Soos Creek Water & Sewer District

Water Comprehensive Plan















FINAL

2014

ROTHHILL

(now Stantec)

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SOOS CREEK WATER AND SEWER DISTRICT

WATER COMPREHENSIVE PLAN

FINAL 2014

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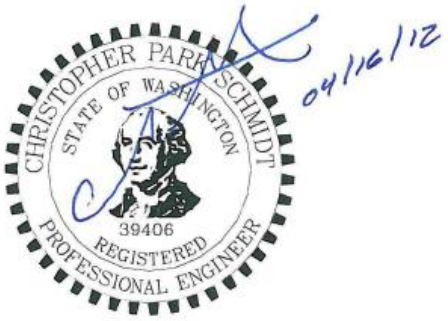
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Reviewed by Washington State Department of Health in accordance with the provisions of WAC Chapter 246-290 and approved on September 12, 2014.

Approved by Soos Creek Water & Sewer District Board of Commissioners on November 5, 2014 by Resolution No. 3457-W.

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EXECUTIVE SUMMARY

Soos Creek Water & Sewer District has prepared its Water Comprehensive Plan to outline the District's planning strategy for the next 20 years. The plan is in accordance with the Revised Code of Washington (RCW) Title 57.16 and supersedes the 2005 Water Comprehensive Plan. The plan analyzes the District's existing water system, provides guidance to evaluate the impacts of future growth, and recommends necessary improvements to the water system to ensure the District remains a regional leader in providing high-quality water service to its current and future customers.

The District's goals as set forth in the 2011 Water Comprehensive Plan are to:

- Provide safe, reliable, and timely water service to District customers at a fair and reasonable price.
- Ensure that water service is available to support development that is consistent with the District's policies and criteria, as well as land use plans and development regulations of the State of Washington, King County, and appropriate local planning agencies.
- Protect the natural environment with operation and conservation procedures.

The 2011 Water Comprehensive Plan carries forward the policies and intent of the 2005 Plan and provides updated documentation and direction for implementing the key functions of the District. The plan is designed to fulfill all local, state, and federal obligations and regulations and is a summary of the manner in which the District will continue to fulfill its mission as a water provider.

INTRODUCTION AND BACKGROUND

Soos Creek Water & Sewer District is a municipal corporation of King County, Washington, serving south King County. Formerly Water District 58 and Cascade Sewer District, the two merged in 1987. Originally serving an area of less than two square miles and a few hundred customers, the District now encompasses over 35 square miles (both water and sewer service areas) and provides water service to more than 17,500 accounts. The District purchases water, which reaches the District via Lake Youngs, solely from Seattle Public Utilities.

The District's water service area is based on the East King County Coordinated Water System Plan, existing agreements with adjacent water utilities, topographical limitations, existing boundaries, and practical limitations of service. The District's current water service area covers over 10,000 acres (approximately 16.5 square miles). The District's service area is bounded by five water purveyors: City of Renton, Covington Water District, King County Water District 111, Cedar River Water & Sewer District, and the City of Kent. The District maintains service agreements with all of these purveyors as well as with Seattle Public Utilities.

POLICIES, CRITERIA, AND STANDARDS

The District has reviewed and updated its water system policies and corresponding criteria to clearly reinforce its commitment to meet or exceed the standards for water providers set by the Washington State Department of Health. The updated policies provide the essential framework for the District to follow in the planning, design, operation and management of its water system.

The policies, criteria, and standards fall into one of the following categories:

- Service Area, Extension and Service Ownership
- System Reliability and Emergency Management Plan
- Fire Protection
- Coordination and Cooperation with Other Agencies
- Water System Planning, Design and Construction
- Environmental Stewardship
- Water Conservation
- Human Resources
- Financial
- Regional Water Supply Development and Transmission

PLANNING CONSIDERATIONS

The District is committed to accommodating all current and projected land use, zoning, population, and water use regulations in the maintenance, operation, and expansion of its water system.

The District's water planning area is consistent with the 1996 East King County Coordinated Water System Plan and encompasses the District's existing water service area, not all of which is currently served by the District.

Within the water planning area, land use and zoning are currently designated by three jurisdictions: King County, the City of Kent, and the City of Renton.

Using planning information from the Puget Sound Regional Council, the District projected the single-family residential use will remain predominant and that land use and zoning patterns will not significantly shift during the next 20 years. However, there will be a greater percentage growth in multifamily and commercial accounts than in single-family accounts within the next 20 years.

Projected Accounts

Classification	2011	2017	2021	2031
Single-family residential	16,791	17,821	18,521	20,373
Multifamily residential	449	488	515	599
Commercial/ Industrial	418	496	541	606
Total	17,658	18,804	19,577	21,578

Historical Water Supply and Consumption

The average annual volume of water purchased by the District over the eight-year period of 2002-2010 was 1,600 million gallons. However, the amount of water purchased by the District in 2010 was 1.65 percent less than in 1995. Moreover, this reduction coincided with a 9 percent increase in customer accounts. This significant shift is in part due to the District's continued commitment to water conservation efforts.

Based on a review of data, this Plan sets the equivalent residential unit (ERU) planning value at 180 gallons per day per ERU for a single-family residence. The planning value for the distribution system leakage is estimated to be 10%. The average day demand forecasted for 2021 is 5.23 MGD and 2031 is 5.82 MGD. The Maximum Day Demand is projected to be 12.03 MGD and 13.39 MGD for 2021 and 2031 respectively, based on the MDD/ADD factor of 2.30.

EXISTING WATER SYSTEM

The District's entire water storage and distribution system consists of approximately 222 miles of water lines, five pump stations, four reservoirs totaling 15.1 MG of storage, 12 pressure reducing facilities, two emergency interties, and four supply interties and master meters with Seattle Public Utilities. The District receives its water solely through the supply interties with the Seattle Public Utilities. The emergency interties are one-way systems designed for the District to provide water to either King County Water District No. 111 or the City of Kent in the event of an emergency.

The distribution facilities are generally in good condition and range in size from 4 to 24 inches in diameter. Over half of the District's piping is ductile iron and less than half is asbestos cement with a minimal amount of PVC and Cast Iron. The District maintains an annual program to replace asbestos cement pipes and has installed 96,570 linear feet of new, ductile iron watermains since the adoption of the 2005 Water Comprehensive Plan.

WATER SYSTEM ANALYSIS

As an essential element of this planning effort, the District conducted a hydraulic analysis using the existing hydraulic model. Three scenarios were created for the existing and projected conditions (6-year and 20-year) to evaluate the system's abilities to support projected growth and expansion.

The hydraulic analysis of the existing conditions identified some deficiencies within the system related to minimum pressure, maximum pressure, and fire flow. The 6-year scenario identified minor deficiencies concerning minimum pressure and only negligible changes in maximum pressures as compared to the existing system analysis. No new high-pressure areas were identified nor did it indicate significant pressure reductions.

All system improvements identified by the 6-year conditions hydraulic analysis are included in the 20-year scenario. No further minimum pressure deficiencies were identified. As such, no improvements, other than those identified for the current and 6-year analyses, are required for any of the fire flow scenarios.

The storage analysis indicated that there is sufficient existing storage to meet the storage requirements for the next 20 years.

The current supply contract with Seattle Public Utilities commits to supplying the full water requirements of the District for 60 years. However, the appendix of the contract guarantees flow from four locations for a total of 7,000 gallons per minute at specific hydraulic gradelines that are less than the current projected maximum daily demand (MDD) of 7,410 gallons per minute, and the projected MDD of 9,300 gallons per minute in 20 years. The physical capacity of the existing interties is 10, 750 gallons per minute, although Seattle Public Utilities is not contractually obligated to provide this amount of flow. Increased water supply may be available in the future if the District modifies the contract with Seattle Public Utilities.

CAPITAL FACILITY PLAN

The District has identified $53.6 million in capital projects to be constructed over the next 20 years. 116 projects, representing a total of $20.2 million, are considered short-term (6-year and 10-year) projects. An additional 150 projects, representing $33.4 million, are considered long-term projects to be constructed during the subsequent 10 years. These costs are based on 2011 dollars and actual cost should be adjusted to account for inflation and changing market conditions at the time of construction. Projects related to new developments are not included in the CFP, as they are developer funded.

Projects included in the Capital Facility Plan focus on improving the District's existing system to meet the District's policies and criteria as well as to address and respond to projected growth. All projects within the Capital Facilities Plan are categorized as follows:

- Supply and source projects
- Pressure zone projects
- Storage facility projects
- Intertie projects
- Distribution and transmission projects

All of the projects are designed to help fulfill the District's mission to provide adequate water supply and improved water quality to the water service area now and in the future.

While the District has determined that additional storage facilities are not required to meet projected demand during the next 20 years, the Capital Facility Plan does include the development of additional storage. This additional storage will improve reliability of the District's existing storage system, and provide additional storage if the District expands beyond its current boundary.

The District is currently considering the installation of an intertie with Cedar River Water & Sewer District at several possible locations. Additionally, the District has investigated the possibility of supplying water to neighboring water purveyors through interties. However, these projects would require the replacement of large portions of the District's existing system with larger diameter pipe.

Distribution and transmission projects identified in the Capital Facility Plan include pump station capacity upgrades, asbestos cement pipe replacement, pipe replacements to boost residual pressure in two identified sections, 4-inch pipe replacement in identified locations, system looping, pipe modifications to address appropriate fire flow/velocity and public facility fire flow requirements, and the creation of a 12-inch diameter grid of pipes throughout the system.

WATER QUALITY

The District purchases all of its water from Seattle Public Utilities and works in coordination with Seattle Public Utilities to maintain water quality by meeting all state and federal water quality standards. Seattle Public Utilities conducts all testing on the water supply, while the District shares joint responsibility for monitoring the distribution system. To this end, the District maintains seven sample stands that Seattle Public Utilities uses for routine coliform and other compliance monitoring. The District complies with all water sampling and monitoring requirements in accordance with Department of Health guidelines under WAC 246.290.

The District maintains an extensive series of water quality monitoring programs that include a coliform monitoring plan, a cross-connection control program, a lead and copper monitoring plan, asbestos monitoring, disinfection by-product monitoring, and residual disinfectant monitoring.

WATER USE EFFICIENCY

The District is committed to implementing the water use efficiency program. In 1996, the District began implementing a conservation program that immediately began producing quantifiable water savings. The District's 1996 Water Conservation Program set a goal to reduce customer demand by five percent by 2015. This goal was achieved by the District within the first five years as average use per ERU was reduced 1.2 percent each year. The District's 2004 -2010 goal was to reduce the average day demand per ERU by one percent per year for ten years, from the planning value of 200.0 gpd/ERU in 2004 to 180.9 gpd/ERU in 2010. From 2004 to 2010, the District's average annual percent decrease in ERU value was 3.32% which exceeded the goal of one percent.

The District's 2011-2017 Water Use Efficiency Program builds on the success of the previous program. The District's current challenge is to support and sustain long-term reductions primarily through educational campaigns. Along these lines, the District continues to support programs and corresponding policies to promote the efficient use of water.

The District is one of a group of 18 utilities that purchase wholesale water from Seattle Public Utilities and are part of Saving Water Partnership. The Saving Water Partnerships regional 2013 – 2018 Water Use Efficiency Goal is to reduce per capita water use from current levels so that the total average annual retail water use of its members is less than 105 mgd from 2013 through 2018 despite forecasted population growth.

FINANCIAL PLAN

The District's provides its ratepayers with dependable, clean and safe potable water, maintains proper water pressure, and ensures adequate water flow for fire protection through properly-sized distribution and storage facilities. Costs are met through charges for services paid by the customers who are connected to the water system.

The District examines its billing and rate structure on an annual basis to help keep rates as low as possible, while still allowing the District to function as a viable entity. The District's current rate structure includes a bi-monthly base charge and an additional charge for volume of water used during summer months.

The District is responsible for financing all improvements to its system with the exception of developer extensions. While the District utilizes Utility Local Improvement Districts (ULIDs) to fund projects, it must immediately obtain the funds for construction which are then reimbursed, with interest, to the District over time.

The District has projected $53.6 million dollars in water capital projects over the next 20 years. The District will fund the improvements recommended by the Water Comprehensive Plan through various means. Sources of funding for improvements are categorized into three areas: Rate Funded, General Facility Charge Funded, and Developer Extension Funded. Each capital project should be reviewed annually through the budget process to more accurately forecast project costs and timing. In conjunction with this, future rate projections should be analyzed to reflect changes in system costs and other assumptions.

The allocation of funds for improvements is generally based on the requirements for that specific improvement. Consideration is given for specific projects based on whether the benefits are localized or District-wide. Another funding consideration is whether a project is maintenance and replacement oriented or an upgrade to an existing system to improve service or reliability.

MAINTENANCE AND OPERATIONS

The District is committed to ensuring that its water system is adequately staffed and maintained to continue to supply quality water to its customers and as such performs regular maintenance of all facilities and equipment, which are checked in accordance with manufacturers' specifications. The District's management structure consists of a Board of Commissioners, District Manager, Finance Manager, Human Resources Manager, Operations Manager, Office Personnel, Field Personnel, District Engineering Consultant, and an Attorney. The District has established that between 9.5 and 12.5 full-time employees are required to adequately staff the general maintenance functions required for the water system.

In 2004, the District updated its Emergency Response Plan in response to the 2002 Bioterrorism Act. The Emergency Response Plan includes system specific information, explanations of roles and

responsibilities, communications procedures, emergency contact lists, situation specific action plans, identification of alternate water sources, and information on personnel safety. Additionally, the District has completed a Hazard Mitigation Plan, and a Vulnerability Assessment.

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CHAPTER 1
INTRODUCTION

PURPOSE AND SCOPE

Soos Creek Water & Sewer District's (District) Water Comprehensive Plan has been prepared according to the Revised Code of Washington (RCW), Title 57.16. These regulations require that all formed water districts prepare a Comprehensive Water Plan outlining the District's present and reasonable foreseeable needs in the future. Furthermore, the Washington Administrative Code (WAC), Chapter 246, requires that the Comprehensive Water Plan be updated every six years, at a minimum, to evaluate and formulate a plan to meet the District's needs by the most efficient and economical means. This Plan is intended to supersede the District's 2005 Water Comprehensive Plan. This Plan was prepared in 2010 and 2011, and is based on 2010 and prior years' data.

This Plan establishes the water system policies and criteria in accordance with the District's framework, analyzes the existing water system and its operations, and recommends improvements to correct deficiencies and meet future service levels. This Plan provides the District with a guide to evaluate the impacts of future proposed development and land use on the water system. The scope of the Plan is as follows:

- Review and update the water system policies and criteria to ensure future improvements and expansions are consistent with adjacent jurisdictions' comprehensive plans.
- Estimate the effect of future land uses on population and household trends within the Retail Water Service Area.
- Determine the existing water consumption characteristics and develop projected future demands.
- Document the existing water system supply, storage, and distribution facilities.
- Review existing water quality data for the system and discuss existing and forthcoming regulatory requirements on the District's water system.
- Identify the role that water conservation will have in reducing future water requirements and how the District's conservation program will be implemented.
- Perform a hydraulic analysis of the water system using the existing computer model.
- Assess the capability of the existing water system to meet existing and projected future demands.
- Identify existing water system deficiencies and develop the Capital Facility Plan, including priorities for construction.
- Document the District's financial program for the water system.
- Document the District's maintenance and operations program for the water facilities.

AUTHORIZATION

The Board of Commissioners, recognizing the obligation to provide for the needs of its present and future customers, has directed Roth Hill, LLC to analyze and prepare an updated Water Comprehensive Plan. This Plan has been prepared in compliance with the State law.

PLAN ORGANIZATION

The subsequent sections of this Plan are organized as follows:

- Chapter 2 provides detailed information on the District's water system. Included are descriptions of the District's Retail Water Service Area, water system history, adjacent water purveyors and interties, related plans, and physical features.

- Chapter 3 describes water system policies, criteria, and standards for design and planning parameters of the District's water system.

- Chapter 4 summarizes existing and future land use, zoning, employment, and population data. It also includes an analysis of historical water consumption and projected water consumption of the District over the next 20 years.

- Chapter 5 summarizes existing water system facilities and major components including water supply source, storage facilities, pump stations, and pressure zones. Also included are descriptions of existing interties, fire protection standards, and the District's operating scheme.

- Chapter 6 summarizes the analysis of the water system facilities and the hydraulic analysis. Additionally, included is an analysis of the District's storage facilities based on the recommended water policies and criteria.

- Chapter 7 outlines the Capital Facility Plan necessary to meet the District's future water system needs.

- Chapter 8 describes the source of the District’s water supply and provides an assessment of the water quality.

- Chapter 9 reviews the existing conservation program and provides an updated cost-effective conservation program.

- Chapter 10 describes the general financial framework that addresses the District's overall financial status.

- Chapter 11 summarizes the District’s water maintenance and operations program. Included is an overview of water system responsibility and authority, system operation and maintenance plan, equipment supplies and inventory, water quality monitoring, emergency response, and cross-connection control.

APPROVAL PROCESS

This Plan is required to meet state requirements. The Water Comprehensive Plan complies with the requirements of the Department of Health (DOH) and Department of Ecology (DOE), as set forth in the WAC 246-290-100, and RCW 57.16.010. Both DOH and DOE must review and approve the Plan.

This Plan is also consistent with King County Code Title 13.24 with respect to water system planning.

The District will submit this document to adjacent utilities and local governments having jurisdiction to assess consistency with ongoing and adopted planning efforts. The District's Board of Commissioners will approve the final Water Comprehensive Plan following the approval by DOH.

ENVIRONMENTAL ASSESSMENT

The District has determined this Plan does not have a probable significant adverse impact on the environment and has issued a Determination of Non Significance under WAC 197-11-340(2). This decision was made after review of the completed environmental checklist and other information on file with the lead agency. The SEPA Checklist and Environmental Determination issued by the District for the Water Comprehensive Plan is provided in **Appendix A.**

It should be noted, however, that each Capital Improvement Project presented in this Plan will undergo subsequent project-specific environmental review as part of the preliminary and final design process.

GENERAL WATER SYSTEM INFORMATION

Soos Creek Water & Sewer District owns and operates a public water system that currently serves customers within its Retail Water Service Area. The following is a summary of current information on the District's water system. The information is consistent with data on file with the DOH. The DOH Water Facilities Inventory (WFI) Form is included in **Appendix K.** A summary of the District's information is included in **Table 1.1**

Table 1.1 General District Information

Water System Name	Soos Creek Water & Sewer District
Water System ID No.	401008
Water System Classification	Group A
Type of Ownership	Local Government
Owner No.	002998
Address	14616 SE 192nd Street PO Box 58039 Renton, WA 98058-1039
System Contact Person	Ron Speer, District Manager
Limit on Number of Service Connections	This system has an unspecified number of connections and must be in accord with growth.

DEFINITIONS

The following terms are used in this Plan:

Consumption - Consumption is the actual volume of water used by the water system customers. This volume is measured by the meter at each customer's connection to the distribution system.

Cross-Connection - Cross-connection is 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 - Dead storage is the volume of stored water not available to all consumers at the minimum design pressure in accordance with WAC 246-290-230(5) and (6).

Demand - The quantity of water obtained from the water supply source over a given period to meet the needs of domestic, commercial, industrial and public use. Also included is non-revenue water.

Demands are normally discussed in terms of flow rate such as million gallons per day (mgd) or gallons per minute (gpm). The flow rates can be described in terms of a volume of water delivered during a specific period. Flow rates pertinent to the analysis and design of water systems include the following defined terms:

Authorized Consumption - Authorized uses of water not billed to customers. These are usually unmetered and must be estimated. They can include main flushing, sewer flushing, reservoir and tank cleaning, fire fighting and training, temporary construction, etc.

Average Daily Demand (ADD) - Average Daily Demand is the total quantity of water used from all sources of supply as measured or estimated over a calendar year divided by 365.

Maximum Day Demand (MDD) - Maximum Day Demand is the volume of water delivered to the water system on the year's maximum water-use day.

Peak Hour Demand (PHD) – Peak Hour Demand is the maximum rate of water use, excluding fire flow, which can be expected to occur within a defined service area over a continuous 60 minute time period.

Peak Season Demand (PSD) - Peak Season Demand is the average daily demand from May 15th to September 15th.

Equalizing Storage - Equalizing storage is the volume of storage needed to supplement supply to consumers when the peak hourly demand exceeds the total source pumping and supply capacity.

Fire Flow - Fire flow is the fire flow rate that has been established for a water system. This is usually specified by the fire protection authority, or in the Coordination Act (PWSCA), whichever is applicable.

Fire Storage (fire suppression storage) - Fire storage (fire suppression storage) is the volume of stored water available during fire suppression activities to satisfy minimum pressure requirements per WAC 246-290-230.

Head - Head is a measure of the equivalent pressure or force exerted by water. Head is measured in feet and can be converted to pounds per square inch (psi) by dividing feet by 2.31.

Head Loss - Head loss is the pressure reduction resulting from pipeline wall friction, bends, physical restricts, or an obstruction as water flows through a pipe. Head loss is determined by pipe diameter.

Hydraulic Grade Line Elevation - Hydraulic grade line elevation is the height of the head above the defined datum of KCAS.

Distribution System Leakage – The water lost from the distribution system, and includes both apparent losses and real losses. Apparent losses include things such as theft, meter inaccuracies, and data collection errors. Real losses are the physical losses from the distribution system and include such things as reservoir overflows and leaky water mains. Because these types of losses cannot be authorized by the water system, they are considered leakage.

Peaking Factor - A peaking factor is a dimensionless parameter used to express the relationship among maximum day demand, peak-hour demand, and maximum month demand as a ratio to the average day demand. The peaking factor used for design purposes is often based on the most severe peaking trends observed on a historical basis.

Purveyor - A purveyor is an agency, subdivision of the state, municipal corporation, firm, company, mutual or cooperative association, institution, partnership, person or other entity owning or operating a public water system. Purveyor also means the authorized agents of such entities.

Reserve or Emergency Storage - Reserve or emergency storage is the reservoir capacity provided to meet emergencies such as supply failure, pipeline failure, pump station failure, or power outages.

Retail Water Service Area – The specific area for which water service is planned by the municipal water supplier, as identified in a water system plan or comprehensive plan, for which there is a duty to serve.

Service (Pressure) Zone - A service zone is a water subsystem operating at a common hydraulic grade line.

Standby Storage - Standby Storage is the volume of stored water available for use when unusual conditions impose higher demands than anticipated. The District has a connection point on all of the tank sites that allow for a connection of a pump and drawing the water in the tanks down to within several feet of the bottom.

Turbidity - Turbidity is a measure of suspended particles in water.

ABBREVIATIONS

Table 1.2 Abbreviations

Abbreviations	Meaning
AAD	Average Annual Demand
ac-ft	Acre-feet
AC	Asbestos-Cement (Pipe)
AC pipe	Asbestos-Cement Pipe
ADD	Average Daily Demand
API	Annual Percentage Increase
APR	Annual Percentage Rate
APWA	American Public Works Association
ASR	Aquifer Storage and Recovery
ASTM	American Society for Testing and Materials
AVE	Avenue
AWC	Association of Washington Cities
AWWA	American Water Works Association
BRB	Boundary Review Board
cf	Cubic Feet
ccf	Hundred Cubic Feet
CCR	Consumer Confidence Report
CDC	Center for Disease Control and Prevention
CEU	Continuing Education Units
CFP	Capital Facility Plan
CFR	Code of Federal Regulations
cfs	Cubic Feet Per Second

Abbreviations	Meaning
CI	Cast Iron (pipe)
CIP	Capital Improvement Program
Conn.	Service Connection
CPA	Certified Public Accountant
CPP	Countywide Planning Policies
CPR	Conservation Planning Requirements
CRWSD	Cedar River Water & Sewer District
CSR	District Customer Service Representatives
CWA	Certificate of Water Availability
CWD	Covington Water District
CWSP	Coordinated Water System Plan
CWSSA	Critical Water Supply Service Area
DCDA	Double Check Detector Assembly
DCVA	Double Check Valve Assembly
d/D	Depth/Diameter
D/DBP	Disinfectant/Disinfection By-Product
DE	Developer Extension
DEA	Developer Extension Agreement
DI	Ductile Iron (pipe)
DNR	(King County) Department of Natural Resources and Parks
DOE	(Washington State) Department of Ecology (a.k.a. ECY)
DOT	(Washington State) Department of Transportation
DOH	(Washington State) Department of Health
Du/ac	Dwelling Units Per Acre
DWSRF	Drinking Water State Revolving Fund
E	East
ECY	(Washington State) Department of Ecology (a.k.a. DOE)
EKC	East King County
EKC-CWSP	East King County-Coordinated Water System Plan
ENR-CCI	Engineering News-Record-Cost of Construction Index
EOC	Emergency Operations Center

Abbreviations	Meaning
EPA	US Environmental Protection Agency
EPP	Environmental Protection Plan
ERU	Equivalent Residential Unit
ESA	Endangered Species Act
ESWTR	Enhanced Surface Water Treatment Rule
FAZ	Forecast Analysis Zones
FBI	Federal Bureau of Investigation
FIU	Field Interface Unit
FF	Fire Flow
FPS	Feet Per Second
ft	Feet
ft2	Square Feet
ft3	Cubic Feet
FTE	Full Time Equivalent
GFC	General Facilities Charge
GIS	Geographic Information System
GMA	Growth Management Act
GP	Grinder Pump
GPAD	Gallons Per Acre Per Day
gpcd	Gallons per Capita per Day
gpd	Gallons Per Day
gpm	Gallons Per Minute
GWI	Groundwater Under the Influence of Surface Water
GWR	Ground Water Rule
HAA	Haloacetic Acids
HDPE	High-Density Polyethylene (pipe)
HGL	Hydraulic Grade Line Elevation
HH	Households
HL	Head Loss
HP	Horsepower
IE	Invert Elevation

Abbreviations	Meaning
In	Inches
IOC	Inorganic Chemical
ISO	Insurance Services Offices
KC	King County
KCAS	King County Aerial Survey
KCCP	King County Comprehensive Plan
KCWD	King County Water District
KCWD111	King County Water District No. 111
KW	Kilowatt
LID	Local Improvement District
LF	Lineal Feet
LT2ESWTR	Long-Term 2 Enhanced Surface Water Treatment Rule
M&O	Maintenance and Operations
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MDD	Maximum Day Demand
MF	Multifamily
MG	Million Gallons
mgd	Million Gallons Per Day
Mg/l	Milligrams Per Liter
MMD	Maximum Month Demand
MMIS	Maintenance Management Information System
MVO	Mainline Valve Opening
N	North
NE	Northeast
NSF	Non-sufficient Funds
NTU	Nephelometric Turbidity Unit
NW	Northwest
NWR	No Water Right
O&M	Operations and Maintenance (same as M&O)
OFM	Office of Financial Management

Abbreviations	Meaning
OMB	Office of Management and Budget
OSHA	Occupational Safety and Health Administration
PAA	Potential Annexation Area
PCi/L	PicoCuries Per Liter
PHD	Peak Hour Demand
PLC	Programmable Logic Controller
ppe	Personal Protective Equipment
ppm	Parts Per Million
PRV	Pressure-Reducing Valve
PS	Pump Station
psi	Pounds Per Square Inch
PSRC	Puget Sound Regional Council
PWTF	Public Works Trust Fund
PUD	Planned Urban Developments
Qa	Annual Quantity
Qi	Instantaneous Quantity
R/W	Right-of-Way
RCW	Revised Code of Washington
RD	Road
RPBA	Reduced Pressure Backflow Assembly
RPDA	Reduced Pressure Detector Assembly
RSL	Regional Supply Line
RTU	Remote Terminal Unit
RWA	Regional Water Association
RWSA	Retail Water Service Area
RWSP	(King County) Regional Wastewater Services Plan
S	South
SCADA	Supervisory Control and Data Acquisition
SDWA	Safe Drinking Water Act
SCWSD	Soos Creek Water & Sewer District
SE	Southeast

Abbreviations	Meaning
SEPA	State Environmental Policy Act
SF	Square Feet
SFR	Single-Family Residential
SMA	Satellite Management Agency
SOC	Synthetic Organic Chemical
SOP	Standard Operating Procedures
SPU	Seattle Public Utilities
SR	State Route
SRF	Washington State Revolving Fund
SSMA	Satellite System Management Agency
ST	Street
SW	Southwest
SVBA	Spill-Resistant Vacuum Breaker Assembly
TAZ	Transportation Analysis Zone
TBD	To Be Determined
TDH	Total Dynamic Head
THAA	Total Haloacetic Acids
THMs	Trihalomethanes
TOT	Time of Travel
TTHMs	Total Trihalomethanes
TV	Television
UBC	Uniform Building Code
UGA	Urban Growth Area
UGB	Urban Growth Boundary
ULID	Utility Local Improvement District
UPC	Uniform Plumbing Code
UTRC	(King County) Utilities Technical Review Committee
V	Voltage
VOC	Volatile Organic Chemical
W	West
WAC	Washington State Administrative Code

Abbreviations	Meaning
WARN	Warning Alert & Response Network
WASWD	Washington Association of Sewer and Water Districts
WaterISAC	Water Information Sharing and Analysis Center
WCCPS	Water Conservation Coalition of Puget Sound
WD	Water District
WFI	Water Facilities Inventory
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation
WSRB	Washington Survey and Rating Bureau
WUCC	Water Utility Coordinating Committee
WWUC	Washington Water Utilities Council

CHAPTER 2
BACKGROUND

INTRODUCTION

This chapter summarizes the District's history, service area topography, retail water service area, and service area agreements. It also includes a brief summary of water system facilities, the relationship with adjacent purveyors and other related plans. **Figure 2.1** at the end of this chapter outlines the District's corporate boundary and surrounding vicinity.

DISTRICT HISTORY

In 1939, King County Water District No. 58 was incorporated and began providing water service to a small area of less than 2 square miles that centered on Benson Road (108th Avenue SE) and extended from SE 164th Street to SE 192nd Street. At that time, water was gathered from a drilled well, pumped to a 40,000-gallon timber tank, and distributed to customers through 2- to 5-inch diameter water lines. Over the next 16 years, the District continued to grow and in 1955 the District established a connection and began purchasing water from the former Seattle Water Department (currently SPU) through the Cedar River Pipeline and discontinued use of its well water.

By 1961, the District had expanded to serve approximately 1,900 customers in a 10-square mile service area. At that time, a second connection to the Cedar River Pipeline was established. Through the next decade, the District continued to grow and expand and by 1974 the District served 6,000 customers.

At that time, the District adopted its first Comprehensive Water Plan. Some of the first improvements associated with the plan were the installation of nearly 4 miles of 12-inch watermain and the construction of the 2-million gallon Lake Desire Standpipe Tank. In conjunction with the watermain construction, the District improved fire protection services throughout the area to meet King County requirements.

In 1980, the District adopted an updated Comprehensive Water Plan and implemented a series of improvements that included the construction of a 6-million gallon concrete reservoir, Pump Station No. 4, and the installation of several miles of transmission and distribution mains.

Through the 1980s, the District continued to grow as three small “island” areas within the District and an additional small area adjacent to the District was annexed. The “island” areas were situated south of SE 192nd Street, East of 124th Avenue SE, and north of SE 208th Street. The fourth adjacent area was located near 109th Avenue SE/SE 227th Street, northeast of the Kent City Limits.

In 1987, the District merged with the Cascade Sewer District to form the Soos Creek Water & Sewer District as a municipal corporation of King County to provide both water and sewer services. Prior to the merger, the two districts already shared office space, equipment, and personnel.

Since that time, the District has been governed by a Board of Commissions which consists of five publicly elected officials. Authority and procedures for both water and sewer District functions was established in RCW 57.

In 1988, the District completed construction of a new office facility near the intersection of SE 192nd Street and 148th Avenue SE. The new office provided necessary garage, work and office space, and improved access throughout the District, improving response time and overall safety. Additionally, the District completed an update to the Comprehensive Water Plan in 1988, 1996 and 2005.

During that time, emergency interties were made with the City of Kent and King County Water District No. 111. Additionally, based on recommendations from the 1996 Comprehensive Water Plan, a series of improvements were performed to help the District provide adequate water supply and improved water quality for the existing and future service areas. Improvements included pump station upgrades, portable emergency power supply, a new intertie, and various other watermain additions and replacements.

In 2001, the District signed a water supply contract with Seattle Public Utilities (included in **Appendix D**) which commits Seattle Public Utilities to supply full water requirements of the District for 60 years.

By 2011, the District's retail water service area has grown to serve approximately 16 square miles with more than 23,400 equivalent residential units (ERUs). Additionally, the District currently maintains four interties with the Seattle Public Utilities System on the Cedar River Pipeline No. 4 and the Fairwood Pipeline.

RETAIL WATER SERVICE AREA

The retail water service area (RWSA) for the District is based on the East King County Coordinated Water System Plan, existing agreements with adjacent water utilities, topographical limitations, existing boundaries and practical limitations of service. The RWSA is also the District's water planning area. The service area covers more than 10,000 acres (over 16.5 square miles).

The RWSA is comprised of all or portions of Sections 20, 21, 25, 28, 29, 30, 31, 32, 33, 34, 35, and 36 of Township 23 North, Range 5 East, W.M.; and Sections 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, and 18 of Township 22 North, Range 5 East, W.M. It is generally bound on the north by the City of Renton at the Cedar River Pipeline, on the east by the City of Seattle's Lake Youngs reservoir and watershed and 148th Avenue SE, on the south by SE 240th Street and King County Water District No. 111 and on the west by SR 167 and the City of Kent.

The RWSA boundary coincides with the District's corporate water system boundary, except in the following two areas:

A large area (approximately 800 acres) in the southeast portion of the service area south of SE 216th Street and the Lake Youngs watershed boundary and east of 148th Avenue SE. This area could be serviced by the Soos Creek Water & Sewer District.

There is also one unannexed "island" area surrounded by the District boundary. This area (nearly 360 acres) is generally located south of SE 208th Street and east of 132nd Avenue SE near Lake Youngs. It is not likely that portions of this area will be annexed, since most of it is situated in a park area adjacent to the Big Soos Creek.

The corporate boundary is the legal boundary of Soos Creek Water & Sewer District as a municipal corporation. Areas adjacent to the corporate boundary can request to annex to the District for the purpose of receiving water service.

The current King County franchise area boundary designates those areas in which the District has constructed water lines in County rights-of-way. Title 57 of the RCW gives the District authority to be in any public Right-of-Way in the State.

Figure 2.2 shows the RWSA boundary, corporate boundary, King County water franchise boundary, and urban growth area boundary.

GEOLOGY, SOILS AND TOPOGRAPHY

The geology of the District is largely the result of prehistoric glacial activity and subsequent ice retreats. The United States Department of Agriculture, in the Soil Survey of King County, has mapped and analyzed the soils in the area. In general, Vashon Drift deposits are predominant along with scattered post-glacial deposits in depression and along stream courses. Small areas of pre-glacial formations also occur near Renton and south of Lake Desire. The most common soil type in the area is known as the Alderwood series that includes moderately well drained gravelly sandy loams that are 24 to 40 inches deep over consolidated glacial till. The next most common type, but much less prevalent than the Alderwood series, is the Everett series. Everett soils are gravelly and are underlain by sand and gravel. In certain areas, principally basins and lowlands, organic materials such as peat and muck occur in depths up to 10 feet.

The physical geography of the service area includes a range in elevation from approximately 700 feet King County Aerial Survey (KCAS) in the eastern portion near Lake Desire to approximately 95 feet (KCAS) along the western boundary near SR 167. The topography in the area has been determined through a series of aerial photographs based on data collected in a flyover of the District in preparation of past comprehensive plans.

INVENTORY OF EXISTING SYSTEM FACILITIES

The District owns and operates the following facilities:

Approximately 221 miles of water lines that include:

64 miles of less than and including 6-inch diameter line
116 miles of 8-inch diameter line
17 miles of 10-inch diameter line
23 miles of 12-inch diameter line
3 miles of all other diameters larger than 12 inches.

Five Pump Stations:

Pump Stations No. 1, 2 and 6 - Seattle Supply Stations
Pump Station No. 4 - Seattle Supply and Internal Booster Station
Pump Station No. 5 - Internal Booster Station

Four Reservoirs:

Reservoir No. 1 - 6.0 MG
Tank No. 2 - 4.0 MG
Tank No. 5 - 3.0 MG
Tank No. 6 - 2.0 MG

11 Pressure Reducing Facilities.

Two Emergency Interties.

Four Supply Interties and Master Meters with Seattle Public Utilities.

A detailed inventory and description of the District's facilities are included in **Chapter 5** and shown in **Figure 5.1**, Existing Water System Facilities.

The District served approximately 17,563 accounts as of December 2010, including single-family residential, multifamily residential, commercial, and government/education accounts. There are no limitations on approved services at this time.

RELATIONSHIPS WITH OTHER PLANS

King County Comprehensive Plan – With Updates Through 2010

The King County Comprehensive Plan manages the projected growth within unincorporated King County by designating where growth will occur through policies, goals, plans and regulations. The plan includes a land use map of unincorporated King County and a zoning map of projected growth. An urban growth boundary is also defined in the plan to direct projected growth into urban areas.

Policy F-101 of the amended Plan states: "King County, the cities, special purpose districts, and/or local service providers shall plan as partners. King County's planning will focus on the unclaimed urban unincorporated areas and cities Potential Annexation Areas."

Additionally, Policy F-209, requires that: "The capital facility plans and capital improvement programs prepared by all other agencies which provide services to unincorporated areas of the County should be consistent with the King County Comprehensive Plan."

City of Kent Comprehensive Plan

The City of Kent updated its 1995 Comprehensive Plan in 2002/2004. This update was precipitated by several policy issues and development projects of local, regional, and statewide significance including, but not limited to, significant annexations, the Endangered Species Act (ESA), and amendments to the Growth Management Act (GMA). The City serves over 84,000 people covering 29.4 square miles. With the annexation of Panther Lake in 2001, the City now covers more thatn 33 square miles with a population of over 119,000. The City is preparing for its next state-mandated Comprehensive Plan update. Kent provides policy direction on coordinating with local utility providers to ensure consistency with its Comprehensive Plan.

City of Renton Comprehensive Plan

The City of Renton updated its Comprehensive Plan in 2009. The Plan is a broad statement of community goals, objectives, and policies that directs the orderly and coordinated physical development of the City. The City is expected to serve more than 61,000 people by the year 2012. Renton provides policy direction on coordinating with local utility providers to ensure consistency with its Comprehensive Plan.

Other Water Plans by Adjacent Water Purveyors

The surrounding purveyors include the City of Renton to the north and northwest, Cedar River Water & Sewer District to the north and east, Covington Water District and King County Water District No. 111 to the southeast, and the City of Kent to the west and southwest (see the Adjacent Purveyor Map, **Figure 2.2**). Lake Youngs, a City of Seattle watershed, directly provides water to the District.

The District maintains four interties with Seattle Public Utilities, which are used for the District's supply. In addition, the District has two emergency interties, one with King County Water District No. 111 and one with the City of Kent. Additional information is located in **Chapter 5, Existing System**.

City of Seattle

The City of Seattle 2007 Water System Plan addressed future growth of the region, water supply, conservation, water utility coordination, system improvement, water quality, and many other important issues. Seattle Public Utilities provides 100% of Soos Creek Water & Sewer District's water. Seattle Public Utilities and the District have a wholesale contract that addresses certain obligations, responsibilities, and commitments for each party. The contract commits Seattle Public Utilities to supply full water requirements of the District for 60 years starting in May of 2001, creates common wholesale rates for the same basic services, and creates an Operating Board to represent the best interests of the region.

City of Renton

The City of Renton adopted its Water System Plan in 2005. The Plan provides service to approximately 16 square miles with more than 50,000 customers. The City maintains eight wells and one spring for normal supply. The City has 10 interties plus four emergency interties. The City also supplies wholesale water to Skyway Water and Sewer District on a long-term basis.

Cedar River Water & Sewer District

Cedar River Water and Sewer District (CRWSD) 2006 Comprehensive Plan addresses both water and sewer systems. The Plan provides for orderly development of the CRWSD's water and sewer system in a manner that will meet the potable water system, fire flow and sanitary sewer collection and disposal needs for the CRWSD's existing and future customers.

CRWSD's water service area includes approximately 24,200 acres generally located south and east of the City of Renton and is within unincorporated King County and the City of Maple Valley. The system includes three water supply connections to the Seattle regional water system, two primary source connections and one emergency supply. In addition, there are four interties with Covington Water District.

Cedar River Water and Sewer District has consideration for an intertie with Soos Creek Water & Sewer District. Since Soos Creek Water & Sewer District serves a higher hydraulic gradient, gravity flow (through PRVs) would be possible to CRWSD's water system. However, pump stations would be required for CRWSD to provide back-up supply to Soos Creek Water & Sewer District. This is further described in Chapter 7, Capital Facilities Program.

Covington Water District

In 2007, Covington Water District (CWD) prepared its Water System Plan update. The CWD operates several facilities for the supply, storage and distribution of water. Supply to the system is provided by 10 production wells. The CWD also receives water from the City of Tacoma's Green River Second Supply Pipeline through a partnership arrangement with Tacoma and others, as well as from the City of Auburn through a wholesale arrangement. In addition, CWD has emergency interties with King County Water District No. 111 and the City of Kent. CWD also maintains operation connections with Cedar River Water and Sewer District. The CWD is also a member of the Cascade Water Alliance, a group of public water systems in King County who formed to jointly plan, develop and operate a regional water system for its members.

King County Water District No. 111

King County Water District No. 111's (KCWD111) 2009 adopted Water System Plan provides for water service to more than 18,000 people within approximately 7 square miles. KCWD111 currently has four active wells. Three wells have been placed in emergency standby status and two other are monitoring wells and are not used for consumption. The District also receives water from the City of Auburn via a joint connection with CWD. KCWD111 is also participating in the City of Tacoma's second supply pipeline.

KCWD111 has six interties with four adjacent purveyors, one being Soos Creek Water & Sewer District. This intertie is used solely as an emergency intertie and allows water to gravity flow from Soos Creek Water & Sewer District to KCWD111.

City of Kent

The most recent City of Kent Water System plan was prepared in 2008. Kent provides water service to approximately a 65,000 population within approximately 24 square miles. The City is supplied by 10 sources of water supply including water purchased from the City of Tacoma's second supply pipeline. The City maintains supply and emergency interties with the cities of Auburn, Renton and Tukwila, Covington Water District, Highline Water District, King County Water District No. 111 and Soos Creek Water & Sewer District.

There are a few small areas in the southwestern portion of the District that overlap with the City of Kent service area boundary. The District serves these areas because it is more feasible for them to do so at this time.

OTHER RELEVANT PLANNING DOCUMENTS

King County Soos Creek Basin Plan

In 1990, King County published the Soos Creek Basin Plan that recommended watershed management measures to protect resources and respond to increasing hazards and property damage resulting from increased urbanization in the Soos Creek Basin. The land use recommendations included low densities in the rural areas, low densities adjacent to streams, maintenance of low densities, purchase of open space lands in areas with regionally significant aquatic resources, and maintenance of forested cover in the Lake Youngs Watershed. However, not all basin plan options have been implemented by King County. Recommended regulatory changes included area-specific

retention/detention standards, clearing limits, water quality and maintenance requirements for drainage facilities.

The majority of the District is within the Soos Creek Basin. The District serves nearly all urban areas in the Soos Creek Basin.

King County Lake Desire Management Plan

In 1995, King County published a study with a draft management plan for Lake Desire. The study was conducted from April 1993 to April 1994. The intent of the plan is to improve water quality in Lake Desire by addressing issues affecting the watershed and in-lake source of nutrients that contribute to the existing water quality problems. Lake Desire is in the northeastern area of the District.

East King County Coordinated Water System Plan

King County Council formally declared East King County a critical water supply area (Ordinance 7893, December 22, 1986 – pursuant to the Public Water System Coordination Act of 1977 [Chapter 70.116 RCW]). As a result of this action, a Water Utility Coordinating Committee (WUCC) was formed for the purpose of preparing a Critical Water System Plan in East King County. The WUCC consists of representatives of water system agencies having 50 or more service connections.

On September 8, 1987, the King County Council formally adopted the external boundaries of the CWSSA through Ordinance 8214.

In October 1989, the three-year regional water system planning effort culminated in the adoption of the East King County Coordinated Water System Plan (CWSP). The plan is significant in that it established the framework for water system planning in East King County.

East King County Coordinated Water System Plan Update (November 1996)

The East King County Coordinated Water System Plan (EKC-CWSP) Update looked at seven specific issues:

1. Water demand forecasts;
2. Boundaries among the utilities;
3. Regional water supply options;
4. Conservation programs;
5. Minimum design standards for water systems;
6. Requirements of E2SSB 5448 which amend RCW 70.116, 70.119, and 70.119A; and
7. Relationship between the 1990 Growth Management Act, the 1994 King County Comprehensive Plan, and the CWSP water demand forecasts.

The Update noted the updated demand forecasts had decreased substantially regionally since reported in 1989. The only substantial boundary change was for the City of Issaquah. The City had reviewed

its water supply and service area and had determined it needed to reduce its boundaries to coincide with its corporate boundaries on the south side of the City.

The EKC-CWSP Update focused on the assessment of the water supply needs in eastern King County. The Update developed a list of options to meet those needs. Two of the options included the North Fork of the Snoqualmie River and the Issaquah Valley aquifer. The plan was developed under the guidance of the Water Utility Coordinating Committee. The goal of the plan was to assist area utilities in establishing an effective process for planning and developing public water systems.

South King County Ground Water Management Plan

The 2003 South King County Ground Water Management Plan documents the work of local governments and citizens to understand and protect the ground water underlying south King County. The South King County Ground Water Advisory Committee developed the South King County Ground Water Management Plan to meet this area's groundwater protection needs. The goal of the Plan is to promote an appreciation for the complexity of the ground water system, to describe potential threats to the system, and to identify strategies which can contribute to the long-term management and beneficial use of the ground water resources. The Plan encompasses approximately 260 square miles in southwest King County. It is bounded by the Duwamish and Cedar Rivers, on the east by the Black Diamond area, on the south by the Green River and Pierce County, and on the west by Puget Sound.

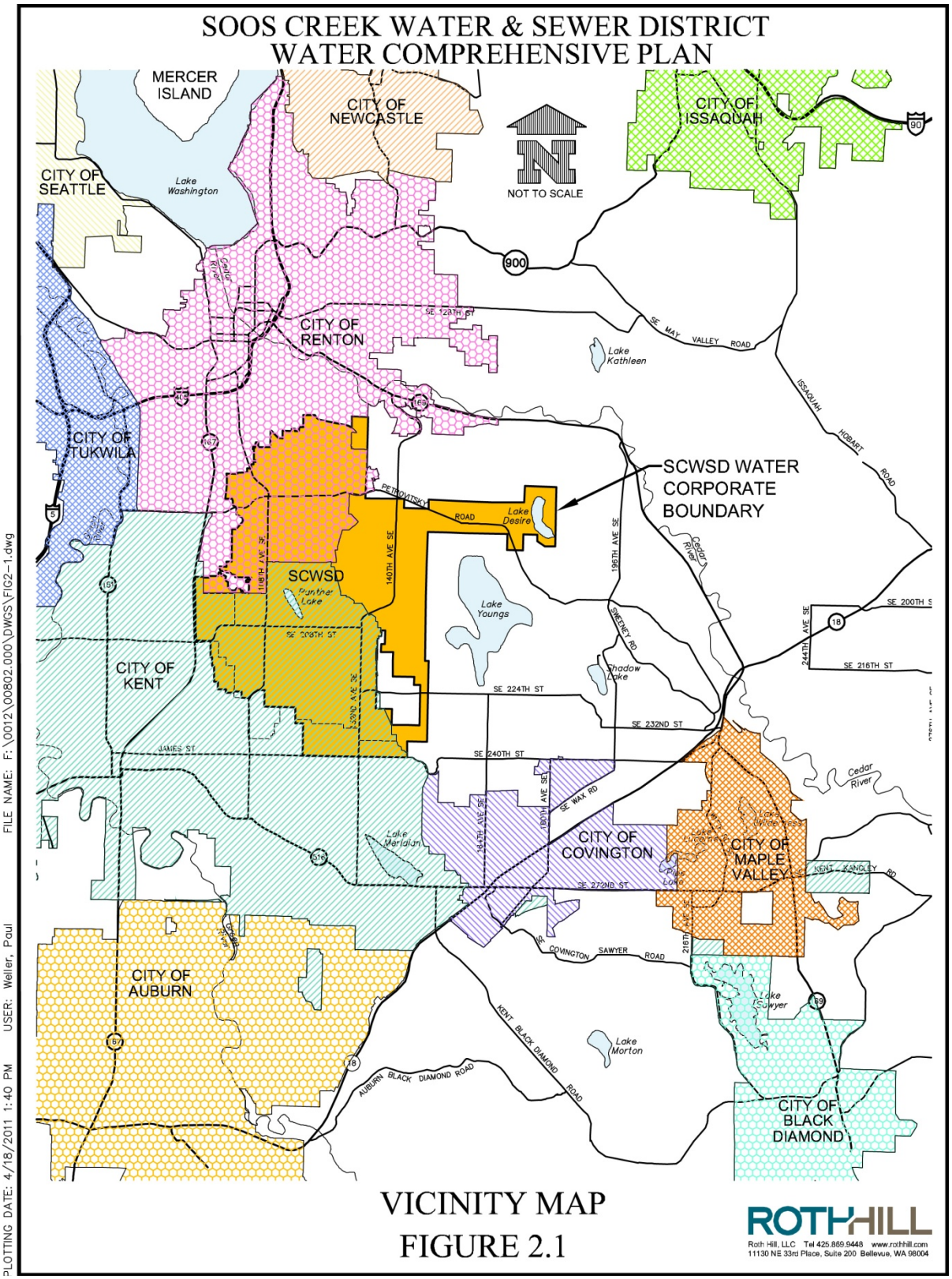
EXISTING SERVICE AGREEMENTS

The District has a number of service agreements with King County, nearby cities, and adjacent water districts. Each agreement has specific purposes and the full resolution document for each can be found in **Appendix D**. Existing Service Agreements, **Table 2.1** is a descriptive list of active agreements.

Table 2.1 Existing Service Agreements

Agency	Date of Agreement	Resolution No.	Resolution Date	Purpose
King County	June 29, 1970	Ord. 00507	N/A	King County Water Franchise (Water District #58)
Covington Water District (Water District No. 105)	June 22, 1984	SC 2390	July 12, 1984	Water Service Area Agreement
City of Renton	August 6, 1991	SC 0666-S	April 18, 1991	Agreement for the transfer of facilities and for the establishment of service boundaries
City of Renton	Not stated	SC 0840-C	September 24, 1992	Finalizing agreement with City of Renton service limits of District and City collection systems

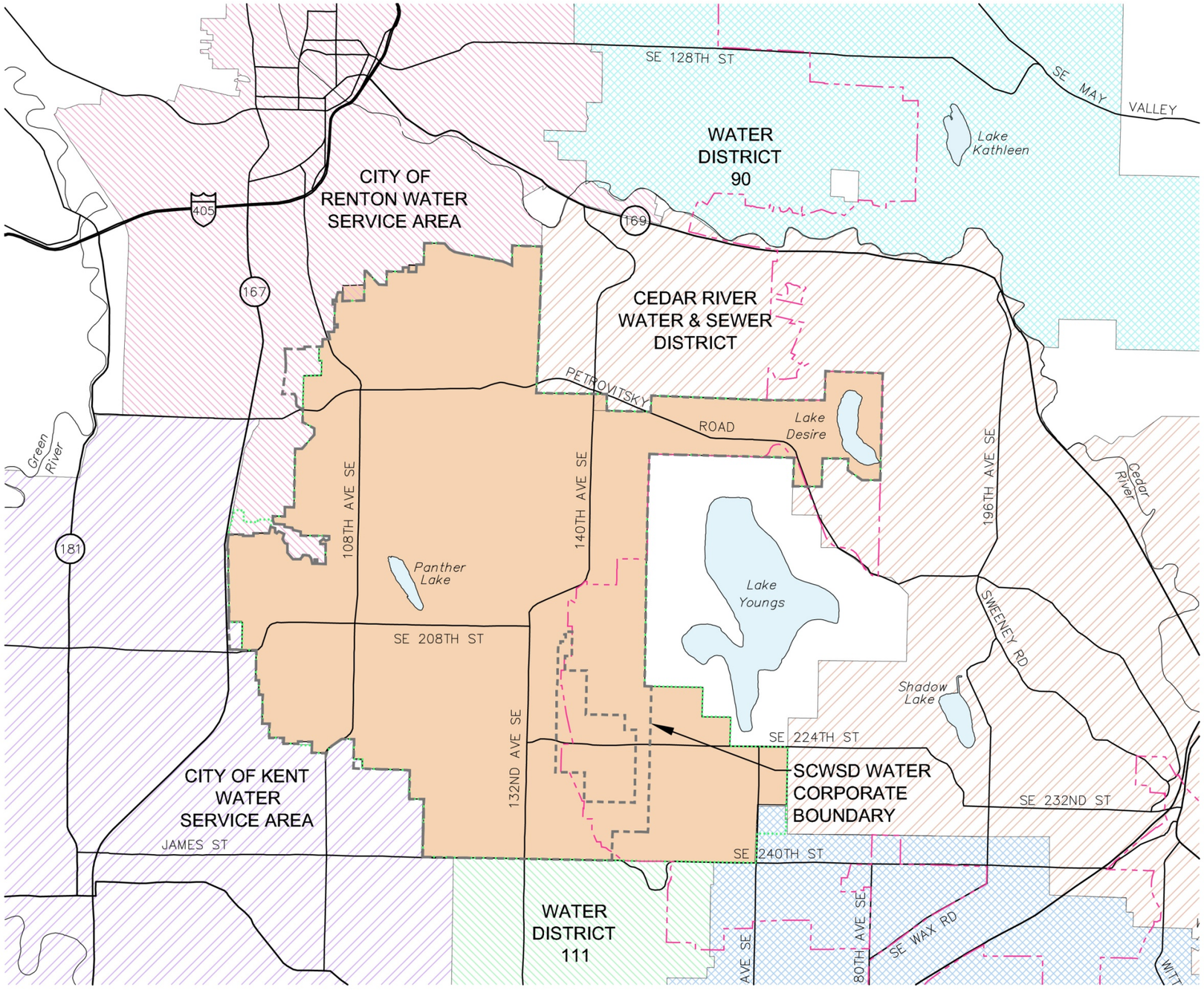
Agency	Date of Agreement	Resolution No.	Resolution Date	Purpose
King County	April 20, 1995	N/A	N/A	1995 King County Water Franchise Application Letter
KCWD111	June 8, 1995	N/A	N/A	Emergency System Intertie
King County	June 14, 1995	N/A	N/A	King County Water Franchise #507 Extension Request Letter
City of Renton	--	SC 1480	August 21, 1996	Approving Interlocal agreement for establishment of service area boundaries
King County	February 10, 1997 King County Ord. signed	SC 1643-W	August 6, 1997	1996 Water Comprehensive Plan, Ord. 12645
City of Renton	October 7, 1997	SC 1611-C	May 21, 1997	Interlocal agreement for the establishment of service boundaries
King County	N/A	SC 2162-W	April 25, 2001	King County Water Franchise Ord #12859
City of Seattle	May 23, 2001	SC 2178-W	May 23, 2001	60-Year Water Supply Contract
City of Kent	August 7, 2001	SC 2212-W	August 1, 2001	Emergency System Intertie
City of Renton	December 22, 2003	SC 2545-C	January 21, 2004	First addendum to agreement - transfer of facilities and for the establishment of service boundaries
King County	October 17, 2005 King County Ord. signed	SC 2773-W	January 4, 2006	2005 Water Comprehensive Plan, Ord. 15302
Cedar River Water & Sewer District	October 2, 2006	SC2872-W	October 4, 2006	Agreement for the purchase of bulk water


SOOS CREEK WATER & SEWER DISTRICT
WATER COMPREHENSIVE PLAN
MERCER ISLAND
CITY OF NEWCASTLE
CITY OF ISSAQUAH
CITY OF SEATTLE
Lake Washington
NOT TO SCALE
900
CITY OF RENTON
Lake Kathleen
SE MAY VALLEY ROAD
ISSAQUAH HOBART ROAD
CITY OF TUKWILA
SCWSD WATER CORPORATE BOUNDARY
PETROVITSKY ROAD
Lake Desire
SCWSD
Panther Lake
Lake Youngs
Shadow Lake
SE 208TH ST
CITY OF KENT
SE 224TH ST
SE 232ND ST
JAMES ST
SE 240TH ST
SE 216TH ST
Cedar River
SE WAX RD
Lake Meridian
CITY OF COVINGTON
CITY OF MAPLE VALLEY
Lake Lucerne
Pipe Lake
SE 272ND ST
KENT KANGLEY RD
SE COVINGTON SAWYER ROAD
CITY OF AUBURN
Lake Sawyer
Lake Morton
KENT BLACK DIAMOND ROAD
AUBURN BLACK DIAMOND ROAD
CITY OF BLACK DIAMOND
VICINITY MAP
FIGURE 2.1
ROTHHILL
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11130 NE 33rd Place, Suite 200 Bellevue, WA 98004
PLOTTING DATE: 4/18/2011 1:40 PM USER: Weller, Paul FILE NAME: F:\0012\00802.000\DWGS\FIG2-1.dwg

SOOS CREEK WATER & SEWER DISTRICT

WATER COMPREHENSIVE PLAN

WATER SERVICE AREA AND ADJACENT WATER PURVEYORS FIGURE 2.2



2500 0 2500 5000
SCALE IN FEET

LEGEND:

- SCWSD WATER PLANNING AREA (RETAIL WATER SERVICE AREA)
- SCWSD WATER CORPORATE BOUNDARY
- KING COUNTY FRANCHISE BOUNDARY
- URBAN GROWTH AREA BOUNDARY

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CHAPTER 3

POLICIES, CRITERIA AND STANDARDS

INTRODUCTION

Soos Creek Water & Sewer District manages and operates their water system in accordance with Federal and State regulations. The District guides the development and financing of the infrastructure required for water services and ensures consistency in service levels and customer relations. While the District has discretion in setting the performance, design criteria and standards for its water system, these must meet or exceed the minimum standards for public water supplies set by the DOH through Washington Administrative Code (WAC) 246-290. Together, policies and criteria provide the desired level of services to utility customers.

The policies described in this chapter are established by the District to provide the District with a framework for planning, designing, operating, and managing its system. In addition, the District has a compilation of substantial rules of general applicability and statements of general policy or interpretations adopted by the District's Board of Commissioners, that are not included in this Plan. The goal of the policies in this Plan is to provide uniform treatment to all District customers and to provide documentation of the District's commitments to current water system customers, as well as potential customers considering service from the District. Each policy described in this chapter is identified by number, followed by a policy statement and discussion.

The District's criteria, which are also described in this chapter, provide the requirements needed to implement and enforce the policies established for its water system. The criteria focus on planning and design parameters and other details that have been developed to establish consistency and to ensure that adequate levels of service are provided throughout the system. Other publications, such as the District's Developer Extension Agreement and the Design Standards and Procedures Manual, document the design standards and procedures for development of the water system. The Developer Extension Agreement is included in **Appendix E**. The Design Standards and Procedures Manual is included in **Appendix F**. The criteria also provide the planning process with measuring tools to identify any areas of the existing system that need to be improved to achieve the desired level of customer service. A number corresponding to the supporting policy identifies each criterion.

Soos Creek Water & Sewer District supports the land use policies and goals of the municipal jurisdictions overlapping the District's service area. The District routinely coordinates with the land use jurisdictions within its service area on pending land use changes, proposed utility projects, proposed transportation projects, and proposed revisions to Comprehensive Plans. The District remains committed to providing the water infrastructure necessary to support the land use of its service area.

The Soos Creek Water & Sewer District Water Comprehensive Plan establishes the following goals for water service:

Goal 1: Provide safe, reliable and timely water service to District consumers at a fair and reasonable price.

Goal 2: Ensure that water service is available to support development that is consistent with the District's policies and criteria, as well as current land use plans and development regulations of the State of Washington, King County, and appropriate local planning agencies.

Goals 3: Protect the natural environment with design, construction, operational, and conservation procedures.

The District's policies are grouped by major categories as shown below:

1. **Service Area, Extension and Service Ownership.** Service area and extension policies define the Retail Water Service Area and conditions for service extension within those boundaries. The service policies define the level of service provided to water system customers, as well as public and private ownership and responsibility for water system components.
2. **System Reliability and Emergency Management Plan.** Service reliability policies and criteria define the District's standards to construct and maintain reliable water system infrastructure and equipment. The Emergency Management Planning states the District's responsibility to maintain an updated Emergency Response Plan and to take reasonable action in case of emergencies.
3. **Fire Protection.** The fire protection policies and criteria outline the District's fire flow requirements and the District's commitment to system improvements.
4. **Coordination and Cooperation with Other Agencies.** These policies summarize the District's willingness to coordinate and cooperate with other agencies as well as to enter interlocal agreements with neighboring jurisdictions for provision of water service.
5. **Water System Planning, Design and Construction.** Planning policies define the methods and procedures the District uses to determine what facilities are needed to meet anticipated growth within the District's service area and the Urban Growth Area. The water system design and construction policies and criteria detail the District's standards for water supply, storage facilities, pump stations, and other requirements to deliver a safe and continuous water supply.
6. **Environmental Stewardship.** The environmental stewardship policies outline the District's dedication to develop and implement facilities and programs that will protect the environment.
7. **Water Use Efficiency.** The water use efficiency policies summarize the District's responsibility to continue promoting programs that address water conservation and implement the use of the best available conservation technology.
8. **Human Resources.** The human resources policies summarize the District's commitment to providing a safe work environment, training, and certification opportunities for its employees.
9. **Financial.** The financial policies summarize the District's general financial policies and criteria, including water rate structure, development charges, capital improvements financing, and reserves.

10. **Regional Water Supply Development and Transmission.** These policies summarize the District's commitment to participate in the regional planning and water supply development.

1. SERVICE AREA, EXTENSION, AND SERVICE OWNERSHIP

Policy 1.1 Service Area

The District should plan for and provide water service to all customers within its Retail Water Service Area (RWSA) as defined by the District.

Provision of water service should be consistent with the goals, objectives and policies of this Plan and the land use regulatory authorities. Prior to receiving water service, provision of water service both inside and outside the District's corporate boundary shall be conditioned on the developer/development providing water system infrastructure improvements that meet the District's criteria and standards. The improvements include capital improvements as defined and/or identified in this Plan. The cost to improve the system shall be borne entirely by the development proposal requesting the service.

Policy 1.2 Retail Water Service Area Definition

The District does not anticipate changes in its defined RWSA boundary. Revisions to the District's RWSA shall be made only by Interlocal Agreement with adjacent purveyors in accordance with local and state regulations.

The East King County Coordinated Water System Plan, 1989, has established the District RWSA boundary. The District has executed Interlocal Agreements with adjacent purveyors. The agreements have established and confirmed concurrence with the boundaries established in the East King County Coordinated Water System Plan.

Policy 1.3 Duty to Serve

The District is committed to providing retail water service to all property within its defined RWSA in a timely and reasonable manner, consistent with applicable District resolutions and policies, the Municipal Water Law, Washington State Department of Health rules and regulations and other applicable federal, state and local laws. Pursuant to RCW 43.20.260, as a municipal water supplier as defined in RCW 90.03.015, the District has a duty to provide retail water service within its RWSA if:

- District water service can be available in a timely and reasonable manner;
- The District has sufficient water rights and other sources of supply to provide the service;
- The District has sufficient capacity to serve the water in a safe and reliable manner as determined by DOH; and

- It is consistent with the requirements of applicable comprehensive plans or development regulations adopted under chapter 36.70A RCW (GMA) or any other applicable comprehensive plan, land use plan, or development regulation adopted by a city, town, or county for the service area.

The District will fulfill its "duty to serve" within its RWSA described in this Plan. The District will provide direct water service to all properties located within its RWSA and applicable adopted District resolutions, policies and procedures.

The District defines "timely" as the availability of retail water service consistent with the terms and conditions presented in Policies in this Chapter and applicable District resolutions, policies, and procedures. For example, the owner(s) of property(s) which may directly connect to the District's existing water system without the need for the extension of that system, as addressed in the District Developer Extension Agreement, should be able to obtain water service within one hundred twenty (120) days after the District receives an application for a water meter and the property owner requesting water service has complied with all applicable District water service policies and procedures, and has paid all applicable meter, connection, and administrative rates, fees, and charges to the District.

The District defines "reasonable" retail water service as follows:

- Water service that is consistent with applicable local land use plans and development regulations;

- The conditions of water service and associated fees, costs and charges are consistent with the conditions of service described in this Plan and applicable adopted District resolutions, policies and procedures; and

- The conditions of service and associated fees, costs and charges are consistent with the District's requirements applied to other property owners requesting water service who are similarly situated and are requesting the same type or level of water service from the District.

- The District has sufficient water rights with purchased water supply from Seattle Public Utilities (SPU) to provide retail water service within its RWSA. The District also has sufficient capacity to serve water in a safe and reliable manner as determined by DOH as addressed in other chapters of this Plan.

As addressed elsewhere in this Plan, the related water system planning documentation is consistent with the requirements of local comprehensive plans and development regulations. Consistency Statements from local land use agencies within the jurisdiction are included in the appendix.

The owner(s) of property(s) which require the extension of the District's water system to make water service available to the property should be able to obtain water service following the owner's execution of a Developer Extension Agreement with the District, the preparation of a design of the extension required to connect the property to the District's existing water system by the owner's engineer, the approval of the extension design by the District, the construction of the extension by the owner's contractor, the owner's payment of all applicable District developer extension, meter, connection, and administrative rates, fees and charges to the District, and the transfer of the ownership of the extension to the District by the property owner, all in accordance with the terms and

conditions of the extension agreement and applicable District resolutions, policies, and procedures. The party entering into the Developer Extension Agreement with the District has eighteen (18) months from the date of the mutual execution of the extension agreement to complete this process to obtain retail water service from the District to the property.

However, in the event an individual applicant for water service or a party seeking a developer extension contends the availability of District water service is not "timely and reasonable," the applicant shall request that the District Board of Commissioners consider the applicant's complaint and that the applicant be given a hearing before the Board of Commissioner to present the applicant's evidence that District water service is not available on a "timely and reasonable" basis consistent with applicable District resolutions, policies and procedures and applicable state law. The District Manager shall submit a recommendation and the basis therefore to the Board of Commissioners for consideration as part of the hearing. The applicant may attend and present the applicant's position at the hearing. Once a request for a hearing is submitted to the District, a hearing before the Board of Commissioners on the matter shall be held within sixty (60) days of the District's receipt of the request. A written decision of the Board of Commissioners on the matter shall be provided within twenty-one (21) business days of the conclusion of the hearing. Applicants shall be required to utilize and exhaust this District administrative hearing procedure as a precondition to requesting that anybody on behalf of Washington State Department of Health Division of Drinking Water or King County consider any appeal or contention that District retail water service is not available to the applicant's property on a "timely and reasonable" basis.

Policy 1.4 Service Extension

The District will provide the level of water service required to meet the fire flow, pressure, and demand necessary to support any development within the District's service area. Requests for water service by a development proponent will be considered on a case-by-case basis. The District will evaluate the impact of a proponent's project on the District's water system. The proponent's development may require an improvement as described in this Plan that shall be made at the cost of the proponent. If, in the District's conclusion, the proponent's development requires system upgrades beyond any upgrade planned by the District and/or before a scheduled capital project, the upgrades shall be made at the cost of the proponent. Said extensions should be installed pursuant to Methods 1 or 2 as described below. The District shall only allow Methods 4, 5, or 6 when the property meets all of the conditions outlined by resolution. Water system service extension shall be allowed to provide service within the District's RWSA if the proponent's use is consistent with adopted development policies and all water system policies and criteria. An extension shall not be granted until the property is annexed to the District. Water service to individual properties may be provided without annexation to the District on a case-by-case basis.

Any service extension shall have no cost to the District except as it chooses to participate to benefit the overall system, such as oversize or other system upgrades. The cost of mains and other facilities and a fair share of the portion of the cost of general facilities shall be paid for by the owners of property benefited by the construction of such facilities by others or by the District.

The District will accept requests to annex into the District boundary for any property within the District's RWSA. Annexation requires that intending properties are contiguous with the existing District corporate boundary and within the District's RWSA. The procedures to request and

realize annexation are commenced by submitting a petition to the District. Proponents requesting annexation may request a petition from the District. The petition and steps to complete the annexation will be explained to the proponent.

Criteria

1.4.1 – Utility Local Improvement Districts – Method 1

A property owner may petition for the formation of a utility local improvement district (ULID) to install an extension to the District's water system. The property owner may request the Board of Commissioners to authorize District staff to prepare a petition for formation of the ULID or the property owner may request formation of a ULID by Resolution of the Board. Property owners within the proposed ULID shall make formation by Resolution only after review by the Board and only upon presentation of convincing evidence of strong support for the ULID. Upon successful completion of the required steps to form the ULID, as prescribed by statute and including notification of each property owner within the ULID and at least two public hearings, the District should proceed with the construction of the facilities. All costs of design, permitting, construction and associated ULID requirements, except those described herein, shall be borne by assessments to the benefited properties within the ULID. The District would consider paying for extra costs associated with mains that are oversized so that general facility needs may be met. The ULID would be responsible for the equivalent cost of the size needed to serve the ULID. In addition, the District would consider paying for the costs of any bored crossings of major streets or sensitive areas and would consider participating in any costs associated with facilities located adjacent to documented wetlands, as long as the proposed facilities are shown in the District's Water Comprehensive Plan.

1.4.2 – Developer Main Extensions – Method 2

A property owner may elect to enter into a private contract to install an extension to the District's water system. The private contract consists of a Developer Extension agreement with the District. The property owner shall prepare the design documents by retaining its own engineer and prepare all applicable permit documents and applications necessary to acquire approvals from the required jurisdictions/agencies for the extension. The property owner is also responsible for control survey and all construction survey and staking. The District will at its own expense provide the first plan review for compliance with District standards and optional redline plan review meeting. Any plan reviews after the first shall be at the property owner's expense. The property owner shall be responsible for obtaining a contractor to install the watermain and associated improvements and shall be responsible for paying all costs associated with the design and construction of the extension. The District would consider paying for extra costs associated with mains that are oversized so that general facility needs may be met. The property owner would be responsible for the equivalent cost of the size needed to serve the development. The District would also consider paying for the costs of any bored crossings of major streets or sensitive areas and would consider participating in any costs associated with facilities located adjacent to documented wetlands, when said facilities are shown in the District's Water Comprehensive Plan. Ownership of the water facilities shall be transferred to the District by a bill of sale upon completion of construction. The property owner shall be responsible for acquiring and conveying to the District all easements necessary for the main extension and future implementation requirements of the District's Water Comprehensive Plan as determined necessary by the District.

1.4.3 – Extended Water Service – Method 3

The District has established standards for the maximum length of water service lines (150 feet from the property line abutting a water main). Where buildings or structures are more than the established distance, a main extension will generally be required. In the event a property owner has a building or structure to which water service cannot feasibly be provided by method 1, 2, or 4 (Interim Service Method) alone, however, the property owner may apply, for permission to install an extended private service line from the nearest connection point. If permission is granted, the owner must pay its interim rate, which is the pro rata share based upon the front footage, for the installation of a future eight (8) inch equivalent mainline. The owner may be required to provide easements as a condition of service. A per front foot amount shall be established by the Board of Commissioners periodically by resolution, and based upon historic construction cost data, to ensure that all property owners pay a fair share. Extended water service may only be used in conjunction with method 1, 2 or 4.

Permission to install an extended service line will be granted at the sole discretion of the District, which will approve applications only upon its determination that such approval is in the best interest of the District. The District will consider water quality impacts in its consideration of any request to allow extended water service, and will deny such request if water quality will be negatively impacted by the proposal. Although the specific physical facilities providing service to property may change in time, Extended Water Service is permanent service.

1.4.3.1 – Extended Water Service Requirements

Extended Water Service will be subject to an agreement between the owner and the District, containing terms acceptable to the District under the special circumstances justifying the extended water service line. The owner must agree that upon installation of any future main, and upon 30 days notice by the District, the water meter for the owner's property may be relocated to the new main by the District as necessary to bring the service to the owner's property into compliance with the District's standards and specifications existing as of such time. At the appropriate time, the transfer will then be performed by the District at no further cost to the owner. The Agreement for Interim/Extended Service shall contain permission from the owner to the District to enter onto the property to accomplish the transfer.

The owner must designate the District as its agent by limited power of attorney in a covenant running with the land for the execution of any ULID petitions including the owner's property, and waiving objection or protest to formation or inclusion within any ULID; provided, however, that any future ULID assessment will be deemed satisfied by the charges collected in accordance herewith. A copy of the agreement for Interim/Extended Service or a memorandum thereof, including the covenant, will be recorded with the King County Recorder to provide constructive notice thereof to all future owners.

1.4.4 – Interim Service – Method 4

In the event a property owner has a single-family home or parcel of land for residential use to which water service cannot feasibly be provided by a ULID or a main extension, and no water main abuts the property, an owner may apply for special permission to install an interim private service line from the nearest connection point. Permission to install an interim service line shall be granted at the sole discretion of the Board of Commissioners which shall approve applications on an individual basis,

subject to the determination that such approval is in the best interest of the District. If permission is granted, the owner must pay its interim rate, which is the pro rata share based upon the front footage, for the installation of a future eight (8) inch equivalent mainline. The owner may be required to provide easements as a condition of service. A per front foot amount shall be established by the Board of Commissioners periodically by resolution, and based upon historic construction cost data, to ensure that all property owners pay a fair share.

Permission to install an interim service line will be granted at the sole discretion of the District, which will approve applications only upon its determination that such approval is in the best interest of the District. The District will consider water quality impacts in its consideration of any request to allow extended water service, and will deny such request if water quality will be negatively impacted by the proposal. Although the specific physical facilities providing service to property may change in time, Interim Water Service is permanent service.

1.4.4.1 – Interim Service Requirements

Interim water service will be subject to an agreement between the owner and the District, containing terms acceptable to the District under the special circumstances. The owner must agree that upon installation of any future main, and upon 30 days notice by the District, the water meter for the owner's property may be relocated to the new main by the District as necessary to bring the service to the owner's property into compliance with the District's standards and specifications existing as of such time. At the appropriate time, the transfer will then be performed by the District at no further cost to the owner. The Agreement for Interim Service shall contain permission from the owner to the District to enter onto the property to accomplish the transfer.

The owner must designate the District as its agent by limited power of attorney in a covenant running with the land for the execution of any ULID petitions including the owner's property, and waiving objection or protest to formation or inclusion within any ULID; provided, however, that any future ULID assessment will be deemed satisfied by the charges collected in accordance herewith. A copy of the agreement for Interim Service or a memorandum thereof, including the covenant, will be recorded with the King County Recorder to provide constructive notice thereof to all future owners.

1.4.5 – Temporary Outside Service – Method 6

On a case-by-case basis, the Board may consider service on a temporary basis to properties within the District water local service area, but which have not yet been annexed to the District. Temporary service will be permitted only to alleviate an extreme hardship or to resolve a threat to the public health and only when annexation to the District is not feasible on a schedule consistent with the need to resolve the hardship or threat to the public health.

1.4.5.1 – Outside Service Requirements

Service under this method shall be conditioned upon the property owner designating the District as its agent by limited power of attorney in a covenant running with the land for the execution of any annexation or ULID petitions including the owner’s property and waiving objection or protest to formation or inclusion within any annexation or ULID. Provided, however, that the owner will not be required to waive objection to the amount of any ULID assessment. The covenant will be recorded with the King County Recorder to provide constructive notice thereof to all future owners.

1.4.6.2 – Temporary Outside Service Fees

Properties receiving temporary outside service shall pay a surcharge to the District's standard monthly service rates until such time they become annexed to the District and service becomes permanent. This fee will be waived if the District is given the power of attorney for signing a petition to annexation into the District and for approving a ULID.

1.4.6 – Medical Hardships – Method 7

On a case-by-case basis, the District may consider service by any of the foregoing methods on a modified basis to meet the needs of persons with a bona fide medical and income hardship. Modifications to the specific method of service may include delays or other rescheduling of otherwise required payments and adjustment of service specifications as reasonably necessary to meet the specific requirements of the qualifying applicant.

1.4.6.1 – Medical Hardship Requirements

Service under this method will be allowed on a non-discriminatory basis upon the Board of Commissioner's determination that a bona fide medical hardship exists, giving special consideration to the determinations of other health and welfare agencies that the applicant qualifies by virtue of the applicant's income and health circumstances.

1.4.6.2 – Medical Hardship Fees

The District may require the execution of a promissory note and appropriate security document, such as a mortgage, to ensure ultimate payment of the District's costs and charges for the method of service provided.

1.4.7 – Financed Connection Charges – Method 8

The District may allow the connection charges, or some portion, required by any of the foregoing Methods of Service to be financed in accordance with the District's then-current resolution establishing policies for setting connection charges, and other fees and charges.

Policy 1.5 Water Service – To and Through

As a condition of service, an eight (8) inch water main will generally be required to run to and through the parcel being served. This allows the next parcel, or parcels, to extend the eight (8) inch water main to and through their property(s). If a water main larger than eight (8) inch is required per District policy, the District will pay for the difference in cost between the eight (8) inch and the larger water main. If the service or flow requirements of the development/project require a water main larger than eight (8) inches, then the developer will pay the full cost of the larger water main.

In accordance with this policy, development of property requires a parcel seeking water service to extend the existing facilities through its property to the next parcel upstream, along such

route as is determined in accordance with the service needs of the property, this Plan, and approval of the extension by the District.

Policy 1.6 Water Service by Other Jurisdictions

The District intends to provide service to all its customers within its RWSA. However, situations may arise where portions of its service area may be better served temporarily or permanently by other jurisdictions. Therefore, water service may be provided by other jurisdictions within the District's RWSA on a case-by-case basis, subject to the written agreement of all interested parties. Future systems that operate within the District's RWSA shall meet applicable District water system standards.

The District anticipates providing service to all customers within its RWSA.

Policy 1.7 Satellite System Policy

It is the District's policy to provide direct service to its customers. At the District's discretion and if the District deems no other options are feasible, the District may opt to enter into a satellite system written agreement with the satellite water system owner. Additionally, if the District cannot provide timely and reasonable direct service, then service will be provided in the following order of preference:

1. Direct satellite management by the District
2. Satellite management by the District through a contract with Washington Water Supply (an approved satellite management agency in King County)
3. Direct satellite management by Washington Water Supply*
4. Management of the new public water system by its owners through a contract with Washington Water Supply*
5. Direct management of the new public water system by its owners*

*Requires removal of the new public water system from the service area of the District.

The decision to allow a satellite system to provide service within the District RWSA shall remain solely the District's. The conditions for District operation of a satellite system shall be determined on a case-by-case basis. Requirements such as information regarding the water supply and water rights, information on the installed equipment, reliability, emergency power, collection of costs to connect to the District's system in the future, the required financial protections, and reserve amount shall be addressed in an agreement. The design and construction of the satellite water system shall meet applicable District water system standards. As of December 2002, according to DOH, there are 4 Group A systems, 3 Group B0 systems, 3 group B1 systems, and 49 Group BL systems within the District's boundaries.

Policy 1.8 Certificates of Water Availability

The District shall issue Certificates of Water Availability (CWA) to serve customers within the RWSA according to the date and order in which the applications are received and are intended to be consistent with the requirements of the overlapping land use authority.

The certificates may be issued with conditional provisions for service. A CWA shall be valid for 365 days, after which the applicant must reapply for a CWA. The District's Board may change or amend projects and the final schedule as confirmed by Board approval.

Policy 1.9 System Ownership

The service line from the main to the meter, the meter and the meter box shall be owned and maintained by the District. The property owner shall own and maintain the service line and other facilities such as pressure reducing valves, pumps or cross-connection devices beyond the meter. Where on-site fire hydrants are required, the District shall acquire easements for, and own, the mains and hydrants. Fire lines on private property are owned by, and therefore the responsibility of, the property owner. Double check valve and reduced pressure backflow assemblies on commercial property are owned and monitored for regulatory compliance by the District, but the property owner is responsible to maintain them.

The District uses meters to monitor and charge for water consumption. The meter will normally be located in the right-of-way at the property line and provides a logical separation between District and private ownership and responsibility.

Policy 1.10 Service Pressure and Flow

The District shall provide water to all utility customers in sufficient quantity to meet peak hour demand conditions at a pressure that meets or exceeds all minimum applicable regulations, except during emergency conditions.

The District will provide a system pressure of at least 30-psi to the customer during peak hour demand (PHD) conditions without emergency conditions. The system pressure shall be as measured at the meter. Customers may choose to install booster pumps to achieve higher pressures.

Policy 1.11 Water Quality Responsibility

The District shall provide water that meets all state and federal water quality standards to all water system customers. Provisions to change the water quality for a specific development proposal will not be accepted by the District.

The District shall take the actions necessary to ensure that all water quality standards are met. This includes the implementation of a cross-connection control program, as well as compliance with all Washington State Department of Health water quality regulations.

2. SYSTEM RELIABILITY AND EMERGENCY MANAGEMENT PLAN

Policy 2.1 Security

The District shall make reasonable attempts to protect the security of their water system. The District shall determine what information about the system should remain unavailable to the public.

Protection of the water system may be accomplished by numerous security measures. Any information deemed critical for the security of the system shall be made available only to regulatory agencies or other agencies on a case-by-case basis.

Policy 2.2 System Reliability

The District shall invest the resources necessary to construct, maintain and rehabilitate the water infrastructure and equipment to ensure that customers are provided consistent, and reliable service in accordance with WAC 246-290-420. In addition, all new system construction shall meet the requirements of the District's Design and Construction Standards included in **Appendix F**.

Wherever possible, the District should anticipate system interruptions and design and operate the system to minimize the impact of such interruptions on customers. Wherever possible, the system shall have operational redundancy. The water system infrastructure, including storage facilities, watermains, hydrants, pump stations and related facilities, shall be designed to meet all applicable codes, criteria and standards in force at the time of permit issuance.

The District shall plan to provide operational response to a variety of potential threats to the system. The greatest elements of maintaining system reliability are maintenance and planned replacement of facilities prior to exhaustion of expected service life.

Criteria

2.2.1 – Booster Pump Stations

The District owns and operates booster pump stations. All but one of the stations are connected to the Seattle Supply System. The remaining station provides service to a pressure zone within the District that is not able to receive service by gravity from District reservoirs. **Table 3.1** displays the action necessary for the various types of service interruptions for booster pump stations.

Table 3.1 Booster Pump Station Emergency Response

Potential Service Interruption	Target Time for Repair	Action
Electrical service interruption	24 hours	Mobilize standby portable generators for Pump Station 6.
Pump or motor failure	1 week	Coordinate with suppliers for replacement parts. Keep inventories of long lead-time items. Install duplex or triplex pumps.
Control failure	4 hours	Standardize all control systems. Keep inventory of replacement control equipment.
Control valve or check valve failure	2 days	Standardize valve manufacturers. Maintain inventory of pilot and control parts.

2.2.2 – Reservoirs

The District owns and operates four reservoirs. Three of the reservoirs provide service to the District's 627-grade line zones. One reservoir serves the District's 710-grade line zone. **Table 3.2** displays the action necessary if a reservoir was taken out of service.

Table 3.2 Reservoirs Emergency Response

Potential Service Interruption	Target Time for Repair	Action
Contamination	2 weeks	Maintain routine inspection of screens, ladders and access hatches. Maintain site security facilities and intrusion alarms.
Internal inspection and clearing	2 weeks	Schedule routine cleaning for low demand season. Use divers for inspection whenever possible.
Re-coating	6 weeks	Schedule interior re-coating for low demand season.

2.2.3 – Pressure Relief Stations

The District owns and operates a number of pressure relief valve (PRV) stations. These stations are integral to providing service to the 290 and 440 grade line zones. **Table 3.3** displays the action necessary if the a PRV was taken out of service.

Table 3.3 PRV Emergency Response

Potential Service Interruption	Target Time for Repair	Action
Valve failure	1 day	Standardize valve manufactures. Provide duplex valve stations. Maintain inventory of pilot and control equipment.

2.2.4 – Watermains

The primary possible malfunction of the distribution system is pipeline failure. Under such conditions it is important to have a distribution network that allows water to be re-routed to affected customers. Therefore, providing system looping and redundant pipeline connections are important distribution system criteria.

Providing redundant connections between pressure zones is particularly important. Distribution system reliability also depends upon maintaining an inventory of pipe and pipe repair materials for the most commonly used pipe materials and sizes. **Table 3.3** displays the action necessary if a watermain was taken out of service.

Table 3.4 Watermain Emergency Response

Potential Service Interruption	Target Time for Repair	Action
Pipeline break	1 day	Maintain inventory of repair bands and pipe material for all known material types and sizes in the system.

2.2.5 – Routine Operation and Preventative Maintenance

All facilities and equipment shall be maintained in accordance with manufacturer's specifications, unless specifically approved otherwise by the District. The District has developed, and shall adhere to, maintenance and replacement schedules for all facilities and equipment.

2.2.5.1 – Equipment Inventory

The District shall maintain a complete inventory of all its trucks and equipment with planned replacement dates as applicable. Additional equipment may be replaced or purchased as required. The District shall also maintain a complete inventory of all supplies and parts in stock for the water system. This inventory shall be used to maintain or repair facilities within the District.

2.2.5.2 – Operation and Preventative Maintenance Practices

The District shall perform all maintenance and non-emergency repair activities in accordance with its adopted Best Management Practices (BMP). Where feasible, emergency repair activities shall also comply with the adopted BMP.

Policy 2.3 Emergency Management Plan

On a regular basis, the District shall update an Emergency Response Plan that focuses on problems created by major disasters (such as earthquakes, floods or windstorms) as part of the District's operations program. The plan should ensure that adequate emergency provisions and procedures are in place to operate the water system. The Emergency Response Plan will not be made available to the public.

The Emergency Response Plan contains contact information, as well as procedures, to evaluate the extent of an emergency and steps to minimize potential impacts to people or the environment from District facilities that have been damaged by the emergency. This document should be reviewed and updated periodically. The document shall address purpose, organization and concept of operations, administration and logistics and direction and control of emergency operations. The District will also continue to participate in the Seattle Public Utilities Emergency Response Planning efforts.

Criteria

2.3.1 – Vulnerability Assessment and Hazard Mitigation Plan

The District shall update, on a regular basis, a Vulnerability Assessment and a Hazard Mitigation Plan. These plans shall include natural and man-made hazards and identify how people and property may be damaged when a hazardous situation occurs. The Vulnerability Assessment will not be made available to the public.

The District will continue to participate in King County's regional disaster planning. The District strives to be responsive to the needs of its customers during times of crisis. The District recommends water customers plan for 72 hours without service. The Vulnerability Assessment and Hazard Mitigation Plan focus on problems created by major disasters that result in power outages, system malfunctions or breaks that may cause an interruption in water services. An uninterruptible clean safe water supply for potable use and fire protection is critical to public health and the safety of the District's customers and the environment.

3. FIRE PROTECTION

Policy 3.1 Fire System Responsibility

The District will provide and maintain the necessary system infrastructure to supply water for fire-fighting purposes to all utility customers. The infrastructure will meet or exceed all minimum applicable standards and regulations for fire flow, storage and peak use periods, except under emergency conditions created by major disasters such as earthquakes or power outages. The District shall maintain, repair or replace mains, hydrants and valves as necessary to ensure adequate fire protection. The District will monitor double check valve assemblies for regulatory compliance, usage, tampering and to ensure proper operation while the property owner is responsible for maintenance.

The fire flow required for a specific development shall be determined by the governing land use agency. The District will provide adequate pressure and stand by fire flow. The development proponent shall advise the District of the required fire flow at the time a Certificate of Water Availability is requested. If the water system requires upgrades to provide the necessary fire flow, the costs of the system upgrades will be borne by the development requiring the system upgrades.

Policy 3.2 Fire Flow Requirements

The District shall require that the fire flow for the water system level of service be provided as a condition of development and as a condition of any extension of the District's water system. The District's existing system may not meet this requirement, but will plan for improvements as part of its Capital Facility Plan.

The level of service standard has two parts to the water system fire flow requirements within the District's RWSA. The first is a fire flow requirement established by the appropriate land use agency's Fire Marshal as a building-specific fire flow based on building use and materials of construction. The second is the system-wide fire flow criteria for single-family or other uses as established in the Plan for the entire water system.

New development and redevelopment, including changes in use or occupancy, shall meet the full fire flow requirements as established by this policy. The developer shall be responsible for installing all necessary facilities needed to serve his property and for complying with the District's development, design and construction standards in order to meet these requirements.

Criteria

3.2.1 – Fire Flow Rates

The quantity or flow rate of water available for fire protection establishes an important level of service for a water system. The District has planned to provide system-wide fire flow as follows:

A. Single-family residential: 1,000 gpm for two hours for single-family detached dwellings in residential zones.

B. Commercial and multifamily fire protection: 3,000 gpm for three hours for non-single-family residential and commercial zones.

C. Public facilities may be designed to the building specific fire flow as required by the Fire Marshal. The majority of the commercial fire flows would be for businesses (retail areas along Benson Highway and the multifamily developments).

3.2.2 – Fire Flow Duration

The time or duration for which a fire flow is to be provided is dependent on the required fire flow rates.

Should a project proponent require fire protection rates beyond those planned for by the District, additional storage may be required. The proponent shall be required to provide additional storage facilities to meet deficiencies that may result from their project's requirement.

The District currently plans to provide a maximum of three hours storage for 3,000 gpm. Fire flow requirements in excess of this volume will require additional storage provided by the development proponent.

Policy 3.3 – Fire Flow Improvement Program

As funding allows, the District shall make water system improvements to the water system in accordance with the Plan's fire flow criteria.

Such system improvements may include replacing undersized watermains, correcting fire hydrant deficiencies of spacing and standardization where current standards are not being met.

Criteria

3.3.1 – Standards

The District standards for residential fire protection are consistent with overlapping land use agencies' criteria and the Washington Surveying and Rating Bureau. This provides that hydrants shall be spaced not more than 700 feet apart in residential areas and that all hydrants will be on at

least 8-inch diameter for all new and expanding systems. The District requires that all hydrants have a 5¼-inch main valve opening (MVO) with six (6) inch auxiliary valves.

For each overlapping land use agency, the District coordinates standards for hydrant location, type, and auxiliary facilities to meet the criteria of the land use agency.

4. COORDINATION AND COOPERATION WITH OTHER AGENCIES

Policy 4.1 Regional Participation

The District should support and participate in applicable regional plans to provide and maintain a safe, reliable and adequate water system for customers.

Regional planning efforts promote a framework for coordinated water system improvements. Therefore, the District should coordinate and cooperate with adjacent jurisdictions and water service providers to plan, respond and provide adequate water for anticipated growth, demand and capacity requirements as well as security and emergency response for water facilities.

Policy 4.2 Coordination with Adjacent Jurisdictions

The District coordinates closely with adjacent jurisdictions to determine applicable regulatory requirements, growth projections and opportunities for joint projects. Interlocal agreements should be prepared between the pertinent parties on all joint projects.

By working closely with adjacent jurisdictions, the District may identify opportunities for joint projects and thus minimize potential impacts to neighborhoods and the environment. These coordination efforts may also aid in diminishing regulatory hurdles that could increase project costs through restrictive permit conditions.

Policy 4.3 Mutual Aid Agreement

The District will participate in Mutual Aid Agreements with adjacent jurisdictions, King County, and the State of Washington.

A Mutual Aid Agreement allows agencies to contract with each other to provide services. Since 1992, the District has had a Mutual Aid Agreement with other participating water and sewer districts to provide personnel and equipment to other districts that request assistance during a disaster or emergency.

Policy 4.4 Warning, Alert and Response Participation

The District will participate in warning, alert and response organizations that collaborate with local and regional governments to share information that protects critical infrastructure.

The District participates in the Northwest Warning, Alert & Response Network (WARN) which is a collaborative effort between government and private sector critical infrastructure partners with a goal of near real-time information sharing to help protect regional/national infrastructures, communities and the public.

The InfraGard is a Federal Bureau of Investigation (FBI) program which is responsible for Critical Infrastructure Protection matters. The goal of InfraGard is to promote ongoing dialogue and timely communication between members and the FBI. The District has been participating in InfraGard for many years.

The District also participates in the Water Information Sharing and Analysis Center (WaterISAC). The WaterISAC mission is to keep drinking water and wastewater utility managers informed about potential risks to the nation's water infrastructure from contamination, terrorism and cyber threats. The mission has been expanded to help utilities respond to and recover from all hazards.

Policy 4.5 Emergency Interties

The District supports emergency interties with adjacent water systems where there is a benefit to the water systems.

Interties increase reliability of water systems during emergencies and other unusual operational circumstances. The District will consider sharing the cost of the intertie facility with the adjacent water system purveyors based on benefit.

5. WATER SYSTEM PLANNING, DESIGN, AND CONSTRUCTION

Policy 5.1 Water System Planning Objectives

The District's objective is to plan and design water system facilities that can deliver continuous safe water supply to meet customer demand and that are consistent with all applicable federal, state, and local regulations.

The development of any facility of the water system, whether by the District or others, shall be planned and designed to meet the District's policy and criteria for the water system.

Policy 5.2 Water System Planning

Future capacity requirements should be estimated by using existing customer connections, a geographic information system (GIS) parcel based analysis and projected future household, and population and employment data as provided by the Puget Sound Regional Council.

These figures should also allow the District to plan the construction of its infrastructure to accommodate growth while maintaining stable rates and charges.

Policy 5.3 Water System Design

The District should design its water system facilities with sufficient capacity to provide continuous service to meet customer demands and fire protection in accordance with applicable federal, state, and local regulations. If the water system facilities must be installed or upgraded as a result of a developer's impacts, the new facilities or upgrades shall conform to the District's policies, criteria, and standards and shall be accomplished at the developer's expense. The District shall be responsible for any portion of the costs that are attributable to general facilities, such as oversizing or over depth requirements.

Criteria

5.3.1 – System Storage

System storage volume requirements consist of three separate components: equalizing, fire protection and standby volumes. Storage facilities may also contain a "dead storage" component of volume that is unused primarily due to the configuration of the facility. The District does not nest the system storage volumes of equalizing, fire protection, and standby storage and, therefore, each component of the storage shall be provided.

5.3.1.1 – Equalizing Volume

Equalizing volume is the total volume required to satisfy peak system demands that exceed the capacity of the supply and pumping facilities. Equalizing volume requirements are greatest on the day of maximum demand and are typically equal to 20-30 percent of the maximum day demand (MDD). The District will plan to provide equalizing storage in the amount needed to offset the difference between the peak hour demand (PHD) and the sum of all the installed and active source of supply capacities for a duration of 2½ hours.

5.3.1.2 – Fire Protection Volume

Design criteria established by WAC 246-290-230 and DOH require that new or expanding water systems have the capacity to provide design fire flows during MDD conditions. Fire protection volume requirements are computed based on the size and duration of the largest required fire flow within the service area of the storage facility. For non-single-family residential and commercial zones, the District will plan to provide for three hours duration at 3,000 gpm fire flow or 0.54 MG.

Fire protection volumes in excess of the above criteria may be required by the Fire Marshal to provide fire protection for specific types of building construction and use. Development proposals that require fire protection volumes exceeding the criteria above will be required to provide additional reservoir storage for the system.

5.3.1.3 – Standby Storage Volume

Emergency and reserve volume is required to supply reasonable system demands during a foreseeable system emergency or outage, such as major pipeline failure, power outage, valve failure or another system outage. Emergency and reserve volume requirements are dependent upon average system

demands and source of supply redundancy. These volumes can be shared within the 710-grade line zone and lower zones. The District has established a minimum standby volume criterion to provide sufficient standby storage to maintain service for two days of average day demand (ADD), with the largest source of supply off-line.

5.3.2 – Pressure and Velocity

The function of the distribution system is to convey water to customers at adequate service pressures. The distribution system should also provide fire flows with adequate minimum residual pressures throughout the service area. The District has established a criterion for minimum pressure within the distribution system of 30 psi at the service meter during peak hour demand (PHD) conditions where all equalizing storage has been depleted except during emergency conditions. The District has established criteria to provide MDD plus the required fire flow at a system pressure of 20 psi within the distribution system during a fire flow emergency.

The District generally requires that maximum static pressure in the system should not exceed 100 psi. Recognizing the complexity involved in restricting maximum pressures to 100 psi during a wide variety of operating conditions and PRV functions, higher pressures may be present within the system. Individual PRVs are required on service lines where pressures exceed 80 psi as required by the Uniform Plumbing Code. Pipe velocities shall not exceed eight feet per second during MDD plus fire flow conditions unless specifically waived by the District.

5.3.3 – Materials and Configuration

Pipe material shall be cement mortar lined ductile iron, class 52 minimum. The minimum size for distribution piping shall be 8 inch except where determined by the District that a smaller size is adequate for dead end service. Pipe sizes larger than 8 inch may be required for major transmission and distribution lines, or to meet fire flow requirements. Fire hydrants shall be spaced per Code or requirement of the overlapping jurisdiction. Closer fire hydrant spacing may be required by the Fire Marshal to serve specific developments. Where the distribution system is divided into separate hydraulic operating areas (zones), each zone shall have multiple supplies, i.e. booster pumps or PRV to reduce the likelihood that failure of a single component interrupts service. Two supplies feed into each operating area and looping of distribution systems in all zones shall be required, where practical, to provide improved water quality, redundancy, reliability and increased fire flow capacity. Water system looping will often require off-site improvements to developing areas. Off-site improvements required to meet a development's needs will be done at the developer's expense.

5.3.4 – Pump Stations

Two separate pump station facilities shall be required to supply water to new operating areas, where feasible. A minimum of two pumps are required at each pump station to provide flexibility and system redundancy. The pumps in the booster station shall be sized so that the station can meet MDD flow conditions.

To increase emergency reliability, each pump station shall be supplied with on-site standby power or have the capability to connect to a portable power supply. This capability allows some emergency supply capacity, even during a general power outage.

Policy 5.4 Construction Contract Standards

The District should establish the construction contract standards by which its facilities shall be built.

Construction contract standards define the relationship between the District, its engineer and the contractor on a construction project. These standards shall be used as the basis for allocating and defining each party's responsibilities under the contract.

Criteria

5.4.1 – General Contract Conditions

The District shall construct its facilities in compliance with the "Standard General Conditions of the Construction Contract" as prepared by the Engineers' Joint Contract Documents Committee and issued jointly by the National Society of Professional Engineers, Consulting Engineers Council, American Society of Civil Engineers, and the Construction Specifications Institute, Inc. Supplemental conditions to these general conditions shall be used to refine the general conditions to meet the District's specific needs.

5.4.2 – Technical Specifications

The District should use the Standard Specifications for Road, Bridge and Municipal Construction as published by the American Public Works Association (APWA) and the Washington State Department of Transportation (WSDOT) to define the technical portions of its construction contract documents. Additionally, the District will comply with the most recent version of the King County Road Standards when performing work in the King County road right-of-way. These technical or standard specifications shall be modified as necessary within the contract documents to meet the District's requirements.

5.4.3 – Construction Observation

Construction observers representing the District shall observe the construction in progress and monitor the contractor's compliance with the approved design.

6. ENVIRONMENTAL STEWARDSHIP

Policy 6.1 Environmental Protection

The District shall adhere to the Habitat Conservation Commitments and Policies described in the District's adopted Environmental Protection Plan (EPP) and develop, implement, monitor and adapt programs, procedures and practices to improve and protect water quality, habitat, aquifers and other environmental values in areas where the District must construct, operate, maintain or replace water system infrastructure.

The District prepared and adopted the EPP in response to the listing of the Chinook salmon and the bull trout under the Endangered Species Act. This document describes the District's policies, criteria, and standards for maintaining and operating its facilities as well as constructing new facilities in an environmentally friendly manner.

Policy 6.2 Wastewater Reuse and Rainwater Reclamation

The District is committed to wastewater reuse and rainwater reclamation. They can serve as cost-effective and environmentally beneficial sources of water for industrial processes, sanitation and irrigation and thereby increase the security and reliability of the region's drinking water supply.

The District may develop projects or consider participation as appropriate in the water reuse projects and programs developed by Seattle Public Utilities and others, including demonstration or pilot projects that may be developed in accordance with applicable federal, state, and local laws and regulations.

District staff may investigate and recommend proposed changes to the District's development and service policies and regulations that may be desirable in order to encourage the promotion of these programs and technologies.

While there are currently no viable candidates for reclaimed water within the District's RWSA, opportunities within the District's sewer service area may exist. The District may investigate potential reuse opportunities as presented by neighboring purveyors.

In accordance with the District's commitment, the District may continue to work with King County to identify opportunities and explore ownership and management options to produce and deliver reclaimed water.

Policy 6.3 Water Resource Protection

The District shall protect groundwater within the District from degradation related to District actions, facilities or programs.

Groundwater is important to wildlife habitat and recharges many local aquifers from which people derive their drinking water. The District recognizes that its actions and facilities have the potential to negatively impact these aquifers. Therefore, it has adopted standards and procedures aimed at reducing or avoiding potential impacts to the groundwater by its actions or facilities.

Policy 6.4 Facility Abandonment

Facility abandonment will be done in a safe and environmentally sound manner consistent with all applicable federal, state, and local regulations at the time of abandonment.

The District routinely abandons some of the water system infrastructure as it is replaced by newer facilities. The abandoned pipe should remain in place and be filled with grout, controlled density fill or cut and capped. In the event the District abandons a pump station or reservoir facility, decisions about disposal of property and infrastructure will be made on a case-by-case basis.

Policy 6.5 Greenhouse Gas Emission Reduction

The District will support efforts to reduce greenhouse gas emission for its construction, maintenance and operation of facilities and procedures.

The District recognizes that its actions and facilities may have potential to negatively impact the air quality of the environment around it. The District will continue to explore and invest in opportunities to reduce greenhouse gases where cost-effective and efficient. This can be accomplished through a variety of ways, such as new building and construction technologies, conservation in both energy and water consumption, employee oriented policies by encouraging ride-share or van-pooling, fleet and equipment maintenance and operations, public education and outreach and waste reduction and use strategies.

7. WATER CONSERVATION

Policy 7.1 Water Use Efficiency

The District will continue implementation and enhancement of its current water use efficiency programs. The District is one of a group of 18 utilities that purchase wholesale water from Seattle Public Utilities (SPU) and are part of the Saving Water Partnership. The Saving Water Partnership's regional 2013 – 2018 Water Use Efficiency Goal is to reduce per capita water use from current levels so that total average annual retail water use of its members is less than 105 mgd from 2013 through 2018 despite forecasted population growth. All measures shall be consistent with, and strive to exceed, all local, state and federal laws and regulations.

Efforts may include, but are not limited to: public education, water reuse and reclamation, use of native and/or drought resistant landscaping, water conservation kit distribution, conservation rate structures, installation of radio read meters, leak detection and monitoring, and utility financed retrofits and rebates.

Policy 7.2 Sustainable Development and Best Available Conservation Technology

The District supports code and policy development by overlapping jurisdictions that require the use of best available technology for water conservation on the demand side.

Examples of best available conservation technology include low-volume toilets, evapotranspiration-based irrigation scheduling, incorporation of cost-effective rainwater harvesting for non-potable uses, retention or removals and replacement of native soils or soils of equivalent quality in landscaped areas, and other measures that demonstrate effective conservation strategies.

Policy 7.3 Unaccounted for Water

The District will strive to maintain levels of unaccounted for water at less than 10 percent on a three year rolling average.

This can be accomplished through a regular program of leak detection, meter testing, metering of main line flushing and other appropriate measures.

8. HUMAN RESOURCES

Policy 8.1 Employee Drug Testing

The District is committed to providing a safe work environment for its employees, its customers and the public at large that is free from the harmful effects of substance abuse.

Policy 8.2 Employee Safety Management

The District is committed to provide safe and healthful working conditions at all facilities and comply with all rules, laws and regulations pertaining to the safety and health of the employees. The District's Safety Manual will be replaced and revised as required by federal and state law.

The District Manager and Safety Committee are responsible for compliance with all state and federal regulations as required by law and are integral parts of the Safety Program for the District.

Policy 8.3 Employee Training

The District encourages participation in workshops, seminars and other education programs to improve job skills.

Policy 8.4 Employee Certification

The District may pay fees and employee's time for the required certification testing as well as required annual renewal fees.

9. FINANCIAL

Policy 9.1 Fiscal Stewardship and Self Sufficient Funding

The District shall manage its income and expenses in a self-supporting manner in compliance with applicable laws, regulations and its own financial policies.

Managing the District's income and expense in a fiscally responsible manner allows the District to maintain stable rates and charges as well as to improve/maintain its bond rating, which allows the District to obtain loans at lower interest rates. Obtaining loans at lower interest rates allows the District to stretch its income over more programs and projects.

Criteria

9.1.1 – Accounting System

The District shall utilize an accounting system that allows it to track its income and expenses.

9.1.2 – Accounting Funds

The District has established separate funds to pay for its maintenance, operations, capital improvement and financing activities.

9.1.2.1 – Capital Improvement Fund

This fund shall be used for the installation of new general facilities that benefit existing and future system customers. The funds shall also be used to upgrade or replace facilities with capacity issues and to modify District infrastructure to accommodate improvements by other jurisdictions. The District's general facilities charge is used to fund this account.

9.1.2.2 – Maintenance Fund

This fund shall be used to pay for all day-to-day costs incurred by the District while operating and maintaining its water facilities, rehabilitating existing lines or repairing facilities damaged by natural events such as earthquakes or floods. Typical costs are for flushing, AC pipe replacement, valve and hydrant maintenance, pump station maintenance, and reservoir cleaning.

9.1.2.3 – Bond Fund

Periodically, the District constructs infrastructure that is beneficial to its entire customer base. These improvements may be funded by revenue bonds. Bonds represent a lien against the earnings of the District and may be issued for varying periods of time and at varying interest rates, depending on the bond market. The maximum repayment period for bonds is 30 years. Revenue bonds may be retired by a combination of operating revenues (after operation and maintenance expenses have been deducted), general facilities charges, connection and latecomer charges, and ULID assessments. In order to track these bonds, separate funds shall be set up for any bonds that are issued for District projects.

Although there are no statutory limitations on the amount of indebtedness that can be incurred, there is an economic limit to the amount the public is willing and able to pay for service. The revenue bond fund was established to insure that the net revenues after operation and maintenance expenses are sufficient to cover the annual bonded debt service by at least 115 percent.

9.1.2.4 – Bond Reserve Fund

This fund shall be established to hold cash in reserve as a guarantee for the revenue bond fund. Establishment of this fund is a required condition of obtaining the revenue bond funds, and the fund must contain enough money for one year of debt service on the outstanding revenue bonds.

9.1.2.5 – Rate Stabilization Fund

This fund allows the District to set aside monies during good economic conditions and then draw down during poor economic times, to lessen the impact on rates for customers.

9.1.2.6 – Public Works Trust Fund Loan

The District may periodically fund its capital improvement projects with low-interest Public Works Trust Fund (PWTF) Loans. PWTF loans are made available to public entities by the State of Washington to finance capital improvements that will improve public health and safety, enhance the performance of the existing system, benefit the environment or enhance or stimulate growth within the jurisdiction. The PWTF fund shall be used to track the use and repayment of these loans.

9.1.3 – Periodic Audits

The District shall perform annual internal reviews on all financial procedures and financial conditions of the District. In addition, the District shall cooperate with the Washington State Auditor's Office for an annual audit of the District's operations by that agency.

Policy 9.2 Rate Structures

The District shall establish rates, charges and fees to maintain sufficient funds to operate, maintain, and upgrade its water system as necessary to provide safe reliable water service to its customers. These rates should be evaluated as part of the annual budget process. This will ensure that forecasted expenses and impacts of regulations are reflected in the rate structure.

By setting rates and reviewing them annually, the District can ensure it has sufficient funds to maintain and operate its water system. Reviewing the rates annually also provides an opportunity to adjust the rates for actual growth that has occurred.

Criteria

9.2.1 – General Facility Charges

General facilities are those facilities that are necessary to accomplish the purpose of the District and which are of general benefit to properties within the District. General facility charges shall be levied on all new connections to the District's water system. The charges shall be based on the needs of the District and the welfare of its customers and should reasonably allocate the general facility costs of the District. General facilities charges shall be based upon the anticipated costs included in the Capital Facility Plan as well as the costs of existing general facilities identified in previous General Facility Charge Review documents that are still applicable. The District shall review these charges and their supporting documentation and assumptions periodically to ensure that future general facilities may be funded at the appropriate time.

Under the terms of their contract, the District shall pay Seattle Public Utilities one facility charge for each ERU connecting to its system. The District's general facility charge will include the ERU fee

charged to the District by Seattle Public Utilities. The current definition of ERUs for these charges are summarized in **Table 3.5**.

Table 3.5 ERUs by Connection Size

ERUs by Connection Size	
Connection Size	**Number of ERUs**
¾-inch and smaller	1
1-inch	2
1-½-inch	5
2-inch	8
3-inch	22
4-inch	31
6-inch	66
8-inch	112
10-inch	169
12-inch	238

Adjustments to the District's general facility charge shall be made as an adjustment to the facility charge payable to Seattle Public Utilities.

The number of stories of a building will be part of the consideration when determining GFC's.

The residential connection charge shall be applied to each residential unit, residential equivalent unit, accessory dwelling unit, when designated as such by the applicable zoning authority or temporary lodging unit to be connected to the District's water system. In the event that subsequent units are placed upon a parcel of property against which a prior connection charge has been paid, the new per unit charge shall be paid for each such additional unit at the then-current rate, as a condition to connecting to the District's water system.

For commercial developments, private schools and any other non-residential uses requiring metered water service, a residential equivalent unit amount will be determined based on the water meter size. Such uses shall be charged the greater of the residential per unit charge as applied to the unit amount so determined or a per square footage charges to be established in accordance with the current Board of Commissioner adopted resolution. The per square footage charge shall apply to the entire area of any property used for the project, including the entire area of any property which has been segregated for connection charge purposes, if a use of any portion of such segregated property is integral to the projects' development and even though no physical connection to the District's system may be made on the segregated property.

Public schools shall be evaluated in accordance with the Department of Ecology and residential equivalency standards regarding their overall impact and utilization of the system, considering the number of students and faculty, the nature of the facilities and other relevant factors. Based thereon, a residential equivalent unit amount will be established.

Public parks shall be evaluated in accordance with the Department of Ecology and residential equivalency standards regarding their overall impact and utilization of the system, considering the number of parking stalls provided the nature of the park facilities and anticipated uses, and other relevant factors. Based thereon, a residential equivalent unit amount will be established.

9.2.2 – Water Utility Rates

The District shall establish customer water rates that consider the cost of providing service, maintain the financial viability of the utility for self-supporting operation, and provide for prudent reserves.

Monthly customer charges will vary by season. The District is charged varying rates by Seattle Public Utilities. Water purchased by the District during the period of September through May is purchased at the winter rate while water purchased between June and August is at Seattle Public Utilities' summer rate.

The District has adopted an increasing block rate structure intended to encourage demand side conservation. The water rates are reviewed annually and adjustments made as necessary to support the revenue required for operation of the utility. The Board of Commissioners adopts by Resolution any adjustment to water rate charges.

9.2.3 – Rate Surcharges

The District may impose rate surcharges if determined necessary. An example of a circumstance warranting rate surcharges would be Seattle Public Utilities charging a surcharge for emergency response to drought conditions. The District's contract allows Seattle Public Utilities to make rate adjustments. The District will consider retail rate adjustments as necessary to account for any adjustments realized in the purchase price of the water from Seattle Public Utilities. Surcharges shall be determined on a case-by-case basis.

9.2.4 – Seattle Public Utilities Rates and Charges

The District shall monitor and collect any applicable rates and charges imposed by the Seattle Public Utilities for treatment and transportation of water to the District's connection. Said fees and charges, as set by Seattle Public Utilities, shall be in addition to the District's rates and charges.

9.2.5 – Rate Payment Program

The District has established several methods for its customers to pay their utility bills, in addition to normal payment by check or money order. The customer may designate a financial institution from which the District would then withdraw amounts billed on the customer's bi-monthly statement for water service. The District will also accept in-person Visa and MasterCard credit and debit card payments at the District's office for residential-only water service charge billings. Credit or debit cards will not be accepted for payment of other types of District fees or charges. The customer may

also electronically transfer funds for payments through the District's web page in accordance with certain limitations and procedures associated with this program.

9.2.6 – Rate Assistance Program

The District shall establish a Senior/Disabled Low Income Utility Rate Reductions Program for eligible customers. The rate reduction shall apply only to the base water rates. The rate reduction shall not apply to consumption (over base) charges, street lighting charges, surcharges, miscellaneous fees or late charges.

9.2.7 – Fire Protection Fee and Double Check Valve Charge and Other Charges

The District has established a fee for providing adequate pressure and standby fire flow for commercial fire lines. Additionally, the District has a charge to monitor double-check valve assemblies for regulatory compliance, usage and tampering, and to ensure proper operation.

Policy 9.3 Development Fees and Charges

The District has established fees and charges to recover its costs related to construction of the water infrastructure by developers.

Developers shall pay all District costs associated with the design and construction of water facilities necessary for service meeting the District's 'to-and-through' policy for Developer Extensions. The fees and charges should represent a fair and equitable manner of sharing the cost of improvements and replacements of general facilities required for service to any development. These fees and charges should be reviewed periodically to assure that the cost methodology remains fair and equitable.

Criteria

9.3.1 – Charges of Certificates of Water Availability

The provision of a Certificate of Water Availability is a special benefit to a particular individual and/or property owner. The District shall periodically establish a schedule of charges for certificates of availability and related services. The appropriate charge must be paid prior to the completion and delivery of a certificate by the District.

9.3.2 – Developer Extension Fees

Administering a Developer Extension Agreement is of special benefit to a particular individual and/or property. Developer projects shall pay their fair share of the actual costs to the District attributable thereto. Fees and charges shall be established by analysis of the District's actual cost experience regarding Developer Extension design and implementation. Schedules shall be established and adopted by the Board of Commissioner for development classifications and fees, deposits and charges related to the developer extension projects including but not limited to; residential main extensions, commercial main extensions, fees for any special facilities required by the project, developer guaranty

deposit, etc. The terms of every Developer Extension Agreement shall include a process for invoicing and recording the notices of intent to file liens as necessary to enforce the collection of Developer Extension Fees, including collection of such fees remaining unpaid after the abandonment of a Developer Extension project. The District shall adopt administrative Developer Extension invoicing and lien filing procedures and forms to ensure that all such costs are identified and collected.

9.3.3 – Latecomer Connection Charges

The latecomers runs as long as the person to receive the latecomer complies with the notice requirements to the District, but not to exceed fifteen (15) years. The person receiving the latecomers must update their information in writing to the District every two years to keep their rights to a latecomers. After a latecomers is established, and it is then waived, the 20 percent is to be paid by the person connecting to the system. The developer is required to pay the 20 percent at the time the latecomer payment is received. If District funds are used to fund the facilities then interest in charged.

Latecomer charges shall be determined and recorded on property that is not part of the development, but is benefited by construction of a water system by the developer. Said charge shall be established per the Revised Code of Washington (RCW 57.22) and shall be a equal to the pro rata share of reasonable construction and contract administration costs of the mainline extension project including but not limited to design, engineering, installation, restoration, permit fees and charges specifically applicable to the extension. The latecomer reimbursement is calculated on a front foot basis. Buildings within 150 feet of a property line adjacent to a mainline extension, or are permitted to connect to a mainline extension by the Extended Service Method are subject to payment of latecomer reimbursement. The reimbursement is calculated on a first-in-time, first-in-line policy. In any case where a prior Developer has installed a main line with either a stub available to a new connecting property, or a main line to which a stub could reasonably be installed, the District will generally either require connection to the stub, or installation of a new stub to that main line. In the event that there are special circumstances in which the District allows an alternative physical connection point, the Latecomer attributable to the existing connection point may still be collected as a condition of permitting the alternative connection point. Avoidance of Latecomer may occur only when connection to alternative connection point is permitted because the new development cannot connect to the existing main line or stub that is subject to the Latecomer. The developer shall be entitled to recoup these charges from the benefited properties when said properties connect to the water system, except the latecomer charges shall be applicable for only fifteen (15) years after acceptance of the facilities by the District. Upon collection of a latecomer, the District shall retain 20 percent of the original latecomer as the District's reasonable costs of establishing and administering the agreement. Provided however, that in the event an owner waives entitlement to a previously established latecomer, the administrative cost shall be 20 percent of the base amount, which shall remain as a Special Connection Charge against the reimbursement area to be paid by the connecting property owner. After the latecomers charge has expired, the fee shall be converted to a special connection charge payable to the District. Interest and/or the District's Operation, Maintenance and Depreciation (OMD) Charge shall accrue for a maximum of 10 years, at which time they shall become fixed for the remaining useful life of the mainline extension. The Operation, Maintenance and Depreciation Charge shall be calculated at the current rate in effect at the date of connection.

9.3.4 – Special Connection Charges

All persons connecting to the District's system shall pay a Special Connection Charge for a portion of the costs of a water mainline extension constructed by the District which makes service available to the connecting property. Special connection charges shall be calculated as follows:

A reimbursement area that shall be formulated by the Board of Commissioners within a reasonable time after construction of the mainline extension for which reimbursement is applicable to include those properties which would require similar improvements to procure service. Said charge shall be due when connection is made to the system.

For mainline extension not subject to a current or expired Latecomer agreement, the Special Connection Charge shall be the following;

- In the first year following a mainline extension being placed in service, the District's actual project costs for the mainline extension to which connection is being sought.

- After the first year following the mainline extension being placed in service, the District's actual projects for any mainline extension to which connection is sought, plus interest thereon from the date of acceptance of the facilities set, in accordance with the District's rate-setting policy; plus the District's Operation, Maintenance and Depreciation Charge for each year, or portion thereof, after the first year.

For mainline extension subject to a Latecomer, or subject to a Special Connection Charge established upon expiration of a Latecomer, the Special Connection Charges shall be the following:

- In the first year following a mainline extension being in placed in service, the latecomer as established in accordance with the District's Latecomer policies.

- After the first year following a mainline extension being placed in service, the latecomer (or Special Connection Charge upon a Latecomer expiration) for any mainline extension to which connection is sought, plus the District's Operation, Maintenance and Depreciation Charge for each year, or portion thereof, after the first year.

Interest and/or the District's Operation, Maintenance and Depreciation Charge shall accrue for a maximum of 10 years, at which time they shall become fixed for the remaining useful life of the mainline extension. The Operation, Maintenance and Depreciation Charge shall be calculated at the current rate in effect at the date of connection.

9.3.4.1 – Special Connection Charge for Residential Properties Utilizing Upgraded Facilities

When a residential property which has been receiving water service undertakes improvements which require a Water Availability, and such property is served by facilities which have been upgraded since its original connection, the property shall pay a Residential Water Upgrade Special Connection Charge, calculated and administered in accordance with the District's adopted Rate Policy Resolution.

9.3.5 – ULID Assessments

Occasionally, portions of the District's water system are extended by a ULID. Under these circumstances, the benefited properties are assessed a fee for their share of the cost of the improvements. The fee is recorded against the property and is based on the actual costs incurred by the District for constructing the improvements. The assessment may be based on a per lot, per front foot, or per square foot basis as determined by the District's Board of Commissioners. The property owner will be required to pay the annual fee over a maximum of 10 to 15 years (as determined by the property owner's within the ULID during the formation hearing) until the assessment is paid in full.

9.3.6 – Other Fees and Charges

Additional fees and charges may be established to cover requests for service as needed. These costs may be a matter of policy or representative of actual costs incurred. These fees and charges should be periodically reviewed and updated as necessary.

Policy 9.4 Installment Payment

In circumstances in which a property owner is unexpectedly compelled to connect to the water system (e.g., a contaminated well), the District will allow payment of connection charges by execution of an installment contract. Installment contracts will be for not more than 90% of the amount of the connection charge. Only one installment connection charge will be permitted for any property owner. The installment contract will either provide for annual installment payments or bi-monthly installment payments, at the District's discretion. The interest rate shall be a per annum amount from the date payment would have otherwise been due; provided that the interest, although accruing, shall only be collected after the end of the first year from the date of the establishment of the connection charge. The per annum interest rate shall be established periodically by the Board of Commissioners. Installment contracts providing for annual payments will be for ten years. Installment contracts providing for monthly payments will be based on bi-monthly payments of one sixth of the amount that would be paid annually by an annual payment contract.

Policy 9.5 Capital Facility Plan

The District shall establish a Capital Facility Plan that describes the anticipated improvements or modifications to the water system for the next 10-year period. The plan should address required repairs to the water system, planned replacement of aging facilities, upgrades to existing facilities to provide additional capacity for projected growth, and construction of general facilities to aid growth.

Establishing a Capital Facility Plan allows the District to determine the projected costs of improving and maintaining its water system. This plan should be used as an aid for setting water rates and connection charges so that the improvements may be constructed in a fiscally sound manner.

Criteria

9.5.1 – Funding the Capital Facility Plan

The Capital Facility Plan shall be funded at levels sufficient to maintain the integrity of the water system. Projects should be planned and scheduled to establish uniform level funding requirements. Significant fluctuations in the level of spending associated with capital improvements should be avoided in order to minimize impacts to operating budgets and related rate increases. The Capital Facility Plan should be funded through District revenues, the sale of water revenue bonds, loans or grants. In general, revenue bonds or a low interest long term Public Works Trust Fund Loan should finance facilities with a useful service life extending beyond 20 years. When portions of these facilities serve a new area, the proportional costs of those facilities that provide service to the new area should be assessed to the owners in the new area through general facility charges or special connection charges.

9.5.2 – Ranking Capital Facility Projects

The District has defined the general criteria to rank proposed capital projects for funding.

Priority Class 1: Projects not constructed for which financing has been secured, a project that has an immediate benefit to the entire system (such as new PRV stations or relocations to adjust high pressure areas) and new or replacement watermains necessary to upgrade service to an existing low-pressure area. These projects should be constructed within two or three years.

Priority Class 2: Projects necessary to improve reliability or water quality. New watermains or replacement of existing undersized mains to improve transmission of water and improve fire flows. These projects should be constructed within seven years.

Priority Class 3: New watermains or replacement of existing undersized mains to improve transmission of water and fire flows to undeveloped areas within the District's RWSA or to fill in the existing grid. Scheduling is undetermined but should occur within ten years.

Priority Class 4: New watermains to serve undeveloped areas outside the District's RWSA but within the future service area, should service be requested. Scheduling is undetermined.

10. REGIONAL WATER SUPPLY DEVELOPMENT AND TRANSMISSION

Policy 10.1 Participation in Regional Water Supply Planning

The District is committed to participating in regional planning and water supply development. The District will actively engage local and state governments, regulatory agencies and other water systems with the goal of improving the water supply industry and to protect the interests of all public water system customers.

The District remains a leader in discussions and communication between interested parties and facilitates communication and inter-jurisdictional cooperation where possible in order to advance the interests of public water system customers.

The District routinely participates in associations, executive platforms and diverse multi-member discussion forums on water issues. Although the District purchases all of its water from Seattle Public Utilities, it will remain involved in member organizations that represent water purveyors with alternative sources.

The District will actively cooperate and participate in regional water planning. Data for forecasting and historical support will be provided to forums or groups engaged in regional planning. The District will update their water system plan according to the statutory requirements and provide updates to forecasts as appropriate to support regional planning projects.

Policy 10.2 Cooperation With Adjacent Purveyors for Sub-Regional Water Supply

The District recognizes the local and regional benefits that can be realized by utilizing existing infrastructure for wheeling water to adjacent systems and that advance planning can result in system improvements that will support interties for supply.

The District is located adjacent to the Seattle Public Utilities Lake Youngs Facilities. This location is such that the District provides an extensive resource to adjacent purveyors for transmission facilities. The location and nature of the District's infrastructure lends itself for involvement in sub-regional transmission projects.

The District will plan for the construction of oversize transmission facilities that will facilitate the transmission of water from Seattle Public Utilities to adjacent purveyors. The District will negotiate in good faith with adjacent purveyors for wheeling of water through the District's distribution system as capacities allow. Oversize facilities will be considered and installed when District initiated or transportation projects result in opportunities for system upgrades. The District will provide wheeling cost structures to adjacent purveyors that will recapture their investment in oversize facilities and operation and maintenance costs on a cost-of-service basis.

CHAPTER 4
PLANNING CONSIDERATIONS

INTRODUCTION

This chapter summarizes the zoning, land use, population, household, and employment data that are utilized to predict future growth needs for the District's water system. The historical quantity of water purchased by the District is also summarized in this chapter.

The amount of water currently being consumed is specifically described as a function of customer classification. The historical and existing sales and production data were used to develop the value of an Equivalent Residential Unit (ERU). This data is used to convert the household and non-residential building area projections into residential and non-residential Equivalent Residential Units (ERUs). In summary, the projection of the average and maximum day future demands for the District requires consideration of ERU values and the summary of ERUs.

Future water supply requirements for the District are based upon future growth projections from the Puget Sound Regional Council (PSRC), land use and zoning capacity, and historical water use patterns (water sales records) for the established water service area. The future water demands are used to establish criteria for the hydraulic analysis of the water system and for development of the Capital Facility Plan.

PLANNING AREA

The planning area is considered the District's existing Retail Water Service Area (RWSA), not all of which is currently served. It is assumed that the District will eventually serve all of this area at some point. The planning area is consistent with the 1996 East King County Coordinated Water System Plan. The planning area is illustrated in **Figure 4.1**.

LAND USE AND ZONING

Land use and zoning designations and regulations are the important factors in determining future water requirements. Land use and zoning determine the area available for various types of development including both single-family and multifamily residential development, as well as commercial and other types of land use. These designations provide the economic base necessary to residential development.

Existing Land Use and Zoning

The existing land use and zoning within the District's RWSA are designated by three jurisdictions: King County, the City of Kent and the City of Renton. The District serves areas within the city limits of both Kent and Renton which are adjacent to the District. The City of Kent annexed a large area known as Panther Lake in 2010. This annexation area was served by the District and transitioned the District from having the majority of their service area within urban unincorporated King County to the majority of its service area within incorporated cities of Renton and Kent. The District has

interlocal agreements for the provision of service with both of these cities. For those portions of the service area located within Renton and Kent, zoning was obtained from each of the cities. The zoning designations are predominately residential, generally four to eight dwelling units per acre. However, there are also multifamily, office, commercial, and business zoning, along with some industrial. The District also contains many parks, lakes, and open spaces. Much of the easterly portion of the District boundary is adjacent to rural residential areas.

Future Land Use and Zoning

Future land use and zoning patterns for the RWSA are expected to correlate to existing uses. They were developed based on the projected needs of the area for the next 20 years. The Comprehensive Plans of Renton and Kent uses similar land use and zoning designation for the portions of the RWSA within their city boundaries. This consistency of land use and zoning is encouraged by the Washington State Growth Management Act and should result in predictable and stable land uses over longer planning periods.

Future land use for the planning period should conform to the Zoning and Land Use Map, **Figure 4.1**.

CITY POTENTIAL ANNEXATION AREAS

Each city in King County has the opportunity, during the preparation of its individual city-wide comprehensive plans, to designate Potential Annexation Areas (PAAs). The PAAs are urban unincorporated areas adjacent to a city. It is expected that cities will annex the designated PAAs over time.

The District has interlocal service area agreements with each of the cities that have designated a PAA within the designated service area of the District. The delivery of service is not expected to change upon the annexation of land to either of these cities.

GROWTH PROJECTIONS

Many factors influence growth. The state of the economy, interest rates, demands for annexation by neighboring cities, and up-zoning all influence new development and population growth. Growth management policies, along with coordination between local governments and the PSRC, should make development more predictable and growth projections more accurate than they historically have been region-wide. However, significant changes to the regional economy will continue to affect growth timing and patterns. Additionally, land use and development policies of other adjoining jurisdiction may also affect growth patterns, especially in light of threatened and endangered species listings and increased efforts to retain rural open space.

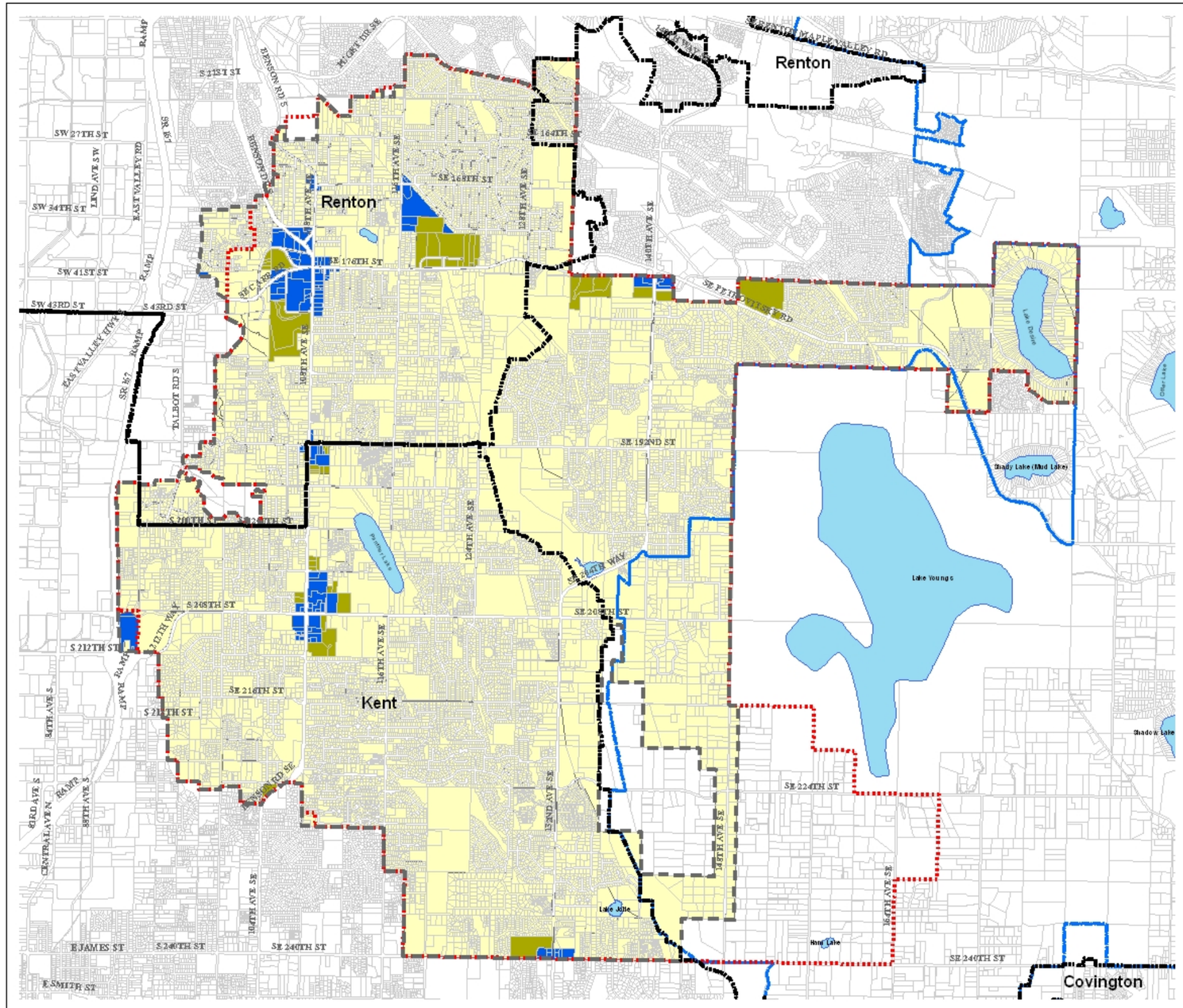
Population, Household, and Employment Projections

Data was obtained from the PSRC for the years 2010, 2020, and 2030. Data used was delineated in the 2006 Transportation Analysis Zones (TAZ) for population, households and employment data which meets the requirement of the Growth Management Act. Population projections for interim years were computed by straight line interpolation based on the projections provided by the PSRC.

The PSRC data was provided in geographic subdivisions designated as Transportation Analysis Zones (TAZ) and is illustrated in **Figure 4.2**. Each TAZ included projected growth of single-family

and multifamily households, population, and employment. The TAZ projections were allocated to the RWSA using an area-allocation procedure. This procedure used zoning information for each of the three jurisdictions to allocate single-family household, multifamily household and employment growth projections based on the percentage of each TAZ within the RWSA. The resulting total population, employment and household growth projections can be seen in **Table 4.1**. A full table of projections by pressure zone and TAZ is located in **Appendix G**.

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Soos Creek Water & Sewer District

2011 Water Comprehensive Plan Update

Figure 4.1 - Zoning

1 inch = 3,000 feet

0 1,500 3,000 6,000 Feet

Legend

- City Boundaries
- SCWSD Water Corporate Boundary
- Water Planning Area (Retail Water Service Area)
- Urban Growth Area Boundary
- Commercial/Industrial
- Multi-Family Residential
- Single Family Residential

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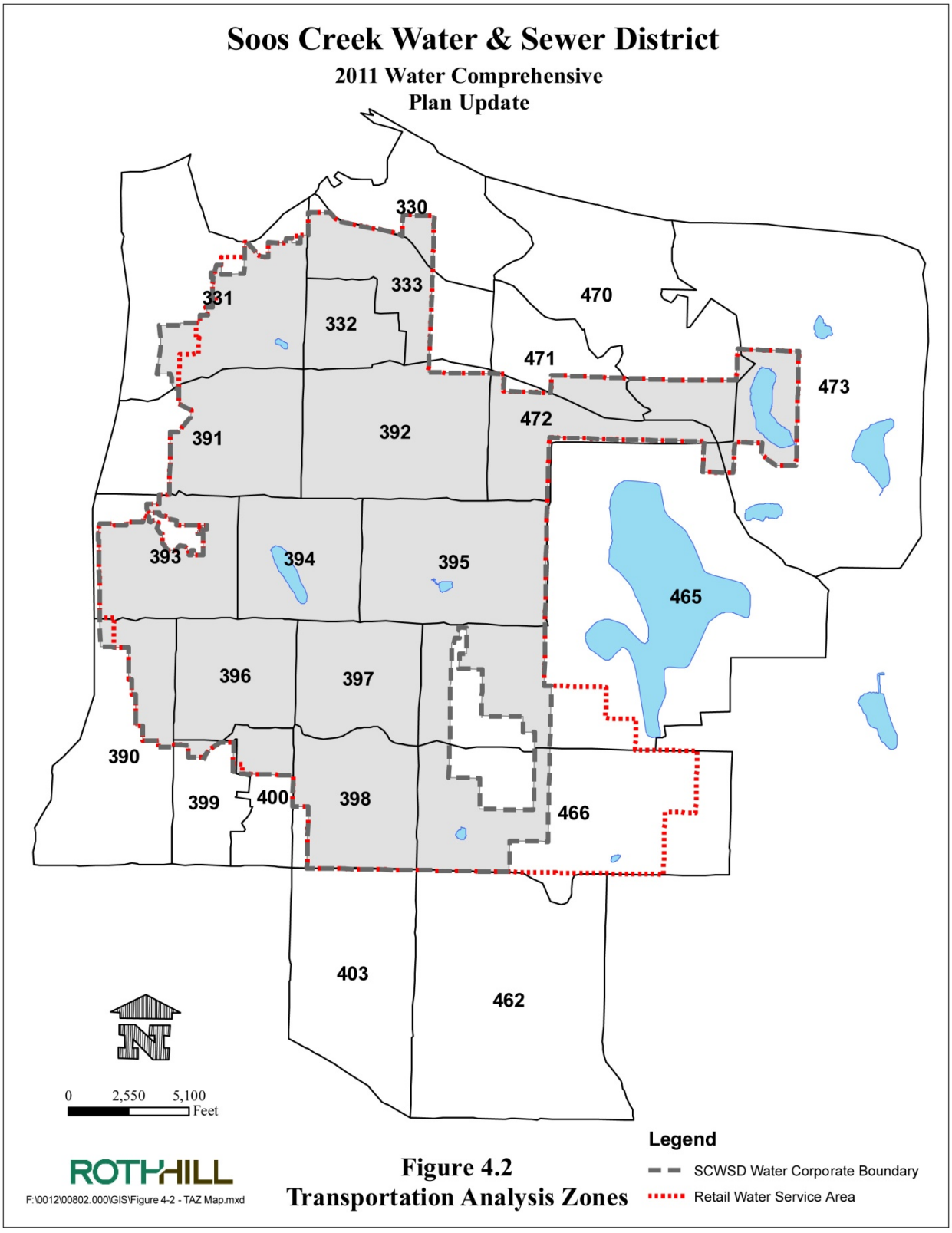


Figure 4.2
Transportation Analysis Zones

Table 4.1 Population, Employment, and Household Projections

	2011	2021	2031
Population	56,800	60,971	65,638
Households	20,722	23,077	25,742
Employment	6,867	8,887	9,957

Growth rates within the District were calculated from the projections in **Table 4.1** and then used as the basis for the remainder of the water demand forecasting analysis. Separate growth rates were determined for single-family residential, multifamily residential and commercial areas.

A comparison between the growth rates of PSRC projections and King County growth targets was conducted. King County issues growth targets for all the cities in the County which are tracked through the Annual Growth Report. For the comparison, the King County housing and employment growth targets were allocated to the District based on its area within the District. The housing growth rates were very similar, as PSRC projected a 1.1 percent growth rate and King County projected a 1.2 percent growth rate. PSRC employment growth rates were 1.9 percent whereas the King County employment growth rates were slightly less at 1.2 percent. While using the PSRC growth projections are slightly different than the GMPC data, this approach is a good planning tool. This would suggest a conservative approach overall in estimating and addressing the District's demand projections.

It must be noted that not all single-family residences within the Water Service Area are connected to the District's water system. There are 52 Group "B" Water Systems (a system that regularly serves fewer than 15 residential connections). Single wells exist for a number of single-family homes. It is anticipated that all wells will be converted to the District's system by ultimate conditions. Typically, other land uses such as multifamily and commercial do not have wells, and it is assumed that all non-residential customers would be served by the District throughout the planning period.

Future population projections are based on data provided by the PSRC. The most recent published forecast data is from 2006. It is not uncommon for actual growth rates to vary from those predicted. Growth rates will vary between different parts of the District based on the availability of services and the costs to develop the land for the zoned use. Although these factors were considered in developing the information included within this Plan, it should be noted that the rates of future growth will likely vary from those included within the Plan due to land use changes and annexations.

Ultimate projections have been calculated for this Comprehensive Plan and are included in the appendix. They were calculated based on zoning information from the cities and county, which is the same methodology that was used in the 2005 Comprehensive Plan. The new ultimate projections are similar to the 2005 Comprehensive Plan, with slightly less than ten (10) percent increase in housing estimates and less than one (1) percent decrease in employment estimates. The increase in housing can be attributed to an increase of multifamily and commercial zones in the RWSA.

As required by the Washington Administrative Code 246-290-108 consistency review checklists are included in **Appendix B.** These will be requested during the agency review process.

WATER ACCOUNT PROJECTIONS

Using the growth rates calculated, the future number of water accounts within the District's RWSA was projected using a starting point number of the existing water accounts. Existing water accounts are defined as accounts that were active as of December 31, 2010, the most recent data available at the time of analysis. These projected accounts for the RWSA are shown in **Table 4.2**. A brief analysis of the account projections shows that while single-family residential accounts constitute the majority of the accounts in the District, single-family residential will also be the slowest growing account category. In the future, single-family residential growth is projected to increase a total of 6.1 percent between 2011-2017, while multifamily residential accounts are projected to increase 8.6 percent and commercial accounts are projected to increase 18.7 percent for the same period. By 2031, projections estimate the number of single-family residential accounts will have increased 21 percent from the numbers presented in 2011. Multifamily accounts and commercial accounts will have increased 33 percent and 45 percent respectively from their current numbers.

Table 4.2 Existing and Projected Accounts

	Planning Year	6-yr Planning Period						10-yr and 20-yr Planning Period	
Classification	2011	2012	2013	2014	2015	2016	2017	2021	2031
Single-family residential	16,791	16,962	17,134	17,306	17,478	17,649	17,821	18,521	20,373
Multifamily residential	449	456	462	469	475	481	488	515	599
Commercial/ Industrial	418	431	444	457	470	483	496	541	606
Total	17,658	17,849	18,040	18,231	18,422	18,613	18,804	19,577	21,578

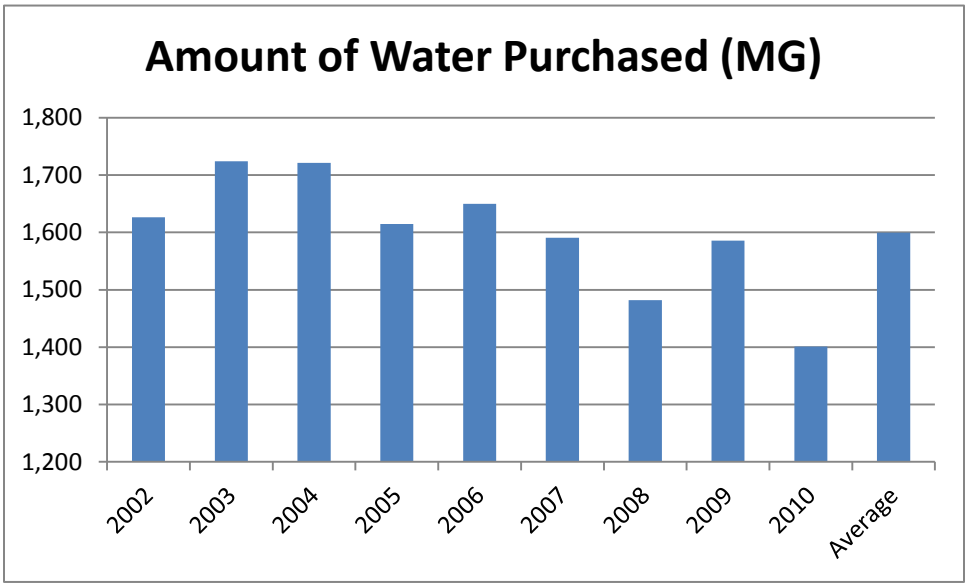
WATER CONSUMPTION

Future water demands were estimated based on existing water use and projected growth in the various customer classes and within the District, as shown earlier in **Table 4.2**. The District maintains extensive records of past water consumption, including both the water that the District purchases from Seattle Public Utilities for the District's supply and the water sold to the District's customers. Together, the water production and the water consumption databases provide useful information for determining historical water use. Evaluated independently, each data source may be misleading. However, when combined with information on changes in operation and service area, they provide useful information on which to base future water needs.

Historical Supply

A summary of the historical amount of wholesale water purchased from Seattle Public Utilities by the District from 2002 to 2010 is presented graphically in **Figure 4.3** and detailed by year in **Table 4.3**. The District's water supply is provided solely through wholesale water purchased from Seattle Public Utilities. The District did not produce any water as it does not own any sources, nor was the District supplied through interties with neighboring water utilities (other than Seattle Public Utilities). Additionally, the District did not sell any water to neighboring water utilities over this same period. Spreadsheets detailing water purchased by month are included in **Appendix L**.

Figure 4.3 Water purchased



The average annual volume of water purchased from 2002-2010 was 1,600 MG. During this same six-year period, the number of accounts served by the District increased by nine (9) percent from 16,049 to 17,563. Variations in water purchased between years typically reflect changes in customer demands based on a variety of factors such as seasonal weather patterns, growth within the RWSA, economics, and District policies. Based on the District's records, the historical maximum day demand was 10.70 million gallons on July 26, 2006.

The system demand ratios, or peaking factors, shown in **Table 4.3** illustrate the relative magnitude of peak-day demands as compared to average system demands. These demand ratios were determined from flow meter data obtained at the District's connections to the Seattle system. Determination of maximum day demand (MDD) is critical because it is the benchmark utilized by a number of the water system criteria discussed in Chapter 3. Supply capability, pump station discharge rates, reservoir capacity, and pump sizes are all determined based on MDD data. The MDD/ADD factor ranges from 2.03 to 2.61 for the period of record shown. Based on the historical MDD data from 2002-2010, the projected MDD/ADD factor is estimated to be 2.20. A peaking factor of 2.30 is chosen to reflect an average closer to the last six years.

Table 4.3 Historical Water Supply and Sales

Classification	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total Annual Purchased (MG)	1,626	1,724	1,721	1,615	1,650	1,591	1,482	1,586	1,401
Total Authorized Consumption (MG)	1,452	1,639	1,569	1,400	1,499	1,492	1,376	1,432	1,276
Distribution System Leakage (MG)	174	85	152	215	151	99	106	154	125
Percent Distribution System Leakage	10.71%	4.92%	8.85%	13.33%	9.14%	6.22%	7.16%	9.69%	8.94%
Average Day Demand (ADD) (MGD)	4.46	4.72	4.71	4.42	4.52	4.36	4.06	4.34	3.84
Maximum Day Demand (MDD) (MGD)	8.10	9.35	8.72	8.00	10.70	10.39	8.31	8.81	7.52
Peaking Factor (MDD/ADD)	2.04	2.08	2.03	2.09	2.61	2.57	2.21	2.26	2.17

HISTORICAL WATER CONSUMPTION

The District categorizes meter size by the customer classes as shown in **Table 4.4**.

Table 4.4 Sizes and Types of Meters by Customer Class

Customer Class	Meter Size (Inches	Number of Connections
Single Family Residential	¾ – 1-1/2	16,619
Multifamily Residential	¾ – 6	443
Commercial/ Industrial	¾ – 4	405
Government/ Education	¾ – 6	96
Total		17,563

For planning purposes, water uses are grouped into the six categories described below:

Single-Family Residential

The single-family residential category includes only residential customers living in single-family residences. The usage in this category comprises the bulk of the water used in the District, averaging 66 percent of the District's total water usage between 2002 and 2010. During this time, single-family water use varied between 61 and 69 percent of the total water usage with no upward or downward trend over this period. This water is used for domestic purposes and lawn irrigation. Typical ADD water use over the historical period for a single-family residence is 180 gpd.

Multifamily Residential

The multifamily category includes duplexes, multiplex (apartment) units, and mobile home parks. This category has stayed steady at 13 to 17 percent of District total water usage with an average of 15 percent of the total water usage over the years 2002-2010, making it the second largest category in the District. Over the historical period, the typical ADD water usage per multifamily account, which may include a number of multifamily housing units, is 1,520 gpd.

Commercial/Industrial

Average commercial usage was seven (7) percent of the District total over the years 2002 through 2010, varying from between five (5) and ten (10) percent of the District's total water usage. The planning value established from the historical data is 1,230 gpd per commercial account. This customer class includes fire sprinkler meters.

Government/Education

This category includes water usage by schools, government buildings, parks, and other public facilities. The average government/education water use is approximately three (3) percent of the District total for 2002-2010. In 2006, the accounting software was updated and approximately 100 government/education accounts were determined to be commercial/industrial accounts. This redistribution reduced the percentage of consumption of the government/education classification from five (5) percent to one (1) percent. A planning value of two (2) percent is used as a conservative value which reflects this redistribution.

Authorized Non-Revenue Consumption

Authorized non-revenue water is that which is used by the District or others, but for which no revenue is received by the District and is not included in the District's Financial System. Water is used by the District for various non-revenue producing activities and is recorded manually by Operations Staff. The District conducts periodic high volume flushing of their system and records the volume of water spent on these activities. The District also provides water for testing and flushing of new waterlines installed as part of their Developer Extension Projects or Capital Improvement Projects and records this as well.

Distribution System Leakage

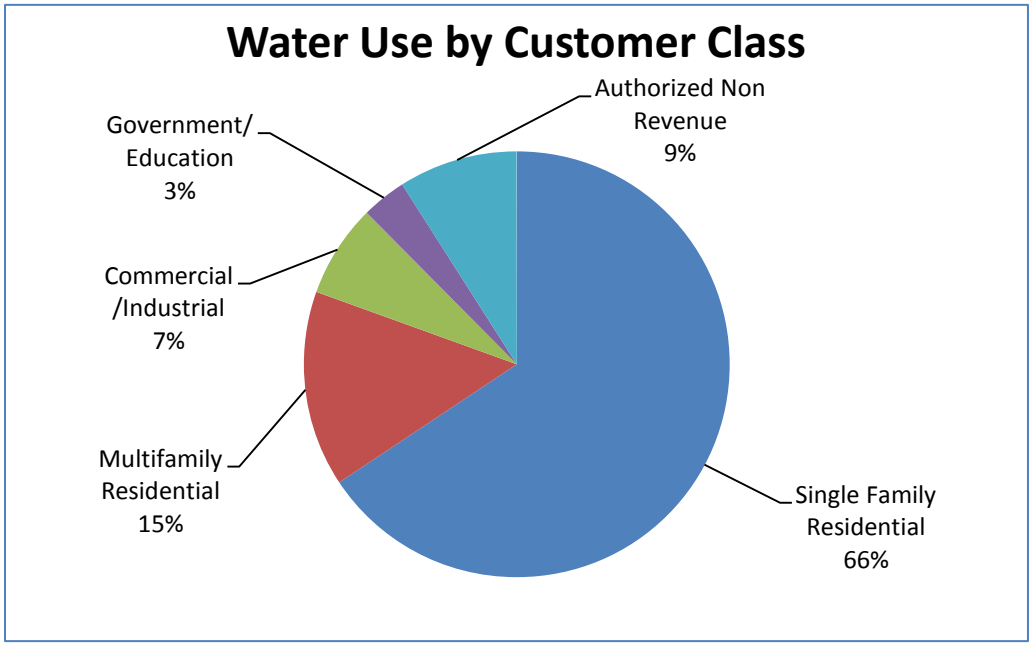
Distribution System leakage is calculated as the difference between the total amount of water produced/purchased and the total authorized consumption. The Water Use Efficiency (WUE) Rule requires that the three-year average of distribution leakage be maintained at less than ten (10) percent of the supply. Distribution leakage does not include authorized non-revenue water consumption. However, to be credited, this must be accounted for by metering or by estimating using credible means. All water that is not authorized for is considered distribution leakage.

Water purchased, water sold, and total distribution leakage over the past eight years is shown in **Table 4.3**. Over the past three years, distribution leakage has been an average of 8.9 percent of the supply. The planning value selected is ten (10) percent in order to accommodate for years with higher non-revenue water use.

Summary of Historical Water Consumption

Figure 4.4 summarizes the water use by customer classification as a percentage of total consumption for the years 2002-2010, as discussed for the individual categories above. This figure represents water use for the entire District as a whole and does not separate out specific geographic areas.

Figure 4.4 Water use by Customer class 2002 to 2010



EXISTING AND FUTURE EQUIVALENT RESIDENTIAL UNITS

An Equivalent Residential Unit (ERU) is defined as the amount of water consumed by a typical full-time, single-family residence. For the 2005 Comprehensive Plan, the selected ERU value was 200 gallons per day (gpd). The historical water consumption data from 2002-2010 (**Table 4.5**) shows that the actual daily consumption per single-family household for the past several years (excluding distribution system leakage which is now determined independent of ERUs) was considerably lower than the value used in the 2005 Comprehensive Plan. Based on the historic consumption data from 2002-2010, the 2011 Comprehensive Plan planning value for water consumption for an ERU is 180 gallons per day (gpd). This value does not account for variations in water use between neighborhoods due to irrigation and lot size but is a valid estimate for District-wide water consumption.

Estimating government/education water usage by specifying a number of ERUs per account may not reflect the true consumption because the amount of water used per account can vary widely for this category. It is more accurate to calculate government/education water usage as a percentage of the total water used by the District. Therefore, we assume as single-family and multifamily accounts grow so will the government and education accounts. As shown in **Table 4.5**, the government and education classification includes consumption and percentage data and the planning value selected is a percentage.

Table 4.5 Annual Average Water Consumption by Classification (GPD)

Classification	2002	2003	2004	2005	2006	2007	2008	2009	2010	Comp Plan Values
Single-family residential	184	208	198	167	170	177	172	178	159	180
Multifamily residential	1,338	1,647	1,596	1,561	1,700	1,701	1,396	1,418	1,344	1,520
Commercial	1,814	2,026	1,514	1,476	1,433	902[(1)]	702	726	493	1,200
Government/ Education	1,178	1,348	1,167	894	1,284	580[(1)]	475	437	407	-
	5.54 %	5.49 %	5.16 %	4.83 %	6.66 %	1.46 %	1.29 %	1.11 %	1.13 %	2%

1. [(1)]The accounting software was updated resulting in a redistribution of accounts

A comparison of the water consumption for the District with other King County water purveyors can be seen in **Table 4.6**. Based on 2008 data, the District consumed 172 gallons per day per ERU while the average of Seattle Public Utilities customers was 179 gallons per day per ERU. This reflects the District's regional leadership in water conservation which will be further described in Chapter 9.

Table 4.6 Comparison of Seattle Water Purveyors Water Consumption

Purveyor	Year 2008 Average Consumption (gallons per day per ERU)
Soos Creek Water & Sewer District[1]	172
City of Bothell	177
Seattle Purveyors Average	179
Cedar River Water & Sewer District	182
City of Bellevue	185
Woodinville Water District	211

[1]Soos Creek Water & Sewer District (planning value) is 180 gpd per ERU

Based on the new planning value of 180 gpd per ERU, the number of ERUs per multifamily and commercial connection is determined. A multifamily account has been assigned a planning ADD of

1,500 gpd. Using an ERU value of 180 gpd, there are an average of eight ERUs for every multifamily account. As commercial water use is a relatively small percentage of the total water use, and commercial accounts in the District are similar business types of small retail and commercial with very few industrial or manufacturing uses, gallons per account were used to establish the ERU value. Therefore, with the planning value of 1,200 gpd per commercial account, each commercial account is equal to 7 ERUs. Like the government/education category, non-metered water consumption is calculated as a percentage of the total water used by the District because there are no accounts associated with this category.

FUTURE WATER REQUIREMENTS

Projecting future water requirements is one of the key elements of the comprehensive water planning process. Identification of system improvements such as supply, pumping, storage, and piping requirements are all related to demand projections.

Future water system demands are based on projected ERUs, which in turn are based on the projected water consumption by customer classification and the projected number of accounts discussed earlier in this chapter. **Table 4.7** shows the projected ERUs for the planning period. The ADD for the entire District was based on multiplying the projected ERUs by the planning value of 180 gpd per ERU and including an additional two (2) percent of the total water use for Government/Education uses and an additional ten (10) percent of the total water use for distribution system leakage.

Table 4.7 Existing and Projected ERUs

	Planning Year	6-yr Planning Period						10-yr and 20-yr Planning Period	
Classification	2011	2012	2013	2014	2015	2016	2017	2021	2031
Single-family residential	16,791	16,962	17,134	17,306	17,478	17,649	17,821	18,521	20,373
Multifamily residential	3,795	3,849	3,902	3,956	4,010	4,064	4,118	4,350	5,055
Commercial/ Industrial	2,090	2,154	2,219	2,284	2,348	2,413	2,478	2,704	3,031
Total	22,844	22,965	23,256	23,546	23,836	24,126	24,417	25,575	28,459

The projected maximum day demand (MDD) is simply the projected ADD multiplied by the MDD/ADD factor of 2.30, as discussed previously. The existing and projected average and maximum daily demands for the District (without conservation) is shown in **Table 4.8** and **Table 4.9**. The ADD and MDD projections were utilized in the System Analysis, Chapter 6.

Table 4.8 Existing and Projected Average Day Demand (MGD)

Classification	Planning Year 2011	6-yr Planning Period 2012	2013	2014	2015	2016	2017	10-yr and 20-yr Planning Period 2021	2031
Single-family residential	3.02	3.05	3.08	3.12	3.15	3.18	3.21	3.33	3.67
Multifamily residential	0.68	0.69	0.70	0.71	0.72	0.73	0.74	0.78	0.91
Commercial/ Industrial	0.38	0.39	0.40	0.41	0.42	0.43	0.45	0.49	0.55
Government/ Education	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.12
Distribution System Leakage	0.46	0.47	0.48	0.48	0.49	0.49	0.50	0.52	0.58
Total	4.64	4.70	4.76	4.82	4.88	4.93	4.99	5.23	5.82

Table 4.9 Existing and Projected Max Day Demand (MGD)

Classification	Planning Year 2011	6-yr Planning Period 2012	2013	2014	2015	2016	2017	10-yr and 20-yr Planning Period 2021	2031
Single-family residential	6.95	7.02	7.09	7.16	7.24	7.31	7.38	7.67	8.43
Multifamily residential	1.57	1.59	1.62	1.64	1.66	1.68	1.70	1.80	2.09
Commercial/ Industrial	0.87	0.89	0.92	0.95	0.97	1.00	1.03	1.12	1.25
Government/ Education	0.21	0.22	0.22	0.22	0.22	0.23	0.23	0.24	0.27
Distribution System Leakage	1.07	1.08	1.09	1.11	1.12	1.14	1.15	1.20	1.34
Total	10.67	10.80	10.94	11.08	11.21	11.35	11.49	12.03	13.39

Comparison Between the 2005 and 2011 Water Comprehensive Plans

In the 2005 Water Comprehensive Plan, the demand projections were calculated the same way as the 2011 Water Comprehensive Plan. The primary difference between the two comprehensive plans demands calculations was a result of the significant difference in the ERU planning values. The 2005 Water Comprehensive Plan uses an ERU planning value of 200 gpd per ERU while the 2011 Water Comprehensive Plan uses 180 GPD per ERU in the calculation. Because the ERU value is less in the 2011 Comprehensive Plan, the demand calculations are less than the 2005 demand calculations. The 2020 single family average day demand projection for the 2005 Comprehensive Plan was 3.82 MGD while the 2021 average day demand for the 2011 Comprehensive Plan was 3.33 MGD. The total 2020 average day demand for the 2005 Comprehensive Plan was 6.19 MGD while the 2011 Comprehensive Plan 2021 average day demand is 5.23 MGD. The total 2020 maximum day demand for the 2005 Comprehensive Plan was 13.62 MGD while the 2011 Comprehensive Plan 2021 maximum day demand is 12.03 MGD. The reduction in the ERU planning value can be attributed to the successful implementation of the water use efficiency programs at the District.

CHAPTER 5
EXISTING WATER SYSTEM

INTRODUCTION

This chapter outlines the District's water system including water supply, storage, and distribution facilities. Also described are booster pump stations, pressure reducing valve (PRV) stations, and interties with adjacent water purveyors. In addition, fire protection within the District is discussed.

The District operates a single-source municipal water system that includes storage and distribution of potable water to more than 17,500 residential and commercial accounts. Individual customers are served from a network of over 221 miles of distribution pipe. Service is provided through one major service area that is further divided into seven pressure zones as required by local topography. Elevations within the District are currently indexed to the King County Aerial Survey (KCAS) datum, unless explicitly stated otherwise. Elevations listed in NAVD-88 datum are approximately 3.58 feet higher than elevations in KCAS.

WATER SUPPLY SOURCE

The District, like many water purveyors in King County, purchases water from Seattle Public Utilities (SPU). The vast majority of SPU's water is supplied from two surface water sources; 70 percent of the total system water is delivered by the Cedar River Supply while an additional 29 percent of the total system water is generated by the South Fork Tolt supply. Only about one percent of Seattle's water is generated by the City's one groundwater source, the Highline Well Field. The water supplied to the District comes only from the Cedar River source.

The source of the water is Chester Morse Lake, southeast of the City of North Bend. The water is diverted from the Cedar River several miles downstream from the lake near Landsburg and is screened, chlorinated, and fluoridated at that point. From Landsburg, the water is transmitted through a 96-inch concrete tunnel and then conveyed through two 78-inch pipelines to the Lake Youngs reservoir adjacent to the District's northeastern boundary. Water can also be routed around Lake Youngs through two bypass lines. Water from the reservoir or the bypass lines is transmitted to the City's control works in the Fairwood area, southeast of the City of Renton and adjacent to the District boundary. Water is then transmitted northward and westward through four large pipelines to supply the City of Seattle and its other water purveyor customers.

When turbidity levels on the Cedar River increase to unacceptable levels, the diversion at Landsburg is shutdown. Lake Youngs is used to meet supply needs during shutdowns in addition to acting as an equalization basin during normal operation.

The water received by the District is of comparable quality to that distributed within the City of Seattle. SPU provides all treatment for water supplied to the District. Historically, SPU's water was treated only with chlorine, corrosion control chemicals, and fluoride. In 2004, operation of the new Cedar Treatment Facility began at Lake Youngs using ozonation and ultraviolet treatment. The facility treats 180 million gallons per day and as the needs of the City grow, it is expandable to 275 million gallons per day. The Tolt Treatment Facility began operation in 2001 and was SPU's first filtration and ozonation facility. The facility treats 120 million gallons of water per day. In addition to these treatment facilities, chlorination and fluoridation are performed at the Landsburg diversion

point, while chlorination and lime and soda ash treatment for corrosion control are performed at the outlet of Lake Youngs.

Master Meters

The District currently receives its water from SPU's system at five locations. Two (Master Meters No. 1 and 2) are on the Cedar River Pipeline No. 4 as it runs west from the control works toward SPU's Riverton Heights Reservoir. Another (Master Meter No. 3) is on the 12-inch pipeline, which runs west from SPU's pump station at Lake Youngs reservoir to its twin Soos Reservoirs near the District's office at SE 192nd Street and 148th Avenue SE. Flow out of the SPU reservoirs is by gravity, however it has the capability to bypass the reservoirs and pump directly into the District's system. The fourth meter (Master Meter No. 4) is located at SE Petrovitsky Road and 147th Avenue SE on the Fairwood Line, which outlets from SPU's Soos Reservoirs.

Pump Station No. 2 houses Master Meter No. 2, which was recently upgraded to increase the station's supply from SPU by installing an additional tap, upsizing the supply lines, and adding two parallel flow meters. The additional tap was installed on the Cedar River Pipeline No. 2. A parallel line was installed during the upgrade of the Pump Station No. 2 where Master Meter No. 5 was installed. Pump Station No. 2 is now fed from taps on the Cedar River Pipeline No. 1, 2, 3 and 4 for redundancy.

SPU's master meters record total consumption, as well as peak consumption, for the determination of demand charges. In 1999, SPU replaced Master Meter No. 3, which was believed to be underreporting the water provided to the District's system. **Table 5.1**, Master Meter Information, indicates the location, function and approximate hydraulic grade line (HGL) available. (Note: Minimum HGL is listed in NAVD-88, which is approximately 3.58 feet higher than elevations in KCAS.)

Table 5.1 Master Meter Information

Meter No.	Location	Meters Water Supplied To:	Minimum Hydraulic Gradient for Planning Purposes (feet NAVD-88 datum)
1	SE 160th Street and 114th Avenue SE	Pump Station No. 1	475
2	SE 164th Street and 132nd Avenue SE	Pump Station No. 2	475
3	SE 192nd Street and 148th Avenue SE	Reservoir No. 1 and Pump Station No. 4	620
4	Petrovitsky Road and 147th Avenue SE	Pump Station No. 6	615
5	SE 164th Street and 132nd Avenue SE	Pump Station No. 2	475

PRESSURE ZONES

The majority of the District is presently divided into two large, distinct pressure zones: the 710 zone and the 627 zone. The 710 zone serves the elevated area north of Lake Youngs and east to Lake Desire, and also areas west and south of Lake Youngs. The 627 zone serves the majority of the District, which is situated on a plateau south and southeast of the City of Renton. On the western slopes of the District service area there are four smaller pressure zones that are supplied through the main 627 zone. The 627 zone also supplies Pump Station No. 5 which boosts the HGL to approximately 670 feet in the Starcrest area located at the south end of the District east of 132nd Avenue SE. The pressure zones are shown on **Figure 5.1**, Existing Water System Facilities, and summarized in **Table 5.2**, Water Pressure Zones. A schematic, profile view of the pressure zones and major water system facilities is shown on **Figure 5.2**, Existing Hydraulic Profile.

Table 5.2 Water Pressure Zones

	Nominal HGL (ft)	High Ground (ft)	Minimum Static Pressure	Low Ground Elevation	Maximum Static Pressure (psi)
710 Zone	710	626	36	445	115
627 Zone	627	528	43	250	163
670 Zone	670	587	36	397	118
440 Zone (North)	440	300	61	180	113
440 Zone (Middle)	440	335	45	113	142
440 Zone (South)	440	345	41	130	134
290 Zone	290	209	35	95	84

710 Zone

The 710 zone located in the northeastern portion of the District is the second largest pressure zone in the District. It is the only pressure zone besides the 627 zone to contain storage. The zoning is primarily single-family residential, with only a small area of multifamily and commercial zoning in the northern portion of the pressure zone. There is also one junior high school and two elementary schools located within the 710 zone. The nominal hydraulic grade line of this zone is 710 feet. Ground elevations for this zone range from 445 to 626 feet.

Storage for the 710-pressure zone is provided by Tank No. 6, which is supplied by Pump No. 1 in Pump Station No. 4, as well as Pump Station No. 6. Pump No. 1 in Pump Station No. 4 is in turn supplied by gravity flow from SPU's Soos Reservoirs and Reservoir No. 1 while Pump Station No. 6 pumps from SPU's Fairwood Line. An emergency connection exists between the 710 zone and the 627 zone through PRV No. 8, which is closed under normal operating conditions.

627 Zone

The 627 zone is the largest pressure zone within the District, comprising over 78 percent of the total Water Service Area. The zoning is primarily single-family residential. However, the 627 zone also contains portions of multifamily residential and commercially zoned areas. All of the commercially zoned areas in the Water Service Area are located within the 627 zone. The nominal hydraulic grade line of this zone is 627 feet with ground elevations ranging from 250 to 528 feet.

Reservoir No. 1 and Tanks No. 2 and No. 5 provide storage within this zone. The majority of water supplied to the 627 zone, as well as the system as a whole, flows via gravity from the SPU's Soos Reservoirs to Reservoir No. 1 through Master Meter No. 3. Pump Station No. 1 pumps from SPU's Cedar River Pipeline No. 4 while Pump Station No. 2 pumps from the Cedar River Pipeline Nos. 1, 2, 3 and 4.

670 Zone

The 670 zone is located in the southern portion of the District and is supplied via the 627 zone. It is zoned for single-family residential. Ground elevations within this pressure zone range from 397 to 587 feet.

There is no storage within the 670 zone so the hydraulic gradient is maintained by two variable speed pumps at Pump Station No. 5 (Starcrest Pump Station) which pump from the 627 zone. These pumps operate by varying their flow rates to meet demand while maintaining a constant 670 hydraulic gradient. Because there is no storage within this zone, an additional 2,000 gpm pump located at Pump Station No. 5 provides fire flow.

440 Zones

There are three hydraulically unconnected pressure zones within the District having a nominal hydraulic grade line of 440 feet. This Plan refers to these zones as 440 zone (North), 440 zone (Middle) and 440 zone (South) based on their locations relative to one another within the District. All three zones are located along the western District boundary with ground elevations ranging from 113 to 345 feet. Zoning is primarily single-family residential, although there is a small area zoned for multifamily residential within 440 zone (North).

Each of the 440 zones is supplied from the 627 zone through PRV stations. These stations are listed in **Table 5.5**, Pressure Reducing Valve Stations.

290 Zone

The 290 zone is located at the westernmost District boundary and is the lowest pressure zone in the District. Ground elevations within this pressure zone range from 95 to 209 feet. It is zoned single-family residential.

The 290 zone is supplied from the 440 zone through PRV stations No. 5 and No. 14.

DISTRIBUTION

Watermains

Existing watermain locations within the District are shown on the Existing Water System Facilities, **Figure 5.1**. The watermains range in size from four (4) to 24-inches, although the majority of watermains are six (6) or eight (8) inches in diameter. Most of the pipe material installed since the early 1980s has been ductile iron. A small amount of PVC has also been installed. Asbestos cement (AC) pipe is no longer an acceptable pipe material to the District. This is primarily due to maintenance difficulties that have been encountered with this type of pipe. The primary problem encountered has been sewer pipe construction exposing existing AC watermain and resulting in new backfill underneath the main. Ensuing earth settlement of the new backfill has caused, in a number of instances, breakage of the AC watermain. In addition to this potential problem, the SPU has discouraged the use of AC pipe because of potential interaction of the lower pH water and asbestos fibers.

The District's distribution facilities are generally in good condition. The District generally averages seven leak repairs per month. The leaks are typically related to aged galvanized or plastic service lines and have been small in volume. **Table 5.3**, Summary of Distribution Pipe, below is a summary of the primary distribution and transmission watermains within the District according to size and length. More than half the District's piping is ductile iron with other being primarily AC along with nominal amounts of PVC and cast iron piping. Since the last Water Comprehensive Plan, approximately 96,570 lineal feet of new watermain has been installed, the majority of which is eight (8) to 12-inches in diameter. Mains smaller than six (6) inches in diameter are gradually being replaced.

Table 5.3 Summary of Distribution Pipe

Diameter	Length (ft)
24 inches	724
18 inches	4,521
16 inches	6,617
14 inches	4,528
12 inches	120,374
10 inches	90,438
8 inches	612,839
6 inches	250,939
4 inches	84,117

STORAGE FACILITIES

The District currently maintains a total of 15.1 million gallons (MG) of water storage, 13.0 MG of which is located in the 627 zone. There is one concrete reservoir and three steel standpipes; and there are no elevated tanks within the system. **Table 5.4** summarizes the physical characteristics of the District's storage facilities.

Table 5.4 Existing Storage Facilities[1]

Location	Date Constructed	Total Capacity	Height	Diameter	Overflow Elevation	Type	Usable Capacity[2] (above 20 psi)
Tank No. 2 SE 188th Street and 116th Avenue SE	1966	4.0 MG	107.5 feet	80 feet	627 feet	Steel Standpipe	1.1 MG
Tank No. 5 SE 211th Street and 126th Avenue SE	1968	3.0 MG	115 feet	67 feet	640 feet	Steel Standpipe	1.1 MG
Tank No. 6 SE 187th Street and 168th Avenue SE	1975	2.1 MG	86 feet	64 feet	710 feet	Steel Standpipe	0.9 MG
Reservoir No. 1 SE 193rd Street and 148th Avenue SE	1981	6.0 MG	29 feet	187 feet	627 feet	Concrete Reservoir	6.0 MG
Total		15.1 MG					9.1 MG

[1]Tanks No. 1, 3 and 4 have been dismantled

[2]Assuming peak hour demand conditions and the largest supply source out of service per DOH standby storage requirements. For the 627 zone, its usable capacity is limited by the base elevation of Reservoir No. 1.

The District's reservoirs range from approximately 30 to 45 years old and are in excellent condition. Each steel standpipe has been retrofitted with improved access ladders and handrail system so that operations personnel can inspect the roof vent on a regular basis.

Tank No. 5 underwent piping improvements in 1996 and had horizontal and vertical manifolds installed inside of the tank to improve water chlorination mixing. In 2001, each of the steel standpipes was retrofitted with pumper ports to facilitate draining water from the reservoirs into the water distribution system allowing the District to drawdown the tanks to a much lower level than in the past. At the same time, vertical manifolds were installed in Tanks No. 2 and No. 6 to facilitate mixing within the tank.

One storage facility has been repainted since the 2005 Water Comprehensive Plan, Tank No. 5, which occurred in 2009. Each tank or reservoir is drained and inspected on a rotating schedule so that one storage facility is inspected each year and each storage facility is inspected once every four years. Any areas inside the tank or reservoir that may require rust removal or spot painting are taken care of at the time of inspection. The exteriors of the storage facilities are steam cleaned for moss and have spot painting done on an as-needed basis. Tank No. 6 is scheduled to be maintenance coated in 2011.

Considering the condition of the reservoirs and the District's ongoing cleaning and maintenance program, the life of these structures is projected to be longer than normally expected. Tank No. 2 and Reservoir No. 1 were constructed in accordance with current seismic criteria. Tank No. 5 and No. 6 will be analyzed for seismic performance and retrofitted if necessary at a future time.

PRESSURE REDUCING VALVE STATIONS

The District currently has 12 PRV stations within its distribution system. PRV stations are located at the boundary between pressure zones, supplying water from the higher to the lower gradient pressure zone at the appropriate (reduced) pressure. Each PRV station contains large and small pressure reducing valves installed in parallel. The smaller valve is typically set to maintain a higher downstream pressure gradient than the larger valve and therefore opens first, supplying lower flows to the lower zone. The larger valve is set to maintain a lower downstream gradient and opens only during periods of high demand and subsequently lower pressure in the lower gradient zone.

PRV stations are set to provide either continuous supply to the lower gradient zone or to open only during emergency situations such as a fire flow, when the pressure drops significantly. Of the 12 PRV stations within the District, only PRV No. 8 is normally closed and utilized only for emergency purposes. All other PRV stations provide continuous supply.

In 1997 existing PRV No. 3, No. 4, No. 6, and No. 7 were removed and replaced with prefabricated PRV stations. PRV No. 11 was also installed at this time. PRV No. 9 was scheduled to be replaced by PRV No. 10 but was refurbished instead. Therefore, there is no PRV No. 10. A developer installed PRV No. 12 in 2000 as part of a Developer's Extension Agreement and PRV No. 14 was installed in 2008 to serve pressure zone 290. There is also no PRV No. 13. **Table 5.5**, Pressure Reduction Valve Stations, summarizes existing pressure reducing valve station data for the District's distribution system.

Table 5.5 Pressure Reducing Valve Stations

PRV No.	Location	Elevation (feet)	Pressure Zone Supply (HGL)	Pressure Zone Served (HGL)	Downstream Pressure Setting		Valve Size		Design Max. Flow (gpm)
					Small (psi)	Large (psi)	Small (inches)	Large (inches)	
1	Carr Road and 103rd Place SE	302	627	440 (N)	75	70	2	8	3,900
2	SE 174th Street and 103rd Avenue SE	314	627	440 (N)	78	73	2	6	2,250
3	SE 192nd Street and 100th Avenue SE	334	627	440 (M)	70	65	2	6	2,250
4	S 200th Street and 98th Avenue S	300	627	440 (S)	55	50	2	6	2,250
5	S 200th Street and 92nd Avenue S	160	440 (S)	290	65	60	2	6	2,250
6	97th Place S and S 212th Street	304	627	440 (S)	65	57	2	6	2,250
7	S 216th Street and 100th Avenue S	342	627	440 (S)	60	55	2	6	2,250
8	SE 183rd Street and 145th Avenue SE	453	710	627	-	-	-	6	2,500
9	SE 202nd Street and 95th Place S	234	627	440 (S)	75	70	2	8	3,900
11	10056 SE 224th Street	367	627	440 (S)	65	60	2	6	2,250
12	SE 220th Street and 102nd Place SE	382	627	440 (S)	60	55	2	6	2,250
14	SE 204th Street and 92nd Avenue SE	150	627	440 (S)	65	60	3	8	3,900

BOOSTER PUMP STATIONS

The District currently operates five booster pump stations within the water system. Three of these stations, Pump Stations No. 1, No. 2, and No. 6 pump water directly from City of Seattle pipelines into the system. Pump Station No. 4 pumps from the SPU Soos Reservoirs and the District's Reservoir No. 1 into both the 627 and 710 zones. The other pump station, Pump Station No. 5, maintains the pressure within the 670 zone with variable speed pumps due to the lack of storage within the 670 zone.

Operational information for each of the District's pump stations is shown in **Table 5.6**, Existing Pump Stations. The capacities shown on this table are shown for the individual pumps and are nominal values. The actual values depend on the condition and age of the pump. Total station capacity is highly variable and dependent on a number of factors, primarily the system head or pressure into which pumping occurs.

The total capacities of Pump Stations No. 1 and No. 6 are identical to that of the larger pumps due to the fact the pressures the larger pumps operate at exceed the head capacities of the smaller pumps. For Pump Station No. 2, the pump station capacity is greater than the capacity of a single pump, but not as great as the combined nominal capacities of both pumps.

Table 5.6 Existing Pump Stations

Pump Station No.	Pump No.	Nominal Capacity			Construction Date	Location
		Gpm	Head (feet)	H.P.		
1	1 2 3	400 400 1,200	150 150 200	20 20 75	1955	SE 160th Street and 114th Avenue SE
Total		1,200	200	75		
2[1]	1 2 3	3,000 3,000 3,000	160 160 160	200 200 200	1961 (Original) 2011 (Replaced)	SE 164th Street and 132nd Avenue SE
Total		5,000	215	600		
4	1 2	1,000 2,500	180 115	75 125	1982	SE 192nd Street and 148th Avenue SE
Total		3,500	-	200		
5[1]	1 2 3	500 500 2,000	75 75 110	15 15 75	1990	SE 230th Street and 134th Avenue SE
Total		2,000	110	75		
6	1 2	500 1,200	100 130	15 50	1999	SE Petrovitsky Road and 147th Avenue SE
Total		1,200	130	50		

[1]Nominal capacity totals for Pump Station No. 2 reflects the total flow rate of the station for the increased head when multiple pumps are operating. Only Pump Stations No. 2 and No. 5 operate multiple pumps simultaneously. For Pump Station No. 5, pumps 1 and 2 can operate simultaneously, but only the maximum capacity is shown in the total. Pumps in Pump Station No. 4 operate simultaneously but pump to separate zones.

Pump Station No. 4 operates differently from the other pump stations in the District. Pump No. 1, within Pump Station No. 4, pumps water from the 627 zone to the 710 zone, but pump No. 2 essentially pumps water from the 627 zone back to the 627 zone. This pump is only operated when there are large demands within the system and serves to maintain the 627 foot gradient for the duration of the large demands.

Because the 670 zone does not contain storage, Pump Station No. 5 is equipped with two variable speed drive pumps. These pumps maintain pressure within the 670 zone. As a result, their capacities vary as demand changes. The third pump at this station provides 2,000 gpm fire flow to the 670 zone.

Pump Station No. 5 has a permanent emergency generator on-site. Pump Station No. 2, No. 4 and No. 6 are configured for connection to portable power generators in the event of a power outage. Pump Station No. 1 is not configured for emergency power supply at this time.

INTERTIES

The District is supplied solely through four interties with SPU. In addition to these four interties, the District currently owns and operates two emergency interties, one with King County Water District No. 111 (KCWD111), and one with the City of Kent.

The four interties with SPU's water system are all primary sources of supply for the District's water system. The majority of the District's supply comes through Intertie No. 4, but all of SPU's interties are currently in use. Information about these interties is summarized below in **Table 5.7**, Interties with Adjacent Water Districts. Intertie No. 6 supplies only the 710 zone under normal operating conditions. The remaining three interties supply all of the pressure zones within the District's Retail Water Service Area, including the 710 zone.

Table 5.7 Interties with Adjacent Water Districts

	Intertie Location	Purpose	Service Area	Date of First Use	Physical Capacity (gpm)
Intertie No. 1	SE 160th Street and 114th Avenue SE	Primary Supply	Entire District	1955	1,250[1]
Intertie No. 2	SE 164th Street and 132nd Avenue SE	Primary Supply	Entire District	1961	5,000[1]
Intertie No. 4	SE 192nd Street and 148th Avenue SE	Primary Supply	Entire District	1967	3,000[1]
Intertie No. 6	SE Petrovitsky Road and 147th Avenue SE	Primary Supply	710 Pressure Zone	1999	1,500[1]
KCWD111 Intertie	SE 240th Street and 135th Avenue SE	Emergency Supply	KCWD111 Water System	1995[2]	500
City of Kent Intertie	SE 228th Place and 113th Avenue SE	Emergency Supply	City of Kent Water System	2001[2]	800

[1]Maximum flow rate up to which the minimum hydraulic gradient applies, as defined by the 2001 Full Requirements Contract between SPU and the District.
[2]Date of Construction (Interties have never been activated).

KCWD111 and City of Kent interties have not been activated since their construction. Both interties are configured to provide water in the event of an emergency within the respective water system connected to the District. Upon such an emergency, the affected water system would request that their intertie be activated at which time the District, via manual valve operation, would open the intertie.

Both interties are one-way systems designed for the District to provide emergency water to the connected water system. Pressure zone gradients and the currently installed intertie components prohibit the District from receiving water from the connected water system. The KCWD111 intertie is designed to provide a nominal flow of 500 gpm, and the City of Kent intertie is designed to provide a nominal flow of 800 gpm.

The intertie agreements for the KCWD111 intertie and the City of Kent intertie can be found in **Appendix D**. The City of Seattle interties are described in the 2001 Full Requirements Contract between SPU and the District and are also located in **Appendix D**.

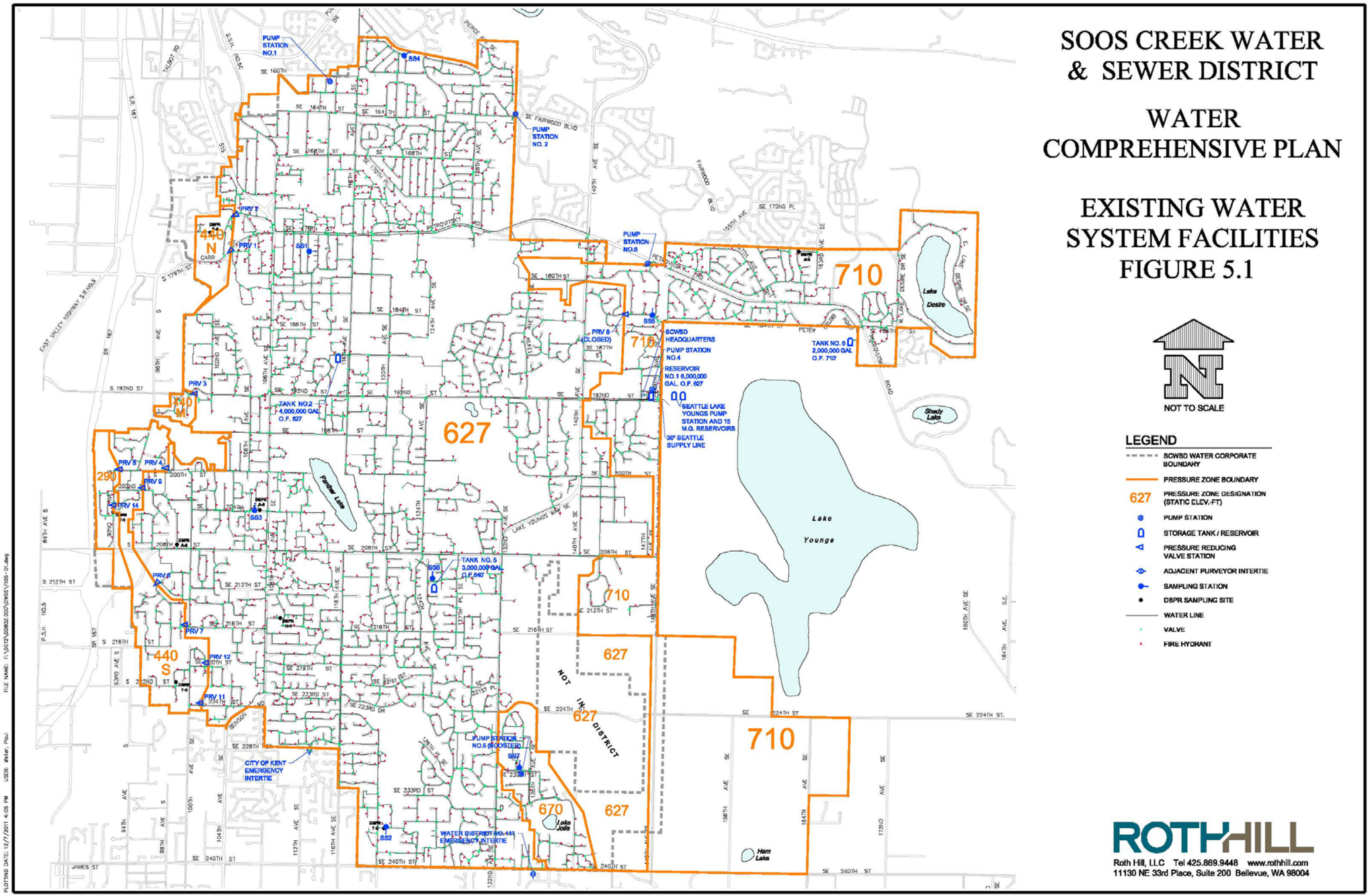
FIRE PROTECTION

Fire Districts No. 37 and No. 40 serve the area within the King County portion of the District. The cities of Renton and Kent have jurisdiction over areas as described in Chapter 2.

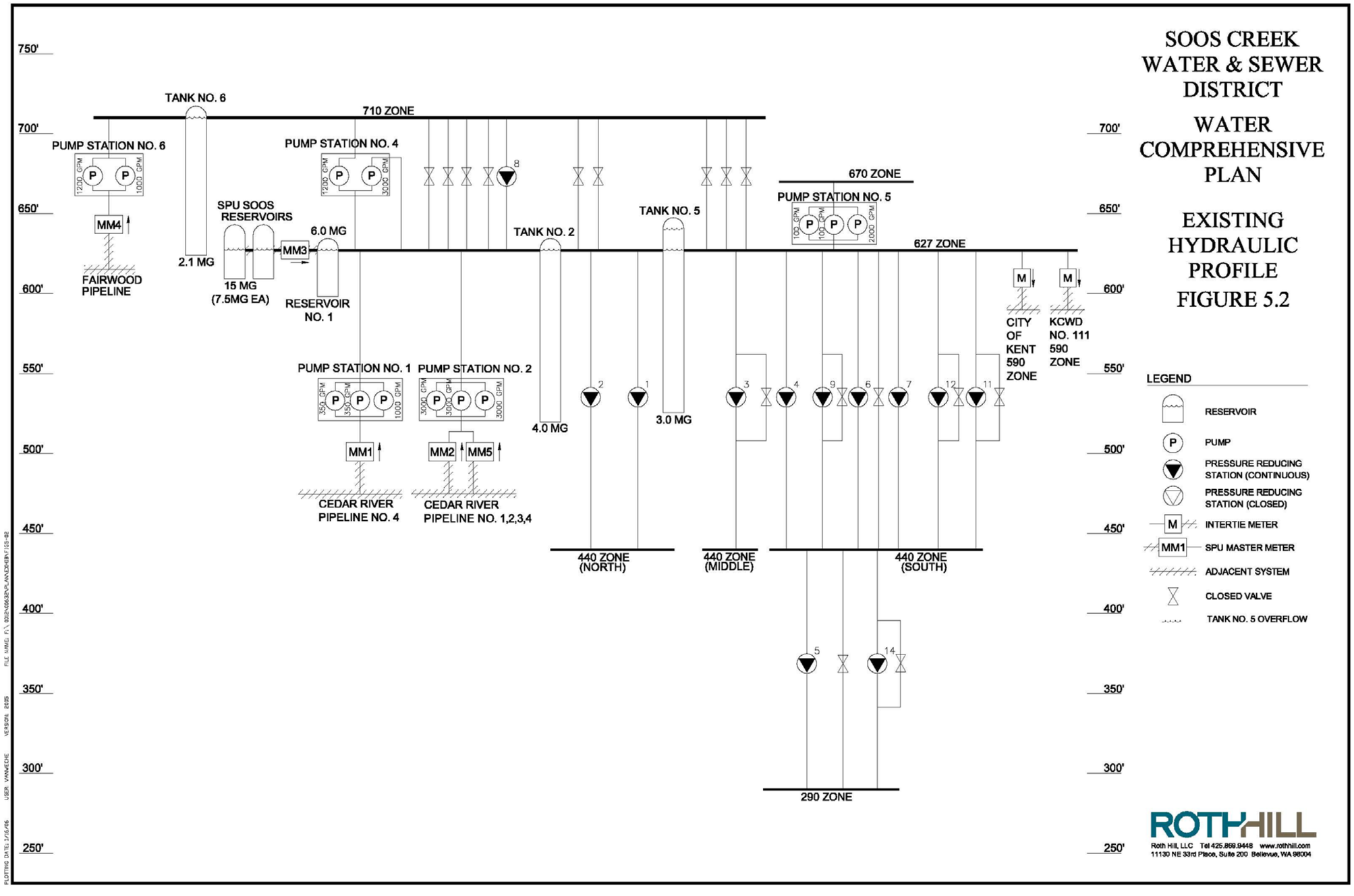
The District standards for fire protection are outlined in Chapter 3. These standards include criteria for fire flow rates, fire flow duration and water system improvements to meet fire flow requirements.

All new developments must meet fire flow requirements established by the Fire Marshal and local land use agency. These requirements are 1,000 gpm for two hours for single-family detached dwellings in residential zones and 3,000 gpm for three hours for non single-family residential and commercially zoned areas. In addition to these requirements, the governing land use agency's Fire Marshal has the authority to establish building-specific fire flow requirements based on building use and materials of construction. Existing developments within the District may not meet current fire flow criteria. In these cases, the District will plan for the water system improvements that are necessary to meet criteria in the District's Capital Facility Plan.

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SOOS CREEK WATER
& SEWER DISTRICT
WATER
COMPREHENSIVE PLAN
EXISTING WATER
SYSTEM FACILITIES
FIGURE 5.1
NOT TO SCALE
LEGEND
SCWSD WATER CORPORATE BOUNDARY
PRESSURE ZONE BOUNDARY
627 PRESSURE ZONE DESIGNATION (STATIC ELEV.-FT)
PUMP STATION
STORAGE TANK / RESERVOIR
PRESSURE REDUCING VALVE STATION
ADJACENT PURVEYOR INTERTIE
SAMPLING STATION
DBPR SAMPLING SITE
WATER LINE
VALVE
FIRE HYDRANT
PUMP STATION NO.1
PUMP STATION NO. 2
PUMP STATION NO.5
SCWSD HEADQUARTERS PUMP STATION NO.4
RESERVOIR NO.1 6,000,000 GAL. O.F. 627
TANK NO.6 2,000,000 GAL O.F. 710'
TANK NO.2 4,000,000 GAL O.F. 627
SEATTLE LAKE YOUNGS PUMP STATION AND 15 M.G. RESERVOIRS
30" SEATTLE SUPPLY LINE
TANK NO. 5 3,000,000 GAL O.F. 647
PUMP STATION NO.6 (BOOSTER)
CITY OF KENT EMERGENCY INTERTIE
WATER DISTRICT NO. 111 EMERGENCY INTERTIE
PRV 1
PRV 2
PRV 3
PRV 4
PRV 5
PRV 6
PRV 7
PRV 8 (CLOSED)
PRV 11
PRV 12
PRV 14
440 N
440 S
710
710 M1
290
627
710
710
627
627
670
NOT IN DISTRICT
Lake Desire
Shady Lake
Lake Youngs
Panther Lake
Lake Jolo
Horn Lake
ROTHHILL
Roth Hill, LLC Tel 425.869.9448 www.rothhill.com
11130 NE 33rd Place, Suite 200 Bellevue, WA 98004

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SOOS CREEK WATER & SEWER DISTRICT
WATER COMPREHENSIVE PLAN
EXISTING HYDRAULIC PROFILE
FIGURE 5.2
750'
700'
650'
600'
550'
500'
450'
400'
350'
300'
250'
TANK NO. 6
710 ZONE
PUMP STATION NO. 6
1200 GPM
1000 GPM
MM4
FAIRWOOD PIPELINE
2.1 MG
SPU SOOS RESERVOIRS
15 MG (7.5MG EA)
MM3
6.0 MG
RESERVOIR NO. 1
PUMP STATION NO. 4
1200 GPM
3000 GPM
8
TANK NO. 2
4.0 MG
TANK NO. 5
3.0 MG
670 ZONE
PUMP STATION NO. 5
100 GPM
100 GPM
2000 GPM
627 ZONE
M
CITY OF KENT 590 ZONE
KCWD NO. 111 590 ZONE
PUMP STATION NO. 1
350 GPM
350 GPM
1000 GPM
PUMP STATION NO. 2
3000 GPM
3000 GPM
3000 GPM
MM1
MM2
MM5
CEDAR RIVER PIPELINE NO. 4
CEDAR RIVER PIPELINE NO. 1,2,3,4
2
1
3
4
9
6
7
12
11
440 ZONE (NORTH)
440 ZONE (MIDDLE)
440 ZONE (SOUTH)
5
14
290 ZONE
LEGEND
RESERVOIR
PUMP
PRESSURE REDUCING STATION (CONTINUOUS)
PRESSURE REDUCING STATION (CLOSED)
M
INTERTIE METER
MM1
SPU MASTER METER
ADJACENT SYSTEM
CLOSED VALVE
TANK NO. 5 OVERFLOW
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11130 NE 33rd Place, Suite 200 Bellevue, WA 98004
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VERSION: 2005
FILE NAME: F:\...\SSCHS&SSCPLANEXHIBIT15-02

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CHAPTER 6

WATER SYSTEM ANALYSIS

HYDRAULIC ANALYSIS

An integral part of the comprehensive planning process is a thorough hydraulic analysis of the water system facilities. The purpose of the analysis is to evaluate the ability of the system transmission and distribution piping, pump stations, storage facilities, PRVs and other components to supply water to the District's customers. Results of the analysis identify deficiencies in meeting DOH and District standards, as well as improvements required to resolve deficiencies. The scope of the hydraulic analysis is as follows:

- Evaluate 6-year (2017) system performance compared to DOH and District criteria and identify deficiencies.
- Compare various improvement alternatives.
- Identify selected improvements to resolve 6-year deficiencies.
- Document any special operational requirements.
- Repeat process for 20-year and "ultimate" (build-out) scenarios.

The hydraulic analysis resulted in the identification of many of the projects in the Capital Facility Plan, identified in the Chapter 7.

COMPUTER MODEL

A computer model of the District's distribution system is used to perform analysis on an on-going basis and has been updated to perform the Comprehensive Plan hydraulic analysis. The model was developed using H_2OMap Water GIS version 9.0, by Innovyze. H_2OMap works integrally with GIS and performs simultaneous pressure and flow calculations throughout the distribution system piping under varying demand conditions and operational scenarios. It evaluates the interaction between system demand (including potential fire flows), supply, storage, pumping, and distribution piping. Steady state (static) analysis can be performed to identify areas of low or high pressure and excessive velocities and/or pressure loss in pipes. Extended period simulations can also be performed to evaluate operational characteristics, such as the relationship between pump station operations and reservoir levels over a 24-hour (diurnal) period or for longer durations. The integration between H_2OMap and GIS allows for a graphical representation and interface with the water distribution system and analysis results data. Pipes can be color coded on the computer monitor to identify

physical characteristics such as diameter or Hazen-Williams "C" values and also to identify analysis results such as pipe flow rates, velocities, and head losses. Node data, such as elevation or pressure, can similarly be graphically represented. The paragraphs below summarize the physical and operational characteristics.

Pipe Data

The main physical pipe parameters include diameter, length, Hazen Williams "C" value, material and status, (i.e., open or closed). Pipe materials and "C" values typically are closely related. Simulation of closed valves is controlled in the model by closing pipes. Dead-end lines with fire hydrant connections are typically simulated as part of this analysis to verify fire flow adequacy. Short lengths of dead-end lines, without fire hydrants, are not always included. All looped portions of system piping are included in the model.

Node Data

Physical data for nodes in the model include elevation, demand (average day, maximum day, and peak hour) and the pressure zone the node resides in. Ground elevation and demand data are input to the model as the system expands. Limited elevation verification was performed prior to this hydraulic analysis.

Pump Station Data

Pump stations with multiple pumps can be represented in the model. Pumps can be assigned pump curves or can be defined as constant supply nodes. If pump curves are used, pump status can be automatically controlled by operational conditions such as reservoir level or node pressure. Supply nodes can be utilized to input nominal flow rates of water supplied to the system if desirable, or if pump curves are unavailable. Actual pump curves are utilized for all pump stations in the hydraulic model of the Soos Creek water distribution system.

Pressure Reducing Valve (PRV) Data

Downstream pressure setting, headloss through valve, elevation, and valve diameter are included in the model for District PRV stations. PRV stations usually consist of a smaller, normal duty valve and a larger valve set to open at a lower pressure. The large valve typically only opens to supply peak or emergency flows. For this analysis, PRVs are simulated by setting the larger valve at the normal pressure setting and ignoring the smaller valve.

Reservoir and Tank Data

Reservoir and tank data in the model include minimum, maximum, and initial water elevations, in addition to physical tank geometry such as shape and dimensions to accurately define storage volumes. In the model, reservoirs are generally assumed to have infinite supply at a specified hydraulic grade line. Tanks generally are defined with finite dimensions and a fluctuating water level.

Seattle Public Utility Intertie Data

The District receives water from interties with Seattle Public Utilities at five different locations. These interties are represented in the model as fixed-head reservoirs, with an elevation set at the hydraulic grade line (HGL0 of the intertie. Although the HGL typically fluctuates at each intertie, they are conservatively set in model based on the minimum allowed per the agreement between the District and SPU.

Source Data

The District's hydraulic model has been updated at regular intervals since its creation. Updates are accomplished by manually inputting construction record drawing data into the model. System demands are updated at the same time by estimating demands associated with developments served by the new construction. For the Comprehensive Plan model used for this analysis, updated system demands were input to the model based on planning data and related system demands previously presented in this document. Zoning changes are reviewed, and a list of top water users in the District was reviewed, and larger demands in the model are allocated based on this information. The previous model system demands were globally factored to match the 6-year, 20-year, and Ultimate Average Day demand (ADD) scenarios. Peak Hour demands (PHD) were calculated using Equation 5-1 in the DOH Water System Design Manual (December 2009).

Fire flow requirements are assigned in the model based on three separate categories:

- Single-family residential: 1,000 gallons per minute (gpm) for two hours.
- Multifamily residential and commercial/industrial: 3,000 gpm for three hours.
- Schools: 2,000 to 3,000 gpm for two to three hours (often 2,500 gpm for two hours).

Fire flows were assigned to nodes in the model for the first two categories based on zoning. Fire flows were assigned to schools based on fire hydrant locations at each school in the service area.

MODEL CALIBRATION

Verification of the accuracy of the computer model is an essential step in the hydraulic analysis

Verification of the accuracy of the computer model is an essential step in the hydraulic analysis process. The DOH Water System Design Manual (December 2009) stipulates in Section 8.2.2 that "where values for pipe roughness are uncertain and/or the location and operation of valves or pipes in a system are not clear, some adjustments to the hydraulic model may be necessary."

This model has been updated at regular intervals, good overall information is available about pipe materials and location and operation of valves. The model is regularly used as a tool for certificates of water availability and fire flow analysis. In order to verify that the existing hydraulic model is accurate, district staff and engineering developed a calibration process and conducted hydrant flow tests at locations throughout the District. Hydrant flow tests were conducted at twelve locations between April 24 and June 10, 2013. The locations were selected so as to establish appropriate Hazen-Williams "C" values for each of the different types of pipe material within the District. The results were used to check the appropriate variables in the model to verify or update the model-predicted performance of the system to closely replicate the measured system performance. The majority of the results indicated model and field-measured results within ten percent of each other. Other results were typically within 2 psi (model versus field), and assumed to be within typical tolerances of the testing.

Typical "C" values of 130 are assigned for ductile iron pipe material and 120 for asbestos cement. These two pipe materials account for about 99 percent of the District's piping. The Civil Engineering Reference Manual (Lindberg, 5th Edition) lists design "C" values of 140 for ductile iron and asbestos cement. The cast iron piping in the distribution system is believed to have a mortar lining, which tends to significantly slow the degradation of "C" values over time. A small amount of piping material is unknown and was assigned a lower "C" value.

"C" values are assigned to the model as follows:

Ductile Iron: *130*

Asbestos Cement: *120*

Cast Iron *100-110*

PVC: *140*

These "C" values are assumed to be valid for future conditions scenarios as well, some increase in roughness (decrease in "C" value) may occur but it is not expected to be significant over the planning period).

Tabular data for the flow tests and calibration are located in Appendix N.

EVALUATION OF DISTRIBUTION SYSTEM

After updating model system demands and verifying "C" values and model settings, the model is used to perform a comprehensive evaluation of the distribution system. The evaluation consists of performing a series of model simulations, under varying system demands and operational parameters, to determine compliance with criteria set forth in Chapter 3. Operational parameters that are manipulated include initial tank levels, pump status and settings, status of valves, and various piping configurations as necessary. System minimum and maximum pressures, fire flow residual pressures, and maximum pipe velocities are all analyzed. Where model results identify deficiencies in meeting

the specified criteria, alternative system improvements were identified, input to the model, and analyzed to verify compliance with the criteria. A generalized discussion of the analysis for each scenario, as well as identified deficiencies and improvements is discussed herein. Recommended improvements are included in the Capital Facility Plan in Chapter 7.

Six- Year Scenario Analysis

The six-year conditions analysis involves utilization of the existing distribution system configuration and six-year ADD, MDD, and PHD scenarios. Reservoir settings for this scenario are determined based on six-year equalizing, fire flow, and standby storage volume requirements (discussed later in this chapter). Pump status is based on standard District operational procedures and modified to comply with DOH requirements for emergency operations.

Minimum Pressure Analysis

Minimum system pressures in each pressure zone were determined for PHD conditions with reservoir levels set at the bottom of their respective equalizing levels. No distribution system pressures below 30 psi occurred under these conditions.

Transmission mains having no water service connections are required to maintain at least 5 psi during non-emergency demand conditions, except when directly adjacent to storage reservoirs. Pressures in transmission mains are above 5 psi throughout the system, except adjacent to Reservoir No. 1, and therefore meet the minimum pressure criteria.

Minimum water service pressures must also be greater than 30 psi during PHD conditions, with storage levels set at the bottom of the standby storage with the largest source of supply out of service. Model results indicate that all service pressures meet this criterion.

Maximum Pressure Analysis

Maximum system pressures were analyzed by simulating a system demand equal to 20 percent of ADD in the model and with the system's reservoirs full. This relatively small system demand minimizes dynamic losses and maximizes the hydraulic gradient and therefore system pressures.

The majority of system pressures in excess of 100 psi are located in the western portion of the system, where the elevation in the 627 zone starts to drop towards the Green River Valley. Relatively lower ground elevations in the depression generally running north and south in the 627 zone also result in a number of areas exceeding 100 psi, particularly to the north. Additionally, there are scattered locations in the 710 zone and 440 zone with pressures exceeding 100 psi. In a few locations at the westernmost end of the 627 zone, zone pressures exceed 140 psi. In Main Avenue South at South 34th Street, the pressure exceeds 160 psi. This is the highest pressure in the entire District water service area according to model results. The criteria generally require that maximum static pressures not exceed 100 psi. However, higher pressures are allowed, recognizing the complexity involved in restricting system pressures to less than 100 psi. The District recommends that individual PRVs be

installed on water service lines for new construction where pressures exceed 80 psi, in accordance with the Uniform Plumbing Code (UPC).

Fire Flow Analysis

The ability of the distribution system to provide required fire flow rates while maintaining 20 psi residual pressure and not exceeding velocity criteria is a significant component in determining system pipe sizes and configurations. Three separate system-wide fire flow analyses were performed as part of this hydraulic analysis. Individual 1,000 gpm fire flows were simulated where nodes are located in single-family zoned areas. For commercial and multifamily zoned areas, 3,000 gpm simulations were performed. The third fire flow category is schools, requiring a 2,000 to 3,000 gpm flow rate.

Fire flow analyses with different flow rate requirements are simulated separately in the model since they require differing reservoir level settings. All fire flow analyses are simulated in conjunction with the MDD scenario, per DOH requirements. The model performs fire flow analyses by applying the specified flow individually in turn to each node identified for the analysis. For 3,000 gpm flow rates, if the simulation results do not meet residual pressure criteria the fire flows are manually re-simulated, assigning 1,000 gpm each to three adjacent node/fire hydrant locations. This is because the model cannot automatically split the fire flow rate between multiple fire hydrants as part of its analysis routine. The residual pressure is checked, per DOH criteria, during manual simulation of fire flow rates. The process of checking fire flow pipe velocities is expedited, however, by knowing that certain pipe configurations convey adequate fire flow rates with acceptable pipe velocities. For example, a 6-inch dead-end line will not convey a 1,000 gpm fire flow rate without violating the pipe velocity criteria, but an 8-inch dead-end line will. More complicated looped water systems requiring a 3,000 gpm fire flow rate may require more scrutiny. However, only limited areas within the distribution system require a 3,000 gpm fire flow rate as compared to the 1,000 gpm fire flow rate.

Alternative improvements were considered as applicable for locations not meeting fire flow criteria and the most feasible alternate was then selected. Often there is only one option available to resolve the deficiency, namely replacing the existing pipe with a larger diameter pipe.

Analysis results indicate that generally the system gradient and capability to convey fire flow rates is strong, typically resulting in adequate residual pressures. The majority of required improvements are due to excessive pipe velocities, particularly for 3,000 gpm fire flow rates. In some instances, moderately excessive pipe velocities resulting from larger fire flow rates were allowed for short lengths of piping, consistent with DOH criteria. The District generally attempts to limit velocities during any fire flow events to 8 feet per second when possible, but under certain conditions may allow velocities up to 10 feet per second in localized areas during fire flow events.

Maximum Velocity Analysis

A model simulation has been performed during PHD conditions, with all pump stations operating, to identify any pipe velocities exceeding the specified criteria. No excessive system pipe velocities were identified under these conditions, aside from pump station piping which is considered to be acceptable. Only the previously discussed fire flow conditions produced excessive pipe velocities requiring water system improvements.

Twenty-year Scenario Analysis

The 20-year analysis involves modification of the existing conditions model to simulate 20-year ADD, MDD, and PHD scenarios. Reservoir settings for this scenario are based on 20-year equalizing, fire flow and standby storage volume requirements (discussed later in this chapter). Pump status is unchanged from the existing conditions analysis.

Minimum Pressure Analysis

Minimum system pressures were examined during PHD conditions, with storage levels set at the bottom of the standby storage with the largest source of supply out of service. Consistent with the six-year scenario analysis, model results indicate that all pressures exceed the 20 psi criterion when equalizing storage is depleted, and also exceed the 30 psi criterion when standby storage is depleted.

Maximum Pressure Analysis

Only negligible changes in maximum system pressures were identified, as compared to the six-year analysis. No new high pressure areas were identified and no existing high pressure areas demonstrated significant pressure reductions. A consistent and very minor (approximately 0.10 psi) reduction in pressures was identified and is believed to be related to the increase in system demands over the six-year scenarios.

Fire Flow Analysis

No improvements other than those identified for the six-year analysis are required for any of the fire flow scenarios.

Maximum Velocity Analysis

Model results indicate that the outlet pipe from Tank No. 5 has a 9.1 fps pipe velocity during PHD conditions. This deficiency was not identified in the 6-year scenario.

Ultimate Scenario Analysis

The ultimate (build-out conditions) analysis involves modification of the existing conditions model to simulate ultimate-year ADD, MDD, and PHD scenarios. Pump status is unchanged from the existing conditions analysis. No fire flow analysis was performed for ultimate conditions.

Capacity Analysis

A capacity analysis of the water system was performed using MDD and PHD demands to determine if there are any long-range system improvements that may be necessary at ultimate build out of the the District water service area. Results of the analysis did not indicate any deficiencies in the water system that were not already identified in the 6-year or 20-year scenarios.

This capacity analysis is based on current assumptions of long-term growth in the area, and should be reviewed whenever new areas of growth are identified or zoning changes significantly.

STORAGE ANALYSIS

The District must provide sufficient storage in its water system to ensure proper customer service. The volume of the storage required is comprised of four individual components: operational volume, equalizing volume, fire protection volume, and standby storage volume. These storage components are defined in Chapter 3. In addition, some storage facilities may contain a fifth, unusable component known as dead storage volume.

The volume available from each storage facility is defined as the total existing storage, less any dead storage that may result from the configuration of the reservoir. Dead storage is an inherent property of each reservoir and is determined by the configuration and elevation of a reservoir. Generally, any volume of water that cannot be supplied from the reservoir by means of gravity flow at a pressure above the District's minimum pressure criteria is dead storage. For example, because of the configuration of the District's system, any storage located below the bottom elevation (598 feet) of Reservoir No. 1 is considered dead storage. This is because drawing the hydraulic gradient down below the bottom of Reservoir No. 1 would introduce a vacuum into the distribution piping near Reservoir No. 1. If the bottom of Reservoir No. 1 were lower, additional standby volume would be available due to the configuration of Tank No. 2 and No. 5. The storage analysis indicates that adequate standby storage is available for all planning scenarios. The Reservoir No. 1 base elevation does not affect equalizing or fire flow storage.

Total storage requirements are determined by summing the volumes necessary to meet the criteria for each of the individual components. Storage requirements have been determined individually for the 710 zone versus the 627, 670, 440, and 290 zones. Calculated storage requirements were then compared to the volume available from existing storage facilities to verify adequacy of storage volumes or identify deficiencies.

These calculations are based on the assumption that all usable storage volume in zones 627, 290, 440, and 670 is available to all portions of the distribution system within these zones. The 710 zone analysis was performed assuming that Tank No. 6 was the only storage available for the zone. It was assumed that Reservoir No. 1, Tank No. 2 and Tank No. 5 did not contribute storage to the 710 zone. The peak hour demand (PHD) factor used for this analysis was calculated using Equation 5-1 in the DOH 2009 Water System Design Manual.

Table 6-1 summarizes the storage analysis for the District's existing storage facilities and identifies the projected storage surpluses and deficiencies by pressure zone for 20 years. There is sufficient existing storage to meet the storage criteria requirements for the next 20 years.

Table 6.1 Existing and Future Storage Requirements

Pressure Zone	Projected ERU's	Fire flow (gal)	Standby (gal)	Equal-izing (gal)	Opera-tional (gal)	Total required (mg)	Total usable existing (mg)	Storage surplus (deficit)
Storage Analysis – (Existing)								
710	2,709	540,000	0	0	288,780	0.83	0.87	0.04
627 290 440 670	20,430	540,000	4,086,000	34,600	1,271,700	5.93	8.2	2.27
Storage Analysis – (6-year)								
710	2,916	540,000	0	0	288,780	0.83	0.87	0.04
627 290 440 670	21,993	540,000	4,398,600	142,500	1,271,700	6.35	8.2	1.85
Storage Analysis – (20-year)								
710	3,396	540,000	0	0	288,780	0.83	0.87	0.04
627 290 440 670	25,620	540,000	5,124,000	392,700	1,271,700	7.33	8.2	0.87

710 Zone

Tank No. 6 provides storage for the 710 zone. The nominal capacity of Tank No. 6 is 2.07 MG, but due to the configuration of the storage facility only 0.87 MG of this storage may be used without lowering residual pressures in the 710 zone below the District's pressure criteria for fire flows of 3,000 gpm. However, because the 710 zone serves a relatively small portion of the District and because two strong supply interties supply the 710 zone, under the District's criteria neither a standby volume nor an equalizing volume is required for the 710 zone. Though the 710 zone currently has sufficient storage to meet future storage demands for the next 20 years, constructing a reservoir in the south portion of the 710 zone in the future may benefit the hydraulic grade line of the system.

627, 290, 440, 670 Zones

Combined storage consisting of Reservoir No. 1 and Tank No. 2 and No. 5 provide storage for the 627, 290, 440, and 670 zones. This storage serves the entire District except for the 710 zone. Nominally, these storage facilities provide a combined storage of 13.00 MG. However, because of the configuration of the storage facilities, only 8.2 MG of storage is usable. This storage is adequate to meet the District's storage criteria requirements for the next 20 years.

SUPPLY ANALYSIS

Based on the demand projections from Chapter 4, the current maximum daily demand is 7,410 gpm with a projected MDD of 9,300 gpm by 2031. The physical capacity of the existing interties between SPU and the District is 10,750 GPM. Individual maximum flow rates for each of the four interties is listed in Table 5-7. However, the appendix of the current contract between Seattle Public Utilities and the District only guarantees flow from the four locations for a total of 7,000 gpm at specific minimum hydraulic grade lines. Increased water supply may be guaranteed in the future if SPU and the District agree to modify the appendix to the contract with Seattle Public Utilities to guarantee a flow rate that meets the projected MDD at the specific minimum hydraulic grade lines. This is discussed further in Chapter 7. Pump station No. 2 has recently been upgraded, and provides the physical capability to draw 5,000 gpm, which, in conjunction with other supply, would meet the 9,300 gpm demand.Hydraulic Analysis for Future Wholesale Water

A separate hydraulic analysis was performed on the water distribution system for the 2011 Water Comprehensive Plan, ultimately to determine piping, pump station and storage improvements required to convey water from the Seattle Public Utilities supply to existing and proposed interties. This process is also known as wheeling water. The following generalized criteria were established as goals:

- Identify piping improvements necessary to complete a one-mile grid of 12-inch diameter piping.
- Wherever practicable, replace asbestos cement piping where piping improvements are identified.
- Supply 20-year scenario MDD.
- Supply proposed intertie demands.

In addition to system MDD, the following intertie demands were assumed for this analysis:

- Two mgd to King County Water District 111
- Three and one-half mgd to the City of Kent
- Two mgd to Cedar River Water & Sewer District

The goals and criteria remain the same for the current analysis, so recommended improvements required to meet these goals/criteria are included in the Capital Facility Program in Chapter 7. Extensive piping improvements were identified to support the system gradient under these demand conditions, particularly in the southern portion of the system.

Improvements to Pump Station No. 4 have also been identified to supply the increased system and intertie demands and to offset the potential changes to Seattle Public Utilities operating conditions such as lowering the reservoir levels supplying the District and thereby reducing available supply via gravity flow. Pump station improvements include supplying a combination of gravity and pumped flow of 4,000 gpm via the 192nd Street corridor and 5,500 gpm of pumped flow via the proposed 148th Street corridor without intertie demands and 9,000 gpm with intertie demands.

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CHAPTER 7
CAPITAL FACILITIES PLAN

This chapter describes the improvements necessary for meeting the District's future water system needs for the next 20 years, corresponding to the period of the District's Capital Facility Plan. Emphasis has been placed on the improvements needed in the short-term through the next ten years. Planned system improvements are primarily based on the District's policies and criteria described in **Chapter 3**.

It should be noted that the specific needs of the District must be evaluated on an ongoing basis. Significant thought has gone into the analysis of improvements in order to select the most cost-effective plan of action that meets the District's future needs. However, as growth and land use patterns are likely to vary from neighborhood to neighborhood over the planning period, the size and timing of necessary projects may differ from the recommendations in this Plan. Additional facility requirements should be identified as part of ongoing facility planning efforts.

RECOMMENDED PROJECTS

The recommended improvements within this section are the facilities that focus on upgrading the existing system to meet the District's policies and criteria, as well as components that respond to projected growth. The recommended improvements also include any facilities necessary to provide the level of service required by the DOH, King County, and other agencies. All recommended projects belong to one of seven categories:

- supply and source projects,
- pressure zone projects,
- storage facility projects,
- booster pump station projects,
- intertie projects,
- general facility projects,
- or distribution and transmission projects.

Each recommended project was assigned a Priority Class of 1 through 4 based on the criteria described in Policy 9.5 of **Chapter 3.** These priority classifications were used to determine whether the project is a short-term or long-term project. Short-term projects are expected to be constructed within the next ten years, and include the six-year and ten year capital improvement projects. Other recommended projects that are not expected to be constructed during the next ten years, but are expected to be constructed during the 20-year planning period, are classified as long-term projects.

Each recommended project has been assigned an identification number and is listed in **Table 7.1** located at the end of this chapter. In addition, each project is shown in **Figure 7.1(A-K)**. For non-distribution and transmission projects, the assigned identification number identifies the project category (i.e., supply and source projects have an 'SS' designation, storage facility projects have an 'SF' designation, etc.). The identification numbers for distribution and transmission projects identify

the map grid where the project is located. For example, a pipe project identified as D3-4 can be found in **Figure 7.1(A-K)** as the pipe coded (4) in grid D3.

Table 7.1 also provides a preliminary opinion of probable cost for each recommended project based on 2011 dollars. Typically, these cost estimates are for the total cost of the project including design and construction. However, some of the larger, more complex projects require in-depth preliminary design that is beyond the scope of this Plan. For these projects, the cost estimate provided is for the preliminary design only. During the course of the preliminary design phase, a more detailed cost analysis will be conducted to estimate the final design and construction costs for these projects. The methodology used to estimate the costs in this Plan is described in further detail in the following section. A complete description of each project, including priority ranking, is included in **Appendix H**.

All projects recommended in this Plan are meant to provide an adequate water supply and improved water quality within the water service area, now and in the future. Although the timing and extent of the future needs cannot be predicted with certainty, these planned improvements should provide adequate service in accordance with recent land use policies and current zoning. The future system is schematic only, especially in areas not yet developed. Proposed facilities and water mains may change configuration as development occurs and as land use policies change. These recommended improvements are meant only as a guide to planning.

COST ESTIMATE METHODOLOGY

The planning-level cost estimates prepared as part of the Capital Facility Plan are provided for guidance in project evaluation, funding and implementation from the best available data at the time. The project cost estimates are presented in April 2011 dollars and based on the Seattle Construction Cost Index of 8745.7 from the Engineering News Record. The estimates are approximately average costs for similar types of projects, but do not take into account individual variables related to particular projects that can significantly affect costs. For example, a project in close proximity to a wetland may have an above-average cost because of costs associated with protecting and/or restoring the wetland. Likewise, a project located in a seldom used private road may have a lower than average cost because of the reduced need for traffic control. For this reason, it is recommended that "project-specific" estimates of probable cost be prepared prior to initiating any specific projects in order to include these unaccounted for variables. Additionally, capital costs estimated for the various projects listed should be adjusted to account for inflation rates applicable to the proposed design and construction schedules. As a result, final project costs will vary from the costs projected herein.

Project costs for projects within the Capital Facility Plan were estimated by:

- Researching average pipe costs from other comprehensive plans and cost estimating guides and then adjusting cost to 2011 dollars to estimate the probable base construction cost of each project. The probable base construction cost only includes construction labor and materials.

- Probable design costs include estimated planning, permitting, legal, and design costs and were generally assumed to be 15 percent of the estimated base construction cost.

- Probable construction costs included both allied construction costs and the probable base construction cost. Allied construction costs include construction observation, contract administration, and sales tax and were generally assumed to be 21 percent of the estimated

base construction cost. The allied construction costs were adjusted as needed to include project specific costs such as costs for geotechnical exploration, land acquisition, etc., if any such costs were identified as being necessary.

- Total project costs are the sum of the probable construction costs and probable design costs.

Costs for the distribution and transmission projects presented in **Table 7.1** are based upon the average constructed costs per foot from recent, similar projects. Costs per linear foot were determined for three categories of projects: new water main installation in undeveloped easements and right-of-ways; new water main installation in developed easements and right-of-ways; and replacement of existing water main. The project costs listed are planning-level estimates of average project costs for similar types of water main improvements, generally assumed to be within existing standard roadway paved areas. Individual projects may deviate significantly from the averages presented for non-standard conditions.

Although several of the identified projects listed are short lengths of water main, the increased costs per foot for installing very small main projects were not considered. To avoid paying large costs per foot for many of the smaller projects identified, two or more projects could be combined, at the District's discretion, to create larger and more continuous projects.

SUPPLY AND SOURCE PROJECTS

SPU Flow Modification (SS-1)

Based on the demand projections from **Chapter 4**, the current maximum daily demand is 10.67 mgd, the equivalent of 7,410 gpm. By 2030, the projected MDD will be 13.39 mgd, or 9,300 gpm. However, the current appendix to the contract between Seattle Public Utilities and the District only guarantees flow from four locations for a total of 7,000 gpm at specific minimum hydraulic grade lines. Seattle Public Utilities will not guarantee to provide the contracted minimum HGL at higher flow rates, but it still may be possible to draw more water through the existing connections than the guaranteed 7,000 gpm. It is recommended that the District negotiate with Seattle Public Utilities to modify the appendix to the contract with Seattle Public Utilities to guarantee a flow rate that meets the projected MDD at the specific minimum hydraulic grade lines. In addition to modifying the appendix to the contract, system improvements may be necessary to accommodate the increased flow from existing supply points. The cost estimate for this project includes associated legal fees and administrative costs. Expenses for design or construction of any associated capital projects have not been estimated.

Pump Station No. 1 Upgrade (SS-2)

In conjunction with the Flow Modification (SS-1), it is recommended that the District replace Pump Station No. 1 to improve flow reliability and redundancy in the system. This station was installed in 1955, and needs to be replaced due to aging and liability concerns. The estimated maximum flow capacity for this station is targeted at about 1,500 gpm. This represents a relatively minor increase in pumping capacity. This project is also intended to work with the Pump Station No. 2 Capacity Upgrade, which was completed in July of 2011, to provide supply redundancy. This project would include demolition of the existing pumping facility and replacement with a new prefabricated station installed underground in a steel vault. A triplex configuration is recommended. This capacity

upgrade also includes the installation of a receptacle compatible with a portable generator currently owned by the District. This will provide a secondary power source to maintain operation of the station during a power failure. The costs estimated for this project include the preliminary design study, final design and construction. The preliminary design study is assumed to include preliminary design engineering, associated hydraulic engineering, and preliminary electrical engineering design.

The upgraded station capacity will also require upsizing pipes in the vicinity of Pump Station No. 1. These upgrades are included with the distribution and transmission projects and are shown on **Figure 7.1(A)**.

Seattle Supply Line Upgrade (SS-3)

The bulk of the existing flow into the District's system is through a gravity connection between SPU's Soos Reservoirs and the District's Reservoir No. 1. Along this gravity connection is approximately 50 feet of 12-inch pipe which limits the amount of flow that can be conveyed through the connection. In 1997, improvements to eliminate this bottleneck were identified in a preliminary design but not constructed. These improvements included installation of a new meter vault, check valve vault and approximately 185 feet of 24-inch water main. However, before these improvements are constructed, a study should be conducted to verify that the improvements proposed in 1997 are the optimum solution due to changes in the current system configuration and updated demands. The cost for this study is included in the estimated cost for this project, which also includes the cost of finalizing design and construction of the improvements proposed in 1997 preliminary design.

Seattle Supply Pump Station Project (SS-4)

It is anticipated that a pump station project will be required within the next 20 years in the vicinity of the gravity connection between SPU's Soos Reservoirs and the District's Reservoir No. 1. This project will be necessary because as water demand grows, the water mains in SE 192nd Street, which convey the majority of the flow from this supply point, will not be able to convey the needed flow at the current gradient. In addition, SPU eventually will not guarantee that operating levels in SPU's Soos Reservoirs will be maintained at their current levels.

There are several potential options for this pump station project. It may entail upgrading existing Pump Station No. 4, constructing a new pump station, significantly upgrading the conveyance along the 148th Avenue SE corridor, purchasing one or both of SPU's Soos Reservoirs, or a combination of these options. As the time approaches when this project becomes necessary, an in-depth analysis should be conducted to determine the solution most beneficial to the District. The cost estimated for this project is solely for the preliminary design study, including preliminary electrical engineering design and hydraulic modeling. Costs for final design and construction of this project will be estimated as part of this study.

PRESSURE ZONE PROJECTS

Currently, lengthy dead ends exist in the 290 and 440 (south) Pressure Zones. To eliminate the water quality and velocity issues associated with these dead ends, installing new water mains to loop the dead ends to the existing system is proposed. One new PRV has been installed to address this issue, but the looping between pressure zones will require two additional PRVs.

PRV A (PZ-A)

The first new PRV will be located along South 208th Street between 92nd Avenue South and 96th Avenue South. At the time of design, the final location should be determined by analyzing the topography along South 208th Street to determine a suitable elevation. This PRV will serve the 440 Pressure Zone (south) from the 627 Zone. The pressure settings of existing PRV No. 4 and PRV No. 9 may need to be adjusted to prevent PRV conflicts due to the 440 Zone (South) being served by three PRVs. This project will likely be paid for by developers seeking to increase the capacity of the existing system in order to supply new growth.

PRV B (PZ-B)

The second new PRV will be located along SE 216th Street, between 132nd Avenue SE and 148th Avenue SE. At the time of design, the final location should be determined based on the topography along SE 216th Street. This connection will feed water from the 710 zone into the 627 zone. This project will be necessary when the proposed conveyance connecting 148th Avenue SE to 132nd Avenue SE along SE 216th Street is constructed. This project will likely be paid for by developers seeking to increase the capacity of the existing system in order to supply new growth.

627 High Pressure Analysis (PZ-C)

It is also recommended that a pressure zone analysis be conducted to determine the feasibility of rezoning to a lower pressure zone the western portions of the 627 zone. Rezoning could improve conditions for two areas currently in the 627 zone identified during the hydraulic analysis as high pressure areas.

STORAGE FACILITY PROJECTS

A storage analysis of the District's water system was performed and is described in **Chapter 6**. According to this analysis, construction of additional storage is not required during the planning period to provide adequate storage within the District's current corporate boundary. The storage-related projects identified below would improve reliability of the District's existing storage system, and provide additional storage if the District expands beyond its current boundary.

Southern 710 Reservoir (SF-1)

Depending on future development of the system, additional storage may be beneficial for operational purposes, particularly in the southeastern portion of the District. Construction of a storage facility is recommended in the 710 Zone (South) when water mains are extended to serve that portion of the District, which is not currently developed. It is anticipated that the existing storage facilities may not

be able to maintain the hydraulic grade line in this area once the water system is extended to it. The additional storage would bolster the hydraulic grade line for this portion of the water system, helping to maintain adequate residual pressures. Construction of this reservoir along with the proposed PRV 'B' along SE 216th Street would also improve the hydraulic gradient in the southern portion of the 627 zone. The District has already purchased a site that it intends to use for the reservoir and has obtained easement access to that site. At the time when this project becomes necessary, a study to confirm the flow hydraulics and the size the reservoir should be conducted. The cost estimated for this project is solely for the preliminary design study. Costs for final design and construction of this project will be estimated as part of the study. This estimate includes the costs of site analysis, preliminary hydraulic modeling, reservoir sizing, preliminary geotechnical analysis, and preliminary cost estimating. The costs of final reservoir design, final geotechnical analysis, and construction have not been included in the cost estimated costs for this project.

Tank 6 Seismic Upgrades (SF-2)

It is recommended that the District perform seismic upgrades on Tank 6. The tank was constructed in 1975, and the design at the time did not require that the standpipe be anchored to the foundation ring wall. Excessive movement of water during an earthquake could knock the tank off the foundations. The upgrades would bring the tank into compliance with current AWWA codes for steel reservoirs. This estimate includes costs for design and construction of the upgrades.

Tank 5 Seismic Upgrades (SF-3)

It is recommended that a seismic analysis be performed on Tank 5 to determine whether it meets current AWWA codes for steel reservoirs. The costs of final design and construction for any seismic upgrades have not been included in the estimated costs for this project.

INTERTIE PROJECTS

Cedar River Water & Sewer District Proposed Intertie (IP-1)

An intertie between the District and the Cedar River Water & Sewer District is currently being considered. There are several possible locations for an intertie, one of which is at the boundary between the Districts on 159th Avenue SE. The intertie would provide water from the 710 zone into Cedar River Water & Sewer District's 655 Zone. This intertie would require a pumped system to have the capacity to provide flow to Soos Creek Water and Sewer District from Cedar River Water & Sewer District's system and be a two-way intertie. The cost estimate for this project does not include standby power.

Regional Supply Interties (IP-2)

In addition to the intertie project, identified as IP-1, the District has considered the possibility of supplying water to neighboring water purveyors through interties. This Regional Supply Interties project would require the replacement of large portions of the District's existing water system with larger diameter pipe for the District to have the capacity to convey the quantity of water desired for these interties. A scenario has been analyzed in which the District would convey 2 mgd to Cedar River Water & Sewer District, 2 mgd to King County Water District No. 111 and 3.5 mgd to the City of Kent. The piping improvements required to convey these flows are shown in **Figure 7.2** at the end of this chapter. The figure does not show any supply improvements that may be necessary for this

scenario. Costs associated with these improvements have not been estimated. It is expected that the costs of these water main replacements would be paid for by the water purveyors that would be supplied by the District.

GENERAL FACILITY PROJECTS

Maintenance Facility (GF-1)

The District intends to develop the parcel adjacent to the District Headquarters with a maintenance building capable of housing the District's large equipment, with drive-through bays for the District's dump truck, backhoe and vactor truck. The building will also include wash-down facilities for the vehicles and storage space. This facility will serve asan emergency headquarters for the District and will be fully contained to include personnel housing quarters, full commercial kitchen, and emergency food and medical supplies. The total cost for the project is estimated to be $1,900,000. This cost will be divided between the water and sewer capital facilities plans, with $600,000 included in the water plan.

SCADA Upgrade (GF-2)

The District intends to upgrade its existing telemetry system. The current system, which was installed in 1999, uses digital radio transceivers to transmit data. This will be replaced with cellular technology, at a cost of $75,000.

Water Security (GF-3)

The District completed a Vulnerability Assessment of its water system as required under the Homeland Security Act. The plan is a confidential document and not available to the public. The plan recommended security upgrades throughout the District to help protect against man-made hazards that may damage water facilities when a hazardous situation might occur. Specifics of this proposal are not available to the public.. Costs of water security improvements will be approximately $200,000.

DISTRIBUTION AND TRANSMISSION PROJECTS

Proposed water main improvement and replacement projects are listed in **Table 7.1**. These projects range from large transmission mains, to filling in the distribution grid, to replacement of undersized or asbestos cement (AC) pipes. The projects may be funded by the District, a developer, as part of a utility local improvement district (ULID), or by other means or a combination of these methods. Water service to new developments will occur as feasible provided the development meets the District's and other agencies' design standards and criteria, and that the intended land use is in conformance with existing regulations.

The distribution and transmission projects shown in **Table 7.1** are presented in further detail in **Appendix H**. Pipe sizes are the minimum acceptable diameter, assuming the pipes are looped as shown in **Figure 7.1(A-K)**. Larger diameters may be necessary if only a portion of the pipe is constructed, if higher than anticipated demands are required, or if ground elevations vary from the assumptions.

There are ten different primary reasons why the various water main improvements are recommended. Improvement projects in **Table 7.1** are sorted by these categories, which are are summarized below.

Pump Station Upgrade (1)

The pump station capacity upgrades described as project SS-2 and SS-4 above require certain improvements in the surrounding distribution system to ensure the increased flow from pump station improvements can be realized. These improvements consist of replacing smaller diameter pipe in the vicinity of the pump station with larger diameter pipe. This will reduce head loss and increase the transmission capability of the distribution system, allowing the system to more efficiently transmit the increased flow output from the upgraded pump stations.

AC Main Replacement (2)

The District has an active AC main replacement program to replace the approximately 60 miles of AC pipe in the system. The extent and age of the AC pipe within the District's system is shown in **Figure 7.3**. The District plans to replace all AC pipe greater than 8-inches in diameter within the next twenty years. These improvements have been included in **Table 7.1**. Also, the District plans on spending $400,000 annually to replace AC pipe 8 inches or less in diameter. This will be ongoing for as long as necessary to eliminate all AC pipe within the system. When evaluating which 8-inch or less diameter pipes to replace as part of the annual program, priority will be given to those improvements identified in **Table 7.1** for reasons other than AC replacement, such as fire flow or residual pressure issues. AC pipes which are 8-inches or less, and do not have other reasons for improvement, are only identified on **Figure 7.3**. Priority will also be given to those AC pipes which are located in hazard areas as identified in the District's Hazard Mitigation Plan.

Residual Pressure (3)

In general, the District's water system is quite strong, as can be seen by the lack of residual pressure problems during high demand fire flow events. Only one area of the District was identified as having potential low residual pressures during such an event. It is recommended that the two sections of water main in these areas be replaced with larger diameter pipe to boost the residual pressures in this area.

4-Inch Replacement (4)

There are several 4-inch diameter pipes in the District used to convey flows greater than average residential flows. These are typically located where 4-inch diameter pipe is part of a loop or where a fire hydrant is located on a 4-inch dead-end. To reduce velocities and improve system performance, these pipes should be replaced. Locations where 4-inch diameter pipes are used as dead-ends to provide service to single-family residences are still acceptable, provided no fire hydrants are located on the 4-inch main.

System Looping (5)

Some improvements have been identified to loop between unconnected portions of the system, thus improving hydraulic flow through the system. Many of these improvements will eliminate existing dead end water mains, which will greatly improve velocities and water quality at those dead ends.

These improvements may be located in undeveloped properties, existing right-of-ways, or in anticipated easements on developed properties.

Fire Flow/Velocity (6)

During the hydraulic analysis described in **Chapter 6**, some pipes were identified as being undersized to provide the required fire flow without exceeding the District's velocity criteria listed in **Chapter 3**. In some areas, the excessive velocities may be eliminated through system looping projects as discussed above. Pipes with excessive velocities that cannot be eliminated through looping should be replaced with larger diameter pipe.

Public Facility Fire Flow (7)

Similar to the Fire Flow/Velocity improvements discussed above, improvements have been identified for water mains located on public properties, such as school properties that do not meet the District's velocity criteria. These improvements are listed separately from Fire Flow/Velocity improvements because public facilities, such as schools, do not necessarily have the same fire flow criteria as other properties in the District.

Twenty-Year Conditions (8)

The hydraulic analysis described in **Chapter 6** identified improvements that will be necessary in the future to meet the projected increase in demands. These improvements are necessary to meet velocity and pressure criteria and to prevent excessive head loss in the system.

12-Inch Grid (9)

These improvements consist of upsizing existing water mains to create a 12-inch pipe grid throughout the District's system. These improvements are necessary to provide a 12-inch transmission main within a distance of one mile of all properties in the water system to make the overall system more robust.

Future Development (10)

Future development projects consist of improvements that are recommended in anticipation of future development within the District. These projects are meant as a plan for developers seeking future developer extensions. It is anticipated that most future development improvements will be funded by developers.

SUMMARY

The District's recommended Water Capital Facility Plan table, as described in **Table 7.1**, translates into $53.1 million in capital expenditures projected for the 20-year planning period. There are 114 short-term (6-year and 10-year) projects totaling $19.6 million. The remaining 151 projects are long-term (20-year) projects, projected to total $33.5 million. Further detail on these projects can be found in **Appendix H**. In addition, the District plans to spend $400,000 annually on AC pipe replacement projects that are not identified in **Table 7.1**, for AC mains 8 inches and smaller in diameter. The existing AC pipe within the District is shown on **Figure 7.3**.

Table 7.1 Capital Facility Plan

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Short Term Projects	Long Term Projects
Supply and Source Projects						
SS-1	N/A	N/A	N/A	N/A	17,200	--
SS-2	627	N/A	N/A	N/A	860,100	--
SS-3	627	N/A	N/A	N/A	128,200	--
SS-4	N/A			N/A	--	$34,400
Supply and Source Projects Subtotal					$1,005,500	$34,400
Pressure Zone Projects						
PZ-A	440/627	N/A	N/A	N/A	$51,600	--
PZ-B	627/710			N/A	--	$51,600
PZ-C	N/A	N/A	N/A	N/A	$30,000	--
Pressure Zone Projects Subtotal					$81,600	$51,600
Storage Facility Projects						
SF-1	710			N/A	--	$13,800
SF-2	710	N/A	N/A	N/A	$113,500	--
SF-3	627	N/A	N/A	N/A	$20,000	--
Storage Facility Projects Subtotal					$133,500	$13,800
Intertie Projects						
IP-1	710			N/A	--	$286,200
IP-2	627	N/A	N/A	N/A	--	$286,200
Intertie Projects Subtotal					--	$572,400
General Facility Projects						
GF-1	N/A	N/A	N/A	N/A	$600,000	--
GF-2	N/A	N/A	N/A	N/A	$75,000	
GF-3	N/A	N/A	N/A	N/A	$200,000	

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Short Term Projects	Long Term Projects
General Facility Projects Subtotal					$875,000	--
Distribution and Transmission Projects						
Pump Station Capacity Upgrade						
B3-11	627	DI	10	12	--	$82,200
B3-12	627	DI	8, 10	12	--	$123,300
B3-13	627	DI	8	12	--	$140,600
B5-7	627	CI	8, 10	12	$486,500	--
AC Main Replacement						
B3-1	627	AC	12	12	$324,400	--
B3-2	627	AC	12	12	$486,500	--
B3-3	627	AC	10	10	$122,400	--
B3-4	627	AC	10	10	$244,800	--
B5-2	627	AC	12	16	$401,200	--
C2-1	627	AC	12	12	$281,100	--
C3-1	627	AC	10	12	$125,400	--
C5-1	627	AC	12	12	--	$205,400
C5-2	627	AC	12	12	--	$75,700
C6-1	627	AC	12	12	--	$454,100
D3-1	627	AC	12	12	--	$97,300
D8-1	710	AC	12	12	--	$308,100
D8-2	710	AC	10	12	$421,700	--
D10-1	710	AC	10	12	--	$491,900
D10-2	710	AC	10	12	--	$173,000
D9-1	710	AC	10	12	$436,800	--
E3-1	627	AC	12	16	$108,800	--
E4-1	627	AC	12	12	--	$275,700
E5-1	627	AC	12	12	$270,300	--
E5-2	627	AC	12	12	$324,400	--
E5-3	627	AC	12	12	$302,700	--
E5-4	627	AC	10	10	$210,500	--
E7-1	710	AC	10	12	--	$497,400
E10-1	710	AC	12	12	--	$156,800
F2-1	627	AC	12	12	--	$556,800

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Short Term Projects	Long Term Projects
F3-1	627	AC	12	12	--	$567,600
F4-1	627	AC	10	24	--	$540,600
F4-5	627	AC	8, 10	24	--	$1,060,800
F6-1	627	AC	8	16	$114,200	--
F7-2	710	AC	4,10	10	$244,800	--
G1-1	627	AC	6	10	$141,000	--
G1-2	627	AC	6	10	$142,000	--
G1-5	440	AC	6	10	$166,500	--
G2-1	627	AC	10	10	$494,500	--
G2-2	627	AC	6	10	$381,900	--
G3-1	627	AC	10	10	$49,000	--
G5-4	637	AC	12	12	--	$194,600
H2-9	627	AC	6	10	$254,600	--
H3-1	627	AC	10	12	$570,900	--
H5-1	627	AC, DI	8	16	$285,600	--
H5-2	627	AC, CI	12	24	--	$142,800
H5-3	627	AC	12	12	--	$393,600
H5-4	627	AC	8	12	$64,900	
H6-1	627	AC	12	12	--	$508,200
J3-1	627	AC	10	12	$178,400	--
J3-2	627	AC	10	10	$102,800	--
J3-3	627	AC	6, 8	12	$113,500	--
J4-1	627	AC	10	12	$600,100	--
J4-2	627	AC	12	12	--	$237,900
J4-3	627	AC	12	12	--	$97,300
J5-1	627	AC	12	12	--	$151,400
J5-2	627	AC	10	12 (min.)	--	$573,000
K3-1	627	AC	6, 10	12	$216,200	--
K4-1	627	AC	10	12	$324,400	--
K5-1	627	AC	10	12	--	$54,100
L5-3	627	AC	6	12	$90,800	--
Residual Pressure						
G7-1	627	AC	6	8	$122,400	--

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Short Term Projects	Long Term Projects
G7-2	627	AC	6	8	$175,400	--
4-Inch Replacement						
B3-10	627	DI	4	8	$32,600	--
B4-2	627	AC	4, 6	8	$125,700	--
B4-3	627	AC	4, 6	8	$122,400	--
E7-3	627	AC	4	8	$93,800	--
F2-5	627	AC	4	8	$53,000	--
G7-3	627	AC	4	8	$195,800	--
H3-3	627	Unknown	4	8	$134,600	--
H4-3	627	AC	4	8	$77,500	--
J3-4	627	AC	4	8	$57,100	--
System Looping						
B2-1	627	N/A	N/A	8	--	$122,900
C5-7	627	N/A	N/A	8	--	$46,900
F6-4	627	N/A	N/A	8	--	$43,200
G5-1	627	N/A	N/A	8	--	$50,500
G7-5	627	N/A	N/A	8	--	$28,800
H1-1	627	N/A	N/A	8	--	$146,000
H2-4	627	N/A	N/A	8	--	$68,500
H2-5	627	N/A	N/A	8	--	$115,300
H2-6	627	N/A	N/A	8	--	$46,900
H7-2	710	N/A	N/A	8	--	$92,200
J2-1	627	N/A	N/A	8	--	$122,900
J2-2	627	N/A	N/A	8	--	$76,800
J3-6	627	N/A	N/A	8	--	$43,200
L6-4	670	N/A	N/A	8	--	$64,900
Fire Flow/Velocity						
B5-5	627	AC	6	8	$65,300	--
B5-6	627	AC	6	8	$40,800	--
C2-2	627	AC	6, 8	10, 12	$165,600	--
C2-3	627	AC	8	12	$205,400	--
C4-1	627	DI	8	10	$107,700	--
C4-2	627	DI	8	10	$39,200	--

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Short Term Projects	Long Term Projects
C4-3	627	DI	8	10	$60,700	--
C4-4	627	DI	8	10	$151,800	--
C4-5	627	DI	8	10	$205,600	--
C4-6	627	DI	8	10	$146,900	--
C4-7	627	DI	8	10	$103,800	--
C5-5	627	AC	6	8	$114,200	--
D3-2	627	AC	6	8	$73,400	--
D7-1	710	AC	6	8	$60,400	--
D7-2	710	AC	6	8	$60,400	--
E2-1	627	AC	6	8	$28,600	--
E5-5	627	AC	6	8	$44,100	--
E5-6	627	AC	6	8	$24,500	--
E5-7	627	AC	6	8	$26,100	--
E5-8	627	AC	6	8	$65,300	--
E5-9	627	AC	6	8	$34,300	--
E5-10	627	AC	6	8	$44,100	--
E5-11	627	AC	6	8	$58,800	--
E5-12	627	AC	6	8	$34,300	--
F1-3	440	AC	4 & 6	8	$77,500	--
F1-4	627	AC	6	8	$94,700	--
F1-5	440	AC	6	8	$118,300	--
F7-3	710	AC	6	8	$45,700	--
F7-4	710	AC	6	8	$55,500	--
G0-2	290	AC	6	10	$131,200	--
G0-3	290	AC	6	8	$97,900	--
G2-4	627	AC	4	8	$28,600	--
G5-2	627	AC	6	8	$31,000	--
H4-4	627	AC	6	8	$93,000	--
H7-1	710	N/A	N/A	8	$57,700	--
K3-2	627	AC	6	8	$60,400	--
K6-1	670	AC	6	8	$106,100	--
L4-6	627	AC	6	8	$53,900	--
L4-7	627	AC	6	8	$47,300	--
L5-1	627	AC	6	8	$65,300	--

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Short Term Projects	Long Term Projects
L6-1	670	AC	6	8	$57,100	--
Public Facility Fire Flow						
B5-3	627	CI	6	8	$40,800	--
B5-4	627	CI	6	8	$61,200	--
F7-1	627/710	AC	6	8	$170,400	--
J5-3	627	AC	6, 8	8, 12	$150,100	--
J5-4	627	AC	6	8	$11,400	--
L4-5	627	DI	8	10	$29,400	--
L4-3	627	AC	8	12	$275,700	--
L4-4	627	DI	8	10, 12	$138,000	--
Twenty-Year Conditions						
E3-4	627	AC	12	16	--	$394,400
F5-4	627	AC, DI	8, 14	24	--	$1,162,800
F6-2	627	DI	14	24	--	$999,600
F7-5	627	N/A	N/A	24	--	$972,400
G4-4	627	AC, DI	8	16	--	$720,800
G6-1	627	N/A	N/A	16	--	$321,300
H4-2	627	AC, DI	8	16	--	$714,000
H5-5	627	AC	10	16	--	$714,000
H6-2	627	N/A	N/A	12 (min.)	--	$522,600
H7-4	710	N/A	N/A	12 (min.)	--	$123,300
H7-5	710	N/A	N/A	12	--	$522,600
J7-1	710	N/A	N/A	12	--	$562,200
K5-3	627	AC	8	12 (min.)	--	$86,500
K8-1	710	N/A	N/A	12 (min.)	--	$259,500
K8-2	710	N/A	N/A	24	--	$224,400
L5-2	627	AC, DI	8	12 (min.)	--	$573,000
12-Inch Grid						
B3-5	627	AC	10	12	$320,000	--
B4-1	627	AC	6	12	$220,600	--
B5-1	627	AC	8	12	$313,500	--
C3-4	627	AC	8	12	$108,100	--
C3-5	627	AC	8	12	$350,300	--

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Short Term Projects	Long Term Projects
D3-3	627	AC	6	12	$573,000	--
E3-3	627	AC	6	12	$297,300	--
H3-2	627	AC	8	12	$551,400	--
K3-3	627	AC	8	12	$100,600	--
K3-4	627	AC	8	12	$329,800	--
K4-2	627	N/A	N/A	12	$258,900	--
K5-2	627	AC	6	12	$367,600	--
Future Development						
B3-6	627	N/A	N/A	8	--	$162,200
B3-7	627	N/A	N/A	8	--	$92,200
B3-8	627	N/A	N/A	8	--	$115,300
B3-9	627	N/A	N/A	8	--	$194,600
C3-2	627	N/A	N/A	8	--	$64,900
C3-3	627	N/A	N/A	8	--	$133,300
C5-3	627	N/A	N/A	8	--	$105,200
C5-4	627	N/A	N/A	8	--	$50,500
C5-6	627	N/A	N/A	8	--	$86,500
D4-1	627	N/A	N/A	8	--	$108,100
D4-2	627	N/A	N/A	8	--	$162,200
D6-1	710	N/A	N/A	8	--	$93,700
D6-2	710	N/A	N/A	8	--	$93,700
D6-3	710	N/A	N/A	8	--	$115,300
D6-4	627	N/A	N/A	8	--	$173,000
E2-2	627	N/A	N/A	10	--	$43,500
E2-3	627	N/A	N/A	10	--	$226,300
E3-2	627	N/A	N/A	10	--	$91,400
E4-2	627	N/A	N/A	8	--	$115,300
E4-3	627	N/A	N/A	8	--	$201,800
E4-4	627	N/A	N/A	8	--	$216,200
E4-5	627	N/A	N/A	8	--	$97,300
E4-6	627	N/A	N/A	8	--	$64,900
E4-7	627	N/A	N/A	8	--	$158,600
E4-8	627	N/A	N/A	8	--	$118,900
E4-9	627	N/A	N/A	8	--	$151,400

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Short Term Projects	Long Term Projects
E4-10	627	N/A	N/A	8	--	$126,100
E6-1	627	N/A	N/A	8	--	$97,300
E6-2	627	N/A	N/A	8	--	$64,900
E6-3	627	N/A	N/A	8	--	$144,200
E6-4	627	N/A	N/A	8	--	$75,700
E7-2	627	N/A	N/A	8	--	$201,800
E7-4	710	N/A	N/A	8	--	$165,800
F1-1	440	N/A	N/A	8	--	$69,200
F1-2	440	N/A	N/A	8	--	$57,600
F2-2	627	N/A	N/A	8	--	$111,700
F2-3	627	N/A	N/A	8	--	$108,100
F2-4	627	N/A	N/A	8	--	$50,500
F3-2	627	N/A	N/A	8	--	$187,400
F3-3	627	N/A	N/A	8	--	$96,600
F3-4	627	N/A	N/A	8	--	$187,400
F3-5	627	N/A	N/A	8	--	$173,000
F3-6	627	N/A	N/A	8	--	$72,100
F4-2	627	N/A	N/A	8	--	$43,200
F4-3	627	N/A	N/A	8	--	$46,900
F4-4	627	N/A	N/A	8	--	$82,900
F4-6	627	AC	8	16	--	$707,200
F5-1	627	N/A	N/A	8	--	$191,000
F5-2	627	N/A	N/A	8	--	$86,500
F5-3	627	N/A	N/A	8	--	$93,700
F6-3	627	N/A	N/A	8	--	$115,300
G0-1	290	N/A	N/A	8	--	$194,600
G1-3	440	N/A	N/A	8	--	$93,700
G1-4	440	N/A	N/A	8	--	$187,400
G2-3	627	N/A	N/A	8	--	$43,200
G3-2	627	N/A	N/A	8	--	$33,200
G3-3	627	N/A	N/A	8	--	$46,900
G3-4	627	N/A	N/A	8	--	$57,700
G4-1	627	N/A	N/A	8	--	$82,900

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Short Term Projects	Long Term Projects
G4-2	627	N/A	N/A	8	--	$241,500
G4-3	627	N/A	N/A	8	--	$43,200
G5-3	627	N/A	N/A	8	--	$165,800
G7-4	627	N/A	N/A	8	--	$372,700
H2-1	627	N/A	N/A	8	--	$43,200
H2-2	627	N/A	N/A	8	--	$108,100
H2-3	627	N/A	N/A	8	--	$277,500
H2-7	627	N/A	N/A	8	--	$86,500
H2-8	627	N/A	N/A	8	--	$72,100
H3-4	627	N/A	N/A	8	--	$86,500
H4-1	627	Unknown	N/A, 4"	8	--	$122,900
H5-6	627	N/A	N/A	8	--	$126,100
H7-3	710	N/A	N/A	6	--	$180,200
J3-5	627	N/A	N/A	8	--	$137,000
K7-1	710	N/A	N/A	8	--	$407,300
K8-3	710	N/A	N/A	12	--	$295,800
K8-4	710	N/A	N/A	8	--	$399,600
K8-5	710	N/A	N/A	8	--	$378,400
K9-1	710	N/A	N/A	8	--	$399,600
K9-2	710	N/A	N/A	8	--	$399,600
K9-3	710	N/A	N/A	8	--	$378,400
L4-1	627	N/A	N/A	8	--	$93,700
L4-2	627	N/A	N/A	8	--	$86,500
L6-3	627	N/A	N/A	8	--	$115,300
L7-1	710	N/A	N/A	8	--	$353,500
J8-1	710	N/A	N/A	8	--	$295,500
J8-2	710	N/A	N/A	8	--	$378,400
L8-1	710	N/A	N/A	8	--	$411,100
L9-1	710	N/A	N/A	8	--	$403,400
L9-2	710	N/A	N/A	8	--	$407,300
Distribution and Transmission Projects Subtotal					$18,124,500	$32,701,300
Total Project Cost (short-term and long-term)					$20,220,100	$33,373,500
Total Cost for Recommended Projects						$53,593,600

COMPLETED PROJECTS - 2005 COMPREHENSIVE WATER SYSTEM PLAN

Table 7.2 includes a list of all projects listed in the 2005 Comprehensive Plan that were completed prior to the current plan.

Table 7.2 Completed Projects

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Pipe Length (Feet)	Category
SS-3	627	N/A	N/A	N/A	N/A	Supply and Source
SS-7	670	N/A	N/A	N/A	N/A	Supply and Source
PZ-C	627/710	N/A	N/A	N/A	N/A	Pressure Zone
B4-1	627	AC	6	12	2,700	12" Grid
B4-2	627	AC	4	8	1,000	4" Replacement
B4-3	627	AC	4	8	1,125	4" Replacement
B4-4	627	AC	4	8	1,075	4" Replacement
B4-5	627	AC	4	6	300	4" Replacement
B4-6	627	AC	4	8	250	FF/Velocity
B5-2	627	AC	12	12	1,225	AC Replacement
B5-8	627	AC	6	8	200	Fire Flow/ Velocity
C3-4	627	N/A	N/A	8	425	Future Development.
C3-5	627	N/A	N/A	8	825	Future Dev.
C3-6	627	N/A	N/A	8	925	Future Dev.
C3-9	627	NA	NA	8	475	Looping
C4-8	627	NA	NA	8	750	Looping
C5-4	627	N/A	N/A	8	1,000	Future Development.
C5-5	627	N/A	N/A	8	1,350	Future Development.
C5-6	627	AC	4	8	325	4" Replacement
C11-1	710	AC	8	10	1,150	Fire Flow/ Velocity
D3-2	627	AC	4	8	1,200	4" Replacement
D3-4	627	AC	4	8	550	4" Replacement

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Pipe Length (Feet)	Category
D3-5	627	AC	4	8	525	4" Replacement
D6-1	627	AC	10	12	2,875	AC Replacement
D11-1	710	AC	6	8	900	Fire Flow/ Velocity
E2-1	627	AC	4	8	850	4" Replacement
E3-2	627	N/A	N/A	8	650	Future Development.
E4-4	627	N/A	N/A	8	875	Future Development.
E4-7	627	N/A	N/A	8	1,300	Future Development.
E4-8	627	N/A	N/A	8	1,400	Future Development.
E6-1	627	AC	10	12	2,675	AC Replacement
E11-1	710	AC	6	8	1,325	Fire Flow/ Velocity
F3-3	627	N/A	N/A	8	1,275	Future Dev.
F3-5	627	N/A	N/A	8	1,300	Future Dev.
F6-1	627	AC	8	16	2,600	AC Replacement / 2020 Conditions
G0-2	290	AC	6	10	1,350	Fire Flow/ Velocity
G0-3	290	AC	6	8	900	Fire Flow/ Velocity
G1-1	627	AC	10	10	2,025	AC Replacement
G1-5	627	AC	6	8	250	Fire Flow/ Velocity
G1-6	627	N/A	N/A	8	550	Future Dev.
G3-2	627	N/A	N/A	8	800	Future Development.
G3-3	627	N/A	N/A	8	875	Future Development.
G3-4	627	N/A	N/A	8	900	Future

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Pipe Length (Feet)	Category
						Development.
H1-1	627	AC	6	10	1,275	AC Replacement
H1-3	440	AC	4	8	700	4" Replacement
H1-4	440	AC	6	8	475	Fire Flow/ Velocity
H1-5	627	AC	4	6	750	4" Replacement
H2-1	627	AC	6	10	1,375	AC Replacement
H3-4	627	N/A	N/A	8	300	System Looping
H4-5	627	N/A	N/A	6	450	Fire Flow/ Velocity
H5-7	627	N/A	N/A	8	530	Looping
H5-8	627	N/A	N/A	8	850	Looping
J1-1	440	AC	6	8	380	Fire Flow/ Velocity
J4-4	627	N/A	N/A	8	450	Future Dev.
K4-1	627	AC	10	12	1,350	AC Replacement / 12" Grid
K5-3	627	N/A	N/A	8	3,175	Future Development.
K5-4	627	AC	8	12 (min.)	2,500	2020 Conditions
K6-1	670	N/A	N/A	8	4,150	Future Dev.
L6-2	627	N/A	N/A	8	900	Future Dev.
SS-3	627	N/A	N/A	N/A	N/A	Supply and Source
SS-7	670	N/A	N/A	N/A	N/A	Supply and Source
PZ-C	627/710	N/A	N/A	N/A	N/A	Pressure Zone
B4-1	627	AC	6	12	2,700	12" Grid
B4-2	627	AC	4	8	1,000	4" Replacement
B4-3	627	AC	4	8	1,125	4" Replacement
B4-4	627	AC	4	8	1,075	4" Replacement

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Pipe Length (Feet)	Category
B4-5	627	AC	4	6	300	4" Replacement
B4-6	627	AC	4	8	250	Fire Flow/ Velocity
B5-2	627	AC	12	12	1,225	AC Replacement
B5-8	627	AC	6	8	200	Fire Flow/ Velocity
C3-4	627	N/A	N/A	8	425	Future Dev.
C3-5	627	N/A	N/A	8	825	Future Dev.
C3-6	627	N/A	N/A	8	925	Future Dev.
C3-9	627	NA	NA	8	475	Looping
C4-8	627	NA	NA	8	750	Looping
C5-4	627	N/A	N/A	8	1,000	Future Development.
C5-5	627	N/A	N/A	8	1,350	Future Development.
C5-6	627	AC	4	8	325	4" Replacement
C11-1	710	AC	8	10	1,150	FF/Velocity
D3-2	627	AC	4	8	1,200	4" Replacement
D3-4	627	AC	4	8	550	4" Replacement
D3-5	627	AC	4	8	525	4" Replacement
D6-1	627	AC	10	12	2,875	AC Replacement
D11-1	710	AC	6	8	900	Fire Flow/ Velocity
E2-1	627	AC	4	8	850	4" Replacement
E3-2	627	N/A	N/A	8	650	Future Development.
E4-4	627	N/A	N/A	8	875	Future Development.
E4-7	627	N/A	N/A	8	1,300	Future Development.
E4-8	627	N/A	N/A	8	1,400	Future Development.
E6-1	627	AC	10	12	2,675	AC Replacement
E11-1	710	AC	6	8	1,325	FF/Velocity

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Pipe Length (Feet)	Category
F3-3	627	N/A	N/A	8	1,275	Future Development.
F3-5	627	N/A	N/A	8	1,300	Future Development.
F6-1	627	AC	8	16	2,600	AC Replacement / 2020 Conditions
G0-2	290	AC	6	10	1,350	Fire Flow/ Velocity
G0-3	290	AC	6	8	900	Fire Flow/ Velocity
G1-1	627	AC	10	10	2,025	AC Replacement
G1-5	627	AC	6	8	250	FF/Velocity
G1-6	627	N/A	N/A	8	550	Future Development.
G3-2	627	N/A	N/A	8	800	Future Development.
G3-3	627	N/A	N/A	8	875	Future Development.
G3-4	627	N/A	N/A	8	900	Future Dev.
H1-1	627	AC	6	10	1,275	AC Replacement
H1-3	440	AC	4	8	700	4" Replacement
H1-4	440	AC	6	8	475	Fire Flow/ Velocity
H1-5	627	AC	4	6	750	4" Replacement
H2-1	627	AC	6	10	1,375	AC Replacement
H3-4	627	N/A	N/A	8	300	System Looping
H4-5	627	N/A	N/A	6	450	Fire Flow/ Velocity
H5-7	627	N/A	N/A	8	530	Looping
H5-8	627	N/A	N/A	8	850	Looping
J1-1	440	AC	6	8	380	Fire Flow/

Project ID No.	Pressure Zone	Existing Pipe Material	Existing Diameter (Inches)	Proposed Diameter (Inches)	Pipe Length (Feet)	Category
						Velocity
J4-4	627	N/A	N/A	8	450	Future Development.
K4-1	627	AC	10	12	1,350	AC Replacement / 12" Grid
K5-3	627	N/A	N/A	8	3,175	Future Development.
K5-4	627	AC	8	12 (min.)	2,500	2020 Conditions
K6-1	670	N/A	N/A	8	4,150	Future Development.
L6-2	627	N/A	N/A	8	900	Future Development.

PROJECTS REMOVED FROM THE 2005 COMPREHENSIVE WATER SYSTEM PLAN

Project B5-6

This project included the replacement of approximately 850 lineal feet of existing 8-inch cast iron water main with 10-inch ductile iron water main in an easement east of 128th Avenue SE, which serves Lindbergh High School, to decrease water velocities in the pipe during required fire flows. The District revised its maximum allowable velocity from 8 ft/s to 10 ft/s, so this project has been removed from the Capital Facility Plan.

Project B5-7

This project included the replacement of approximately 700 lineal feet of existing 8-inch cast iron water main with 10-inch ductile iron water main in an easement south of SE 164th Street, which serves Lindbergh High School, to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project C2-4

This project included the replacement of approximately 800 lineal feet of existing 8-inch ductile iron water main with 10-inch ductile iron water main in a loop north of SE 174th Street east of 106th Place SE, which serves a commercial property, to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project D6-2

This project included the replacement of approximately 475 lineal feet of existing 8-inch ductile iron water main with 10-inch ductile iron water main in an easement on the Fairwood Grove Condominiums property to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project D6-3

This project included the replacement of approximately 500 lineal feet of existing 8-inch ductile iron water main with 10-inch ductile iron water main in an easement on the Fairwood Grove Condominiums property to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project D8-3

This project included the replacement of approximately 200 lineal feet of existing 8-inch ductile iron water main with 10-inch ductile iron water main on 148th Lane SE west of SE 177th Place to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project D8-4

This project included the replacement of approximately 150 lineal feet of existing 8-inch ductile iron water main with 10-inch ductile iron water main on 149th Lane SE west of SE 177th Place to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project E2-3

This project included the installation of approximately 650 lineal feet of 8-inch ductile iron water main on 106th Avenue SE south of SE 188thth Court to provide water for future development. This project was located in a stream buffer, so it has been removed from the Capital Facility Plan.

Project E5-12

This project included the installation of approximately 350 lineal feet of 8-inch ductile iron water main in an easement north of SE 192th Street, which would connect to an existing main which serves Meeker Junior High School in order to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project E7-2

This project included the installation of approximately 1,400 lineal feet of 8-inch ductile iron water main on anticipated right-of-way from 140th Avenue SE to the existing main south of 143rd Court SE to provide water for future development. This project alignment crossed Molasses Creek, so it has been removed from the Capital Facility Plan.

Project J2-2

Tis project included the installation of approximately 500 lineal feet of 8-inch ductile iron water main in an anticipated easement from the east end of SE 220th Street to the north end of of 104th Place SE to provide looping in the water system.. This project alignment was in a wetlandt, so it has been removed from the Capital Facility Plan.

Project L5-2

This project included the replacement of approximately 900 lineal feet of 8-inch ductile iron water main with 10-inch ductile iron water main in an existing easement north of SE 240th Street on the Wandering Creek Apartments property to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project L6-5

This project included the installation of approximately 250 lineal feet of 8-inch ductile iron water main with 10-inch ductile iron water main in an existing easement east of 132nd Avenue SE 240th on a commercial property to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

SOOS CREEK WATER & SEWER DISTRICT

WATER COMPREHENSIVE PLAN

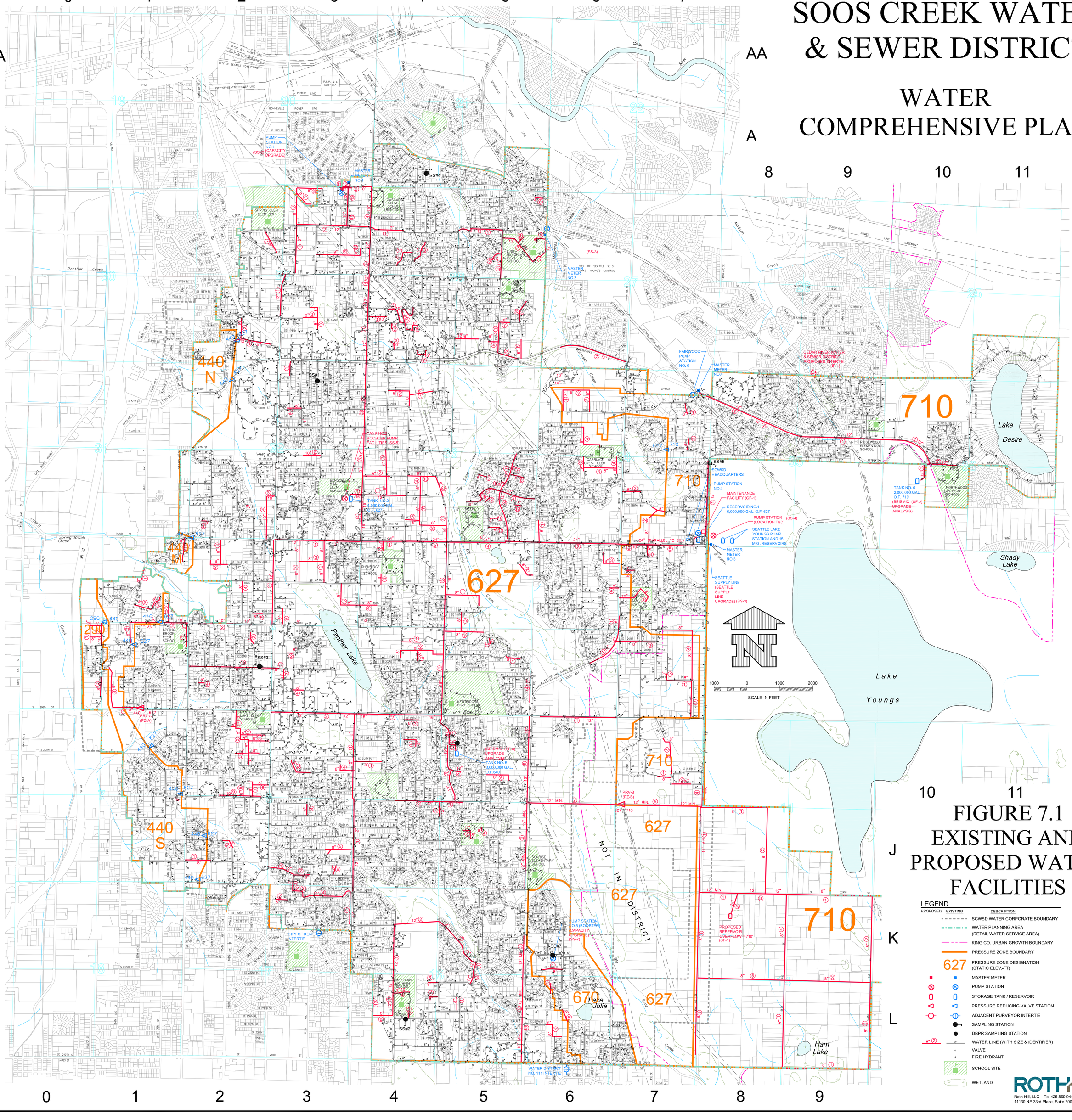


FIGURE 7.1 EXISTING AND PROPOSED WATER FACILITIES

LEGEND

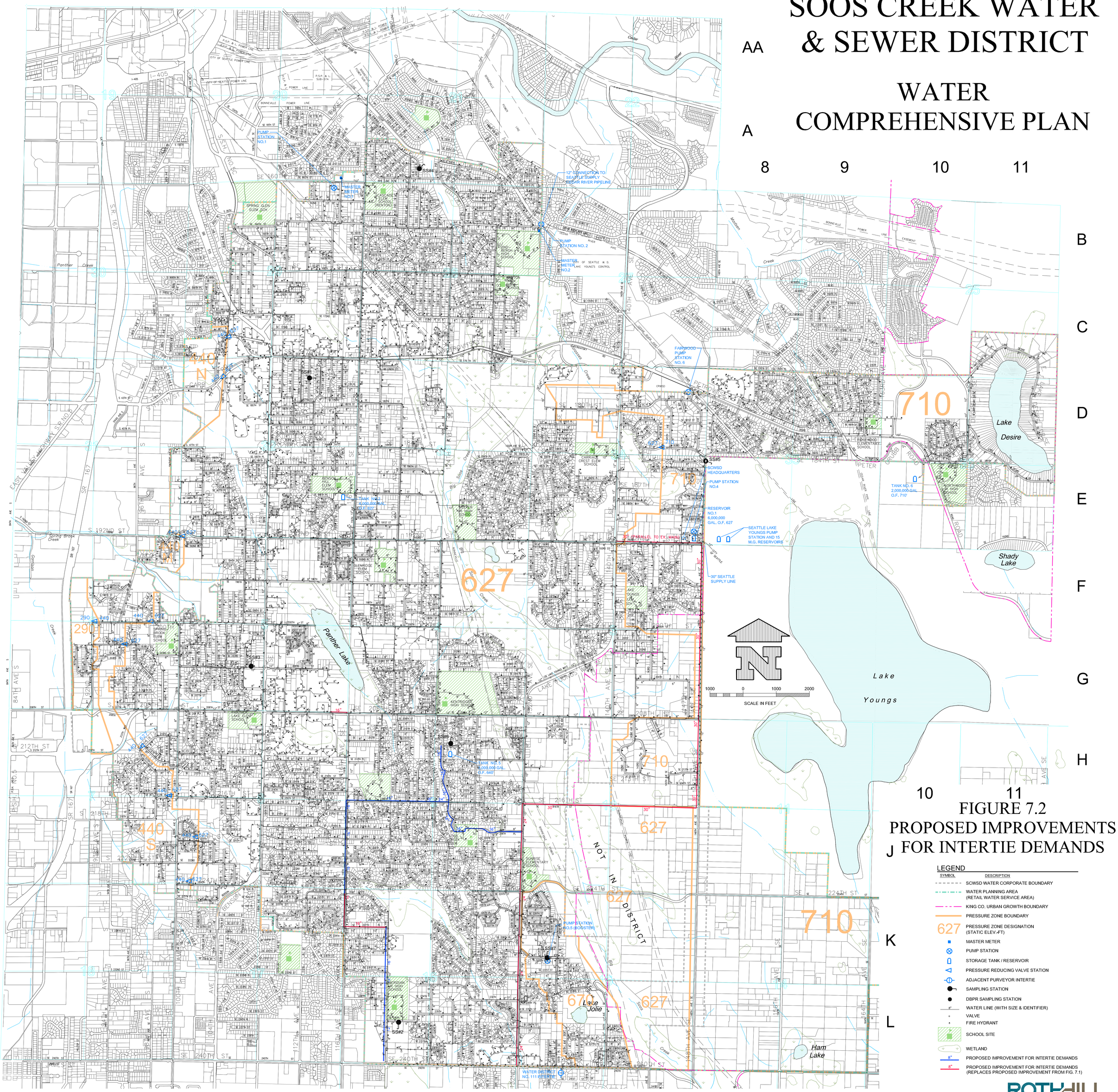
PROPOSED	EXISTING	DESCRIPTION
		SCWSD WATER CORPORATE BOUNDARY
		WATER PLANNING AREA (RETAIL WATER SERVICE AREA)
		KING CO. URBAN GROWTH BOUNDARY
		PRESSURE ZONE BOUNDARY
		627 PRESSURE ZONE DESIGNATION (STATIC ELEV.-FT)
		MASTER METER
		PUMP STATION
		STORAGE TANK / RESERVOIR
		PRESSURE REDUCING VALVE STATION
		ADJACENT PURVEYOR INTERTIE
		SAMPLING STATION
		DBPR SAMPLING STATION
		WATER LINE (WITH SIZE & IDENTIFIER)
		VALVE
		FIRE HYDRANT
		SCHOOL SITE
		WETLAND

ROTHHILL
Roth Hill, LLC Tel 425.869.9448 www.rothhill.com
11130 NE 33rd Place, Suite 200 Bellevue, WA 98004

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SOOS CREEK WATER & SEWER DISTRICT

WATER COMPREHENSIVE PLAN


SS#1
SS#2
SS#3
SS#4
SS#5
SS#6
SS#7
PUMP STATION NO.1
MASTER METER NO.1
12" CONNECTION TO SEATTLE SUPPLY CEDAR RIVER PIPELINE
PUMP STATION NO. 2
MASTER METER NO.2
FAIRWOOD PUMP STATION NO. 6
SOOS CREEK WATER & SEWER DISTRICT HEADQUARTERS
PUMP STATION NO.4
RESERVOIR NO.1 6,000,000 GAL. O.F. 627
SEATTLE LAKE YOUNGS PUMP STATION AND 15 M.G. RESERVOIRS
TANK NO. 6 2,000,000-GAL O.F. 710'
TANK NO.2 2,000,000 GAL. O.F. 627
TANK NO.5 5,000,000 GAL. O.F. 640'
PUMP STATION NO.5 (BOOSTER)
WATER DISTRICT NO. 111 INTERTIE
30" SEATTLE SUPPLY LINE
30" PARALLEL TO EX. MAIN
12" PARALLEL TO EX. MAIN
NOT IN DISTRICT
Lake Desire
Lake Youngs
Shady Lake
Panther Lake
Lake Jolie
Ham Lake
Panther Creek
Spring Brook Creek
Soos Creek
Cedar River
Mercer Slough
Meadow Creek
Honey Creek
Jenkins Creek
Covington Creek
Big Soos Creek
Garrison Creek
Springbrook Creek
Molasses Creek
Jones Gulch
Peterson Creek
Hazelnut Creek
Maxwell Creek
Sunrise Creek
Meridian Creek
Lake Meridian
Lake Sawyer
SR 167
SR 516
SR 18
I-405
EAST VALLEY HIGHWAY (SR 900)
140th AVE SE
148th AVE SE
156th AVE SE
164th AVE SE
172nd AVE SE
180th AVE SE
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SOOS CREEK WATER & SEWER DISTRICT

WATER COMPREHENSIVE PLAN

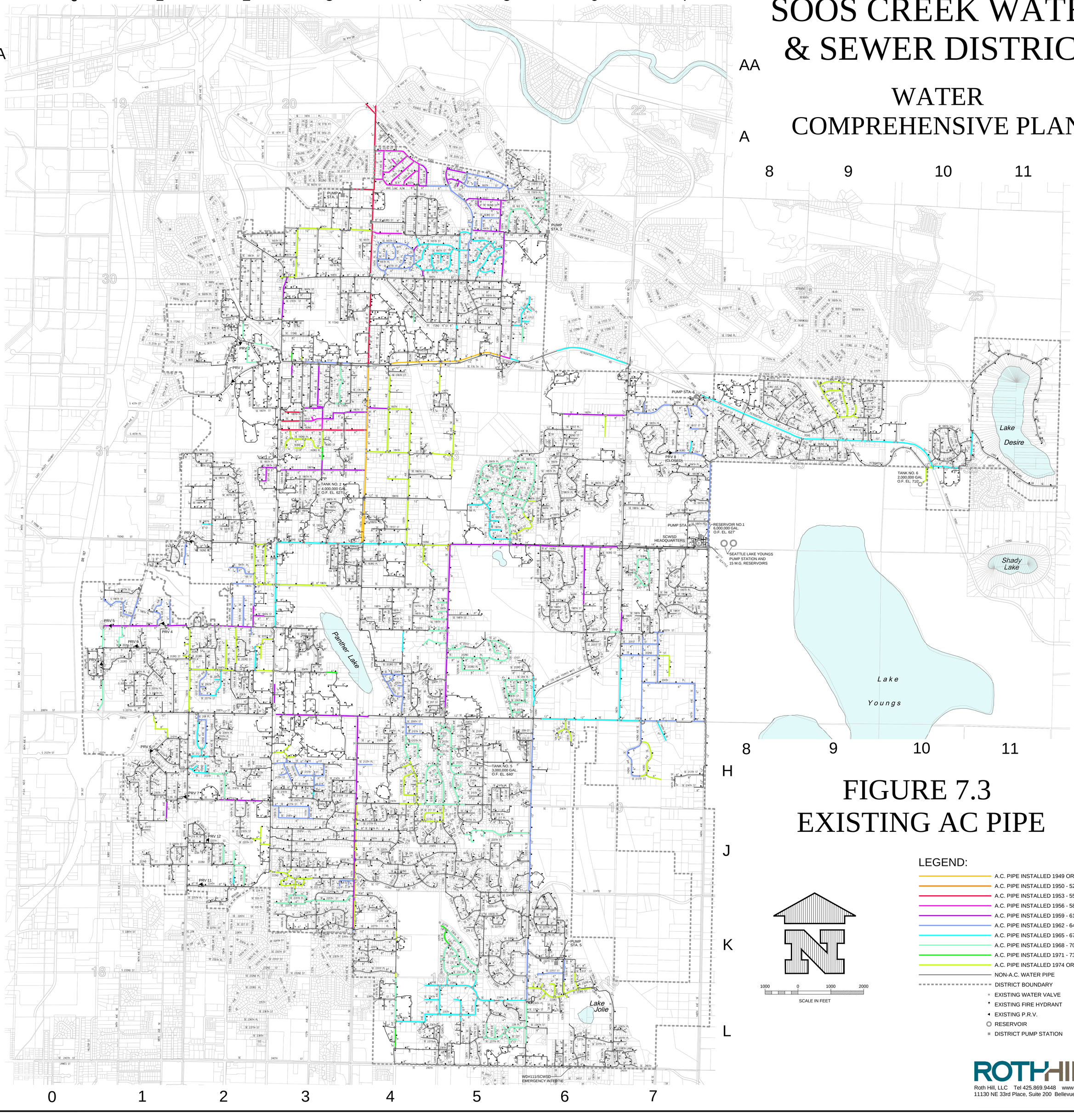


FIGURE 7.3
EXISTING AC PIPE

LEGEND:

- A.C. PIPE INSTALLED 1949 OR BEFORE
- A.C. PIPE INSTALLED 1950 - 52
- A.C. PIPE INSTALLED 1953 - 55
- A.C. PIPE INSTALLED 1956 - 58
- A.C. PIPE INSTALLED 1959 - 61
- A.C. PIPE INSTALLED 1962 - 64
- A.C. PIPE INSTALLED 1965 - 67
- A.C. PIPE INSTALLED 1968 - 70
- A.C. PIPE INSTALLED 1971 - 73
- A.C. PIPE INSTALLED 1974 OR AFTER
- NON-A.C. WATER PIPE
- DISTRICT BOUNDARY
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING P.R.V.
- RESERVOIR
- DISTRICT PUMP STATION

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CHAPTER 8
WATER QUALITY

GENERAL

This chapter describes the source of the Soos Creek Water & Sewer District's water supply and provides an assessment of the water quality provided to customers. The goal of this chapter is to discuss the Distribution System Monitoring plan with regards to federal, state, and local guidelines, as well as to review the existing water quality testing and monitoring program within the District.

The District currently purchases all of its water from the Seattle Public Utilities (SPU). SPU provides drinking water to approximately 1.3 million customers in King County. The District works in coordination with SPU to maintain water quality by meeting all state and federal water quality standards. SPU conducts all testing of the supply and shares responsibility with the District for monitoring the distribution system. The District has two employees responsible for monitoring water quality.

ASSESSMENT OF SOURCE WATER QUALITY

SPUs' primary water sources are the Cedar and Tolt River systems. SPU also operates the Seattle Wellfield for peak summer demands. The Tolt River water supply has a treatment facility that began operations in February 2001. This facility uses ozonation and high-rate filtration to treat the water. Chlorine and fluoride are added prior to transmission. The Cedar River water supply receives primary treatment including physical screening, disinfection with gaseous chlorine, fluoridation and lime for corrosion treatment. The treatment plant began operations on the Cedar River in the summer of 2004 to further treat the water with ozone and ultraviolet light prior to distribution.

The District's water comes primarily from the Cedar River Supply system via the Lake Youngs Reservoir.

SPUs' drinking water quality has always been in full compliance with both state and federal regulations for maximum contaminant levels. However, during the summer of 1992 the Cedar River source exceeded the Surface Water Treatment Rule's (SWTR) raw water fecal coliform criterion for unfiltered supplies. The SWTR was adopted by Washington State in 1993 and sets filtration and disinfection requirements for water systems using surface water or groundwater under the influence of surface water. The DOH enforces the SWTR. In order to comply with current laws, SPU entered into an agreement whereby SPU conducted studies on how to assure future water quality. As a result of this compliance study, an Agreed Order was developed with the DOH in 1994. The requirements of the Agreed Order were fulfilled, revised and signed in 1996. The primary result was the design of a new water treatment facility.

Water treatment for the Cedar supply system is relocated from the Cedar River diversion at Landsburg to the outlet at Lake Youngs Reservoir. The facility began operation in the summer of 2004 and has an initial capacity of 180 million gallons per day (mgd) and an ultimate capacity of 275 mgd. Water treatment is performed by a combination of ozonation, UV light, chlorination, fluoridation, and corrosion control. Water is pumped from Lake Youngs, injected with ozone, and piped to the UV light facility. Required contact time (CT) with the ozone is achieved during this

time. Any ozone remaining in the water is removed using sodium bisulfate by the UV facility. From the UV facility, the water is piped to two clearwells with a total capacity of 20 MG. Chlorine gas and hydrated lime is added here before the water is released into the system. The facility is also built to allow for a future upgrade of a filtration system.

SPU is also conducting ongoing studies of treatment for the reduction of taste and odor complaints from the Lake Youngs system users. Algal growths are often responsible for an earthy taste in water supplies. Ozonation has been shown to reduce this and improves water taste.

SPUs' Water Quality Laboratory (WQL) analyzes over 20,000 samples each year and is divided into three groups: the Chemistry Laboratory, the Limnology Laboratory, and the Microbiology Laboratory. Testing of synthetic organic chemicals, Giardia, Cryptosporidium, and taste and odor compounds amongst others are contracted out to commercial and institutional laboratories. WQL tests for fluoride, turbidity, pH, UV absorbance, chlorine, inorganic chemicals, trihalomethanes, haloacetic acids, volatile organic chemicals, and biological content, as well as E. coli and fecal coliforms. The District is only responsible for testing if there is a positive test and repeat testing is required.

The District installed manifolds on Reservoir No. 1, and Tanks No. 2, No. 5, and No. 6 in order to increase mixing and eliminate areas in the tanks with poor circulation. Vertical manifolds with varying orifice diameters and open tops were used on Tank Nos. 2, No. 5, and No. 6. The orifice size increases in diameter as the manifold increases in height which allows for a balanced flow through the manifold. A horizontal manifold was installed across the bottom of Tank No. 1. These manifolds have helped to eliminate odors and algal growths by not allowing the water to stagnate in any portion of the tank.

DISTRIBUTION SYSTEM MONITORING

The District's distribution system is comprised of over 222 miles of water supply and distribution mains, nearly 1,700 fire hydrants and 3,350 gate valves. Approximately half of the distribution mains (24-inch diameter and smaller) are ductile iron, almost all of which are lined with cement mortar linings. The remainder of the distribution mains is primarily asbestos-cement (AC) with nominal lengths of PVC and cast iron piping also present. The District has no lead service lines within the distribution system. The District maintains seven water-sampling stands that the City of Seattle uses for routine coliform and other compliance monitoring.

A list containing the addresses of the sampling stands is found in **Table 8.5**, Sampling Stand Locations, and the addresses of the sampling stands and the locations for repeat testing in case of a positive result are located in **Table 8.3**, Selected Water Sample Site Groups (District). Sampling stands are utilized to overcome the problems of gaining routine access to public and private premises for water quality sampling. These stands are located to represent different population concentrations, sources of supply, pressure zones, distribution system pipe material, and storage facilities so that representative water samples can be taken. The District complies with all water sampling and monitoring requirements in accordance with DOH guidelines under WAC 246-290.

A list of the sample sites for Disinfection Byproducts monitoring, which will begin in 2012, is given in **Table 8.6**, Disinfection Byproducts – Sample Locations.

HISTORY OF WATER QUALITY REGULATIONS

In 1974, Congress established the Safe Drinking Water Act (SDWA) to safeguard the public from contaminants in public water systems and prevent contamination of groundwater supplies. The SDWA was amended in 1986 and again in 1996. The DOH is responsible for developing and administering state rules for the federal requirements as the Environmental Protection Agency (EPA) adopts them.

The SDWA accomplishes this goal mainly by defining primary, as well as secondary national contaminant-based drinking water standards. The SDWA defines a contaminant as including any physical, biological, chemical or radiological substance. Primary standards address adverse health effects and are based on maximum contaminant levels (MCL). Drinking water systems are required to meet MCL and/or employ techniques to treat drinking water to protect the public from adverse health effects. Secondary standards have been defined to primarily address aesthetic issues, such as odor and appearance of drinking water, and includes some inorganic chemical constituents. Secondary standards are enforced at the discretion of each state. Testing, recordkeeping, reporting and timely notification of failure to meet applicable standards are required. Since being amended, the number of contaminants regulated under the Safe Drinking Water Act (SDWA) grew from 23 in 1986 to 91 in 2001. The rules for monitoring, treatment and regulatory enforcement for these contaminants were developed by the EPA in phases. **Table 8.1**, Regulatory Rules and Effective Dates, provides a summary of the amendments to the SDWA and the DOH regulations described in WAC 246-290.

Table 8.1 Regulatory Rules and Effective Dates

Rule	Parameters Regulated	Effective Date
Phase 1	VOCs	January 1989
Total Coliform Rule	Bacteriological, Disinfection	December 1990
Surface Water Treatment Rule	Turbidity, Disinfection, Bacteriological, THMs	December 1990
Lead and Copper Rule	Lead, Copper	December 1992
Phase II, Phase V	Inorganics, VOCs, SOCs	January 1993
Enhanced Surface Water Treatment Rule	Cryptosporidium, Giardia, Viruses	November 1998
Disinfection By-Products	THMs, HAA5, Disinfectants	Stage 1 – November 1998 Stage 2 – April 2012[1]
Consumer Confidence Reports	Not applicable	October 1999
Arsenic	Arsenic	February 2002
Radon	Radon	Not Finalized
Radionuclides	Radionuclides (exclusive of radon)	December 2003

[1]Under Stage 2, the District will begin quarterly compliance monitoring and reporting in April of 2012.

DISTRICT WATER QUALITY MONITORING PLAN

Table 8.2, Current Water Quality Monitoring, summarizes the current status of the District with regards to the major SDWA regulations. The remainder of this chapter breaks each segment down and explains in greater detail the history and status of these regulations.

Table 8.2 Current Water Quality Monitoring

Requirement	Seattle Public Utilities	District	Action
Coliform Monitoring Plan		X	District Plan currently adopted.
Lead and Copper Rule		X	Conducted in 2012, and every 3 years thereafter.
Asbestos Monitoring		X	Sample taken in 2004. Follow up samples not required for 9 years.
Disinfection Byproducts Rule (Stage 2)	X	X	Stage 2 quarterly compliance and monitoring for TTHM and HAA5 scheduled to begin in April of 2012. 8 sampling sites have been designated.
Residual Disinfection Monitoring	X	X	Samples collected at 7 stations. 49 samples per month. Seattle performs routine coliform and residual monitoring of the distribution system. The District performs follow up monitoring. Additionally, 3 samples are taken per week in summer months at areas of concern.

Coliform Monitoring Plan

In 1975, the EPA agreed to the implementation of a regional coliform monitoring plan for the total SPU served system on the basis that the direct service and the wholesale areas share the same sources, primary treatment plants and transmission grid.

In June 1989, the EPA promulgated a revised regulation for total coliforms. Where the previous regulation was based on the density of coliforms in a given volume of water, the revised rule is based on the presence/absence of coliforms. Under the Total Coliform Rule (TCR), utilities must develop a monitoring plan to collect representative samples of water throughout the distribution system. Monitoring frequency is based on the population served. For a system collecting more than 40 samples per month, compliance is based on no more than 5 percent of the samples collected being coliform positive. Additionally, coliform-positive samples must be analyzed for fecal coliforms or E. coli. Repeat samples collected for positive coliforms must also be analyzed for fecal coliforms and/or E. coli. The TCR went into effect on December 31, 1990 and was implemented and enforced in Washington under the federal rule on September 1, 1991. The TCR was adopted and effective in the Washington Drinking Water Regulations in February 1992.

The Maximum Contaminant Level (MCL) for coliforms is as follows:

Non-Acute MCL

1. For a system collecting more than 40 samples per month, a non-acute violation occurs when more than five percent of the samples collected during the month are coliform positive.
2. For systems collecting less than 40 samples per month, a non-acute violation occurs when there is more than one positive coliform sample in a given month.

Acute MCL

An Acute MCL for coliform bacteria occurs when there is:

1. Fecal coliform present in a repeat sample;
2. E. coli present in a repeat sample; or
3. Coliform present in a set of repeat samples collected as a follow-up to a sample with fecal coliform or E. coli present.

Concerns were raised about the TCR because no variances or exemptions were allowed. The concern was that biofilm in the distribution system may lead to violations of the TCR even though there would not be a demonstrable risk to public health. In August 1989, the American Water Works Association (AWWA) filed a legal petition with the U.S. Court of Appeals to review the rule. As a result of those activities, the EPA agreed to allow variances to systems not at risk for fecal or pathogenic contamination. The EPA developed interim criteria guidance to states seeking to identify systems that could operate under a variance without posing an unreasonable risk to health. In the future, the EPA will establish variance criteria.

Public notification is required for a Group "A" system operating under a variance.

The state can invalidate a positive total coliform sample under three conditions:

1. The SPU WQL determines that improper sample analysis caused the total coliform-positive result;
2. The state determines that the positive total coliform sample resulted from a domestic or other non-distribution system plumbing problem (the state cannot invalidate a sample on the basis of repeat sample results unless all repeat samples collected at the same tap as the original total coliform positive sample are also total coliform positive, and all repeat samples collected within five service connections of the original tap are total coliform negative); or
3. The state has substantial grounds to believe that a total coliform positive result is due to a circumstance or condition which does not reflect water quality in the distribution system. A SPU WQL must invalidate a total coliform sample (unless total coliforms are detected) if the sample produces a turbid culture in the absence of gas production, using the analytical method where gas formation is examined.

Routine Sampling

Under the Washington State Board of Health Drinking Water Regulations for total coliforms, the number of samples a utility is required to collect each month to determine compliance under the total coliform rule is based on population served (resident and non-resident population). In response to a 1972 request from the DOH (Washington Department of Social and Health Services in 1972), the

City of Seattle developed a coliform rule monitoring plan for its direct customers and for the wholesale distribution areas. Under the original agreement with the State, SPU WQL is responsible for collecting and analyzing drinking water samples from all of the direct and wholesale service areas. Under this original agreement, Seattle and its purveyors sample at a rate of at least 0.7 samples per 1,000 customers per month. Within the District, SPU currently takes approximately 49 monthly samples for coliform in conformance with the regional coliform monitoring plan.

Sample Analysis/Reporting to the State

According to the Washington drinking water regulation WAC 246-290-480 (2.f.), the DOH must be notified:

- Within 10 days of the presence of coliform in a sample; and
- By the end of the day, when the purveyor is notified by the SPU WQL for the presence of fecal coliform or E. coli.

If a positive coliform sample is found, the SPU Water Quality Lab will first notify the District. The lab will then contact or send notification to the DOH. It is the District's responsibility to follow-up with the DOH within the required timeframes.

Operational Responses to Unsatisfactory Samples

According to WAC 246-290-320, repeat samples must be collected whenever a sample is determined to be coliform positive. Within 24 hours of being informed by the SPU WQL of a coliform presence sample, a set of three repeat samples must be collected. One sample must be collected from the same sample site that the original coliform presence result came from. Plus, a sample must be taken from each of two additional repeat sites identified on the following pages. Due to the requirement for repeat sample sites, routine sampling at the source and the service connection farthest from the source should be avoided.

Sample Site Group

After the routine sampling sites are selected, three additional sites (repeat sites) must be identified for each routine site. The first repeat site will be the routine site. The second and third repeat sites will be located within five service connections upstream and downstream from the routine/first repeat site.

The Sample Site Group locations are shown on **Figure 5.1**, Existing Water System Facilities, earlier in this Plan. Copies of this map are on file at the District office, DOH, and SPU. Copies of the Sampling Station Site Maps are also in the District's Water Quality Regulatory Compliance Handbook, in **Appendix I.**

Table 8.3 Selected Water Sample Site Groups (District)

Water Sampling Station #58-1 (111th Avenue SE & SE 179th Street)	
Up	**Down**
1. 17665 – 111th Avenue SE	1. 17658 – 111th Avenue SE
2. 17810 – 111th Avenue SE	2. 17657 – 111th Avenue SE
3. 17801 – 111th Avenue SE	3. 17650 – 111th Avenue SE
4. 17808 – 111th Avenue SE	4. 17649 – 111th Avenue SE
5. 17815 – 111th Avenue SE	5. 17642 – 111th Avenue SE
Water Sampling Station #58-2 (SE 236th Street & 123rd Avenue SE)	
Up	**Down**
1. 12125 SE 236th Street	1. 12009 SE 236th Street
2. 12211 SE 236th Street	2. 23607 – 120th Avenue SE
3. 12216 SE 236th Street	3. 23622 – 120th Avenue SE
4. 23603 SE 236th Place	4. 11858 SE 236th Street
5. 23501 – 123rd Avenue SE	5. 23419 – 120th Avenue SE
Water Sampling Station #58-3 (SE 204th Street & 108th Avenue SE)	
Up	**Down**
1. 10630 SE 204th Street	1. 20256 – 106th Avenue SE
2. 20221 – 108th Avenue SE	2. 20257 – 106th Avenue SE
3. 20216 – 108th Avenue SE	3. 20406 – 106th Avenue SE
4. 20201 – 108th Avenue SE	4. 20407 – 106th Avenue SE
5. 20125 – 108th Avenue SE	5. 10429 SE 204th Street
Water Sampling Station #58-4 (SE 160th Street & 121st Avenue SE)	
Up	**Down**
1. 15716 – 121st Avenue SE	1. 15704 – 121st Avenue SE
2. 15723 – 121st Avenue SE	2. 12011 SE 157th Place
3. 15722 – 121st Avenue SE	3. 12014 SE 157th Place

Table 8.3 Selected Water Sample Site Groups (District)

4. 15728 – 121st Avenue SE	4. 12008 SE 157th Place
5. 15729 – 121st Avenue SE	5. 12002 SE 157th Place
Water Sampling Station #58-5 (SE 183rd Street & 148th Avenue SE)	
Up	**Down**
1. 14702 SE 183rd Street	1. 14770 SE 185th Place
2. 14705 SE 183rd Street	2. 14754 SE 185th Place
3. 18164 – 147th Avenue SE	3. 14748 SE 185th Place
4. 18149 – 147th Avenue SE	4. 14742 SE 185th Place
5. 18142 – 147th Avenue SE	5. 18611 – 148th Avenue SE
Water Sampling Station #58-6 (SE 211th Street & 125th Avenue SE)	
Up	**Down**
1. 12524 SE 211th Street	1. 12516 SE 211th Street
2. 12532 SE 211th Street	2. 21020 – 125th Avenue SE
3. 12540 SE 211th Street	3. 21107 – 125th Avenue SE
4. 21020 – 126th Avenue SE	4. 21104 – 125th Avenue SE
5. 21012 – 126th Avenue SE	5. 21112 – 125th Avenue SE
Water Sampling Station #58-7 (13425 SE 230th Street)	
Up	**Down**
1. 23003 – 135th Avenue SE	1. 13426 SE 230th Street
2. 23006 – 135th Avenue SE	2. 22845 – 135th Avenue SE
3. 23020 – 135th Avenue SE	3. 23003 – 135th Avenue SE
4. 23030 – 135th Avenue SE	4. 13406 SE 230th Street
5. 23100 – 135th Avenue SE	5. 13405 SE 230th Street

Flushing Options

After a bad sample has been confirmed, the District thoroughly flushes the suspect area before resampling. A chlorine residual test is taken before and immediately after flushing has taken place. If a low chlorine residual (below 0.3) is found, appropriate measures are taken to boost the chlorine in the system. WAC 246-290-320 prohibits batch or shock chlorination prior to the collection of repeat samples without prior authorization from DOH. Recent activities within the area of the bad sample

are researched to determine if a cross-connection may have taken place. New construction or water draws may also cause problems. It should not be immediately assumed that the source water is contaminated.

System Analysis

The District conducts an ongoing system analysis program in order to identify possible problem areas before an MCL violation occurs. Deadend lines are potentials for low chlorine residual as well as MCL violations. Valves that are turned down or off could cause stagnant water and flow problems. Tanks and water sampling stands need to be cleaned and/or inspected on a yearly or as needed basis.

Lead and Copper Rule

The purpose of the Lead and Copper Rule is to protect the public from exposure to corrosion byproducts, primarily lead, used in plumbing, piping, and fixture materials. The Lead and Copper Rule was finalized in June 1991 and monitoring requirements for systems such as Soos Creek Water & Sewer District which serves 3,301 to 50,000 people began in July 1992.

The District has 26 tap monitoring locations that are sampled yearly for conformance with the regional monitoring plan. The result of testing from the years 2000 and 2001 in the District was 0.0 parts per billion (ppb) of Lead and 1.3 ppb of Copper, which is in compliance with current regulations. In addition, two sets of regional lead and copper monitoring samples were collected in the Fall of 2003, Spring of 2004, Summer of 2006, and Summer of 2009. The 90th percentile values for both lead and copper were below the respective action levels.

Asbestos Monitoring

The District completed tests for the presence of specific sized asbestos fibers in the system in 1995 and 2004. The test results indicated that there were no fibers above the detectable limits present in the samples collected and tested. SPU reports that there is no naturally occurring asbestos of the test size in the source water. Testing is required once every nine years.

Disinfection Byproducts Monitoring (Stage 2)

All samples are currently being collected by the District and analyzed by the SPU WQL which is certified by Washington State for Total Trihalomethanes (TTHM) and for haloacetic acids (HAAs) analyses. Beginning in April of 2012, quarterly monitoring and compliance at 8 sites for TTHM and haloacetic acid 5 (HAA5) will commence. These 8 sites which were determined in the IDSE Report for Standard Monitoring (December 8, 2008) and approved by the EPA via letter dated May 18, 2007. The District is planning to install sample stations at all of the 8 sites which do not currently have sample stands. By doing this, SPU will conduct the sampling and testing at all 8 locations for the byproducts similarly to the sampling and testing SPU currently performs for coliform monitoring.

A copy of the IDSE Report for Standard Monitoring (December 8, 2008) is included in **Appendix I**, Water Quality Regulatory Compliance Handbook. A copy of a map showing the monitoring sites is also enclosed in **Appendix I**, Water Quality Regulatory Compliance Handbook.

Residual Disinfection Monitoring

The District currently has no form of gaseous or hypochlorination to boost residuals in the system. All chlorinating is done by manual means of introducing chlorine tablets into the District's reservoirs.

During the summer months, the District completes additional system chlorine residual monitoring. These samples are taken at locations in the system which the District has specific concerns for possible low residual levels.

Disinfection residual monitoring for compliance is conducted in conjunction with monthly distribution coliform monitoring. SPU collects the routine samples and the District collects the follow up samples.

Cross-Connection Control Program

The Cross-Connection Control Program is discussed in Chapter 11 and the full program can be found in **Appendix J**.

PUBLIC NOTIFICATION FOR VIOLATIONS

Requirements for Public Notification in the event of a Fecal Coliform or E. Coli violation (Tier 1) or a Total Coliform violation (Tier 2) are given in **Appendix I**, Water Quality Regulatory Compliance Handbook. The Handbook also includes the requirements for Public Notification in the event of a Stage 2 Disinfection Byproducts Rule violation.

KEY PUBLIC NOTIFICATION CONTACTS

Response to the public is to be made only after confirmation of an MCL violation with DOH, SPU, and coordination with management of the utility. Key contacts for utility decisions and response are listed below:

Soos Creek Water & Sewer District Key Contacts

	Phone
Ron Speer, District Manager	(253) 630-9900 ext. 102
Alan Eades, Operations Manager	(253) 630-9900 ext. 104
Ken Van Den Bergh, Field Foreman	(253) 630-9900 ext. 115

Seattle Public Utilities Contacts

	Phone	FAX
Terri Gregg, Wholesale Contracts Manager	(206) 684-7975	
Wylie Harper, Laboratory Services Director	(206) 684-7880	(206) 684-4133
Lynn Kirby, Water Quality Engineer	(206) 684-0216	(206) 684-4133

Washington State Department of Health (Northwest Regional Office) Contacts

	Phone	FAX
Paige Igoe, King County Regional Engineer	(253) 395-6764	(253) 394-6760
Northwest Regional Office/Kent	(253) 395-6750	(253) 394-6760
After hours Emergency Hotline	(877) 481-4901	(253) 394-6760

Public Health – Seattle and King County Contacts

	Phone
Bill Lasby, Health & Environmental Investigator IV	(206) 263-8495

Newspaper Contacts

	Phone
Seattle Times	(206) 464-2111(Main) / (206) 464-2261(News Room)
Reporter	
Kent	(253) 872-6600
Renton	(425) 255-3484

Television Contacts

	Phone	FAX
KING	(206) 448-5555	(206) 448-4525
KSTW	(206) 441-1111	
KIRO	(206) 728-7777	
KOMO	(206) 404-4000	

Radio Contacts

	Phone
KIRO (FM)	(206) 726-5476
KOMO	(206) 404-5666

School Districts

In cases requiring notification, the District will contact the principal of the effected school(s). The District maintains a list, which includes the names and phone numbers of each school within the District in its Emergency Response Plan.

RECORDKEEPING

As taken from WAC 246-290-480, the test results shall be kept for a minimum of the following lengths of time:

Chemical analysis	Life of system
Records of daily source meter readings	10 years
Bacteriological and turbidity analysis	5 years

Other records of operation and analyses required:

By the department	3 years
Chlorine residual	3 years
Fluoride level	3 years

Water treatment plant performance including, but not limited to:

Type of chemicals used and quantity	3 years
Amount of water treated	3 years
Results of analyses	3 years

All records shall bear the signature of the operator in responsible charge of the water system or his or her representative. The District and SPU shall keep these records available for inspection by the DOH and shall send the records to the department if requested. Actual laboratory reports may be kept or data may be transferred to tabular summaries, provided the guidelines outlined in WAC 246-290-480 (1.a. i-vi) are followed.

Records shall be kept of actions taken to correct violations of primary drinking water standards. For each violation, records of actions taken to correct the violation and copies of public notifications shall be kept for no less than ten years after the last corrective action taken.

Copies of any written reports, summaries or communications relating to sanitary surveys or special purpose investigations (SPI) of the system conducted by District personnel, by a consultant or by any local, state, or federal agency shall be kept for ten years after completion of the sanitary survey or SPI.

Copies of project reports, construction documents and related drawings, inspection reports and approvals shall be kept for the life of the facility.

FACILITY LOCATIONS AND CLEANING PLANS

Storage Tank Cleaning Plan

The District currently has four storage tanks in service with a total capacity of 15.1 million gallons. **Table 8.4**, Tank Location and Cleaning Plan, shows the location of each tank and the inspection and cleaning plan for each.

Table 8.4 Tank Location and Cleaning Plan

Tank # (size)	Address	Inspected	Cleaning
1 (6MG)	SE 193rd Street and 146th Avenue SE	Yearly	Every 4 years
2 (4MG)	SE 188th Street and 116th Avenue SE	Yearly	Every 4 years
5 (3MG)	SE 211th Street and 126th Avenue SE	Yearly	Every 4 years
6 (2MG)	SE 187th Street and 168th Avenue SE	Yearly	Every 4 years

Water Sampling Stand Cleaning Plan

The District currently maintains seven water sampling stands. The stand number, code number and location are given in **Table 8.5**, Sampling Stand Locations.

Table 8.5 Sampling Stand Locations

Sampling Stand #	Code #	Location
185	58-1	111th Avenue SE and SE 179th Street
186	58-2	SE 236th Street and 120th Avenue SE
187	58-3	SE 204th Street and 108th Avenue SE
188	58-4	SE 160th Street and 121st Avenue SE
189	58-5	SE 183rd Street and 148th Avenue SE
190	58-6	125th Avenue SE and SE 211th Street
191	58-7	SE 230th Street and 134th Avenue SE

Water sampling stands need to be kept clean and maintained in order to prevent false positives from occurring during routine sampling. The following is a listing of the items which need to be addressed in a sampling stand maintenance schedule:

Disinfect:	Yearly or whenever a sample is positive for coliform.
Painting:	Every three years or as needed.
Trim Brush:	Yearly or as needed.
Replace Valves:	Inspect yearly and replace as needed.

Piping and Hose: Inspect yearly and replace as needed.
Meter Box: Inspect yearly and clean as needed.

The following is a listing of the items necessary for disinfecting sampling stands:

Garden Spray Pump
Tygon clear plastic tubing
Two (2) hose clamps
Safety glasses
Cl2 Bleach (5 to 1 solution of water to bleach)

When disinfecting the stand, a water and bleach solution should sit in the stand for approximately five to ten minutes.

Disinfection Byproducts Sample Locations

Beginning in 2012, quarterly sampling for disinfection byproducts at 8 sites is scheduled to begin. These site locations are given in **Table 8-6**, Disinfection Byproducts – Sample Locations. It is anticipated that sampling stands will be installed at the locations listed which presently do not have sampling stands. It is further anticipated that SPU will assign a sampling stand number to each of the new locations in continuation of the current sampling stand nomenclature, for example, 58-8, etc.

Table 8.6 Disinfection Byproducts - Sample Locations

Site ID		Location
1	T-1	20406- 92nd Avenue SE
2	A-4	17610 – 162nd Avenue SE
3	T-2	Sampling Stand 58-2
4	H-1	10891 SE 214th Place
5	T-6	906 S. 38th Court
6	T-3	22124 - 98th Place SE
7	A-2	20654 – 98th Place S
8	A-3	Sampling Stand 58-3

PENDING CHANGES TO SYSTEM OPERATION

The District has addressed past concerns related to water quality and is considering no new improvements for water quality reasons. One proposal that remains a pending change is the installation of booster pump facilities at Tank No. 2. This project would allow the District to draw Tank No. 2 down by pumping into the distribution system, thus ensuring that the reservoir can be more fully cycled during low demand periods. This is identified in the Capital Facility Plan list as Project SS-5, in **Chapter 7**.

Connections and piping for a future chlorination system are installed in Tank No. 5. However, as indicated above, there are no current plans to install the chlorination facilities.

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CHAPTER 9
WATER USE EFFICIENCY

Efficient water use is critical for water systems to support growth in their communities and provide water for other environmental uses. The efficient use of water helps ensure reliable water supplies are available for the District well into the future. It is important to the District to not only conserve water, which reduces use, but also promote efficient use, which both conserves water and reduces wasteful uses. The purpose of this chapter is to provide an analysis of the District's historic water conservation program and to evaluate the existing and proposed conservation and water use efficiency measures.

This chapter is formatted into two sections. The first section analyzes the previous conservation program by examining how it was formed, its program and goals, and analyzes the savings. The second section of this chapter presents the District's new 2011 Water Use Efficiency Program (WUE), and includes the new requirements, measures, and demand savings anticipated from the program.

HISTORY

In 1985 East King County, in which the District is located, was declared a Critical Water Supply Service Area (CWSSA).

In 1989 the East King County Regional Water Association (EKC RWA) formed to develop a Coordinated Water System Plan (CWSP). The CWSP included a water conservation element outlining regional and local conservation objectives, including a target reduction of 6.5 percent by the year 2000 for purveyors, such as the District, serving 500 or more customers. The District implemented the Comprehensive Program with a target reduction of 8 percent by the year 2000 for utilities with 10,000 or more customers. The District exceeded the goal of the CWSP by reducing its water usage by 18 percent from 1990 to 2000. No target reductions were established by the EKC RWA beyond 2000.

The District began its conservation program in 1996 and has produced quantifiable immediate water savings through operations and maintenance, plumbing retrofit programs, water rates, metering approaches, and information programs to educate customers about conservation. The District's 1996 Water Conservation Program specified a projected reduction in demand of five percent by the year 2015. The District achieved this goal in 2001. From 1996-2001, the District reduced demand by an average of 2.4 gallons per day per ERU, which correlates to a reduction of approximately 1.2 percent per year.

The District's next challenge is sustaining long-term demand reduction through a change in consumers' water use habits. The District has established policies and programs that strive to make efficient use of water. The policies are summarized in Chapter 3, such as Policy 7.1 which states that the District will continue implementation and enhancement of its current conservation programs. The District set a target conservation consumption of one percent per year through the Planning Period 2017. The District's water conservation measures shall be consistent with, and strive to exceed, all local, state, and federal laws and regulations.

The District, in partnership with 18 other local water providers known as the Saving Water Partnership, is working to help all customers conserve water. The partnership offers educational programs, financial incentives, and special promotions to help inform customers of conservation opportunities. The Saving Water Partnership's regional 2013-2018 Water Use Efficiency Goal is to reduce per capita water use from current levels so that total average annual retail water use of members of the Saving Water Partnership is less than 105 mgd from 2013 through 2018 despite forecasted population growth.

REGULATORY REQUIREMENTS

The Washington Water Utilities Council, DOH and DOE jointly developed Conservation Planning Requirements (CPR) Guidelines and Requirements for Public Waters Systems Regarding Water Use Reporting, Demand Forecasting Methodologies, and Conservation Programs. Interim guidelines were first established in 1990 and subsequently finalized and approved in 1994. The DOH published the CPR in 1994, which was the basis of the District's conservation program.

The CPR included guidelines for public water systems in preparing and implementing conservation plans and programs to monitor water use. The CPR suggested a conservation plan include three components:

1. water use data collection
2. demand forecasting
3. conservation program development

In 2003, the Washington State Legislature passed Engrossed Second Substitute House Bill 1338, better known as the Municipal Water Law, to address the increasing demand on our state's water resources. The law established that all municipal water suppliers must use water more efficiently in exchange for water rights certainty and flexibility to help them meet future demand. The Legislature directed the DOH to adopt an enforceable WUE program, which became effective on January 22, 2007. The WUE program replaced the CPR. The new WUE requirements emphasize the importance of measuring water usage and evaluating the effectiveness of the WUE program.

Additionally, the 60-year Water Supply Contract with Seattle Public Utilities required the District to adopt and agree to the regional goals.

2004–2010 WATER CONSERVATION PROGRAM

The District's 2004–2010 Water Conservation Program was comprised of measures and goals following the format of the CPR. The measures include four categories as depicted in **Figure 9.1** below, Public Education, Technical Assistance, System Measures and Incentives.

Figure 9.1 Conservation Program



The District's goal was the implementation of regional conservations goals and continued implementation of the District's 1996 conservation program. The District targeted conservation consumption of one percent per year for 10 years that began in 2000.

Historical Program Goals and Objectives

The District's 1996 Water Conservation Program identified a projected reduction in demand of 5 percent by 2015. The District met this goal during 2001, by reducing the average day demand by 2.4 gallons per day per ERU, or a reduction of approximately 1.2 percent per year. When the District adopted the 1996 Water Comprehensive Plan, the 1% Conservation Program was not yet in place. In 2000, the District committed to the Saving Water Partnership regional goal along with other local water providers. This program targeted water conservation savings of one percent per capita per year through 2010.

The District's goal for the 2004 to 2010 program was to continue with the Saving Water Partnership WUE regional goal. The District's 2004 -2010 implemented goal was to reduce the average day demand per ERU by one percent per year for ten years, from the planning value of 200.0 gpd/ERU in 2004 to 180.9 gpd/ERU in 2010. From 2004 to 2010, the District's average annual percent decrease in ERU value was 3.32% which exceeded their goal of one percent. The planning value selected for this Plan is 180 gpd/ERU, discussed in more detail in chapter 4.

Historical Water Savings

As part of the development of the Water Use Efficiency Program, the District compared its ERU and ADD values from the 2005 Comprehensive Plan to the 2011 Plan values. This comparison is provided by customer class and shown below in **Table 9.1**.

Table 9.1 ADD & ERU Comparison

Classification	ADD (MGD)		ERU (GPD)	
	2003[1]	2011	2005	2011
Single-family residential	3.09	3.02	200	180
Multifamily residential	0.66	0.68	1,400	1,520
Commercial/ Industrial	0.42	0.38	2,000	1,200
Government/ Education	0.25	0.09	5%	2%
Distribution System Leakage	0.49	0.46	10%	10%
Total	4.92	4.64	-	-

[1] 2003 was the planning year for the 2005 Plan

As shown in **Table 9.1**, average day demands have decreased in the single-family, commercial/industrial, and non-metered classifications. The most significant reduction in ADD is in the single-family residential customer class, which decreased 2 percent since 2003. Although this may not appear to be a significant reduction, the Single Family customer class represents approximately 95% of the District's accounts. From 2003 to 2011, the total ADD decreased by 6%, which can be attributed to a successful conservation program. Multifamily residential was the only customer class to have increased in daily demand, which can be a result of new multifamily residential developments occurring in the District during the planning period.

2004–2010 Program Measures

The District's 2004-2010 Water Conservation Program was comprised of measures to successfully achieve their goal of 1% reduction in gpd/ERU per year. The measures were carried over from their 1996 conservation program which followed the CPR format and added addition enhancement measures to achieve its goals.

PUBLIC EDUCATION

- The District, in partnership with 18 other local water providers, worked to help all customers conserve water. The partnership offered educational programs, financial incentives and special promotions to inform customers of conservation opportunities.

School Outreach

- The District distributed conservation materials provided by Saving Water Partnership ities to local schools.

- The District participated with Puget Power in the “In Concert with the Environment” middle and high school education program.

- The District sponsored students to participate in educational field trips and activities such as the Annual Water Festival.

Speakers Bureau

- The District provided speakers to schools upon request to discuss with the students various aspects of the water and sewer system, including water quality, supply and use.

- The District had a demonstration model of the "water cycle" that was used to educate students on how water is provided to customers as well as what happens to the water after it is used.

Program Promotion

- The District, in coordination with Saving Water Partnership, distributed literature to its customers on water conservation practices, efficiency standards for plumbing fixtures, water conserving landscaping, and more.

- The District participated in the regional mass communication and marketing program (TV, radio, community events) to promote water conservation.

- The District periodically provided conservation information as a bill stuffers.

- The District published a bi-monthly newsletter, The Soos Creek Connection, which provided customers with information on programs, conservation tips, and provide additional resources.

- The District, as required, provided an annual Consumer Confidence Report (CCR) which outlined the water source, contaminant levels, violation of contaminates, etc. Conservation information was generally included as part of the CCR.

- Conservation information was listed on the District's website and updated as needed. Additionally, a link to Seattle Public Utilities’ conservation website is listed.

- The District worked with local newspapers to provide information for news articles and feature pieces on water supply and conservation.

TECHNICAL ASSISTANCE

Purveyor Assistance

Not applicable.

Customer Service

- The District routinely monitored water usage for all residential and commercial accounts. If a significant deviation from past usage was noticed, the customer is notified immediately.
- The District participated in the school facility program that offered assessments and audits of local school facilities.
- The District provided assistance to prospective new customers regarding water conservation practices.

Bill Showing Consumption History

- Customers' water bills included water use over the same period from the prior year as well as the classification average water use.

SYSTEM MEASURES

Source Meters

- The District is metered at all source connections. These meters assisted in system management, water accounting, and billing from Seattle Public Utilities. Meters were maintained and tested on a regular basis by Seattle Public Utilities.

Service Meters

- The District required all water to be metered at the point of use.
- The District began replacing all water meters with electronic meters over a 3-year period starting in 2004.
- The District required any person desiring to use District water from an unmetered source to use the water stations the District provided.
- The District requires annual testing and replacement of large meters as necessary.

Unaccounted Water/Leak Detection

- The District systematically cleaned and scours all watermains as part of a flushing program. The water is accounted for by the use of a flow meter and diffuser.
- Leak Detection Surveys were conducted every other year.
- The District required developers and contractors to use a water station during the construction of projects.

- When anomalies appeared on customer's bills the District investigated for the source of the problem.

- Formal program to identify and track annual authorized usage (fire department training, flushing, reservoir cleaning, and other maintenance purposes).

- Investigated potential mechanisms to prevent illegal connections and unauthorized use of fire hydrant water.

INCENTIVES/OTHER MEASURES

Single-Family/Multifamily Kits

- The District encouraged and periodically provided water conservation items to single-family homes and the owners and managers of multifamily buildings. Conservation items available free of charge included adjustable low-flow showerheads, bathroom and kitchen faucet aerators, toilet leak detection tablets, shower timers, and toilet displacement devices.

Nurseries/Agriculture

- Through partnerships with local businesses, the District supported the Water Smart Technology (WST) program which offered technical and financial assistance for the installation of water conservation technologies for businesses.

- The District provided informational pieces on watering practices and the use of native vegetation.

Landscape Management/Playfields

- The District supports the Water Efficient Irrigation Program (WEIP) that offers irrigation system assessments and audits as well as detailed evaluations of irrigation efficiency to qualifying customers. According to the Saving Water Partnership 2010 Annual Report, one District customers participated in the program in 2010.

- The District encouraged and distributes brochures and informational pieces on water practices and the use of native plants.

- The District supported, in cooperation with participating local nurseries, the soaker hose rebate program to promote Natural Lawn and Garden practices.

- The District installed a low-water consumption landscape at its office in order to encourage customers to consider alternatives to conventional high water consumption settings.

Conservation Pricing

- The District passed seasonal rate charges from Seattle Public Utilities on to its customers.

- The District maintained a conservation pricing structure with increasing block rates to provide economic conservation incentive.

Utility Financed Retrofit

- The District, in cooperation with Saving Water Partnership, participated in the Toilet Rebate Program for single-family, multifamily and commercial customers. According to the Saving Water Partnership 2010 Annual Report, a total of 34 toilet rebates occurred for Single Family, 103 rebates occurred for multifamily.

- The District promoted high-efficiency washing machines to its customers as part of the regional "WashWise Program". The District offers information on these machines and offers a customer rebate. According to the Saving Water Partnership 2010 Annual Report, a total of 439 rebates were provided to District customers in 2010.

Other Measures

- The District supported wastewater reuse and rainwater reclamation projects and programs and participates when they serve as cost-effective and environmentally beneficial sources of water.

- The District monitors non-revenue water by testing the accuracy of meters and changes any malfunctioning meter upon detection. Additionally, the District meters all water flushing of its system.

2011-2017 WATER USE EFFICIENCY PROGRAM

The development of the WUE program is the foundation for using water wisely. The 2011-2017 WUE program will be a continuation of the 2004-2010 conservation program with specific enhancements to the program to comply with current regulations and create an emphasis on efficient water usage rather than only conserving. The following sections includes requirements that are mandatory by the WUE program and shows the measures the District intends to continue implementing as well as recommended enhanced measures. The District will need to implement enhancements in order to achieve its overall goal.

Program Goals

Per the WAC 246-290-830(4)(a) all water purveyors with 1,000 or more connections were required to set efficiency goals through a public process. The deadline to do so was 01/22/2008. The District conducted a public forum 12/19/2007 and adopted the SPU six-year regional goal comprised of the remainder of the 11 mgd savings goal of the Saving Water Partnership WUE regional goal adopted through 2010; and of a portion of the 15 mgd regional goal from 2011 to 2030. In 2013 the District adopted the Saving Water Partnership's regional 2013-2018 Water Use Efficiency Goal to reduce per capita water use from current levels so that total average annual retail water use of members of the Saving Water Partnership is less than 105 mgd from 2013 through 2018 despite forecasted population growth. Therefore, the District estimates a 1% reduction in the ERU value for the 2011-2017 WUE program. The WUE program measures are designed to help meet the District's established goal.

The District sets a leakage goal to continue to have less than 10% annual water loss for the entire system which will be achieved through a water main and meter replace program.

Program Requirements

The new WUE requirements emphasize the importance of measuring water usage and evaluating the effectiveness of the District's program. There are three fundamental elements of a WUE Program that the District will follow:

- **Planning Requirements** – Municipal water suppliers are required to:
  - Collect data
  - Forecast demand
  - Evaluate WUE measures
  - Calculate distribution system leakage
  - Implement a WUE program to meet their goals
- **Distribution Leakage Standard** – Municipal water suppliers are required to meet a distribution system leakage standard to minimize water loss from their distribution system.
- **Goal setting and performance reporting** – Municipal water suppliers are required to set WUE goals through a public process and report annually to their customers and DOH.

2011-2017 Program Measures

Under the new WUE requirements, a program measure may include water efficient devices, actions, business practices, or policies that promote efficient water use. As mentioned, the District is required to implement or evaluate a minimum of nine WUE measures.

WUE measures can target specific customer classes or a combination of customer classes. The WUE guidelines state that a measure can be counted for each class it is attributed to. For example, the water efficient irrigation program is provided across multiple customer classes (single family, multifamily, and commercial/industrial), which means it could be counted as three measures.

In order to achieve the program goals as stated, the District must maintain its commitment to the existing program by continuing to implement the previous measures. The District will provide the required nine measures and an additional four to make a total of twelve (12) measures which incorporates all the measures from the previous plan and is proposing to not double count measures that cross into multiple customer classes. The District will do this because it has successfully implemented the measures in the past and desires to continue its effective program further into the future. This is a conservative approach to reach the District's goals. Measures that are required, like system measures, are being implemented but do not count as part of the District's program as discussed later herein. The program measures are provided below.

Program Measures:

1. As part of Saving Water Partnership, the District will continue its active participation and support of the Water Smart Technology (WST) program. The Program offers technical and financial assistance for the installation of water conservation technologies for business.

2. As part of Saving Water Partnership, the District will continue to actively participate in the Water Efficient Irrigation Program (WEIP) which offers irrigation system assessments and audits, as well as detailed evaluations of irrigation efficiency, to qualifying customers.

3. The District will continue to encourage and distribute brochures and informational pieces to its customers on water conservation practices, efficiency standards for plumbing fixtures, water conserving landscaping, and more.

4. The District coordinates with the schools to educate the students on water conservation practices through programs like the "in Concert with the Environment." They sponsor field trips, provide speakers to the schools, and have a demonstration of the "water cycle" to show the students.

5. The District participates in the regional mass communication and marketing program (TV, radio, community events) to promote water use efficiency.

6. The District publishes a bi-monthly newsletter, The Soos Creek Connection, to provide customers with information on programs, conservation tips, and provide additional resources.

7. The District will also actively participate and support, in cooperation with participating local nurseries, the soaker hose rebate program when available as part of Saving Water Partnership program. This rebate program promotes natural lawn and garden practices.

8. The District utilizes a seasonal rate structure that is intended to further encourage conservation during high demand times of the year. The District's rates are higher during the summer, high demand, months to encourage additional conservation above existing educational efforts. The District has found this to be successful and will continue to follow suite in the coming years.

9. The District will encourage and periodically provide water conservation items to single-family homes and the owners and managers of multifamily buildings for remodels or new construction. Conservation items available will be free of charge and will include adjustable low-flow showerheads, bathroom and kitchen faucet aerators, toilet leak detection tablets, shower timers, and toilet displacement devices.

10. The District maintains a conservation pricing structure with increasing block rates to provide economic conservation incentive.

11. The District, in cooperation with the Saving Water Partnership, will participate in the Toilet Rebate Program for single-family, multifamily and commercial customers.

12. The District routinely monitors water usage for all residential and commercial accounts. If a significant deviation from past usage is noticed, the customer is notified immediately. The District will also provide conservation information on customers' bills.

It is important to note that in addition to the water cost savings for the WUE measures, other benefits result, both to the utility and to its customers, from WUE activities. Such additional benefits could include:

- Significant customer energy savings because water heaters are the second largest energy users in the home. Hot water use can be reduced almost one-third by cost-effective WUE measures, such as water efficient fixtures and appliances. Significant energy savings can also occur for industrial processes requiring water heating and other power uses.
- Efficient landscaping and irrigation techniques save on maintenance costs.
- Reductions in water production decrease energy required by utilities to treat and distribute water and to collect and treat wastewater. Chemical costs are also reduced in water and wastewater operations.
- System measures could provide substantial benefits in addition to water production cost savings including:
    - Identification of non-revenue water could result in recovery of unbilled revenue (inaccurate meters) and reduced unauthorized water usage (theft);
    - Leak detection helps prevent major main breaks, which could result in significant repair costs to the utility;
    - Leak detection reduces a utility's liability due to prevention of potential property damage;
    - Repair and/or replacement of service and source meters allows a utility to recover unbilled water revenues.

Mandatory Measure Requirements

In addition to the nine required measures discussed above, the WUE program requires supply side requirements that must be implemented. Any supply side measures that are implemented do not count towards the minimum number of measures discussed earlier. These are considered activities that the District implements to understand and control leakage including new meters, leak detection surveys, and water audits. Per the WUE requirements, the following measures must be implemented:

- Install production (source) meters
- Install consumption (service) meters
- Perform meter calibration
- Implement a water loss control action plan to control leakage if distribution system leakage is greater than 10 percent over a three-year period

- Educate customers about water use efficiency practices

The measures that must be evaluated are:

- Evaluate rates that encourage water demand efficiency
- Evaluate reclamation opportunities

In the previous plan, the District included six (6) system measures that now are mandatory and do not count towards the required measures to be implemented or evaluated. These measures are shown below.

- Water meter replacement program
- Annual testing and replacement of large meters
- Leak Detection Survey every other year
- Formal program to identify and track annual authorized usage (fire department training, flushing, reservoir cleaning,
- Prevent unauthorized use of fire hydrant water
- Water Audits

The District in the past has complied with these requirements and will continue to comply with these regulations.

Reclaimed Water Use

According to WAC 246-290-100 and the WUE rule, water systems with over 1,000 connections must collect and evaluate information on reclaimed water opportunities. Because only an evaluation of reclaimed water use is required in the WUE program, the actual use of reclaimed water can be used as a WUE program measure. Currently, the District is only focused on evaluating reclaimed water use savings.

The District may develop projects or consider participation as appropriate in the water reuse projects and programs developed by adjacent jurisdictions and others, including demonstration or pilot projects that may be developed in accordance with applicable federal, state, and local laws and regulations.

The District staff may investigate and recommend proposed changes to the District's development and service policies and regulations that may be desirable in order to encourage the promotion of these programs and technologies.

The District perceives the most likely user of reclaimed water to be the irrigation customer class. Attachment 9, of the Municipal Water Law has been completed that identifies potential reclaimed water users and can be found in **Appendix M**.

Distribution System Leakage

Distribution system leakage is a significant element of the new WUE requirement although it is not considered a program measure. In the past, distribution leakage was referred to as "unaccounted-for-water". The WUE requirements now use the terms "authorized consumption" and "distribution system leakage." It is calculated as shown below.

Volume of Distribution System Leakage = Total Water Produced and Purchased – Authorized Consumption

Authorized consumption is considered water delivered to customers by service meters, water sold to other water systems, and other authorized uses such as fire protection, flushing, construction, street cleaning, and other maintenance and operations practices. However, to be credited, this must be accounted for by metering or by estimating water use with credible means. All water that is not authorized is considered distribution system leakage.

The WUE Rule requires that the three-year average of distribution leakage be maintained at less than 10 percent of the supply. The District has made a significant commitment to maintain this status and the three year average from 2008 to 2010 is 8.6%.

Projected Water Demand

The District's 2011-2017 WUE Program assumes water savings from retail customers only. In the tables below are the projected water demands for the Retail Water Service Area with and without WUE, followed by projections of total water system demand with and without WUE. As shown in the tables, it is important to note retail demand is only one component of total system demand.

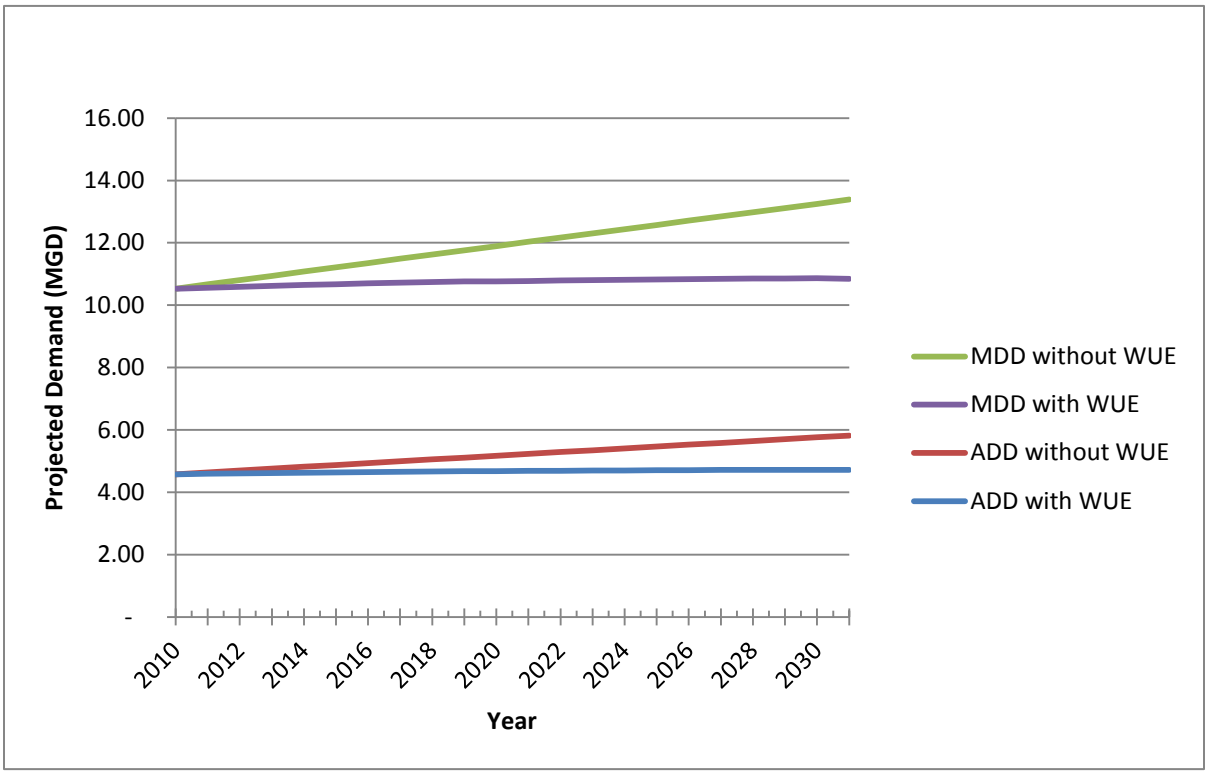
The water demand savings presented in this section are based upon the recommended WUE Program, discussed earlier herein, developed for the 6-year implementation period (2011 through 2017). In the demand estimates, a one percent reduction was applied throughout up until 2031.

Table 9.1 presents the comparison of projected water demand, both average day demand (ADD), and maximum day demand (MDD) for retail customers with and without WUE for the 20-year planning period. **Figure 9.2** shows a graphical representation of the **Table 9.2**. As shown in the table, WUE measures are projected to result in an average day reduction in retail demand of 0.33 mgd by 2017, representing a reduction of approximately 7 percent. A reduction of 0.55 mgd is projected by year 2021 and 1.11 by 2031. MDD is calculated at 2.3 times ADD. WUE measures are projected to result in a reduction in retail MDD of 0.77 mgd by 2017, 1.26 mgd by 2021, and 2.55 by 2031.

Table 9.1 ADD with and Without WUE

Volumes (MGD)	2011	2012	2013	2014	2015	2016	2017	2021	2031
ADD w/o WUE	4.64	4.70	4.76	4.82	4.88	4.93	4.99	5.23	5.82
ADD w/ WUE	4.59	4.61	4.62	4.63	4.64	4.65	4.66	4.68	4.71
MDD w/o WUE	10.67	10.80	10.94	11.08	11.21	11.35	11.49	12.03	13.39
MDD w/ WUE	10.56	10.59	10.62	10.65	10.67	10.70	10.72	10.77	10.84

Figure 9.2 ADD & MDD with and Without WUE



Budget

The budget of the WUE program is primarily the cost of the membership of Saving Water Partnership along with additional rebate costs and staff time. The cost of the membership is included into the rate the District pays Seattle Public Utilities. The average annual contribution of the District to the Partnership from 2008 to 2010 is approximately $20,000. Any enhancement to the Water Use Efficiency Program will be achieved with little or no significant increase in the existing budget.

Cost/Benefit Analysis

The District has completed a cost/benefit analysis of their proposed WUE program using historical data and projected annual water savings. The District does not produce water, rather purchases all water. The average cost to purchase one gallon of water for 2007 and 2008 was approximately $0.0021. The true cost savings in water conservation for the District is to reduce the unauthorized water usage as low as possible. For each 1% reduction of unauthorized water use, the District should realize $30,000 to $35,000 cost savings in purchased water. For each 1% reduction in authorized water use by their customers and lost revenue from those sales, the District will need to account for $45,000 to $50,000 of additional revenue.

Summary of Water Use Efficiency Program

The District, since the beginning of implementing conservation programs, has been successful in reducing their water usage and increasing their efficiency. As stated above, The District's 2005 goal was to reduce the average day demand per ERU by one percent per year for ten years. From 2004 to 2010, the District's average annual percent decrease in ERU value was 3.32%

Many factors affect the usage of water which could be weather, economics, politics, etc. The District has implemented a successful program in the past and will continue to operate a successful program into the future. The District will make adjustments and modifications to their program to achieve the results they have historically accomplished and to realize their goals.

The District will continue to participate in and support the Saving Water Partnership regional program. The Saving Water Partnership's regional 2013-2018 Water Use Efficiency Goal is to reduce per capita water use from current levels so that total average annual retail water use of members of the Saving Water Partnership is less than 105 mgd from 2013 through 2018 despite forecasted population growth.. This will be achieved by implementing the new or enhanced measures to the program. The District's goal is a portion of the regional goal which is 15 mgd from 2011 to 2030.

The District will continue to maintain its existing conservation budget to fund the program which is a portion of the rates paid to Seattle Public Utilities. Any enhancement to the Water Use Efficiency Program will be achieved with little or no significant increase in the existing budget.

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CHAPTER 10

FINANCIAL PROGRAM

INTRODUCTION

The District's water system provides its ratepayers with dependable, clean and safe potable water, maintains proper water pressure, and ensures adequate water flow for fire protection through properly sized distribution and storage facilities. These responsibilities are met through established programs such as preventive maintenance, emergency repairs, meter installations and readings, and long-range planning. Costs are met through charges for services paid by the customers connected to the water system.

FINANCIAL STATUS

The District uses the Budget Accounting and Reporting System of the Washington State Auditor's Office, to maintain their financial records. A periodic internal review is performed on all of the District's financial procedures and conditions. The District is also subject to audits by the Washington State Auditor's Office. The last audit of the District's records was performed in 2011, based on yearend 2010 records.

The District examines its billing and rate structure on an annual basis. A analysis is required to keep rates as low as possible, while still allowing the District to function as a viable entity. Any action considered ineffective, inefficient or wasteful by the Commissioners and District staff is examined, improved, or eliminated, if possible.

A summary of income and expenses for the District's water system was obtained from the District's Finance Department, and is presented in **Table 10.1**. A summary of the District's combined (water and sewer) financial history for the past ten years is presented in **Table 10.2**. The Finance Department maintains an extensive set of accounts that monitors and evaluates fiscal performance. Historical information provided in this plan is a summary of the data available and has been condensed for presentation purposes.

Table 10.1 Summary of Income and Expenses – Water

	2010	2009
OPERATING REVENUES		
Water	$6,213,996	$7,062,305
Street lights	$235,087	$234,980
Other operating revenue	$668,265	$652,041
TOTAL OPERATING REVENUES	$7,117,348	$7,949,326
OPERATING EXPENSES		
Water purchased for resale	$3,006,381	$3,481,675
Street light power	$214,547	$208,618
Maintenance	$1,495,637	$1,487,480
Business and accounting	$697,561	$691,086
Administration	$813,245	$954,911
Business and payroll taxes	$421,828	$457,052
Depreciation	$1,450,753	$1,293,711
TOTAL OPERATING EXPENSES	$8,099,952	$8,574,533
OPERATING INCOME (LOSS)	($982,604)	($625,207)
NON-OPERATING REVENUES (EXPENSES)		
Investment interest	$177,516	$299,788
Gain on sale of surplus property	$10,409	$2,497
Loss on abandonment of utility plant	($5,851)	($19,884)
TOTAL NON-OP REVENUES (EXPENSES)	$182,074	$282,401
INCOME (LOSS) BEFORE CONTRIBUTIONS	($800,530)	($342,806)
Contributions in aid of construction	$1,260,803	$653,620
CHANGE IN NET ASSETS	$460,273	$310,814

Table 10.2 Summary of the District's Water and Sewer Financial History for the Past 10-years

Year	Total Revenues	% Incr.	Total Expenditures	% Incr.	Unusual Gain/(Loss)	Net Profit/(Loss)	Total assets
2001	$19,636,663		$18,449,425		$8,866,773[a]	$10,054,011	$151,141,705
2002	$21,193,725	8%	$19,818,212	7%	$6,054,272[a]	$7,429,785	$157,323,269
2003	$21,980,845	4%	$21,452,532	8%	$9,758,594[b]	$10,286,907	$165,309,345
2004	$22,748,784	3%	$23,025,512	7%	$8,898,186[a]	$8,621,458	$172,107,450
2005	$24,771,456	9%	$24,282,474	5%	$11,239,691[c]	$11,728,673	$181,344,269
2006	$27,250,299	10%	$26,064,502	7%	$8,944,224[a]	$10,130,021	$189,303,370
2007	$28,022,373	3%	$27,495,778	5%	$12,706,288[d]	$13,232,883	$200,339,336
2008	$27,806,651	-1%	$27,707,447	1%	$8,070,710[a]	$8,169,914	$206,098,372
2009	$30,419,408	9%	$30,272,310	9%	$3,359,093[a]	$3,506,191	$206,660,678
2010	$29,537,310	-3%	$30,135,923	0%	$3,811,643[a]	$3,213,030	$207,593,124
Average Annual Increase (%)		5%		6%			

[a]Contributions in aid of construction

[b]Contributions in aid of construction of $9,716,398 plus extraordinary income of $42,196.

[c]Contributions in aid of construction of $11,168,649 plus extraordinary income of $71,042.

[d]Contributions in aid of construction of $12,335,063 plus extraordinary income of $371,225.

BOND DEBT

The District, which has a debt rating of "AA" by Standard & Poor's, reports a combined sewer and water bond debt. A year end summary of annual debt service costs of outstanding bonds are shown in **Table 10.3**.

Table 10.3 Annual Debt Service Costs on Outstanding Bonds

Year	Principal	Interest	Total
2011	$0	$76,920	$76,920
2012	$530,000	$167,825	$697,825
2013	$545,000	$151,825	$696,925
2014	$560,000	$135,575	$695,575
2015	$575,000	$118,775	$693,775
2016 to 2020	$3,165,000	$318,800	$3,483,800
Total	$5,375,000	$969,820	$6,344,820

RATES AND CHARGES

The District's existing rate structure is outlined in Resolution No. 3266-C, effective February 28, 2011. The District staff provides data to the Board of Commissioners, illustrating rates necessary for the maintenance and operation of the District. This data is consistent with the prudent financial management of the District.

The District's current water rate structure, shown in **Table 10.4**, includes a bi-monthly base charge and an additional charge for volume of water used in the winter. All water taken from the District's water system for use or consumption is metered at the connection to the water system. The normal billing period is two months with water charged to the nearest 100 cubic feet of consumption. The base and quantity charges vary depending on customer classes.

Table 10.4 Monthly Rates for Water Service

	Meter Size (inches)	Residential	Non-residential	Irrigation
Base Rate	¾	$9.65	$9.65	$9.65
	1	$14.20	$14.20	$14.20
	1 ½	$29.75	$29.75	$29.75
	2	$48.40	$48.40	$48.40
	3	$91.95	$91.95	$91.95
	4	$154.20	$154.20	$154.20
	6	$309.80	$309.80	$309.80
	Quantity (cf)	**Residential**	**Non-residential**	**Irrigation**
Winter Rates (per 100 cf)	0 - 500	$1.60	$1.60	$5.55
	501 - 1000	$3.25	$3.25	$5.55
	1001 - 1500	$4.05	$4.05	$5.55
	greater than 1500	$4.60	$4.60	$5.55

Summer conservation rates apply to the June through September billing periods and are 20 percent higher than winter rates for the portion of monthly consumption which exceeds 500 cubic feet of water.

METHODS OF FINANCING IMPROVEMENTS

There are several methods for financing improvements, which are further described below.

District Funds

With the exception of developer extensions, the District must finance all improvements to the District's water system. Though property owners in utility local improvement districts (ULIDs) are assessed the costs of construction over a period of years, the District must immediately obtain the funds for the construction. As the assessments are collected, they are applied to paying the previously established debt. General facility charges are a source of funding for capital projects, but the charges actually apply to retiring the debt established when the improvements are constructed. Therefore, sources of funding are necessary to pay the costs upfront as they arise.

In some circumstances, the District may oversize a facility. Oversized costs are those associated with the construction of 10-inch or larger water main for improvements required for the development of current or future District areas.

Water Operating Revenue

An important source of funding for the District is revenue obtained from metered sales, connection charges, latecomer charges, and other miscellaneous items.

Connection charges are collected at the time of connection to the system. Special connection charges are collected in full at the time the application for connection is made for properties benefiting from the construction of new water lines. The charges are based on a portion of the costs of the water facilities which make service available to the connecting property. The connection charge shall in no event be less than one-half of the District's interim service charge in effect at the date of application. A reimbursement area is first defined within the District and includes properties for which reimbursement is applicable.

Income from these sources is invested in the King County Investment Pool. Over a period of time, this process may yield sufficient financial resources to aid in financing proposed water system improvements. The water operating revenue normally pays for basic operating expenses.

Developer Extensions

If a developer, or other party, desires to extend the water system to their property, they may do so at their own expense provided that: 1) they comply with the District's design standards; 2) the extension meets fire flow requirements; and 3) the extension is in conformance with the existing land use. The developer normally provides the basic water service and contributes an appropriate amount for the general facilities necessary for the area, usually in the form of a residential equivalent unit charge. Developer financing will be a major source of funding for facilities located in undeveloped areas.

Occasionally, a developer may be required to construct off-site improvements in order to provide water to the new development. If properties that benefit from the off-site improvements are not associated with the development, those properties will be subject to a latecomer's agreement. The developer would receive the latecomer's fees when these properties connect to the new main, subject to the conditions in the District's latecomers policies.

A reimbursement area shall be established by the District to include those properties that benefit from the new improvements. The base amount of the latecomer charge shall be a pro rata share of reasonable construction and contract administration costs of the mainline extension project. This includes fees, including but not limited to, design, engineering, installation, restoration and permit fees and charges specifically applicable to the extension. The pro rata share of costs shall be determined by an audit of the owner's invoices and other documentary evidence of actual costs by the District's consulting engineer. The 15-year reimbursement period commences from the date the facilities are accepted by the District, without regard to the date of determination of the reimbursement amount or execution of a reimbursement agreement. Continued entitlement to Latecomer reimbursement is conditioned upon the owner's continued compliance with the notice provisions of RCW 57.22 which requires notice every two (2) years of updated owner information. No reimbursement to the owner shall be made upon expiration of the 15-year period.

Revenue Bonds

Revenue bonds are financed by the water operating revenue. Although there are no statutory limitations on the amount of indebtedness that can be incurred, there is an economic limit on the amount the public is willing and able to pay for service. The rationale for bond financing is that future water rate payers benefiting from major system improvements should pay a proportionate share of the cost of the improvements over the life of the bonds. The expenditure of these bond funds is limited to major capital improvements approved by the Commissioners. An initial authorizing vote of the people is required in order to sell revenue bonds. A vote was taken in 1961 providing the initial authorization and additional authorization is not needed.

These bonds constitute a lien against the earnings of the District. Bonds may be issued for varying periods of time and at varying interest rates, depending on the bond market, with a maximum payable period of thirty years. Depending on whether the capital improvements are of direct benefit to certain properties or to an entire area, debt service payments are met by either annual property assessments or from net operating income.

Assessments (Utility Local Improvement Districts)

Improvements to the water system can be financed by assessments generated by the formation of a utility local improvement district (ULID). If a majority of property owners agree to form a ULID, the properties that benefits from it will pay for all or a portion of the cost of the improvements. These assessments may be paid upfront in full, but generally are paid with interest over a period of time, usually 10 to 15 years. Typically, the assessments are specified in the petition or overall ULID scheme and contribute to the revenue bond fund for payment of the revenue bonds.

Loans

Federal, state, and local agencies have developed various programs for funding water system improvements. The District could consider a federal revolving loan program as a funding source for projects related to water quality or regulatory compliance. The Public Works Trust Fund (PWTF) program is also a possible source of funds.

The PWTF Construction Loan Program is a commonly used, low-cost, revolving-loan fund established by the 1985 State Legislature to provide financial assistance to local governments for public works projects. Eligible projects include repair, replacement, rehabilitation, reconstruction or improvement of eligible public works systems to meet current standards for existing users. Recent revisions to the program have now made growth-related projects consistent with 20-year projected needs eligible for this program.

The applicant must be a local government such as a city, county or special purpose utility district and have an approved long-term plan for financing its public works needs. Local governments must compete for PWTF dollars, since more funds are requested each year than are made available by the State Legislature. The Public Works Board evaluates each application and transmits a prioritized list of projects to the Legislature. The Legislature then indicates its approval by passing an appropriation from the Public Works Assistance Accounts to cover the cost of the approved loans. Once the Governor has signed the appropriations bill into law, the local governments receiving the loans are offered a formal loan agreement with the appropriate interest rate and terms, as determined by the Public Works Board.

PWTF loans are currently available at interest rates of one-half percent, 1 percent and 2 percent, with the lower interest rates given to applicants who pay a larger local matching share of the total project costs. The loan applicant must pay a minimum of 5 percent towards the project cost to qualify for a 2 percent loan, 10 percent for a 1-percent loan, and 15 percent for a one-half percent loan. The maximum loan limit is $10 million per jurisdiction per biennium. The useful life of the project determines the loan repayment term, up to a maximum of 20 years. The approved project must be completed within 48 months after the PWTF contract is executed. Applications are generally due in May or June of each year and executed, if approved, in May or June of the following year.

Many funding sources may be unavailable in the future due to competition and budget restrictions. The District does not depend or rely upon these funding sources for future water improvements.

The District's combined (water and sewer) PWTF maturity schedule is shown below in **Table 10.5**.

Table 10.5 Maturity Schedule for SCWSD Public Works Trust Fund Loans

Year	Principal	Interest	Total
2011	$531,665	$29,721	$561,387
2012	$531,665	$24,724	$556,390
2013	$531,665	$29,721	$551,393
2014	$531,665	$19,728	$546,396
2015	$345,288	$9,734	$355,022
2016 to 2020	$788,117	$20,444	$808,560
2021	$63,992	$320	$64,312
Total	$3,324,058	$119,402	$3,443,460

Grants

Recently, there have been budget cutbacks at the state and federal levels which have limited the number of available grants. Grants are not anticipated to be sufficiently available for use as a funding source for the District in the near future. If the government's ability to provide grants to water districts improves, this funding source would be considered.

Accounting Funds

The District maintains several funds, each of which has been established for a specific purpose or purposes. These funds are as follows:

- Capital Improvement Fund
- Rate Stabilization Fund
- Maintenance Fund
- Bond Fund
- Bond Reserve Fund

The funds are described in more detail in **Chapter 3** of this Comprehensive Plan.

Other Sources

The District receives income from other sources, such as water service availability charges, ownership transfer fees, street light service charges, ERU general facilities charges (GFC), Seattle Public Utilities facilities connection charges (SFC), segregation fees, water availability certificate charges, temporary water service abandonment charges, water development fees, water service inspection fee, cross connection initial inspections, shut-off penalties and collection charges, unauthorized connection charges, and equipment rental and labor charges.

FINANCING THE COMPREHENSIVE PLAN'S RECOMMENDATIONS

The District expenditure for the 2010 water system operation and maintenance (excluding non-operating expenditures) was $8,099,952. Developers will finance many of the water main improvements in the more undeveloped portions of the District. Revenue bonds may be used to finance major capital improvement projects.

The District does not plan to issue any additional long-term debt in the near future. Service to remote portions of the future service area may be financed by a combination of revenue bonds and ULID assessments.

To assure financial stability, the District maintains certain fund balances which surpass planned expenditures. These minimum balances would be used to cover expenditures resulting from unforeseen changes in the economy, advances in King County or other jurisdiction's road schedules, project overruns and cash flow fluctuations. In addition, it is the District's goal to fund 100% of the asset depreciation expense, thus providing for infrastructure replacement at the lowest long-term cost to its customers.

ALLOCATION OF FUNDS FOR IMPROVEMENTS

The District's allocation of funds for improvements is generally based upon the requirements for that specific improvement. Consideration is given for a specific project based upon whether the project benefits are localized or benefit the entire District. Another funding consideration is whether a project is maintenance and replacement oriented or an upgrade to an existing system to improve service or system reliability.

Sources of funding for improvements are categorized into three areas generally described below.

Rate Funded

Rate funded projects are viewed as maintenance or replacement oriented. These projects are necessary to sustain the current water system.

General Facility Charge (GFC) Funded

The General Facility Charge (GFC) is a one-time fee, paid at the time the permit for development is issued. This charge is designed to recover a proportionate share of the cost of the existing system that has been borne by the District's ratepayers and attempts to establish equity between the District's existing and future customers by placing new customers on par with existing ratepayers. To ensure that the water utility achieves its fiscal policy of fully recovering the costs of system expansion and a proportional share of the investment in the existing system from new development, the GFC calculation should include the cost of future facilities and the interest accrued on existing system capacity.

Developer Extension (DE) Funded

Developer extension projects are viewed as solely funded by developers. These facilities are built to District standards and approved and accepted by the District upon completion. The District reimburses any over-sizing to the developer from GFC funds.

SERVICE POLICIES

The District has established methods, criteria, terms and conditions upon which water service is made available, which are described in detail in **Chapter 3**.

FUTURE FINANCIAL ANALYSIS

The District has projected approximately $53.6 million dollars in water capital projects over the next 20 years. These improvements are summarized in the District's Capital Facility Plan. The District also maintains a Capital Improvement Plan (CIP). The CIP is used to implement the Capital Facility Plan and is updated annually, through the budget process, in order to better forecast project costs and timing. In conjunction with this effort, future rate projections should be analyzed to reflect changes in system costs and other assumptions. As described in **Chapter 7**, projects recommended for the next 10 years total $20.2 million dollars. The remaining projects are recommended for the following ten years and total $33.4 million dollars.

CHAPTER 11
MAINTENANCE AND OPERATIONS PROGRAM

INTRODUCTION

A maintenance and operations program is required for all water systems per WAC 246-290-415-195. This chapter provides an overview of the water system responsibility and authority, system operation and control, water quality monitoring, emergency response and cross-connection control. More information regarding certain programs is available from the District and has been referenced in this chapter.

MANAGEMENT AND OPERATIONS RESPONSIBILITY

The responsibilities for the day-to-day management of the District's water system including operation, maintenance and administration are listed below.

Board of Commissioners

There are five elected Commissioners, each serving six-year terms. The Board of Commissioners holds regular meetings at the District office on a schedule established by the Board. A record of all resolutions adopted by the Board is maintained at the District office.

The current elected commissioners are:

	Term Expires
Darold Stroud	January, 2016
Alice R. Marshall	January, 2016
Steve Pfaff	January, 2018
Gary O. Cline	January, 2020
Larry West	January, 2020

DISTRICT MANAGEMENT TEAM

General Manager

- Responds to complaints, public affairs, and press relations.
- Responsible for development, field operations and rate setting. Oversees all the operations as listed below as a management team

  Ron Speer, General Manager – 19 years with the District
  - (MPA) Master of Public Administration, University of Washington
  - Associate in Applied Science, Mid-Management
  - Commissioner of Johnson County (Texas) Fresh Water Supply District No. 1 for 2 years
  - General Manager of Johnson County Fresh Water Supply District No. 1 for 7.5 years

- State of Washington Water Manager 4 Certification
- Washington Waste Water Collection Level 3 certification
- Water System Vulnerability – RAM – Federal Certification
- FEMA Certified in the following:
  - IS-1 Emergency Manager: An orientation to the position
  - IS-100 Introduction to Incident Command System
  - IS-200 Single Resource Initial Action
  - IS-700 National Incident Management System
- Appointed staff member to King County Oversight Governance & Finance Committee
- Homeland Security - MEPG Committee
- Alternate Voting Member of EMAC
- Washington Association of Sewer & Water Districts (WASWD)
  - Legislative Committee
  - Code of Ethics Policy
- Washington State Department of Health Certification Board (Olympia) - Former Chair (8 years) – Certification Committee
- Seattle Public Utilities (SPU) Contract - Former Chair of SPU Operating Board (Currently alternate Board member)
- King County Chair – MWPAAC King County Contract Amendment Subcommittee

Finance Manager

Responsible for accounting, finance, budgeting and information systems

Rob Howell, Finance Manager – 18 years with the District

- BS, MBA, MPAcc (Master of Accounting)
- CPA, CGFM (Certified Government Financial Manager)

Human Resources Manager

Responsible for personnel policies, compensation, security and benefit programs.

Marci Oda, Human Resources Manager – 15years with the District

- B.A. in Business Management
- Member SHRM (Society for Human Resources Manager)
- Member NHMA (Northwest Human Resources Management Association)

Office Personnel

Development

- Responsible for new developments, water taps and removal of unauthorized connections.

Accounting

- Responsible for accounting, payroll and computer functions.

Billing/Customer Service

- Responsible for billing, customer calls, reception and cash receipts.

Field Personnel

Responsible for the maintenance and repair of the District's water systems and equipment.

Ken Van Den Bergh, Field Superintendent – 30 years with the District

- Wastewater Collection Specialist Certificate II
- State of Washington – Water Distribution Manager III certification

Meter Reading and Maintenance

- Responsible for meter reading, repair, maintenance and utility locates.

Distribution System

- Responsible for maintenance and repair of water distribution system.
- Pump Stations
- Responsible for maintenance and repair of all equipment for the pump stations.

Inspections/Water Quality/ Safety

- Responsible for inspections, water quality, cross-connection control and safety regulations.
- The District receives professional services from the following:

District Engineering Consultant

Stantec

Gregory G. Hill, PE, District Engineer

- Over 25 years experience in water and sewer engineering
- B.S. Civil Engineering, North Dakota State University

District Attorney

Hanis Irvine Prothero, PLLC

Mike Hanis, District Attorney

- Over 40 years experience in the field of water and sewer law
- B.A. Business Administration, Brigham Young University
- J.D. Willamette University College of Law, Salem, Oregon

District Staff

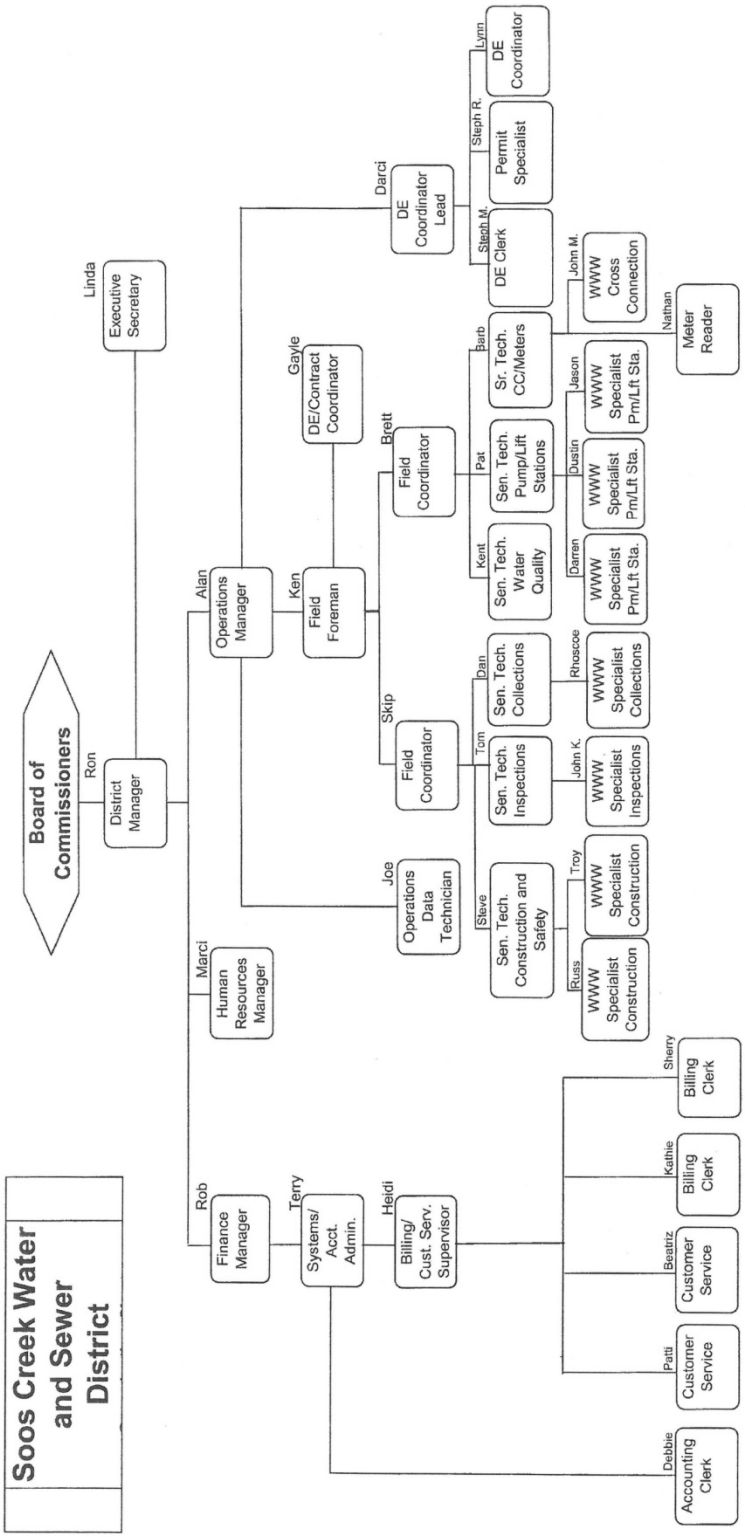
Table 11.1 is an approximation of current staffing requirements for the general maintenance tasks. It represents a general guideline rather than actual requirements.

Table 11.1 General Maintenance Staffing Requirements

	Functions	Staffing (FTE/Year)
1	Tank Maintenance	.5
2	Hydrants and Valves	1
3	Cross-Connection Control, Pressure Reducing Station, Pump Station and Telemetry	2
4	Meter Reading	.5
5	New Meter Installation	.5 to 1.5
6	Watermains, Service Maintenance, and Rehabilitation (road work)	2 to 4
7	Supervision, Delinquent Accounts, Line Locations, Miscellaneous	2
8	Water Quality, Flushing, Chlorine Monitoring	1
	Total	9.5 to 12.5

A copy of the District's organizational chart is included as **Figure 11.1**.

Figure 11.1 District Organizational Chart



CERTIFICATION STATUS

The State regulation (WAC 246-292-050) requires certified operators for certain positions. **Table 11.2** provides a listing of current certifications held by District staff members.

Table 11.2 Current Employee Certification

Employee	Job Title	Certification Level
Barbara Englander	Senior Technician	Water Distribution Manager 2 Cross Connection Specialist Backflow Assembly Tester
Brett Herrin	Field Coordinator	Water Distribution Manager 2 Cross Connection Specialist
Dan Englander	Senior Technician	Water Distribution Manager 3
Darren Butler	Water Specialist	Water Distribution Manager 2 Cross Connection Specialist
Dustin Wilton	Water Specialist	Water Distribution Manager 1
Jason Irvin	Water Specialist	Water Distribution Manager 1
John Keblish	Water Specialist	Water Distribution Specialist
John Millan	Water Specialist	Water Distribution Manager 2 Cross Connection Specialist Backflow Assembly Tester
Ken Van Den Bergh	Field Superintendent	Water Distribution Manager 3
Kent Zettel	Senior Technician	Water Distribution Manager 2 Cross Connection Specialist
Nate Miller	Water Specialist	Water Distribution Specialist 1
Pat Downing	Senior Technician	Water Distribution Manager 2
Ron Speer	General Manager	Water Distribution Manager 4 Cross Connection Specialist
Rhoscoe Coquia	Water Specialist	Water Distribution Specialist
Russell Miller	Water Specialist	Water Distribution Manager 2
Skip Shear	Field Coordinator	Water Distribution Manager 2 Cross Connection Specialist
Steve McMillin	Senior Technician	Water Distribution Manager 2
Tom Bolster	Senior Technician	Water Distribution Manager 2
Troy Grant	Water Specialist	Water Distribution Manager 1

PROFESSIONAL DEVELOPMENT

The District encourages professional growth among its staff members and has policies in place that support this position.

Employee Certification

The District may pay fees and an employee's time to sit for Water Certification testing.

The District pays for all staff certifications. It pays annual renewal fees for all required certifications. If an employee has a higher certification than is required, the District will pay for the highest certification rating.

Continuing Education and Tuition Reimbursement

The District encourages participation in workshops, seminars and other education programs to improve job skills. After one year of regular full-time employment, other continuing education classes offered in accredited schools or colleges (taken on the employee's own time) are also considered for tuition reimbursement. Education assistance is limited to courses that apply directly to an employee's opportunities within the District.

ROUTINE OPERATION AND PREVENTATIVE MAINTENANCE

The key to routine operation is the on-going maintenance of all facilities and equipment, which are checked in accordance with manufacturer's specifications. Lubrication and maintenance charts are provided for each piece of equipment. The following is an overview of the maintenance schedules for facilities and equipment.

Daily Facility Maintenance

- Receive and analyze telemetry readings – Pump Station

Weekly Facility Maintenance

- Evaluate Pump Station Reports – Pump Station

Monthly Facility Maintenance

- Run Generators
- Check packing
- Run vibration tests – Pump Station

Quarterly Facility Maintenance

- Inspect reservoirs and tanks to account for seasonal activities (i.e. bugs and bats)

Annual Facility Maintenance

- Change oil, antifreeze and all air filters – Generator Maintenance
- Flushing of watermains, including deadends – Distribution System

On-Going or Periodic Facility Maintenance

- Clean reservoir and tanks – Storage Facilities
- Inspect and recoat reservoir and tanks – Storage Facilities
- Maintain building and site – Pump Station
- Clean station and grease bearings – Pump Station
- Exercise valves

MOTOR VEHICLES, EQUIPMENT AND SUPPLIES

Table 11.3 lists the vehicles and equipment that the District currently owns.

Table 11.3 Motor Vehicles and Equipment

Item	Description
1.	07 Catepillar Backhoe
2.	99 Case Backhoe
3.	Wacker/Compactor (2)
4.	Portable Air Compressor
5.	Stihl Cut Off Saw
6.	Speed Shore 6'x8'
7.	Mikasa Plate Compactor
8.	Cues Mini Camera
9.	2011 Stihl Chain Saw
10.	Easement Machine
11.	Hole Hog
12.	CAT Asphalt Roller
13.	07 Tetex Portable Light
14.	93 Ingersoll Rand Air Compressor
15.	Concrete Saw
16.	09 Ford F-150
17.	05 Chevrolet Trailblazer (2)
18.	03 Ford F-550
19.	06 Ford F-150 (2)
20.	04 Ford F-450
21.	02 Chevrolet Van
22.	05 Peterbuilt Jet Truck
23.	10 Ford Ranger (2)
24.	02 Interstate Lawn Trailer
25.	01 Ford F-250

Table 11.3 Motor Vehicles and Equipment

Item	Description
26.	10 Peterbuilt Vactor Truck
27.	02 Dodge Caravan
28.	00 Chevrolet Step Van
29.	03 Ford F-450 Utility Truck
30.	09 Ford F-450 Dump Truck
31.	07 Ford F-150 (2)
32.	07 Chevrolet Silverado
33.	07 Ford Ranger
34.	91 International Dump Truck
35.	99 International Dump Truck
36.	Portable Generator (1000W)
37.	Onan Generator (150KW)
38.	Honda Generator (3000W) w/Inverter
39.	Honda Generator (2000W) w/Inverter
40.	Honda Generator (3500W)
41.	99 Onan Portable Generator (80KW)
42.	96 Onan Generator (150KW)
43.	Honda Portable Generator (3500W)
44.	Kawasaki 2” Pump
45.	Honda 3” Trash Pump
46.	Homelite 2” Diaphram Pump
47.	MQ Submersible Pump
48.	92 Gorman Rupp Portable Pump
49.	01 Cornell Pump
50.	82 Tilt Trailer (Shoring Box)
51.	90 Tilt Trailer (Shoring Box)
52.	06 C&B Easement Trailer
53.	04 Interstate Trailer (I&I)
54.	91 Backhoe Trailer
55.	96 Tow Master Trailer
56.	10 Fuel Trailer

REPLACEMENT OF TRUCKS AND EQUIPMENT

The District has compiled a list of equipment, with its planned replacement date. Additional equipment may be replaced or purchased as required. A replacement schedule for some of the larger items the District owns is identified in **Table 11.4.**

Table 11.4 Equipment Replacement Schedule

Description	Year of Replacement	Replacement Cost	Total for Year
2001 ¾ Ton Pickup	2011	$30,000	
2006 ¾ Ton Pickup	2011	$25,000	$55,000
2003 F-550 Pump Truck	2012	$60,000	
2006 ½ Ton Pickup (on-call)	2012	$23,000	
2003 F-450 Utility Truck	2012	$60,000	$143,000
1991 10 to 12 yard Dump Truck	2013	$80,000	
Construction Step Van	2013	$40,000	$120,000
1992 5 to 7 yard Dump Truck	2014	$75,000	$75,000

Supplies

The District maintains a complete inventory system of all supplies and parts in stock for the water system. A separate inventory list is maintained for the water system and those items used for either the water or sewer system. The supplies and parts are located at the District office. The inventory is used in conjunction with the maintenance and/or repair of facilities within the District.

CROSS-CONNECTION CONTROL PROGRAM

A Cross-Connection Control Program is required for the District's system by WAC 246-290-490. The District's Board of Commissioners adopted the implementation of the cross-connection control program through Resolution No. 2574-W.

The purpose of the cross-connection control program is to protect the health of water consumers and the potability of the District water system by assuring the inspection and regulation of plumbing in existing and proposed piping networks and the proper installation and surveillance of backflow prevention assemblies when actual or potential cross-connections exist and cannot be eliminated.

When an existing cross-connection poses a potential health or system hazard, the District shall shut off water service to the premises until the cross-connection has been eliminated or controlled by the installation of a proper backflow prevention assembly. The cross-connection control program manager for the District shall be notified when a service has been shut off.

The District maintains an inventory and status list of each device in operation. The District has prioritized the customers or businesses in need of required devices.

In order to facilitate efficient work scheduling of the Cross-Connection Control Program, the District maintains a file for the cross-connection control program requirements for backflow prevention, assembly, installation and testing, private fire protection systems connected to public water systems, enforcement of cross-connections and backflow prevention assembly installation agreements.

Further information regarding the Cross-Connection Control Program can be found in **Appendix J** or obtained from the District office.

WATER QUALITY MONITORING

The District currently purchases all of its water from the Seattle Public Utilities. The District works in coordination with Seattle Public Utilities to maintain water quality by meeting all state and federal water quality standards. The following text is a summary of water quality as it pertains to the operations program. The District's Water Quality Program is more fully described in **Chapter 8**.

Sampling Procedures

The Cedar and the Tolt Rivers primary treatment includes physical screening, disinfection with gaseous chlorine, fluoridation and corrosion treatment with lime and soda ash on the Tolt and with lime only on the Cedar. The District's water comes primarily from the Cedar River supply.

The water sampling points are identified on the Existing and Proposed Water Facilities Map found in **Chapter 7 (Figure 7.1)**. Sample stands are located to overcome the problems of gaining daily access to public and private premises for water quality sampling. These stands are located to represent different population concentrations, sources of supply, pressure zones and storage facilities so that representative water samples can be taken. The District complies with all water sampling and monitoring requirements in accordance with DOH guidelines under WAC 248-54-165.

Seattle Public Utilities currently takes approximately 49 monthly samples from the District to conform to the regional coliform monitoring plan. Seattle Public Utilities staff collects and analyzes routine coliform samples. If a positive coliform sample is found, the SPU Water Quality Lab will first notify the District. The lab will then contact or send notification to DOH. It is the District's responsibility to follow-up with the DOH within the required timeframes. District staff are responsible for follow-up sampling which is analyzed by Seattle Public Utilities.

Beginning in 2012, the District will begin quarterly sampling for Disinfection Byproducts pursuant to Stage 2 Disinfection Byproducts Rule requirements at 8 sampling sites within the District's service area. The sampling will be for Total Trihalomethanes (TTHM) and Haloacetic Acid 5 (HAA5). These chemicals may result from the reaction of naturally occurring substances with the chlorine that is used for disinfection purposes. This sampling will be done at 8 sites which are shown in **Figure 7.1 (Chapter 7)**. It is anticipated that Seattle Public Utilities will be responsible for the sampling and testing at the District's 8 sites.

Violations Procedures

The District has established a set of violation procedures in the event that samples are found to exceed standards. Refer to Appendix I, Water Quality Regulatory Compliance Handbook.

Requirements for Public Notification in the event of a Fecal Coliform or E. Coli violation (Tier 1), a Total Coliform violation (Tier 2), or a Stage 2 DBPR violation (Tier 2) are also given in **Appendix I**, Water Quality Regulatory Compliance Handbook.

EMERGENCY RESPONSE PROGRAM

The District has developed an Emergency Response Program to help the District identify, prepare and respond to emergency situations. The program includes elements such as an Emergency Response Plan, Vulnerability Assessment, Hazard Mitigation Plan, and a set of contingency plans to address specific situations such as severe drought.

In 2004, the District completed an update to their Emergency Response Plan in response to the 2002 Bioterrorism Act. The Emergency Response Plan includes system specific information, explanation of roles and responsibilities, communications procedures, emergency contact lists, situation specific action plans, identification of alternate water sources, and information on personnel safety. This Plan is reviewed and updated periodically.

Emergency Call-Up List

The District's telephone number (206) 630-9900 is manned 24 hours a day, seven days per week. The appropriate personnel will be contacted during an emergency situation, as well as two field employees are on-call after working hours. In the event of a major emergency, the Management Team and the Field Foreman will be contacted. The two field coordinators would then mobilize their crews as necessary.

Vulnerability Assessment and Hazard Mitigation Plan

The District has completed a Vulnerability Assessment and a Hazard Mitigation Plan. The Hazard Mitigation Plan focuses on natural disasters such as earthquakes and outlines measures the District will take to reduce risks of damage to its facilities and reduce service disruption impacts to customers. The Vulnerability Assessment focuses on manmade disasters.

Security measures protect all District facilities, including the headquarters and remote sites such as pump stations and reservoirs. Doors and entrances to all facilities remain locked when not in use. All access ladders are fitted with a locked panel and are protected by metal cages in order to discourage access by unauthorized personnel. Pump stations and buildings are also monitored for intrusion and smoke. Any incidence of alarm would result in notification and call out of the on-call person. The District has not experienced any significant problems with vandalism or interference with facility operations by unauthorized personnel.

Portions in the District have watermains crossing creeks, wetlands, or seismic hazard area. The vulnerability of these facilities to a total loss of service has been reduced, for the most part, by looping the system, allowing for portions of the system to be valved off and the direction of water

flow changed. Small areas may be out of service due to a watermain failure, but the disruption would be minor.

In cases of broken watermains, the areas affected could be valved off so that water service to other customers outside the affected area would be maintained. In most instances, buildings and houses inside the area without water could be jumped from hose bibs outside the affected area. Therefore, if the system were to be shut down for a considerable amount of time for repairs, water service could still be provided.

During times of water shortages, the District follows procedures that may be found in the District's Water Shortage Response Contingency Plan which was adopted in June 1994. This plan is a complement to the "Information Section" of Seattle Public Utilities' Emergency Response Plan. The District's plan provides a systematic response for the District to reduce customer demands due to a water supply emergency or drought. The plan outlines specific steps the District should take, including the notification of the public and appropriate city, county, and state officials. The entire plan is available at the District office.

A prolonged emergency would require conservation measures by the District. This would involve contacting the local news media and mailing notices to the customers. Other methods include door-to-door notification or the District could use vehicles with loud speakers. Specific contacts include:

Seattle Public Utilities Contacts

Wylie Harper	(206) 684-7880
Lynn Kirby	(206) 684-0216

Public Health – Seattle and King County

Greg Bishop	(206) 296-9753

Kent and Renton School District

In case of notification, the District would contact the principal of the affected school(s). The District has a list for internal use which includes the names and phone numbers of each school within the District.

Newspaper Contacts

	Phone
Seattle Times	(206) 464-2121
Reporter	
Kent	(253) 872-6600
Renton	(425) 255-3484

Television Contacts

	Phone
KING	(206) 448-5555
KSTW	(206) 441-1111
KIRO	(206) 728-7777
KOMO	(206) 404-4000

Radio Contacts

	Phone
KIRO (FM)	(206) 726-5476
KOMO	(206) 404-5666

The DOH and Seattle Public Utilities should be kept informed so water quality could be closely monitored. The phone number for the DOH is (253) 395-6750 and the number for Seattle Public Utilities is (206) 386-1800.

The DOH also provides a phone number strictly for purveyors that encounter an after-hours emergency. The person staffing the phone will contact the appropriate person for the emergency and have technical support contact the purveyor within 30 minutes of the call. This emergency number is (877) 481-4901.

Emergency water supply distribution points would depend upon the extent of the disaster. Pre-planned distribution points may be unusable after an emergency, so none are specifically listed in this plan. A general location of supply points would include schools and churches. The public would be notified of secure supply points after it is determined the site is suitable as an emergency center. In a major emergency, supply points would be coordinated through the King County Office of Emergency Management (OEM) and their operations center. The phone number for OEM is (206) 296-3830.

CUSTOMER COMPLAINT PROGRAM

The District maintains a record of complaints by making notations on the computerized billing system. In additional, complaints which are filed by customers who attend board meetings are logged in the minutes of the meeting.

Complaints are responded to appropriately by District staff that determine if the issue can be easily resolved or if creation of a work order is necessary. If a work order is issued, it lists the nature of the complaint. The work order is closed out upon satisfactory completion of any required work and the recording of the corrective action taken. Multiple complaints which arise from maintenance activities are not individually documented, such as dirty water complaints which often occur after water is run through hydrants.

Should a customer believe the complaint has not been adequately addressed, they have an opportunity to appeal the decision with the District's Board of Commissioners. This appeal will be heard during a

Board of Commissioners meeting and a final decision and determination of action will be rendered by the Board.

RECORDKEEPING AND REPORTING

The District's administrative staff share in the responsibility of maintaining all records pertaining to water use, billings, receipts and water utility financial records. In addition, the staff also maintains records regarding the system facilities, utility locate requests, repairs and water quality monitoring and reporting.

OPERATIONS AND MAINTENANCE IMPROVEMENTS

The District strives to provide the best available tools and training to assist District staff with the management, maintenance and operation of the District's system. The District will review the operations and maintenance program as needed and update when appropriate.

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APPENDIX A

SOOS CREEK WATER AND SEWER DISTRICT

Water Comprehensive System Plan Update, 2012

Determination of Non-Significance and SEPA Checklist Distribution List

ECOLOGY, DEPT. OF
ENVIRONMENTAL REVIEW
SEPA OFFICIAL
PO BOX 47703
OLYMPIA WA 98504-7703
(360) 407-6922
FAX (360) 407-6904
SEPAUNIT@ECY.WA.GOV

FISH AND WILDLIFE, DEPT. OF
BOB ZEIGLER
PO BOX 43200
OLYMPIA WA 98504-3155
(360) 902-2578
FAX (360) 902-2946
ROBERT.ZEIGLER@DFW.WA.GOV
SEPADESK@DFW.WA.GOV

HEALTH, DEPT. OF
KELLY COOPER
PO BOX 47820
OLYMPIA WA 98504-7820
(360) 236-3011
FAX (360) 664-8150
KELLY.COOPER@DOH.WA.GOV

NATURAL RESOURCES, DEPT. OF
SEPA OFFICIAL
1111 WASHINGTON STREET SOUTHEAST
PO BOX 47015
OLYMPIA WA 98504-7015
(360) 902-2117
FAX (360) 902-1789
SEPACENTER@DNR.WA.GOV

KING COUNTY DDES
STEVE BOTTHEIM
LAND USE SERVICES DIVISION
900 OAKESDALE AVE SW
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STEVE.BOTTHEIM@KINGCOUNTY.GOV

CITY OF KENT
CHARLENE ANDERSON, AICP
220 SOUTH 4TH AVE
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FAX (253) 866-6454
CANDERSON@CI.KENT.WA.US

CITY OF RENTON
MR. NEIL WATTS
1055 S. GRADY WAY
RENTON WA 98057
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FAX (425) 277-4455
NWATTS@RENTONWA.GOV

METROPOLITAN KING COUNTY COUNCIL
ANNE NORIS, CLERK OF THE COUNCIL
516 THIRD AVE., RM. 1200
SEATTLE, WA 98104
PHONE: 206-296-1000
FAX: 206-296-0198
ANNE.NORIS@KINGCOUNTY.GOV
COUNCIL@KINGCOUNTY.GOV

KING COUNTY
PLANNING & ASSET MANAGEMENT
STEVE HIRSCHEY, UTRC CHAIR
KING STREET CENTER
201 S. JACKSON ST RM 512
KSC-NR-0512
SEATTLE, WA 98104
206-205-0817
STEVE.HIRSCHEY@KINGCOUNTY.GOV

CEDAR RIVER WATER AND SEWER DISTRICT
RON SHEADEL, GENERAL MANAGER
18421 SE PETROVITSKY RD
RENTON, WA 98058
(425) 255-6370
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RSHEADEL@CRWSD.COM

KING COUNTY WATER DISTRICT 111
27224 144TH AVE SE
KENT WA 98042
(253) 631-3770
FAX (253) 631-8072
CHALL@WD111.COM

KING COUNTY FIRE DISTRICT 40
18002 108TH AVE SE
RENTON, WA 98055
425-255-0931
KCFD40@HOTMAIL.COM

KENT FIRE DISTRICT RFA
24611 116TH AVE SE
KENT WA 98030
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KENT SCHOOL DISTRICT
FACILITY CONSTRUCTION
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RENTON SCHOOL DISTRICT
MAINTENANCE AND OPERATIONS
7812 S 124TH
SEATTLE, WA 98178
425-204-4400
JOE.LAMBORN@RENTON SCHOOLS.US

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PO BOX 34018
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MUCKELSHOOT TRIBE
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COVINGTON WATER DISTRICT
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COVINGTON, WA 98042
(253) 631-0565
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SEPA RULES

WAC 197-11-970 DETERMINATION OF NON-SIGNIFICANCE (DNS).

DETERMINATION OF NON-SIGNIFICANCE

Description of proposal: SOOS CREEK WATER AND SEWER DISTRICT, WATER COMPREHENSIVE PLAN, 2012

THIS PLAN ESTABLISHES THE WATER SYSTEM POLICIES AND CRITERIA IN ACCORDANCE WITH THE DISTRICT'S FRAMEWORK, ANALYZES THE EXISTING WATER SYSTEM AND ITS OPERATIONS, AND RECOMMENDS IMPROVEMENTS TO CORRECT DEFICIENCIES AND MEET FUTURE SERVICE NEEDS. THIS PLAN PROVIDES THE DISTRICT WITH A GUIDE TO EVALUATE THE IMPACTS OF FUTURE PROPOSED DEVELOPMENT AND LAND USE ON THE WATER SYSTEM.

Proponent: SOOS CREEK WATER AND SEWER DISTRICT

Location of proposal, including street address, if any:

THE SERVICE PLAN AREA IS COMPRISED OF ALL OR PORTIONS OF SECTIONS 20, 21, 25, 28, 29, 30, 31, 32, 33, 34, 35 AND 36, TOWNSHIP 23 NORTH, RANGE 5 EAST, W.M., AND SECTIONS 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17 AND 18 OF TOWNSHIP 22 NORTH, RANGE 5 EAST W.M., KING COUNTY, WASHINGTON, AND IS SITUATED ON THE SOOS CREEK PLATEAU ADJACENT TO, AND WITHIN, THE CITIES OF KENT AND RENTON. A MAP OF THE DISTRICT IS ATTACHED.

Lead agency: SOOS CREEK WATER AND SEWER 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.

[ ] There is no comment period for this DNS.

[X] This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 20 days from the date below. Comments must be submitted by May 22, 2012.

Responsible Official: RON SPEER

Position/Title: DISTRICT MANAGER

Address: PO BOX 58039
14616 SE 192ND STREET
RENTON, WASHINGTON 98058-1039

Phone: 425-630-9900

Date: MAY 2, 2012

Signature: _____
RON SPEER, DISTRICT MANAGER

[X] There is no agency appeal.

ENVIRONMENTAL CHECKLIST

Purpose of Checklist:

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for Applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers to provide additional information reasonably related to determining if there may be significant adverse impact.

Use of Checklist for Non-project Proposals:

Complete this checklist for non-project proposals, even though questions may be answered "does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NON-PROJECT ACTIONS (part D).

For non-project actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," and "affected geographic area," respectively.

A. BACKGROUND

1. Name of proposed project, if applicable:

   SOOS CREEK WATER AND SEWER DISTRICT, WATER COMPREHENSIVE PLAN, 2012

2. Name of applicant:

   SOOS CREEK WATER AND SEWER DISTRICT

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

   PO BOX 58039
   14616 SE 192ND STREET
   RENTON, WASHINGTON 98058
   (253) 360-9900
   RON SPEER, DISTRICT MANAGER

4. Date checklist prepared: APRIL 23, 2012

5. Agency requesting checklist:

   SOOS CREEK WATER AND SEWER DISTRICT

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

   THE WATER COMPREHENSIVE PLAN, 2012 IS EXPECTED TO BE ADOPTED IN THE SUMMER OF 2012

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

   YES, THE WATER COMPREHENSIVE PLAN, 2012, DISCUSSES ADDITIONS AND IMPROVEMENTS TO THE SOOS CREEK WATER AND SEWER DISTRICT WATER SYSTEM. HIGH PRIORITY IMPROVEMENTS WILL PROBABLY OCCUR WITHIN SIX YEARS AND ARE DISCUSSED IN THE CAPITAL FACILITIES CHAPTER OF THE PLAN. THESE PROJECTS WILL BE REVIEWED AND ADDRESSED BY APPROPRIATE AGENCIES AS THE PROJECTS COMMENCE. ALTHOUGH UNLIKELY, THERE MAY BE FUTURE ADJUSTMENT IN THE WATER SERVICE AREA OR UNFORESEEN ANNEXATIONS, DEVELOPER EXTENSIONS, ETC, WHICH WOULD BE REVIEWED AS THEY OCCUR.

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

   NONE. PROJECTS PROPOSED IN THE PLAN MAY REQUIRE, DEPENDING UPON THE SCOPE OF THE PROJECT, THEIR OWN ENVIRONMENTAL CHECKLIST AND DETERMINATION, WHICH WOULD OCCUR AS SPECIFIC PROJECTS ARE PROPOSED.

   KING COUNTY AND THE CITIES OF KENT AND RENTON MAY HAVE SPECIFIC PLANS, AS WELL AS PROJECTS, REQUIRING DISTRICT ACTIONS, WHICH MAY REQUIRE ENVIRONMENTAL ANALYSES. INFORMATION REGARDING SPECIFIC PLANS OR PROJECTS SHOULD BE LOCATED WITHIN THEIR COMPREHENSIVE PLANS AND CAPITAL IMPROVEMENT PROGRAMS. WITH BOTH PRIVATE AND PUBLIC DEVELOPMENT, IT IS ANTICIPATED THAT

SEPA DETERMINATIONS AND ANALYSES WILL OCCUR ON A PROJECT-BY-PROJECT BASIS, AS REQUIRED. ADDITIONALLY, COPIES OF ENVIRONMENTAL ANALYSES SHOULD BE ON FILE AT THE APPROPRIATE JURISDICTION.

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

THE WATER COMPREHENSIVE PLAN, 2012, WILL REQUIRE APPROVAL FROM THE FOLLOWING AGENCIES:

- WASHINGTON STATE DEPARTMENT OF HEALTH (DOH)
- METROPOLITAN KING COUNTY COUNCIL
- KING COUNTY UTILITIES TECHNICAL REVIEW COMMITTEE
- CITY OF KENT
- CITY OF RENTON

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 PLAN ESTABLISHES THE WATER SYSTEM POLICIES AND CRITERIA IN ACCORDANCE WITH THE DISTRICT'S FRAMEWORK, ANALYZES THE EXISTING WATER SYSTEM AND ITS OPERATIONS, AND RECOMMENDS IMPROVEMENTS TO CORRECT DEFICIENCIES AND MEET FUTURE SERVICE NEEDS. THIS PLAN PROVIDES THE DISTRICT WITH A GUIDE TO EVALUATE THE IMPACTS OF FUTURE PROPOSED DEVELOPMENT AND LAND USE ON THE WATER SYSTEM.

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 applications related to this checklist.

THE SERVICE PLAN AREA IS COMPRISED OF ALL OR PORTIONS OF SECTIONS 20, 21, 25, 28, 29, 30, 31, 32, 33, 34, 35 AND 36 OR TOWNSHIP 23 NORTH, RANGE 5 EAST, W.M., AND SECTIONS 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17 AND 18 OF TOWNSHIP 18 NORTH, RANGE 5 EAST W.M., KING COUNTY, WASHINGTON, AND IS SITUATED ON THE SOOS CREEK PLATEAU ADJACENT TO AND WITHIN THE CITIES OF KENT AND RENTON.

TO BE COMPLETED BY APPLICANT

EVALUATION FOR AGENCY USE ONLY

B. **ENVIRONMENTAL ELEMENTS**

1. **EARTH**

A. General description of the site (circle one): FLAT, ROLLING, HILLY, STEEP SLOPES, Mountainous, Other (_____).

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

ACTUAL LAND SLOPES VARY. THE VAST MAJORITY OF THE SERVICE AREA HAS SLOPES BETWEEN 0% TO 15%. ALONG STATE ROUTE 167 AND SOME OF THE CREEKS, SLOPES MAY EXCEED 50%, HOWEVER, THE MAJORITY OF THESE AREAS HAVE SLOPES WHICH DO NOT EXCEED 15 TO 30%.

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.

ALDERWOOD GRAVELLY SANDY LOAM (AGB, C AND D)
EVERETT GRAVELLY SANDY LOAM (EVB, C AND D)
ALDERWOOD AND KITSAP SOILS (AKF)
ARENTS
ALDERWOOD MATERIAL (AMB AND C)

TOGETHER WITH A FEW SPOTS OF:
BELLINGHAM SILT LOAM (BH)
INDIANOLA LOAMY (INC)
KITSAP LOAM (KPB)
MIXED ALLUVIAL LAND (MA)
NORMA SANDY LOAM (NO)
SEATTLE MUCK (SK)
SNOHOMISH SILT LOAM (SO)
URBAN LAND (UR) AND
TUKWILA MUCK (TU)

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

KING COUNTY GIS INFORMATION SHOWS THE FOLLOWING HAZARD AREAS:

SEISMIC, EROSION AND LANDSLIDE HAZARD AREAS ALONG SOOS CREEK, WHICH FLOWS NORTH TO SOUTH THROUGH THE DISTRICT, A LANDSLIDE HAZARD AREA JUST EAST OF LAKE DESIRE, COAL MINE HAZARD AREAS NORTHWESTERLY OF LAKE DESIRE, AS WELL AS OTHER LANDSLIDE, EROSION AND SEISMIC HAZARD AREAS THROUGHOUT THE DISTRICT'S SERVICE AREA. ANY AND ALL HAZARD AREAS WOULD BE ADDRESSED BY INDIVIDUAL PROJECTS AS NECESSARY.

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

THIS PLAN REQUIRES NO FILLING OR GRADING. EXCAVATION WILL BE REQUIRED FOR FUTURE INSTALLATION OF WATERMAINS, GENERALLY TO A DEPTH OF BETWEEN THREE TO FIVE FEET.

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

NOT AS A RESULT OF THIS PLAN. SLIGHT EROSION COULD OCCUR AS A RESULT OF TRENCHING ACTIVITIES ASSOCIATED WITH THE INSTALLATION OF FUTURE WATERMAINS. THE APPROPRIATE EROSION CONTROL MEASURES WILL BE USED IN AREAS OF CONSTRUCTION.

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

NONE AS A RESULT OF THIS PLAN. WATERMAINS ARE GENERALLY CONSTRUCTED WITHIN EXISTING ROAD PRISMS AND DO NOT USUALLY ADD IMPERVIOUS SURFACE. THIS ISSUE WILL BE ADDRESSED WITH EACH INDIVIDUAL WATERMAIN PROJECT THAT OCCURS.

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

DOES NOT APPLY TO THIS PLAN. EROSION CONTROL MEASURES WILL BE ADDRESSED AS NEEDED ON AN INDIVIDUAL BASIS AS EACH PROJECT OCCURS.

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.

DOES NOT APPLY. DUST AND STANDARD EMISSIONS FROM CONSTRUCTION EQUIPMENT COULD OCCUR DURING INDIVIDUAL PROJECTS.

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

NO.

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

DOES NOT APPLY. EMISSION CONTROL ISSUES WILL BE ADDRESSED AS INDIVIDUAL PROJECTS OCCUR.

3. **WATER**

A. SURFACE

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.

ACCORDING TO KING COUNTY GIS INFORMATION AND THE KING COUNTY WETLAND INVENTORY, AS WELL AS OTHER DOCUMENTS, THERE ARE SEVERAL STREAMS, LAKES, PONDS AND WETLANDS (OF VARIOUS CLASSIFICATIONS) WITHIN THE SERVICE PLANNING AREA. THERE ARE SEVERAL STREAMS WHICH GENERALLY FLOW NORTH AND SOUTH THROUGH THE DISTRICT INCLUDING BIG SOOS CREEK AND OTHER CLASS 2 (WITH SALMONIDS) STREAMS. MAJOR WATER BODIES INCLUDE PANTHER LAKE, LAKE DESIRE AND LAKE JOLIE, TOGETHER WITH THEIR TRIBUTARIES.

THE MAJORITY OF THE WETLANDS WITHIN THE SERVICE PLANNING AREA ARE WITHIN THE GREEN RIVER BASIN IN THE SOOS CREEK AND BLACK RIVER SUBBASINS. ADDITIONAL WETLANDS ARE WITHIN THE LOWER CEDAR RIVER SUBBASIN, WHICH IS PART OF THE CEDAR RIVER BASIN

SOOS CREEK WETLAND NO. 1 IS A CLASS 2 PALUSTRINE EMERGENT NARROW-LEAVED PERSISTENT (CATTAIL) OR SHALLOW MARSH WETLAND.

SOOS CREEK WETLAND NO. 2 IS QUITE LARGE AND ENCOMPASSES PORTIONS OF BIG SOOS CREEK. IT IS A CLASS 1C WETLAND WITH SEVERAL CLASSIFICATIONS AND HABITATS WITHIN IT AND INCLUDES THE FOLLOWING: PALUSTRINE EMERGENT WETLAND, SCRUB-SHRUB 1 & 2, FORESTED WETLAND, AND OPEN WATER WETLAND TYPES. THE KING COUNTY WETLANDS INVENTORY INDICATES THAT IS HAS GREAT BLUE HERONS, WHICH ARE ON THE STATE MONITORED LIST.

SOOS CREEK WETLAND NO. 4 IS A CLASS 2 PALUSTRINE SCRUB-SHRUB BROAD-LEAVED DECIDUOUS (HARDHACK) WETLAND.

SOOS CREEK WETLAND NO. 5 IS A CLASS 2 PALUSTRINE EMERGENT NARROW-LEAVED PERSISTENT (FOXTAIL/CATTAIL/JUNCUS EFFUSUS) OR MEADOW WETLAND. THE INVENTORY STATES THE PRESENCE OF A RED-TAILED HAWK IN THE VICINITY OF THIS WETLAND. WHILE NOT A SPECIES OF CONCERN NOR A MONITORED SPECIES, THE KING COUNTY COMPREHENSIVE PLAN 1994'S TECHNICAL APPENDIX C INDICATES THAT THE STATE CONSIDERS SITES WHICH THE SPECIES MAY USE IN URBAN AND EMERGING URBAN TO BE A PRIORITY AREA.

SOOS CREEK WETLAND NOS. 6 & 7 ARE CLASS 3 PALUSTRINE OPEN WATER WETLANDS.

SOOS CREED WETLAND NO. 8 ENCOMPASSES PORTIONS OF BIG SOOS CREEK AND IS A CLASS 2 PALUSTRINE OPEN WATER, FORESTED BROAD-LEAVED DECIDUOUS WETLAND. THE INVENTORY ALSO INDICATES THAT THE WETLAND HAS GREAT BLUE HERONS AND GREEN-BACKED HERONS IN THE VICINITY. BOTH SPECIES OF HERONS ARE STATE MONITORED SPECIES.

SOOS CREEK WETLAND NO. 9 IS ABOUT 82 ACRES IN SIZE AND ENCOMPASSES PORTIONS OF BIG SOOS CREEK. IT IS A CLASS 2 PALUSTRINE SCRUB-SHRUB BROAD-LEAVED DECIDUOUS (WILLOW/HARDHACK), FORESTED NEEDLE-LEAVED EVERGREEN (HEMLOCK/WESTERN RED CEDAR) AND EMERGENT NARROW-LEAVED PERSISTENT (JUNCUS EFFUSUS) WETLAND. IT HAS GREEN-BACKED HERONS WHICH USE THE SITE.

SOOS CREEK WETLAND NO. 12 IS A CLASS 2 PALUSTRINE OPEN WATER.

SOOS CREEK WETLAND NO. 13B IS WITHIN THE NATIONAL WETLAND INVENTORY. IT IS 1.3 ACRES AND IS A CLASS 4A PALUSTRINE EMERGENT SEASONAL FLOODED

SOOS CREEK WETLAND NO. 15 IS ALSO A CLASS 2 PALUSTRINE AQUATIC BED FLOATING-LEAVED (POND WEED) AND EMERGENT NARROW-LEAVED PERSISTENT (CATTAIL) OR DEEP MARSH WETLAND.

SOOS CREEK WETLAND NO. 16 IS ABOUT 150 ACRES IN SIZE AND ENCOMPASSES PORTIONS OF BIG SOOS CREEK. IT IS A CLASS 2 PALUSTRINE SCRUB-SHRUB BROAD-LEAVED DECIDUOUS (WILLOW), FORESTED NEEDLE-LEAVED EVERGREEN (HEMLOCK/WESTERN RED CEDAR) AND EMERGENT NARROW-LEAVED PERSISTENT (JUNCUS EFFUSUS/SCRIPUS MICROCARPUS) WETLAND.

SOOS CREEK WETLAND NO. 20 IS ABOUT 32 ACRES IN SIZE. IT IS BOTH A CLASS 2 PALUSTRINE SCRUB-SHRUB BROAD-LEAVED DECIDUOUS (HARDHACK/WILD CRABAPPLE) AND FORESTED BROAD-LEAVED DECIDUOUS (OREGON ASH) WETLAND. IT TOO HAS GREAT BLUE HERONS WHICH USE THE SITE.

SOOS CREEK WETLAND NO. 21 IS WITHIN THE NATIONAL WETLAND INVENTORY. IT IS 2.86 ACRES AND IS A CLASS 4 PALUSTRINE FORESTED SEASONALLY FLOODED

SOOS CREEK WETLAND NO. 25 IS A CLASS 3 PALUSTRINE OPEN WATER WETLAND.

SOOS CREEK WETLAND NO. 26 IS BOTH A CLASS 2 PALUSTRINE AQUATIC BED FLOATING-LEAVED (YELLOW POND WEED) AND UNCONSOLIDATED BOTTOM MUD WETLAND. THIS WETLAND IS HOME TO A HERON ROOKERY.

SOOS CREEK WETLAND NO. 30 IS ABOUT 185 ACRES IN SIZE AND ENCOMPASSES PORTIONS OF BIG SOOS CREEK. IT IS A CLASS 2 PALUSTRINE FORESTED BROAD-LEAVED DECIDUOUS (RED ALDER/BLACK COTTONWOOD), EMERGENT NARROW-LEAVED PERSISTENT (JUNCUS EFFUSUS/SCIRPUS MICROCARPUS) AND EMERGENT NARROW-LEAVED PERSISTENT (CATTAIL) WETLAND.

SOOS CREEK WETLAND NO. 65 IS WITHIN THE NATIONAL WETLAND INVENTORY. IT IS BOTH A CLASS 4 PALUSTRINE EMERGENT TEMPORARY FLOODED A CLASS 4 PALUSTRINE SCRUB-SCRUB TEMPORARY FLOODED WETLAND.

SOOS CREEK WETLAND NO. 75 IS BOTH A CLASS 2 PALUSTRINE SCRUB-SHRUB BROAD-LEAVED DECIDUOUS (HARDHACK/RED OSIER DOGWOOD) AND FORESTED BROAD-LEAVED DECIDUOUS (BLACK COTTONWOOD/RED ALDER) WETLAND.

SOOS CREEK WETLAND NO. 76 IS A CLASS 2 PALUSTRINE SCRUB-SHRUB BROAD-LEAVED DECIDUOUS (HARDHACK) WETLAND.

BLACK RIVER WETLAND NO. 6, OTHERWISE KNOWN AS PANTHER LAKE, IS SURROUNDED BY RESIDENTIAL DEVELOPMENT AND THE LAKE APPEARS TO BE FAIRLY UNAFFECTED BY DEVELOPMENT, EXCEPT FOR LITTER. THE WETLAND IS BOTH A CLASS 1C PALUSTRINE SCRUB-SHRUB BROAD-LEAVED DECIDUOUS (HARDHACK) AND LACUSTRINE LITTORAL AQUATIC BED FLOATING-LEAVED (WATER SHIELD/WHITE POND LILY) WETLAND. IT TOO IS A SITE THAT GREAT BLUE HERON USE.

BLACK RIVER WETLAND NO. 14B IS A CLASS 4 PALUSTRINE EMERGENT SEASONALLY FLOODED WETLAND.

BLACK RIVER WETLAND NO. 17 IS BOTH A CLASS 4 PALUSTRINE EMERGENT TEMPORARY FLOODED AND A CLASS 4 PALUSTRINE SCRUB-SCRUB TEMPORARY FLOODED WETLAND.

BLACK RIVER NO. 21 IS A CLASS 2 PALUSTRINE EMERGENT PERSISTENT (JUNCUS EFFUSUS) OR WET MEADOW WETLAND.

LOWER CEDAR RIVER WETLAND NO. 15 IS BOTH A PALUSTRINE FORESTED SEASONALLY FLOODED WETLAND AND A PALUSTRINE SCRUB-SCRUB TEMPORARY FLOODED WETLAND.

LOWER CEDAR RIVER WETLAND NO. 16 IS BOTH A PALUSTRINE EMERGENT SEASONALLY FLOODED WETLAND AND A PALUSTRINE SCRUB-SCRUB TEMPORARY FLOODED WETLAND.

LOWER CEDAR RIVER WETLAND NO. 18 IS A CLASS 2 PALUSTRINE FORESTED DECIDUOUS (ALDER) WETLAND.

LOWER CEDAR RIVER WETLAND NO. 20 IS A CLASS 2 PALUSTRINE SCRUB-SHRUB BROAD-LEAVED DECIDUOUS (WILLOW) WETLAND.

LOWER CEDAR RIVER WETLAND NO. 22 IS A CLASS 1D PALUSTRINE SCRUB-SHRUB BROAD-LEAVED DECIDUOUS (HARDHACK), SCRUB-SHRUB BROAD-LEAVED EVERGREEN (LABRADOR TEA) AND UNCONSOLIDATED BOTTOM MUD WETLAND, OTHERWISE KNOWN AS A BOG AND OPEN WATER WETLAND. GREAT BLUE HERONS USE THE SITE, ACCORDING TO THE KING COUNTY INVENTORY.

LOWER CEDAR RIVER WETLAND NO. 23 IS A CLASS 1D PALUSTRINE SCRUB-SHRUB BROAD-LEAVED DECIDUOUS (HARDHACK), SCRUB-SHRUB BROAD-LEAVED EVERGREEN (LABRADOR TEA), FORESTED BROAD-LEAVED DECIDUOUS (OREGON ASH) AND FORESTED NEEDLE-LEAVED EVERGREEN (HEMLOCK) WETLAND. THE INVENTORY INDICATES THAT THE RED-TAILED HAWK MAY USE THIS SITE. WHILE NOT A SPECIES OF CONCERN NOR A MONITORED SPECIES, THE KING COUNTY COMPREHENSIVE PLAN 1994'S TECHNICAL APPENDIX C INDICATES THAT THE

STATE CONSIDERS SITES WHICH THE SPECIES MAY USE IN URBAN AND EMERGING URBAN TO BE A PRIORITY AREA

LOWER CEDAR RIVER WETLAND NO. 25 IS A CLASS 1D PALUSTRINE SCRUB-SHRUB BROAD-LEAVED DECIDUOUS (HARDHACK) AND SCRUB-SHRUB BROAD-LEAVED EVERGREEN (LABRADOR TEA) WETLAND. THE INVENTORY INDICATES THAT RED-TAILED HAWK MAY USE THIS SITE.

LOWER CEDAR RIVER WETLAND NO. 63 IS A CLASS 3 PALUSTRINE SCRUB-SHRUB BROAD-LEAVED DECIDUOUS (HARDHACK) WETLAND.

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.

THE WATER COMPREHENSIVE PLAN, 2012 DOES NOT REQUIRE WORK NEAR THE DESCRIBED WATERS. HOWEVER, ADOPTION OF THE PLAN WILL ALLOW THE CONTINUED DESIGN AND DEVELOPMENT OF AN APPROPRIATE WATER SYSTEM THROUGHOUT THE DISTRICT. INDIVIDUAL PROJECTS WILL REQUIRE THEIR OWN ENVIRONMENTAL EVALUATION.

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

DOES NOT APPLY TO THIS PLAN.

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

DOES NOT APPLY.

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

YES, SOME PORTIONS OF THE SERVICE PLANNING AREA, WHICH ARE ADJACENT TO BIG SOOS CREEK, ARE WITHIN THE 100-YEAR FLOODPLAIN.

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:

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

THERE WILL BE NO GROUNDWATER WITHDRAWALS AS A RESULT OF THIS PLAN. GROUNDWATER ISSUES WILL BE ADDRESSED BY INDIVIDUAL PROJECTS AS NECESSARY.

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.

DOES NOT APPLY.

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.

DOES NOT APPLY TO THIS PLAN.

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

NOT AS A RESULT OF THIS PLAN.

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

DOES NOT APPLY.

4. PLANTS

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

X Deciduous Tree: ALDER, MAPLE, ASPEN, Other (COTTONWOOD, DOGWOOD)
X Evergreen Tree: FIR, CEDAR, PINE, Other (SPRUCE)
X SHRUBS
X GRASS
X PASTURE
___ Crop Or Grain
X Wet Soil Plants: CATTAIL, BUTTERCUP, BULRUSH, SKUNK CABBAGE, Other (____)
X Water Plants: WATER LILY, Eelgrass, MILFOIL, Other (RUSHES)
X Other Types Of Vegetation

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

NONE AS A RESULT OF THIS PLAN. VEGETATION REMOVAL WILL BE ADDRESSED BY INDIVIDUAL PROJECTS AS NECESSARY.

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

NONE KNOWN.

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

DOES NOT APPLY TO THIS PLAN. LANDSCAPE AND RESTORATION REQUIREMENTS WILL BE ADDRESSED BY INDIVIDUAL PROJECTS AS NECESSARY.

5. ANIMALS

A. Circle any birds and animals that 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**, Other (**SQUIRREL**, **MICE**, **RABBITS**)
Fish: **BASS**, **SALMON**, **TROUT**, Herring, Shellfish, Other) (____)

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

AS MENTIONED PREVIOUSLY IN THIS DOCUMENT, RAPTORS AND SEVERAL SPECIES OF TROUT AND SALMON, WHICH ARE LISTED AS SPECIES OF CONCERN OR ENDANGERED SPECIES BY STATE AND FEDERAL AGENCIES, ARE KNOWN TO BE WITHIN THE PLAN SERVICE AREA.

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

KING COUNTY GIS INFORMATION INDICATES THAT THERE IS A WILDLIFE NETWORK, MIGRATION ROUTE RUNNING NORTH AND SOUTH THROUGH THE APPROXIMATE MIDDLE OF THE PLAN SERVICE AREA.

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

DOES NOT APPLY. ADOPTION OF THIS PLAN WILL HAVE NO IMPACT ON NEARBY WILDLIFE. IMPACTS TO WILDLIFE WILL BE ADDRESSED BY INDIVIDUAL PROJECTS.

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.

DOES NOT APPLY. ADOPTION OF THIS PLAN WILL NOT REQUIRE ANY ENERGY OR NATURAL RESOURCES.

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:

DOES NOT APPLY.

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 special emergency services that might be required.

DOES NOT APPLY.

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

DOES NOT APPLY. NO HAZARDS ARE IDENTIFIED.

B. Noise

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

NONE.

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

NONE AS A RESULT OF THIS PLAN. INDIVIDUAL PROJECTS WILL ADDRESS LONG AND SHORT TERM NOISE LEVELS AS NECESSARY.

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

DOES NOT APPLY. NOISE IMPACTS WILL ADDRESSED BY INDIVIDUAL PROJECTS AS NECESSARY.

8. LAND AND SHORELINE USE

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

THE 2008 KING COUNTY COMPREHENSIVE PLAN WITH THE 2010 UPDATE, AS ADOPTED UNDER THE GROWTH MANAGEMENT ACT, HAS DESIGNATED THESE AREAS AS URBAN AND AS BEING LOCATED WITHIN THE KING COUNTY URBAN GROWTH AREA. THERE ARE AREAS EAST OF BIG SOOS CREEK AND SOUTHWEST OF LAKE YOUNGS WHICH HAVE BEEN DESIGNATED RURAL. THE SERVICE PLANNING AREAS ARE PREDOMINATELY RESIDENTIAL.

B. Has the site been used for agriculture? If so, describe.

UNKNOWN.

C. Describe any structures on the site.

THERE ARE SEVERAL DIFFERENT TYPES OF STRUCTURES WITHIN THE SERVICE PLANNING AREA.

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

DOES NOT APPLY.

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

THE SERVICE AREA INCLUDES A VARIETY OF URBAN LAND USES WITH R-4 THROUGH R-48 ZONING. ALTHOUGH THE AREA IS PREDOMINATELY RESIDENTIAL, THE AREA WITHIN THE UGA ALSO INCLUDES BUSINESS AND COMMERCIAL CLASSIFICATIONS WHILE THE RURAL PORTION OF THE SERVICE AREA HAS KING COUNTY DESIGNATIONS OF RA-2.5 THROUGH RA-10.

THE CITY OF RENTON HAS ITS WATERSHED LOCATED WITHIN THE SERVICE AREA OF THE WATER COMPREHENSIVE PLAN, 2012. ITS ZONING IS CONSISTENT WITH THAT LAND USE.

CURRENTLY, PORTIONS OF THE PLAN ARE WITHIN AREAS WHERE EITHER THE CITY OF KENT OR RENTON HAVE OR WILL HAVE JURISDICTION OVER THE LAND USE. THE AREAS WILL RETAIN THEIR URBAN AND RURAL DESIGNATIONS THAT ARE PROVIDED BY THE COUNTYWIDE PLANNING POLICIES AND THE KING COUNTY COMPREHENSIVE PLAN. THE DISTRICT HAS AGREEMENTS WITH BOTH

THE CITY OF KENT AND RENTON DEFINING SERVICE RESPONSIBILITIES. ACCORDING TO THE EAST AND SOUTH KING COUNTY COORDINATED WATER SUPPLY PLAN, IT IS NOT ANTICIPATED THAT THE PLAN WOULD BE AFFECTED BY A TRANSFER OF LAND USE JURISDICTION.

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

THE KING COUNTY COMPREHENSIVE PLAN HAS DESIGNATED THE VAST MAJORITY OF THE AREA AS URBAN AND WITHIN THE URBAN GROWTH AREA (UGA) FOR KING COUNTY FOR THE IMPLEMENTATION OF THE GROWTH MANAGEMENT ACT. SOME AREAS SOUTHWEST OF LAKE YOUNGS AND EAST OF BIG SOOS CREEK HAVE BEEN DESIGNATED AS RURAL.

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

KING COUNTY HAS DESIGNATED LAKE DESIRE AS RURAL, PANTHER LAKE HAS BEEN DESIGNATED AS CONSERVANCY AND SHORELINE RESIDENTIAL, LAKE YOUNGS IS DESIGNATED AS CONSERVANCY.

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

KNOWN SENSITIVE AREAS ARE AS DESCRIBED IN SECTIONS B1D AND B3 OF THIS DOCUMENT.

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:

DOES NOT APPLY.

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

DOES NOT APPLY TO THIS PLAN. INDIVIDUAL PROJECTS WILL BE REVIEWED FOR COMPATIBILITY WITH EXISTING AND PROJECTED LAND USES AND PLANS.

9. HOUSING

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

DOES NOT APPLY.

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

DOES NOT APPLY.

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

DOES NOT APPLY.

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?

DOES NOT APPLY.

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

DOES NOT APPLY.

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

DOES NOT APPLY.

11. LIGHT AND GLARE

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

DOES NOT APPLY.

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

DOES NOT APPLY.

C. What existing off-site sources of light or glare may affect your proposal?

DOES NOT APPLY.

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

DOES NOT APPLY.

12. RECREATION

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

THERE ARE SEVERAL PARK AND RECREATIONAL OPPORTUNITIES WITHIN THE SERVICE AREA INCLUDING RENTON, SOOS CREEK, GARRISON CREEK, NORTH MERIDIAN AND PETROVITSKY PARKS, AMONGST OTHERS. THERE IS A DEPARTMENT OF FISH AND WILDLIFE BOAT LAUNCH AT LAKE DESIRE AND THE LAKE YOUNGS PARK AND TRAIL. THERE ARE ALSO SEVERAL OTHER LAKES IN THE AREA THAT PROVIDE RECREATIONAL OPPORTUNITIES.

B. Would the proposed project displace any existing recreational use? 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:

DOES NOT APPLY. THERE WILL BE NO IMPACTS AS A RESULT OF THIS PLAN.

13. HISTORIC AND CULTURAL PRESERVATION

A. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

NONE KNOWN.

B. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

THERE ARE FIVE POTENTIAL HISTORIC SITES WITHIN THE SERVICE AREA:

- NICHOLIS HOUSE AT 16832 108TH AVE SE, KENT
- RESIDENCE AT 20406 108TH AVE SE, KENT
- HOUSE AND BARN AT 21837 14TH AVE SE, KENT
- RANCH/FARM AT 22841 148TH AVE SE, KENT
- SAAR PIONEER CEMETARY AT 9100 S. 212 ST., KENT

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

DOES NOT APPLY.

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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.

DOES NOT APPLY TO THIS PLAN. THE SERVICE AREA IS SERVED BY MANY ROADS. INDIVIDUAL PROJECTS WILL ADDRESS PUBLIC STREETS AND HIGHWAYS THAT SERVE EACH PROJECT.

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

DOES NOT APPLY TO THIS PLAN. THERE ARE NUMEROUS BUS ROUTES IN THE AREA. INDIVIDUAL PROJECT CHECKLISTS WILL PROVIDE THIS INFORMATION AS NECESSARY.

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

NONE.

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.

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

DOES NOT APPLY.

F. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

NONE.

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

DOES NOT APPLY.

15. PUBLIC SERVICES

A. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

NO.

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B. Proposed measures to reduce or control direct impacts on public services, if any.

DOES NOT APPLY.

16. **UTILITIES**

A. Circle utilities currently available at the site: **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 the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

THE WATER COMPREHENSIVE PLAN, 2012, SERVES AS A GUIDE FOR THE CONTROLLED EXPANSION OF WATER SERVICES WITHIN THE PLANNING AREA. SUBSEQUENT ACTIONS MAY INCLUDE CONSTRUCTION OF WATERMAINS, INTERTIES AND STORAGE FACILITIES CONSISTENT WITH THE EAST AND SOUTH KING COUNTY COORDINATED WATER SUPPLY PLANS, THE KING COUNTY, CITY OF KENT AND CITY OF RENTON COMPREHENSIVE PLANS AND THE AREA ZONING.

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: Tom Cosby

Date Submitted: 4/23/12

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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?

THIS PROPOSAL, THE SOOS CREEK WATER AND SEWER DISTRICT WATER COMPREHENSIVE PLAN, 2012, WILL NOT DIRECTLY EFFECT THE ENVIRONMENT. THE PLAN RESPONDS IN AN ORDERLY MANNER TO FUTURE DEVELOPMENT APPROVED BY VARIOUS AGENCIES, IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS. SUBSEQUENT ACTIONS MAY INCLUDE PROPERTY OWNER REQUESTS FOR CONSTRUCTION OF WATERMAINS CONSISTENT WITH KING COUNTY GUIDELINES.

Proposed measures to avoid or reduce such increases are:

PROPOSED PROJECTS WILL BE REVIEWED AND ADDRESSED BY THE APPROPRIATE AGENCIES AS PROJECTS COMMENCE. ADDITIONALLY, DEVELOPMENT AND GROWTH WILL BE MONITORED AND CONTROLLED BY THE APPROPRIATE KING COUNTY AND /OR CITY AGENCIES.

(2) How would the proposal be likely to affect plants, animals, fish, or marine life?

THE PROPOSED PROJECTS AND POTENTIAL DEVELOPMENT WILL RESULT IN THE LOSS OF PLANTS WHERE WATER SYSTEM FACILITIES ARE INSTALLED ALONG EASEMENTS OR ON SPECIFIC SITES. IT IS NOT ANTICIPATED THAT THE PROPOSED PROJECTS WILL HAVE A SIGNIFICANT IMPACT UPON FISH OR WILDLIFE.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

PROPOSED PROJECTS WILL BE REVIEWED AND ADDRESSED BY APPROPRIATE AGENCIES AS THEY COMMENCE.

(3) How would the proposal be likely to deplete energy or natural resources?

DOES NOT APPLY, AS THE PLAN WILL HAVE NO DIRECT EFFECT UPON ENERGY RESOURCES OR MOST NATURAL RESOURCES. THE PLAN DOES HAVE A STRONG CONSERVATION ELEMENT WITHIN IT WHICH WILL FACILITATE THE CONSERVATION OF WATER AND ENERGY RESOURCES. IT IS POSSIBLE THAT THERE MAY BE SOME LOCATIONS WHERE TREES MAY BE CUT AND NOT REPLANTED IN SOME DEVELOPMENT LOCATIONS.

Proposed measures to protect or conserve energy and natural resources are:

DEVELOPMENT MUST CONFORM TO KING COUNTY AND THE CITIES OF RENTON AND KENT GUIDELINES AND REGULATIONS

(4) How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or 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 farmlands?

THE WATER COMPREHENSIVE PLAN, 2012 WILL NOT AFFECT THE CURRENT USAGE OF SITES. PROJECTS WITHIN THE SERVICE AREA WILL ADDRESS THESE CONCERNS MORE SPECIFICALLY.

Proposed measures to protect such resources or to avoid or reduce impacts are:

PROPOSED PROJECTS WILL BE REVIEWED AND ADDRESSED BY APPROPRIATE AGENCIES AS THE PROJECTS COMMENCE.

(5) How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

THIS PLAN AMENDMENT DOES NOT ALLOW OR ENCOURAGE USES INCOMPATIBLE WITH EXISTING PLANS. THE PLAN AMENDMENT DOES SHOW SOME PROPOSED FACILITIES IN THE VICINITY OF WATER BODIES, HOWEVER, LAND AND SHORELINE USES SHOULD NOT BE AFFECTED.

Proposed measures to avoid or reduce shoreline and land use impacts are:

CONFORMANCE TO APPLICABLE KING COUNTY AND LOCAL JURISDICATION GUIDELINES, ZONING REQUIREMENTS, ALL STATE REGULATION AND DISTRICT STANDARDS WOULD BE REQUIRED WHEN FUTURE DEVELOPMENT OCCURS.

(6) How would the proposal be likely to increase demands on transportation or public services and utilities?

THE WATER COMPREHENSIVE PLAN, 2012 DOES NOT CONFLICT WITH ANY KNOWN ENVIRONMENTAL LAWS. DEVELOPMENT AND GROWTH WHICH MAY FOLLOW WILL BE IN ACCORDANCE WITH ENVIRONMENTAL RESTRICTIONS, AS WELL AS LOCAL GUIDELINES.

THE PLAN RECOMMENDS PROJECTS THAT WILL ADD TO AND IMPROVE THE EXISTING WATER SYSTEM IN RESPONSE TO DEVELOPMENT. THE PLAN IS NOT LIKELY TO INCREASE THE DEMAND UPON TRANSPORTATION.

Proposed measures to reduce or respond to such demand(s) are:

GROWTH TO BE GUIDED BY KING COUNTY AND CITY COMPREHENSIVE PLANNING. UTILITIES AND SERVICES MAY BE EXTENDED AND EXPANDED TO MEET THESE PROJECTED NEEDS.

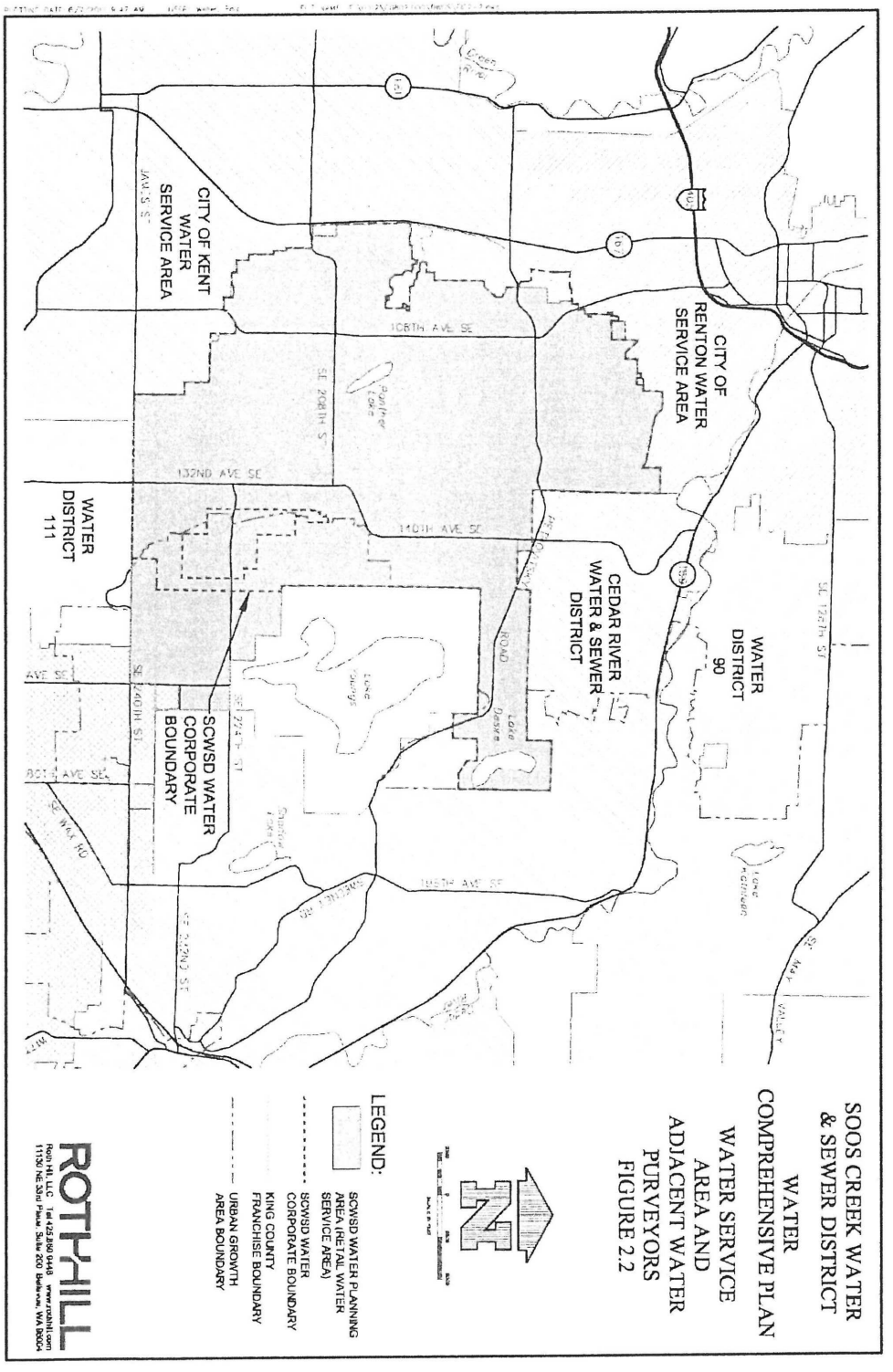
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(7) Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

THE WATER COMPREHENSIVE PLAN, 2012, DOES NOT CONFLICT WITH ANY KNOWN ENVIRONMENTAL LAWS. PORTIONS OF SOME OF THE PROJECTS MAY REQUIRE A UTILITY EXCEPTION FOR MINOR VARIANCES TO PORTIONS OF THE SENSITIVE AREAS ORDINANCE. DEVELOPMENT AND GROWTH WHICH MAY FOLLOW WILL BE IN ACCORDANCE WITH ENVIRONMENTAL RESTRICTIONS, AS WELL AS COUNTY AND CITY PLANNING GUIDELINES.

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PROJECT AREA MAP



APPENDIX B

Cobley, Pam

From: Cobley, Pam
Sent: Thursday, January 23, 2014 12:47 PM
To: 'Igoe, Paige S (DOH)'
Cc: Rodriguez, Richard (DOH); Schmidt, Chris; Hill, Gregory; Ron Speer; kvan@sooscreek.com; lswanson@sooscreek.com
Subject: RE: Soos Creek WSP Review Comments

Hi Paige,

I apologize for the confusion. There is some duplication, but we wanted to include a file for each of the sites as a standalone link. That way you weren't flipping to another packet to look for something. The original designs were provided because there were no asbuilts done for some the projects. And yes, the piping modifications, is what we intended for you to see.

We look forward to your approval.

Thanks,
Pam

Pamela-Rae Cobley
Project Manager
Stantec, formerly Roth Hill
11130 NE 33rd Place, Suite 200 Bellevue WA 98004-1465
Phone: (425) 289-7309
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From: Igoe, Paige S (DOH) [mailto:Paige.Igoe@DOH.WA.GOV]
Sent: Thursday, January 23, 2014 11:59 AM
To: Cobley, Pam
Cc: Rodriguez, Richard (DOH); Schmidt, Chris; Hill, Gregory; Ron Speer; kvan@sooscreek.com; lswanson@sooscreek.com; Igoe, Paige S (DOH)
Subject: RE: Soos Creek WSP Review Comments

Thanks Pam.

I looked at the drawings you sent via ftp site. What's included is confusing (and may be repetitive) and appears to be many of the original design drawings for the reservoirs, which we would have on file. I did see some piping changes for Reservoirs 2, 5 and 6 (Contract No. 9-2000W) which appear to be installation of piping that one could connect a portable pump up to and pump out water from the reservoirs. Is that what you intended to provide? Anything else?

In the future, any projects the District plans to install to help improve water quality or change piping at the reservoir must be submitted to the Department for review and approval. District staff can call me directly or have their engineer call – either way. We can discuss the proposed project and determine whether a submittal is required under WAC 246 290 110 and 120.

Let me know. Looks like we are ready to approve.

Thanks,
Paige

From: Cobley, Pam [mailto:pam.cobley@stantec.com]
Sent: Friday, January 17, 2014 8:57 AM
To: Igoe, Paige S (DOH)
Cc: Rodriguez, Richard (DOH); Schmidt, Chris; Hill, Gregory; Ron Speer; kvan@sooscreek.com; lswanson@sooscreek.com
Subject: RE: Soos Creek WSP Review Comments

Happy New Year Paige!

Hope your holidays were good.

Thank you for your additional comments/questions. The following responses are provided for your review:

1) **Comment 1**
   The hydrant tests were conducted in 2013. The text will be modified to reflect the correct year

   Comprehensive Plan modifications as noted.

2) **Comment 18**
   The District installed piping in case it needed to draw down the tanks. They could put the water from the reservoirs into the systems rather than drain to waste. The piping also allows the District to access the dead storage in the structures in the event of a catastrophic event that requires them to draw upon the dead storage. The District decided instead of installing permanent pumps at the sites that they would purchase a portable pump. This was done a number of years ago. The project that was listed was a carryover from several Comprehensive Plans ago.

   We've uploaded the asbuilts for Reservoir 1, Tanks 2, 5 and 6 for your information. The drawings we have uploaded include asbuilt drawings that have been completed over a number of years for various reasons, such as when the structures were built and when various subsequent modifications to the structures were completed. Accordingly, you will note some of the plan sheets are watermarked "Reference Only". Additionally, no asbuilt drawings are available for the Reservoir No. 1 manifold project. The District did the work themselves in 1996. The manifold was installed to distribute the water more evenly when entering the reservoir. Once this was complete the District observed that the reservoir was maintained a consistent chlorine residual. The District also observed that due to the manifold improvements in Reservoir No. 1, they were able to better maintain chlorine residual in the overall distribution system. The small diameter manifolds in Tank No. 5 were removed and not reinstalled when the structure was recoated in 2008. The small diameter manifolds in Tank No. 6 have never been used for their intended purpose but remain in the structure. The District will decide to keep them in place when they schedule the next interior recoating project for that structure. You can download (access will expire on 1/27/14) the information use the link below.

   Automatic Login
   FTP site link: ftp://s0127153339:1949186@ftptmp.stantec.com
   By clicking on the link above (or pasting the link into Windows Explorer) you will be automatically logged into your FTP site.

   No Comprehensive Plan modifications proposed.

3) **Comment 21**
Please see attached revised WFI. This form will be replace in Appendix K.

Comprehensive Plan modifications proposed as noted.

If you have additional questions or have difficulties with the link, please let me know. We look forward to hearing from you soon.

Regards,
Pam

Pamela-Rae Cobley
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From: Igoe, Paige S (DOH) [mailto:Paige.Igoe@DOH.WA.GOV]
Sent: Monday, December 16, 2013 11:51 AM
To: Cobley, Pam
Cc: Rodriguez, Richard (DOH); Igoe, Paige S (DOH)
Subject: Soos Creek WSP Review Comments

Hi Pam,
I have a few questions on your response to comments letter for the Soos Creek WSP received in this office on October 25 2013. I just got back to the office from my leave in early December.

1) On Comment 1, were the hydrant tests conducted in 2012 or 2013? The text says both.
2) On Comment 18, please provide drawings/information on the changes made at Tank No. 2 to improve water quality. Are you speaking of the manifolds that are mentioned on Page 8-2? I'm not sure how an emergency bypass would help with regular turnover and potential stagnant water in the tank. A change in design for water facilities should be submitted and approved by the Department of Health. Please submit information on the changes provided for Reservoir 1, Tanks No. 2, No. 5 and No. 6.
3) Comment 21, please include the latest WFI in the final WSP. Please update the SPU inlet capacity.

Let me know if you have any questions.

Thanks,
Paige

Stantec Consulting Services Inc.
11130 NE 33rd Place, Suite 200
Bellevue WA 98004-1465
Tel: (425) 869-9448
Fax: (425) 869-1190

October 14, 2013

Attention: Richard Rodriguez, Regional Planner
Paige S. Igoe, PE, Regional Engineer
Northwest Drinking Water Regional Operations
2025 – 72nd Avenue South, Suite 310
Kent, WA 98032

Richard Paige

Dear Mr. Rodriguez and Ms. Igoe,

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan
ID #40100

Thank you for the comments in your letter, dated September 28, 2012, on the Soos Creek Water & Sewer District draft Water Comprehensive Plan update. We have reviewed the comments and offer the following responses:

Water System Analysis
Comment 1
Were hydrant tests conducted to calibrate the model? Was any field date used to compare the model to actual water system conditions? Please comment on the level of calibration performed and the reliability of your model results.

Response
The existing SCWSD water system hydraulic model has been calibrated. Flow testing was performed at 12 locations between April 24 and June 10, 2013, and the model has been verified against the field data. The results of the calibration indicated that the existing model was in close agreement with the field data for 11 of 12 field tests. The one test with inconsistent results was assumed to have faulty field data, and was disregarded. The model was more conservative than the field data at this location, so it was not considered to be a concern. Since no modifications to the model were required, no additional hydraulic analysis will be performed.

The Model Calibration, page 6-3, description in Chapter 6 of the Water Comprehensive Plan will be replaced with the following text:

> "Verification of the accuracy of the computer model is an essential step in the hydraulic analysis process. The DOH Water System Design Manual (December 2009) stipulates in Section 8.2.2 that "where values for pipe roughness are uncertain and/or the location and operation of valves or pipes in a system are not clear, some adjustments to the hydraulic model may be necessary."

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan ID #40100

This model has been updated at regular intervals, good overall information is available about pipe materials and location and operation of valves. The model is regularly used as a tool for certificates of water availability and fire flow analysis. In order to verify that the existing hydraulic model is accurate, district staff and engineering developed a calibration process and conducted hydrant flow tests at locations throughout the District. Hydrant flow tests were conducted at twelve locations between April 24 and June 10, 2012. The locations were selected so as to establish appropriate Hazen-Williams "C" values for each of the different types of pipe material within the District. The results were used to check the appropriate variables in the model to verify or update the model-predicted performance of the system to closely replicate the measured system performance. The majority of the results indicated model and field-measured results within ten percent of each other. Other results were typically within 2 psi (model versus field), and assumed to be within typical tolerances of the testing.

Typical "C" values of 130 are assigned for ductile iron pipe material and 120 for asbestos cement. These two pipe materials account for about 99 percent of the District's piping. The Civil Engineering Reference Manual (Lindberg, 5th Edition) lists design "C" values of 140 for ductile iron and asbestos cement. The cast iron piping in the distribution system is believed to have a mortar lining, which tends to significantly slow the degradation of "C" values over time. A small amount of piping material is unknown and was assigned a lower "C" value.

"C" values are assigned to the model as follows:

Ductile Iron: 130

Asbestos Cement: 120

Cast Iron 100-110

PVC: 140

These "C" values are assumed to be valid for future conditions scenarios as well, some increase in roughness (decrease in "C" value) may occur but it is not expected to be significant over the planning period).

Tabular data for the flow tests and calibration are located in Appendix N."

Comprehensive Plan modifications proposed as noted.

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan ID #40100

Comment 2
Please describe in the text how demands were allocated within the hydraulic model.

Response
Page 6-3. Paragraph 1 will be modified as follows:

> "Updates are accomplished by manually inputting construction record drawing data into the model. System demands are updated at the same time by estimating demands associated with developments served by the new construction. For the Comprehensive Plan model used for this analysis, updated system demands were input to the model based on planning data and related system demands previously presented in this document. Zoning changes are reviewed, and a list of top water users in the District was reviewed, and larger demands in the model are allocated based on this information. The previous model system demands were globally factored to match the 6-year, 20-year, and Ultimate Average Day demand (ADD) scenarios."

Comment 3
In the text, describe how the Seattle Public Utility (SPU) supply station were modeled including pressure and flow assumptions.

Response
The following section will be added at the bottom of Page 7-2:

> **"SEATTLE PUBLIC UTILITY INTERTIE DATA**
>
> The District receives water from interties with Seattle Public Utilities at five different locations. These interties are represented in the model as fixed-head reservoirs, with an elevation set at the hydraulic grade line (HGLo of the intertie. Although the HGL typically fluctuates at each intertie, they are conservatively set in model based on the minimum allowed per the agreement between the District and SPU."

Comprehensive Plan modifications proposed as noted.

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan ID #40100

Comment 4
Please provide model results for the analyses conducted for this WSP, including minimum pressure, maximum pressure and available fire flow scenarios. The information can be shown graphically or in tables in the appendix. At a minimum, provide results for the existing system and for the system with proposed improvements incorporated. Please tie the deficiencies identified with the analyses to the CFP projects presented in Chapter 7.

Response
Results of the model analysis analysis, including minimum pressure, maximum pressure and available fire flow scenarios are described on pages 6-4 through page 6-6. Individual deficiencies and the recommended improvements to correct these deficiencies are described in Chapter 7, and are identified on Figures 7-1A to 7-1K.

No Comprehensive Plan modification proposed.

Comment 5
For the minimum pressure analysis, please confirm that under peak hour demand, system pressures were greater than 30 psi. The text on Page 6-6 indicates that under PHD conditions, all pressures exceed the 20 psi criterion when equalizing storage is depleted. Please clarify.

Response
The 20 psi criterion described was a typographical error. The minimum pressure analysis for the 6-year and 20-year analysis were performed using the 30 psi criterion. The text on page 6-4 and 6-6 will be corrected.

Comprehensive Plan modifications proposed as noted.

Comment 6
The supply analysis presented on Page 6-9 indicates the District is ***currently*** deficient in supply. Is this a true deficiency? Are current maximum day demands consistent with the projection for 2011 and 2012? Describe the actual physical capacity of the SPU supply stations in greater detail. Please provide more information on how the District plans to correct (including a schedule) what appears to be a signification deficiency in the supply analysis presented in Chapter 6.

Response
The existing agreement between the District and SPU guarantees flows of 7,000 GPM. However, the total physical capacity of the interties is 10,750 GPM, as listed in Table 5.7. SPU has not indicated a requirement to negotiate a contract at this time, even though current flows to the District exceed the contracted guarantee. The supply analysis was conducted assuming the current contracted obligations.

In order to address the difference in existing and future flow projections with the current SPU contract, the District is proposing to modify the appendix if the contract so that adequate source of

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan ID #40100

supply will be guaranteed within the planning period. This is Project SS-12 in described in Chapter 7, and is designated as a short-term project.

Page 6-9, Paragraph 1 will be modified as follows:

"Based on the demand projections from Chapter 4, the current maximum daily demand is 7,410 gpm with a projected MDD of 9,300 gpm by 2031. The physical capacity of the existing interties between SPU and the District is 10,750 GPM. Individual maximum flow rates for each of the four interties is listed in Table 5-7. However, the appendix of the current contract between Seattle Public Utilities and the District only guarantees flow from the four locations for a total of 7,000 gpm at specific minimum hydraulic grade lines. Increased water supply may be guaranteed in the future if SPU and the District agree to modify the appendix to the contract with Seattle Public Utilities to guarantee a flow rate that meets the projected MDD at the specific minimum hydraulic grade lines. This is discussed further in Chapter 7. Pump station No. 2 has recently been upgraded, and provides the physical capability to draw 5,000 gpm, which, in conjunction with other supply, would meet the 9,300 gpm demand.

Comprehensive Plan modifications proposed as noted.

Water Use Efficiency

Comment 7

On Page 9-13, the text states the District has made a commitment to maintain DSL at less than 10%. In the document, describe what actions the District conducts to keep its DSL below 10%.

Response

Historical information is listed on page 9-6, Unaccounted Water/Leak Detection. While many of these items have not been specifically identified in the new Program, the District is still committed to performing many of these actions. In addition, the District has a metering station to required developers and contractors to use during the construction of projects which helps to reduce the theft of water. The District also has an AC Main Replacement Program that is budgeted at $400,000 annually. This Program helps to reduce leaks and breaks in the pipe.

No Comprehensive Plan modification proposed.

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan ID #40100

Water Quality

Comment 8

On Page 8-8, text says the District flushes the suspect area after an unsatisfactory sample has been collected and chlorine residuals are taken before and after flushing. And if chlorine residual is less than 0.3 mg/L, 'appropriate measures are taken to boost the chlorine in the system'. Please describe what measures are taken to boost chlorine in the system. When does the District collect repeat samples taken in the process described?

Response

In the memory of the current District staff, this has never occurred. The most likely locations for low residual readings are dead-end lines or other known areas with low flows. In response to a low residual event, the District would flush the subject lines and resample for verification.

No Comprehensive Plan modification proposed.

Comment 9

For DBP monitoring throughout the document, please clarify whether District Staff or SPU Staff are taking required quarterly samples. Text on Page 8-9 states that DBP samples are being taken at existing coliform sample stands in the interim until dedicated sample stands can be installed for the DBP monitoring. DBP samples should be taken at locations identified in the Stage 2 DBP Monitoring Plan. Please clarify where the DBP samples are being taken currently.

Response

The last sentence of the 1st paragraph under Disinfection Byproducts Monitoring (Stage 2) will be deleted per previous review comment by SPU.

The DBP samples are being taken at the locations stated in Table 8.6. Coincidentally, two of these locations are also coliform monitoring sites.

No Comprehensive Plan modification proposed.

Comment 10

On Page 8-10, in the Residual Disinfection Monitoring section, please add text describing the levels of chlorine observed in the District's system. Include what actions staff would take if high or low residuals are observed.

Response

Chlorine residual levels in 2011 ranged from 0.3 to 1.73 mg/l with an average of 0.97 mg/l. If high (over 2.0 mg/l) or low (less than 0.2 mg/l) levels are observed, the District would flush until chlorine level is within the normal range for the area, then resample.

No Comprehensive Plan modification proposed.

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan ID #40100

Comment 11
Please update the Public Health – Seattle King County contact information throughout the WSP. Bill Lasby no longer works in the drinking water section.

Response
Page 11-13, Public Health – Seattle and King County contact information will be replaced with the following:

Greg Bishop 206-296-9753

Comprehensive Plan modification proposed as noted.

Comment 12
Thank you for providing your coliform and disinfection byproducts sampling plan in the Appendix I. The information submitted in Appendix B and C appears to be a duplicated. Please provide the correct maps showing coliform sampling stations in Appendix B.

Response
The Appendix A, Sampling Stations, will be replaced with the correct maps.

Comprehensive Plan modifications proposed as noted.

Design and Construction Standards
Comment 13
Please include information on the pressure testing and disinfection procedures use to put a new water main into service. And per WAC 246 290 451, 'drinking water shall not be furnished to the consumer until satisfactory bacteriological samples have been analyzed by a laboratory certified by the state'. Does the District take bacteriological samples? This requirement was not shown in the standard specifications provided. Please clarify.

Response
Please see the Appendix F Design and Construction Standards, pages 8 number 17 and page 12 number seven which states the following;

All water mains shall be subject to final testing and flushing per District Standard Construction Provisions and subject to final purity samples taken by the District to the Washington State Department of Health (DOH) for testing and approval prior to water mains and facilities being accepted for service.

Pressure testing of lines shall be in accordance with Section 7-09.3(23) of the Standard Specifications. Test pressure shall be the existing system line pressure plus 150 psi, but in no case shall the test pressure be less than 250 psi. Mains shall be disinfected per Section 7-09.3(24) of the Standard Specifications.

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan ID #40100

The Developer/Contractor shall cube and flush all new water mains while being observed by the District's field representative. District shall furnish the cubes for the Developer/Contractor who shall then be responsible for cubing the new water mains. Developer/Contractor shall coordinate with District's field representative for the locations to be cubed. After the cubes have been flushed from the system, the rest of the flushing, chlorinating, pressure and purity tests shall be completed. The District shall be responsible for collecting the samples and obtaining the bacteriological tests.

No Comprehensive Plan modification proposed.

Operation & Maintenance

Comment 14

Please clarify the units of the staffing information included in Table 11.1. Please indicate in the text whether current staffing levels are adequate to conduct operation and maintenance activities for the water system.

Response

Table 11.1 on page 11-4, in the "Staffing" column will be modified to full-time equivalent. As noted in the text above, "Table 11.1 this is an approximation of current staffing requirements for the general maintenance tasks. It represents a general guidance rather than actual requirements."

Comprehensive Plan modification proposed as noted.

Comment 15

Please describe how the District is addressing regular preventative maintenance for water system valves, hydrants, pumps, PRV stations and meters.

Response

Page 11-7 and 11-8 provides an overview of the District's Routine Operation and Preventative Maintenance.

No Comprehensive Plan modification proposed.

Comment 16

Text on Page 11-12 states that during a water main break, water service is shut off and homes affected are provided water service through garden hoses. Is it possible to keep the water system in positive pressure during water main breaks? How does the District ensure that the water system is protected from a backflow event when using hoses to provide water service? What actions does the District take to bring the area without water service back into service?

Response

Page, 11-13, first sentence, second paragraph will be revised with the following:

"In case of broken water mains, the areas affected could be valved off so that service to customers outside the affected areas would be maintained."

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan ID #40100

Potable water piping would be used to supply temporary service from sources of supply such as blow-offs, or hydrants within an unaffected area depending upon the number of services needing temporary service. Each connection would be evaluated for cross connection hazards and the appropriate backflow prevention assembly used. The District will make the necessary water main repairs, re-open the closed valves, and return water service back to the affected area. Once repairs to the system are completed, the system would be flushed and samples taken before restoring service.

The vulnerability of District water main facilities to a total loss of service has been reduced by looping the system, allowing for portions of the system to be valved off, and the direction of water flow changed. Small areas may be out of service due to a watermain failure, but the disruption would be minor.

When a cross-connection poses a potential health or system hazard, the District shall shut off water service to the premises until the cross-connection has been eliminated or controlled by the installation of a proper backflow prevention assembly. The Cross-Connection Control Program is discussed in Chapter 11 and the full program can be found in **Appendix J**.

Backflow prevention facilities according to Soos Creek Water and Sewer District and Washington State Code requirements shall be provided on all systems which serve interior fire protection sprinkler systems and/or any other system(s) that may contaminate the water system as outlined in District Resolution No. 2574-W.

Comprehensive Plan modifications proposed as noted.

Capital Facilities Plan

Comment 17

Please indicate a list of projects from the last WSP have been completed by the District. It appears some of the projects identified in the 2004 WSP were removed (as shown in Appendix H). Provide justification for why the projects were no longer needed.

Response

The following section will be added at the end of Chapter 7:

"PROJECTS REMOVED FROM THE 2005 COMPREHENSIVE WATER SYSTEM PLAN

Project B5-6

This project included the replacement of approximately 850 lineal feet of existing 8-inch cast iron water main with 10-inch ductile iron water main in an easement east of 128th Avenue SE, which serves Lindbergh High School, to decrease water velocities in the pipe during required fire flows. The District revised its maximum allowable velocity from 8 ft/s to 10 ft/s, so this project has been removed from the Capital Facility Plan.

Soos Creek Water and Sewer District
2012 Water Comprehensive Plan Update
Fire Hydrant Flow Test Data Spreadsheet

			Hydrant Flow Test Data													Tank Levels								Booster Pump Data																	
						Pressure Reading										Reservoir 1		Tank 2		Tank 5		Tank 6		Pump Station No. 1			Pump Station No. 2			Pump Station No. 4			Pump Station No. 5			Pump Station No. 6		
Test #	Location	Pressure Zone	Date/Time (start)	Date/Time (finish)	Hydrant Flow (gpm)	Before Test (psi)			During Test (psi)			After Test (psi)			Pressure Change (psi)			Tank Level Before (ft)	Tank Level After (ft)	Tank Level Before (ft)	Tank Level After (ft)	Tank Level Before (ft)	Tank Level After (ft)	Pump Rate Before Test	Pump Rate During Test	Pump Rate After Test	Pump Rate Before Test	Pump Rate During Test	Pump Rate After Test	Pump Rate Before Test	Pump Rate During Test	Pump Rate After Test	Pump Rate Before Test	Pump Rate During Test	Pump Rate After Test	Pump Rate Before Test	Pump Rate During Test	Pump Rate After Test
1	8" DI on 129th Pl north of SE 159th St	627	6/10/2013	6/10/2013	Q_1	P_{1A}	P_{1B}	P_{1C}	P_{1A}	P_{1B}	P_{1C}	P_{1A}	P_{1B}	P_{1C}	P_{1A}	P_{1B}	P_{1C}																						
			3:00pm	3:06pm	908 29psi	73	76	71	61	66	63	73	76	71	12	10	8	26	26	89.9	89.9	81.9	81.9																
			Model	Test#1		71	76.2	70.1	58.6	65.7	62.5				12.4	10.5	7.6																						
2	8" CI southwest of Pump Station 2 on Renton Elementary School/Lindbergh High School property	627	6/20/2013	6/20/2013	Q_2	P_{2A}	P_{2B}	P_{2C}	P_{2A}	P_{2B}	P_{2C}	P_{2A}	P_{2B}	P_{2C}	P_{2A}	P_{2B}	P_{2C}																						
			2:42pm	2:48pm	1273 57psi	90	Hydrant damaged - Not available for testing	85	86		81	90		85	4		4	22.3	22.3	84.6	84.6	76.8	76.8																
			Model	Test#1		88.4		82.9	82.2		78				6.2		4.9																						
3	8" DI on Main Ave and S 35th St	627	5/1/2013	5/1/2013	Q_3	P_{3A}	P_{3B}	P_{3C}	P_{3A}	P_{3B}	P_{3C}	P_{3A}	P_{3B}	P_{3C}	P_{3A}	P_{3B}	P_{3C}																						
			10:00 AM	10:10am	1646 95psi	150	130	140	141	122	131	150	130	140	9	8	9	20.5	20.5	87.7	87.6	79.6	79.5																
			Model	Test#1		148.8	126.7	137.1	137.7	116.7	127.2				11.1	10	9.9																						
4	8" DI in Vantage Glen Mobile Home Park	627	5/1/2013	5/1/2013	Q_4	P_{4A}	P_{4B}	P_{4C}	P_{4A}	P_{4B}	P_{4C}	P_{4A}	P_{4B}	P_{4C}	P_{4A}	P_{4B}	P_{4C}																						
			12:55 PM	1:05 PM	1317 61psi	116	108	106	113	103	100	115	107	105	3	5	6	20.4	20.3	86.7	86.6	78.7	78.6																
			Model	Test#1		113.1	107.1	104.1	107.8	101.9	97.9				5.3	5.2	6.2																						
5	8" DI on Lake Desire Dr SE	710	4/25/2013	4/25/2013	Q_5	P_{5A}	P_{5B}	P_{5C}	P_{5A}	P_{5B}	P_{5C}	P_{5A}	P_{5B}	P_{5C}	P_{5A}	P_{5B}	P_{5C}							74	74												Pumps off		
			10:40am	10:46am	908 29psi	86	81	76	68	66	64	86	81	76	18	15	12																						
			Model	Test#1		84.8	80.4	74.8	67.6	66.8	65.2				17.2	13.6	9.6																						
6*	8" DI on S. 47th St/S 48th St/102nd Ave SE	627	4/30/2013	4/30/2013	Q_6	P_{6A}	P_{6B}	P_{6C}	P_{6A}	P_{6B}	P_{6C}	P_{6A}	P_{6B}	P_{6C}	P_{6A}	P_{6B}	P_{6C}																						
			9:04am	9:12am	1216 52psi	93	92	109	81	82	97	93	92	109	12	10	12	21.9	21.8	90.4	90.2	82	81.9																
			Model	Test#1		92.1	91.2	105.3	76.5	74.7	87.9				15.6	16.5	17.4																						
7	6" AC on SE 186th St between 108th Ave SE and 116th Ave SE	627 Q7 and P7B switched	6/11/2013	6/11/2013	P_{7B}	P_{7A}	Q7	P_{7C}	P_{7A}	Q7	P_{7C}	P_{7A}	Q7	P_{7C}	P_{7A}	Q7	P_{7C}																						
			11:45am	11:55am	924 30psi	64	52	63	62	52	62	64	52	63	2	0	1	21.5	21.5	85.5	85.5	77.6	77.6																
			Model	Test#1		64.7	49.7	62.6	62.8	48.7	61.2				1.9	1	1.4																						
8	Tests not performed at this location				Q_8	P_{8A}	P_{8B}	P_{8C}	P_{8A}	P_{8B}	P_{8C}	P_{8A}	P_{8B}	P_{8C}																										
9	6" AC on SE 203rd Pl /127th Pl SE/SE 202nd Pl /130th Ave SE/SE 201st St	627	4/29/2013	4/29/2013	Q_9	P_{9A}	P_{9B}	P_{9C}	P_{9A}	P_{9B}	P_{9C}	P_{9A}	P_{9B}	P_{9C}	P_{9A}	P_{9B}	P_{9C}																						
			2:56 PM	3:05 PM	843 25psi	75	68	75	62	58	70	75	68	75	13	10	5	24.7	24.7	90.7	90.7	83	83																
			Model	Test#1		77.6	66.1	71.7	61.6	57.4	68.2				16	8.7	3.5																						
10	6" AC on SE 204th Pl/147th Ave SE	627	4/29/2013	4/29/2013	Q_{10}	P_{10A}	P_{10B}	P_{10C}	P_{10A}	P_{10B}	P_{10C}	P_{10A}	P_{10B}	P_{10C}	P_{10A}	P_{10B}	P_{10C}																						
			1:45 PM	1:50 PM	533 10psi	52	52	60	30	32	50	52	52	60	22	20	10	25	25	90.7	90.7	83	83																
			Model	Test#1		50.5	49.2	55.7	27.5	32.1	44.4				23	17.1	11.3																						
11	6" AC on 142nd Ave SE/SE 213th St/143rd Ave SE	710	4/25/2013	4/25/2013	Q_{11}	P_{11A}	P_{11B}	P_{11C}	P_{11A}	P_{11B}	P_{11C}	P_{11A}	P_{11B}	P_{11C}	P_{11A}	P_{11B}	P_{11C}							73	73												Pumps off		
			11:50 AM	11:56 AM	716 18psi	80	90	80	44	59	44	80	90	80	36	31	36																						
			Model	Test#1		77.1	89.7	79.7	44.2	61.2	45.7				32.9	28.5	34																						
12	8" DI on SE 220th Pl @ 110th Ave SE	627	6/10/2013	6/10/2013	Q_{12}	P_{12A}	P_{12B}	P_{12C}	P_{12A}	P_{12B}	P_{12C}	P_{12A}	P_{12B}	P_{12C}	P_{11A}	P_{11B}	P_{11C}																						
			12:55pm	1:00pm	984 34psi	70	72	74	65	70	72	70	72	74	5	2	2	26.3	26.3	90.8	90.8	82.5	82.5																
			Model			68	70.9	72.2	63	69.3	70.7				5	1.6	1.5																						
13	6" CI/AC/DI on SE 227th Pl between 109th Pl SE and 116th Ave SE	627	6/10/2013	6/10/2013	Q_{13}	P_{13A}	P_{13B}	P_{13C}	P_{13A}	P_{13B}	P_{13C}	P_{13A}	P_{13B}	P_{13C}	P_{13A}	P_{13B}	P_{13C}																						
			10:00am	10:10am	860 26psi	80	81	69	71	73	63	80	81	69	9	8	6	26.6	26.6	92.8	92.8	84.5	84.5																
			Model	Test#1		77.3	76.4	70.4	67.4	69.4	64.8				9.9	7	5.6																						
14	Tests not performed at this location				Q_{14}	P_{14A}	P_{14B}	P_{14C}	P_{14A}	P_{14B}	P_{14C}	P_{14A}	P_{14B}	P_{14C}																										

Note: Turn off pumps at all Pump Station No. 1, Pump Station No. 2, and Pump Station No. 4 for all tests.

Note: Data not required for any cell blocked out in gray.

*Location 6 calibration results differed significantly from the field data. This is likely due to improper guage readings taken at the time of the test.

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan ID #40100

Project B5-7
This project included the replacement of approximately 700 lineal feet of existing 8-inch cast iron water main with 10-inch ductile iron water main in an easement south of SE 164th Street, which serves Lindbergh High School, to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project C2-4
This project included the replacement of approximately 800 lineal feet of existing 8-inch ductile iron water main with 10-inch ductile iron water main in a loop north of SE 174th Street east of 106th Place SE, which serves a commercial property, to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project D6-2
This project included the replacement of approximately 475 lineal feet of existing 8-inch ductile iron water main with 10-inch ductile iron water main in an easement on the Fairwood Grove Condominiums property to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project D6-3
This project included the replacement of approximately 500 lineal feet of existing 8-inch ductile iron water main with 10-inch ductile iron water main in an easement on the Fairwood Grove Condominiums property to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project D8-3
This project included the replacement of approximately 200 lineal feet of existing 8-inch ductile iron water main with 10-inch ductile iron water main on 148th Lane SE west of SE 177th Place to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project D8-4
This project included the replacement of approximately 150 lineal feet of existing 8-inch ductile iron water main with 10-inch ductile iron water main on 149th Lane SE west of SE 177th Place to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan ID #40100

Project E2-3
This project included the installation of approximately 650 lineal feet of 8-inch ductile iron water main on 106th Avenue SE south of SE 188thth Court to provide water for future development. This project was located in a stream buffer, so it has been removed from the Capital Facility Plan.

Project E5-12
This project included the installation of approximately 350 lineal feet of 8-inch ductile iron water main in an easement north of SE 192th Street, which would connect to an existing main which serves Meeker Junior High School in order to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project E7-2
This project included the installation of approximately 1,400 lineal feet of 8-inch ductile iron water main on anticipated right-of-way from 140th Avenue SE to the existing main south of 143rd Court SE to provide water for future development. This project alignment crossed Molasses Creek, so it has been removed from the Capital Facility Plan.

Project J2-2
This project included the installation of approximately 500 lineal feet of 8-inch ductile iron water main in an anticipated easement from the east end of SE 220th Street to the north end of of 104th Place SE to provide looping in the water system.. This project alignment was in a wetland, so it has been removed from the Capital Facility Plan.

Project L5-2
This project included the replacement of approximately 900 lineal feet of 8-inch ductile iron water main with 10-inch ductile iron water main in an existing easement north of SE 240th Street on the Wandering Creek Apartments property to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Project L6-5

This project included the installation of approximately 250 lineal feet of 8-inch ductile iron water main with 10-inch ductile iron water main in an existing easement east of 132nd Avenue SE 240th on a commercial property to decrease water velocities in the pipe during required fire flows. This project has been removed from the Capital Facility Plan due the District's revised velocity requirements.

Comprehensive Plan modification proposed as noted.

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan
ID #40100

Comment 18
On Page 7-4, booster pump facilities are recommended to help improve water quality in Tank No. 2. Describe the problems observed with this storage facility. Describe the winter and summer turnover for this facility. What does the District do to monitor water quality in its reservoirs?

Response
Bypass piping has been installed on Tank No. 2 to provide access to the tank's dead storage volume during emergencies. However, the District has clarified that there is no water quality problem associated with Tank 2. Project SS-5 will be removed from the Capital Facilities Plan.

Comprehensive Plan modification proposed as noted.

Comment 19
On Page 7-5, an additional reservoir is recommended to for the 710 zone. What is meant by the phrase "the additional storage would bolster the hydraulic grade line for this portion of the water system'? Wouldn't the 710 reservoir be at the same hydraulic grade as the existing reservoir? Describe the problems that exist in this portion of the pressure zone.

Response
Project SF-1 is recommended to provide storage for future parts of the water system which will be located in the 710 zone. It is not required to correct any deficiency in the current water system. The project description will be modified as follows:

> "....Construction of a storage facility is recommended in the 710 Zone (South) when water mains are extended to serve that portion of the District, which is not currently developed. It is anticipated that the existing storage facilities may not be able to maintain the hydraulic grade line in this area once the water system is extended to it. The additional storage would bolster the hydraulic grade line for this portion of the water system, helping to maintain adequate residual pressures...."

Comprehensive Plan modification proposed as noted.

<u>Other Documentation</u>
Comment 20
Please provide a complete table of contents which includes a full list of tables, figures and appendices. What should be included in Appendix B and C?

Response
A full list of the tables, figures and appendices are including in the Table of Contents, pages viii through x. As detailed on page x of the Table of Contents Appendix B will include the Agency Comments and Appendix C will include the Adopting Resolutions.

No Comprehensive Plan modifications proposed.

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan ID #40100

Comment 21
Please update the WFI included in Appendix K. Include the total number of inlets with SPU in parentheses in box 16. Please change the capacity shown in box 23 to 7,000 gpm to match the numbers provided in the SPU contract.

Response
The District will update the WFI during the annual cycle, which will occur in January.

No Comprehensive Plan modifications proposed.

Comment 22
The water system must meet the consumer input process outlined in WAC 246-290-100(8). Please provide documentation of a consumer meeting discussing the WSP, prior to DOH approval of the WSP.

Response
The District held a public hearing on May 23, 2012 prior to the Board of Commissioner's approving the plan for agency distribution.

No Comprehensive Plan modification proposed.

Comment 23
Prior to DOH approval, the District's governing body must approve and adopt the WPS. This is a new requirement resulting from the Municipal Water Legislative.

Response
The District Board of Commissioner has adopted the draft Plan for agency review and distribution. The District Board of Commissioners will adopt the final Plan once all the comments have been agreed to and a final document is produced. The adopting resolutions will be included in Appendix C of the final Plan.

Comprehensive Plan modifications proposed as noted.

Comment 24
Please provide an Adoption Ordinance for you WSP from King County, if the District provides water service in unincorporated King County.

Response
The King County adopting ordinance will be included in Appendix C of the final Plan.

Comprehensive Plan modifications proposed as noted.

Reference: Soos Creek Water & Sewer District 2012 draft Water Comprehensive Plan
ID #40100

Comment 25
Please provide copies of any comments made by adjacent purveyors or other interested parties, along with the District's response to those comments.

Response
All agency comments and the District responses will be included in Appendix B once the final Plan is produced.

Thank you again for your comments. We believe these responses adequately address your concerns. Should you have additional comments or questions, please provide them by within two weeks of the date of this letter. If we do not hear from you by then, we will finalize the changes in the Plan and forward it to you for final approval. Should you have additional questions, please feel free to contact me at (425) 289-7309 or Chris Schmidt, PE at (425) 289-7315.

Regards,

Stantec, formerly Roth Hill

Pamela-Rae Cobley
Project Manager
Phone: (425) 289-7309
Fax: (425) 869-1190
pam.cobley@stantec.com

Attachment: New Appendix N - Tabular data for the flow tests and calibration

c. Ron Speer, Ken VanDenBergh – Soos Creek Water & Sewer District
Mike Hanis, District Attorney – Hanis Irvine Prothero, PLLC
Gregory G. Hill, PE, Chris Schmidt, PE - Stantec

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STATE OF WASHINGTON
DEPARTMENT OF HEALTH
NORTHWEST DRINKING WATER REGIONAL OPERATIONS
20425 72nd Avenue South, Suite 310, Kent, Washington 98032

September 28, 2012

RON SPEER DISTRICT MANAGER
SOOS CREEK WATER & SEWER DISTRICT
PO BOX 58039
RENTON WA 98055

RE: Soos Creek Water & Sewer District, ID# 40100
King County
Water System Plan – 2012
Submittal #12-0509

Dear Mr. Speer:

Thank you for submitting the draft Water System Plan (WSP) for the Soos Creek Water & Sewer District (the District), received in this office on May 25, 2012. We offer the following comments. The comments must be adequately addressed prior to approval.

Water System Analysis

1. Were hydrant tests conducted to calibrate the model? Was any field data used to compare the model to actual water system conditions? Please comment on the level of calibration performed and the reliability of your model results.

2. Please describe in the text how demands were allocated within the hydraulic model.

3. In the text, describe how the Seattle Public Utility (SPU) supply stations were modeled including pressure and flow assumptions.

4. Please provide model results for the analyses conducted for this WSP, including minimum pressure, maximum pressure and available fire flow scenarios. The information can be shown graphically or in tables in an appendix. At a minimum, provide results for the existing system and for the system with proposed improvements incorporated. Please tie the deficiencies identified with the analyses to the CFP projects presented in Chapter 7.

5. For the minimum pressure analysis, please confirm that under peak hour demand, system pressures were greater than 30 psi. The text on Page 6-6 indicates that under PHD conditions, all pressures exceed the 20 psi criterion when equalizing storage is depleted. Please clarify.

6. The supply analysis presented on Page 6-9 indicates the District is ***currently*** deficient in supply. Is this a true deficiency? Are current maximum day demands consistent with the projections for 2011 and 2012? Describe the actual physical capacity of the SPU supply stations in greater detail. Please provide more information on how the District plans to correct (including a schedule) what appears to be a significant deficiency in the supply analysis presented in Chapter 6.

Water Use Efficiency

7. On Page 9-13, the text states the District has made a commitment to maintain DSL at less than 10%. In the document, describe what actions the District conducts to keep its DSL below 10%.

Water Quality

8. On Page 8-8, text says the District flushes the suspect area after an unsatisfactory sample has been collected and chlorine residuals are taken before and after flushing. And if the chlorine residual is less than 0.3 mg/L, 'appropriate measures are taken to boost the chlorine in the system'. Please describe what measures are taken to boost chlorine in the system. When does the District collect repeat samples taken in the process described?

9. For DBP monitoring throughout the document, please clarify whether District staff or SPU staff are taking the required quarterly samples. Text on Page 8-9 states that DBP samples are being taken at existing coliform sample stands in the interim until dedicated sample stands can be installed for the DBP monitoring. DBP samples should be taken at the locations identified in the Stage 2 DBP Monitoring Plan. Please clarify where the DBP samples are being taken currently.

10. On Page 8-10, in the Residual Disinfection Monitoring section, please add text describing the typical levels of chlorine observed in the District's system. Include what actions staff would take if high or low residuals are observed.

11. Please update the Public Health – Seattle King County contact information throughout the WSP. Bill Lasby no longer works in the drinking water section.

12. Thank you for providing your coliform and disinfection byproducts sampling plan in Appendix I. The information submitted in Appendix B and C appears to be a duplicate. Please provide the correct maps showing coliform sampling stations in Appendix B.

Design and Construction Standards

13. Please include information on the pressure testing and disinfection procedures used to put a new water main into service. And per WAC 246 290 451, 'drinking water shall not be furnished to the consumer until satisfactory bacteriological samples have been analyzed by a laboratory certified by the state'. Does the District take bacteriological samples? This requirement was not shown in the standard specifications provided. Please clarify.

Operation & Maintenance

14. Please clarify the units of the staffing information included in Table 11.1. Please indicate in the text whether current staffing levels are adequate to conduct operation and maintenance activities for the water system.

15. Please describe how the District is addressing regular preventative maintenance for water system valves, hydrants, pumps, PRV stations and meters.

16. Text on Page 11-12 states that during a water main break, water service is shut off and homes affected are provided water service through garden hoses. Is it possible to keep the water system in positive pressure during water main breaks? How does the District ensure that the water system is protected from a backflow event when using hoses to provide water service? What actions does the District take to bring the area without water service back into service?

Capital Facilities Plan

17. Please include a list of the projects from the last WSP have been completed by the District. It appears some of the projects identified in the 2004 WSP were removed (as shown in Appendix H). Provide justification for why the projects are no longer needed.

18. On Page 7-4, booster pump facilities are recommended to help improve water quality in Tank No. 2. Describe the problems observed with this storage facility. Describe the winter and summer turnover for this facility. What does the District do to monitor water quality in its reservoirs?

19. On Page 7-5, an additional reservoir is recommended to for the 710 zone. What is meant by the phrase 'the additional storage would bolster the hydraulic grade line for this portion of the water system'? Wouldn't the 710 reservoir be at the same hydraulic grade as the existing reservoir? Describe the problems that exist in this portion of the pressure zone.

Other Documentation

20. Please provide a complete table of contents which includes a full list of tables, figures and appendices. What should be included in Appendix B and C?

21. Please update the WFI included in Appendix K. Include the total number of inlets with SPU in parentheses in box 16. Please change the capacity shown in box 23 to 7,000 gpm to match the numbers provided in the SPU contract.

22. 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.

23. Prior to DOH approval, the District's governing body must approve and adopt the WSP. This is a new requirement resulting from the Municipal Water Legislation.

24. Please provide an Adoption Ordinance for your WSP from King County, if the District provides water service in unincorporated King County.

25. Please provide copies of any comments made by adjacent purveyors or other interested parties, along with the District's response to those comments.

We hope that you have found these comments to be clear, constructive and helpful in the development of your final draft WSP. We ask that you submit the revised WSP on or before **December 28, 2012.** In order to expedite the review of your revised submittal, please include a cover letter summarizing how each of the above comments was addressed in the revised WSP and where each response is located (i.e., page numbers, Appendices, etc.)

Regulations establishing a schedule for fees for review of planning, engineering and construction documents have been adopted (WAC 246-290-990). Please note that we have included an invoice in the amount of $5,484 for the review of the Water System Plan. This fee covers our cost for review of the initial submittal, plus the review of one revised document. Please remit your complete payment in the form of a check or money order within thirty days of the date of this letter to: **DOH, Revenue Section, and P.O. Box 1099, Olympia, WA 98507-1099.**

Thank you again for submitting your draft Water System Plan for our review. If you have any comments or questions concerning our review, please contact one of us at the phone numbers provided below.

Sincerely,

Richard Rodriguez
Regional Planner
Office of Drinking Water - NWRO
(253) 395-6771

Paige S. Igoe, PE
Regional Engineer
Office of Drinking Water – NWRO
(253) 395-6764

cc: Steve Hirschey, King County UTRC
Erik Brodahl, PE – Roth Hill LLC

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STATE OF WASHINGTON
DEPARTMENT OF HEALTH
NORTHWEST DRINKING WATER REGIONAL OPERATIONS
20435 72nd Avenue South, Suite 200, Kent, Washington 98032-2358

May 29, 2012

RON SPEER
SOOS CREEK WATER & SEWER DISTRICT
PO BOX 58039
RENTON WA 98055

RE: SOOS CREEK WATER & SEWER DISTRICT ID# 40100
KING COUNTY
COMPREHENSIVE WATER SYSTEM PLAN
SUBMITTAL #12-0509

Dear Ron Speer:

On May 25, 2012 the Department of Health, Office of Drinking Water (ODW) received planning documents submitted for review and approval per WAC 246-290. This submittal has been assigned a unique identification number 12-0509. Please include this number on all future correspondence or additional submittals about this project.

We will review and respond to your Water System Plan (WSP) within 90 days unless a longer period of time is necessary, RCW 70.116.140. If additional time is needed, we will notify you.

Please note: We charge a review fee. Our fee invoice is sent with our review letter or approval letter. This fee will cover the cost of reviewing the initial draft plan plus review of one final draft. Payment of review fees does not guarantee our approval of a submittal. If additional review letters and submittals are required, we will send another invoice with the final approval letter. There is a link to our fee schedule on our website www.doh.wa.gov/ehp/dw under rules, WAC 246-290-990.

Please call me at (253) 395-6750 if you have any questions about this letter.

Sincerely,

Kathie L Robinson

Kathie Robinson
Northwest Drinking Water Operations

cc: PAMELA-RAE COBLEY, ROTH HILL ENGINEERING PARTNERS INC

ROTHHILL

May 24, 2012

Washington State Department of Health
Division of Drinking Water
Northwest Regional Office
20435 – 72nd Avenue S., Suite 200
Mailstop K17-12
Kent, WA 98032 - 2358

Attn: Richard Rodriguez, Regional Planner

RE: Soos Creek Water & Sewer District - Water Comprehensive Plan Update

Dear Mr. Rodriguez:

On behalf of Soos Creek Water and Sewer District, enclosed are three (3) copies of the Agency Review Draft, Water Comprehensive Plan Update for review and approval. The District has initiated the request for Local Government Consistency Review with the local land use agencies and will forward the signed Checklists once they have been received. Please return any comments as soon as possible or by August 24, 2012. A final Plan, that will address comments from regulatory agencies and neighboring jurisdictions, is expected late summer 2012.

Should you have any questions, please feel free to contact to contact me at (425) 289-7309 or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill, LLC

PRHC:prhc

Enclosures: Water System Plan Submittal Form
Water Comprehensive Plan, Agency Review Draft, 3 copies

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

Water System Plan Submittal Form

This form is required to be submitted along with the Water System Plan (WSP). It will serve to expedite review and approval of your WSP. WSPs will not be reviewed until submittal form and checklist are completed.

Soos Creek Water & Sewer District 1. Water System Name	401008 2. PWS ID# or Owner ID#	Soos Creek Water & Sewer District 3. System Owner Name
Ron Speer 4. Contact Name for Utility	(253) 630-9900 Phone Number	District Manager Title
14616 SE 192nd Street Contact Address	Renton City	WA 98058-1039 State Zip
Chris Schmidt, P.E. 5. Project Engineer	(425) 289-7315 Phone Number	Project Engineer - Roth Hill, LLC Title
11130 NE 33rd Place, Suite 200 Project Engineer Address	Bellevue City	WA 98004 State Zip
6. Billing Contact Name (required if not the same as #4)	Billing Phone Number	Billing Fax Number
Billing Address	City	State Zip

6.	How many services are presently connected to the system?	17,658	
7.	Is the system expanding? (seeking to extend service area or increase number of approved connections)	☐ Yes	☒ No
8.	If number of services is expected to increase, how many new connections are proposed in the next six years?	1,149	
9.	If the system is private-for-profit, is it regulated by the State Utilities and Transportation Commission?	☐ Yes	☒ No
10.	Is the system located in a Critical Water Supply Service Area (i.e., have a Coordinated Water System Plan)?	☒ Yes	☐ No
11.	Is the system a customer of a wholesale water purveyor?	☒ Yes	☐ No
12.	Will the system be pursuing additional water rights from the State Department of Ecology in the next twenty years?	☐ Yes	☒ No
13.	Is the system proposing a new intertie?	☒ Yes	☐ No
14.	Do you have projects currently under review by the Department of Health?	☐ Yes	☒ No
15.	Are you requesting distribution main project report and construction document submittal exception, and if so, does the WSP contain standard construction specifications for distribution mains?	☒ Yes	☐ No
16.	Are you requesting distribution related project report and construction document submittal exception, and if so, does the WSP contain distribution facilities design and construction standards, including internal engineering review procedures?	☒ Yes	☐ No
17.	Have you sent copies of the draft WSP or notice to adjacent purveyors for their review?	☒ Yes	☐ No
18.	Have you sent copies of the draft WSP to local governments with jurisdiction within your service area for their review?	☒ Yes	☐ No
19.	Are you proposing a change in the place of use of your water right?	☐ Yes	☒ No

If answer to questions 17 and 18 is yes, list adjacent utilities/entities that have received a copy of the draft WSP: City of Kent, City of Renton, Seattle Public Utilities, Cedar River Water & Sewer District, King County Water District No. 111, Covington Water District, East King County RWA, South King County RWA, Fire District No. 37, Fire District, No. 40, Kent School District 415, Renton School District 403, King County DNR (UTRC)

Is this plan: ☒ an Initial Submittal ☐ a Revised Submittal

Please enclose the following number of copies of the WSP:

2 copies for Department of Health
1 copy for Department of Ecology
1 additional copy if you answered "yes" to question 9

3 Total copies attached

Please return completed form to the Office of Drinking Water regional office checked below.

☒ **Northwest Drinking Water Operations** **Department of Health** **20435 72nd Ave. S, Ste 200** **Kent, WA 98032-2358** **(253) 395-6750**	☐ **Southwest Drinking Water Operations** **Department of Health** **PO Box 47823** **Olympia, WA 98504-7823** **(360) 236-3030**	☐ **Eastern Drinking Water Operations** **Department of Health** **1500 W. Fourth Ave, Suite 305** **Spokane, WA 99201** **(509) 456-3115**

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).

WRIA #____

Water System Plan (WSP) Checklist

	√Required	Content Description	WSP Page #
Chapter 1		**Description of Water System**	
	(√)	Ownership and management	1-4
	(√)	System history and background	2-1 to 2-2
	(√)	Inventory of existing facilities	2-3 to 2-4
	(√)	Related plans / CWSP	2-4 to 2-8
	(√)	Maps: Service area, retail service area, local land use & agreements	Figures2.1, 2.2, 4.1, Page 2-8 to 2-9
	(√)	Policies: Service area, SMA, conditions of service, annexation	3-1 to 3-38
	(√)	Duty to serve requirement: procedures, conditions, appeals	3-3 to 3-4
	(√)	Consistency from **local planning** agency	App C
	( )	Consistency from local **watershed** planning group	NA
Chapter 2		**Basic Planning Data**	
	(√)	Current water use: Population, service connections, & ERUs and data reporting	4-9
	(√)	6 & 20 year projections: Population, service connections, & ERUs	4-9, 4-16
	(√)	6 & 20 year projections: Demand forecasts w/ & w/o expected efficiency savings	4-17,9-13
	(√)	Total water loss percentage and volume	4-11
	(√)	Monthly and annual production and consumption totals per source	4-10
	(√)	Annual usage by customer class	4-9
	( )	Annual usage for water supplied to other systems	NA
	( )	>1000, seasonal variations in consumption by customer class	NA
Chapter 3		**System Analysis**	
	(√)	Capacity analysis w/ water right assessment	6-3 to 6-10
	(√)	System design standards	App F
	(√)	Water quality analysis	8-1 to 8-15
	(√)	System inventory, description and analysis	5-1 to 5-5
	(√)	Source	5-1
	( )	Treatment	8-1
	(√)	Storage	5-7 to 5-8
	( )	Distribution system/hydraulics	5-5 to 5-6
	(√)	Summary of system deficiencies	6-3 to 6-10
	(√)	Analysis of possible improvement projects	6-4 to 6-10
Chapter 4		**Water Use Efficiency Program and Water Rights**	
	(√)	Water Use Efficiency Program per WAC 246-290-810	9-2
	(√)	Source & Service Meters / or schedule w/activities to minimize leakage	9-6
	(√)	Water right self assessment for existing and 6 & 20-year projections	App K
	(√)	Water supply characteristics, description & discussion on effect of water use	6-2
	( )	Source of supply analysis and evaluation of supply alternatives	6-2
	( )	Interties	5-12
	( )	≥1,000 connections explore reclaimed water opportunities☆	App M
Chapter 5		**Source Water Protection (Check One or Both)**	
	( )	Wellhead protection program	NA
	( )	Watershed control program	NA
Chapter 6		**Operation and Maintenance Program**	
	(√)	Water system management and personnel	11-1 to 11-3
	(√)	Operator certification	11-5
	(√)	Routine operating procedures and preventive maintenance	11-6
	(√)	Water quality sampling procedures & program	App I
	(√)	Coliform monitoring plan	App I
	(√)	Emergency program, water shortage plan, service reliability per WAC 246-290-420	11-11
	(√)	Safety procedures	3-27
	(√)	Cross-connection control program	App J
	(√)	Recordkeeping, reporting, and customer complaint program	11-14
	( )	Summary of O&M deficiencies	11-15
Chapter 7		**Distribution Facilities Design and Construction Standards**	
	( )	Standard construction specification for distribution mains	App F
Chapter 8		**Improvement Program**	
	(√)	Capital improvement schedule for 6 and 20 years	7-1 to 7-18
Chapter 9		**Financial Program**	
	( )	≥1000 connections – Balanced 1-year budget	10-3
	( )	<1000 connections – Balanced 6-year budget, w/ Financial Viability-Feasibility	
	(√)	Revenue and cash flow stability to fund capital and emergency improvements	10-3

	√Required	Content Description	WSP Page #
	(√)	Affordable rate structure that encourages water demand efficiency☆	10-5
Chapter 10		**Miscellaneous Documents**	
	(√)	Meeting of the consumers (date and description)	App C
	(√)	County/Adjacent Utility Correspondence	App B
	( )	≥1000 connections - State Environmental Policy Act (SEPA) Determination	App A
	( )	Agreements	App D
	( )	Satellite Management Program	NA

* Requirements will be determined at the pre-plan conference

Cobley,Pam

From: Hirschey, Steve <Steve.Hirschey@kingcounty.gov>
Sent: Thursday, November 29, 2012 2:58 PM
To: Cobley,Pam
Cc: Burns, Bob; Ron Speer; Steve Ohlenkamp (steveo@tcgnet.net); Schmidt, Chris
Subject: RE: Follow-up to Soos Creek water plan meeting

Hi Pam – we look forward to seeing the final plan. Steve

Steve Hirschey
206.205.0817
King County UTRC Chair

From: Cobley,Pam [mailto:pcobley@rothhill.com]
Sent: Thursday, November 29, 2012 2:34 PM
To: Hirschey, Steve
Cc: Burns, Bob; Ron Speer; Steve Ohlenkamp (steveo@tcgnet.net); Schmidt, Chris
Subject: FW: Follow-up to Soos Creek water plan meeting

Hi Steve,

This is to follow-up on our conversation a couple of weeks ago. Per our discussion, as it relates to fire flow, the following revisions will be made to the District's Plan:

Chapter 3 – Policies, Criteria and Standards
Page 3-17
3.2.1 – Fire Flow Rates
The District plans a fire flow rate, system-wide for single-family residential 1,000 gpm regardless of jurisdiction. Part of the District's service area is outside the Urban where a 12-inch distribution main transports water to the urban area. The fire flow that exists in the rural area meets the 1,000 gpm although higher than the 500 gpm however, because this 12-inch main is needed to serve within the urban area. That being said, the size of the pipeline must be larger and subsequently provides a higher fire flow than what is required in the rural area. The fire marshal is the designated authority for the requirements of fire flow, however the District must plan to serve the entire system as a whole. Ultimately, fire flow is used for modeling storage purposes.

The following text will be deleted from the first paragraph:

"~~The Fire Marshal is authorized to establish fire protection measures based on the fire hazard potential of a proponent's project.~~"

3.2.2 – Fire Flow Duration
The following text will be deleted from the first paragraph:

"~~The District must comply with city or King County requirements and the Washington Surveying and Rating Bureau. The following Table 3.5 provides the 2009 International Fire Code as a basis to plan by:~~"

Table 3.5, Required Fire Flow, on page 3-18 will be deleted from the text.

Thank you again for your comments. We believe these final edits should adequately address your concerns. The District is in the process of finalizing the Plan will provide an insert and replace packet once all revisions have been completed. Should you have additional questions, please feel free to contact me.

Regards,
Pam

Pamela-Rae Cobley • ROTHHILL, LLC
11130 N.E. 33rd Place, Suite 200 | Bellevue, WA 98004
Tel. 425.869.9448 Ext. 109 | Fax 425.869.1190
Direct 425.289.7309
www.rothhill.com

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Please consider the environment before printing this email

From: Hirschey, Steve [mailto:Steve.Hirschey@kingcounty.gov]
Sent: Wednesday, October 10, 2012 10:43 AM
To: Burns, Bob; Cobley,Pam
Cc: 'RSpeer@sooscreek.com'
Subject: RE: Follow-up to Soos Creek water plan meeting

Pam and I just talked about comment # 5 to discuss a solution and I believe we have a downhill path.

Steve Hirschey
206.205.0817
King County UTRC Chair

From: Burns, Bob
Sent: Wednesday, October 10, 2012 5:47 AM
To: Hirschey, Steve; 'pcobley@rothhill.com'
Cc: 'RSpeer@sooscreek.com'
Subject: Re: Follow-up to Soos Creek water plan meeting

Steve, why don't you think #5 is reasonable? And can you please call Pam to discuss a solution verbally so we can get this completed.

Thanks. Bob.

From: Hirschey, Steve
Sent: Tuesday, October 09, 2012 11:28 AM
To: Cobley,Pam <pcobley@rothhill.com>
Cc: Burns, Bob; Ron Speer <RSpeer@sooscreek.com>
Subject: RE: Follow-up to Soos Creek water plan meeting

Hi Pam – thanks for your recent email. We look forward to receiving your written response to the King County/DOH/neighboring purveyors/Cities comments and the final plan. As to your draft responses below, they appear reasonable except for comment 5 which does not appear to address the reason(s) why the District would adopt fire flow standards that are in excess of that required by the land use agency. Upon receipt of the final responses and final plan the District will be invited to the next UTRC meeting when your plan will be considered and forwarded on to the King County Council. Please feel free to contact me with any questions or concerns you have. Thanks again. Steve

Steve Hirschey
206.205.0817
King County UTRC Chair

From: Cobley,Pam [mailto:pcobley@rothhill.com]
Sent: Monday, October 01, 2012 12:44 PM
To: Hirschey, Steve
Cc: Burns, Bob; Ron Speer; Schmidt, Chris; 'SteveO'; Linda Swanson
Subject: RE: Follow-up to Soos Creek water plan meeting

Hi Steve,

Thank you again for taking the time to meet with us to discuss your letter dated August 20. The following responses are provided based on our meeting:

Comment 2

The City of Kent's signed consistency statement has been received.

Comment 3

The following text will be inserted after the 6th paragraph of the Policy 1.3 Duty to Serve:

"The District defines "timely" as the availability of retail water service consistent with the terms and conditions presented in Policies in this Chapter and applicable District resolutions, policies, and procedures. For example, the owner(s) of property(s) which may directly connect to the District's existing water system without the need for the extension of that system, as addressed in the District Developer Extension Agreement, should be able to obtain water service within one hundred twenty (120) days after the District receives an application for a water meter and the property owner requesting water service has complied with all applicable District water service policies and procedures, and has paid all applicable meter, connection, and administrative rates, fees, and charges to the District.

The owner(s) of property(s) which require the extension of the District's water system to make water service available to the property should be able to obtain water service following the owner's execution of a Developer Extension Agreement with the District, the preparation of a design of the extension required to connect the property to the District's existing water system by the owner's engineer, the approval of the extension design by the District, the construction of the extension by the owner's contractor, the owner's payment of all applicable District developer extension, meter, connection, and administrative rates, fees and charges to the District, and the transfer of the ownership of the extension to the District by the property owner, all in accordance with the terms and conditions of the extension agreement and applicable District resolutions, policies, and procedures. The party entering into the Developer Extension Agreement with the District has eighteen (18) months from the date of the mutual execution of the extension agreement to complete this process to obtain retail water service from the District to the property."

Comment 4

See the response under comment 3.

Comment 5

The District provides water service to the cities of Kent and Renton as well as a small portion of unincorporated King County. The District has adopted a standard that serves the entire service area as a whole. The District is required to either meet or exceed the fire flow requirements. See Policy 1.3, Fire System Responsibility, and the Criterion that follows in the Plan.

Comment 7

The District does not charge new customers a surcharge outside corporate boundary. New customers are required to sign a power of attorney for annexation and ULID if outside the District corporate boundary. The District has a few existing customers that are subject to surcharge under the previous policy. Criteria 1.4.6.2 - Temporary Outside Service Fees, will remain unchanged. Criteria 9.2.3 - Surcharges, will be modified by deleting the 5th sentence from the paragraph, *"A surcharge shall also apply to properties that are served by the District but are not located within the District RWSA."*

Thank you again for the follow-up meeting. We look forward to hearing from you soon regarding our responses. If you have additional comments or questions, please let me know.

Regards,
Pam

Pamela-Rae Cobley • ROTHHILL, LLC
11130 N.E. 33rd Place, Suite 200 | Bellevue, WA 98004
Tel. 425.869.9448 Ext. 109 | Fax 425.869.1190
Direct 425.289.7309
www.rothhill.com

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Please consider the environment before printing this email

From: Hirschey, Steve [mailto:Steve.Hirschey@kingcounty.gov]
Sent: Friday, September 07, 2012 3:29 PM
To: Cobley,Pam; 'SteveO'
Cc: Burns, Bob
Subject: Follow-up to Soos Creek water plan meeting

Pam and Steve –

Thank you for taking the time today to talk about the King County Utilities Technical Review Committee's letter on the Soos Creek water plan. I think we had a very productive meeting. Below is a summary of our discussion on the comments and any outstanding items:

Comment 1, franchise – completed.

Comment 2, consistency statements. We understand a City of Renton consistency statement will be in the final plan and that, to date, the City of Kent has not responded to the District.

Comment 3, timely and reasonable. The District will add clarity/references to the District policies and procedures that apply to timely and reasonable water service.

Comment 4, timely and reasonable. The DOH perspective is at https://fortress.wa.gov/doh/eh/dw/publications/publications.cfm?action=pubdetail&type=number&PubId=566&CFID=1109448&CFTOKEN=17869721.

Comment 5, fire flow, the County will provide in the plan (or perhaps a separate policy statement) the extenuating circumstances of the District that create the sound rational for District fire flow standards being more protective than County code.

Comment 6, reclaimed water –completed.

Comment 7, surcharge, District to clarify.

Comment 8, recent OFM numbers, completed. I spoke with Chandler Felt (King County Demographer) and we looked at the recent projections for that part of the District in the rural area as compared to the plan; we are comfortable with the numbers.

Under the broader lessons learned for future UTRC reviews, our conversation on franchises and recent/stale OFM numbers may need some follow-up/tweaking with the Utility group. If I've mischaracterized our discussion, please let me know.

A courtesy copy of the Soos Creek letter was sent to Pam at the Roth Hill office at 11130 NE 33rd Place, Suite 200, Bellevue, WA 98004-1465. If Pam would like future correspondence sent to some other address, please let us know.

Finally, the on page two of the Soos Creek letter is a paragraph regarding construction and maintenance of utility lines in the road right of way. The paragraph is standard to UTRC comment letters for entities that may do road work in unincorporated King County. In light of Steve's comment on this in the meeting, I reviewed the recent 2012 comment letters on water plans. Those letters have the standard road paragraph when necessary. The paragraph is unnecessary in the UTRC comment letter for districts that do not work in the County road right of way.

I look forward to seeing the District's final plan and working with you to obtain King County Council approval of the water plan.

Steve Hirschey
206.205.0817
King County UTRC Chair

Cobley,Pam

From: Cobley,Pam
Sent: Thursday, November 29, 2012 2:34 PM
To: Hirschey, Steve (Steve.Hirschey@kingcounty.gov)
Cc: Burns, Bob (Bob.Burns@kingcounty.gov); Ron Speer; Steve Ohlenkamp (steveo@tcgnet.net); Schmidt, Chris
Subject: FW: Follow-up to Soos Creek water plan meeting

Hi Steve,

This is to follow-up on our conversation a couple of weeks ago. Per our discussion, as it relates to fire flow, the following revisions will be made to the District's Plan:

Chapter 3 – Policies, Criteria and Standards
Page 3-17
3.2.1 – Fire Flow Rates
The District plans a fire flow rate, system-wide for single-family residential 1,000 gpm regardless of jurisdiction. Part of the District's service area is outside the Urban where a 12-inch distribution main transports water to the urban area. The fire flow that exists in the rural area meets the 1,000 gpm although higher than the 500 gpm however, because this 12-inch main is needed to serve within the urban area. That being said, the size of the pipeline must be larger and subsequently provides a higher fire flow than what is required in the rural area. The fire marshal is the designated authority for the requirements of fire flow, however the District must plan to serve the entire system as a whole. Ultimately, fire flow is used for modeling storage purposes.

The following text will be deleted from the first paragraph:
"~~The Fire Marshal is authorized to establish fire protection measures based on the fire hazard potential of a proponent's project.~~"

3.2.2 – Fire Flow Duration
The following text will be deleted from the first paragraph:
"~~The District must comply with city or King County requirements and the Washington Surveying and Rating Bureau. The following Table 3.5 provides the 2009 International Fire Code as a basis to plan by:~~"

Table 3.5, Required Fire Flow, on page 3-18 will be deleted from the text.

Thank you again for your comments. We believe these final edits should adequately address your concerns. The District is in the process of finalizing the Plan will provide an insert and replace packet once all revisions have been completed. Should you have additional questions, please feel free to contact me.

Regards,
Pam

Pamela-Rae Cobley • ROTHHILL, LLC
11130 N.E. 33rd Place, Suite 200 | Bellevue, WA 98004
Tel. 425.869.9448 Ext. 109 | Fax 425.869.1190
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Please consider the environment before printing this email

From: Hirschey, Steve [mailto:Steve.Hirschey@kingcounty.gov]
Sent: Wednesday, October 10, 2012 10:43 AM
To: Burns, Bob; Cobley,Pam
Cc: 'RSpeer@sooscreek.com'
Subject: RE: Follow-up to Soos Creek water plan meeting

Pam and I just talked about comment # 5 to discuss a solution and I believe we have a downhill path.

Steve Hirschey
206.205.0817
King County UTRC Chair

From: Burns, Bob
Sent: Wednesday, October 10, 2012 5:47 AM
To: Hirschey, Steve; 'pcobley@rothhill.com'
Cc: 'RSpeer@sooscreek.com'
Subject: Re: Follow-up to Soos Creek water plan meeting

Steve, why don't you think #5 is reasonable? And can you please call Pam to discuss a solution verbally so we can get this completed.

Thanks. Bob.

From: Hirschey, Steve
Sent: Tuesday, October 09, 2012 11:28 AM
To: Cobley,Pam <pcobley@rothhill.com>
Cc: Burns, Bob; Ron Speer <RSpeer@sooscreek.com>
Subject: RE: Follow-up to Soos Creek water plan meeting

Hi Pam – thanks for your recent email. We look forward to receiving your written response to the King County/DOH/neighboring purveyors/Cities comments and the final plan. As to your draft responses below, they appear reasonable except for comment 5 which does not appear to address the reason(s) why the District would adopt fire flow standards that are in excess of that required by the land use agency. Upon receipt of the final responses and final plan the District will be invited to the next UTRC meeting when your plan will be considered and forwarded on to the King County Council. Please feel free to contact me with any questions or concerns you have. Thanks again. Steve

Steve Hirschey
206.205.0817
King County UTRC Chair

From: Cobley,Pam [mailto:pcobley@rothhill.com]
Sent: Monday, October 01, 2012 12:44 PM
To: Hirschey, Steve
Cc: Burns, Bob; Ron Speer; Schmidt, Chris; 'SteveO'; Linda Swanson
Subject: RE: Follow-up to Soos Creek water plan meeting

Hi Steve,

Thank you again for taking the time to meet with us to discuss your letter dated August 20. The following responses are provided based on our meeting:

Comment 2

The City of Kent's signed consistency statement has been received.

Comment 3

The following text will be inserted after the 6th paragraph of the Policy 1.3 Duty to Serve:

"The District defines "timely" as the availability of retail water service consistent with the terms and conditions presented in Policies in this Chapter and applicable District resolutions, policies, and procedures. For example, the owner(s) of property(s) which may directly connect to the District's existing water system without the need for the extension of that system, as addressed in the District Developer Extension Agreement, should be able to obtain water service within one hundred twenty (120) days after the District receives an application for a water meter and the property owner requesting water service has complied with all applicable District water service policies and procedures, and has paid all applicable meter, connection, and administrative rates, fees, and charges to the District.

The owner(s) of property(s) which require the extension of the District's water system to make water service available to the property should be able to obtain water service following the owner's execution of a Developer Extension Agreement with the District, the preparation of a design of the extension required to connect the property to the District's existing water system by the owner's engineer, the approval of the extension design by the District, the construction of the extension by the owner's contractor, the owner's payment of all applicable District developer extension, meter, connection, and administrative rates, fees and charges to the District, and the transfer of the ownership of the extension to the District by the property owner, all in accordance with the terms and conditions of the extension agreement and applicable District resolutions, policies, and procedures. The party entering into the Developer Extension Agreement with the District has eighteen (18) months from the date of the mutual execution of the extension agreement to complete this process to obtain retail water service from the District to the property."

Comment 4

See the response under comment 3.

Comment 5

The District provides water service to the cities of Kent and Renton as well as a small portion of unincorporated King County. The District has adopted a standard that serves the entire service area as a whole. The District is required to either meet or exceed the fire flow requirements. See Policy 1.3, Fire System Responsibility, and the Criterion that follows in the Plan.

Comment 7

The District does not charge new customers a surcharge outside corporate boundary. New customers are required to sign a power of attorney for annexation and ULID if outside the District corporate boundary. The District has a few existing customers that are subject to surcharge under the previous policy. Criteria 1.4.6.2 - Temporary Outside Service Fees, will remain unchanged. Criteria 9.2.3 - Surcharges, will be modified by deleting the 5th sentence from the paragraph, *"A surcharge shall also apply to properties that are served by the District but are not located within the District RWSA."*

Thank you again for the follow-up meeting. We look forward to hearing from you soon regarding our responses. If you have additional comments or questions, please let me know.

Regards,
Pam

Pamela-Rae Cobley • ROTHHILL, LLC
11130 N.E. 33rd Place, Suite 200 | Bellevue, WA 98004
Tel. 425.869.9448 Ext. 109 | Fax 425.869.1190
Direct 425.289.7309
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Please consider the environment before printing this email

From: Hirschey, Steve [mailto:Steve.Hirschey@kingcounty.gov]
Sent: Friday, September 07, 2012 3:29 PM
To: Cobley,Pam; 'SteveO'
Cc: Burns, Bob
Subject: Follow-up to Soos Creek water plan meeting

Pam and Steve –

Thank you for taking the time today to talk about the King County Utilities Technical Review Committee's letter on the Soos Creek water plan. I think we had a very productive meeting. Below is a summary of our discussion on the comments and any outstanding items:

Comment 1, franchise – completed.

Comment 2, consistency statements. We understand a City of Renton consistency statement will be in the final plan and that, to date, the City of Kent has not responded to the District.

Comment 3, timely and reasonable. The District will add clarity/references to the District policies and procedures that apply to timely and reasonable water service.

Comment 4, timely and reasonable. The DOH perspective is at https://fortress.wa.gov/doh/eh/dw/publications/publications.cfm?action=pubdetail&type=number&PubId=566&CFID=1109448&CFTOKEN=17869721.

Comment 5, fire flow, the County will provide in the plan (or perhaps a separate policy statement) the extenuating circumstances of the District that create the sound rational for District fire flow standards being more protective than County code.

Comment 6, reclaimed water –completed.

Comment 7, surcharge, District to clarify.

Comment 8, recent OFM numbers, completed. I spoke with Chandler Felt (King County Demographer) and we looked at the recent projections for that part of the District in the rural area as compared to the plan; we are comfortable with the numbers.

Under the broader lessons learned for future UTRC reviews, our conversation on franchises and recent/stale OFM numbers may need some follow-up/tweaking with the Utility group. If I've mischaracterized our discussion, please let me know.

King County

Utilities Technical Review Committee
Department of Natural Resources and Parks
King Street Center
210 South Jackson Street, Suite 512
Seattle, WA 98104-3855
www.kingcounty.gov

August 20, 2011

Ron Speer, General Manager
Soos Creek Water and Sewer District
P. O. Box 58039
Renton, WA 98058-1039

Dear Mr. Speer:

Thank you for submitting the Soos Creek Water and Sewer District (District) draft Water Comprehensive Plan (Plan) for King County approval. The Plan was received on May 25, 2012. In accordance with chapter 57.16 of the Revised Code of Washington and King County Code (KCC) 13.24 King County's Utilities Technical Review Committee (UTRC) has reviewed the Plan for consistency with the King County Comprehensive Plan and the KCC.

In reviewing the Plan, the UTRC found that the Plan is largely consistent with the County's comprehensive plan and code. However, eight additions are necessary before we can make a recommendation to the King County Council that the Plan is consistent with the County's comprehensive plan and code. We request you include;

- update references to the franchises held by the District. Records indicate three franchises for water service are held by the District including franchises numbers 12859, 13583, and 14916;
- the Consistency Statements (pursuant to WAC 246-290-108) from the Cities of Kent and Renton to affirm the Plan is consistent with their respective planning efforts;
- identify, reference or paraphrase the District resolutions, policies and procedures that apply to how timely water service is determined;
- clarification that Washington State Department of Health does not consider appeals related to timely and reasonable water service;
- clarification that for those portions of rural King County when or where the Fire Marshal does not require a development to provide fire flow, the District does not require it either;
- a completed King County reclaimed water checklist (attached);
- the criteria or factors considered and the fee if a surcharge is levied for properties obtaining water that are outside the District retail water service area;
- an assessment of the recently released Washington State Office of Financial Management's new long-range population forecasts for King County as compared to the demographic and employment data used in the plan to ensure appropriate demographic

and employment data was used in the current plan(at http://www.ofm.wa.gov/pop/gma/projections12/projections12.asp).

Often times the construction and/or maintenance of utility lines requires work within the road right-of-way (ROW) for roads in unincorporated King County. When a utility has a proposed project within unincorporated King County, please contact the King County Department of Transportation (KCDOT), Traffic and Engineering Services Section for coordination with the County's annual overlay program. Failure to do so may result in the denial of the permit to work within the ROW once an overlay of the road section has been completed. Although each utility has a set of construction standards and specifications for their projects, when construction and or maintenance of utilities requires work within the road ROW for roads in unincorporated King County, please be aware that the current edition of the King County Road and Construction standards apply to any installation or work in these ROWs. Not adhering to these standards could result in the installation of non specified and approved methods and/or materials that are out of the specifications for King County, and could potentially add additional costs to the purveyor for future repairs or adversely affect acceptance of those repairs/installations. The KCDOT- 2007 King County Road Design and Construction Standards can be found on the World Wide Web at http://www.kingcounty.gov/transportation/kcdot/Roads/EngineeringServices/RoadStandards2007.aspx

We look forward to seeing the final Plan and working with you to secure the King County Council's approval. The Council's action will represent King County's final action on the Plan.

If you have any questions or concerns about any of the information in the letter, please do not hesitate to call me at 206-205-0817.

Sincerely,

Stephen Hirschey
Chair, Utilities Technical Review Committee

cc: Pam Cobley, Roth Hill, LLC
Richard Rodriguez, Regional Planner, Washington State Department of Health

ROTH HILL

May 24, 2012

King County Department of Natural Resources
KSC-NR-0700
201 South Jackson Street, Suite 700
Seattle, WA 98104-3855

Attn: Steve Hirschey, Utilities Technical Review Committee Chair

RE: Soos Creek Water & Sewer District - Water Comprehensive Plan Update

Dear Mr. Hirschey:

On behalf of Soos Creek Water & Sewer District, enclosed are three (3) copies and one (1) CD version of the Agency Review Draft, Water Comprehensive Plan Update for review and approval. Please return any comments as soon as possible or by August 24, 2012. A final Plan, that will address comments from regulatory agencies and neighboring jurisdictions, is expected late summer 2012.

Should you have any questions, please feel free to contact to contact me at (425) 289-7309 or Chris Schmidt, P.E., (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill. LLC

PRHC:prhc

Enclosures: Water Comprehensive Plan, Agency Review Draft, 3 copies and 1 CD version

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

ROTHHILL

June 13, 2013

Seattle Public Utilities
PO Box 34018
700 - 5th Avenue, Suite 4900
Seattle WA 98124-4018

Attn: Joan M. Kersnar, P.E., Drinking Water Planning Manager

Re: Soos Creek Water & Sewer District Water Comprehensive Plan Update

Dear Ms. Kersnar;

Thank you for the comments, dated August 20, 2012, on the Soos Creek Water & Sewer District draft Water Comprehensive Plan update. We have reviewed the comments and offer the following responses:

Comment 1
The plan does not reflect the 2013-2018 SWP regional WUE goal set by the Operating Board on October 28, 2011 nor the materials provided in writing by SPU on February 14, 2012, which describes the 2013-2018 goal.

Response
The Plan will be modified throughout to reflect the new goal which states:
"The Saving Water Partnership's regional 2013-2018 Water Use Efficiency Goal is to reduce per capita water use from current levels so that total average annual retail water use of members of the Saving Water Partnership is less than 105 mgd from 2013 through 2018 despite forecasted population growth."

Comprehensive Plan modifications proposed as noted.

Comment 2
The District is one of group of 18 utilities, not 19, that purchase wholesale water from Seattle Public Utilities and collaborate to implement the Regional Water Conservation Program (Regional Program), administered by SPU.

Response
The Plan will be modified throughout to reflect 18 utilities.

Comprehensive Plan modifications proposed as noted.

Comment 3
Change "Seattle Public Utilities" to Saving Water Partnership" when referring to the regional conservation program (either the 1% Program through 2010 or the Regional Program after 2010. Also change "Seattle Public Utilities Goal' to "Saving Water Partnership WUE regional goal". Lastly, the SWP website should be used instead of SPU's.

Response
Changes throughout the Plan will be made as requested.

Comprehensive Plan modifications proposed as noted.

Comment 4
Where the WPS refers to District targets for 2004-2010 and 2011-2017, add reference to:

The District adopted 2007-2012 regional WUE goal: as a member of the Saving Water Partners, the District has adopted the SWP WUE six-year regional goal for the period 2007-2012, comprised of the remainder f the 11 mgd savings target of the 1% Water Conservation Program adopted through 2010; and a portion of the 15 mgd regional target from 2011 to 2030.

Response
Changes throughout the Plan will be made as requested.

Comprehensive Plan modifications proposed as noted.

Comment 5
Where the WPS refers to District targets for 2004-2010 and 2011-2017, add reference to:

The District will adopted the SWP WUE regional goal for 2013-2-18 that has been approved by the Operating Board in 2011:

> "The Saving Water Partnership's regional 2013-2018 Water Use Efficiency Goal is to reduce per capita water use from current levels so that total average annual retail water use of members of the Saving Water Partnership is less than 105 mgd from 2013 through 2018 despite forecasted population growth."

Response
Changes throughout the Plan will be made as requested.

Comprehensive Plan modifications proposed as noted.

Comment 6
In practice, any additional demand-side efforts by the District in 2013-2018 will support and be captured in the reporting of the regional goal, and not supplement it.

Response
Thank you for your comment.

No Comprehensive Plan modifications are proposed.

Comment 7
Estimating the impact of water use efficiency efforts on the District (e.g. 1% reduction in ERU) is important for the demand forecast, but should not be stated as a savings goal, to avoid confusion with the regional goal.

Response
Changes throughout the Plan will be made as needed to reflect this comment.

Comprehensive Plan modifications proposed as noted.

Comment 8
Chapter 6, Water System Analysis, Supply Analysis indicates that the projected MDD for 2013 is 9,300 gpm based on the demand projects from Chapter 4, which do not include the anticipated demand reductions in Chapter 9. The demand projections provided in Chapter "with WUE" are close to our projections and consistent with the WUE goal and trend of declining consumption per ERU. Use of the "with WUE" projections given in Chapter 9 would require no or minor changes to Exhibit II to the District's wholesale contract with SPU, and would most likely preclude the need for system improvements identified under SUP Flow Modification (SS-1) in Chapter 7, Capital Facility Plan. The District should clarify that the demand projections provided in Chapter 9 represent their official forecast.

Response
While the District plans for and realizes the benefits of water conservation it is not a consideration during the system analysis because there may be years when it is not realized. Demand forecasts are provided for consumption with and without conservation as required.

No Comprehensive Plan modifications are proposed.

Comment 9
Soos Creek Water and Sewer District has been cooperative in our efforts to coordinate emergency supply planning in the region, including identification of intertie locations and capacities. However, while Exhibit I of the wholesale contract with the District includes an intertie agreement with W.D. 111 for emergency supply, an emergency intertie agreement with Kent is not listed. We would like to work with the District to update this exhibit which may require approval from the Operating Board. Additionally, the wholesale water contract between the District and SPU requires that any water from the SUP regional system sold to other purveyors would require prior written approval from SPU. Thus, any water sold to W.D. 11, Kent and Cedar River Water and Sewer District would need to go through this process. Note that that no demand from W.D. 111 or Kent has been included in any SPU forecasts.

Response
The District looks forward to working with SUP to include the existing emergency interties.

No Comprehensive Plan modifications proposed.

Comment 10
Page 8-1, Assessment of Source Water Quality: we are now referring to the Highline Wellfield as the Seattle Well Fields.

Response
Page 8-1, Assessment of Source Water Quality, first paragraph, second sentence will be revised to reflect change noted above.

Comprehensive Plan modifications proposed as noted.

Comment 11
Page 8-1, Assessment of Source Water Quality: add the following underlined text "...to further treat the water with ozone and ultraviolet light prior to distribution."

Response
Page 8-1, Assessment of Source Water Quality, first paragraph, last sentence will be revised to reflect change noted above.

Comprehensive Plan modifications proposed as noted.

Comment 12
Page 8-2: add the following underlined text: "...ozone remaining in the water is removed using sodium bisulfate...."

Response
Page 8-1 to 8-2, Assessment of Source Water Quality, fourth paragraph, sixth sentence will be revised to reflect change noted above.

Comprehensive Plan modifications proposed as noted.

Comment 13
Page 8-2: the water is not pumped from the UV facility to the clearwells, but rather from Lake Youngs.

Response
Page 8-1, Assessment of Water Quality, fourth paragraph, sentences four through six will be revised as follows:
"Water is pumped from Lake Youngs, injected with ozone, and piped to the UV light facility. Required contact time (CT) with the ozone is achieved during this time. Any ozone remaining in the water is removed by the UV facility. From the UV facility, the water is piped to two clearwells with a total capacity of 20 MG".

Comprehensive Plan modifications proposed as noted.

Comment 14
Page 8-2, second paragraph: delete text as shown and underlined text: "...Testing of ~~volatile and~~ synthetic organic chemicals, Giardia...inorganic chemicals, trihalomethane, haloacetic acids, volatile organic chemicals, and biological content..."

Response
Page 8-2, Assessment of Source Water Quality, third paragraph, second sentence will be revised to reflect change noted above.

Comprehensive Plan modifications proposed as noted.

Comment 15
Page 8-3, Table 8.1: The Radon Rule has not been finalized.

Response
Page 8-3, Table 8.1, Radon Rule will be revised to reflect the effective date as "Not Finalized."

Comprehensive Plan modifications proposed as noted.

Comment 16
Page 8-4, Table 8.2: Lead Cover Rule: LCR monitoring for Soos Creek Water & Sewer District is occurring in 2012, and every 3 years thereafter.

Response
Table 8.4, Page 8-4, Lead and Copper Rule under the Action column will be revised to reflect the change noted above.

Comprehensive Plan modifications proposed as noted.

Comment 17
Page 8-4: coliform positive sample must be analyzed for fecal coliforms or E. coli, not both.

Response
Page 8-4, Coliform Monitoring Plan, second paragraph, seventh sentence, - the word "and" will be replaced with "or" as noted above..

Additionally, Appendix I, page 1, Background on Coliform Rule, first paragraph, seventh sentence will be revised as noted above.

Comprehensive Plan modifications proposed as noted.

Comment 18
Page 8-9, Disinfection Byproducts Monitoring (Stage 2): All samples are currently being collected by the District, not by SPU, and analyzed at the SPU WQL. Also, delete the last sentence in the first paragraph as it is not correct.

Response
Page 8-9, Disinfection Byproduct Monitoring (Stage 2), first paragraph will be revised as noted above.
Comprehensive Plan modifications proposed as noted.

Thank you again for your comments. We believe these responses adequately address your concerns. The District is in process of finalizing the Plan and will provide a final document once all approvals have been received. Should you have additional questions, please feel free to contact me at (425) 289-7309 or Chris Schmidt, PE at (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

Cc: Ron Speer - Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, PE, District Engineer - Roth Hill, LLC
Chris Schmidt, PE - Roth Hill, LLC
File

PRHC:prhc

City of Seattle
Seattle Public Utilities

RECEIVED
AUG 24 2012
Roth Hill, LLC
Bellevue, WA

August 20, 2012

Ms. Pamela-Rae Cobley
Roth Hill
11130 NE 33rd Place, Suite 200
Bellevue, WA 98004

Subject: Comments to 2012 Agency Review Draft of Soos Creek Water & Sewer District Water Comprehensive Plan Update

Dear Ms. Cobley,

Thank you for the opportunity to review and comment on the 2012 Agency Review Draft of the Soos Creek Water & Sewer District Water Comprehensive Plan Update (WSP). Our comments below include general comments and more specific comments to correct and update information presented in the WSP.

1. We offer the following comments to enable the District's WSP to be consistent with the SPU 2013 WSP and with other Saving Water Partnership (SWP) member WSPs in the eyes of DOH with respect to the SWP Regional Conservation Program WUE goal.
    a. The plan does not reflect the 2013-2018 SWP regional WUE goal set by the Operating Board on October 28, 2011, nor the material provided in writing by SPU on February 14, 2012, which describes the 2013-2018 goal.
    b. Throughout the document, clarify the description of the Saving Water Partnership and the regional program:
        i. The District is one of a group of 18 utilities, not 19, that purchase wholesale water from Seattle Public Utilities and collaborate to implement the Regional Water Conservation Program (Regional Program), administered by SPU.
        ii. Change "Seattle Public Utilities" to "Saving Water Partnership" when referring to the regional conservation program (either the 1% Program through 2010 or the Regional Program after 2010. Also change "Seattle Public Utilities Goal" to "Saving Water Partnership WUE regional goal". Lastly, the SWP website should be used instead of SPU's.
    c. Where the WSP refers to District targets for 2004-2010 and 2011-2017, add reference to:
        i. The District's adopted 2007-2012 regional WUE goal: as a member of the Saving Water Partnership, the District has adopted the SWP WUE six-

Ray Hoffman, Director
Seattle Public Utilities
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Seattle, WA 98124-4018

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year regional goal for the period 2007-2012, comprised of the remainder of the 11 mgd savings target of the 1% Water Conservation Program adopted through 2010; and of a portion of the 15 mgd regional target from 2011 to 2030.

ii. The District will adopt the SWP WUE regional goal for 2013-2018 that has been approved by the Operating Board in 2011:

> "The Saving Water Partnership's regional 2013-2018 Water Use Efficiency Goal is to reduce per capita water use from current levels so that total average annual retail water use of members of the Saving Water Partnership is less than 105 mgd from 2013 through 2018 despite forecasted population growth".

d. In practice, any additional demand-side efforts by the District in 2013-2018 will support and be captured in the reporting of the regional goal, and not supplement it.

e. Estimating the impact of water use efficiency efforts on the District (e.g. 1% reduction in ERU) is important for the demand forecast, but should not be stated as a savings goal, to avoid confusion with the regional goal.

2. Chapter 6, Water System Analysis, Supply Analysis indicates that the projected MDD for 2031 is 9,300 gpm based on the demand projections from Chapter 4, which do not include the anticipated demand reductions described in Chapter 9. The demand projections provided in Chapter 9 "with WUE" are close to our projections and consistent with the WUE goal and trend of declining consumption per ERU. Use of the "with WUE" projections given in Chapter 9 would require no or minor changes to Exhibit II to the District's wholesale contract with SPU, and would most likely preclude the need for system improvements identified under SPU Flow Modification (SS-1) in Chapter 7, Capital Facility Plan. The District should clarify that the demand projections provided in Chapter 9 represent their official forecast.

3. Soos Creek Water and Sewer District has been cooperative in our efforts to coordinate emergency supply planning in the region, including identification of intertie locations and capacities. However, while Exhibit I of the wholesale contract with the District includes an intertie agreement with W.D. 111 for emergency supply, an emergency intertie agreement with Kent is not listed. We would like to work with the District to update this exhibit which may require approval from the Operating Board. Additionally, the wholesale water contract between the District and SPU requires that any water from the SPU regional system sold to other purveyors would require prior written approval from SPU. Thus, any water sold to W.D. 111, Kent and Cedar River Water and Sewer District would need to go through this process. Note that that no demand from W.D. 111 or Kent has been included in any SPU forecasts.

4. There are several items in Chapter 8, Water Quality, that should be updated and corrected to reflect SPU's current responsibilities for water quality:

   a. Page 8-1, Assessment of Source Water Quality: we are now referring to the Highline Wellfield as the Seattle Well Fields.

   b. Page 8-1, Assessment of Source Water Quality: add the following underlined text: "...to further treat the water <u>with ozone and ultraviolet light</u> prior to distribution."

c. Page 8-2: add the following underlined text: "...ozone remaining in the water is removed using sodium bisulfate...."

d. Page 8-2: the water is not pumped from the UV facility to the clearwells, but rather from Lake Youngs.

e. Page 8-2, second paragraph: delete text as shown and add underlined text: "...Testing of ~~volatile and~~ synthetic organic chemicals, Giardia.....inorganic chemicals, trihalomethane, haloacetic acids, volatile organic chemicals, and biological content...."

f. Page 8-3, Table 8.1: The Radon Rule has not been finalized.

g. Page 8-4, Table 8.2: Lead and Copper Rule: LCR monitoring for Soos Creek Water & Sewer District is occurring in 2012, and every 3 years thereafter.

h. Page 8-4: coliform-positive samples must be analyzed for fecal coliforms **or** E. coli, not both.

i. Page 8-9, Disinfection Byproducts Monitoring (Stage 2): All samples are currently being collected by the District, not by SPU, and analyzed at the SPU WQL. Also, delete the last sentence in the first paragraph as it is not correct.

If you have any questions on our comments, please contact me at 206-684-0839 or joan.kersnar@seattle.gov.

Sincerely,

Joan M. Kersnar

Joan M. Kersnar, P.E.
Drinking Water Planning Manager

cc: Terri Gregg, Wholesale Contracts Manager, Seattle Public Utilities
Ron Speer, Soos Creek Water & Sewer District

ROTH HILL

May 24, 2012

Seattle Public Utilities
PO Box 34018
700 - 5th Avenue #4900
Seattle, WA. 98124-4018

Attn: Joan M. Kersner, P.E., Drinking Water Planning Manager

RE: Soos Creek Water & Sewer District - Water Comprehensive Plan Update

Dear Ms. Kersner;

On behalf of Soos Creek Water & Sewer District, enclosed is a CD version of the Agency Review Draft, Water Comprehensive Plan, 2012. Should you have any comments, please provide them within the 90-day comment period which closes August 23, 2012.

Should you have any questions, please feel free to contact to contact me at (425) 289-7309 or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill, LLC

PRHC:prhc

Enclosures: Water Comprehensive Plan, Draft 2012, 1 CD version

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

ROTHHILL

June 13, 2013

City of Kent
220 -4th Avenue S
Kent, WA 98032

Attn: Fred N. Satterstrom, AICP, Planning Director

Re: Soos Creek Water & Sewer District Water Comprehensive Plan Update

Dear Mr. Satterstrom;

Thank you for the comments, dated September 25, 2012, on the Soos Creek Water & Sewer District draft Water Comprehensive Plan update. We have reviewed the comments and offer the following responses:

Comment 1
The Zoning Districts Map, Figure 4-1, does not reflect the zoning that was effective with the Panther Lake Annexation on July 1, 2012.

Response
Figure 4-1 has been updated to reflect current zoning information.

Comprehensive Plan modifications proposed as noted.

Comment 2
Page 4-8 states the Plan uses PSRC future population projects, with the most recent published forecast data from 2000. I believe the most current PSRC forecast data are from 2006. The City uses 2000 data in its Land Use element of the 2004 Comprehensive Plan Update but used 2006 growth capacity calculations for its Transportation Master Plan, Water System Plan, and Drainage Master Plan.

Response
Page 4-2, Population, Household, and Employment Projects, second sentence and page 4-8, fourth paragraph, second sentence will be modified to reflect the year 2006.

Comprehensive Plan modifications proposed as noted.

Comment 3
Chapter 2, page 2-6 "City of Kent", states Kent's Water System Plan was prepared in 2008. The plan date has been changed to 2011. It states the City's service population is 65,000 but it should be 66,000.; it states the City has 10 sources of water supply including Tacoma Second Supply , but is should state 9 sources including the Tacoma Second Supply.

Response
Revisions will be made as requested.

Comprehensive Plan modifications proposed as noted.

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

Comment 4
Page 2-4 does not list the correct City of Kent population and size. With the Panther Lake Annexation in 2010, the City is 33.45 square miles in size, and the April 1, 2012 population estimate is 119,100. We understand the plan uses 2010 data but because it was not being issued until 2012, the plan should mention the more recent 2012 population estimate.

Response
Page 2-4, City of Kent Comprehensive Plan, the following will be inserted after the 3rd sentence which states:

"With the annexation of Panther Lake in 2001 the City now covers more than 33 square miles with a population estimate of over 119,000."

Comprehensive Plan modifications proposed as noted

Comment 5
There are service area boundary discrepancies between the District and the City of Kent. Policy 1.2 (Page 3-3) states agreements have established and confirmed concurrence with the boundaries. However, the City and the District should continue to work collaboratively to address these discrepancies.

Response
The District is committed to working with the City to address any boundary discrepancies.

No Comprehensive Plan modifications proposed.

Comment 6
As general comments, there are several data inconsistencies in the Plan that you might want to address.

a. The Executive Summary states that the current contract with SPU provides for 7,000 ga/min of water, yet the current MDD is listed at 7,500 ga/min, and the projected MDD is 9,458 ga/min. The District's plan should provide an explanation on the adequacy of current and future sources of supply required to meet both current and projected demands within the 6- and 20-year planning horizons.
b. The projected MDD of 9,458 listed in the summary does not agree with page 7-3 which says the projected MDD is 9,200, nor does it match page 6-9, 1st paragraph, which states the current MDD is 7,410 with the projected MDD of 9,300.
c. The Executive summary states there are 222 miles of water lines and 12 pressure-reducing facilities. Page 2-3 lists 221 miles of lines and 11 pressure-reducing facilities, page 5-1 lists 222 miles of lines.
d. Page 4-10 states the number of accounts increased by 8% from 15,214 to 16,619. The Executive Summary states there was a 9% increase. Page 2-4 lists 17,563 accounts. Page 5-1 says more than 17,600 accounts.
e. Page 2-2 shows the service area as more than 10,000 acres (16 square miles. Page 1 states that the District now encompasses over 35 square miles.

Response

a. The existing agreement between the District and SPU guarantees flows of 7,000 GPM. However, the physical capacity of the interties is 10,750 GPM, as listed in Table 5.7. SPU has not indicated a requirement to negotiate a contract at this time, even though current flows to the District exceed the contracted guarantee. However, in order to address the difference in existing and future flows with the current SPU contract, the District is proposing to modify the appendix if the contract so that adequate source of supply will be guaranteed within the planning period.

Page 5, paragraph 5 of the Executive Summary will be modified to state "...the appendix of the contract guarantees flow from four locations for a total of 7,000 gallons per minutes at specific hydraulic gradelines that are less than the current projected maximum daily demand (MDD) of 7,410 gallons per minute, and the projected MDD of 9,300 gallons per minute in 20 years. The physical capacity of the existing interties is 10,750 GPM, although SPU is not contractually obligated to provide this amount of flow. Increased water supply may be guaranteed in the future if the District modifies the contract with Seattle Public Utilities.

b. The values listed in the Executive Summary were incorrect. The values on page 7-3 are those for the years 2010 and 2030. The correct value for current (2011) MDD is 7,410 GPM (10.67 MGD) and the correct value for projected 20-year (2031) MDD is 9,300 GPM (13.39 MGD). The values listed on page 4, paragraph 5 of the Executive Summary and on page 7-3, paragraph 4 will be updated to include the projected values for 2011 and 2031.

c. Page 2-4, Pressure Reducing Facilities, will be changed to *"12."* Page 5-1 will be changed to reflect over *"221."*

d. Page 4-10, Historical Supply, third paragraph, second sentence will be revised to state: "*...increased by nine (9) percent from 16,049 to 17,563."*

Page 5-1, Introduction, second paragraph, first sentence, will be revised to state: *"...more than 17,500 residential and commercial accounts."*

e. Page 1, Introduction and Background, first paragraph, second sentence, will be revised to state:
"*...35 square miles (both water and sewer service areas) and provides water service to more than 17,500 accounts."*

Page 1, Introduction, second paragraph, second sentence, will be revised to state: *"...covers over 10,000 acres (approximately 16.5 square miles)."*

Comprehensive Plan modifications proposed as noted

Thank you again for your comments. We believe these responses adequately address your concerns. The District is in process of finalizing the Plan and will provide a final document once all approvals have been received. Should you have additional questions, please feel free to contact me at (425) 289-7309 or Chris Schmidt, PE at (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

Cc: Ron Speer - Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, PE, District Engineer - Roth Hill, LLC
Chris Schmidt, PE - Roth Hill, LLC
File

PRHC:prhc

RECEIVED
SEP 2 6 2012
RothHill, LLC
Bellevue, WA

KENT
WASHINGTON

PLANNING SERVICES
Fred N. Satterstrom, AICP
Planning Director
220 4th Avenue South
Kent, WA 98032
Fax: 253-856-6454

PHONE: 253-856-5454

September 25, 2012

Pamela-Rae Cobley, Project Manager
RothHill
11130 NE 33rd Place, Suite 200
Bellevue, WA 98004

RE: Soos Creek Water & Sewer District Water Comprehensive Plan Update
Local Government Consistency Review Checklist

Dear Ms. Cobley:

Thank you for the opportunity to comment on and discuss issues regarding the consistency of the Water Comprehensive Plan with the City's Growth Management Act plan, the Kent Comprehensive Plan. Attached is the Consistency Review Checklist which references this letter offering the following comments:

1. The Zoning Districts Map, Figure 4-1, does not reflect the zoning that was effective with the Panther Lake Annexation on July 1, 2010.
2. Page 4-8 states the Plan uses PSRC future population projections, with the most recent published forecast data from 2000. I believe the most current PSRC forecast data are from 2006. The City uses 2000 data in its Land Use Element of the 2004 Comprehensive Plan Update but used 2006 growth capacity calculations for its Transportation Master Plan, Water System Plan, and Drainage Master Plan.
3. Chapter 2, page 2-6 "City of Kent", states Kent's Water System Plan was prepared in 2008. That plan date has been changed to 2011. It states the City's service population is 65,000 but it should be 66,000; it states the City has 10 sources of water supply including Tacoma Second Supply, but it should state 9 sources including Tacoma Second Supply.
4. Page 2-4 does not list the correct City of Kent population and size. With the Panther Lake Annexation in 2010, the City is 33.45 square miles in size, and the April 1, 2012 population estimate is 119,100. We understand the plan uses 2010 data but because it is not being issued until 2012, the plan should mention the more recent 2012 population estimate.
5. There are service area boundary discrepancies between the District and the City of Kent. Policy 1.2 (page 3-3) states agreements have been established and confirmed concurrence with the boundaries. However, the City and the District should continue to work collaboratively to address these discrepancies.

6. As general comments, there are several data inconsistencies in the Plan that you might want to address.
    a. The Executive Summary states that the current contract with SPU provides for 7,000 ga/min of water, yet the current MDD is listed at 7,500 ga/min, and the projected MDD is 9,458 ga/min. The District's plan should provide an explanation on the adequacy of current and future sources of supply required to meet both current and projected demands within the 6- and 20-year planning horizons.
    b. The projected MDD of 9,458 listed in the summary does not agree with page 7-3 which says the projected MDD is 9,200, nor does it match page 6-9, 1st paragraph, which states the current MDD is 7,410 with a projected MDD of 9,300.
    c. The Executive Summary states there are 222 miles of water lines and 12 pressure-reducing facilities. Page 2-3 lists 221 miles of lines and 11 pressure-reducing facilities, page 5-1 lists 222 miles of lines.
    d. Page 4-10 states the number of accounts increased by 8% from 15,214 to 16,619. The Executive Summary states there was a 9% increase. Page 2-4 lists 17,563 accounts. Page 5-1 says more than 17,600 accounts.
    e. Page 2-2 shows the service area as more than 10,000 acres (16 square miles). Page 1 states the District now encompasses over 35 square miles.

Again, thank you for the opportunity to provide comments. Please feel free to call me if you have questions or need clarification on the City's comments. I understand the Kent Regional Fire Authority has provided separate comments.

Regards,

Fred N. Satterstrom, AICP
Planning Director
S:\PUBLIC\COMMUNITY DEVELOPMENT\Planning\osborne\ExtraJurisdictionalCapitalFacils\SCWSD\Consistency_Memo_09252012.doc

Cc: Charlene Anderson, Planning Manager
Sean Bauer, Interim Water Superintendent
Chad Bieren, City Engineer
David Brock, Utility Engineer
Brad Lake, Public Works Operations Manager
Jon Napier, D/C Fire Marshal
Larry Rabel, Captain/Fire RFA Community Liaison

Health

Local Government Consistency Review Checklist

Water System Name: Soos Creek Water & Sewer District PWS ID: 401008

Planning/Engineering Document Title: Comprehensive Water Plan Update Plan Date: May 2012

Local Government with Jurisdiction: City of Kent

WAC 246-290-108 Consistency with local plans and regulations:
Consistency with local plans and regulations applies to planning and engineering documents under WAC 246-290-106, 246-290-107, and 246-290-110(4)(b (ii).

1) Municipal water suppliers must include a consistency review and supporting documentation in its planning or engineering document describing how it has addressed consistency with **local plans and regulations**. This review must include specific elements of local plans and regulations, as they reasonably relate to water service as determined by Department of Health (DOH). Complete the table below and see instructions on back.

Local Government Consistency Statement	Page(s) in Planning Document	Yes – No – Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the applicable service area.	4-1 to 4-2, Figure 4.1	~~Yes~~ No
b) The six-year growth projection used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	4-2 to 4-17	~~Yes~~ No
c) Applies to cities and towns that provide water service: All water service area policies of the city or town are consistent with the utility service extension ordinances of the city or town.	NA	NA
d) Service area policies for new service connections are consistent with the adopted local plans and adopted development regulations of all jurisdictions with authority over the service area [City(ies), County(ies)].	Chapter 3	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable; Coordinated Water System plans, Regional Wastewater plans, Reclaimed Water plans, Groundwater Area Management plans, and Capital Facilities Element of Comprehensive plans.	Chapter 2	Yes

See attached letter.

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.

Fred N Satterstrom 9-25-12

Signature Date

Fred N. Satterstrom, Planning Director, City of Kent, WA

Printed Name, Title, & Jurisdiction

ROTH HILL

September 11, 2012

City of Kent
220 – 4th Avenue S
Kent, WA 98032

Attn: Sean Bauer, Interim Water Superintendent

RE: Soos Creek Water & Sewer District Water Comprehensive Plan Update
Local Government Consistency Review Checklist

Dear Mr. Bauer:

On May 24, 2012, we sent a letter to Tim LaPorte on behalf of Soos Creek Water & Sewer District regarding the Local Government Consistency Review Checklist. We provided a copy of the District's Plan on CD and a completed Checklist for approval and signature. Per our telephone conversation this yesterday, enclosed is a full copy of the District's Water Comprehensive Plan for your use. As I mentioned, to date we have not received a response and need to proceed with final review and approval.

Attached is a completed Checklist that has been completed for your convenience. Please sign, date and return the attached Consistency Statement Checklist by **September 21, 2012,** in the self-addressed stamped envelope. The District is required to have a completed Checklist from each jurisdiction prior to the final approval of its Plan by the State of Washington Department of Health.

This checklist is intended to ensure consistency of the District's Water Comprehensive Plan with the City's adopted local comprehensive plan and development regulations. The District's Water Comprehensive Plan was developed using the most current information at the time and to ensure service is provided to the City's resident in a cost-effective manner.

We look forward to hearing from you soon. Should you have any questions regarding this Checklist, please contact me at (425) 289-7309, or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,
ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer - Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E. - Roth Hill, LLC

Enclosures: Local Government Consistency Review Checklist (with self-addressed stamped envelope) and Water Comprehensive Plan, Agency Review Draft, 2012

PRHC:prhc

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

Health

Local Government Consistency Review Checklist

Water System Name: Soos Creek Water & Sewer District PWS ID: 401008

Planning/Engineering Document Title: Comprehensive Water Plan Update Plan Date: May 2012

Local Government with Jurisdiction: City of Kent

WAC 246-290-108 Consistency with local plans and regulations:
Consistency with local plans and regulations applies to planning and engineering documents under WAC 246-290-106, 246-290-107, and 246-290-110(4)(b (ii).

1) Municipal water suppliers must include a consistency review and supporting documentation in its planning or engineering document describing how it has addressed consistency with **local plans and regulations**. This review must include specific elements of local plans and regulations, as they reasonably relate to water service as determined by Department of Health (DOH). Complete the table below and see instructions on back.

Local Government Consistency Statement	Page(s) in Planning Document	Yes – No – Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the applicable service area.	4-1 to 4-2, Figure 4.1	Yes
b) The six-year growth projection used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	4-2 to 4-17	Yes
c) Applies to cities and towns that provide water service: All water service area policies of the city or town are consistent with the utility service extension ordinances of the city or town.	NA	NA
d) Service area policies for new service connections are consistent with the adopted local plans and adopted development regulations of all jurisdictions with authority over the service area [City(ies), County(ies)].	Chapter 3	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable; Coordinated Water System plans, Regional Wastewater plans, Reclaimed Water plans, Groundwater Area Management plans, and Capital Facilities Element of Comprehensive plans.	Chapter 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 Date

Printed Name, Title, & Jurisdiction

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 retail 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 non-community 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 per WAC 246-290-110(4)(b)(ii).

A) Documenting Consistency: Municipal water suppliers must document all of the elements in a consistency review per WAC 246-290-108.

1 a) Provide 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 are related to water supply planning.

1 b) Include a copy of the **six-year growth projections** that corresponds to the service area. If the local population growth rate projections are not used, provide a detailed explanation on why the chosen projections more accurately describe the expected growth rate. Explain how it is consistent with the adopted land use.

1c) 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.

1 d) Include all **service area policies** for how new water service will be provided to new customers.

1 e) **Other relevant elements** related to water supply planning as determined by the department (DOH). 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 provide direction on how this inconsistency can be resolved.

C) Documenting Lack of Consistency Review by Local Government: 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 their review. Please include: name of contact, date, and efforts made (letters, phone calls, and e-mails). In order 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).

ROTH HILL

May 24, 2012

City of Kent
220 - 4th Avenue S
Kent, WA 98032

Attn: Tim LaPorte, Public Works Director

RE: Soos Creek Water & Sewer District Water Comprehensive Plan Update
Local Government Consistency Review Checklist

Dear Mr. LaPorte,

On behalf of Soos Creek Water & Sewer District, enclosed is the Local Government Consistency Review Checklist for your signature. In accordance with the Washington Administrative Code 246-290-108, the District must provide documentation on how it considered local plans and regulations of the land use agency. The City of Kent is one of the local planning jurisdictions within the District's Retail Water Service Area; it is required that the Consistency Checklist must be signed by your agency.

This checklist is intended to ensure consistency of the District's Water Comprehensive Plan Update with your adopted local comprehensive plan and development regulations. The District's Water Comprehensive Plan Update was developed using the most current information and to ensure service is provided to the City's residents in a cost-effective manner. We have included a CD version of the District's Agency Review Draft, Water Comprehensive Plan Update to aid in your review and signing of the Checklist.

The attached applicable portions of the Checklist have been completed for your convenience. Please sign, date, and return the attached Consistency Statement Checklist by **August 24, 2012,** in the self-addressed stamped envelope along with any comments you may have. The Checklist is required prior to the final approval of the District's Plan by the State of Washington Department of Health.

Should you have any questions regarding this Checklist, please contact me at (425) 289-7309, or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,
ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill, LLC

PRHC:prhc

Enclosures: Local Government Consistency Review Checklist (with self-addressed stamped envelope)
CD containing the Water Comprehensive Plan, Agency Review Draft

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

Health

Local Government Consistency Review Checklist

Water System Name: Soos Creek Water & Sewer District PWS ID: 401008

Planning/Engineering Document Title: Comprehensive Water Plan Update Plan Date: May 2012

Local Government with Jurisdiction: City of Kent

WAC 246-290-108 Consistency with local plans and regulations:
Consistency with local plans and regulations applies to planning and engineering documents under WAC 246-290-106, 246-290-107, and 246-290-110(4)(b (ii).

1) Municipal water suppliers must include a consistency review and supporting documentation in its planning or engineering document describing how it has addressed consistency with **local plans and regulations**. This review must include specific elements of local plans and regulations, as they reasonably relate to water service as determined by Department of Health (DOH). Complete the table below and see instructions on back.

Local Government Consistency Statement	Page(s) in Planning Document	Yes – No – Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the applicable service area.	4-1 to 4-2, Figure 4.1	Yes
b) The six-year growth projection used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	4-2 to 4-17	Yes
c) Applies to cities and towns that provide water service: All water service area policies of the city or town are consistent with the utility service extension ordinances of the city or town.	NA	NA
d) Service area policies for new service connections are consistent with the adopted local plans and adopted development regulations of all jurisdictions with authority over the service area [City(ies), County(ies)].	Chapter 3	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable; Coordinated Water System plans, Regional Wastewater plans, Reclaimed Water plans, Groundwater Area Management plans, and Capital Facilities Element of Comprehensive plans.	Chapter 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 Date

Printed Name, Title, & Jurisdiction

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 retail 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 non-community 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 per WAC 246-290-110(4)(b)(ii).

A) Documenting Consistency: Municipal water suppliers must document all of the elements in a consistency review per WAC 246-290-108.

1 a) Provide 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 are related to water supply planning.

1 b) Include a copy of the **six-year growth projections** that corresponds to the service area. If the local population growth rate projections are not used, provide a detailed explanation on why the chosen projections more accurately describe the expected growth rate. Explain how it is consistent with the adopted land use.

1c) 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.

1 d) Include all **service area policies** for how new water service will be provided to new customers.

1 e) **Other relevant elements** related to water supply planning as determined by the department (DOH). 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 provide direction on how this inconsistency can be resolved.

C) Documenting Lack of Consistency Review by Local Government: 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 their review. Please include: name of contact, date, and efforts made (letters, phone calls, and e-mails). In order 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).

ROTH HILL

May 24, 2012

City of Renton
1055 S Grady Way
Renton, WA 98057

Attn: Gregg Zimmerman, Public Works Administrator

RE: Soos Creek Water & Sewer District Water Comprehensive Plan Update
Local Government Consistency Review Checklist

Dear Mr. Zimmerman,

On behalf of Soos Creek Water & Sewer District, enclosed is the Local Government Consistency Review Checklist for your signature. In accordance with the Washington Administrative Code 246-290-108, the District must provide documentation on how it considered local plans and regulations of the land use agency. The City of Renton is one of the local planning jurisdictions within the District's Retail Water Service Area; it is required that the Consistency Checklist must be signed by your agency.

This checklist is intended to ensure consistency of the District's Water Comprehensive Plan Update with your adopted local comprehensive plan and development regulations. The District's Water Comprehensive Plan Update was developed using the most current information and to ensure service is provided to the City's residents in a cost-effective manner. We have included a CD version of the District's Agency Review Draft, Water Comprehensive Plan Update to aid in your review and signing of the Checklist.

The attached applicable portions of the Checklist have been completed for your convenience. Please sign, date, and return the attached Consistency Statement Checklist by **August 24, 2012,** in the self-addressed stamped envelope along with any comments you may have. The Checklist is required prior to the final approval of the District's Plan by the State of Washington Department of Health.

Should you have any questions regarding this Checklist, please contact me at (425) 289-7309, or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,
ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill, LLC

PRHC:prhc

Enclosures: Local Government Consistency Review Checklist (with self-addressed stamped envelope)
CD containing the Water Comprehensive Plan, Agency Review Draft

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

Health

Local Government Consistency Review Checklist

Water System Name: Soos Creek Water & Sewer District PWS ID: 401008

Planning/Engineering Document Title: Comprehensive Water Plan Update Plan Date: May 2012

Local Government with Jurisdiction: City of Renton

WAC 246-290-108 Consistency with local plans and regulations:
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1) Municipal water suppliers must include a consistency review and supporting documentation in its planning or engineering document describing how it has addressed consistency with **local plans and regulations**. This review must include specific elements of local plans and regulations, as they reasonably relate to water service as determined by Department of Health (DOH). Complete the table below and see instructions on back.

Local Government Consistency Statement	Page(s) in Planning Document	Yes – No – Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the applicable service area.	4-1 to 4-2, Figure 4.1	Yes
b) The six-year growth projection used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	4-2 to 4-17	Yes
c) Applies to cities and towns that provide water service: All water service area policies of the city or town are consistent with the utility service extension ordinances of the city or town.	NA	NA
d) Service area policies for new service connections are consistent with the adopted local plans and adopted development regulations of all jurisdictions with authority over the service area [City(ies), County(ies)].	Chapter 3	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable; Coordinated Water System plans, Regional Wastewater plans, Reclaimed Water plans, Groundwater Area Management plans, and Capital Facilities Element of Comprehensive plans.	Chapter 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 Date

Printed Name, Title, & Jurisdiction

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 retail 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 non-community 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 per WAC 246-290-110(4)(b)(ii).

A) Documenting Consistency: Municipal water suppliers must document all of the elements in a consistency review per WAC 246-290-108.

1 a) Provide 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 are related to water supply planning.

1 b) Include a copy of the **six-year growth projections** that corresponds to the service area. If the local population growth rate projections are not used, provide a detailed explanation on why the chosen projections more accurately describe the expected growth rate. Explain how it is consistent with the adopted land use.

1c) 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.

1 d) Include all **service area policies** for how new water service will be provided to new customers.

1 e) **Other relevant elements** related to water supply planning as determined by the department (DOH). 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 provide direction on how this inconsistency can be resolved.

C) Documenting Lack of Consistency Review by Local Government: 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 their review. Please include: name of contact, date, and efforts made (letters, phone calls, and e-mails). In order 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).

ROTH HILL

May 24, 2012

Covington Water District
18631 SE 300th Place
Kent, WA. 98042

Attn: Gwenn Maxfield, General Manager

RE: Soos Creek Water & Sewer District - Water Comprehensive Plan Update

Dear Ms. Maxfield;

On behalf of Soos Creek Water & Sewer District, enclosed is a CD version of the Agency Review Draft, Water Comprehensive Plan, 2012. Should you have any comments, please provide them within the 90-day comment period which closes August 23, 2012.

Should you have any questions, please feel free to contact to contact me at (425) 289-7309 or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill, LLC

PRHC:prhc

Enclosures: Water Comprehensive Plan, Draft 2012, 1 CD version

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

ROTHHILL

May 24, 2012

King County Water District No. 111
27224 144th Ave SE
Kent, WA. 98042

Attn: Chris Hall, General Manager

RE: Soos Creek Water & Sewer District - Water Comprehensive Plan Update

Dear Mr. Hall;

On behalf of Soos Creek Water & Sewer District, enclosed is a CD version of the Agency Review Draft, Water Comprehensive Plan, 2012. Should you have any comments, please provide them within the 90-day comment period which closes August 23, 2012.

Should you have any questions, please feel free to contact to contact me at (425) 289-7309 or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill, LLC

PRHC:prhc

Enclosures: Water Comprehensive Plan, Draft 2012, 1 CD version

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ROTH HILL

May 24, 2012

Cedar River Water & Sewer District
PO Box 1040
Maple Valley, WA 98038-1040

Attn: Ron Sheadel, General Manager

RE: Soos Creek Water & Sewer District - Water Comprehensive Plan Update

Dear Mr. Sheadel;

On behalf of Soos Creek Water & Sewer District, enclosed is a CD version of the Agency Review Draft, Water Comprehensive Plan, 2012. Should you have any comments, please provide them within the 90-day comment period which closes August 23, 2012.

Should you have any questions, please feel free to contact to contact me at (425) 289-7309 or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill, LLC

PRHC:prhc

Enclosures: Water Comprehensive Plan, Draft 2012, 1 CD version

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

ROTH HILL

May 24, 2012

Renton School District 403
300 SW 7th Street
Renton, WA 98055

Attn: School District Superintendent

RE: Soos Creek Water & Sewer District - Water Comprehensive Plan Update

On behalf of Soos Creek Water & Sewer District, enclosed is a CD version of the Agency Review Draft, Water Comprehensive Plan, 2012. Should you have any comments, please provide them within the 90-day comment period which closes August 23, 2012.

Should you have any questions, please feel free to contact to contact me at (425) 289-7309 or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill, LLC

PRHC:prhc

Enclosures: Water Comprehensive Plan, Draft 2012, 1 CD version

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

ROTH HILL

May 24, 2012

Kent School District 415
12033 SE 256th Street
Kent, WA 98030

Attn: School District Superintendent

RE: Soos Creek Water & Sewer District - Water Comprehensive Plan Update

On behalf of Soos Creek Water & Sewer District, enclosed is a CD version of the Agency Review Draft, Water Comprehensive Plan, 2012. Should you have any comments, please provide them within the 90-day comment period which closes August 23, 2012.

Should you have any questions, please feel free to contact to contact me at (425) 289-7309 or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill, LLC

PRHC:prhc

Enclosures: Water Comprehensive Plan, Draft 2012, 1 CD version

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

ROTH HILL

June 5, 2012

Fire District No. 40
18002 - 108th Ave SE
Renton, WA 98055

Attn: Fire Chief

RE: Soos Creek Water & Sewer District - Water Comprehensive Plan Update

On behalf of Soos Creek Water & Sewer District, enclosed is a CD version of the Agency Review Draft, Water Comprehensive Plan, 2012. Should you have any comments, please provide them within the 90-day comment period which closes August 23, 2012.

Should you have any questions, please feel free to contact to contact me at (425) 289-7309 or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill, LLC

PRHC:prhc

Enclosures: Water Comprehensive Plan, Draft 2012, 1 CD version

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

ROTH HILL

May 24, 2012

Kent Regional Fire Authority
24611 - 116th Avenue SE
Kent, WA 98030

Attn: Fire Chief

RE: Soos Creek Water & Sewer District - Water Comprehensive Plan Update

On behalf of Soos Creek Water & Sewer District, enclosed is a CD version of the Agency Review Draft, Water Comprehensive Plan, 2012. Should you have any comments, please provide them within the 90-day comment period which closes August 23, 2012.

Should you have any questions, please feel free to contact to contact me at (425) 289-7309 or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill, LLC

PRHC:prhc

Enclosures: Water Comprehensive Plan, Draft 2012, 1 CD version

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

ROTH HILL

May 24, 2012

South King County RWA
27224 144th SE
Kent, WA 98042

Attn: Don Wright

RE: Soos Creek Water & Sewer District - Water Comprehensive Plan Update

Dear Mr. Wright;

On behalf of Soos Creek Water & Sewer District, enclosed is a CD version of the Agency Review Draft, Water Comprehensive Plan, 2012. Should you have any comments, please provide them within the 90-day comment period which closes August 23, 2012.

Should you have any questions, please feel free to contact to contact me at (425) 289-7309 or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill, LLC

PRHC:prhc

Enclosures: Water Comprehensive Plan, Draft 2012, 1 CD version

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

ROTH HILL

May 24, 2012

East King County RWA
PO Box 699
Carnation, WA 98014

RE: Soos Creek Water & Sewer District - Water Comprehensive Plan Update

On behalf of Soos Creek Water & Sewer District, enclosed is a CD version of the Agency Review Draft, Water Comprehensive Plan, 2012. Should you have any comments, please provide them within the 90-day comment period which closes August 23, 2012.

Should you have any questions, please feel free to contact to contact me at (425) 289-7309 or Chris Schmidt, P.E., at (425) 289-7315.

Sincerely,

ROTH HILL, LLC

Pamela-Rae Cobley
Project Manager

cc: Ron Speer, Soos Creek Water & Sewer District
Mike Hanis, District Attorney - Hanis Irvine Prothero, PLLC
Gregory G. Hill, P.E., District Engineer - Roth Hill, LLC
Chris Schmidt, P.E., Roth Hill, LLC

PRHC:prhc

Enclosures: Water Comprehensive Plan, Draft 2012, 1 CD version

11130 NE 33rd Place, Suite 200 Bellevue, WA 98004 tel 425.869.9448 fax 425.869.1190 www.rothhill.com

APPENDIX C

SOOS CREEK WATER AND SEWER DISTRICT

KING COUNTY, WASHINGTON

RESOLUTION NO. 3457-W

A RESOLUTION of the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington; final approval of 2014 Comprehensive Water Plan.

WHEREAS, water districts are required by RCW 57.16.010 to adopt a general comprehensive plan of water supply for the district; and

WHEREAS, pursuant to direction of the Board of Commissioners, the several portions and sections of the District were investigated for the purpose of determining the present and reasonably foreseeable future needs of the District for water supply, storage, conveyance and distribution of water throughout the District; and

WHEREAS, such investigation included determining the method of distributing the cost and expense of the water system against the District and against local improvement districts or utility local improvement districts within the District; and

WHEREAS, the District developed as a portion of the Water Plan a long-term plan for financing the projects described in the Plan; and

WHEREAS, on May 23, 2012, the 2012 Water Comprehensive Plan Agency Review Draft was adopted by Resolution 3342-W for submission to an engineer designated by the King County Council, to the King County Director of Health, to the Washington State Department of Health, and to the governing bodies of all cities and towns, portions of which are included in the District, all in accordance with RCW 57.16.010; and

WHEREAS, the Plan was approved by the Washington State Department of Health on September 12, 2014, in accordance with the provisions of WAC 246-290-100; and

WHEREAS, the Plan was approved by the King County Council on August 24, 2014, by Ordinance 17860; and

WHEREAS, the 2014 Comprehensive Water Plan for adoption by this Resolution is the 2012 Review Draft as modified during the process of the approvals of the Department of Health, and by the King County Council.

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, as follows:

SECTION 1: That the Soos Creek Water and Sewer District 2014 Comprehensive Water Plan is hereby granted final approval, and adopted by the Board of Commissioners of Soos Creek Water and Sewer District in accordance with RCW 57.16.010.

ADOPTED by the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, at a regular open public meeting thereof on the 5th day of November, 2014.

GARY CLINE, President

STEVE PFAFF, Secretary

ALICE MARSHALL, Commissioner

DAROLD STROUD, Commissioner

LARRY WEST, Commissioner

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
NORTHWEST DRINKING WATER REGIONAL OPERATIONS
20425 72nd Avenue South, Suite 310, Kent Washington 98032-2388

September 12, 2014

RON SPEER DISTRICT MANAGER
SOOS CREEK WATER & SEWER DISTRICT
PO BOX 58039
RENTON WA 98055

RE: Soos Creek Water & Sewer District, ID#40100
King County
Water System Plan - APPROVAL
Submittal # 12-0509

Dear Mr. Speer:

The Soos Creek Water & Sewer District (the District) water system plan (WSP), received in this office on May 25, 2012, with a subsequent submittal on October 25, 2013 and January 23, 2014, has been reviewed and in accordance with the provisions of WAC 246-290-100, is hereby APPROVED.

Approval of this WSP is valid as it relates to current standards outlined in Washington Administrative Code (WAC) 246-290 revised March 18, 2012; WAC 246-293 revised September 1997, and is subject to the qualifications herein. Future revisions in the rules and statutes may be more stringent and require facility modification or corrective action. An approved update of this WSP is required on or before **September 15, 2020**, unless ODW requests an update or plan amendment pursuant to WAC 246-290-100(9).

APPROVED NUMBER OF CONNECTIONS

The analysis provided in this WSP shows the water system has sufficient capacity to meet the growth projections during this planning period. The Soos Creek water system can support an **"unspecified"** designation for its approved number of connections. A specific number of approved connections will not be applied at this time. Development may occur in compliance with the schedule and information provided in this WSP. This designation may be rescinded (and replaced with a specified number of approved connections) if ODW determines that the WSP is no longer representative of system activities.

LOCAL GOVERNMENT CONSISTENCY

This document meets local government consistency requirements for WSP approval pursuant to DOH "Local Government Consistency, RCW 90.03.386, and RCW 43.20.

SERVICE AREA AND DUTY TO SERVE

Pursuant to RCW 90.03.386(2), the service area identified in this WSP service area map may now represent expanded "place of use" for this system's water rights. Changes in service area should be made through a WSP amendment.

The District has a duty to provide new water service within its retail service area. This WSP includes service policies to describe how your system plans to provide new service within your retail service area.

CONSTRUCTION WAIVERS

Standard Construction Specifications for distribution main extensions in this WSP are approved. Consistent with WAC 246-290-125(2), this system may proceed with the installation of distribution main extensions provided this system completes and keeps on file the enclosed construction completion report form in accordance with WAC 246-290-125(2) and WAC 246-290-120(5) and makes it available for review upon request by ODW.

WATER RESOURCES

The department's approval of your water system design does not confer or guarantee any right to a specific quantity of water. The approved number of service connections 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.

Thank you for your cooperation. King County is being notified of the terms of this approval and the determination of the approved number of connections. If you have any questions or wish to check our records, you may contact either of us at the numbers listed below.

Sincerely,

Richard Rodriguez
WSDOH Regional Planner
(253) 395-6771

Paige Igoe, P.E.
Regional Engineer
(253) 395-6764

Encl: Construction Completion Report

cc: Steve Hirschey, King County UTRC
Seattle/King County Health
Pam Cobley, Stantec, Inc.

CONSTRUCTION COMPLETION REPORT FOR DISTRIBUTION MAIN PROJECTS

In accordance with WAC 246-290-120(5), a ***Construction Completion Report*** is required for all construction projects. Under the submittal exception process for distribution main projects, designed by a professional engineer but not submitted to DOH for approval, the report does not need to be submitted. **However, the purveyor must keep the Construction Completion Report on file and make it available for review upon request by DOH in accordance with WAC 246-290-125 (2)(b).** Furthermore:

(1) The report form **must** bear the seal, date and signature of a professional engineer (PE) licensed in the state of Washington; and

(2) Per WAC 246-290-120(5)(c), the amount of change in the physical capacity of a system must be documented, if the project results in a change in physical capacity.

SOOS CREEK WATER & SEWER DISTRICT
Name of Water System

DOH System ID No.: **40100**

RON SPEER
Name of Purveyor (Owner or System Contact)

Date Water System Plan that includes Standard Construction Specifications

PO BOX 58039
Mailing Address

Date Standard Specifications Approved by DOH: _____

RENTON, WA 98055
City State Zip

PROJECT NAME AND DESCRIPTIVE TITLE:
(Include the name of any development project and number of services.)

Date Project or Portions Thereof Completed

PROFESSIONAL ENGINEER'S ACKNOWLEDGMENT

The undersigned professional engineer (PE), or his/her authorized agent, has inspected the above-described project that, as to layout, size and type of pipe, valves and materials, and other designed physical facilities, has been constructed and is substantially completed in accordance with construction documents reviewed by the purveyor's engineer. In the opinion of the undersigned engineer, the installation, physical testing procedures, water quality tests, and disinfection practices were carried out in accordance with state regulations and principles of standard engineering practice.

I have reviewed the disinfection procedures, pressure test results, and results of the bacteriological test(s) for this project and certify that they comply with the requirements of the construction standards/specifications approved by DOH.

P.E.'s Seal

Date Signed

Name of Engineering Firm

Name of PE Acknowledging Construction

Mailing Address

City State Zip

Engineer's Signature

State/Federal Funding Type (if any) _____

Please keep a completed, signed, and stamped copy on file.

☒ **NWRO Drinking Water**
Department of Health
20425 72nd Ave. S, Ste 310
Kent, WA 98032-2358
(253) 395-6750

☐ **SWRO Drinking Water**
Department of Health
PO Box 47823
Olympia, WA 98504-7823
(360) 236-3030

☐ **ERO Drinking Water**
Department of Health
16201 E Indiana Ave, Suite 1500
Spokane Valley, WA 99216
(509) 329-2100

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).

King County

1200 King County Courthouse
516 Third Avenue
Seattle, WA 98104

KING COUNTY

Signature Report

August 18, 2014

Ordinance 17860

RECEIVED
SEP 2014
SOOS CREEK
WATER & SEWER DISTRICT

Proposed No. 2014-0270.1 **Sponsors** Dembowski and Dunn

AN ORDINANCE approving the Soos Creek Water & Sewer District Water Comprehensive Plan.

STATEMENT OF FACTS:

1. King County has adopted K.C.C. chapter 13.24, which requires approval of comprehensive plans for water and sewer utilities that provide service in unincorporated King County as a prerequisite for operating in unincorporated King County, receiving approval for annexation proposals, being granted right of way franchises, and being given approval for right of way construction permits. K.C.C. chapters 13.24 and 28.84 and chapter 57.16 RCW prescribe the requirements for approval of such plans, including consistency with state and local planning requirements.

2. The district's last comprehensive plan was prepared in 2005. Washington state Department of Health and King County regulations require water plans to be updated every six years.

3. The district's service area is within King County and the district has adopted a comprehensive plan update ("the plan").

4. King County has adopted a Comprehensive Plan that includes water policies in its provisions for facilities and services (applicable portions of policies F-101 through F-254) that call for consistency with other adopted

plans, pursuit of reclaimed water, water conservation and protection of water resources.

5. K.C.C. chapter 13.24 requires the utilities technical review committee to review and make a recommendation to the King County executive and council on the plan, the requirements under K.C.C. chapter 13.24 and consistency with the King County Comprehensive Plan. The utilities technical review committee has reviewed the planning data and district operations and has found:

a. The plan uses population and employment forecasts developed by the Puget Sound Regional Council and acknowledges the housing and job growth targets adopted by the Growth Management Planning Council for the district's service area;

b. A portion of the district's service area is in unincorporated King County;

c. The capital facility plan is adequate to meet anticipated facility and service needs;

d. The plan is consistent with applicable Washington state water quality laws; and

e. The plan is consistent with other pertinent county adopted plans and policies.

6. Washington state Department of Health approval is pending upon King County's approval of the plan.

7. Under the state Environmental Policy Act, the district issued a Determination of Nonsignificance for the plan on May 22, 2012. There were no appeals.

8. The district's operations and facilities meet multiple existing statutory, administrative and planning standards. As the district's operations, facilities and planning meet the requirements of the King County Code and are consistent with the King County Comprehensive Plan, the utilities technical review committee has recommended approval of the plan.

BE IT ORDAINED BY THE COUNCIL OF KING COUNTY:

SECTION 1. The Soos Creek Water & Sewer District Water Comprehensive

Plan, Attachment A to this ordinance, is hereby approved as a comprehensive water system plan.

Ordinance 17860 was introduced on 7/7/2014 and passed by the Metropolitan King County Council on 8/18/2014, by the following vote:

Yes: 8 - Mr. von Reichbauer, Mr. Gossett, Ms. Hague, Ms. Lambert, Mr. Dunn, Mr. McDermott, Mr. Dembowski and Mr. Upthegrove
No: 0
Excused: 1 - Mr. Phillips

KING COUNTY COUNCIL
KING COUNTY, WASHINGTON

For Larry Phillips, Chair

ATTEST:

Anne Noris, Clerk of the Council

RECEIVED
2014 AUG 29 PM 4:25
KING COUNTY COUNCIL
CLERK

APPROVED this 24th day of August, 2014.

Dow Constantine, County Executive

Attachments: A. Soos Creek Water & Sewer District Water Comprehensive Plan

Washington State Department of Health

Local Government Consistency Review Checklist

Water System Name: Soos Creek Water & Sewer District PWS ID: 401008

Planning/Engineering Document Title: Comprehensive Water Plan Update Plan Date: May 2012

Local Government with Jurisdiction: City of Kent

WAC 246-290-108 Consistency with local plans and regulations:
Consistency with local plans and regulations applies to planning and engineering documents under WAC 246-290-106, 246-290-107, and 246-290-110(4)(b (ii).

1) Municipal water suppliers must include a consistency review and supporting documentation in its planning or engineering document describing how it has addressed consistency with **local plans and regulations**. This review must include specific elements of local plans and regulations, as they reasonably relate to water service as determined by Department of Health (DOH). Complete the table below and see instructions on back.

Local Government Consistency Statement	Page(s) in Planning Document	Yes – No – Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the applicable service area.	4-1 to 4-2, Figure 4.1	~~Yes~~ No
b) The six-year growth projection used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	4-2 to 4-17	~~Yes~~ No
c) Applies to cities and towns that provide water service: All water service area policies of the city or town are consistent with the utility service extension ordinances of the city or town.	NA	NA
d) Service area policies for new service connections are consistent with the adopted local plans and adopted development regulations of all jurisdictions with authority over the service area [City(ies), County(ies)].	Chapter 3	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable; Coordinated Water System plans, Regional Wastewater plans, Reclaimed Water plans, Groundwater Area Management plans, and Capital Facilities Element of Comprehensive plans.	Chapter 2	Yes

See attached letter.

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.

Fred N Satterstrom 9-25-12

Signature Date

Fred N. Satterstrom, Planning Director, City of Kent, WA

Printed Name, Title, & Jurisdiction

Washington State Department of Health

Local Government Consistency Review Checklist

Water System Name: Soos Creek Water & Sewer District PWS ID: 401008

Planning/Engineering Document Title: Comprehensive Water Plan Update Plan Date: May 2012

Local Government with Jurisdiction: City of Renton

WAC 246-290-108 Consistency with local plans and regulations:
Consistency with local plans and regulations applies to planning and engineering documents under WAC 246-290-106, 246-290-107, and 246-290-110(4)(b (ii).

1) Municipal water suppliers must include a consistency review and supporting documentation in its planning or engineering document describing how it has addressed consistency with **local plans and regulations**. This review must include specific elements of local plans and regulations, as they reasonably relate to water service as determined by Department of Health (DOH). Complete the table below and see instructions on back.

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b) The six-year growth projection used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	4-2 to 4-17	Yes
c) Applies to cities and towns that provide water service: All water service area policies of the city or town are consistent with the utility service extension ordinances of the city or town.	NA	NA
d) Service area policies for new service connections are consistent with the adopted local plans and adopted development regulations of all jurisdictions with authority over the service area [City(ies), County(ies)].	Chapter 3	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable; Coordinated Water System plans, Regional Wastewater plans, Reclaimed Water plans, Groundwater Area Management plans, and Capital Facilities Element of Comprehensive plans.	Chapter 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.

Jennifer Henning 8/23/2012

Signature Date

Jennifer Henning, Current Planning Manager
City of Renton

Printed Name, Title, & Jurisdiction

APPENDIX D

EXISTING SERVICE AGREEMENTS

ORDINANCE NO. 00507

In the matter of the application of

WATER DISTRICT #58

for a franchise to lay down, construct, maintain and operate a watermain along, under and across the following described county roads, streets, avenues, boulevards, alleys and public places, to wit:

(See attached sheets for description)

The above matter having come on regularly for hearing before the King County Council and it appearing that:

1. The application was properly made.

2. The application was referred to the County Executive for investigation of the feasibility thereof and the checking of the plans and description of the location thereof.

3. The County Executive having made such investigation and has filed with the Council his report and recommendations as follows:

For date of hearing

4. Due and legal notice of said application and of this hearing thereon has been given by posting and publication in the manner and as required by law and the Council having considered said application, and being advised in the premises, and the proposed franchise having been presented for examination:

It is Ordained by the King County Council that the application of WATER DISTRICT #58 be approved and that the Franchise be granted as approved and that the same be executed on behalf of King County by the County Executive.

Dated this 29th day of June, 1970.

KING COUNTY COUNCIL

BY Bill Kearns
Chairman

ATTEST:

Ralph R. Leander
Clerk of the Council

APPROVED 30 June, 1970

John D. Spellman, County Executive

CJL/ade
7/16/69

KING COUNTY WATER DISTRICT NO. 58

KING COUNTY, WASHINGTON

RESOLUTION NO. 2390

A RESOLUTION of the Board of Commissioners of King County Water District No. 58, King County, Washington, authorizing execution of Agreement with King County Water District No. 105 for service to Plat of Erwin Estates.

WHEREAS, requests have been made to both Water District No. 58 and Water District No. 105 for water service to the area generally known as Plat of Erwin Estates; and

WHEREAS, such area is presently located in the service area of Water District No. 58, and accordingly would annex to and receive water service from Water District No. 58; and

WHEREAS, Water District No. 58 presently does not have facilities in the area which would allow it to provide the requested water service; and

WHEREAS, Water District No. 105 has represented that it has the facilities and capacity to provide the requested water service; and

WHEREAS, the Board has determined it to be in the best interests of the public welfare to enter into an agreement with Water District No. 105 regarding annexation, service, and joint use of facilities in the subject area.

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of King County Water District No. 58, King County, Washington, as follows:

SECTION 1: That the execution of an Agreement (attached as Exhibit "A") with King County Water District No. 105 for annexation and service of the area generally known as Plat of Erwin Estates is hereby authorized.

SECTION 2: That District staff is hereby instructed to take all steps necessary to carry out the provisions of said Agreement.

ADOPTED by the Board of Commissioners of King County Water District No. 58, King County, Washington, at a regular open public meeting thereof on the 12th day of July, 1984.

PATRICK J. BRAZIL, President

EMILIO PIEROTTI, Secretary

CLEMENT QUANRUD, Commissioner

RESOLUTION NO. 2390

SUBJECT: Authorizing Execution of Agreement with King County Water District No. 105 for Service to Plat of Erwin Estates

EXHIBIT "A"
AGREEMENT

THIS AGREEMENT made and entered into this_____ day of _____, 1984, by and between King County Water District No. 58 and King County Water District No. 105.

W I T N E S S E T H

WHEREAS, requests have been made to both Water District No. 58 and Water District No. 105 for water service to the area generally known as Plat of Erwin Estates; and

WHEREAS, such area is presently located in the service area of Water District No. 58 and accordingly would annex to and receive water service from Water District No. 58; and

WHEREAS, Water District No. 58 presently does not have facilities in the area which would allow it to provide the requested water service; and

WHEREAS, it has been determined that Water District No. 105 has facilities and the capacity to provide the requested water service; and

WHEREAS, the Boards of Commissioners of Water District No. 58 and Water District No. 105 have determined it to be in the best interests of the public welfare of both districts to allow annexation to, and provision of water service by Water District No. 105, pursuant to an agreement between the districts to facilitate such annexation, water service, and future water service in the area.

NOW THEREFORE, IT IS AGREED by the parties hereto as follows:

SECTION 1: The following described property within the present service area of King County Water District No. 58 shall be annexed to King County Water District No. 105 subject to approval of all appropriate agencies:

THE SOUTHWEST QUARTER
OF SECTION 13 TOWNSHIP
22 NORTH RANGE
5 EAST, W.M.

SECTION 2: King County Water District No. 58 shall consent to such annexation in writing, and does by this Agreement so consent to annexation to King County Water District No. 105 of the described area.

SECTION 3: Such annexation is agreed to by King County Water District No. 58 upon the representation of King County Water District No. 105 that it has or shall install the facilities to provide water service to said area upon the terms and conditions such service is provided to the other customers of King County Water District No. 105.

SECTION 4: As a portion of the facilities to be installed by Water District No. 105 to provide such service shall be a water main to be located along 164th Avenue S.E. within the described area. Water District No. 105 hereby agrees to install said main, and to allow connection thereto for water service of all property in parcels which abut said street on the west side within the described area as of the date of execution of this agreement.

SECTION 5: The parties agree that the described property within parcels on the West side of 164th Avenue S.E. shall be customers of Water District No. 58. Latecomer charges shall be paid to Water District No. 105 as such properties connect, representing the fair share of the installation costs of the main attributable to the connecting property. Additionally, Water District No. 58 shall pay Water District No. 105's wholesale water rate for actual consumption by said customers of King County Water District No. 58.

SECTION 6: By execution of the Agreement King County Water District No. 105 hereby agrees to allow King County Water District No. 58 to tap service lines into the main to be installed on 164th

Avenue S.E. to provide service to the customers of King County Water District No. 58 described in the foregoing Section. Such service lines installed shall be owned and maintained by King County Water District No. 58. The water main shall be owned and maintained by King County Water District No. 105. All such taps shall be coordinated by the districts, and Water District No. 58 shall give reasonable advance notice.

SECTION 7: Neither District assumes any present or future liability to the customers of the other District by the execution of this Agreement.

SECTION 8: Each of the districts shall pay one half of the cost of the preparation of this Agreement, an accounting of which shall be provided prior to the execution hereof.

EXECUTED as of the date first above written.

KING COUNTY WATER DISTRICT NO. 58

By Emilio Pierotti
Secretary of the Board
Execution hereof authorized by Resolution No. 2390

KING COUNTY WATER DISTRICT NO. 105

By _____
Secretary of the Board
Execution hereof authorized by Resolution No. _____

SOOS CREEK WATER AND SEWER DISTRICT

KING COUNTY, WASHINGTON

RESOLUTION NO. 0666-S

A RESOLUTION of the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, authorizing execution of Agreement with City of Renton for transfer of facilities and establishment of service boundaries.

WHEREAS, the District and the City of Renton have negotiated an Agreement for the transfer of facilities and establishment of service boundaries with the City of Renton within the City's corporate limits and/or service area; and

WHEREAS, such agreement makes appropriate arrangements for service of bonded indebtedness, revenue and service issues, and payment for facilities; and

WHEREAS, the Board finds it in the best interests of the welfare of the District to enter into the Agreement.

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of Soos Creek Water and Sewer District, as follows:

SECTION 1: That the District shall execute the Agreement with the City of Renton for transfer of facilities and establishment of service areas, a copy of which is on file at the District's office.

SECTION 2: That execution of the Agreement will be deemed complete only after approval of the King County Boundary Review Board pursuant to R.C.W. 36.93.

SECTION 3: That the District's Staff should do all things reasonably necessary to carry out the Agreement upon its approval by the Boundary Review Board.

ADOPTED by the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, at a regular open public

meeting thereof on the 18th day of April, 1991.

PATRICK BRAZIL, President

CLEMENT QUANRUD, Secretary

JOHN PAVEL, Commissioner

EMILIO PIEROTTI, Commissioner

- excused.

KAREN WEBSTER, Commissioner

RESOLUTION NO. 0666-S
SUBJECT: Authorizing Execution of Agreement with City of Renton-Transfer of Facilities and Service Boundaries

RECEIVED
NOV - 2 1995
HEDGES & ROTH ENGINEERING, INC.
BELLEVUE, WA

SOOS CREEK WATER AND SEWER DISTRICT

KING COUNTY, WASHINGTON

RESOLUTION NO. 0840 - C

A RESOLUTION of the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, finalizing agreement with City of Renton regarding transfer of facilities and establishment of service areas.

WHEREAS, the following steps have been taken and acts accomplished:

a. The City of Renton ("the City") and the District entered into an AGREEMENT FOR THE TRANSFER OF FACILITIES AND FOR THE ESTABLISHMENT OF SEWER BOUNDARIES ("the Agreement").

b. Resolution No. 0666-S was adopted by the District at a regular meeting of the Board of Commissioners approving the Agreement.

c. The Agreement was filed with a Notice of Intention with the King County Boundary Review Board for approval of the portion of the Agreement regarding permanent service outside the boundaries of the District and the City, pursuant to RCW 36.93.090.

d. The King County Boundary Review Board chose not to take jurisdiction for review of the Agreement, received no request for review, and has deemed the proposal approved; and

WHEREAS, the Agreement was submitted to King County for its review and comment, and the County has not objected to the contents of the Agreement; and

WHEREAS, the Agreement does not change the corporate boundaries of either the City or the District, and therefore, no

formal action is necessary by King County following the Boundary Review Board's approval.

NOW, THEREFORE, BE IT RESOLVED by the Commissioners of Soos Creek Water and Sewer District, King County, Washington, as follows:

SECTION 1: That Soos Creek Water and Sewer District hereby gives final approval to the AGREEMENT FOR THE TRANSFER OF FACILITIES AND FOR THE ESTABLISHMENT OF SEWER BOUNDARIES, and hereby formally adopts the contents thereof as the policy of the District.

Adopted by the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, at a regular open public meeting thereof on the 24th day of September, 1992.

CLEMENT QUANRUD, President

PATRICK BRAZIL, Secretary

KAREN WEBSTER, Commissioner

JOHN PAVEL, Commissioner

EMILIO PIEROTTI, Commissioner

Hedges
& Roth Engineering, Inc.

ENGINEERS
PLANNERS
SURVEYORS
AM/FM/GIS

April 20, 1995

Clerk of the Metropolitan King County Council
Room 402 King County Courthouse
516 Third Avenue
Seattle, Washington 98104

Attn: Jerry Peterson, Clerk of the Council

Re: Soos Creek Water and Sewer District
New 1995 King County Water Franchise

Dear Mr. Peterson,

As the engineering consultant for Soos Creek Water and Sewer District, we are making an application for a new 1995 King County Water Franchise. This application is being made on behalf of Soos Creek Water and Sewer District, 14616 Southeast 192nd Street, Renton, Washington 98058.

This Water Franchise will replace the existing water franchise that Soos Creek Water and Sewer District currently holds. If this existing franchise needs an extension while this application is pending please let us know. Also included is a copy of paragraph 17 that contains some new language agreed upon between Gary Olson, Soos Creek Water and Sewer District attorney, and Bernard Thompson of King County Property Services.

The legal description for the new water franchise boundary is shown as Exhibit "A" and Exhibit "B" is a map depicting the legal description. Exhibit "C" is a map showing the existing Soos Creek Water and Sewer District franchise in the area. Exhibit "D" is a vicinity map for the area and Exhibit "E" is the revised paragraph 17.

Enclosed as part of this application are the following:

1. A cashier's check in the amount of $600.00.
2. One (1) copy of the legal description (Exhibit "A").
3. Six (6) copies of the description map (Exhibit "B").
4. One (1) copy of the existing franchise map (Exhibit "C").
5. One (1) copy of the vicinity map (Exhibit "D").
6. One (1) copy of revised paragraph 17 (Exhibit "E").

If there are any questions or additional requirements necessary for this application please do not hesitate to contact me at 682-7426.

f:\12\486\docs\newfrapp.ltr April 20, 1995

14450 NE 29th Pl., Suite 101, Bellevue, Washington 98007
(206) 869-9448 800-835-0292 FAX (206) 869-1190

1011 E Main, Suite 101, Puyallup, Washington 98372
(206) 840-9847 800-540-9847 FAX (206) 840-6217

Filed at the Request of:

Gerald M. Ormiston
800 5th Ave., #4100
Seattle, WA 98104

EMERGENCY SYSTEM INTERTIE AGREEMENT
PHASE 1

This agreement between Soos Creek Water & Sewer District, hereinafter referred to as SCWSD, and Water District No. 111 of King County, hereinafter referred to as WD 111, is entered into for the purposes of planning, designing, constructing, maintaining and operating an emergency system intertie between the respective parties.

The terms of the agreement are as follows:

1. The intertie is intended to operate initially as a one way gravity flow from SCWSD's system into WD 111's system. The initial facility and its operation will be defined as Phase 1 of this project. The facilities for this operation are schematically shown on Exhibit No. 1 of this document. Final location and configuration of the facilities shall be determined at the time of final design.

2. WD 111 will act as the lead agency on Phase 1 of this project.

3. WD 111 will acquire the site, design facilities, and contract for the construction of all of the facilities. WD 111 will own the piping on WD 111's side of the vault.

4. Upon completion of construction, WD 111 will deed the intertie vault and all interior equipment and interior appurtenances, and all piping which is located on the SCWSD side of the vault, to SCWSD.

5. SCWSD and WD 111 will each have unlimited access to the vault via a dual padlock or ownership of keys to the vault.

6. SCWSD will own, maintain and operate a normally locked gate or butterfly valve inside of the vault. WD 111 will be provided with a key to this valve's lock. SCWSD will solely unlock and operate the locked valve unless SCWSD personnel are unable to respond to WD 111's request to activate the intertie.

7. The intertie shall be operated only in the event of an emergency. For purposes of this agreement, an emergency shall be defined as a major water line break in WD 111's system, fire demand on WD 111's system, contamination to WD 111's water supply system, mechanical equipment failure, electrical equipment failure or Puget Power facility failure, which are part of WD 111's water supply system.

8. The procedure for operating the intertie in the event of such emergency shall be as follows:

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A. WD 111 shall determine that an emergency of sufficient magnitude has occurred which warrants the need to request that the intertie be activated.

B. The manager of WD 111 or appointed person shall provide a verbal request to the operations manager or appointed person of SCWSD. Upon SCWSD's agreement that an emergency exists which shall allow for the intertie to be opened, the intertie will be activated in one of the following two manners:

1. In the event of an emergency which does not require immediate need for water by WD 111, SCWSD will open the intertie at 9:00 a.m. the following morning. WD 111 personnel shall also be on site for operation of WD 111 facilities. SCWSD and WD 111 personnel shall confirm the standing reading on the flow meter totalizer.

2. In the event of a major water line break, or fire demand on the system which requires immediate use of the intertie, WD 111 will verbally notify SCWSD that the intertie needs to be activated as soon as reasonably possible, but not less than thirty minutes after the time of the request. If SCWSD is unable to respond within thirty minutes of WD 111's initial request, WD 111's personnel shall unlock and activate the intertie valve, and verify the standing reading on the flow meter totalizer.

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C. WD 111 shall provide SCWSD with a written confirmation of the request not less than 24 hours after the verbal request, or on the first day of normal business after the verbal request. In the event that WD 111 requests that the intertie be activated prior to 9:00 a.m., WD 111 will provide backup data as necessary to SCWSD in order for SCWSD to request and obtain a waiver of demand metering charges from Seattle Water Department for the particular event, in accordance with the water purveyor contract between SCWSD and the Seattle Water Department. However, in the event that demand metering charges are not waived, WD 111 shall pay the demand metering charges incurred by SCWSD related to the event.

SCWSD shall notify Seattle Water Department in writing within 10 days after the use of the emergency intertie and state the nature of the emergency, date, time and quantity of water used during the intertie.

D. The intertie shall remain activated until WD 111 requests that SCWSD close the intertie, or until SCWSD has determined that the need for activation of the emergency intertie has ceased, but in no event for a period of time longer than eight weeks. SCWSD, at their discretion, shall close the intertie at the time of request or determination that the emergency has ceased, or at 9:00

a.m. following such request or determination. WD 111 shall provide a written confirmation requesting that the intertie be closed.

E. SCWSD shall read the meter and shall then calculate and invoice WD 111 for the water used during the request.

F. The invoice shall be calculated as follows:

The flow meter reading taken prior to activating the intertie, shall be subtracted from the meter reading taken when intertie is closed. The total water used during the event, which prompted the opening of the intertie, shall be calculated to the nearest ccf (hundred cubic feet).

SCWSD shall multiply the calculated ccf times the new water wholesale rate SCWSD pays to Seattle in dollars per ccf times 1.2 (ccf x wholesale rate x 1.2), unless the event is subject to demand metering charges from Seattle Water Department, in which event the charge to WD 111 shall be calculated as ccf times the demand metering rate times 1.2 (ccf x demand metering charge rate x 1.2). This shall be complete payment for the water, labor, and administration of activating the intertie.

SCWSD shall then forward an invoice to WD 111, and WD 111 shall pay the invoice in full within thirty days of its issue. In the event of non-payment by WD 111 within sixty days, an additional late charge of 10% of the amount past due shall be added to the required payment by WD 111.

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9. WD 111 and SCWSD recognize that at some point in the future the districts may desire to operate the intertie flow from WD 111 to SCWSD, for emergency or other reasons. Such operation would require installation of a pump station and related facilities. In the event that the parties to this agreement desire to initiate such future operations, installation of the facilities to pump water from WD 111 to SCWSD shall be referred to as Phase 2, and all costs related thereto, including the possibility of a latecomer reimbursement for Phase 1 costs, would be negotiated at that time. The facilities which would be required to pump water from WD 111 to SCWSD are schematically shown on Exhibit No. 2 of this document. Final facility design and selected option for Phase 2 operation shall be negotiated at the time SCWSD and WD 111 enter into the agreement for Phase 2.

10. This agreement is contingent upon written approval by the Seattle Water Department. This agreement will expire upon expiration of the current Water Purveyor Contract between SCWSD and the Seattle Water Department, and shall also be subject to any amendments made to such Water Purveyor Contract.

This agreement dated this 8th day of June, 1995

WATER DISTRICT NO. 111

Manager

Commissioner

Commissioner

Commissioner

Commissioner

SOOS CREEK WATER & SEWER DISTRICT

Operations Manager

Commissioner

Commissioner

Commissioner

Commissioner

Commissioner

950707-146

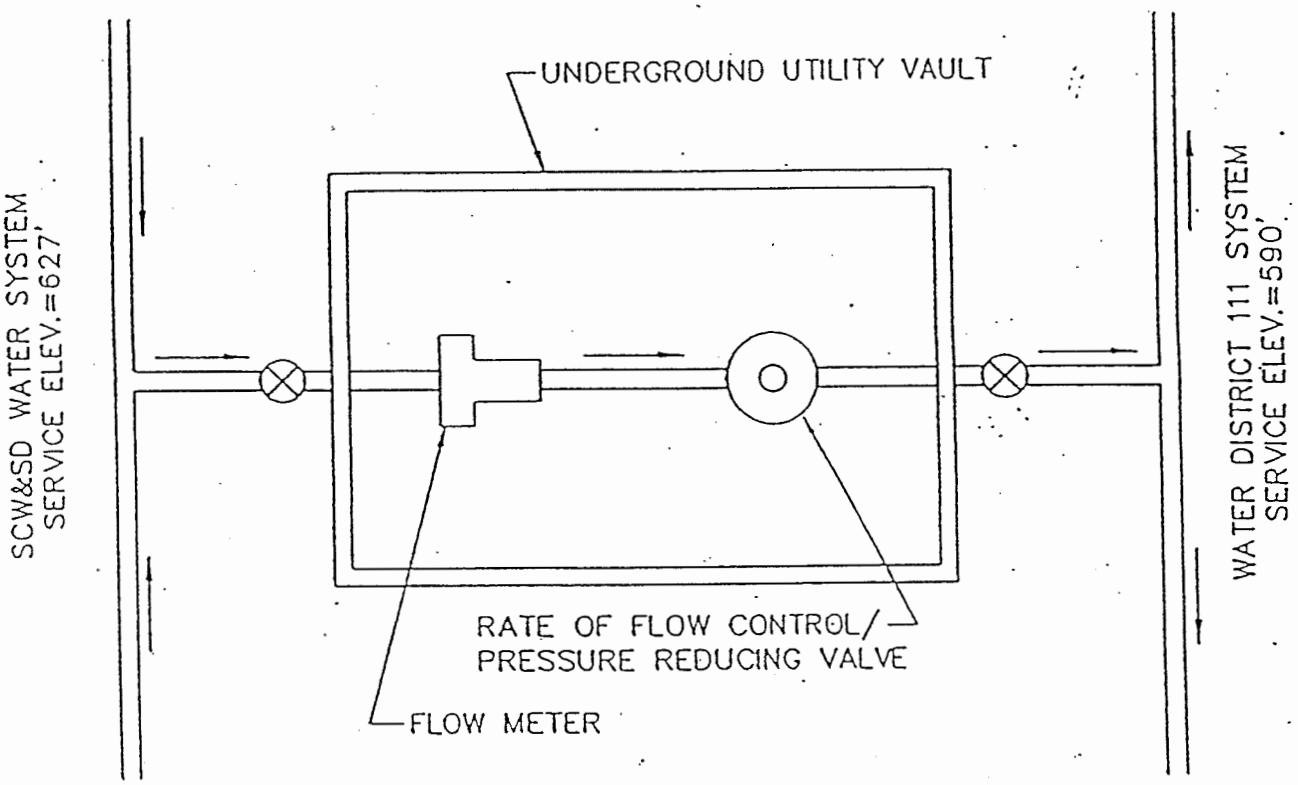
APPROVED BY:

SEATTLE WATER DEPARTMENT

SWD Representative

EXHIBIT NO.1

EMERGENCY SYSTEM INTERTIE AGREEMENT
PHASE 1-SCHEMATIC DIAGRAM OF FACILITIES & OPERATION

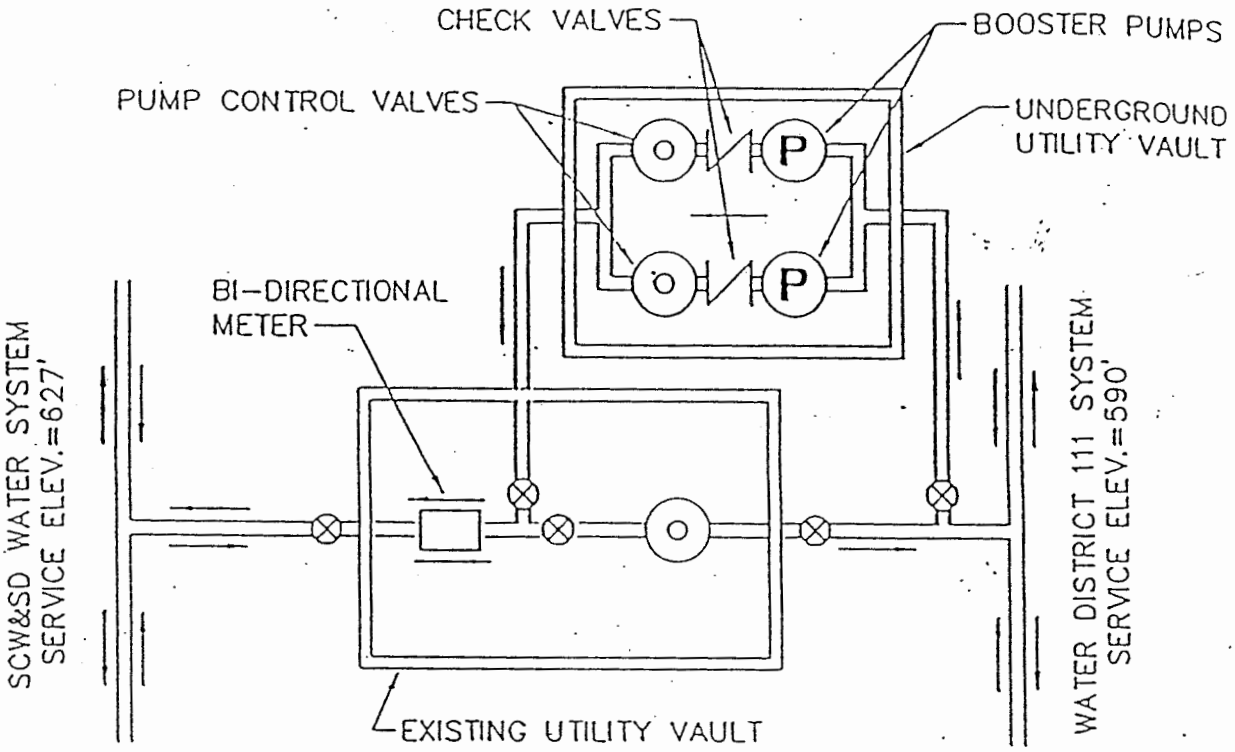


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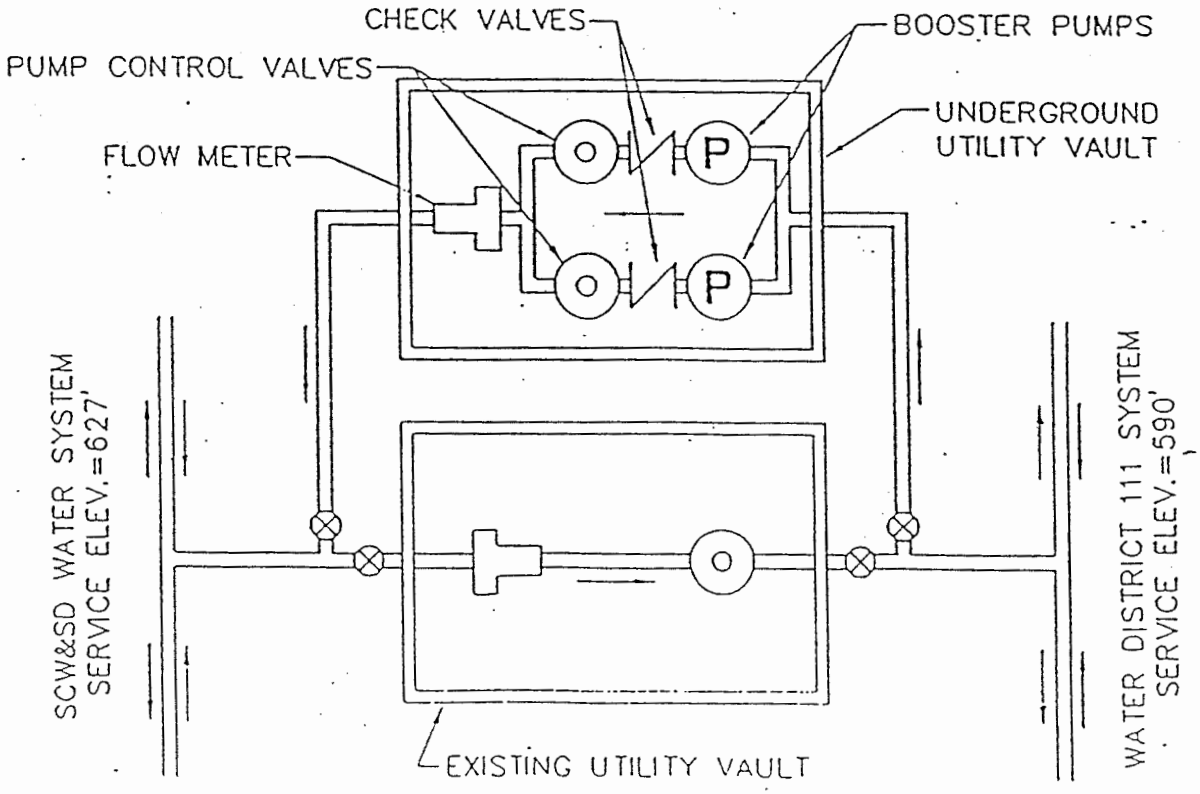
EXHIBIT NO.2

EMERGENCY SYSTEM INTERTIE AGREEMENT
HASE 2-SCHEMATIC DIAGRAM OF FUTURE FACILITIES & OPERATION

9507071146



OPTION NO.1



OPTION NO.2

SOOS CREEK WATER & SEWER DISTRICT

P.O. Box 58039 Renton, Washington 98058-1039
14616 S.E. 192nd St. (206) 630-9900
Fax (206) 630-5289

June 14, 1995

King County Property Services
500 King County Administration Building
500 Fourth Avenue
Seattle, Washington 98104

Attn: Bernard Thompson
Franchise Supervisor

Re: Soos Creek Water and Sewer District
King County Water Franchise #507 Extension

Dear Mr. Thompson,

This letter is a request for an extension of the existing King County Water Franchise #507 currently held by Soos Creek Water & Sewer District. Per your conversation with the District's Engineering Consultant, Hedges & Roth Engineering we hereby submit this request due to the inability of the processing of the District's 1995 King County Water Franchise submitted on April 20, 1995.

The District is currently preparing a new 1995 Comprehensive Water Plan and this plan will not be approved before the expiration of this Franchise #507. This plan could not be prepared until the adoption of the King County Comprehensive Plan and current King County Zoning was finalized.

If there are any questions or additional information necessary for this extension please do not hesitate to contact Bill Holladay of Hedges & Roth Engineering at 682-7426 or myself at 630-9900.\

Thank you for your assistance.

Very truly yours,

SOOS CREEK WATER & SEWER DISTRICT

Ron Speer
Operations Manager
RS:wlh
encl.
cc: Karen Wolf, King County Planning & Community Development Division
Chair, King County Technical Review Committee
Gary Olson, Harris & Olson
John Roth Jr., Bill Holladay, Hedges & Roth Engineering, Inc.

f:\12486\docs\lcancxt.ltr June 14, 1995

SOOS CREEK WATER AND SEWER DI STRICT

KING COUNTY, WASHINGTON

RESOLUTION NO. 2162-W

A RESOLUTION of the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, formally accepting King County Franchise Ordinance No. 12859; public water system franchise.

WHEREAS, Metropolitan King County has adopted its Ordinance No. 12859, which authorizes the Executive to execute with the District a public water system franchise to construct, operate and maintain a sewer system in Council Districts 6, 9, 12 and 13; and

WHEREAS, the District Manager has signed the franchise agreement, as required by the Ordinance; and

WHEREAS, the Board of Commissioners finds it to be in the best interests of the District to confirm its acceptance of the terms of the Franchise Ordinance.

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of Soos Creek Water and Sewer District, as follows:

SECTION 1: That Soos Creek Water and Sewer District hereby confirms its acceptance of the terms of Franchise Ordinance No. 12859 as authorized by Metropolitan King County.

SECTION 2: That the District Manager's signing of the franchise agreement on behalf of the District is hereby ratified.

ADOPTED by the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, at a regular, open public meeting thereof on the 25th day of April, 2001.

KAREN WEBSTER, President

PHILIP SULLIVAN, Secretary

STEVE SANDELIUS, Commissioner

CLEMENT QUANRUD, Commissioner

RANDY REECE, Commissioner

SOOS CREEK WATER AND SEWER DISTRICT

KING COUNTY, WASHINGTON

RESOLUTION NO. 2178-W

A RESOLUTION of the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, authorizing execution of Full Requirements Contract for the Supply of Water with the City of Seattle.

WHEREAS, the District and the City of Seattle entered into a Seattle Water Purveyors Contract in 1982, which is set to expire by January 1, 2012; and

WHEREAS, the District and the City have negotiated for a new 60 year Contract by which they will participate as partners in meeting the water needs of their respective service areas and of the region; and

WHEREAS, the culmination of those negotiations is a Contract which emphasizes the protection, efficient use and conservation of one of the region's most precious resources – safe, clean, and economical water to meet the region's water supply needs; and

WHEREAS, the District's Manager, Ron Speer, has had a key leadership role in the negotiation of the Contract on behalf of the District and the industry; and

WHEREAS, the District as a member of the Water Suppliers Association has been a leader and partner in the negotiations for the Contract, and with Cedar River Water and Sewer District is the first to have reached agreement with Seattle on a long term full requirements contract; and

WHEREAS, upon study and deliberation the Board of Commissioners has determined that the Contract is beneficial to the District, and is in the public interest.

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of Soos Creek Water and Sewer District as follows:

SECTION 1: That Soos Creek Water and Sewer District hereby approves the following Contract between the District and the City of Seattle, copies of which are on file at the District office:

CITY OF SEATTLE FULL REQUIREMENTS CONTRACT
FOR THE SUPPLY OF WATER

SECTION 2: That the District Manager is hereby authorized to execute the Contract on behalf of the District.

ADOPTED by the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, at a regular open public meeting thereof on the 23rd day of May, 2001.

KAREN WEBSTER, President

PHILIP SULLIVAN, Secretary

RANDY REECE, Commissioner

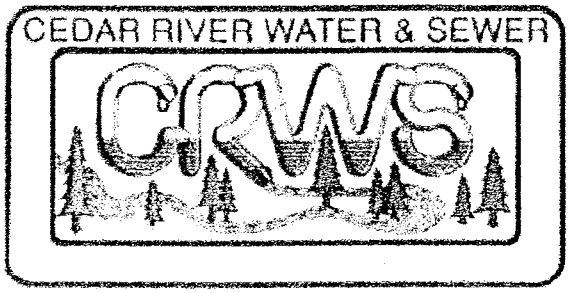
CLEMENT QUANRUD, Commissioner

STEVE SANDELIUS, Commissioner

Joint Certificate of Resolution
City of Seattle Water Supply Contract



Soos Creek
Water and Sewer District



Cedar River
Water and Sewer District

The undersigned hereby certify that Resolutions of the Boards of Commissioners of Soos Creek Water and Sewer District and Cedar River Water and Sewer District, King County, Washington, authorizing execution of Full Requirements Contract for the Supply of Water with the City of Seattle, were adopted at a joint open public meeting of the Boards of Commissioners this 23rd day of May, 2001.

Soos Creek Water
and Sewer District

Clement Quanrud, Commissioner

Randy Reece, Commissioner

Steve Sandelius, Commissioner

Philip Sullivan, Commissioner

Karen Webster, Commissioner

Ron Speer, District Manager

Cedar River Water
and Sewer District

Walter Canter, Commissioner

Lorraine Snyder, Commissioner

Charles Terwillegar, Commissioner

Ron Sheadel, District Manager

CITY OF SEATTLE

FULL REQUIREMENTS CONTRACT

FOR THE

SUPPLY OF WATER

TO

SOOS CREEK WATER AND SEWER DISTRICT

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FULL REQUIREMENTS CONTRACT

BETWEEN
THE CITY OF SEATTLE
AND
SOOS CREEK WATER AND SEWER DISTRICT

FOR THE SUPPLY OF WATER

THIS CONTRACT is entered into between the CITY OF SEATTLE ("Seattle"), a municipal corporation of the State of Washington, and SOOS CREEK WATER AND SEWER DISTRICT ("Water Utility"), a municipal corporation of the State of Washington.

RECITALS

1. Seattle owns and operates a system for the supply, transmission and distribution of potable water and is authorized to sell and distribute water to its residents and to other persons and customers located outside the corporate limits of Seattle.

2. Seattle's water system is integral to the health and welfare of the residents located within the water service area shown in Seattle's Water System Comprehensive Plan. Seattle intends to provide water from the system to meet the current and future needs of the residents of such water service area when such service is requested from Seattle.

3. In meeting this service commitment, Seattle must ensure that this role does not place financial burdens on its retail customers for which they do not receive a corresponding benefit.

4. This contract and contracts of a similar nature with other wholesale customers of Seattle located within Seattle's service area are intended to provide those customers with the security of a long term service commitment and to describe the terms and conditions associated with that commitment.

5. Under this contract, Seattle intends to provide wholesale water to Water Utility at an equivalent level of service and under the same pricing principles as it provides water to Seattle's own distribution system.

6. Given the extensive growth of the Seattle and surrounding areas and the impacts upon infrastructure and costs, this contract is intended to provide sufficient water for growth. As a general philosophy for cost sharing purposes, the parties desire to adopt the principle that "growth should pay for growth."

7. Seattle and Water Utility, together with other wholesale customers of Seattle, have agreed to establish an Operating Board comprised of representatives pledged to represent the best interests of the region in order to provide overall direction to the Administrator of the Seattle Water Supply System.

NOW, THEREFORE, in consideration of mutual covenants herein, it is agreed as follows:

SECTION I. DEFINITIONS

For the purposes of this contract, the following terms have been defined as:

"Full Water Requirements" - All of the water needed by Water Utility to meet the needs of its present and future water customers within its service area as shown in Water Utility's comprehensive water system plan.

"Block Purchase Contract" – A contract in which Seattle sells a fixed quantity of water to the Wholesale Customer on a take or pay basis.

"Full Requirements Contract" – A contract in which Seattle supplies a Wholesale Customer with its Full Water Requirements .

"Partial Requirements Contract" - A contract in which Seattle supplies a Wholesale Customer with that portion of its Full Water Requirements above that provided by the Wholesale Customer's own supply.

"Wholesale Customer" – Those customers who receive water from Seattle for the purposes of reselling to others.

"1982 Water Purveyor Contract" – That certain Water Purveyor Contract between Water Utility and Seattle having an effective date of September 8, 1982.

"Existing Supply Resources" - Current components of the Seattle Water Supply System which consist of the Cedar River storage, treatment and diversion facilities, the Tolt River storage, treatment and diversion facilities, and the Highline Well Field as set forth in Exhibit VII.

"FC" – Means Facility Charge.

"1% Water Conservation Program" - A program which has been implemented by Seattle with the agreement of Water Utility which contains a goal of 1% conservation per year for ten years.

"Seattle Water Supply System" - Seattle's water supply system consisting of dams, impounded water, supply and transmission mains, pumps, treatment facilities, and all other facilities utilized in conveying water to Seattle's retail service area, to Water Utility and other Wholesale Customers. This definition does not include Seattle's water distribution system, which is used to serve its Retail Customers.

"Seattle's Average Cost of Debt" - The weighted average interest rate on Seattle's water

system debt outstanding calculated at the end of each calendar year during the term of this contract.

"Rate of Return on Investment" - Seattle's Average Cost of Debt, plus 1.5 percent.

"Service Connection" - The water meter and appurtenances through which water is delivered from the Seattle Water Supply System to a Wholesale Customer's water system.

"Seattle Transmission Facilities" – Those facilities serving Seattle's regional transmission needs as set forth in Exhibit VIII.

"Stranded Costs" – Those water supply and related costs that Seattle and others have invested for the region which may not be recovered as a result of lost revenues.

"Seattle Water System Comprehensive Plan" - Seattle's Water System Comprehensive Plan dated April, 2001, and amendments thereto, prepared by Seattle to comply with the requirements of WAC 248-54-580, and successor regulations.

"Administrator" - The Director of Seattle Public Utilities or any other title given to that person who maintains the authority to operate and manage the Seattle Water Supply System.

"Operating Board" – A board of representatives having the powers and duties set forth in Section V hereof.

SECTION II. TERM OF CONTRACT AND GUARANTEES

II.A. Term of Contract

1. Term. This contract shall take effect upon the signature of both parties and shall remain in effect until 12:01 AM on January 1, 2062.

2. Subsequent Right Of First Refusal. At the end of the term of this contract, Water Utility shall have a right of first refusal to continue to purchase the amount of water then purchased from Seattle at the time of contract expiration.

3. Periodic Review and Right to Change Certain Terms and Conditions. The parties may review and change certain terms and conditions governing the sales of water hereunder on January 1, 2022 and January 1, 2042 as follows.

    a. Consensual Process. On or before January 1, 2021, and then again on or before January 1, 2041, either party may provide the other with a written proposal to amend the contract terms. The parties shall then meet and consider the proposal. If the parties agree to the proposal prior to January 1, 2022 and January 1, 2042, respectively, a written amendment to this

contract shall be approved and executed by both parties and this contract shall be amended accordingly.

b. Seattle' s Right to Amend. If the parties are unable to agree on a proposal by Seattle pursuant to subsection a. above within the respective one-year periods, Seattle may propose in writing its desired amendment to the Operating Board. Seattle and the Operating Board shall meet and consider the proposed amendment and use reasonable efforts to resolve any differences in the proposal. After 90 days from Seattle's written proposal to the Board, Seattle may propose its desired amendment to the Seattle City Council. If the Operating Board does not agree with such proposal, it may submit a revised proposal to the Seattle City Council within 90 days of Seattle's submission of its proposal to the Seattle City Council. After receiving the Operating Board's alternate proposal, or after the lapse of the 90 day period for the Operating Board to make an alternate proposal, the Seattle City Council may then deny both proposals or approve one of them and issue an amendment to this contract which shall be in effect for the remaining term of the contract from the date of issuance, unless later amended pursuant to subsection a. above, or by mutual agreement.

c. Limitation on Seattle's Right to Amend. Notwithstanding subsection b. above, Seattle shall not have the right to: (i) reduce its obligation to provide the Full Water Requirements of Water Utility; (ii) cease to provide wholesale water to Water Utility at an equivalent level of service as it provides water to Seattle's own distribution system. (iii) charge a higher wholesale rate for water supply and transmission to Water Utility than that charged to Seattle for supply to its retail customers, (iv) reduce its water quality obligations hereunder, (v) change the methodology for calculating Rate of Return on Investment, (vi) restrict Water Utility's right to withdraw from this contract, and (vii) disband or significantly reduce the powers of the Operating Board.

II.B. Agreement to Supply and Purchase Water

1. Full Requirements Commitment. Seattle shall supply the Full Water Requirements of Water Utility for the term of this contract. Except as set forth in Exhibit I and section II.B.5 below, Water Utility shall purchase all of its wholesale water needs from Seattle.

2. Adjustments in Water Utility's Service Area. In the event Water Utility acquires additional service area that is: 1) located outside of the service area identified in its comprehensive water system plan and 2) which is not already served with Seattle water, then Seattle shall supply the water requirements of the additional service area subject to a) Seattle's ability to serve that area, and b) Water Utility's payment of FCs for that additional service area in accordance with section IV.E..

3. Assumption or Transfer of Responsibilities. In the event Water Utility's entire service area and service responsibilities are assumed by or are transferred to another utility, then this contract shall become null and void at the time of the assumption or transfer; provided, however, if the transferee of the service area is a Wholesale Customer, Seattle shall provide water to the transferee according to the terms of the transferee's water supply contract with Seattle. If the transferee is not a Wholesale Customer, then Seattle shall issue the transferee a water supply contract for such area subject to terms and conditions as Seattle shall determine.

4. Annexation by Seattle. If the entire water service area of Water Utility is annexed to Seattle, then this contract shall become null and void upon Seattle's assumption of Water Utility's water system.

5. Water Utility's Right To Terminate or Reduce Purchase Commitment. Water Utility's commitment to purchase water from Seattle under this contract may be terminated or reduced subject to the terms and conditions set forth below. Water Utility shall provide Seattle at least 5 years written notice thereof, provided, however, if Seattle unilaterally amends the terms and conditions of this contract pursuant to Section II.A.3 above, Water Utility may terminate this contract at any time within 1 year thereafter by giving Seattle 1 year written notice.

   a. Automatically Permitted Reductions. Water Utility may, without restriction, upon five years written notice to Seattle, reduce its water purchases from Seattle by an amount not to exceed 10 million gallons per day of its average annual demand.

   b. Reductions Requiring Permission. Water Utility may reduce quantities of water purchased from Seattle by more than the amount identified in the preceding section or by providing less than five years advance notice of such reduction if in the judgment of the Operating Board, using the criteria listed below, it determines that such reduction is in the best interest of the Seattle Water Supply System as a whole.

   c. Criteria. The criteria to be used by the Operating Board in determining the best interest of the Seattle Water Supply System shall include but not be limited to the following:

      i. The potential for Stranded Costs and impacts on rates;

      ii. The cost of new resources;

      iii. The feasibility and benefit of reallocating to Seattle or other customers the amount of water foregone by Water Utility; and

iv. Environmental aspects of the proposed change.

The Operating Board shall act promptly and reasonably in evaluating and deciding upon Water Utility's request. The Operating Board may approve, with or without reasonable conditions, or deny Water Utility's request based on the above criteria. Approval conditions may include a requirement that Water Utility waive its rights to be served its Full Water Requirements. If the approval conditions are unacceptable to Water Utility, it may elect in writing to withdraw its request and this contract shall continue in full force and effect.

II.C. Continuity of Service within the Term of the Contract

1. Parity of Service. Seattle shall provide wholesale water to Water Utility at an equivalent level of service that it provides to Seattle's own distribution system. In the event of a general emergency or weather-related water shortage affecting the entire Seattle Water Supply System, general restrictions placed upon water deliveries to Water Utility shall be determined by the Operating Board and applied equally to Seattle's distribution system and the Wholesale Customers. In the event of localized emergency problems, Water Utility acknowledges temporary, localized service interruptions may occur for the duration of the emergency.

2. Emergency Curtailment Measures. It is recognized by both parties that emergency water use curtailment measures may have to be implemented by Seattle on a regional basis in order to meet an emergency condition or a regional water shortage. The procedures to be used in the event of a weather-related regional water shortage, or shortages caused by other factors, shall be as described in Seattle's Water Shortage Contingency Plan in effect as of the effective date of this contract, or successor contingency plans. Successor contingency plans shall be developed and implemented by Seattle in consultation with the Operating Board. Water Utility shall assist with and support all emergency curtailment measures that are implemented.

3. Other Emergencies. Seattle may temporarily interrupt or reduce deliveries of water to Water Utility if Seattle determines that such interruption or reduction is necessary or reasonable in case of system emergencies or in order to install equipment, make repairs, replacements, investigations and inspections or perform other maintenance work on the Seattle Water Supply System. Except in cases of emergency, and in order that Water Utility's operations will not be unreasonably interrupted, Seattle shall give Water Utility and the Operating Board reasonable notice of any such interruption or reduction, the reasons for and the probable duration. Seattle shall use its best efforts to minimize service interruptions to Water Utility.

4. Waiver Of Charges. If interruption or reduction in service to Water Utility requires that Water Utility draw water supply in a manner that subjects Water Utility to demand charges (as described in Exhibit III hereto), Seattle shall waive such charges during the period of such interruption or reduction.

II.D. Water Quality

1. Seattle Water Supply System. Seattle shall be responsible for water quality within the Seattle Water Supply System as set forth below. Seattle shall construct, operate and maintain water quality treatment facilities and use its best efforts to carry out its water quality responsibilities in the most cost-effective manner for the region.

2. Applicable Standards. Seattle shall at all times during the term hereof deliver water to Water Utility's system that meets or exceeds all applicable Federal, State and local regulations as the same may change from time to time.

3. System-wide Water Quality Plan. Seattle, in consultation with the Operating Board, shall develop and maintain a system-wide regional water quality plan. The plan shall describe, at a minimum, goals, objectives, procedures and the means to satisfy legal requirements and industry standards for water quality, monitoring, information exchange, best management practices, adaptive management practices, public health protection, and cross connection control. The Operating Board may form a technical subcommittee to provide input and review of such plan. Seattle shall share available water quality data and technical expertise with all Wholesale Customers.

4. Distribution Systems. Water Utility shall be responsible for compliance with all applicable federal, State and local water quality laws and regulations applicable to water in its distribution system including any water from supply sources that it may own or operate.

5. Monitoring. Water quality monitoring shall be performed by Seattle in the Seattle Water Supply System and by Water Utility in its distribution system to comply with federal, State and local water quality regulations, to verify the condition of water that is passing from one entity to the other, to enhance system operation and to document the aesthetic qualities of the water. Notwithstanding the foregoing, Water Utility may contract with Seattle for water quality monitoring services as an elective service under section IV.F. hereof.

6. Water Quality Notifications to Customers (Consumer Confidence Reports). Each party shall prepare at its sole cost periodic water quality notifications to its respective retail customers and regulatory agencies as required by law. Seattle shall provide Water Utility all water quality data in a timely manner regarding the Seattle Water Supply System that Water Utility may be legally required to report

in such notices.

7. Water Quality Best Management Practices and Adaptive Management Practices. The Operating Board shall develop best management practices ("BMPs") and adaptive management practices ("AMPs") as reasonably necessary to protect water quality within the Seattle Water Supply System. The BMPs and AMPs will include recommendations to prevent deterioration of water quality in transmission and distribution systems. The parties shall use reasonable efforts to comply with the BMPs and AMPs.

8. Flushing. Water Utility shall be solely responsible for flushing water mains within its system. Flushing allowances will be provided by Seattle only when the Operating Board determines that flushing is required to maintain or improve regional water quality.

9. New Water Sources. Prior to the introduction of any new water supply source by Water Utility which mixes with water in Seattle's Transmission Facilities, the proposed source must be evaluated using customary and reasonable water quality criteria developed in consultation with the Operating Board to ensure compatibility with Seattle water. The proposed Water Utility source must also meet all federal, state and Seattle water quality and treatment standards. Water Utility shall also provide Seattle with satisfactory results from a blending study to determine the compatibility of the source with existing sources already in the Transmission System, the appropriate method and level of treatment and the probable distribution of the new supply within the Transmission System. Water Utility shall also complete a flavor rating analysis of no more than 3.0 as tested by Seattle's Flavor Profile Panel according to the methodology described by the American Water Works Association, or its successor. Water Utility shall obtain all necessary and appropriate regulatory permits, reviews and approvals for rights to and operational use of such water supply source. The introduction of any direct or indirect potable reuse water into Seattle's Transmission Facilities shall, in addition, require Seattle's prior written consent.

   The Operating Board may form a technical subcommittee to develop water quality standards and review and advise on the water quality evaluation criteria for proposed new sources. Such criteria for new sources shall be the same for surface water and ground water.

10. Transfers Outside Seattle's Transmission System. If, with the consent of Seattle, water is transferred between Water Utility and another water utility in a manner that does not use the Seattle Water Supply System, Water Utility or the other water utility shall be responsible for meeting all applicable water quality standards related to the transfer of such water.

II.E. Conservation

The parties acknowledge that conservation prolongs the time before new supply resources are needed and thus constitutes an important ongoing tool in managing the water resources of the region. Accordingly, Water Utility hereby adopts and agrees to be bound by Seattle's 1% Water Conservation Program through the year 2010.

1. Performance Measurements. For the purposes of determining water conservation performance, Water Utility's water use shall be measured in conjunction with the use of all other participants in Seattle's 1% Water Conservation Program. The Operating Board may develop reasonable criteria to measure the participants' water conservation performance in accordance with such program.

2. Conservation Above the 1% Program. Water Utility acknowledges that water conservation beyond the 1% Water Conservation Program may be required as condition of State or federal regulations, court orders, settlements or agreements made to avoid litigation, fines or penalties, or as otherwise determined to be reasonably necessary by the Operating Board. The Operating Board may adopt reasonable additional conservation measures and targets for such purposes. Such conservation measures and targets shall apply in the same manner to all holders of Full and Partial Requirements contracts and to Seattle. Except as provided in the next subsection, Water Utility shall use reasonable efforts to abide by and perform such water conservation measures and to meet the adopted targets.

3. Water Utility's Option to be Conservation Service Provider. Water Utility may elect to provide its own water conservation program, beyond its commitment to the 1% Water Conservation Program to meet conservation targets adopted by the Operating Board or more stringent targets. Water Utility shall bear the costs thereof and shall be solely responsible for its implementation. Under this option, Water Utility shall be evaluated for meeting water conservation targets solely by its own performance.

4. Incentives and Penalties. The Operating Board may adopt penalties for shortfalls in water conservation and rewards for meeting or exceeding adopted targets. In the event Water Utility or Seattle fails to meet the adopted targets set by the Operating Board, the Operating Board may assess a penalty. Penalties may not exceed the cost of Seattle undertaking those conservation measures reasonably needed to achieve the adopted target.

5. Postponing The Need For New Water Supply Facilities. In order to avoid the necessity of developing new physical water supply facilities for as long as reasonably practicable, any water saved through conservation in either Seattle's or Water Utility's retail service areas shall be dedicated first to the municipal and industrial water supply requirements of the Seattle Water Supply System before any other use of such water may be undertaken.

SECTION III. CONDITIONS OF SERVICE

III.A. Minimum Hydraulic Gradient

1. Initial Minimum. Seattle shall maintain a minimum hydraulic gradient or head at a maximum flow rate in amounts and at locations described in Exhibit II attached hereto for each Service Connection from Seattle's Water Supply System to Water Utility's distribution system. Such gradients and locations shall be contained in Seattle's and Water Utility's future water system comprehensive plans. Seattle shall operate and maintain facilities necessary to carry out such obligation. If Seattle and the Operating Board find that a project resulting in the modification of such minimum gradient or head would benefit the Seattle Water Supply System as a whole, the minimum hydraulic gradient or head described in Exhibit II may be modified by Seattle if such modification is feasible from an economic, land use and engineering perspective taking into account the facilities required to carry out and for Water Utility to adapt to such modification. Seattle may make these modifications only once during any fifteen (15) year period provided that four (4) years advance written notice is given to Water Utility, unless a shorter notice is approved by the Operating Board.

2. Emergencies. If Seattle is prevented by emergency circumstances from providing such minimum hydraulic gradient, Seattle shall supply not less than the volume of water equivalent to the maximum 24-hour average flow rate required by Water Utility as shown on Exhibit II for each 24 hour period that the minimum hydraulic gradient is interrupted.

3. Additional Service Connections. Additional Service Connections between Water Utility's and Seattle's water systems or adjusted minimum gradients may be established from time to time by mutual agreement between Seattle and Water Utility subject to approval by the Operating Board. Exhibit II shall be appropriately amended to reflect such additions or adjustments.

III.B. Resale to Other Parties

Water Utility may sell water supplied by Seattle to water purveyors located outside of Water Utility's existing or future boundaries only upon the prior written consent of Seattle (or oral, in case of emergency). Agreements for resale of water by Water Utility listed in Exhibit I are hereby approved by Seattle subject to whatever written terms, conditions and limitations that Seattle has imposed on such resale.

III.C. Interconnection With Other Systems

1. Prohibition on Interconnection. Water Utility shall not interconnect any part of its system supplied with water from Seattle with other water systems without the prior written approval of the Operating Board, or, in case of emergency, upon oral approval by Seattle, which shall not be unreasonably withheld. Any such interconnection shall be subject to the approval of the Washington State Department of Health. Such other systems must be in compliance with all applicable local, State and federal laws and regulations including the requirement that they have a valid operating permit issued by the Washington State Department of Health.

2. Requests by Seattle to Interconnect. Seattle may request that Water Utility interconnect its water system to the water system of an adjacent Wholesale Customer. Water Utility shall comply with that request subject to the terms and conditions set forth below.

3. Requirement for Interconnection. If Water Utility does not consent to Seattle's request for interconnection, Seattle may propose the interconnection of Water Utility's water system to the adjacent Wholesale Customer to the Operating Board. Water Utility may present facts and arguments to the Operating Board in opposition to the interconnection and/or to document its costs in making the interconnection and conveying water to the adjacent Wholesale Customer. The Operating Board shall hear and consider the matter. Upon (a) a written finding by the Operating Board that the proposed interconnection with an adjacent Wholesale Customer is feasible taking into account Water Utility's capabilities, limitations and obligations, (b) a written finding by the Operating Board that such interconnection benefits the Seattle Water Supply System and (c) a written demand of the Operating Board that Water Utility carry out the interconnection, Water Utility shall be required to interconnect its facilities to the adjacent Wholesale Customer for the purpose of supplying water to that Wholesale Customer through the distribution system of Water Utility, provided that the interconnection shall be performed in a location and according to a schedule which does not unduly disrupt Water Utility's operations.

4. Payment and Indemnity. Water Utility shall be paid its actual costs of providing such interconnection and water transmission service to the adjacent Wholesale Customer, plus a reasonable amount for overhead, administration and rate of return (equal to Rate of Return on Investment) on such costs, and Water Utility shall be indemnified from any liability that may result from providing such interconnection. The Operating Board may adopt a standard methodology for calculating costs that ensures that Water Utility is fairly compensated for such service.

III.D. Development of Regional Supply and Transmission Infrastructure

Final decisions and authority to approve construction of capital infrastructure related to the Seattle Water Supply System shall rest with the Seattle City Council. Capital construction activities include all renewals, replacements, upgrades, expansion and any other capital construction activities.

III.E. Metering Equipment

Seattle shall own and maintain appropriate metering devices to measure the amount of water delivered to Water Utility pursuant to this contract. At Water Utility's request and expense, Seattle shall install and maintain equipment selected by Water Utility and approved by Seattle to transmit signals to Water Utility's recording equipment (at locations determined by Water Utility) of the amount of water delivered as measured by Seattle's meter(s).

Until such time as Seattle determines it to be economical to install metering devices to measure the amount of water delivered from the Seattle Water Supply System to Seattle's distribution system, the amount of water delivered to the Seattle distribution system shall be measured indirectly by subtracting the metered water delivered to all of Seattle's Wholesale Customers from 98% of the total amount of water exiting Seattle's sources of supply as measured by the supply meters.

SECTION IV. COST OF WATER & TRANSMISSION

Cost-based rates are a water industry accepted practice and the historical practice of Seattle and the Wholesale Customers. The rate-making principles, policies and methodologies set forth in this Section IV are intended to meet the objective of equitable and cost-based rates.

IV.A. Rate-making Principles

The following general principles and policies shall apply to the establishment of all rates and charges for water supply and related services hereunder beginning on January 1, 2002. Prior to that date, the pricing method of the 1982 Water Purveyor Contract shall be maintained.

1. No expenses attributable to electric power development maybe allocated to the cost pools identified herein unless the pools are allocated a commensurate share of revenue derived from such development.

2. Seattle shall utilize generally accepted accounting principles consistently applied as a basis for developing the financial information upon which rates and charges are based.

3. Abrupt changes in financial policies should be avoided.

4. The rate structure should encourage the efficient use of water, conservation and the timely development of new environmentally responsible water sources and should incorporate seasonal rates and other pricing approaches to encourage efficient use.

5. The rate structure should be innovative, flexible and adaptive whenever it is cost effective and beneficial in furthering the rate-making policies.

6. The rate structure should be simple to administer and easily understandable.

7. The rate structure should be fair and equitable while balancing the needs of all parties.

8. Capital costs which benefit only a new Wholesale Customer shall be allocated to that customer and not to any cost pool described in this contract.

9. Seattle's distribution system which serves its retail customers shall be treated as the equivalent of a Wholesale Customer of the Seattle Water Supply System for the purpose of charging Seattle the same wholesale rates and charges as Water Utility for water supply and transmission. Costs calculated under the costs pools described below shall apply equally to Water Utility and to Seattle's distribution system which serves its retail customers.

10. The allocation of costs associated with capital construction activities within the Seattle Water Supply System shall be the responsibility of the Operating Board. The Operating Board shall use its best efforts to determine and approve a cost allocation method for infrastructure projects prior to the capital project obtaining construction approval from the Seattle City Council. Failure of the Operating Board to determine and approve a cost allocation method shall not hinder the Seattle City Council from approving capital infrastructure projects in order to assure Seattle's ability to fulfill the requirements of this contract.

11. The purveyor balance account as that term is defined in the 1982 Water Purveyor Contract between Seattle and Water Utility shall be credited to the Wholesale Customers in a ratable and equitable manner commencing with the application of rate making policies and framework.

IV.B. Ratemaking Framework

Subject to the foregoing principles, wholesale rates and charges for the services described in this contract shall be developed by Seattle based on the following framework:

1. Water Supply and Transmission Service. The costs of water supply and transmission of water shall be accounted for separately in the water supply and transmission cost pools described below. The price for each service shall be recovered through separate rates for each service. All direct costs incurred in providing water supply and transmission services shall be allocated to the appropriate cost pool and recovered through the rates for each service. In addition, certain indirect costs consisting of a reasonable overhead and administration cost shall be allocated to the appropriate cost pool and recovered through rates for each service.

2. Water Supply - Basic and Elective Services. The costs of supplying water falls into two categories – basic and elective services. Basic service costs includes direct and indirect costs attributable to the delivery of water to the Wholesale Customers and to Seattle's retail service area pursuant to the foregoing principles. Elective services are optional services, such as water quality laboratory services and specific engineering support that Seattle makes available.

3. Conservation. Costs incurred by Seattle for regional conservation shall be allocated to the Wholesale Customers through rates or FCs as determined by the Operating Board in the New Supply Cost Pool.

IV.C. Water Supply Pricing – Basic Services

1. Two Water Supply Cost Pools. For the purposes of determining costs of water supply, there shall be two cost pools: An existing supply cost pool ("Existing Supply Cost Pool") and a new supply cost pool (" New Supply Cost Pool").

    a. Existing Supply Cost Pool. The Existing Supply Cost Pool shall be accounted for as follows:

        i. A basic services rate for water supply shall be levied to recover the full costs of operating, maintaining and replacing the Existing Supply Resources incurred by Seattle.

        ii. All conservation programs undertaken by Seattle prior to the effective date of this contract with the exception of the costs of the 1% Program from January 1, 2002 through 2010, shall be considered an Existing Supply Resource cost.

        iii. Renewal and replacement of Existing Supply Resources will be an

Existing Supply Resource cost.

b. New Supply Cost Pool. The New Supply Cost Pool shall be accounted for as follows:

i. Water supply resources developed in the future ("New Supply Resources") that expand the capacity of the Seattle Water Supply System, including the costs of the 1% conservation program from January 1, 2002 through 2010, and a portion of the cost of the Tacoma Second Supply Project (as allocated from the Tacoma Second Supply Project Cost Pool as set forth in Section IV.E. 7), shall be included in the New Supply Cost Pool. If any portion of a New Supply Resource project enhances reliability of Existing Supply Resources, the costs thereof may be allocated to the Existing Supply Cost Pool if the Operating Board and Seattle both agree.

ii. The cost of New Supply Resources plus Rate of Return on Investment may be recovered through FCs charged annually to the holders of Full Requirements Contracts, Partial Requirements Contracts and Seattle or through new supply rates based on the costs of such facilities. Such costs which are not recovered on an annual basis through FCs shall be recovered through new supply rates. The new supply rate shall be applied to all holders of Full Requirements Contracts and Partial Requirements Contracts and Seattle.

iii. The Operating Board shall determine the portion of the New Supply Resource costs that shall be recovered through FCs or through new supply rates. The FCs and new supply rates may be scalable to create an incentive for developers to build housing or commercial units with efficient water usage levels. Water Utility, as well as each other Wholesale Customer and Seattle in setting rates for retail customers shall be free to choose the method of incorporating FCs or new supply rates into their own retail rates and charges.

iv. Holders of Full and Partial Requirements Contracts who have not purchased water from Seattle under the 1982 Water Purveyor Contract between Seattle and the Wholesale Customer shall be assessed the full marginal costs of the operation, including Rate of Return on Investment, of the New Supply Facilities. This assessment may be satisfied by either paying FCs and new supply rates or arranging a special water supply rate in lieu of paying FCs.

c. Emergency Surcharge. In the event of a drought, catastrophe or other extraordinary condition that requires emergency expenditures to maintain a sufficient water supply, Seattle may impose an emergency surcharge on all holders of Full and Partial Requirements Contracts in order to pay for such expenditures and/or maintain financial stability of the Seattle Water Supply System. Any such emergency surcharge shall be presented to the Operating Board prior to adoption by Seattle. Seattle shall consider the comments of the Operating Board but shall nevertheless have the full authority to adopt the charge.

IV.D. Transmission Pricing - Basic Services

2. Two Transmission Costs Pools. For purposes of determining the cost of the transmission of water to the Wholesale Customers there shall be two transmission cost pools consisting of an existing transmission cost pool ("Existing Transmission Cost Pool") and a new transmission cost pool ("New Transmission Cost Pool").

a. Existing Transmission Cost Pool. Costs to be allocated to the Existing Transmission Cost Pool shall consist of the following: operation, maintenance, repairs and replacements to the Seattle Transmission Facilities.

i. The Seattle Transmission Facilities are owned and operated as a regional network by Seattle to convey water to Wholesale Customers and to Seattle's distribution system. Therefore, the price of transmission for Seattle water transmitted within the Seattle Transmission Facilities shall be calculated on the same basis to holders of Full Requirements Contracts and Partial Requirements Contracts and to Seattle.

ii. Costs incurred for purposes of transmission reliability may be included in the Existing Transmission Cost Pool subject to the approval of the Operating Board and Seattle.

b. New Transmission Cost Pool. The cost of new transmission facilities shall be included in the New Transmission Cost Pool. The renewal, replacement or modification of existing transmission facilities which create an expansion of transmission capacity may be allocated to the New Transmission Cost Pool. The Operating Board shall decide what portion of costs of renewal, replacement or modification of transmission facilities may be treated as new transmission costs and the portion of the cost of a transmission project that extends the geographic extent of the transmission system that shall be recovered through the New Transmission Cost Pool or from a new Wholesale Customer. Except for costs allocated specifically

to a specific Wholesale Customer, New Transmission Cost Pool costs shall be recovered through new transmission rates or FCs. The new transmission rate shall be applied in a uniform manner to all holders of Full Requirements Contracts and Partial Requirements Contracts and Seattle.

2. Demand Charge

a. Seattle may adopt a demand charge in accordance with the methodology described in Exhibit III. The demand charge rate (i.e., dollars per 1000 gallons of deficient storage) shall be based on the equivalent cost of providing the deficient storage.

b. The proceeds of the demand charge will be treated in rate setting as a credit to the New Transmission Cost Pool.

c. Seattle shall suspend the demand charge rate in the event of emergencies and unforeseen conditions.

3. Cost of New or Changed Service Connection. If Seattle changes the location of the Service Connection to Water Utility for Seattle's benefit, then Seattle shall pay the cost and it shall be included in the appropriate transmission cost pool. If Water Utility requests the change in location, then Water Utility shall pay the cost of the new connection.

IV.E. Allocation of Costs and Revenues into Cost Pools

1. Accounting. Seattle shall maintain a cost accounting system consistent with the provisions of this contract and generally accepted accounting principles consistently applied in developing the financial information for determining the costs of construction, replacement, maintenance and operation of the facilities in each cost pool.

a. Asset Accounts. An asset account shall be maintained for each facility and within that account Seattle shall record the original cost of that facility plus betterments and less retirements.

b. Depreciation. Facilities shall be depreciated according to Standard Water System Asset Lives and a record of life-to-date depreciation shall be maintained for each facility. No depreciation shall be recorded in the first calendar year of operation of a facility. A full year's depreciation shall be recorded in every subsequent year.

c. Net Book Value. The net book value of any facility shall be its original cost plus betterments and less retirements as recorded in its

facility asset account, less life-to-date depreciation.

2. Infrastructure Costs. Each cost pool shall include the infrastructure costs for its respective facilities, calculated on a utility, cash or other basis depending upon the facility and the cost pool as set forth below.

   a. Utility Basis. The utility basis shall be used to calculate the infrastructure costs for all Existing Supply Facilities and Existing Transmission Facilities, as well as their replacements and betterments. The utility basis may also be used for new supply facilities and new transmission facilities in Seattle's discretion. Under the utility basis, the infrastructure cost for a facility in any year shall be the sum of (i) the annual depreciation expense recorded for that facility and (ii) the product of the net book value of that facility and the Rate Of Return On Investment.

   At Seattle's discretion, interest costs may be considered current infrastructure costs during the construction of a facility. However, any such interest costs must be considered contributions in aid of construction, and not included in the Net Book Value of the facility for purposes of calculating Utility Basis costs in future years.

   b. Cash Basis. The cash basis may be used in Seattle's discretion for new supply facilities and new transmission facilities, or a portion thereof. Under the cash basis, the infrastructure cost for a facility in any year shall be the actual cash expenditure made by Seattle in that year for either the payment of construction costs or actual principal and interest costs on debt issued to finance its construction. In the event that the depreciation lifetime of the facility is less than the term of the debt issued to finance all or a portion of the facility, debt maturities will be selected such that the construction cost of the facility will be fully amortized at the end of its depreciation lifetime.

   c. Other Basis. Seattle, with the approval of the Operating Board may determine one or more other bases on which to calculate infrastructure costs and may apply these bases to facilities in the New Supply and New Transmission Cost Pools.

3. Operations Costs. The costs of operating the assets assigned to a cost pool shall be included in the cost pool. The annual operations costs of a cost pool shall be the labor, materials, equipment and other direct costs required for the operation and maintenance of the facilities in that cost pool, together with any net profit or expense from the disposition of facilities in that pool. Operations costs shall include the cost of general and administrative overhead applied in a manner consistent with its application to facilities construction projects.

a. Existing Supply Operations Costs. The parties agree that an efficient way of handling operations costs for the Existing Supply Cost Pool shall be as follows: The Operations Cost base in the Existing Supply Cost Pool for the year 2001 shall be $17,780,262.00. In each succeeding year, the amount from the previous year shall be adjusted by the percentage increase in cost in the supply cost centers identified in Exhibit IX, except that the increase in treatment operations costs caused by the first full year start-up of the Cedar Treatment Plant at Lake Youngs in or around 2005 shall not be included in the percentage adjustment. Any increase in Cedar Treatment operations costs for the first full year of operation of the plant shall instead be added directly to the Operations Cost total from the prior year as adjusted by the index. For each year after the first full year of operation, increases in Cedar Treatment operations costs shall be included in the adjustment index.

b. Existing Transmission Operations Costs. The parties agree that an efficient way of handling operations costs for the Existing Transmission Cost Pool shall be as follows: the Operations Costs base in the Existing Transmission Cost Pool for the year 2001 shall be $4,531,931.00. In each succeeding year, the amount of these costs from the previous year shall be adjusted by the percentage increase in cost in the transmission cost center identified in Exhibit IX.

c. New Supply Operations Costs. The operation costs of the 1% Program after January 1, 2002 and the Second Supply Project, together with the costs of operating facilities assigned to the New Supply Cost Pool and any other costs approved by the Operating Board, shall be assigned to the New Supply Cost Pool. The base for operations costs for 2001 for the 1% Program shall be $1,326,712.00. This amount shall be adjusted in each succeeding year by the percentage increase in cost in the "1% Conservation" cost center as identified in Exhibit IX.

d. New Transmission Operations Costs. The actual costs of operating facilities assigned to the New Transmission Cost Pool and any other costs approved by the Operating Board, shall be assigned to the New Transmission Cost Pool.

4. Disposition Costs. The costs of disposing of assets within a cost pool shall be included in the cost pool. Net disposition costs shall be calculated as follows:

a. Disposition Under the Utility Basis. The net book value of the facility, less any sales, salvage, or other revenues derived from the disposition of that facility.

b. Disposition Under the Cash Basis. The value of principal of unpaid maturities of debt used to finance the construction cost of the facility, less

any sales, salvage or other revenues derived from the disposition of that facility.

c. Disposition Under Other Basis. Disposition of any facilities whose infrastructure costs are calculated on another basis under section IVE.2.c. above shall be determined by the parties as part of the definition of such other basis.

5. Creation of Additional Cost Pools. Seattle, in its discretion, may create additional cost pools to provide equity and flexibility in payment arrangements and the allocation of costs as the Seattle Water Supply System expands to include new infrastructure and new customers. The costs in an additional cost pool, or a portion thereof, may be added to an existing cost pool subject to the consent of the Operating Board if the costs to be allocated satisfy the criteria for accounting in the existing cost pool.

6. Tacoma Second Supply Project Cost Pool. The Tacoma Second Supply Project Cost Pool shall be an Additional Cost Pool. The Tacoma Second Supply Project Cost Pool shall contain the infrastructure and operations costs associated with the Tacoma Second Supply Project. The New Supply Cost Pool shall be allocated that portion of the Tacoma Second Supply Project costs commensurate with the proportion of the benefits of the project received by Wholesale Customers with Full and Partial Requirements Contracts.

7. Facilities Charge Revenues. Supply FC revenues shall offset infrastructure costs in the New Supply Cost Pool allocated to the Supply FC by the Operating Board. Surpluses and deficits in actual Supply FC revenues over cost allocated to the Supply FC shall be carried forward and earn simple interest at Seattle's Average Cost of Debt. Any current-year deficit (including any surplus balance available from previous years) shall be paid by rates for the New Supply Cost Pool. New Supply Cost Pool rates shall be discounted by surplus Supply FC revenues until any deficit Supply FC balance is repaid, except the amount of this discount shall not exceed, without the agreement of the Operating Board, twice the maximum annual deficit paid by the rate for the New Supply Cost Pool in any one year. In the event that Supply FC surplus balances exceed the Net Book Value of assets whose costs are allocated to the Supply FC, the difference between the Supply FC balance and the Net Book Value of these assets shall be used to discount the rate for the New Supply Cost Pool (and the Supply FC surplus balance shall reduced by the amount of this discount). The use and accounting for Transmission FCs shall be done in a like manner to Supply FCs. Seattle and Water Utility agree that FC revenues are the sole property of Seattle.

8. Allocation of Cost Pools by Customer Class. The costs in cost pools shall be allocated within the pools as follows:

a. Allocation of Existing Supply Cost Pool. The total cost of the Existing Supply Cost Pool shall be allocated to two customer classes as follows:

i. Block Purchase Customer Class. The portion of costs in the Existing Supply Cost Pool allocated to holders of Block Purchase Contracts shall be determined pursuant to those contracts.

ii. Full and Partial Requirements Customer Class. The holders of Full Requirements Contracts and Partial Requirements Contracts and Seattle shall be allocated the remaining costs in the Existing Supply Cost Pool.

b. Allocation of New Supply Cost Pool. The costs allocated to the New Supply Cost Pool shall be:

i. Block Purchase Customer Class. The holders of Block Purchase Contracts shall be allocated no costs from the New Supply Cost Pool.

ii Full and Partial Requirements Customer Class. The holders of Full Requirements Contracts and Partial Requirements Contracts and Seattle shall be allocated all costs in the New Supply Cost Pool.

c. Allocation of Existing Transmission Cost Pool. The costs of the Existing Transmission Cost Pool shall be allocated as follows:

i. Block Purchase Customer Class. The proportion of costs in the Existing Transmission Cost Pool allocated to holders of Block Purchase Contracts shall be determined pursuant to those contracts.

ii Full and Partial Requirements Customer Class. The holders of Full Requirements Contracts and Partial Requirements Contracts and Seattle shall be allocated the remaining costs in the Existing Transmission Cost Pool.

d. Allocation of New Transmission Cost Pool.

i. Block Purchase Customer Class. The holders of Block Purchase Contracts shall be allocated no costs from the New Transmission Cost Pool.

ii Full and Partial Requirements Customer Class. The holders of Full Requirements Contracts and Partial Requirements Contracts and Seattle shall be allocated all costs in the New Supply Cost Pool.

e. Allocation of Additional Cost Pools. The costs in any additional cost pool created by Seattle pursuant to the terms of this contract, or portion thereof, may be allocated to an existing cost pool identified above with the consent of the Operating Board.

9. Facilities Charges. If Seattle establishes FCs as authorized herein, then such charges shall be calculated as follows:

a. ERU Definition. Seattle shall develop a definition of an Equivalent Residential Unit ("ERU") based on meter size as set forth in Exhibit VI, number of residential units, water use, or other basis which shall be consistent with accepted industry standards. The Operating Board shall have the right to review and comment on the definition and Seattle shall consider the Operating Board's comments.

b. Record-Keeping. Water Utility shall provide Seattle with an annual accounting of its water connections by January 31st of each year, which shall be accurate as of December 31st of the preceding year. Water Utility shall report the size of the meter and other pertinent data such as the number of residential units or square footage served or water use. Seattle shall provide Water Utility with an annual accounting of its retail service connections on the same basis. Upon reasonable notice, Water Utility shall make its billing and connection records available to Seattle for inspection and copying during normal business hours, and Seattle's billing and connection records shall be made available to Water Utility on the same basis.

c. Annual Calculation of ERUs. Until such time as Seattle develops another basis, the calculation of ERUs in any year shall be the greater of:

i. Method One: The annual growth in the number of meters installed by Water Utility during the year taking into account the size of each meter, or

ii Method Two: The annual growth in total water consumption of Water Utility divided by the annual average use of a single-family residential household of Seattle and all of its Wholesale Customers. The average annual growth shall be measured by a rolling three-year average of the most recent three years. Water use resulting from catastrophes, e.g. large fire, shall be excluded for purposes of this calculation.

d. Imposition of Facilities Charges. Seattle shall collect and Water Utility shall pay FCs based on the number of ERU's added during the previous month determined by the number of meters installed. Seattle shall pay FCs

into the accounts of the Seattle Water Supply System on the same basis. Seattle shall prepare and distribute a report no later than March 31st of each year showing the ERU count of Seattle and each Wholesale Customer on such basis for the previous year and each year since the effective date of this contract.

Beginning in the June billing for each year, a truing charge for any underpayment of ERUs taking into account method two described above shall be added to Water Utility's bill in six equal installments.

e. Emergency Situations. Water Utility and Seattle agree that emergency situations may arise that require a Partial Requirements Customer to temporarily demand water in excess of its long-term annual demand. In the event of an emergency, Seattle may suspend the use of Method Two identified above in the calculation of the ERU count for any such Partial Requirements Customer for a period not longer than two consecutive years.

10. Rate Setting. The structure of FCs water rates for water charged to the holders of Full Requirements Contracts and Partial Requirements Contracts shall be determined by Seattle, in its sole discretion, except that the price may not, without the consent of Water Utility, be set to collect more than the costs forecast under Section IV hereof and Rate of Return on Investment. FCs shall be calculated as set forth on page 1 of Exhibit VI.

11. Cost Audit. At the end of each fiscal year, Seattle shall provide a statement of actual costs allocated to each cost pool and other costs and revenues received, which statement may be audited by an external auditor selected by the Operating Board. In addition, Water Utility may have the statement audited by an external auditor of its choice, solely at Water Utility's expense.

12. Transition. Notwithstanding the foregoing, Water Utility and Seattle agree that it is appropriate to adjust certain terms of this contract for the period commencing with the date of this contract to December 31, 2011 ("Transition Period").

a. Waiver of Supply FCs. Seattle shall not levy Supply FCs on Water Utility as long as the amount of water it purchases from Seattle does not exceed its old water allowance under the 1982 Water Purveyor Contract . This waiver shall continue until the earlier of (i) January 1, 2012; or, (ii) the year in which the average annual water demand of Water Utility exceeds its old water allowance. This waiver, however, shall not relieve Water Utility from the record-keeping requirement of subsection 9 above.

b. Transition Growth Surcharge. A transition growth surcharge of $0.60 per CCF shall be applied to the rates of Water Utility for delivery of water in excess of the old water allowance of the 1982 Water Purveyor Contract for

the Transition Period. The revenue from this surcharge shall be used to discount the base rates of the holders of Full and Partial Requirements Contracts by not more than $0.16 per CCF. In the event that the revenues generated by the surcharge exceed those required to fund the discount, Seattle may keep the difference.

IV.F. Elective Services

1. Water Supply Services. Seattle may provide certain elective services (e.g. conservation, engineering) to Water Utility upon request by Water Utility. Such services shall be negotiated and contracted for separately between Water Utility and Seattle.

2. Transmission Wheeling. In consultation with the Operating Board, excess transmission capacity may be made available by Seattle for a fee for purposes of wheeling water between points within the Seattle Water Supply System to Water Utility or to others.

3. Water Quality. So long as Seattle owns and operates a water quality lab, Water Utility may use the services of that lab based on its published rates.

IV.G. Rate Adjustment

1. Rate Adjustment. Upon 120-days notice of its intent to do so, Seattle may adjust water service rates and FCs to Water Utility subject to the terms of this contract. Rate adjustments will be effected only within five years of the completion of a cost of service study to be conducted by Seattle which shall include an analysis of the allocation of operation, maintenance and capital costs between cost pools. Such study shall be prepared in accordance with accepted industry standards. In addition, Seattle shall review the Operating Board's comments and recommendations on the rate proposal and provide a written explanation of any recommendations that are not accepted.

2. Rate Consultant. An independent rate consultant shall be selected by Seattle in consultation with the Operating Board. Detailed information and progress reports from the consultant will be made to Water Utility during the course of the study upon drafting of each major study section directly affecting Water Utility and other Wholesale Customers. A final consultant report shall be made available to Water Utility not less than 30 days before Seattle formally transmits any resulting rate adjustment proposal to the Operating Board.

IV.H. Retail Rate-Setting

Each party to this contract shall have sole authority for establishing retail rates, connection charges and other fees and charges within its respective jurisdiction.

IV.I. Truing Actual Costs and Actual Revenues

A mechanism for reconciling revenue targets for the various cost pools and the actual revenues received during each year shall be implemented by Seattle as follows:

1. For each previously identified class of customers in each cost pool, Seattle shall maintain a running balance of the excess or deficit of actual rate revenues collected less actual expenses incurred. Each balance shall earn simple interest at the rate of Seattle's Average Cost of Debt. At the end of each year, each balance shall be adjusted to reflect the operating results of that year. The statement of these balances shall be reviewed and approved by an external auditor.

2. FC balances shall be carried forward as set forth in Section IV.E.7.

3. Each wholesale rate study shall adjust rates to eliminate the cost pool balances. ERU fees shall be based on the costs of increments in supply and transmission capacity, and shall not be adjusted to reflect surpluses or deficits in FC revenues.

SECTION V. OPERATING BOARD

1. Purpose. The purpose of the Operating Board is to provide certain limited authority to a board of representatives elected by the Wholesale Customers over policy and operational matters as they affect the Seattle Water Supply System.

2. Structure and Authority. The Operating Board shall have the powers and authority as set forth herein. Exhibits IV and V describe the structure and authority of the Operating Board. The matrix provided in Exhibit V is for illustrative purposes only. In the event of a conflict between provisions of this contract which grant specific powers to the Operating Board and Exhibits IV and V, such grants of specific powers shall control. The Operating Board shall not be formed until such time as there are six (6) signatories to Full or Partial Requirements contracts, or January 1, 2002, whichever comes first.

3. Review. The structure and authority of the Operating Board may be reviewed as of January 1, 2007 and every five years thereafter to determine its effectiveness in addressing regional and contractual issues. The review may address the composition of the Board and its powers and authority as set forth in Exhibits IV and V, provided that notwithstanding any other term or provision of this contract, Seattle shall not have the power to disband the Operating Board nor take away or diminish the powers vested in the Operating Board as set forth in Sections II, III and IV of this contract. Either party may initiate the review. The reviewing party shall provide the other with its comments and proposals. The parties agree to consider the other party's comments and proposals and to respond in writing stating its reasons for rejecting any proposals and the reasons for its own counter-

proposal. After consideration of all comments and proposals at each five year interval, Seattle may make changes in the structure and authority of the Operating Board that are not inconsistent with the provisions of this subsection.

SECTION VI. PLANNING

VI.A. Reporting of Planning Data

1. By no later than April 1 of each year, Water Utility shall report to Seattle and the Operating Board as follows:

   a. Its annual and peak day total system demand for each year, during the term of this contract, as of December 31st of the previous year.

   b. Its forecast of Full Water Requirements for the year including estimates of annual water consumption and maximum 24-peak demand for the ensuing calendar year, and for the fifth, tenth, and fifteenth year in the future. Such forecasts shall reflect the best judgment of Water Utility.

2. Water Utility shall report other data relating to water supply and demand as may be reasonably requested by Seattle for water planning purposes.

3. Records relevant to water supply and consumption within the possession of Seattle or Water Utility shall be provided to the other upon reasonable request.

VI.B. Submittal of Water Utility Comprehensive Plans

Water Utility shall provide a copy of its water comprehensive plan, including any amendments, to Seattle for inclusion in Seattle's Water System Comprehensive Plan.

VI.C. Seattle as Water Planning Agency

Seattle shall be the lead agency and primary planning authority for the purposes of fulfilling its obligations to provide for the Full Water Requirements of Water Utility. Seattle, in consultation with the Operating Board, shall examine and investigate water supplies suitable and adequate to meet the present and reasonable future needs of Seattle and the Wholesale Customers. Seattle shall prepare and adopt a plan for acquiring such water supplies in a timely fashion. The plan shall provide for the lands, waters, water rights and easements necessary therefor, and facilities for retaining, storing and delivering such waters, including dams, reservoirs, aqueducts and pipelines to convey same throughout the Seattle Water Supply System. In preparing or adopting the plan, Seattle shall consider as possible alternatives or additional water supply sources the acquisition of water from sources controlled and/or developed by individual water utilities, legally constituted groups of water utilities and utilities which are not presently

supplied by the Seattle Water Supply System. Seattle has final responsibility for the plan and for fulfilling the obligations of this contract. However, the Operating Board may participate in developing the plan by proposing goals and objectives for the Seattle Water Supply System, by making any additional suggestions and by acting in a review capacity.

VI.D. Comprehensive Capital Facilities Plan

Before ordering any major improvements to fulfill the requirements of this contract, Seattle shall adopt and maintain a comprehensive capital facilities plan for the Seattle Water Supply System, which provide for such improvements. When such plan is updated or amended, it shall be reviewed by the Operating Board prior to submission to the Seattle City Council. The Operating Board shall respond within 60 days of receipt of the plan, or its approval shall be presumed to be given. The response submitted by the Operating Board regarding facilities substantially affecting Water Utility and other Wholesale Customers shall be seriously considered by Seattle. Seattle shall reply to the Operating Board within 90 days with its comments. The Operating Board and Seattle shall use their best efforts to arrive at a mutually acceptable plan.

VI.E. Emergency Planning

An emergency plan shall be prepared and maintained by Seattle as part of its Water System Comprehensive Plan to provide for water supply in the event of drought or disaster. Such plan shall be prepared pursuant to the procedure outlined in Section V1.D. Water Utility shall use reasonable efforts to comply with the provisions of such plan, or alternatively, Water Utility may adopt its own emergency plan if it believes it is prudent to do so.

SECTION VII. PAYMENT

VII.A. Collection of Money Due City

Seattle shall bill Water Utility on a monthly basis for all charges due under this contract. Water Utility shall pay such charges within 60 days of the billing date. Any amounts disputed by Water Utility shall be paid under protest within the 60-day time period.

VII.B. Penalties for Late Payment

All late payments, and any refund of an amount in dispute that was paid under protest, shall accrue interest at 1% per month.

VII.C. Disputes

Water Utility may dispute the accuracy of any portion of charges billed by Seattle by taking the following actions within the 60-day payment period by notifying Seattle in writing of the specific nature of the dispute and paying the undisputed portion of the charges.

Seattle shall consider and decide any billing dispute in a reasonable and timely manner. Any billing disputes that remain after such consideration shall be reconciled pursuant to the dispute resolution procedures of this contract.

SECTION VIII. CONTRACT AMENDMENTS

Seattle shall notify Water Utility and all other holders of Full Requirements Contracts of any amendments to such contracts within 30 days of the execution of such amendment. Water Utility shall then have 90 days to decide whether to include such amendment in this contract by giving written notice to Seattle of its election to do so. Upon the issuance of such notice, Seattle shall issue the amendment to Water Utility and the amendment shall be final and binding upon both parties upon mutual execution.

SECTION IX. DISPUTE RESOLUTION

Dispute resolution shall proceed in four steps as follows:

IX.A. Operating Board Review

Any dispute regarding the terms of this contract shall first be referred to the Operating Board for consideration and recommendation. Each party shall submit a written statement regarding the dispute to the Operating Board.

1. If the dispute cannot be resolved in discussions with the Operating Board, then the Operating Board shall provide written recommendations to each party within 60 days of the above submittal setting forth its interpretation of the applicable facts and law.

2. If either party rejects the written recommendation of the Operating Board, that party shall within 10 days, notify the other party in writing of its reasons.

IX.B. Seattle City Council Review

The written statements of the parties, the recommendations of the Operating Board and the written reasons for either party's rejection of those recommendations shall then be submitted to the Seattle City Council for review.

1. Within 60 days of the submittal of the written materials, the Seattle City Council shall provide written recommendations to resolve the dispute.

2. If either party rejects the written recommendation of the Seattle City Council, that party shall within 10 days notify the other party in writing its reasons.

IX.C. Non-binding Mediation

Within 10 days of receiving the written rejection of the Seattle City Council's recommendations by one or both parties, each party shall designate in writing not more than 5 candidates it proposes to act as a non-binding mediator.

1. If the parties cannot agree on one of the mediators from the combined list within 5 days, the Operating Board shall within an additional 5 days select one of the mediators from either list to serve as mediator.

2. Upon selection of the mediator, the parties shall use reasonable efforts to resolve the dispute within 30 days with the assistance of the mediator.

IX.D. Resort to Litigation

If mediation fails to resolve the dispute within 30 days of selection of the mediator, the parties may thereafter seek redress in court subject to Section X.H. below.

SECTION X. MISCELLANEOUS

X.A. Notification

Whenever written notice is required by this contract, that notice shall be given to the following representatives by actual delivery or by the United States mail (registered or certified with return receipt requested,) addressed to the respective party at the following addresses or a different address hereafter designated in writing by the party):

SEATTLE:	WATER UTILITY:
Director	Manager
Seattle Public Utilities	Soos Creek Water and Sewer District
Dexter Horton Building, 10th Floor	P.O. Box 58039
710 Second Avenue	Renton, WA
Seattle, WA 98104	98058-1039

The date of giving such notice shall be deemed to be the postmarked date of mailing.

X.B. Severability

The purpose of this contract is to provide for long-term water supply planning and certainty for both Seattle and Water Utility through adoption of orderly plans calling for the expenditure of vast sums of money for regional water supply and transmission facilities. It is the intent of the parties that if any provision of this contract or its application is held by a court of competent jurisdiction to be illegal, invalid, or void, the validity of the remaining provisions of this contract or its application to other entities, or circumstances shall not be affected. The remaining provisions shall continue in full force and effect, and the rights and obligations of the parties shall be construed and enforced as if the contract did not contain the particular invalid provision; provided, however, if the invalid provision or its application is found by a court of competent jurisdiction to be substantive and to render performance of the remaining provisions unworkable and non-feasible, is found to seriously affect the consideration and is inseparably connected to the remainder of the contract, the entire contract shall be null and void.

X.C. Consent

Whenever it is provided in this contract that the prior written consent or approval of either party is required as a condition precedent to any actions, in each such instance said consent or approval shall not be unreasonably withheld, and in each such instance where prior consent is sought, failure of the party to respond in writing within 90 days of the request shall be deemed as that party's consent or approval unless expressly stated herein. This provision does not apply to requests for amendments of this contract.

X.D. Emergency Situations

Nothing in this contract shall be deemed to preclude either party from taking necessary action to maintain or restore water supply in emergency situations and such action shall not be deemed a violation of this contract.

X.E. No Joint Venture - Individual Liability

This is not an agreement of joint venture or partnership, and no provision of this contract shall be construed so as to make Water Utility individually or collectively a partner or joint venturer with any other Wholesale Customer or with Seattle. Neither party is an agent of the other. Neither Seattle nor Water Utility shall be liable for the acts of the other in any representative capacity whatsoever.

X.F. Complete Agreement

This contract represents the entire agreement between the parties hereto concerning the subject matter hereof. This contract may not be amended except as provided herein.

X.G. Relinquishment of Prior Contract

Upon entering into this contract, Water Utility relinquishes its then existing 1982 Water Purveyor Contract with Seattle and the terms and conditions of that 1982 Water Purveyor Contract shall have no further force and effect.

X.H. Venue, Jurisdiction and Specific Performance

In the event of litigation between the parties, venue and jurisdiction shall lie with the King County Superior Court of the State of Washington. The parties shall be entitled to specific performance of the terms hereof.

X.I. Default

In the event of default of any provision of the contract, the non-defaulting party shall issue written notice to the other party setting forth the nature of the default. If the default is for a monetary payment due hereunder, the defaulting party shall have thirty (30) days to cure the default. In the event of other defaults, the non-defaulting party shall use its best efforts to cure the default within ninety (90) days. If such default cannot be reasonably cured within such ninety (90) day period, the non-defaulting party shall, upon written request prior to the expiration of the ninety (90) day period be granted an additional sixty (60) days to cure the default.

X.J. Force Majeur

The time periods for Seattle's performance under any provisions of this contract shall be extended for a reasonable period of time during which Seattle's performance is prevented, in good faith, due to fire, flood, earthquake, lockouts, strikes, embargoes, acts of God, war and civil disobedience. If this provision is invoked, Seattle agrees to immediately take all reasonable steps to alleviate, cure, minimize or avoid the cause preventing such performance, at its sole expense.

X.K. Successors

This contract shall inure to the benefit of and be binding upon the parties and their successors and assigns.

X.L. Exhibits

Exhibits I through IX are attached hereto and are hereby incorporated by reference as if set forth in full herein.

SIGNATURE PAGE

IN WITNESS WHEREOF, the parties hereby execute this contract.

WATER UTILITY

BY: _____

TITLE: District Mgr

DATE 5/23/01

AUTHORIZING LEGISLATION: ORDINANCE/RESOLUTION 2177W

THE CITY OF SEATTLE

BY: _____
Director, Seattle Public Utilities

DATE: June 14, 2001

AUTHORIZING LEGISLATION: ORDINANCE 120362

LIST OF EXHIBITS

I. Contracts, etc.

II. Minimum Hydraulic Gradient of Water Supplied

III. Demand Charge Methodology

IV. Operating Board Structure

V. Contract Authority Matrix

VI. Calculation of ERUs as a Part of Facilities Charges

VII. List of Supply Facilities

VIII. List of Transmission Facilities

IX. Cost Centers used for Operations Cost Indexes

EXHIBIT I

List of documents, commitments, adjustments, reductions, agreements, and/or written approvals by Seattle regarding the supply, purchase and/or resale of water according to Sections I.B. and II.B. of this Contract:

1. Intertie Agreement:

   a. Agreement between Soos Creek Water and Sewer District and King County Water District No. 111 for the ownership, maintenance and operation of an emergency intertie. The Agreement is dated June 8th, 1995 and was approved by the Director of the Seattle Water Department.

2. Independent Well Sources:

   Soos Creek Water and Sewer District does not own or operate any well sources.

3. Water Supply Contracts To Other Water Utilities:

Soos Creek Water and Sewer District does not have water supply contracts with other utilities.

EXHIBIT II

CUSTOMARY POINTS OF DELIVERY, MINIMUM HYDRAULIC GRADIENTS, AND MAXIMUM FLOW RATES OF WATER SUPPLIED

SECTION XI. METER SERVICE					
LOCATION	STATION NUMBER (1)	PIPELINE SEGMENT NUMBER(1)	SIZE OF METER (IN.)	MINIMUM HYDRAULIC GRADIENT FOR PLANNING PURPOSES AT STATION UPSTREAM OF METER (FEET NAVD-88 Datum)	MAXIMUM FLOW RATE UP TO WHICH THE MINIMUM HYDRAULIC GRADIENT APPLIES (gpm)
148th Ave SE and SE 192nd Street	27	11	10	620	3,000
SE 164TH Street and 132nd Ave SE	28	13	10	475	1,250
SE 160TH Street and 114th Ave SE	29	13	8	475	1,250
147th Ave SE and SE Petrovitski Road	172	11	6	615	1,500
				TOTAL:	7,000

Notes:

(1) Station and Pipeline Segment Numbers pertain to the demand metering program.

EXHIBIT III

DEMAND CHARGE METHODOLOGY

The policy of Seattle Public Utilities is to supply water to its Wholesale Customers at, as near as is practical, the twenty-four hour average flow rate, during the peak demand season (June through August). To comply, the Wholesale Customers have to construct adequate storage volume within their individual systems, or sometimes collectively, so as to avoid excessive peak flow withdrawals from the Seattle transmission pipelines. The Demand Metering Program is established to set performance standards, and to monitor the Wholesale Customer's compliance with this policy. If an individual Water Utility exceeds the prescribed threshold, a "demand charge" is calculated.

Except where other agreements supersede the provisions of this contract, each Water Utility shall be subject to a demand charge based on effective deficient storage, as determined by the peak instantaneous flow rate, and the equivalent financing costs to provide storage. The demand charge rate (i.e., dollars per 1000 gallons of deficient storage) shall be based on the equivalent cost of providing the deficient storage. This rate will be determined as part of each rate study.

The Demand Metering Program is charged with implementation of the "demand charge" methodology. It shall be the responsibility of Seattle, in consultation with the Operating Board, to determine the appropriate means to achieve the program's purpose. The options that may be considered range from temporary suspension on a year by year basis to full activation, as described below.

There shall be no requirement for Seattle to install demand-metering equipment at each Service Connection in order to assess a demand charge. Seattle may choose to apply "demand metering" selectively to certain parts of the transmission network that are designated as "critical" from the standpoint of hydraulic capacity or other operational considerations. Seattle may choose to apply "demand metering" intermittently in various parts of the transmission network for the purpose of monitoring for compliance by individual Wholesale Customers or groups of Wholesale Customers on a given line segment.

EXHIBIT IV

OPERATING BOARD STRUCTURE

1. Structure. The Operating Board (or "Board") shall be structured as follows:

   a. The Board shall consist of seven (7) members, composed of three members representing Seattle Public Utilities (SPU), three members representing Seattle's Wholesale Customers selected as described below and one independent party selected as set forth below to be a tie-breaker as needed. Board members shall, to the best of their ability, act in the best interests of the Seattle Water Supply System as a whole and shall not represent the interest of a group of utilities or an individual utility.

   b. The term of each Board position shall commence on January 1 and shall be for four (4) years. Terms of each Board position shall be staggered such that no more than two positions are renewed in any single year. Board members may serve not more than three successive terms.

   c. Three Board members representing the Wholesale Customers will be selected from persons nominated by the holders of Full Requirements and Partial Requirements Contracts and sorted into three categories based on utility size, calculated by ERUs. The selected categories will be small, medium and large utilities, which will be made up from approximately equal numbers of contract holders. Each category of utility may elect, by majority vote (one vote per utility) its representative to the Operating Board.

   d. The initial Operating Board will be created when there are at least six (6) signatories to the Full and Partial Requirements Contracts or January 1, 2002, whichever comes first. The initial Board will then be recomposed pursuant to the above subsection on January 1, 2002 and every 5 years thereafter.

   e. The seventh member of the Board shall be a person having expertise in the operations of regional water supply systems. Such person shall be selected by majority vote of the other Board members. In the event of a deadlock in selecting the independent representative, the independent board member shall be selected by Judicial Arbitration and Mediation Services Inc., of Seattle, Washington or its successor. The seventh member shall not vote on issues coming before the Board unless there is a deadlock in the voting among the other six Board members. The seventh member may nevertheless express his or her opinions in Operating Board discussions. Such member shall have no employment, financial or contractual relationship with Seattle nor any Wholesale Customer and shall have no other actual or apparent conflict of interest in holding this position.

2. Voting Except as otherwise provided above, each member of the Board shall have

one vote on all matters coming before the Board. Each Board member may appoint an alternate to vote in his or her absence. A quorum of four (4) Board members present shall be required for any vote. Members of the Board may not grant proxies for any vote.

3. Chairperson The Board shall have a Chairperson who will be selected and have duties as defined below:

   a. The Chairperson shall be selected at the first regularly scheduled meeting of each new year.

   b. For the initial year, a designated representative of SPU shall be the Chairperson of the Board. All Chairpersons thereafter shall be selected by the Board using a nomination and voting process.

   c. Nominations for the position of Chairperson shall be taken from Board members. The Chairperson shall be selected based upon the simple majority vote of Board members. Should the Board fail to elect a Chairperson at the first regularly scheduled meeting of the new year, a designated representative from SPU shall be the acting Chairperson until such time as the Board elects a Chairperson.

   d. The Chairperson shall have the responsibility to call meetings, determine the agenda and preside over meetings. In the absence of the Chairperson, for whatever reason, a designated representative from SPU shall be the Acting Chairperson for that meeting. The Chairperson shall also act as the spokesperson for the Board and liaison between the Administrator and the Seattle City Council's Committee on Water Resources and Public Health or successor committees.

4. Schedule / Procedures. The Board shall adopt a regular meeting schedule and notify all Wholesale Customers of the schedule. The Operating Board may adopt its own internal procedures. The latest edition of Roberts Rules of Order shall, in the absence of agreement by the Operating Board on procedural matters, govern all meetings and votes of the Operating Board.

5. Reporting. The Board will provide reports to the Wholesale Customers and to the Seattle City Council Committee on Water Resources, or successor City Council committee, on its decisions and recommendations in a timely manner.

6. Responsibilities and Authority of the Board. The Contract Authority Matrix, attached as Exhibit V, provides an outline of the responsibilities and authority of the Board for illustration purposes only. It also provides details of the relationship between the Operating Board, the Seattle City Council, and the Seattle Public Utilities. Where no clear responsibility or authority on an issue is established in this contract the responsibility and authority shall rest with the Seattle City Council.

7. Expenses. The Board shall be authorized to incur reasonable expenses which will be allocated by the Board to either or both of the New Transmission or Supply Cost

Pools.

EXHIBIT V

CONTRACT AUTHORITY MATRIX

	SPU ADMINISTRATOR	OPERATING BOARD	COUNCIL
CONTRACT Terms & conditions (amendments)	Implements	Recommends	Authorizes
OPERATING **BOARD** Structure & responsibilities	Recommends	Recommends	Authorizes
FINANCIAL Cost allocation structure	Recommends	Reviews & Recommends	Authorizes
Wholesale Rates	Develops & Implements	Review & Recommends	Authorizes
New Financial Policies	Develops & Implements	Reviews & Recommends	Authorizes
Purchase and disposal of regional property	Recommends	Recommends	Authorizes
Allocation of new regional projects costs	Recommends	Authorizes	Reviews
Issuance of Bonds	Implements	-	Authorizes
Regional Budget	Develops & Implements	Reviews & Recommends	Authorizes
Selection of vendors, consultants & contractors (for regional projects)	Authorizes	Recommends	-

Regional CIP	Develops & Implements	Recommends	Authorizes

	SPU ADMINISTRATOR	OPERATING BOARD	COUNCIL
SUPPLY Yield Analysis	Develops	Reviews	Reviews
Selections of new sources	Recommends	Recommends	Authorizes
New source criteria	Implements	Authorizes	Reviews
New supply cost allocation	Develops & Implements	Authorizes	Reviews
Allocation of supply to new customers	Recommends	Recommends	Authorizes
Reserves	Develops & Implements	Authorizes	Reviews
Allocation of block sales quantities	Implements	Recommends	Authorizes
Water Shortage Contingency Plan	Implements	Develops & Recommends	Authorizes
WATER CONSERVATION 1% Program	Develops & Implements	Reviews	Reviews and Approves
New Goals	Implements	Develops & Authorizes	Reviews
Incentive & disincentive programs	Implements	Develops & Authorizes	Reviews
Conservation Potential Assessment	Develops & Approves	Reviews	Reviews

	SPU ADMINISTRATOR	OPERATING BOARD	COUNCIL
WATER QUALITY Monitoring responsibility	Develops & Approves	Reviews	Reviews
Selection of new treatment techniques	Reviews & Implements	Recommends	Authorizes
New treatment cost allocation	Recommends & Implements	Authorizes	Reviews
New treatment regulations	Reviews & Implements	Reviews	Reviews
Flushing allowances	Reviews	Authorizes	Reviews
Solutions to identified regional water quality deficiencies	Recommends & Implements	Recommends	Authorizes
REGIONAL INFRASTRUCTURE Operation of System	Implements	Recommends	Authorizes
Access to transmission	Recommends	Recommends	Authorizes
Allocation of excess capacity	Recommends & Implements	Recommends	Authorizes
Transmission capacity cost allocation	Recommends & Implements	Authorizes	Reviews
New regional infrastructure	Recommends	Authorizes	Authorizes
New regional project cost allocation	Recommends	Authorizes	Reviews
Wheeling	Recommends	Recommends	Authorizes
Wheeling cost	Develops & Implements	Reviews & Recommends	Authorizes

Regional CIP prioritization	Develops & Recommends	Reviews & Recommends	Authorizes

	SPU ADMINISTRATOR	OPERATING BOARD	COUNCIL
OPERATIONS & MAINTENANCE Best Management Practices	Recommends & Implements	Develops & Approves	Reviews
Demand Forecast	Develops & Approves	Reviews	Reviews
Reliability standard	Develops & Recommends	Reviews & Recommends	Authorizes
REGIONAL ISSUES CPS Water Suppliers Forum	Represents	-	Reviews
Tacoma Second Supply Project	Represents	Recommends	Represents
HCP's	Represents	Recommends	Authorizes
Regional conservation organizations	Represents	Recommends	Authorizes

EXHIBIT VI

Calculation of ERUs as a Part Of Facilities Charges

The ERU Fee is:

- the flat debt service payment required to finance the facility providing the ERU over the lesser of (i) the facility life or (ii) the period over which new demand will fully utilize the facility's supply

- divided by -

- the number of new ERU's of demand expected in each year.

Seattle's Average Cost of Debt shall be used as the interest rate in this calculation. In the event that several new supply facilities are added simultaneously, the facilities may be considered together as providing a total new supply capacity for a total construction cost.

Example: A new facility costing $100 million is built with a capacity of 100,000 ERUs. Growth of 5,000 ERU's per year is expected over the next 20 years, so the facility is projected to be supplying its full capacity in 20 years. Were this facility financed over 20 years at 6% interest, the flat annual debt service payment would be $8.7 million. Each ERU would cost 0.02% of this annual amount, or about $1,740.

At the time a new supply facility is added, the ERU price for this supply shall be calculated. This ERU price shall then be averaged with the then-current ERU Fee. This average shall be weighted by the number of unpurchased ERUs available at the then-current ERU fee and the number of new ERUs being added at the new ERU price. This weighted average shall be the new ERU Fee, and the number of ERUs available at the fee shall be the sum of the unsold ERUs at the previous fee and the ERU capacity of the new facility.

Example: 10 years ago, a $100 million facility was constructed that can supply 100,000 ERU's. Growth and demand projections have proven accurate, and now 50,000 ERUs have been purchased, each for $1,740. The facility also has an additional 50,000 ERU's still available at the same price. This year, we construct a facility worth $70 million, with a capacity of 40,000 ERU's. Based on demand projections, this facility (on it's own) would be fully utilized in 10 years, and it's ERU price is therefore $2,375. The average price of any of the 90,000 available ERU's is therefore $2,022.

EXHIBIT VI

ERUs by Connection Size

Connection Size	Number of ERUs
¾" and smaller	1
1"	2
1 1/2"	5
2"	8
3"	22
4"	31
6"	66
8"	112
10"	169
12"	238

ERU Proving Methodology

The size of the water service connection used to serve an establishment depends upon both the total demand of that establishment and the instantaneous flow required by that establishment. For this reason, connection size is only a general indicator of the annual demand placed on water supplies by the establishment.

EXHIBIT VII

List of Seattle Supply System Facilities

1. **Cedar Source**
   - All roads, buildings, structures, water supply facilities, recreational and educational facilities, and fisheries enhancement and mitigation facilities located within or close to the Cedar River Hydrographic Watershed boundary as defined by Seattle land ownership, including the land itself, and any capitalized studies related to the above. Excepted are facilities solely owned by Seattle City Light for the purpose of power generation. Facilities shared by Seattle City Light and Seattle Public Utilities shall be part of the Seattle Supply System only to the extent of SPU share or responsibility.
   - All facilities located within the Lake Youngs Reservation as defined by Seattle ownership of the land except for conveyance facilities used to transport finished water during non-emergency operation
   - All facilities located within the Lake Youngs Aqueduct, the Landsburg Tunnel, and the Lake Youngs Supply Lines right-of-way, including the right-of-way itself
   - Existing Morse Lake Floating Pump Stations

2. **Tolt Source**
   - All roads, buildings, structures, water supply facilities, recreational and educational facilities, and fisheries enhancement and mitigation facilities located within or close to the South Fork Tolt River Hydrographic Watershed boundary as defined by Seattle land ownership, including the land itself, and any capitalized studies related to the above. Excepted are facilities solely owned by Seattle City Light for the purpose of power generation. Facilities shared by Seattle City Light and Seattle Public Utilities shall be part of the Seattle Supply System only to the extent of SPU share or responsibility.
   - Tolt Treatment Facility

3. **Highline Wellfield**
   - Riverton Wells, including all pumping and treatment equipment, original yard piping, to the connection to CRPL4, and the low flow piping to Riverton Reservoir
   - Boulevard Well, including all pumping and treatment equipment, and all piping up to the connection to CRPL4

4. **Other**
   - Water Reuse Program
   - One Percent Conservation Program through December 31, 2001
   - Commercial Incentive Program
   - Commercial Toilet Retrofit Program
   - Showerhead retrofit Program
   - The Seattle Forecasting Model (SEAFM Model)

- GIS Projects related to facilities identified herein as part of the Seattle Supply System

EXHIBIT VIII

List of Seattle Transmission Facilities

1. Pipelines
   - Tolt Pipeline No. 1 from the Tolt Regulating Basin to Lake Forest Reservoir, including any transfer and ancillary small diameter parallel pipes
   - Tolt Pipeline No. 2 (where constructed), including any transfer and ancillary small diameter parallel pipes
   - Tolt Tieline
   - Tolt Eastside Supply Line (from TESS Junction to the intersection of SE 16th ST and 145th Place SE)
   - Tolt Eastside Line Extension (from the intersection of SE 16th ST and 145th Place SE to Eastside Reservoir)
   - The 540 head Pipeline from Maple Leaf Reservoir to Lake Forest Reservoir
   - Lake Youngs Bypass No. 4 from the outlet of each of the Cedar Treatment Facility clearwells to Control Works
   - Lake Youngs Bypass No. 5 from the outlet of each of the Cedar Treatment Facility clearwells to the Lake Youngs Tunnel
   - The Lake Youngs Tunnel (from the original lake outlet to Control Works)
   - The Maple Leaf Pipeline (from the intersection of 18th Avenue E. and E. Prospect Street to Maple Leaf Reservoir)
   - Cedar River Pipeline No. 1 from Control Works to Volunteer Reservoir
   - Cedar River Pipeline No. 2 from Control Works to Lincoln Reservoir
   - Cedar River Pipeline No. 3 from Control Works to the intersection of 18th Avenue E. and E. Prospect Street
   - 30" intertie between Cedar River Pipelines 2 and 3 in east Olive Street
   - Cedar River Pipeline No. 4 from Control Works to the West Seattle Pipeline
   - Cedar Eastside Supply Line (from the Cedar Wye to the intersection of SE 16th St and 145th Place SE)
   - West Seattle Pipeline from Augusta Gatehouse to Cedar River Pipeline 4
   - The 8th Avenue S. Pipeline between S. 146th Street and S. 160th Street
   - The Bow Lake Pipeline (between 8th Avenue S. and CRPL 4, and as relocated outside runways at Seatac Airport)
   - The Burien Feeder (in S. 146th Street between 8th Avenue S. and CRPL 4)
   - The Fairwood Line (between Fairwood Pump Station and Soos Reservoirs)
   - The 24-inch discharge pipeline of Lake Youngs Pump Station up to Soos Reservoirs
   - The 12-inch discharge pipeline of Lake Youngs Pump Station up to Soos Reservoirs
   - The 630 head pipeline between Lake Youngs Pump Station and the Cedar River WSD pump station at the eastern boundary of the Lake Youngs Reservation

2. Reservoirs, Tanks, and Standpipes, including overflow pipes, all valves, appurtenances, and disinfection facility located on the premises of each storage facility, unless otherwise noted

- Lake Forest Reservoir
- Eastside Reservoir
- Riverton Reservoir
- Maple Leaf Reservoir (excluding Roosevelt Way Pump Station and its suction and discharge piping, Maple Leaf Tank and 520 zone piping, except where solely serving the disinfection facility)
- Soos Reservoirs

3. Pump Stations, Major Valve Structures, and other Facilities

- Eastgate Pump Station
- TESS Junction Pump Station
- Lake Hills Pump Station
- Maplewood Pump Station
- Maple Leaf Pump Station
- Bothell Way Pump Station
- Fairwood Pump Station
- Lake Youngs Pump Station
- The Control Works
- Augusta Gatehouse

Purveyor tap and meter installations shall not be part of the Regional Transmission System. The cost of improvements to such installations shall be borne by the purveyor served by the installation regardless of the cause for the improvements provided that such cause is consistent with AWWA and safety standards and practices.

The facilities include the appurtenance of these transmission facilities including but not limited to rights of way, line valves, system meters and remote automation devices.

EXHIBIT IX

Cost Centers Used for Operations Cost Indices

The following costs centers or successor cost centers that capture the direct costs of operation of Existing Supply Facilities, Existing Transmission Facilities and the 1% Program shall be used as the indices for operations cost in the Existing Supply Cost Pool, Existing Transmission Cost Pool and for the 1% Program in the New Supply Cost Pool.

Supply

Program	Project	Project Name	Activity
Communications	N1203	Communications Activity Group	N120304 Purveyor Relations
Audit & Accounting	N3303	Customer Audit	N330303 Purveyor Audit
Watershed Management	N5401	Program Management	N540194 Department Support
Watershed Management	N5401	Program Management	N540195 General Expense
Watershed Management	N5401	Program Management	N540196 General Management
Watershed Management	N5401	Program Management	N540197 Training
Watershed Management	N5401	Program Management	N540198 Safety
Watershed Management	N5401	Program Management	N540199 Personnel
Watershed Management	N5401	Program Management	N540289 Capital Purchase
Watershed Management	N5403	Support Services	N540301 Modified Duty
Watershed Management	N5403	Support Services	N540302 Procuring/Paying/Receiving
Watershed Management	N5403	Support Services	N540303 Vehicle Equipment Downtime
Watershed Management	N5404	Watershed Protection	N540401 Hydrological Data Collection
Watershed Management	N5404	Watershed Protection	N540402 Fire Protection
Watershed Management	N5404	Watershed Protection	N540403 Inspection
Watershed Management	N5404	Watershed Protection	N540404 Boundaries
Watershed Management	N5405	Facility Management	N540501 WS Grounds
Watershed Management	N5405	Facility Management	N540502 WS Buildings
Watershed Management	N5405	Facility Management	N540503 WS Facilities & Roads
Watershed Management	N5406	Watershed Road Maintenance	N540601 Grade/Gravel/Ditching
Watershed Management	N5406	Watershed Road Maintenance	N540602 Bridges/Streams Culvert
Watershed Management	N5406	Watershed Road Maintenance	N540603 Roads/Row/Vegetation Cutting
Watershed Management	N5406	Watershed Road Maintenance	N540604 Tolt Roads & Streams
Watershed Management	N5407	Watershed Operations Support	N540701 Veh/Equipment Management
Watershed Management	N5407	Watershed Operations Support	N540702 Veh/Equip/Tool Repair
Watershed Management	N5408	Water Quality & Hydrology	N540801 Water Quality Monitoring
Watershed Management	N5408	Water Quality & Hydrology	N540802 Hydrological Monitoring
Watershed Management	N5409	Public/Cultural Programs	N540901 Recreation Planning
Watershed Management	N5409	Public/Cultural Programs	N540902 Management & Research
Watershed Management	N5409	Public/Cultural Programs	N540903 Watershed Education
Watershed Management	N5409	Public/Cultural Programs	N540904 Watershed Public Information
Watershed Management	N5410	Wildlife & Fisheries Programs	N541001 Program Planning & Evaluation
Watershed Management	N5410	Wildlife & Fisheries Programs	N541002 Interagency/Public Involvement
Watershed Management	N5410	Wildlife & Fisheries Programs	N541003 Ecological Monitoring & Research
Watershed Management	N5410	Wildlife & Fisheries Programs	N541004 Habitat & Species Inventory
Watershed Management	N5410	Wildlife & Fisheries Programs	N541005 Habitat Enhancement/Restoration

Watershed Management	N5411	Resource Information Mgmt	N541101 Program Plan/Evaluation
Watershed Management	N5411	Resource Information Mgmt	N541102 Information Maintenance
Watershed Management	N5411	Resource Information Mgmt	N541103 Information Services
Watershed Management	N5412	Special Projects	N541202 Silviculture
Watershed Management	N5412	Special Projects	N541205 Land Exchanges/Acquisitions
Watershed Management	N5415	Cedar HCP	N541501 ASSESS OF EXPAND FOREST STAND
Watershed Management	N5415	Cedar HCP	N541502 ASSESS EXPAND FOREST ATTRIBUTE
Watershed Management	N5415	Cedar HCP	N541503 AUGMENT FOREST HABITAT INV
Watershed Management	N5415	Cedar HCP	N541504 LONG-TERM FOREST HABITAT
Watershed Management	N5415	Cedar HCP	N541505 OLD-GROWTH CLASSIFICATION
Watershed Management	N5415	Cedar HCP	N541506 RIPARIAN RESTOR PROJECT MONIT
Watershed Management	N5415	Cedar HCP	N541507 UP0LAND FOREST RESTOR PROJ MONT
Watershed Management	N5415	Cedar HCP	N541515 GIS DATA COMPATIBILITY STUDY
Watershed Management	N5415	Cedar HCP	N541516 FOREST HABITAT MODELING
Watershed Management	N5415	Cedar HCP	N541517 SPECIE HABITAT RELATION MODEL
Watershed Management	N5416	Cedar HCP	N541601 CRHCP GIS SUPPORT
Watershed Management	N5416	Cedar HCP	N541603 CRHCP TECHNICAL SUPPORT
Watershed Management	N5417	Cedar HCP	N541701 ROAD MAINTENANCE
Watershed Management	N5418	Cedar HCP	N541801 EXPERIMENTAL STREAM MONITORING
Watershed Management	N5418	Cedar HCP	N541802 LONG-TERM STREAM MONITORING
Watershed Management	N5418	Cedar HCP	N541803 AQUATIC RESTORATION MONITORING
Watershed Management	N5418	Cedar HCP	N541804 BULL TROUT SURVEYS (ADULT)
Watershed Management	N5418	Cedar HCP	N541805 BULL TROUT SPAWNING SURVEY
Watershed Management	N5418	Cedar HCP	N541806 BULL TROUT FRY/JUVENILE SURVEY
Watershed Management	N5418	Cedar HCP	Riparian Zone Studies
Watershed Management	N5418	Cedar HCP	N541809 BULL TROUT STREAM DISTRIBUTION
Watershed Management	N5418	Cedar HCP	N541810 BULL TROUT REDD INUNDATION STU
Watershed Management	N5418	Cedar HCP	N541811 COMMON LOON MONITORING
Water Quality & Supply	N5503	Water System Operations	N550301 Water Management
Water Quality & Supply	N5503	Water System Operations	N550302 Water System Control
Water Quality & Supply	N5503	Water System Operations	N550303 Anadromous Fishery Mgmt
Water Quality & Supply	N5503	Water System Operations	N550304 SCADA Management
Water Quality & Supply	N5503	Water System Operations	N550305 Highline Well Field
Water Quality & Supply	N5503	Water System Operations	N550306 Morse Lake PS
Water Quality & Supply	N5503	Water System Operations	N550307-SAFETY PROCESS MGMT COMPLIANCE
Water Quality & Supply	N5503	Water System Operations	N550308-EPA RISK MGMT COMPLIANCE
Water Quality & Supply	N5504	Water System Analysis	N550401 Eng Analysis/Modeling

Water Quality & Supply	N5504	Water System Analysis	N550402 Water Rights Mgmt
Water Quality & Supply	N5504	Water System Analysis	N550403 DEMAND METERING
Water Quality & Supply	N5505	Surface Water Trtmnt Rule	N550501 Monitoring, Reporting & Admin
Water Quality & Supply	N5505	Surface Water Trtmnt Rule	N550502 Cholrination Facilities O&M
Water Quality & Supply	N5505	Surface Water Trtmnt Rule	N550503 Watershed Management
Water Quality & Supply	N5506	Total Coliform Rule Compl.	N550601 Monitoring, Reporting & Admin
Water Quality & Supply	N5508	Lead & Copper Rule Compl.	N550801 Monitoring, Reporting & Admin
Water Quality & Supply	N5508	Lead & Copper Rule Compl.	N550802 Corrosion Trtmnt Facil O&M
Water Quality & Supply	N5509	Fluoridation Program	N550901 Fluoridation Program O&M
Water Quality & Supply	N5510	Other Reg Comp/Monitoring	N551001 Otr Reg/Operational Analysis
Water Quality & Supply	N5510	Other Reg Comp/Monitoring	N551002 Disinfection By-Product Rule
Water Quality & Supply	N5510	Other Reg Comp/Monitoring	N551003 Limnology
Water Quality & Supply	N5510	Other Reg Comp/Monitoring	N551005 WQ Lab
Water Quality & Supply	N5510	Other Reg Comp/Monitoring	N551006 DW Reg Dev & App Research
Water Quality & Supply	N5510	Other Reg Comp/Monitoring	N551007 Public Information/Notification
Water Quality & Supply	N5511	Special Projects	N551104 LIMS & QA/QC
Water Quality & Supply	N5512	Cedar HCP	N551201 INTERIM CHINOOK COHO
Water Quality & Supply	N5513	Cedar HCP	N551301 HCP STREAMFLOW GAUGING
Water Quality & Supply	N5513	Cedar HCP	N551302 SWITCHING CRITERIA STUDY
Water Quality & Supply	N5513	Cedar HCP	N551303 STEELHEAD REDD MONITORING
Water Quality & Supply	N5513	Cedar HCP	N551304 CHINOOK STUDIES
Water Quality & Supply	N5513	Cedar HCP	Salmonid Studies
Water Quality & Supply	N5514	WQ Monitoring	N551403 DRINKING WATER QUALITY MONITOR
Water Quality & Supply	N5515	HCP Fisheries	N551501 FRY CONDITION AT RELEASE
Water Quality & Supply	N5515	HCP Fisheries	N551502 FRY MARKING & EVALUATION
Water Quality & Supply	N5515	HCP Fisheries	N551503 FRY TRAPPING & COUNTING
Water Quality & Supply	N5515	HCP Fisheries	N551504 FISH HEALTH
Water Quality & Supply	N5515	HCP Fisheries	N551505 SHORT-TERM FRY REARING
Water Quality & Supply	N5515	HCP Fisheries	N551506 LAKE WASHINGTON PLANKTON STUDY
Water Quality & Supply	N5515	HCP Fisheries	N551508 ADULT SURVIVAL DISTRIBUTION
Water Quality & Supply	N5515	HCP Fisheries	N551509 PHENOTYPIC & GENETIC STUDY
Water Quality & Supply	N5516	Tolt DBO	N551601-CONTRACTOR PAYMENTS
Water Quality & Supply	N5516	Tolt DBO	N551603-MANAGEMENT COSTS
Resource Planning	N5609	Water Resource & Habitat Issues	N560903-ESA

Transmission

Program	Project	Project Name	Activity
Water Operation	N6540	WT - Headwork/Storage	N654001 Program Maintenance
Water Operation	N6540	WT - Headwork/Storage	N654002 Event Driven Repairs
Water Operation	N6541	WT - Transmission Pipeline Maint	N654101 Program Maintenance
Water Operation	N6541	WT - Transmission Pipeline Maint	N654102 Event Driven Repairs
Water Operation	N6542	WT - Value Op/Maint - Water Tran	N654201 Program Maintenance
Water Operation	N6542	WT - Value Op/Maint - Water Tran	N654202 Event Driven Repairs
Water Operation	N6543	WT - Grounds/Roads/ROW	N654301 Grade/gravel roads - P

Water Operation	N6543	WT - Grounds/Roads/ROW	N654302 Grade/gravel roads - E
Water Operation	N6543	WT - Grounds/Roads/ROW	N654303 Bridges/culverts - P
Water Operation	N6543	WT - Grounds/Roads/ROW	N654304 Bridges/culverts - E
Water Operation	N6543	WT - Grounds/Roads/ROW	N654305 Fences/gates - P
Water Operation	N6543	WT - Grounds/Roads/ROW	N654306 Fences/gates - E
Water Operation	N6543	WT - Grounds/Roads/ROW	N654307 Mow ROW - P
Water Operation	N6543	WT - Grounds/Roads/ROW	N654308 Mow ROW - E
Water Operation	N6543	WT - Grounds/Roads/ROW	N654309 Mow Other
Water Operation	N6544	WT - Facility Maintenance	N654401 Program Maintenance
Water Operation	N6544	WT - Facility Maintenance	N654402 Event Driven Repairs
Water Operation	N6545	WT - Castings	N654501 Casting Adjustments
Water Operation	N6546	WT - Customer Services	N654601 Communications/Dispatch
Water Operation	N6546	WT - Customer Services	N654602 Locating/Marking
Water Operation	N6547	WT - Damage by Others	N654701 P/L/ROW/Facility
Water Operation	N6548	WT - Transmission Shops	N654801 Shops/Fabrication
Water Operation	N6549	WT - General Expenses	N654905 Tools/small equipment
Water Operation	N6549	WT - General Expenses	N654906 Standy
Water Operation	N6549	WT - General Expenses	N654907 Truck Inventory
Water Operation	N6549	WT - General Expenses	N654908 Downtime - Job Related
Water Operation	N6549	WT - General Expenses	N654909-DISASTER-EMERG RESPONSE

1% Program

Program	Project	Project Name	Activity
Community Services	N5303	Resource Conservation	N530301 1% Conservation

SOOS CREEK WATER AND SEWER DISTRICT

KING COUNTY, WASHINGTON

RESOLUTION NO. 2212-W

A RESOLUTION of the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, approving EMERGENCY USE INTER-TIE AGREEMENT with the City of Kent and the City of Seattle.

WHEREAS, emergency use inter-ties between public water agencies can assist them in performing their water supply duties during times of emergency and water shortage; and

WHEREAS, the City of Kent has requested that an emergency use inter-tie be established between the District and the City; and

WHEREAS, the City of Seattle (SPU) has agreed to the inter-tie, by which SPU water will be conveyed via the District's water system to the City of Kent as required during emergency conditions; and

WHEREAS, it is in the public interest for the parties herein to establish an emergency use inter-tie to provide backup water supply in the event of an emergency; and

WHEREAS, the District, the City of Kent and SPU desire to enter into an Agreement describing the terms and conditions applicable to the use of the emergency inter-tie.

NOW, THEREFORE, BE IT RESOLVED by the Commissioners of Soos Creek Water and Sewer District, King County, Washington, as follows:

SECTION 1: That the Board of Commissioners of Soos Creek Water and Sewer District hereby authorizes the District Manager to execute the following on behalf of the District:

CITY OF KENT and SOOS CREEK WATER AND SEWER DISTRICT
EMERGENCY USE INTER-TIE AGREEMENT

OCT-10-2003 16:35 SOOS CREEK WATER & SEWER 253 630 5289 P.02/03

SECTION 2: That the District shall take such action as is appropriate to accomplish the terms and purposes hereof.

Adopted by the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, at a regular open public meeting thereof on the 1st day of August, 2001.

KAREN WEBSTER, President

PHILIP SULLIVAN, Secretary

RANDY REECE, Commissioner

CLEMENT QUANRUD, Commissioner

STEVE SANDELIUS, Commissioner

CITY OF RENTON and SOOS CREEK WATER AND SEWER DISTRICT INTERLOCAL AGREEMENT FOR THE ESTABLISHMENT OF SERVICE BOUNDARIES

THIS AGREEMENT, made and entered into this 10th day of October, 1997, by and between the **CITY OF RENTON**, a Washington municipal corporation, hereinafter referred to as "the City", and **SOOS CREEK WATER AND SEWER DISTRICT**, a Washington municipal corporation, hereinafter referred to as "the District", both being duly organized and existing under and by virtue of the laws of the State of Washington,

WITNESSETH:

WHEREAS, both the City and the District are public agencies authorized by law and qualified to engage in furnishing water service and sanitary sewer service within their prescribed areas; and

WHEREAS, it is in the public interest for the parties herein to amend the boundaries previously agreed to under the 1991 Interlocal Agreement to provide for the efficient planning and development of water and sewer services in areas which may be served by either, or both, of the parties herein.

NOW, THEREFORE:

IT IS HEREBY AGREED by and between the parties hereto as follows:

1. **Water Service Boundary.** The parties have agreed on a revision to the permanent water service area boundary between them. The revised boundary is legally described in Exhibit "A", which is attached hereto, and by this reference incorporated herein. The boundary is graphically depicted on the map attached hereto as Exhibit "B", which is by reference incorporated herein.

2. **Sewer Service Boundary.** The parties have agreed on a revision to the permanent sewer service area boundary between them. The revised boundary is legally described in Exhibit "C", which is attached hereto, and by this reference incorporated herein. The boundary is graphically depicted on the map attached hereto as Exhibit "D", which is by reference incorporated herein.

3. **Transfer of Service Area.** The City shall assume responsibility to provide service to the area(s) on the City's side of the respective service area boundaries as revised by this agreement, whether or not annexed to the City. The District shall assume responsibility to provide service to the area(s) on the District's side of the respective service area boundaries as revised by this agreement, whether or not annexed to the City. As part of this agreement, the sewer facilities installed under District ULID 11 shall be transferred to the City as described in the November 19, 1974 interlocal agreement notwithstanding that the properties served by these sewers have not been annexed to the City.

4. **Governmental Approvals.** The parties may give notice of the adoption of this Agreement to Metropolitan/King County, to the Department of Ecology, to the Department of Health, and to any other agency with jurisdiction or mission relevant to the terms hereof, and shall cooperate and assist in all reasonable manner in procuring any necessary approvals hereof by those agencies.

5. **Sanctity of Agreement.** This agreement constitutes the entire agreement of the parties regarding the subject matter hereof, and there are no other representations or oral agreements other than those listed herein, which vary the terms of this agreement. Future agreements may occur between the parties to transfer additional, or future service areas by mutual agreement.

6. **Obligations Intact.** Nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of either the City or the District pursuant to the AGREEMENT FOR THE TRANSFER OF FACILITIES AND FOR THE ESTABLISHMENT OF SERVICE BOUNDARIES, previously executed by the parties, except as specifically set forth herein.

Approved by Resolution No. 3287 of the **City of Renton**, Washington, at its regular meeting held on the 6th day of October, 1997.

CITY OF RENTON

By: Jesse Tanner
Jesse Tanner

Title: mayor

Attest: Brenda Fritsvold
~~City Clerk~~ Brenda Fritsvold
Deputy City Clerk

EXHIBIT "A"

SOOS CREEK WATER & SEWER DISTRICT AND CITY OF RENTON

AGREEMENT FOR THE TRANSFER OF FACILITIES AND FOR ESTABLISHMENT OF SERVICE BOUNDARIES (WATER SERVICE BOUNDARY LINE)

APRIL 19, 1996

BEGINNING at a point described as the intersection of the North line of the South 1,350 feet of the Northwest quarter of Section 6, Township 22 North, Range 5 East, W.M., in King County, Washington, and the Easterly right-of-way margin of Primary State Highway No. 5, also known as State Route No. 167, said point being on the existing boundary of Soos Creek Water & Sewer District;

Thence Easterly along said North line to the North-South center line of said Section 6, also being the West line of Tract 1, Spring Brook Acre Tracts, as recorded in Volume 12 of Plats, page 60, records of King County, Washington;

Thence Southerly along said West line to the South line of said Tract 1;

Thence Easterly along said South line to the West line of the South 132 feet of the East 660 feet of said Tract 1;

Thence North along said West line to the North line of said South 132 feet of the East 660 feet of said Tract 1;

Thence Easterly along said North line to the Westerly margin of 96th Avenue South, also known as John Langston Road or Springbrook Road or Talbot Road;

Thence Northerly along said Westerly margin to its intersection with the Westerly extension of the most Northerly line of Tract 8, of said Plat of Spring Brook Acre Tracts;

Thence South 74°50'00" East along said extension to the Easterly margin of said 96th Avenue South and continuing South 74°50'00" East along said most Northerly line, a distance of 189.00 feet;

Thence South 00°44'00" East, a distance of 188.40 feet;

Thence South 58°38'00" East, a distance of 89.35 feet along the line common to Tracts 8 and 9, said Plat of Spring Brook Acre Tracts;

Thence North 41°22'00" East, a distance of 128.10 feet;

Thence South 64°22'00" East, a distance of 275.60 feet;

Thence South 16°58'00" West, a distance of 239.80 feet;

Thence South 31°43'00" East, a distance of 210.90 feet;

Thence South 68°25'00" East, a distance of 99.50 feet;

Thence South 60°35'30" East, a distance of 28.17 feet to the most Northerly corner of Tract 7, said Plat of Spring Brook Acre Tracts;

Thence South 00°12'30" East, a distance of 396.04 feet;

Thence South 39°31'00" East, a distance of 383.85 feet;

Thence North 89°32'00" East, a distance of 340.00 feet to the East line of the Northeast quarter of said Section 6, said East line also being the West line of Section 5, Township 22 North, Range 5 East, W.M.;

Thence North along a line common to said Sections 5 and 6, a distance of 21.50 feet to a point that lies North 00°12'30" West, a distance of 241.50 feet from the Southwest corner of the Southwest quarter of the Northwest quarter of said Section 5;

Thence North 40°41'00" East, a distance of 230.30 feet;

Thence South 84°12'00" East, a distance of 245.90 feet;

Thence South 34°26'00" East, a distance of 147.30 feet;

Thence South 14°49'00" East, a distance of 257.44 feet to a line 30.00 feet North of, as measured at right angles to, and lying parallel with the South line of the Northwest quarter of said Section 5, said line also being the North margin of Southeast 200th Street;

Thence Easterly along said parallel line to the West line of the East one-half of the Southwest quarter of the Northwest quarter of said Section 5;

Thence North 00°31'17" East along said West line, a distance of 190.00 feet;

Thence South 88°38'33" East, to the East line of the West 115.00 feet of the East half of said Southwest quarter of the Northwest quarter;

Thence South 00°31'17" West along said East line, a distance of 190.00 feet to the North margin of said Southeast 200th Street;

Thence South 88°38'33" East along said North margin, a distance of 377.82 feet to the West line of the East 156.00 feet of said Southwest quarter of the Northwest quarter;

Thence North 00°39'11" East along said West line, also being the West line of the Plat of Parkridge East 1, as recorded in Volume 132 of Plats, pages 45 and 46, records of King County, Washington, a distance of 918.18 feet to the South line of Lot 2, King County Short Plat No. R877058, recorded under Auditor's File No.'s 7803010983 and 7808100855, records of King County, Washington;

Thence North 89°20'49" West, a distance of 59.00 feet;

Thence South 85°17'46" West, a distance of 80.30 feet;

Thence North 89°24'30" West, a distance of 96.01 feet;

Thence North 05°09'11" West, a distance of 111.45 feet;

Thence North 53°49'07" East, a distance of 198.22 feet;

Thence South 48°37'32" East, a distance of 118.20 feet to the Northeast corner of said Lot 2;

Thence North 69°21'46" East, a distance of 165.28 feet to the East line of the Southwest quarter of the Northwest quarter of said Section 5;

Thence North 00°39'11" East along said East line, a distance of 147.85 feet to the North line of said Southwest quarter;

Thence Westerly along said North line to the West line of said Section 5, also being the East line of said Tract 9, said Plat of Spring Brook Acre Tracts;

Thence Northerly along said East line to a point that lies 271.50 feet South, as measured along said East line from the Northeast corner of said Tract 9;

Thence North 78°21'42" West, a distance of 336.34 feet;

Thence North 26°09'56" West, a distance of 106.78 feet;

Thence North 83°20'02" West, a distance of 289.79 feet;

Thence North 70°34'46" West to an intersection with the Southerly extension of the West line of the Plat of Springbrook Terrace, Amended, as recorded in Volume 131 of Plats, pages 55 through 58 as amended, records of King County, Washington;

Thence Northerly along said Southerly extension to the Southwest corner of said Plat of Springbrook Terrace, Amended;

Thence North 86°00'00" West a distance of 509.65 feet to the East line of the old right-of-way margin of 96th Avenue South, as established October 5, 1931, also known as John Langston Road or Springbrook Road or Talbot Road;

Thence Northwesterly and Northerly along said Easterly right-of-way margin to the South line of the North 425 feet of the Northwest quarter of the Northeast quarter of the Northeast quarter of said Section 6;

Thence South 88°27'05" East along said South line to the West line of said Plat of Springbrook Terrace, Amended;

Thence Northerly along said West line and its Northerly extension to the North line of said Section 6, also being the South line of Section 31, Township 23 North, Range 5 East, W.M.;

Thence Easterly along said South line to the East line of the West 1,003.00 feet of the Southeast quarter of the Southeast quarter of Section 31, Township 23 North, Range 5 East, W.M.;

Thence Northerly along said East line to the North line of the Southeast quarter of said Section 31;

Thence Easterly along said North line to the East quarter corner of said Section 31, said East quarter corner also being the Southwest corner of the Northwest quarter of Section 32, Township 23 North, Range 5 East, W.M.;

Thence Northeasterly to a point 600.00 feet North and 550.00 feet East of said Southwest corner;

Thence Northerly along a line parallel with and 550.00 feet East of the West line of said Northwest quarter to a point 900.00 feet North and 550.00 feet East of said Southwest corner;

Thence Northwesterly to a point on said West line of the Northwest quarter of said Section 32, 1,200.00 feet North of said Southwest corner, said West line also being the East line of the Northeast quarter of Section 31, Township 23 North, Range 5 East, W.M.;

Thence Northerly along said West line of said Northwest quarter, and the West line of Section 29, Township 23 North, Range 5 East, W.M. to the North line of the South half of the Southwest quarter of the Southwest quarter of said Section 29;

Thence Easterly along said North line, a distance of 802 feet, more or less to the Southerly extension of the West line of Lot 4 of King County Short Plat No. 577051, Recording No. 790280736;

Thence North 01°52'36" East along said Southerly extension to the South line of Lot 1 of Revised King County Short Plat No. 275022R, Recording No. 8003210741;

Thence Westerly along said South line to the West line of said Lot 1;

Thence Northerly along said West line and the West line of Lots 2 and 3 of said Revised King County Short Plat No. 275022R to the North line of the South half of the Northwest quarter of the Southwest quarter of said Section 29;

Thence North 88°39'49" East along said North line to the West line of Lot 4 of King County Short Plat No. 577051, Recording No. 790280736;

Thence Northerly along said West line to the North line of said Lot 4;

Thence Easterly along said North line and its Easterly extension to the Easterly margin of State Route 515;

Thence Northerly along said East margin to the North line of the Southwest quarter of said Section 29;

Thence Easterly along said North line to the centerline of Cedar Avenue South (104th Avenue S.E.), said centerline also being the East line of the Southwest quarter of the Northwest quarter of said Section 29;

Thence Northerly along said East line to the Westerly extension of the South line of Lot 2 of City of Renton Short Plat No. 071-85;

Thence Easterly along the South line and said Westerly extension to the East line of said lot;

Thence Northerly along said East line to the Northeast corner of said lot;

Thence continuing Northerly along the East line of Lot 1 of said Short Plat to the Northeast corner of said Lot 1;

Thence Westerly along the North line of said lot and the Westerly extension thereof to said East line of the Southwest quarter of the Northwest quarter of said Section 29;

Thence Northerly along said East line to the South line of the North 100.00 feet of the Southwest quarter of the Northwest quarter of said Section 29;

Thence Westerly along said South line to the West line of the East 100.00 feet of the West half of the Northwest quarter of said Section 29;

Thence Northerly along said West line to the North line of the South 100.00 feet of the North half of the Northwest quarter of said Section 29;

Thence Easterly along said North line to its intersection with the Westerly margin line of Benson Road;

Thence Southerly along said West margin line to its intersection with the South line of the North half of the Northwest quarter of said Section 29;

Thence Easterly along said South line to its intersection with the Easterly margin line of Benson Road;

Thence Northerly along said East margin line to the South line of the following described parcel:

> Beginning at a point located North 01°42'40" East, a distance of 749.65 feet and North 88°17'20" West, a distance of 191.67 feet, more or less, from a point on the centerline of South 27th Street (S.E. 164th Street), a distance of 255.00 feet East of the Easterly margin line of Benson Road;
>
> Thence South 88°17'20" East, a distance of 191.67 feet, more or less, to a point located North 01°42'40" East, a distance of 749.65 feet, more or less, from said point on the centerline of said South 27th Street;
>
> Thence South 01°42'40" West, to a line parallel with and 400.00 feet North of the South line of the Northeast quarter of the Northwest quarter of said Section 29;
>
> Thence West along said parallel line to the Easterly margin of Benson Road;
>
> Thence Northerly along said Easterly margin to the Point of Beginning of this parcel's description;

Thence Easterly along said South line of the above-described parcel to the East line of said parcel, also being the West line of Spring Glen Elementary School Site;

Thence Northerly along said East line of said parcel to a line parallel with and 700 feet, more or less, North of the South line of the Northeast quarter of the Northwest quarter of said Section 29, also being the North line of Spring Glen Elementary School Site;

Thence Easterly along said parallel line to the North-South centerline of said Section 29;

Thence Northerly along said North-South centerline to the Westerly extension of the South margin of S.E. 160th Street;

Thence Easterly along said Westerly extension and said South margin to the centerline of the Bonneville Power Line right-of-way;

Thence Southeasterly along said centerline to the Westerly extension of the South margin of S.E. 162nd Street;

Thence Easterly along said extension and said South margin to the West line of the East 330.00 feet of the Northwest quarter of the Northeast quarter of said Section 29;

Thence North along said West line to the North line of said Northwest quarter of the Northeast quarter of said Section 29, also being the South line of Section 20, Township 23 North, Range 5 East, W.M.;

Thence Easterly along said South line of said Section 20 to the West line of the East 930.00 feet of the Southeast quarter of said Section 20;

Thence Northerly along said West line to the North line of the South 200.00 feet of said Southeast quarter;

Thence Easterly along said North line to the West line of the East 670.00 feet of said Southeast quarter;

Thence North 01°50'38" East, a distance of 105.01 feet to the North line of the South 305 feet, more or less, of said Southeast quarter;

Thence South 88°46'15" East along said North line to the West line of the East 330.00 feet of said Southeast quarter;

Thence Northerly along said West line to the South line of the Plat of Parkwood South Division No. 3, as recorded in Volume 109 of Plats, pages 57 and 58, records of King County, Washington;

Thence Easterly along said South line to the East line of said Section 20, also being the West line of Section 21, Township 23 North, Range 5 East, W.M.;

Thence Northerly along said West line to the Westerly extension of the South line of the Plat of Ponderosa Estates Addition, as recorded in Volume 70 of Plats, pages 34 and 35, records of King County, Washington;

Thence Easterly along said extension and said South line to the Southerly margin of the Cedar River Pipeline right-of-way;

Thence Southeasterly and Easterly along said Southerly right-of-way margin to the West line of the East half of the Southeast quarter of said Section 21;

Thence Northerly along said West line to the North line of the Southeast quarter of said Southeast quarter of Section 21;

Thence Easterly along said North line to the East line of said Section 21, said point being on the City of Renton City Limits as established by City Ordinance 3723, and the terminus of this boundary description.

EXHIBIT "C"

SOOS CREEK WATER & SEWER DISTRICT AND CITY OF RENTON

AGREEMENT FOR THE TRANSFER OF FACILITIES AND FOR ESTABLISHMENT OF SERVICE BOUNDARIES (SEWER SERVICE BOUNDARY LINE)

April 19, 1996

BEGINNING at a point described as the intersection of the North line of the South 1,350 feet of the Northwest quarter of Section 6, Township 22 North, Range 5 East, W.M., in King County, Washington, and the Easterly right-of-way margin of Primary State Highway No. 5, also known as State Route No. 167, said point being on the existing boundary of Soos Creek Water & Sewer District;

Thence Easterly along said North line to the North-South center line of said Section 6, also being the West line of Tract 1, Spring Brook Acre Tracts, as recorded in Volume 12 of Plats, page 60, records of King County, Washington;

Thence Southerly along said West line to the South line of said Tract 1;

Thence Easterly along said South line to the West line of the South 132 feet of the East 660 feet of said Tract 1;

Thence North along said West line to the North line of said South 132 feet of the East 660 feet of said Tract 1;

Thence Easterly along said North line to the Westerly margin of 96th Avenue South, also known as John Langston Road or Springbrook Road or Talbot Road;

Thence Northerly along said Westerly margin to its intersection with the Westerly extension of the most Northerly line of Tract 8, of said Plat of Spring Brook Acre Tracts;

Thence South 74°50'00" East along said extension to the Easterly margin of said 96th Avenue South and continuing South 74°50'00" East along said most Northerly line, a distance of 189.00 feet;

Thence South 00°44'00" East, a distance of 188.40 feet;

Thence South 58°38'00" East, a distance of 89.35 feet along the line common to Tracts 8 and 9, said Plat of Spring Brook Acre Tracts;

Thence North 41°22'00" East, a distance of 128.10 feet;

Thence South 64°22'00" East, a distance of 275.60 feet;

Thence South 16°58'00" West, a distance of 239.80 feet;

Thence South 31°43'00" East, a distance of 210.90 feet;

Thence South 68°25'00" East, a distance of 99.50 feet;

Thence South 60°35'30" East, a distance of 28.17 feet to the most Northerly corner of Tract 7, said Plat of Spring Brook Acre Tracts;

Thence South 00°12'30" East, a distance of 396.04 feet;

Thence South 39°31'00" East, a distance of 383.85 feet;

Thence North 89°32'00" East, a distance of 340.00 feet to the East line of the Northeast quarter of said Section 6, said East line also being the West line of Section 5, Township 22 North, Range 5 East, W.M.;

Thence North along a line common to said Sections 5 and 6, a distance of 21.50 feet to a point that lies North 00°12'30" West, a distance of 241.50 feet from the Southwest corner of the Southwest quarter of the Northwest quarter of said Section 5;

Thence North 40°41'00" East, a distance of 230.30 feet;

Thence South 84°12'00" East, a distance of 245.90 feet;

Thence South 34°26'00" East, a distance of 147.30 feet;

Thence South 14°49'00" East, a distance of 257.44 feet to a line 30.00 feet North of, as measured at right angles to, and lying parallel with the South line of the Northwest quarter of said Section 5, said line also being the North margin of Southeast 200th Street;

Thence Easterly along said parallel line to the West line of the East one-half of the Southwest quarter of the Northwest quarter of said Section 5;

Thence North 00°31'17" East along said West line, a distance of 190.00 feet;

Thence South 88°38'33" East, to the East line of the West 115.00 feet of the East half of said Southwest quarter of the Northwest quarter;

Thence South 00°31'17" West along said East line, a distance of 190.00 feet to the North margin of said Southeast 200th Street;

Thence South 88°38'33" East along said North margin, a distance of 377.82 feet to the West line of the East 156.00 feet of said Southwest quarter of the Northwest quarter;

Thence North 00°39'11" East along said West line, also being the West line of the Plat of Parkridge East 1, as recorded in Volume 132 of Plats, pages 45 and 46, records of King County, Washington, a distance of 918.18 feet to the South line of Lot 2, King County Short Plat No. R877058, recorded under Auditor's File No.'s 7803010983 and 7808100855, records of King County, Washington;

Thence North 89°20'49" West, a distance of 59.00 feet;

Thence South 85°17'46" West, a distance of 80.30 feet;

Thence North 89°24'30" West, a distance of 96.01 feet;

Thence North 05°09'11" West, a distance of 111.45 feet;

Thence North 53°49'07" East, a distance of 198.22 feet;

Thence South 48°37'32" East, a distance of 118.20 feet to the Northeast corner of said Lot 2;

Thence North 69°21'46" East, a distance of 165.28 feet to the East line of the Southwest quarter of the Northwest quarter of said Section 5;

Thence North 00°39'11" East along said East line, a distance of 147.85 feet to the North line of said Southwest quarter;

Thence Westerly along said North line to the West line of said Section 5, also being the East line of said Tract 9, said Plat of Spring Brook Acre Tracts;

Thence Northerly along said East line to a point that lies 271.50 feet South, as measured along said East line from the Northeast corner of said Tract 9;

Thence North 78°21'42" West, a distance of 336.34 feet;

Thence North 26°09'56" West, a distance of 106.78 feet;

Thence North 83°20'02" West, a distance of 289.79 feet;

Thence North 70°34'46" West to an intersection with the Southerly extension of the West line of the Plat of Springbrook Terrace, Amended, as recorded in Volume 131 of Plats, pages 55 through 58 as amended, records of King County, Washington;

Thence Northerly along said Southerly extension to the Southwest corner of said Plat of Springbrook Terrace, Amended;

Thence North 86°00'00" West a distance of 509.65 feet to the East line of the old right-of-way margin of 96th Avenue South, as established October 5, 1931, also known as John Langston Road or Springbrook Road or Talbot Road;

Thence Northwesterly and Northerly along said Easterly right-of-way margin to the South line of the North 425 feet of the Northwest quarter of the Northeast quarter of the Northeast quarter of said Section 6;

Thence South 88°27'05" East along said South line to the West line of said Plat of Springbrook Terrace, Amended;

Thence Northerly along said West line and its Northerly extension to the North line of said Section 6, also being the South line of Section 31, Township 23 North, Range 5 East, W.M.;

Thence Easterly along said South line to the Southeast corner of the Southeast quarter of said Section 31;

Thence Northerly along the East line of said Southeast quarter to the Northeast corner thereof, also being the Southwest corner of the Northwest quarter of Section 32, Township 23 North, Range 5 East, W.M.;

Thence Easterly along the South line of said Northwest quarter to the Southeast corner of the Southwest quarter of said Northwest quarter;

Thence Northerly along the East line of said Southwest quarter to the South line of the North 200.00 feet thereof;

Thence Westerly along said South line to the East line of the West half of said Southwest quarter;

Thence Northerly along said East line to the North line of said Southwest quarter;

Thence Westerly along said North line to the West line of said Northwest quarter of said Section 32, also being the East line of the Northeast quarter of said Section 31;

Thence Northerly along said East line to its intersection with the Northerly margin of South 179th Street, also known as Carr Road, est. 11-27-17 (former Carr Road No. 1147);

Thence Westerly along said Northerly margin, said margin being a curve to the left, the center of which bears South 00°01'50" West, having a radius of 1,462.69 feet, through a central angle of 02°21'07", an arc distance of 60.04 feet to the Easterly most corner of Lot 42, Plat of Scott's Terrace, (Recording No. 761680) as recorded in Volume 72 of Plats, pages 39 and 40, records of King County, Washington;

Thence continuing along the Northeasterly boundary of said plat the following bearings and distances:

Thence North 60°04'34" West, a distance of 250.34 feet;

Thence North 17°02'46" West, a distance of 112.00 feet;

Thence North 01°13'36" East, a distance of 268.68 feet;

Thence North 22°31'55" West, a distance of 180.92 feet;

Thence North 89°03'13" West, a distance of 565.00 feet to the centerline of Talbot Road, also known as 96th Avenue South, said point being on the existing boundary of Soos Creek Water & Sewer District;

Thence Northeasterly and Northerly along said centerline of Talbot Road to the North line of said Section 31, also being the south line of Section 30, Township 23 North, Range 5 East, W.M.;

Thence continuing Northerly along said centerline of Talbot Road to the South line of North 100.00 feet of the South half of the Northeast quarter of the Southeast quarter of said Section 30;

Thence Easterly along said South line to the East line of said Southeast quarter of said Section 30, also being the West line of Southwest quarter of Section 29, Township 23 North, Range 5 East, W.M.;

Thence Northerly along said West line to the North line of the South half of the Northwest quarter of the Southwest quarter of said Section 29;

Thence North 88°39'49" East along said North line to the West line of Lot 4 of King County Short Plat No. 577051, Recording No. 790280736;

Thence Northerly along said West line to the North line of said Lot 4;

Thence Easterly along said North line and its Easterly extension to the Easterly right-of-way margin of State Route 515;

Thence Northerly along said Easterly margin to the North line of the Southwest quarter of said Section 29, also being the South line of the Northwest quarter of said Section 29;

Thence Easterly along said South line to the West line of the Southeast quarter of the Northwest quarter of said Section 29;

Thence Northerly along said West line to the Westerly extension of the South line of Lot 4, Block 2, Plat of Akers Farms No. 5, as recorded in Volume 40 of Plats, page 27, records of King County, Washington;

Thence Easterly along the South line of said Lot 4 to the East line of the West half of said lot;

Thence Northerly along said East line, and the Northerly extension thereof to the South line of Lot 1, Block 2, of said Plat of Aker's Farms No. 5;

Thence Easterly along said South line to the West line of the East 62.50 feet of said Lot 1;

Thence Northerly along said West line to the Northerly line of said Lot 1, also being the Southerly margin of Southeast 166th Street;

Thence Northeasterly to a point on the Northerly margin of said Southeast 166th Street, which lies 237.41 feet East of said West line of the Southeast quarter of the Northwest quarter of said Section 29, said point also described as the Southwest corner of Lot 4 of Tract A, said Plat of Aker's Farms No. 5;

Thence North 24°02'04" East, 182.23 feet along the Westerly line of said Lot 4;

Thence Southeasterly along the Southerly line of the North half of said Lot 4 to the Easterly line thereof;

Thence North 24°02'04" East along said Easterly line, also being the Northwesterly line of Lot 5, Block A of said Plat, to a point 107 feet Southwesterly from the most Northerly corner of said Lot 5;

Thence Southeasterly to a point on the Easterly line of said Lot 5 lying 107 feet Southerly from the Northeast corner thereof, said point also being on the West right-of-way margin of 106th Avenue Southeast;

Thence continuing Southeasterly to the intersection of the West line of Lot 1, Block 4 of said Plat and the North line of the South 273 feet of said Lot 1, said point also being on the East right-of-way margin of 106th Avenue Southeast;

Thence Easterly along said North line to the East line of said Lot 1, also being the West line of Lot 2, Block 4 of said Plat;

Thence Southerly along said West line to the North line of the South 120 feet of said Lot 2;

Thence Easterly along said North line to the West line of the East 20 feet of said Lot 2;

Thence Northerly along said West line and its Northerly extension thereof to the Westerly extension of the South right-of-way margin of South 29th Street, also known as Southeast 166th Street;

Thence Easterly along said Westerly extension and said South margin of South 29th Street to the Southerly extension of the Easterly right-of-way margin of 106th Place Southeast;

Thence Northwesterly along said Southerly extension and continuing Northwesterly along said Easterly margin and its Northerly extension to the centerline of Southeast 164th Street, also known as South 27th Street;

Thence Easterly along said centerline to the East line of said Northwest quarter of Section 29, also being the West of the Northeast quarter of said Section 29;

Thence Northerly along said West line to the North line of the South 430.00 feet of the Northwest quarter of said Northeast quarter of Section 29;

Thence Easterly along said North line to the East line of the West 450.00 feet of said Northwest quarter of the Northeast quarter;

Thence Northerly along said East line to its intersection with the Westerly extension of the South right-of-way margin of Southeast 162nd Street;

Thence Easterly along said Westerly extension and said South margin to the West line of the East 330.00 feet of said Northwest quarter of the Northeast quarter;

Thence North along said West line to the North line of said Northwest quarter of the Northeast quarter of said Section 29, also being the South line of Section 20, Township 23 North, Range 5 East, W.M.;

Thence Easterly along said South line of said Section 20 to the West line of the East 930.00 feet of the Southeast quarter of said Section 20;

Thence Northerly along said West line to the North line of the South 200.00 feet of said Southeast quarter;

Thence Easterly along said North line to the West line of the East 670.00 feet of said Southeast quarter;

EXHIBIT "C", continued

Thence North 01°50' 38" East, a distance of 105.01 feet to the North line of the South 305 feet, more or less, of said Southeast quarter;

Thence South 88°46'15" East along said North line to the West line of the East 330 feet of said Southeast quarter;

Thence Northerly along said West line to the South line of the Plat of Parkwood South Division No. 3, as recorded in Volume 109 of Plats, pages 57 and 58, records of King County, Washington;

Thence Easterly along said South line to the East line of said Section 20, also being the West line of Section 21, Township 23 North, Range 5 East, W.M.;

Thence Northerly along said West line to the Westerly extension of the South line of the Plat of Ponderosa Estates Addition, as recorded in Volume 70 of Plats, pages 34 and 35, records of King County, Washington;

Thence Easterly along said extension and said South line to the Southerly margin of the Cedar River Pipeline right-of-way;

Thence Southeasterly and Easterly along said Southerly right-of-way margin to the West line of the East half of the Southeast quarter of said Section 21;

Thence Northerly along said West line to the North line of the Southeast quarter of the Southeast quarter of said Section 21;

Thence Easterly along said North line to the East line of said Section 21, said point being on the City of Renton City Limits, as established by City Ordinance 3723, and the terminus of this boundary description.

SOOS CREEK WATER AND SEWER DISTRICT

KING COUNTY, WASHINGTON

RESOLUTION NO. 1480-C

A RESOLUTION of the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, approving INTERLOCAL AGREEMENT FOR THE ESTABLISHMENT OF SERVICE AREA BOUNDARIES with City of Renton.

WHEREAS, the District and the City of Renton have studied their water and sanitary sewer service areas, and have reached agreement regarding which entity should provide water service and sanitary sewer service to the areas of present and future overlap between them as the City annexes those areas designated by it as its planning and future annexation area; and

WHEREAS, the District and the City desire to enter into an Interlocal Agreement designating their respective future water service and sanitary sewer service area boundaries to be relied upon as each plans and constructs infrastructure to serve its present and future service area; and

WHEREAS, an Interlocal Agreement designating service area boundaries is consistent with planning principals under the Growth Management Act and other pertinent State and County statutes, regulations and ordinances; and

WHEREAS, determining future service areas will provide maximum efficient use of existing and future facilities, orderly and efficient water system and sanitary sewer system planning, and is in the public interest.

NOW, THEREFORE, BE IT RESOLVED by the Commissioners of Soos Creek Water and Sewer District, King County, Washington, as follows:

SECTION 1: That Soos Creek Water and Sewer District hereby authorizes execution of the

CITY OF RENTON and SOOS CREEK WATER AND SEWER DISTRICT
INTERLOCAL AGREEMENT FOR THE
ESTABLISHMENT OF SERVICE AREA BOUNDARIES

SECTION 2: That the District shall take such action as is appropriate to accomplish the terms and purposes hereof.

Adopted by the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, at a regular open public meeting thereof on the 21st day of August, 1996.

KAREN WEBSTER, President

-excused-
PATRICK BRAZIL, Secretary

STEVE SANDELIUS, Commissioner

-excused-
PHILIP SULLIVAN, Commissioner

CLEMENT QUANRUD, Commissioner

SOOS CREEK WATER AND SEWER DISTRICT

KING COUNTY, WASHINGTON

RESOLUTION NO. 2545-C

A RESOLUTION of the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, approving First Addendum to Agreement for the Transfer of Facilities and for the Establishment of Service Boundaries; City of Renton.

WHEREAS, the District has entered into an AGREEMENT FOR THE TRANSFER OF FACILITIES AND FOR THE ESTABLISHMENT OF SEWER BOUNDARIES with the City of Renton; and

WHEREAS, by Addendum the District and the City desire to amend the Agreement regarding its establishment of sewer and water service areas.

NOW, THEREFORE, BE IT RESOLVED by the Commissioners of Soos Creek Water and Sewer District, King County, Washington, as follows:

SECTION 1: That Soos Creek Water and Sewer District hereby agrees to amendment of the Interlocal Agreement with the City of Renton by execution of the following, a copy of which is attached hereto as Exhibit A:

FIRST ADDENDUM TO AGREEMENT FOR THE TRANSFER OF FACILITIES AND FOR THE ESTABLISHMENT OF SERVICE BOUNDARIES

SECTION 2: That the District take such action as is appropriate to accomplish the terms hereof.

Adopted by the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, at a regular open public meeting thereof on the 21st day of January, 2004.

STEVE SANDELIUS, President

RANDY REECE, Secretary

PHILIP SULLIVAN, Commissioner

KAREN WEBSTER, Commissioner

CLEMENT QUANRUD, Commissioner

ORIGINAL

CAG-91-083 Addendum 1-04

FIRST ADDENDUM TO CITY OF RENTON & SOOS CREEK WATER AND SEWER DISTRICT AGREEMENT FOR THE TRANSFER OF FACILITIES AND FOR THE ESTABLISHMENT OF SERVICE BOUNDARIES

THIS ADDENDUM, made and entered into this 26th day of January, 2004, by and between the **CITY OF RENTON**, a Washington municipal corporation, hereinafter referred to as "the City", and **SOOS CREEK WATER AND SEWER DISTRICT**, a Washington municipal corporation, hereinafter referred to as "the District", both being duly organized and existing under and by virtue of the laws of the State of Washington,

WITNESSETH:

WHEREAS, with effective date of the 6th day of August, 1991, the City and the District entered into the following agreement:

CITY OF RENTON & SOOS CREEK WATER AND SEWER DISTRICT
AGREEMENT FOR THE TRANSFER OF FACILITIES
AND FOR
THE ESTABLISHMENT OF SERVICE BOUNDARIES

(1991 AGREEMENT); and

WHEREAS, by mutual agreement, in 1997 the City and the District amended the boundaries as contained in the Agreement by the execution of the following agreement

CITY OF RENTON and SOOS CREEK WATER AND SEWER DISTRICT
INTERLOCAL AGREEMENT FOR THE
ESTABLISHMENT OF SERVICE BOUNDARIES

(1997 AGREEMENT); and

WHEREAS, the 1997 AGREEMENT left all obligations of the 1991 AGREEMENT intact, changing only the service area descriptions of the 1991 AGREEMENT; and

WHEREAS, the parties now desire to modify the 1991 AGREEMENT as to both terms and service area; and

WHEREAS, the 1991 AGREEMENT as modified by the 1997 AGREEMENT, and by this Addendum, will continue to provide for maximum efficient use of existing and future facilities, and orderly and efficient water and sanitary sewer system planning.

NOW, THEREFORE:

IT IS HEREBY AGREED by and between the parties hereto as follows:

1. **Sale of Springbrook Area Sewer System to Renton.** The parties have agreed that in consideration of the mutual agreements contained herein, that all payment obligations contained in Section 6. and Section 7. of the 1991 AGREEMENT regarding the sale of the Springbrook Sewer System to Renton shall be deemed to have been satisfied in full, and Renton shall have no further payment or accounting obligation there for.

2. **Amended Terms for Service and Payment by District for Stonehaven Area.** The parties agree that as an alternative the District may connect the Stonehaven and adjacent area , as shown on Exhibit "A" which is by reference incorporated herein, to the South 47th Street sewer line of Renton, generally in the manner shown on said Exhibit. In the event of such alternate connection, and in consideration thereof, the District shall pay one half of the General Facilities Charges it collects from such area to Renton, after the property owner has made such payment to the District. Total payment will be dependent upon the number of units utilizing such alternate connection, when the charge is paid, the rate at the time of connection, and the number of units developed.

3. **Termination on Build-out.** The terms hereof with regard to the Stonehaven and adjacent area shall terminate and be of no further force or effect upon completion of build-out within that area.

4. **Remaining Obligations Intact.** Nothing herein shall be construed to alter the rights, responsibilities, liabilities, or obligations of either the City or the District pursuant to either the 1991 AGREEMENT or the 1997 AGREEMENT, previously executed by the parties, except as specifically set forth herein.

Approved by Resolution No. 3681 of the City Council of the **CITY OF RENTON**, Washington, at its regular meeting held on the 22nd day of December, ~~2004~~ 2003.

CITY OF RENTON

By: Kathy Keolker-Wheeler

Title: Kathy Keolker-Wheeler, Mayor

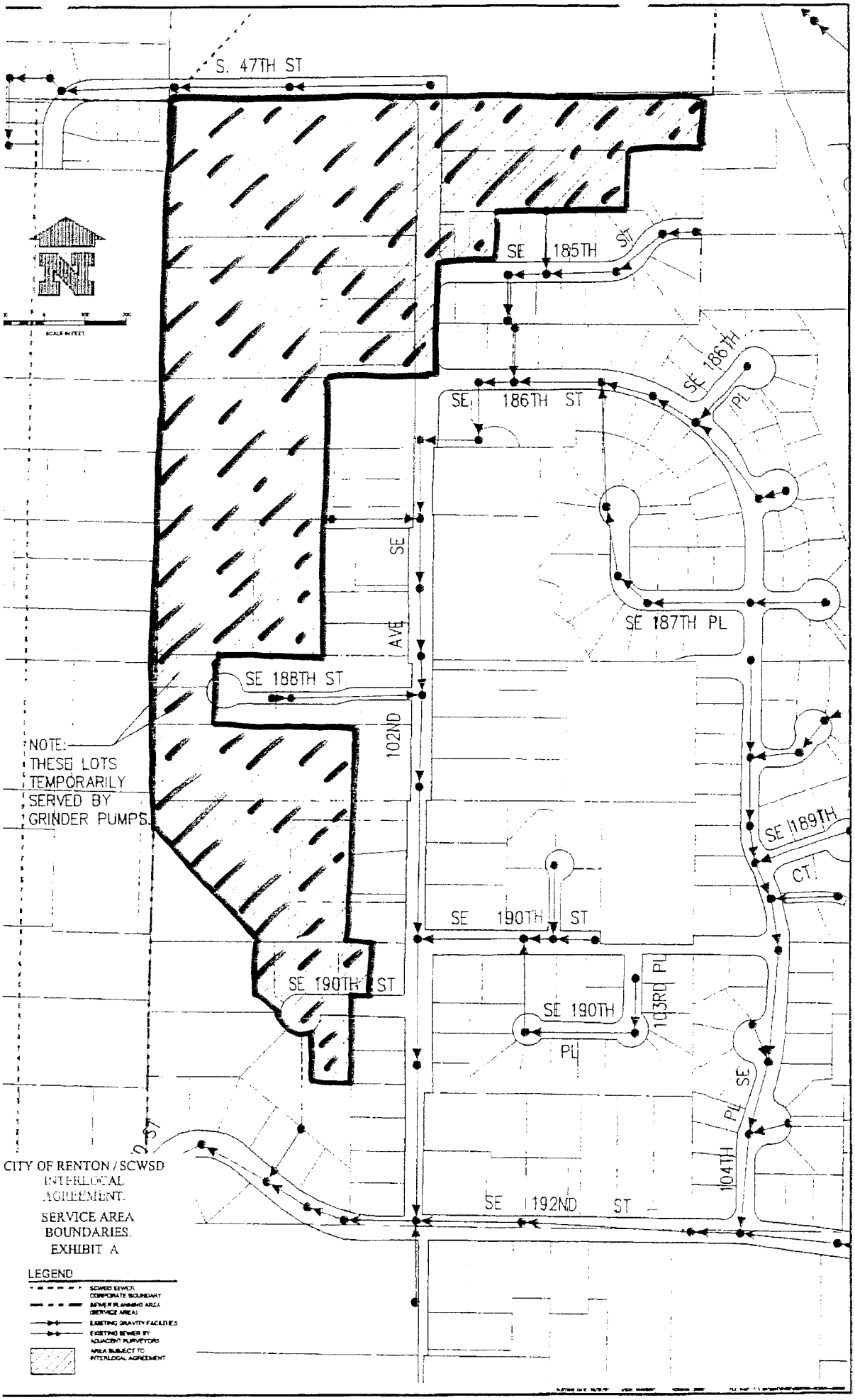
Attest: Bonnie I. Walton
City Clerk - Bonnie I. Walton

Approved by Resolution No. 2545-S of the Board of Commissioners of **SOOS CREEK WATER AND SEWER DISTRICT** of King County, Washington, at its regular meeting held on the 7th day of January, ~~2003~~ 2004.

SOOS CREEK WATER AND SEWER DISTRICT

By: Philip W. Sullivan
Philip Sullivan, President of Board

By: Randy Reece
~~Clement Quamrud~~, Secretary of Board
Randy Reece Acting


S. 47TH ST
SE 185TH ST
SE 186TH ST
SE 186TH PL
SE 187TH PL
SE 188TH ST
102ND AVE SE
SE 189TH CT
SE 190TH ST
SE 190TH ST
SE 190TH PL
103RD PL SE
104TH PL SE
SE 192ND ST
NOTE:
THESE LOTS
TEMPORARILY
SERVED BY
GRINDER PUMPS.
CITY OF RENTON / SCWSD
INTERLOCAL
AGREEMENT.
SERVICE AREA
BOUNDARIES.
EXHIBIT A
LEGEND

CITY OF KENT and SOOS CREEK WATER AND SEWER DISTRICT
EMERGENCY USE INTER-TIE AGREEMENT

THIS AGREEMENT, made and entered into this 7th day of August, 2001, by and between the **CITY OF KENT**, a Washington municipal corporation (hereinafter referred to as "the City"), **SOOS CREEK WATER AND SEWER DISTRICT**, a Washington municipal corporation (hereinafter referred to as "the District"), and the **CITY OF SEATTLE** (hereinafter referred to as SPU), all entities being duly organized and existing under and by virtue of the laws of the State of Washington, is entered into for the purposes of planning, designing, constructing , maintaining and operating an emergency system inter-tie between the respective parties.

WITNESSETH:

WHEREAS, both the City and the District are public agencies authorized by law and qualified to provide domestic public water in accordance with federal, state and local laws and regulations; and

WHEREAS, emergency use inter-ties between public water agencies can assist them in performing their water supply duties during times of emergency and water shortage; and

WHEREAS, implementation of emergency intertie agreements between SPU purveyor and non-purveyor customers that involve SPU water supply are allowed subject to SPU approval; and

WHEREAS, it is in the public interest for the parties herein to establish an emergency use inter-tie to provide backup water supply in the event of an emergency, as defined herein.

NOW, THEREFORE:

IT IS HEREBY AGREED by and between the parties hereto as follows:

1. The inter-tie is intended to operate as a one way gravity flow from the District's system into the City's system, by an inter-tie facility to be located within a vault suitable for the purpose. The facilities for this purpose are schematically shown on Attachment 1 to this document. Final location and configuration of the facilities will be determined at the time of final design.

2. The District will act as the lead agency, and will be the design and contracting entity for the construction of the facilities contemplated hereby.

3. Upon completion of construction, the District and the City will own and operate the facilities respectively indicated on Attachment 1 to this agreement. The District will convey those facilities to be owned and operated by Kent by Bill of Sale.

4. The City shall reimburse the District for all actual costs associated with the planning, design, construction and permitting for this project. All reasonable

efforts have been made to develop cost projections for this project. The estimated total project cost is $85,000.

5. The City and the District will each have access to the vault via dual padlocks or ownership of keys to the vault.

6. The City will be provided a key to the vault's lock. Only the District will unlock and operate the vault, except as otherwise provided herein.

7. The inter-tie will be operated only in the event of an emergency. For purposes of this agreement, an emergency is defined to be as a infrastructure failure, contamination of water supply fire flow demand failure, electrical supply failure, or drought condition as defined by the State Department of Ecology such that -the City's water supply is unable to provide sufficient water supply to its inhabitants.

8. It is anticipated that the inter-tie will be capable of transporting approximately 500-750 gpm. Both parties recognize that the District's water system's ability to sustain this flow rate is limited by District physical system characteristics. The District may reduce the rate of flow for any period necessary to ensure that the inter-tie does not adversely impact its system operation.

9. The procedures for operating the inter-tie in the event of an emergency shall be as follows:

   a. The City will make the determination that an emergency exists which warrants a request that the inter-tie be activated.

   b. The City's Water Superintendent or designee shall provide a verbal request to the District Manager or designee and Seattle Public Utilities (SPU). Upon the District's and SPU's concurrence that such an emergency exists, the inter-tie will be activated in one of the two following manners:

      i. If the emergency is one that does not require immediate water by the City, the District will open the inter-tie at 9:00 a.m. on the first business day following the determination of the emergency. The City's personnel shall also be on site for operation of the City's facilities. At the time of activation, District and City personnel shall concurrently confirm and note the standing reading on the flow meter totalizer of the inter-tie.

      ii. In the even of an emergency which requires immediate use of the inter-tie, the City shall verbally notify the District that the inter-tie's activation is required as soon as reasonably possible. If the District is unable to respond within thirty minutes of such verbal notification, the City's personnel will be permitted to unlock and activate the inter-tie valve, and to verify and to note the standing reading on the flow meter totalizer of the inter-tie.

c. The City will provide the District with a written request confirmation not less than 24 hours after any verbal request, or during the first day of normal business after the verbal request, whichever is later. If the City requests that the inter-tie be activated prior to 9:00 a.m. on the first business day following the determination of an emergency, the City will provide backup data as necessary to allow the District to request a waiver of demand metering charges from SPU for the particular event, in accordance with the wholesale water contract between the District and SPU. If demand metering charges are not waived by SPU, the City shall pay such charges incurred by the District relative to the event.

d. The District shall notify SPU in writing within 10 days after the use of the emergency inter-tie. This notification will include a description of the nature of the emergency, and the date, time and quantity of water used during the activation of the inter-tie.

e. The inter-tie shall remain activated until the City has determined that the emergency causing need for the activation has ceased, but in no event for longer than two weeks unless mutually agreed to in writing by the District and SPU. The District shall close the inter-tie at the time of such determination, or at 9:00 a.m. on the following day. The City shall provide a written confirmation of its request that the inter-tie be closed.

f. The District shall read the meter, and calculate and invoice the City for the water used during each activation of the inter-tie as follows:

   i. The District shall prepare an invoice by multiplying the number of ccf's (hundred cubic feet) of water used by either the new water wholesale rate or the demand metering charge the District is required to pay to SPU for the event, whichever is greater, plus the amount per ccf established the District's Board of Commissioners as the District's wheeling charge. For calendar year 2001, the wheeling charge shall be $.20 per ccf. Payment of invoices calculated in accordance herewith shall constitute complete payment for the water, labor, and activation of the inter-tie, and its administration while activated or while pending activation.

   ii. The City shall pay each invoice in full within thirty days of its issue. After 60 days, a late charge of 10% of the amount due shall be added, and thereafter the entire balance due shall bear interest at 12% per annum, until paid in full.

10. The implementation of this agreement is contingent upon receipt of the written approval of SPU; and it shall be subject to any amendments made to the District's wholesale water contract with SPU during the term hereof.

12. The inter-tie project is subject to approval by the Washington State Department of Health. The District will submit plans and specifications to the Department for review and approval concurrently with the project's construction. The City will pay the review fees directly to the Department. Any changes to the project

required by the Department will be made by the District. Both parties recognize that these changes may result in additional costs to the City.

13. Each party hereto agrees to protect, defend and indemnify the other party, its officers, officials, employees and agents from any and all costs, claims, judgments and/or awards of damages, arising out of or in any way resulting from the party's default, failure of performance, or negligent conduct associated with this agreement, by the party, its employees, subcontractors or agents. Each party agrees that its obligations under this provision extend to any claim, demand, and/or cause of action brought by or on behalf of any of its employees, or agents. The foregoing indemnity is specifically and expressly intended to constitute a waiver of each party's immunity under Washington's industrial insurance act, RCW Title 51, as respects the other party only, and only to the extent necessary to provide each party with a full and complete indemnity of claims made by the other party's employees. The parties acknowledge that these provisions were specifically negotiated and agreed upon by them.

14. The City agrees to protect, defend and indemnify the District, its officers, officials, employees and agents from any and all costs, claims, judgments and/or awards of damages, arising out of or in any way related to pressure changes within the City's service area attributable to the activation and use of the inter-tie.

15. This agreement shall continue in effect until mutually cancelled by the parties.

16. Unless otherwise agreed to by the parties, this agreement is not intended to preclude, conflict with, or otherwise affect the terms of existing or future agreements executed between SPU and the City that may involve use of the inter-tie described herein.

THE CITY OF KENT

Mayor

Date: 7-26-01

SOOS CREEK WATER AND SEWER DISTRICT

DISTRICT MGR

Date: 8/1/01

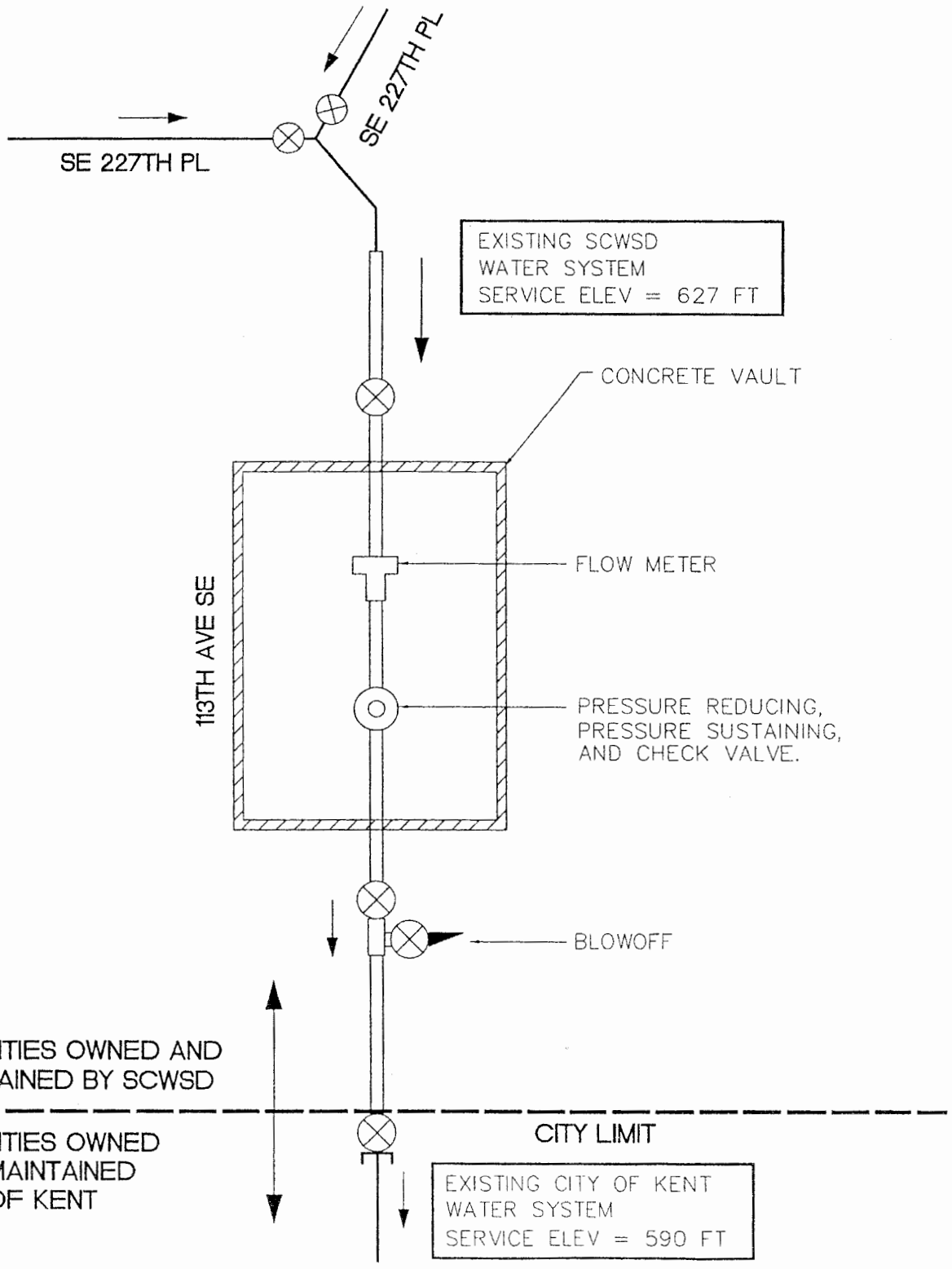
CITY OF SEATTLE

SPU Managing Director

Date: 8-7-01

ATTACHMENT NO. 1

CITY OF KENT - SOOS CREEK WATER AND SEWER DISTRICT
EMERGENCY USE INTERTIE AGREEMENT
SCHEMATIC DIAGRAM OF FACILITIES AND OPERATION



SOOS CREEK WATER AND SEWER DISTRICT

KING COUNTY, WASHINGTON

RESOLUTION NO. 2872-W

A RESOLUTION of the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, approving Agreement for the Purchase of Bulk Water Between Cedar River Water and Sewer District and Soos Creek Water and Sewer District.

WHEREAS, Cedar River Water and Sewer District and Soos Creek Water and Sewer District each have bulk water fill stations within the sewer service area of one another; and

WHEREAS, the Districts have reached agreement on the terms of an agreement for bulk rates for water from one another's fill stations; and

WHEREAS, the agreement reached is mutually beneficial to the Districts and to their customers; and

WHEREAS, the Board of Commissioners of the District has considered and approved the terms of the proposed agreement;

NOW, THEREFORE, BE IT RESOLVED by the Commissioners of Soos Creek Water and Sewer District, King County, Washington, as follows:

SECTION 1: That the Board of Commissioners of Soos Creek Water and Sewer District hereby authorizes the following:

Agreement for the Purchase of Bulk Water Between Cedar River Water and Sewer District and Soos Creek Water and Sewer District

SECTION 2: That the District Manager is authorized to execute the Agreement on behalf of the District.

SECTION 3: That the District shall take such action as is appropriate to accomplish the terms and purposes hereof.

Adopted by the Board of Commissioners of Soos Creek Water and Sewer District, King County, Washington, at a regular open public meeting thereof on the 4th day of October, 2006.

KAREN WEBSTER, President

CLEMENT QUANRUD, Secretary

CONNIE SULLIVAN, Commissioner

RANDY REECE, Commissioner

EXCUSED

STEVE SANDELIUS, Commissioner

APPENDIX E

SOOS CREEK WATER AND SEWER DISTRICT

DEVELOPER EXTENSION CHECKLIST AND AGREEMENT

PROJECT NAME _ _____

TYPE

☐ WATER EXTENSION

- ☐ District Special Facilities
- ☐ Latecomer
- ☐ Oversize/Overdepth

☐ SEWER EXTENSION

- ☐ District Special Facilities
- ☐ Latecomer
- ☐ Oversize/Overdepth

SOOS CREEK WATER AND SEWER DISTRICT

KING COUNTY, WASHINGTON

Commissioners

Gary Cline
Alice Marshall
Steve Pfaff
Darold Stroud
Karen Webster

Sewer and Water District Office

14616 S.E. 192nd Street
P.O. Box 58039
Renton, Washington 98058-1039

Ron Speer, District Manager
Telephone: 253-630-9900
FAX: 253-630-5289
email: rspeer@sooscreek.com

Attorney

Hanis Irvine Prothero, PLLC
6703 South 234th Street, #300
Kent, Washington 98032-2900
Telephone: 253-520-5000
FAX: 253-893-5007
email: mhanis@hiplawfirm.com

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SOOS CREEK WATER AND SEWER DISTRICT

KING COUNTY, WASHINGTON

DEVELOPER EXTENSION CHECKLIST

NAME OF PLAT/PROJECT _____

PARCEL NO. _____

PROJECT ADDRESS _____

DEVELOPER _____

MAILING ADDRESS _____

_____

PHONE _____ FAX _____

EMAIL _____

ADDITIONAL OWNER(S)/CONTACTS _____

DEVELOPER'S ENGINEER _____

REGISTRATON NUMBER _____

MAILING ADDRESS _____

_____

PHONE _____ FAX _____

EMAIL _____

OTHER JURISDICTIONS

☐	King County	☐	City of Maple Valley
☐	City of Covington	☐	City of Renton
☐	City of Kent	☐	Cedar River Water & Sewer District
☐	Water District #111	☐	Covington Water District
☐	City of Black Diamond	☐	City of Auburn PAA

DOCUMENTS

In addition to this Developer Extension Agreement, the following materials may be required for performance of a Developer Extension Project:

- Pre-Construction Conference Items
- Contractor's Release
- Engineer's Release
- Performance Bond
- Bill of Sale
- Easement Template
- Easement Relinquishment Template
- Developer Extension Renewal Agreement
- Assignment and Covenant to Perform Developer Extension Agreement
- Performance and Indemnification Bond
- Certification of Assignment in Lieu of Performance Bond
- Value of Systems
- Memorandum of Developer Extension Reimbursement Agreement (Latecomer)
- Resolution of Fees and Charges for Developer Extensions
- Resolution regarding Maintaining Grades and Television Inspection
- Notice of Execution of Developer Extension Agreement
- Notice of Completion of Developer Extension Agreement

The District's Specifications and Standards, and other materials that may be necessary to this project are available at the District office; or at www.sooscreek.com. Signing of this Agreement will constitute a representation that you have been offered all such materials.

A. PRELIMINARY

☐	1.	Legal Description of property and any encumbrances	(DEVELOPER)
☐	2.	Required facilities or design modifications (e.g., oversizing and/or overdepth), determined by District	(DISTRICT)
☐	3.	Easements and temporary construction permits, as necessary, properly executed and delivered to the District	(DEVELOPER)
☐	4.	Provide preliminary plat	(DEVELOPER)
☐	5.	Fire flow requirements and hydrant locations from Fire Marshall (Water Extensions)	(DEVELOPER)
☐	6.	Cost estimate of special facilities	(DEVELOPER)
☐	7.	Calculation of Main Extension Fee(s)	(DISTRICT)
☐	8.	Application form completed	(DEVELOPER)
☐	9.	Application approved	(DISTRICT)
☐	10.	Payment of Plan Review Fee, or Design Fee if District Special Facilities	(DEVELOPER)[1]
☐	11.	Issue design and construction standards	(DISTRICT)

[1] See Section 11.08. ADDITIONAL FEES AND CHARGES – District pays for first cycle of plan review; Developer pays for subsequent plan review cycles, if necessary.

B. REQUIRED BEFORE PRE-CONSTRUCTION CONFERENCE
Note: Final site plans must be completed prior to pre-construction meeting.

☐	1.	Plans and specifications prepared and submitted to District for review	(DEVELOPER)
☐	2.	Written approval by Developer of system plans and specifications	(DEVELOPER)
☐	3.	Written approval of final street and storm construction plans by appropriate jurisdiction	(DEVELOPER)
☐	4.	Approval of water plans by County or City Fire Marshal	(DEVELOPER)
☐	5.	Review of plans by King County Wastewater Treatment Division (Sewer Extensions)	(DEVELOPER)
☐	6.	SEPA (if applicable)	(DISTRICT)
☐	7.	Approval of plans and issuance of permits by applicable permitting agencies	(DEVELOPER)
☐	8.	Insurance Certificate	(DEVELOPER/ CONTRACTOR)
☐	9.	Payment of vertical datum, site benchmark, and the first run of pipe and the first manhole verification survey (sewer only); construction record drawing (CRD) survey (by District)	(DISTRICT/ DEVELOPER)[2]
☐	10.	Payment of Construction Observation and Admin. Deposit; SCWSD Inspection Deposit; Developer Guaranty Deposit; and Developer Conformance Deposit ; Latecomer agreement preparation fee	(DEVELOPER)
☐	11.	Provide itemized contractor bid sheet for off-site and on-site work	(DEVELOPER)

[2] See Section 11.08. OTHER FEES AND CHARGES – District pays for vertical datum, site benchmark, and the first run of pipe and the first manhole verification survey (sewer only) and CRD survey; Developer pays for subsequent CRD surveys, if necessary.

☐ 12. Pre-Construction Conference (DISTRICT and ENGINEER; DEVELOPER and ENGINEER; CONTRACTOR)

Note: For all Developer Extension projects, Developer or representative, Developer's Engineer and on-site representative of the Contractor (e.g., foreman) must be present at the pre-construction conference.

C. REQUIRED BEFORE CONSTRUCTION BEGINS

☐ 1. Request District Engineer to verify vertical datum and site benchmark survey (sewer only) (CONTRACTOR)

☐ 2. Payment of Performance Bond for off-site and comprehensive plan or general facility portions of extension (if any) (DEVELOPER)

☐ 3. One week notice of starting date (DEVELOPER)

☐ 4. Vertical datum, site benchmark, and the first run of pipe and the first manhole verification survey (sewer only) (DISTRICT)

☐ 5. Coordination of telephone vaults; coordination of power vault and hand hold locations with Puget Sound Energy (DEVELOPER)

D. PRIOR TO ACCEPTANCE OF JOB

☐ 1. Television inspection of system (sewer only) (DISTRICT)

☐ 2. Construction Record Drawing (CRD) survey (DISTRICT)

☐ 3. Approval of construction – final (DISTRICT)

☐ 4. Certification of areas of all parcels and lots (DISTRICT)

☐ 5. Verification of site grading to meet plat design (DEVELOPER)

☐ 6. Construction costs to District (DEVELOPER)

☐ 7. Preparation of Bill of Sale (DISTRICT)

☐ 8. Executed Bill of Sale and on-site easements returned to District (DEVELOPER)

Note: Signed easements ready for recording are required for review before the Bill of Sale will be accepted by the Board of Commissioners.

☐ 9. Value of system to District (DEVELOPER)

☐ 10. CRD prepared along with the On-From-To document (DISTRICT)

☐ 11. Copy of recorded final plat, showing minimum floor elevation limitations, if any (DEVELOPER)

☐ 12. Bill of Sale (will not be approved by the Board until District has received all documents) (DISTRICT)

☐ 13. Memorandum of Developer Extension Reimbursement Agreement (Latecomer), if applicable (DISTRICT)

Note: Applications for Water Meter and Side Sewer Permits will not be accepted until all of the above items have been accomplished.

E. PRIOR TO RELEASE OF DEVELOPER GUARANTY DEPOSIT

☐ 1. Final inspection approximately one year from acceptance of Bill of Sale (DISTRICT)

☐ 2. Notification of necessary repairs and/or restoration (DISTRICT)

☐ 3. Completion of repairs (DEVELOPER)

☐ 4. Accounting for any funds applied from Deposits; release of balance (DISTRICT)

SOOS CREEK WATER AND SEWER DISTRICT

KING COUNTY, WASHINGTON

APPLICATION AND AGREEMENT TO ALLOW CONSTRUCTION

OF EXTENSION TO FACILITIES

TO: SOOS CREEK WATER AND SEWER DISTRICT

The undersigned ("the Developer"), hereby makes application to Soos Creek Water and Sewer District, King County, Washington ("the District"), for permission to construct and install an extension to the District's

☐ Water
☐ Sewer

facilities in the public right-of-way under the District's franchise, and/or upon easements approved by the District, and to connect to the District's water distribution system and/or sewage collection system; and in consideration thereof, makes the following representations and agreements, to wit:

1. **LOCATION OF EXTENSION**

Name of Plat/Project _____

2. **DESCRIPTION OF PROJECT**

A conceptual drawing of the project must be attached, and by this reference thereto the same is made a part of this Agreement.

3. **INCORPORATION OF OTHER DOCUMENTS**

Listed hereinabove are other “Documents”, copies of which have been provided herewith, and which may be applicable to the performance of this Agreement. To the extent any such document applies, the parties hereto agree that the terms thereof are incorporated herein as though fully set forth, and may be enforced in the same manner and to the same extent as all other terms of this Agreement.

4. **DESCRIPTION OF EXTENSION**

4.01 The proposed extension, as determined at the pre-application review, will consist of approximately

_____ Lineal feet of water pipe

_____ Lineal feet of sewer pipe

and appurtenances and shall be installed in accordance with the plans and specifications provided by the Developer’s Engineer, and in accordance with the standards and conditions for constructing extensions to the District's systems adopted by the Board of Commissioners of the District, the terms of which are by this reference made a part hereof as though set forth in full herein.

4.02 The Limitation Period for Acceptance of this extension, as described in Section 26, shall be 18 months, unless the project includes facilities and improvements required by the District (Section 6), in which case the Limitation Period shall be 24 months from the date of this Agreement.

4.03 This extension

☐ Does
☐ Does not include the installation of facilities for which latecomer reimbursement, as described in Section 22 may be available.

5. **SPECIAL FACILITIES (to be paid for by Developer)**

5.01 Special facilities are those that must be constructed to make service available to the Developer's project, but which are other than the typical mains and appurtenances for developer extension projects (e.g. pump stations and pressure reducing valve stations).

5.02 For this project special facilities are (check one)

☐ Not applicable
☐ Applicable. The description and estimated construction cost of the special facilities are as follows:

_____

_____

_____

_____

_____

_____

6. **FACILITIES AND IMPROVEMENTS REQUIRED BY DISTRICT (to be paid for in whole or part by the District)**

6.01 Facilities and improvements required by the District, are as defined in Section 21 hereof.

6.02 For this project special facilities are (check one)

☐ Not applicable
☐ Applicable. The description and projected cost thereof are generally described as follows:

7. PROJECT ACCOUNTING

PROJECT ACCOUNTING DUE WITH APPLICATION	WATER	SEWER
Due with Application	$0.00	$0.00
TOTAL DUE WITH APPLICATION	**$1,000**	**$ 1,000**
ADDITIONAL AMOUNTS DUE PRIOR TO PRE-CONSTRUCTION CONFERENCE		
Construction Observation & Admin. Deposit	$ 0.00	$ 0.00
SCWSD Inspection Deposit (including TV sewer inspection)	$ 0.00	$ 0.00
Developer Guaranty and Conformance Deposit	0.00	0.00
Administration and Pre-Construction Meeting Fee	250.00	250.00
Latecomer Calculation & Administration Fee	0.00	0.00
TOTAL DUE PRIOR TO PRE-CONSTRUCTION CONFERENCE	**$ 0.00**	**$ 0.00**

NOTE: The pre-construction conference will not be scheduled until all fees and deposits have been paid.

8. **OTHER FEES AND CHARGES - INFORMATIONAL ONLY**

8.01 Plan Review Fee – A minimum Plan Review Fee has been established by the District. The Fee will be paid by the District for the first "cycle" of plan review as described in Section 11.02. For each subsequent cycle of plan review, it shall then be paid by the Developer.

Water - (each for second cycle)	$ 3,000.00 + 20% = $3,600.00
(for each cycle required after two)	$ 1,500.00 + 20% = $1,800.00
Sewer - (each for second cycle)	$ 5,000.00 + 20% = $ 6,000.00
(for each cycle required after two)	$ 2,500.00 + 20% = $3,000.00

8.02 Construction Record Drawing (CRD) Survey determined as necessary

The District will pay for the first CRD Survey. If additional Surveys are required due to failure of the Development to conform with District standards, the cost thereof shall be charged to the Developer as an additional fee.

8.02 Consultation/assistance conference as requested
by the Developer or Developer's Engineer (one hour minimum) $ 250.00/hour

8.03 Latecomer/Special Connection Charges - ***Updated and payable at time of Bill of Sale***

Water -	No.	$ per front foot
Water -	No.	$ per front foot
Sewer -	No.	$ per front foot

8.04 Current District General Facility Charge

A. Residential, per Single Family Unit

Water -	$ 2,444.00 per unit
Sewer -	$ 2,672.00 per unit

B. Commercial Properties; calculated on greater of ERUs based on meter size, or on square footage

Water - (if based on ERUs)	$ 2,444.00 per unit
(if based on square footage)	$ 0.2444 per sq ft
Sewer - (if based on ERUs)	$ 2,672.00 per unit
(if based on square footage)	$ 0.2672 per sq ft

C. Public Schools and Parks; shall be evaluated in accordance with Department of Ecology and residential equivalency standards regarding their overall impact and utilization of the system to determine ERUs

Water - $ 2,444.00 per unit

Sewer - $ 2,672.00 per unit

8.05 Seattle Public Utility Facility Charge, determined by meter size

Water - $ 783.00 per ERU

8.06 Trench failure/settlement bond amount $__N/A_____

8.07 Landscape plantings bond amount $__N/A_____

NOTE: All fees include and all deposits are subject to the District's regular and ordinary administrative costs, which have been determined to be 20% of the total amount.

9. **DEVELOPER RESPONSIBILITIES**

THE DEVELOPER/DEVELOPER'S ENGINEER IS FULLY RESPONSIBLE FOR THE EXECUTION OF ITS PROJECT, AND SHALL PERFORM ALL FUNCTIONS WITH REGARD TO THE PROJECT, INCLUDING THE FOLLOWING:

9.01 Determine District's construction specifications and standards, and advise Developer;

9.02 Preparation of plans and specifications;

A. The final plat map shall be to a scale of 1 inch = 100 feet or 1 inch = 50 feet. The contour map shall be to a scale of 1 inch = 100 feet with contour intervals of 5 feet or less. The road profile and storm plan sheets shall be to a scale of 1 inch = 50 feet and shall be furnished to the District rolled, not folded.

B. The Developer shall also provide the description, location and elevation of all bench mark data available on the project site, and this information, wherever possible, shall be indicated on the maps furnished by the Developer. Datum shall be King County Aerial Survey (KCAS or NAVD 88). If not provided by the Developer, this data will be procured by the District, and the cost thereof will be charged as Additional Fees pursuant to Section 11.08 hereof, to which fee the Developer hereby consents. The Developer shall also furnish a plat computation work map with a scale of 1 inch = 50 feet, and a certification by the Developer's Engineer of the areas of all lots and parcels within the plat.

C. Construction plan(s) shall be prepared according to District standards and submitted to the District for review and approval prior to construction.

D. The plan(s) shall be separate from those plans for plat improvements, storm drainage improvements, and road/street improvements, and plans for other

utilities. Plans for water system improvements shall be separate from plans for sanitary sewer system improvements.

The standard scale of horizontal 1 inch = 50 feet and vertical 1 inch = 5 feet is dependent upon the site information/layout and vertical tolerances. The plan and profile views shall be prepared in such a manner that show complete pipe segments between street intersections and easements without duplication of information, as much as possible.

9.03 Send plans to agencies for permitting approval and provide the permits to the District;

9.04 Offsite design survey;

9.05 Provide two (2) sets of preliminary and Eight (8) sets of full size and 2 sets of half sized stamped, approved of final plans and specifications to the District;

9.06 Provide current accepted version of AUTOCAD Compatible Drawing (DWG) electronic files on CD Rom; files to include any special fonts used, all external cross-references, lot and street layout with computation data, street and storm plan and profile data, and site topography and proposed site grading plan;

9.07 Perform all construction staking.

Construction staking procedures used by field surveyors shall place positions of new facilities such as manhole centers, cleanouts, mains, fittings, etc, dimensioned in the design to within a tolerance of 0.2 feet horizontally and 0.02 feet vertically of design dimension, and meet any design clearance or setback requirements.

Vertical elevations are to be expressed in NAVD 88 datum and tied into sufficient known benchmarks to meet this requirement within said tolerance. Slopes shall be expressed to 4 decimal places (e.g., ".0063" representing "0.63 %"). Control and site benchmarks provided or used to position said facilities shall also be of a quality sufficient to meet said tolerances and datum requirement.

10. DISTRICT RESPONSIBILITIES

THE DISTRICT'S RESPONSIBILITY IS LIMITED TO CONFIRMING THAT THE PROJECT CONFORMS TO DISTRICT STANDARDS.

In addition, the District will be responsible for preparation of SEPA Checklist and Environmental Impact Statement, if required, or other environmental documents necessary for compliance of the Developer's Project with SEPA. The costs of the SEPA process will be borne by the District; provided, however, that if SEPA review and process is attributable to pipe over 8" required to serve the Developer's Project, such review and the cost thereof will be borne by the Developer.

11. DESCRIPTION OF FEES, CHARGES, AND DEPOSITS

The following is a description of the fees, charges, and deposits, and the payment terms thereof attributable to this Agreement, and/or necessary to provision of service by the District:

11.01 DESIGN FEE – DISTRICT SPECIAL FACILITIES **-** A Design Fee shall be paid by the Developer to the District in an amount equal to the current rate schedule adopted by Resolution for design fees for any water and/or sewer District Special Facilities. Payment of the design fee is in consideration of the following basic work:

A. Preparation of plans and specifications;

B. Regular and ordinary administrative costs attributable to Special Facilities;

C. Four (4) sets of plans and specifications for Special Facilities; and

D. Preparation of Bill of Sale for Special Facilities.

11.02 PLAN REVIEW FEE **-** A Plan Review Fee shall be paid to the District for the review of plans by the District to determine compliance with District standards and the requirements of other agencies having regulatory authority or control over the extension. The fee for the first cycle of plan review will be paid by the District, and covers one cycle of plan review. A "cycle" is one submission of plans; a review of the plans by the District and response with required changes; and one review of the plans as corrected. Any additional required reviews shall be deemed "additional" and charged as provided in Section 11.08 of this Agreement. The plans shall be prepared in accordance with the District's Design and Construction Standards, Standard Plan Requirements.

11.03 CONSTRUCTION OBSERVATION AND ADMINISTRATION DEPOSIT **-** A deposit as determined by the District, payable prior to the Pre-Construction Meeting, toward the estimated actual costs of construction observation and administration that will be attributable to the Project, including 20% for District administrative costs.

11.04 CRD SURVEY CHARGE - A Construction Record Drawing (CRD) Survey shall be performed by the District Engineer. The cost for the first Survey will be paid by the District. If any additional survey work is required due to the development's failure to conform to the District's standards, such additional survey work shall be deemed "additional" and charged as provided in Section 11.08 of this Agreement.

Measurements taken after construction for production of construction record drawings shall be taken to the same tolerances as the construction staking procedure. Lengths of pipe (run distances) shall be expressed to within 0.5 foot (e.g., "163.5 feet") and elevations expressed to the nearest 0.01 foot (e.g., "423.32 feet") with slopes calculated and expressed to 4 decimal places (e.g., ".0063" representing "0.63%).

11.05 SCWSD INSPECTION DEPOSIT **-** A deposit as determined by the District toward the estimated cost for District inspection, including but not limited to TV inspection, purity testing, punch list inspection, and District administrative costs. To the extent that actual inspection costs exceed this amount, and/or to the extent such costs are attributable to Developer field revisions or deficient work, they shall be deemed "additional" and charged for as provided in Section 11.08 of this Agreement.

11.06 DEVELOPER GUARANTY DEPOSIT

A. The Guaranty Deposit shall be to condition the Developer's compliance with the terms, conditions and standards contained or referenced herein, and shall insure the District against any damage to its existing system and/or proposed extension as a result of the Developer's failure to comply.

B. The Guaranty Deposit shall be used in cases determined by the District when the Developer has failed to make necessary repairs or restoration of any failures, including ditch settlement, of any portion of the extension covered by the guaranty within twenty-four (24) hours after notification by the District of the necessity for said repairs. At the end of the 24 hour period, if the Developer has not accomplished the necessary work, the District will have the work done and pay all costs in connection therewith from the deposit. Determination of any necessary repairs or restoration will be made by the District during the course of periodic inspections and until the final inspection that is to be made within one (1) year of the District's acceptance of the Bill of Sale as provided herein.

C. The Guaranty Deposit will be retained by the District until all items requiring repair or restoration have been satisfactorily completed, and a copy of King County's or the appropriate city's approval of the plat has been provided to the District.

D. In the event that the Guaranty Deposit is reduced by application by the District to repairs or restoration prior to the final inspection, the District will notify the Developer of the amount of the Guaranty Deposit which has been utilized, and the Developer shall immediately deposit with the District the amount of such deposit deficiency.

E. The amount of the Guaranty Deposit shall not constitute a limit on the amount of any District claim, or on the Developer's liability for repairs or restoration, or liability arising out of any other claim by the District for breach of any term of this Agreement. In the event the Main Extension Fee does not cover actual costs, any balance remaining in this deposit may at the District's option be applied to the deficit.

11.07 DEVELOPER CONFORMANCE DEPOSIT

A. The Developer Conformance Deposit shall be held until the Developer has filed with the District office a copy of the recorded plat and any adjustments, amendments or additions to the easement documents or as-built records of the District that are required due to changes in the following, but not limited to: lot line changes, lot number changes, greenbelt area legal description changes, and changes that require amendment to easement descriptions; any of said changes having been made after submittal of the preliminary plat plans, short plat or subdivision plans.

B. The Deposit will be retained by the District until all items requiring adjustment, amendment, or addition have been completed. All costs of such changes for engineering, legal and administration shall be deducted from the deposit and any balance remaining shall be returned to the Developer. The Deposit shall not constitute a limit on the amount to be paid to the District for any such

adjustments, and connections to the system will not be allowed until the District has been reimbursed for the full amount thereof if in excess of the amount of the Deposit. In the event the Main Extension Fee does not cover actual costs, any balance remaining in this deposit may, at the District's option, be applied to the deficit, and the Developer shall be provided an accounting thereof.

11.08 ADDITIONAL FEES AND CHARGES **-** Additional fees and charges shall be paid by the Developer to the District for the costs of work required in addition to the basic work. Additional fees will be based upon the District's current schedule of costs for District employees, and actual engineering, legal and other charges for additional work, plus 20% of the total thereof as the District's administrative costs attributable thereto. Such fees are due upon receipt of the District's invoice, and completed payment is a prerequisite for acceptance by the District of the extension. Additional fees and charges may include, but are not limited to the following:

A. Costs of obtaining King County, appropriate city, and/or State of Washington or other governmental agency franchises, LSA boundary adjustments, annexations, or required approvals, and charges for any inspections performed by those agencies. (Charges for such services are established by the individual agency and not by the District.)

B. Costs attributable to any required environmental assessment and evaluation, including SEPA Checklists and Determinations.

C. Costs of preparation of any special agreements between the Developer and the District, and Resolutions of acceptance.

D. Actual construction observation costs, attributable to Developer field revisions and/or defective work.

E. Any and all costs, charges, expenses and damages attributable to failure of the Developer to comply with this Agreement and/or the requirements of any governing agency.

F. Any and all costs, charges, and expenses incurred by the District to perform or complete any of those functions identified to be performed by the Developer's Engineer.

G. All costs and expenses billed to the District by the District's Engineer to perform or complete any of those functions identified to be performed by the Developer's Engineer.

H. Re-notification of customers if Contractor is unable to meet pre-arranged shutdown schedule (water extensions).

I. All costs, damages and expenses, including reasonable attorney fees, incurred by the District in responding to, and/or defending claims made by third parties for acts of the Developer, its Developer’s Engineer or Contractor.

Note: All amounts remaining from deposits or other funds, including, but not limited to those paid pursuant to this or any other Section of this Agreement, paving deposits, and construction completion deposits for early plat approval, may first be applied by the District to balances owing in the performance of any other portion of this Agreement, and only the balance thereof, after such application, shall be refunded to the Developer.

11.09 CHARGES REQUIRED AS A CONDITION TO SERVICE (INFORMATIONAL ONLY) – As the service is required, other charges will be due, as applicable, as a condition of service. A description of these charges is provided as information only, and are not collected as a part of the Developer Extension process.

A. Latecomer/Special Connection Charges - The charge presently allocated against the property to be developed for prior construction for which there is a connection fee established. This charge is to be paid at the time of submission of the Bill of Sale as a condition to commencement of service. After the first year, this charge is subject to an annual OMD charge and will be re-calculated at time of Bill of Sale.

B. General Facilities Connection Charge - The District's charge for general facilities. This fee is subject to change and is non-refundable. Residential connections are charged on a per living unit basis. Commercial and all other non-living units will be charged on an equivalent residential unit basis, based on water meter size, or on a cost per square foot basis. Public schools and parks will be charged on an Equivalent Residential Unit (ERU) basis. The connection charge shall be paid at the time of application for a meter or side sewer permit, or at such earlier time as may be permitted by Resolution, at the current rate in effect at the time of such application.

12. EVIDENCE OF INSURANCE

12.01 The Developer or the Developer's Contractor shall secure and maintain during the life of this contract Public Liability Insurance for bodily injury and property damage liability, including without limitation, coverage for explosion, collapse, blasting and destruction of underground utilities (X.C.U.) and contingent liability, including projects and completed operations and blanket contractual liability, **as shall protect the Developer or Developer's Contractor, the District and its officers, agents and employees, and specifically designating the District's consulting engineering firm, and the representatives or employees of any regulatory agency with personnel on site, as additional named insureds in said policies, all at no cost to the District.**

12.02 The insurance shall cover the District and its officers, agents and employees, its consulting engineering firm, regulatory agencies with personnel on site, the Developer, and the Developer's Contractor and sub-contractors for claims or damages for bodily injury, including wrongful death, as well as other claims for property damage which may arise from operations under this Agreement, whether such operations be by the Developer or by any contractor or sub-contractor or anyone directly or indirectly employed by either of them, and the Developer agrees, in addition, to indemnify and save harmless the District, its officers, agents and employees, and/or its consulting engineers, from all suits, claims, demands, judgments and attorney's fees, expenses or losses occasioned by the performance of this Agreement by the Developer, its Contractor and

subcontractors, or persons working directly or indirectly for the Developer, on account of, or in consequence of any neglect in safeguarding the work or failure to conform with the safety standards for construction work adopted by the Safety Division of the Department of Labor and Industries of the State of Washington.

12.03 The amount of such insurance shall be as follows: $1,000,000.00 combined single limit bodily injury, including wrongful death, and property damage liability. The Developer's insurance policy shall not contain deductible or self-insured retentions in excess of $10,000, unless approved by the District.

12.04 The Developer shall not cause any policy to be canceled or permit it to lapse, and all policies shall include a clause to the effect that the policy or certificate shall not be subject to cancellation or to a reduction in the required limits of liability or amounts of insurance or any other material change until notice has been mailed to the District stating when, not less than ten (10) days thereafter, such cancellation or reduction or change shall be effective.

12.05 There shall be provided to the District an "Acord Certificate of Insurance". The Certificate is to be completed in full, endorsed to the required limits, and certified by the Developer's or the Developer's Contractor's insurance company.

13. **PERFORMANCE BOND FOR OFF-SITE AND COMPREHENSIVE PLAN OR GENERAL FACILITY PORTIONS OF EXTENSION**

13.01 The Developer shall furnish a fully executed Performance Bond prior to the preconstruction conference, on a form approved by the District and signed by an approved surety or sureties in an amount to be determined by the District Engineer. The Performance Bond shall be conditioned upon the faithful performance of all portions of the extension that are either off-site (not on Developer owned property), or on-site portions of the District's Comprehensive Plan, or General Facilities, which bond shall remain in effect until the Developer has completed all such portions in accordance with District standards and the provisions of this Developer Extension Agreement. The Bond shall also provide that the surety agrees to protect and indemnify the District against any direct or indirect loss claimed

A. By reason of failure by the Developer or its Contractor to faithfully perform the above-referenced portions of the work; or

B. By reason of failure by the Developer or its Contractor to pay all contractors, laborers, mechanics, sub-contractors, agents, materialmen, and all persons who shall supply such Developer or its Contractor, or their sub-contractors or agents, with provisions or supplies for carrying out those portions of the Developer Extension described above.

13.02 The Performance Bond shall be accompanied by a certification indicating the authenticity of the signing agent to act on behalf of the surety. The District may require the sureties or surety company to appear and qualify themselves upon the bond. Whenever the surety or sureties are deemed insufficient, the District may demand in writing that the Developer furnish additional surety in an amount not exceeding that originally required as

may be necessary to cover the remaining portion of the Developer Extension as described hereinabove.

14. **EASEMENTS**

All easements shall be executed on the District's form and shall be prepared and obtained by the Developer at its sole cost and expense prior to commencement of construction. Such easements shall be presented free of all encumbrances, except those acceptable to the District. The District will record a Notice of Executed Easement upon receipt of plat Volume and Page Numbers. Easements over properties that are not within the development site will be recorded upon receipt. Easements within the development site will be recorded by the District upon completion of the extension and recording of the Final Plat.

15. **PERMITS**

All necessary permits and governmental approvals shall be prepared, applied for, and obtained by the Developer before construction commences, at the Developer's expense. The original permit applications shall be provided to the District.

16. **GRADING OF ROADS**

The Developer shall grade all roads to the design subgrade elevation prior to the start of construction or construction staking, and shall advise the District in writing of any changes which may be contemplated during construction. If the Developer changes the subgrade elevation of any road after completion of the extension, or any part thereof, the Developer shall be responsible for all costs incurred by the District as a result of any such change in subgrade elevation. This obligation shall continue in full force until King County and/or any other governing agency releases the right-of-way or road construction bond, or releases any bond of other description provided to ensure the Developer's obligation to the County or other agency for completion of roads within the area of the extension.

17. **SEWER EXTENSIONS - MAINTENANCE OF CORRECT GRADES, AND TELEVISION TESTING FOR CONFORMANCE TO STANDING WATER STANDARDS**

17.01 The Developer and its Contractor shall maintain correct grade at all points between manholes. This requirement shall, at a minimum, require checking of intermediate grades by means of a taut grade wire between no less than three (3) intermediate grade stakes between manholes. In the event that the grade stakes do not line up, the work shall be stopped until the grade is corrected.

17.02 All lines installed by the Developer shall be subject to television testing for conformance to the District's standing water specifications as a condition to the District's acceptance of a Bill of Sale for the extension. The Developer represents that it is, or will make itself familiar with the District's **Resolution No. 1904-S**, which sets out allowable standing water parameters and the District's policies and procedures for testing and acceptance of sewer mains.

18. **PURITY TESTING OF WATER MAINS**

All water mains shall be purity tested under the District's observation prior to any connection to the District's water system.

19. **CONNECTION TO THE DISTRICT'S SYSTEM**

19.01 Not less than forty-eight (48) hours prior to the time that actual connection to the District's system is requested to be made, application for permission to make such connection at a specified time shall be made by the Developer or its Contractor.

19.02 Any connection to the District's existing system and any testing of a new line require advance authorization by the District, and shall be performed under the observation of the District and/or authorized representative.

20. **USE OF EXISTING MAINS**

Until execution and acceptance of the Bill of Sale there shall be no flow through any on-site or off-site mains or facilities.

21. **FACILITIES AND IMPROVEMENTS REQUIRED BY DISTRICT**

21.01 The District may require the installation of facilities, or modification of the Developer's proposed facility design in order to comply with the District's Comprehensive Plan or to provide service availability to other properties within the District's service areas. The most common example is the oversizing or overdepth of lines, and the construction of offsite facilities. An estimated reimbursement amount for the extra cost of such District-required facilities and improvements shall be determined by the Board of Commissioners prior to start of construction, and shall be established by Motion of the Board. Oversized lines are generally those in excess of eight (8) inches equivalent in diameter. Lines sized over eight (8) inches to meet the development's requirements (e.g., larger diameter to compensate for flatter slopes) are not considered oversizing. Overdepth lines are those deeper than ten (10) feet, and only to the extent they are at least two (2) feet deeper than the development's requirements in order to meet the District's Comprehensive Plan or service availability to other properties.

21.02 In the event of unforeseen circumstances which require an increase in the District's cost obligation from that set by the Motion, this Agreement may be modified by supplemental agreement covering said increase. Developer shall provide complete documentation of its costs attributable to such oversize/overdepth within ninety (90) days of the date of the acceptance of the Bill of Sale for the project. If complete documentation is not provided within ninety (90) days, upon written request from the Developer the District may extend the time at its sole discretion, but only for good cause shown. Failure to provide such documentation shall be considered a waiver of the right to such reimbursement.

Written approval must be secured from the District before the beginning of such work. Upon completion of the extension, the final amount of reimbursement will be confirmed by Resolution of the Board of Commissioners in accordance with and pursuant to the laws of the State of Washington.

21.03 The District may refuse to participate in an extension which would otherwise qualify for District reimbursement if budgetary considerations or the prudent management of the District indicates such participation is not appropriate at the time. In such event, the Developer may proceed to construct its extension, but with the facilities or design modifications, and shall be entitled to a reimbursement agreement with the District, payment to be conditioned upon future events as determined by the District which justify such District expenditure, e.g., development utilizing such oversized facilities and providing General Facility Charge funds to the District.

21.04 In the event the District and the Developer are unable to reach agreement as to a reimbursement amount, or as to the increased costs to the District's obligation due to unforeseen circumstances, the Developer may bring no claim against the District in litigation unless the claim has first been the subject of a non-binding mediation before a single mediator under the Voluntary Construction Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The mediation shall be conducted as soon as is practicable after the completion of the project. This requirement cannot be waived except by an explicit written waiver signed by the District. The request for mediation shall be submitted in writing to the American Arbitration Association. The District and the Developer shall participate in the mediation process in good faith. An officer of Developer, and the District Manager or his designee from the District, both having full authority to settle the claim, must attend the mediation session. To the extent there are other parties in interest, such as engineers, subcontractors, or suppliers, their representatives, with full authority to settle any claim, shall also attend the mediation session. Unless the District and the Developer mutually agree in writing otherwise, all unresolved claims shall be considered at a single mediation session which shall occur prior to acceptance by the District of the Bill of Sale.

22. LATECOMER REIMBURSEMENT AGREEMENT

Entitlement to latecomer reimbursement shall be determined in accordance with the District's current latecomer policy Resolutions. Execution of this Agreement constitutes application for Latecomer reimbursement for any facilities which would be eligible for such reimbursement. Developer shall provide complete documentation of its costs attributable to such oversize/overdepth and/or latecomer within ninety (90) days of the date of the acceptance of the Bill of Sale for the project. Based thereon, a Memorandum will be completed, adopted by Resolution, and recorded in accordance with RCW 57.22. If complete documentation is not provided within ninety (90) days, upon written request from the Developer the District may extend the time at its sole discretion, but only for good cause shown. Failure to provide such documentation shall be considered a waiver of the right to such reimbursement.

The Developer shall pay a fee to the District for the preparation of the latecomer agreement, plus 20% for District administrative costs; provided, however, that if the Developer waives latecomer, the 20% shall remain as a Special Connection Charge against any reimbursement area, to be paid by the connecting property owner.

23. PLAT APPROVAL PRIOR TO COMPLETION OF CONSTRUCTION

23.01 If the Developer desires to obtain final plat approval from King County or the applicable city prior to substantial completion of the extension, the District may allow the Developer to provide the District with a set-aside letter or completion bond in an amount the District

determines is reasonably necessary to complete all performances necessary to comply with this Developer Extension Agreement.

23.02 All expenses, including engineering, legal and administrative costs will be determined by the District and paid by the Developer; and signed easements, ready for recording, and a Bill of Sale for the extension shall be provided to the District as a condition to the District's acceptance of a set-aside letter or completion bond.

23.03 The District will advise the King County Health Department of the Developer Extension Agreement, and of the set-aside letter or completion bond upon its acceptance by the District. The Developer shall provide the final plat recording number, Volume and Page Number of Plats, to the District immediately upon recording of the plat. Acceptance of a set-aside letter or completion bond by the District does not entitle the development to receive service. All performances required under this Agreement must be completed before service will be available.

23.04 Upon the Developer's failure to complete the extension and all performances required under this Agreement within the times provided herein, or by any other date mutually agreed upon between the District and the Developer, the District will give ten (10) days written notice to the Developer and thereafter, at its option and without the prior consent of the Developer, accept the Bill of Sale for the extension, assume ownership and control thereof, and utilize the set-aside funds or completion bond to complete the extension and all performances required under this Agreement.

23.05 Upon completion of the extension, the District will provide an accounting to the Developer of the expenditures made pursuant hereto. If the set-aside or bond amount was insufficient to complete the extension and all performances required hereunder, a connection charge will be applied against the properties served by the extension, payment of which will be a condition for receipt of water meter and/or side sewer permits from the District.

23.06 To utilize this procedure for allowing a set-aside letter or completion bond the Developer shall provide to the District a written request in letter form in which the Developer specifically represents to the District that it has read and understands the contents of this Section 23, and consents to the terms hereof.

Note: It is the Developer's obligation to notify the purchaser of any property in the development of the existence and status of any set-aside funds or completion bonds.

24. FINAL ACCEPTANCE

24.01 Fully completed

A. The District will accept title to the extension only when all work has been properly completed, when any damage has been repaired, and when the District has made its inspection and has approved the system as having been completed in accordance with the plans and specifications; provided, however, that there will be no acceptance if the Developer is in default of any of the terms of this Agreement. Acceptance of the extension will be by Resolution of the Board of

Commissioners of the District accepting an executed Bill of Sale on the form provided by the District.

B. Acceptance by the District does not relieve the Developer of the obligation to correct defects in labor and/or materials as heretofore provided, nor of the obligations set forth in the applicable paragraphs hereof. Acceptance will cause the extension to be subject to the ownership, control, use and operation of the District, which may thereafter apply to it all regulations and conditions of service, and make such charges there for as the Board of Commissioners has determined by Resolution to be reasonable and proper.

24.02 Substantially completed

A. At its option, the District may choose to accept a Bill of Sale when an extension is substantially complete, but which cannot reasonably be fully completed prior to the expiration of this Agreement. The Developer will provide the District with a cash deposit in an amount the District determines is reasonably necessary to complete all performances necessary to comply with this Developer Extension Agreement.

B. All expenses, including engineering, legal and administrative costs will be determined by the District and paid by the Developer; and signed easements, ready for recording, and a Bill of Sale for the extension shall be provided to the District as a condition to the District's acceptance of a cash deposit.

C. Acceptance of a cash deposit by the District does not entitle the development to receive service. All performances required under this Agreement must be completed before service will be available.

D. Upon the Developer's failure to complete the extension and all performances required under this Agreement prior to the expiration hereof, the District will give ten (10) days written notice to the Developer and thereafter, at its option and without the prior consent of the Developer, accept the Bill of Sale for the extension, assume ownership and control thereof, and utilize the cash deposit to complete the extension and all performances required under this Agreement.

E. Upon completion of the extension, the District will provide an accounting to the Developer of the expenditures made pursuant hereto. Any balance will be returned to the Developer. If the cash bond was insufficient to complete the extension and all performances required hereunder, a connection charge will be applied against the properties served by the extension, payment of which will be a condition for receipt of water meter and/or side sewer permits from the District.

F. To utilize this procedure for allowing a cash deposit the Developer shall provide to the District a written request, in letter form, in which the Developer specifically represents to the District that it has read and understands the contents of this Section 24, and consents to the terms hereof.

25. BILL OF SALE CONDITIONS

The Bill of Sale will provide for transfer of title to the constructed extension from the Developer to the District, and its acceptance is conditioned upon the following:

25.01 The Developer is the lawful owner and has the right to transfer the extension, that the extension is free from all encumbrances, and that the Developer will warrant and defend the same against all claims and demands of any person.

25.02 All bills for labor and materials have been paid and the Developer has provided a certificate from all contractors providing work on the installation of the extension, and the Developer's Engineer, acknowledging that the contractor(s) and Engineer have been paid in full and/or do fully release, transfer, assign and set over to the District all of their rights, title, claims and interest therein.

25.03 The Developer has submitted to the District the total costs incurred in the installation of the extension, and supporting detail thereof; including but not limited to invoices, payouts, measurements of materials, and other such evidence of the costs incurred for the extension.

25.04 The consideration for the Bill of Sale shall be the District's incorporation of the improvements into its overall water distribution and/or sewer conveyance system.

25.05 The Developer warrants that for a period of one (1) year from the date of the Bill of Sale the water and/or sewer system will remain in acceptable working order and condition, except where abused or neglected by the District, and the Developer will repair or replace at its own expense any work or material that is shown to have been defective during said one (1) year period of warranty.

25.06 The Developer warrants that paving which has been completed will remain in acceptable condition for two (2) years from the date of the Bill of Sale. For paving which has not been completed on the date of the Bill of Sale, for which there is a paving deposit, the Developer warrants that after the paving has been completed, it will remain in acceptable condition for two (2) years from the date of the Bill of Sale, or one (1) year from the date of completion of the paving, whichever is later. The Developer will repair or replace at its own expense any paving work or material that is shown to have failed during the applicable period.

25.07 The Developer agrees to defend and hold the District and its Engineer harmless for trench failures or settlement occurring over any portions of the system installed on private property for two (2) years from the date of the Bill of Sale. The District and its Engineer do not, by virtue of their construction observation and/or inspection, assume liability for such failures, any such construction observation and/or inspection being for the District's purposes of ensuring the soundness of the installation of its system facilities, and not as a warranty of compaction or other restoration on private property. The performance of this condition shall be secured by a bond in the amount specified in Section 8.06.

25.08 The Developer warrants that bushes, trees and other landscaping plantings installed as a part of the permit-required restoration will remain in acceptable condition for the time from the date of the Bill of Sale specified in the applicable permit. The Developer will maintain

such plantings at its own expense during such period. The Developer shall replace at its own expense any such plantings that have failed during the applicable period. The performance of this condition shall be secured by a bond or cash payment in the amount specified in Section 8.07. In the alternative, and at the District's option, the District and the Developer may agree on an amount of payment to the district for which the District will assume the obligation for maintenance and replacement of landscape plantings required hereunder.

25.09 The Developer has submitted a copy of the recorded plat, and all necessary easements.

26. LIMITATION PERIOD FOR ACCEPTANCE

26.01 The Developer agrees that the construction of the extension shall be carried out in a timely and efficient manner and further agrees that the improvements shall be completed and ready for acceptance by the District within the Limitation Period for Acceptance. If the Developer has executed a completion bond or set-aside letter, upon expiration of the period thereof, the District may order the work done, or any remaining portion thereof, and all costs and expense incurred, shall be reimbursed to the District from the bond company or financial institution holding the funds as provided in the set-aside letter; provided, however, that the amount of such reimbursement available shall not be deemed to limit the Developer's obligation to pay the total costs attributable to the work. If the work is completed beyond the period for acceptance, reimbursement shall also include the costs of renewal of this Agreement as described below.

26.02 If the extension is not completed and ready for acceptance within said period, the Developer's rights under this Agreement shall cease and no additional administrative, engineering or legal services will be provided by the District unless and until the Developer makes a new application, or until the District consents to the renewal of the expired Agreement. If the District consents to the renewal of the Agreement, and in consideration thereof, the District's actual costs incurred to the date of renewal shall be accounted, and if they exceed the amount of the fees collected by the District to the date of renewal, the Developer shall pay the difference. In addition, the Developer shall pay all administrative, legal, engineering, construction observation and inspection costs attributable to the renewal. Any renewal shall be for the same number of months specified in Section 4.02. hereof, and shall be from the date of expiration of this Agreement without regard to the date of application or consent to such renewal.

27. ASSIGNMENT OF AGREEMENT

If the Developer desires to assign the Developer Extension Agreement, it shall give the District written notice of its request to do so. Assignment may be accomplished only by the execution by the Developer, by the assignee, and by the District of the ASSIGNMENT AND COVENANT TO PERFORM, listed under "Documents" herein above, the terms of which are incorporated herein by this reference as though fully set forth. Except upon completion of an assignment in accordance herewith, the Developer and the property shall remain fully responsible for performance of this Agreement, and the District may enforce the terms of this Agreement against the Developer and the Property without regard to any purported assignment by any other method.

28. CANCELLATION OF AGREEMENT

28.01 A Developer Extension Agreement may be cancelled under the following circumstances:

A. The Developer gives the District written Notice of its request to cancel the Agreement; or

B. After a period of inactivity, the District gives the Developer written Notice of the District's intent to cancel the Agreement, unless the Developer shall object in writing to such cancellation within thirty (30) days of such Notice by the District.

28.02 Regardless of how a Developer Extension Agreement cancellation is initiated, the procedures to cancel the Agreement shall be as follows:

A. The District shall notify the District Engineer by Work Order that the project has been cancelled, and shall request from the Engineer a final invoice for engineering services rendered to the project, together with a statement of the percentage of plans completed to the date of cancellation;

B. The District and its Engineer will review their records to identify all outstanding work orders which should be cancelled/closed by the cancellation of the project;

C. A final invoice shall be prepared by the District indicating the project's balance (for refund), or shortage (due from Developer) as of the date of cancellation;

D. Either a voucher request or an invoice, as appropriate, shall be prepared to close out the project financially;

E. If an amount is due, the invoice shall notify the Developer that the balance on the invoice, if it becomes delinquent, shall accrue penalties and interest in accordance with the District's collection procedures and policies, and applicable statutes;

F. If an amount is due, and any deposit accounts have balances, the balance of such deposit account may be applied by the District to the outstanding invoice without regard to the nature of the balance on the invoice, and without regard to the nature of the deposit account which contains the balance; and

G. The District will show the project as cancelled in its database, and move the files for the project to the District's inactive files.

28.03 Once a Developer Extension Agreement has been cancelled, it may be revived only in the exercise of the District's sole discretion.

29. DELINQUENT INVOICES

In the event any invoice authorized by this Agreement is not paid within 30 days, it shall be considered delinquent. Simple interest of 6% (but no more than the prime lending rate of the District's bank plus four percentage points) per year shall be added thereto until paid. After 60 days from the date of invoice, the District may stop all work by it and the District Engineer

required under this Agreement. After 120 days from the date of the invoice, the District may record liens against the property for the original invoice amount, plus the recording fee, and enforce such liens in accordance with R.C.W. 57.08.081(4).

30. **BREACH OF CONTRACT - ATTORNEY FEES**

A breach of any provision of this Agreement shall constitute a total breach thereof, and shall subject the Developer to cancellation of the Agreement, forfeiture of deposits, and claim for costs and damages, as appropriate. The parties agree that in the event of litigation regarding the terms or performance of this Agreement, the substantially prevailing party shall be entitled to an award of reasonable attorney fees and costs, in addition to any other appropriate remedy.

31. **RECORDING OF NOTICE OF EXECUTION OF AGREEMENT**

Upon execution hereof, the District may record a Notice of Execution of Developer Extension Agreement against the property as reasonably necessary to notify persons dealing with the property that it is subject to the terms hereof. Upon completion of the project, the District may record a Notice of Completion of Developer Extension Agreement. The Notices shall be in the form described under “Documents” herein.

Dated this _____ day of _____ 20____.

_____
DEVELOPER - Authorized Signature

_____
ADDITIONAL OWNER SIGNATURE

_____
SIGNATURE OF DISTRICT MANAGER
approving Application and Agreement

Date _____, 20____

APPENDIX F

SOOS CREEK WATER & SEWER DISTRICT

WATER AND SEWER DESIGN AND CONSTRUCTION STANDARDS

APPROVED: FEBRUARY 2003

REVISED 05/16/11

SOOS CREEK WATER & SEWER DISTRICT

DESIGN AND CONSTRUCTION STANDARDS

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1. STANDARD SPECIFICATIONS

All work, materials and testing shall conform to the standards of the Soos Creek Water & Sewer District (SCWSD, or the "District") and the Washington State Department of Transportation Standard Specifications for Road, Bridge, and Municipal Construction, current edition, except as herein modified.

NOTE: All work, materials and testing within local city or King County rights-of-way is subject to current city or King County Road Standards and requirements.

2. SEPA (STATE ENVIRONMENTAL POLICY ACT)

A. Projects constructed in Soos Creek Water & Sewer District shall comply with SEPA.

B. SEPA Checklist required IF:

1. Project located in environmentally sensitive area or,
2. Project located on "Easement" (outside of proposed subdivision or development) and requires city or King County Grading Permit or,
3. Pipe size is larger than 8 inches.

C. Preparation of SEPA checklist and Environmental Impact Statement, if required, or other environmental documents necessary for compliance with SEPA, shall be prepared by the "Design Engineer" and submitted to SCWSD for review, approval, processing, and SEPA Determination.

D. Projects that require a SEPA checklist will need to obtain District approval by resolution prior to commencement of construction.

3. PERMITS/AGENCY APPROVALS

A. Projects to be constructed in Soos Creek Water & Sewer District shall receive approvals from Soos Creek Water & Sewer District and other agencies as required.

B. Plans, Specifications, and submittals of Permits or Agency Applications as required shall be prepared by the "Design Engineer", who shall also coordinate with Soos Creek Water & Sewer District as needed for review, processing and approval.

C. Agencies:

Sewer Mains
King County Wastewater Treatment Division
Department of Ecology (DOE)

Water Mains
King County Department of Development and Environmental Services - Commercial Permit Section - Fire Protection Engineering
Washington State Department of Health (DOH)

Both Sewer and Water
King County Real Property (R/W Construction Permit)
King County DDES - Grading Permit
City of Renton
City of Kent
City of Covington
City of Maple Valley
City of Auburn
City of Black Diamond
Burlington Northern Railroad
Bonneville Power Association
Washington State Department of Transportation
Washington State Department of Natural Resources
Washington State Department of Fish and Wildlife
U.S. Corps of Engineers

Notes:

King County DDES

1) Final King County approved development PLANS or street and storm drainage PLANS are required prior to construction of sewer and water developer extension projects.

2) Projects that will be constructed on easements and with trench excavation of more than 100 cubic yards will require a King County Grading Permit prior to construction.

4. EASEMENTS

A. ON-SITE and OFF-SITE easement(s) and/or temporary construction permit(s) shall be prepared by the District's Engineer, executed on the District's form(s) and shall be obtained by the Developer at its sole cost and expense prior to commencement of construction.

B. Easement document form and number designation shall be according to the District's system.

C. After Developer obtains signature(s) on the easement document(s), the document shall be submitted to the District for approval and final recording.

5. STANDARD PLAN REQUIREMENTS

A. Construction PLANS shall be prepared according to District standards and submitted to the District for review and approval prior to construction. (See attached water and sewer plan sample format requirements.)

B. The PLAN(S) shall be separate from those PLANS for plat improvements, storm drainage improvements and road/street improvements, and PLANS for any other

utilities. PLANS for water system improvements shall be separate from PLANS for sanitary sewer system improvements.

C. The PLANS shall be prepared using AUTOCAD Release 2008 drawing (DWG) compatible electronic files. The drawing files shall be submitted to the District on CD-Rom. Drawing files to include any special fonts used, all external cross-references, lot and street layout with computation data, street and storm plan and profile data, site topography and proposed site grading or lot computation data.

(Note: **DO NOT** show street or storm computation data or topography on **FINAL** Water or Sewer PLANS.)

D. PLAN SIZE: 22" X 34"
Plan View: Lower ½ of sheet
Profile: Upper ½ of sheet

E. SCALE: Horizontal: 1" = 50' (SHOW SCALE BAR on PLAN)
Vertical: 1" = 10'

F. North Arrow/Plan Orientation
North toward the top of the sheet or toward the left of the sheet.

G. DATUM shall be KCAS (Mean Sea Level) or NAVD 88. The elevation benchmarks used for control shall be shown on the PLAN.

H. The PLANS shall be prepared and stamped by a civil engineer with current registration in the State of Washington.

I. The PLANS shall indicate and identify all property lot lines, street rights-of-way lines, lot numbers, block numbers, plat names, street names, utility easements and references within and adjacent to the project area. The PLANS shall indicate and identify all existing and proposed buildings; building numbers/letters; structures; existing underground power, telephone, natural gas, cable television, storm drainage, water and sewer mains; street alley and driveway pavement; stream crossings; trees to be saved; green belts; and other known physical features within the project area which will affect the construction of the system improvement. This information should not obscure any water or sewer improvement information. See the attached standard water and sewer plan format samples.

Permanent Easements shall be shown for Sewer and Water as required (typical easement widths: 15 feet or 20 feet as required; minimum width: 10 feet).

J. The PLANS shall include title block/plate, which states the names and/or addresses of the property owner/Developer, and Engineer, the scale, the date, stamp and signature of the design Engineer. This information should be located on the right side of the PLAN according to District standard format.

K. The PLANS shall indicate requirements for pavement restoration/repair that are necessary if an existing street or portion thereof is damaged/removed for construction.

L. Soos Creek Water & Sewer District "General Notes" and "Standard Details" shall be included in the PLAN sets.

M. The PLANS shall have a vicinity map that clearly shows the project and its boundaries in relationship to the nearest street intersections. The PLANS shall also include an index sheet map if there are 3 sheets or more.

N. Lettering and line work shall be of the sizes and thickness as shown on the attached standard water and sewer plan format samples.

O. The PLANS shall be submitted to Soos Creek Water & Sewer District for review and approval. After District approval, the PLANS shall be submitted to required agencies for review and approval. Construction shall not begin until all approvals and permits have been received by the District.

P. Upon approval, the PLANS shall be submitted to the District to be stamped as "Approved for Construction" by the District. The electronic AUTOCAD file(s) shall be submitted along with the FINAL PLANS for use by the District. Upon completion of construction, the Developer shall also submit Construction Record Drawings as hardcopy as well as AUTOCAD file(s).

6. WATER DESIGN:

A. DESIGN CRITERIA

1. Comply with current Soos Creek Water & Sewer District approved Comprehensive Water System Plan and all amendments thereto.

2. Fire Protection – All work within the Soos Creek Water & Sewer District must comply with city or King County requirements and the Washington Surveying and Rating Bureau.

   Obtain fire flow requirements and hydrant location requirements from city or King County Fire Marshal.

   Fire hydrants shall be provided according to District requirements and requirements of city or King County Fire Marshal. Soos Creek Water & Sewer District is served by King County Fire District Nos. 37 and 40, and some portions by the cities of Renton & Kent.

3. Verify existing water mains and hydrant facility locations, sizes and type of pipes, and feasibility of use.

4. Minimum separation between water and sewer shall be according to the Washington State Department of Ecology (DOE) requirements.

5. Pipe shall be new Ductile Iron Pipe. See Section C - Materials.

6. Water mains shall be extended to the boundaries of plat or commercial development as required for future connections.

7. Water mains serving fire protection systems shall be a minimum of 8-inch in diameter.

8. According to King County Road or city standards, location for water mains shall be 5 feet North and 5 feet East of street centerline (other locations subject to District, King County and/or city approvals). Water mains shall be located to not cross storm detention ponds or vaults.

9. Maximum distance/spacing for fire hydrants shall be per city or King County Code.

10. Water mains shall maintain 36-inch minimum cover over top of pipe or as required for oversize pipe and valves.

11. Water mains shall pass under storm sewers when required to maintain 36-inch minimum cover. Provide minimum 6-inch sand cushion between water main and storm sewer.

12. Each lot/parcel shall have 1-inch minimum single service line. See Section C - Materials.

13. Pipe size, length and fittings call-outs, gate valves, fire hydrant assemblies, and blow-off assemblies shall be shown on the PLANS.

14. Water mains, meters, fire hydrants and blow-off assemblies shall maintain minimum 10 feet separation from power vaults, hand holes and light standards. Water services shall maintain minimum 5 feet separation from power vaults, hand holes and light standards.

15. Backflow prevention facilities according to Soos Creek Water and Sewer District and Washington State Code requirements shall be provided on all systems which serve interior fire protection sprinkler systems and/or any other system(s) that may contaminate the water system as outlined in District Resolution No. 2574-W.

16. Individual pressure reducing valve assemblies may be required at some lots in areas of high pressure as required by Soos Creek Water and Sewer District.

17. All water mains shall be subject to final testing and flushing per District Standard Construction Provisions and subject to final purity samples taken by the District to the Washington State Department of Health (DOH) for testing and approval prior to water mains and facilities being accepted for service.

B. CONSTRUCTION PROVISIONS

1. STANDARD SPECIFICATIONS

All work, materials and testing shall conform to the standards of Soos Creek Water & Sewer District and the "Standard Specifications for Road, Bridge, and Municipal Construction", current edition, as prepared by the Washington State Department of Transportation, and hereinafter referred to as the "Standard Specifications," except as herein modified.

2. TRENCH EXCAVATION, BEDDING AND BACKFILL

All work within the right-of-way shall comply with all pertinent permits, the governing agency's current road standards, and the Standard Specifications. All material from clearing and grubbing shall be hauled to an approved waste disposal site provided by the Developer/Contractor.

When trenching through existing pavement, the pavement shall be cut on a neat-line by saw cutting. Trench sides shall be kept as vertical as possible given the soil conditions. Compaction and restoration shall be done as detailed below and immediately after the trench backfill is placed so as to cause the least disruption to traffic. All pavement shall be cut 1 foot outside the edge of the trench on each side.

Any trench exceeding four feet in depth shall be provided with adequate safety systems meeting the requirements of the Washington State Industrial Safety and Health Act (WISHA), Chapter 49.17 RCW, and all regulations adopted pursuant thereto. The Developer/Contractor shall have a structural engineer review and stamp any and all shoring plans and calculations. The Developer/Contractor shall be responsible for worker safety and the District and the District's Engineer assume no responsibility.

When native material at the trench bottom is suitable for pipe bedding, the bottom shall be hand finished to grade so that the pipe will have uniform support along the barrel and bell. After the pipe is in place, additional hand selected native material meeting the requirements for bedding material shall be placed and tamped around the pipe for a minimum of 4 inches above the crown of the pipe.

When native material at the trench bottom is stony or otherwise non-uniform, the trench shall be over-excavated a minimum of 6 inches below the specified grade and a layer of pipe bedding material shall be furnished and placed to the specified grade. After the pipe is in place, additional hand selected native material meeting the requirements for bedding material shall be placed and tamped around the pipe for a minimum of 4 inches above the crown of the pipe.

If the native material at the trench bottom is unsuitable for foundation purposes or will have difficulty providing uniform bearing for the pipe, such material shall be removed and replaced with a minimum of 6 inches of compacted foundation material.

The bedding material shall be carried up evenly on both sides of the pipe simultaneously in approximately 6-inch layers and each layer thoroughly compacted with appropriate tools in such manner as to avoid injuring or disturbing the completed pipeline. All

bedding and native material shall be stored away from the edges of excavation and off the paved roadway and shoulder.

All trench backfill shall be mechanically compacted to 95% of the maximum density within the right-of-way and in all areas (paved and unpaved) where streets, roadway shoulders, driveways, sidewalks, or parking lots will be constructed or reconstructed over the trench except for trenches over 8 feet in depth. When the trench depth exceeds 8 feet, trench backfill up to 4 feet from the top of the trench shall be mechanically compacted to 90% of the maximum density. The remaining top 4 feet of the trench shall then be mechanically compacted to 95% of the maximum density. In unpaved areas and other areas not subject to vehicular traffic, trench backfill from the pipe to within 3 feet of the surface shall be compacted to 90% of the maximum density. The upper 3 feet shall be compacted to 95% of the maximum density.

All densities shall be determined by testing per the modified proctor method, ASTM D1557. The Developer/Contractor shall be responsible for providing density test reports certified by a professional engineer registered in the State of Washington. A minimum of one test shall be taken within every 500 feet of trench length and at depths up to 50% of trench depth, or as directed by the District's field representative or the governing road agency. Compaction of laterals or service line trenches shall also be tested where directed by the District's field representative or the governing road agency. Testing of CDF, when used as required by the governing road agency, shall be in accordance with ASTM 04832.

Trench backfill shall be placed in uniform loose layers no more than 12 inches thick and mechanically compacted as specified. In any trench where the specified compaction cannot be achieved with native backfill, the top 4 feet shall be replaced and compacted to 95% of the maximum density with imported bank run gravel. The District's field representative reserves the right to request a compaction test at any time on the backfill material.

In cuts transverse to the road alignment and at all utility crossings, the entire trench shall be backfilled with crushed surfacing. Backfill shall be placed and mechanically compacted in 12-inch maximum lifts.

After backfill and compaction, an immediate cold mix patch shall be placed and maintained in a manner acceptable to the governing road agency until replaced with permanent surfacing.

All pipe and fittings shall be laid "in the dry" unless otherwise approved by the District. Trench excavations shall be dewatered by using well point systems, sumps with pumps or other methods approved by the District. Dewatering systems shall be used in accordance with good standard practice and shall be efficient enough to lower the water level in advance of the excavation and maintain it continuously to keep the trench bottom and sides firm and dry. Developer/Contractor shall submit the dewatering plan to the District for review at least 10 days prior to commencing any dewatering work. All dewatering effluent shall be routed through a dewatering pond prior to release.

Groundwater shall be controlled such that softening of the bottom of excavations or formation of "quick" conditions or "boils" during excavation shall be prevented and no soil shall be eroded into the excavation from the sides of excavation. Dewatering systems

shall be designed and operated so as to prevent removal of the natural soils. The Developer/Contractor shall at all times have on hand sufficient pumping equipment and machinery in good working condition for all ordinary emergencies, including power outages, and shall have available at all times competent workers for the operation of said equipment.

Developer/Contractor shall control surface runoff so as to prevent entry or collection of water in excavations and shall maintain the undisturbed state of the foundation soils and allow the placement of any backfill to the required density. The release of groundwater to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill, and prevent flotation or movement of structures and pipelines.

Developer/Contractor shall be responsible for complying with all permit requirements and provisions for monitoring and managing water discharged from the excavation.

3. COVER OVER PIPELINES

The depth of cover for water mains shall be 36-inches for 8-inch diameter and smaller mains and 48-inches for mains over 8-inches in diameter. Depth of cover at ditch lines shall meet the same requirements. Exceptions will be allowed only with the prior approval of the District.

4. CONNECTION TO EXISTING WATER SYSTEM

The Developer/Contractor shall notify the District's field representative and other utilities at least 48 hours in advance of any construction and make the necessary arrangements with the District's field representative for the connection to the existing water main. The Developer/Contractor shall not operate any gate valve of the water system before, during or after construction without prior approval of the District. The Developer/Contractor shall furnish all material, equipment and labor necessary for making the connection under the supervision of the District. The 48 hour notice requirement shall not count Saturdays, Sundays, and holidays.

Work shall not be started until all of the material, equipment and labor necessary to properly complete work is assembled on the site. Once work is started on a connection, it shall proceed continuously without interruption and as rapidly as possible until the connection is completed. Before ordering materials for any connection to an existing water main, Developer/Contractor shall excavate the water main and verify outside diameter of all pipes for determination of types of fittings to be used. The Developer/Contractor shall coordinate all work with the District's field representative.

5. SEPARATION OF UTILITIES

Minimum separation between water and sewer mains shall conform to Section C1-9.1 of the "Criteria for Sewage Works Design", current edition, as published by the Department of Ecology. Minimum separation between other utilities shall be 6 inches with a sand cushion.

Water mains shall pass under storm sewers when necessary to maintain the minimum cover requirements for water mains. There shall be not less than a six-inch cushion between the water mains and the storm sewers.

Puget Sound Energy vaults, hand holes and light standards shall be located no closer than 10 feet from any water mains, fire hydrants, and blow-off assemblies and no closer than 5 feet from any water services. Developer shall be responsible for coordination of vaults, hand holes, and light standards with the water mains, services, fire hydrants, and blow-off assemblies. No construction shall start until the Developer has furnished the District with a work sketch from Puget Sound Energy or a signed hold harmless agreement (form supplied by the District) is provided.

6. THRUST BLOCKING

All fittings shall be blocked with poured concrete against undisturbed soil with sufficient concrete and 3/4-inch anchor rods, if required, to resist the resultant forces. Blocking shall provide for removal of any connection to the fitting without damage to the fitting. Where unfavorable ground conditions are encountered, special blocking will be required as directed by the District in the field. When digging near fittings on existing pipelines, temporary blocking shall be installed to prevent blowouts. Thrust blocking shall conform to the standard details.

7. WATER WORKS TESTING

Pressure testing of lines shall be in accordance with Section 7-09.3(23) of the Standard Specifications. Test pressure shall be the existing system line pressure plus 150 psi, but in no case shall the test pressure be less than 250 psi. Mains shall be disinfected per Section 7-09.3(24) of the Standard Specifications.

The Developer/Contractor shall cube and flush all new water mains while being observed by the District's field representative. District shall furnish the cubes for the Developer/Contractor who shall then be responsible for cubing the new water mains. Developer/Contractor shall coordinate with District's field representative for the locations to be cubed. After the cubes have been flushed from the system, the rest of the flushing, chlorinating, pressure and purity tests shall be completed. The District shall be responsible for collecting the samples and obtaining the bacteriological tests.

8. REPAIR OF PIPELINE FAILURES

Broken or otherwise defective pipe shall be removed and replaced. Repair bands or clamps shall not be used to repair broken pipe.

9. JACKED CROSSING

At locations as required by the District or governing road agency, or as proposed by the Developer, water main crossings of arterial streets shall be made by jacking, driving, or auguring a steel casing pipe beneath the surface. Alignment and grade of casings furnished shall be such that no additional fittings are necessary to make the connection. If the casing does not meet this requirement, it shall be abandoned by filling the casing with moist sand and a new casing installed to meet the line and grade requirements. No open excavation shall be made closer than 6 feet from the edge of pavement.

Diameter of casing pipe shall be sufficient to allow installation of the water pipe. Wall thickness shall be sufficient to withstand installation force and highway loading with a minimum thickness of ¼-inch. After the water pipe has been adjusted to grade, moist sand shall be tamped into the casing pipe so that all voids will be filled. Manufactured casing spacers that prohibit movement of the pipe in any direction within the casing may be used in lieu of filling the void between the water main and the casing wall with sand.

10. WATER SUPPLY

Water supply for filling, testing and flushing of the new mains may be available from the existing distribution system; however, the Developer/Contractor will be billed by the District for the water used at the current commercial meter rate. The Developer/Contractor may provide his own metering facilities to the satisfaction of the District or accept the quantities estimated by the District.

11. EXISTING UTILITIES

Existing utilities shown on any reference drawings provided by the District have been plotted from the best information available to the District. The Developer/Contractor shall be responsible for locating all existing utilities well enough in advance of the excavation to prevent damage during construction. The Developer/Contractor shall be responsible for any damage resulting from his operations on the project.

The Developer shall relocate or replace any existing fire hydrants located within 50 feet of the development to meet the District's requirements if new construction by the development creates a safety hazard or a non-compliant condition with District standard specification requirements.

12. WARRANTY PERIOD

The Developer making the application for a line extension shall be responsible for the materials and for satisfactory operation of the facility for a period of one year from the date of acceptance of the completed project and the bill of sale to the District.

C. MATERIALS

1. DUCTILE IRON PIPE

All ductile iron pipe shall conform to Section 9-30.1(1) of the Standard Specifications. Pipe shall be Class 52 conforming to laying condition type 2, shall be lined with cement mortar per ANSI/AWWA C104/A21.4-95, and shall be seal coated. Joints shall be push-on types with rubber gaskets, which fit into annular grooves. Joints at valves or fittings may be mechanical joint or flanged depending on specification and drawing requirement. Ductile iron pipe manufactured and distributed by Pacific States Cast Iron Pipe Company shall be manufactured after 1988. Restrained joints for ductile iron pipe shall be U.S. Pipe field lock gasket system or approved equal.

2. FITTINGS

Fittings for ductile iron pipe shall conform to Section 9-30.2(1) of the Standard Specifications and may be flanged, mechanical or push-on as required. Flanged fittings shall conform to a Class 125 pressure rating. Mechanical joint fittings shall be restrained with mega-lug restraining devices or approved equal. Restraining devices shall be manufactured of high strength ductile iron, ASTM A536, Grade 65-45-12. Bolts and connecting hardware shall be of high strength low alloy material in accordance with ANSI/AWWA C111/A21.11. All restraining devices shall have a water working pressure rating equivalent to the full rated pressure of the pipe on which they are installed, with a minimum 2:1 safety factor in any nominal pipe size. Notarized certification from the manufacturer of the restraint device shall be provided with submittals.

The exterior of all ductile iron fittings shall be coated with bituminous paint.

3. FIRE HYDRANTS

Hydrants shall conform to AWWA C-502, except as herein modified. Hydrants shall have a minimum of 5-1/4-inch main valve opening with two 2-1/2-inch hose connections and one 4-1/2-inch pumper connection. All ports shall be furnished with national standard hose thread and 1-1/4-inch operating nuts that turn counterclockwise to open.

The pumper connection shall be equipped with a 5-inch storz adapter meeting or exceeding the following specifications.

A. Storz adapter and cap shall be forged and/or extruded 6061-t6 aluminum alloy, hard coat anodized.

B. Threaded portion to have two set screws 180° apart and no lugs.

C. Storz face to be metal with no gaskets to weather.

D. Storz cap to have synthetic molded rubber gasket and shall be attached to hydrant adapter with 1/8-inch coated stainless steel aircraft cable.

E. Cap to be connected and disconnected with storz wrenches only. Torque to be sufficient so cap cannot be removed by hand.

Hydrants shall be furnished with a 6-inch mechanical joint outlet, two 3/4-inch diameter tie rods, or mega-lugs, a 6-inch auxiliary gate valve with valve box, and a riser to suit trench depth at each installation. The gate valve shall be flanged to the main tee. Hydrant shall be furnished with a break-off flange on the barrel and a break-off coupling for the stem. Hydrants shall conform to District standards.

All fire hydrants shall be M & H Style 929 Reliant, Mueller Centurion Model A-423, Clow Medallion or Waterous Pacer No. WB-67.

Nozzles shall be fitted with renewable bronze nipple locked in place. Maintain 3 feet clearance between hydrant and property or easement line.

Type 1 blue reflective markers as described in Section 9-21.1 of the Standard Specifications shall be installed as required by the governing road agency.

Fire hydrants shall be equipped with steamer and hose port threads in accordance with the requirements of the local Fire Protection District.

The hydrant shall be cleansed and prime coated with a heavy-duty brush type primer or approved equal. All hydrants shall be painted yellow with two topcoats of oil resistant enamel, brush type or approved equal. The distance from the hydrant to the 6-inch gate valve shall be stenciled on the hydrant with 2-inch letters.

During the chlorinating process for the newly laid pipe, all valves associated with the fire hydrants shall be operated while the pipeline is filled with the chlorinating agent and under normal operating pressure.

4. FIRE HYDRANT GUARD POSTS

Guard posts shall not be installed with fire hydrant assemblies unless required by District. If guard posts are required by District, they shall be made of reinforced concrete, 8 inches in diameter, 6 feet long and buried to a minimum depth of 3 feet. Guard posts shall be set with their tops at the same elevation as the bonnet flange of the hydrant. The exposed portion of the guard posts shall be painted with 2 coats of exterior concrete paint, color as designated by the District.

5. GATE VALVES

Gate valves shall be of the size and type indicated on the drawings with bronze-mounted resilient seat wedging devices conforming to AWWA C509 or AWWA C515. Valves shall be coated per AWWA C550 with non-rising stems, open counterclockwise, and be equipped with an o-ring stuffing box. Valve end connections may be flanged, mechanical joint or push-on as required. All flange faces shall be machined and drilled to straddle the vertical centerline. Valve stem extensions with plate welded to operating nut will be required where operating nut is more than 4 feet below surface. The valve stem extension top shall be installed within 18 inches to 24 inches below finish grade and shall have a 2-inch square operating nut and self-centering rock plate support. Lock down set screws shall not be used on valve operating nut extensions.

Manufacturer shall provide catalog data, net weight, and assembly drawings of all valves to be purchased and installed as well as an affidavit of compliance. All valves shall have

a water working pressure rating equivalent to the full rated pressure of the pipe on which they are installed, with a minimum 2:1 safety factor in any nominal pipe size.

6. VALVE BOX

Valve box shall be cast iron Series 940B as manufactured by Olympic Foundry or approved equal with lid marked "WATER". All boxes shall be adjusted to match the finish grade at the valve location. All valve box covers shall be painted blue. Orient the valve boxes so the "ears" are set the same as the pipe direction. Provide 4-inch thick by 2-foot wide asphalt or concrete collar around valve box covers in unimproved areas, landscape areas and easements.

7. VALVE MARKER POSTS

Valve marker posts shall be furnished and installed with each valve unless the valve is located in the pavement or in a vault. Marker posts shall be concrete with 4-inch minimum square section, 42-inch length, and shall be reinforced with one 3/8" x 39" bar of reinforcing steel. Markers shall be placed at the edge of the right-of-way opposite the valve or as directed by the District with 18 inches of the post exposed above grade. The exposed portion shall be painted with two coats of white exterior concrete paint with the size of the valve and the distance in feet and inches to the valve stenciled with black paint on the face of the post using a stencil that will produce letters two inches high.

8. WET TAPS

Tapping sleeve shall be JCM 432 or Romac "SST" stainless steel sleeves with full coverage rubber gasket, or epoxy coated long pattern sleeve, or approved equal. Valve shall be a resilient seated valve made for tapping, U.S. Pipe Metroseal 250 or approved equal. Refer to the gate valve description for additional details. Submittals required for all wet tap materials.

9. WATER SERVICES AND METERS

New service lines shall be Class 200, Hi-Mol or approved equal and shall conform to the standard details and Sections 9-30.6 and 9-30.6(3)B of the Standard Specifications. Install plastic-coated 16-gauge copper tracer wire along top of all plastic service pipes. Attach bare wire to angle and corporation stops.

Connections from pipe to angle and corporation stops shall be with compression pack joints. Meter boxes shall be as called out on the standard details. Meter boxes and lids located in driveways or sidewalks shall be traffic bearing as approved by the District.

Water services shall be located by mutual agreement between Developer, District, and other utility companies. Paint service locations on curb with blue paint. Meter boxes shall be furnished and installed by Developer/Contractor. Water service shall be located no closer than 5 feet from power vaults, hand holes and light standards.

All service lines shall be one-inch minimum, and shall be continuous and unspliced from corporation stop to meter and shall have 6 inches of sand bedding surrounding the service line. Expansion loops are to be held as flat as possible with no reverse grade.

Water main service saddle and corporation stop with compression adapter shall be located at approximately 10° above spring line per the standard detail.

The Developer/Contractor shall not backfill any service lines until all brass fittings associated with that service line have been inspected and accepted by the District.

Existing water services, which need to be abandoned, shall be disconnected at the water main corporation stop. The Developer/Contractor shall coordinate with the District's field representative as required.

10. IMPORTED GRAVEL MATERIAL

Pipe bedding shall conform to Section 9-03.12(3) of the Standard Specifications. Foundation gravel shall conform to Section 9-03.17 of the Standard Specifications. Bankrun gravel for trench backfill shall conform to Section 9-03.19 of the Standard Specifications, except at transverse cuts to the road alignment or at utility crossings, which shall be backfilled with crushed gravel surfacing or as required by the governing agency. Developer/Contractor shall be responsible for removing and disposing of any excess excavated soil material at an approved disposal site.

11. CRUSHED GRAVEL SURFACING

Crushed gravel surfacing shall conform to the requirements of Section 9-03.9(3) of the Standard Specifications.

12. ASPHALT CONCRETE PATCH AND OVERLAY

Asphalt concrete surfacing for patching and overlay shall conform to Section 5-04.2 and 5-04.3 of the Standard Specifications. Asphalt concrete surfacing shall meet Class 1/2-inch, P.G. 58-22 grading requirements, or as required by the governing road agency.

D. SURFACE RESTORATION

1. OFFSITE SURFACE RESTORATION

All paved or unpaved surfaces or easements shall be restored to a condition equal to or better than that which existed prior to construction. All trees, shrubs and or other improvements shall be saved, relocated, or replaced by Developer/Contractor unless noted otherwise on the drawings or in the easement stipulations. Restoration shall be to the satisfaction of the District, property owner, or governing road agency. Preconstruction photographs shall be used to approve restoration.

2. ROAD SHOULDER RESTORATION WITHIN RIGHT-OF-WAY

The existing surfacing of disturbed asphalt shoulders shall be removed to a minimum depth of 6 inches below original street grade to provide for placement of the new subgrade and paving. The subgrade shall be constructed of 1-1/4-inch minus crushed surfacing base course placed to a compacted thickness of 2-1/2 inches, followed by 5/8-inch minus crushed surfacing top course placed to a compacted thickness of 1-1/2 inches. Asphalt concrete paving shall then be placed and compacted in 2-inch lifts up to a maximum 4-inch thickness to match existing pavement thickness. Minimum thickness shall be 2 inches. The shoulder shall be replaced to the existing fog line in areas where the existing asphalt shoulder is seriously disturbed, or at the discretion of the District or the governing road agency.

Restoration of gravel shoulders shall include a minimum of 1-1/2 inches of crushed surfacing top course and 2-1/2 inches of crushed surfacing base course.

3. ASPHALT SURFACE RESTORATION WITHIN RIGHT-OF-WAY

The existing asphalt surface shall be cut on a neat line by sawcutting prior to excavation. Following proper backfill and compaction of the trench, the edges of the surfacing shall be re-trimmed 12 inches wider than the excavation with straight vertical edges free from irregularities. A 1-1/4 inch minus crushed surfacing base course shall be placed to a compacted thickness of 4-1/2 inches, followed by 5/8-inch minus crushed surfacing top course placed to a compacted thickness of 2 inches.

Asphalt concrete paving shall then be placed and compacted in 2-inch lifts to match the existing thickness and grade of the original surface. Asphalt patches shall have a minimum thickness of 2 inches and a maximum thickness of 4 inches. The asphalt patch shall then be overlaid with a minimum of 1-1/2 inches compacted asphalt concrete. Asphalt overlay shall be pre-leveled as determined by the District's field representative. No overlay shall be required if the final trimmed edge of the asphalt patch does not encroach inside the fog line or, in lieu of a fog line, within 12 feet from the existing centerline of the road. The District or governing road agency reserves the right to require an overlay on any section. If the edge of the road is curb and gutter, then the asphalt patch shall extend to the edge of the curb unless indicated otherwise by the District or governing road agency. All asphalt joints shall be sealed with an approved sealer. Developer/Contractor shall replace existing striping and pavement markings as required by the governing road agency.

Developer/Contractor shall maintain temporary cold or hot mix asphalt patches daily during construction to the satisfaction of the governing road agency and the District's field representative until said patch is replaced with a permanent hot patch. The permanent patch shall be placed and sealed with paving grade asphalt within 30 calendar days.

Concrete pavement shall be restored consistent with Section 5-01 of the Standard Specifications. Any concrete pavement traffic lane affected by the trenching shall have all affected panels replaced. Cement concrete pavement shall be restored with an 8-sack mix, using either Type II or Type III cement within 30 calendar days.

4. CURBS, GUTTERS, AND SIDEWALKS

Existing curbs, gutters, and sidewalks damaged by construction of the project or the Developer's/Contractor's use and activity, shall be repaired to the satisfaction of the property owner, the District, or the governing road agency, and to its original condition or better.

5. NON-PAVEMENT RESTORATION WITHIN RIGHT-OF-WAY

Cultivated lawns shall be restored with sod. Reseeding of cultivated lawns will not be allowed without prior approval of property owner and District. Uncultivated lawns, pasture and vacant land shall be restored with a pasture grass meeting the following requirements.

Seed Mix: 40% perennial ryegrass
10% white clover
30% fescue
20% red creeping fescue
Apply at the rate of 100 pounds per acre

Mulch: Silva fiber mulch applied at 1500 to 2000 pounds per acre.

Fertilizer: Commercial mix 10/20/20 of nitrate, phosphate and potash applied at rate of 450 pounds per acre.

6. FINAL UTILITY ADJUSTMENT TO FINISH GRADE

All utility covers, which are located on proposed asphalt roadways, shall be temporarily placed at sub-grade elevation prior to placing crushed surfacing material. Final adjustment of all covers and access entries shall be made following final paving by sawcutting the pavement around lids and covers. Opening should not be larger than 12 inches beyond the radius of the cover. Developer/Contractor shall then remove base material, surfacing course, and frame; add raising bricks; and replace frame and cover to finish grade. Fill and mechanically compact around the structure and frame with crushed surfacing material. Finished surfacing shall be two, 2-inch courses of asphalt concrete surfacing, compacted and sealed to provide a dense, uniform surface. Final adjustment of all covers and access entries shall be completed within 30 days of final paving.

7. FINAL CLEANUP

The Developer/Contractor shall cleanup all adjacent areas in compliance with Section 1-04.11 of the Standard Specifications. Streets and roadways shall be cleaned and swept both during and after the installation work. Disturbed soils shall be final graded, seeded, and mulched after installation of the water main. In limited areas, seeding and mulching by hand, using approved methods, will be acceptable. Ditch lines with erodible soil or subject to rapid flows may require seeding, jute matting, netting, or rock lining to control erosion. Any silting of downstream drainage facilities, whether ditches or pipe and catch basins, which results from the water main installation shall be cleaned out and the work site restored to a stable condition as part of site cleanup.

8. TRAFFIC CONTROL

The Developer/Contractor shall be responsible for interim traffic control during construction on or along traveled county roadways. Traffic control shall follow the guidelines of Section 1-07.23 of the Standard Specifications. All barricades, signs, and flagging shall conform to the requirements of the MUTCD Manual. Signs shall be legible and visible and should be removed at the end of each workday if not applicable after construction hours.

When road closures cannot be avoided, the Developer/Contractor shall post "to be closed" signs a minimum of five days prior to the closing. The types and locations of the signs shall be shown on a detour plan. A detour plan must be prepared and submitted to the District's field representative and approved by the governing road agency prior to closing any roadways. In addition, the Developer/Contractor must notify in writing all local fire, school, law enforcement authorities, metro transit, and any other affected persons as directed by the District's field representative at least five days prior to the road closure.

E. GENERAL NOTES

1. All work shall be performed in accordance with the specifications of the Soos Creek Water & Sewer District, also referred hereinafter as "District".

2. The Developer shall furnish the District a copy of the commercial and/or subdivision plans approved by the governing agency prior to any water main construction.

3. Prior to constructing any water mains, the appropriate streets and lots shall be cleared, graded, and staked by the Developer/Contractor and all existing utilities shall be located.

4. Following water main construction, any revision of roadway or easement grades requiring the mains to be reconstructed shall be made at the Developer's/Contractor's expense.

5. Reconstruction shall conform to the specifications of the District. All costs for inspecting such reconstruction shall be charged to the Developer in addition to the standard charges, and shall be paid before acceptance by the District.

6. No water service connections shall be made to the existing system until completion of the Bill of Sale and all easements. Make application to the District for water meter installation for each water service connection prior to making connection. Bill of Sale will not be processed until Puget Sound Energy has either provided a work sketch or installed their vaults, hand holes and light standards, or the Developer has provided a signed hold harmless agreement (form supplied by the District).

7. All costs of water main re-staking shall be paid by the Developer/Contractor.

8. Property corners shall be pinned with reference tack on curbs by the Developer/Contractor.

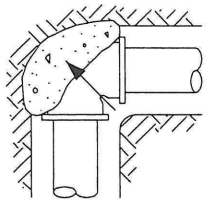
9. The Developer/Contractor shall notify the District at (253) 630-9900 to schedule a pre-construction meeting at the District office. After the pre-construction meeting, the Developer/Contractor shall notify the District's field representative at least 48 hours (regular working days) before starting work.

10. The Developer/Contractor shall obtain all required final inspections to meet permit requirements. Inspections must be scheduled at least 48 hours in advance.

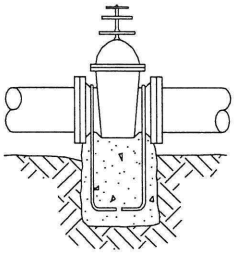
F. WATER STANDARD DETAILS

DTL. NO.	DETAIL TITLE
W-1	CONCRETE BLOCKING DETAIL (06-02-11)
W-2	TYPICAL ROADWAY SECTIONS FOR RESIDENTIAL SUBDIVISION (06-02-11)
W-3	TYPICAL ROADWAY SECTIONS (06-02-11)
W-4	FIRE HYDRANT ASSEMBLY – ROLLED CURB (06-02-11)
W-5	FIRE HYDRANT ASSEMBLY – VERTICAL CURB (06-02-11)
W-6	FIRE HYDRANT ASSEMBLY – COMMERCIAL (06-02-11)
W-7	FIRE HYDRANT ASSEBMLY – GRAVEL SHOULDER (06-02-11)
W-8	IN PAVING 2" BLOWOFF ASSEMBLY (06-02-11)
W-9	OFF PAVING 2" BLOWOFF ASSEMBLY (06-02-11)
W-10	IN PAVING 4" BLOWOFF ASSEMBLY FOR 8" AND LARGER MAINS (06-02-11)
W-11	OFF PAVING 4" BLOWOFF ASSEMBLY FOR 8" AND LARGER MAINS (06-02-11)
W-11A	4", 6" OR 8" TEMPORARY BLOWOFF ASSEMBLY (06-02-11)
W-12	A/C WATERMAIN REPLACEMENT @ SANITARY SEWER CROSSING (06-02-11)
W-13	VALVE BOX PROTECTIVE PAD AND MARKER POST (06-02-11)
W-14	VALVE OPERATING NUT EXTENSION (06-02-11)
W-15	WATER SERVICE CONNECTION – 1" (06-02-11)
W-16	TYPICAL SERVICE DETAIL (06-02-11)
W-16A	NEW SERVICE TRANSFER TO EXISTING METER (06-02-11)
W-17	HDPE METER BOX FOR 5/8"x3/4" METER (06-02-11)
W-18	HDPE METER BOX FOR 1" METER (06-02-11)
W-19	METER INSTALLATION (06-02-11)
W-20	WATER SERVICE CONNECTION – 1-1/2" AND LARGER (06-02-11)
W-21	1-1/2" AND 2" METER SETTERS (ALTERNATE NO. 1) (06-02-11)

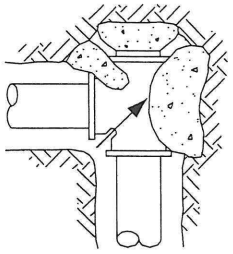
DTL. NO.	DETAIL TITLE
W-22	1-1/2" AND 2" METER SETTERS (ALTERNATE NO. 2) (06-02-11)
W-23	1-1/2" AND 2" IRRIGATION METER SETTERS (ALTERNATE NO. 1) (06-02-11)
W-24	1-1/2" AND 2" IRRIGATION METER SETTERS (ALTERNATE NO. 2) (06-02-11)
W-25A	DOUBLE CHECK DETCTOR BACKFLOR PREVENTION ASSEMBLY (06-02-11)
W-25B	DOUBLE CHECK DETCTOR BACKFLOR PREVENTION ASSEMBLY (06-02-11)
W-25C	LOCKING FRAME AND COVER DETAIL (06-02-11)
W-26A	3", 4" AND 6" METERS (06-02-11)
W-26B	3", 4" AND 6" METERS – MATERIALS LIST AND GENERAL NOTES (06-02-11)
W-26C	LOCKING FRAME AND COVER DETAIL (06-02-11)
W-27A	3" TURBO METER (06-02-11)
W-27B	3" TURBO METER – MATERIALS LIST AND GENERAL NOTES (06-02-11)
W-28	2" AIR/VACUUM VALVE CHAMBER (06-02-11)
W-29	PIPE ANCHOR DETAIL (06-02-11)
W-30	SACK SLOPE RETAINER (06-02-11)
W-31	FILTER FABRIC FENCE (06-02-11)
W-32	TYPICAL UTILITY / WATER MAIN CROSSING (06-02-11)
W-33	TYPICAL TRENCH DETAIL (06-02-11)
W-34	TYPICAL TRENCH DETAIL (OUTSIDE ROADWAY) (06-02-11)



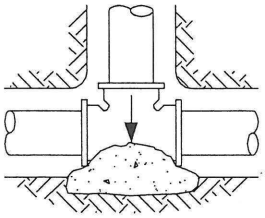
HORIZONTAL BEND



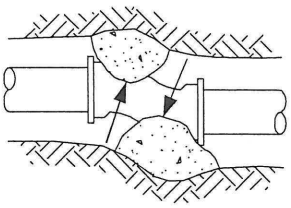
VALVE ANCHOR



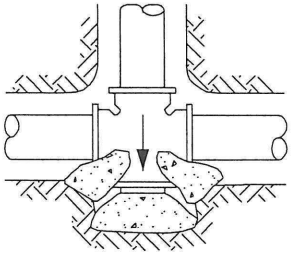
PLUGGED TEE



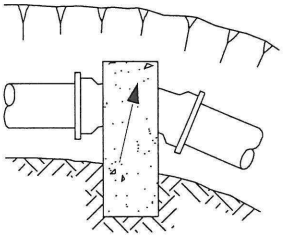
TEE



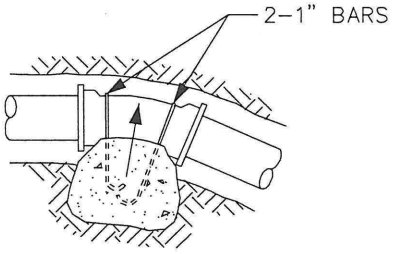
OFFSET



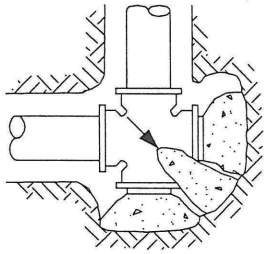
PLUGGED CROSS



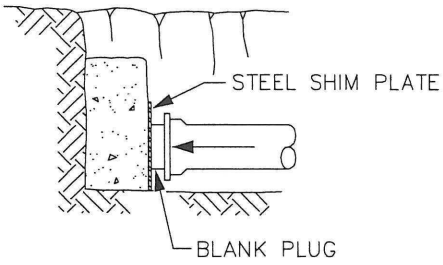
VERTICAL BEND



ALTERNATE VERTICAL BEND



PLUGGED CROSS



PLUGGED END FOR FUTURE EXPANSION

NOTES:

1. ALL CONCRETE FOR BLOCKING SHALL BE A FIVE (5) SACK MIX.
2. ALL BLOCKING SHALL BE POURED AGAINST FIRM, UNDISTURBED EARTH.

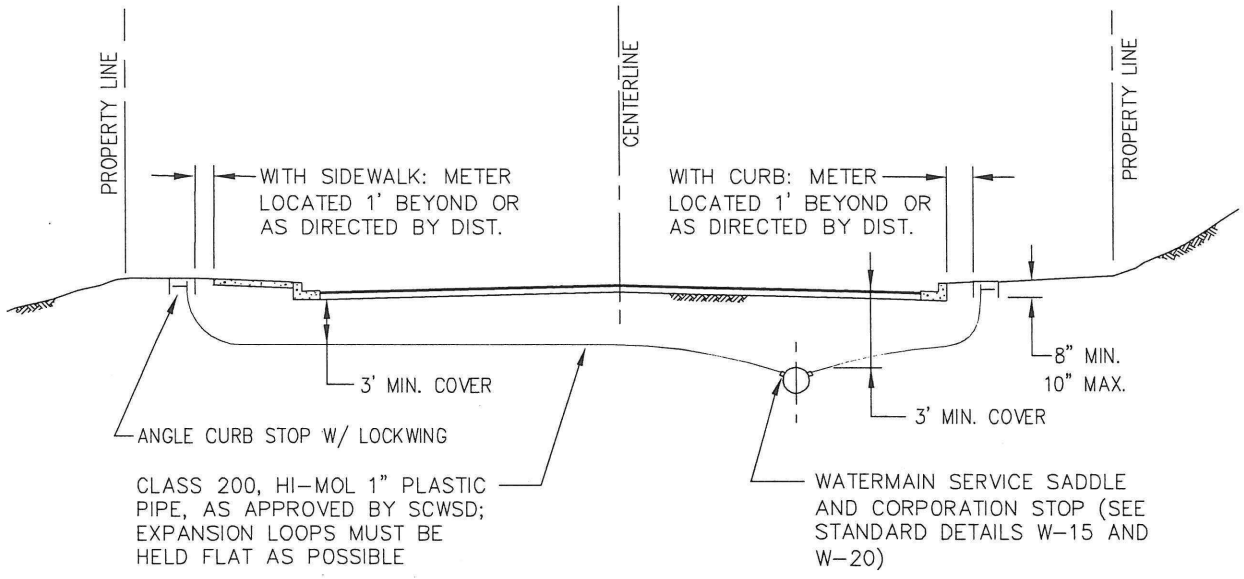
SOOS CREEK WATER & SEWER DISTRICT

CONCRETE BLOCKING DETAIL

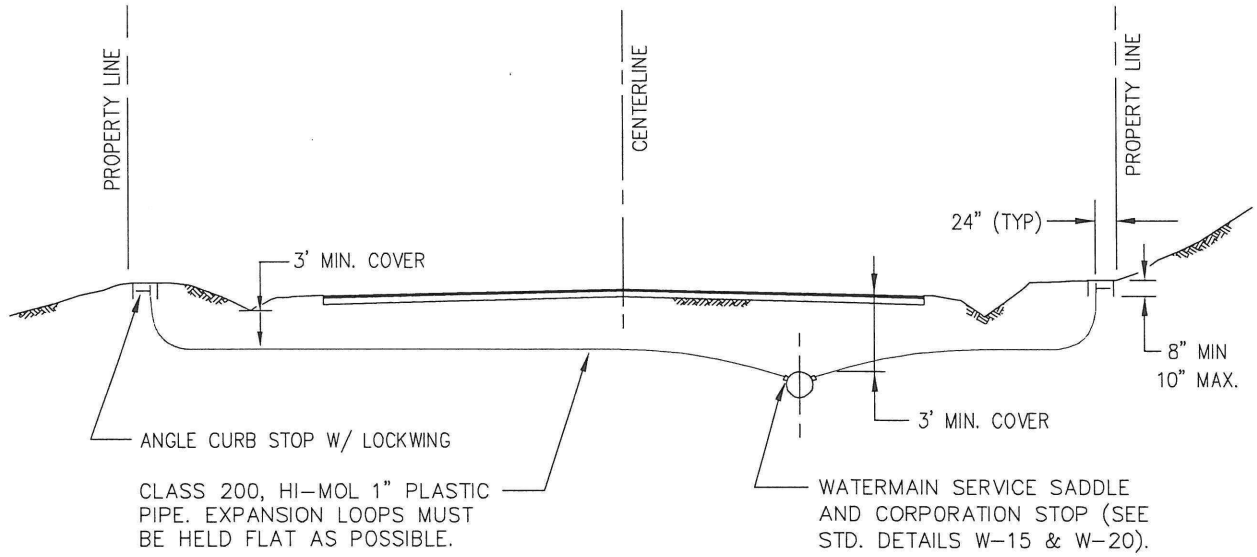
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-1

DWG. NO. W-1



ROADWAY WITH CURB AND GUTTER AND/OR SIDEWALK



ROADWAY WITH DITCHES

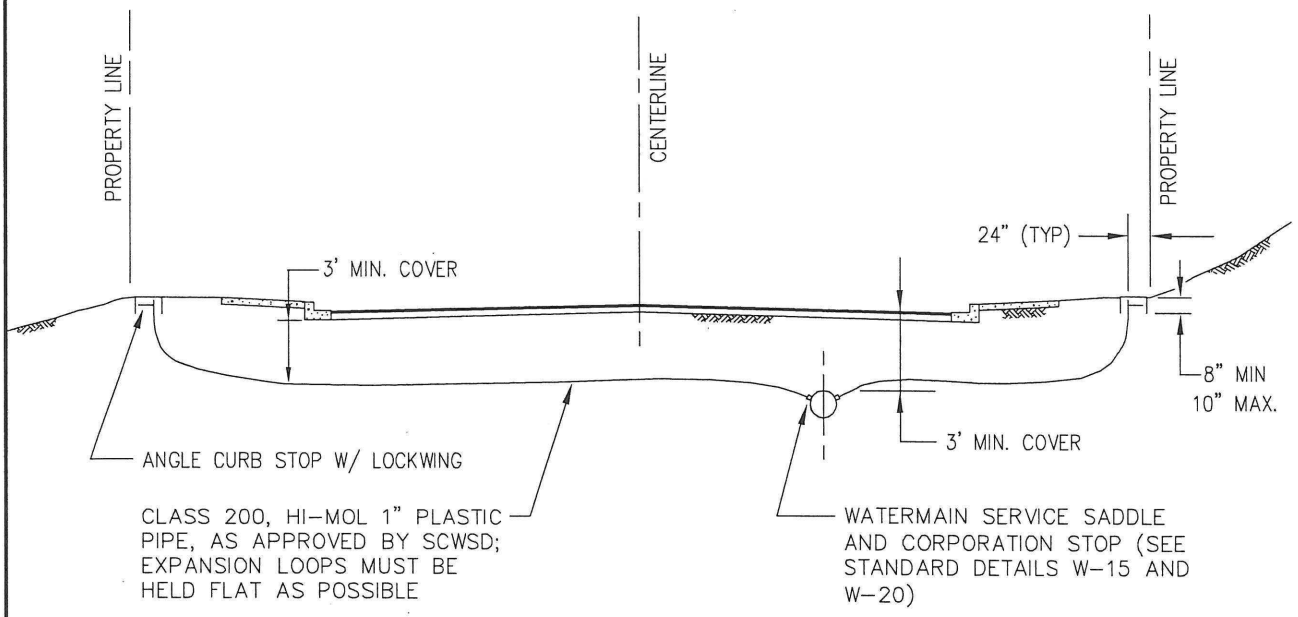
NOTE:
METER BOX SUPPLIED BY DEVELOPER OR CONTRACTOR; METER BOX SHALL BE PER STANDARD DETAILS W-17 AND W-18.

TYPICAL ROADWAY SECTIONS FOR RESIDENTIAL SUBDIVISION

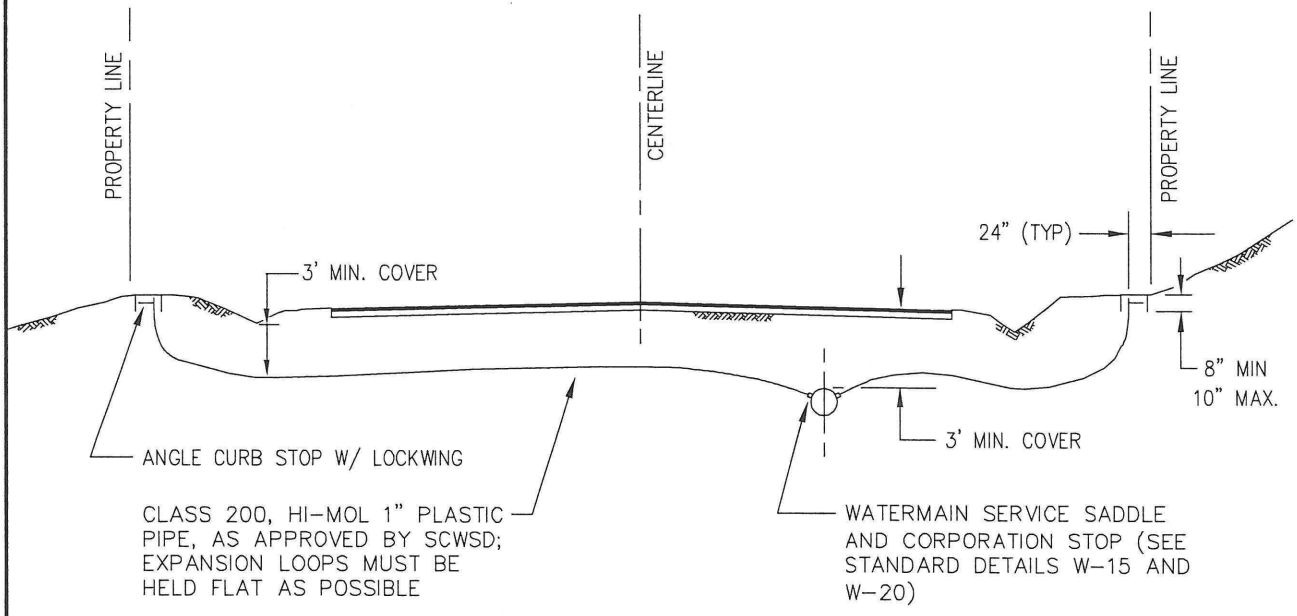
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-2

DWG. NO. W-2



ROADWAY WITH CURB AND GUTTER



ROADWAY WITH DITCHES

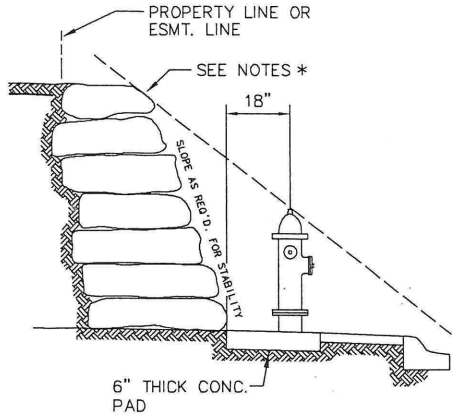
NOTE:
METER BOX SUPPLIED BY DEVELOPER OR CONTRACTOR; METER BOX SHALL BE PER STANDARD DETAILS W-17 AND W-18.

TYPICAL ROADWAY SECTIONS

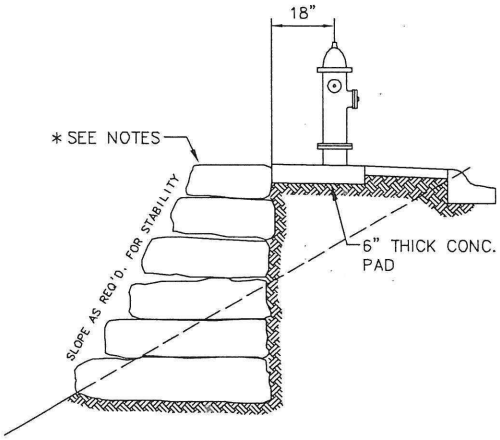
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-3

DWG. NO. W-3

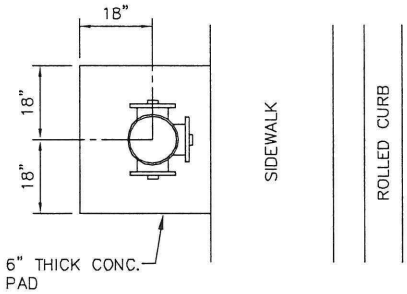


FIRE HYDRANT IN CUT



FIRE HYDRANT IN FILL

FIRE HYDRANT LOCATION IN CUT OR FILL



FIRE HYDRANT PLAN VIEW

HYDRANT RUN:

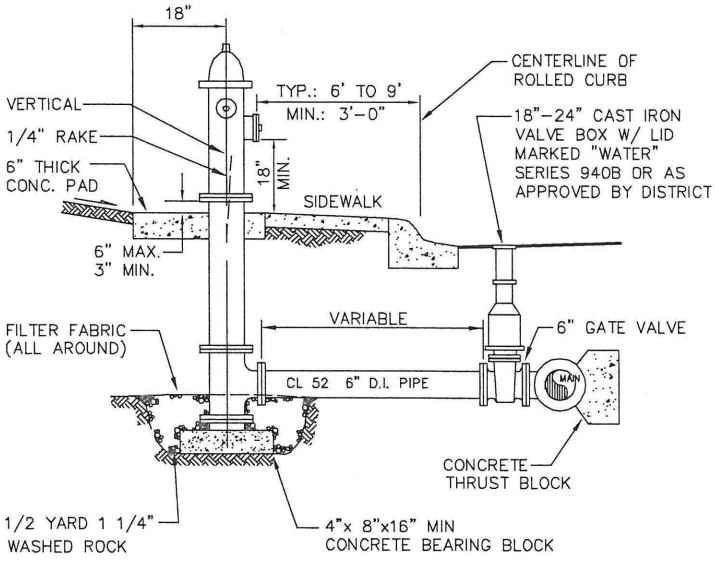
1. LENGTH ESTABLISHED ON JOB AS APPROVED BY DISTRICT.
   A. USE 6" DI PIPE, FLANGED (SHORT RUNS ONLY).
   B. OR 6" DI PIPE, MJ WITH 2 3/4" STEEL TIE RODS WITH ONE HEAVY COAT OF COAL TAR PRESERVATIVE ON TIE RODS, NUTS AND BOLTS AFTER INSTALLATION. MEGALUGS CAN BE PROVIDED IN LIEU OF TIE RODS.

HYDRANT:

1. SHALL BE CLEANSED & PRIME COATED WITH HEAVY DUTY BRUSH TYPE PRIMER OR APPROVED EQUAL. ALL HYDRANTS SHALL BE PAINTED YELLOW. TWO TOP COATS SHALL BE OIL RESISTANT ENAMEL, BRUSH TYPE OR APPROVED EQUAL.
2. STENCIL ON FACE OF HYDRANT BARREL THE DISTANCE FROM HYDRANT TO GV. IN FEET WITH 2" BLACK LETTERS.
3. SURFACE TO BE GRADED UNIFORMLY AROUND HYDRANT (18" RADIUS). SLOPE AWAY W/ BRUSH FINISH.
4. INSTALL STIMSONITE MODEL 88-A BLUE REFLECTIVE PAVEMENT MARKER, OR EQUAL, ON HYDRANT SIDE OF THE CENTER LINE OF THE ADJACENT STREET IN DIRECT LINE WITH THE HYDRANT.

* NOTES:

1. ROCKERY TYPE RETAINING WALL TO BE PROVIDED WHERE NECESSARY IN CUT OR FILL AREAS.
2. NO GUARD POSTS.

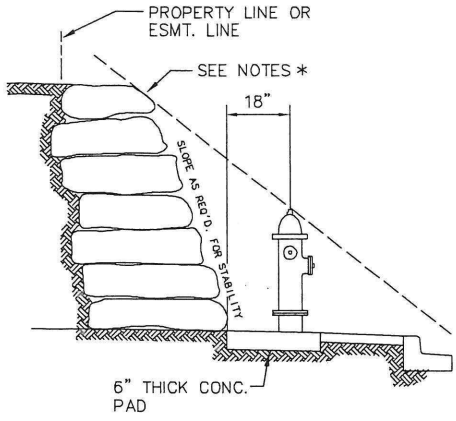


FIRE HYDRANT ASSEMBLY

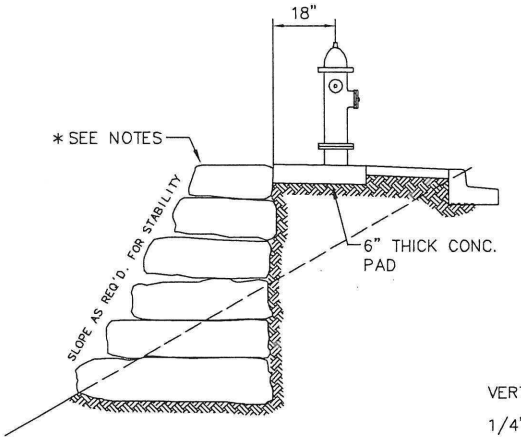
FIRE HYDRANT ASSEMBLY ROLLED CURB

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME	DWG. NO.
M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-4	W-4

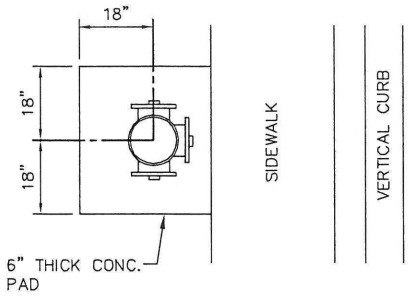


FIRE HYDRANT IN CUT



FIRE HYDRANT IN FILL

FIRE HYDRANT LOCATION IN CUT OR FILL



FIRE HYDRANT PLAN VIEW

HYDRANT RUN:

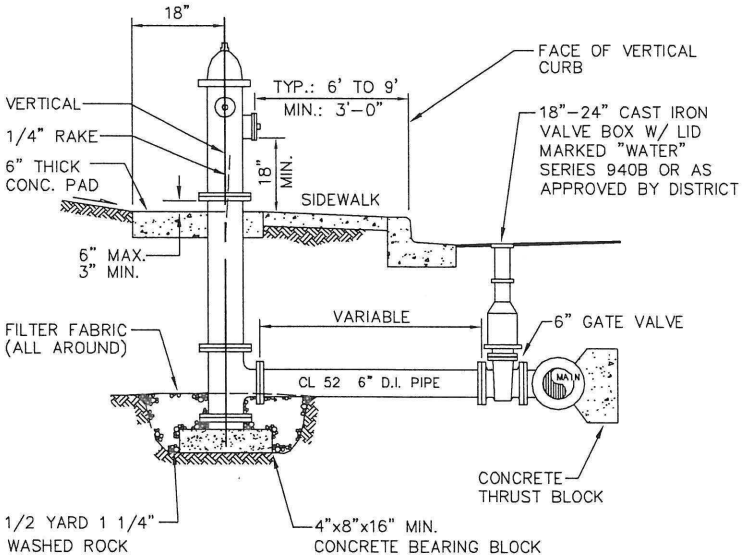
1. LENGTH ESTABLISHED ON JOB AS APPROVED BY DISTRICT.
   A. USE 6" DI PIPE, FLANGED (SHORT RUNS ONLY).
   B. OR 6" DI PIPE, MJ WITH 2 3/4" STEEL TIE RODS WITH ONE HEAVY COAT OF COAL TAR PRESERVATIVE ON TIE RODS, NUTS AND BOLTS AFTER INSTALLATION. MEGALUGS CAN BE PROVIDED IN LIEU OF TIE RODS.

HYDRANT:

1. SHALL BE CLEANSED & PRIME COATED WITH HEAVY DUTY BRUSH TYPE PRIMER OR APPROVED EQUAL. ALL HYDRANTS SHALL BE PAINTED YELLOW. TWO TOP COATS SHALL BE OIL RESISTANT ENAMEL, BRUSH TYPE OR APPROVED EQUAL.
2. STENCIL ON FACE OF HYDRANT BARREL THE DISTANCE FROM HYDRANT TO GV. IN FEET WITH 2" BLACK LETTERS.
3. SURFACE TO BE GRADED UNIFORMLY AROUND HYDRANT (18" RADIUS). SLOPE AWAY W/ BRUSH FINISH.
4. INSTALL STIMSONITE MODEL 88-A BLUE REFLECTIVE PAVEMENT MARKER, OR EQUAL, ON HYDRANT SIDE OF THE CENTER LINE OF THE ADJACENT STREET IN DIRECT LINE WITH THE HYDRANT.

* NOTES:

1. ROCKERY TYPE RETAINING WALL TO BE PROVIDED WHERE NECESSARY IN CUT OR FILL AREAS.
2. NO GUARD POSTS.



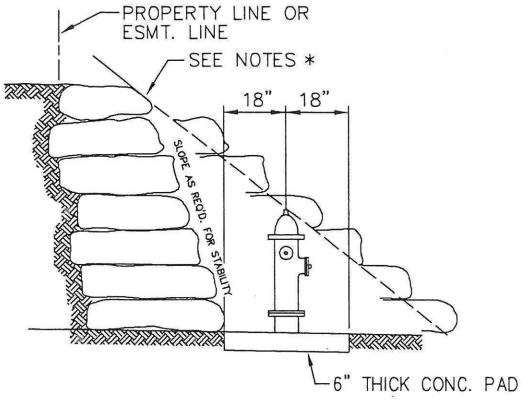
FIRE HYDRANT ASSEMBLY

FIRE HYDRANT ASSEMBLY VERTICAL CURB

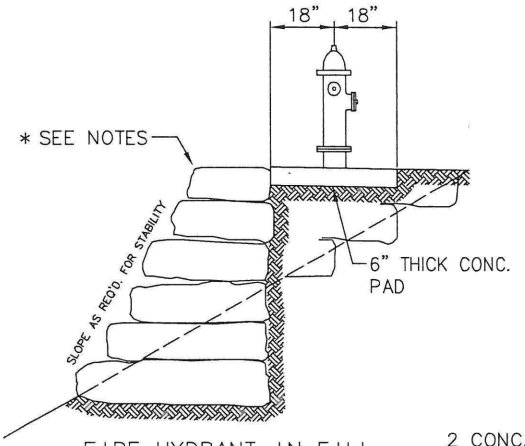
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-5

DWG. NO. W-5



FIRE HYDRANT IN CUT



FIRE HYDRANT IN FILL

FIRE HYDRANT LOCATION IN CUT OR FILL

HYDRANT RUN:

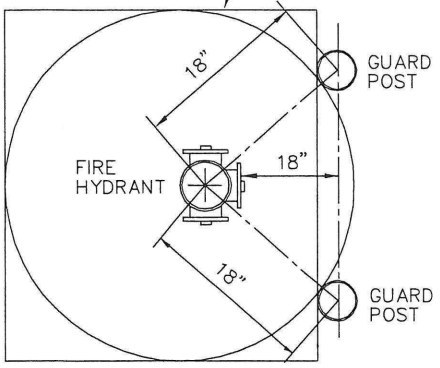
1. LENGTH ESTABLISHED ON JOB AS APPROVED BY DISTRICT.
   A. USE 6" DI PIPE, FLANGED (SHORT RUNS ONLY).
   B. OR 6" DI PIPE, MJ WITH 2 3/4" STEEL TIE RODS WITH ONE HEAVY COAT OF COAL TAR PRESERVATIVE ON TIE RODS, NUTS AND BOLTS AFTER INSTALLATION. MEGALUGS CAN BE PROVIDED IN LIEU OF TIE RODS.

HYDRANT:

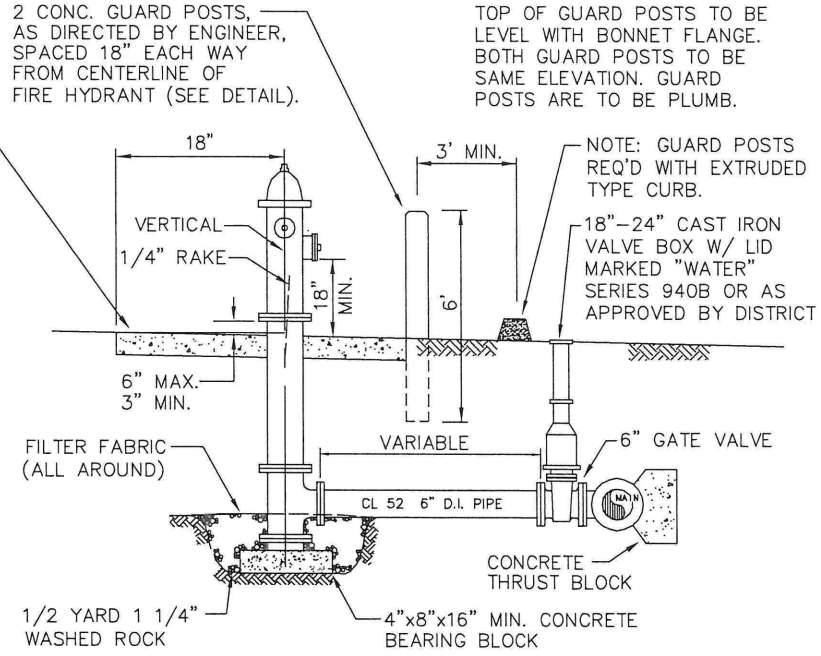
1. SHALL BE CLEANSED & PRIME COATED WITH HEAVY DUTY BRUSH TYPE PRIMER OR APPROVED EQUAL. ALL HYDRANTS SHALL BE PAINTED YELLOW. TWO TOP COATS SHALL BE OIL RESISTANT ENAMEL, BRUSH TYPE OR APPROVED EQUAL.
2. STENCIL ON FACE OF HYDRANT BARREL THE DISTANCE FROM HYDRANT TO GV. IN FEET WITH 2" BLACK LETTERS.
3. SURFACE TO BE GRADED UNIFORMLY AROUND HYDRANT (18" RADIUS). SLOPE AWAY W/ BRUSH FINISH.
4. GUARD POSTS SHALL BE INSTALLED FOR ALL FIRE HYDRANTS EXCEPT IN PLATS IN WHICH VERTICAL TYPE CURBS WILL BE INSTALLED.
5. INSTALL STIMSONITE MODEL 88-A BLUE REFLECTIVE PAVEMENT MARKER, OR EQUAL, ON HYDRANT SIDE OF THE CENTER LINE OF THE ADJACENT STREET IN DIRECT LINE WITH THE HYDRANT.

* NOTES:

1. ROCKERY TYPE RETAINING WALL TO BE PROVIDED WHERE NECESSARY IN CUT OR FILL AREAS.
2. GUARD POSTS NOT REQUIRED WITH POURED-IN-PLACE VERTICAL CURB.
3. GUARD POSTS LOCATED IN KING CO. RIGHT-OF-WAY REQUIRE 10 FT. SETBACK FROM ROADWAY EDGE.



DETAIL



FIRE HYDRANT ASSEMBLY

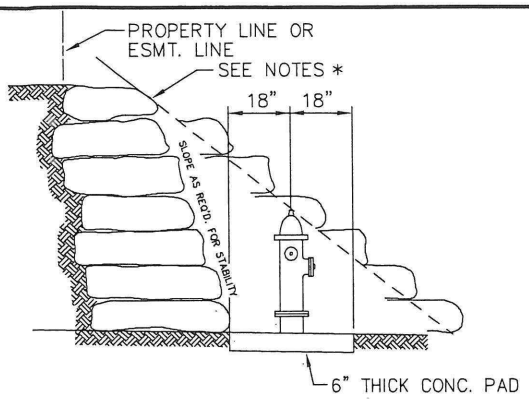
SOOS CREEK WATER & SEWER DISTRICT

FIRE HYDRANT ASSEMBLY COMMERCIAL

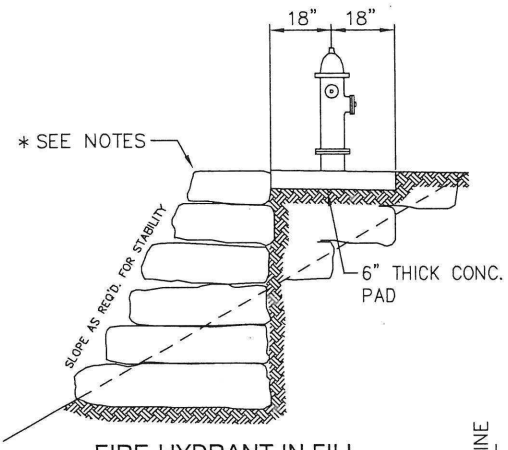
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-6

DWG. NO. W-6



FIRE HYDRANT IN CUT



FIRE HYDRANT IN FILL

FIRE HYDRANT LOCATION IN CUT OR FILL

HYDRANT RUN:

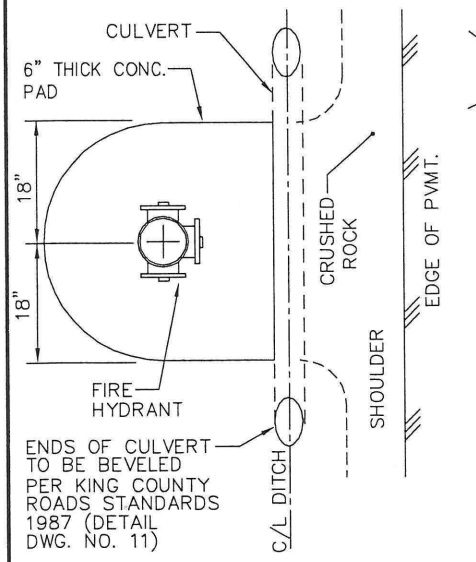
1. LENGTH ESTABLISHED ON JOB AS APPROVED BY DISTRICT.
   - A. USE 6" DI PIPE, FLANGED (SHORT RUNS ONLY).
   - B. OR 6" DI PIPE, MJ WITH 2 3/4" STEEL TIE RODS WITH ONE HEAVY COAT OF COAL TAR PRESERVATIVE ON TIE RODS, NUTS AND BOLTS AFTER INSTALLATION. MEGALUGS CAN BE PROVIDED IN LIEU OF TIE RODS.

HYDRANT:

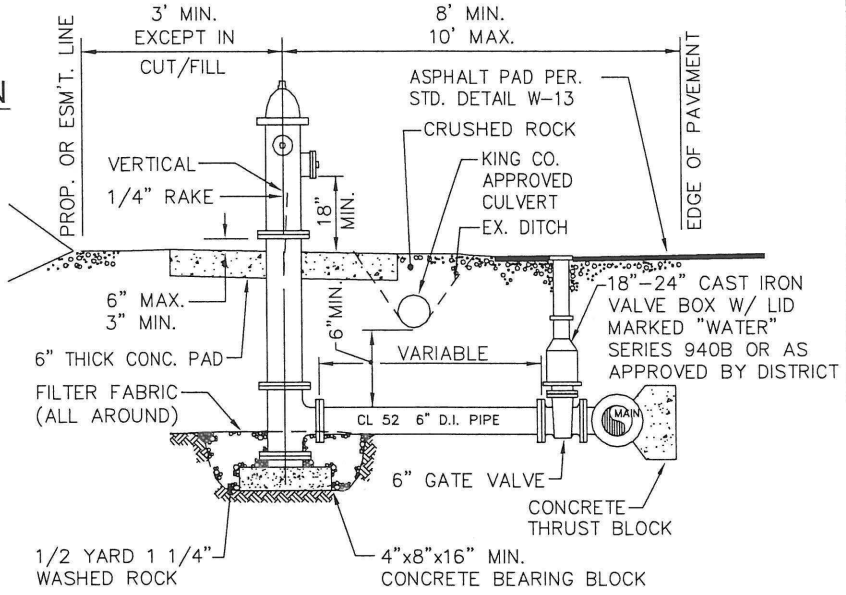
1. SHALL BE CLEANSED & PRIME COATED WITH HEAVY DUTY BRUSH TYPE PRIMER OR APPROVED EQUAL. ALL HYDRANTS SHALL BE PAINTED YELLOW. TWO TOP COATS SHALL BE OIL RESISTANT ENAMEL, BRUSH TYPE OR APPROVED EQUAL.
2. STENCIL ON FACE OF HYDRANT BARREL THE DISTANCE FROM HYDRANT TO GV. IN FEET WITH 2" BLACK LETTERS.
3. SURFACE TO BE GRADED UNIFORMLY AROUND HYDRANT (18" RADIUS). SLOPE AWAY W/ BRUSH FINISH.
4. INSTALL STIMSONITE MODEL 88-A BLUE REFLECTIVE PAVEMENT MARKER, OR EQUAL, ON HYDRANT SIDE OF THE CENTER LINE OF THE ADJACENT STREET IN DIRECT LINE WITH THE HYDRANT.

* NOTES:

1. ROCKERY TYPE RETAINING WALL TO BE PROVIDED WHERE NECESSARY IN CUT OR FILL AREAS.
2. NO GUARD POSTS.



PLAN VIEW



FIRE HYDRANT ASSEMBLY

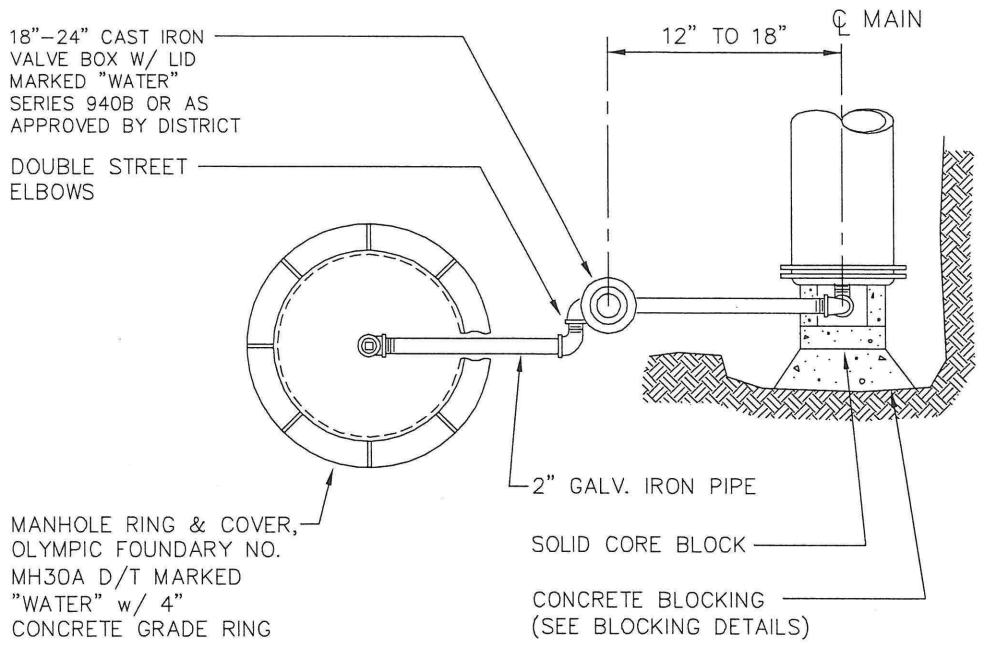
SOOS CREEK WATER & SEWER DISTRICT

FIRE HYDRANT ASSEMBLY GRAVEL SHOULDER

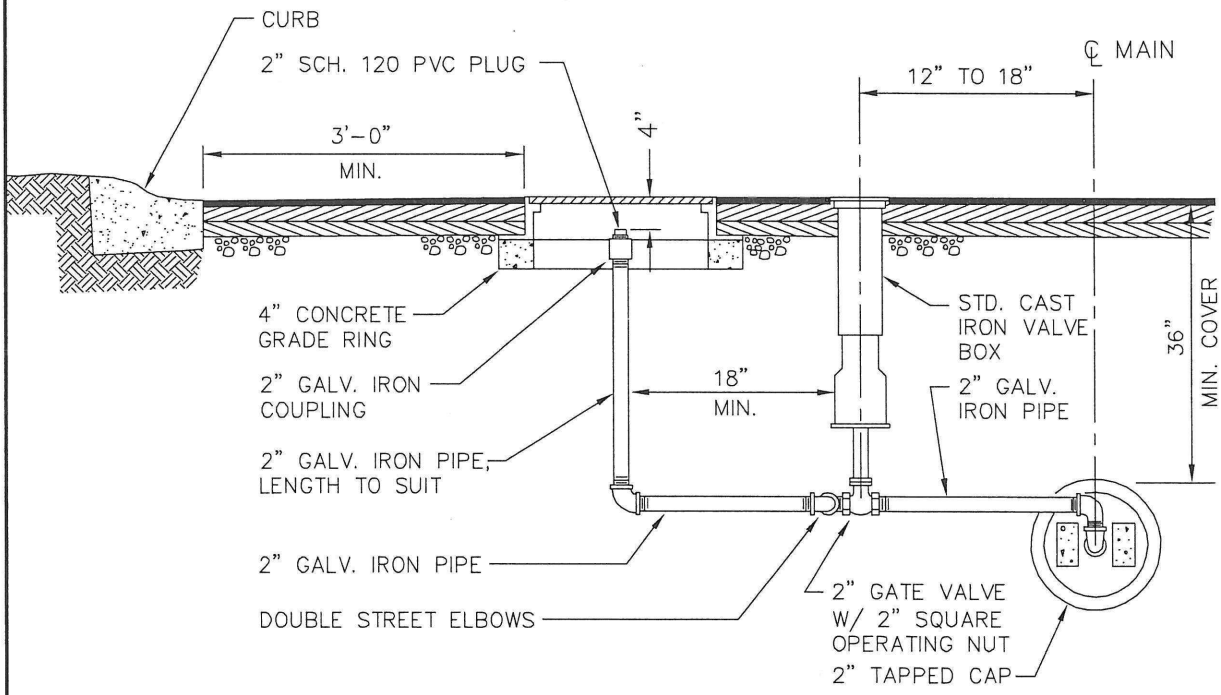
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-7

DWG. NO. W-7



PLAN



ELEVATION

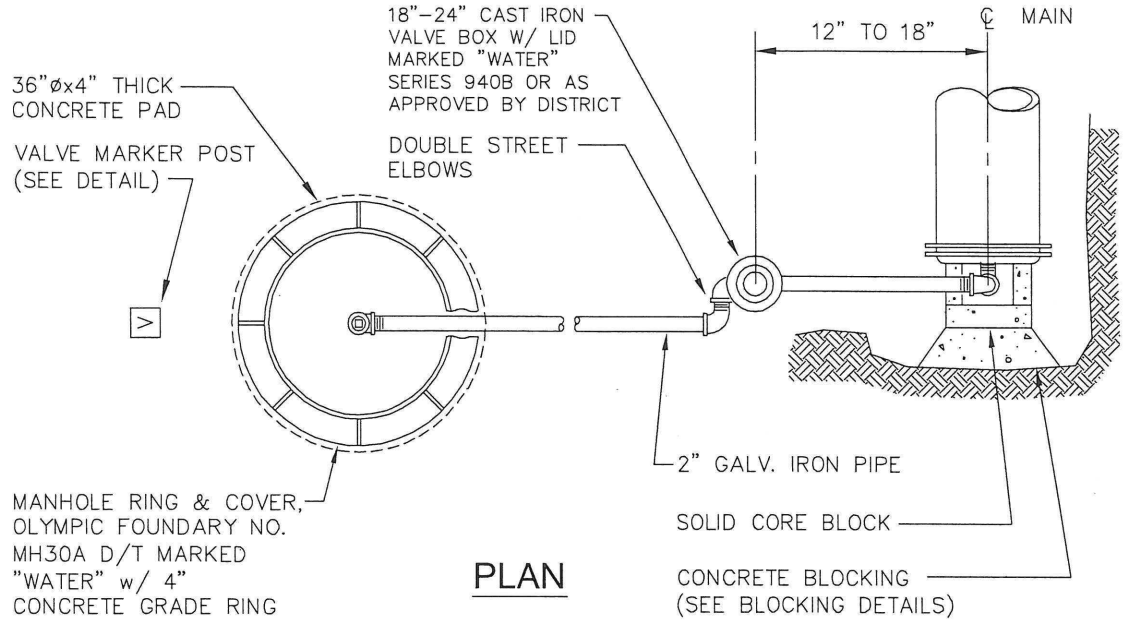
NOTE:
LOCATE BLOW–OFF ASSEMBLY AS CLOSE AS POSSIBLE TO MAIN.

IN PAVING 2" BLOWOFF ASSEMBLY

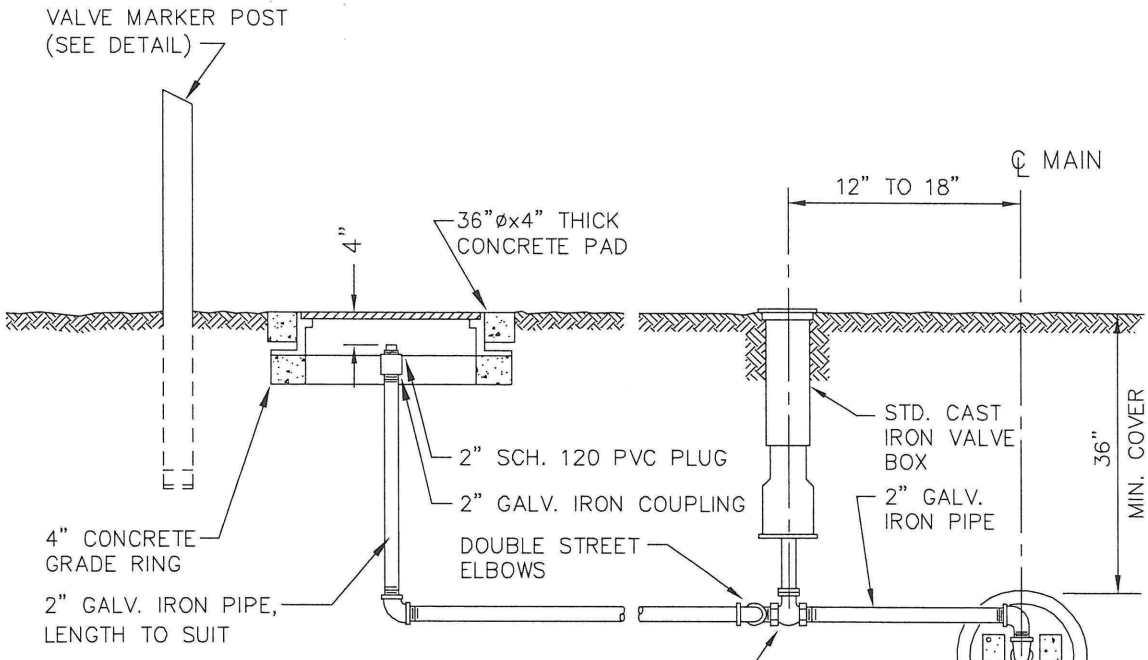
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-8

DWG. NO. W-8



PLAN



ELEVATION

NOTES:

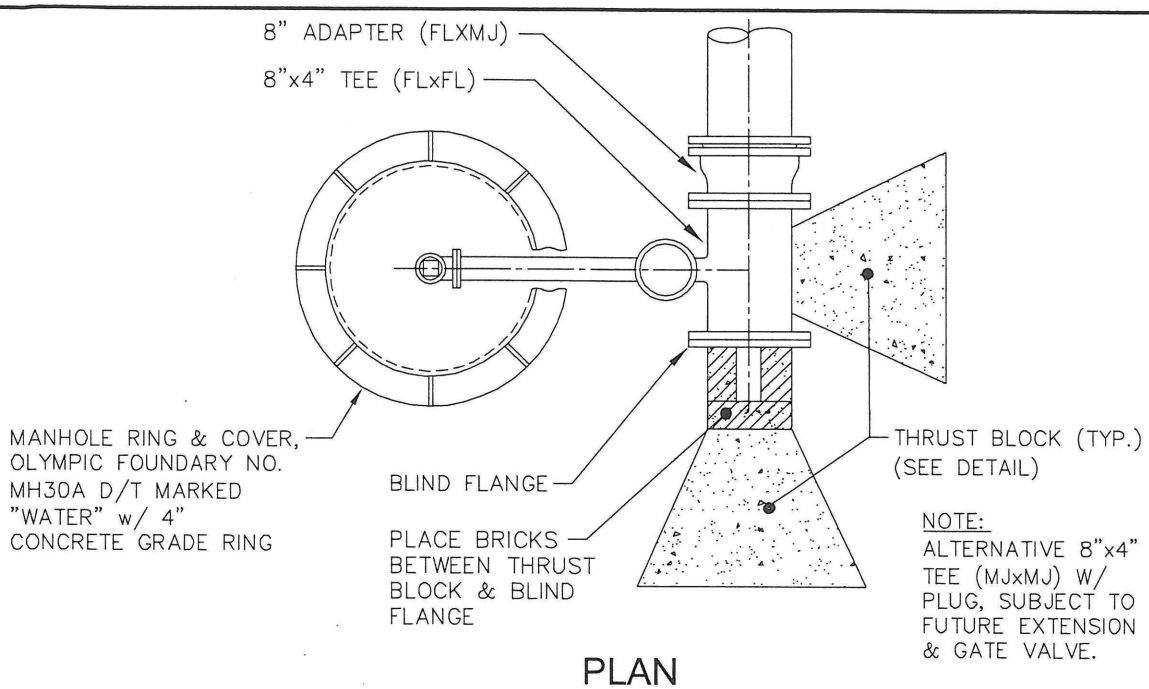
1. LOCATE BLOW–OFF AS CLOSE AS POSSIBLE TO MAIN.
2. THE GROUND WITHIN 3' RADIUS OF BLOW–OFF SHALL BE GRADED UNIFORMLY.

OFF PAVING 2" BLOWOFF ASSEMBLY

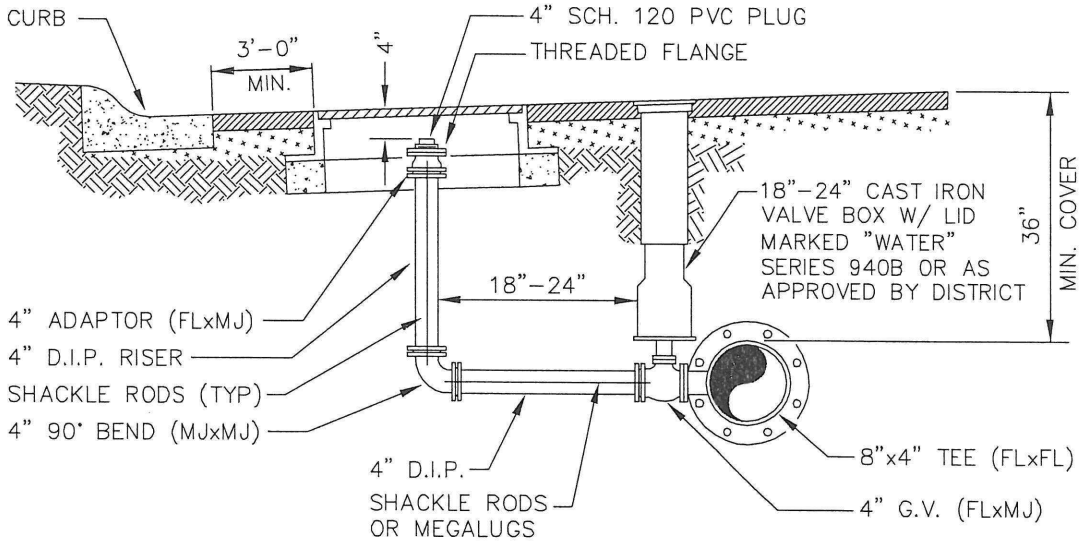
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W–9

DWG. NO. W-9



PLAN



ELEVATION

NOTES:

1. LOCATE BLOW-OFF AS CLOSE AS POSSIBLE TO MAIN, OR AS DIRECTED BY DISTRICT.
2. THE GROUND WITHIN 3' RADIUS OF BLOWOFF SHALL BE GRADED UNIFORMLY.
3. SHACKLE RODS SHALL BE TWO EA., 3/4" GALV. STEEL TIE RODS WITH ONE HEAVY COAT OF COAL TAR PRESERVATIVE ON TIE RODS, NUTS AND BOLTS AFTER INSTALLATION. MEGALUGS CAN BE PROVIDED IN LIEU OF SHACKLE RODS.
4. COVER ON BOX MUST BE LOCKING TYPE.
5. NO MARKING POST NEEDED.

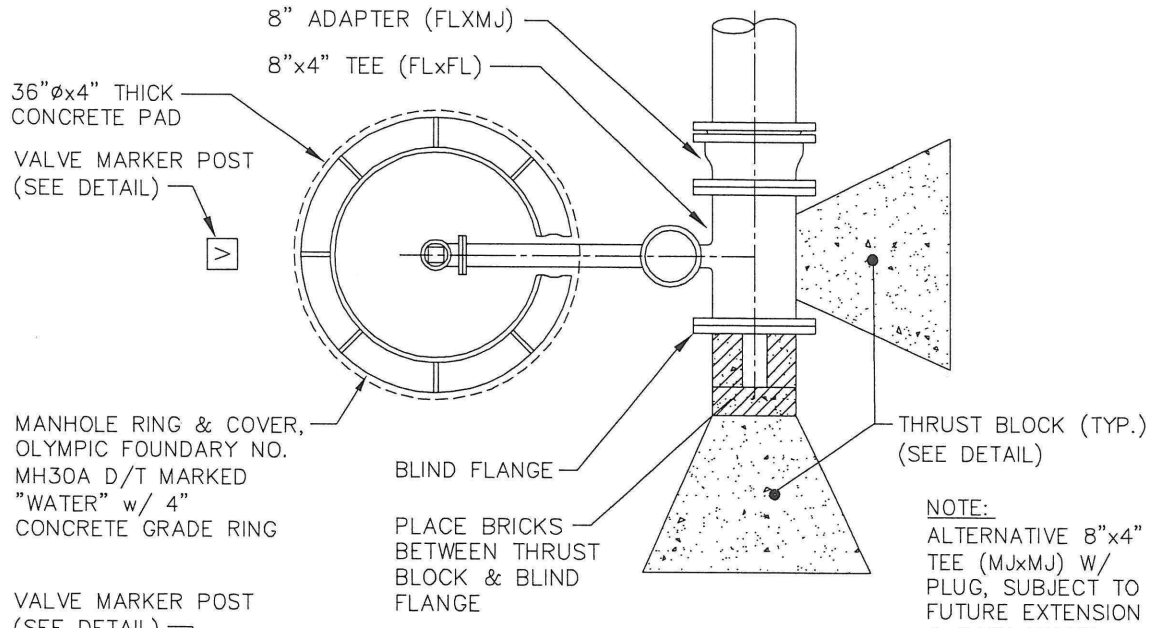
SOOS CREEK WATER & SEWER DISTRICT

IN PAVING 4" BLOWOFF ASSY. FOR 8" AND LARGER MAINS

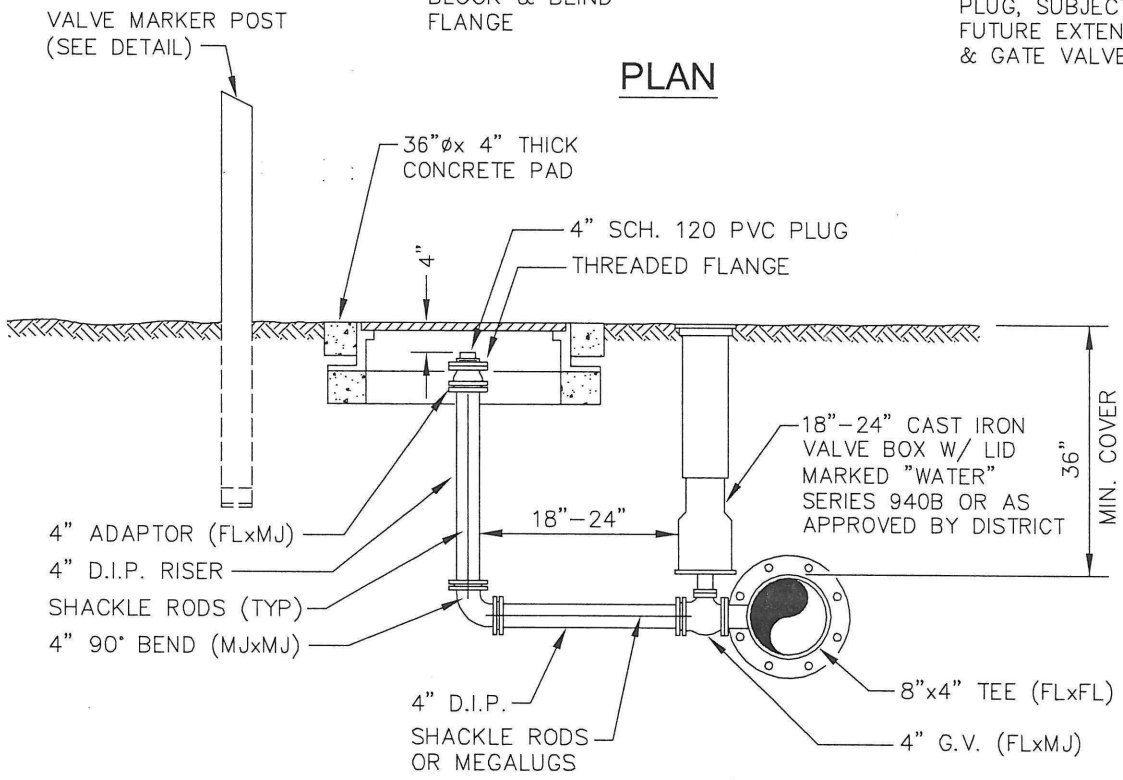
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-10

DWG. NO. W-10



PLAN



ELEVATION

NOTES:

1. LOCATE BLOW-OFF AS CLOSE AS POSSIBLE TO MAIN, OR AS DIRECTED BY DISTRICT.
2. THE GROUND WITHIN 3' RADIUS OF BLOWOFF SHALL BE GRADED UNIFORMLY.
3. SHACKLE RODS SHALL BE TWO EA., 3/4" GALV. STEEL TIE RODS WITH ONE HEAVY COAT OF COAL TAR PRESERVATIVE ON TIE RODS, NUTS AND BOLTS AFTER INSTALLATION. MEGALUGS CAN BE PROVIDED IN LIEU OF SHACKLE RODS.
4. COVER ON BOX MUST BE LOCKING TYPE.

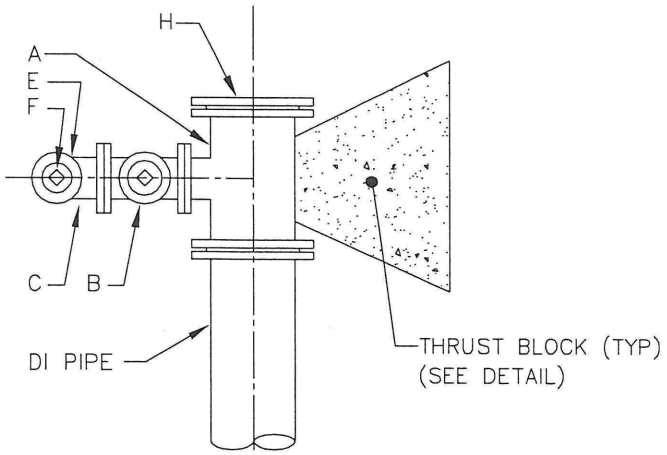
SOOS CREEK WATER & SEWER DISTRICT

OFF PAVING 4" BLOWOFF ASSY. FOR 8" AND LARGER MAINS

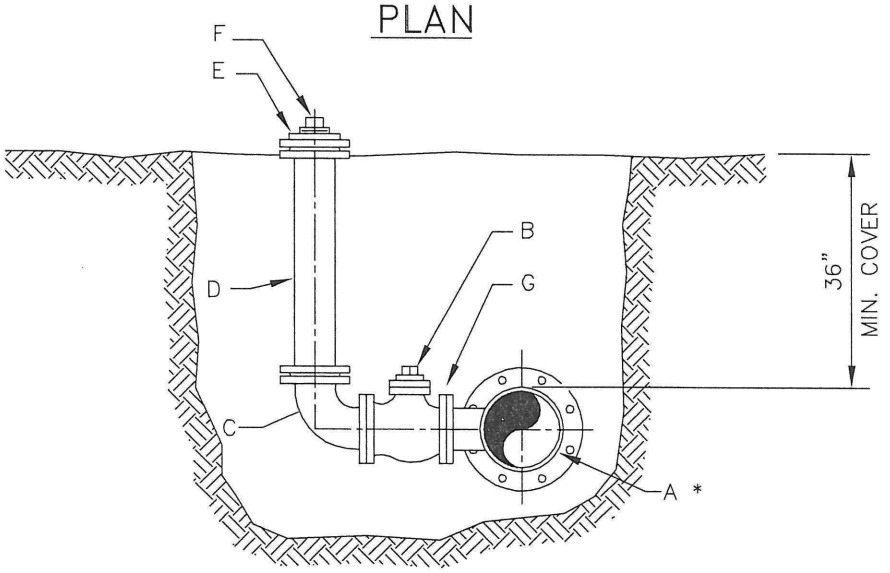
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-11

DWG. NO. W-11



PLAN



ELEVATION

PART NO.	PART DESCRIPTION	BLOW OFF SIZE		
		4"	6"	8"
A	D.I. TEE (FL x MJ) BRANCH SIZE *	4"	6"	8"
B	G.V. (FL x FL)	4"	6"	8"
C	90° BEND (FL x MJ)	4"	6"	8"
D	RISER D.I.P. x LENGTH AS REQ'D	4"	6"	8"
E	MJ CAP W/ MEGALUGS TAPPED FOR 4" IPT (3" IPT FOR 4" BLOW OFF)	4"	6"	8"
F	PLASTIC PLUG	3"	4"	4"
G	BLIND FLANGE (AFTER FLUSHING, REMOVE GATE VALVE & RISER)	4"	6"	8"
H	MJ PLUG	MAIN	SIZE	

* TEE SIZE SAME AS WATER MAIN UNLESS OTHERWISE INDICATED. ALTERNATIVELY D.I. TEE (MJ x MJ) WITH PLUG, SUBJECT TO FUTURE EXTENSION & GATE VALVE.

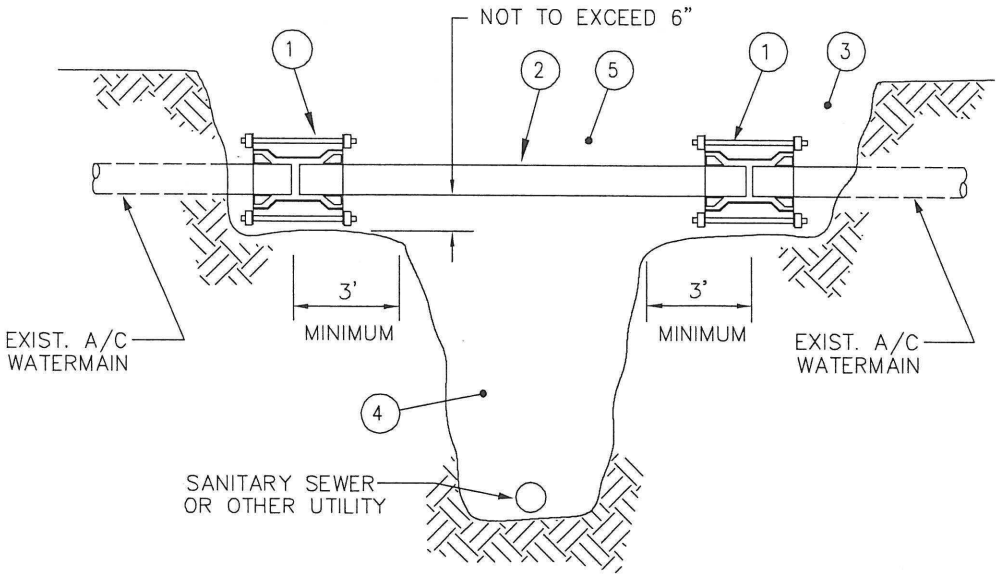
SOOS CREEK WATER & SEWER DISTRICT

4", 6" OR 8" TEMPORARY BLOWOFF ASSEMBLY

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-11A

DWG. NO. W-11A



NOTES:

(1) COUPLING: ASBESTOS–CEMENT (A/C) BY DUCTILE IRON (DUCTILE IRON, ROMAC STYLE 501, OR EQUAL).

(2) DUCTILE IRON PIPE, CL. 52, DIAMETER TO MATCH EXISTING A/C.

(3) BACKFILL EXISTING A/C AND COUPLING WITH PEA GRAVEL TO 1' ABOVE PIPE.

(4) BACKFILL UNDER THE WATERLINE WITH CRUSHED ROCK COMPACTED TO 95% MDD, OR CONTROLLED DENSITY FILL (CDF) PER GOVERNING ROAD AGENCY REQUIREMENTS.

(5) BACKFILL OVER THE TOP OF THE WATERLINE WITH CRUSHED ROCK COMPACTED TO 95% MDD, OR CONTROLLED DENSITY FILL (CDF) PER GOVERNING ROAD AGENCY REQUIREMENTS. BACKFILL OVER THE TOP OF THE WATERLINE WITH NATIVE MATERIAL COMPACTED TO 90% MDD IF LOCATED WITHIN EASEMENT OR UNIMPROVED AREAS.

(6) A/C DISPOSAL PER CURRENT WAC AND PUGET SOUND AIR POLLUTION CONTROL AGENCY REQUIREMENTS.

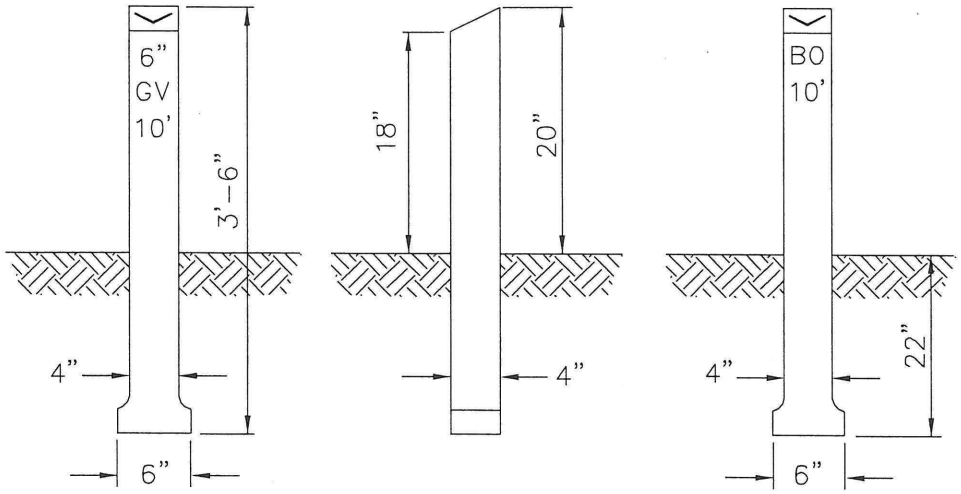
SOOS CREEK WATER & SEWER DISTRICT

A/C WATER MAIN REPLACEMENT @ SANITARY SEWER CROSSING

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-12

DWG. NO. W-12

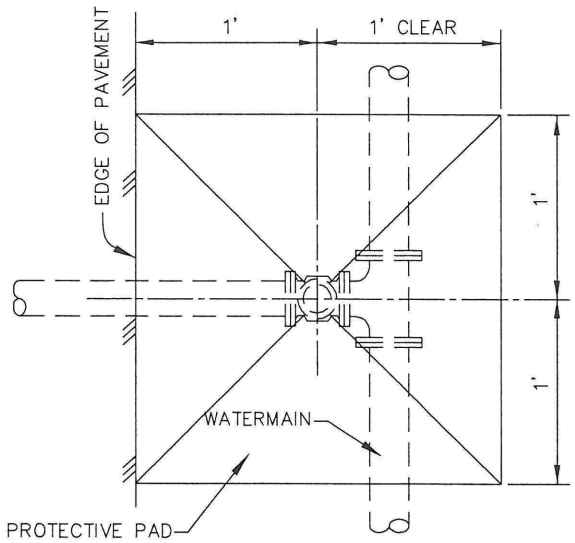


VALVE MARKER POST

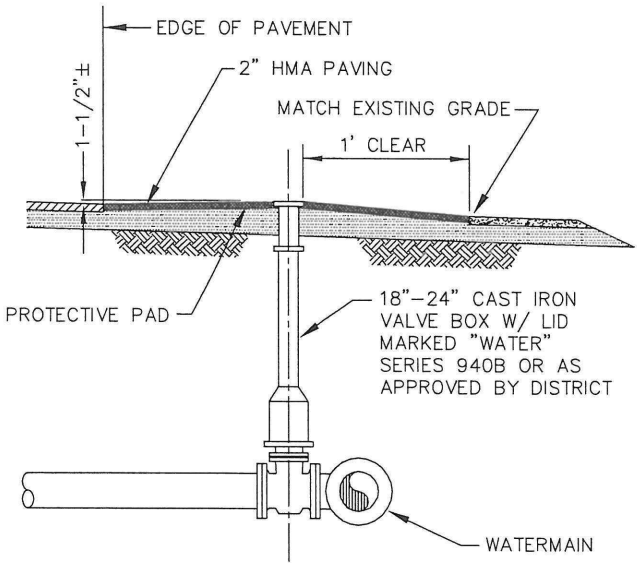
VALVE MARKER POST WILL BE REQUIRED UNLESS VALVE IS IN PAVEMENT AND TOP OF VALVE BOX IS AT FINISHED GRADE.

BLOW-OFF ASSEMBLY MARKER POST

BLOW-OFF MARKER POST WILL BE REQUIRED UNLESS BLOW-OFF IS IN PAVEMENT.



PLAN



SECTION

VALVE BOX PROTECTIVE PAD

NOTE:
MARKER POST SHALL BE PAINTED WITH 2 COATS OF WHITE PAINT, LETTERS SHALL BE 2" HIGH AND STENCILED IN BLACK PAINT. MARKER POST SHALL BE LOCATED 10 FT. (MIN.) AWAY FROM EDGE OF ROAD WAY.

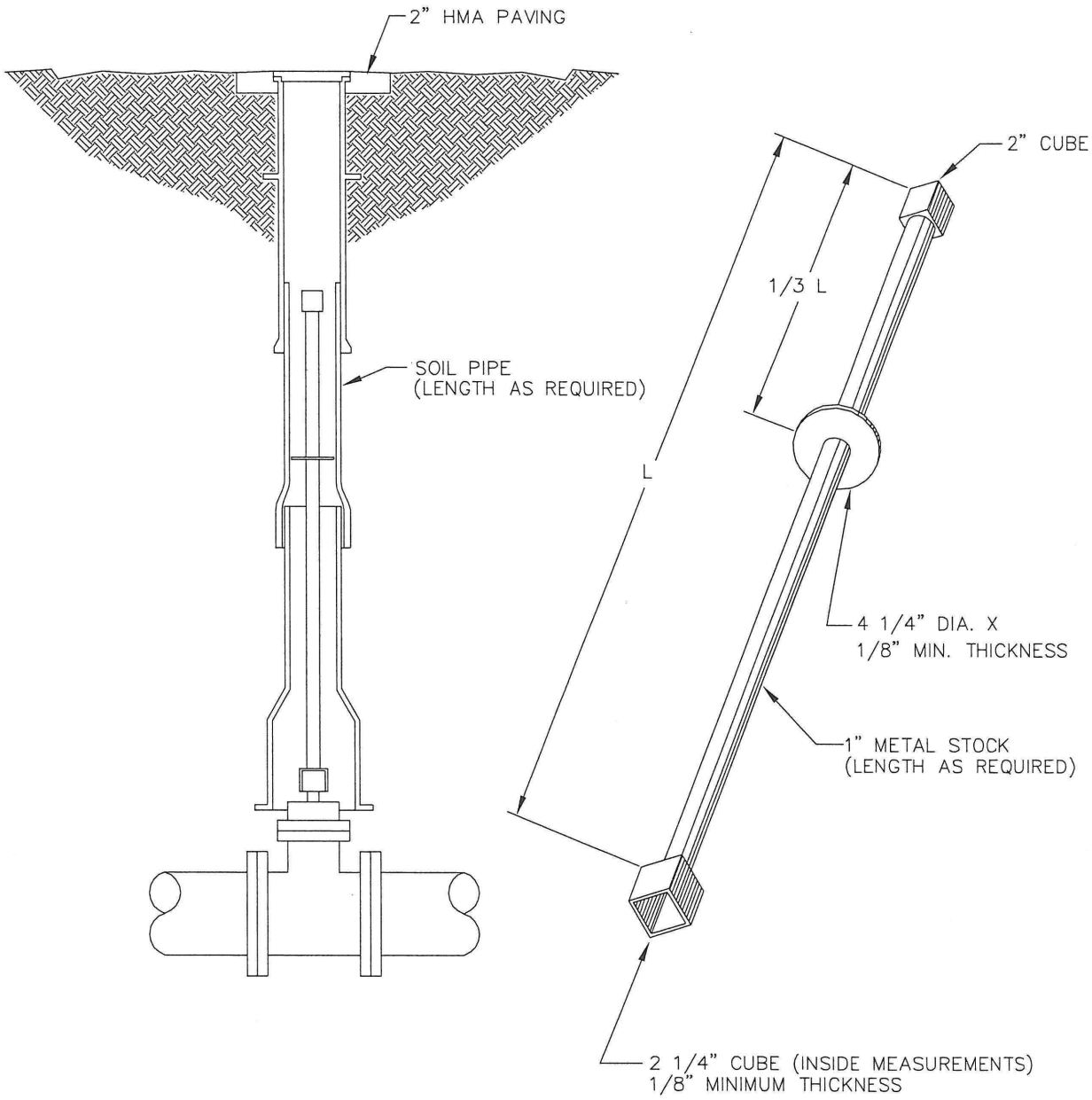
SOOS CREEK WATER & SEWER DISTRICT

VALVE BOX PROTECTIVE PAD AND MARKER POST

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-13

DWG. NO. W-13



NOTES:

LENGTH AS REQUIRED TO PUT OPERATING NUT TWO (2) FEET FROM SURFACE. EXTENSIONS ARE REQUIRED WHEN THE VALVE NUT IS MORE THAN FOUR (4) FEET BELOW FINISHED GRADE. EXTENSIONS ARE TO BE A MINIMUM OF TWO (2) FEET LONG. ONE EXTENSION IS TO BE USED PER VALVE.

ALL EXTENSIONS ARE TO BE MADE OF STEEL, SIZED AS NOTED, AND PAINTED WITH TWO (2) COATS OF METAL PAINT.

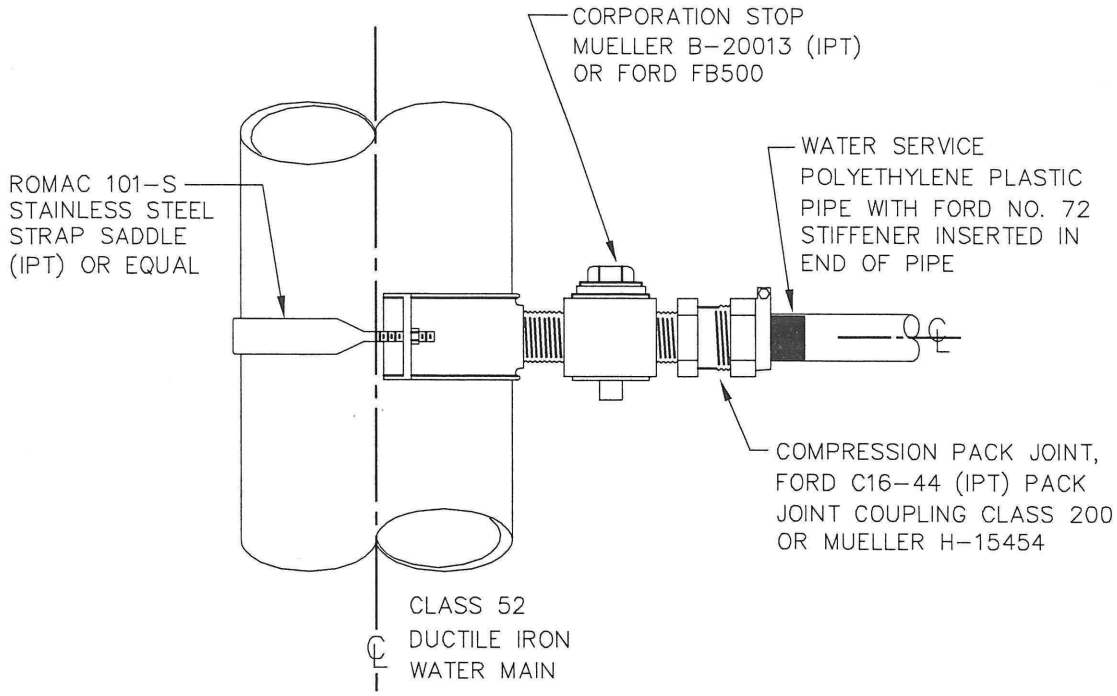
SOOS CREEK WATER & SEWER DISTRICT

VALVE OPERATING NUT EXTENSION

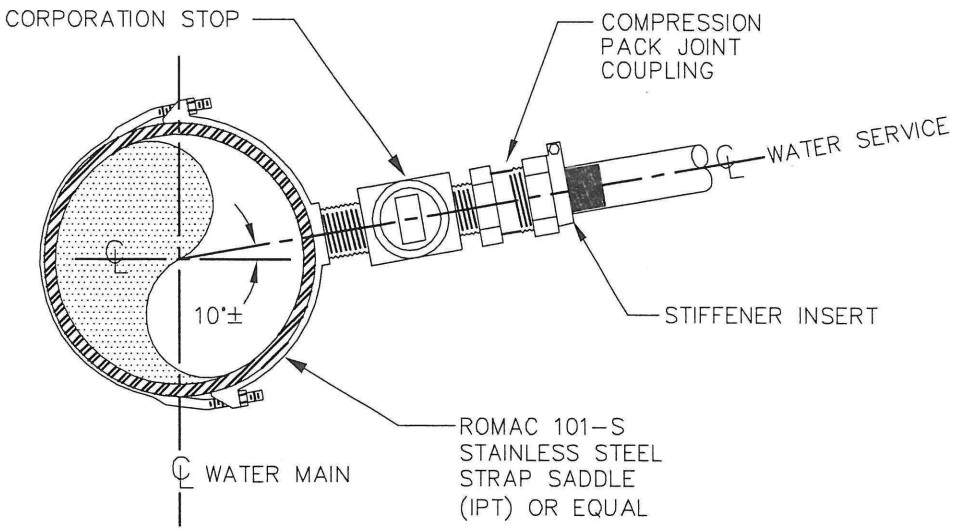
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-14

DWG. NO. W-14



PLAN



ELEVATION

NOTES:

1. SERVICE LINE FITTINGS: ALL FITTINGS SHALL BE CAST FROM WATER WORKS BRASS CONFORMING TO C800.
2. MUNICIPAL SERVICE PIPE: IRON PIPE SIZE ID, ASTM D-2239, SIDR 7, PE 3408 (HI-MOL PLASTIC) WITH 16 GAUGE TRACER WIRE.

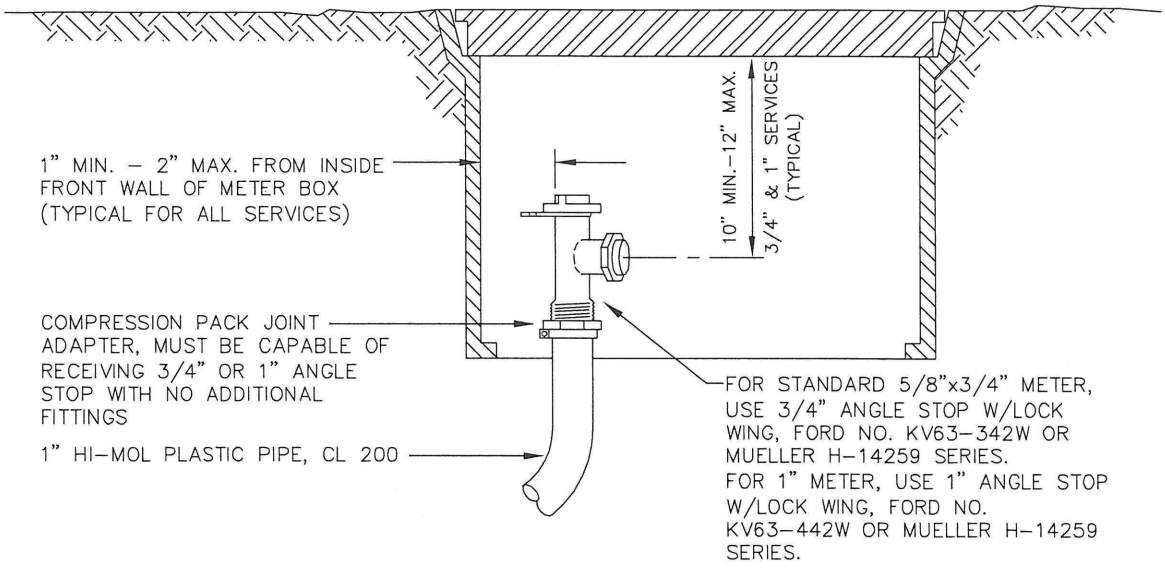
SOOS CREEK WATER & SEWER DISTRICT

WATER SERVICE CONNECTION ONE INCH

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-15

DWG. NO. W-15



SINGLE SERVICE

NOTES:

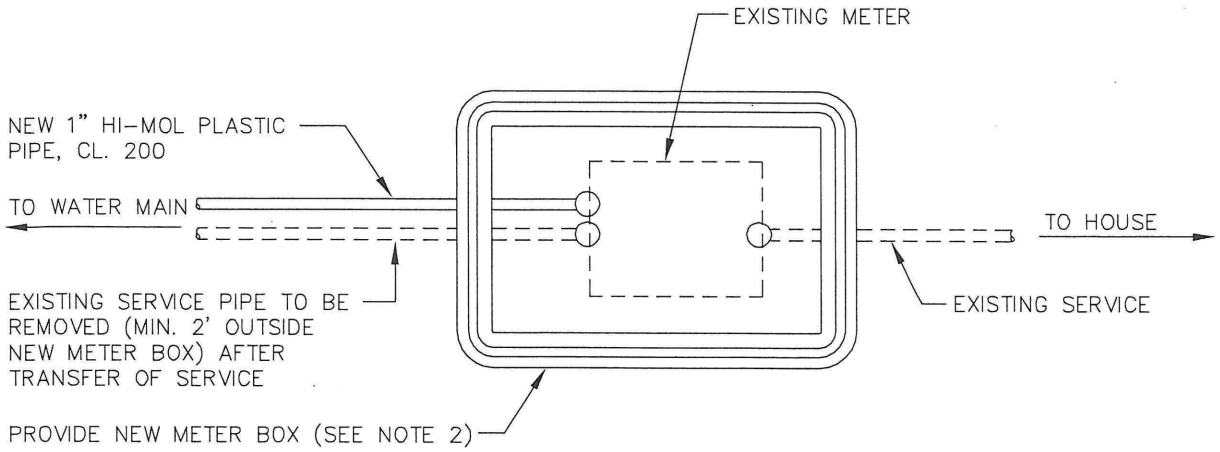
1. DO NOT BACKFILL UNTIL ALL BRASS FITTINGS HAVE BEEN INSPECTED BY THE DISTRICT.
2. WATER METER BOXES SHALL BE A MINIMUM OF 5 FEET FROM POWER VAULTS, HANDHOLES, STREET LIGHTS AND ELECTRICAL SERVICES AND SHALL BE A MINIMUM OF 3 FEET FROM OTHER WATER METERS, SERVICES, FIRE HYDRANTS AND BLOWOFF ASSEMBLIES.
3. METER BOX SHALL BE SUPPLIED BY DEVELOPER OR CONTRACTOR AND SHALL BE PER STANDARD DETAILS W–17 AND W–18.

SOOS CREEK WATER & SEWER DISTRICT

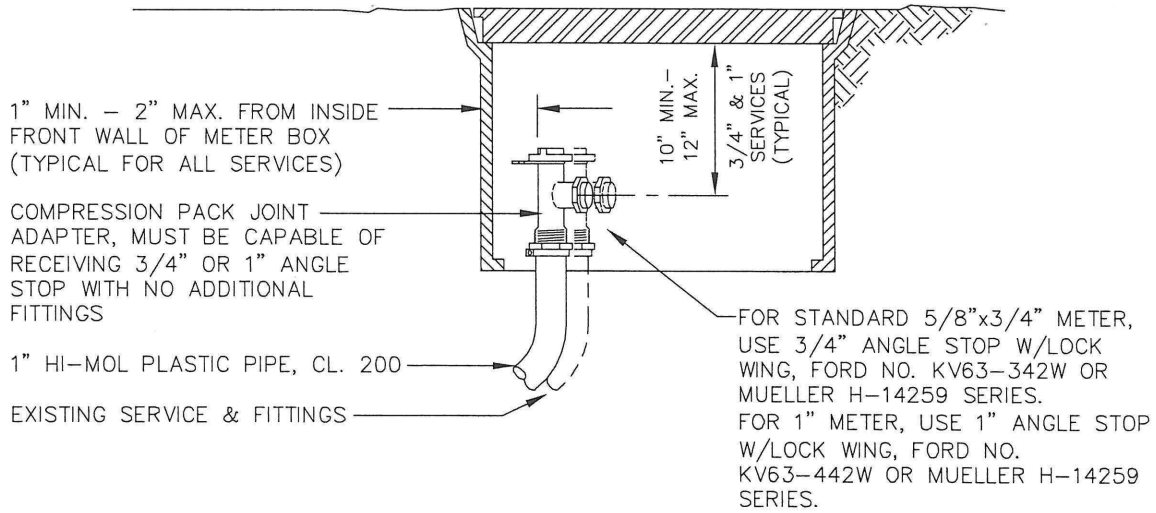
TYPICAL SERVICE DETAIL

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME	DWG. NO.
M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W–16	W-16



PLAN VIEW



SINGLE SERVICE

NOTES:

1. BRING NEW WATER SERVICE INTO METER BOX AND INSTALL NEW ANGLE STOP, ETC. TO MATCH VERTICAL AND HORIZONTAL ALIGNMENT WITH EXISTING FITTINGS FOR METER RECONNECTION.
2. DO NOT BACKFILL UNTIL ALL BRASS FITTINGS HAVE BEEN INSPECTED BY THE DISTRICT.
3. WATER METER BOXES SHALL BE A MINIMUM OF 5 FEET FROM POWER VAULTS, HANDHOLES, STREET LIGHTS AND ELECTRICAL SERVICES AND SHALL BE A MINIMUM OF 3 FEET FROM OTHER WATER METERS, SERVICES, FIRE HYDRANTS AND BLOWOFF ASSEMBLIES.
4. METER BOX SHALL BE SUPPLIED BY DEVELOPER OR CONTRACTOR AND SHALL BE PER STANDARD DETAILS W-17 AND W-18.

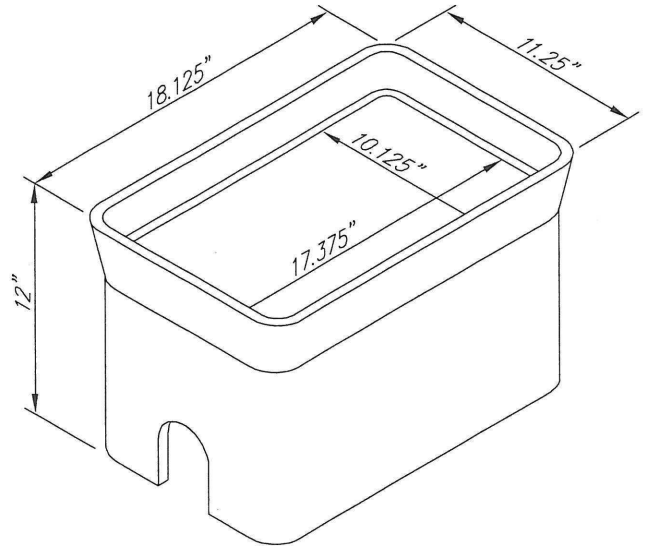
SOOS CREEK WATER & SEWER DISTRICT

INSTALLATION DETAIL FOR NEW SERVICE TRANSFER TO EXISTING METER

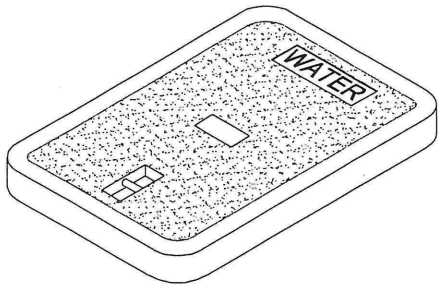
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-16A

DWG. NO. W-16A



MID-STATES PLASTIC HDPE METER BOX NO. BC111812BXL



CARSON LID #11184135 MARKED "WATER"

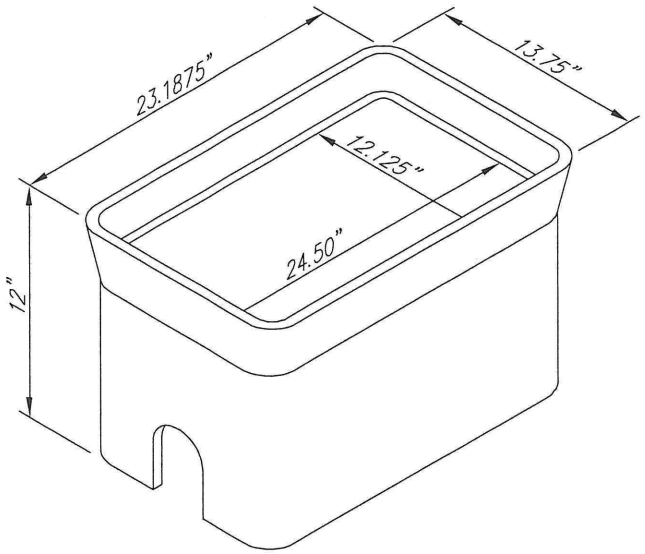
SOOS CREEK WATER & SEWER DISTRICT

HDPE METER BOX FOR 5/8"x3/4" METER

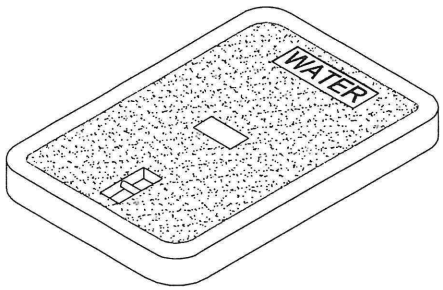
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-17

DWG. NO. W-17



MID-STATES PLASTIC HDPE METER BOX NO. BCF132412B



CARSON LID #13244252 MARKED "WATER"

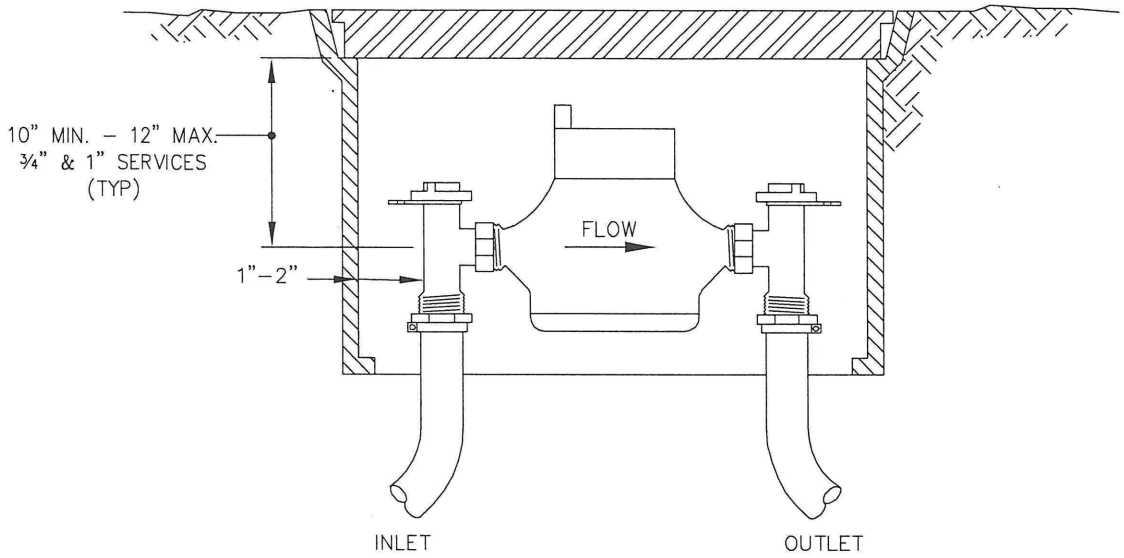
SOOS CREEK WATER & SEWER DISTRICT

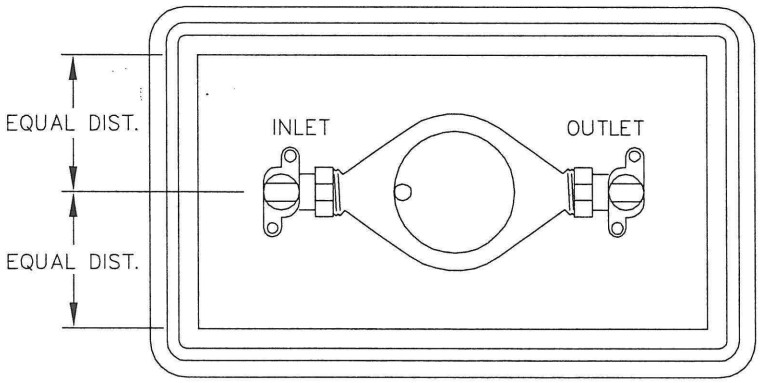
HDPE METER BOX FOR 1" METER

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-18

DWG. NO. W-18





NOTES:

1. THE ANGLESTOPS MUST BE EQUAL DISTANCE FROM THE LONGITUDINAL SIDES OF THE METER BOX. THE OUTLET OF THE ANGLESTOPS MUST BE BETWEEN 10" AND 12" BELOW THE BOTTOM OF THE METER BOX LID. THE ANGLESTOPS MUST BE BETWEEN 1" AND 2" FROM THE LATITUDINAL END OF THE METER BOX AND MUST BE VERTICAL (90°) TO GROUND LEVEL.
2. THE ANGLESTOP CONNECTION ON THE CUSTOMER'S SIDE OF THE METER MUST REMAIN IN A VERTICAL POSITION AFTER THE CONNECTION TO THE CUSTOMER'S LINE HAS BEEN COMPLETED.
3. THE METER BOX MUST REMAIN FREE OF FOREIGN MATERIAL SUCH AS CONCRETE & ITS BY–PRODUCTS.
4. METER BOX SUPPLIED BY DEVELOPER/CONTRACTOR. METER BOX SHALL BE PER STANDARD DETAILS W–17 AND W–18.

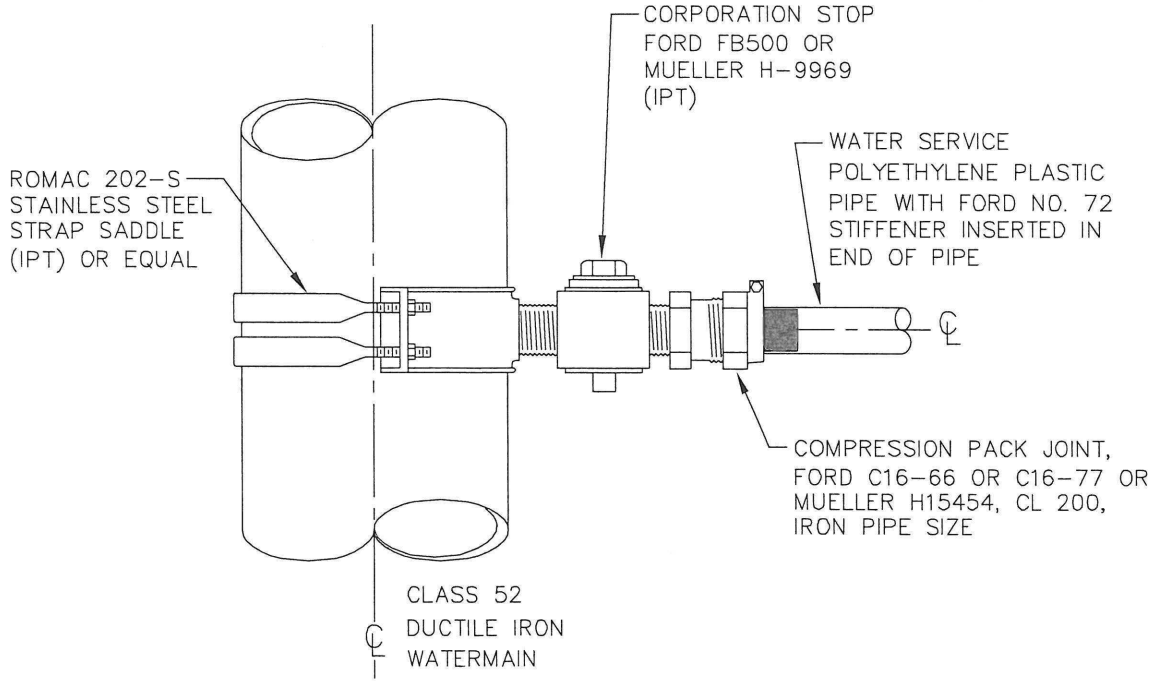
SOOS CREEK WATER & SEWER DISTRICT

METER INSTALLATION

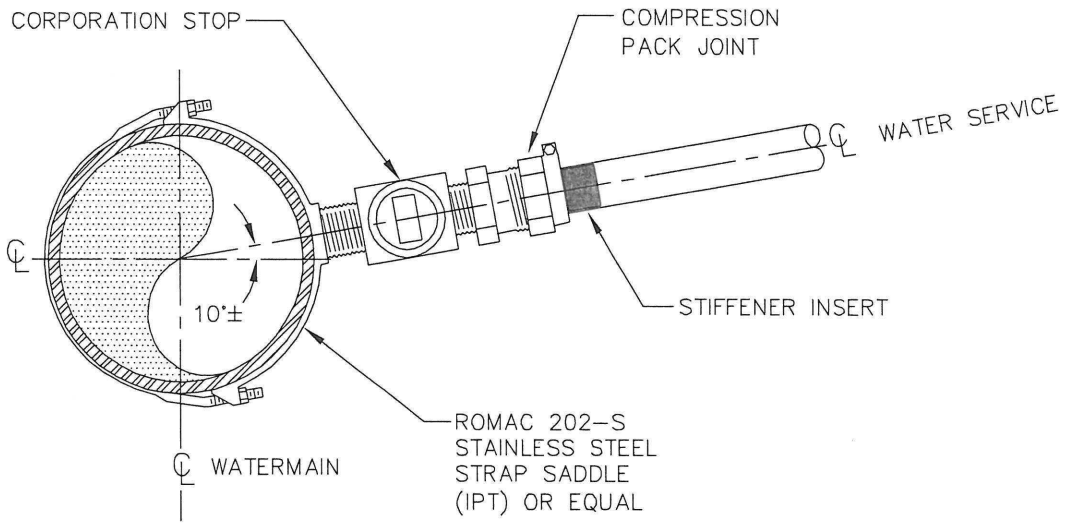
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
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FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W–19

DWG. NO. W-19



PLAN



ELEVATION

NOTES:

1. SERVICE LINE FITTINGS: CAST C800 WATER WORKS BRASS.
2. MUNICIPAL SERVICE PIPE: IRON PIPE SIZE ID, ASTM D-2239, SIDR 7, PE 3408 (HI-MOL PLASTIC) WITH 16 GAUGE TRACER WIRE.
3. CORPORATION STOP VALVE INSTALLED PARALLEL TO WATERMAIN.

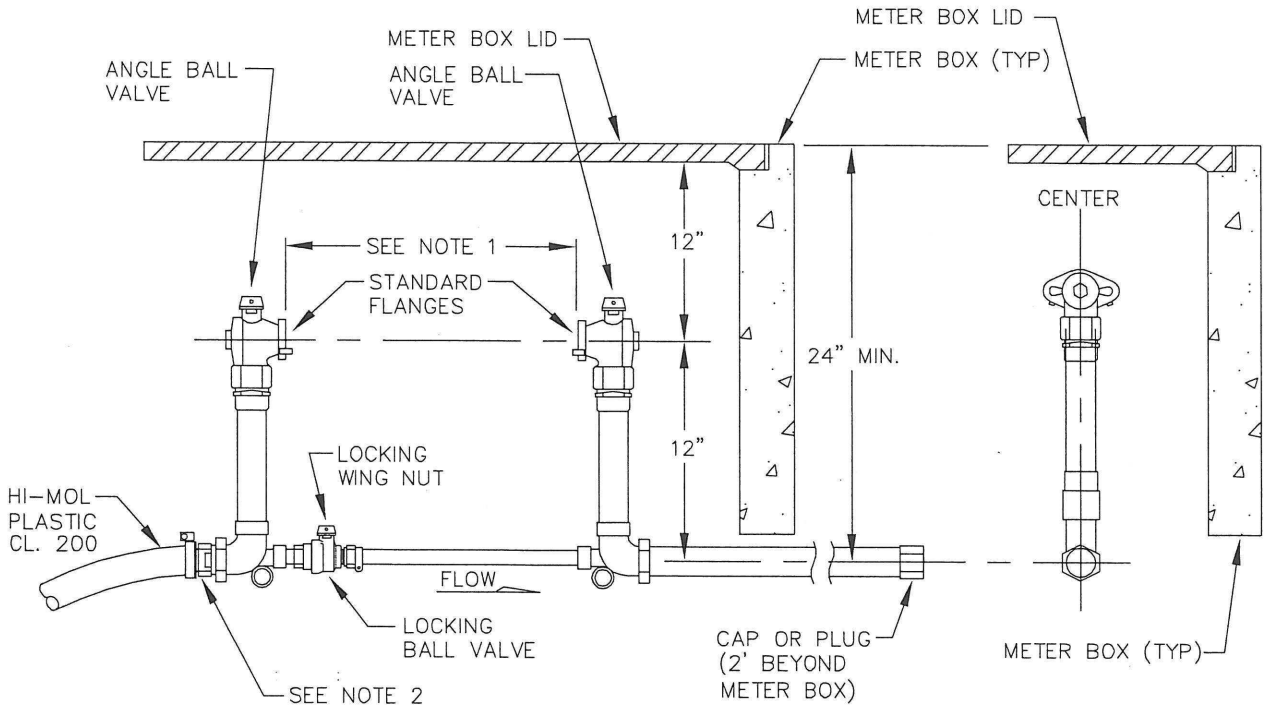
SOOS CREEK WATER & SEWER DISTRICT

WATER SERVICE CONNECTION 1-1/2 INCH AND LARGER

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-20

DWG. NO. W-20



ELEVATION

END VIEW

NOTE 1:

1-1/2" METER = 13"
2" METER = 15¼"

NOTE 2:

COMPRESSION PACK JOINT:

FOR 1-1/2" DIA. USE FORD #C86-66 (PACK END I.P.S.) OR EQUAL.

FOR 2" DIA. USE FORD #C86-77 (PACK END I.P.S.) OR EQUAL.

NOTE 3:

METER BOXES SHALL BE INSTALLED AS FOLLOWS:

2-HDPE METER BOX BOTTOMS NO. BCF173012B STACKED UPON EACH OTHER.

1-HDPE METER BOX LID NO. BCF1730.

GENERAL NOTES:

FORD CUSTOM SETTER 1-1/2": #VBB76-12B-11-66
FORD CUSTOM SETTER 2": #VBB77-12B-11-77-1525

METERS TO BE SUPPLIED AND SET BY THE DISTRICT.

ABOVE REFERENCED PART NUMBERS REFER TO ITEMS MANUFACTURED BY FORD METER BOX CO, INC. THESE OR EQUIVALENT FITTINGS TO BE USED.

METER SETTER TO BE APPROVED BY THE DISTRICT PRIOR TO BACKFILL.

METER BOXES TO BE SUPPLIED BY DEVELOPER OR CONTRACTOR. METER BOX SHALL BE MANUFACTURED BY MID-STATES PLASTIC, INC. METER BOX COMPANY.

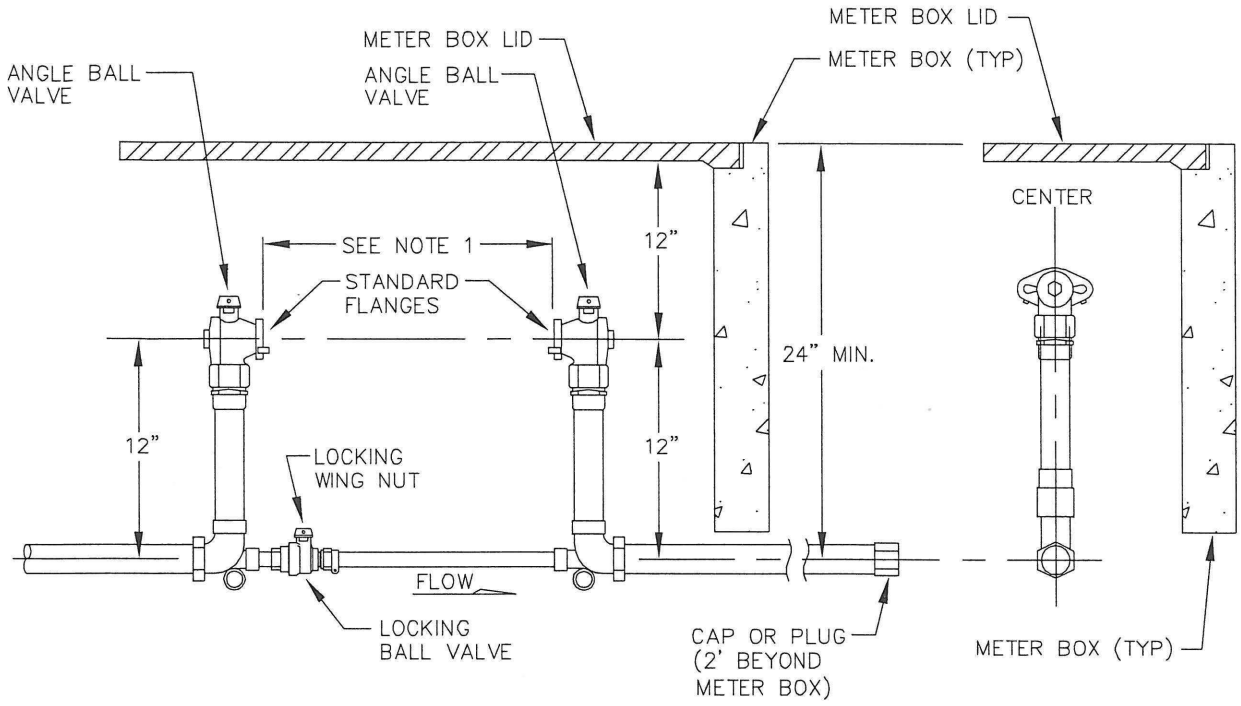
SOOS CREEK WATER & SEWER DISTRICT

1-1/2" & 2" METER SETTERS (ALTERNATE NO. 1)

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-21

DWG. NO. W-21



ELEVATION

END VIEW

NOTE 1:

1-1/2" METER = 13"
2" METER = 15¼"

NOTE 2:

COMPRESSION PACK JOINT:

FOR 1-1/2" DIA. USE FORD #C86-66 (PACK END I.P.S.) OR EQUAL.

FOR 2" DIA. USE FORD #C86-77 (PACK END I.P.S.) OR EQUAL.

NOTE 3:

METER BOXES SHALL BE INSTALLED AS FOLLOWS:

2-HDPE METER BOX BOTTOMS NO. BCF173012B STACKED UPON EACH OTHER.

1-HDPE METER BOX LID NO. BCF1730.

GENERAL NOTES:

FORD CUSTOM SETTER 1-1/2": #VBB76-12B-11-66
FORD CUSTOM SETTER 2": #VBB77-12B-11-77-1525

METERS TO BE SUPPLIED AND SET BY THE DISTRICT.

ABOVE REFERENCED PART NUMBERS REFER TO ITEMS MANUFACTURED BY FORD METER BOX CO, INC. THESE OR EQUIVALENT FITTINGS TO BE USED.

METER SETTER TO BE APPROVED BY THE DISTRICT PRIOR TO BACKFILL.

METER BOXES TO BE SUPPLIED BY DEVELOPER OR CONTRACTOR. METER BOX SHALL BE MANUFACTURED BY MID-STATES PLASTIC, INC. METER BOX COMPANY.

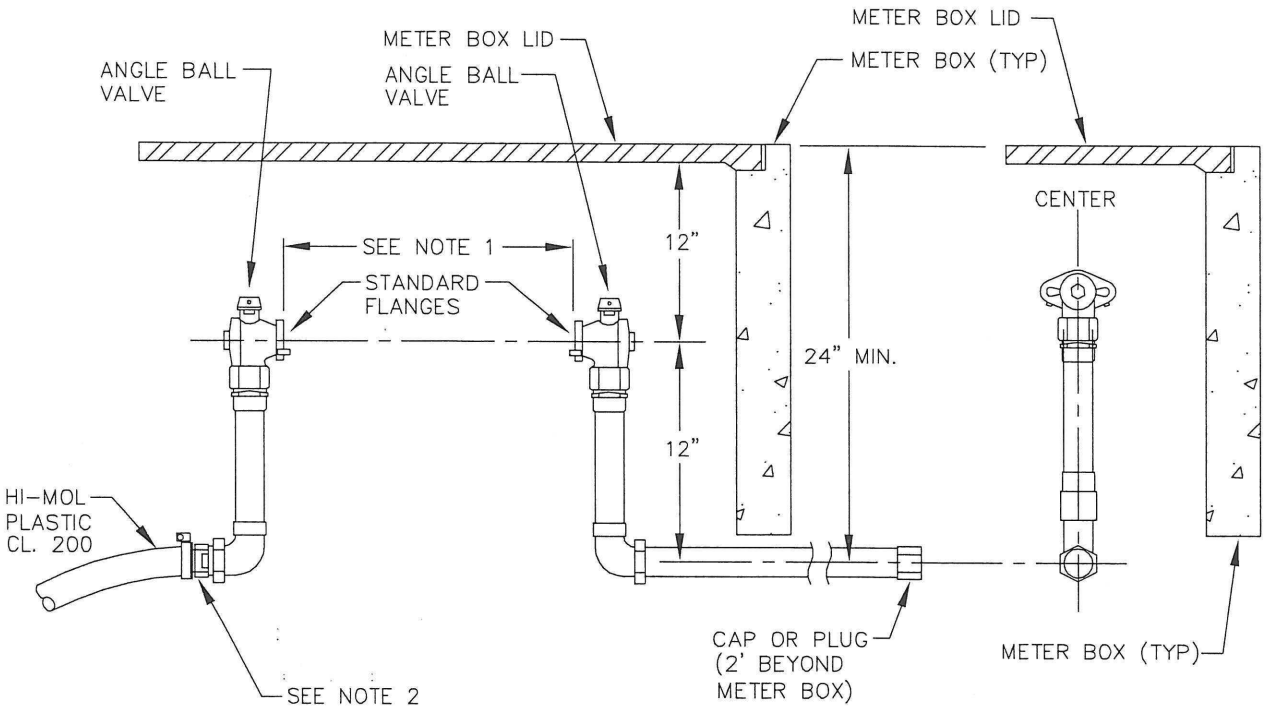
SOOS CREEK WATER & SEWER DISTRICT

1-1/2" & 2" METER SETTERS (ALTERNATE NO. 2)

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-22

DWG. NO. W-22



ELEVATION

END VIEW

NOTE 1:

1-1/2" METER = 13"
2" METER = 15¼"

NOTE 2:

COMPRESSION PACK JOINT:

FOR 1-1/2" DIA. USE FORD #C86-66 (PACK END I.P.S.) OR EQUAL.

FOR 2" DIA. USE FORD #C86-77 (PACK END I.P.S.) OR EQUAL.

NOTE 3:

METER BOXES SHALL BE INSTALLED AS FOLLOWS:

2-HDPE METER BOX BOTTOMS NO. BCF173012B STACKED UPON EACH OTHER.

1-HDPE METER BOX LID NO. BCF1730.

GENERAL NOTES:

FORD CUSTOM SETTER 1-1/2": #VBB76-12B-11-66
FORD CUSTOM SETTER 2": #VBB77-12B-11-77-1525

METERS TO BE SUPPLIED AND SET BY THE DISTRICT.

ABOVE REFERENCED PART NUMBERS REFER TO ITEMS MANUFACTURED BY FORD METER BOX CO, INC. THESE OR EQUIVALENT FITTINGS TO BE USED.

METER SETTER TO BE APPROVED BY THE DISTRICT PRIOR TO BACKFILL.

METER BOXES TO BE SUPPLIED BY DEVELOPER OR CONTRACTOR. METER BOX SHALL BE MANUFACTURED BY MID-STATES PLASTIC, INC. METER BOX COMPANY.

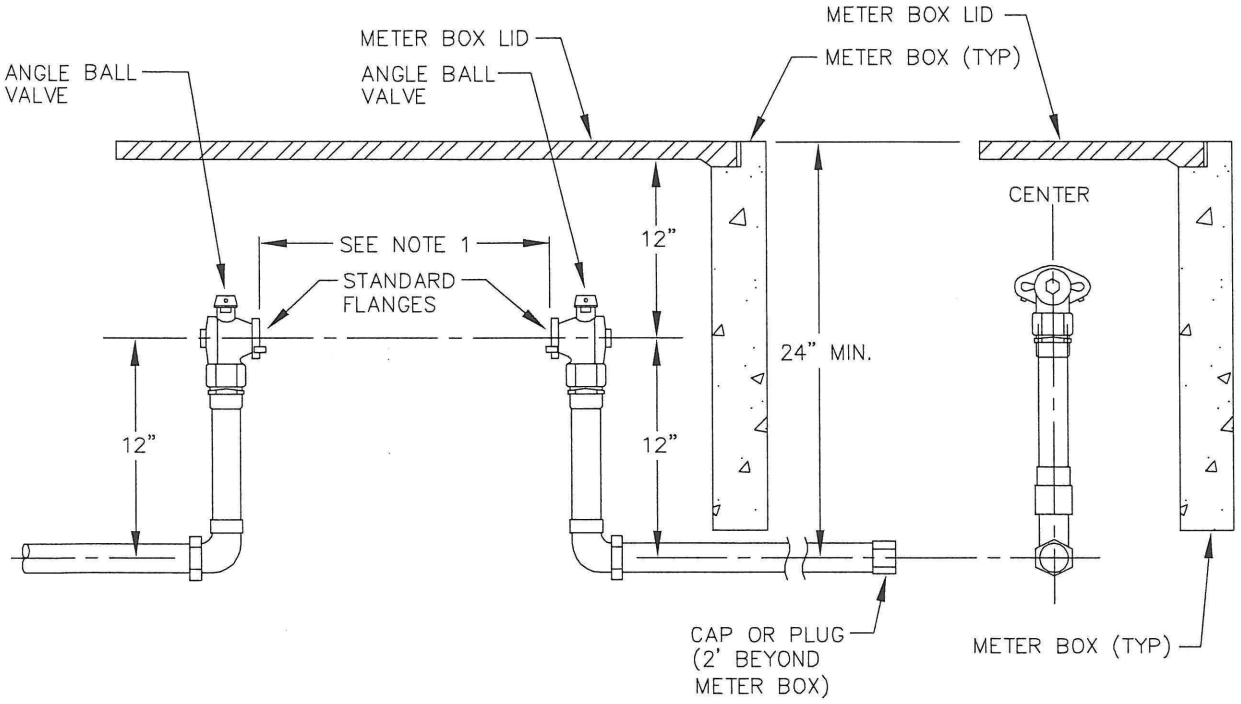
SOOS CREEK WATER & SEWER DISTRICT

1-1/2" & 2" IRRIGATION METER SETTERS (ALTERNATE NO. 1)

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-23

DWG. NO. W-23



ELEVATION

END VIEW

NOTE 1:

1-1/2" METER = 13"
2" METER = 15¼"

NOTE 2:

COMPRESSION PACK JOINT:

FOR 1-1/2" DIA. USE FORD #C86-66 (PACK END I.P.S.) OR EQUAL.

FOR 2" DIA. USE FORD #C86-77 (PACK END I.P.S.) OR EQUAL.

NOTE 3:

METER BOXES SHALL BE INSTALLED AS FOLLOWS:

2-HDPE METER BOX BOTTOMS NO. BCF173012B STACKED UPON EACH OTHER.

1-HDPE METER BOX LID NO. BCF1730.

GENERAL NOTES:

FORD CUSTOM SETTER 1-1/2": #VBB76-12B-11-66
FORD CUSTOM SETTER 2": #VBB77-12B-11-77-1525

METERS TO BE SUPPLIED AND SET BY THE DISTRICT.

ABOVE REFERENCED PART NUMBERS REFER TO ITEMS MANUFACTURED BY FORD METER BOX CO, INC. THESE OR EQUIVALENT FITTINGS TO BE USED.

METER SETTER TO BE APPROVED BY THE DISTRICT PRIOR TO BACKFILL.

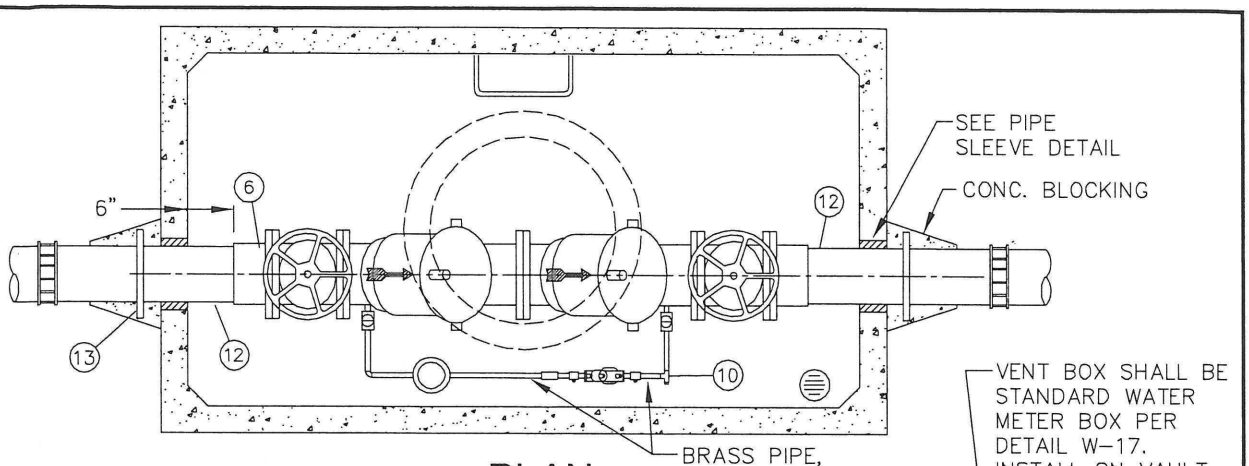
METER BOXES TO BE SUPPLIED BY DEVELOPER OR CONTRACTOR. METER BOX SHALL BE MANUFACTURED BY MID-STATES PLASTIC, INC. METER BOX COMPANY.

SOOS CREEK WATER & SEWER DISTRICT

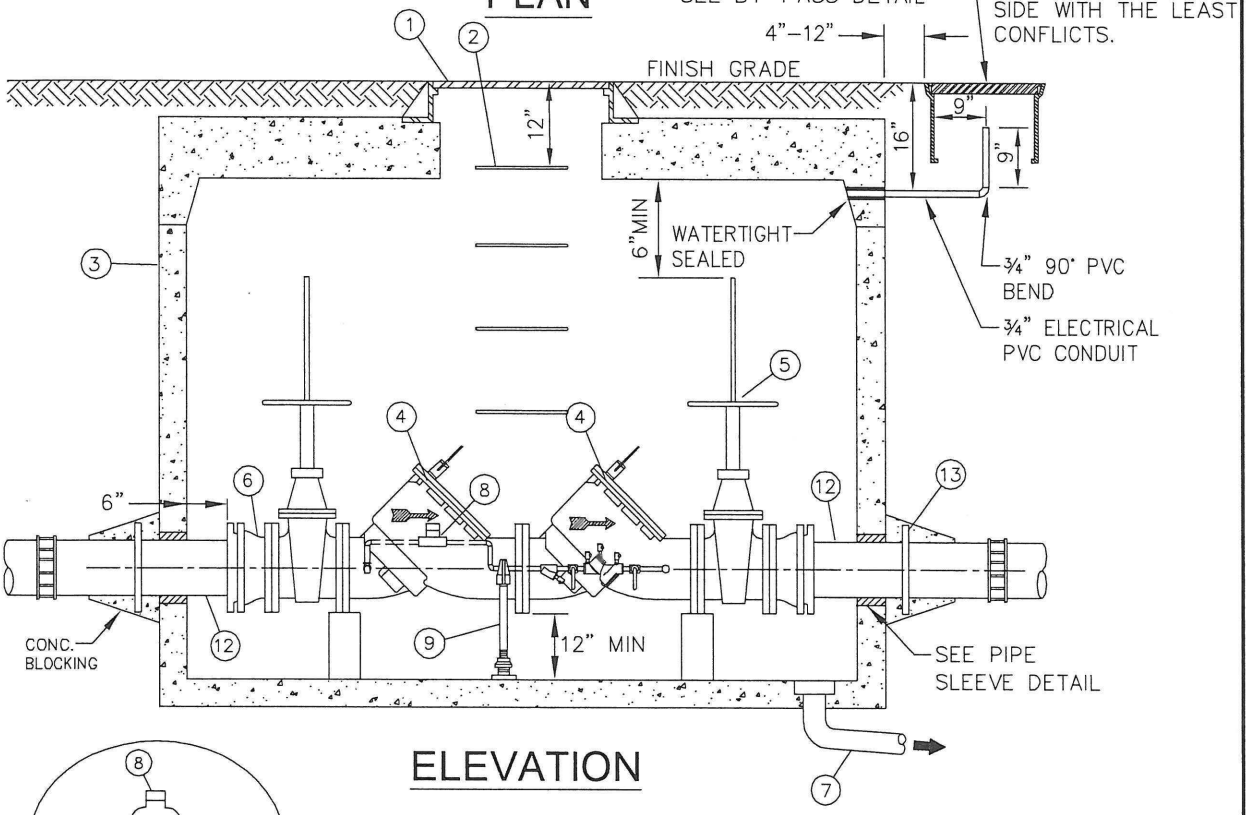
1-1/2" & 2" IRRIGATION METER SETTERS (ALTERNATE NO. 2)

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

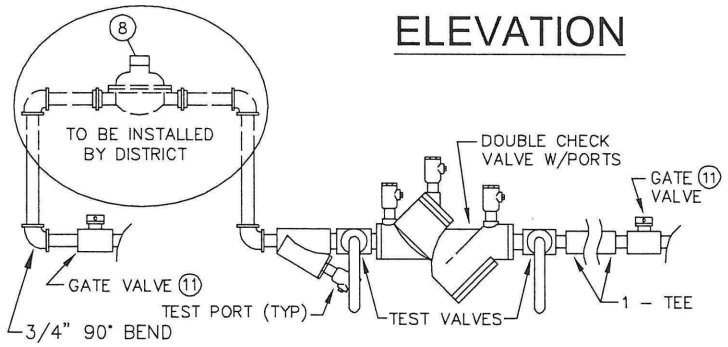
FILE NAME	DWG. NO.
M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-24	W-24



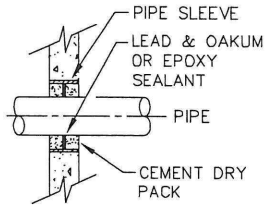
PLAN



ELEVATION



BY-PASS DETAIL (BRASS PIPE)



PIPE SLEEVE DETAIL

* SEE SHEET 2 FOR ADDITIONAL NOTES & MATERIALS

SOOS CREEK WATER & SEWER DISTRICT

DOUBLE CHECK DETECTOR BACKFLOW PREVENTION ASSY.

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-25A

DWG. NO. W-25A

PIPE SIZE	VAULT SIZES			
	CATALOG #	VAULT #	COVER #	BASE #
3" & 4"	575-LA	575-BL	57TL-30C	575-BL
6" & 8"	4484-LA	4484-ML	4484TL-30C	4484-BL
10"	5106-LA	5106-ML	5106TL-30C	5106-BL

GENERAL NOTES:

1. PAINT ALL INTERIOR METAL INCLUDING PIPE, VALVES, AND FITTINGS WITH TWO COATS OF EPOXY AS APPROVED BY THE DISTRICT. USE TNEMEC SERIES 135 CHEMBUILD, MODIFIED POLYAMIDOAMINE EPOXY. APPLY PER MANUFACTURERS INSTRUCTIONS.
2. THE ABOVE VAULT SIZES WERE SUPPLIED BY UTILITY VAULT CO. AS A REFERENCE FOR REQUIRED VAULT DIMENSIONS. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL.
3. ALL ACCESS COVERS MUST BE MARKED "WATER" & BE LOCKING & TRAFFIC BEARING AS REQ'D BY DIST. WITH THREE (3) TAPPED 5/8" HOLES (SEE STANDARD DETAIL W-25C). SQUARE HATCH MAY BE USED, SUBJECT TO APPROVAL BY DISTRICT.
4. CLASS 52 D.I. PIPE IS REQUIRED.

MATERIAL LIST

(1) HATCH ——— CAST IRON OR ALUMINUM MANHOLE GRATE AND COVER (SEE #3 ABOVE).

(2) LADDER RUNGS——— CAST IN PLACE 3/4" GALV. BAR AT 12" O.C. OR FABRICATED ALUMINUM LADDER SECURED AT TOP AND BOTTOM.

(3) CONCRETE VAULT—— SUBMIT DETAILS FOR APPROVAL (SEE TABLE ABOVE).

(4) DETECTOR ——— DOUBLE DETECTOR CHECK VALVE ASSEMBLY MUST BE APPROVED FOR INSTALLATION IN WASHINGTON STATE. TYPE SHALL BE APPROVED BY THE DISTRICT.

(5) VALVE ——— TWO EACH, AWWA, FLANGED OS & Y GATE VALVES WITH HANDWHEELS. MUST BE LOCATED INSIDE OF VAULT.

(6) COUPLING ADAPTOR- TWO EACH, CAST IRON, FLANGE BY MECHANICAL JOINT WITH RESTRAINT.

(7) FLOOR DRAIN ——— 4" PVC, SLOPED TO STORM SEWER OR DAYLIGHT TO DRAINAGE DITCH. ALTERNATE: WATERPROOF VAULT w/ XYPEX & SUMP PUMP. ALTERNATE MUST BE APPROVED BY THE DISTRICT AND WILL BE ALLOWED ONLY IF DAYLIGHT DRAIN IS EXTENDED OVER 300 FEET.

(8) WATER METER ——— 5/8" x 3/4" TO BE INSTALLED BY THE DISTRICT.

(9) PIPE STAND ——— 1" SCHEDULE 40 GALVANIZED PIPE STAND & BASE BOLTED TO FLANGE.

(10) TEE ——— 3/4" BRASS WITH 3/4" PLUG.

(11) GATE VALVE ——— 3/4" BRONZE BYPASS GATE VALVES (ASTM B62).

(12) WATER MAIN ——— CLASS 52 D.I. PIPE WITH RESTRAINED JOINTS.

(13) WALL FLANGE ——— TWO EACH

* SEE SHEET 1 FOR ADDITIONAL DETAILS

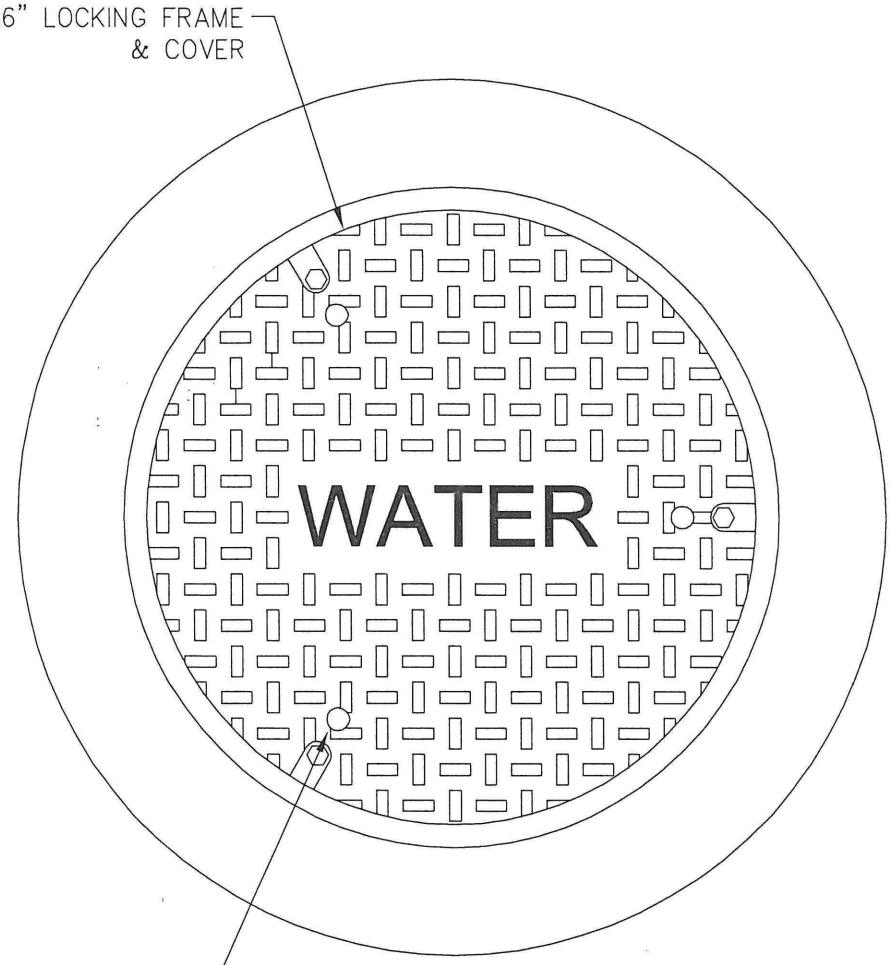
SOOS CREEK WATER & SEWER DISTRICT

1-1/2" & 2" IRRIGATION METER SETTERS (ALTERNATE NO. 1)

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-25B

DWG. NO. W-25B



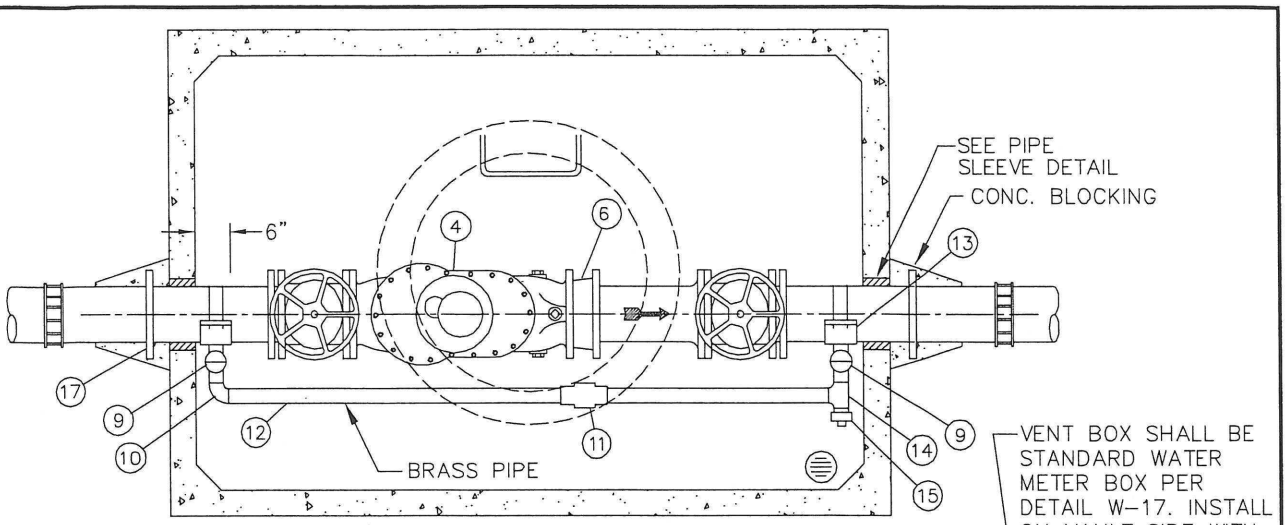
UTILITY VAULT CO:
30" x 6"
30" DIA. CLEAR OPENING
FLANGED DOWN

LOCKING FRAME & COVER DETAIL

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

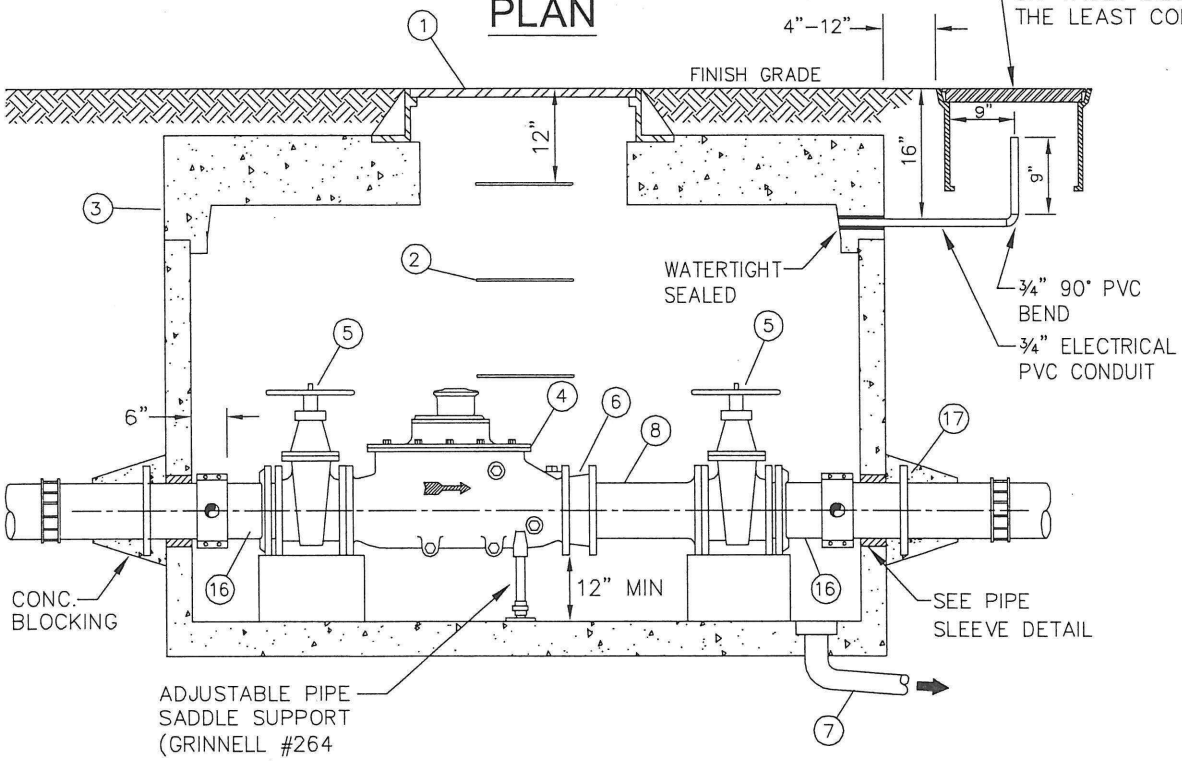
FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-25C

DWG. NO. W-25C

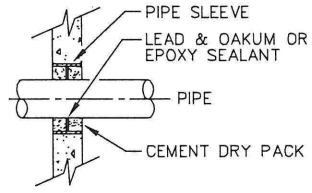


PLAN

VENT BOX SHALL BE STANDARD WATER METER BOX PER DETAIL W-17. INSTALL ON VAULT SIDE WITH THE LEAST CONFLICTS.



ELEVATION



PIPE SLEEVE DETAIL

* SEE SHEET 2 FOR ADDITIONAL NOTES & MATERIALS

SOOS CREEK WATER & SEWER DISTRICT

3", 4" AND 6" METERS

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-26A

DWG. NO. W-26A

METER SIZE	VAULT SIZES			
	CATALOG#	VAULT#	COVER#	BASE#
3"	575-LA	575-BL	57TL-30C	575-BL
4"	575-LA	575-BL	57TL-30C	575-BL
6"	675-LA	675-ML	675-TL-30C	675-BL

GENERAL NOTES:

1. PAINT ALL INTERIOR METAL INCLUDING PIPE, VALVES, AND FITTINGS WITH TWO COATS OF EPOXY AS APPROVED BY THE ENGINEER. USE TNEMEC SERIES 135 CHEMBUILD MODIFIED POLYAMIDOAMINE EPOXY. APPLY PER MANUFACTURERS INSTRUCTIONS.
2. THE ABOVE VAULT SIZES WERE SUPPLIED BY UTILTY VAULT CO. AS A REFERENCE FOR REQUIRED VAULT DIMENSIONS. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL.
3. ALL ACCESS COVERS MUST BE MARKED "WATER", AND BE LOCKING, & TRAFFIC BEARING. AS REQUIRED BY DIST. WITH THREE (3) TAPPED 5/8" HOLES (SEE DWG. 26C). SQUARE HATCH MAY BE USED, SUBJECT TO APPROVAL BY DISTRICT.
4. CLASS 52 D.I.PIPE IS REQUIRED.
5. ALTERNATE METHODS OF RESTRAINT SHALL BE APPROVED BY THE DISTRICT.

MATERIAL LIST

(1) HATCH ——— CAST IRON OR ALUMINUM MANHOLE GRATE AND COVER (30"x 6") SEE #3 ABOVE

(2) LADDER RUNGS ——— CAST IN PLACE 3/4" GALV. BAR AT 12" O.C. OR FABRICATED ALUMINUM LADDER SECURED AT TOP AND BOTTOM.

(3) CONCRETE VAULT —— SUBMIT DETAILS FOR APPROVAL. (SEE TABLE ABOVE)

(4) METER ——— COMPOUND WATER METER FLG. x FLG. SUPPLIED BY DISTRICT.

(5) MAIN VALVE ——— TWO EACH, AWWA, FL x MJ W/RESTRAINTS GATE VALVES WITH HANDWHEEL. MUST BE LOCATED INSIDE OF VAULT.

(6) COUPLING ADAPTER — ONE EACH, CAST IRON, (FLANGE BY MECHANICAL JOINT) COUPLING ADAPTER.

(7) FLOOR DRAIN ——— 4" PVC, SLOPED TO STORM SEWER OR DAYLIGHT TO DRAINAGE DITCH. ALTERNATE: WATERPROOF VAULT W/ XYPEX. ALTERNATE MUST BE APPROVED BY THE DISTRICT AND WILL BE ALLOWED ONLY IF DAYLIGHT DRAIN IS EXTENDED OVER 300 FEET.

(8) SPOOL ——— SPOOL PLANE-END x FLANGED D.I.P. (CL52)

(9) 1-1/2" VALVE ——— TWO EA. BRASS GATE VALVES FOR BY-PASS.

(10) BEND ——— TWO EA. 1-1/2 INCH 90 BRASS BENDS.

(11) UNION ——— ONE EA. 1-1/2 INCH TWO-PART UNION BRASS.

(12) BY-PASS PIPE ——— 1-1/2 INCH BRASS PIPE AS NEEDED.

(13) SADDLE ——— TWO EA. 1-1/2 INCH SMITH BLAIR TYPE 313 OR EQUAL.

(14) TEE ——— 1-1/2"x 1-1/2" BRASS TEE.

(15) BUSHING ——— 1 1/2"x 3/4" BUSHING WITH 3/4" PLUG.

(16) WATER MAIN ——— CLASS 52 DUCTILE IRON PIPE WITH MEGALUG RESTRAINED JOINTS.

(17) WALL FLANGE ——— TWO EACH

* SEE SHEET 1 FOR ADDITIONAL DETAILS

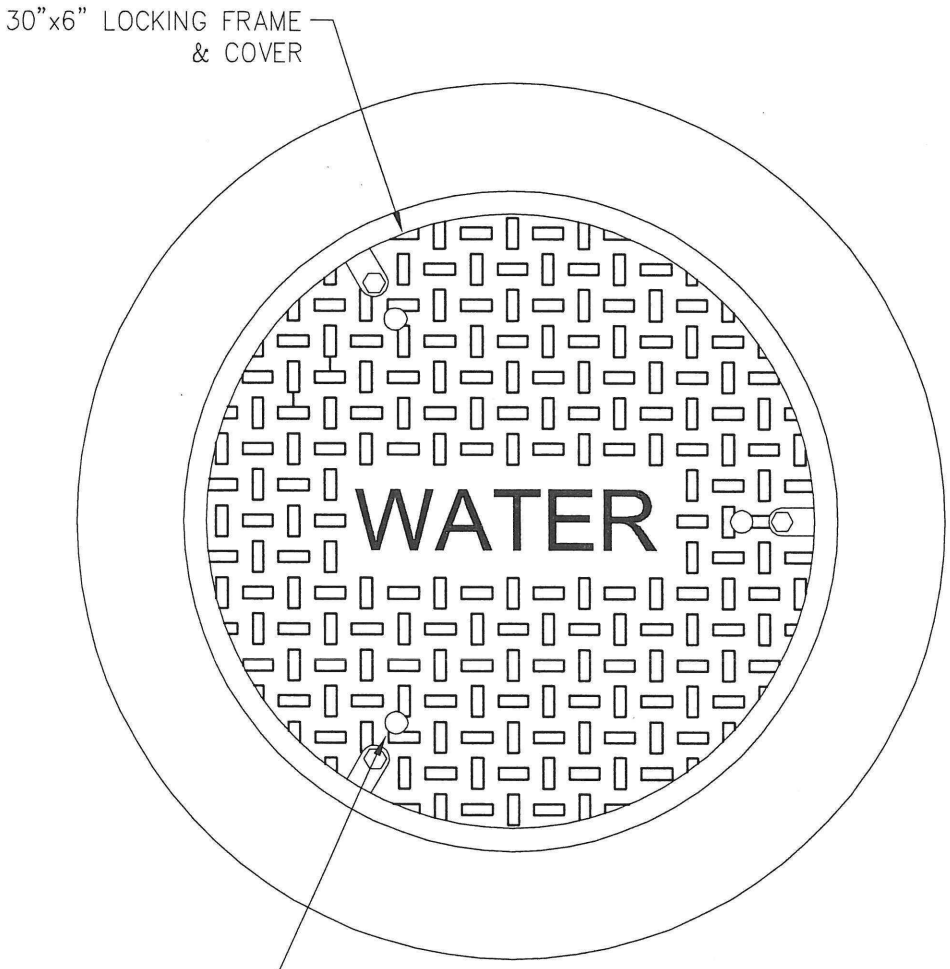
SOOS CREEK WATER & SEWER DISTRICT

3", 4" AND 6" METERS
MAT'L LIST AND GENERAL NOTES

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-26B

DWG. NO. W-26B



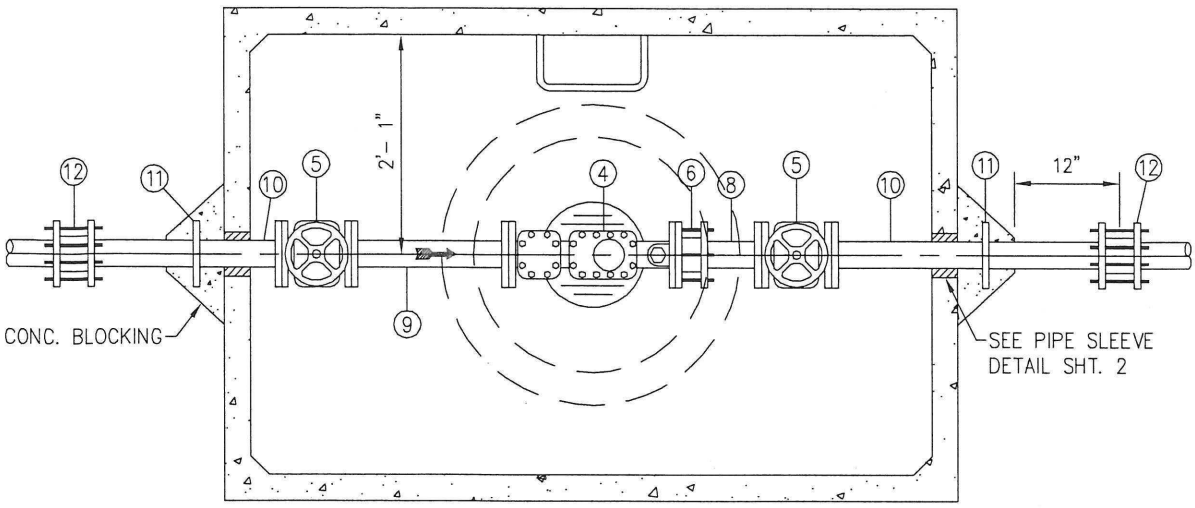
UTILITY VAULT CO:
30" x 6"
30" DIA. CLEAR OPENING
FLANGED DOWN

LOCKING FRAME & COVER DETAIL

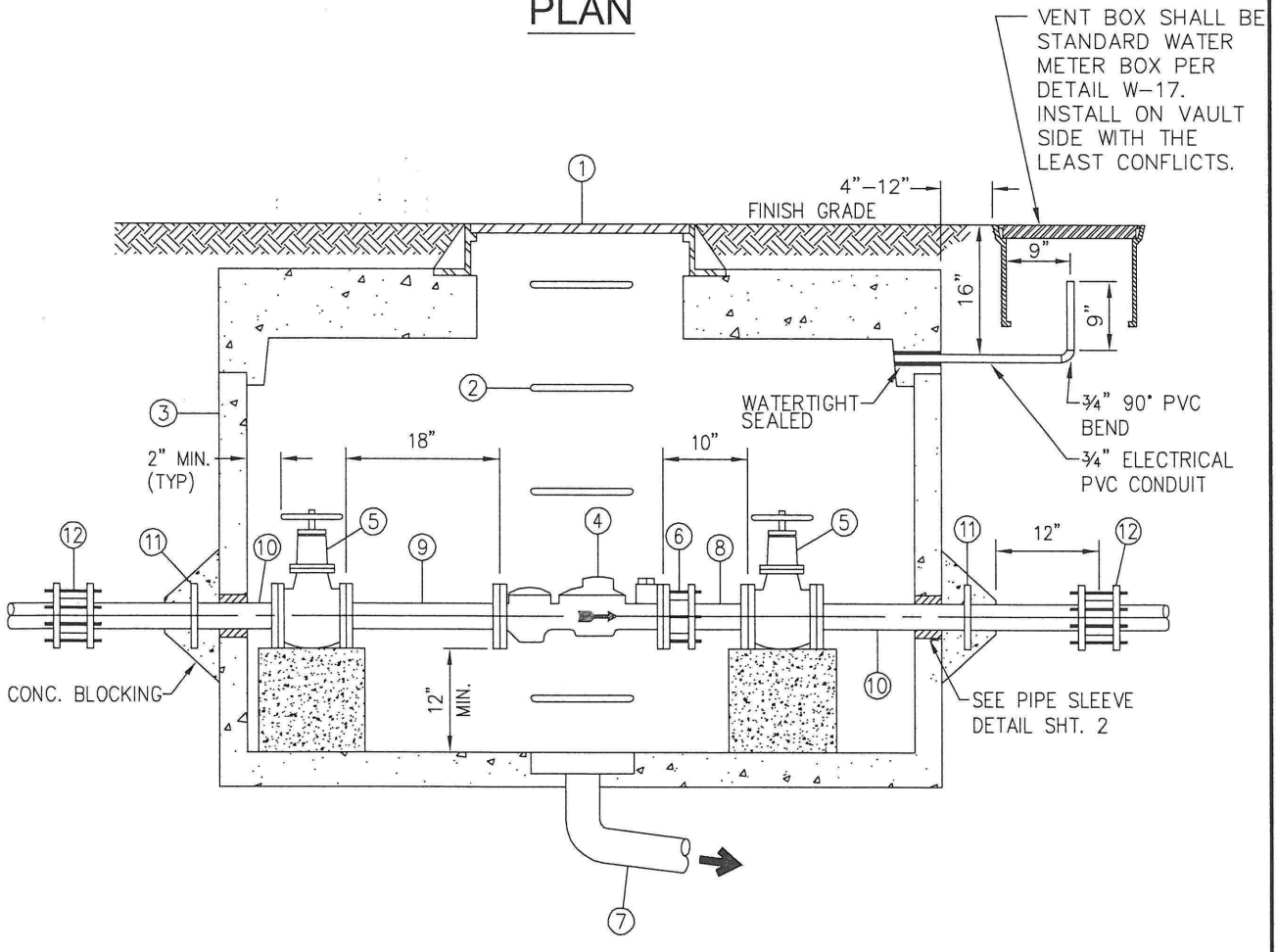
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-26C

DWG. NO. W-26C



PLAN



ELEVATION

* SEE SHEET 2 FOR ADDITIONAL NOTES & MATERIALS

SOOS CREEK WATER & SEWER DISTRICT

3" TURBO METER

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-27A

DWG. NO. W-27A

GENERAL NOTES:

1. PAINT ALL INTERIOR METAL INCLUDING PIPE, VALVES, AND FITTINGS WITH TWO COATS OF EPOXY AS APPROVED BY THE ENGINEER. USE TNEMEC SERIES 135 CHEMBUILD MODIFIED POLYAMIDOAMINE EPOXY.
2. THE VAULT SIZE WAS SUPPLIED BY UTILITY VAULT CO. AS A REFERANCE FOR REQUIRED VAULT DIMENSIONS. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL.
3. ALL ACCESS COVERS MUST BE MARKED "WATER" AND BE LOCKING AND TRAFFIC BEARING AS REQUIRED BY DISTRICT WITH THREE (3) TAPPED 5/8" HOLES (SEE DWG. 26C). SQUARE HATCH MAY BE USED, SUBJECT TO APPROVAL BY DISTRICT.
4. CLASS 52 D.I. PIPE IS REQUIRED.
5. ALTERNATE METHODS OF RESTRAINT SHALL BE APPROVED BY THE DISTRICT.

MATERIAL LIST

(1) HATCH ——— CAST IRON OR ALUMINUM MANHOLE GRATE AND COVER (30"x 6") SEE #3 ABOVE

(2) LADDER RUNGS ——— CAST IN PLACE 3/4" GALV. BAR AT 12" O.C. OR FABRICATED ALUMINUM LADDER SECURED AT TOP AND BOTTOM.

(3) CONCRETE VAULT — UTILITY VAULT CO. VAULT #575-BL, COVER #57TL-30C SUBMIT DETAILS FOR APPROVAL.

(4) METER ——— TURBO WATER METER FLG. x FLG. SUPPLIED BY DISTRICT.

(5) MAIN VALVE ——— TWO EACH, AWWA, FLG. x FLG. GATE VALVES W/ HANDWHEEL. MUST BE LOCATED INSIDE VAULT.

(6) COUPLING ADAPTOR-ONE EACH, CAST IRON, (FLG. x MECH. JOINT) COUPLING ADAPTOR.

(7) FLOOR DRAIN ——— 4" PVC, SLOPED TO STORM SEWER OR DAYLIGHT TO DRAINAGE DITCH. ALTERNATE: WATERPROOF VAULT W/ XYPEX. ALTERNATE MUST BE APPROVED BY THE DISTRICT AND WILL BE ALLOWED ONLY IF DAYLIGHT DRAIN IS EXTENDED OVER 300 FEET.

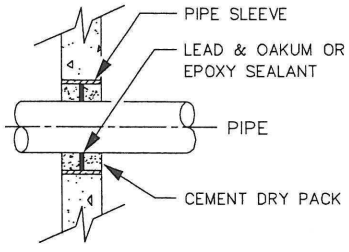
(8) SPOOL ——— 10" LONG D.I. PIPE PLANE-END x FLANGE

(9) SPOOL ——— 18" LONG D.I. PIPE FLANGE x FLANGE

(10) WATER MAIN ——— CLASS 52 DUCTILE IRON PIPE WITH MEGALUG RESTRAINED JOINTS.

(11) WALL FLANGE ——— TWO EACH

(12) FLEX COUPLING ——— TWO EACH W/ RESTRAINED JOINTS



PIPE SLEEVE DETAIL

* SEE SHEET 1 FOR ADDITIONAL DETAILS

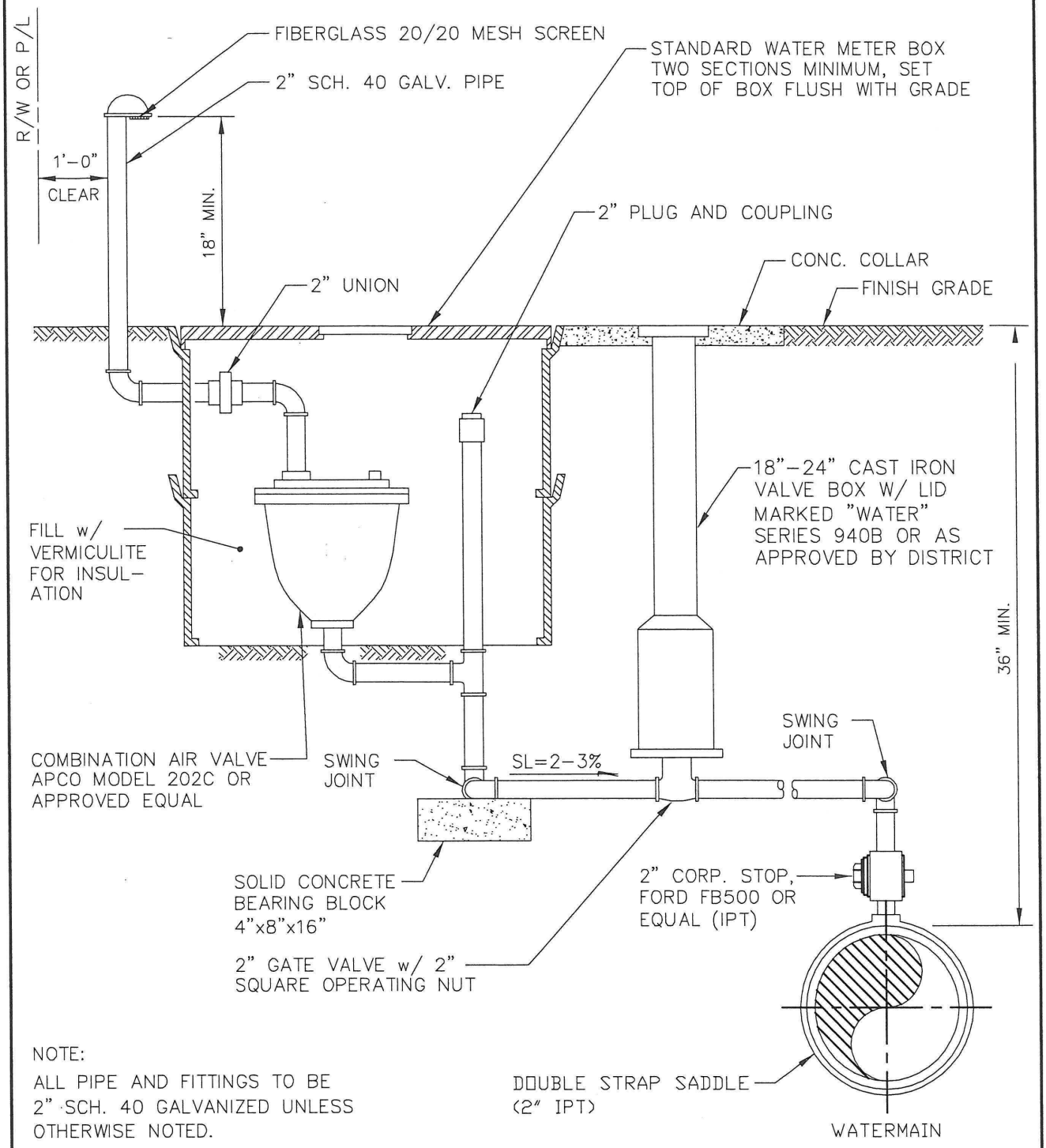
SOOS CREEK WATER & SEWER DISTRICT

3" TURBO METER
MAT'L LIST & GENERAL NOTES

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-27B

DWG. NO. W-27B



NOTE:

ALL PIPE AND FITTINGS TO BE 2" SCH. 40 GALVANIZED UNLESS OTHERWISE NOTED.

2" AIR/VACUUM VALVE CHAMBER

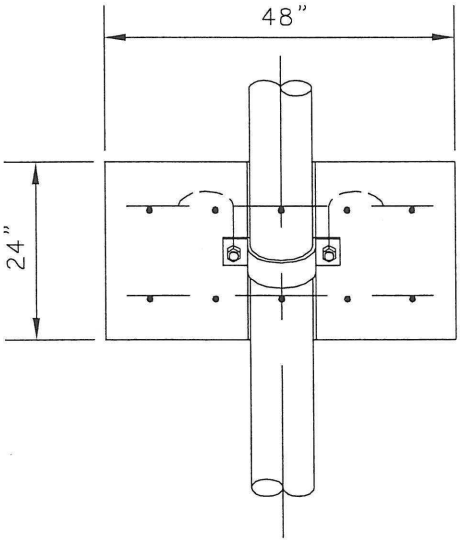
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-28

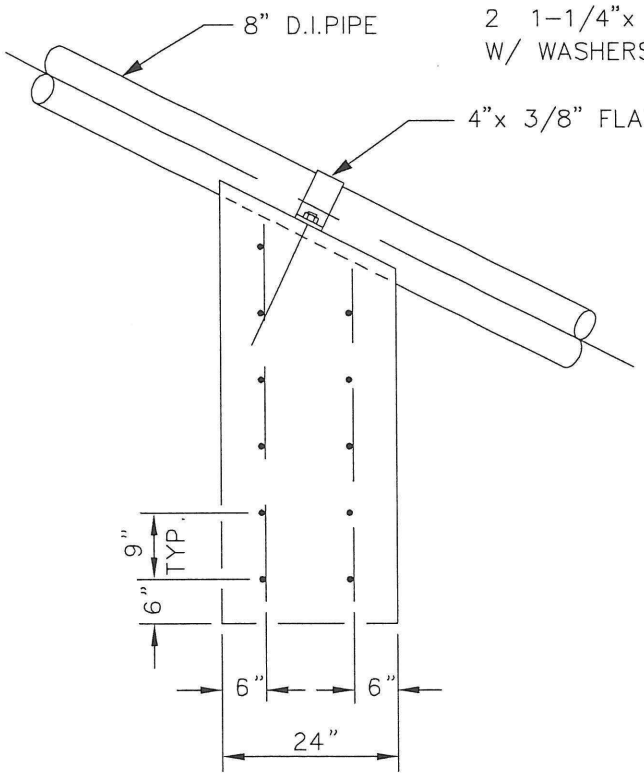
DWG. NO. W-28

NOTES:

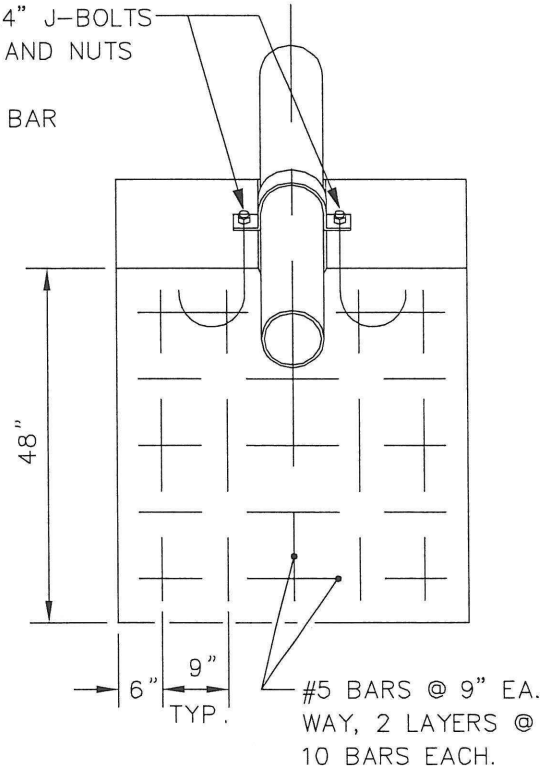
1. SLOPE TOP SURFACE OF PIPE ANCHOR TO MATCH PIPE SLOPE.
2. INSTALL J – BOLTS AT RIGHT ANGLES TO TOP SURFACE OF ANCHOR FOR MAXIMUM CONTACT BETWEEN PIPE AND STRAP.
3. BOLTS, NUTS AND FLAT BAR TO BE HOT–DIPPED GALVANIZED.



PLAN



END VIEW



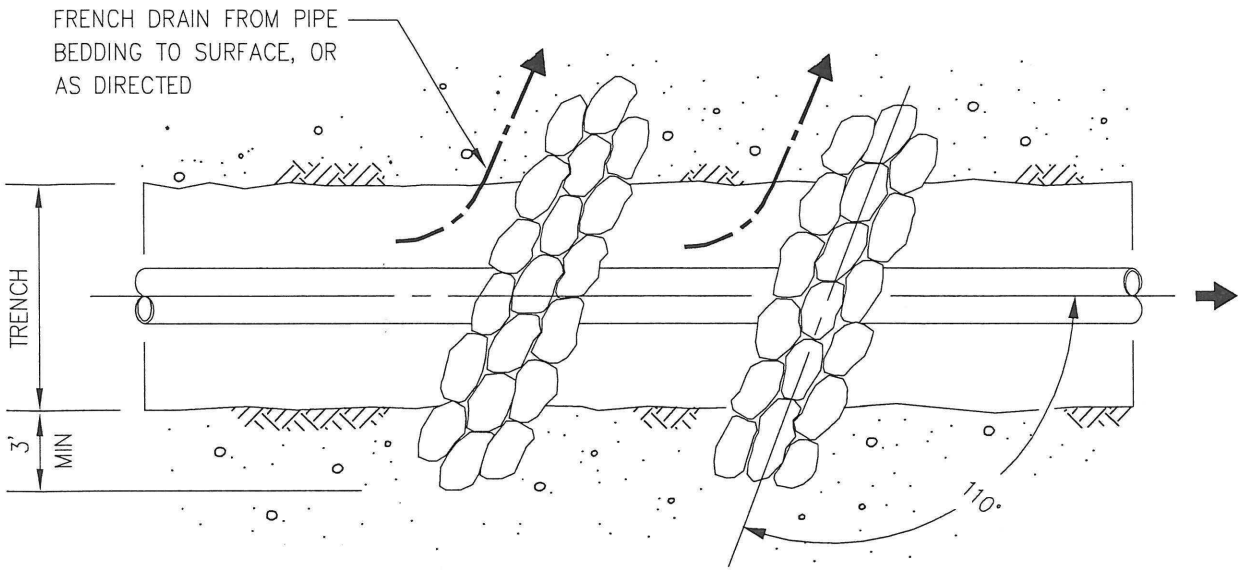
ELEVATION

PIPE ANCHOR DETAIL

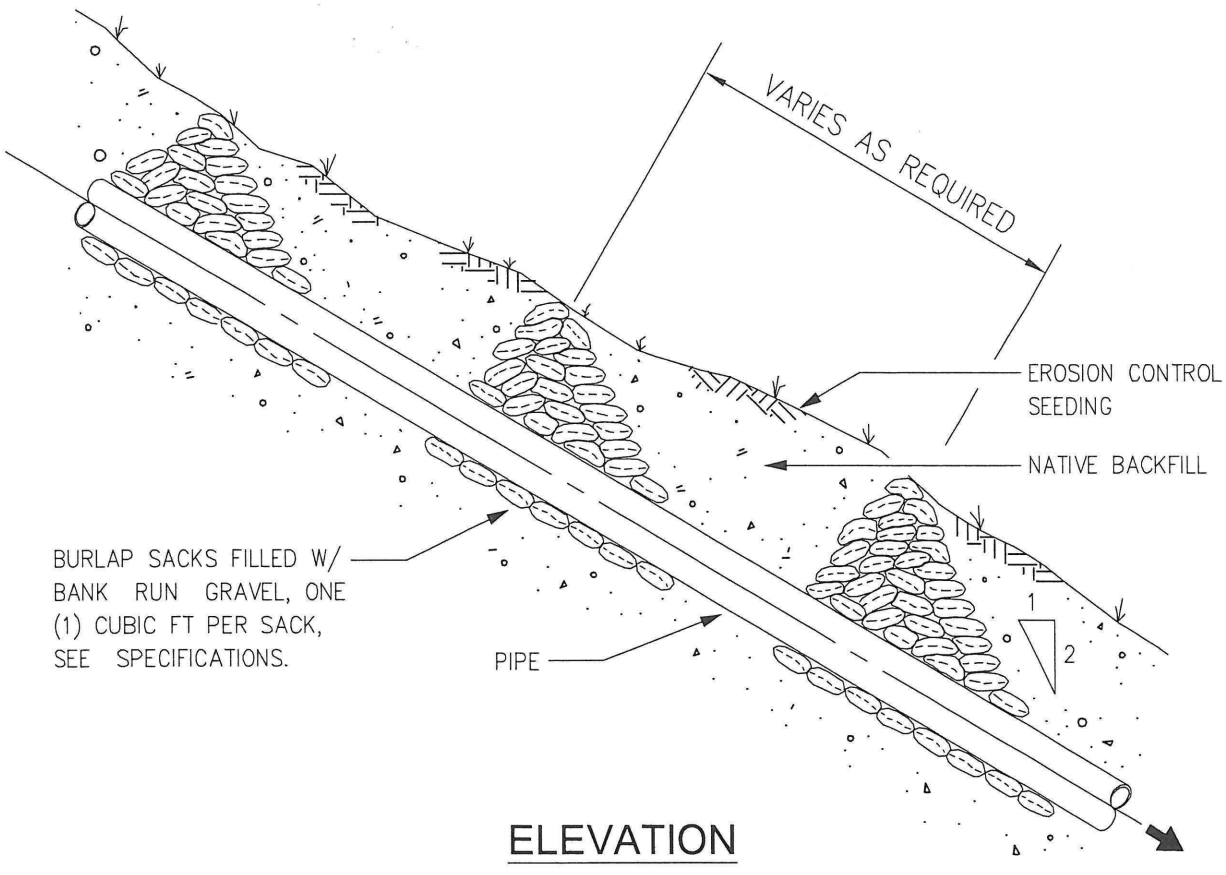
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W–29

DWG. NO. W-29



PLAN



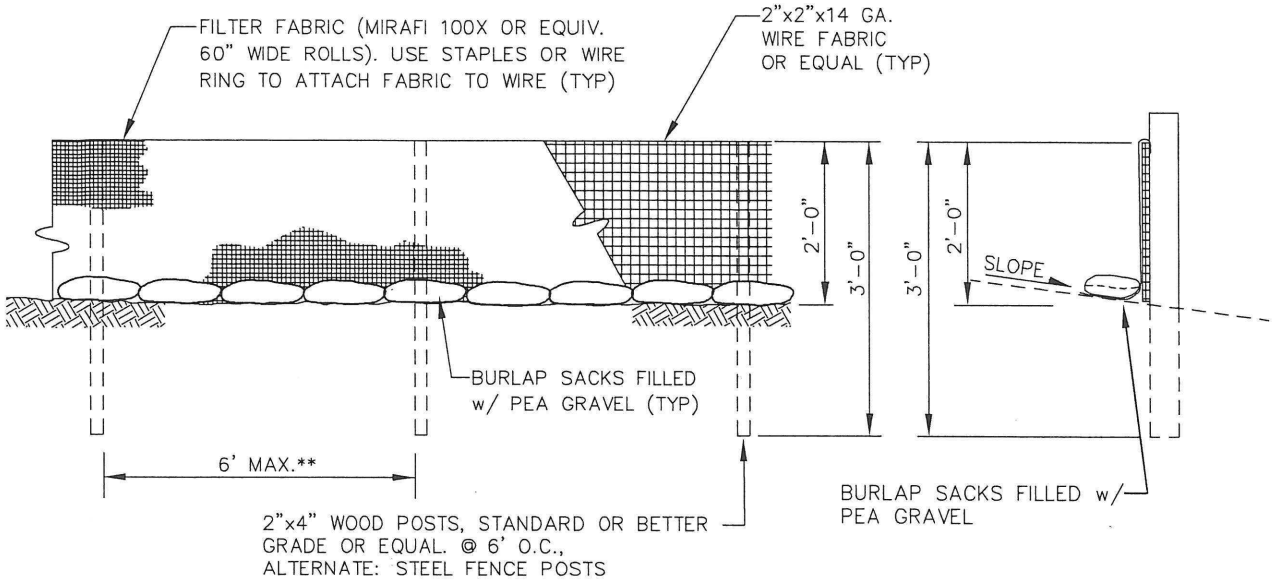
ELEVATION

SACK SLOPE RETAINER

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-30

DWG. NO. W-30



** POST SPACING MAY BE INCREASED TO 8' IF WIRE BACKING IS USED

SIDE VIEW

FILTER FABRIC FENCE NOTES:

1. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6–INCH OVERLAP AND BOTH ENDS SECURELY FASTENED TO THE POST.

2. THE FILTER FABRIC FENCE SHALL BE INSTALLED TO FOLLOW THE CONTOURS (WHERE FEASIBLE). THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 30 INCHES).

3. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY–DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 4 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

4. THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 20 INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 30 INCHES ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.

5. WHEN EXTRA–STRENGTH FILTER FABRIC AND CLOSER POST SPACING ARE USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH A CASE, THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS WITH ALL OTHER PROVISIONS OF STANDARD NOTE 5 APPLYING.

6. FILTER FABRIC FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.

7. FILTER FABRIC FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.

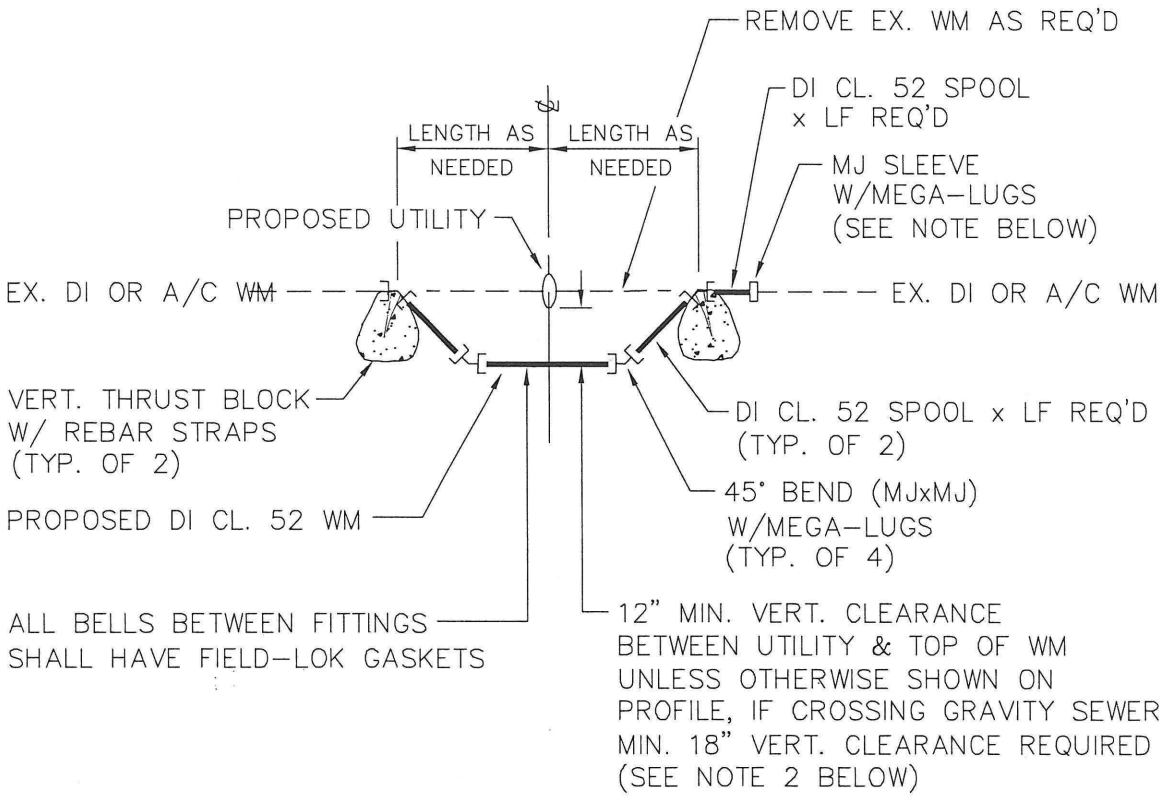
SOOS CREEK WATER & SEWER DISTRICT

FILTER FABRIC FENCE

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-31

DWG. NO. W-31



NOTES:

1. MEGA-LUGS SHALL NOT BE USED ON EXISTING WATER MAIN PIPE IF EXISTING PIPE IS CLASS 50 D.I. OR A.C. PIPE. MJ SLEEVE TO BE INSTALLED ON CLASS 50 D.I. PIPE. TRANSITION COUPLING TO BE INSTALLED ON A.C. PIPE. BLOCKING SHALL BE DETERMINED IN FIELD BY DISTRICT FIELD REPRESENTATIVE.
2. SANITARY SEWER SHOULD BE LOCATED BELOW WATER MAINS IF POSSIBLE. GRAVITY SEWERS MAY BE LOCATED ABOVE WATER MAINS AS LONG AS THERE IS 18" MIN. SEPARATION AND THE WATER MAIN IS CASED FOR AT LEAST 10' EACH SIDE OF THE CROSSING.
3. PRESSURE SEWER MAINS SHALL ONLY BE LOCATED BELOW WATER MAINS WITH 18" MIN. SEPARATION. WATER MAIN SHALL ALSO BE CASED FOR 10' EACH SIDE OF CROSSING.

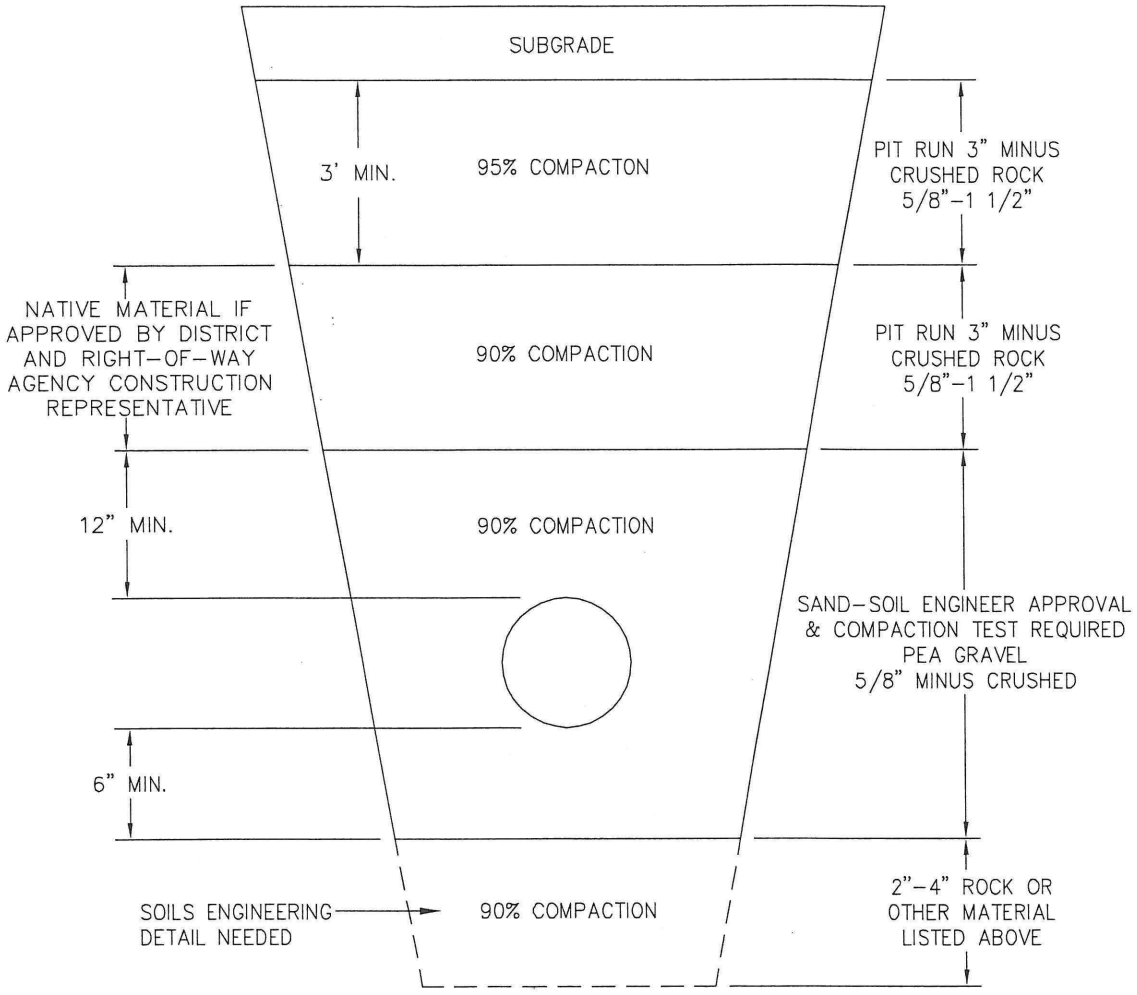
SOOS CREEK WATER & SEWER DISTRICT

TYPICAL UTILITY / WATER MAIN CROSSING

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-32

DWG. NO. W-32



NOTES:

1. BEDDING-IN RIGHT OF WAY, DRIVEWAY PARKING LOTS, PAVED AREAS, AND NON-PAVED AREAS.
2. BEDDING FOR RIGID PIPE-NATIVE MATERIAL UNLESS JUDGED UNSUITABLE BY THE DISTRICT AND RIGHT-OF-WAY AGENCY CONSTRUCTION REPRESENTATIVE.
3. TRENCH BACKFILL, BEDDING AND MATERIAL TO CONFORM TO RIGHT-OF-WAY AGENCY SPECIFICATIONS AND DISTRICT STANDARDS.

TRENCH WIDTHS			
NOMINAL PIPE DIAMETER	MINIMUM EARTH	MINIMUM ROCK	MAXIMUM
2	18	24	36
3	18	24	36
4	18	24	36
6	21	24	36
8	24	24	36
12	28	28	40

(IN INCHES)

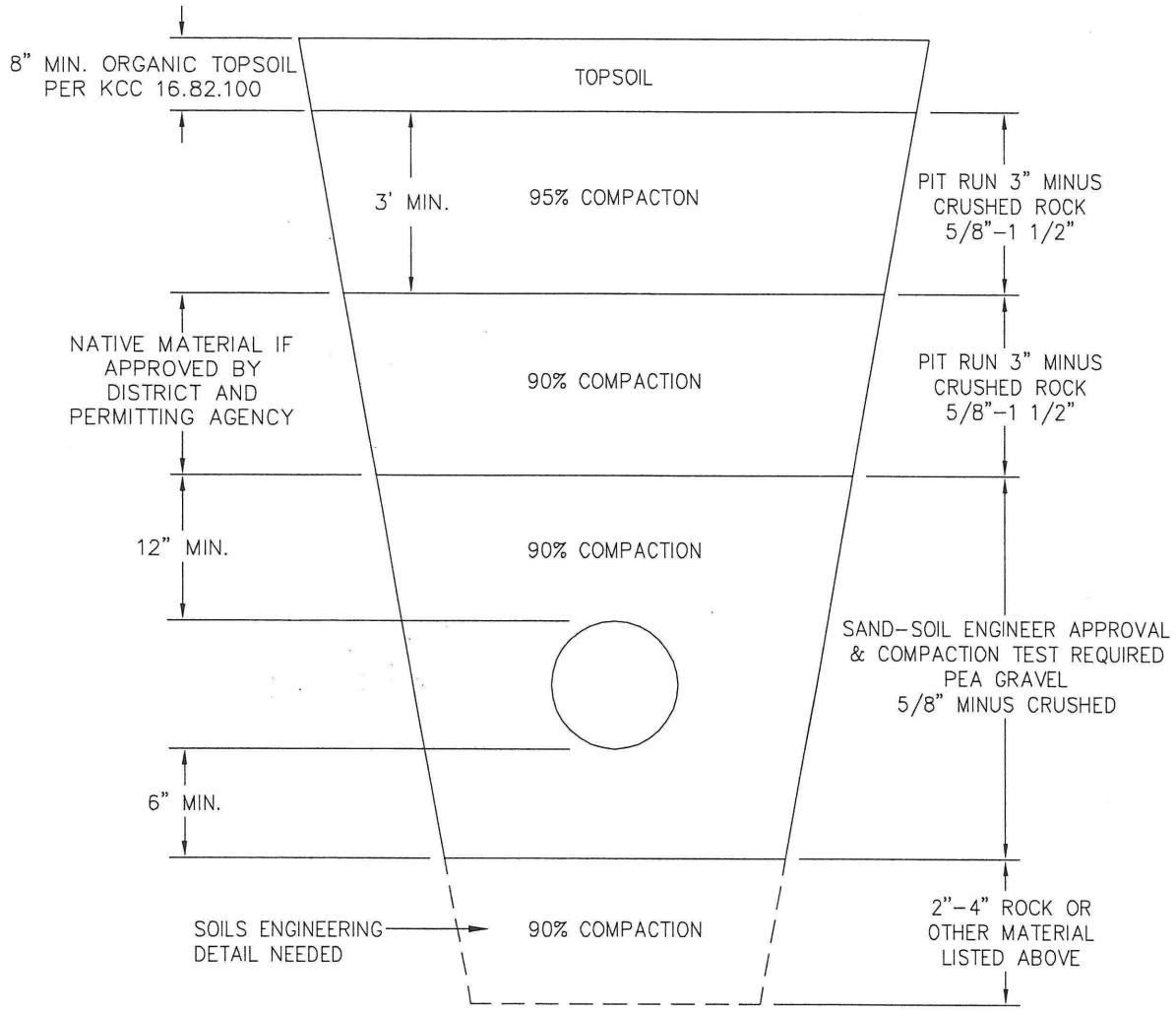
SOOS CREEK WATER & SEWER DISTRICT

TYPICAL TRENCH DETAIL

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W-33

DWG. NO. W-33



NOTES:

1. BEDDING–IN RIGHT OF WAY, DRIVEWAY PARKING LOTS, PAVED AREAS, AND NON–PAVED AREAS.
2. BEDDING FOR RIGID PIPE–NATIVE MATERIAL UNLESS JUDGED UNSUITABLE BY THE DISTRICT AND PERMITTING AGENCY.
3. TRENCH BACKFILL, BEDDING AND MATERIAL TO CONFORM TO PERMITTING AGENCY SPECIFICATIONS AND DISTRICT STANDARDS.

TRENCH WIDTHS			
NOMINAL PIPE DIAMETER	MINIMUM EARTH	MINIMUM ROCK	MAXIMUM
2	18	24	36
3	18	24	36
4	18	24	36
6	21	24	36
8	24	24	36
12	28	28	40

(IN INCHES)

TYPICAL TRENCH DETAIL (OUTSIDE ROADWAY)

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

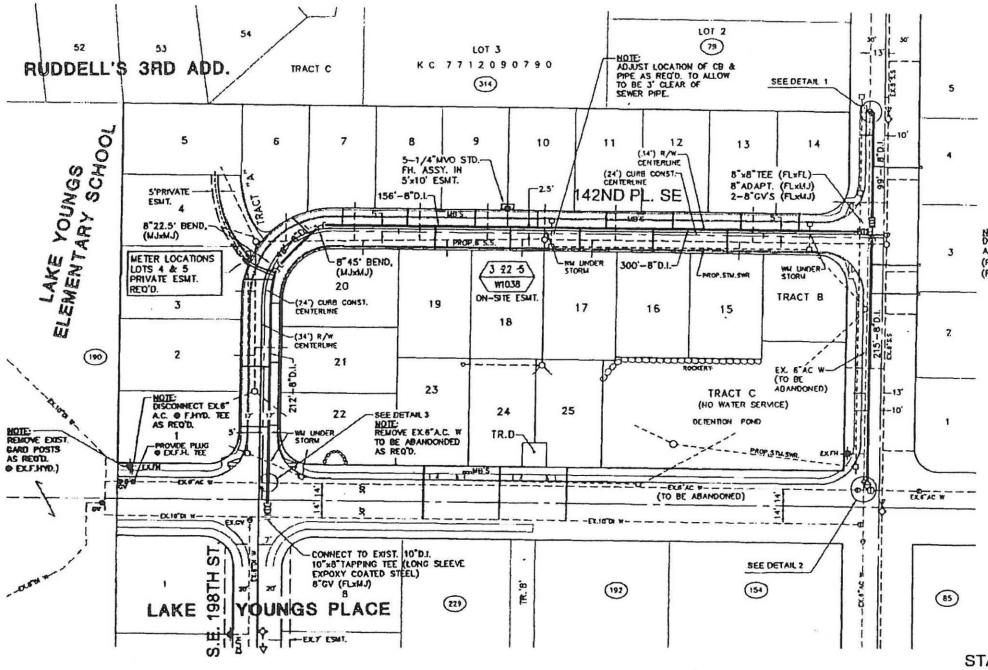
FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\WTR DTLS\W–34

DWG. NO. W-34

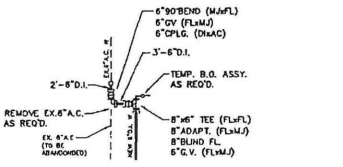
G. WATER STANDARD PLANS FORMAT

Note: The following 11"x17" figures are half size samples. Standard full size plans are to be 22"x34" per Section 5.

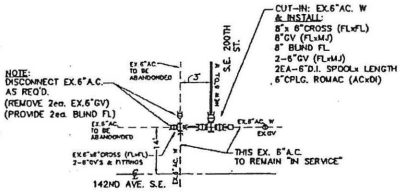
Figure WP-1	Water Plan Sheet Format
Figure WP-2	Construction Provisions
Figure WP-3	Materials and Surface Restoration
Figure WP-4	Standard Details



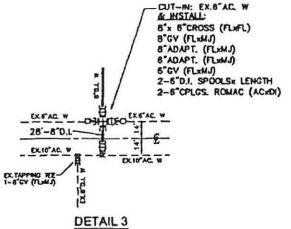
(EXAMPLE OF PLAN VIEW)



DETAIL 1



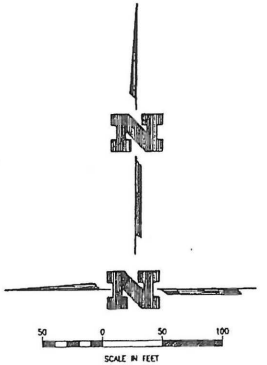
DETAIL 2



DETAIL 3

WATER GENERAL NOTES:

(INSERT THE MOST CURRENT VERSION OF GENERAL NOTES)



NOTE:
ALL SYMBOLS, TEXT & LINES ARE SHOWN AT A LTSCALE OF 50.

STANARD LINETYPES & TEXT

(USE THE TEXT, LINETYPE STYLES AND PEN WEIGHTS RECOMMENDED)

PROPOSED WATER EASEMENT	P-LINE WIDTH: 0 LINETYPE: EASEMENT.LIN PEN WEIGHT: 0.018
PROPOSED WATER LINE	P-LINE WIDTH: 1.8 LINETYPE: CONTINUOUS PEN WEIGHT: 0.021
PROPOSED WATER SERVICE	P-LINE WIDTH: 0 LINETYPE: CONTINUOUS PEN WEIGHT: 0.021
EXISTING WATER LINE	P-LINE WIDTH: 0 LINETYPE: EXWATER PEN WEIGHT: 0.001
WATER DESIGN TEXT	DESIGN TEXT STYLE: SIMPLEX.SHX HEIGHT: 5 PEN WEIGHT: 0.015
SE 240TH ST	STREET NAME CALLOUTS STYLE: ARIAL.SHX HEIGHT: 10 PEN WEIGHT: 0.015
PLAT TEXT	PLAT NAME CALLLOUTS STYLE: HMO.SHX HEIGHT: 10 OR 8 PEN WEIGHT: 0.001
22	EXISTING PLAT LOT NOS. STYLE: SIMPLEX.SHX HEIGHT: 6 PEN WEIGHT: 0.004
12	PROPOSED PLAT LOT NOS.. STYLE: ROMAND.SHX HEIGHT: 7 PEN WEIGHT: 0.009

THESE ARE THE DISTRICT STANDARDS AND WILL HELP TO MAKE REVIEW AND REVISING TO CONSTRUCTION RECORDS EASIER.

THE TEXT HEIGHT IS USED TO KEEP HALF SIZING FOR DISTRICT RECORDS READABLE.

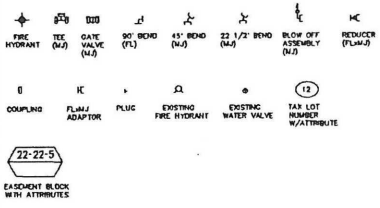
IN THE TITLE BLOCK AREA, JUST USE THE TEXT EDIT COMMAND AND EDIT THE TEXT AS NEEDED.

SITE

VICINITY MAP

THIS DRAWING REDUCED ONE-HALF (SCALE ACCORDINGLY)

STANDARD BLOCKS



EXISTING FEATURES LEGEND

(EXAMPLE OF EXISTING FEATURE LINETYPES AND PEN WEIGHTS TO USE)

MB	MAIL BOX	14"MP	DECIDUOUS TREE
RS	ROAD SIGN	14"FIR	CONIFEROUS TREE
UP	UTILITY POLE		EDGE OF TREES
UB	UTILITY BOX		FENCE
TR	TELEPHONE BOX		CULVERT
PB	POWER BOX		EDGE OF PAVEMENT
EX. SEWER MANHOLE			EDGE OF GRAVEL
CB	CATCH BASIN		DITCH CENTERLINE
SM	STORM MANHOLE		GRADE BREAK
WB	WATER BLOW-OFF		STORM SEWER LINE
FH	FIRE HYDRANT		SANITARY SEWER LINE
WV	WATER VALVE	P	UNDERGROUND POWER
WM	WATER METER	T	UNDERGROUND TELECOM
	SURVEY MONUMENT	W	EXISTING WATER LINE
	OWNERSHIP TIE	02+00	PROPOSED SEWER FORCE MAIN W/ STA. NUMBER

BURIED UTILITIES IN AREA
CALL BEFORE YOU DIG
1-800-424-5555
EXISTING UTILITIES SHOWN ARE FROM THE BEST AVAILABLE INFORMATION AND NO GUARANTEE IS MADE AS TO THE EXACT SIZE, TYPE, LOCATION OR DEPTH

OPTIONAL ENGINEER NAME AND LOGO HERE

SOOS CREEK WATER & SEWER DISTRICT

WATERMAIN EXTENSION PROJECT NAME HERE

BASE MAP

SHEET 1 OF 4

DRAWING WP-1

NO.	BY	DATE	REVISIONS DESCRIPTION

DATE
APPROVED
DESIGN
DRAWN
CHECKED
JOB NO. 12-

SCALE HORIZ. 1"=50' VERT.

DES. FLD. BK. NO. PG.

CST. FLD. BK. NO. PG.

PLOTTING DATE: 1-26-03 USER: VANHORNE VERSION: 2000 FILE NAME: P:\...\WP1.dwg

CONSTRUCTION PROVISIONS (Revised 05-16-11)

1. STANDARD SPECIFICATIONS

ALL WORK, MATERIALS AND TESTING SHALL CONFORM TO THE STANDARDS OF SOOS CREEK WATER & SEWER DISTRICT AND THE "STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION", CURRENT EDITION, AS PREPARED BY THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION, AND HEREINAFTER REFERRED TO AS THE "STANDARD SPECIFICATIONS," EXCEPT AS HEREIN MODIFIED.

2. TRENCH EXCAVATION, BEDDING AND BACKFILL

ALL WORK WITHIN THE RIGHT-OF-WAY SHALL COMPLY WITH ALL PERTINENT PERMITS, THE GOVERNING AGENCY'S CURRENT ROAD STANDARDS AND THE STANDARD SPECIFICATIONS. ALL MATERIAL FROM CLEARING AND GRUBBING SHALL BE HAULED TO AN APPROVED WASTE DISPOSAL SITE PROVIDED BY THE DEVELOPER/CONTRACTOR.

WHEN TRENCHING THROUGH EXISTING PAVEMENT, THE PAVEMENT SHALL BE CUT ON A NEAT-LINE BY SAW CUTTING. TRENCH SIDES SHALL BE KEPT AS VERTICAL AS POSSIBLE GIVEN THE SOIL CONDITIONS. COMPACTION AND RESTORATION SHALL BE DONE AS DETAILED BELOW AND IMMEDIATELY AFTER THE TRENCH BACKFILL IS PLACED SO AS TO CAUSE THE LEAST DISRUPTION TO TRAFFIC. ALL PAVEMENT SHALL BE CUT 1 FOOT OUTSIDE THE EDGE OF THE TRENCH ON EACH SIDE.

ANY TRENCH EXCEEDING FOUR FEET IN DEPTH SHALL BE PROVIDED WITH ADEQUATE SAFETY SYSTEMS MEETING THE REQUIREMENTS OF THE WASHINGTON STATE INDUSTRIAL SAFETY AND HEALTH ACT (WISHA), CHAPTER 49.17 RCW, AND ALL REGULATIONS ADOPTED PURSUANT THERETO. THE DEVELOPER/CONTRACTOR SHALL HAVE A STRUCTURAL ENGINEER REVIEW AND STAMP ANY AND ALL SHORING PLANS AND CALCULATIONS. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR WORKER SAFETY AND THE DISTRICT AND THE DISTRICT'S ENGINEER ASSUME NO RESPONSIBILITY.

WHEN NATIVE MATERIAL AT THE TRENCH BOTTOM IS SUITABLE FOR PIPE BEDDING, THE BOTTOM SHALL BE HAND FINISHED TO GRADE SO THAT THE PIPE WILL HAVE UNIFORM SUPPORT ALONG THE BARREL AND BELL. AFTER THE PIPE IS IN PLACE, ADDITIONAL HAND SELECTED NATIVE MATERIAL MEETING THE REQUIREMENTS FOR BEDDING MATERIAL SHALL BE PLACED AND TAMPED AROUND THE PIPE FOR A MINIMUM OF 4 INCHES ABOVE THE CROWN OF THE PIPE.

WHEN NATIVE MATERIAL AT THE TRENCH BOTTOM IS STONY OR OTHERWISE NON-UNIFORM, THE TRENCH SHALL BE OVER-EXCAVATED A MINIMUM OF 6 INCHES BELOW THE SPECIFIED GRADE AND A LAYER OF PIPE BEDDING MATERIAL SHALL BE FURNISHED AND PLACED TO THE SPECIFIED GRADE. AFTER THE PIPE IS IN PLACE, ADDITIONAL HAND SELECTED NATIVE MATERIAL MEETING THE REQUIREMENTS FOR BEDDING MATERIAL SHALL BE PLACED AND TAMPED AROUND THE PIPE FOR A MINIMUM OF 4 INCHES ABOVE THE CROWN OF THE PIPE.

IF THE NATIVE MATERIAL AT THE TRENCH BOTTOM IS UNSUITABLE FOR FOUNDATION PURPOSES OR WILL HAVE DIFFICULTY PROVIDING UNIFORM BEARING FOR THE PIPE, SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH A MINIMUM OF 6 INCHES OF COMPACTED FOUNDATION MATERIAL.

THE BEDDING MATERIAL SHALL BE CARRIED UP EVENLY ON BOTH SIDES OF THE PIPE SIMULTANEOUSLY IN APPROXIMATELY 6-INCH LAYERS AND EACH LAYER THOROUGHLY COMPACTED WITH APPROPRIATE TOOLS IN SUCH MANNER AS TO AVOID INJURING OR DISTURBING THE COMPLETED PIPELINE. ALL BEDDING AND NATIVE MATERIAL SHALL BE STORED AWAY FROM THE EDGES OF EXCAVATION AND OFF THE PAVED ROADWAY AND SHOULDER.

ALL TRENCH BACKFILL SHALL BE MECHANICALLY COMPACTED TO 95% OF THE MAXIMUM DENSITY WITHIN THE RIGHT-OF-WAY AND IN ALL AREAS (PAVED AND UNPAVED) WHERE STREETS, ROADWAY SHOULDERS, DRIVEWAYS, SIDEWALKS, OR PARKING LOTS WILL BE CONSTRUCTED OR RECONSTRUCTED OVER THE TRENCH, EXCEPT FOR TRENCHES OVER 8 FEET IN DEPTH. WHEN THE TRENCH DEPTH EXCEEDS 8 FEET, TRENCH BACKFILL UP TO 4 FEET FROM THE TOP OF THE TRENCH SHALL BE MECHANICALLY COMPACTED TO 90% OF THE MAXIMUM DENSITY. THE REMAINING TOP 4 FEET OF THE TRENCH SHALL THEN BE MECHANICALLY COMPACTED TO 95% OF THE MAXIMUM DENSITY. IN UNPAVED AREAS AND OTHER AREAS NOT SUBJECT TO VEHICULAR TRAFFIC, TRENCH BACKFILL FROM THE PIPE TO WITHIN 3 FEET OF THE SURFACE SHALL BE COMPACTED TO 90% OF THE MAXIMUM DENSITY. THE UPPER 3 FEET SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY.

ALL DENSITIES SHALL BE DETERMINED BY TESTING PER THE MODIFIED PROCTOR METHOD, ASTM D1557. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING DENSITY TEST REPORTS CERTIFIED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF WASHINGTON. A MINIMUM OF ONE TEST SHALL BE TAKEN WITHIN EVERY 500 FEET OF TRENCH LENGTH AND AT DEPTHS UP TO 50% OF TRENCH DEPTH, OR AS DIRECTED BY THE DISTRICT'S FIELD REPRESENTATIVE OR THE GOVERNING ROAD AGENCY. COMPACTION OF LATERALS OR SERVICE LINE TRENCHES SHALL ALSO BE TESTED WHERE DIRECTED BY THE DISTRICT'S FIELD REPRESENTATIVE OR THE GOVERNING ROAD AGENCY. TESTING OF CDF, WHEN USED AS REQUIRED BY THE GOVERNING ROAD AGENCY, SHALL BE IN ACCORDANCE WITH ASTM D4832.

TRENCH BACKFILL SHALL BE PLACED IN UNIFORM LOOSE LAYERS NO MORE THAN 12 INCHES THICK AND MECHANICALLY COMPACTED AS SPECIFIED. IN ANY TRENCH WHERE THE SPECIFIED COMPACTION CANNOT BE ACHIEVED WITH NATIVE BACKFILL, THE TOP 4 FEET SHALL BE REPLACED AND COMPACTED TO 95% OF THE MAXIMUM DENSITY WITH IMPORTED BANK RUN GRAVEL. THE DISTRICT'S FIELD REPRESENTATIVE RESERVES THE RIGHT TO REQUEST A COMPACTION TEST AT ANY TIME ON THE BACKFILL MATERIAL.

IN CUTS TRANSVERSE TO THE ROAD ALIGNMENT AND AT ALL UTILITY CROSSINGS, THE ENTIRE TRENCH SHALL BE BACKFILLED WITH CRUSHED SURFACING. BACKFILL SHALL BE PLACED AND MECHANICALLY COMPACTED IN 12-INCH MAXIMUM LIFTS.

AFTER BACKFILL AND COMPACTION, AN IMMEDIATE COLD MIX PATCH SHALL BE PLACED AND MAINTAINED IN A MANNER ACCEPTABLE TO THE GOVERNING ROAD AGENCY UNTIL REPLACED WITH PERMANENT SURFACING.

ALL PIPE AND FITTINGS SHALL BE LAID 'IN THE DRY' UNLESS OTHERWISE APPROVED BY THE DISTRICT. TRENCH EXCAVATIONS SHALL BE DEWATERED BY USING WELL POINT SYSTEMS, SUMPS WITH PUMPS OR OTHER METHODS APPROVED BY THE DISTRICT. DEWATERING SYSTEMS SHALL BE USED IN ACCORDANCE WITH GOOD STANDARD PRACTICE AND SHALL BE EFFICIENT ENOUGH TO LOWER THE WATER LEVEL IN ADVANCE OF THE EXCAVATION AND MAINTAIN IT CONTINUOUSLY TO KEEP THE TRENCH BOTTOM AND SIDES FIRM AND DRY. DEVELOPER/CONTRACTOR SHALL SUBMIT THE DEWATERING PLAN TO THE DISTRICT FOR REVIEW AT LEAST 10 DAYS PRIOR TO COMMENCING ANY DEWATERING WORK. ALL DEWATERING EFFLUENT SHALL BE ROUTED THROUGH A DEWATERING POND PRIOR TO RELEASE.

GROUNDWATER SHALL BE CONTROLLED SUCH THAT SOFTENING OF THE BOTTOM OF EXCAVATIONS OR FORMATION OF "QUICK" CONDITIONS OR "BOILS" DURING EXCAVATION SHALL BE PREVENTED AND NO SOIL SHALL BE ERODED INTO THE EXCAVATION FROM THE SIDES OF EXCAVATION. DEWATERING SYSTEMS SHALL BE DESIGNED AND OPERATED SO AS TO PREVENT REMOVAL OF THE NATURAL SOILS. THE DEVELOPER/CONTRACTOR SHALL AT ALL TIMES HAVE ON HAND SUFFICIENT PUMPING EQUIPMENT AND MACHINERY IN GOOD WORKING CONDITION FOR ALL ORDINARY EMERGENCIES, INCLUDING POWER OUTAGES, AND SHALL HAVE AVAILABLE AT ALL TIMES COMPETENT WORKERS FOR THE OPERATION OF SAID EQUIPMENT.

DEVELOPER/CONTRACTOR SHALL CONTROL SURFACE RUNOFF SO AS TO PREVENT ENTRY OR COLLECTION OF WATER IN EXCAVATIONS AND SHALL MAINTAIN THE UNDISTURBED STATE OF THE FOUNDATION SOILS AND ALLOW THE PLACEMENT OF ANY BACKFILL TO THE REQUIRED DENSITY. THE RELEASE OF GROUNDWATER TO ITS STATIC LEVEL SHALL BE PERFORMED IN SUCH A MANNER AS TO MAINTAIN THE UNDISTURBED STATE OF THE NATURAL FOUNDATION SOILS, PREVENT DISTURBANCE OF COMPACTED BACKFILL, AND PREVENT FLOTATION OR MOVEMENT OF STRUCTURES AND PIPELINES.

DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL PERMIT REQUIREMENTS AND PROVISIONS FOR MONITORING AND MANAGING WATER DISCHARGED FROM THE EXCAVATION.

3. COVER OVER PIPELINES

THE DEPTH OF COVER FOR WATER MAINS SHALL BE 36-INCHES FOR 8-INCH DIAMETER AND SMALLER MAINS AND 48-INCHES FOR MAINS OVER 8-INCHES IN DIAMETER. DEPTH OF COVER AT DITCH LINES SHALL MEET THE SAME REQUIREMENTS. EXCEPTIONS WILL BE ALLOWED ONLY WITH THE PRIOR APPROVAL OF THE DISTRICT.

4. CONNECTION TO EXISTING WATER SYSTEM

THE DEVELOPER/CONTRACTOR SHALL NOTIFY THE DISTRICT'S FIELD REPRESENTATIVE AND OTHER UTILITIES AT LEAST 48 HOURS IN ADVANCE OF ANY CONSTRUCTION AND MAKE THE NECESSARY ARRANGEMENTS WITH THE DISTRICT'S FIELD REPRESENTATIVE FOR THE CONNECTION TO THE EXISTING WATER MAIN. THE DEVELOPER/CONTRACTOR SHALL NOT OPERATE ANY GATE VALVE OF THE WATER SYSTEM BEFORE, DURING OR AFTER CONSTRUCTION WITHOUT PRIOR APPROVAL OF THE DISTRICT. THE DEVELOPER/CONTRACTOR SHALL FURNISH ALL MATERIAL, EQUIPMENT AND LABOR NECESSARY FOR MAKING THE CONNECTION UNDER THE SUPERVISION OF THE DISTRICT. THE 48 HOUR NOTICE REQUIREMENT SHALL NOT COUNT SATURDAYS, SUNDAYS, AND HOLIDAYS.

WORK SHALL NOT BE STARTED UNTIL ALL OF THE MATERIAL, EQUIPMENT AND LABOR NECESSARY TO PROPERLY COMPLETE WORK IS ASSEMBLED ON THE SITE. ONCE WORK IS STARTED ON A CONNECTION, IT SHALL PROCEED CONTINUOUSLY WITHOUT INTERRUPTION AND AS RAPIDLY AS POSSIBLE UNTIL THE CONNECTION IS COMPLETED. BEFORE ORDERING MATERIALS FOR ANY CONNECTION TO AN EXISTING WATER MAIN, DEVELOPER/CONTRACTOR SHALL EXCAVATE THE WATER MAIN AND VERIFY OUTSIDE DIAMETER OF ALL PIPES FOR DETERMINATION OF TYPES OF FITTINGS TO BE USED. THE DEVELOPER/CONTRACTOR SHALL COORDINATE ALL WORK WITH THE DISTRICT'S FIELD REPRESENTATIVE.

5. SEPARATION OF UTILITIES

MINIMUM SEPARATION BETWEEN WATER AND SEWER MAINS SHALL CONFORM TO SECTION C1-9.1 OF THE "CRITERIA FOR SEWAGE WORKS DESIGN", CURRENT EDITION, AS PUBLISHED BY THE DEPARTMENT OF ECOLOGY. MINIMUM SEPARATION BETWEEN OTHER UTILITIES SHALL BE 6 INCHES WITH A SAND CUSHION.

WATER MAINS SHALL PASS UNDER STORM SEWERS WHEN NECESSARY TO MAINTAIN THE MINIMUM COVER REQUIREMENTS FOR WATER MAINS. THERE SHALL BE NOT LESS THAN A SIX-INCH CUSHION BETWEEN THE WATER MAINS AND THE STORM SEWERS.

PUGET SOUND ENERGY VAULTS, HAND HOLES AND LIGHT STANDARDS SHALL BE LOCATED NO CLOSER THAN 10 FEET FROM ANY WATER MAINS. FIRE HYDRANTS, AND BLOW-OFF ASSEMBLIES AND NO CLOSER THAN 5 FEET FROM ANY WATER SERVICES. DEVELOPER SHALL BE RESPONSIBLE FOR COORDINATION OF VAULTS, HAND HOLES, AND LIGHT STANDARDS WITH THE WATER MAINS, SERVICES, FIRE HYDRANTS, AND BLOW-OFF ASSEMBLIES. NO CONSTRUCTION SHALL START UNTIL THE DEVELOPER HAS FURNISHED THE DISTRICT WITH A WORK SKETCH FROM PUGET SOUND ENERGY OR A SIGNED HOLD HARMLESS AGREEMENT (FORM SUPPLIED BY THE DISTRICT) IS PROVIDED.

6. THRUST BLOCKING

ALL FITTINGS SHALL BE BLOCKED WITH POURED CONCRETE AGAINST UNDISTURBED SOIL WITH SUFFICIENT CONCRETE AND 3/4-INCH ANCHOR RODS IF REQUIRED, TO RESIST THE RESULTANT FORCES. BLOCKING SHALL PROVIDE FOR REMOVAL OF ANY CONNECTION TO THE FITTING WITHOUT DAMAGE TO THE FITTING. WHERE UNFAVORABLE GROUND CONDITIONS ARE ENCOUNTERED, SPECIAL BLOCKING WILL BE REQUIRED AS DIRECTED BY THE DISTRICT IN THE FIELD. WHEN DIGGING NEAR FITTINGS ON EXISTING PIPELINES, TEMPORARY BLOCKING SHALL BE INSTALLED TO PREVENT BLOWOUTS. THRUST BLOCKING SHALL CONFORM TO THE STANDARD DETAILS.

7. WATER WORKS TESTING

PRESSURE TESTING OF LINES SHALL BE IN ACCORDANCE WITH SECTION 7-09.3(23) OF THE STANDARD SPECIFICATIONS. TEST PRESSURE SHALL BE THE EXISTING SYSTEM LINE PRESSURE PLUS 150 PSI, BUT IN NO CASE SHALL THE TEST PRESSURE BE LESS THAN 250 PSI. MAINS SHALL BE DISINFECTED PER SECTION 7-09.3(24) OF THE STANDARD SPECIFICATIONS.

THE DEVELOPER/CONTRACTOR SHALL CUBE AND FLUSH ALL NEW WATER MAINS WHILE BEING OBSERVED BY THE DISTRICT'S FIELD REPRESENTATIVE. DISTRICT SHALL FURNISH THE CUBES FOR THE DEVELOPER/CONTRACTOR WHO SHALL THEN BE RESPONSIBLE FOR CUBING THE NEW WATER MAINS. DEVELOPER/CONTRACTOR SHALL COORDINATE WITH DISTRICT'S FIELD REPRESENTATIVE FOR THE LOCATIONS TO BE CUBED. AFTER THE CUBES HAVE BEEN FLUSHED FROM THE SYSTEM, THE REST OF THE FLUSHING, CHLORINATING, PRESSURE AND PURITY TESTS SHALL BE COMPLETED. THE DISTRICT SHALL BE RESPONSIBLE FOR COLLECTING THE SAMPLES AND OBTAINING THE BACTERIOLOGICAL TESTS.

8. REPAIR OF PIPELINE FAILURES

BROKEN OR OTHERWISE DEFECTIVE PIPE SHALL BE REMOVED AND REPLACED. REPAIR BANDS OR CLAMPS SHALL NOT BE USED TO REPAIR BROKEN PIPE.

9. JACKED CROSSING

AT LOCATIONS AS REQUIRED BY THE DISTRICT OR GOVERNING ROAD AGENCY, OR AS PROPOSED BY THE DEVELOPER, WATER MAIN CROSSINGS OF ARTERIAL STREETS SHALL BE MADE BY JACKING, DRIVING, OR AUGURING A STEEL CASING PIPE BENEATH THE SURFACE. ALIGNMENT AND GRADE OF CASINGS FURNISHED SHALL BE SUCH THAT NO ADDITIONAL FITTINGS ARE NECESSARY TO MAKE THE CONNECTION. IF THE CASING DOES NOT MEET THIS REQUIREMENT, IT SHALL BE ABANDONED BY FILLING THE CASING WITH MOIST SAND AND A NEW CASING INSTALLED TO MEET THE LINE AND GRADE REQUIREMENTS. NO OPEN EXCAVATION SHALL BE MADE CLOSER THAN 6 FEET FROM THE EDGE OF PAVEMENT.

DIAMETER OF CASING PIPE SHALL BE SUFFICIENT TO ALLOW INSTALLATION OF THE WATER PIPE. WALL THICKNESS SHALL BE SUFFICIENT TO WITHSTAND INSTALLATION FORCE AND HIGHWAY LOADING WITH A MINIMUM THICKNESS OF ¼-INCH. AFTER THE WATER PIPE HAS BEEN ADJUSTED TO GRADE, MOIST SAND SHALL BE TAMPED INTO THE CASING PIPE SO THAT ALL VOIDS WILL BE FILLED. MANUFACTURED CASING SPACERS THAT PROHIBIT MOVEMENT OF THE PIPE IN ANY DIRECTION WITHIN THE CASING MAY BE USED IN LIEU OF FILLING THE VOID BETWEEN THE WATER MAIN AND THE CASING WALL WITH SAND.

10. WATER SUPPLY

WATER SUPPLY FOR FILLING, TESTING AND FLUSHING OF THE NEW MAINS MAY BE AVAILABLE FROM THE EXISTING DISTRIBUTION SYSTEM; HOWEVER, THE DEVELOPER/CONTRACTOR WILL BE BILLED BY THE DISTRICT FOR THE WATER USED AT THE CURRENT COMMERCIAL METER RATE. THE DEVELOPER/CONTRACTOR MAY PROVIDE HIS OWN METERING FACILITIES TO THE SATISFACTION OF THE DISTRICT OR ACCEPT THE QUANTITIES ESTIMATED BY THE DISTRICT.

11. EXISTING UTILITIES

EXISTING UTILITIES SHOWN ON ANY REFERENCE DRAWINGS PROVIDED BY THE DISTRICT HAVE BEEN PLOTTED FROM THE BEST INFORMATION AVAILABLE TO THE DISTRICT. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING UTILITIES WELL ENOUGH IN ADVANCE OF THE EXCAVATION TO PREVENT DAMAGE DURING CONSTRUCTION. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM HIS OPERATIONS ON THE PROJECT.

THE DEVELOPER SHALL RELOCATE OR REPLACE ANY EXISTING FIRE HYDRANTS LOCATED WITHIN 50 FEET OF THE DEVELOPMENT TO MEET THE DISTRICT'S REQUIREMENTS IF NEW CONSTRUCTION BY THE DEVELOPMENT CREATES A SAFETY HAZARD OR A NON-COMPLIANT CONDITION WITH DISTRICT STANDARD SPECIFICATION REQUIREMENTS.

12. WARRANTY PERIOD

THE DEVELOPER MAKING THE APPLICATION FOR A LINE EXTENSION SHALL BE RESPONSIBLE FOR THE MATERIALS AND FOR SATISFACTORY OPERATION OF THE FACILITY FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE OF THE COMPLETED PROJECT AND THE BILL OF SALE TO THE DISTRICT.

NO.	BY	DATE	REVISIONS DESCRIPTION

DATE APPROVED
PRINCIPAL APPROVAL
DESIGN
DRAWN
CHECKED
JOB NO.

OPTIONAL ENGINEER NAME AND LOGO HERE

SCALE HORIZ.: VERT.:
DES. FLD. BK.:
NO.: PG.:
CST. FLD. BK.:
NO.: PG.:

SOOS CREEK WATER & SEWER DISTRICT

WATERMAIN EXTENSION
PROJECT NAME HERE
CONSTRUCTION PROVISIONS

BASE MAP

SHEET 2 OF 4

DRAWING FIG. WP-2

MATERIALS (Revised 05-16-11)

1. **DUCTILE IRON PIPE**

ALL DUCTILE IRON PIPE SHALL CONFORM TO SECTION 9-30.1(1) OF THE STANDARD SPECIFICATIONS. PIPE SHALL BE CLASS 52 CONFORMING TO LAYING CONDITION TYPE 2, SHALL BE LINED WITH CEMENT MORTAR PER ANSI/AWWA C104/A21.4-95 AND SHALL BE SEAL COATED. JOINTS SHALL BE PUSH-ON TYPES WITH RUBBER GASKETS, WHICH FIT INTO ANNULAR GROOVES. JOINTS AT VALVES OR FITTINGS MAY BE MECHANICAL JOINT OR FLANGED DEPENDING ON SPECIFICATION AND DRAWING REQUIREMENT. DUCTILE IRON PIPE MANUFACTURED AND DISTRIBUTED BY PACIFIC STATES CAST IRON PIPE COMPANY SHALL BE MANUFACTURED AFTER 1988. RESTRAINED JOINTS FOR DUCTILE IRON PIPE SHALL BE U.S. PIPE FIELD LOCK GASKET SYSTEM OR APPROVED EQUAL.

2. **FITTINGS**

FITTINGS FOR DUCTILE IRON PIPE SHALL CONFORM TO SECTION 9-30.2(1) OF THE STANDARD SPECIFICATIONS AND MAY BE FLANGED, MECHANICAL OR PUSH-ON AS REQUIRED. FLANGED FITTINGS SHALL CONFORM TO A CLASS 125 PRESSURE RATING. MECHANICAL JOINT FITTINGS SHALL BE RESTRAINED WITH MEGA-LUG RESTRAINING DEVICES OR APPROVED EQUAL. RESTRAINING DEVICES SHALL BE MANUFACTURED OF HIGH STRENGTH DUCTILE IRON, ASTM A536, GRADE 65-45-12. BOLTS AND CONNECTING HARDWARE SHALL BE OF HIGH STRENGTH LOW ALLOY MATERIAL IN ACCORDANCE WITH ANSI/AWWA C111/A21.11. ALL RESTRAINING DEVICES SHALL HAVE A WATER WORKING PRESSURE RATING EQUIVALENT TO THE FULL RATED PRESSURE OF THE PIPE ON WHICH THEY ARE INSTALLED, WITH A MINIMUM 2:1 SAFETY FACTOR IN ANY NOMINAL PIPE SIZE. NOTARIZED CERTIFICATION FROM THE MANUFACTURER OF THE RESTRAINT DEVICE SHALL BE PROVIDED WITH SUBMITTALS.

THE EXTERIOR OF ALL DUCTILE IRON FITTINGS SHALL BE COATED WITH BITUMINOUS PAINT.

3. **FIRE HYDRANTS**

HYDRANTS SHALL CONFORM TO AWWA C-502, EXCEPT AS HEREIN MODIFIED. HYDRANTS SHALL HAVE A MINIMUM OF 5-1/4-INCH MAIN VALVE OPENING WITH TWO 2-1/2-INCH HOSE CONNECTIONS AND ONE 4-1/2-INCH PUMPER CONNECTION. ALL PORTS SHALL BE FURNISHED WITH NATIONAL STANDARD HOSE THREAD AND 1-1/4-INCH OPERATING NUTS THAT TURN COUNTERCLOCKWISE TO OPEN.

THE PUMPER CONNECTION SHALL BE EQUIPPED WITH A 5-INCH STORZ ADAPTER MEETING OR EXCEEDING THE FOLLOWING SPECIFICATIONS.

A. STORZ ADAPTER AND CAP SHALL BE FORGED AND/OR EXTRUDED 6061-T6 ALUMINUM ALLOY, HARD COAT ANODIZED.

B. THREADED PORTION TO HAVE TWO SET SCREWS 180° APART AND NO LUGS.

C. STORZ FACE TO BE METAL WITH NO GASKETS TO WEATHER.

D. STORZ CAP TO HAVE SYNTHETIC MOLDED RUBBER GASKET AND SHALL BE ATTACHED TO HYDRANT ADAPTER WITH 1/8-INCH COATED STAINLESS STEEL AIRCRAFT CABLE.

E. CAP TO BE CONNECTED AND DISCONNECTED WITH STORZ WRENCHES ONLY. TORQUE TO BE SUFFICIENT SO CAP CANNOT BE REMOVED BY HAND.

HYDRANTS SHALL BE FURNISHED WITH A 6-INCH MECHANICAL JOINT OUTLET, TWO 3/4-INCH DIAMETER TIE RODS, OR MEGA-LUGS, A 6-INCH AUXILIARY GATE VALVE WITH VALVE BOX, AND A RISER TO SUIT TRENCH DEPTH AT EACH INSTALLATION. THE GATE VALVE SHALL BE FLANGED TO THE MAIN TEE. HYDRANT SHALL BE FURNISHED WITH A BREAK-OFF FLANGE ON THE BARREL AND A BREAK-OFF COUPLING FOR THE STEM. HYDRANTS SHALL CONFORM TO DISTRICT STANDARDS.

ALL FIRE HYDRANTS SHALL BE M & H STYLE 929 RELIANT, MUELLER CENTURION MODEL A-423 CLOW MEDALLION OR WATEROUS PACER NO. WB-67.

NOZZLES SHALL BE FITTED WITH RENEWABLE BRONZE NIPPLE LOCKED IN PLACE. MAINTAIN 3 FEET CLEARANCE BETWEEN HYDRANT AND PROPERTY OR EASEMENT LINE.

TYPE 1 BLUE REFLECTIVE MARKERS AS DESCRIBED IN SECTION 9-21.1 OF THE STANDARD SPECIFICATIONS SHALL BE INSTALLED AS REQUIRED BY THE GOVERNING ROAD AGENCY.

FIRE HYDRANTS SHALL BE EQUIPPED WITH STEAMER AND HOSE PORT THREADS IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL FIRE PROTECTION DISTRICT.

THE HYDRANT SHALL BE CLEANSED AND PRIME COATED WITH A HEAVY-DUTY BRUSH TYPE PRIMER OR APPROVED EQUAL. ALL HYDRANTS SHALL BE PAINTED YELLOW WITH TWO TOPCOATS OF OIL RESISTANT ENAMEL, BRUSH TYPE OR APPROVED EQUAL. THE DISTANCE FROM THE HYDRANT TO THE 6-INCH GATE VALVE SHALL BE STENCILED ON THE HYDRANT WITH 2-INCH LETTERS.

DURING THE CHLORINATING PROCESS FOR THE NEWLY LAID PIPE, ALL VALVES ASSOCIATED WITH THE FIRE HYDRANTS SHALL BE OPERATED WHILE THE PIPELINE IS FILLED WITH THE CHLORINATING AGENT AND UNDER NORMAL OPERATING PRESSURE.

4. **FIRE HYDRANT GUARD POSTS**

GUARD POSTS SHALL NOT BE INSTALLED WITH FIRE HYDRANT ASSEMBLIES UNLESS REQUIRED BY DISTRICT. IF GUARD POSTS ARE REQUIRED BY DISTRICT, THEY SHALL BE MADE OF REINFORCED CONCRETE, 6 INCHES IN DIAMETER, 5 FEET LONG AND BURIED TO A MINIMUM DEPTH OF 3 FEET. GUARD POSTS SHALL BE SET WITH THEIR TOPS AT THE SAME ELEVATION AS THE BONNET FLANGE OF THE HYDRANT. THE EXPOSED PORTION OF THE GUARD POSTS SHALL BE PAINTED WITH 2 COATS OF EXTERIOR CONCRETE PAINT, COLOR AS DESIGNATED BY THE DISTRICT.

5. **GATE VALVES**

GATE VALVES SHALL BE OF THE SIZE AND TYPE INDICATED ON THE DRAWINGS WITH BRONZE-MOUNTED RESILIENT SEAT WEDGING DEVICES CONFORMING TO AWWA C509 OR AWWA C515. VALVES SHALL BE COATED PER AWWA C550 WITH NON-RISING STEMS OPEN COUNTERCLOCKWISE, AND BE EQUIPPED WITH AN O-RING STUFFING BOX. VALVE END CONNECTIONS MAY BE FLANGED, MECHANICAL JOINT OR PUSH-ON AS REQUIRED. ALL FLANGE FACES SHALL BE MACHINED AND DRILLED TO STRADDLE THE VERTICAL CENTERLINE. VALVE STEM EXTENSIONS WITH PLATE WELDED TO OPERATING NUT WILL BE REQUIRED WHERE OPERATING NUT IS MORE THAN 4 FEET BELOW SURFACE. THE VALVE STEM EXTENSION TOP SHALL BE INSTALLED WITHIN 18 INCHES TO 24 INCHES BELOW FINISH GRADE AND SHALL HAVE A 2-INCH SQUARE OPERATING NUT AND SELF-CENTERING ROCK PLATE SUPPORT. LOCK DOWN SET SCREWS SHALL NOT BE USED ON VALVE OPERATING NUT EXTENSIONS.

MANUFACTURER SHALL PROVIDE CATALOG DATA, NET WEIGHT, AND ASSEMBLY DRAWINGS OF ALL VALVES TO BE PURCHASED AND INSTALLED AS WELL AS AN AFFIDAVIT OF COMPLIANCE. ALL VALVES SHALL HAVE A WATER WORKING PRESSURE RATING EQUIVALENT TO THE FULL RATED PRESSURE OF THE PIPE ON WHICH THEY ARE INSTALLED, WITH A MINIMUM 2:1 SAFETY FACTOR IN ANY NOMINAL PIPE SIZE.

6. **VALVE BOX**

VALVE BOX SHALL BE CAST IRON SERIES 940B AS MANUFACTURED BY OLYMPIC FOUNDRY OR APPROVED EQUAL WITH LID MARKED "WATER". ALL BOXES SHALL BE ADJUSTED TO MATCH THE FINISH GRADE AT THE VALVE LOCATION. ALL VALVE BOX COVERS SHALL BE PAINTED BLUE. ORIENT THE VALVE BOXES SO THE "EARS" ARE SET THE SAME AS THE PIPE DIRECTION. PROVIDE 4-INCH THICK BY 2-FOOT WIDE ASPHALT OR CONCRETE COLLAR AROUND VALVE BOX COVERS IN UNIMPROVED AREAS, LANDSCAPE AREAS AND EASEMENTS.

7. **VALVE MARKER POSTS**

VALVE MARKER POSTS SHALL BE FURNISHED AND INSTALLED WITH EACH VALVE UNLESS THE VALVE IS LOCATED IN THE PAVEMENT OR IN A VAULT. MARKER POSTS SHALL BE CONCRETE WITH 4-INCH MINIMUM SQUARE SECTION, 42-INCH LENGTH, AND SHALL BE REINFORCED WITH ONE 3/8" X 39" BAR OF REINFORCING STEEL. MARKERS SHALL BE PLACED AT THE EDGE OF THE RIGHT-OF-WAY OPPOSITE THE VALVE OR AS DIRECTED BY THE DISTRICT WITH 18 INCHES OF THE POST EXPOSED ABOVE GRADE. THE EXPOSED PORTION SHALL BE PAINTED WITH TWO COATS OF WHITE EXTERIOR CONCRETE PAINT WITH THE SIZE OF THE VALVE AND THE DISTANCE IN FEET AND INCHES TO THE VALVE STENCILED WITH BLACK PAINT ON THE FACE OF THE POST USING A STENCIL THAT WILL PRODUCE LETTERS TWO INCHES HIGH.

8. **WET TAPS**

TAPPING SLEEVE SHALL BE JCM 432 OR ROMAC "SST" STAINLESS STEEL SLEEVES WITH FULL COVERAGE RUBBER GASKET, OR EPOXY COATED LONG PATTERN SLEEVE, OR APPROVED EQUAL. VALVE SHALL BE A RESILIENT SEATED VALVE MADE FOR TAPPING, U.S. PIPE METROSEAL 250 OR APPROVED EQUAL. REFER TO THE GATE VALVE DESCRIPTION FOR ADDITIONAL DETAILS. SUBMITTALS REQUIRED FOR ALL WET TAP MATERIALS.

9. **WATER SERVICES AND METERS**

NEW SERVICE LINES SHALL BE CLASS 200, HI-MOL OR APPROVED EQUAL AND SHALL CONFORM TO THE STANDARD DETAILS AND SECTIONS 9-30.6 AND 9-30.6(3)B OF THE STANDARD SPECIFICATIONS. INSTALL PLASTIC-COATED 16-GAUGE COPPER TRACER WIRE ALONG TOP OF ALL PLASTIC SERVICE PIPES. ATTACH BARE WIRE TO ANGLE AND CORPORATION STOPS.

CONNECTIONS FROM PIPE TO ANGLE AND CORPORATION STOPS SHALL BE WITH COMPRESSION PACK JOINTS. METER BOXES SHALL BE AS CALLED OUT ON THE STANDARD DETAILS. METER BOXES AND LIDS LOCATED IN DRIVEWAYS OR SIDEWALKS SHALL BE TRAFFIC BEARING AS APPROVED BY THE DISTRICT.

WATER SERVICES SHALL BE LOCATED BY MUTUAL AGREEMENT BETWEEN DEVELOPER, DISTRICT, AND OTHER UTILITY COMPANIES. PAINT SERVICE LOCATIONS ON CURB WITH BLUE PAINT. METER BOXES SHALL BE FURNISHED AND INSTALLED BY DEVELOPER/CONTRACTOR. WATER SERVICE SHALL BE LOCATED NO CLOSER THAN 5 FEET FROM POWER VAULTS, HAND HOLES AND LIGHT STANDARDS.

ALL SERVICE LINES SHALL BE ONE-INCH MINIMUM, AND SHALL BE CONTINUOUS AND UNSPLICED FROM CORPORATION STOP TO METER AND SHALL HAVE 6 INCHES OF SAND BEDDING SURROUNDING THE SERVICE LINE. EXPANSION LOOPS ARE TO BE HELD AS FLAT AS POSSIBLE WITH NO REVERSE GRADE. WATER MAIN SERVICE SADDLE AND CORPORATION STOP WITH COMPRESSION ADAPTER SHALL BE LOCATED AT APPROXIMATELY 10 ABOVE SPRING LINE PER THE STANDARD DETAIL.

THE DEVELOPER/CONTRACTOR SHALL NOT BACKFILL ANY SERVICE LINES UNTIL ALL BRASS FITTINGS ASSOCIATED WITH THAT SERVICE LINE HAVE BEEN INSPECTED AND ACCEPTED BY THE DISTRICT.

EXISTING WATER SERVICES, WHICH NEED TO BE ABANDONED, SHALL BE DISCONNECTED AT THE WATER MAIN CORPORATION STOP. THE DEVELOPER/CONTRACTOR SHALL COORDINATE WITH THE DISTRICT'S FIELD REPRESENTATIVE AS REQUIRED.

10. **IMPORTED GRAVEL MATERIAL**

PIPE BEDDING SHALL CONFORM TO SECTION 9-03.12(3) OF THE STANDARD SPECIFICATIONS. FOUNDATION GRAVEL SHALL CONFORM TO SECTION 9-03.17 OF THE STANDARD SPECIFICATIONS. BANKRUN GRAVEL FOR TRENCH BACKFILL SHALL CONFORM TO SECTION 9-03.19 OF THE STANDARD SPECIFICATIONS, EXCEPT AT TRANSVERSE CUTS TO THE ROAD ALIGNMENT OR AT UTILITY CROSSINGS, WHICH SHALL BE BACKFILLED WITH CRUSHED GRAVEL SURFACING OR AS REQUIRED BY THE GOVERNING AGENCY. DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND DISPOSING OF ANY EXCESS EXCAVATED SOIL MATERIAL AT AN APPROVED DISPOSAL SITE.

11. **CRUSHED GRAVEL SURFACING**

CRUSHED GRAVEL SURFACING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 9-03.9(3) OF THE STANDARD SPECIFICATIONS.

12. **ASPHALT CONCRETE PATCH AND OVERLAY**

ASPHALT CONCRETE SURFACING FOR PATCHING AND OVERLAY SHALL CONFORM TO SECTION 5-04.2 AND 5-04.3 OF THE STANDARD SPECIFICATIONS. ASPHALT CONCRETE SURFACING SHALL MEET CLASS 1/2-INCH, P.G. 58-22 GRADING REQUIREMENTS, OR AS REQUIRED BY THE GOVERNING ROAD AGENCY.

SURFACE RESTORATION (Revised 05-16-11)

1. **OFFSITE SURFACE RESTORATION**

ALL PAVED OR UNPAVED SURFACES OR EASEMENTS SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO CONSTRUCTION. ALL TREES, SHRUBS AND OR OTHER IMPROVEMENTS SHALL BE SAVED, RELOCATED, OR REPLACED BY DEVELOPER/CONTRACTOR UNLESS NOTED OTHERWISE ON THE DRAWINGS OR IN THE EASEMENT STIPULATIONS. RESTORATION SHALL BE TO THE SATISFACTION OF THE DISTRICT, PROPERTY OWNER, OR GOVERNING ROAD AGENCY. PRECONSTRUCTION PHOTOGRAPHS SHALL BE USED TO APPROVE RESTORATION.

2. **ROAD SHOULDER RESTORATION WITHIN RIGHT-OF-WAY**

THE EXISTING SURFACING OF DISTURBED ASPHALT SHOULDERS SHALL BE REMOVED TO A MINIMUM DEPTH OF 6 INCHES BELOW ORIGINAL STREET GRADE TO PROVIDE FOR PLACEMENT OF THE NEW SUBGRADE AND PAVING. THE SUBGRADE SHALL BE CONSTRUCTED OF 1-1/4-INCH MINUS CRUSHED SURFACING BASE COURSE PLACED TO A COMPACTED THICKNESS OF 2-1/2 INCHES, FOLLOWED BY 5/8-INCH MINUS CRUSHED SURFACING TOP COURSE PLACED TO A COMPACTED THICKNESS OF 1-1/2 INCHES. ASPHALT CONCRETE PAVING SHALL THEN BE PLACED AND COMPACTED IN 2-INCH LIFTS UP TO A MAXIMUM 4-INCH THICKNESS TO MATCH EXISTING PAVEMENT THICKNESS. MINIMUM THICKNESS SHALL BE 2 INCHES. THE SHOULDER SHALL BE REPLACED TO THE EXISTING FOG LINE IN AREAS WHERE THE EXISTING ASPHALT SHOULDER IS SERIOUSLY DISTURBED, OR AT THE DISCRETION OF THE DISTRICT OR THE GOVERNING ROAD AGENCY.

RESTORATION OF GRAVEL SHOULDERS SHALL INCLUDE A MINIMUM OF 1-1/2 INCHES OF CRUSHED SURFACING TOP COURSE AND 2-1/2 INCHES OF CRUSHED SURFACING BASE COURSE.

3. **ASPHALT SURFACE RESTORATION WITHIN RIGHT-OF-WAY**

THE EXISTING ASPHALT SURFACE SHALL BE CUT ON A NEAT LINE BY SAWCUTTING PRIOR TO EXCAVATION. FOLLOWING PROPER BACKFILL AND COMPACTION OF THE TRENCH, THE EDGES OF THE SURFACING SHALL BE RE-TRIMMED 12 INCHES WIDER THAN THE EXCAVATION WITH STRAIGHT VERTICAL EDGES FREE FROM IRREGULARITIES. A 1-1/4 INCH MINUS CRUSHED SURFACING BASE COURSE SHALL BE PLACED TO A COMPACTED THICKNESS OF 4-1/2 INCHES, FOLLOWED BY 5/8-INCH MINUS CRUSHED SURFACING TOP COURSE PLACED TO A COMPACTED THICKNESS OF 2 INCHES.

ASPHALT CONCRETE PAVING SHALL THEN BE PLACED AND COMPACTED IN 2-INCH LIFTS TO MATCH THE EXISTING THICKNESS AND GRADE OF THE ORIGINAL SURFACE. ASPHALT PATCHES SHALL HAVE A MINIMUM THICKNESS OF 2 INCHES AND A MAXIMUM THICKNESS OF 4 INCHES. THE ASPHALT PATCH SHALL THEN BE OVERLAID WITH A MINIMUM OF 1-1/2 INCHES COMPACTED ASPHALT CONCRETE. ASPHALT OVERLAY SHALL BE PRE-LEVELED AS DETERMINED BY THE DISTRICT'S FIELD REPRESENTATIVE. NO OVERLAY SHALL BE REQUIRED IF THE FINAL TRIMMED EDGE OF THE ASPHALT PATCH DOES NOT ENCROACH INSIDE THE FOG LINE OR, IN LIEU OF A FOG LINE, WITHIN 12 FEET FROM THE EXISTING CENTERLINE OF THE ROAD. THE DISTRICT OR GOVERNING ROAD AGENCY RESERVES THE RIGHT TO REQUIRE AN OVERLAY ON ANY SECTION, IF THE EDGE OF THE ROAD IS CURB AND GUTTER, THEN THE ASPHALT PATCH SHALL EXTEND TO THE EDGE OF THE CURB UNLESS INDICATED OTHERWISE BY THE DISTRICT OR GOVERNING ROAD AGENCY. ALL ASPHALT JOINTS SHALL BE SEALED WITH AN APPROVED SEALER. DEVELOPER/CONTRACTOR SHALL REPLACE EXISTING STRIPING AND PAVEMENT MARKINGS AS REQUIRED BY THE GOVERNING ROAD AGENCY.

DEVELOPER/CONTRACTOR SHALL MAINTAIN TEMPORARY COLD OR HOT MIX ASPHALT PATCHES DAILY DURING CONSTRUCTION TO THE SATISFACTION OF THE GOVERNING ROAD AGENCY AND THE DISTRICT'S FIELD REPRESENTATIVE UNTIL SAID PATCH IS REPLACED WITH A PERMANENT HOT PATCH. THE PERMANENT PATCH SHALL BE PLACED AND SEALED WITH PAVING GRADE ASPHALT WITHIN 30 CALENDAR DAYS.

CONCRETE PAVEMENT SHALL BE RESTORED CONSISTENT WITH SECTION 5-01 OF THE STANDARD SPECIFICATIONS. ANY CONCRETE PAVEMENT TRAFFIC LANE AFFECTED BY THE TRENCHING SHALL HAVE ALL AFFECTED PANELS REPLACED. CEMENT CONCRETE PAVEMENT SHALL BE RESTORED WITH AN 8-SACK MIX, USING EITHER TYPE II OR TYPE III CEMENT WITHIN 30 CALENDAR DAYS.

4. **CURBS, GUTTERS, AND SIDEWALKS**

EXISTING CURBS, GUTTERS, AND SIDEWALKS DAMAGED BY CONSTRUCTION OF THE PROJECT OR THE DEVELOPER'S/CONTRACTOR'S USE AND ACTIVITY, SHALL BE REPAIRED TO THE SATISFACTION OF THE PROPERTY OWNER, THE DISTRICT, OR THE GOVERNING ROAD AGENCY, AND TO ITS ORIGINAL CONDITION OR BETTER.

5. **NON-PAVEMENT RESTORATION WITHIN RIGHT-OF-WAY**

CULTIVATED LAWNS SHALL BE RESTORED WITH SOD. RESEEDING OF CULTIVATED LAWNS WILL NOT BE ALLOWED WITHOUT PRIOR APPROVAL OF PROPERTY OWNER AND DISTRICT. UNCULTIVATED LAWNS, PASTURE AND VACANT LAND SHALL BE RESTORED WITH A PASTURE GRASS MEETING THE FOLLOWING REQUIREMENTS.

SEED MIX. 40% PERENNIAL RYEGRASS
10% WHITE CLOVER
30% FESCUE
20% RED CREEPING FESCUE
APPLY AT THE RATE OF 100 POUNDS PER ACRE

MULCH SILVA FIBER MULCH APPLIED AT 1500 TO 2000 POUNDS PER ACRE.

FERTILIZER COMMERCIAL MIX 10/20/20 OF NITRATE, PHOSPHATE AND POTASH APPLIED AT RATE OF 450 POUNDS PER ACRE.

6. **FINAL UTILITY ADJUSTMENT TO FINISH GRADE**

ALL UTILITY COVERS, WHICH ARE LOCATED ON PROPOSED ASPHALT ROADWAYS, SHALL BE TEMPORARILY PLACED AT SUB-GRADE ELEVATION PRIOR TO PLACING CRUSHED SURFACING MATERIAL. FINAL ADJUSTMENT OF ALL COVERS AND ACCESS ENTRIES SHALL BE MADE FOLLOWING FINAL PAVING BY SAWCUTTING THE PAVEMENT AROUND LIDS AND COVERS. OPENING SHOULD NOT BE LARGER THAN 12 INCHES BEYOND THE RADIUS OF THE COVER. DEVELOPER/CONTRACTOR SHALL THEN REMOVE BASE MATERIAL SURFACING COURSE, AND FRAME, ADD RAISING BRICKS, AND REPLACE FRAME AND COVER TO FINISH GRADE. FILL AND MECHANICALLY COMPACT AROUND THE STRUCTURE AND FRAME WITH CRUSHED SURFACING MATERIAL. FINISHED SURFACING SHALL BE TWO, 2-INCH COURSES OF ASPHALT CONCRETE SURFACING, COMPACTED AND SEALED TO PROVIDE A DENSE, UNIFORM SURFACE. FINAL ADJUSTMENT OF ALL COVERS AND ACCESS ENTRIES SHALL BE COMPLETED WITHIN 30 DAYS OF FINAL PAVING.

7. **FINAL CLEANUP**

THE DEVELOPER/CONTRACTOR SHALL CLEANUP ALL ADJACENT AREAS IN COMPLIANCE WITH SECTION 1-04.11 OF THE STANDARD SPECIFICATIONS. STREETS AND ROADWAYS SHALL BE CLEANED AND SWEPT BOTH DURING AND AFTER THE INSTALLATION WORK. DISTURBED SOILS SHALL BE FINAL GRADED, SEEDED, AND MULCHED AFTER INSTALLATION OF THE WATER MAIN. IN LIMITED AREAS, SEEDING AND MULCHING BY HAND, USING APPROVED METHODS, WILL BE ACCEPTABLE. DITCH LINES WITH ERODIBLE SOIL OR SUBJECT TO RAPID FLOWS MAY REQUIRE SEEDING, JUTE MATTING, NETTING, OR ROCK LINING TO CONTROL EROSION. ANY SILTING OF DOWNSTREAM DRAINAGE FACILITIES, WHETHER DITCHES OR PIPE AND CATCH BASINS, WHICH RESULTS FROM THE WATER MAIN INSTALLATION SHALL BE CLEANED OUT AND THE WORK SITE RESTORED TO A STABLE CONDITION AS PART OF SITE CLEANUP.

8. **TRAFFIC CONTROL**

THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR INTERIM TRAFFIC CONTROL DURING CONSTRUCTION ON OR ALONG TRAVELED COUNTY ROADWAYS. TRAFFIC CONTROL SHALL FOLLOW THE GUIDELINES OF SECTION 1-07.23 OF THE STANDARD SPECIFICATIONS. ALL BARRICADES, SIGNS, AND FLAGGING SHALL CONFORM TO THE REQUIREMENTS OF THE MUTCD MANUAL. SIGNS SHALL BE LEGIBLE AND VISIBLE AND SHOULD BE REMOVED AT THE END OF EACH WORKDAY IF NOT APPLICABLE AFTER CONSTRUCTION HOURS.

WHEN ROAD CLOSURES CANNOT BE AVOIDED, THE DEVELOPER/CONTRACTOR SHALL POST "TO BE CLOSED" SIGNS A MINIMUM OF FIVE DAYS PRIOR TO THE CLOSING. THE TYPES AND LOCATIONS OF THE SIGNS SHALL BE SHOWN ON A DETOUR PLAN. A DETOUR PLAN MUST BE PREPARED AND SUBMITTED TO THE DISTRICT'S FIELD REPRESENTATIVE AND APPROVED BY THE GOVERNING ROAD AGENCY PRIOR TO CLOSING ANY ROADWAYS. IN ADDITION THE DEVELOPER/CONTRACTOR MUST NOTIFY IN WRITING ALL LOCAL FIRE, SCHOOL, LAW ENFORCEMENT AUTHORITIES, METRO TRANSIT, AND ANY OTHER AFFECTED PERSONS AS DIRECTED BY THE DISTRICT'S FIELD REPRESENTATIVE AT LEAST FIVE DAYS PRIOR TO THE ROAD CLOSURE.

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			REVISIONS

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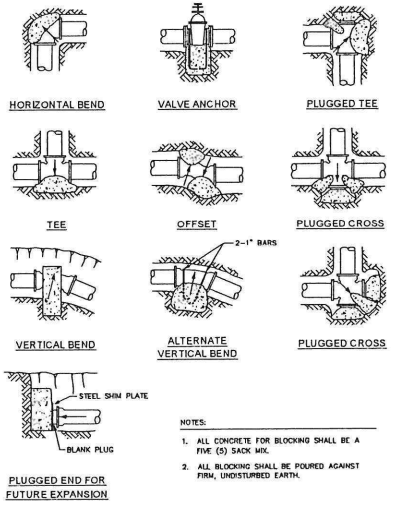
SOOS CREEK WATER
& SEWER DISTRICT

WATERMAIN EXTENSION
PROJECT NAME HERE
MATERIALS & SURFACE RESTORATION

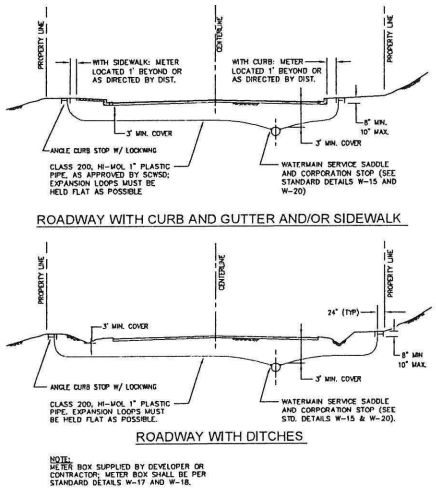
BASE MAP

SHEET 3 OF 4

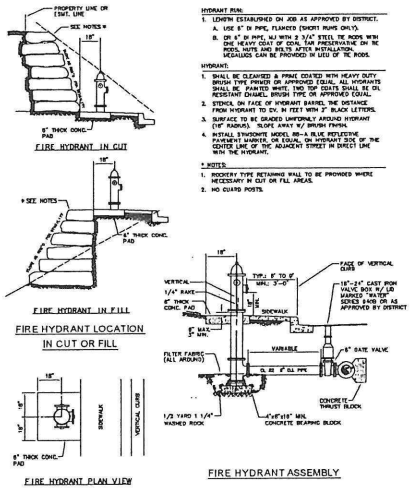
DRAWING FIG. WP-3



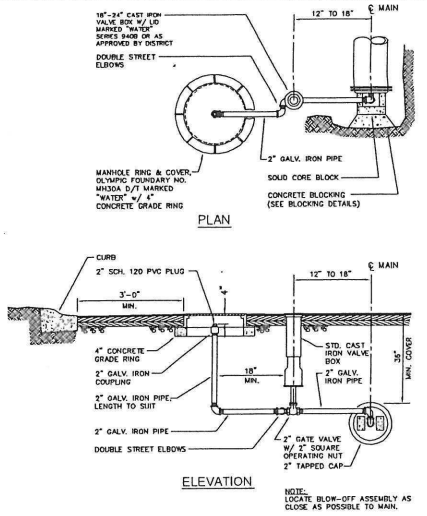
W 1 CONCRETE BLOCKING DETAIL
NTS



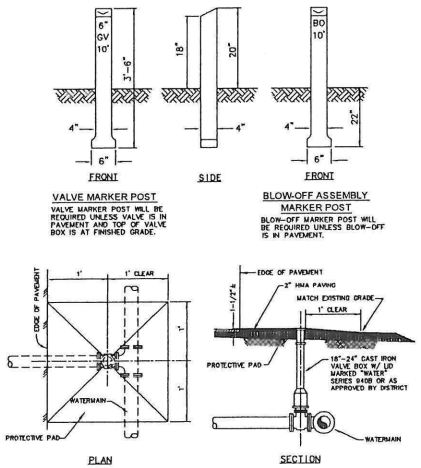
TYPICAL ROADWAY SECTIONS FOR RESIDENTIAL SUBDIVISIONS
W 2
NTS



FIRE HYDRANT ASSEMBLY-VERTICAL CURB
W 5
NTS

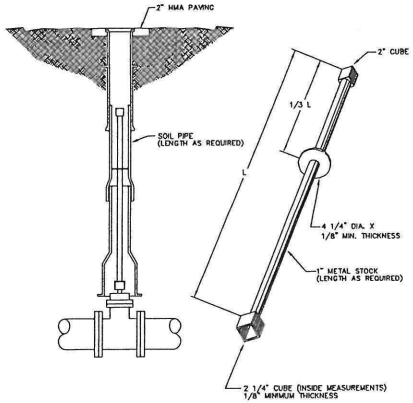


W 8 2" BLOWOFF ASSEMBLY-IN PAVING
NTS



NOTE:
MARKER POST SHALL BE PAINTED WITH 2 COATS OF WHITE PAINT, LETTERS SHALL BE 2" HIGH AND STENCILED IN BLACK PAINT. MARKER POST SHALL BE LOCATED 10 FT. (MIN.) AWAY FROM EDGE OF ROAD WAY.

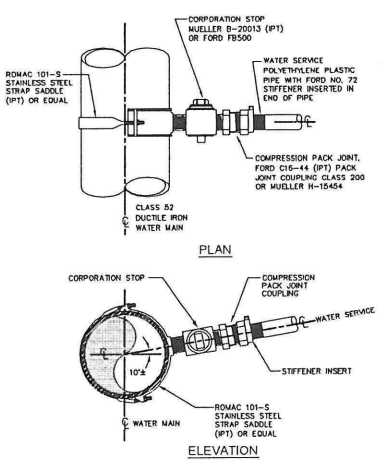
VALVE BOX PROTECTION PAD AND MARKER POST
W 13
NTS



NOTES:
LENGTH AS REQUIRED TO PUT OPERATING NUT TWO (2) FEET FROM SURFACE. EXTENSIONS ARE REQUIRED WHEN THE VALVE NUT IS MORE THAN FOUR (4) FEET BELOW FINISHED GRADE. EXTENSIONS ARE TO BE A MINIMUM OF TWO (2) FEET LONG. ONE EXTENSION IS TO BE USED PER VALVE.

ALL EXTENSIONS ARE TO BE MADE OF STEEL, SIZED AS NOTED, AND PAINTED WITH TWO (2) COATS OF METAL PAINT.

VALVE OPERATING NUT EXTENSION
W 14
NTS



NOTES:
1. SERVICE LINE FITTINGS: ALL FITTINGS SHALL BE CAST FROM WATER WORKS BRASS CONFORMING TO C800.
2. MUNICIPAL SERVICE PIPE: IRON PIPE SIZE ID, ASTM D-2239, SIDR 7, PE 3408 (HI-MOL PLASTIC) WITH 18 GAUGE TRACER WIRE.

1" WATER SERVICE CONNECTION
W 15
NTS

NOTE:

THIS IS A SAMPLE SHEET ONLY. THE DEVELOPER SHALL USE THE APPROPRIATE STANDARD DETAILS FOR EACH SPECIFIC PROJECT.

NO.	BY	DATE	DESCRIPTION
			REVISIONS

DATE APPROVED
PRINCIPAL APPROVAL
DESIGN
DRAWN
CHECKED
JOB NO.

OPTIONAL ENGINEER NAME AND LOGO HERE

SCALE HORIZ.
VERT.
DES. FLD. BK. NO. PG.
CST. FLD. BK. NO. PG.

SOOS CREEK WATER & SEWER DISTRICT

WATERMAIN EXTENSION
PROJECT NAME HERE
STANDARD DETAILS

BASE MAP
SHEET 4 OF 4
DRAWING FIG. WP-4

7. SEWER DESIGN:

A. DESIGN CRITERIA

1. Comply with current Soos Creek Water & Sewer District approved Comprehensive Sewerage Plan and all amendments thereto.

2. Verify existing sewer main facility locations, sizes and type of pipes, and feasibility of use.

3. Utilize the aerial base map data to determine the sewer service area requirements.

4. Minimum separation between sewer and water shall be according to the Washington State Department of Ecology (DOE) requirements.

5. Minimum depth of manholes shall be 8 feet in public right-of-ways and other paved traffic areas; or 6 feet in non-traffic easements.

6. Pipe shall be PVC or D.I. Ductile iron pipe shall be used for all slopes greater than 20% and for sewer 18 feet and deeper.

7. Minimum slope on all 8-inch sewer lines shall be 0.4% (0.004). Minimum slope on all dead end lines shall be 1.0%. All other minimum slopes shall be per DOE requirements.

8. All main line sewers shall terminate with a manhole.

9. Main line sewers shall be extended to the boundaries of plat or commercial development as required for future connections.

10. Main line sewers shall be a minimum of 8-inches in diameter. Maximum design capacity for all sanitary lines shall not exceed d/D - 0.8.

11. According to King County Road or city standards, location for sewer main lines shall be 5 feet South and 5 feet West of street centerline (other locations subject to District, King County and/or city approvals). Sewer mains shall be located to not cross under storm detention vaults.

12. Minimum cover on all sewer main lines shall be 7 feet in public right-of-ways and other paved traffic areas and 5 feet on easements (out of paved areas).

13. Maximum distance between manholes shall be 400 feet.

14. Pipe size, length and slopes of all main lines shall be shown on the profile.

15. Sewer mains shall maintain minimum 10 feet separation from power vaults, hand holes and light standards.

16. ALL SEWER LINES shall be subject to television testing for conformance to the District's standard specifications. Final acceptance of SEWERS will be subject to the District's Resolution No. 1904-S.

SEWER STUB SERVICES

1. All stub services shall be 6-inch minimum diameter and terminate at the property and/or easement line with a 6-inch cap, or 10 feet past at option of Developer/Contractor. (Install TEE at property line/or easement line as directed.)

2. Minimum cover shall be 5 feet at the property line, or deeper, if required to provide sewer service and/or proper clearance from other utilities.

3. Minimum slope on stub services shall be 2%.

4. Each lot/unit shall have a single side sewer stub unless the District issues a special permit for double side sewer.

5. For one/two units, the side sewer stub shall connect directly to the sewer main with a tee (or to a manhole).

6. For commercial buildings, schools, and apartments, the side sewer stub shall connect directly to a manhole.

7. Provide one stub to each tract for OFFSITE sewers required in paved areas, and stubs for future lots shall be extended out from under any paved areas.

8. Maximum 6-inch side sewer length shall be 200 feet with a surface cleanout at 100 foot intervals and at the end.

9. Puget Sound Energy vaults, hand holes and light standards shall be located no closer than 10 feet from sewer stub services.

10. Refer to Soos Creek Water and Sewer District current side sewer policy for other side sewer requirements.

ALTERNATIVE SEWER SYSTEM

1. It is the District's policy that transporting sewage by gravity is the best system. Alternative pressure systems will be permitted only in those circumstances when a gravity system would be impractical, unreasonably expensive or otherwise infeasible.

2. A pre-design report, with system analysis to justify the installation of an alternative system, must be submitted prior to design. Approval of an alternative system must be given by the District's Board of Commissioners.

3. The District has selected the grinder pump pressure system as most suitable for its needs and has standardized on the "Environment One" grinder pump for all installations.

4. All pipe and fittings for the alternative system shall be High Density Polyethylene (HDPE). See Section C - Materials.

5. HDPE pipe location shall be identified by installation of a 16-gauge solid tracer wire attached to top of pipe and by "SEWER" warning tape installed 18 inches above the

pipe.

6. Grinder Pump Sewer stubs shall be as detailed on the Standard Details and Sewer Construction Provisions.

7. Minimum cover on alternative pressure mains shall be minimum 4 feet (or as required to provide minimum clearance from water main and other utilities), or as directed by the District.

B. CONSTRUCTION PROVISIONS

1. STANDARD SPECIFICATIONS

All work, materials and testing shall conform to the standards of Soos Creek Water & Sewer District and the "Standard Specifications for Road, Bridge, and Municipal Construction", current edition, as prepared by the Washington State Department of Transportation, and hereinafter referred to as the "Standard Specifications," except as herein modified.

2. TRENCH EXCAVATION, BEDDING AND BACKFILL

All work within the right-of-way shall comply with all pertinent permits, the governing agency's current road standards, and the Standard Specifications. All material from clearing and grubbing shall be hauled to an approved waste disposal site provided by the Developer/Contractor.

When trenching through existing pavement, the pavement shall be cut on a neat-line by saw cutting. Trench sides shall be kept as vertical as possible given the soil conditions. Compaction and restoration shall be done as detailed below and immediately after the trench backfill is placed, so as to cause the least disruption to traffic. All pavement shall be cut 1 foot outside the edge of the trench on each side.

Any trench exceeding four feet in depth shall be provided with adequate safety systems meeting the requirements of the Washington State Industrial Safety and Health Act (WISHA), Chapter 49.17 RCW, and all regulations adopted pursuant thereto. The Developer/Contractor shall have a structural engineer review and stamp any and all shoring plans and calculations. The Developer/Contractor shall be responsible for worker safety and the District and the District's Engineer assume no responsibility.

When native material at the trench bottom is suitable for pipe bedding, the bottom shall be hand finished to grade so that the pipe will have uniform support along the barrel and bell. After the pipe is in place, additional hand selected native material meeting the requirements for bedding material shall be placed and tamped around the pipe for a minimum of 4 inches above the crown of the pipe.

When native material at the trench bottom is stony or otherwise non-uniform, the trench shall be over-excavated a minimum of 6 inches below the specified grade and a layer of pipe bedding material shall be furnished and placed to the specified grade. After the pipe is in place, additional hand selected native material meeting the requirements for bedding material shall be placed and tamped around the pipe for a minimum of 4 inches above the crown of the pipe.

If the native material at the trench bottom is unsuitable for foundation purposes or will have difficulty providing uniform bearing for the pipe, such material shall be removed and replaced with a minimum of 6 inches of compacted foundation material.

The bedding material shall be carried up evenly on both sides of the pipe simultaneously in approximately 6-inch layers and each layer thoroughly compacted with appropriate tools in such manner as to avoid injuring or disturbing the completed pipeline. All

bedding and native material shall be stored away from the edges of excavation and off the paved roadway and shoulder.

All trench backfill shall be mechanically compacted to 95% of the maximum density within the right-of-way and in all areas (paved and unpaved) where streets, roadway shoulders, driveways, sidewalks, or parking lots will be constructed or reconstructed over the trench except for trenches over 8 feet in depth. When the trench depth exceeds 8 feet, trench backfill up to 4 feet from the top of the trench shall be mechanically compacted to 90% of the maximum density. The remaining top 4 feet of the trench shall then be mechanically compacted to 95% of the maximum density. In unpaved areas and other areas not subject to vehicular traffic, trench backfill from the pipe to within 3 feet of the surface shall be compacted to 90% of the maximum density. The upper 3 feet shall be compacted to 95% of the maximum density.

All densities shall be determined by testing per the modified proctor method, ASTM D1557. The Developer/Contractor shall be responsible for providing density test reports certified by a professional engineer registered in the State of Washington. A minimum of one test shall be taken within every 500 feet of trench length and at depths up to 50% of trench depth, or as directed by the District's field representative or the governing road agency. Compaction of laterals or service line trenches shall be tested where directed by the District's field representative or the governing road agency. Testing of CDF, when used as required by the governing road agency, shall be in accordance with ASTM 04832.

Trench backfill shall be placed in uniform loose layers no more than 12 inches thick and mechanically compacted as specified. In any trench where the specified compaction cannot be achieved with native backfill, the top 4 feet shall be replaced and compacted to 95% of the maximum density with imported bank run gravel. The District's field representative reserves the right to request a compaction test at any time on the backfill material.

In cuts transverse to the road alignment and at all utility crossings, the entire trench shall be backfilled with crushed surfacing. Backfill shall be placed and mechanically compacted in 12-inch maximum lifts.

After backfill and compaction, an immediate cold mix patch shall be placed and maintained in a manner acceptable to the governing road agency until replaced with permanent surfacing.

All pipe and fittings shall be laid "in the dry" unless otherwise approved by Engineer. Trench excavations shall be dewatered by using well point systems, sumps with pumps or other methods approved by the District. Dewatering systems shall be used in accordance with good standard practice and shall be efficient enough to lower the water level in advance of the excavation and maintain it continuously to keep the trench bottom and sides firm and dry. Developer/Contractor shall submit the dewatering plan to the District for review at least 10 days prior to commencing any dewatering work. All dewatering effluent shall be routed through a dewatering pond prior to release.

Groundwater shall be controlled such that softening of the bottom of excavations or formation of "quick" conditions or "boils" during excavation shall be prevented and no soil shall be eroded into the excavation from the sides of excavation. Dewatering systems

shall be designed and operated so as to prevent removal of the natural soils. The Developer/Contractor shall at all times have on hand sufficient pumping equipment and machinery in good working condition for all ordinary emergencies, including power outages, and shall have available at all times competent workers for the operation of said equipment.

Developer/Contractor shall control surface runoff so as to prevent entry or collection of water in excavations and shall maintain the undisturbed state of the foundation soils and allow the placement of any backfill to the required density. The release of groundwater to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill, and prevent flotation or movement of structures and pipelines.

Developer/Contractor shall be responsible for complying with all permit requirements and provisions for monitoring and managing water discharged from the excavation.

3. CONNECTION TO EXISTING SEWER SYSTEM

Connections to existing lines shall be made only with the written approval of Soos Creek Water & Sewer District. The Developer/Contractor shall notify the District's field representative and other utilities at least 48 hours in advance of any construction and make the necessary arrangements with the District's field representative for the connection to the existing sewer system. The Developer/Contractor shall furnish all material, equipment and labor necessary for making the connection under the supervision of the District. The 48-hour notice requirement shall not count Saturdays, Sundays, and holidays.

Work shall not be started until all of the material, equipment and labor necessary to properly complete work is assembled on the site. Once work is started on a connection, it shall proceed continuously without interruption and as rapidly as possible until the connection is completed. Before ordering materials for any connection to an existing manhole, Developer/Contractor shall excavate the manhole and verify outside diameter of all pipes for determining types of fittings to be used. All work shall be coordinated with the District's field representative. The existing sewers shall remain in service at all times.

Connections to sanitary sewer manholes shall be made using a sand collar, a concrete coupling or a kor-n-seal boot. The pipe to manhole connection shall be watertight. Any leaks in the couplings or other areas created while connecting to the existing manhole shall be sealed with Strata Tech ST-520 Injection Resin or approved equal.

Developer/Contractor shall re-channel existing manholes as necessary to smoothly direct the flow into the existing system.

All water and/or construction debris shall be removed from new sewers and not be permitted to enter the existing system. The Developer/Contractor shall be responsible for flushing out and cleaning any existing sewers into which gravel, rocks or other debris has entered as a result of the Developer's/Contractor's operations, and shall pay for repair to lift stations or other facilities damaged by such debris. All flushing water shall be pumped from upstream manholes or sewer lines and shall not be allowed to enter the existing sewer.

4. SEPARATION OF UTILITIES

Minimum separation between sewer and water mains shall conform to Section C1-9.1 of the "Criteria for Sewage Works Design", current edition, as published by the Department of Ecology. Minimum separation between other utilities shall be 6 inches with a sand cushion.

Puget Sound Energy vaults, hand holes and light standards shall be located no closer than 10 feet from any sewer mains and stub services. Developer/Contractor shall be responsible for coordination of vaults, hand holes, and light standards with the sewer stub services. No construction shall start until the Developer/Contractor has furnished the District with a work sketch from Puget Sound Energy or a signed hold harmless agreement (form supplied by the District) is provided..

5. THRUST BLOCKING

When digging near fittings on existing pipelines, temporary blocking shall be installed to prevent blowouts. Blocking shall allow for any connections to the fitting to be removed without damaging the fitting. Thrust blocking shall conform to the standard details. Where unfavorable ground conditions are encountered, special blocking may be required as directed by the District in the field.

6. SEWER MAIN TESTING

Gravity sewers and appurtenances shall be tested after backfilling by the low-pressure air method in accordance with Section 7-17.3(2) of the Standard Specifications, except where the ground water table is such that the District may require the infiltration test. Final acceptance of the sewer main installation will be subject to the District's Resolution No. 1904-S, which allows a maximum ponding depth of 3/4-inch. In the event of conflicts between the standards established in Resolution No. 1904-S and the standards specified in Section 7-17.3(2) of the Standard Specifications, the standards of the Resolution will take precedence.

7. REPAIR OF PIPELINE FAILURES

Broken or otherwise defective pipe shall be removed and replaced. Repair bands or clamps shall not be used to repair broken pipe.

8. JACKED CROSSING

At locations as required by the District or governing road agency, or as proposed by the Developer/Contractor, sewer main crossings of arterial streets shall be made by jacking, driving, or auguring a steel casing pipe beneath the surface. Alignment and grade of casings furnished shall be such that no additional fittings are necessary to make the connection. If the casing does not meet this requirement, it shall be abandoned by filling the casing with moist sand and a new casing installed to meet the line and grade requirements. No open excavation shall be made closer than 6 feet from the edge of pavement.

Diameter of casing pipe shall be sufficient to allow installation of the sewer. Wall thickness shall be sufficient to withstand installation force and highway loading with a minimum thickness of ¼-inch. After the sewer main has been adjusted to grade, moist sand shall be tamped into the casing pipe so that all voids will be filled. Manufactured casing spacers that prohibit movement of the pipe in any direction within the casing may be used in lieu of filling the void between the sewer main and the casing wall with sand.

10. EXISTING UTILITIES

Existing utilities shown on any reference drawings provided by the District have been plotted from the best information available to the District. The Developer/Contractor shall be responsible for locating all existing utilities well enough in advance of the excavation to prevent damage during construction. The Developer/Contractor shall be responsible for any damage resulting from his operations on the project.

11. WARRANTY PERIOD

The Developer making the application for a line extension shall be responsible for the materials and for satisfactory operation of the facility for a period of one year from the date of acceptance of the completed project and the bill of sale to the District.

C. MATERIALS

1. PIPE

Gravity sewers and services shall be constructed of PVC pipe conforming to Section 9-05.12 of the Standard Specifications unless required otherwise by the District. PVC gravity sewer main and PVC gravity sewer service pipe shall be considered flexible conduit. PVC compound shall meet the requirements of ASTM D 1784 for Class 12454-B PVC.

Ductile iron pipe (class 52) may be used in lieu of PVC pipe provided the ductile iron pipe is lined with epoxy, polyurethane, or SewperCoat as manufactured by Kerneos Aluminate Technologies or approved equal. All linings shall be applied per the manufacturer's recommendations.

A. Lined ductile iron pipe shall have the lining applied to all exposed interior surfaces per the manufacturer's recommendations.

B. Polyurethane linings shall consist of polyisocyanate resin and polyol resin mixed at a 1:1 ratio at the time of the application and applied to a dry film thickness of 40 mils (0.040 inches). Coating thickness within the bell socket interior and on the spigot end of the pipe exterior shall be 8 mils (0.008 inches) nominal with a maximum thickness of 10 mils (0.010 inches) in order to minimize potential dimensional assembly problems. Thicker coats may be allowed provided final dimensions are within allowable tolerances after the coating. The lining shall provide an ASTM D16 Type V system.

C. Sewpercoat is a calcium aluminate mortar made of fused calcium aluminate and calcium aluminate aggregates. The lining shall be applied to a thickness of 125 mils (0.125 inches) for 12-inch and smaller diameter pipes and 3/16 inches for pipes larger than 12 inches in diameter. Cracks in the lining, other than closed hairline cracks and/or fine crazing are not acceptable. A seal coat shall be applied to any Sewpercoat lining.

D. The exterior of all ductile iron pipes shall be coated with 1 mil (0.001 inches) of bituminous paint according to ANSI/AWWA C151/A21.51.

2. SIDE SEWER SERVICES

All side services shall be constructed in accordance with the Section 7-18 of the Standard Specifications and the resolutions of the District, which are incorporated herein by reference. Side service construction shall follow the installation of main lines as closely as practical in the opinion of the District.

Contractor shall install the pipe to a minimum depth at the property line of 5 feet below the floor to be served or 5 feet below the street centerline whichever is deeper. In cases of vacant properties or properties vacant beyond 150 feet from sewer main, the side sewer shall be constructed with a minimum slope of 2% from the tee, unless otherwise approved by the District in writing.

All stub services shall terminate with a 6-inch watertight cap at the property and/or easement line, or 10 feet past at the option of the Developer. All ends of stub services shall be marked by a 12-gauge galvanized wire and a 2-inch by 4-inch timber. The wire shall extend vertically from the capped end to the ground surface and shall be attached to the timber from end to end. The timber shall extend from the capped end to a minimum of 12 inches above the ground and shall be painted traffic white with the word "sewer" stenciled on with black paint. The end of the timber shall be marked in permanent indelible ink with the length of the timber installed. Neither the wire nor 2" x 4" timber shall be secured or attached to the sewer pipe.

All side services shall be tested for acceptance at the same time the main line sewer is tested for acceptance.

All 6-inch stubs into manholes to match crowns.

3. MANHOLES

Manholes shall be precast concrete unless required otherwise by the District and shall conform to Standard Plan B-23A except with eccentric reducing cones. Poured in place bases shall not be allowed. Maximum allowable dimension from the break of cone to top of casting shall be 20 inches.

Internal concrete channels, benches and fillets shall be formed using Low Shrinkage Class 4000D 5 sack mix with pea gravel to 5/8-inch (max size) aggregate conforming to Section 6-02.3 of the Standard Specifications. The water-cement ratio shall not exceed 0.38. A water-reducing admixture shall be included in the mix.

Ladder rungs shall be 1-inch diameter deformed bar, galvanized or polypropylene safety-type steps meeting the requirements of ASTM C478, AASHTO M-199, and all WISHA and OSHA specifications. Polypropylene steps, conforming to ASTM D 4101, shall be injection molded around a 1/2-inch ASTM A 615 Grade 60 steel reinforcing bar.

Covers shall be Olympic Foundry Model No. MH30A D/T or approved equal and shall be 24-inch diameter cast iron or ductile iron with three 5/8-inch diameter x 1 1/2-inch long countersunk N.C. stainless steel socket head cap screws and single 1-inch diameter lift hole located approximately 3 inches from the outside edge of the cover. Provide 5/8-inch x 2 1/2-inch stainless steel carriage bolt installed in manhole lift hole. Lids shall have a non-skid pattern cast integrally on top with the word "SEWER" cast in 3-inch raised letters. Ring and cover shall have one of the lock down bolts centered directly over the access ladder.

All manhole covers located in sidewalks or driveways shall be Olympic Foundry No. MH30A D/T Smooth Design or approved equal with locking lid and 6-inch casting ring and the word "SEWER" cast integrally on top in 3-inch raised letters.

Manhole sections shall have rubber gasket joints conforming to ASTM C 443. All manhole joints and pick holes shall be sealed from the inside and the outside with a sand and Portland cement concrete mix.

Contractor shall provide an 8-inch thick by 6-foot wide asphalt or concrete collar around the rims of all manholes located in unimproved areas, landscaped areas, easements, and all other unpaved areas. The asphalt or concrete collar shall slope away from the manhole rim.

4. IMPORTED GRAVEL MATERIAL

Pipe bedding shall conform to Section 9-03.12(3) of the Standard Specifications. Foundation gravel shall conform to Section 9-03.17 of the Standard Specifications. Bankrun gravel for trench backfill shall conform to Section 9-03.19 of the Standard Specifications, except at transverse cuts to the road alignment or at utility crossings, which shall be backfilled with crushed gravel surfacing or as required by the governing road agency. Developer/Contractor shall be responsible for removing and disposing of any excess excavated soil material at an approved disposal site.

5. CRUSHED GRAVEL SURFACING

Crushed gravel surfacing shall conform to the requirements of Section 9-03.9(3) of the Standard Specifications.

6. ASPHALT CONCRETE PATCH AND OVERLAY

Asphalt concrete surfacing for patching and overlay shall conform to Section 5-04.2 and 5-04.3 of the Standard Specifications. Asphalt concrete surfacing shall meet Class ½-inch, P.G, 58-22 grading requirements, or as required by the governing road agency.

D. SURFACE RESTORATION

1. OFFSITE SURFACE RESTORATION

All paved or unpaved surfaces or easements shall be restored to a condition equal to or better than that which existed prior to construction. All trees, shrubs and or other improvements shall be saved, relocated, or replaced by Developer/Contractor unless noted otherwise on the drawings or in the easement stipulations. Restoration shall be to the satisfaction of the District, property owner, or governing road agency. Preconstruction photographs shall be used to approve restoration.

2. ROAD SHOULDER RESTORATION WITHIN RIGHT-Of-WAY

The existing surfacing of disturbed asphalt shoulders shall be removed to a minimum depth of 6 inches below original street grade to provide for placement of the new subgrade and paving. The subgrade shall be constructed of 1-1/4-inch minus crushed surfacing base course placed to a compacted thickness of 2-1/2 inches, followed by 5/8-inch minus crushed surfacing top course placed to a compacted thickness of 1-1/2 inches. Asphalt concrete paving shall then be placed and compacted in 2-inch lifts up to a maximum 4-inch thickness to match existing pavement thickness. Minimum thickness shall be 2 inches. The shoulder shall be replaced to the existing fog line in areas where the existing asphalt shoulder is seriously disturbed, or at the discretion of the District or the governing road agency.

Restoration of gravel shoulders shall include a minimum of 1-1/2 inches of crushed surfacing top course and 2-1/2 inches of crushed surfacing base course.

3. ASPHALT SURFACE RESTORATION WITHIN RIGHT-Of-WAY

The existing asphalt surface shall be cut on a neat line by sawcutting prior to excavation to provide a continuous line. Following proper backfill and compaction of the trench, the edges of the surfacing shall be re-trimmed 12 inches wider than the excavation with straight vertical edges free from irregularities. A 1-1/4-inch minus crushed surfacing base course shall be placed to a compacted thickness of 4-1/2 inches, followed by 5/8-inch minus crushed surfacing top course placed to a compacted thickness of 2 inches.

Asphalt concrete paving shall then be placed and compacted in 2-inch lifts to match the existing thickness and grade of the original surface. Asphalt patch shall have a minimum thickness of 2 inches and a maximum thickness of 4 inches. The asphalt patch shall then be overlaid with a minimum of 1-1/2 inches compacted asphalt concrete. Asphalt overlay shall be pre-leveled as determined by the District's field representative. No overlay shall be required if the final trimmed edge of the asphalt patch does not encroach inside the fog line or, in lieu of a fog line, within 12 feet from the existing centerline of the road. The District or governing road agency reserves the right to require an overlay on any section. If the edge of the road is curb and gutter, then the asphalt patch shall extend to the edge of the curb unless indicated otherwise by the District or governing road agency. All asphalt joints shall be sealed with approved sealer. Developer/Contractor shall replace existing striping and pavement markings as required by the governing road agency.

Developer/Contractor shall maintain temporary cold or hot mix asphalt patches daily during construction to the satisfaction of the governing road agency and the District's field representative until said patch is replaced with a permanent hot patch. The permanent patch shall be placed and sealed with paving grade asphalt within 30 calendar days.

Concrete pavement shall be restored consistent with Section 5-01 of the Standard Specifications. Any concrete pavement traffic lane affected by the trenching shall have all affected panels replaced. Cement concrete pavement shall be restored with an 8-sack mix, using either Type II or Type III cement within 30 calendar days.

4. CURBS, GUTTERS, AND SIDEWALKS

Existing curbs, gutters, and sidewalks damaged by construction of the project or the Developer's/Contractor's use and activity, shall be repaired to the satisfaction of the property owner, the District, or the governing road agency, and to its original condition or better.

5. NON-PAVEMENT RESTORATION WITHIN RIGHT-OF-WAY

Cultivated lawns shall be restored with sod. Reseeding of cultivated lawns will not be allowed without prior approval of property owner and District. Uncultivated lawns, pasture and vacant land shall be restored with a pasture grass meeting the following requirements.

Seed Mix:	40% perennial ryegrass 10% white clover 30% fescue 20% red creeping fescue Apply at the rate of 100 pounds per acre
Mulch:	Silva fiber mulch applied at 1500 to 2000 pounds per acre.
Fertilizer:	Commercial mix 10/20/20 of nitrate, phosphate and potash applied at rate of 450 pounds per acre.

6. FINAL UTILITY ADJUSTMENT TO FINISH GRADE

All utility covers, which are located on proposed asphalt roadways, shall be temporarily placed at sub-grade elevation prior to placing crushed surfacing material. Final adjustment of all covers and access entries shall be made following final paving by sawcutting of the pavement around lids and covers. Opening should not be larger than 12 inches beyond the radius of the cover. Developer/Contractor shall then remove base material, surfacing course, and frame; add raising bricks; and replace frame and cover to finish grade. Fill and mechanically compact around the structure and frame with crushed surfacing material. Finished surfacing shall be two, 2-inch courses of asphalt concrete surfacing, compacted and sealed to provide a dense, uniform surface. Final adjustment of all covers and access entries shall be completed within 30 days of final paving.

7. FINAL CLEANUP

The Developer/Contractor shall cleanup all adjacent areas in compliance with Section 1-04.11 of the Standard Specifications. Streets and roadways shall be cleaned and swept both during and after the installation work. Disturbed soils shall be final graded, seeded, and mulched after installation of the sewer main. In limited areas seeding and mulching by hand, using approved methods, will be acceptable. Ditch lines with erodible soil or subject to rapid flows may require seeding, jute matting, netting, or rock lining to control erosion. Any silting of downstream drainage facilities, whether ditches or pipe and catch basins, which results from the sewer main installation shall be cleaned out and the work site restored to a stable condition as part of site cleanup.

8. TRAFFIC CONTROL

The Developer/Contractor shall be responsible for interim traffic control during construction on or along traveled county roadways. Traffic control shall follow the guidelines of Section 1-07.23 of the Standard Specifications. All barricades, signs, and flagging shall conform to the requirements of the MUTCD Manual. Signs shall be legible and visible and should be removed at the end of each workday if not applicable after construction hours.

When road closures cannot be avoided, the Developer/Contractor shall post "to be closed" signs a minimum of five days prior to the closing. The types and locations of the signs shall be shown on a detour plan. A detour plan must be prepared and submitted to the District's field representative and approved by the governing road agency prior to closing any roadways. In addition, the Developer/Contractor must notify in writing all local fire, school, law enforcement authorities, metro transit, and any other affected persons as directed by the District's field representative at least five days prior to the road closure.

E. GENERAL NOTES

1. All work shall be performed in accordance with the specifications of the Soos Creek Water & Sewer District, also referred hereinafter as "District".

2. The Developer shall furnish the District a copy of the commercial and/or subdivision plans approved by the governing agency prior to any sewer main construction.

3. Prior to constructing any sewer mains, the appropriate streets and lots shall be cleared, graded, and staked by the Developer/Contractor and all existing utilities shall be located.

4. Following sewer main construction, any revision of roadway or easement grades requiring the mains to be reconstructed shall be made at the Developer's/Contractor's expense.

5. Reconstruction shall conform to the specifications of the District. All costs for inspecting such reconstruction shall be charged to the Developer in addition to the standard charges, and shall be paid before acceptance by the District.

6. No side sewer connections shall be made to the existing system until completion of the Bill of Sale and all easements. Obtain side sewer permits from the District for each side sewer connection prior to making connection. Bill of Sale will not be processed until Puget Sound Energy has either provided a work sketch or installed their vaults, hand holes and light standards, or the Developer has provided a signed hold harmless agreement (form supplied by the District).

7. All costs of sewer main re-staking shall be paid by the Developer/Contractor.

8. Property corners shall be pinned with reference tack on curbs by the Developer/Contractor.

9. The Developer/Contractor shall notify the District at (253) 630-9900 to schedule a pre-construction meeting at the District office. After the pre-construction meeting, the Developer/Contractor shall notify the District's field representative at least 48 hours (regular working days) before starting work.

10. The Developer/Contractor shall obtain all required final inspections to meet permit requirements. Inspections must be scheduled at least 48 hours in advance.

11. Connections to existing sewer mains shall be made only with written approval of the District and only after at least 48 hours (two regular working days) advance notice.

12. Existing sewers to remain in service at all times.

13. All water and/or construction debris shall be removed from new sewers and shall not be permitted to enter the existing system.

14. Existing Manhole No. ___ shall be core-drilled and re-channeled as required to receive incoming flow from the new sewer.

F. SEWER STANDARD DETAILS

DTL. NO.	DETAIL TITLE
S-1	SPECIAL MANHOLE CUT-IN INSTALLATION (06-02-11)
S-2	MANHOLE DETAIL (06-02-11)
S-3	SURFACE CLEANOUT (MAINLINE STUB) (06-02-11)
S-4	STUB SERVICE CONSTRUCTION DETAIL (06-02-11)
S-5	STANDARD PLAN STUB SERVICE (ALTERNATE NO. 1) (06-02-11)
S-6	STANDARD PLAN STUB SERVICE (ALTERNATE NO. 2) (06-02-11)
S-7	STANDARD PLAN DOUBLE STUB SERVICE (06-02-11)
S-8	STANDARD PLAN STUB SERVICE FOR MANUFACTURED HOME (06-02-11)
S-9	SADDLE STUB SERVICE CONNECTION TO EXISTING SEWER MAIN (06-02-11)
S-10	SAFETY GRATE DETAIL (06-02-11)
S-11	PIPE ANCHOR DETAIL (06-02-11)
S-12	SACK SLOPE RETAINER (06-02-11)
S-13	STEEL SLOPE RETAINER (06-02-11)
S-14	SADDLE MANHOLE BASE DETAIL (06-02-11)
S-15	FILTER FABRIC FENCE (06-02-11)
S-16	GRINDER PUMP SERVICE LINE FOR PVC OR D.I. GRAVITY SEWER MAIN IN PUBLIC RIGHT-OF-WAY (06-02-11)
S-17	GRINDER PUMP SERVICE LINE FOR SMALL DIAMTER LOW PRESSURE SEWER SYSTEM IN PUBLIC RIGHT-OF-WAY (06-02-11)
S-18	GRINDER PUMP DOUBLE SERVICE LINE FOR LOW PRESSURE SEWER SYSTEM (06-02-11)
S-19A	TYPICAL HOUSE CONNECTION FOR GRAVITY SEWER (06-02-11)
S-19B	TYPICAL HOUSE CONNECTION ALT. – GRAVITY STUB (06-02-11)
S-19C	TYPICAL HOUSE CONNECTION ALT. – PRESSURE STUB (06-02-11)
S-19D	TYPICAL HOUSE CONNECTION CONSTRUCTION REQUIREMENTS (06-02-11)

S-19E TYPICAL HOUSE CONNECTION MATERIALS LIST (06-02-11)

S-20 SIDE SEWER CONNECTION INFORMATION (06-02-11)

S-21 SHALLOW MANHOLE DETAIL (06-02-11)

S-22 GRINDER SERVICE CONNECTION TAPPED ON EXISTING LINE (06-02-11)

S-23 MANHOLE RIM AND COVER – OFF PAVEMENT (06-02-11)

S-24 A/C WATER MAIN REPLACEMENT & SANITARY SEWER CROSSING (06-02-11)

S-25 DROP MANHOLE DETAIL (06-02-11)

S-26 BACKWATER VALVE DETAIL (06-02-11)

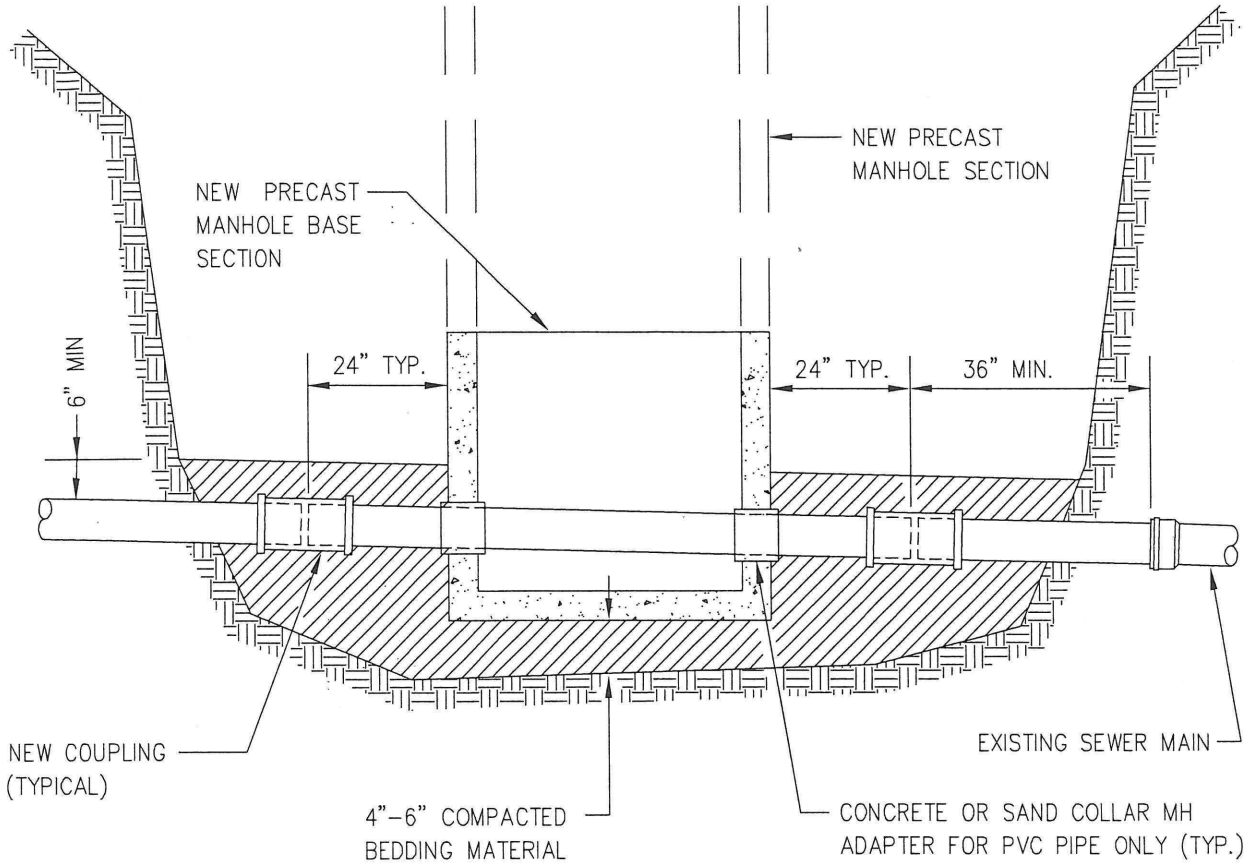
S-27 STANDARD MANHOLE DETAIL (06-02-11)

S-28 TYPICAL TRENCH DETAIL (06-02-11)

S-29 TYPICAL TRENCH DETAIL (OUTSIDE ROADWAY) (06-02-11)

S-30 SURFACE CLEANOUT (MAINLINE STUB) (06-02-11)

S-31 SEWER FORCE MAIN TRACER WIRE RISER (06-02-11)



ELEVATION

INSTALLATION PROCEDURES:

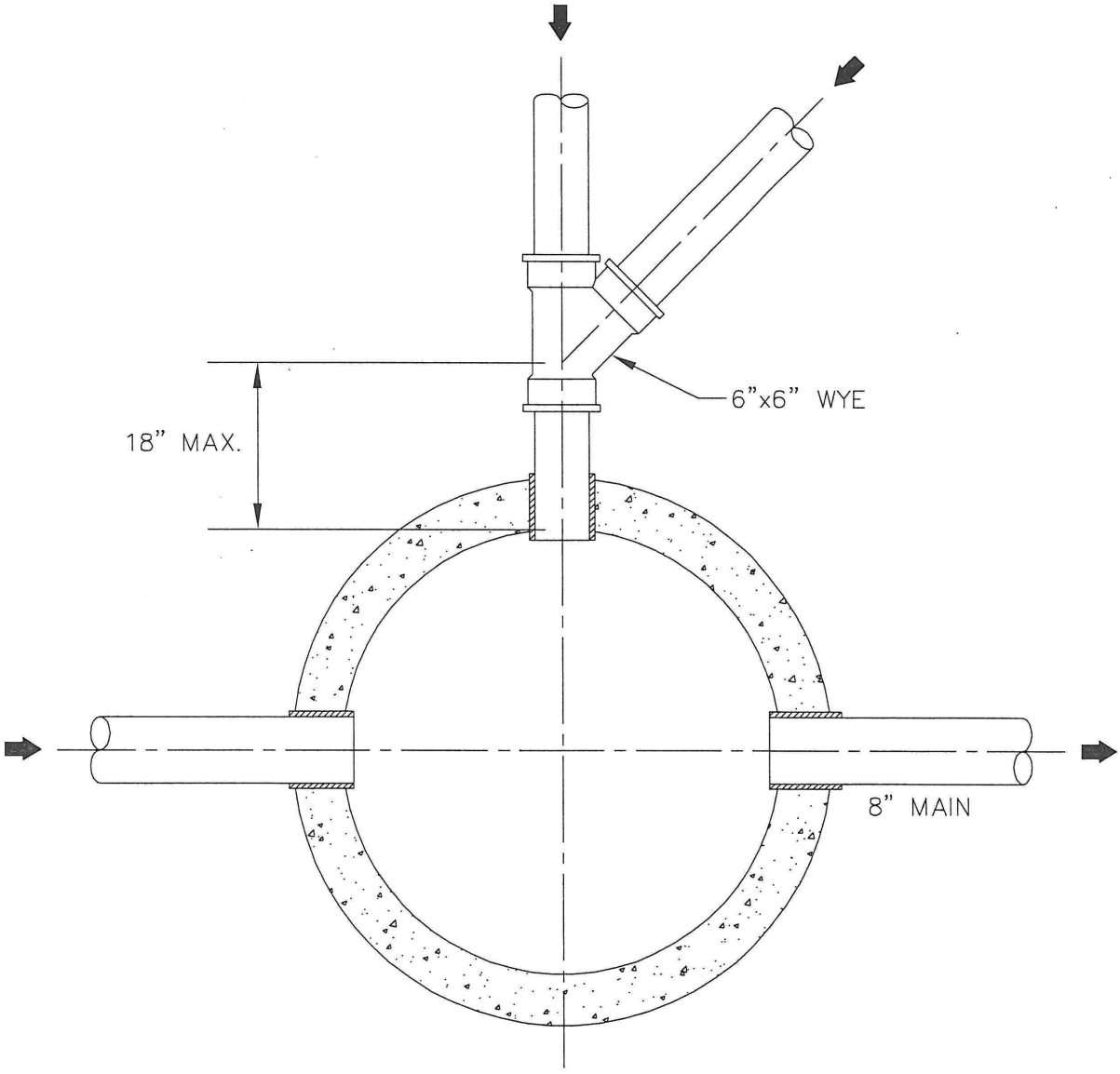
1. THE CONTRACTOR SHALL TEMPORARILY PLUG LINE AT UPSTREAM MANHOLE UNDER DISTRICT SUPERVISION. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE BY–PASS SEWAGE PUMPING AS REQUIRED.
2. EXPOSE AND REMOVE EXISTING PIPE.
3. PLACE EXISTING PIPE WITH NEW CONCRETE OR SAND COLLARS THROUGH NEW MANHOLE BASE SECTION. IF CUT PIPE SECTION CONTAINS A PIPE BELL, REPLACE PIPE WITH A NEW STRAIGHT SECTION OF PIPE, OR AS DIRECTED BY THE DISTRICT.
4. SET MANHOLE AND PIPE IN PLACE TO PROPER ALIGNMENT AND GRADE.
5. RECONNECT PIPE WITH COUPLINGS (ROMAC, MJ SLEEVE, OR PVC SLIP COUPLING).
6. CHANNEL MANHOLE PER DISTRICT STANDARDS.
7. REMOVE PIPE INSIDE MANHOLE.

SOOS CREEK WATER & SEWER DISTRICT

SPECIAL MANHOLE CUT-IN INSTALLATION

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME	DWG. NO.
M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-1	S-1



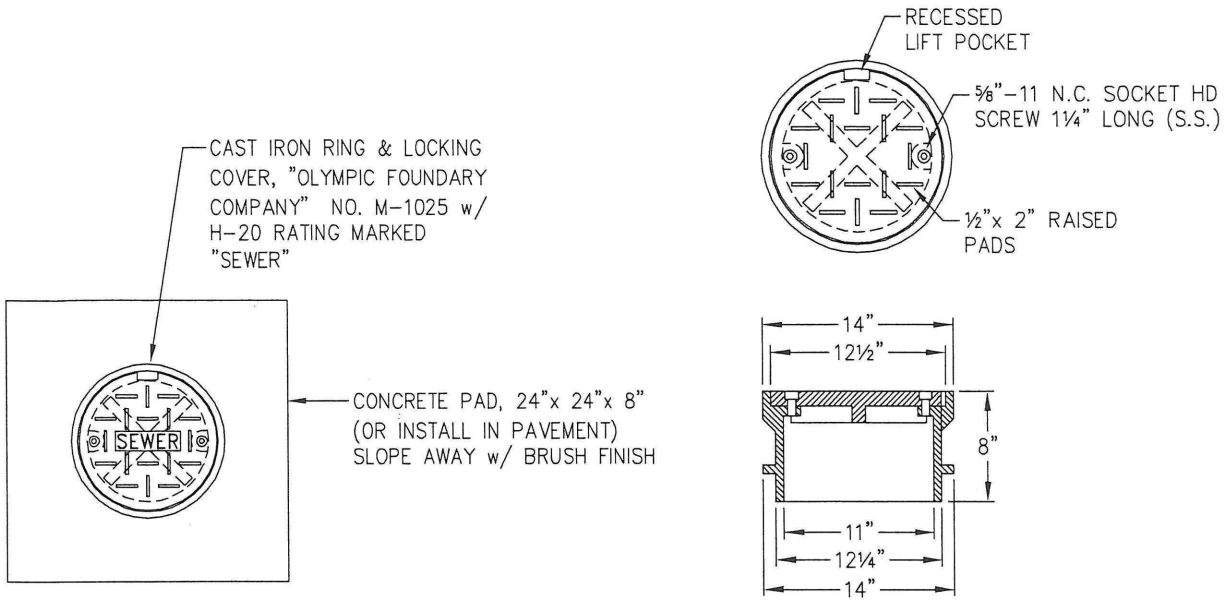
PLAN VIEW

MANHOLE DETAIL

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

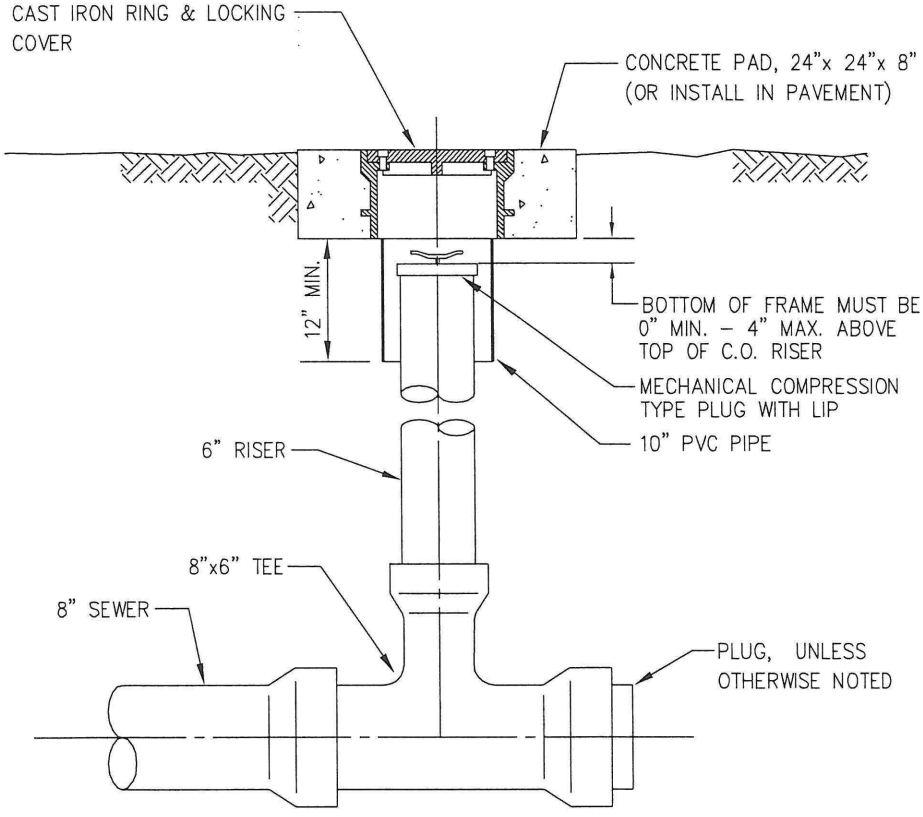
FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-2

DWG. NO. S-2



PLAN

11"x 8" LOCKING CLEANOUT

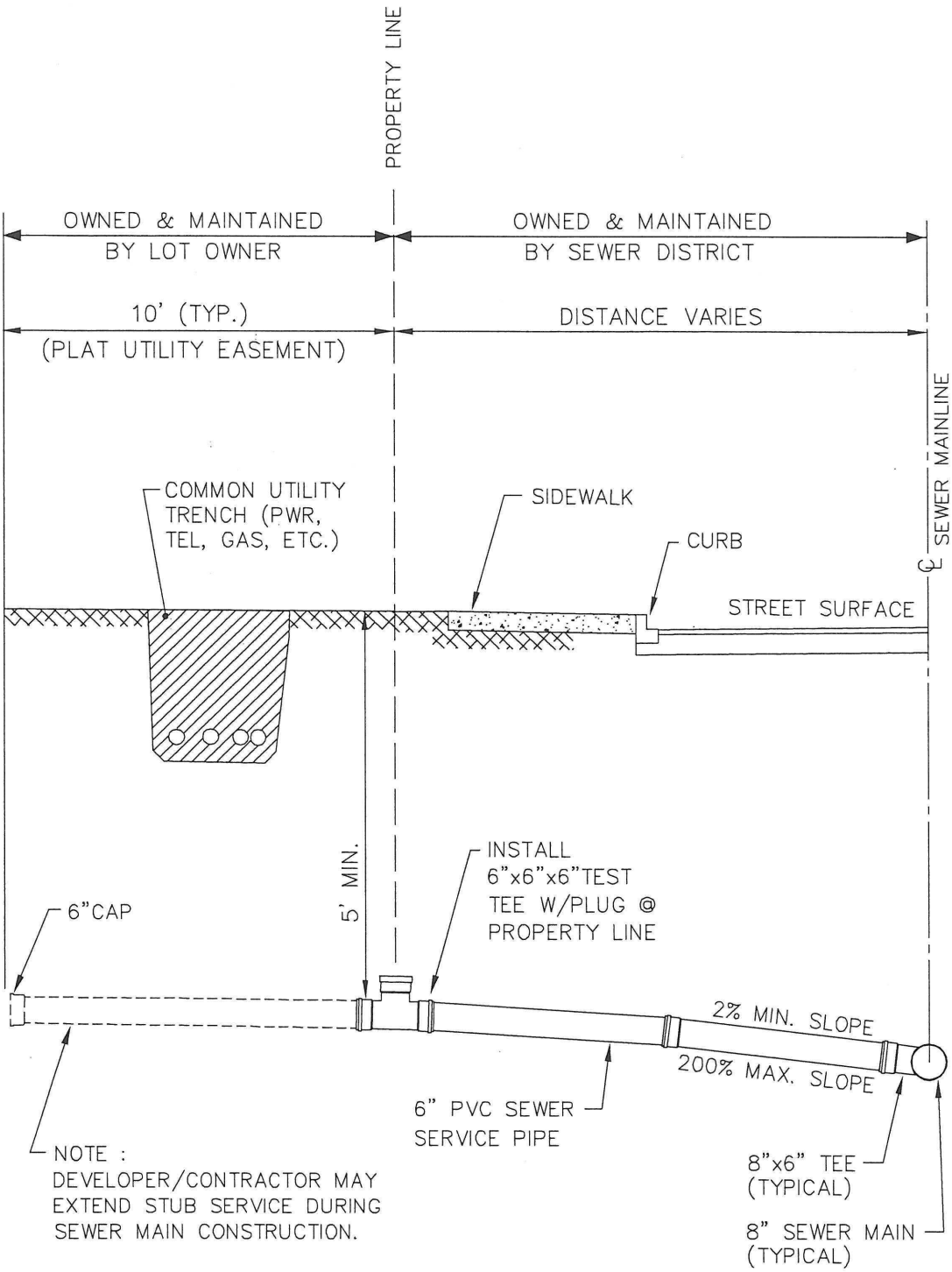


ELEVATION

SURFACE CLEAN OUT
(MAINLINE STUB)

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME	DWG. NO.
M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S–3	S-3



ELEVATION

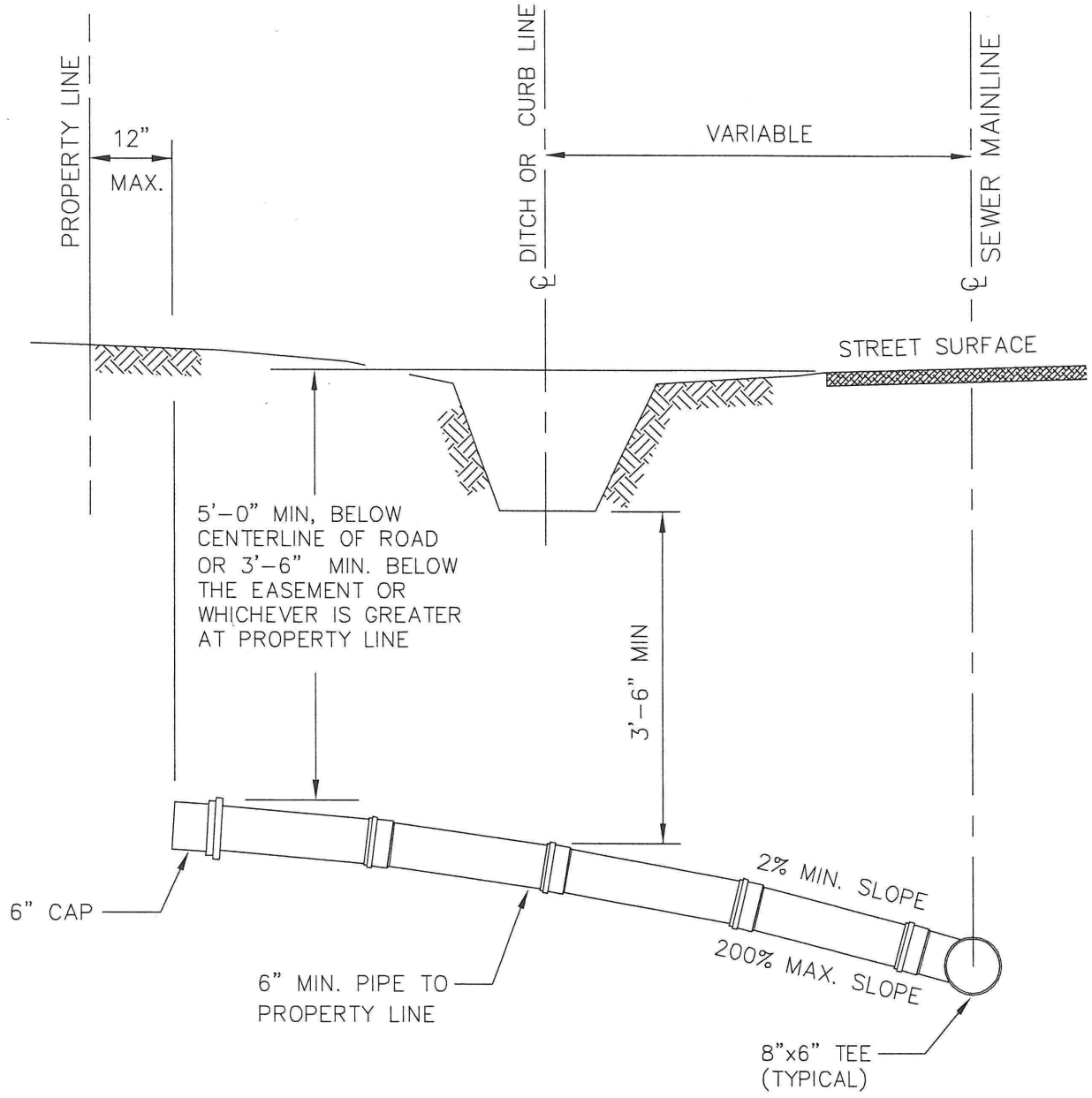
SOOS CREEK WATER & SEWER DISTRICT

STUB SERVICE CONSTRUCTION DETAIL

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-4

DWG. NO. S-4



ELEVATION

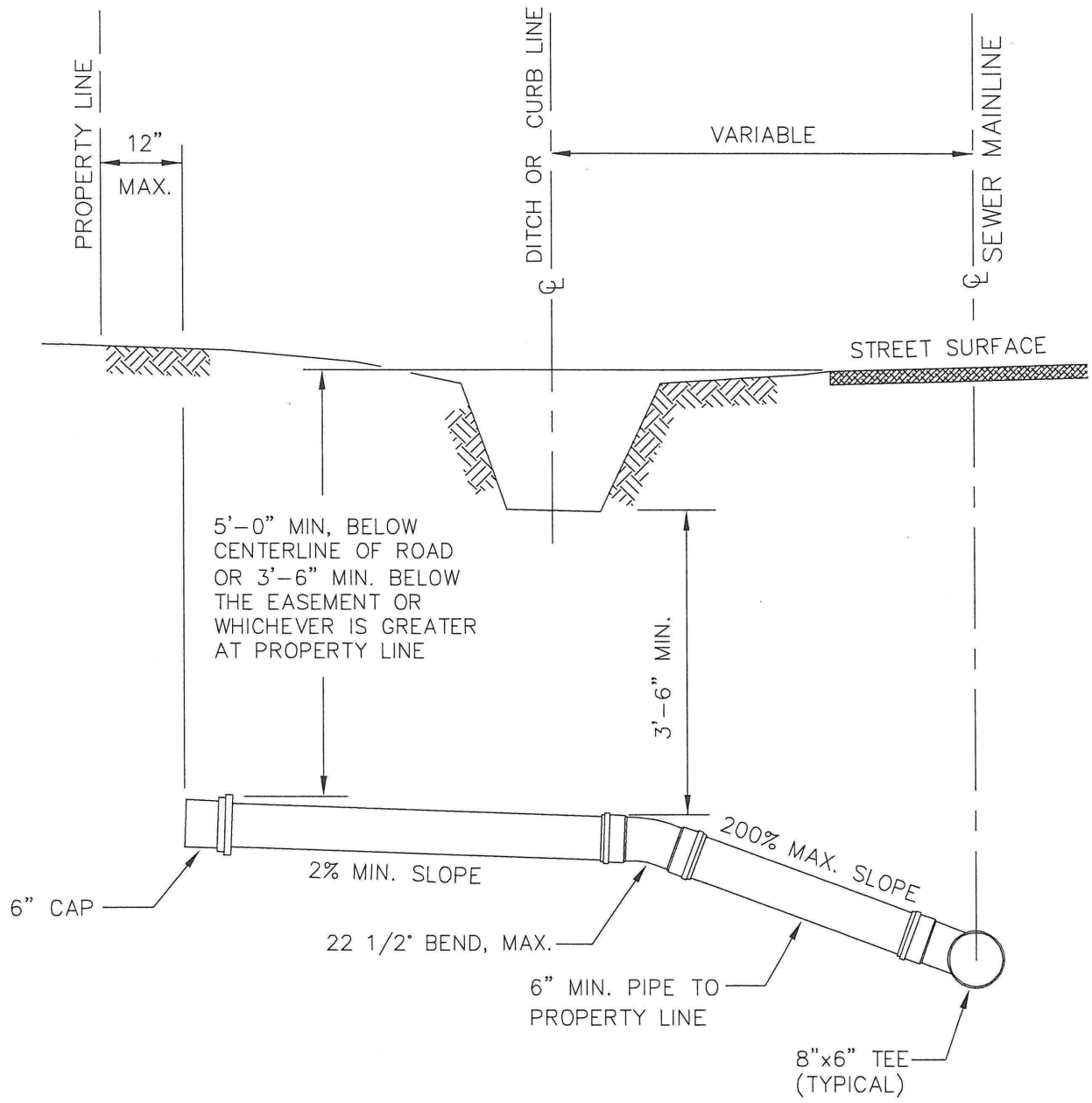
NOTE:

MAXIMUM DEFLECTION PER JOINT NOT OVER 2" PER FOOT, OR 5" PER STANDARD 30" PIPE SECTION. (NOT TO EXCEED PIPE MANUFACTURER'S SPECIFICATIONS)

STANDARD PLAN STUB SERVICE (ALT. NO. 1)

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME	DWG. NO.	
M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-5	DWG. NO.	S-5



ELEVATION

NOTE:

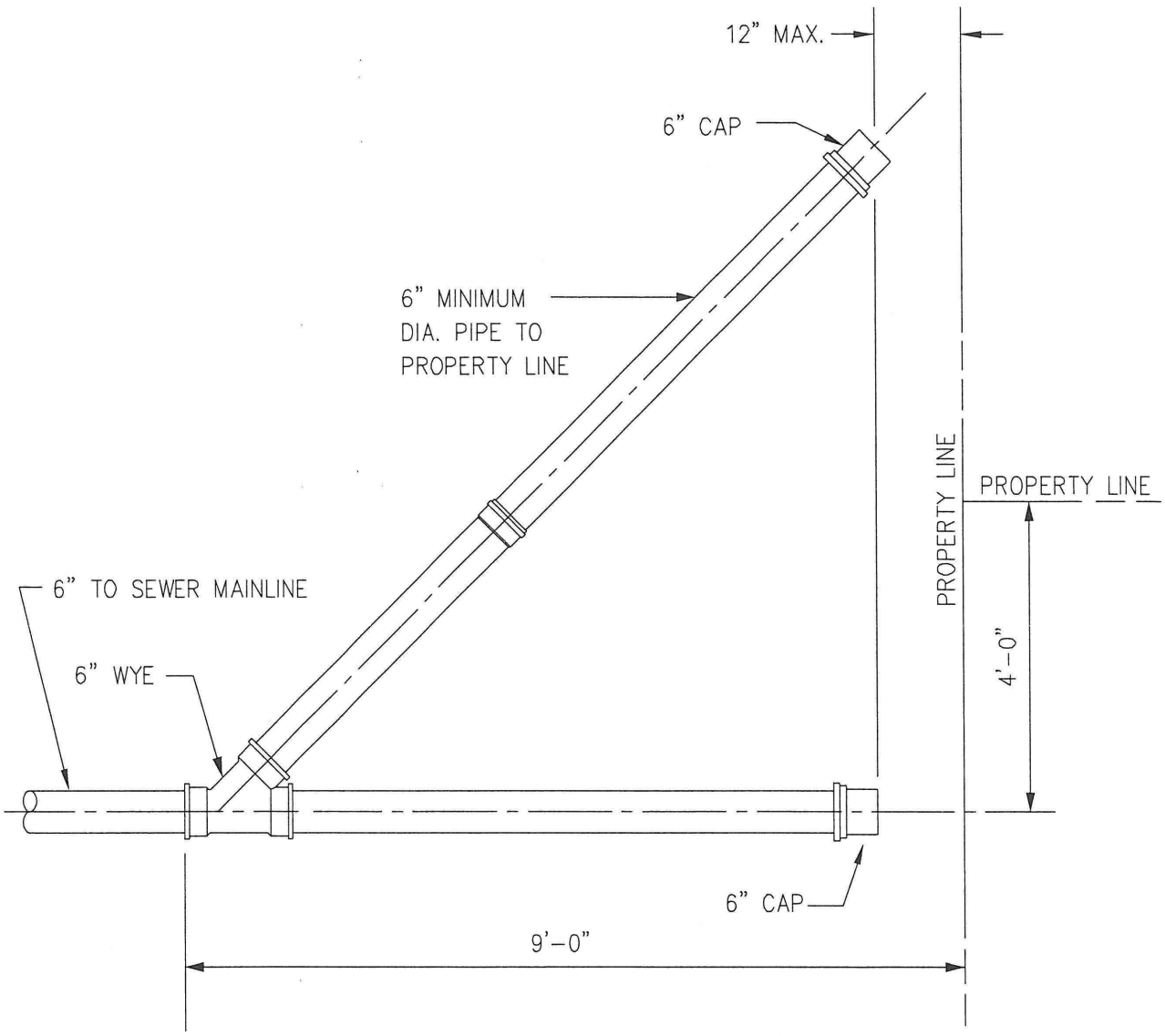
MAXIMUM ALLOWANCE FOR INSTALLATION IS A 22 1/2° MANUFACTURED BEND.

SOOS CREEK WATER & SEWER DISTRICT

STANDARD PLAN STUB SERVICE (ALT. NO. 2)

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME	DWG. NO.	
M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-6	DWG. NO.	S-6



PLAN VIEW

NOTE:
SPECIAL PERMIT REQUIRED FOR USE OF DOUBLE SIDE SEWER PER SCWS DIST.

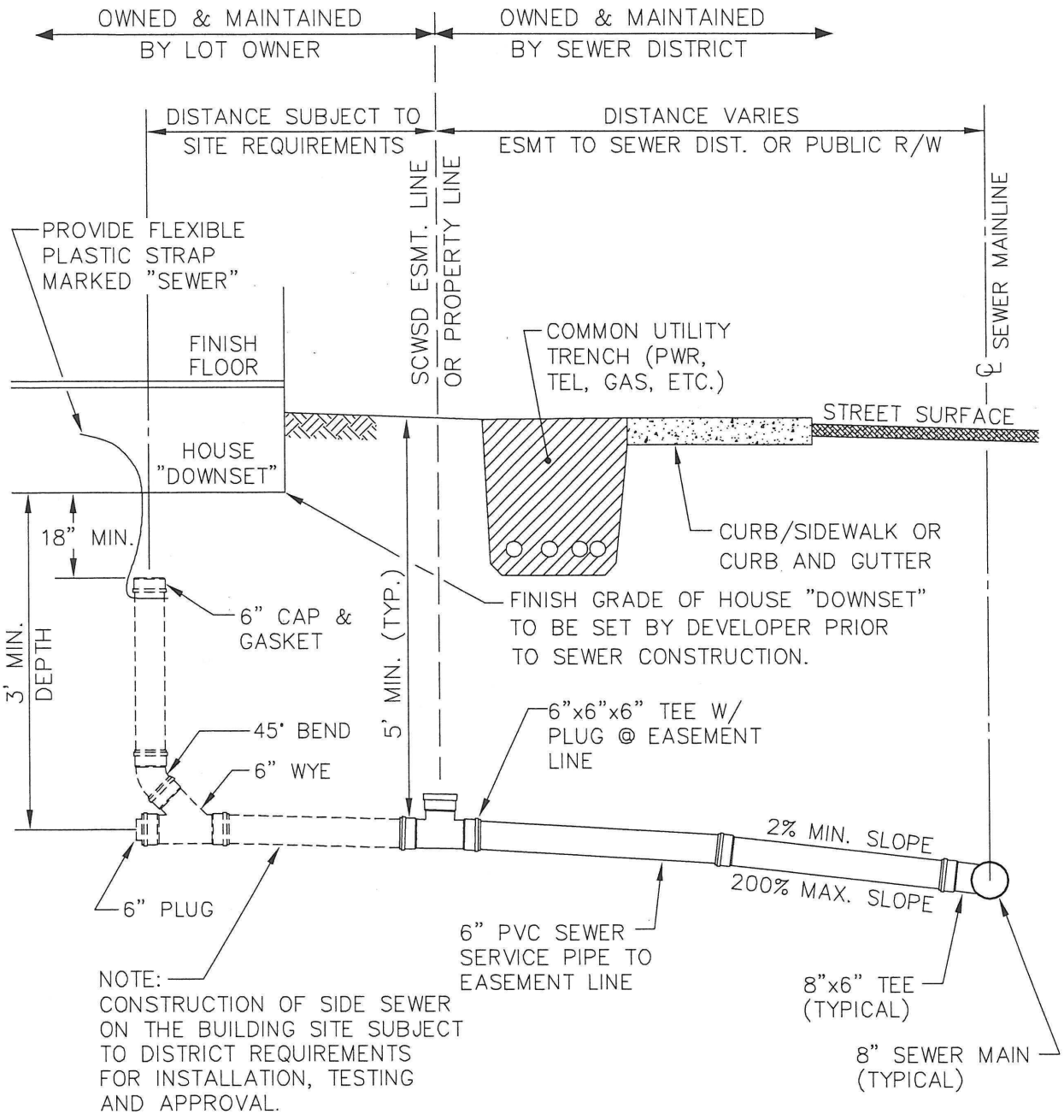
SOOS CREEK WATER & SEWER DISTRICT

STANDARD PLAN
DOUBLE STUB SERVICE

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-7

DWG. NO. S-7



ELEVATION

NOTE:

MAXIMUM DEFLECTION PER JOINT NOT OVER 2" PER FOOT, OR 5" PER STANDARD 30" PIPE SECTION. (NOT TO EXCEED PIPE MANUFACTURER'S SPECIFICATIONS)

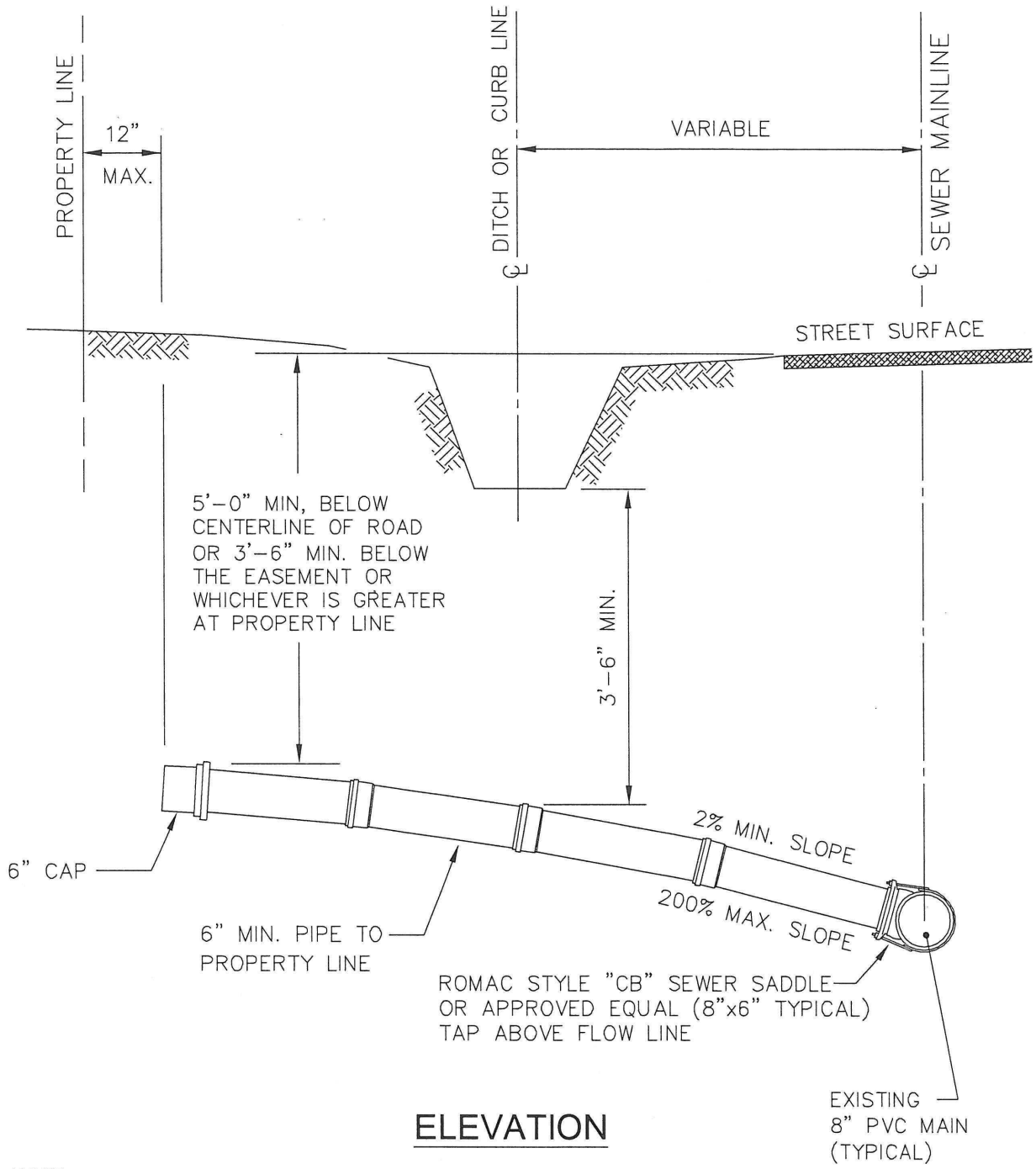
SOOS CREEK WATER & SEWER DISTRICT

STANDARD PLAN STUB SERVICE FOR MANUFACTURED HOME

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-8

DWG. NO. S-8



ELEVATION

NOTE:

MAXIMUM DEFLECTION PER JOINT NOT OVER 2" PER FOOT, OR 5" PER STANDARD 30" PIPE SECTION. (NOT TO EXCEED PIPE MANUFACTURER'S SPECIFICATIONS)

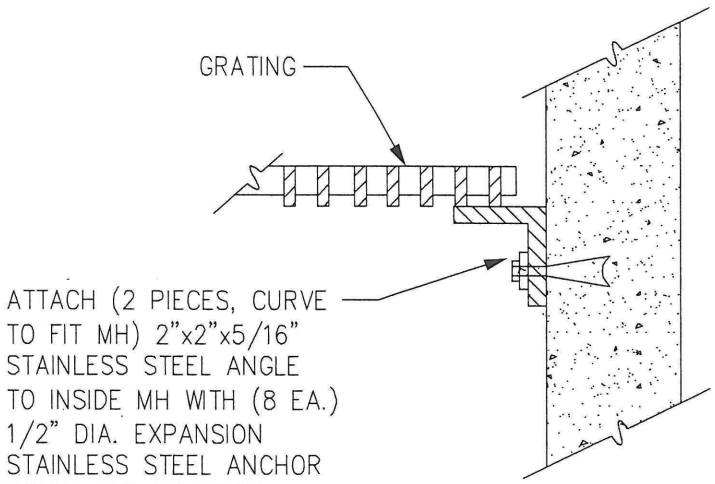
SOOS CREEK WATER & SEWER DISTRICT

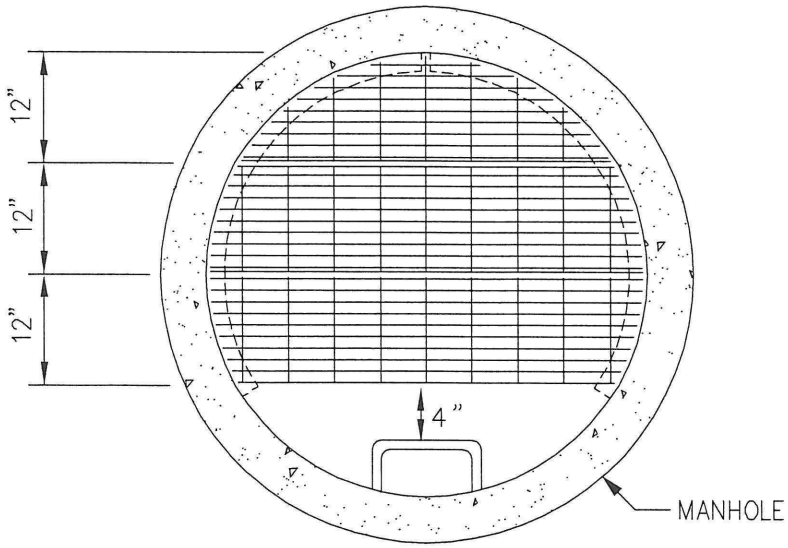
SADDLE STUB SERVICE CONNECTION TO EXISTING SEWER MAIN

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-9

DWG. NO. S-9





PLAN

THREE-PIECE ALUMINUM GRATING:
IRVING "X-BAR" GRATING (OR EQUAL)
TYPE AA: 1-1/4"x 3/16" BEARING
BARS SPACED @ 1-3/16" O.C.
W/ CROSS BARS SPACED @ 4" O.C.

SAFETY GRATE DETAIL

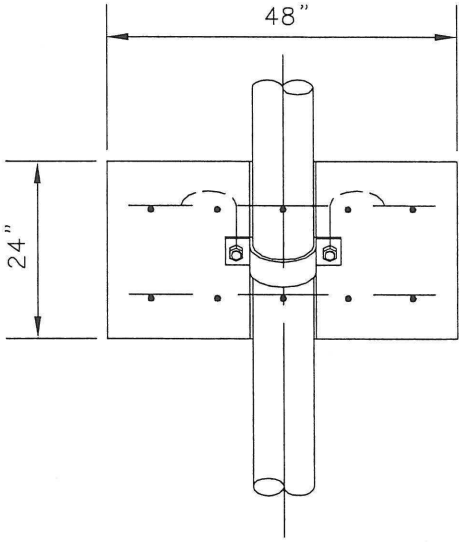
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-10

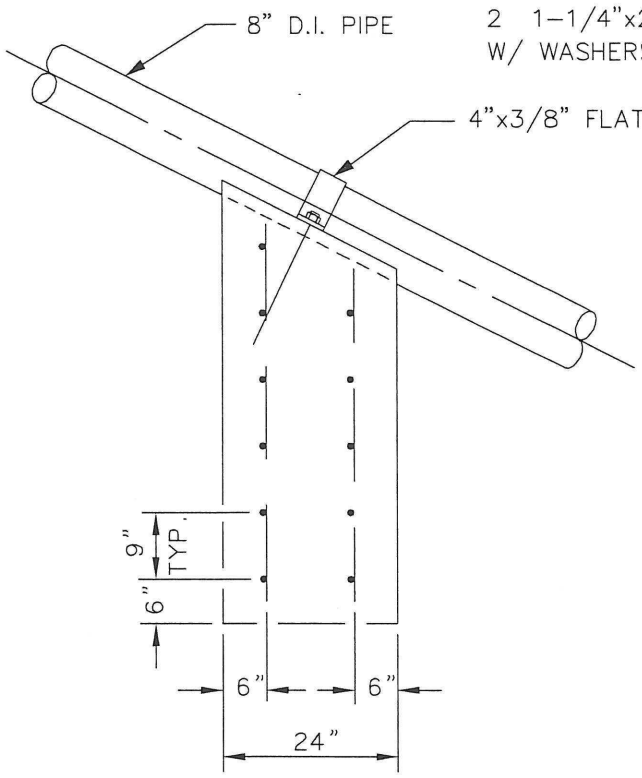
DWG. NO. S-10

NOTES:

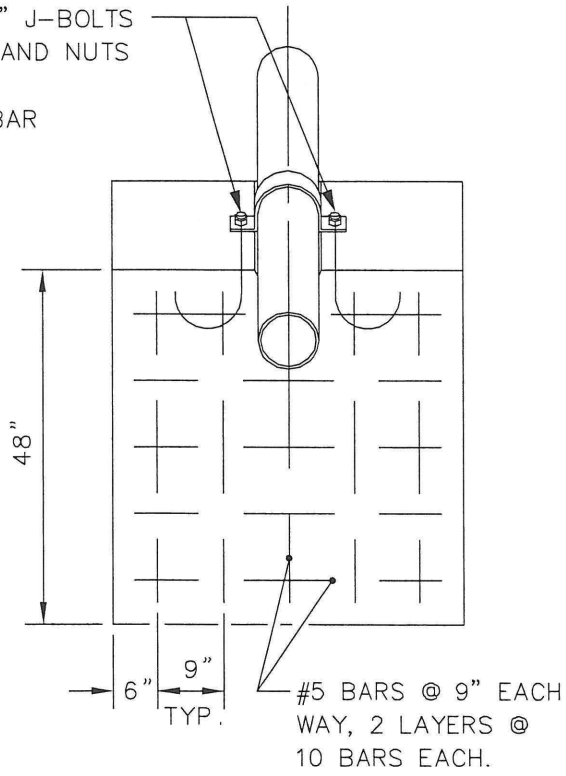
1. SLOPE TOP SURFACE OF PIPE ANCHOR TO MATCH PIPE SLOPE.
2. INSTALL J-BOLTS AT RIGHT ANGLES TO TOP SURFACE OF ANCHOR FOR MAXIMUM CONTACT BETWEEN PIPE AND STRAP.
3. BOLTS, NUTS AND FLAT BAR TO BE HOT-DIPPED GALVANIZED.



PLAN



END VIEW



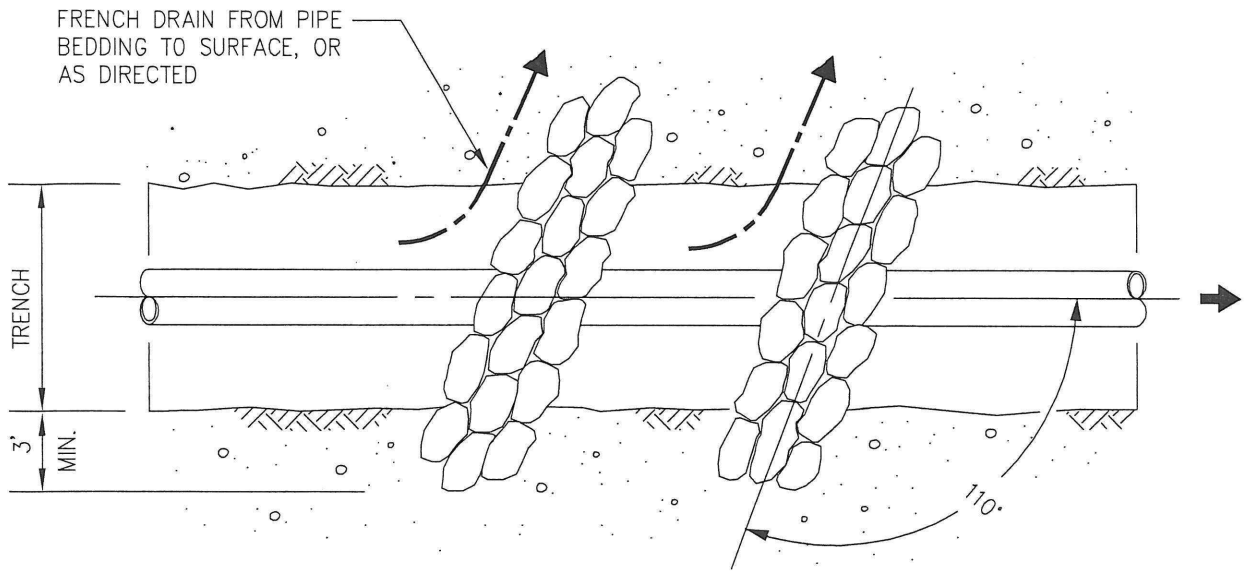
ELEVATION

PIPE ANCHOR DETAIL

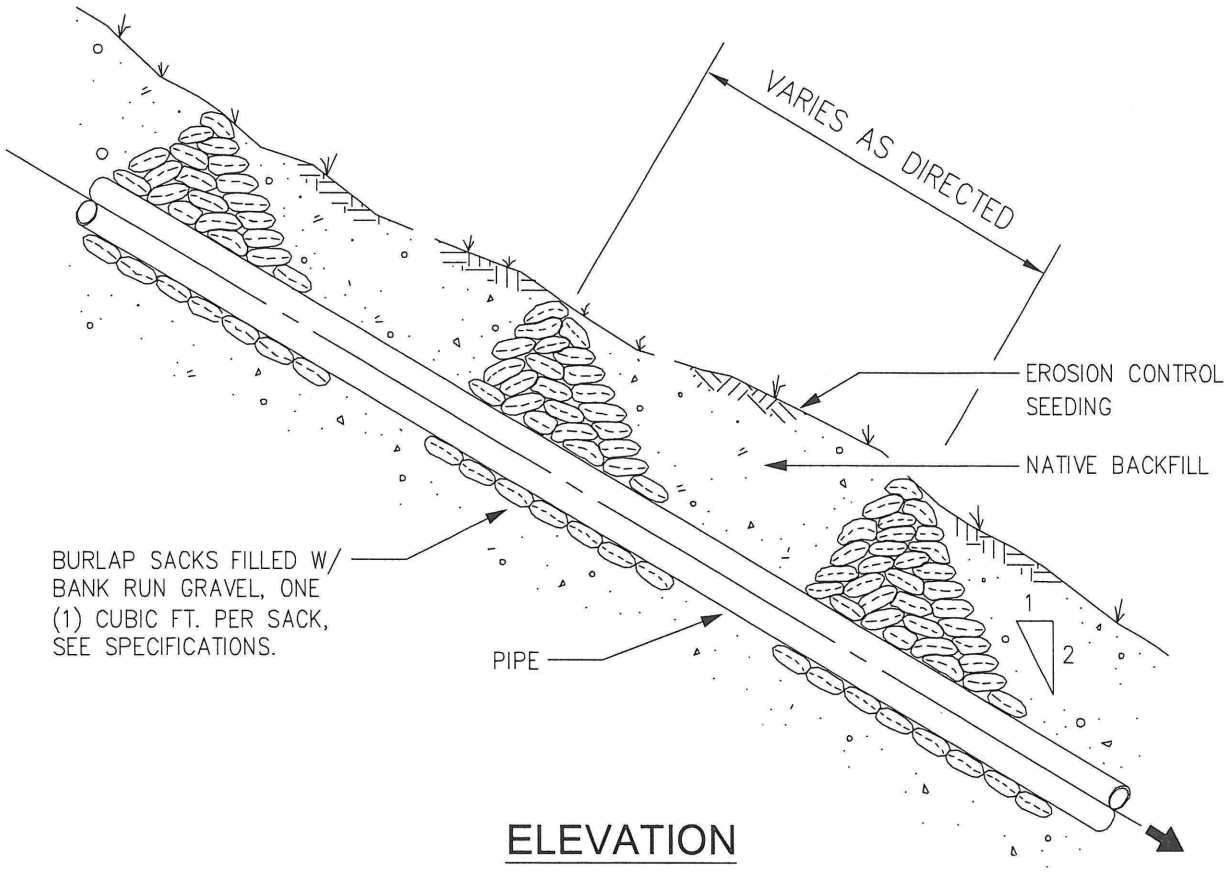
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-11

DWG. NO. S-11



PLAN



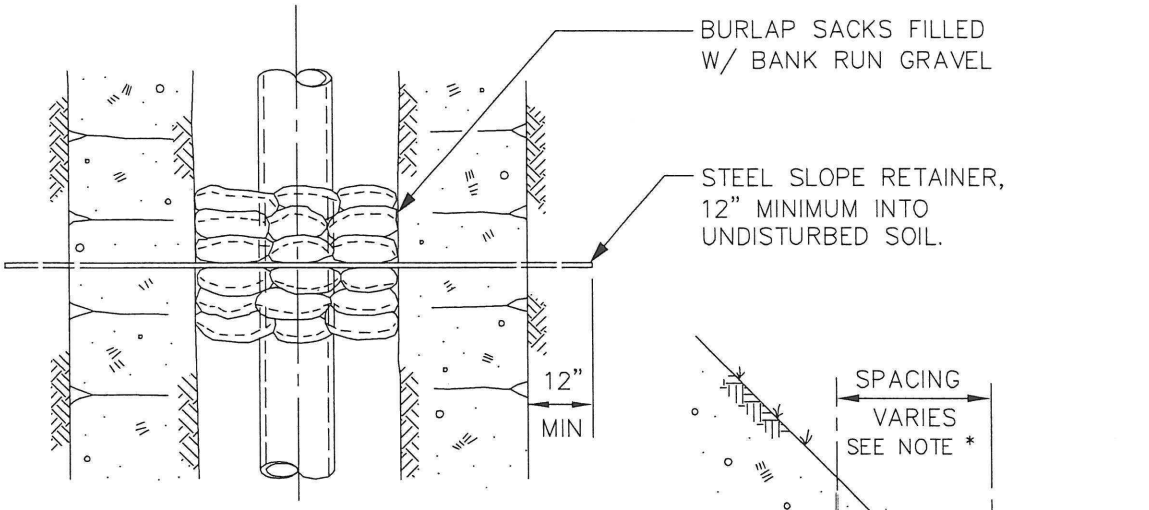
ELEVATION

SACK SLOPE RETAINER

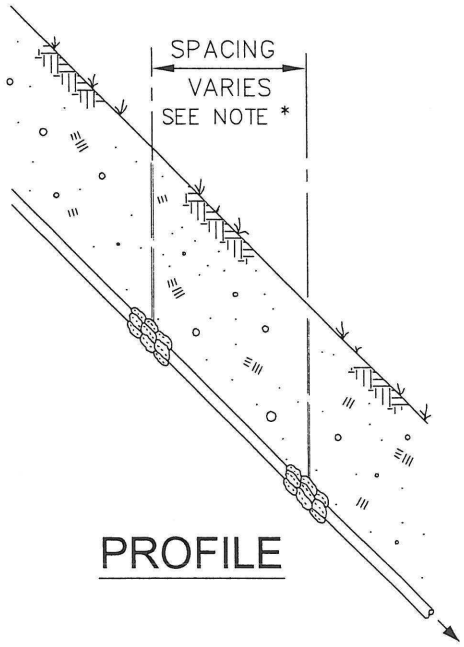
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-12

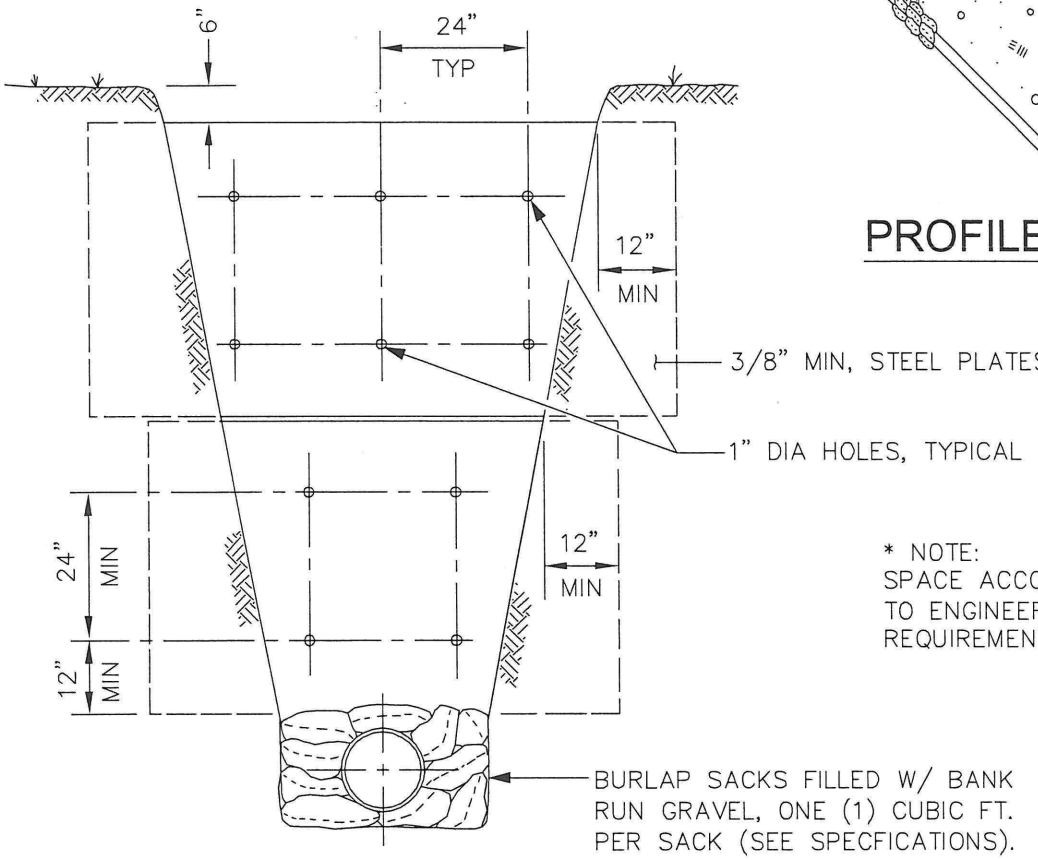
DWG. NO. S-12



PLAN



PROFILE



SECTION

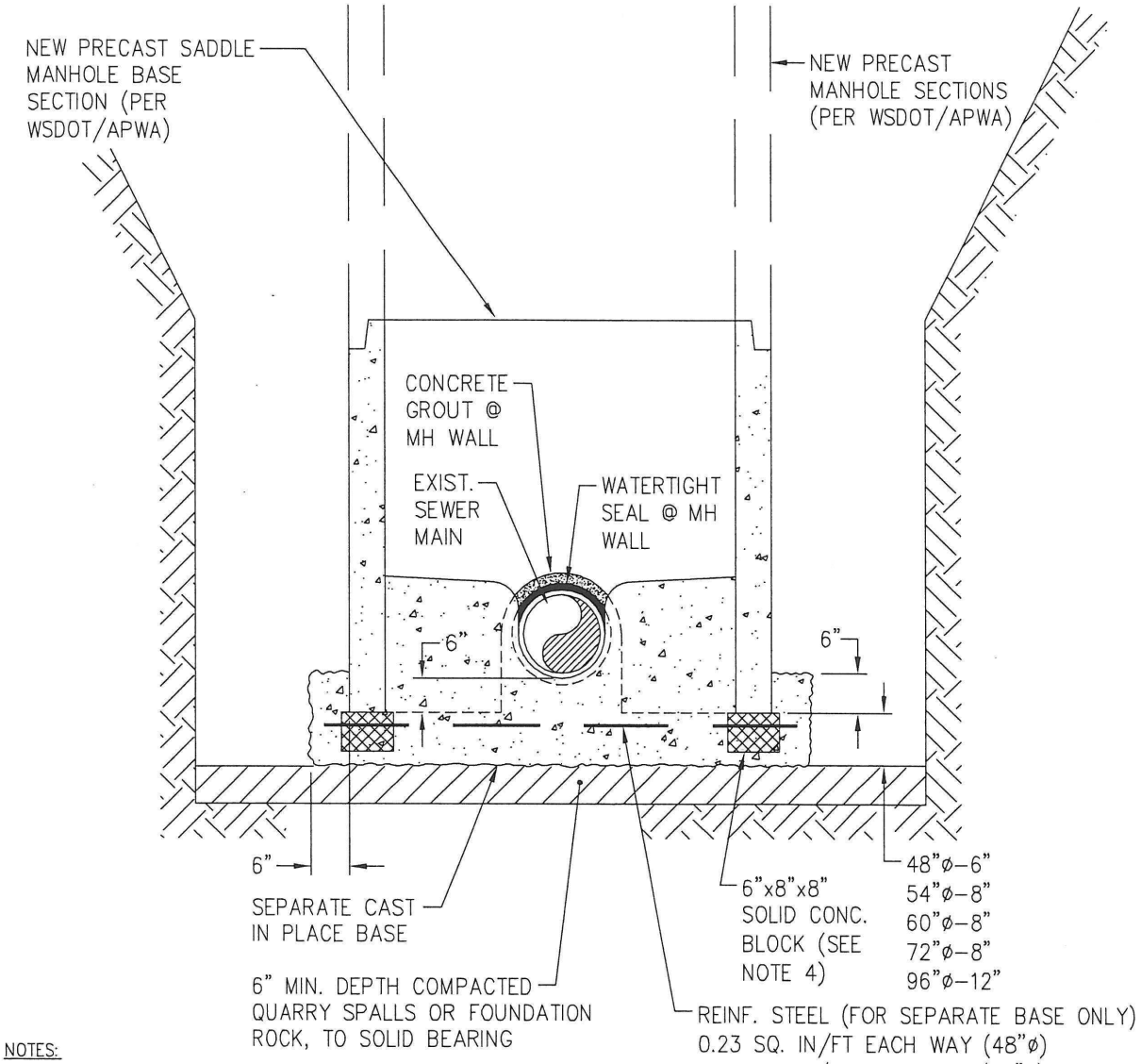
* NOTE:
SPACE ACCORDING
TO ENGINEER'S
REQUIREMENTS.

STEEL SLOPE RETAINER

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME
M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-13

DWG. NO. S-13



NOTES:

1. IN GENERAL, SADDLE MANHOLES ARE NOT ALLOWED BY SCWSD. THIS DETAIL SHALL BE USED ONLY AS PRE–APPROVED BY THE DISTRICT.
2. KNOCKOUT OR CUTOUT HOLE SIZE SHALL BE EQUAL TO PIPE OUTER DIAMETER PLUS MANHOLE WALL THICKNESS. MAXIMUM HOLE SIZE IS 36" FOR 48" MANHOLE, 42" FOR 54" MANHOLE, 48" FOR 60" MANHOLE, 60" FOR 72" MANHOLE, & 84" FOR 96" MANHOLE. MINIMUM DISTANCE BETWEEN HOLES IS 12" MIN.
3. ALL BASE REINFORCING STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF 60,000 PSI & SHALL BE PLACED IN THE UPPER HALF OF THE BASE WITH 1" MINIMUM CLEARANCE FROM ANY SURFACE.
4. RESILIENT CONNECTIONS TO MANHOLES, CONFORMING TO ASTM C 923, ARE NOT PERMITTED.
5. SET BASE SECTION ON 4 EVENLY SPACED 6"x8"x8" SOLID CONCRETE BLOCKS ON QUARRY SPALL FOUNDATION PRIOR TO POURING OF BASE BOTTOM.
6. CAST–IN–PLACE CONCRETE SHALL HAVE A MINIMUM YIELD STRENGTH OF 4,000 PSI.
7. DEWATER EXCAVATION PRIOR TO CONCRETE PLACEMENT. CONTINUE DEWATERING UNTIL CONCRETE HAS SET.
8. EXISTING PIPE SHALL NOT BE CUT UNTIL APPROVED BY DISTRICT.

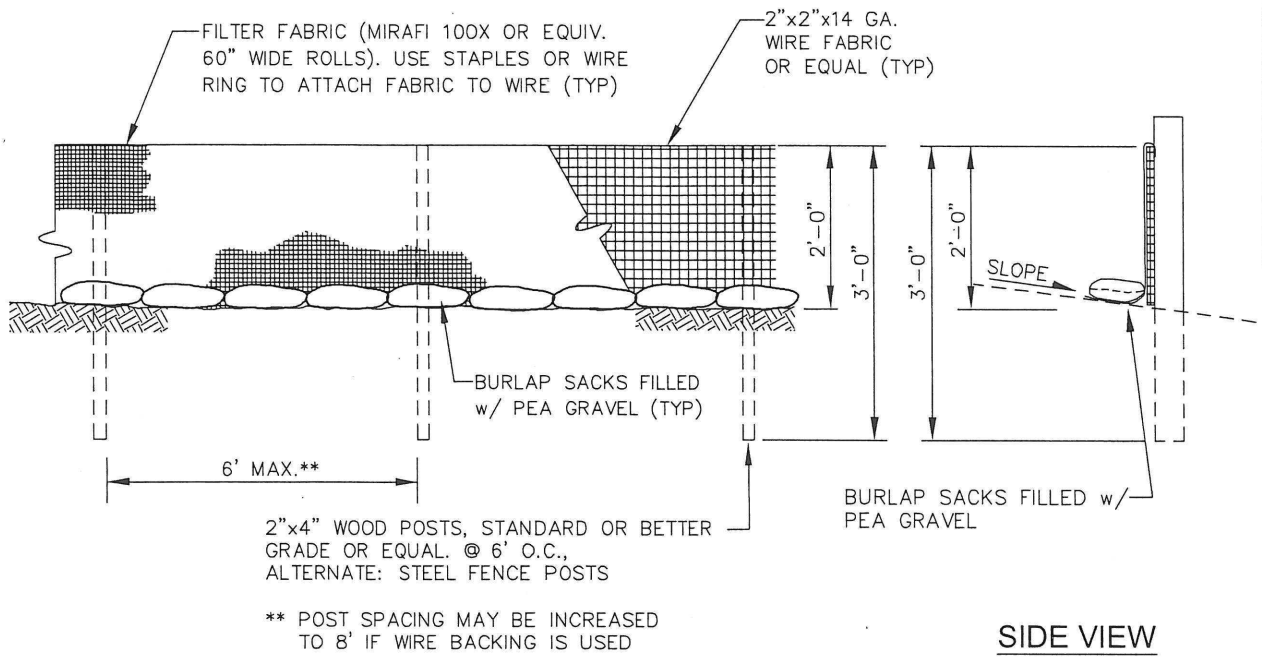
SOOS CREEK WATER & SEWER DISTRICT

SADDLE MANHOLE BASE DETAIL

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S–14

DWG. NO. S-14



SIDE VIEW

FILTER FABRIC FENCE NOTES:

1. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP AND BOTH ENDS SECURELY FASTENED TO THE POST.

2. THE FILTER FABRIC FENCE SHALL BE INSTALLED TO FOLLOW THE CONTOURS (WHERE FEASIBLE). THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 30 INCHES).

3. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 4 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

4. THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 20 INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 30 INCHES ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.

5. WHEN EXTRA-STRENGTH FILTER FABRIC AND CLOSER POST SPACING ARE USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH A CASE, THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS WITH ALL OTHER PROVISIONS OF STANDARD NOTE 5 APPLYING.

6. FILTER FABRIC FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.

7. FILTER FABRIC FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.

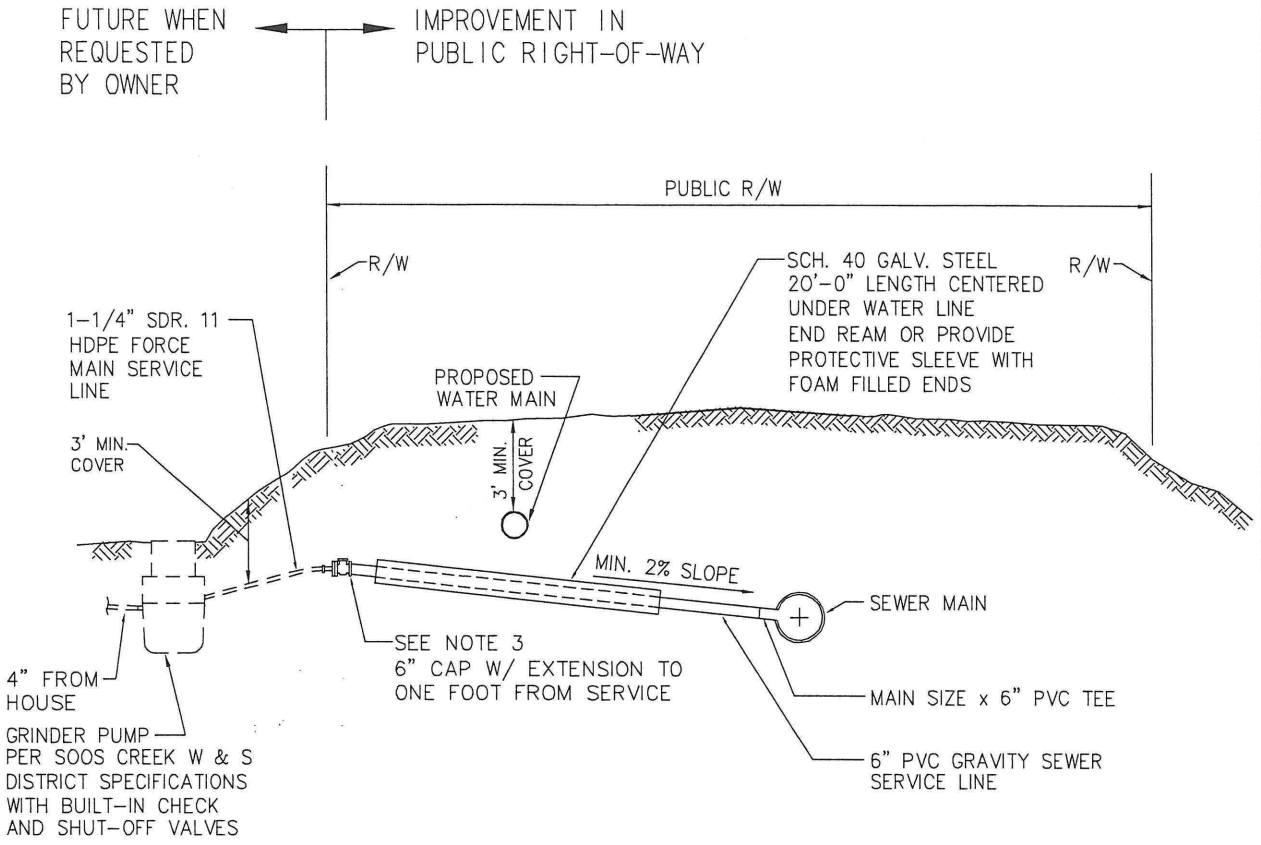
SOOS CREEK WATER & SEWER DISTRICT

FILTER FABRIC FENCE

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-15

DWG. NO. S-15



GRINDER PUMP SERVICE LINE NOTES

1. INSTALL 16-GAUGE SOLID COPPER TRACER WIRE ALONG TOP OF 6" GRAVITY SEWER SERVICE LINE AND HDPE FORCE MAIN SERVICE LINE WITH WARNING TAPE MARKED "SEWER" 12" ABOVE SERVICE LINE. TRACER WIRE SHALL EXTEND FROM 6" TEE AT RIGHT-OF-WAY LINE TEE TO GRINDER PUMP. TRACER WIRE SHALL TERMINATE AT GRINDER PUMP LID WITH 24" OF EXTRA COIL.

2. THE LOCATION OF THE STUB SERVICE TERMINATION SHALL BE MARKED BY THE CONTRACTOR WITH 2"x4" TIMBER EXTENDED VERTICALLY FROM THE PLUG END TO A MINIMUM OF 12" ABOVE THE GROUND SURFACE. A 12-GAUGE GALVANIZED WIRE SHALL BE ATTACHED TO THE TIMBER FROM END TO END. NEITHER THE WIRE NOR THE 2"x4" SHALL BE SECURED OR ATTACHED TO THE SEWER PIPE OR PLUG. THE EXPOSED PORTION OF THE 2"x4" SHALL BE PRE-PAINTED TRAFFIC WHITE WITH THE WORDS "GRINDER PUMP SEWER CONNECTION" STENCILED ON WITH BLACK PAINT. THE END OF THE 2"x4" SHALL BE PRE-MARKED IN PERMANENT INK WITH THE LENGTH OF THE TIMBER INSTALLED.

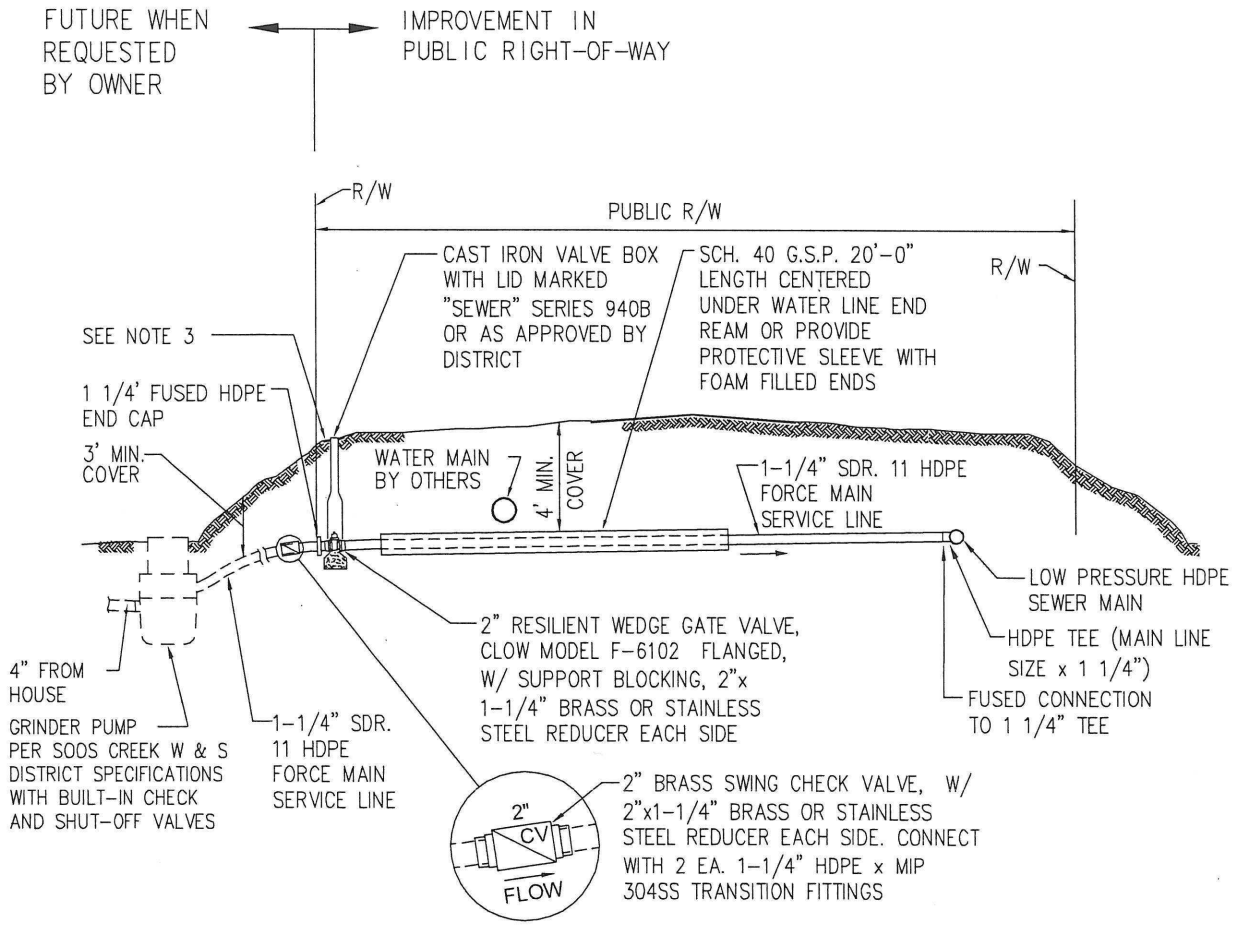
3. 6" TEE AT PROPERTY LINE x 6" MJ CAP AND TAPPED 1-1/4" FIPT.

SOOS CREEK WATER & SEWER DISTRICT

GRINDER PUMP SERVICE LINE FOR PVC OR DI GRAVITY SEWER MAIN IN PUBLIC R.O.W.

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME	DWG. NO.
M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-16	S-16



GRINDER PUMP SERVICE LINE NOTES

1. INSTALL 16-GAUGE SOLID COPPER TRACER WIRE ALONG TOP OF HDPE FORCE MAIN SERVICE LINE WITH WARNING TAPE MARKED "SEWER" 12" ABOVE SERVICE LINE. TRACER WIRE SHALL EXTEND FROM LOW PRESSURE SEWER MAIN TO VALVE AT RIGHT-OF-WAY LINE AND FROM GATE VALVE TO GRINDER PUMP. TRACER WIRE SHALL TERMINATE IN VALVE CAN WITH EXTRA 24" OF COIL AND TERMINATE AT GRINDER PUMP LID.

2. THE LOCATION OF THE STUB SERVICE TERMINATION SHALL BE MARKED BY THE CONTRACTOR WITH 2"x4" TIMBER EXTENDED VERTICALLY FROM THE PLUG END TO A MINIMUM OF 12" ABOVE THE GROUND SURFACE. A 12-GAUGE GALVANIZED WIRE SHALL BE ATTACHED TO THE TIMBER FROM END TO END. NEITHER THE WIRE NOR THE 2"x4" SHALL BE SECURED OR ATTACHED TO THE SEWER PIPE OR PLUG. THE EXPOSED PORTION OF THE 2"x4" SHALL BE PRE-PAINTED TRAFFIC WHITE WITH THE WORDS "GRINDER PUMP SEWER CONNECTION" STENCILED ON WITH BLACK PAINT. THE END OF THE 2"x4" SHALL BE PRE-MARKED IN PERMANENT INK WITH THE LENGTH OF THE TIMBER INSTALLED.

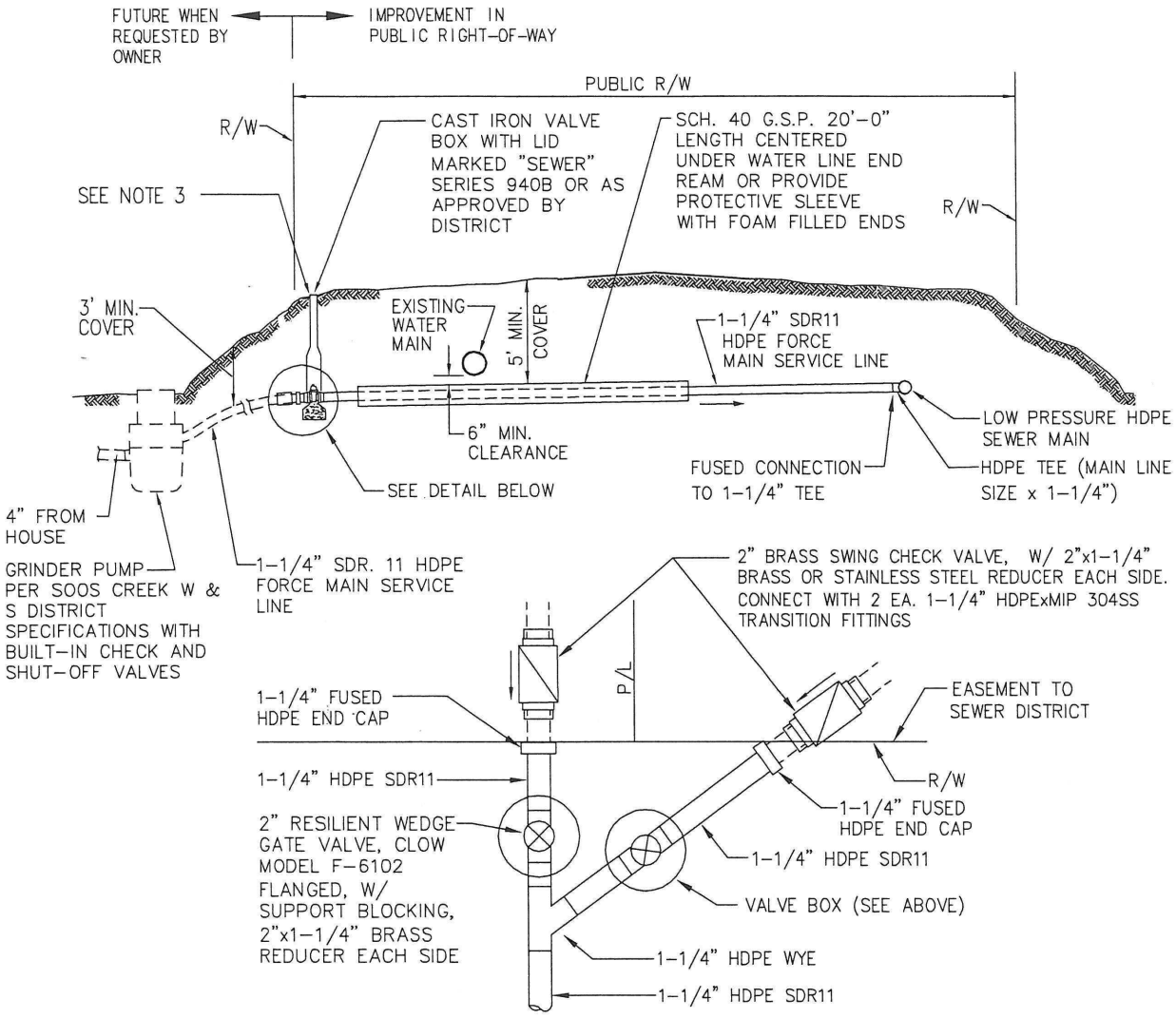
3. INSTALL A 2 FOOT SQUARE x 4" THICK ASPHALT OR CONCRETE PAD AROUND THE VALVE BOX AT ALL VACANT LOTS.

SOOS CREEK WATER & SEWER DISTRICT

GRINDER PUMP SERVICE LINE FOR SMALL DIA. LOW PRESSURE SEWER IN PUBLIC R.O.W.

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME	DWG. NO.
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DOUBLE SERVICE DETAIL

GRINDER PUMP SERVICE LINE NOTES

1. INSTALL 16-GAUGE SOLID COPPER TRACER WIRE ALONG TOP OF HDPE FORCE MAIN SERVICE LINE WITH WARNING TAPE MARKED "SEWER" 12" ABOVE SERVICE LINE. TRACER WIRE SHALL EXTEND FROM LOW PRESSURE SEWER MAIN TO VALVE AT RIGHT-OF-WAY LINE AND FROM GATE VALVE TO GRINDER PUMP. TRACER WIRE SHALL TERMINATE IN VALVE CAN WITH EXTRA 24" OF COIL AND TERMINATE AT GRINDER PUMP LID.

2. THE LOCATION OF THE STUB SERVICE TERMINATION SHALL BE MARKED BY THE CONTRACTOR WITH 2"x4" TIMBER EXTENDED VERTICALLY FROM THE PLUG END TO A MINIMUM OF 12" ABOVE THE GROUND SURFACE. A 12-GAUGE GALVANIZED WIRE SHALL BE ATTACHED TO THE TIMBER FROM END TO END. NEITHER THE WIRE NOR THE 2"x4" SHALL BE SECURED OR ATTACHED TO THE SEWER PIPE OR PLUG. THE EXPOSED PORTION OF THE 2"x4" SHALL BE PRE-PAINTED TRAFFIC WHITE WITH THE WORDS "GRINDER PUMP SEWER CONNECTION" STENCILED ON WITH BLACK PAINT. THE END OF THE 2"x4" SHALL BE PRE-MARKED IN PERMANENT INK WITH THE LENGTH OF THE TIMBER INSTALLED.

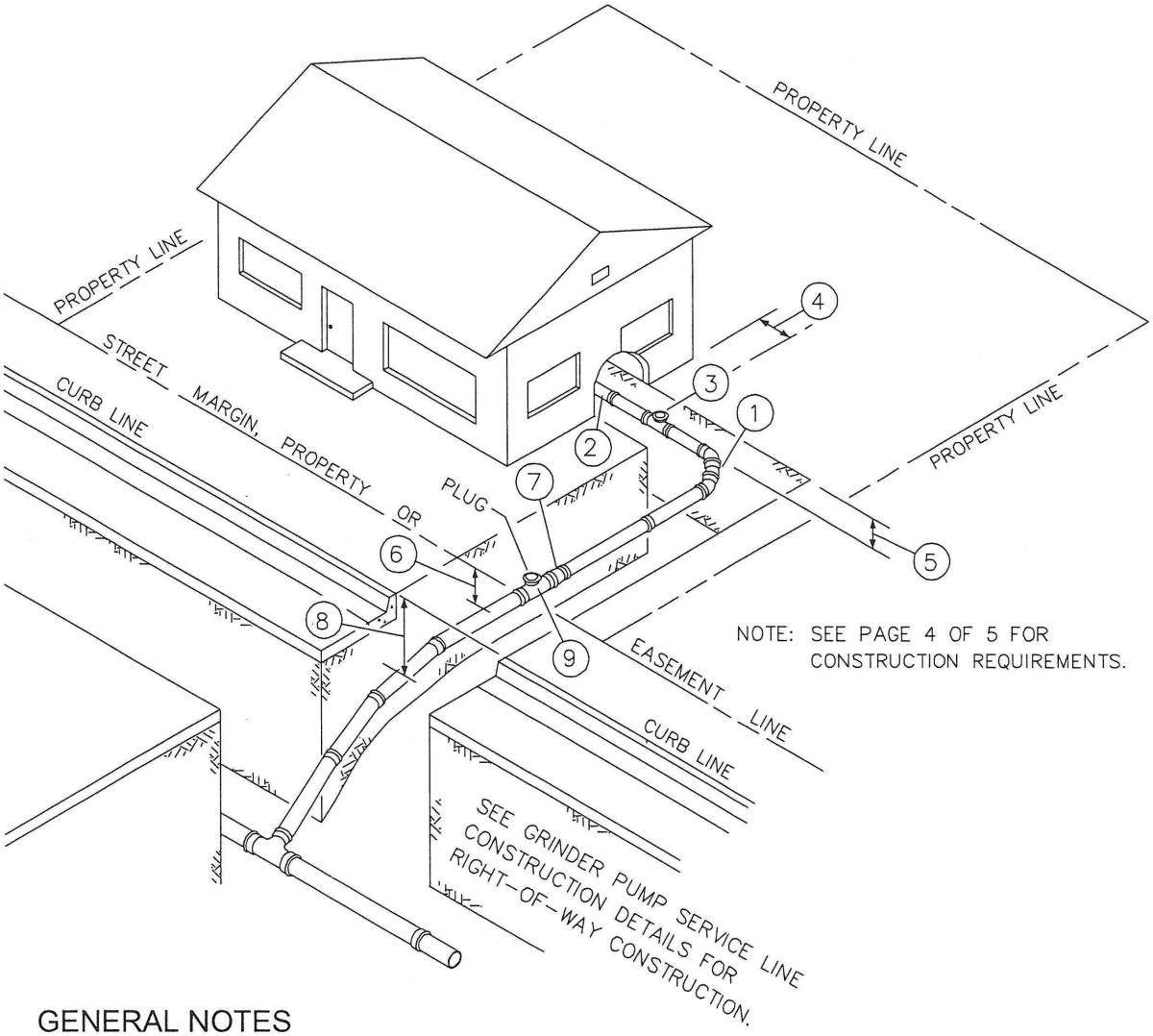
3. INSTALL A 2 FOOT SQUARE x 4" THICK ASPHALT OR CONCRETE PAD AROUND THE VALVE BOX AT ALL VACANT LOTS. LOTS WITH EXISTING HOMES WILL HAVE PAD INSTALLED BY THE DISTRICT AFTER GRINDER PUMP CONNECTION IS COMPLETED.

SOOS CREEK WATER & SEWER DISTRICT

GRINDER PUMP DOUBLE SERVICE LINE FOR SMALL DIA. LOW PRESSURE SEWER IN R.O.W.

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M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-18	S-18



NOTE: SEE PAGE 4 OF 5 FOR CONSTRUCTION REQUIREMENTS.

GENERAL NOTES

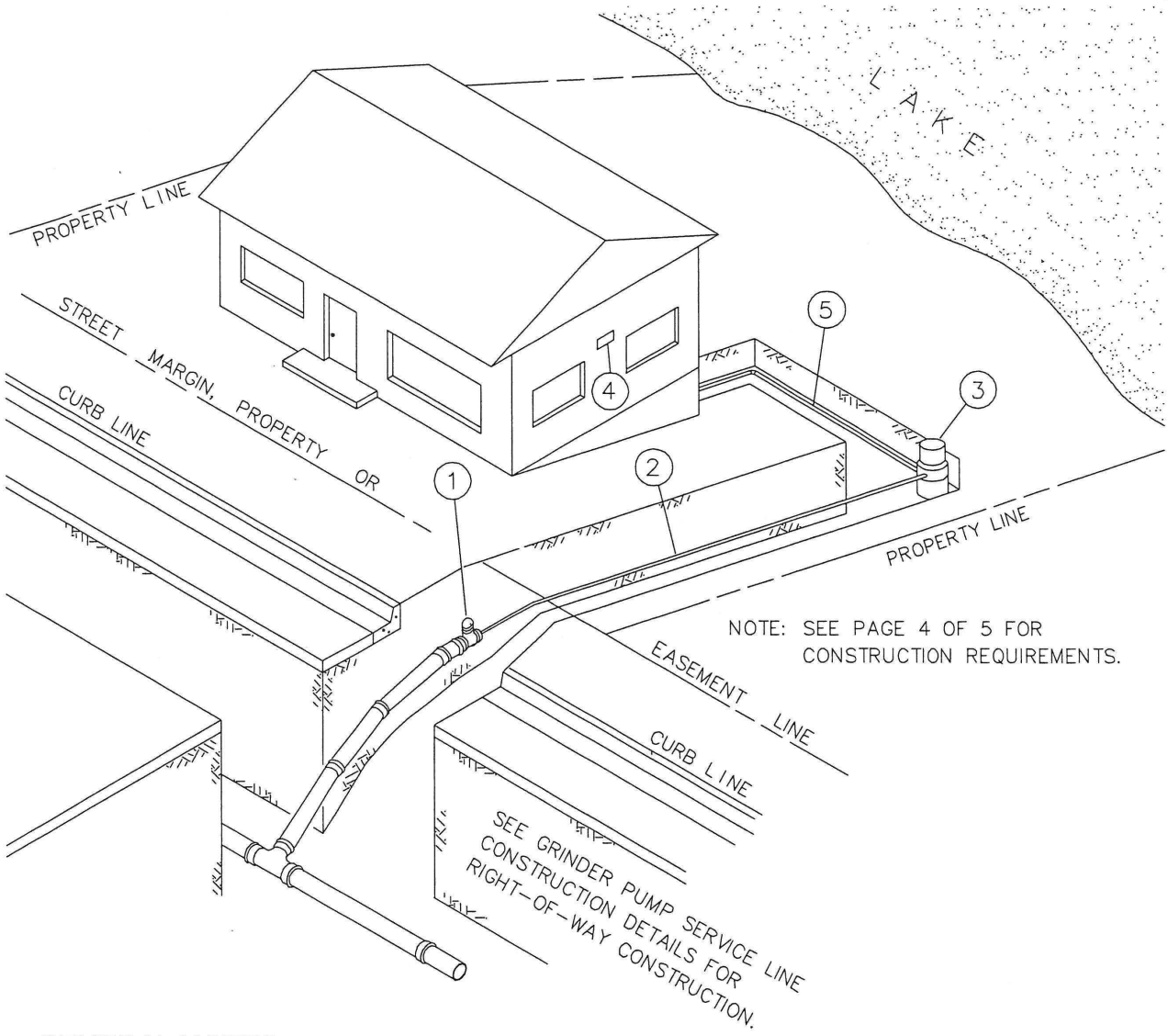
1. 2 – 45° BENDS WITH 24" MIN. SEPARATION BETWEEN BENDS TO EQUAL 90° BEND.
2. CONNECTION TO MAIN STACK FROM SIDE SEWER SHALL BE DUCTILE IRON OR PVC PIPE WITH A FLEXIBLE 2–BAND RUBBER COUPLING.
3. 4" WYE, TEE OR BACKWATER VALVE FOR CLEANOUT AND TESTING.
4. 18" MINIMUM OR 30" MAXIMUM DISTANCE FROM HOUSE. IF ACCESS IS PREVENTED BY PORCH OR DECKS, THEN SURFACE CLEAN–OUT IS REQUIRED (SEE DETAIL NO. 30).
5. 18" MINIMUM COVER.
6. 5'–0" MINIMUM BELOW STREET CENTERLINE OR 3'–6" MINIMUM BELOW EASEMENT LINE ELEVATION, WHICHEVER IS DEEPER @ THE PROPERTY OR EASEMENT LINE.
7. STANDARD 4" TO 6" INCREASER.
8. 6'–0" MINIMUM BELOW ROAD GRADE OR CURB LINE.
9. 6"x6"x6" TEE SHALL BE LOCATED INSIDE PRIVATE PROPERTY.

SOOS CREEK WATER & SEWER DISTRICT

TYPICAL HOUSE CONNECTION FOR GRAVITY SEWER

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FILE NAME	DWG. NO.
M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S–19A	S-19A



GENERAL NOTES

(1) 6" TEE x MJ CAP TAPPED WITH 1-1/4" NPT.

(2) 1-1/4" HDPE ON-SITE SERVICE LINE WITH 16-GAUGE SOLID COPPER TRACER WIRE ALONG TOP OF HDPE FORCE MAIN AND WARNING TAPE MARKED "SEWER" 12" ABOVE.

(3) GRINDER PUMP.

(4) PUMP CONTROL PANEL. LOCATION MUST BE IN DIRECT LINE OF SIGHT FROM GRINDER PUMP, 3' MIN., 5' MAX. ABOVE GROUND. CONTROL WIRE TO BE PLACED IN 1" MIN. CONDUIT FROM PANEL TO GRINDER PUMP.

(5) GRAVITY HOUSE SERVICE TO GRINDER PUMP.

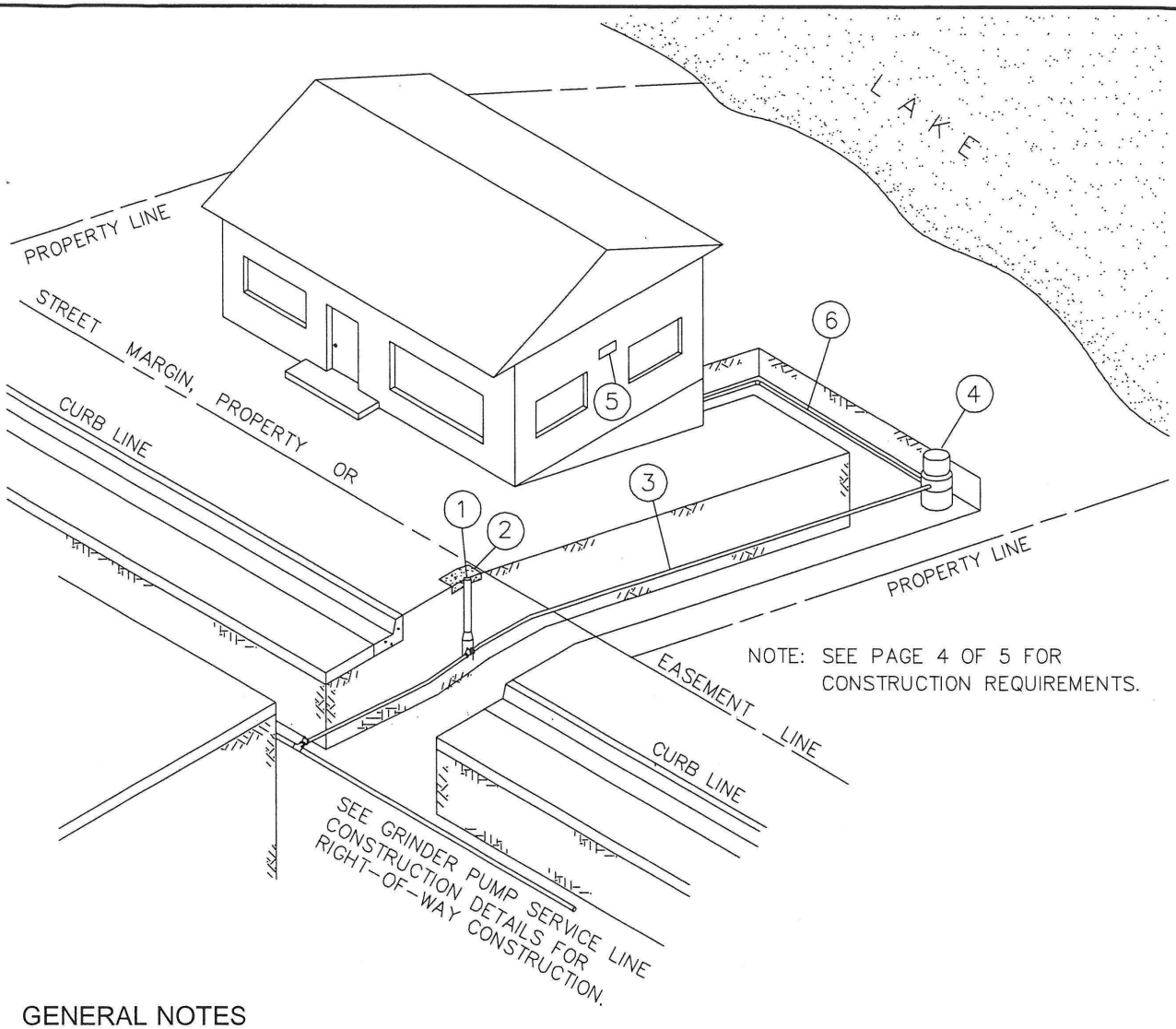
(6) CONTACT THE DISTRICT TO SCHEDULE AN ON-SITE PRECONSTRUCTION MEETING PRIOR TO ANY WORK.

SOOS CREEK WATER & SEWER DISTRICT

TYPICAL HOUSE CONNECTION FOR ALT. GRAVITY SEWER STUB

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME	DWG. NO.
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GENERAL NOTES

1. CAST IRON VALVE BOX WITH LID MARKED "SEWER" SERIES 940B OR AS APPROVED BY DISTRICT.
2. INSTALL A 2 FOOT X 4 INCH THICK ASPHALT OR CONCRETE PAD AROUND THE VALVE BOX.
3. 1¼" HDPE ON-SITE SERVICE LINE WITH 16-GAUGE SOLID COPPER TRACER WIRE ALONG TOP OF HDPE FORCE MAIN AND WARNING TAPE MARKED "SEWER" 12" ABOVE LINE.
4. E/ONE EXTREME GRINDER MODEL #DH 071 WITH 70 GALLON CAPACITY. IF MORE CAPACITY IS DESIRED A MODEL #DH 151 WITH A 150 GALLON CAPACITY WILL BE ACCEPTED.
5. SENTRY CONTROL PANEL #SA1A01B1AA MUST BE LOCATED IN DIRECT LINE OF SITE FROM THE GRINDER PUMP 3 FT. MIN. 5 FT. MAX. ABOVE GROUND. CONTROL WIRE SHALL BE RUN UNSPLICED (ORDER LENGTH AS NEEDED) AND PLACED IN 1 INCH MIN. CONDUIT FROM PANEL TO GRINDER PUMP. IF CABLE LONGER THAN 100 FT. IS NEEDED AND SPLICING IS NECESSARY, DISTRICT APPROVAL IS REQUIRED FOR SPECIAL SPLICING REQUIREMENTS. ALL CONTROL PANEL WIRING SHALL BE PER MANUFACTURERS WIRING DIAGRAM LOCATED INSIDE THE DOOR OF CONTROL PANEL.
6. GRAVITY HOUSE SERVICE TO GRINDER PUMP.
7. CONTACT THE DISTRICT TO SCHEDULE AN ON-SITE PRECONSTRUCTION MEETING PRIOR TO BEGINNING ANY WORK.

SOOS CREEK WATER & SEWER DISTRICT

TYPICAL HOUSE CONNECTION FOR ALT. PRESSURE SEWER STUB

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
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DWG. NO. S-19C

CONSTRUCTION REQUIREMENTS (STUB SERVICE)

(TO BE CONSTRUCTED BY DISTRICT OR DEVELOPER AS PART OF THE PROJECT)

1. 6" SEWER PIPE REQUIRED IN STREET AT 2% MINIMUM GRADE AND 200% MAXIMUM GRADE.
2. JOINTS MUST BE MADE W/RUBBER TYPE GASKET AS APPROVED BY DISTRICT.
3. ALL STUB SERVICES SHALL BE TESTED IN ACCORDANCE WITH THE DISTRICT'S SPECIFICATIONS PRIOR TO APPROVAL.
4. ALL MATERIALS USED IN THE CONSTRUCTION OF ANY STUB SERVICE SHALL HAVE PRIOR APPROVAL OF THE DISTRICT.
5. ALL CONSTRUCTION OF STUB SERVICES MUST COMPLY WITH SIDE SEWER RESOLUTION ADOPTED BY SOOS CREEK WATER AND SEWER DISTRICT BOARD OF COMMISSIONERS.

CONSTRUCTION REQUIREMENTS (SIDE SEWER)

(TO BE CONSTRUCTED BY PROPERTY OWNER AFTER COMPLETION OF PROJECT)

1. SIDE SEWER SHALL BE CONNECTED TO STUB SERVICE WITH A 6"x6"x6" TEST TEE AND 6"x4" REDUCER, BY PROPERTY OWNER.
2. 4" MINIMUM SEWER PIPE REQUIRED ON PROPERTY. PERMIT REQUIRED.
3. 6" MINIMUM SEWER PIPE REQUIRED ON PROPERTY, FOR JOINT SIDE SEWERS. PERMIT AND JOINT SIDE SEWER AGREEMENT REQUIRED.
4. 2% MINIMUM GRADE (1/4" FALL PER FOOT); 200% MAXIMUM GRADE (24" FALL PER FOOT).
5. JOINTS MUST BE MADE W/RUBBER TYPE GASKET, APPROVED BY DISTRICT.
6. SEE GENERAL NOTES, PAGE 1 OF 5 – TYPICAL HOUSE CONNECTION.
7. CONSTRUCTION ON PRIVATE PROPERTY MAY BE DONE BY OWNER, BUT REQUIRES A PERMIT.
8. ALL MATERIALS USED IN THE CONSTRUCTION OF ANY SIDE SEWER SHALL HAVE PRIOR APPROVAL OF DISTRICT. PIPE TO BE CLASS 50 DUCTILE IRON, OR ASTM D–3034, SDR 35 PVC, OR SDR 11 HDPE FOR ALTERNATIVE SEWER SERVICE.
9. ALL SIDE SEWERS SHALL BE TESTED IN ACCORDANCE WITH THE DISTRICT'S SPECIFICATIONS PRIOR TO APPROVAL BY DISTRICT.
10. CONNECTIONS SHALL BE COMPLETE AT BOTH ENDS BEFORE CALLING FOR INSPECTION.
11. NO DOWNSPOUTS OR OUTSIDE DRAINS SHALL BE CONNECTED TO SANITARY SEWERS.
12. CLEAN–OUTS SHALL BE PROVIDED 18" MINIMUM TO 30" MAXIMUM FROM BUILDING AND SPACED AT 100' (MAXIMUM) INTERVALS UNLESS APPROVED BY DISTRICT.
13. ALL CONSTRUCTION OF SIDE SEWERS MUST COMPLY WITH SIDE SEWER RESOLUTION ADOPTED BY SOOS CREEK WATER AND SEWER DISTRICT BOARD OF COMMISSIONERS.
14. TWO 45° BENDS WITH 24" MIN. SEPARATION BETWEEN BENDS TO EQUAL 90° BEND.

SOOS CREEK WATER & SEWER DISTRICT

TYPICAL HOUSE CONNECTION CONSTRUCTION REQUIREMENTS

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MATERIALS LIST

1. SDR–11 1–1/4" HDPE PIPE, DR11–55.
2. TRACER WIRE (16 GAUGE SOLID COPPER), NO. WI14BLK–500 OR EQUAL.
3. TRACER TAPE (MARKED SEWER) NO. WWTAPEDET–25.
4. 1–1/4" HDPE BUTT FUSED JOINT.
5. 6" MJ CAP TAPPED 1–1/4" OR 2" IP WITH MJ KIT NO. IFD2MX5L.
6. 2"x1–1/4" STAINLESS STEEL OR BRASS BUSHING.
7. IF PIPE IS 6" 3034 SEWER, A 6" MJ x PSM TRANSITION GASKET NO. IFGMPSMZ WILL BE REQUIRED.
8. 1–1/4" TRANSITION FITTING HDPE SDR11 x MIP 304SS (DRAS–5).
9. 2" BRASS SWING CHECK FIPxFIP (LEGEND VALVE T–451 OR EQUAL).

SUPPLIER

HD FOWLER CO.
(425) 746–8400
BELLEVUE, WA

(THERE ARE OTHER SUPPLIERS THAT MAY CARRY THESE PARTS)

SOOS CREEK WATER & SEWER DISTRICT

GRINDER PUMP INSTALLATION MATERIALS FOR CONNECTION TO GRAVITY STUB

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SCHEDULE _____ DEPTH AT PROPERTY LINE _____ FOR OFFICE USE ONLY

LATERAL _____

STATION _____ INSPECTION CHECK _____

SIDE SEWER CONNECTION INFORMATION

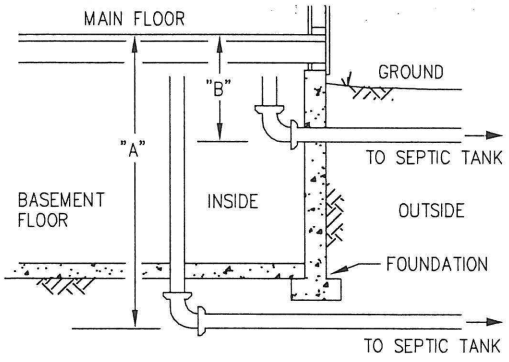
PLEASE ANSWER THE FOLLOWING QUESTIONS AND SUPPLY THE NECESSARY INFORMATION AND DIMENSIONS:

1. ADDRESS OR LOCATION OF PROPERTY INVOLVED _____
2. NAME OF OWNER _____
3. ADDRESS OF OWNER, IF DIFFERENT FROM ITEM 1, ABOVE _____
4. PHONE NUMBER: HOME _____ WORK _____
5. (A). IF YOUR PRESENT SANITARY PLUMBING OUTLET PIPE EXTENDS BELOW THE BASEMENT FLOOR, OR IF YOU PLAN TO INSTALL PLUMBING TO SUCH A DEPTH AT A LATER DATE, MEASURE AND SUPPLY DIMENSION "A" AS SHOWN BELOW.

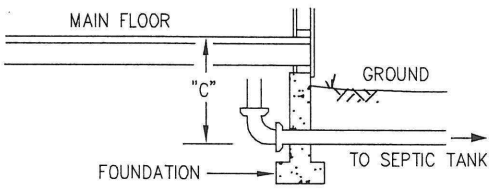
   IF YOUR PRESENT SANITARY PLUMBING OUTLET LEAVES THE HOUSE BETWEEN THE MAIN FLOOR AND THE BASEMENT FLOOR AND YOU DO NOT PLAN TO LOWER IT, MEASURE AND SUPPLY DIMENSION "B" AS SHOWN BELOW.

   (B). IF YOUR HOUSE DOES NOT HAVE A BASEMENT, MEASURE AND SUPPLY DIMENSION "C" AS SHOWN BELOW.

FOR HOME WITH BASEMENT



FOR HOME WITHOUT BASEMENT

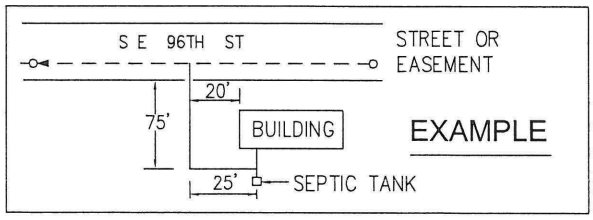


DIMENSION "A": _____ FEET _____ INCHES

DIMENSION "B": _____ FEET _____ INCHES

DIMENSION "C": _____ FEET _____ INCHES

6. ON THE SKETCH BELOW, PLEASE INDICATE THE ROUTE YOU PROPOSE TO FOLLOW WITH YOUR HOUSE SERVICE LINE FROM THE APPROXIMATE POINT YOUR PLUMBING LEAVES THE HOUSE TO THE POINT ON YOUR PROPERTY LINE WHERE YOU WOULD LIKE TO CONNECT TO THE SERVICE CONNECTION PIPE. AN EXAMPLE IS SHOWN TO INDICATE THE DIMENSIONS DESIRED. PLEASE FILL IN THE STREET NAME IF APPLICABLE.



_____

STREET OR EASEMENT

BUILDING

7. ADDITIONAL INFORMATION OR REMARKS: _____

DATE: _____, 19___. SIGNATURE _____

PAGE___ OF___

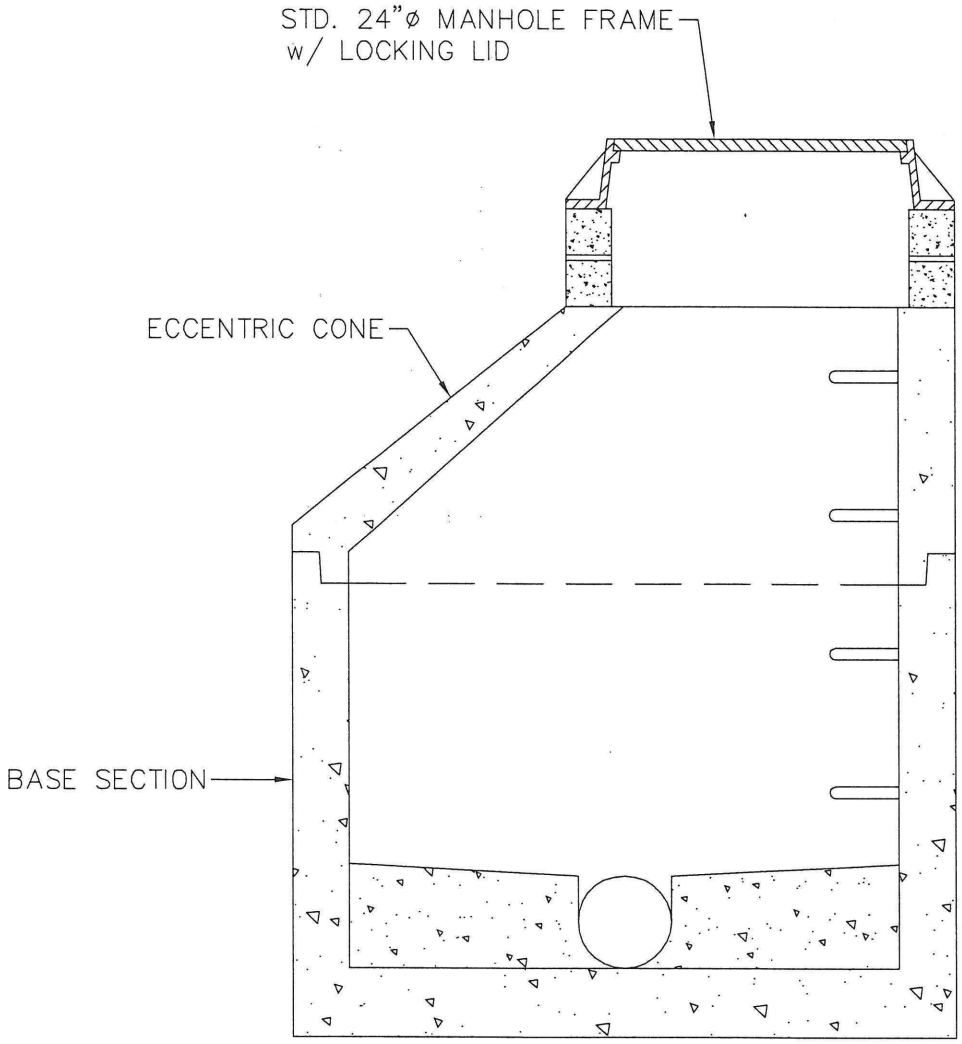
SOOS CREEK WATER & SEWER DISTRICT

SIDE SEWER CONNECTION INFORMATION

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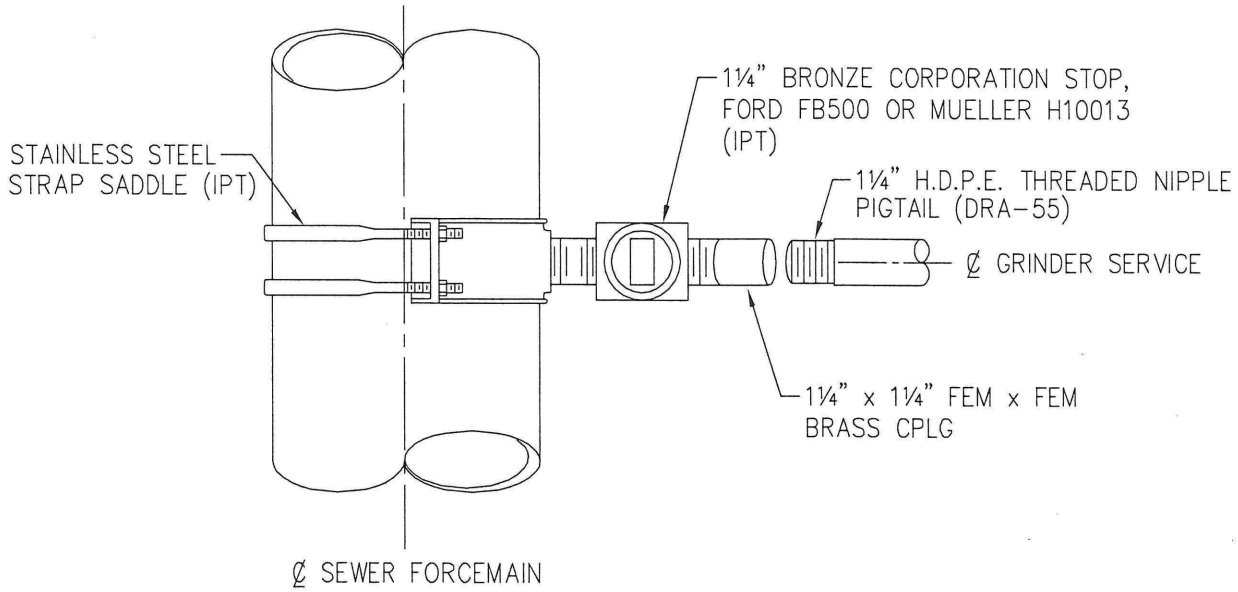


SHALLOW MANHOLE DETAIL

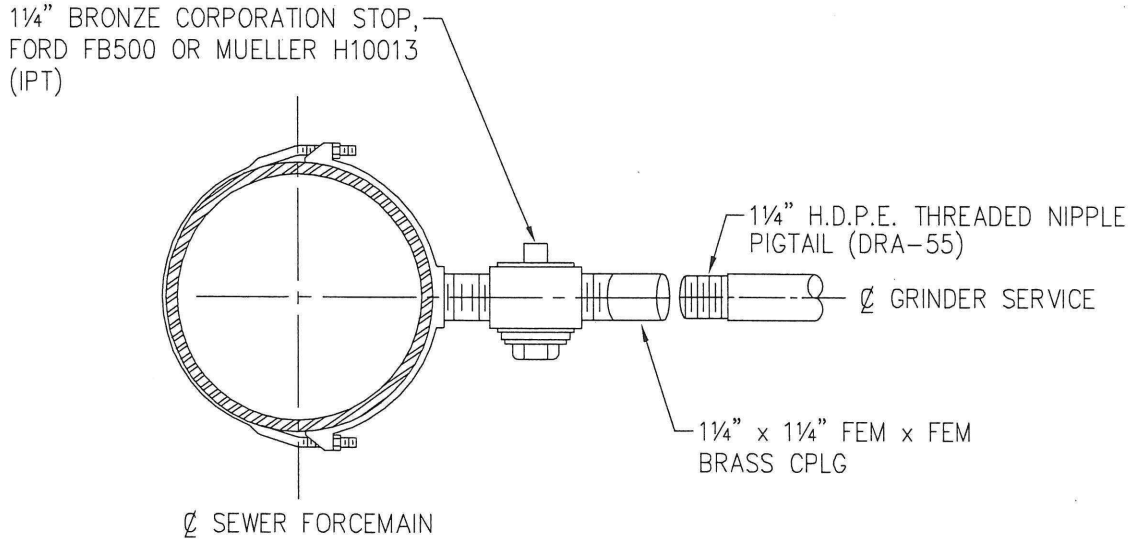
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PLAN



ELEVATION

NOTES:

1. GRINDER LINE FITTINGS: ALL FITTINGS SHALL BE CAST FROM WATER WORKS BRASS CONFORMING TO C800-89.
2. MUNICIPAL SERVICE PIPE: IRON PIPE SIZE SDR 11 WITH TRACER WIRE AND WARNING TAPE MARKED "SEWER" 12" ABOVE.
3. FOR HDPE FORCE MAIN, USE SPRING WASHERS ON SADDLE.

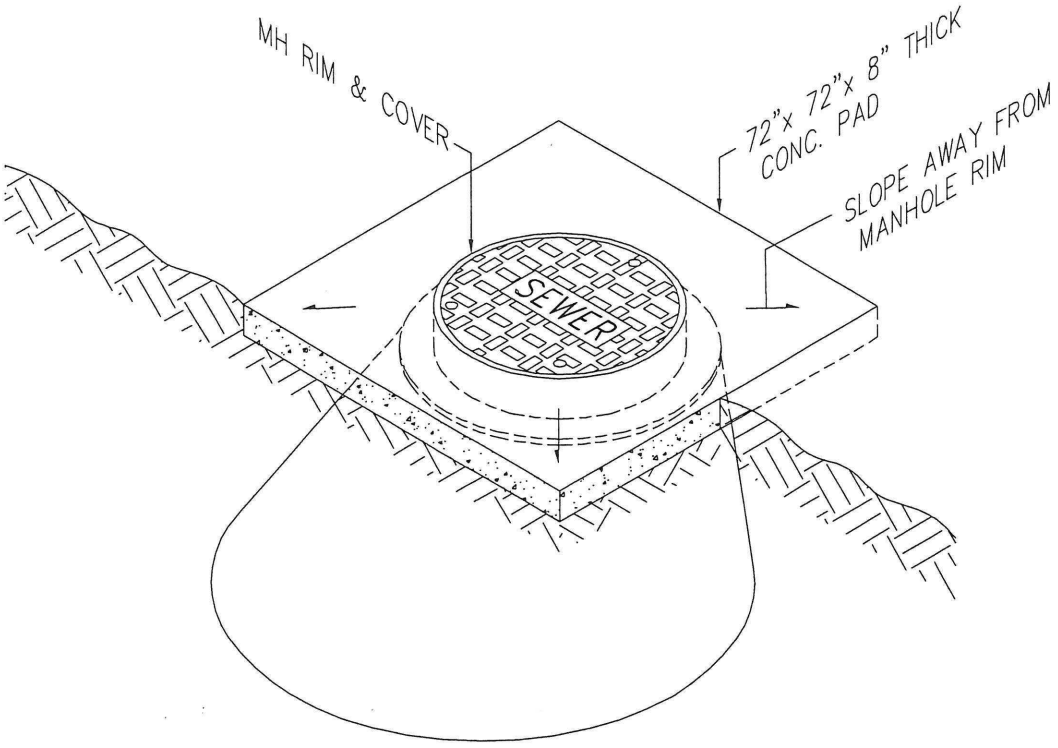
SOOS CREEK WATER & SEWER DISTRICT

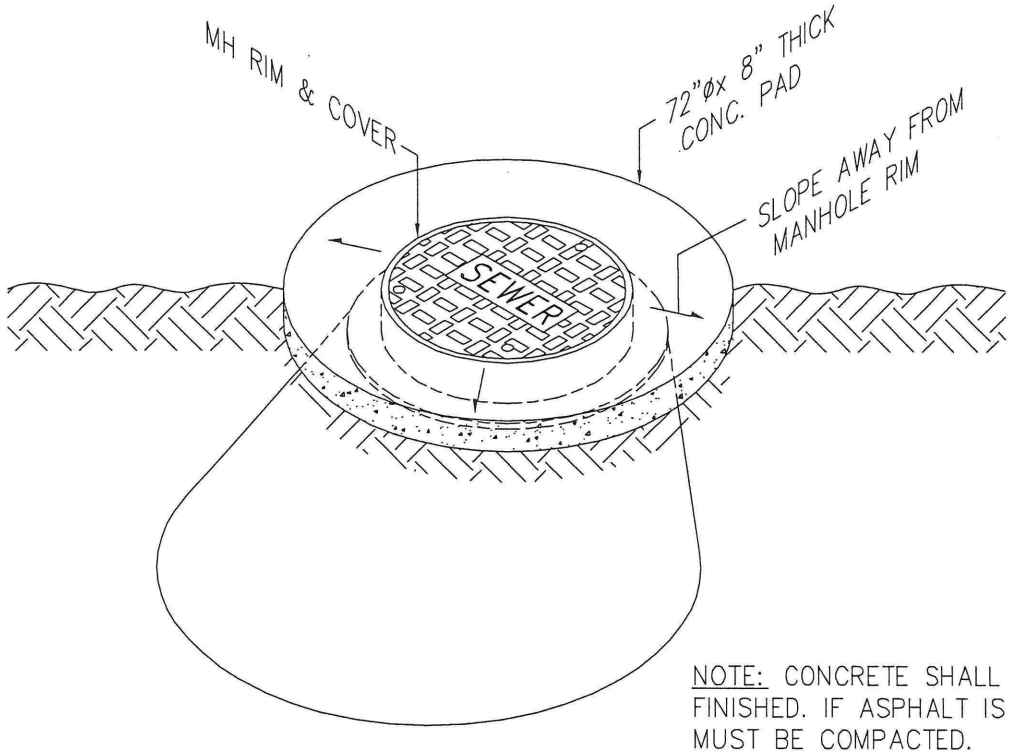
GRINDER SERVICE CONNECTION TAPPED ON EXISTING FORCE MAIN

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DWG. NO. S-22





NOTE: CONCRETE SHALL BE BRUSHED FINISHED. IF ASPHALT IS USED IT MUST BE COMPACTED.

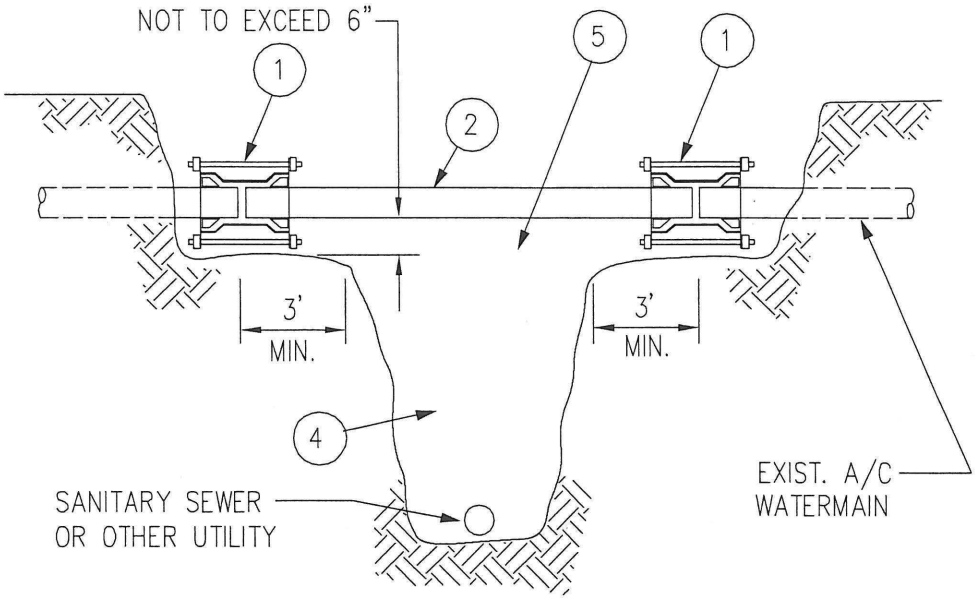
SOOS CREEK WATER & SEWER DISTRICT

MANHOLE RIM AND COVER OFF PAVEMENT

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MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

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N O T E S :

(1) COUPLING: ASBESTOS–CEMENT (A/C) BY DUCTILE IRON (DUCTILE IRON, ROMAC STYLE 501, OR EQUAL).

(2) DUCTILE IRON PIPE, CL. 52, DIAMETER TO MATCH EXISTING A/C.

(3) BACKFILL EXISTING A/C AND COUPLING WITH PEA GRAVEL TO 1' ABOVE PIPE.

(4) BACKFILL UNDER THE WATERLINE WITH CRUSHED ROCK COMPACTED TO 95% MDD, OR CONTROLLED DENSITY FILL (CDF) PER GOVERNING ROAD AGENCY REQUIREMENTS.

(5) BACKFILL OVER THE TOP OF THE WATERLINE WITH CRUSHED ROCK COMPACTED TO 95% MDD, OR CONTROLLED DENSITY FILL (CDF) PER GOVERNING ROAD AGENCY REQUIREMENTS. BACKFILL OVER THE TOP OF THE WATERLINE WITH NATIVE MATERIAL COMPACTED TO 90% MDD IF LOCATED WITHIN EASEMENT OR UNIMPROVED AREAS.

(6) A/C DISPOSAL PER CURRENT WAC AND PUGET SOUND AIR POLLUTION CONTROL AGENCY REQUIREMENTS.

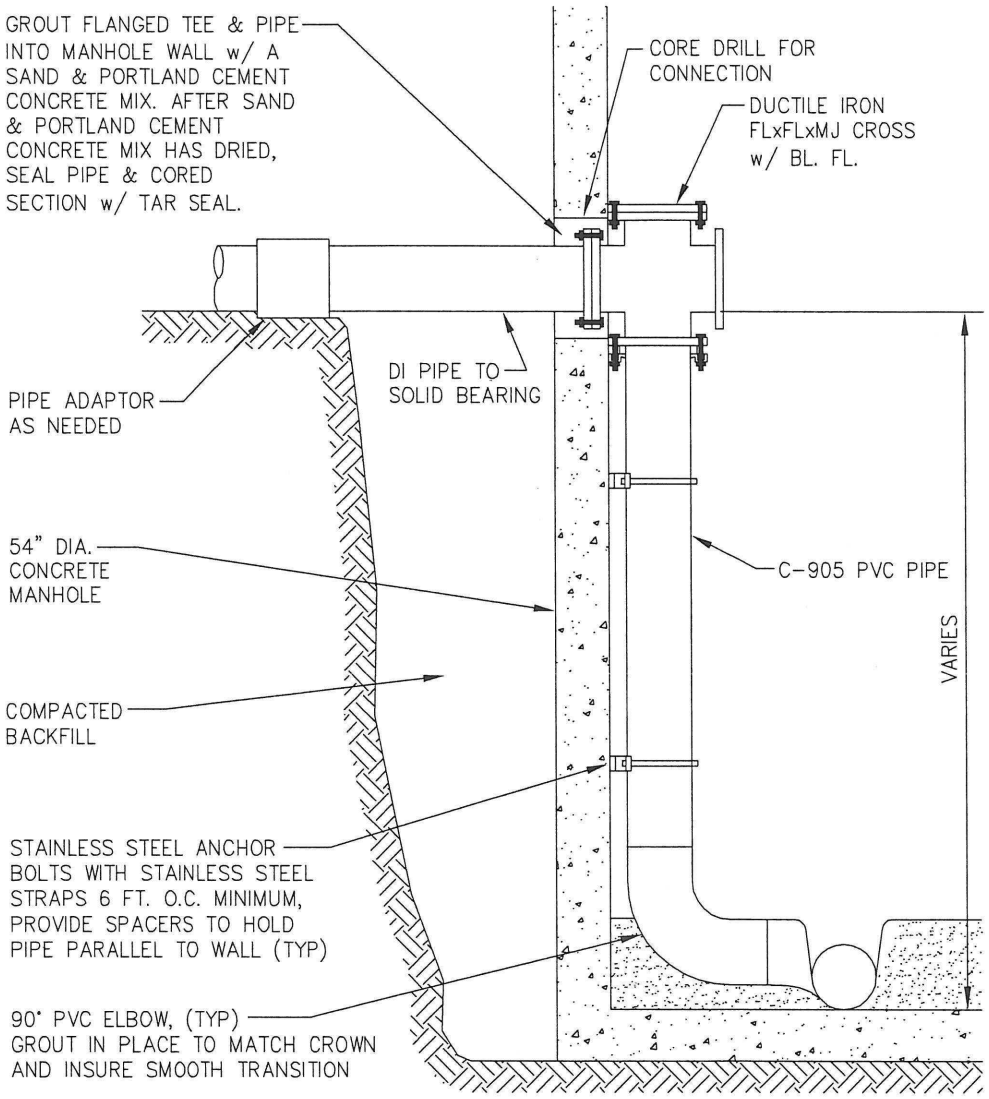
SOOS CREEK WATER & SEWER DISTRICT

A/C WATERMAIN REPLACEMENT AND SANITARY SEWER CROSSING

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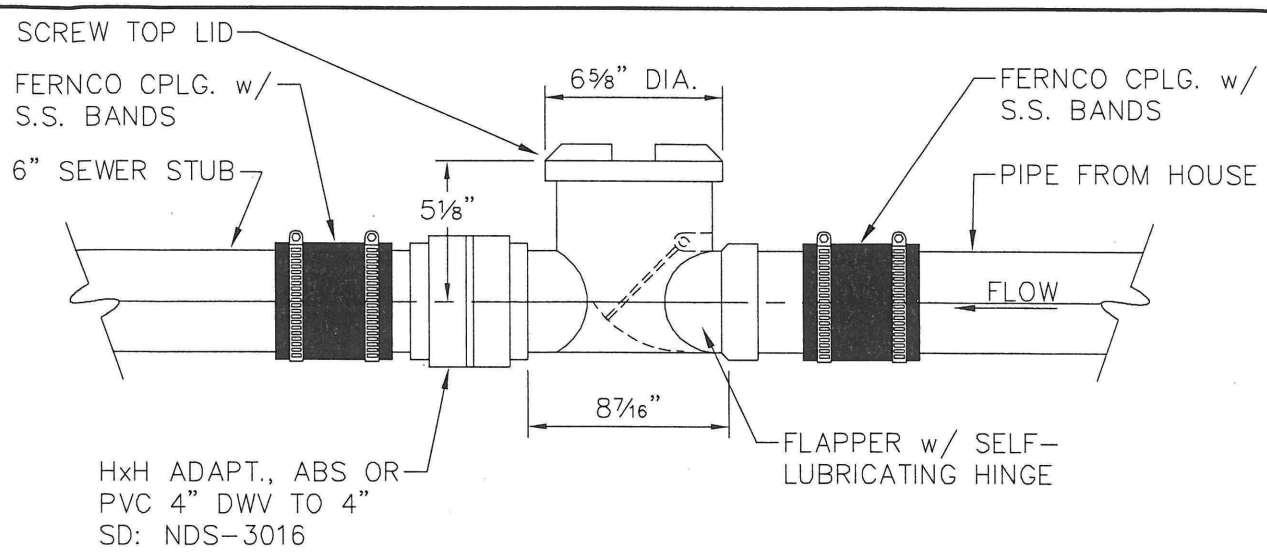
SOOS CREEK WATER & SEWER DISTRICT

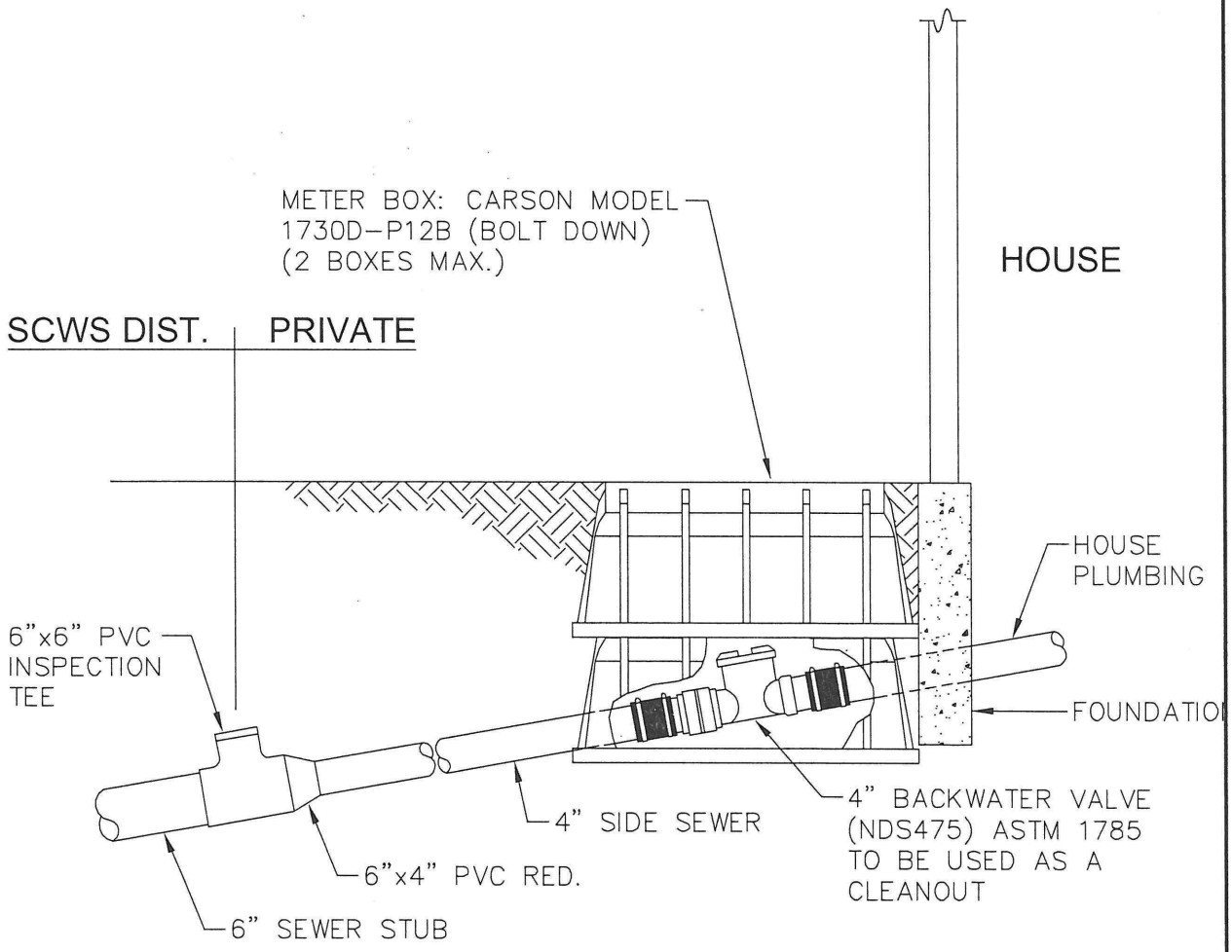
DROP MANHOLE DETAIL

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-25

DWG. NO. S-25





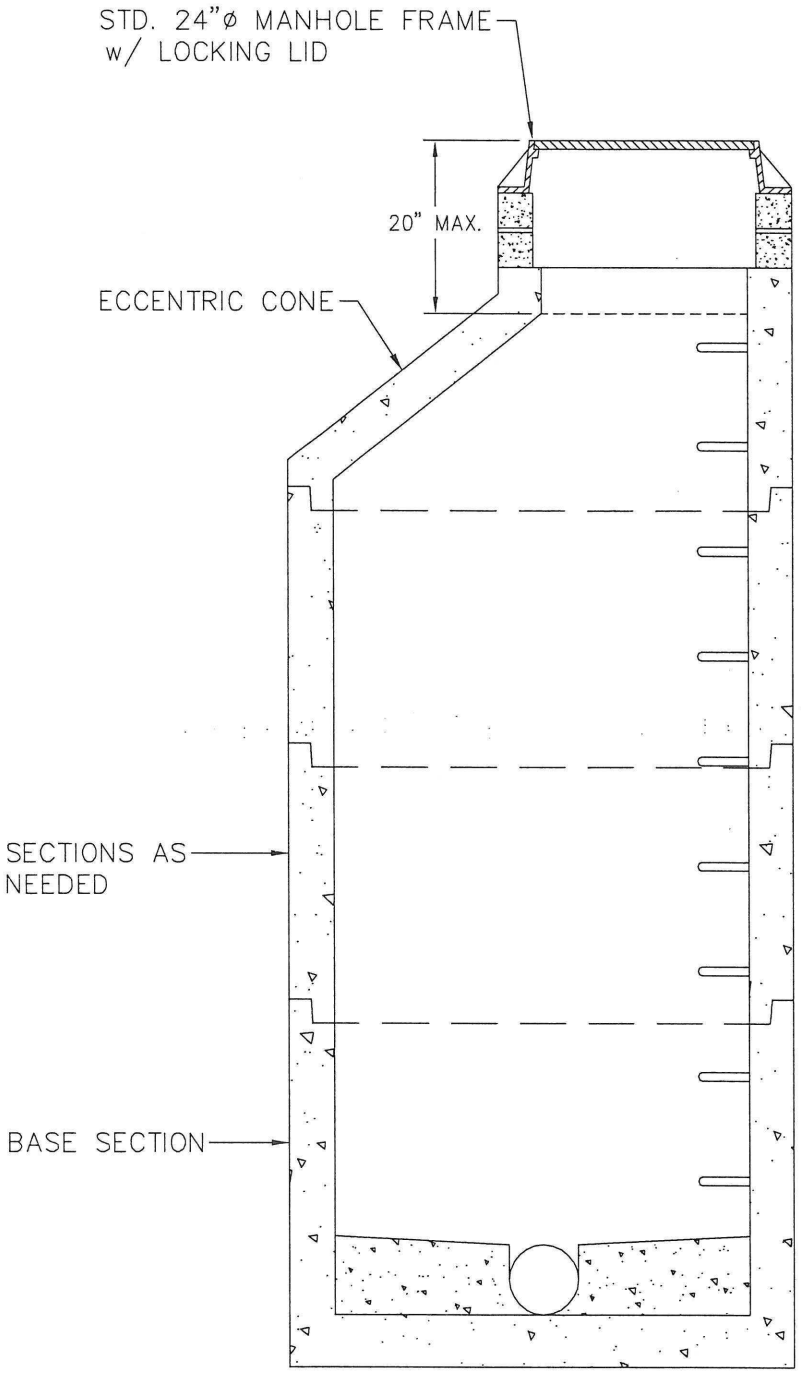
SOOS CREEK WATER & SEWER DISTRICT

BACKWATER VALVE DETAIL

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
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FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-26

DWG. NO. S-26



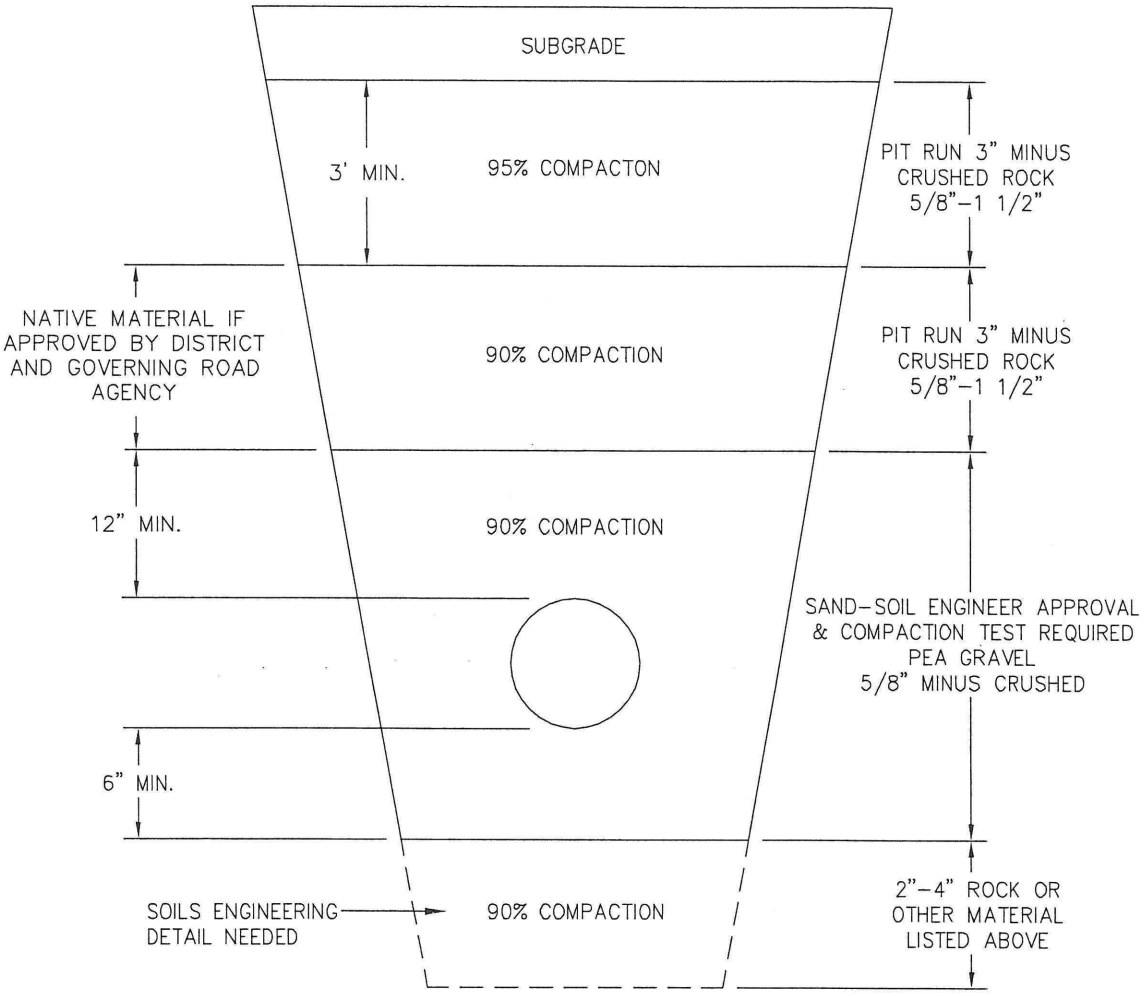
NOTE: A MINIMUM OF ONE ADJUSTMENT RING SHALL BE INSTALLED BETWEEN THE BREAK OF THE CONE AND THE MANHOLE COVER.

STANDARD MANHOLE DETAIL

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-27

DWG. NO. S-27



NOTES:

1. BEDDING REQUIRED IN RIGHT–OF–WAYS, DRIVEWAYS, PARKING LOTS, PAVED AREAS, AND NON–PAVED AREAS.
2. BEDDING FOR RIGID PIPE SHALL BE NATIVE MATERIAL UNLESS JUDGED UNSUITABLE BY THE DISTRICT AND GOVERNING ROAD AGENCY.
3. TRENCH BACKFILL, BEDDING AND MATERIAL TO CONFORM TO GOVERNING ROAD AGENCY SPECIFICATIONS AND DISTRICT STANDARDS.

TRENCH WIDTHS (IN INCHES)			
NOMINAL PIPE DIAMETER	MINIMUM EARTH	MINIMUM ROCK	MAXIMUM
2	18	24	36
3	18	24	36
4	18	24	36
6	21	24	36
8	24	24	36
12	28	28	40

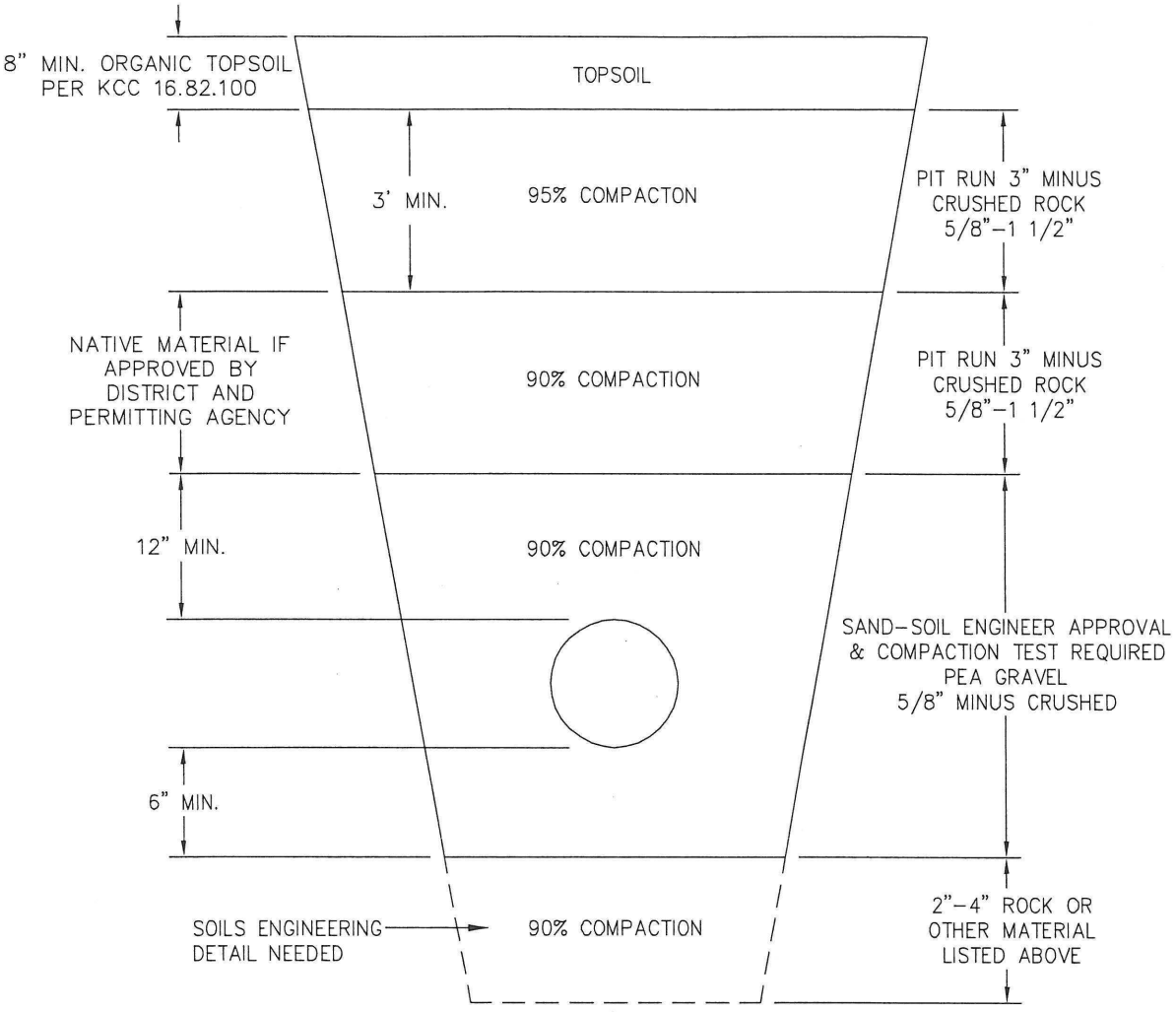
SOOS CREEK WATER & SEWER DISTRICT

TYPICAL TRENCH DETAIL

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-28

DWG. NO. S-28



NOTES:

1. BEDDING REQUIRED IN RIGHT–OF–WAYS, DRIVEWAYS, PARKING LOTS, PAVED AREAS, AND NON–PAVED AREAS.
2. BEDDING FOR RIGID PIPE SHALL BE NATIVE MATERIAL UNLESS JUDGED UNSUITABLE BY THE DISTRICT AND PERMITTING AGENCY.
3. TRENCH BACKFILL, BEDDING AND MATERIAL TO CONFORM TO PERMITTING AGENCY SPECIFICATIONS AND DISTRICT STANDARDS.

TRENCH WIDTHS (IN INCHES)			
NOMINAL PIPE DIAMETER	MINIMUM EARTH	MINIMUM ROCK	MAXIMUM
2	18	24	36
3	18	24	36
4	18	24	36
6	21	24	36
8	24	24	36
12	28	28	40

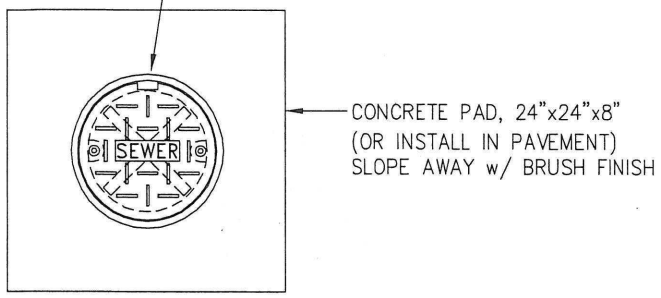
SOOS CREEK WATER & SEWER DISTRICT

TYPICAL TRENCH DETAIL (OUTSIDE ROADWAY)

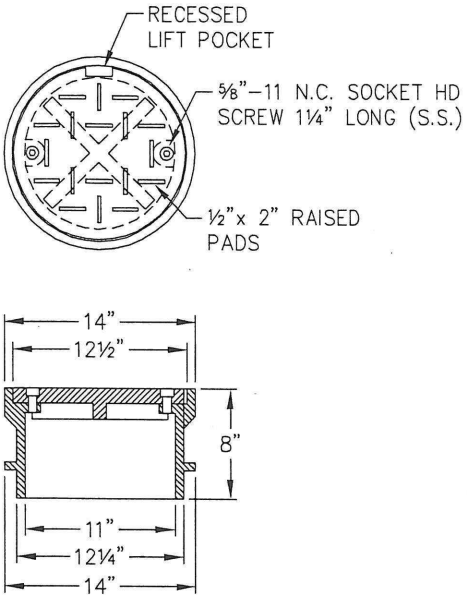
REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S-29

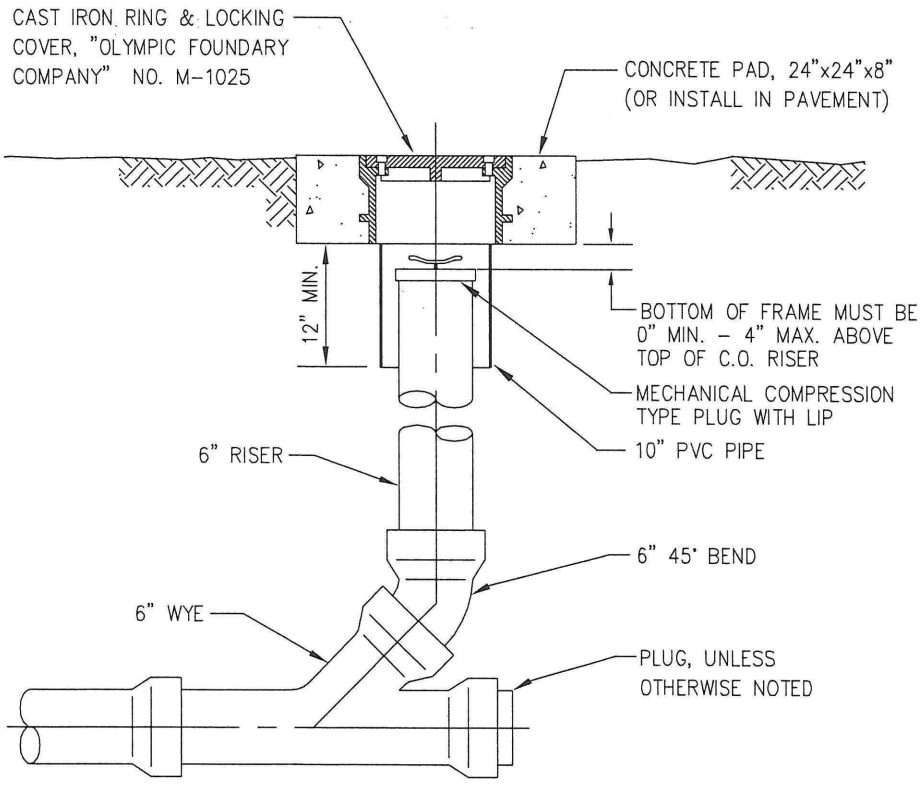
DWG. NO. S-29



PLAN



11"x8" LOCKING CLEANOUT



ELEVATION

SURFACE CLEAN OUT (MAINLINE STUB)

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

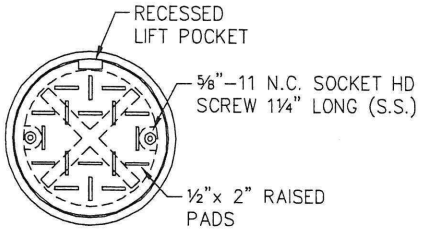
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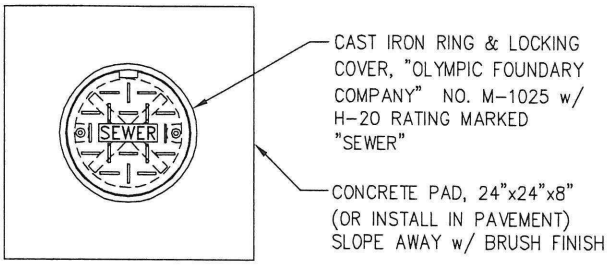
DWG. NO. S-30

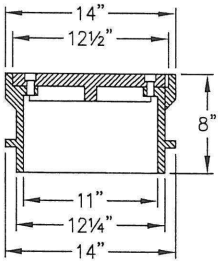
NOTES:

BRING TRACER WIRE WITHIN 1 FOOT OF SURFACE. EXTENSIONS ARE REQUIRED WHEN THE FORCE MAIN IS MORE THAN FOUR (4) FEET BELOW FINISHED GRADE. EXTENSIONS ARE TO BE A MINIMUM OF TWO (2) FEET LONG. ONE EXTENSION IS TO BE USED PER TRACER WIRE RISER.

ALL EXTENSIONS ARE TO BE MADE OF STEEL, SIZED AS NOTED, AND PAINTED WITH TWO (2) COATS OF METAL PAINT.

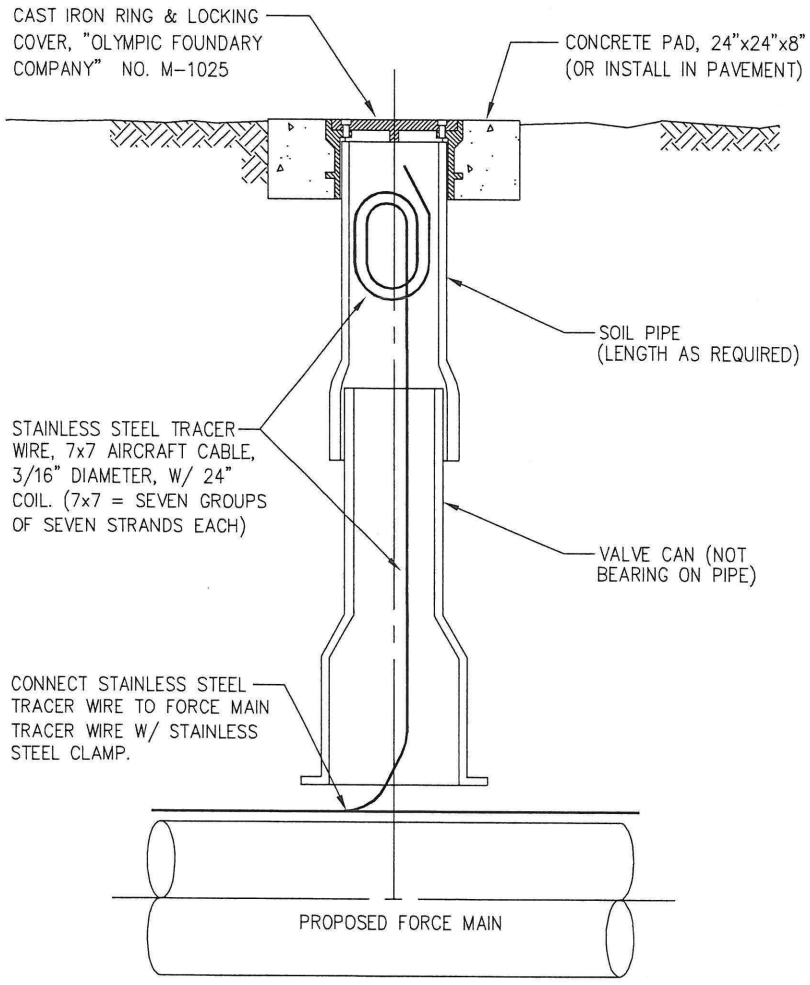






PLAN

11"x8" LOCKING CLEANOUT



SOOS CREEK WATER & SEWER DISTRICT

SEWER FORCE MAIN TRACER WIRE RISER

REVISION DATE	SCALE	DISTRICT APPROVAL	DATE APPROVED
MAY 17, 2011	NTS	K.V.	JUNE 02, 2011

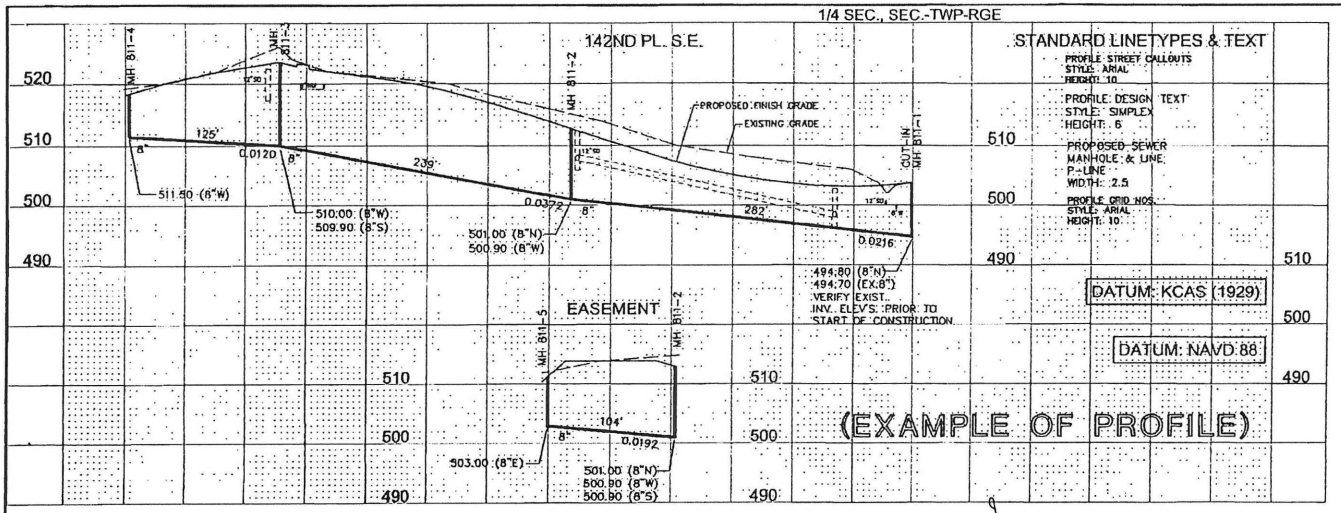
FILE NAME: M:\SOOS CREEK W&S\DESIGN STANDARDS\SWR DTLS\S–31

DWG. NO. S-31

G. SEWER STANDARD PLANS FORMAT

Note: The following 11"x17" figures are half size samples. Standard full size plans are to be 22"x34" per Section 5.

Figure SP-1	Sewer Plan Sheet Format
Figure SP-2	Construction Provisions
Figure SP-3	Materials and Surface Restoration
Figure SP-4	Standard Details



LINETYPE: GRIDLINE.LIN

STANDARD LINETYPES & TEXT

PROFILE STREET CALLOUTS
STYLE: ARIAL
HEIGHT: 10

PROFILE DESIGN TEXT
STYLE: SIMPLEX
HEIGHT: 6

PROPOSED SEWER MANHOLE & LINE P-LINE
WIDTH: 2.5

PROFILE GRID NOS.
STYLE: ARIAL
HEIGHT: 10

SEWER GENERAL NOTES:

(INSERT THE MOST CURRENT VERSION OF GENERAL NOTES)

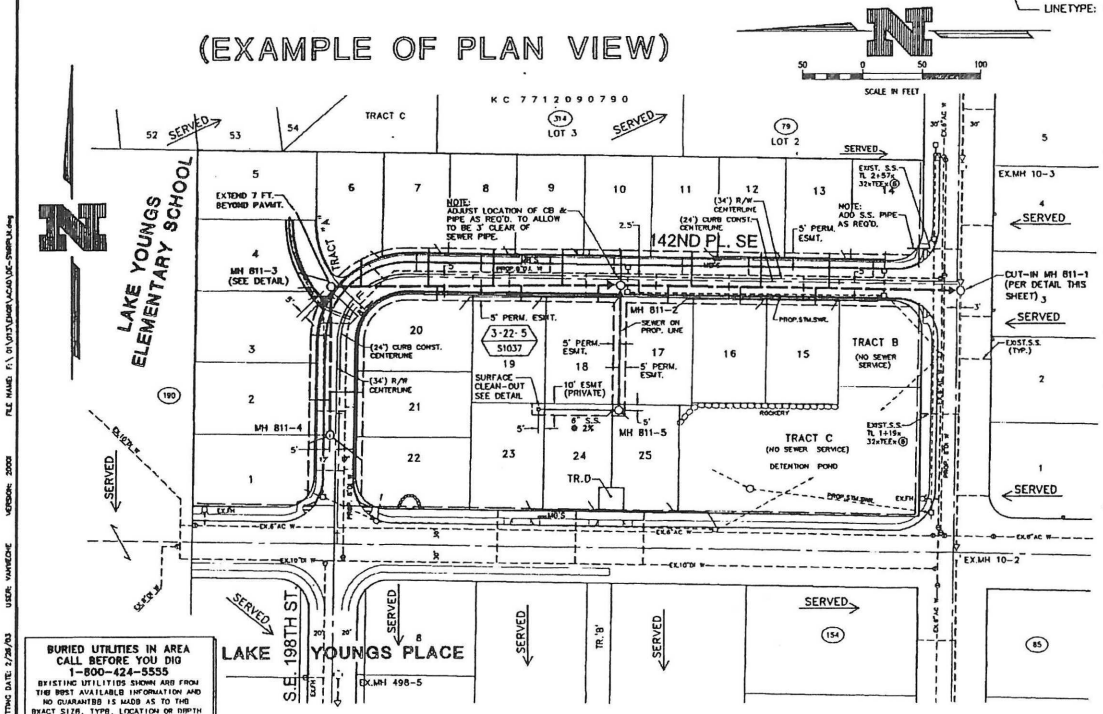
EXISTING FEATURES LEGEND

MB MAIL BOX	DECIDUOUS TREE
RS ROAD SIGN	CONIFEROUS TREE
UP UTILITY POLE	EDGE OF TREES
UTILITY BOX	FENCE
TB TELEPHONE BOX	CULVERT
PB POWER BOX	EDGE OF PAVEMENT
EX. SEWER MANHOLE	EDGE OF GRAVEL
CB CATCH BASIN	DITCH CENTERLINE
SM STORM MANHOLE	GRADE BREAK
WB WATER BLOW-OFF	STORM SEWER LINE
FH FIRE HYDRANT	SANITARY SEWER LINE
WV WATER VALVE	UNDERGROUND POWER
WM WATER METER	UNDERGROUND TELECOM
SURVEY MONUMENT	EXISTING WATER LINE
OWNERSHIP TIE	PROPOSED SEWER FORCE MAIN W/ STA. NUMBER

STANDARD BLOCKS

EXISTING FLOW ARROW
EXISTING SEWER MANHOLE
EXISTING SEWER MANHOLE W/ARROW
PROPOSED SEWER MANHOLE W/ARROW
EXISTING SEWER MANHOLE W/PROPOSED SEWER ARROW
PROPOSED SEWER MANHOLE
PROPOSED FLOW ARROW
PROPOSED CLEAN OUT
22-22-5 EASEMENT BLOCK WITH ATTRIBUTES
12 TAX LOT NO. BLOCK WITH ATTRIBUTE

(EXAMPLE OF PLAN VIEW)



STANDARD LINETYPES & TEXT

(USE THE TEXT, LINETYPE STYLES AND PEN WEIGHTS RECOMMENDED)

PROPOSED SEWER LINE
P-LINE
WIDTH: 1.8
LINETYPE: SWR.LIN
PEN WEIGHT: 0.012

EXISTING SEWER LINE
P-LINE
WIDTH: 1.4
LINETYPE: EXSS.LIN
PEN WEIGHT: 0.012

PROPOSED SEWER SERVICE
WIDTH: 0
LINETYPE: CONTINUOUS
PEN WEIGHT: 0.012

PROPOSED SEWER EASEMENT
WIDTH: 0
LINETYPE: EASEMENT.LIN
PEN WEIGHT: 0.012

SEWER DESIGN TEXT
DESIGN TEXT
STYLE: SIMPLEX.SHX
HEIGHT: 5
PEN WEIGHT: 0.015

PLAT NAME
PLAT NAME CALLOTS
STYLE: HMO.SHX
HEIGHT: 10 OR 8
PEN WEIGHT: 0.001

SE 240TH ST
STREET NAME CALLOUTS
STYLE: HWF1.SHX
HEIGHT: 10
PEN WEIGHT: 0.015

12
PROPOSED PLAT LOT NOS.
STYLE: ROMAND.SHX
HEIGHT: 7
PEN WEIGHT: 0.009

22
EXISTING PLAT NOS.
STYLE: SIMPLEX.SHX
HEIGHT: 6
PEN WEIGHT: 0.004

NOTE:
ALL SYMBOLS, TEXT & LINES SHOWN ARE AT A LTSCALE OF 50.

THESE ARE THE DISTRICT STANDARDS AND WILL HELP TO MAKE REVIEW AND REVISING TO CONSTRUCTION RECORDS EASIER.

THE TEXT HEIGHT IS USED TO KEEP HALF SIZING FOR DISTRICT RECORDS READABLE.

IN THE TITLE BLOCK AREA, JUST USE THE EDIT ATTRIBUTE COMMAND AND EDIT THE TEXT AS NEEDED.

SITE

VICINITY MAP

THIS DRAWING REDUCED ONE-HALF (SCALE ACCORDINGLY)

NO.	BY	DATE	DESCRIPTION
			REVISIONS

DATE
APPROVED
DESIGN
DRAWN
CHECKED
JOB NO.

OPTIONAL ENGINEER NAME AND LOGO HERE

DES. FLD. BK. NO. PG.
CHT. FLD. BK. NO. PG.

SCALE HORIZ: 1"=50'
VERT: 1"=10'

SOOS CREEK WATER & SEWER DISTRICT

SEWER PLAN AND PROFILE
PROJECT NAME HERE

BASE MAP
SHEET 1 OF 4
DRAWING SP-1

PLOTTING DATE: 2/26/03 USER: VANECHE VERSION: 2003 FILE NAME: F:\...\SP1.dwg

CONSTRUCTION PROVISIONS (Revised 05-16-11)

1. STANDARD SPECIFICATIONS

ALL WORK, MATERIALS AND TESTING SHALL CONFORM TO THE STANDARDS OF SOOS CREEK WATER & SEWER DISTRICT AND THE "STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION", CURRENT EDITION, AS PREPARED BY THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION, AND HEREINAFTER REFERRED TO AS THE "STANDARD SPECIFICATIONS," EXCEPT AS HEREIN MODIFIED.

2. TRENCH EXCAVATION, BEDDING AND BACKFILL

ALL WORK WITHIN THE RIGHT-OF-WAY SHALL COMPLY WITH ALL PERTINENT PERMITS, THE GOVERNING AGENCY'S CURRENT ROAD STANDARDS, AND THE STANDARD SPECIFICATIONS. ALL MATERIAL FROM CLEARING AND GRUBBING SHALL BE HAULED TO AN APPROVED WASTE DISPOSAL SITE PROVIDED BY THE DEVELOPER/CONTRACTOR.

WHEN TRENCHING THROUGH EXISTING PAVEMENT, THE PAVEMENT SHALL BE CUT ON A NEAT-LINE BY SAW CUTTING. TRENCH SIDES SHALL BE KEPT AS VERTICAL AS POSSIBLE GIVEN THE SOIL CONDITIONS. COMPACTION AND RESTORATION SHALL BE DONE AS DETAILED BELOW AND IMMEDIATELY AFTER THE TRENCH BACKFILL IS PLACED, SO AS TO CAUSE THE LEAST DISRUPTION TO TRAFFIC. ALL PAVEMENT SHALL BE CUT 1 FOOT OUTSIDE THE EDGE OF THE TRENCH ON EACH SIDE.

ANY TRENCH EXCEEDING FOUR FEET IN DEPTH SHALL BE PROVIDED WITH ADEQUATE SAFETY SYSTEMS MEETING THE REQUIREMENTS OF THE WASHINGTON STATE INDUSTRIAL SAFETY AND HEALTH ACT (WISHA), CHAPTER 49.17 RCW, AND ALL REGULATIONS ADOPTED PURSUANT THERETO. THE DEVELOPER/CONTRACTOR SHALL HAVE A STRUCTURAL ENGINEER REVIEW AND STAMP ANY AND ALL SHORING PLANS AND CALCULATIONS. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR WORKER SAFETY AND THE DISTRICT AND THE DISTRICT'S ENGINEER ASSUME NO RESPONSIBILITY.

WHEN NATIVE MATERIAL AT THE TRENCH BOTTOM IS SUITABLE FOR PIPE BEDDING, THE BOTTOM SHALL BE HAND FINISHED TO GRADE SO THAT THE PIPE WILL HAVE UNIFORM SUPPORT ALONG THE BARREL AND BELL. AFTER THE PIPE IS IN PLACE, ADDITIONAL HAND SELECTED NATIVE MATERIAL MEETING THE REQUIREMENTS FOR BEDDING MATERIAL SHALL BE PLACED AND TAMPED AROUND THE PIPE FOR A MINIMUM OF 4 INCHES ABOVE THE CROWN OF THE PIPE.

WHEN NATIVE MATERIAL AT THE TRENCH BOTTOM IS STONY OR OTHERWISE NON-UNIFORM, THE TRENCH SHALL BE OVER-EXCAVATED A MINIMUM OF 6 INCHES BELOW THE SPECIFIED GRADE AND A LAYER OF PIPE BEDDING MATERIAL SHALL BE FURNISHED AND PLACED TO THE SPECIFIED GRADE. AFTER THE PIPE IS IN PLACE, ADDITIONAL HAND SELECTED NATIVE MATERIAL MEETING THE REQUIREMENTS FOR BEDDING MATERIAL SHALL BE PLACED AND TAMPED AROUND THE PIPE FOR A MINIMUM OF 4 INCHES ABOVE THE CROWN OF THE PIPE.

IF THE NATIVE MATERIAL AT THE TRENCH BOTTOM IS UNSUITABLE FOR FOUNDATION PURPOSES OR WILL HAVE DIFFICULTY PROVIDING UNIFORM BEARING FOR THE PIPE, SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH A MINIMUM OF 6 INCHES OF COMPACTED FOUNDATION MATERIAL.

THE BEDDING MATERIAL SHALL BE CARRIED UP EVENLY ON BOTH SIDES OF THE PIPE SIMULTANEOUSLY IN APPROXIMATELY 6-INCH LAYERS AND EACH LAYER THOROUGHLY COMPACTED WITH APPROPRIATE TOOLS IN SUCH MANNER AS TO AVOID INJURING OR DISTURBING THE COMPLETED PIPELINE. ALL BEDDING AND NATIVE MATERIAL SHALL BE STORED AWAY FROM THE EDGES OF EXCAVATION AND OFF THE PAVED ROADWAY AND SHOULDER.

ALL TRENCH BACKFILL SHALL BE MECHANICALLY COMPACTED TO 95% OF THE MAXIMUM DENSITY WITHIN THE RIGHT-OF-WAY AND IN ALL AREAS (PAVED AND UNPAVED) WHERE STREETS, ROADWAY SHOULDERS, DRIVEWAYS, SIDEWALKS, OR PARKING LOTS WILL BE CONSTRUCTED OR RECONSTRUCTED OVER THE TRENCH EXCEPT FOR TRENCHES OVER 8 FEET IN DEPTH. WHEN THE TRENCH DEPTH EXCEEDS 8 FEET, TRENCH BACKFILL UP TO 4 FEET FROM THE TOP OF THE TRENCH SHALL BE MECHANICALLY COMPACTED TO 90% OF THE MAXIMUM DENSITY. THE REMAINING TOP 4 FEET OF THE TRENCH SHALL THEN BE MECHANICALLY COMPACTED TO 95% OF THE MAXIMUM DENSITY. IN UNPAVED AREAS AND OTHER AREAS NOT SUBJECT TO VEHICULAR TRAFFIC, TRENCH BACKFILL FROM THE PIPE TO WITHIN 3 FEET OF THE SURFACE SHALL BE COMPACTED TO 90% OF THE MAXIMUM DENSITY. THE UPPER 3 FEET SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY.

ALL DENSITIES SHALL BE DETERMINED BY TESTING PER THE MODIFIED PROCTOR METHOD, ASTM D1557, THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING DENSITY TEST REPORTS CERTIFIED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF WASHINGTON. A MINIMUM OF ONE TEST SHALL BE TAKEN WITHIN EVERY 500 FEET OF TRENCH LENGTH AND AT DEPTHS UP TO 50% OF TRENCH DEPTH, OR AS DIRECTED BY THE DISTRICT'S FIELD REPRESENTATIVE OR THE GOVERNING ROAD AGENCY. COMPACTION OF LATERALS OR SERVICE LINE TRENCHES SHALL BE TESTED WHERE DIRECTED BY THE DISTRICT'S FIELD REPRESENTATIVE OR THE GOVERNING ROAD AGENCY. TESTING OF CDF, WHEN USED AS REQUIRED BY THE GOVERNING ROAD AGENCY, SHALL BE IN ACCORDANCE WITH ASTM D4832.

TRENCH BACKFILL SHALL BE PLACED IN UNIFORM LOOSE LAYERS NO MORE THAN 12 INCHES THICK AND MECHANICALLY COMPACTED AS SPECIFIED. IN ANY TRENCH WHERE THE SPECIFIED COMPACTION CANNOT BE ACHIEVED WITH NATIVE BACKFILL, THE TOP 4 FEET SHALL BE REPLACED AND COMPACTED TO 95% OF THE MAXIMUM DENSITY WITH IMPORTED BANK RUN GRAVEL. THE DISTRICT'S FIELD REPRESENTATIVE RESERVES THE RIGHT TO REQUEST A COMPACTION TEST AT ANY TIME ON THE BACKFILL MATERIAL.

IN CUTS TRANSVERSE TO THE ROAD ALIGNMENT AND AT ALL UTILITY CROSSINGS, THE ENTIRE TRENCH SHALL BE BACKFILLED WITH CRUSHED SURFACING. BACKFILL SHALL BE PLACED AND MECHANICALLY COMPACTED IN 12-INCH MAXIMUM LIFTS.

AFTER BACKFILL AND COMPACTION, AN IMMEDIATE COLD MIX PATCH SHALL BE PLACED AND MAINTAINED IN A MANNER ACCEPTABLE TO THE GOVERNING ROAD AGENCY UNTIL REPLACED WITH PERMANENT SURFACING.

ALL PIPE AND FITTINGS SHALL BE LAID "IN THE DRY" UNLESS OTHERWISE APPROVED BY ENGINEER. TRENCH EXCAVATIONS SHALL BE DEWATERED BY USING WELL POINT SYSTEMS, SUMPS WITH PUMPS OR OTHER METHODS APPROVED BY THE DISTRICT. DEWATERING SYSTEMS SHALL BE USED IN ACCORDANCE WITH GOOD STANDARD PRACTICE AND SHALL BE EFFICIENT ENOUGH TO LOWER THE WATER LEVEL IN ADVANCE OF THE EXCAVATION AND MAINTAIN IT CONTINUOUSLY TO KEEP THE TRENCH BOTTOM AND SIDES FIRM AND DRY. DEVELOPER/CONTRACTOR SHALL SUBMIT THE DEWATERING PLAN TO THE DISTRICT FOR REVIEW AT LEAST 10 DAYS PRIOR TO COMMENCING ANY DEWATERING WORK. ALL DEWATERING EFFLUENT SHALL BE ROUTED THROUGH A DEWATERING POND PRIOR TO RELEASE.

GROUNDWATER SHALL BE CONTROLLED SUCH THAT SOFTENING OF THE BOTTOM OF EXCAVATIONS OR FORMATION OF "QUICK" CONDITIONS OR "BOILS" DURING EXCAVATION SHALL BE PREVENTED AND NO SOIL SHALL BE ERODED INTO THE EXCAVATION FROM THE SIDES OF EXCAVATION. DEWATERING SYSTEMS SHALL BE DESIGNED AND OPERATED SO AS TO PREVENT REMOVAL OF THE NATURAL SOILS. THE DEVELOPER/CONTRACTOR SHALL AT ALL TIMES HAVE ON HAND SUFFICIENT PUMPING EQUIPMENT AND MACHINERY IN GOOD WORKING CONDITION FOR ALL ORDINARY EMERGENCIES, INCLUDING POWER OUTAGES, AND SHALL HAVE AVAILABLE AT ALL TIMES COMPETENT WORKERS FOR THE OPERATION OF SAID EQUIPMENT.

DEVELOPER/CONTRACTOR SHALL CONTROL SURFACE RUNOFF SO AS TO PREVENT ENTRY OR COLLECTION OF WATER IN EXCAVATIONS AND SHALL MAINTAIN THE UNDISTURBED STATE OF THE FOUNDATION SOILS AND ALLOW THE PLACEMENT OF ANY BACKFILL TO THE REQUIRED DENSITY. THE RELEASE OF GROUNDWATER TO ITS STATIC LEVEL SHALL BE PERFORMED IN SUCH A MANNER AS TO MAINTAIN THE UNDISTURBED STATE OF THE NATURAL FOUNDATION SOILS, PREVENT DISTURBANCE OF COMPACTED BACKFILL, AND PREVENT FLOTATION OR MOVEMENT OF STRUCTURES AND PIPELINES.

DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL PERMIT REQUIREMENTS AND PROVISIONS FOR MONITORING AND MANAGING WATER DISCHARGED FROM THE EXCAVATION.

3. CONNECTION TO EXISTING SEWER SYSTEM

CONNECTIONS TO EXISTING LINES SHALL BE MADE ONLY WITH THE WRITTEN APPROVAL OF SOOS CREEK WATER & SEWER DISTRICT. THE DEVELOPER/CONTRACTOR SHALL NOTIFY THE DISTRICT'S FIELD REPRESENTATIVE AND OTHER UTILITIES AT LEAST 48 HOURS IN ADVANCE OF ANY CONSTRUCTION AND MAKE THE NECESSARY ARRANGEMENTS WITH THE DISTRICT'S FIELD REPRESENTATIVE FOR THE CONNECTION TO THE EXISTING SEWER SYSTEM. THE DEVELOPER/CONTRACTOR SHALL FURNISH ALL MATERIAL, EQUIPMENT AND LABOR NECESSARY FOR MAKING THE CONNECTION UNDER THE SUPERVISION OF THE DISTRICT. THE 48-HOUR NOTICE REQUIREMENT SHALL NOT COUNT SATURDAYS, SUNDAYS, AND HOLIDAYS.

WORK SHALL NOT BE STARTED UNTIL ALL OF THE MATERIAL, EQUIPMENT AND LABOR NECESSARY TO PROPERLY COMPLETE WORK IS ASSEMBLED ON THE SITE. ONCE WORK IS STARTED ON A CONNECTION, IT SHALL PROCEED CONTINUOUSLY WITHOUT INTERRUPTION AND AS RAPIDLY AS POSSIBLE UNTIL THE CONNECTION IS COMPLETED. BEFORE ORDERING MATERIALS FOR ANY CONNECTION TO AN EXISTING MANHOLE, DEVELOPER/CONTRACTOR SHALL EXCAVATE THE MANHOLE AND VERIFY OUTSIDE DIAMETER OF ALL PIPES FOR DETERMINING TYPES OF FITTINGS TO BE USED. ALL WORK SHALL BE COORDINATED WITH THE DISTRICT'S FIELD REPRESENTATIVE. THE EXISTING SEWERS SHALL REMAIN IN SERVICE AT ALL TIMES.

CONNECTIONS TO SANITARY SEWER MANHOLES SHALL BE MADE USING A SAND COLLAR, A CONCRETE COUPLING OR A KOR-N-SEAL BOOT. THE PIPE TO MANHOLE CONNECTION SHALL BE WATERTIGHT. ANY LEAKS IN THE COUPLINGS OR OTHER AREAS CREATED WHILE CONNECTING TO THE EXISTING MANHOLE SHALL BE SEALED WITH STRATA TECH ST-520 INJECTION RESIN OR APPROVED EQUAL.

DEVELOPER/CONTRACTOR SHALL RE-CHANNEL EXISTING MANHOLES AS NECESSARY TO SMOOTHLY DIRECT THE FLOW INTO THE EXISTING SYSTEM.

ALL WATER AND/OR CONSTRUCTION DEBRIS SHALL BE REMOVED FROM NEW SEWERS AND NOT BE PERMITTED TO ENTER THE EXISTING SYSTEM. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR FLUSHING OUT AND CLEANING ANY EXISTING SEWERS INTO WHICH GRAVEL, ROCKS OR OTHER DEBRIS HAS ENTERED AS A RESULT OF THE DEVELOPER'S/CONTRACTOR'S OPERATIONS, AND SHALL PAY FOR REPAIR TO LIFT STATIONS OR OTHER FACILITIES DAMAGED BY SUCH DEBRIS. ALL FLUSHING WATER SHALL BE PUMPED FROM UPSTREAM MANHOLES OR SEWER LINES AND SHALL NOT BE ALLOWED TO ENTER THE EXISTING SEWER.

4. SEPARATION OF UTILITIES

MINIMUM SEPARATION BETWEEN SEWER AND WATER MAINS SHALL CONFORM TO SECTION C1-9.1 OF THE "CRITERIA FOR SEWAGE WORKS DESIGN", CURRENT EDITION, AS PUBLISHED BY THE DEPARTMENT OF ECOLOGY. MINIMUM SEPARATION BETWEEN OTHER UTILITIES SHALL BE 6 INCHES WITH A SAND CUSHION.

PUGET SOUND ENERGY VAULTS, HAND HOLES AND LIGHT STANDARDS SHALL BE LOCATED NO CLOSER THAN 10 FEET FROM ANY SEWER MAINS AND STUB SERVICES. DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF VAULTS, HAND HOLES AND LIGHT STANDARDS WITH THE SEWER STUB SERVICES. NO CONSTRUCTION SHALL START UNTIL THE DEVELOPER/CONTRACTOR HAS FURNISHED THE DISTRICT WITH A WORK SKETCH FROM PUGET SOUND ENERGY OR A SIGNED HOLD HARMLESS AGREEMENT (FORM SUPPLIED BY THE DISTRICT) IS PROVIDED.

5. THRUST BLOCKING

WHEN DIGGING NEAR FITTINGS ON EXISTING PIPELINES, TEMPORARY BLOCKING SHALL BE INSTALLED TO PREVENT BLOWOUTS. BLOCKING SHALL ALLOW FOR ANY CONNECTIONS TO THE FITTING TO BE REMOVED WITHOUT DAMAGING THE FITTING. THRUST BLOCKING SHALL CONFORM TO THE STANDARD DETAILS. WHERE UNFAVORABLE GROUND CONDITIONS ARE ENCOUNTERED, SPECIAL BLOCKING MAY BE REQUIRED AS DIRECTED BY THE DISTRICT IN THE FIELD.

6. SEWER MAIN TESTING

GRAVITY SEWERS AND APPURTENANCES SHALL BE TESTED AFTER BACKFILLING BY THE LOW-PRESSURE AIR METHOD IN ACCORDANCE WITH SECTION 7-17.3(2) OF THE STANDARD SPECIFICATIONS, EXCEPT WHERE THE GROUND WATER TABLE IS SUCH THAT THE DISTRICT MAY REQUIRE THE INFILTRATION TEST. FINAL ACCEPTANCE OF THE SEWER MAIN INSTALLATION WILL BE SUBJECT TO THE DISTRICT'S RESOLUTION NO. 1904-S, WHICH ALLOWS A MAXIMUM PONDING DEPTH OF 3/4-INCH. IN THE EVENT OF CONFLICTS BETWEEN THE STANDARDS ESTABLISHED IN RESOLUTION NO. 1904-S AND THE STANDARDS SPECIFIED IN SECTION 7-17.3(2) OF THE STANDARD SPECIFICATIONS, THE STANDARDS OF THE RESOLUTION WILL TAKE PRECEDENCE.

7. REPAIR OF PIPELINE FAILURES

BROKEN OR OTHERWISE DEFECTIVE PIPE SHALL BE REMOVED AND REPLACED. REPAIR BANDS OR CLAMPS SHALL NOT BE USED TO REPAIR BROKEN PIPE.

8. JACKED CROSSING

AT LOCATIONS AS REQUIRED BY THE DISTRICT OR GOVERNING ROAD AGENCY, OR AS PROPOSED BY THE DEVELOPER/CONTRACTOR, SEWER MAIN CROSSINGS OF ARTERIAL STREETS SHALL BE MADE BY JACKING, DRIVING, OR AUGURING A STEEL CASING PIPE BENEATH THE SURFACE. ALIGNMENT AND GRADE OF CASINGS FURNISHED SHALL BE SUCH THAT NO ADDITIONAL FITTINGS ARE NECESSARY TO MAKE THE CONNECTION, IF THE CASING DOES NOT MEET THIS REQUIREMENT, IT SHALL BE ABANDONED BY FILLING THE CASING WITH MOIST SAND AND A NEW CASING INSTALLED TO MEET THE LINE AND GRADE REQUIREMENTS. NO OPEN EXCAVATION SHALL BE MADE CLOSER THAN 4 FEET FROM THE EDGE OF PAVEMENT.

DIAMETER OF CASING PIPE SHALL BE SUFFICIENT TO ALLOW INSTALLATION OF THE SEWER. WALL THICKNESS SHALL BE SUFFICIENT TO WITHSTAND INSTALLATION FORCE AND HIGHWAY LOADING WITH A MINIMUM THICKNESS OF 1/4-INCH. AFTER THE SEWER MAIN HAS BEEN ADJUSTED TO GRADE, MOIST SAND SHALL BE TAMPED INTO THE CASING PIPE SO THAT ALL VOIDS WILL BE FILLED. MANUFACTURED CASING SPACERS THAT PROHIBIT MOVEMENT OF THE PIPE IN ANY DIRECTION WITHIN THE CASING MAY BE USED IN LIEU OF FILLING THE VOID BETWEEN THE SEWER MAIN AND THE CASING WALL WITH SAND.

10. EXISTING UTILITIES

EXISTING UTILITIES SHOWN ON ANY REFERENCE DRAWINGS PROVIDED BY THE DISTRICT HAVE BEEN PLOTTED FROM THE BEST INFORMATION AVAILABLE TO THE DISTRICT. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING UTILITIES WELL ENOUGH IN ADVANCE OF THE EXCAVATION TO PREVENT DAMAGE DURING CONSTRUCTION. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM HIS OPERATIONS ON THE PROJECT.

11. WARRANTY PERIOD

THE DEVELOPER MAKING THE APPLICATION FOR A LINE EXTENSION SHALL BE RESPONSIBLE FOR THE MATERIALS AND FOR SATISFACTORY OPERATION OF THE FACILITY FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE OF THE COMPLETED PROJECT AND THE BILL OF SALE TO THE DISTRICT.

NO. | BY | DATE | DESCRIPTION — REVISIONS

DATE APPROVED
PRINCIPAL APPROVAL
DESIGN
DRAWN
CHECKED
JOB NO.

OPTIONAL ENGINEER NAME AND LOGO HERE

SCALE HORIZ.: VERT.:
DES. FLD. BK. NO. PG.
CST. FLD. BK. NO. PG.

SOOS CREEK WATER & SEWER DISTRICT

SEWER MAIN EXTENSION
PROJECT NAME HERE
CONSTRUCTION PROVISIONS

BASE MAP

SHEET 2 OF 4

DRAWING FIG. SP-2

MATERIALS (Revised 05-16-11)

1. **PIPE**

GRAVITY SEWERS AND SERVICES SHALL BE CONSTRUCTED OF PVC PIPE CONFORMING TO SECTION 9-05.12 OF THE STANDARD SPECIFICATIONS UNLESS REQUIRED OTHERWISE BY THE DISTRICT. PVC GRAVITY SEWER MAIN AND PVC GRAVITY SEWER SERVICE PIPE SHALL BE CONSIDERED FLEXIBLE CONDUIT. PVC COMPOUND SHALL MEET THE REQUIREMENTS OF ASTM D 1784 FOR CLASS 12454-B PVC.

DUCTILE IRON PIPE (CLASS 52) MAY BE USED IN LIEU OF PVC PIPE PROVIDED THE DUCTILE IRON PIPE IS LINED WITH EPOXY, POLYURETHANE, OR SEWERCOAT AS MANUFACTURED BY KERNEOS ALUMINATE TECHNOLOGIES OR APPROVED EQUAL. ALL LININGS SHALL BE APPLIED PER THE MANUFACTURER'S RECOMMENDATIONS.

A. LINED DUCTILE IRON PIPE SHALL HAVE THE LINING APPLIED TO ALL EXPOSED INTERIOR SURFACES PER THE MANUFACTURER'S RECOMMENDATIONS.

B. POLYURETHANE LININGS SHALL CONSIST OF POLYISOCYANATE RESIN AND POLYOL RESIN MIXED AT A 1:1 RATIO AT THE TIME OF THE APPLICATION AND APPLIED TO A DRY FILM THICKNESS OF 40 MILS (0.040 INCHES). COATING THICKNESS WITHIN THE BELL SOCKET INTERIOR AND ON THE SPIGOT END OF THE PIPE EXTERIOR SHALL BE 8 MILS (0.008 INCHES) NOMINAL WITH A MAXIMUM THICKNESS OF 10 MILS (0.010 INCHES) IN ORDER TO MINIMIZE POTENTIAL DIMENSIONAL ASSEMBLY PROBLEMS. THICKER COATS MAY BE ALLOWED PROVIDED FINAL DIMENSIONS ARE WITHIN ALLOWABLE TOLERANCES AFTER THE COATING. THE LINING SHALL PROVIDE AN ASTM D16 TYPE V SYSTEM.

C. SEWERCOAT IS A CALCIUM ALUMINATE MORTAR MADE OF FUSED CALCIUM ALUMINATE AND CALCIUM ALUMINATE AGGREGATES. THE LINING SHALL BE APPLIED TO A THICKNESS OF 125 MILS (0.125 INCHES) FOR 12-INCH AND SMALLER DIAMETER PIPES AND 3/16 INCHES FOR PIPES LARGER THAN 12 INCHES IN DIAMETER. CRACKS IN THE LINING, OTHER THAN CLOSED HAIRLINE CRACKS AND/OR FINE CRAZING ARE NOT ACCEPTABLE. A SEAL COAT SHALL BE APPLIED TO ANY SEWERCOAT LINING.

D. THE EXTERIOR OF ALL DUCTILE IRON PIPES SHALL BE COATED WITH 1 MIL (0.001 INCHES) OF BITUMINOUS PAINT ACCORDING TO AWS/AWWA C151/A21.51.

2. **SIDE SEWER SERVICES**

ALL SIDE SERVICES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SECTION 7-18 OF THE STANDARD SPECIFICATIONS AND THE RESOLUTIONS OF THE DISTRICT, WHICH ARE INCORPORATED HEREIN BY REFERENCE. SIDE SERVICE CONSTRUCTION SHALL FOLLOW THE INSTALLATION OF MAIN LINES AS CLOSELY AS PRACTICAL IN THE OPINION OF THE DISTRICT.

CONTRACTOR SHALL INSTALL THE PIPE TO A MINIMUM DEPTH AT THE PROPERTY LINE OF 5 FEET BELOW THE FLOOR TO BE SERVED OR 5 FEET BELOW THE STREET CENTERLINE WHICHEVER IS DEEPER. IN CASES OF VACANT PROPERTIES OR PROPERTIES VACANT BEYOND 150 FEET FROM SEWER MAIN, THE SIDE SEWER SHALL BE CONSTRUCTED WITH A MINIMUM SLOPE OF 2% FROM THE TEE, UNLESS OTHERWISE APPROVED BY THE DISTRICT IN WRITING.

ALL STUB SERVICES SHALL TERMINATE WITH A 6-INCH WATERTIGHT CAP AT THE PROPERTY AND/OR EASEMENT LINE, OR 10 FEET PAST AT THE OPTION OF THE DEVELOPER. ALL ENDS OF STUB SERVICES SHALL BE MARKED BY A 12-GAUGE GALVANIZED WIRE AND A 2-INCH BY 4_INCH TIMBER. THE WIRE SHALL EXTEND VERTICALLY FROM THE CAPPED END TO THE GROUND SURFACE AND SHALL BE ATTACHED TO THE TIMBER FROM END TO END. THE TIMBER SHALL EXTEND FROM THE CAPPED END TO A MINIMUM OF 12 INCHES ABOVE THE GROUND AND SHALL BE PAINTED TRAFFIC WHITE WITH THE WORD "SEWER" STENCILED ON WITH BLACK PAINT. THE END OF THE TIMBER SHALL BE MARKED IN PERMANENT INDELIBLE INK WITH THE LENGTH OF THE TIMBER INSTALLED. NEITHER THE WIRE NOR 2" X 4" TIMBER SHALL BE SECURED OR ATTACHED TO THE SEWER PIPE.

ALL SIDE SERVICES SHALL BE TESTED FOR ACCEPTANCE AT THE SAME TIME THE MAIN LINE SEWER IS TESTED FOR ACCEPTANCE.

ALL 6-INCH STUBS INTO MANHOLES TO MATCH CROWNS.

3. **MANHOLES**

MANHOLES SHALL BE PRECAST CONCRETE UNLESS REQUIRED OTHERWISE BY THE DISTRICT AND SHALL CONFORM TO STANDARD PLAN B-23A EXCEPT WITH ECCENTRIC REDUCING CONES POURED IN PLACE BASES SHALL NOT BE ALLOWED. MAXIMUM ALLOWABLE DIMENSION FROM THE BREAK OF CONE TO TOP OF CASTING SHALL BE 20 INCHES.

INTERNAL CONCRETE CHANNELS, BENCHES AND FILLETS SHALL BE FORMED USING LOW SHRINKAGE CLASS 4000D, 5 SACK MIX WITH PEA GRAVEL TO 5/8-INCH (MAX SIZE) AGGREGATE CONFORMING TO SECTION 9-03.1 OF THE STANDARD SPECIFICATIONS. THE WATER-CEMENT RATIO SHALL NOT EXCEED 0.38. A WATER-REDUCING ADMIXTURE SHALL BE INCLUDED IN THE MIX.

LADDER RUNGS SHALL BE 1-INCH DIAMETER DEFORMED BAR, GALVANIZED OR POLYPROPYLENE SAFETY-TYPE STEPS MEETING THE REQUIREMENTS OF ASTM C478, AASHTO M-199, AND ALL WISHA AND OSHA SPECIFICATIONS. POLYPROPYLENE STEPS, CONFORMING TO ASTM D 4101, SHALL BE INJECTION MOLDED AROUND A 1/2-INCH ASTM A 615 GRADE 60 STEEL REINFORCING BAR.

COVERS SHALL BE OLYMPIC FOUNDRY MODEL NO. MH30A D/T OR APPROVED EQUAL AND SHALL BE 24-INCH DIAMETER CAST IRON OR DUCTILE IRON WITH THREE 5/8-INCH DIAMETER X 1 1/2-INCH LONG COUNTERSUNK N.C. STAINLESS STEEL SOCKET HEAD CAP SCREWS AND SINGLE 1-INCH DIAMETER LIFT HOLE LOCATED APPROXIMATELY 3 INCHES FROM THE OUTSIDE EDGE OF THE COVER. PROVIDE 5/8-INCH X 2 1/2-INCH STAINLESS STEEL CARRIAGE BOLT INSTALLED IN MANHOLE LIFT HOLE. LIDS SHALL HAVE A NON-SKID PATTERN CAST INTEGRALLY ON TOP WITH THE WORD "SEWER" CAST IN 3-INCH RAISED LETTERS. RING AND COVER SHALL HAVE ONE OF THE LOCK DOWN BOLTS CENTERED DIRECTLY OVER THE ACCESS LADDER.

ALL MANHOLE COVERS LOCATED IN SIDEWALKS OR DRIVEWAYS SHALL BE OLYMPIC FOUNDRY NO. MH30A D/T SMOOTH DESIGN OR APPROVED EQUAL WITH LOCKING LID AND 8-INCH CASTING RING AND THE WORD "SEWER" CAST INTEGRALLY ON TOP IN 3-INCH RAISED LETTERS.

MANHOLE SECTIONS SHALL HAVE RUBBER GASKET JOINTS CONFORMING TO ASTM C 443. ALL MANHOLE JOINTS AND PICK HOLES SHALL BE SEALED FROM THE INSIDE AND THE OUTSIDE WITH A SAND AND PORTLAND CEMENT CONCRETE MIX.

CONTRACTOR SHALL PROVIDE AN 8-INCH THICK BY 6-FOOT WIDE ASPHALT OR CONCRETE COLLAR AROUND THE RIMS OF ALL MANHOLES LOCATED IN UNIMPROVED AREAS, LANDSCAPED AREAS, EASEMENTS, AND ALL OTHER UNPAVED AREAS. THE ASPHALT OR CONCRETE COLLAR SHALL SLOPE AWAY FROM THE MANHOLE RIM.

4. **IMPORTED GRAVEL MATERIAL**

PIPE BEDDING SHALL CONFORM TO SECTION 9-03.12(3) OF THE STANDARD SPECIFICATIONS. FOUNDATION GRAVEL SHALL CONFORM TO SECTION 9-03.17 OF THE STANDARD SPECIFICATIONS. BANKRUN GRAVEL FOR TRENCH BACKFILL SHALL CONFORM TO SECTION 9-03.19 OF THE STANDARD SPECIFICATIONS, EXCEPT AT TRANSVERSE CUTS TO THE ROAD ALIGNMENT OR AT UTILITY CROSSINGS, WHICH SHALL BE BACKFILLED WITH CRUSHED GRAVEL SURFACING OR AS REQUIRED BY THE GOVERNING ROAD AGENCY. DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND DISPOSING OF ANY EXCESS EXCAVATED SOIL MATERIAL AT AN APPROVED DISPOSAL SITE.

5. **CRUSHED GRAVEL SURFACING**

CRUSHED GRAVEL SURFACING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 9-03.9(3) OF THE STANDARD SPECIFICATIONS.

6. **ASPHALT CONCRETE PATCH AND OVERLAY**

ASPHALT CONCRETE SURFACING FOR PATCHING AND OVERLAY SHALL CONFORM TO SECTION 5-04.2 AND 5-04.3 OF THE STANDARD SPECIFICATIONS. ASPHALT CONCRETE SURFACING SHALL MEET CLASS ¼-INCH, P.G. 58-22 GRADING REQUIREMENTS, OR AS REQUIRED BY THE GOVERNING ROAD AGENCY.

SURFACE RESTORATION (Revised 05-16-11)

1. **OFFSITE SURFACE RESTORATION**

ALL PAVED OR UNPAVED SURFACES OR EASEMENTS SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO CONSTRUCTION. ALL TREES, SHRUBS AND OR OTHER IMPROVEMENTS SHALL BE SAVED, RELOCATED, OR REPLACED BY DEVELOPER/CONTRACTOR UNLESS NOTED OTHERWISE ON THE DRAWINGS OR IN THE EASEMENT STIPULATIONS. RESTORATION SHALL BE TO THE SATISFACTION OF THE DISTRICT, PROPERTY OWNER, OR GOVERNING ROAD AGENCY. PRECONSTRUCTION PHOTOGRAPHS SHALL BE USED TO APPROVE RESTORATION.

2. **ROAD SHOULDER RESTORATION WITHIN RIGHT-OF-WAY**

THE EXISTING SURFACING OF DISTURBED ASPHALT SHOULDERS SHALL BE REMOVED TO A MINIMUM DEPTH OF 6 INCHES BELOW ORIGINAL STREET GRADE TO PROVIDE FOR PLACEMENT OF THE NEW SUBGRADE AND PAVING. THE SUBGRADE SHALL BE CONSTRUCTED OF 1-1/4-INCH MINUS CRUSHED SURFACING BASE COURSE PLACED TO A COMPACTED THICKNESS OF 2-1/2 INCHES, FOLLOWED BY 5/8-INCH MINUS CRUSHED SURFACING TOP COURSE PLACED TO A COMPACTED THICKNESS OF 1-1/2 INCHES. ASPHALT CONCRETE PAVING SHALL THEN BE PLACED AND COMPACTED IN 2-INCH LIFTS UP TO A MAXIMUM 4-INCH THICKNESS TO MATCH EXISTING PAVEMENT THICKNESS. MINIMUM THICKNESS SHALL BE 2 INCHES. THE SHOULDER SHALL BE REPLACED TO THE EXISTING FOG LINE IN AREAS WHERE THE EXISTING ASPHALT SHOULDER IS SERIOUSLY DISTURBED, OR AT THE DISCRETION OF THE DISTRICT OR THE GOVERNING ROAD AGENCY.

RESTORATION OF GRAVEL SHOULDERS SHALL INCLUDE A MINIMUM OF 1-1/2 INCHES OF CRUSHED SURFACING TOP COURSE AND 2-1/2 INCHES OF CRUSHED SURFACING BASE COURSE.

3. **ASPHALT SURFACE RESTORATION WITHIN RIGHT-OF-WAY**

THE EXISTING ASPHALT SURFACE SHALL BE CUT ON A NEAT LINE BY SAWCUTTING PRIOR TO EXCAVATION TO PROVIDE A CONTINUOUS LINE. FOLLOWING PROPER BACKFILL AND COMPACTION OF THE TRENCH, THE EDGES OF THE SURFACING SHALL BE RE-TRIMMED 12 INCHES WIDER THAN THE EXCAVATION WITH STRAIGHT VERTICAL EDGES FREE FROM IRREGULARITIES. A 1-1/4-INCH MINUS CRUSHED SURFACING BASE COURSE SHALL BE PLACED TO A COMPACTED THICKNESS OF 4-1/2 INCHES, FOLLOWED BY 5/8-INCH MINUS CRUSHED SURFACING TOP COURSE PLACED TO A COMPACTED THICKNESS OF 2 INCHES.

ASPHALT CONCRETE PAVING SHALL THEN BE PLACED AND COMPACTED IN 2-INCH LIFTS TO MATCH THE EXISTING THICKNESS AND GRADE OF THE ORIGINAL SURFACE. ASPHALT PATCH SHALL HAVE A MINIMUM THICKNESS OF 2 INCHES AND A MAXIMUM THICKNESS OF 4 INCHES. THE ASPHALT PATCH SHALL THEN BE OVERLAID WITH A MINIMUM OF 1-1/2 INCHES COMPACTED ASPHALT CONCRETE. ASPHALT OVERLAY SHALL BE PRE-LEVELED AS DETERMINED BY THE DISTRICT'S FIELD REPRESENTATIVE. NO OVERLAY SHALL BE REQUIRED IF THE FINAL TRIMMED EDGE OF THE ASPHALT PATCH DOES NOT ENCROACH INSIDE THE FOG LINE OR, IN LIEU OF A FOG LINE, WITHIN 12 FEET FROM THE EXISTING CENTERLINE OF THE ROAD. THE DISTRICT OR GOVERNING ROAD AGENCY RESERVES THE RIGHT TO REQUIRE AN OVERLAY ON ANY SECTION. IF THE EDGE OF THE ROAD IS CURB AND GUTTER, THEN THE ASPHALT PATCH SHALL EXTEND TO THE EDGE OF THE CURB UNLESS INDICATED OTHERWISE BY THE DISTRICT OR GOVERNING ROAD AGENCY. ALL ASPHALT JOINTS SHALL BE SEALED WITH APPROVED SEALER. DEVELOPER/CONTRACTOR SHALL REPLACE EXISTING STRIPING AND PAVEMENT MARKINGS AS REQUIRED BY THE GOVERNING ROAD AGENCY.

DEVELOPER/CONTRACTOR SHALL MAINTAIN TEMPORARY COLD OR HOT MIX ASPHALT PATCHES DAILY DURING CONSTRUCTION TO THE SATISFACTION OF THE GOVERNING ROAD AGENCY AND THE DISTRICT'S FIELD REPRESENTATIVE UNTIL SAID PATCH IS REPLACED WITH A PERMANENT HOT PATCH. THE PERMANENT PATCH SHALL BE PLACED AND SEALED WITH PAVING GRADE ASPHALT WITHIN 30 CALENDAR DAYS.

CONCRETE PAVEMENT SHALL BE RESTORED CONSISTENT WITH SECTION 5-01 OF THE STANDARD SPECIFICATIONS. ANY CONCRETE PAVEMENT TRAFFIC LANE AFFECTED BY THE TRENCHING SHALL HAVE ALL AFFECTED PANELS REPLACED. CEMENT CONCRETE PAVEMENT SHALL BE RESTORED WITH AN 8-SACK MIX, USING EITHER TYPE II OR TYPE III CEMENT WITHIN 30 CALENDAR DAYS.

4. **CURBS, GUTTERS, AND SIDEWALKS**

EXISTING CURBS, GUTTERS, AND SIDEWALKS DAMAGED BY CONSTRUCTION OF THE PROJECT OR THE DEVELOPERS/CONTRACTOR'S USE AND ACTIVITY, SHALL BE REPAIRED TO THE SATISFACTION OF THE PROPERTY OWNER, THE DISTRICT, OR THE GOVERNING ROAD AGENCY, AND TO ITS ORIGINAL CONDITION OR BETTER.

5. **NON-PAVEMENT RESTORATION WITHIN RIGHT-OF-WAY**

CULTIVATED LAWNS SHALL BE RESTORED WITH SOD. RESEEDING OF CULTIVATED LAWNS WILL NOT BE ALLOWED WITHOUT PRIOR APPROVAL OF PROPERTY OWNER AND DISTRICT. UNCULTIVATED LAWNS, PASTURE AND VACANT LAND SHALL BE RESTORED WITH A PASTURE GRASS MEETING THE FOLLOWING REQUIREMENTS.

SEED MIX 40% PERENNIAL RYEGRASS
10% WHITE CLOVER
30% FESCUE
20% RED CREEPING FESCUE
APPLY AT THE RATE OF 100 POUNDS PER ACRE

MULCH SILVA FIBER MULCH APPLIED AT 1500 TO 2000 POUNDS PER ACRE.

FERTILIZER COMMERCIAL MIX 10/20/20 OF NITRATE, PHOSPHATE AND POTASH APPLIED AT RATE OF 450 POUNDS PER ACRE.

6. **FINAL UTILITY ADJUSTMENT TO FINISH GRADE**

ALL UTILITY COVERS, WHICH ARE LOCATED ON PROPOSED ASPHALT ROADWAYS, SHALL BE TEMPORARILY PLACED AT SUB-GRADE ELEVATION PRIOR TO PLACING CRUSHED SURFACING MATERIAL. FINAL ADJUSTMENT OF ALL COVERS AND ACCESS ENTRIES SHALL BE MADE FOLLOWING FINAL PAVING BY SAWCUTTING OF THE PAVEMENT AROUND LIDS AND COVERS. OPENING SHOULD NOT BE LARGER THAN 12 INCHES BEYOND THE RADIUS OF THE COVER. DEVELOPER/CONTRACTOR SHALL THEN REMOVE BASE MATERIAL, SURFACING COURSE, AND FRAME, ADD RAISING BRICKS, AND REPLACE FRAME AND COVER TO FINISH GRADE. FILL AND MECHANICALLY COMPACT AROUND THE STRUCTURE AND FRAME WITH CRUSHED SURFACING MATERIAL. FINISHED SURFACING SHALL BE TWO, 2-INCH COURSES OF ASPHALT CONCRETE SURFACING, COMPACTED AND SEALED TO PROVIDE A DENSE, UNIFORM SURFACE. FINAL ADJUSTMENT OF ALL COVERS AND ACCESS ENTRIES SHALL BE COMPLETED WITHIN 30 DAYS OF FINAL PAVING.

7. **FINAL CLEANUP**

THE DEVELOPER/CONTRACTOR SHALL CLEANUP ALL ADJACENT AREAS IN COMPLIANCE WITH SECTION 1.11 OF THE STANDARD SPECIFICATIONS. STREETS AND ROADWAYS SHALL BE CLEANED AND SWEPT BOTH DURING AND AFTER THE INSTALLATION WORK. DISTURBED SOILS SHALL BE FINAL GRADED, SEEDED, AND MULCHED AFTER INSTALLATION OF THE SEWER MAIN. IN LIMITED AREAS SEEDING AND MULCHING BY HAND, USING APPROVED METHODS, WILL BE ACCEPTABLE. DITCH LINES WITH ERODIBLE SOIL OR SUBJECT TO RAPID FLOWS MAY REQUIRE SEEDING, JUTE MATTING, NETTING, OR ROCK LINING TO CONTROL EROSION. ANY SILTING OF DOWNSTREAM DRAINAGE FACILITIES, WHETHER DITCHES OR PIPE AND CATCH BASINS, WHICH RESULTS FROM THE SEWER MAIN INSTALLATION SHALL BE CLEANED OUT AND THE WORK SITE RESTORED TO A STABLE CONDITION AS PART OF SITE CLEANUP.

8. **TRAFFIC CONTROL**

THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR INTERIM TRAFFIC CONTROL DURING CONSTRUCTION ON OR ALONG TRAVELED COUNTY ROADWAYS. TRAFFIC CONTROL SHALL FOLLOW THE GUIDELINES OF SECTION 1-07.23 OF THE STANDARD SPECIFICATIONS. ALL BARRICADES, SIGNS, AND FLAGGING SHALL CONFORM TO THE REQUIREMENTS OF THE MUTCD MANUAL. SIGNS SHALL BE LEGIBLE AND VISIBLE AND SHOULD BE REMOVED AT THE END OF EACH WORKDAY IF NOT APPLICABLE AFTER CONSTRUCTION HOURS.

WHEN ROAD CLOSURES CANNOT BE AVOIDED, THE DEVELOPER/CONTRACTOR SHALL POST "TO BE CLOSED" SIGNS A MINIMUM OF FIVE DAYS PRIOR TO THE CLOSING. THE TYPES AND LOCATIONS OF THE SIGNS SHALL BE SHOWN ON A DETOUR PLAN. A DETOUR PLAN MUST BE PREPARED AND SUBMITTED TO THE DISTRICT'S FIELD REPRESENTATIVE AND APPROVED BY THE GOVERNING ROAD AGENCY PRIOR TO CLOSING ANY ROADWAYS. IN ADDITION, THE DEVELOPER/CONTRACTOR MUST NOTIFY IN WRITING ALL LOCAL FIRE, SCHOOL, LAW ENFORCEMENT AUTHORITIES, METRO TRANSIT, AND ANY OTHER AFFECTED PERSONS AS DIRECTED BY THE DISTRICT'S FIELD REPRESENTATIVE AT LEAST FIVE DAYS PRIOR TO THE ROAD CLOSURE.

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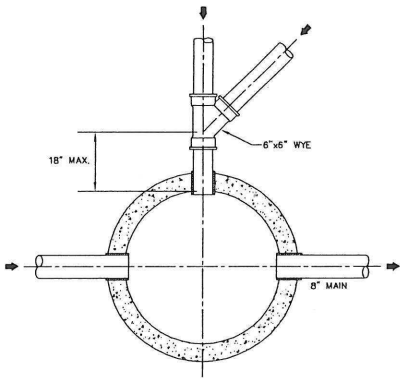
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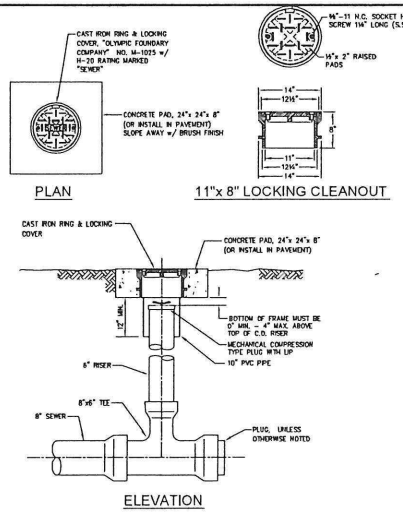
SOOS CREEK WATER & SEWER DISTRICT
SEWER MAIN EXTENSION
PROJECT NAME HERE
MATERIALS & SURFACE RESTORATION

BASE MAP
SHEET 3 OF 4
DRAWING FIG. SP-3



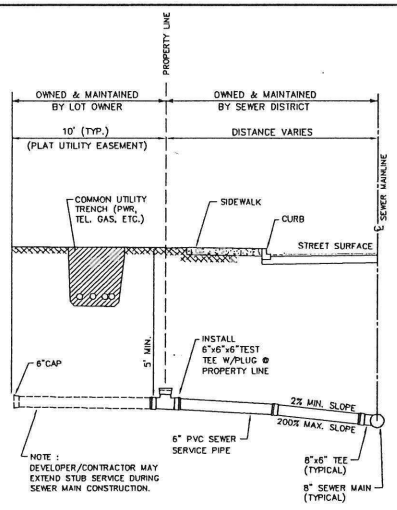
PLAN VIEW

S 2 MANHOLE DETAIL
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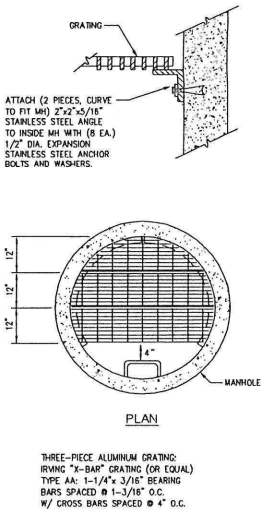


SURFACE CLEAN OUT
(MAINLINE STUB)

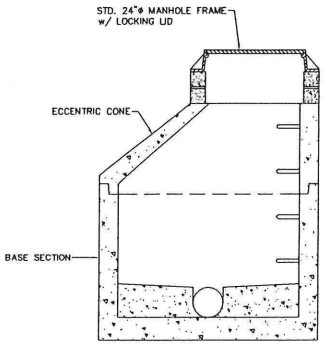
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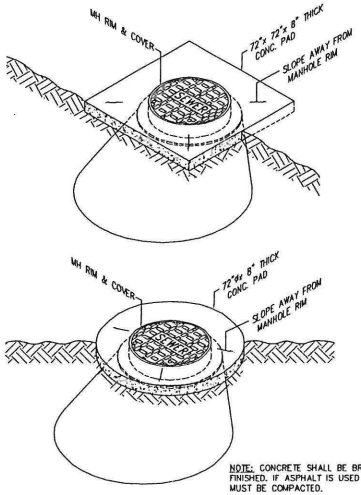
S 4 STUB SERVICE CONSTRUCTION DETAIL
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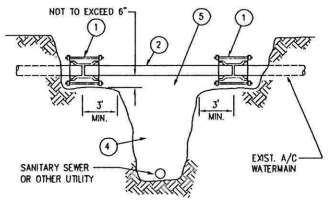
S 10 SAFETY GRATE DETAIL
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S 21 SHALLOW MANHOLE DETAIL
NTS



S 23 MANHOLE RIM & COVER-OFF PAVING
NTS



NOTES:

1. COUPLING: ASBESTOS-CEMENT (A/C) BY DUCTILE IRON (DUCTILE IRON, ROMAC STYLE 501, OR EQUAL).
2. DUCTILE IRON PIPE, CL. 52, DIAMETER TO MATCH EXISTING A/C.
3. BACKFILL EXISTING A/C AND COUPLING WITH PEA GRAVEL TO 1' ABOVE PIPE.
4. BACKFILL UNDER WATERLINE WITH CRUSHED ROCK COMPACTED TO 95% MDD, OR CONTROL DENSITY FILL (CDF) PER KING COUNTY MATERIAL REQUIREMENTS.
5. BACKFILL OVER THE TOP OF THE WATERLINE SHALL BE CRUSHED ROCK COMPACTED TO 95% MDD, OR CONTROL DENSITY FILL (CDF) PER KING COUNTY MATERIAL REQUIREMENTS, WITHIN COUNTY ROAD TRAVEL SURFACE. BACKFILL OVER THE TOP OF THE PIPE WITH NATIVE MATERIAL COMPACTED TO 90% MDD IF LOCATED WITHIN EASEMENT OR UNIMPROVED AREA.
6. A/C DISPOSAL PER WAC173-400-075, WAC 296-65, PUGET SOUND AIR POLLUTION CONTROL AGENCY REQUIREMENTS.

A/C WATER MAIN REPLACEMENT
@ SANITARY SEWER CROSSING

S 24
NTS

NOTE:

THIS IS A SAMPLE SHEET ONLY. THE DEVELOPER SHALL USE THE APPROPRIATE STANDARD DETAILS FOR EACH SPECIFIC PROJECT.

NO.	BY	DATE	REVISIONS DESCRIPTION

DATE APPROVED
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VERT.:
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CST. FLD. BK.: NO.: PG.

SOOS CREEK WATER & SEWER DISTRICT

SEWER MAIN EXTENSION
PROJECT NAME HERE
STANDARD DETAILS

BASE MAP

SHEET 4 OF 4

DRAWING FIG. SP-4

APPENDIX G

SCWSD Comprehensive Water Plan
Planning Data Worksheet
TAZ Summary Worksheet

Total Households

Area Description	SCWSD Planning Area Designation	2010	2020	2030	Ultimate (From 2004 Comp Plan	Ratios to Total Existing	Ultimate for 2011 Plan is Total Only - Ratios of 2004 Plan Applied to the total to get to each zone
Existing Service Area	290 Zone	151	177	202	160	0.52%	176
	440 Zone	886	997	1,112	1,917	6.21%	2,105
	627 Zone	16,944	18,796	20,942	24,300	78.77%	26,687
	670 Zone	106	129	152	403	1.31%	443
	710 Zone	2,403	2,712	3,065	4,069	13.19%	4,469
Total Existing Service Area		20,490	22,810	25,473	30,849		33,879
							9.82%

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
151	154	156	159	162	164	167	169	172	174	177	179	182	184	187	189	192	194	197	199	202
886	897	908	919	930	941	952	963	974	986	997	1008	1020	1031	1043	1054	1066	1078	1089	1101	1112
16,944	17129	17314	17499	17685	17870	18055	18240	18425	18611	18,796	19010	19225	19440	19654	19869	20084	20298	20513	20727	20942
106	109	111	113	115	118	120	122	125	127	129	132	134	136	139	141	143	145	148	150	152
2,403	2434	2465	2496	2526	2557	2588	2619	2650	2681	2,712	2747	2782	2818	2853	2888	2924	2959	2994	3030	3065
20,490	20722	20954	21186	21418	21650	21882	22114	22346	22578	22,810	23077	23343	23609	23876	24142	24408	24674	24941	25207	25473
	1.13%	1.12%	1.11%	1.10%	1.08%	1.07%	1.06%	1.05%	1.04%	1.03%	1.17%	1.15%	1.14%	1.13%	1.12%	1.10%	1.09%	1.08%	1.07%	1.06%

SF Households

Area Description	SCWSD Planning Area Designation	2010	2020	2030	Ultimate (From 2004 Comp Plan
Existing Service Area	290 Zone	115	133	149	160
	440 Zone	548	611	670	1,798
	627 Zone	12,911	14,181	15,559	21,340
	670 Zone	104	126	146	403
	710 Zone	1,811	2,039	2,288	3,690
Total Existing Service Area		15,489	17,089	18,812	27,391

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
115	117	119	120	122	124	126	128	129	131	133	135	136	138	139	141	142	144	145	147	149
548	554	560	566	573	579	585	592	598	604	611	616	622	628	634	640	646	652	658	664	670
12,911	13038	13165	13292	13419	13546	13673	13800	13927	14054	14,181	14319	14456	14594	14732	14870	15008	15146	15283	15421	15559
104	106	108	110	113	115	117	119	121	123	126	128	130	132	134	136	138	140	142	144	146
1,811	1834	1857	1879	1902	1925	1948	1971	1994	2016	2,039	2064	2089	2114	2139	2164	2189	2214	2239	2263	2288
15,489	15649	15809	15969	16129	16289	16449	16609	16769	16929	17,089	17261	17434	17606	17778	17951	18123	18295	18468	18640	18812
	1.03%	1.02%	1.01%	1.00%	0.99%	0.98%	0.97%	0.96%	0.95%	0.95%	1.01%	1.00%	0.99%	0.98%	0.97%	0.96%	0.95%	0.94%	0.93%	0.92%

MF Households

Area Description	SCWSD Planning Area Designation	2010	2020	2030	Ultimate (From 2004 Comp Plan
Existing Service Area	290 Zone	36	44	53	0
	440 Zone	338	386	442	119
	627 Zone	4,033	4,615	5,383	2,959
	670 Zone	2	4	6	0
	710 Zone	592	672	777	379
Total Existing Service Area		5,001	5,721	6,661	3,457

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
36	37	38	39	39	40	41	42	42	43	44	45	46	47	48	49	49	50	51	52	53
338	343	348	353	357	362	367	372	377	381	386	392	397	403	409	414	420	425	431	437	442
4,033	4091	4149	4207	4266	4324	4382	4440	4499	4557	4,615	4692	4769	4845	4922	4999	5076	5153	5229	5306	5383
2	2	3	3	3	3	3	3	3	4	4	4	4	4	5	5	5	5	5	6	6
592	600	608	616	624	632	640	648	656	664	672	683	693	704	714	724	735	745	756	766	777
5,001	5073	5145	5217	5289	5361	5433	5505	5577	5649	5,721	5815	5909	6003	6097	6191	6285	6379	6473	6567	6661
	1.44%	1.42%	1.40%	1.38%	1.36%	1.34%	1.33%	1.31%	1.29%	1.27%	1.64%	1.62%	1.59%	1.57%	1.54%	1.52%	1.49%	1.47%	1.45%	1.43%

Total Population

Area Description	SCWSD Planning Area Designation	2010	2020	2030	Ultimate (From 2004 Comp Plan	Ratios to Total Existing	Ultimate for 2011 Plan is Total Only - Ratios of 2004 Plan Applied to the total to get to each zone
Existing Service Area	290 Zone	432	489	538	414	1.34%	455
	440 Zone	2,311	2,514	2,713	4,965	16.09%	5,453
	627 Zone	46,767	49,959	53,662	62,936	204.01%	69,118
	670 Zone	303	355	403	1,043	3.38%	1,145
	710 Zone	6,576	7,188	7,852	10,539	34.16%	11,574
Total Existing Service Area		56,389	60,504	65,168	79,897		87,747
							9.83%
							2.59

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
432	438	443	449	455	460	466	472	478	483	489	494	499	504	509	514	519	524	528	533	538
2,311	2331	2352	2372	2392	2413	2433	2453	2473	2494	2,514	2534	2554	2574	2594	2614	2633	2653	2673	2693	2713
46,767	47086	47406	47725	48044	48363	48682	49001	49320	49639	49,959	50329	50699	51070	51440	51810	52181	52551	52921	53291	53662
303	308	313	318	324	329	334	339	345	350	355	360	365	369	374	379	384	389	393	398	403
6,576	6637	6698	6759	6821	6882	6943	7004	7065	7126	7,188	7254	7320	7387	7453	7520	7586	7653	7719	7786	7852
56,389	56800	57212	57623	58035	58446	58858	59270	59681	60093	60,504	60971	61437	61903	62370	62836	63303	63769	64236	64702	65168
	0.73%	0.72%	0.72%	0.71%	0.71%	0.70%	0.70%	0.69%	0.69%	0.68%	0.77%	0.76%	0.76%	0.75%	0.75%	0.74%	0.74%	0.73%	0.73%	0.72%
2.752025	2.741068	2.730353	2.719873	2.709621	2.699588	2.689767	2.680153	2.670739	2.661518	2.652484	2.642089	2.631931	2.622003	2.612295	2.602802	2.593516	2.58443	2.575539	2.566835	2.558313

Total Employment

Area Description	SCWSD Planning Area Designation	2010	2020	2030	Ultimate (From 2004 Comp Plan	Ratios to Total Existing	Ultimate for 2011 Plan is Total Only - Ratios of 2004 Plan Applied to the total to get to each zone
Existing Service Area	290 Zone	47	52	57	43	0.14%	47
	440 Zone	471	567	636	33	0.11%	36
	627 Zone	5,337	7,196	8,010	7,497	24.30%	8,233
	670 Zone	28	41	58	0	0.00%	0
	710 Zone	772	924	1,089	0	0.00%	0
Total Existing Service Area		6,654	8,780	9,849	7,573		7,503
							-0.93%

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
47	47	48	48	49	49	50	50	51	52	52	53	53	54	54	54	55	55	56	56	57
471	481	490	500	509	519	529	538	548	558	567	574	581	588	595	602	609	616	622	629	636
5,337	5523	5708	5894	6080	6266	6452	6638	6824	7010	7,196	7277	7359	7440	7521	7603	7684	7765	7847	7928	8010
28	29	31	32	33	34	36	37	38	40	41	43	44	46	48	49	51	53	54	56	58
772	787	803	818	833	848	863	878	893	908	924	940	957	973	990	1006	1023	1039	1056	1072	1089
6,654	6867	7079	7292	7504	7717	7930	8142	8355	8567	8,780	8887	8994	9101	9208	9314	9421	9528	9635	9742	9849
	3.19%	3.10%	3.00%	2.92%	2.83%	2.75%	2.68%	2.61%	2.54%	2.48%	1.22%	1.20%	1.19%	1.17%	1.16%	1.15%	1.13%	1.12%	1.11%	1.10%

APPENDIX H

Project ID Number	Pressure Zone	Location	Existing Pipe Material	Old Pipe Size (Inches)	New Pipe Size (Inches)	Pipe Length (feet)	Category	Probable Design Cost	Probable Construction Cost	Total Project Cost
6-Year Projects										
SS-1	N/A	SPU- Flow Modification	N/A	N/A	N/A	N/A	Supply and Source	$2,580	$14,620	$17,200
SS-3	627	Seattle Supply Line Upgrade	N/A	N/A	N/A	N/A	Supply and Source	$19,230	$108,970	$128,200
PZ-A	440/627	PRV A	N/A	N/A	N/A	N/A	Pressure Zone	$7,740	$43,860	$51,600
SF-2	710	Tank 6 Seismic Upgrades	N/A	N/A	N/A	N/A	Storage Facility	$17,025	$96,475	$113,500
SF-3	627	Tank 5 Seismic Upgrades	N/A	N/A	N/A	N/A	Storage Facility	$3,000	$17,000	$20,000
GF-1	N/A	Maintenance Facility	N/A	N/A	N/A	N/A	General Facility	$90,000	$510,000	$600,000
GF-2	N/A	SCADA Upgrade	N/A	N/A	N/A	N/A	General Facility	$11,250	$63,750	$75,000
GF-3	N/A	Water Security	N/A	N/A	N/A	N/A	General Facility	$30,000	$170,000	$200,000
G7-1	627	In SE 204th Pl., east from 144th Pl. SE to 147th Ave SE	AC	6	8	750	Residual Pressure and FF/Velocity	$18,360	$104,040	$122,400
G7-2	627	In 147th Ave SE, south from SE 204th Pl. to SE 208th St.	AC	6	8	1075	Residual Pressure and FF/Velocity	$26,310	$149,090	$175,400
G7-3	627	In SE 201st St., east from SE 204th Way to 143rd Pl. SE	AC	4	8	1200	4" Replacement	$29,370	$166,430	$195,800
B4-1	627	In SE 164th St., west from 125th Ave SE to 116th Ave SE	AC	6	12	1020	12" Grid	$33,090	$187,510	$220,600
B5-1	627	In SE 164th St., west from 128th Ave SE to 125th Ave SE	AC	8	12	1450	12" Grid	$47,025	$266,475	$313,500
B5-2	627	In 128th Ave SE, south from SE 164th St. to SE 168th St.	AC	12	16	1475	AC Replacement	$60,180	$341,020	$401,200
B5-3	627	In existing easement, east from project B5-7 to the first hydrant	CI	6	8	250	School FF	$6,120	$34,680	$40,800
B5-4	627	In existing easement, west from project B5-7 to the first hydrant	CI	6	8	375	School FF	$9,180	$52,020	$61,200
B5-5	627	In SE 167th St., west from 128th Ave SE to the first hydrant	AC	6	8	400	FF/Velocity	$9,795	$55,505	$65,300
B5-6	627	In SE 160th Pl., west from 131St Pl SE to the first hydrant	AC	6	8	250	FF/Velocity	$6,120	$34,680	$40,800
C2-2	627	In 103rd Ave SE, east from PRV 2 to the first tee, then north to SE 172nd St.	AC	6, 8	10, 12	625- 10" 200 - 12"	MF/Comm FF	$24,840	$140,760	$165,600
C2-3	627	In SE 174th St., from 106th Pl SE to 108th Ave SE	AC	8	12	950	FF/Velocity	$30,810	$174,590	$205,400
C5-5	627	In 130th Ave SE, north from SE 172nd St. to the second hydrant	AC	6	8	700	FF/Velocity	$17,130	$97,070	$114,200
D3-2	627	In SE 180th Pl., west from 110th Ave SE to the first hydrant	AC	6	8	450	FF/Velocity	$11,010	$62,390	$73,400
D3-3	627	In 116th Ave SE, south from SE 176th St. to SE 184th St.	AC	6	12	2650	12" Grid/AC Replacement	$85,950	$487,050	$573,000
D7-1	710	In 146th Ave SE, south from SE 178th Pl. to the first hydrant	AC	6	8	370	FF/Velocity	$9,060	$51,340	$60,400
D7-2	710	In 146th Ave SE, north from SE 183rd St. to the first hydrant	AC	6	8	370	FF/Velocity	$9,060	$51,340	$60,400
E2-1	627	In SE 190th St., west from 102nd Ave SE to first hydrant	AC	6	8	175	FF/Velocity	$4,290	$24,310	$28,600
E5-5	627	In SE 185th Pl., east from 126th Pl. SE to the first hydrant	AC	6	8	270	FF/Velocity	$6,615	$37,485	$44,100
E5-6	627	In SE 186th Pl., west from 129th Pl. SE to the first hydrant	AC	6	8	150	FF/Velocity	$3,675	$20,825	$24,500
E5-7	627	In SE 185th St., east from 129th Pl. SE to the first hydrant	AC	6	8	150	FF/Velocity	$3,915	$22,185	$26,100
E5-8	627	In SE 186th St., east from 129th Pl. SE to the second hydrant	AC	6	8	400	FF/Velocity	$9,795	$55,505	$65,300

E5-9	627	In SE 188th Pl., east from 127th Pl. SE to the first hydrant	AC	6	8	210	FF/Velocity	$5,145	$29,155	$34,300
E5-10	627	In SE 189th Pl., east from 127th Pl. SE to the first hydrant	AC	6	8	270	FF/Velocity	$6,615	$37,485	$44,100
E5-11	627	In SE 190th Pl., east from 127th Pl. SE to the first hydrant	AC	6	8	360	FF/Velocity	$8,820	$49,980	$58,800
E5-12	627	In SE 188th Pl., west from 131st Ave SE to the first hydrant	AC	6	8	210	FF/Velocity	$5,145	$29,155	$34,300
F1-3	440	In 97th Ave S, north from S 198th Pl. to the first hydrant	AC	4 & 6	8	475	FF/Velocity	$11,625	$65,875	$77,500
F1-4	627	In 98th Ave S, north from S 200th St. to the first hydrant	AC	6	8	580	FF/Velocity	$14,205	$80,495	$94,700
F1-5	440	In 99th Pl. S, south from SE 192nd St. to the second hydrant	AC	6	8	725	FF/Velocity	$17,745	$100,555	$118,300
F6-1	627	In 140th Ave SE, south from N of SE 198th St. to SE 200th St.	AC	8	16	420	AC Replacement / 2030 Conditions	$17,130	$97,070	$114,200
F7-1	627/710	In anticipated easement, complete loop around north portion of Lake Youngs Elementary and construct new water main in SE 200th St.	AC	6	8	910	School FF. Change the school and plat of Country Gate to higher pressure zone.	$25,560	$144,840	$170,400
F7-2	710	In SE 192nd St., east from 140th Ave SE to approximately 425 feet east of 142nd Ave SE	AC	4,10	10	1250	AC Replacement	$36,720	$208,080	$244,800
F7-3	710	In SE 194th St., east from 141st Ave SE to the first hydrant	AC	6	8	280	FF/Velocity	$6,855	$38,845	$45,700
F7-4	710	In 142nd Pl SE, south from SE 192nd St. to SE 193rd St.	AC	6	8	340	FF/Velocity	$8,325	$47,175	$55,500
G0-2	290	In 92nd Ave S, south from SE 200th St. to SE 202nd St.	AC	6	10	670	FF/Velocity	$19,680	$111,520	$131,200
G0-3	290	In 92nd Ave S, south from SE 205th Pl. to the second hydrant	AC	6	8	600	FF/Velocity	$14,685	$83,215	$97,900
G1-1	627	In 100th Ave SE, south from SE 200th St to SE 202nd St.	AC	6	10	720	AC Replacement	$21,150	$119,850	$141,000
G1-2	627	In SE 200th St., east from PRV No. 4 to 100th Ave SE.	AC	6	10	725	AC Replacement	$21,300	$120,700	$142,000
G1-5	440	In SE 200th St., from 96th Ave SE to PRV No. 4	AC	6	10	850	Ac Replacement	$24,975	$141,525	$166,500
G2-2	627	In SE 200th St., east from 100th Ave SE to 106th Ave SE	AC	6	10	1950	AC Replacement	$57,285	$324,615	$381,900
G2-4	627	In SE 206th St., east from 101st Ave SE to the first hydrant	AC	4	8	175	FF/Velocity	$4,290	$24,310	$28,600
G5-2	627	In 128th Ave SE, south from SE 201st St. to the first hydrant	AC	6	8	190	FF/Velocity	$4,650	$26,350	$31,000
H2-9	627	In SE 216th St, from west of 103rd Pl SE to west of 108th Ave SE	AC	6	10	1300	Future Development/AC Replacement	$38,190	$216,410	$254,600
H3-1	627	In 116th Ave SE, south from SE 208th St. to SE 216th St.	AC	10	12	2640	AC Replacement	$85,635	$485,265	$570,900
H4-4	627	In S.E. 210th Pl., east from 120th Pl. S.E. to the first hydrant south of S.E. 210th Pl. in 121st Pl. S.E.	AC	6	8	570	FF/Velocity	$13,950	$79,050	$93,000
H5-1	627	In 124th Ave SE, south from SE 208th St. to SE 209th St., then southeast along SE 209th St. to SE 211th St.	AC, DI	8	16	1050	AC Replacement / 2030 Conditions	$42,840	$242,760	$285,600
H5-4	627	In SE 213th St., east from 125th Ave SE approximately 300 feet	AC	8	12	300	AC Replacement	$9,735	$55,165	$64,900
H7-1	710	In anticipated ROW/easement, west from 145th Ave SE to existing 6" dead end approximately 400 feet to the west	N/A	N/A	8	400	FF/Velocity	$8,655	$49,045	$57,700
J3-3	627	In 110th Pl. SE, south from SE 223rd St. to SE 224th Pl.	AC	6, 8	12	525	AC Replacement/12" Grid	$17,025	$96,475	$113,500
J4-1	627	In 116th Ave SE, south from SE 216th St. to SE 225th St.	AC	10	12	2775	AC Replacement	$90,015	$510,085	$600,100
J5-3	627	In existing easement, east from SE 125th Pl. to the tee, then south to the first hydrant	AC	6, 8	8, 12	375 - 8" 250 - 12"	School FF	$22,515	$127,585	$150,100

J5-4	627	In existing easement, south from SE 218th Pl. to the first hydrant	AC	6	8	70	School FF	$1,710	$9,690	$11,400
K3-1	627	In 116th Ave SE, south from SE 225th St. to SE 227th Pl.	AC	6, 10	12	1000	AC Replacement / 12" Grid	$32,430	$183,770	$216,200
K3-2	627	In SE 225th St., west from 110th Ave SE to the first hydrant	AC	6	8	370	FF/Velocity	$9,060	$51,340	$60,400
K6-1	670	In SE 231st St., west from 135th Ave SE to the first hydrant	AC	6	8	675	FF/Velocity	$15,915	$90,185	$106,100
L4-5	627	In existing easement, north from SE 236th St. to the first hydrant	DI	8	10	150	School FF	$4,410	$24,990	$29,400
L5-3	627	In 127th Ave SE, south from SE 232nd St to SE 233rd St	AC	6	12	420	AC Main Replacement	$13,620	$77,180	$90,800
L4-3	627	In 120th Ave SE, south from the existing valve located approximately 130 feet south of SE 231st Pl. to SE 236th Pl.	AC	8	12	1275	School FF	$41,355	$234,345	$275,700
L4-4	627	In existing easement, east from 120th Ave SE to the second hydrant	DI	8	10, 12	325 - 10" 175 - 12"	School FF	$20,700	$117,300	$138,000
L4-6	627	In SE 233rd St., west from 124th Ave SE to first hydrant	AC	6	8	330	FF/Velocity	$8,085	$45,815	$53,900
L4-7	627	In SE 234th St., west from 120th Ave SE to first hydrant	AC	6	8	290	FF/Velocity	$7,095	$40,205	$47,300
L5-1	627	In 126th Ave SE, north from SE 235th St. to the first hydrant	AC	6	8	400	FF/Velocity	$9,795	$55,505	$65,300
L6-1	670	In 134th Ave SE, north from SE 233rd St. to the first hydrant	AC	6	8	350	FF/Velocity	$8,565	$48,535	$57,100
								$1,475,730	$8,362,470	$9,838,200
10-Year Projects										
SS-2	627	Pump Station 1 Upgrade	N/A	N/A	N/A	N/A	Supply and Source	$129,015	$731,085	$860,100
PZ-C	N/A	627 High Pressure Analysis	N/A	N/A	N/A	N/A	Pressure Zone	$4,500	$25,500	$30,000
B3-1	627	In 109th Ave SE, south from SE 164th St. to SE 168th St.	AC	12	12	1500	AC Replacement	$48,660	$275,740	$324,400
B3-2	627	In SE 164th St., east from 109th Ave SE to 116th Ave SE	AC	12	12	2250	AC Replacement	$72,975	$413,525	$486,500
B3-3	627	In SE 160th St., east from 114th Ave SE to 116th Ave SE	AC	10	10	625	AC Replacement	$18,360	$104,040	$122,400
B3-4	627	In 116th Ave SE, south from SE 160th St. to SE 164th St.	AC	10	10	1250	AC Replacement	$36,720	$208,080	$244,800
B3-5	627	In 116th Ave SE, south from SE 164th St. to SE 168th St.	AC	10	12	1480	12" Grid	$48,000	$272,000	$320,000
B3-10	627	In 115th Ave SE, south from the hydrant to the end of 115th Ave SE	DI	4	8	200	4" Replacement	$4,890	$27,710	$32,600
B4-2	627	In SE 119th Pl., north from SE 167th St., then east in existing easement to 120th Ave SE	AC	4, 6	8	770	4" Replacement	$18,855	$106,845	$125,700
B4-3	627	In 121st Ave SE, south from SE 165th St., then southwest in existing easement to 120th Ave SE	AC	4, 6	8	750	4" Replacement	$18,360	$104,040	$122,400
B5-7	627	In existing easement, east from 128th Ave SE to Pump Station No. 2	CI	8, 10	12	2250	12" Grid/Distribution	$72,975	$413,525	$486,500
C2-1	627	In 108th Ave SE, south from SE 168th St. to SE 172nd St.	AC	12	12	1300	AC Replacement	$42,165	$238,935	$281,100
C3-1	627	In 116th Ave SE, south from SE 169th St. approximately 600 feet	AC	10	12	580	AC Replacement / 12" Grid	$18,810	$106,590	$125,400
C3-4	627	In 116th Ave SE, south from SE 168th St. to SE 169th St.	AC	8	12	500	12" Grid	$16,215	$91,885	$108,100
C3-5	627	In 116th Ave SE, south from the south end of project C3-1 to SE 176th St.	AC	8	12	1625	12" Grid	$52,545	$297,755	$350,300
C4-1	627	In existing easement, east from 116th Ave SE to first tee	DI	8	10	550	MF/Comm FF	$16,155	$91,545	$107,700
C4-2	627	In existing easement, south from tee to second hydrant	DI	8	10	200	MF/Comm FF	$5,880	$33,320	$39,200

C4-3	627	In existing easement, north from SE 175th St. to second hydrant	DI	8	10	310	MF/Comm FF	$9,105	$51,595	$60,700
C4-4	627	In existing easement, west from tee, then north and west to fourth hydrant	DI	8	10	775	MF/Comm FF	$22,770	$129,030	$151,800
C4-5	627	In existing easement, north from tee to SE 170th Pl.	DI	8	10	1050	MF/Comm FF	$30,840	$174,760	$205,600
C4-6	627	In existing easement, south from tee then east to BPA easement	DI	8	10	750	MF/Comm FF	$22,035	$124,865	$146,900
C4-7	627	In existing easement, along loop south of SE 175th St. and east of 122nd Ave SE, then north to BPA easement	DI	8	10	530	MF/Comm FF	$15,570	$88,230	$103,800
D8-2	710	In SE Petrovitsky Road, east from 151st Ave SE to 156th Ave SE.	AC	10	12	1950	AC Replacement	$63,255	$358,445	$421,700
D9-1	710	In SE Petrovitsky Road, east from 156th Ave SE to 162nd Ave SE	AC	10	12	2020	AC Replacement	$65,520	$371,280	$436,800
E3-1	627	In existing easement, east from Tank No. 2 to 116th Ave SE	AC	12	16	400	AC Replacement / 2030 Conditions	$16,320	$92,480	$108,800
E3-3	627	In 116th Ave SE, south from SE 184th St. to SE 188th St.	AC	6	12	1375	12" Grid	$44,595	$252,705	$297,300
E5-1	627	In 129th Pl. SE, south from SE 184th Pl. to SE 187th Pl.	AC	12	12	1250	AC Replacement	$40,545	$229,755	$270,300
E5-2	627	In 129th Pl. SE, south from SE 187th Pl. to SE 192nd St.	AC	12	12	1500	AC Replacement	$48,660	$275,740	$324,400
E5-3	627	In SE 188th Pl., east from the west end of SE 188th Pl. to 127th Pl. SE, then north to SE 187th Pl., then east to 129th Pl. SE	AC	12	12	1400	AC Replacement	$45,405	$257,295	$302,700
E5-4	627	In SE 187th Pl., east from 129th Ave SE to the valve located approximately 350 east of 131st Ave SE	AC	10	10	1075	AC Replacement	$31,575	$178,925	$210,500
E7-3	627	In existing easement, east from 140th Ave SE to the first hydrant	AC	4	8	575	4" Replacement	$14,070	$79,730	$93,800
F2-5	627	In SE 199th St., east from 106th Ave SE to existing 8" main	AC	4	8	325	4" Replacement	$7,950	$45,050	$53,000
G2-1	627	In SE 204th St., east from 100th Ave SE to 108th Ave SE	AC	10	10	2525	AC Replacement	$74,175	$420,325	$494,500
G3-1	627	In SE 204th St., east from 108th Ave SE approximately 250 feet	AC	10	10	250	AC Replacement	$7,350	$41,650	$49,000
H3-2	627	In SE 208th St., east from 108th Ave SE to 116th Ave SE	AC	8	12	2550	12" Grid	$82,710	$468,690	$551,400
H3-3	627	In SE 213th St., west from 112th Ave SE to SE 212th St.	UNKNOWN	4	8	825	4" Replacement	$20,190	$114,410	$134,600
H4-3	627	In SE 209th St., east from 120th Pl. SE for approximately 475 feet	AC	4	8	475	4" Replacement	$11,625	$65,875	$77,500
J3-1	627	In SE 222nd Pl., east from 108th Ave SE to 110th Pl. SE	AC	10	12	825	AC Replacement / 12" Grid	$26,760	$151,640	$178,400
J3-2	627	In SE 223rd St., east from 110th Pl. SE approximately 525 feet	AC	10	10	525	AC Replacement	$15,420	$87,380	$102,800
J3-4	627	In 111th Ave SE, north from SE 218th St. to SE 217th St.	AC	4	8	325	4" Replacement	$8,565	$48,535	$57,100
K3-3	627	In SE 224th Pl., east from 110th Pl. SE to 111th Ave SE, then south to SE 225th St.	AC	8	12	465	12" Grid	$15,090	$85,510	$100,600
K3-4	627	In SE 225th St., east from 111th Ave SE to 116th Ave SE	AC	8	12	1525	12" Grid	$49,470	$280,330	$329,800
K4-1	627	In 120th Ave SE, south from SE 227th Pl. to the valve approximately 150 feet south of SE 231st Pl.	AC	10	12	1500	AC Replacement	$48,660	$275,740	$324,400
K4-2	627	In anticipated easement, east from 120th Ave SE to to 125th Ave SE	N/A	N/A	12	1350	12" Grid	$38,835	$220,065	$258,900
K5-2	627	In 126th Pl. SE, southeast from the west end of SE 227th St. to 127th Ave SE	AC	6	12	1700	12" Grid	$55,140	$312,460	$367,600
								$1,557,285	$8,824,615	$10,381,900

20-Year Projects										
SS-4	N/A	Seattle Supply Pump Station Project			N/A	N/A	Supply and Source	$5,160	$29,240	$34,400
PZ-B	627/710	PRV B			N/A	N/A	Pressure Zone	$7,740	$43,860	$51,600
SF-1	710	Southern 710 Reservoir			N/A	N/A	Storage Facility	$2,070	$11,730	$13,800
IP-1	710	Cedar River Water and Sewer District Proposed Intertie			N/A	N/A	Intertie	$42,930	$243,270	$286,200
IP-2	627	Regional Supply Interties	N/A	N/A	N/A	N/A	Intertie	$42,930	$243,270	$286,200
B2-1	627	In 106th Pl. SE, south from SE 164th St. to SE 166th St.	N/A	N/A	8	800	System Looping	$18,435	$104,465	$122,900
B3-6	627	In anticipated ROW north from the north end of 109th Ave SE for approximately 1,125 feet	N/A	N/A	8	1125	Future Dev.	$24,330	$137,870	$162,200
B3-7	627	In SE 162nd St. west from approximately 320 feet west of 111th Pl. SE for approximately 600 feet	N/A	N/A	8	600	Future Dev.	$13,830	$78,370	$92,200
B3-8	627	In anticipated ROW west from the north end of 111th Pl. SE to 109th Ave SE	N/A	N/A	8	800	Future Dev.	$17,295	$98,005	$115,300
B3-9	627	In anticipated ROW west from the south end of 115th Ave SE to 111th Ave SE	N/A	N/A	8	1350	Future Dev.	$29,190	$165,410	$194,600
B3-11	627	From Master Meter No. 1 to Pump Station No. 1 in Pipeline ROW	DI	10	12	380	PS Capacity Upgrade	$12,330	$69,870	$82,200
B3-12	627	In 114th Ave SE, south from Pump Station No. 1 to SE 162nd St	DI	8, 10	12	570	PS Capacity Upgrade	$18,495	$104,805	$123,300
B3-13	627	In 114th Ave SE, south from SE 162nd St to SE 164th St	DI	8	12	650	PS Capacity Upgrade	$21,090	$119,510	$140,600
C3-2	627	In anticipated ROW east from the east end of SE 172nd St. approximately 450 feet.	N/A	N/A	8	450	Future Dev.	$9,735	$55,165	$64,900
C3-3	627	In anticipated ROW east from the south end of 110th Pl. SE, then south to the end of the water main in SE 173rd St.	N/A	N/A	8	925	Future Dev.	$19,995	$113,305	$133,300
C5-1	627	In 128th Ave SE, South from SE 172nd St. to Petrovitsky Road	AC	12	12	950	AC Replacement	$30,810	$174,590	$205,400
C5-2	627	In Petrovitsky Road, east from 128th Ave SE to 130th Ave SE	AC	12	12	350	AC Replacement	$11,355	$64,345	$75,700
C5-3	627	In anticipated ROW east from the intersection of 125th Ave SE and SE 173rd Pl. to new development (name/Streets Unknown)	N/A	N/A	8	730	Future Dev.	$15,780	$89,420	$105,200
C5-4	627	In anticipated ROW east from the new development (name/Streets Unknown) to 125th Ave SE	N/A	N/A	8	350	Future Dev.	$7,575	$42,925	$50,500
C5-6	627	In anticipated ROW south from the south end of 130th Ave SE to SE Petrovitsky Rd.	N/A	N/A	8	600	Future Dev.	$12,975	$73,525	$86,500
C5-7	627	In SE 172nd St., east from 128th Ave SE to 129th Ave SE	N/A	N/A	8	325	System Looping	$7,035	$39,865	$46,900
C6-1	627	In Petrovitsky Road, east from 134th Ave SE to 140th Ave SE	AC	12	12	2100	AC Replacement	$68,115	$385,985	$454,100
D3-1	627	In 109th Ave SE, south from SE 176th St. approximately 450 feet	AC	12	12	450	AC Replacement	$14,595	$82,705	$97,300
D4-1	627	In future easement/anticipated ROW west from the end of SE 178th St. to 120th Ave SE	N/A	N/A	8	750	Future Dev.	$16,215	$91,885	$108,100
D4-2	627	In future easement/anticipated ROW east from 118th Ave SE, then south to SE 180th St.	N/A	N/A	8	1125	Future Dev.	$24,330	$137,870	$162,200
D6-1	710	In anticipated ROW west of 140th Ave SE, approximately 134th Ave SE approximately 650 feet	N/A	N/A	8	650	Future Dev.	$14,055	$79,645	$93,700
D6-2	710	In anticipated ROW approximately 136th Ave SE, north from SE 180th St. approximately 650 feet	N/A	N/A	8	650	Future Dev.	$14,055	$79,645	$93,700

D6-3	710	In anticipated ROW north of SE 180th St., east from the north end of project D6-1 to the north end of project D6-2	N/A	N/A	8	800	Future Dev.	$17,295	$98,005	$115,300
D6-4	627	In anticipated ROW east from the east end of SE 181st Pl. then south to the 8" water main south of Carriage Crest Elementary School	N/A	N/A	8	1000	Future Dev.	$25,950	$147,050	$173,000
D8-1	710	In SE Petrovitsky Road, east from 147th Ave SE to 151st Ave SE	AC	12	12	1425	AC Replacement	$46,215	$261,885	$308,100
D10-1	710	In SE Petrovitsky Road, east from 162nd Ave SE to SE 184th St.	AC	10	12	2275	AC Replacement	$73,785	$418,115	$491,900
D10-2	710	In SE 184th St., east from SE Petrovitsky Road approximately 800 feet	AC	10	12	800	AC Replacement	$25,950	$147,050	$173,000
E2-2	627	In anticipated ROW west from 108th Ave SE approximately 250 feet	N/A	N/A	10	250	Future Dev.	$6,525	$36,975	$43,500
E2-3	627	In anticipated ROW north from SE 192nd St. approximately 1,300 feet	N/A	N/A	10	1300	Future Dev.	$33,945	$192,355	$226,300
E3-2	627	In anticipated easement, north of SE 186th St., west from 112th Ave SE to existing valve	N/A	N/A	10	525	Future Dev.	$13,710	$77,690	$91,400
E3-4	627	In 116th Ave SE, south from SE 188th St. to SE 192nd St.	AC	12	16	1450	2030 Conditions	$59,160	$335,240	$394,400
E4-1	627	In SE 188th St., east from 116th Ave SE to 120th Ave SE	AC	12	12	1275	AC Replacement	$41,355	$234,345	$275,700
E4-2	627	In anticipated ROW north of SE 188th St., east from 116th Ave NE to existing hydrant	N/A	N/A	8	800	Future Dev.	$17,295	$98,005	$115,300
E4-3	627	In anticipated ROW at 118th Ave SE, north from SE 188th St. to SE 184th St.	N/A	N/A	8	1400	Future Dev.	$30,270	$171,530	$201,800
E4-4	627	In anticipated ROW east of 120th Ave SE, north from existing 8" water main approximately 1,500 feet	N/A	N/A	8	1500	Future Dev.	$32,430	$183,770	$216,200
E4-5	627	In anticipated ROW north of the east end of SE 188th St., north from the existing 12" water main to the existing 8" water main	N/A	N/A	8	675	Future Dev.	$14,595	$82,705	$97,300
E4-6	627	In anticipated ROW north of SE 192nd St., east from 120th Ave SE approximately 450 feet	N/A	N/A	8	450	Future Dev.	$9,735	$55,165	$64,900
E4-7	627	In anticipated ROW east of 120th Ave SE, south from SE 188th St. to existing 8" dead-end	N/A	N/A	8	1100	Future Dev.	$23,790	$134,810	$158,600
E4-8	627	In anticipated ROW north of SE 192nd St., east from north end of existing 8" dead-end approximately 825 feet	N/A	N/A	8	825	Future Dev.	$17,835	$101,065	$118,900
E4-9	627	In anticipated ROW north from the intersection of 124th Ave SE and SE 192nd St. to existing 12" water main	N/A	N/A	8	1050	Future Dev.	$22,710	$128,690	$151,400
E4-10	627	In anticipated ROW north of SE 188th St., east from 120th Ave SE to the existing 8" water main	N/A	N/A	8	875	Future Dev.	$18,915	$107,185	$126,100
E6-1	627	In anticipated ROW south from the south end of 132nd Pl. SE to SE 192nd St.	N/A	N/A	8	675	Future Dev.	$14,595	$82,705	$97,300
E6-2	627	In anticipated ROW north from 136th Pl. SE to the existing 10" water main south of Carriage Crest Elementary School	N/A	N/A	8	450	Future Dev.	$9,735	$55,165	$64,900
E6-3	627	In anticipated ROW south of Carriage Crest Elementary school, east from project E6-2 to project E6-4	N/A	N/A	8	1000	Future Dev.	$21,630	$122,570	$144,200

E6-4	627	In anticipated ROW north from the north end of 139th Way SE to the existing 10" water main south of Carriage Crest Elementary School	N/A	N/A	8	525	Future Dev.	$11,355	$64,345	$75,700
E7-1	710	In 148th Ave SE, south from SE 184th St. to SE 192nd St.	AC	10	12	2300	AC Replacement	$74,610	$422,790	$497,400
E7-2	627	In anticipated ROW east from 140th Ave SE, then north to the 8" dead end south of 143rd Ct. SE	N/A	N/A	8	1400	Future Dev.	$30,270	$171,530	$201,800
E7-4	710	In anticipated ROW north from SE 192nd St. to future SE 188th Way extension	N/A	N/A	8	1150	Future Dev.	$24,870	$140,930	$165,800
E10-1	710	In existing easement, northeast from Tank No. 6 to SE 184th St.	AC	12	12	725	AC Replacement	$23,520	$133,280	$156,800
F1-1	440	In 96th Ave S, north from the existing 6" water main approximately 1,000 feet	N/A	N/A	8	450	Future Dev.	$10,380	$58,820	$69,200
F1-2	440	In S 198th Pl., east from 96th Ave S to the existing 6" water main	N/A	N/A	8	375	Future Dev.	$8,640	$48,960	$57,600
F2-1	627	In 108th Ave SE, south from SE 192nd St. to SE 200th St.	AC	12	12	2575	AC Replacement	$83,520	$473,280	$556,800
F2-2	627	In anticipated ROW west from the end of SE 194th Pl. to 102nd Ave SE	N/A	N/A	8	775	Future Dev.	$16,755	$94,945	$111,700
F2-3	627	In anticipated ROW east of 102nd Ave SE, south from SE 192nd St. approximately 750 feet	N/A	N/A	8	750	Future Dev.	$16,215	$91,885	$108,100
F2-4	627	In anticipated ROW north from the end of 105th Ave SE to SE 196th St.	N/A	N/A	8	350	Future Dev.	$7,575	$42,925	$50,500
F3-1	627	In SE 192nd St., east from 108th Ave SE to 116th Ave SE	AC	12	12	2625	AC Replacement	$85,140	$482,460	$567,600
F3-2	627	In anticipated ROW east of 108th Ave SE, north from SE 196th St. to SE 192nd St.	N/A	N/A	8	1300	Future Dev.	$28,110	$159,290	$187,400
F3-3	627	In anticipated ROW south of SE 192nd St., east from project F3-2 to 113th Pl. SE	N/A	N/A	8	670	Future Dev.	$14,490	$82,110	$96,600
F3-4	627	In anticipated ROW east of project F3-2, north from SE 196th St. to SE 192nd St.	N/A	N/A	8	1300	Future Dev.	$28,110	$159,290	$187,400
F3-5	627	In anticipated ROW approximately aligned w/ SE 198th St., west from 116th Ave SE then north to SE 196th St.	N/A	N/A	8	1200	Future Dev.	$25,950	$147,050	$173,000
F3-6	627	In anticipated ROW east of 108th Ave SE, north from SE 200th St. to existing 8" water main	N/A	N/A	8	500	Future Dev.	$10,815	$61,285	$72,100
F4-1	627	In SE 192nd St., east from 116th Ave SE to 120th Ave SE	AC	10	24	1325	AC Replacement / 2030 Conditions	$81,090	$459,510	$540,600
F4-5	627	In SE 192nd St., east from 116th Ave SE to 124th Ave SE	AC	8, 10	24	2600	AC Replacement / 2030 Conditions	$159,120	$901,680	$1,060,800
F4-2	627	In anticipated easement, south from SE 192nd St. to the existing 8" water main west of Glenridge Elementary	N/A	N/A	8	300	Future Dev.	$6,480	$36,720	$43,200
F4-3	627	In anticipated easement, north from SE 196th St. to the existing 8" water main west of Glenridge Elementary	N/A	N/A	8	325	Future Dev.	$7,035	$39,865	$46,900
F4-4	627	In anticipated ROW west from the end of SE 198th St. to 116th Ave SE	N/A	N/A	8	575	Future Dev.	$12,435	$70,465	$82,900
F4-6	627	In 124th Ave SE from SE 192nd St. to SE 200th St.	AC	8	16	2600	Future Development	$106,080	$601,120	$707,200
F5-1	627	In anticipated ROW north of SE 198th St., east from 124th Ave SE then south to the existing hydrant	N/A	N/A	8	1325	Future Dev.	$28,650	$162,350	$191,000

F5-2	627	In anticipated ROW northwest from the west end of SE 195th St. to the existing 8" water main	N/A	N/A	8	600	Future Dev.	$12,975	$73,525	$86,500
F5-3	627	In anticipated ROW east of 124th Ave SE, south from SE 198th St. approximately 650 feet	N/A	N/A	8	650	Future Dev.	$14,055	$79,645	$93,700
F5-4	627	In SE 192nd St., east from 124th Ave SE to 132nd Ave SE	AC, DI	8, 14	24	2850	2030 Conditions	$174,420	$988,380	$1,162,800
F6-2	627	In SE 192nd St., east from 132nd Ave SE to 140th Ave SE	DI	14	24	2450	2030 Conditions	$149,940	$849,660	$999,600
F6-3	627	In anticipated ROW south from the east end of SE 193rd St. then east to 140th Ave SE	N/A	N/A	8	800	Future Dev.	$17,295	$98,005	$115,300
F6-4	627	In anticipated easement, east from the existing 8" stub east of 138th Ave SE to 140th Ave SE	N/A	N/A	8	300	System Looping	$6,480	$36,720	$43,200
F7-5	627	In SE 192nd St., construct new water main parallel to existing east from 140th Ave SE to Reservoir No. 1	N/A	N/A	24	2600	2030 Conditions	$145,860	$826,540	$972,400
G0-1	290	In anticpated ROW west of 92nd Ave S, construct 8" loop and dead-ends to property line	N/A	N/A	8	1350	Future Dev.	$29,190	$165,410	$194,600
G1-3	440	In anticipated ROW north from PRV 9 to S 200th St.	N/A	N/A	8	650	Future Dev.	$14,055	$79,645	$93,700
G1-4	440	In anticipated ROW south from the east end of S 204th St. to S 208th St.	N/A	N/A	8	1300	Future Dev.	$28,110	$159,290	$187,400
G2-3	627	In anticipated ROW southeast from the south end of 106th Ave SE to the exiting 6" water main	N/A	N/A	8	300	Future Dev.	$6,480	$36,720	$43,200
G3-2	627	In anticipated ROW/easement, east from the existing 12" water main located east of 108th Ave SE, easement in Villa Real subdivision	N/A	N/A	8	230	Future Dev.	$4,980	$28,220	$33,200
G3-3	627	In anticipated ROW/easement, south from SE 204th St. to existing 8" water main	N/A	N/A	8	325	Future Dev.	$7,035	$39,865	$46,900
G3-4	627	In anticipated ROW/easement (on approx. SE 206th St.), east from existing 8" water main to existing 8" water main	N/A	N/A	8	400	Future Dev.	$8,655	$49,045	$57,700
G4-1	627	In anticipated ROW (on approx. 206th St) west from the end of the existing 6" water main to the existing 6" water main	N/A	N/A	8	575	Future Dev.	$12,435	$70,465	$82,900
G4-2	627	In anticipated ROW west from existing 124th Ave SE to the end of SE 203rd St.	N/A	N/A	8	1675	Future Dev.	$36,225	$205,275	$241,500
G4-3	627	In anticipated ROW north from the end of 122nd Ave SE to project G4-2	N/A	N/A	8	300	Future Dev.	$6,480	$36,720	$43,200
G4-4	627	In 124th Ave SE, south from SE 200th St. to SE 208th St.	AC, DI	8	16	2650	2030 Conditions	$108,120	$612,680	$720,800
G5-1	627	In anticipated easement, west from the end of 131st Pl. SE to SE 202nd Pl.	N/A	N/A	8	350	System Looping	$7,575	$42,925	$50,500
G5-3	627	In anticipated ROW east from 124th Ave SE to SE 201st St.	N/A	N/A	8	1150	Future Dev.	$24,870	$140,930	$165,800
G5-4	637	In 132nd Ave SE, from north of SE 204th PL. to south of Lake Youngs Way SE	AC	12	12	900	AC Replacement	$29,190	$165,410	$194,600
G6-1	627	In SE 204th Way, south from SE 200th St. to 137th Ave SE	N/A	N/A	16	1250	2030 Conditions	$48,195	$273,105	$321,300
G7-4	627	In SE 200th St., east from the 6" dead end east of 143rd Pl. SE then south to SE 204th Pl.	N/A	N/A	8	2425	Future Dev.	$55,905	$316,795	$372,700
G7-5	627	In anticipated easement, north from SE 204th Pl. to the existing 6" dead end	N/A	N/A	8	200	System Looping	$4,320	$24,480	$28,800
H1-1	627	In S 208th St., west from 96th Ave S to project G1-4	N/A	N/A	8	950	System Looping	$21,900	$124,100	$146,000

H2-1	627	In anticipated ROW east from the east end of SE 209th Pl. to project H2-2	N/A	N/A	8	300	Future Dev.	$6,480	$36,720	$43,200
H2-2	627	In anticipated ROW west from the 8" dead end south of Panther Lake Elementary School to project H2-1	N/A	N/A	8	750	Future Dev.	$16,215	$91,885	$108,100
H2-3	627	In anticipated ROW south from SE 208th St. then east and south to SE 213th St. along 106th Ave SE	N/A	N/A	8	1925	Future Dev.	$41,625	$235,875	$277,500
H2-4	627	In anticipated ROW west from the 8" dead end north of SE 212th St. to project H2-3	N/A	N/A	8	475	System Looping	$10,275	$58,225	$68,500
H2-5	627	In SE 212th St., west from the 8" dead end west of 108th Ave SE to the 8" dead end east of 104th Ave SE	N/A	N/A	8	750	System Looping	$17,295	$98,005	$115,300
H2-6	627	In anticipated ROW south from SE 214th Pl. to SE 216th St.	N/A	N/A	8	325	System Looping	$7,035	$39,865	$46,900
H2-7	627	In anticipated ROW south from the east end of SE 214th Pl. to SE 216th St.	N/A	N/A	8	600	Future Dev.	$12,975	$73,525	$86,500
H2-8	627	In anticpated ROW east from project H2-7 to 108th Ave SE	N/A	N/A	8	500	Future Dev.	$10,815	$61,285	$72,100
H3-4	627	In anticipated ROW/Easement, east from the east end of SE 212th St. to 116th Ave SE	N/A	N/A	8	600	Future Dev.	$12,975	$73,525	$86,500
H4-1	627	In SE 212th Pl., east from 116th Ave SE to 119th Ave SE	UNKNOWN	N/A/4"	8	800	Future Dev.	$18,435	$104,465	$122,900
H4-2	627	In SE 208th St., east from 116th Ave SE to 124th Ave SE	AC, DI	8	16	2625	2030 Conditions	$107,100	$606,900	$714,000
H5-2	627	In SE 211th St., east from 125th Ave SE then south to Tank No. 5	AC, CI	12	24	350	AC Replacement / 2030 Conditions	$21,420	$121,380	$142,800
H5-3	627	In 125th Ave SE, south from SE 211th St. to SE 216th St	AC	12	12	1820	AC Replacement	$59,040	$334,560	$393,600
H5-5	627	In 132nd Ave SE, south from SE 208th St. to SE 216th St.	AC	10	16	2625	2030 Conditions	$107,100	$606,900	$714,000
H5-6	627	In anticipated ROW, east from the east end of SE 213th St. then south to 130th Ave SE	N/A	N/A	8	875	Future Dev.	$18,915	$107,185	$126,100
H6-1	627	In SE 208th St., west from 140th Ave SE to the valve located approximately 275 feet east of 132nd Ave SE	AC	12	12	2350	AC Replacement	$76,230	$431,970	$508,200
H6-2	627	In SE 216th St., east from 132nd Ave SE approximately 2,650 feet	N/A	N/A	12 (min.)	2650	2030 Conditions	$78,390	$444,210	$522,600
H7-2	710	In SE 213th St., east from 145th Ave SE to the existing 8" dead end	N/A	N/A	8	600	System Looping	$13,830	$78,370	$92,200
H7-3	710	In anticipated ROW/easement, south from the end of 144th Ave SE to SE 213th St	N/A	N/A	6	1250	Future Dev.	$27,030	$153,170	$180,200
H7-4	710	In 148th Ave SE, south from SE 214th St. to SE 216th St.	N/A	N/A	12 (min.)	625	2030 Conditions	$18,495	$104,805	$123,300
H7-5	710	In SE 216th St., west from 148th Ave SE approximately 2,650 feet	N/A	N/A	12	2650	2030 Conditions	$78,390	$444,210	$522,600
J2-1	627	In SE 222nd St., west from the 6" stub to 100th Ave S	N/A	N/A	8	800	System Looping	$18,435	$104,465	$122,900
J2-2	627	In anticipated easement, east from the east end of SE 220th St. then south to the north end of 104th Pl. SE	N/A	N/A	8	500	System Looping	$11,520	$65,280	$76,800
J3-5	627	In anticipated ROW west from 116th Ave SE to the end of SE 220th Pl. and the 8" stub to the northeast of the end of 113th Ct. SE	N/A	N/A	8	950	Future Dev.	$20,550	$116,450	$137,000
J3-6	627	In anticipated ROW south from the 8" stub off the end of SE 221st Pl. to SE 223rd St.	N/A	N/A	8	300	System Looping	$6,480	$36,720	$43,200
J4-2	627	In SE 216th St., east from 120th Ave SE to 124th Ave SE	AC	12	12	1100	AC Replacement	$35,685	$202,215	$237,900
J4-3	627	In 124th Ave SE, south from SE 216th St. to SE 217th Pl.	AC	12	12	450	AC Replacement	$14,595	$82,705	$97,300
J5-1	627	In SE 216th St., east from 124th Ave to the valve located approximately 225 feet east of 125th Ave SE	AC	12	12	700	AC Replacement	$22,710	$128,690	$151,400

J5-2	627	In 132nd Ave SE, south from SE 216th St. to SE 224th St.	AC	10	12 (min.)	2650	AC Replacement / 2030 Conditions	$85,950	$487,050	$573,000
J7-1	710	In 148th Ave SE, south from SE 216th St. to SE 224th St.	N/A	N/A	12	2600	2030 Conditions	$84,330	$477,870	$562,200
K5-1	627	In 127th Ave SE, south from SE 231st St. to SE 232nd St.	AC	10	12	250	AC Replacement	$8,115	$45,985	$54,100
K7-1	710	In 148th Ave SE, south from SE 224th St. approximately 2,650 feet	N/A	N/A	8	2650	Future Dev.	$61,095	$346,205	$407,300
K8-3	710	In SE 224th St., west from 156th Ave SE approximately 1,500 feet	N/A	N/A	12	1500	Future Dev.	$44,370	$251,430	$295,800
L4-1	627	In anticipated ROW south from SE 231st Pl. approximately 1,450 feet	N/A	N/A	8	650	Future Dev.	$14,055	$79,645	$93,700
L4-2	627	In anticipated ROW west from the intersection of 120th Ave SE and SE 236th St. approximately 600 feet	N/A	N/A	8	600	Future Dev.	$12,975	$73,525	$86,500
L5-2	627	In 132nd Ave SE, south from SE 231st Way to SE 240th St.	AC, DI	8	12 (min.)	2650	2030 Conditions	$85,950	$487,050	$573,000
L6-3	627	In anticipated ROW east from the east end of SE 236th St. then south to the north end of 135th Pl. SE	N/A	N/A	8	800	Future Dev.	$17,295	$98,005	$115,300

L6-4	670	In anticipated ROW/easement, southeast from the east end of SE 235th St. to the 8" dead end to the northwest of 137th Ave SE	N/A	N/A	8	450	System Looping	$9,735	$55,165	$64,900
L7-1	710	In 148th Ave SE, south from project K8-5 approximately 2,300 feet	N/A	N/A	8	2300	Future Dev.	$53,025	$300,475	$353,500
J8-1	710	In anticipated ROW east from the intersection of 148th Ave SE and SE 216th St. approximately 2,050 feet	N/A	N/A	8	2050	Future Dev.	$44,325	$251,175	$295,500
J8-2	710	In anticipated ROW north from SE 224th St. approximately 2,625 feet	N/A	N/A	8	2625	Future Dev.	$56,760	$321,640	$378,400
K5-3	627	In 132nd Ave SE, south from SE 224th St. to SE 231st Way	AC	8	12 (min.)	400	2030 Conditions	$12,975	$73,525	$86,500
K8-1	710	In SE 224th St., east from 148th Ave SE approximately 1,200 feet	N/A	N/A	12 (min.)	1200	2030 Conditions	$38,925	$220,575	$259,500
K8-2	710	In anticipated easement, south from SE 224th St. approximately 600 feet	N/A	N/A	24	600	2030 Conditions	$33,660	$190,740	$224,400
K8-4	710	In 156th Ave SE, south from SE 224th St. approximately 2,600 feet	N/A	N/A	8	2600	Future Dev.	$59,940	$339,660	$399,600
K8-5	710	In anticipated SE 232nd St ROW, east from 148th Ave SE to 156th Ave SE	N/A	N/A	8	2625	Future Dev.	$56,760	$321,640	$378,400
K9-1	710	In SE 224th St., east from 156th Ave SE to 164th Ave SE	N/A	N/A	8	2600	Future Dev.	$59,940	$339,660	$399,600
K9-2	710	In 164th Ave SE, south from SE 224th St. approximately 2,600 feet	N/A	N/A	8	2600	Future Dev.	$59,940	$339,660	$399,600
K9-3	710	In anticipated SE 232nd St. ROW, East from 156th Ave SE to 164th Ave SE	N/A	N/A	8	2625	Future Dev.	$56,760	$321,640	$378,400
L8-1	710	In 156th Ave SE, north from SE 240th St. approximately 2,675 feet	N/A	N/A	8	2675	Future Dev.	$61,665	$349,435	$411,100
L9-1	710	In SE 240th St., east from 156th Ave SE to 164th Ave SE	N/A	N/A	8	2625	Future Dev.	$60,510	$342,890	$403,400
L9-2	710	In 164th Ave SE, north from SE 240th St. approximately 2,650 feet	N/A	N/A	8	2650	Future Dev.	$61,095	$346,205	$407,300
								$5,006,025	$28,367,475	$33,373,500
							6-year - Distribution and Transmission Projects	$1,294,905	$7,337,795	$8,632,700
							6-year - Supply and Source Projects	$139,575	$790,925	$1,205,500
							Total 6-year	$1,434,480	$8,128,720	$9,838,200
							10-year - Distribution and Transmission Projects	$1,423,770	$8,068,030	$9,491,800
							10-year -Supply and Source Projects	$133,515	$756,585	$890,100
							Total 10-year	$1,557,285	$8,824,615	$10,381,900
							Short-Term-Total			$20,220,100
							20-year Subtotal, Distribution and Transmission Projects	$4,905,195	$27,796,105	$32,701,300
							20-year Subtotal, Supply and Source Projects	$100,830	$571,370	$672,200
							Total 20-year	$5,006,025	$28,367,475	$33,373,500
							Total	$7,997,790	$45,320,810	$53,593,600

New Projects - 2011 Water Comprehensive Plan Capital Facilities Plan										
Project ID Number	**Pressure Zone**	**Location**	**Existing Pipe Material**	**Old Pipe Size (Inches)**	**New Pipe Size (Inches)**	**Pipe Length (feet)**	**Category**	**Probable Design Cost**	**Probable Construction Cost**	**Total Project Cost**
SF-2	710	Tank 6 Seismic Upgrades	N/A	N/A	N/A	N/A	Storage Facility	$17,025	$96,475	$113,500
SF-3	627	Tank 5 Seismic Upgrades	N/A	N/A	N/A	N/A	Storage Facility	$3,000	$17,000	$20,000
GF-1	N/A	Maintenance Facility	N/A	N/A	N/A	N/A	General Facility	$90,000	$510,000	$600,000
GF-2	N/A	SCADA Upgrade	N/A	N/A	N/A	N/A	General Facility	$11,250	$63,750	$75,000
GF-3	N/A	Water Security	N/A	N/A	N/A	N/A	General Facility	$30,000	$170,000	$200,000
B5-2	627	In 128th Ave SE, south from SE 164th St. to SE 168th St.	AC	12	16	1475	AC Replacement	$60,180	$341,020	$401,200
B5-7	627	In existing easement, east from 128th Ave SE to Pump Station No. 2	CI	8, 10	12	2250	12" Grid/Distribution	$72,975	$413,525	$486,500
Completed Projects - 2004 Water Comprehensive Plan Capital Facilities Plan										
Note: Prpoject ID Numbers listed are thiose used in 2004 Water Comprehensive Plan. New Project ID Numbers were assigned for 201 Comprehensive Plan CFP										

Project ID Number	**Pressure Zone**	**Location**	**Existing Pipe Material**	**Old Pipe Size (Inches)**	**New Pipe Size (Inches)**	**Pipe Length (feet)**	**Category**	**Notes**
SS-3	627	Pump Station 2	N/A	N/A	N/A	N/A	Supply and Source	
SS-7	670	Pump Station 5	N/A	N/A	N/A	N/A	Supply and Source	
PZ-C	627/710	PRV-B	N/A	N/A	N/A	N/A	Pressure Zone	
B4-1	627	In SE 164th St., west from 125th Ave SE to 116th Ave SE	AC	6	12	2,700	12" Grid	Partially completed. See B4-1 in 2010 CFP
B4-2	627	In SE 163rd St., east from 116th Ave SE to 119th Ave SE	AC	4	8	1,000	4" Replacement	
B4-3	627	In 119th Ave SE, north from SE 163rd St. to 120th Ave SE	AC	4	8	1,125	4" Replacement	
B4-4	627	In 121st Ave SE, north from SE 164th St. to SE 161st St.	AC	4	8	1,075	4" Replacement	
B4-5	627	In SE 162nd St., east from 121st Ave SE to 122nd Ave SE	AC	4	6	300	4" Replacement	
B4-6	627	In 123rd Ave SE, north from SE 164th St. to the first hydrant	AC	4	8	250	FF/Velocity	
B5-2	627	In SE 164th St., west from Pump Station No. 2 to 128th Ave SE	AC	12	12	1,225	AC Replacement	
B5-8	627	In 129th Ave SE, north from SE 164th St. to the first hydrant	AC	6	8	200	FF/Velocity	
C3-4	627	In 114th Ave SE, north from 172nd Ave SE to existing water main	N/A	N/A	8	425	Future Dev.	
C3-5	627	In anticipated ROW, north from 172nd Ave SE to 169th Ave SE	N/A	N/A	8	825	Future Dev.	
C3-6	627	In SE 172nd St., east from 116th Ave NE to 113th Ave SE	N/A	N/A	8	925	Future Dev.	
C3-9	627	In anticipated easement east of 113th Ave., between SE 168th St. and SE 169th St.	NA	NA	8	475	Looping	
C4-8	627	In easement east of 120th Ave SE between east end of SE 175th Street and west end of SE 173rd street.	NA	NA	8	750	Looping	
C5-4	627	In anticpated ROW, south from the intersection of SE 172nd St. and 127th Ave SE to SE Petrovitsky Rd.	N/A	N/A	8	1,000	Future Dev.	
C5-5	627	In anticipated ROW, east from the intersection of 125th Ave SE and SE 173rd Pl. to 128th Ave SE	N/A	N/A	8	1,350	Future Dev.	Partially Completed. See C5-3 and 5-4 in 2010 CF

C5-6	627	In SE 170th St., east from 128th Ave SE to 129th Ave SE	AC	4	8	325	4" Replacement	
C11-1	710	In W Lake Desire Dr. SE, southwest from 174th Ave SE to the first valve	AC	8	10	1,150	FF/Velocity	
D3-2	627	From the valve at the intersection of 110th Ave SE and SE 180th St., north to 179th Pl. SE, then west to 109th Ave SE, then north approximately 700 feet	AC	4	8	1,200	4" Replacement	
D3-4	627	In 110th Ave SE, north from SE 182nd St. to SE 180th Pl.	AC	4	8	550	4" Replacement	
D3-5	627	In 110th Ave SE, north from 179th Pl. SE approximately 525 feet	AC	4	8	525	4" Replacement	
D6-1	627	In 140th Ave SE, south from Petrovitsky Road to SE 184th St.	AC	10	12	2,875	AC Replacement	
D11-1	710	In E Lake Desire Dr. SE, south from existing tee to the second hyrdant	AC	6	8	900	FF/Velocity	
E2-1	627	In existing easement, west from 102nd Ave SE to first hydrant	AC	4	8	850	4" Replacement	
E3-2	627	In anticipated ROW, west from the end of SE 189th St. to 108th Ave SE	N/A	N/A	8	650	Future Dev.	
E4-4	627	In anticipated ROW north of SE 188th St., east from 120th Ave SE to the existing 8" water main	N/A	N/A	8	875	Future Dev.	
E4-7	627	In anticipated ROW north of SE 192nd St., west from 120th Ave SE to 116th Ave SE.	N/A	N/A	8	1,300	Future Dev.	
E4-8	627	In anticipated ROW east of 116th Ave SE, north from SE 192nd St. to SE 188th St.	N/A	N/A	8	1,400	Future Dev.	
E6-1	627	In 140th Ave SE, south from SE 184th St. to SE 192nd St.	AC	10	12	2,675	AC Replacement	
E11-1	710	In W Lake Desire Dr. SE, west from the east end of W Lake Desire Dr. SE to the third hydrant	AC	6	8	1,325	FF/Velocity	
F3-3	627	In anticipated ROW south of SE 192nd Ave SE, east from project F3-2 to project F3-5	N/A	N/A	8	1,275	Future Dev.	Partially completed. See F3-3 in 2010 CFP
F3-5	627	In anticipated ROW west of 116th Ave SE, north from SE 196th St. to SE 192nd St.	N/A	N/A	8	1,300	Future Dev.	
F6-1	627	In 140th Ave SE, south from SE 192nd St. to SE 200th St.	AC	8	16	2,600	AC Replacement / 2020 Conditions	Partially completed. See F6-1 in 2011 CIP
G0-2	290	In 92nd Ave S, south from SE 200th St. to SE 204th St.	AC	6	10	1,350	FF/Velocity	Partially completed. See G-02 in 2011 CIP
G0-3	290	In 92nd Ave S, south from SE 204th St. to the second hydrant	AC	6	8	900	FF/Velocity	Partially completed. See G-03 in 2011 CIP
G1-1	627	In 100th Ave SE, south from Springbrook Elementary School to SE 208th St.	AC	10	10	2,025	AC Replacement	Partially Completed. See G1-1 in 2011 CIP.
G1-5	627	In S. 206th Pl., east from 96th Ave S. to first hydrant	AC	6	8	250	FF/Velocity	
G1-6	627	In anticipated easement, northwest from the north end of 98th Pl. S to S 203rd St.	N/A	N/A	8	550	Future Dev.	
G3-2	627	In anticipated ROW/easement, east from the existing 12" water main located east of 108th Ave SE, approximately 800 feet	N/A	N/A	8	800	Future Dev.	Partially completed. See G3-2 of 2011 CIP
G3-3	627	In SE 200th St., east approximately 450 feet then south in anticpated ROW approximately 425 feet	N/A	N/A	8	875	Future Dev.	
G3-4	627	In anticipated ROW/easement, north from SE 204th St. to project G3-2	N/A	N/A	8	900	Future Dev.	
H1-1	627	In S 208th St., west from 100th Ave SE to 96th Ave S	AC	6	10	1,275	AC Replacement	
H1-3	440	In 96th Ave S, north from S 216th St. for approximately 700 feet	AC	4	8	700	4" Replacement	
H1-4	440	In 99th Ave S, north from S 216th St. to the first hydrant	AC	6	8	475	FF/Velocity	

H1-5	627	In 99th Ave S, north from S 212th St. to S 210th Pl.	AC	4	6	750	4" Replacement			
H2-1	627	In SE 208th St., east from 100th Ave SE to the valve approximately 200 feet west of 108th Ave SE	AC	6	10	1,375	AC Replacement			
H3-4	627	In anticipated ROW, east from the east end of SE 216th St. to the west end of SE 216th St.	N/A	N/A	8	300	System Looping			
H4-5	627	In anticipated ROW, southeast from the east end of SE 210th St. to the existing 6" stub in the west end of SE 211th St.	N/A	N/A	6	450	FF/Velocity			
H5-7	627	In anticipated ROW and easement, south from SE 210th PL. to SE 212th St	N/A	N/A	8	530	Looping			
H5-8	627	In anticipated easement, north from SE 212th Street to SE 211th Street east of1 27th Pl SE	N/A	N/A	8	850	Looping			
J1-1	440	In 99th Ave S, south from S 216th St. to the first hydrant	AC	6	8	380	FF/Velocity			
J4-4	627	In anticipated ROW, west from the west end of SE 217th Pl. to 116th Ave SE	N/A	N/A	8	450	Future Dev.			
K4-1	627	In SE 227th Pl., east from 116th Ave SE to 120th Ave SE	AC	10	12	1,350	AC Replacement / 12" Grid			
K5-3	627	In anticpated ROW west of 132nd Ave SE, looping between the existing system in 129th Pl. SE, 131st Ave SE, SE 226th Pl., and SE 228th Pl.	N/A	N/A	8	3,175	Future Dev.			
K5-4	627	In 132nd Ave SE, south from SE 224th St. to SE 231st Way	AC	8	12 (min.)	2,500	2020 Conditions	Partially completed. See K5-3 of 2011 CIP		
K6-1	670	In anticipated ROW east of 132nd Ave SE, looping around anticipated development and connecting to 134th Ave SE and 135th Ave SE, and stubbing to SE 224th St.	N/A	N/A	8	4,150	Future Dev.			
L6-2	627	In anticpated ROW, west from the west end of SE 239th St. the north to 134th Ave SE	N/A	N/A	8	900	Future Dev.			

2004 Water Comprehensive Plan Capital Facilities Plan Projects Removed from 2010 Capital Facilities Plan

Note: Prpoject ID Numbers listed are thiose used in 2004 Water Comprehensive Plan. New Project ID Numbers were assigned for 201 Comprehensive Plan CFP

Project ID Number	Pressure Zone	Location	Existing Pipe Material	Old Pipe Size (Inches)	New Pipe Size (Inches)	Pipe Length (feet)	Category	Notes
B5-6	627	In existing easement, east from 128th Ave SE to the second teee	CI	8	10	850	School FF	Below new 10 ft/s velocity req. for FF
B5-7	627	In existing easement, south from SE 164th St. to the first hydrant	CI	8	10	700	School FF	Below new 10 ft/s velocity req. for FF
C2-4	627	Along 8" loop north of SE 174th St., just east of 106th Pl. SE	DI	8	10	800	MF/Comm FF	Below new 10 ft/s velocity req. for FF
D6-2	627	In existing easement at Fairwood Grove Condos, east from Drive C to Drive E	DI	8	10	475	MF/Comm FF	Below new 10 ft/s velocity req. for FF
D6-3	627	In existing easement at Fairwood Grove Condos, east from Drive C to Drive E	DI	8	10	500	MF/Comm FF	Below new 10 ft/s velocity req. for FF
D8-3	710	In existing easement, northwest from existing tee to the second hydrant	DI	8	10	200	MF/Comm FF	Below new 10 ft/s velocity req. for FF
D8-4	710	In existing easement, northwest from existing tee to the first hydrant	DI	8	10	150	MF/Comm FF	Below new 10 ft/s velocity req. for FF
E2-3	627	In 106th Ave SE, south from SE 188th Ct. to the first tee	N/A	N/A	8	650	Future Dev.	Location within stream buffer
E5-12	627	In existing easement, north of SE 192nd St. to the first hydrant	N/A	N/A	8	350	School FF	Below new 10 ft/s velocity req. for FF
E7-2	627	In anticpated ROW, east from 140th Ave SE, then north to the 8" dead end south of 143rd Ct. SE	N/A	N/A	8	1,400	Future Dev.	Alignment crosses Molasses Creek
J2-2	627	In anticipated easement, east from the east end of SE 220th St. then south to the north end of 104th Pl. SE	N/A	N/A	6	500	System Looping	Alignment not feasible due to wetland
L5-2	627	In existing easement, north along 8" loop from SE 240th St. to the tee	DI	8	10	900	MF/Comm FF	Below new 10 ft/s velocity req. for FF
L6-5	627	In existing easement, east from 132nd Ave SE to the first hydrant	DI	8	12	250	FF/Velocity	Below new 10 ft/s velocity req. for FF

APPENDIX I









Soos Creek
Water & Sewer District

Water Quality Regulatory Compliance Handbook

Updated June 2011

Water Quality Regulatory Compliance Handbook
Soos Creek Water & Sewer District

Total Coliform Rule
Disinfection Byproducts Rule

Updated July 2011

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Appendix B – Water Sampling Station Site Maps

Sampling Station Site No. 1
Sampling Station Site No. 2
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Appendix C – Disinfection Byproducts Sampling Locations

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T-3 22124 98th PL. SE
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Appendix D - Glossary of Terms

Appendix E - References

BACKGROUND OF COLIFORM RULE

In June 1989, the Environmental Protection Agency (EPA) promulgated a revised regulation for total coliforms. Where the previous regulation was based on the density of coliforms in a given volume of water, the revised rule is based on the presence/absence of coliforms. Under the TCR (Total Coliform Rule), utilities must develop a monitoring plan to collect representative samples of water throughout the distribution system. Monitoring frequency is based on population served. For a system collecting more than 40 samples per month, compliance is based on no more than 5 percent of the samples collected being coliform positive. Additionally, coliform-positive samples must be analyzed for fecal coliforms and E. coli. Repeat samples collected for positive coliforms must also be analyzed for fecal coliforms and/or E. coli. The TCR went into effect on December 31, 1990 and was implemented and enforced in Washington under the federal rule on September 1, 1991. The TCR was adopted and effective in the Washington Drinking Water Regulations in February 1992.

The Maximum Contaminant Level (MCL) for total coliforms is as follows:

1. For a system collecting more than 40 samples per month, a non-acute violation occurs when more than five (5) percent of the samples collected during the month are coliform positive.
2. For systems collecting less than 40 samples per month, non-acute violation occurs when there is more than one positive coliform sample in a given month.
3. Any fecal coliform positive repeat example, or E. coli positive repeat sample, or any total coliform positive repeat sample following a fecal coliform or E. coli positive routine sample, constitutes a violation of the MCL for total coliforms.

Concerns were raised about the TCR because no variances or exceptions were allowed. The concern was that biofilm in the distribution system may lead to violations of the TCR even though there would not be a demonstrable risk to public health. In August 1989, the American Water Works Association (AWWA) filed a legal petition to with the US Court of Appeals to review the rule. As a result of those activities, the EPA agreed to allow variances to systems not at risk for fecal or pathogenic contamination. The EPA developed interim criteria guidance to states seeking to identify systems that could operate under a variance without posing an unreasonable risk to health. In the future, the EPA will establish variance criteria.

Public notification is required for a Group A system operation under a variance.

The state can invalidate a positive total coliform sample under three conditions:

4. The Seattle Public Utilities (SPU) Water Quality Laboratory (WQL) determines that improper sample analysis caused the total coliform positive result;
5. The state determines that the positive total coliform sample resulted from a domestic or other non-distribution system plumbing problem (the state cannot invalidate a sample on the basis of repeat sample results, unless all repeat samples collected at the same tap as the original total coliform positive sample are total coliform positive, and all repeat samples collected within five service connections of the original tap are total coliform-negative); or

6. The state has substantial grounds to believe that a total coliform positive result is due to a circumstance or condition which does not reflect water quality in the distribution system.

LOCAL SAMPLING AND MONITORING PROGRAM (COLIFORM)

Routine Sampling

Under the Washington State Board of Health Drinking Water Regulations for total coliforms, the number of samples a utility is required to collect each month to determine compliance under the total coliform rule is based on population served (resident and non-resident population). In response to a 1972 request from the Washington Department of Health (Washington Department of Social and Health Services in 1972), the SPU developed a coliform rule monitoring plan for its direct customers and for the wholesale distribution areas. Under the original agreement with the State, the SPU WQL is responsible for collecting and analyzing drinking water samples from all of the direct and wholesale service areas. This area represents approximately 1.3 million customers in King County. Under this original agreement, SPU and its purveyors sample at a rate of at least 0.7 samples per 1,000 customers per month.

Sample Analysis/Reporting to the State

According to the Washington drinking water regulation WAC 246-290-408(2.f.), the Department of Health must be notified:

- Within 10 days of the presence of coliform in a sample; and
- By the end of the day, when the purveyor is notified by the SPU WQL for the presence of fecal coliform or E. coli.

If a positive coliform sample is found, the SPU WQL will first notify the District. The lab will then contact or send notification to the DOH. It is the District's responsibility to follow-up with the DOH within the required timeframes.

DISINFECTION BYPRODUCTS MONITORING

Chlorine is added to drinking water to kill or inactivate disease causing organisms. This process is called disinfection. Since chlorine is an active substance, it may react with naturally occurring substances to form compounds known as disinfection byproducts. The most common disinfection byproducts are Total Trihalomethanes (TTHM) and haloacetic acids (HAAs)

Beginning in April of 2012, the District will commence quarterly monitoring and compliance at 8 sites for TTHM and for the compound Haloacetic Acid 5 (HAA5).

WATER SYSTEM OVERVIEW

Soos Creek Water & Sewer District purchases its water from the SPU. In 1975 the EPA agreed to the implementation of a regional coliform monitoring plan for the total SPU served system on the basis that the direct service and wholesale areas share the same sources, primary treatment plants, and transmission grid.

The sources of supply for the region are the Cedar River Supply, the South Fork Tolt Supply, and the Highline Well Field, which is used only on a seasonal basis. None of these supplies are currently filtered. The Cedar River and the South Fork Tolt primary treatment includes physical screening, disinfected with gaseous chlorine, fluoridation, and corrosion treatment with lime and soda ash on the South Fork Tolt. The Highline Well Field is chlorinated, fluoridated, and treated for corrosion control with sodium hydroxide. Soos Creek's water comes primarily from the Cedar River Supply.

Sample stands are utilized to overcome the problems of gaining routine access to public and private premises for water quality sampling. These stands are located to represent different population concentrations, sources of supply, pressure zones, distribution pipe material and storage facilities so that representative water samples can be taken.

Soos Creek Water & Sewer District's service area includes over 17,600 connections. This area is located in Southeast King County. The surrounding purveyors include the City of Renton to the North and Northwest, the Cedar River Water & Sewer District to the north and east, Covington Water District and King County Water District No. 111 to the southeast, and the City of Kent to the southwest. The District currently owns and operates two emergency interties, one with King County Water District No. 111 (KCWD111), and one with the City of Kent. The direct service areas covers more 10,000 acres (over 16 square miles).

Soos Creek Water & Sewer District has a six million gallon concrete reservoir and three steel standpipe supply tanks in the direct service area to provide equalizing storage and fire flows. Soos Creek Water & Sewer District currently has no form of gaseous or hypochlorination to boost residuals in the system. All chlorinating is done by manual means of introducing chloring tablets pellets into the storage facilities during peak or demand situations.

Soos Creek Water & Sewer District's distribution system is comprised of over 222 miles of water supply and distribution mains. Approximately half of the distribution mains (24" diameter and smaller) are ductile iron. Most of these are lined with cement mortar linings. Soos Creek Water & Sewer District has no lead service lines within the distribution system, but does have some asbestos cement pipe remaining in the system. Soos Creek Water & Sewer District has seven sample stands that SPU uses for routine coliform compliance monitoring.

OPERATIONAL RESPONSES TO NON-CONFORMING SAMPLES (COLIFORM MONITORING)

Repeat Samples

According to WAC 246-290-320, repeat samples must be collected whenever a sample is determined to be coliform positive. Within 24 hours of being informed by the SPU WQL of a coliform presence sample, a set of three repeat samples must be collected. One sample must be collected from the same sample site that the original coliform presence result came from. Plus, a sample must be taken from each of two repeat sites identified herein. The original routine sample sites and the two associated repeat sample sites, constitute a sample site grouping. Due to the requirement for repeat sample sites, routine sampling at the source and the service connection farthest from the source should be avoided.

Sample Site Group

After the routine sampling sites are selected, three additional sites (repeat sites) must be identified for each routine site. Each of these three sites are to be at a different service connection. Do not select the same site twice.

From the routine sample site:

- The first repeat site will be the routine site;
- The second site will be located within 5 service connections downstream from the routine/first repeat site; and
- The third site will be located within 5 service connections upstream from the routine/first repeat site.

Selected Water Sample Site Groups (District)	
Water Sample Station #58-1 (111th Avenue SE & SE 179th Street)	
Up	***Down***
1. 17665 – 111th Avenue SE	*1. 17658 – 111th Avenue SE*
2. 17810 – 111th Avenue SE	*2. 17657 – 111th Avenue SE*
3. 17801 – 111th Avenue SE	*3. 17650 – 111th Avenue SE*
4. 17808 – 111th Avenue SE	*4. 17649 – 111th Avenue SE*
5. 17815 – 111th Avenue SE	*5. 17642 – 111th Avenue SE*
Water Sample Station #58-2 (SE 236th Street & 123rd Avenue SE)	
Up	***Down***
1. 12125 SE 236th Street	*1. 12009 SE 236th Street*
2. 12211 SE 236th Street	*2. 23607 – 120th Avenue SE*
3. 23603 SE 236th Street	*3. 23622 – 120th Avenue SE*
4. 23603 SE 236th Place	*4. 11858 SE 236th Street*
5. 23501 – 123rd Avenue SE	*5. 23419 – 120th Avenue SE*
Water Sample Station #58-3 (SE 204th Street & 108th Avenue SE)	
Up	***Down***
1. 10630 SE 204th Street	*1. 20256 – 106th Avenue SE*
2. 20221 – 108th Avenue SE	*2. 20257 – 106th Avenue SE*
3. 20216 – 108th Avenue SE	*3. 20406 – 106th Avenue SE*
4. 20201 – 108th Avenue SE	*4. 20407 – 106th Avenue SE*
5. 20125 – 108th Avenue SE	*5. 10429 SE 204th Street*

Selected Water Sample Site Groups (District)	
Water Sample Station #58-4 (SE 160th Street & 121st Avenue SE)	
Up	***Down***
1. 15716 – 121st Avenue SE	*1. 15704 – 121st Avenue SE*
2. 15723 – 121st Avenue SE	*2. 12011 SE 157th Place*
3. 15722 – 121st Avenue SE	*3. 12014 SE 157th Place*
4. 15728 – 121st Avenue SE	*4. 12008 SE 157th Place*
5. 15729 – 121st Avenue SE	*5. 12002 SE 157th Place*
Water Sample Station #58-5 (SE 183rd Street & 148th Avenue SE)	
Up	***Down***
1. 14702 SE 183rd Street	*1. 14770 SE 185th Place*
2. 14705 SE 183rd Street	*2. 14754 SE 185th Place*
3. 18164 – 147th Avenue SE	*3. 14748 SE 185th Place*
4. 18149 – 147th Avenue SE	*4. 14742 SE 185th Place*
5. 18142 – 147th Avenue SE	*5. 18611 – 148th Avenue SE*
Water Sample Station #58-6 (SE 211th Street & 125th Avenue SE)	
Up	***Down***
1. 12524 SE 211th Street	*1. 12516 SE 211th Street*
2. 12532 SE 211th Street	*2. 21020 – 125th Avenue SE*
3. 12540 SE 211th Street	*3. 21107 – 125th Avenue SE*
4. 21020 – 126th Avenue SE	*4. 21104 – 125th Avenue SE*
5. 21012 – 126th Avenue SE	*5. 21112 – 125th Avenue SE*
Water Sample Station #58-7 (13425 SE 230th Street)	
Up	***Down***
1. 23003 – 135th Avenue SE	*1. 13426 SE 230th Street*
2. 23006 – 135th Avenue SE	*2. 22845 – 135th Avenue SE*
3. 23020 – 135th Avenue SE	*3. 23003 – 135th Avenue SE*
4. 23030 – 135th Avenue SE	*4. 13406 SE 230th Street*
5. 23100 – 135th Avenue SE	*5. 13405 SE 230th Street*

The sampling site locations are shown on the figures located in Appendix B.

Flushing Options

After a bad sample has been confirmed, it is best to thoroughly flush the suspect area before resampling. A chlorine residual before and immediately after flushing has taken place. If a low chlorine residual (below 0.3) is found, appropriate measures are taken to boost the chlorine in the system. Recent activities within the area of the bad sample are researched to determine if a cross-connection may have taken place. New construction or water draws may also cause problems.

It should not be assumed that the source water is contaminated.

System Analysis

The District conducts and ongoing system analysis program in order to identify possible problem areas before a MCL violation occurs. Deadend lines are potentials for low chlorine residuals, as well as MCL violations. Valves that are turned down or off could cause stagnate water and flow problems. Tanks and reservoirs need to be cleaned and/or inspected on a yearly or as needed basis.

A thorough knowledge of the District water system will allow a better understanding of what is happening when a violation takes place.

Sample Stand Locations

Sample Stand #	***Code #***	***Location***
0185	*58-1*	*111th Avenue SE & SE 179th Street*
0186	*58-2*	*SE 236th Street & 120th Street SE*
0187	*58-3*	*SE 204th Street & 108th Avenue SE*
0188	*58-4*	*SE 160th Street & 121stAvenue SE*
0189	*58-5*	*SE 183rdStreet & 148th Avenue SE*
0190	*58-6*	*SE 211th Street & 125th Avenue SE*
0191	*58-7*	*SE 230th Street & 134th Avenue SE*

Note: Seattle currently takes 49 monthly samples from Soos Creek at the above combined locations to conform with the regional monitoring plan.

Disinfection Byproducts-Sampling Locations

Beginning in 2012, quarterly sampling for disinfection byproducts at the 8 sites listedin the following table is scheduled to begin. It is anticipated that sample stands will be installed at the locations listed which presently do not have sample stands. It is further anticipated that Seattle Public Utilities will assign a sample stand number to each of the new locations in continuation of the current sample stand nomenclature, for example, 58-8, etc. The sampling site locations are shown on the figures located in Appendix C.

	Site ID	***Location***
1	*T-1*	*20406 92nd Avenue SE*
2	*A-4*	*17610 162nd Avenue SE*
3	*T-2*	*Sample Stand 58-2*
4	*H-1*	*10891 SE 214th Place*
5	*T-6*	*906 S. 38th Court*
6	*T-3*	*22124 98th Place SE*
7	*A-2*	*20654 98th Place S*
8	*A-3*	*Sample Stand 58-3*

Sample Stand Cleaning Plan

The following is a listing of the items which need to be addressed in a sample stand maintenance schedule:

1. Disinfect: Yearly or whenever a sample is positive for coliform.
2. Painting: Every three years or as needed.
3. Trim brush: Yearly or as needed.
4. Replace Valves: Inspect yearly and replace as needed.
5. Piping and hose: Inspect yearly and replace as needed.
6. Meter Box: Inspect yearly and clean as needed.

The following is a listing of the items which would need to be purchased to disinfect sample stands:

1. Garden Spray Pump
2. 5 feet of Tygon clear plastic tubing
3. Two (2) hose clamps
4. Safety glasses
5. Cl2 Bleach (5 to 1 solution of water to bleach)

When disinfecting the stand, a let water and bleach solution should sit in the stand for approximately five to 10 minutes.

Tank and Reservoir Locations

Tank/Reservoir # (size)	*Address*	*Inspected*	*Cleaning*
2 (4MG)	*SE 188th Street and 116th Avenue SE*	*Yearly*	*Every 4 years*
5 (3MG)	*SE 211th Street and 126th Avenue SE*	*Yearly*	*Every 4 years*
6 (2MG)	*SE 187th Street and 168th Avenue SE*	*Yearly*	*Every 4 years*
1 (6MG)	*SE 193rd Street and 146th Avenue SE*	*Yearly*	*Every 4 years*

PRV Locations

PRV Station Number	*Location*	*Main Diameter*
1	*Carr Road & 103rd Place SE*	*8"*
2	*SE 174th Street & 103rd Avenue SE*	*6"*
3	*SE 192nd Street & 100th Avenue SE*	*6"*
4	*S 200th Street & 98th Avenue S*	*6"*
5	*S 200th Street & 92nd Avenue S*	*6"*
6	*97th Place S & S 212th Street*	*4"*
7	*S 216th Street & 100th Avenue S*	*6"*
8	*SE 183rd Street & 145th Avenue SE*	*6"*
9	*SE 202nd Street & 95th Place S*	*8"*
11	*10056 SE 224th Street*	*6"*
12	*SE 220th Street & 102nd Place SE*	*6"*
14	*SE 204th Street & 92nd Avenue SE*	*8"*

Pump Station Locations

Pump Station Number	***Location***
1	*SE 160th Street & 114th Avenue SE*
2	*SE 164th Street & 132nd Avenue SE*
4	*SE 192nd Street & 148th Avenue SE*
5	*SE 230th Street & 134th Avenue SE*
6	*SE Petrovitsky Road & 147th Avenue SE*

PUBLIC NOTIFICATION FOR VIOLATIONS

Key Contacts for Utility Decisions/Response	
Washington State Department of Health (Northwest Regional Office) Contacts	***Phone Number***
Paige Igoe, King County Regional Engineer	*253-395-6764*
Northwest Regional Office/Kent	*253-395-6750*
After Hours Emergency Hotline	*877-481-4901*
Seattle Public Utilities Contacts	***Phone Number***
Terri Gregg	*206-684-7975*
Lynn Kirby	*206-684-0216*
Wylie Harper	*206-684-7880*
Newspaper Contacts	
Reporter	*253 872-6600 (Kent)* *425 255-3484 (Renton)*
Seattle Times	*206-464-2111 (Main)* *2069464-2261 (News Room)*

Key Contacts for Utility Decisions/Response	
Television Contacts	
KING	*206-448-5555* *206-448-4525 (fax)*
KSTW	*206-441-1111*
KIRO	*206-728-7777*
KOMO	*206-404-4000*
Radio Contacts	
KIRO (FM	*206-726-5476*
KOMO	*206-404-5666*

Response to the public is to be made only after confirmation of an MCL violation with DOH, Seattle Public Utilities and coordination with management of the utility.

Non-Acute Violations and Public Notification (Coliform, Tier 2)

A non-acute Maximum Contaminant Level (MCL) for coliform bacteria occurs when:

- For a system collecting less than 40 routine samples per month, a non-acute violation occurs when there is more than one positive coliform sample in a given month; or
- For a system taking 40 samples per the month, a non-acute violation occurs when more than five percent of the samples collected during the month are coliform positive.

A non-acute violation requires a Tier 2 public notification as defined in WAC 246-290-71001 and pursuant to 40 CFR 141.203(a). A Tier 2 notification must be made as soon as possible or within 30 days. Repeat notice is required every 3 months until the violation is resolved. Notification must be by ***mail*** *or* ***hand/direct delivery*** *and* ***other methods reasonably calculated to reach others, as needed.***

Acute Violations and Public Notification (Coliform,Tier 1)

An acute MCL for coliform bacteria occurs when there is:

- Fecal coliform present in a repeat sample;
- E. coli present in a repeat sample; or
- Coliform present in a set of repeat samples collected as a follow-up to a sample with fecal coliform or E. coli present.

An acute violation requires a Tier 1 public notification as defined in WAC 246-290-71001 and pursuant to 40 CFR 141.202(a). A Tier 1 notification must be made within 24 hours. Notification must be by ***radio*** *and* ***television*** *or* ***posting*** *or* ***hand delivery*** *or* ***other method if approved by the DOH****.*

Non-Acute Violations and Public Notification (DBPR)

A non-acute MCL for disinfection byproducts occurs if the system's locational running average annual for Total Trihalomethanes (TTHM) exceeds the MCL of 0.080 mg/l or the locational running average for Haloacetic Acid 5 (HAA5) exceeds the MCL of 0.060 mg/l at one or more sampling stations.

A non-acute violation requires a Tier 2 public notification as defined in WAC 246-290-71001 and pursuant to 40 CFR 141.203(a). A Tier 2 notification must be made as soon as possible or within 30 days. Repeat notice is required every 3 months until the violation is resolved. Notification must be by ***mail*** *or* ***hand/direct delivery*** *and* ***other methods reasonably calculated to reach others, as needed.***

Public Notice Content

Pursuant to WAC 246-290-71002, public notices shall provide:

- A description of the violation or situation, including the contaminant and contaminant levels, if applicable
- When the violation or situation occurred
- Any potential adverse health effects (using standard health effects language from Appendix B of the public notification rule or the standard monitoring language.).
- The population at risk, including subpopulations particularly vulnerable if exposed to the contaminant
- Whether alternative water supplies should be used
- What actions consumers should take
- What the system is doing to correct the violation or situation
- The District's name, business address, and phone number
- A statement to encourage the notice recipient to distribute the public notice to other persons served using the standard language below

The purveyor may provide additional information to further explain the situation.

Public Notification Templates

The United States Environmental Protection Agency, in its Revised Public Notification Handbook, March 2010, has published templates that may be used for notification purposes in conformance with the requirements delineated above. It is strongly recommended that these templates be used. The following templates are presented in the EPA Handbook. The template numbers are per the EPA Handbook.

- Fecal Coliform or E. coli Notice – Template 1-2 (Tier 1)
- Tier 1 "Corrected Problem" Notice – Template 1-6
- Unresolved Total Coliform Notice – Template 2-1 (Tier 2)
- Resolved Total Coliform Notice – Template 2-2
- Stage 2 DBPR TTHM or HAA5 MCL Violation Notice – Template 2-19

Copies of the templates are included in Appendix A. In addition to providing a template for format and content of the public notices, each template has a convenient summary of the

procedures to be followed should a violation occur. These summary of procedures for each template follow below.

Fecal Coliform / E. coli Notice Instructions (for Template 1-2)

Since exceeding the fecal coliform or E. coli maximum contaminant level is a Tier 1 violation, you must provide public notice to persons served as soon as practical but within 24 hours after you learn of the violation (141.202(b)). During this time, you must also contact the Department of Health. You should also coordinate with your local health department. You may also have to modify the template if you also have high nitrate levels or other coliform MCL violations. You must use one or more of the following methods to deliver the notice to consumers (141.202(c)):

- Radio
- Television
- Hand or direct delivery
- Posting in conspicuous locations

You may need to use additional methods (e.g., newspaper, deliver of multiple copies to hospitals, clinics, or apartment buildings) since notice must be provided in a manner reasonably calculated to reach all persons served.

The following notice is appropriate for hand delivery or a newspaper notice. However, you may wish to modify it before using it for a radio or TV notice. If you do, you must still include all required elements and leave the health effects language in italics unchanged. This language is mandatory (141.205(d)). If you post or hand deliver, print your notice on letterhead.

Population Served

Make sure it is clear who is served by your water system – generally, "The Fairwood Area."

Corrective Action

In your notice, describe corrective actions you are taking. Listed below are some steps commonly taken by water systems with fecal coliform or E. coli violations. Use one or more of the following actions, if appropriate, or develop your own:

- We are chlorinating and flushing the water system
- We are switching to an alternate drinking water source
- We are increasing sampling for coliform bacteria to determine the source of the contamination
- We are repairing the wellhead seal
- We are repairing the storage tank
- We are restricting water intake from the river/lake/reservoir to prevent additional bacteria from entering the water system and restricting water use to emergencies

After Issuing the Notice

Send a copy of each type of notice and a certification that you have met all the public notice requirements to the Department of Health within ten days from the time you issue the notice (141.31(d)).

It is recommended that you notify health professionals in the area of the violation. People may call their doctors with questions about how the violation may affect their health, and the doctors should have the information they need to respond appropriately. In addition, health professionals, including dentists, use tap water during their procedures and need to know of contamination so they can use bottled water.

It is a good idea to issue a "problem corrected" notice when the violation is resolved. See below.

Problem Corrected Notice Instructions (for Template 1-6)

It is a good idea to issue a notice when a serious violation or situation has been resolved. Although EPA regulations do not require such notices, your primacy agency may require you to issue one. You should coordinate with your local health department as well. Below are some recommended methods for a "problem corrected" notice. You should use the same delivery methods you used for the original notice.

- Radio
- Television
- Newspaper
- Hand or direct delivery
- Posting in conspicuous locations

You may wish to use additional methods (e.g., delivery of multiple copies to hospitals, clinics, or apartment buildings) if necessary to reach all persons served. If you post or hand deliver, print your notice on letterhead.

The following notice is very general and can be used for any violation or situation. However, to help restore consumers' confidence in the water system, you should modify the notice to fit your situation. Although the public should have seen your initial notice, there may be additional information you learned after the notice was issued. Therefore, you should described the violation or situation again and discuss how the problem was solved.

Unresolved Total Coliform Notice Instructions (for Template 2-1)

Since exceeding the total coliform bacteria maximum contaminant level is a Tier 2 violation, you must provide public notice to persons served as soon as practical but within 30 days after you learn of the violation (141.203(b)). Persistent total coliform problems can be serious. Some states have more stringent requirements for coliform violations. Check with the Department of Health to make sure you meet all requirements. You must issue a repeat notice every three months for as long as the violation persists.

Community systems must use one of the following methods (141.203(c)):

- Hand or direct delivery
- Mail, as a separate notice or included with the bill

Non-community systems must use one of the following methods (141.203(c)):

- Posting in conspicuous locations
- Hand delivery
- Mail

In addition, both community and non-community systems must us another method reasonably calculated to reach others if they would not be reached by the first method (141.203(c)). Such methods could include newspapers, e-mail, or delivery to community organizations. If you mail, post, or hand deliver, print your notice on letterhead.

The notice on the reverse is appropriate for hand delivery or mail. If you modify the notice, you must still include all the required elements and leave the health effects language in italics unchanged. This language is mandatory (141.205(d)).

Description of the Violation

The description of the violation and the MCL vary depending on the number of samples you take. The following table should help you complete the second paragraph of the template.

If You Take Less Than 40 Samples a Month	*If You Take More Than 40 Samples a Month*
State the number of samples testing positive for coliform. The standard is that no more than one sample per month may be positive.	State the percentage of samples testing positive for coliform. The standard is that no more than five percent of the samples may test positive each month.

Corrective Action

In your notice, describe corrective actions you are taking. If you know what is causing the coliform problem, explain this in the notice. Listed below are some steps commonly taken by water systems with total coliform violations. Use one or more of the following actions, if appropriate, or develop your own.

- We are chlorinating and flushing the water system
- We are increasing sampling for coliform bacteria
- We are investigating the source of contamination
- We are repairing the wellhead seal
- We are repairing the storage tank
- We will inform you when additional samples show no coliform bacteria

Make sure to send a copy of each type of notice and a certification that you have met all the public notice requirements to your primary agency within ten days after issuing the notice (141.31(d)). It is a good idea to inform your consumers when the violation has been resolved. See the instructions below and Template 2-2 in Appendix A.

Instructions For Resolved Total Coliform Notice (for Template 2-2)

Since exceeding the total coliform bacteria maximum contaminant level is a Tier 2 violation, you must provide public notice to persons served as soon as practical but within 30 days after you learn of the violation (141.203(b)). Some states have more stringent requirements for coliform violations. Check with the Department of Health to make sure you meet all its requirements.

Community systems must use one of the following methods (141.203(c)):

- Hand or direct delivery
- Mail, as a separate notice or included with the bill

Non-community systems must use one of the following methods (141.203(c)):

- Posting in conspicuous locations
- Hand delivery
- Mail

In addition, both community and non-community systems must use another method reasonably calculated to reach others if they would not be reached by the first method (141.203(c)). Such methods could include newspapers, e-mail, or delivery to community organizations. If you mail, post, or hand deliver, print your notice on letterhead.

The following notice is appropriate for hand delivery or mail. However, you may wish to modify it before using it for posting. If you do, you must still include all the required elements and leave the health effects language in italics unchanged. This language is mandatory (141.205(d)).

Description of the Violation

Make sure that the notice is clear about the fact that the coliform problem has been resolved, and there is no current cause for concern. The description of the violation and the MCL vary depending on the number of samples you take. The following table should help you complete the second paragraph of the template.

If You Take Less Than 40 Samples a Month	*If You Take More Than 40 Samples a Month*
State the number of samples testing positive for coliform. The standard is that no more than one sample per month may be positive.	State the percentage of samples testing positive for coliform. The standard is that no more than five percent of samples may test positive each month.

Corrective Action

In your notice, describe corrective actions you have taken. Listed below are some steps commonly taken by water systems with total coliform violations. Use one or more of the following actions, if appropriate, or develop your own.

- We have increased sampling for coliform bacteria to catch the problem early if it recurs
- The well and/or distribution system has been disinfected and additional samples do not show presence of coliform bacteria

After Issuing the Notice

Make sure to send a copy of each type of notice along with a certification that you have met all the public notice requirements to the Department of Health within ten days after issuing the notice (141.31(d)).

Instructions For Stage 2 DBPR TTHM or HAA5 MCL Violation Notice (for Template 2-19)

Since exceeding the DBPR TTHM or HAA5 maximum contaminant level is a Tier 2 violation, you must provide public notice to persons served as soon as practical but within 30 hours after you learn of the violation (141.203.(b)). You should also coordinate with your local health department. You must use one or more of the following methods to deliver the notice to consumers (141.2039c)):

- Hand or direct delivery
- Mail as a separate notice or included with a bill

In addition, you must use another method reasonably calculated to reach others if they would not be reached by the first method (141.203(c)). Such methods could include newspapers, e-mail, or delivery to community organizations. If you mail, post, or hand deliver, print your notice on your system's letterhead.

The following notice is appropriate for mailing, posting or hand delivery. If you modify this notice, you must include all required publication elements from 40 CFR 141.205(a). and leave the mandatory language unchanged.

Corrective Action

In your notice, describe corrective actions you are taking. Listed below is one step commonly taken by water systems with TTHM or HAA5 MCL violations. You can include the following statement, if appropriate, or develop your own:

- We are working to minimize the formation of [TTHM or HAA5] while ensuring we maintain an adequate level of disinfectant. We have taken additional steps to change disinfect type/levels, remove natural organic matter, and increase flushing of water lines to determine if our efforts have been effective.

Repeat Notices

For repeat notices, you should state how long the violation has been ongoing and remind customers of when you sent out any previous notices. If you are making progress, describe it. Alternatively, if funding or other issues are delaying progress, let customers know.

After Issuing the Notice

Send a copy of each type of notice and a certification that you have met all the public notice requirements to the Department of Health within ten days from the time you issue the notice (141.31(d)).

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Appendix A
Public Notification Templates

TEMPLATE 1-2

DRINKING WATER WARNING

Soos Creek Water & Sewer District water is contaminated with *[fecal coliform/E. Coli]*

BOIL YOUR WATER BEFORE USING

Fecal coliform *[or E. coli]* bacteria were found in the water supply on *[date]*. These bacteria can make you sick, and are a particular concern for people with weakened immune systems.

What should you do?

- **DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST.** Bring all water to a boil, let it boil for one minute, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation **until further notice.** Boiling kills bacteria and other organisms in the water.
- Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
- The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care providers.

What happened? What is being done?

Bacterial contamination can occur when increased run-off enters the drinking water source (for example, following heavy rains). It can also happen due to a break in the distribution system (pipes) or a failure in the water treatment process.

[Describe corrective action.] We will inform you when tests show no bacteria and you no longer need to boil your water. We anticipate resolving the problem within *[estimated time frame]*.

For more information, please contact Ron Speer at (253) 630-9900 or P.O. Box 58039, Renton, WA 98058-1039. General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1(800) 426-4791.

> *Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by Soos Creek Water & Sewer District. State Water System ID #401008. Date distributed: _____.

TEMPLATE 1-6

DRINKING WATER PROBLEM CORRECTED

Customers of Soos Creek Water & Sewer District were notified on *[date]* of a problem with our drinking water and were advised to *[describe recommended action]*. We are pleased to report that the problem has been corrected and that it is no longer necessary to *[describe recommended action]*. We apologize for any inconvenience and thank you for your patience.

[Add further details here when appropriate.]

As always, you may contact Ron Speer at (253) 630-9900 or P.O. Box 58039, Renton, WA 98058-1039 with any comments or questions.

> *Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by Soos Creek Water & Sewer District. State Water System ID#401008. Date distributed: _____

TEMPLATE 2-1

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Tests Show Coliform Bacteria in Soos Creek Water and Sewer District Water

Our water system recently violated a drinking water standard. Although this is not an emergency, as our customers, you have a right to know what happened, what you should do, and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. We took *[number]* samples for coliform bacteria during *[month]*. *[Percentage]* of those samples showed the presence of coliform bacteria. The standard is that no more than 5 percent may do so.

What should I do?

- **You do not need to boil your water or take other corrective actions.** However, if you have specific health concerns, consult your doctor.
- People with severely compromised immune systems, infants, and some elderly may be at increased risk. These people should seek advice about drinking water from their health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at 1(800) 426-4791.

What does this mean?

This is not an emergency. If it had been you would have been notified immediately. Total coliform bacteria are generally not harmful themselves. Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.

Usually, coliforms are a sign that there could be a problem with the treatment or distribution system (pipes). Whenever we detect coliform bacteria in any sample, we do follow-up testing to see if other bacteria of greater concern, such as fecal coliform or E. coli, are present. **We did not find any of these bacteria in our subsequent testing.** If we had, we would have notified you immediately. However, we are still finding coliforms in the drinking water.

What happened? What is being done?

[Describe corrective action.]

We are still detecting coliform bacteria. We will inform you when our sampling shows that no bacteria are present. We anticipate resolving the problem within *[estimate time frame]*.

For more information, please contact Ron Speer at (253) 630-9900 or P.O. Box 58039, Renton, WA 98058-1039.

> *Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by Soos Creek Water & Sewer District. State Water System ID #401008. Date distributed _____

TEMPLATE 2-2

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Tests Showed Coliform Bacteria in Soos Creek Water and Sewer District Water

Our water system recently violated a drinking water standard. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct this situation.

We routinely monitor for drinking water contaminants. We took *[number]* samples to test for the presence of coliform bacteria during *[month]*. *[Percentage]* of our samples showed the presence of total coliform bacteria. The standard is that no more than 5 percent of our samples may do so.

What should I do?

- You do not need to boil your water or take other corrective actions. However, if you have specific health concerns, consult your doctor.
- **People with severely compromised immune systems, infants, and some elderly may be at increased risk.** These people should seek advice about drinking water from their health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at 1 (800) 426-4791.

What does this mean?

This is not an emergency. If it had been, you would have been notified immediately. Coliform bacteria are generally not harmful themselves. Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.

Usually, coliforms are a sign that there could be a problem with the system's treatment or distribution system (pipes). Whenever we detect coliform bacteria in any sample, we do follow-up testing to see if other bacteria of greater concern, such as fecal coliform or E. coli, are present. **We did not find any of these bacteria in our subsequent testing, and further testing shows that this problem has been resolved.**

What happened? What was done?

[Describe corrective action.]

For more information, please contact Ron Speer at (253) 630-9900 or P.O. Box 58039, Renton, WA 98058-1039.

> *Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by Soos Creek Water & Sewer District. State Water System ID# 401008. Date distributed: _____.

TEMPLATE 2-19

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

[Contaminant, i.e., Total Trihalomethanes (TTHM) or Haloacetic Acid 5 (HAA5)] MCL Violation at Soos Creek Water & Sewer District

Our water system recently violated a drinking water standard. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did (are doing) to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Testing results from [provide date range] show that our system exceeds the standard, or maximum contaminant level (MCL), for *[TTHM/HAA5]*. The standard for *[TTHM/HAA5]* is *[MCL]*. It is determined by averaging all the samples collected at each sampling location for the past 12 months. The level of *[TTHM/HAA5]* averaged at one of our system's locations for *[provide date range]* was *[level]*.

What should I do?

- There is nothing you need to do. You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours.
- If you have a severely compromised immune system, have an infant, are pregnant, or are elderly, you may be at increased risk and should seek advice from your health care providers about drinking this water.

What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.
[TTHM are four volatile organic chemicals] [HAA5 are five haloacetic acid compounds] which form when disinfectants react with natural organic matter in the water.

[**People who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.**] Or

[**People who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.**]

What is being done?

[Describe corrective action.] We anticipate resolving the problem within *[estimated time frame]* (or the problem was resolved on *[give date]*).

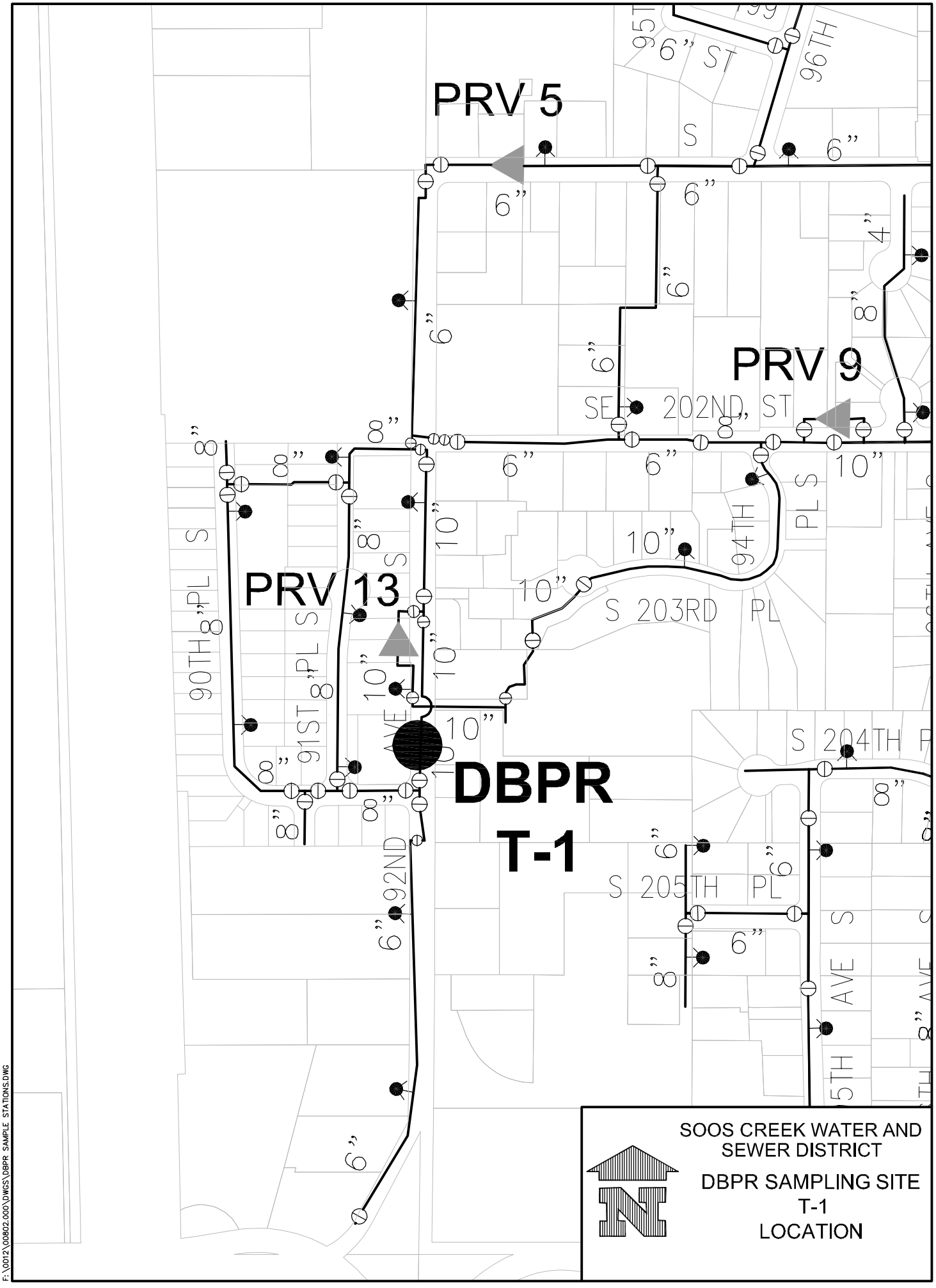
For more information, please contact Ron Speer at (253) 630-9900 or P.O. Box 58039, Renton, WA 98058-1039.

> *Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing*

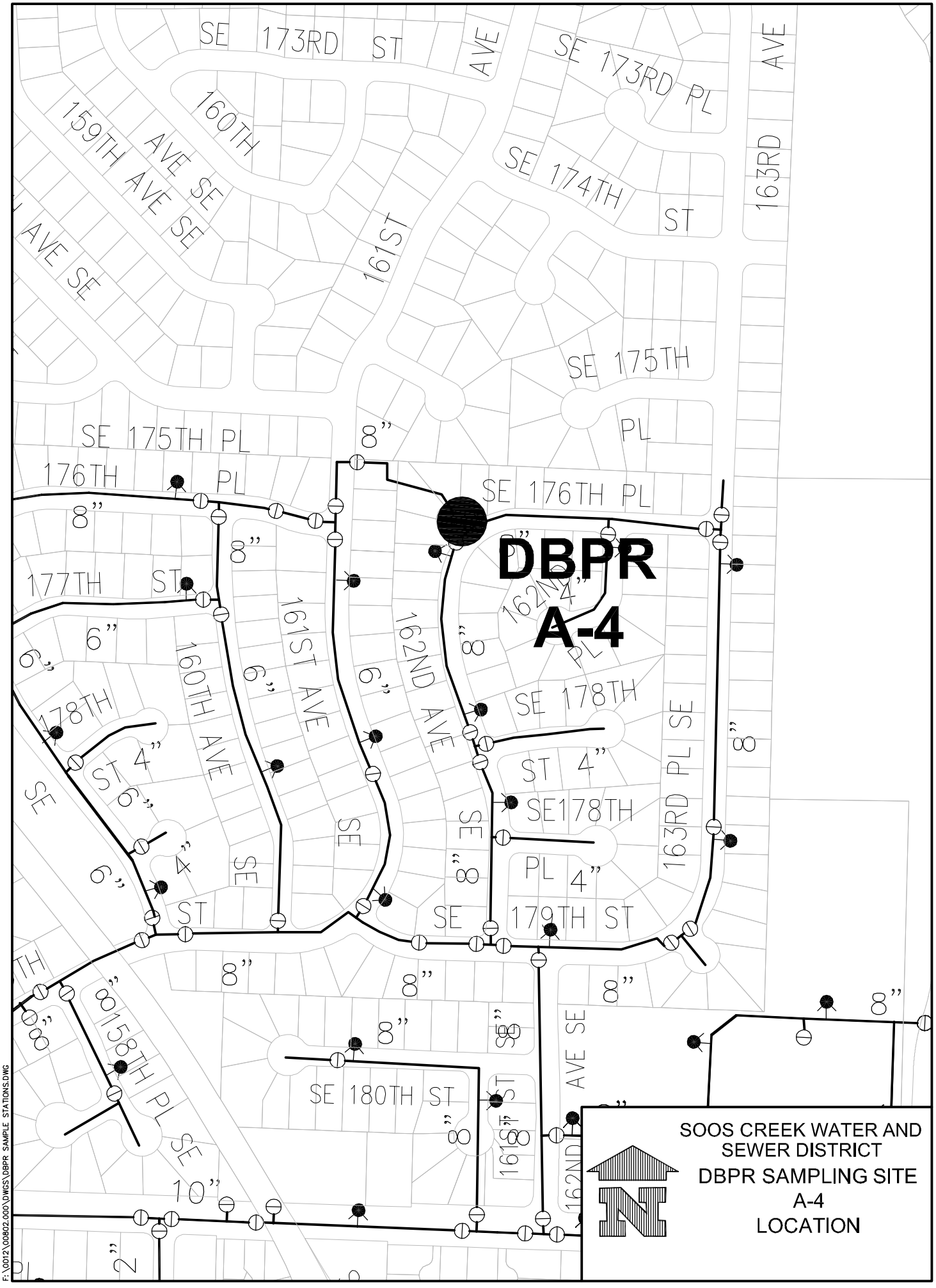
homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by Soos Creek Water & Sewer District. State Water System ID# 401008. Date distributed: _____.

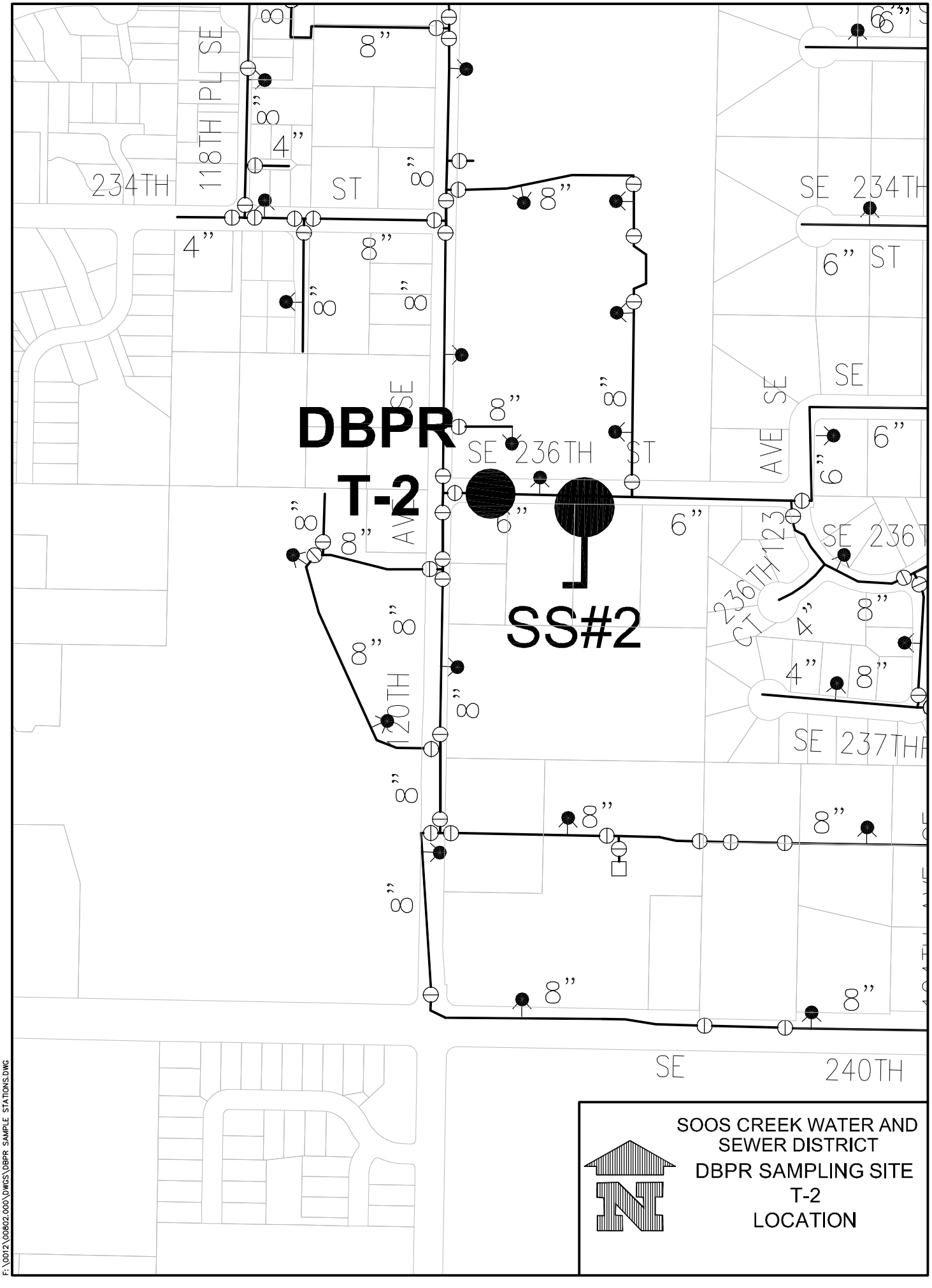
Appendix B
Sampling Station Site Maps



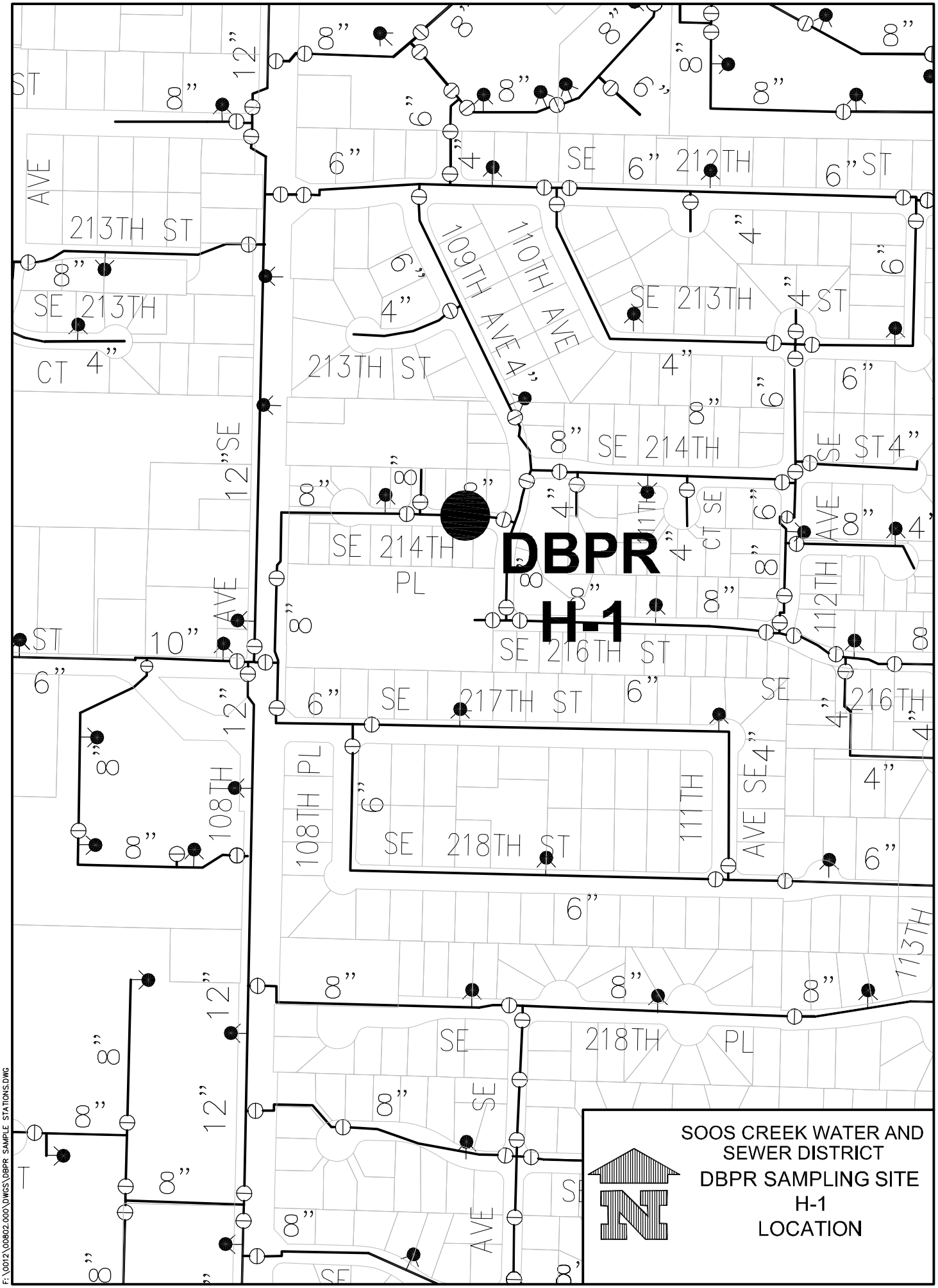
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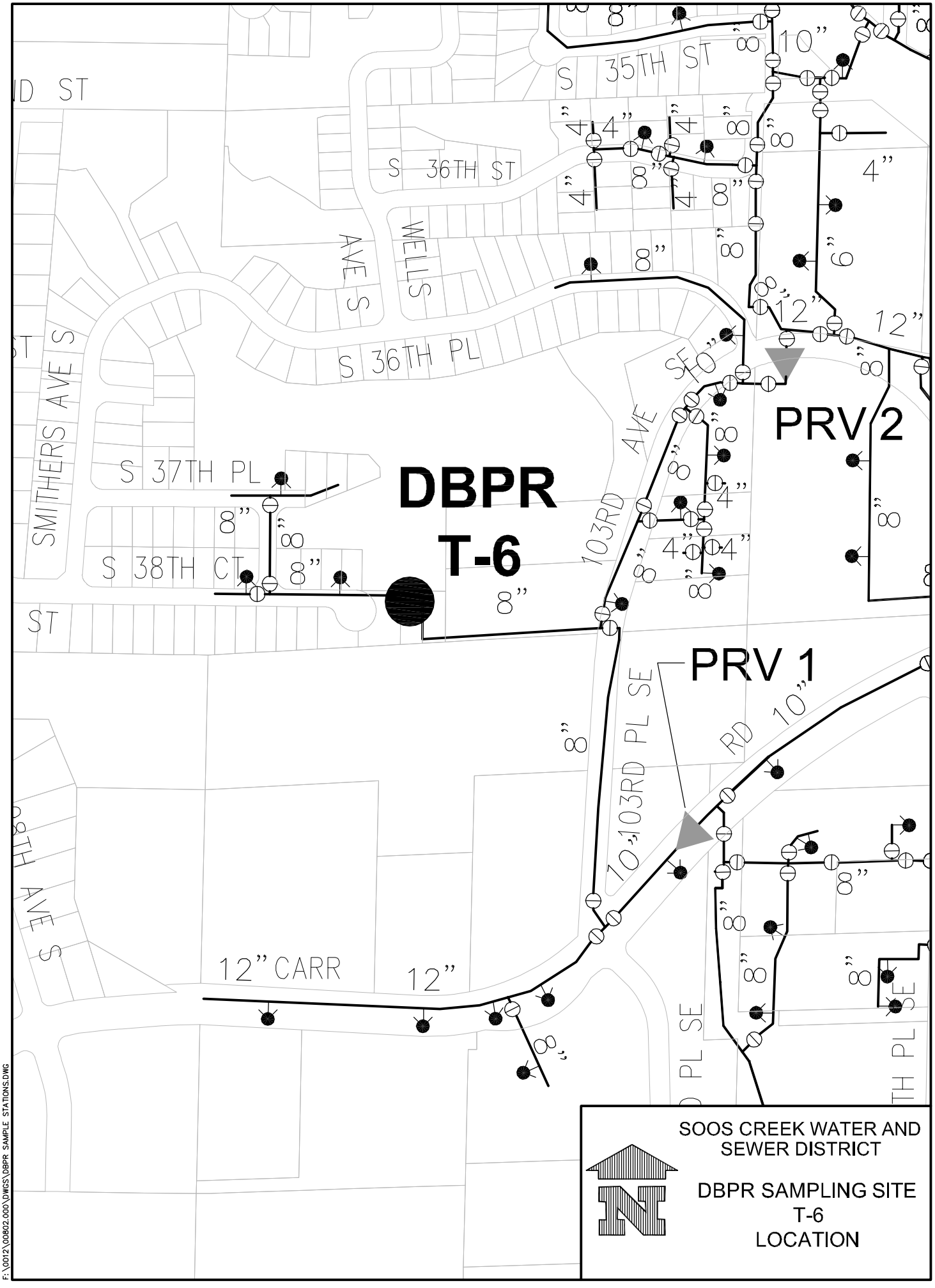


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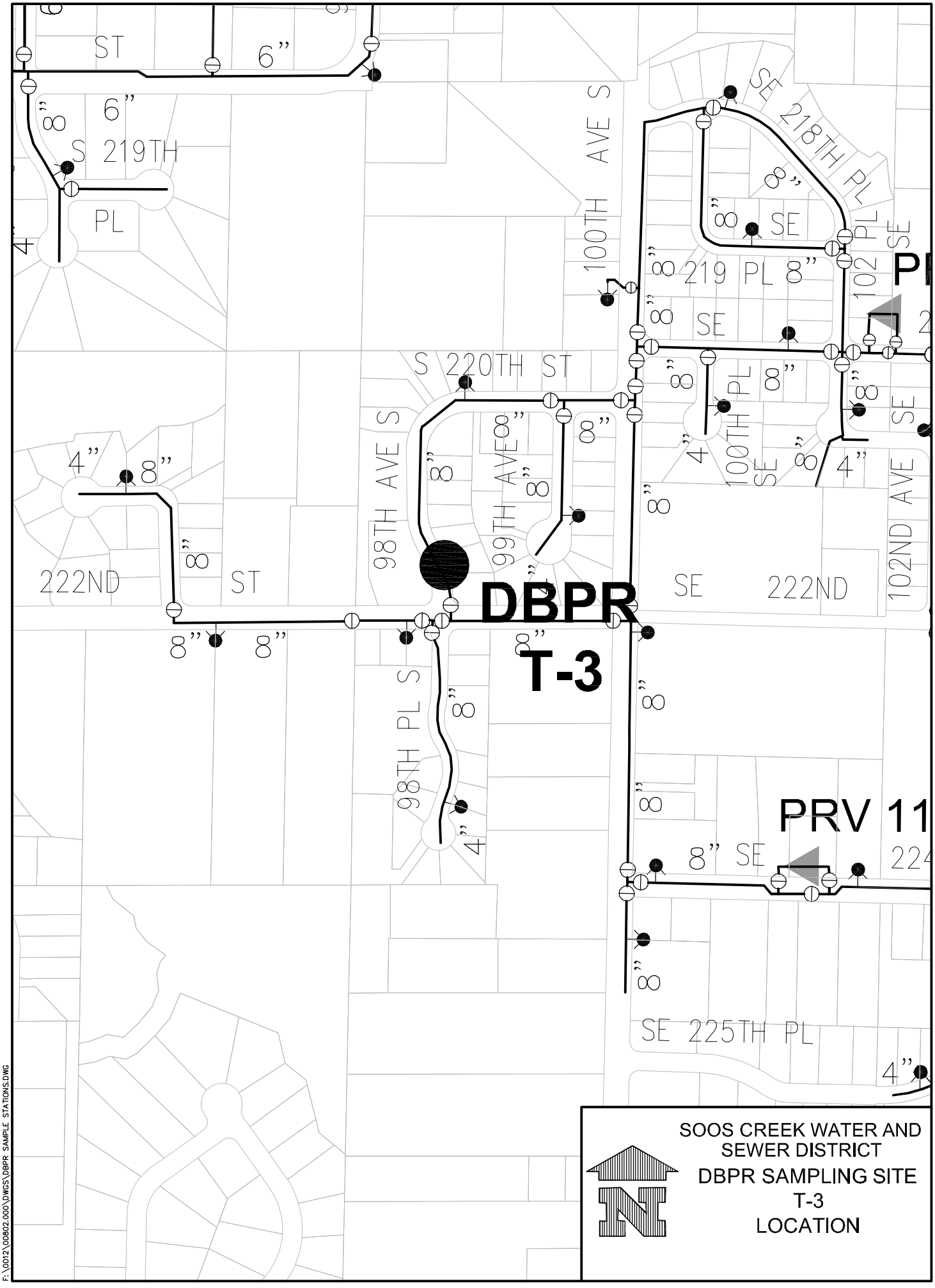


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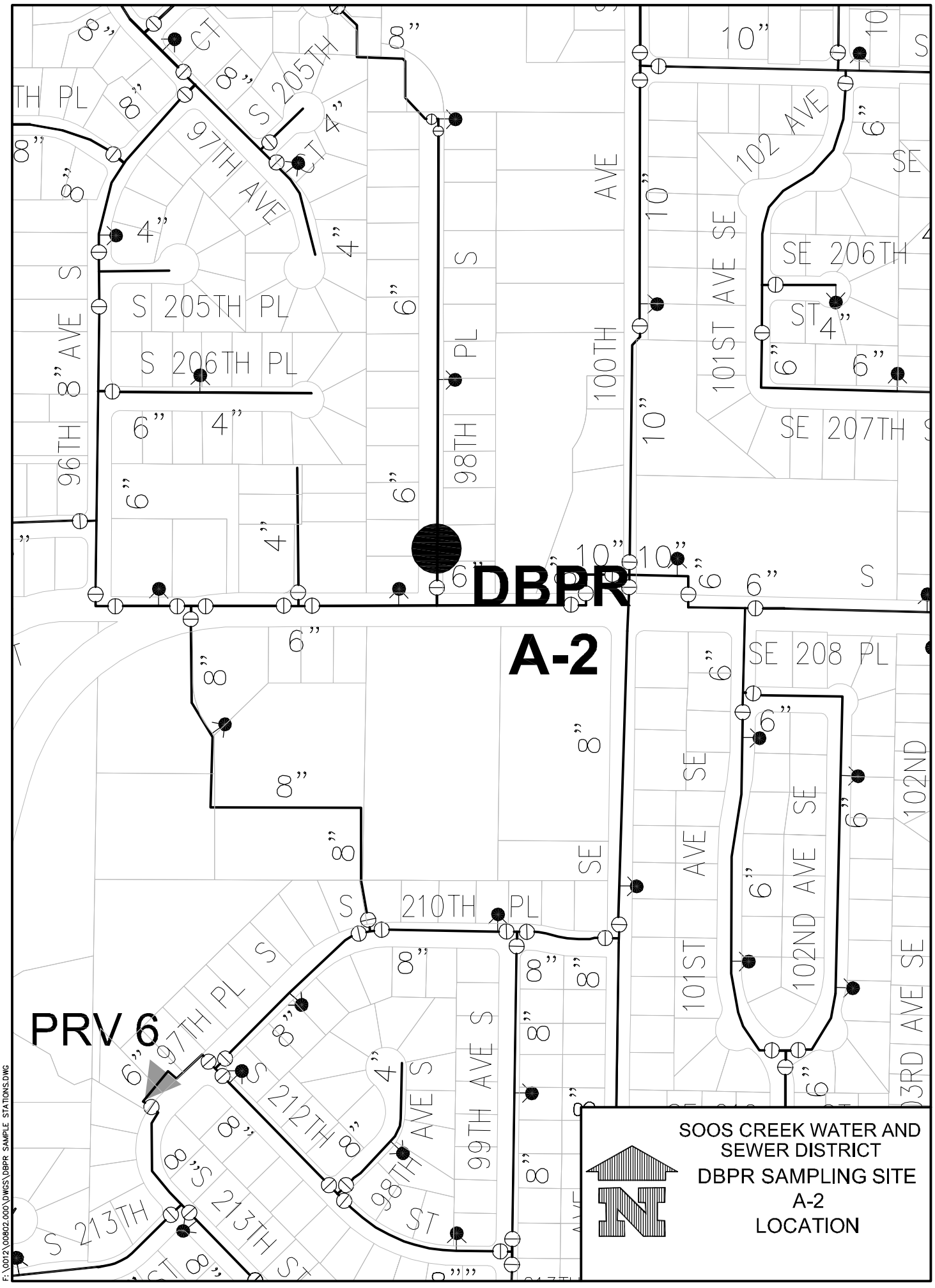

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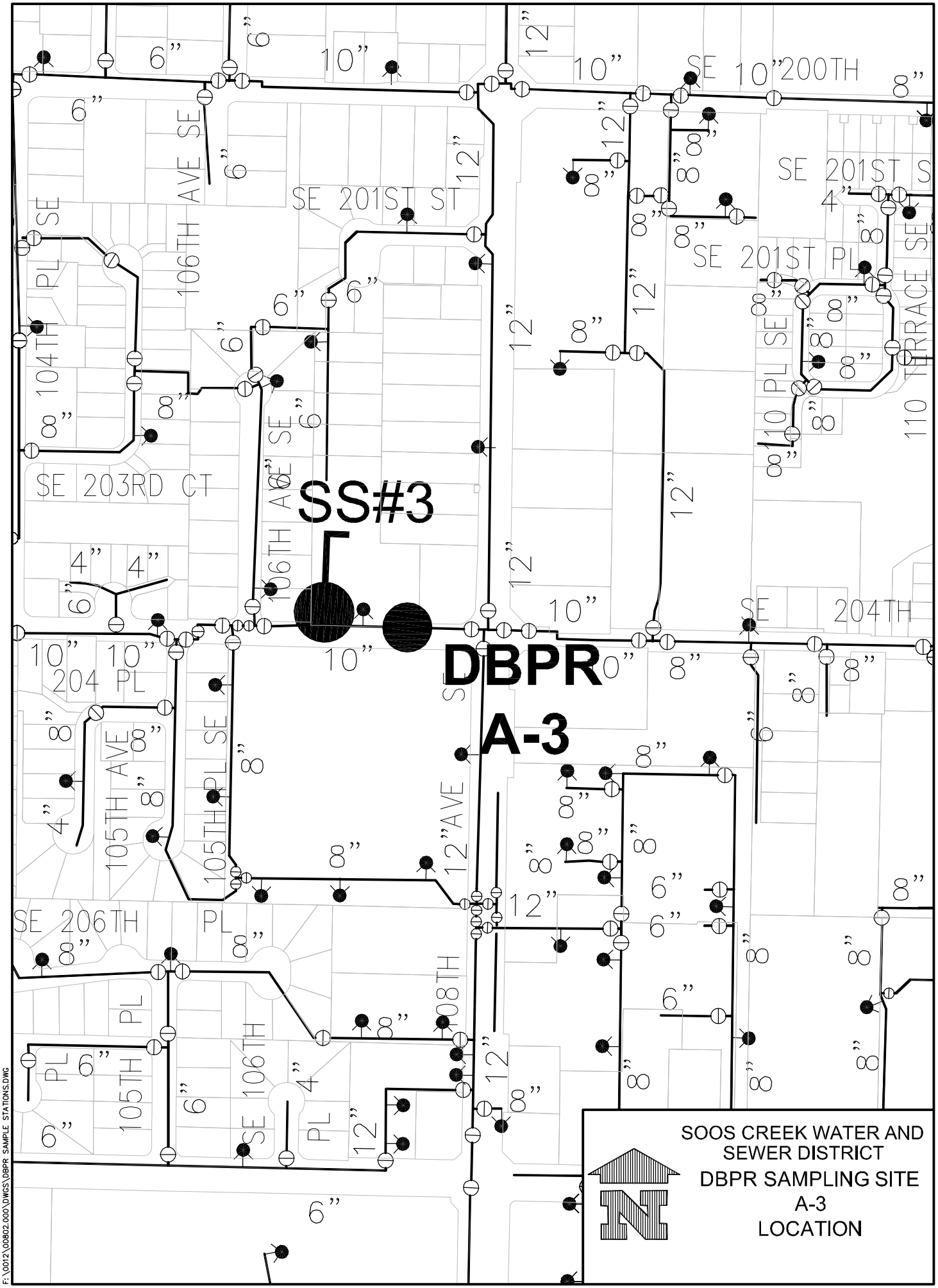


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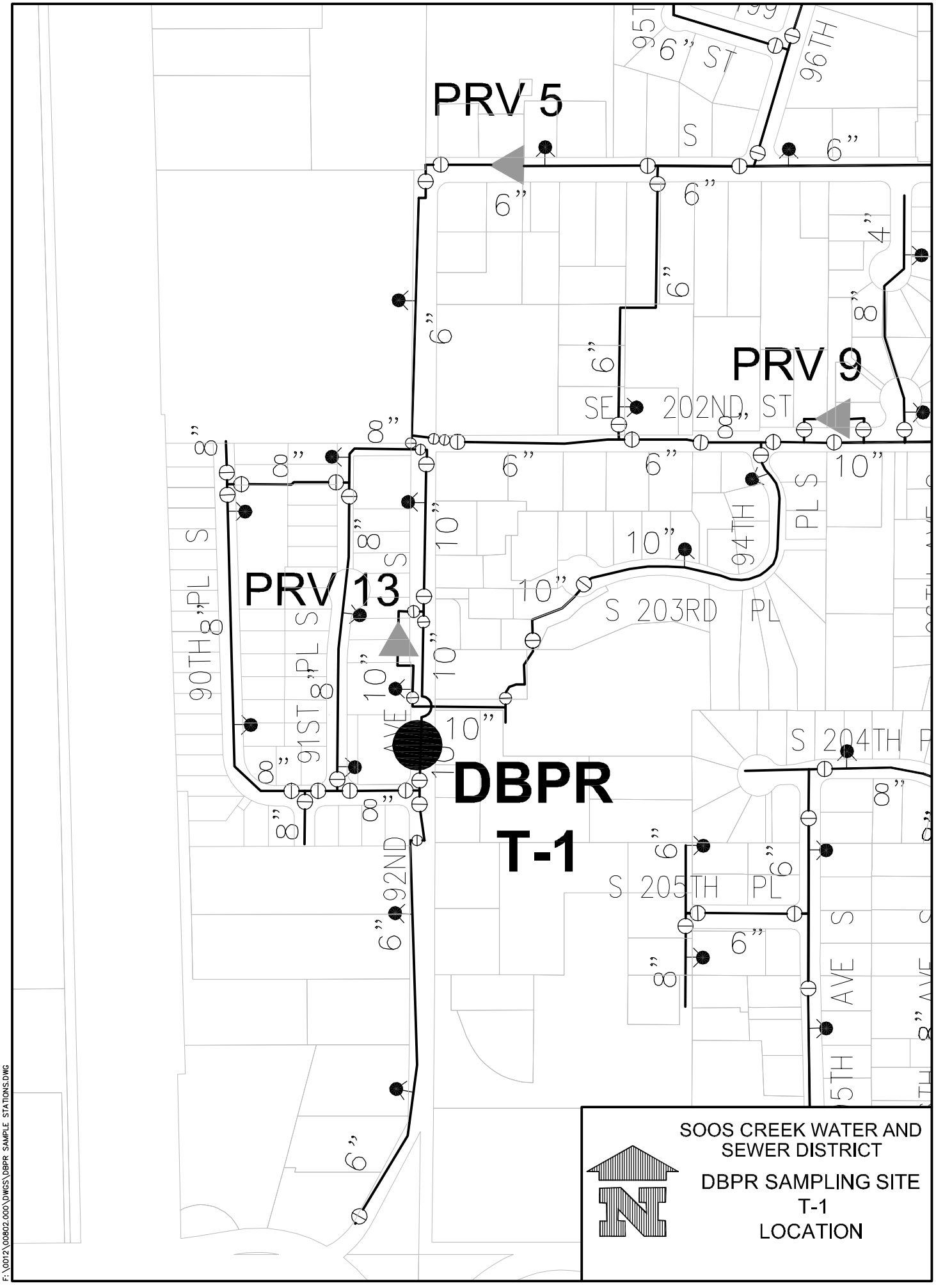
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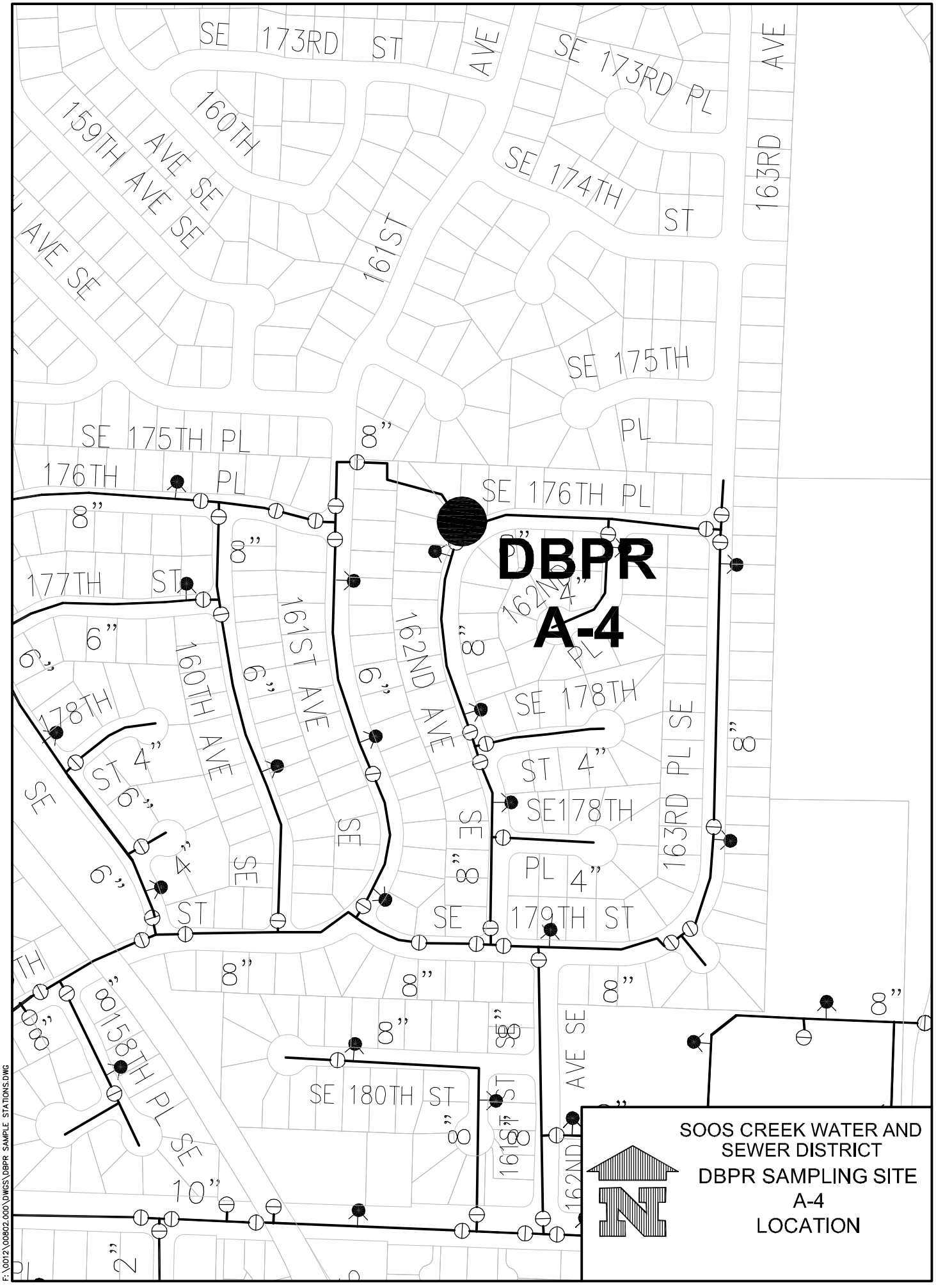

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Appendix C

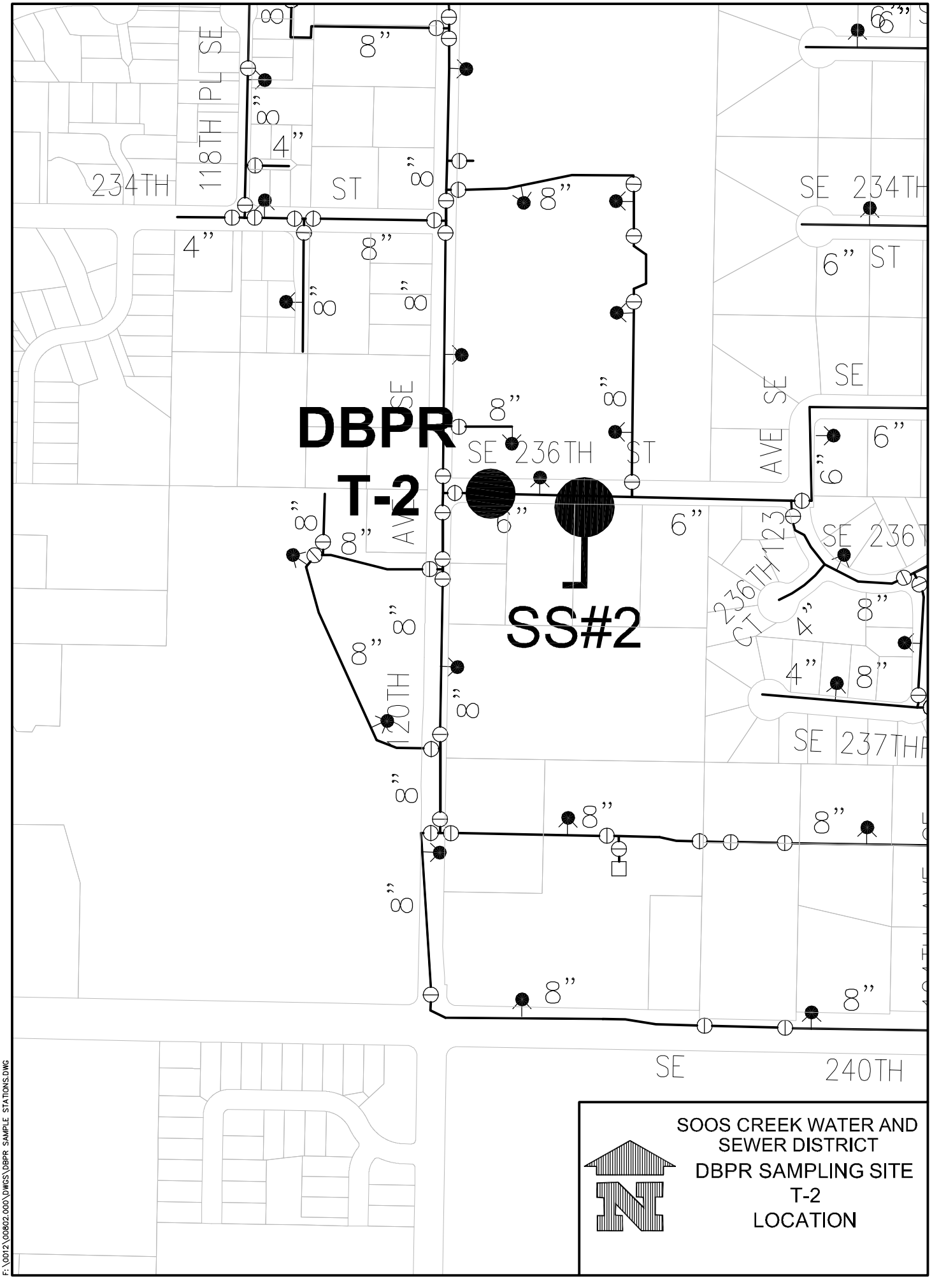
Disinfection Byproducts Sampling Locations



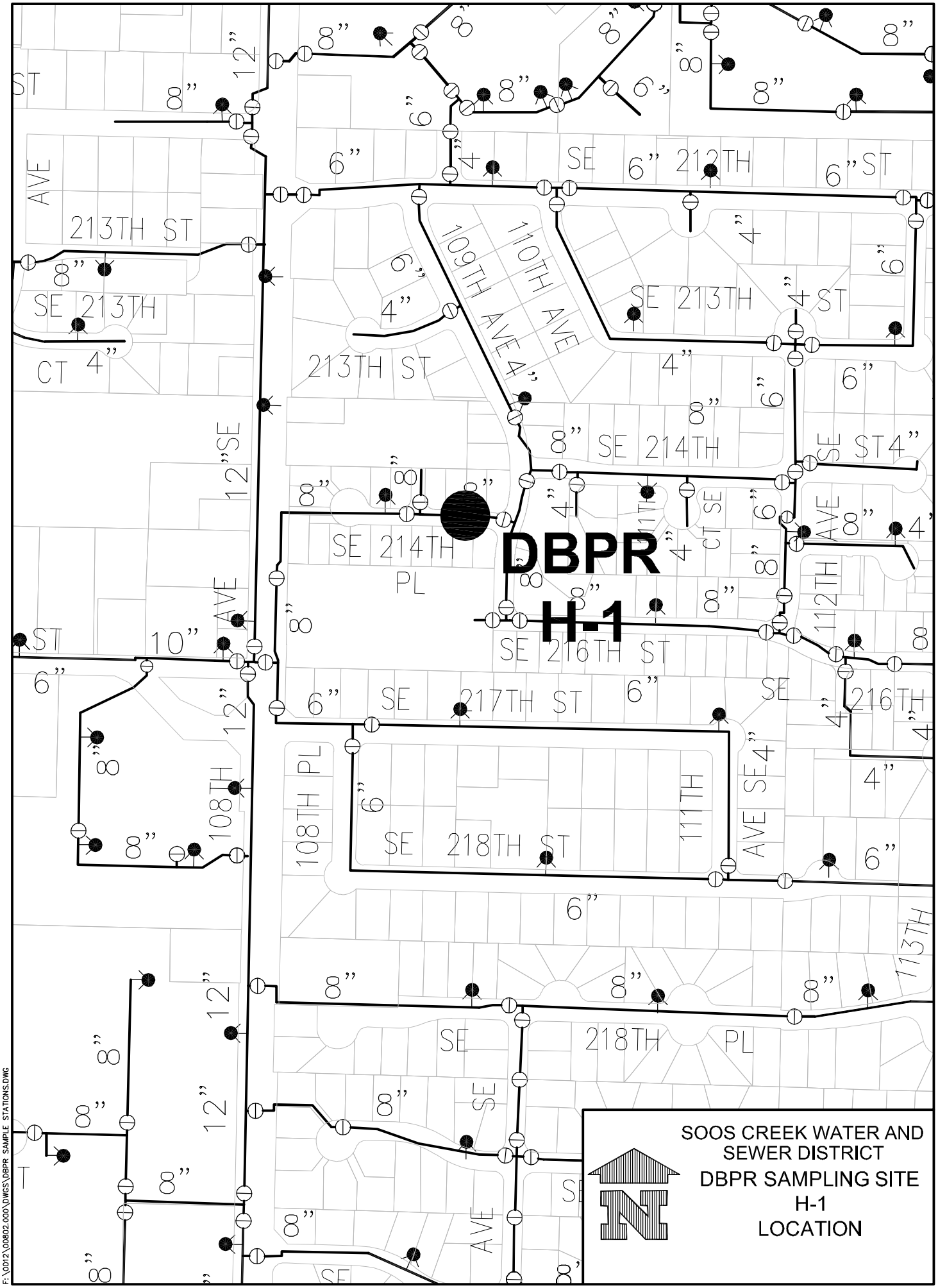
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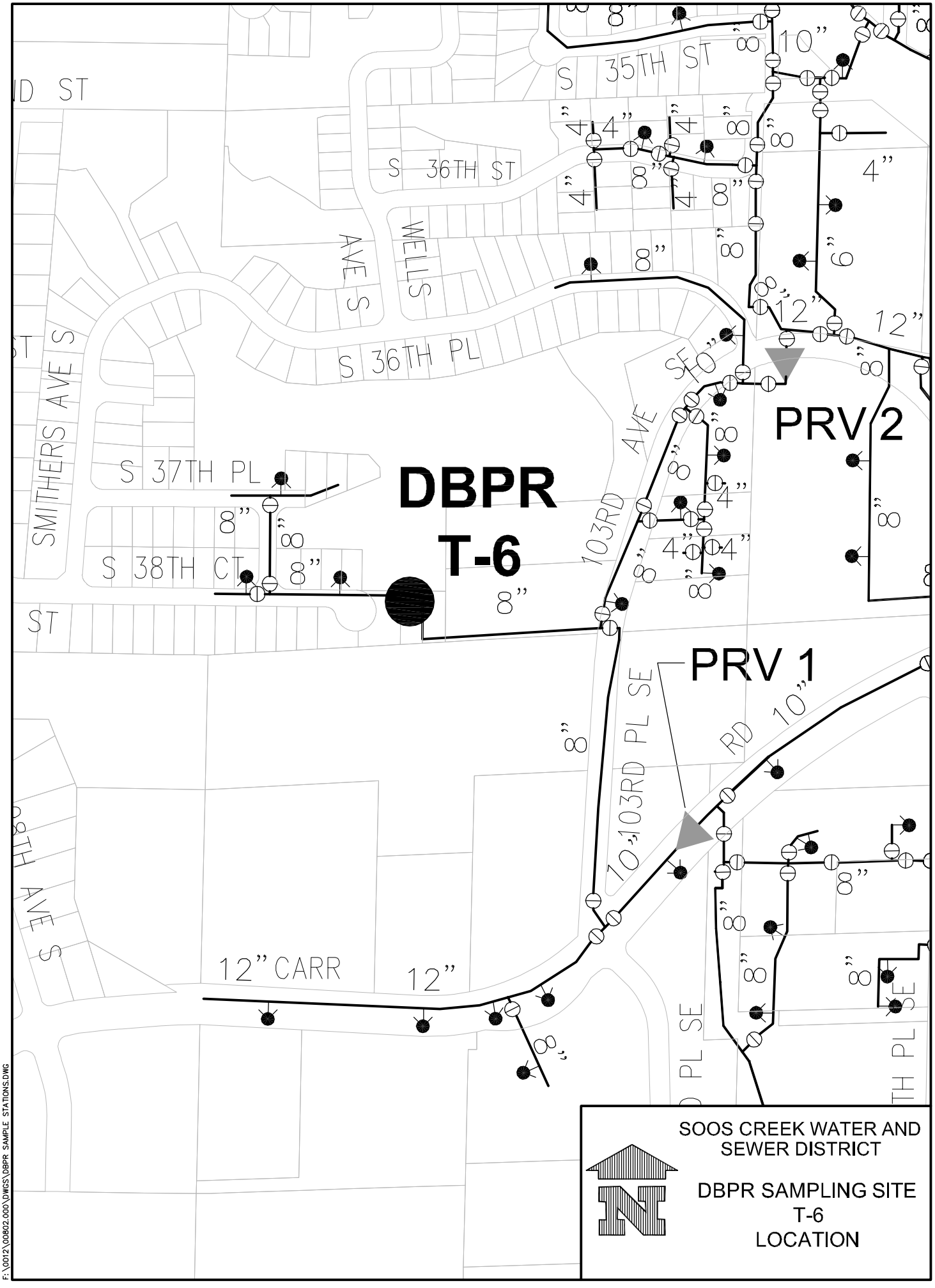


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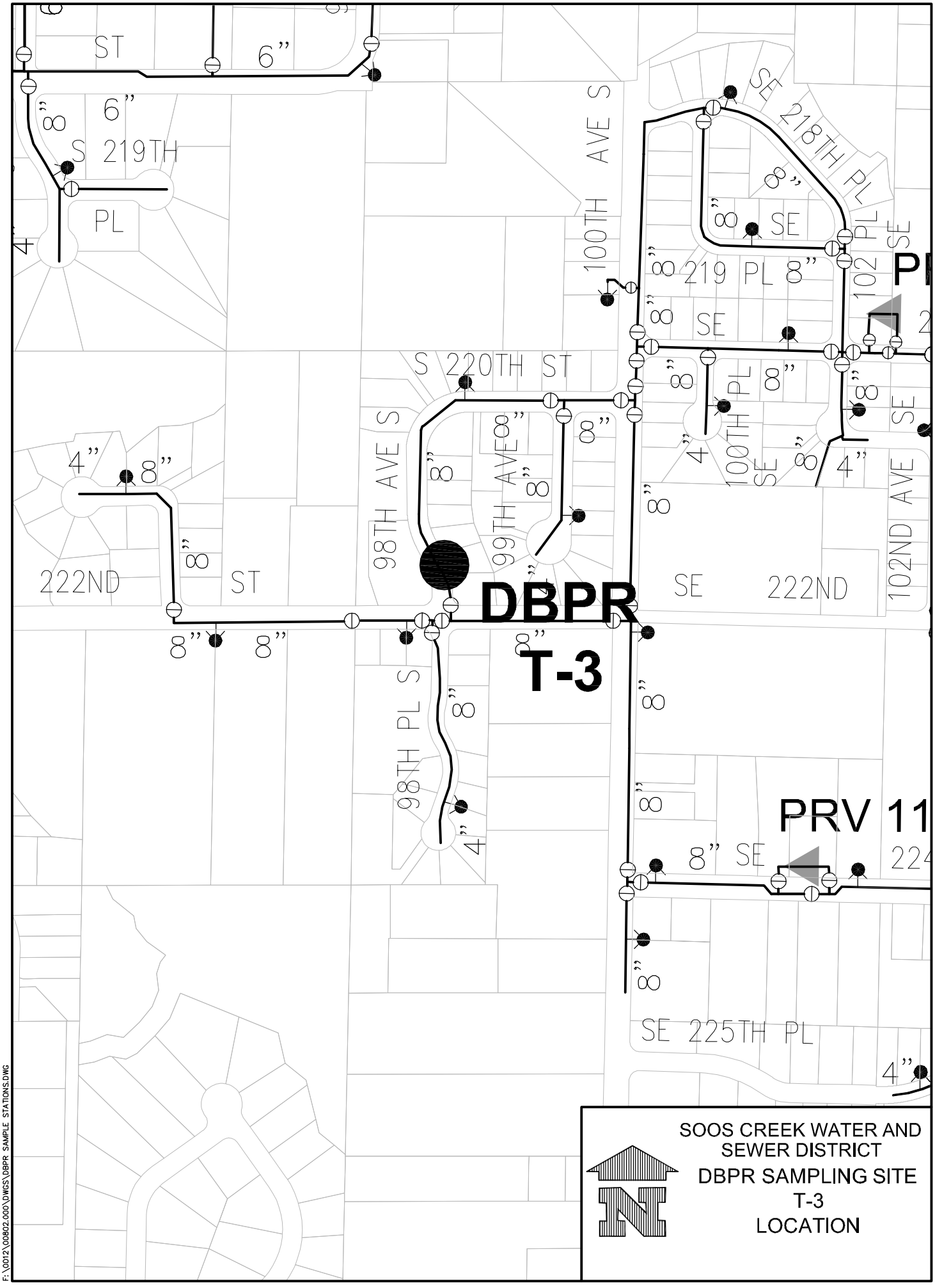


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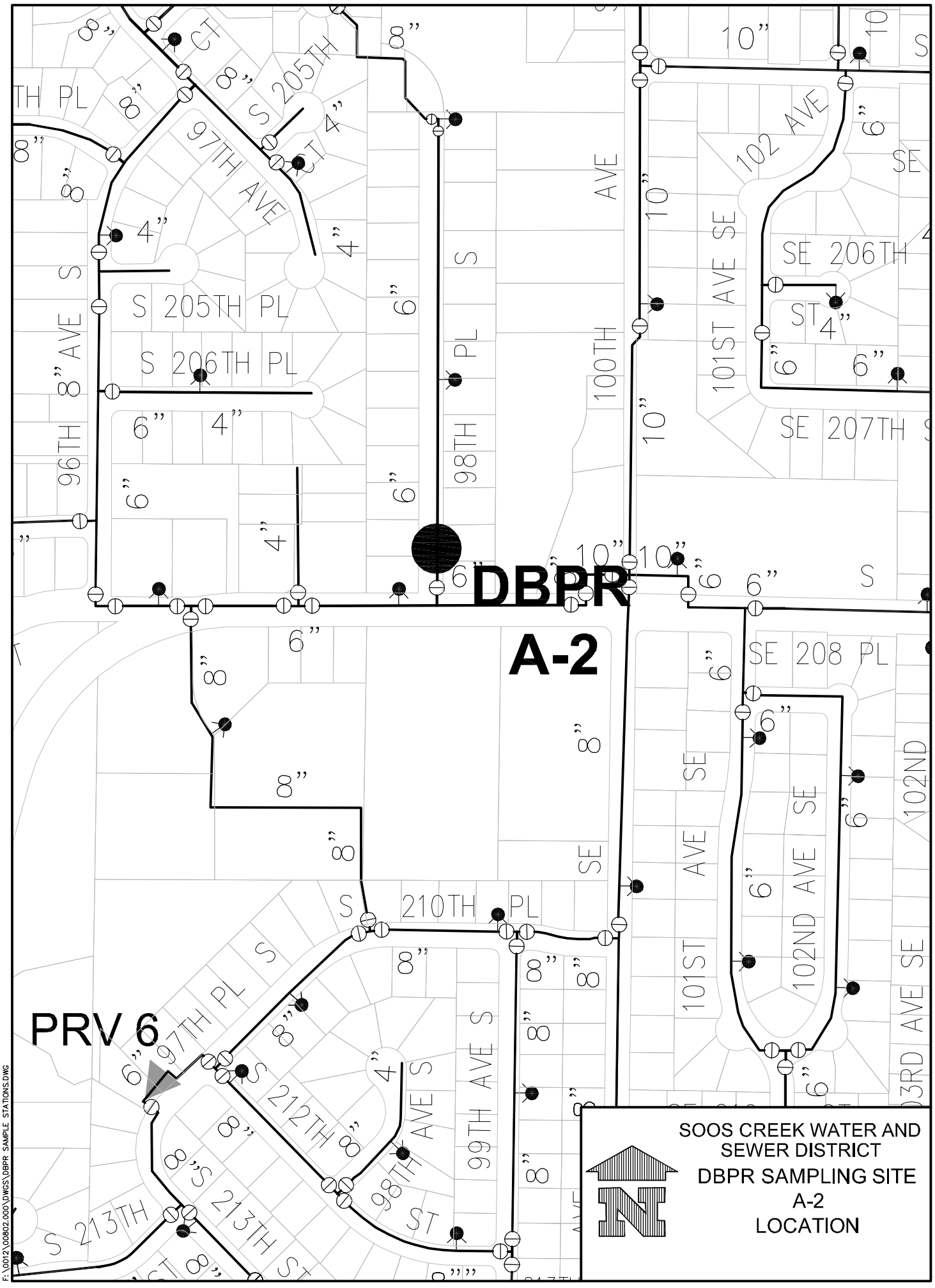

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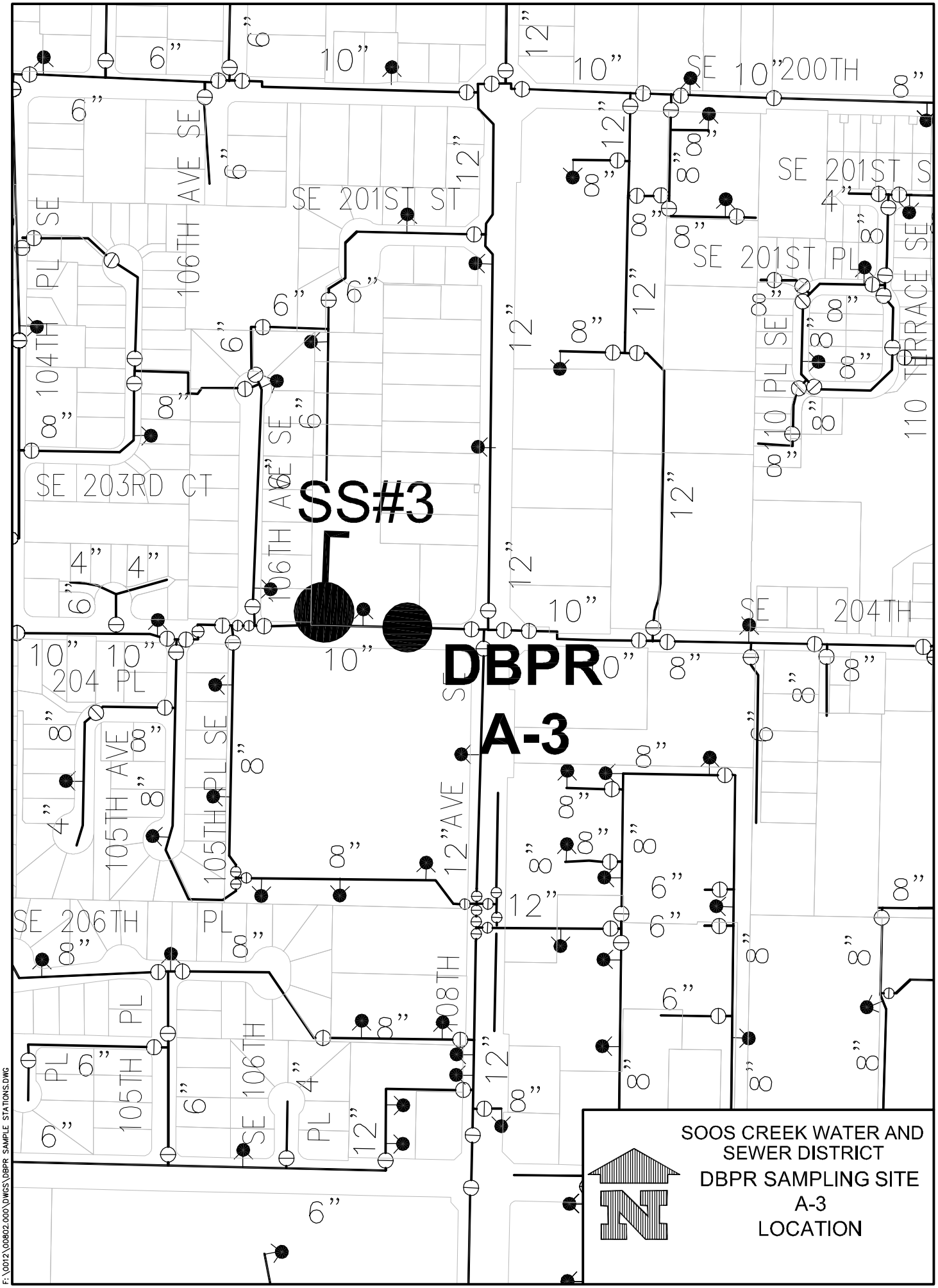


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Appendix D
Glossary of Terms

Glossary of Terms

ACUTE – Posing an immediate risk to human health

AWWA – American Water Works Association

BIOFILM – Biological regrowth of bacterial or organic nature that can use up CL2

COLIFORM – Are one of a group of microbiological contaminants regulated as part of the Safe Drinking Water Act (SDWA) written by the US Enviromental Protection Agency (EPA). The many types of coliforms, including fecal coliforms, are usually no disease causing (pathogenic). However, their presence in drinking water indicates the potential presence of pathogens associated with waterborne disease outbreaks. In particular, the presence of fecal coliforms in drinking water indicates that an urgent public health problem may exist.

COLIFORM SAMPLE – A sample of water collected from the distribution system at or after the first service and analyzed for coliform presence.

CONTAMINANT – A substance present in drinking water which may adversely affect the health of the consumer or the aesthetic qualities of the water.

DBP – Disinfection byproducts

DBPR – Disinfection Byproducts Rule

DISTRIBUTION SYSTEM – That portion of a public water system which conveys water from the source and/or treatment facilities to consumers.

DOH – Department of Health

E.COLI – Fecal Coliform Bacteria

EPA – Environmental Protection Agency

HAA5 – Haloacetic acid 5

HAAs – Haloacetic acids

MCL – Maximum Contaminant Level

NON-ACUTE – Posing a possible or less than immediate risk to human health

NTNC – Non-Transient non community

POTABLE – Water suitable for drinking by the public

PRV – Pressure reducing valve.

PURVEYOR – Agency, subdivision of the state, municipal corporation, firm, company, mutual or cooperative association, institution, partnership or person or other entity owning or operating a public water system. Purveyor also means authorized agents of such agencies.

REPEAT SAMPLE – A sample collected to confirm the results of a previous analysis.

ROUTINE SAMPLE – A sample collected on a monthly or regular basis, as part of the monitoring plan.

SAMPLE SITE – A designated site to collect samples for analysis.

SERVICE CONNECTION - A connection to a public water system designed to provide potable water to a single family residence, or other residential or non-residential population.

SOURCE – The origin of the water that a purveyor is receiving

TTHM – Total trihalomethanes

TURBIDITY – Measurable indication of water clarity. High levels can indicate water quality problems.

TYPE A WATER SYSTEM – a public water system with fifteen or more service connections, regardless of the number of people; or serving an average of twenty-five or more people per day for sixty or more days within a calendar year, regardless of the number of service connections.

Appendix E
References

References:

WDOH WAC 246-290, Part 4 – Water Quality and Part 7 – Reporting

Form 7: IDSE Report for Standard Monitoring, December 16, 2008

USEPA Revised Publication Notification Handbook, March 2010

APPENDIX J

Soos Creek Water & Sewer District
Cross-Connection Control Program

Soos Creek Water & Sewer District, (PWS ID No. 401008) hereinafter referred to as the District, has the responsibility to protect the public water systems (PWS) from contamination due to cross connections. Washington Administrative Code (WAC) 246-290 (Group "A" Drinking Water Regulations), defines a cross connection as **"*Any actual or potential physical connection between a public water system or the consumer's water system and any source of non-potable liquid, solid or gas that could contaminate the potable water supply by backflow*.**

All PWS are required to develop and implement cross-connection control (CCC) programs. The requirements are contained in WAC 246-290-490 (Exhibit A) of the Drinking Water Regulations. The elements of a CCC program are as follows:

1. Establishment of legal authority and program policies;
2. Evaluation of premises for cross-connection hazards;
3. Elimination and/or control of cross-connections;
4. Provision of qualified personnel;
5. Inspection and testing of backflow assemblies;
6. Quality control of testing process;
7. Response to backflow incidents;
8. Public education for consumers;
9. Record keeping for CCC program;
10. Special requirements for reclaimed water use.

Other requirements of a CCC program include:

1. Coordination with the Jurisdiction Having Authority (JHA) (local building or plumbing official) regarding CCC activities;
2. Prohibition of the return of used water into the PWS distribution system;
3. Inclusion of a written CCC program in a Water System Plan (WSP)

The objectives of the cross connection control program are to:

1. Reduce the risk of contamination of the PWS, and;

2. Reduce the Districts exposure to legal liability arising from backflow of any contaminant originating from the customer's plumbing system, then supplied to other customers.

The following table summarizes the major policy and program decisions adopted for the District's water system. The items in the table represent CCC program areas that have more than one acceptable approach or option.

Decision Item	Decision
1. Type of Program [General, WAC 246-290-490(2)(e)]	
a. Premise Isolation Only	
b. Premise Isolation and In-premises protection (Combination Program)	**X**
2. Extent of Coordination with the Jurisdiction Having Authority [-290(2)(d)]	
a. Information Exchange	**X**
b. Interaction	
c. Joint Program	
3. Relationship with Customer [Element 1]	
a. Signed service agreement or contract	**X**
b. Ordinance/Resolution; implied service agreement	**X**
4. Enforcement of Corrective Action [Element 1]	
a. Rely upon shut-off of water service	**X**
b. Rely upon purveyor installed premises isolation	
5. Assessment and Re-Assessment of Hazard [Element 2]	
a. By District staff or equivalent	**X**
b. By CCS employed by customer, report reviewed by District's CCS	**X**
6. Location and Ownership of Premises Isolation Assembly [Element 3]	
a. On Districts service line	
b. On customer's service line	**X**
7. CCS Option – Districts Program Management [Element 4]	
a. District's staff member certified	**X**
b. Inter-agency agreement of use other agency's CCS	
c. Contract with consultant CCS	
8. Testing of Assemblies [Element 5]	
a. By District's staff or District employed BAT	**X**
b. By customer employed (contractor) BAT	**X**
9. Cost Recovery [WAC 246-290-100(4)(h) and –105(4)(p)]	
a. Borne by all customers (general water rates)	**X**
b. Assessed to specific class (commercial meters)	
c. Each customer directly bears cost	**X**

Washington State Department of Health (DOH) requires a cross connection control program include certain elements. The elements are listed in WAC 246-290-490(3). These elements are summarized in this section together with a description of how the District intends to comply with the program element.

Element 1

Adoption of A Written Legal Instrument Authorizing the Establishment and Implementation of a CCC Program

Soos Creek Water & Sewer District has adopted a resolution (Resolution No. 2574-W), reproduced as Exhibit H which authorizes the District to implement a CCC program. In accordance with WAC 246-290-490 and utilizing the American Water Works Association-Pacific Northwest Section "Manual of Cross-Connection Control," Sixth Edition, (hereinafter referred to as the "yellow manual" or latest edition thereof as a guide.

CONDITIONS FOR PROVIDING SERVICE:
The customer's plumbing system, starting from the termination of the District's water service pipe, shall be considered a potential high health hazard requiring the isolation of the customer's premises by a District and DOH approved, customer installed and maintained reduced pressure backflow assembly (RPBA) or detector derivative (RPDA) thereof. The RPBA or RPDA shall be located at the end of the District's water service pipe (i.e., immediately downstream of the meter). Water shall only be supplied to the customer through a District and DOH approved, customer installed, and maintained, RPBA or RPDA.

Notwithstanding the aforesaid, the District, upon an assessment of the risk of contamination posed by the customer's plumbing system and use of water, may allow:

- a single family or duplex residential customer to connect directly to the water service pipe, i.e., without a DOH approved backflow assembly.

- any customer other than a single family or duplex residential customer, as a minimum, to be supplied through a DOH approved, customer installed and maintained double check valve assembly (DCVA) or double check detector assembly (DCDA).

- any customer, other than a single family or duplex residential customer, or Table 9 premise, to connect directly to the water service pipe (i.e., without a DOH approved DCVA or RPBA), PROVIDED THAT the customer installs and maintains a backflow assembly at the point of hazard commensurate with the degree of hazard, as assessed by the District.

Water service is provided based on the following terms and limitations:

1) The customer agrees to take all measures necessary to prevent contamination of the plumbing system, within their premises and the District's distribution system that may occur from backflow through a cross connection. These measures shall include the prevention of backflow under any back pressure or backsiphonage condition, including the disruption of supply from the District's system that may occur by during routine system maintenance or during emergency conditions, such as a water main break.

2) The customer agrees to install, operate and maintain at all times, their plumbing system in compliance with the most current edition of the plumbing code having jurisdiction as it pertains to the prevention of cross contamination, and protection from thermal expansion due to a closed system that could occur with present or future installation of backflow assemblies on the customer's service and/or plumbing fixtures.

3) For cross connection control or other public health related surveys, the customer agrees to provide free access for employees or agents of the District to all parts of the premises during reasonable working hours of the day for routine surveys, and at all times during emergencies.

Where agreement for free access for the District's survey is denied, water service may be supplied by the District, provided premises isolation is provided through a District and DOH approved reduced pressure backflow assembly (RPBA).

4) The customer agrees to install all backflow prevention assemblies requested by the District, and maintain those assemblies in proper working order. The assemblies shall be of type, size and make approved by the District and DOH. The assemblies shall be installed in accordance with recommendations given in the "Cross Connection Control Manual, Accepted Procedures and Practices" 6th Edition, December 1995. (Published by Pacific Northwest Section, American Water Works Association)

The customer agrees:

(a) To have their backflow assembly tested annually. Customer agrees that upon installation, repair or relocation or at the Districts request, to have their backflow assembly tested.
(b) All or any backflow testing will be performed by a District approved, Washington State Department of Health certified Backflow Assembly Tester (BAT).
(c) The only test procedures approved to use while testing in the District are those procedures approved by the DOH.
(d) To submit to the District the results of the test(s) within 30 days.

The customer agrees to bear all costs for the aforementioned installation, testing, repair, maintenance and replacement of any backflow assembly or derivative thereof installed to protect the District's distribution system and PWS.

5) At the time of application for service, if required by the District, the customer agrees to submit plumbing plans and/or a cross connection control survey of the premises conducted by a District approved and DOH certified Cross Connection Control Specialist (CCS).

The survey shall assess the cross connection hazards and list the backflow prevention provided within the premises. The results of the survey shall be submitted prior to the District turning on water service to a new customer. The cost of the survey shall be borne by the customer.

6) For classes of customers other than single family residential, when required by the District, the customer agrees to submit a cross connection control re-survey of the premises by the persons described in paragraph 5 above. The District may require the re-survey to be performed in response to changes in customer's plumbing, or performed periodically (annually or less frequently) where the District considers the customer's plumbing system to be complex or subject to frequent changes in water use. The cost of the re-survey shall be borne by the customer.

7) Within 30 days of a request by the District, any customer shall agree to complete and submit to the District a "Water-Use Questionnaire" (Exhibit C) for the purpose of surveying the health hazard posed by the customer's plumbing system on the District's distribution system. Further, the customer agrees to provide, within 30 days of a request by the District, a cross connection control survey of the premises by a District approved and DOH certified CCS.

8) The customer agrees to obtain prior approval from the District for all changes in water use, and alterations and additions to the plumbing system, and shall comply with any additional requirements imposed by the District for cross connection control.

9) The customer agrees to immediately notify the District and the local health department of any backflow incident occurring within the premises, (i.e., entry into the potable water of any contaminant or pollutant) and shall cooperate fully with the District to determine the reason for the incident.

10) If the customer fails to cooperate in any aspect of the District’s Cross Connection Control Program, the customer acknowledges the rights of the District to discontinue water service within 72 hours of giving survey notice. The District may discontinue water service at any time and without notice if immediate or life threatening health concerns exist.

The District shall require premises isolation for customers that fall within any category of "Mandatory Premises Isolation" established by the DOH regulations Table 9, WAC 246-290-490 (Exhibit A).

Where the District imposes mandatory premises isolation in compliance with DOH regulations, or agrees to the customer's voluntary premises isolation through the installation of an RPBA immediately downstream of the District's water meter, the customer acknowledges their obligation to comply with the other cross connection control regulations having jurisdictions (e.g., plumbing codes). Although the District's requirement for installation, testing and repair of backflow assemblies may

be limited to the RPBA used for premises isolation, the customer agrees to the other terms herein as a condition of allowing a direct connection to the District's service pipe.

11) The customer agrees to indemnify and hold harmless the District for all contamination of the customer's plumbing system or the District's distribution system that results from an unprotected or inadequately protected cross connection within their premises. This indemnification shall pertain to all backflow conditions that may arise from the District's suspension of water supply or reduction of water pressure, recognizing that the air gap separation otherwise required would require the customer to provide adequate facilities to collect, store and pump water for their premises.

12) The customer agrees that, in the event legal action is required and commenced between the District and the customer to enforce the terms and conditions herein, the substantially prevailing party shall be entitled to reimbursement of all its costs and expenses including but not limited to reasonable attorney's fees as determined by the Court.

13) The customer acknowledges that the District's survey of a customer's premises is for the sole purpose of establishing the District's minimum requirements for protection of the PWS, commensurate with the District's assessment of the degree of hazard.

    It shall not be assumed by the customer or any regulatory agency, that the District's survey requirements for the installation of backflow prevention assemblies, lack of requirements for the installation of backflow prevention assemblies, or other actions by District personnel constitutes an approval of the customer's plumbing system, or an assurance to the customer of the absence of cross connections therein.

14) The customer acknowledges the rights of the District, in keeping with changes to Washington State regulations, industry standards, or the District's risk management policies, to impose retroactive requirements for additional cross connection control measures.

The District shall record the customer's agreement to the above terms for service on an "Application for Water Service", "Application for Change of Water Service" (Exhibit B) or other such form prepared by the District and signed by the customer.

Element 2

Development and Implementation of Procedures and Schedules for Evaluating New and Existing Service Connections to Assess the Degree of Hazard

Cross Connection Hazard Surveys - The procedures for evaluating backflow prevention requirements for new and existing customers are as follows:

For all new, non-residential services, the District will require the customer to install an RPDA/RPBA (whichever is applicable) unless the customer receives permission from a District employed CCS to install backflow protection of a lesser degree. The customer must submit with the application for water service, a cross connection evaluation or water-use survey for the proposed plumbing system, conducted by a DOH certified CCS and performed at the customer's expense. The District, at the direction of the District Manager or/and a District employed CCS, may accept or reject any recommendation provided to protect the PWS.

1. For all new residential services, the District will require the customer to submit with the application for water service a completed "Water Use Questionnaire" (Exhibit C). If the customer indicates special plumbing, such as a lawn irrigation system or fire sprinkler system, a District employed and DOH certified CCS will conduct a water-use survey to determine the degree of hazard. The CCS will make a determination what level of backflow protection is required.

   As an alternative to the above requirement for a survey by a CCS, at the discretion of the Director, the District may specify the backflow assembly required as a condition of service. Us Exhibit K as a guide.

2. For all existing non-residential services, the District will require the property owner or occupant to submit, within 60 days of notification, an evaluation by a District and DOH certified CCS, of the hazard posed by the plumbing system, with recommendations for the installation at the meter of either a DCVA or RPBA. The District, at the discretion of the Director, may accept the recommendation or submit the recommendations to a CCS employed by the District for peer review and concurrence, before acceptance.

   As an alternative to the above requirement for a survey by a CCS, the customer may agree to install an AG or RPBA for premises isolation within 90 days or a time period acceptable to the District.

3. For all existing residential services, the District will require the property owner or occupant to submit within 30 days of notification, a completed "Water-Use Questionnaire". A District employed and DOH certified CCS will conduct a water-use survey to determine the degree of hazard. The CCS will make a determination what level of backflow protection is required.

As an alternative to the above requirement for a survey by a CCS, at the discretion of the Director, the District may specify what backflow assembly must be installed as a condition of service. Guidance on the type of backflow assembly is provided by the District's CCS.

For existing services, should the customer fail to supply the required information for a hazard assessment or a completed "Water-Use Questionnaire", the Director may have the assessment made by a CCS employed by the District, require the installation of an RPBA for premises isolation, or take other such actions consistent with the previously stated policies.

1. The schedule for initial hazard assessment is outlined in the table following. The schedule is based upon time after establishment of the program.

Initial Assessment Task	Schedule
Assessment of all new connections.	At time of application for water service
Identification and assessment of high hazard premises which are listed on Table 9. (Exhibit A)	Within 24 months
Identification and assessment of hazardous premises supplemental to Table 9 list.	Within 36 months
Identification of residential connections with special plumbing facilities.	Within 60 months

For subsequent cross connection surveys, procedures for evaluating the backflow prevention requirements are:

1. For residential services the District will require the customer to submit, within 30 days of notification, a completed "Water-Use Questionnaire" (Exhibit C). The procedure for evaluating the need to change the hazard assessment, and thus require a change in the backflow prevention, will be the same as the procedure for the initial assessment.

2. For all commercial services, the District will require the customer to submit a reevaluation (at customer expense) of the hazard assessment by a District approved, DOH certified CCS.

3. The frequency of re-evaluation shall be as shown in the table below:

Type of Service	Frequency of Re-Evaluation

Any services with RPBA installed for premises isolation	None required as long as the RPBA passes tests and inspection
Commercial services with DCVA installed for premises isolation	Every 3 years and upon change in use or ownership
Commercial services when District relies upon in-premises protection.	Every 3 years and upon change in use, ownership, or plumbing system
Residential services with special plumbing and District relies upon compliance with Uniform Plumbing Code	Every 3 years (questionnaire)
Residential services with DCVA installed for premises isolation.	Every 5 years (questionnaire)
Residential services with no known special plumbing	Every 5 years and upon change in use, ownership, or plumbing system (questionnaire)

The District will inform the customer the District's survey of a customer's premises, whether by a representative of the District or through the evaluation of a questionnaire completed by the customer, is for the sole purpose of establishing the District's minimum requirements for the protection of the public water supply system, commensurate with the District assessment of the degree of hazard. The District will inform the customer or any regulatory agencies the District's survey, requirements for the installation of backflow prevention assemblies, lack of requirements for the installation of backflow prevention assemblies, or other actions by District's personnel or agent does not constitute an approval of the customer's plumbing system, or an assurance to the customer or any regulatory agency, of the absence of cross connections.

A list of all existing facilities shall be created and updated as necessary, which lists by category the priority basis for surveying. (Example in Exhibit D)

Element 3

Development and Implementation of Procedures and Schedules for Elimination and/or Control of Cross Connections

Backflow Assembly Requirements - The following service policy shall apply to all new and existing customers:

1. The District will require that water service to all non-residential customers, be isolated at the meter by a District and DOH approved DCVA or RPBA. All customers described in Table 9 of WAC 246-290-490 shall be isolated with an RPBA. All other non-residential customers shall be isolated with a DCVA. In lieu of isolation with a DCVA, other non-residential customers, at the approval of a District employed CCS,, may install in-premises protection commensurate with the degree of hazard, as determined by the District's CCS.

   The District will require all residential customers with facilities described in Table 9 of WAC 246-290-490 be isolated with a RPBA. All other residential customers (with special plumbing) shall be isolated with a DCVA. Residential customers not required to be isolated with an RPBA, with the approval of the District's CCS may install in-premises protection in accordance with the Uniform Plumbing Code in lieu of isolation with a DCVA.

   For all residential customers, the premises isolation DCVA or RPBA required above shall be:

   - Purchased and installed by the customer (at the customer's expense) immediately downstream of the water meter in accordance with the District's standards described hereinafter;
   - Maintained, tested, and inspected in accordance with the District's standards described hereinafter;

   For new customers, the District will not turn on water (except for testing purposes) at the meter until the customer complies with the above requirements.

   Know that these assemblies are owned by the customers and as such are located on private property. All assemblies on private property are subject to local JHA permits and inspections for compliance with building and plumbing codes. District requirements on installation are supplement to and do not supercede those of the JHA.

3. Approved Backflow Assemblies and Installation

   All backflow assemblies relied upon by the District to protect the PWS shall meet the definition of "Approved Backflow Assemblies" as contained in WAC 246-290-010 (Exhibit A). The District will obtain and maintain a current list of assemblies approved for installation in Washington State from the DOH.

All backflow assemblies must be installed:

- In the orientation for which they are approved.
- In a manner and location that facilitates their proper operation, maintenance, and testing or inspection. Installation standards contained in the PNWS-AWWA Manual or the USC Manual are the only installation procedures approved in the District.
- In a manner that will protect them from weather-related conditions such as flooding and freezing.
- In compliance with applicable safety regulations.

The District has no regulatory responsibility or authority over the installation and operation of the customer's plumbing system. The customer is solely responsible for compliance with all applicable regulations and for prevention of contamination of their plumbing system from sources within their premises. Any action taken by the District to survey plumbing, inspect or test backflow prevention assemblies, or to require premises isolation (installation of DCVA or RPBA on service) is solely for the purposes of reducing the risk of contamination of the District's distribution system and PWS.

The District will inform the customer that any action taken shall not be construed by the customer to provide guidance on the safety or reliability of the plumbing system. The District will not provide advice to the customer on the design and installation of plumbing other than the general public education program discussed in Element 8.

Except for easements containing the District's distribution system, the District will not undertake work on the customer's premises.

Element 4

Provision of Qualified Personnel, Including At Least One Person Certified as a CCS, to Develop and Implement the Cross Connection Control Program

1. Program Administration - The responsibility for administration rests with the Board of Commissioners, as a body or to a designated employee, hereinafter referred to as the Director.

2. The District will employ at least one person certified by the DOH as a CCS to implement the CCC program. As an alternative, or when no staff or employees are properly qualified, the District may retain a properly certified CCS on contract to provide the necessary expertise and services.

3. The following cross-connection related tasks will be performed by or under the direction of the certified CCS:
    - Preparation of and recommendation of changes to the CCC program;
    - Performance of and/or review of CCC hazard evaluations;
    - Recommendation of the type of backflow assembies to be installed;
    - Recommendation of schedules for retrofitting of backflow assemblies;
    - Inspection of backflow assemblies for proper application and installation;
    - Review of backflow assemblies inspection and test reports;
    - Review of backflow testing quality control information;
    - Recommendation and/or the granting of exceptions to mandatory premises isolation;
    - Participation in or cooperation with other water utility staff in the investigation of backflow incidents and other water quality problems;
    - Completion of CCC Activity and Program Summary Reports when required by DOH.

4. Other CCC program activities may be delegated, as necessary, to other personnel, including clerical support staff. These activities include:
    - Administration of paperwork associated with service agreements;
    - Mailing, collecting and screening of hazard evaluation questionnaires;
    - Mailing of assembly testing notices;
    - Receiving and screening of assembly test reports;
    - Database administration and record keeping of CCC program information;
    - Dissemination of public education material;
    - Assist in tasks associated with coordination with the local administrative authority.

5. Current Cross Connection Control Specialists employed by the District:

Name of CCS	Brett Herrin (Coordinator)
Address	P.O. Box 58039.
City, State, Zip	Renton, WA. 98058
Telephone Number	253-630-9900 ext 124
CCS Certification Number	6773

Name of CCS	Barbra Englander (Meters/Cross Connection Senior)
Address	P.O. Box 58039.
City, State, Zip	Renton, WA. 98058
Telephone Number	253-630-9900 ext 120
CCS Certification Number	

Name of CCS	John Millan (Cross Connection Control Specialist)
Address	P.O. Box 58039.
City, State, Zip	Renton, WA. 98058
Telephone Number	253-630-9900 ext 153
CCS Certification Number	10164

Name of CCS	Kent Zettel (Water Quality Senior)
Address	P.O. Box 58039.
City, State, Zip	Renton, WA. 98058
Telephone Number	253-630-9900 ext 125
CCS Certification Number	2649

Element 5

Development and Implementation of Procedures to Ensure Approved Backflow Assemblies are Inspected and/or Tested (As Applicable)

1. Inspection and Testing of Backflow Assemblies

    - Any backflow assembly the District relies upon for protection of the PWS will be subject to inspection and testing.

    - Inspection of backflow assemblies for proper application will be performed by a District CCS.

    - Inspection of backflow assemblies for correct installation will be performed by either a CCS or a DOH certified Backflow Assembly Tester (BAT).

    - Testing of backflow assemblies will only be performed by a District approved and DOH certified BAT.

2. Frequency of Inspection and Testing

    Inspection and testing of backflow assemblies will be conducted:
    - At the time of installation;
    - Annually, after installation;
    - After a backflow incident;
    - After a repair, reinstallation or relocation.

    The District retains the right to require random testing for backflow assemblies protecting the PWS from Table 9 or High Hazard facilities..

3. Responsibility for Inspection and Testing

    The District is responsible for inspection and testing of all District-owned backflow assemblies.

    The District requires all customers be responsible for inspection and testing of backflow assemblies owned by the customer. The customer shall employ, at customer expense, a DOH certified and District approved BAT to conduct inspection and testing within the time period specified in a testing notice sent by the District. The test report (Exhibit E) shall be completed and signed by the BAT, then returned by the customer to the District before the due date specified by the District. It is the customer's responsibility to ensure the test report reaches the District's office in the specified time. A request for an extension of the completion time for the return of a test report may be made via phone call, email, and fax or in person by the customer to the District. One extension up to 45 days may be granted at the discretion of the Director.

4. Approved Test Procedures

The District requires that all assemblies relied upon to protect the water system be tested in accordance with DOH-approved test procedures as specified in WAC 246-290-490(7)(d). The District does not permit alternate testing procedures not approved by the DOH.

5. Notification of Inspection and/or Testing

The District will notify all customers who own backflow assemblies that are relied upon to protect the PWS to have their backflow assembly/s inspected and/or tested. Notices (Exhibit F) will be sent out not less than 30 days before the due date of the inspection and/or test. The notice will also specify the date (up to 30 days after the due date of the inspection and/or test date) by which the inspection/test report must be received by the District.

6. Enforcement

When a customer fails to send in the inspection/test report within 10 days after the due date specified, and the District has not approved an extension, the District will take the following enforcement action:

- The District will send a second notice (Exhibit G) giving the customer an additional 14 days to send in the report. This notice will also inform the customer that failure to satisfactorily respond to this notice will result in service shut-off
- If the customer has not sent in the report by the due date given in the second notice, the District will hand deliver a notice, giving 7 days to service shut-off (Exhibit I).
- The District will send copies of the third notice to occupants of the premises (if different from the customer), and to the AHJ.
- If the customer has not responded satisfactorily by the due date specified in the third notice, the District will implement service shut-off.

Element 6

Development and Implementation of a Backflow Prevention Assembly Testing Quality Control Assurance Program

Customer Convenience

1. The District will maintain a list of BATs for the convenience of its customers. To be included in this list or remain on this list, the following information is required.

   A. Proof of current certification as a Washington State certified BAT, i.e., copy of BAT certification card, and;
   B. Submission of annual test kit calibration;
   C. A request to remain on or be placed on convenience list, which includes legal name, phone number and address of company.

2. The District will provide a list of BAT'S for the customers convenience and at the customers request.

3. The District will send a notice to existing BATS on the convenience list after March 1st of each year with requirements in No 1 above. This is designed to allow the state's recertification program to mail out new certification cards . Thirty (30) days is allowed for response or the tester will be removed from the list.

4. The District's CCS will review the inspection/test report forms submitted by the customer within 30 days of receipt. The District's CCS may accept reports that are signed by a CCS or BAT not on the pre-approved CCS or BAT list provided that the same information as listed in "Pre-Approval Qualifications" are also submitted. The District's CCS will follow up on reports that are deficient in any way.

   The District will report incidences of fraud or gross incompetence on the part of any BAT or CCS to the DOH and ban them from testing or conducting surveys within Soos Creek Water District boundaries.

Element 7

Development and Implementation of Procedures for Responding to Backflow Incidents

1. Backflow Incident Response Plan

   The District's CCS will participate in developing a backflow incident response plan that will be part of the water system's emergency response program as required by (WAC 246-290-415(2)). The incident response plan will include, but will not be limited to:
   - Notification of affected population;
   - Notification and coordination with other agencies, such as DOH, the local administrative authority, and the local health jurisdiction;
   - Identification of the source of contamination;
   - Isolation of the source of contamination and the affected area(s);
   - Cleaning, flushing, and other measures to mitigate and correct the problem;
   - Apply corrective action to prevent future backflow occurrences.

2. Technical Resource

   The District will use the manual *BACKFLOW INCIDENT INVESTIGATION PROCEDURES*, First Edition, 1996, published by the PNWS-AWWA as a supplement.

Element 8

Development and Implementation of a Cross Connection Public Education Program

1. Customer Education

   The District may distribute with water bills, every three to five years, informational brochures describing the cross connection hazards in homes and recommended devices that should be installed by the homeowner to reduce hazards. The education program should emphasize the responsibility of the customer in preventing the contamination of their water supply. The brochures may be obtained from:

   - the District, produced by the staff;
   - Pacific Northwest Section, American Water Works Association;
   - Spokane Regional Cross-Connection Control Committee (SRC4);
   - Other backflow prevention associations and other water utilities.

   Information distributed may include, but not be limited to, subjects such as:

   - Cross connection hazards in general;
   - Irrigation system hazards and corrective actions;
   - Fire sprinkler cross-connection hazards;
   - Importance of annual inspection or testing of backflow assemblies;
   - Thermal expansion in hot water systems when backflow assemblies are installed.

   The District may distribute information brochures to new customers at the time of signing a service agreement.

2. Public Outreach

   In cooperation with other water utilities, the District may participate in an outreach program consisting of:
   - Distribution of cross-connection information to hardware and plumbing stores serving the area;
   - Participation in fairs, exhibits and other events.

Element 9

Development and Maintenance of Cross Connection Control Records

1. Types of Records and Data to be Maintained

   The District will maintain records of the following types of information:

   - Service connections/customer premises information including:
     a. Assessed degree of hazard; and
     b. Required backflow assembly to protect the PWS.
   - Backflow assembly inventory and information including:
     a. Air gap location, installation and inspection dates, inspection results and person conducting inspection;
     b. Backflow assembly location, assembly description (type, manufacturer, make, model, size and serial number), installation, inspection and test dates, test results, and person ;performing test;
     c. Information on AVBs used for irrigation system applications, including manufacturer, make, model, size, dates of installation and inspections, and person performing inspections.

   Where applicable, the foregoing information will also be maintained for backflow assemblies installed for in-premises protection that the District relies upon to protect the PWS.

2. Reports to be prepared and submitted

   The District will prepare the following reports as required by the DOH:

   - Cross Connection Control Program activities for the calendar year, to be sent to DOH when requested;
   - Cross Connection Control Program summary information, when required, or when there are significant policy changes;
   - Backflow incident reports, to DOH and PNWS-AWWA CCC Committee;
   - Documentation when exceptions to mandatory premises isolation are granted.

   The District's CCS will prepare or review the reports for accuracy. The manager of the water system shall sign the report before submission to DOH.

Element 10

Additional Cross-Connection Control Requirements for Reclaimed Water

At this time Soos Creek Water & Sewer District does not receive or distribute reclaimed water. In the event that reclaimed water use is proposed within the District's service area, all CCC requirements mandated by the permitting authority in accordance with Chapter 90.46 of the RCW, will be made part the CCC program and be complied with.

Other Provisions

1. Coordination with Jurisdiction Having Authority

   A copy of this CCC program is provided to King County DOH and the City's of Kent and Renton (JHA). The District will inform the JHA of any changes in policy or procedure that may impact the JHA.

   The Director will provide information to the JHA in a timely manner of:

   - Any requirement imposed on a residential customer for the installation of a DCVA or RPBA on the service, with a description of the cross-connection hazard identified,

   - Any backflow incident.

   The District will pursue a written agreement with the JHA regarding the details of the coordination between the two parties. The agreement will include, but not be limited to, the following items:

   1. The purpose of the written agreement;
   2. Identification of the parties and other interested agencies;
   3. Delineation of responsibilities;
   4. Procedures regarding new service connections
   5. Procedures regarding existing and changes to existing services;
   6. Special policies and procedures, such as for fire protection and irrigation services;
   7. Procedures regarding water service shut-offs, backflow incidents, and other events;
   8. Communications between parties;
   9. Other contingencies.

2. Intentional return of used water
   The water system must prohibit the intentional return of used water.

3. Unapproved Auxiliary Supplies
   All water supplies other than those owned by the District are considered unapproved auxiliary supplies as defined in WAC 246-290-010. The District will require the installation of an RPBA for premises isolation at the service connection of any customer having an unapproved auxiliary supply on the premises, whether or not there is a physical connection between the auxiliary supply and the District's system.

4. Tanker Trucks
   The District will allow tanker trucks to obtain water from the PWS under the following conditions:

   - The tanker trucks will obtain water from District's fill stations only.
   - All tanker trucks must have an approved air AG

- The AG must be inspected by a District employed CCS before the first fill and annually thereafter
- An acknowledgment the taking water from District hydrants is not permitted

5. Interties and Wholesale Water Customers

The Purveyor will require that interties with other public water systems (PWS) or wholesale customers (such as mobile home parks) be isolated at the point of delivery by:

- a minimum of a DCVA,
- a minimum of an RPBA if the Purveyor considers the customer to be a high health hazard.

The District may waive or reduce the level of protection if the customer:

- Is a Group A public water system not exempt from DOH regulation as per WAC 246-290-020(2);
- Has a CCC program that complies with WAC 246-290-490 and which has been approved by DOH; and
- Implements the CCC program at a level satisfactory to the District.

The District will consider the requirements and consequences of the cross-connection program upon the planning and operations requirements of the water utility. Such considerations include, but are not limited to:

- Ensuring and promoting adequate communication between CCC program personnel and other water utility staff;
- Ensuring that adequate training is provided to all staff to recognize potential cross-connection control problems;
- Ensuring that cross-connection issues be considered in water quality investigations;
- Ensuring that the design of the water distribution system make adequate provisions for expected head losses experienced by backflow assemblies;
- Ensuring that the CCC program personnel be consulted in the design of water and wastewater treatment facilities and when proposals are made to receive or distribute reclaimed water;
- Ensuring that operations under normal and abnormal conditions do not result in excessive pressure losses;

Provisions for adequate financial and administrative resources to carry out the CCC program.

APPENDIX K

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: 11/20/2012
Printed: 10/02/2013
WFI Printed For: Annual
Submission Reason: Annual Update

RETURN TO: Northwest Regional Office, 20425 72nd Ave S STE 310, Kent, WA, 98032

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
40100 8	SOOS CREEK WATER & SEWER DISTRICT	KING	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS

RON SPEER [DISTRICT MANAGER]
PO BOX 58039
RENTON, WA 98055

STREET ADDRESS IF DIFFERENT FROM ABOVE
ATTN ATTN: RON SPEER.
ADDRESS 14616 SE 192ND ST
CITY RENTON STATE WA ZIP 98058

7. OWNER NAME & MAILING ADDRESS | **8. Owner Number** 002998

SOOS CREEK WATER & SEWER DIST.
RON SPEER TITLE: DISTRICT MANAGER
PO BOX 58039
RENTON, WA 98058

FILE COPY

STREET ADDRESS IF DIFFERENT FROM ABOVE
ATTN ATTN RON SPEER
ADDRESS 14616 SE 192ND ST
CITY RENTON STATE WA ZIP 98058

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone:	(253) 630-9900	Owner Daytime Phone:	(253) 630-9900
Primary Contact Mobile/Cell Phone:	(206) 953-8559	Owner Mobile/Cell Phone:	
Primary Contact Evening Phone:	(253) 630-9900	Owner Evening Phone:	
Fax: (253) 630-5289	E-mail: rspeer@sooscreek.com	Fax:	E-mail:

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

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

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

SMA NAME: _____ SMA Number: _____

12. WATER SYSTEM CHARACTERISTICS (mark ALL that apply)

- [ ] Agricultural
- [x] Commercial / Business
- [x] Day Care
- [x] Food Service/Food Permit
- [ ] 1,000 or more person event for 2 or more days per year
- [x] Hospital/Clinic
- [ ] Industrial
- [ ] Licensed Residential Facility
- [ ] Lodging
- [ ] Recreational / RV Park
- [x] Residential
- [x] School
- [ ] 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)

15,000,000

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	77050Y/SEATTLE (4)	77050 Y											X			Y	X								9000 7000			00N	00E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
40100 8	SOOS CREEK WATER & SEWER DISTRICT	KING	A	Comm

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)	0	21692	Unspecified
A. Full Time Single Family Residences (Occupied 180 days or *more* per year) 16895	~~16858~~		
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 4869	~~4834~~		
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.	649	649	
28. TOTAL SERVICE CONNECTIONS		22341	

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or *more* days per year? ~~62690~~ 62,898

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

33. ROUTINE COLIFORM SCHEDULE * Requirement is exception from WAC 246-290	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*

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: Ron Speer DATE: Nov. 13, 2013

PRINT NAME: Ron Speer TITLE: General Manager

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

Table 2

WATER SYSTEM PLAN
WATER RIGHTS SELF ASSESSMENT – 6 YEAR FORECAST

PERMIT CERTIFICATE OR CLAIM #	NAME ON DOCUMENT	PRIORITY DATE (List oldest first)	SOURCE NAME/ NUMBER	ANY PORTION SUPPLEMENTAL? (If yes, explain in footnote)	EXISTING WATER RIGHTS		FORECASTED WATER USE FROM SOURCES (6-year Demand)		FORECASTED WATER RIGHT STATUS (Excess/Deficiency)	
					Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)
Permits/ Certificates 1.										
2.										
3.										
4.										
Claims 1.										
2.										
3.										
4.										
TOTAL	**********	********	********	**********						

INTERTIE NAME/ IDENTIFIER	NAME OF PURVEYOR PROVIDING WATER	EXISTING LIMITS ON INTERTIE USE		FORECASTED CONSUMPTION THROUGH INTERTIE		FORECASTED INTERTIE SUPPLY STATUS (Excess/Deficiency)	
		Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)
1. **Intertie No. 1 - Primary Supply**	**Seattle Public Utilities (SPU)**	**1,250 gpm**	**2,018 acre-foot**	**1,836 gpm**	**70 acre-foot**	**586 gpm (deficit)**	**1,948 acre-foot (excess)**
2. **Intertie No. 2 - Primary Supply**	**Seattle Public Utilities (SPU)**	**5,000 gpm**	**8,070 acre-foot**	**2,808 gpm**	**216 acre-foot**	**2,192 gpm (excess)**	**7,854 acre-foot (excess)**
3. **Intertie No. 4 - Primary Supply**	**Seattle Public Utilities (SPU)**	**3,000 gpm**	**4,842 acre-foot**	**4,458 gpm**	**3,790 acre-foot**	**1,458 gpm (deficit)**	**1,052 acre-foot (excess)**
4. **Intertie No. 6 - Primary Supply**	**Seattle Public Utilities (SPU)**	**1,500 gpm**	**2,421 acre-foot**	**1,867 gpm**	**560 acre-foot**	**367 gpm (deficit)**	**1,861 acre-foot (excess)**
5. **KCWD111 Intertie - External only - Emergency Supply**	**King County Water District No. 111**	**500 gpm**	**807 acre-foot**	**0 gpm**	**0 acre-foot**	**N/A**	**N/A**
6. **City of Kent Intertie - Bi-directional - Emergency Supply**	**City of Kent**	**800 gpm**	**1,291 acre-foot**	**0 gpm**	**0 acre-foot**	**N/A**	**N/A**

TOTAL	**********		**12,050 gpm**	**19,449 acre-foot**	**10,969 gpm**	**4,636 acre-foot**	**219 gpm (deficit)**	**12,715 acre-foot (excess)**
PENDING WATER RIGHT APPLICATION (New/Change)	NAME ON APPLICATION	DATE SUBMITTED	ANY PORTION SUPPLEMENTAL? (If yes, explain in footnote)		PENDING WATER RIGHTS			
					Maximum Instantaneous Flow Rate (Qi) Requested		Maximum Annual Volume (Qa) Requested	
1.								
2.								
3.								
4.								

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD call (800) 833-6388.

DOH Form 331-372 (Updated 08/10)

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Please return completed form to the Office of Drinking Water regional office checked below.

☐ Northwest Drinking Water
Department of Health
20435 72nd Ave S, Suite 200
Kent, WA 98032-2358
Phone: (253) 395-6750
Fax: (253) 395-6760

☐ Southwest Drinking Water
Department of Health
PO Box 47823
Olympia, WA 98504-7823
Phone (360) 236-3030
Fax: (360) 664-8058

☐ Eastern Drinking Water
Department of Health
16201 E Indiana Ave, Suite 1500
Spokane Valley, WA 99216
Phone: (509) 329-2100
Fax: (509) 329-2104

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

Table 3

WATER SYSTEM PLAN
WATER RIGHTS SELF ASSESSMENT – 20 YEAR FORECAST

PERMIT CERTIFICATE OR CLAIM #	NAME ON DOCUMENT	PRIORITY DATE (List oldest first)	SOURCE NAME/ NUMBER	ANY PORTION SUPPLEMENTAL? (If yes, explain in footnote)	EXISTING WATER RIGHTS		FORECASTED WATER USE FROM SOURCES (20-year Demand)		FORECASTED WATER RIGHT STATUS (Excess/Deficiency)	
					Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)
Permits/ Certificates 1.										
2.										
3.										
4.										
Claims 1.										
2.										
3.										
4.										
TOTAL	**********	********	********	**********						

INTERTIE NAME/ IDENTIFIER	NAME OF PURVEYOR PROVIDING WATER	EXISTING LIMITS ON INTERTIE USE		FORECASTED CONSUMPTION THROUGH INTERTIE		FORECASTED INTERTIE SUPPLY STATUS (Excess/Deficiency)	
		Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)
1. **Intertie No. 1 - Primary Supply**	**Seattle Public Utilities (SPU)**	**1,250 gpm**	**2,018 acre-foot**	**2,081 gpm**	**80 acre-foot**	**831 gpm (deficit)**	**1,938 acre-foot (excess)**
2. **Intertie No. 2 - Primary Supply**	**Seattle Public Utilities (SPU)**	**5,000 gpm**	**8,070 acre-foot**	**3,182 gpm**	**245 acre-foot**	**1,818 gpm (excess)**	**7,825 acre-foot (excess)**
3. **Intertie No. 4 - Primary Supply**	**Seattle Public Utilities (SPU)**	**3,000 gpm**	**4,842 acre-foot**	**5,053 gpm**	**4,295 acre-foot**	**2,053 gpm (deficit)**	**547 acre-foot (excess)**
4. **Intertie No. 6 - Primary Supply**	**Seattle Public Utilities (SPU)**	**1,500 gpm**	**2,421 acre-foot**	**2,093 gpm**	**628 acre-foot**	**593 gpm (deficit)**	**1,793 acre-foot (excess)**
5. **KCWD111 Intertie - External only - Emergency Supply**	**King County Water District No. 111**	**500 gpm**	**807 acre-foot**	**0 gpm**	**0 acre-foot**	**N/A**	**N/A**
6. **City of Kent Intertie - Bi-directional - Emergency Supply**	**City of Kent**	**800 gpm**	**1,291 acre-foot**	**0 gpm**	**0 acre-foot**	**N/A**	**N/A**

TOTAL	**********		**12,050 gpm**	**19,449 acre-foot**	**12,409 gpm**	**5,247 acre-foot**	**1,659 gpm (deficit)**	**12,104 acre-foot (excess)**
PENDING WATER RIGHT APPLICATION (New/Change)	NAME ON APPLICATION	DATE SUBMITTED	ANY PORTION SUPPLEMENTAL? (If yes, explain in footnote)		PENDING WATER RIGHTS			
					Maximum Instantaneous Flow Rate (Qi) Requested		Maximum Annual Volume (Qa) Requested	
1.								
2.								
3.								
4.								

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☐ Northwest Drinking Water
Department of Health
20435 72nd Ave S, Suite 200
Kent, WA 98032-2358
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☐ Southwest Drinking Water
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☐ Eastern Drinking Water
Department of Health
16201 E Indiana Ave, Suite 1500
Spokane Valley, WA 99216
Phone: (509) 329-2100
Fax: (509) 329-2104

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

Table 1

WATER SYSTEM PLAN
WATER RIGHTS SELF ASSESSMENT – EXISTING STATUS

PERMIT CERTIFICATE OR CLAIM #	NAME ON DOCUMENT	PRIORITY DATE (List oldest first)	SOURCE NAME/ NUMBER	ANY PORTION SUPPLEMENTAL? (If yes, explain in footnote)	EXISTING WATER RIGHTS		EXISTING CONSUMPTION		CURRENT WATER RIGHT STATUS (Excess/Deficiency)	
					Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)
Permits/ Certificates 1.										
2.										
3.										
4.										
Claims 1.										
2.										
3.										
4.										
TOTAL	**********	*********	*********	**********						

INTERTIE NAME/ IDENTIFIER	NAME OF PURVEYOR PROVIDING WATER	EXISTING LIMITS ON INTERTIE USE		EXISTING CONSUMPTION THROUGH INTERTIE		CURRENT INTERTIE SUPPLY STATUS (Excess/Deficiency)	
		Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)
1. **Intertie No. 1 - Primary Supply**	**Seattle Public Utilities (SPU)**	**1,250 gpm**	**2,018 acre-foot**	**1,700 gpm**	**65 acre-foot**	**450 gpm (deficiency)**	**1,953 acre-foot (excess)**
2. **Intertie No. 2 - Primary Supply**	**Seattle Public Utilities (SPU)**	**5,000 gpm**	**8,070 acre-foot**	**2,600 gpm**	**200 acre-foot**	**2,400 gpm (excess)**	**7,870 acre-foot (excess)**
3. **Intertie No. 4 - Primary Supply**	**Seattle Public Utilities (SPU)**	**3,000 gpm**	**4,842 acre-foot**	**4,128 gpm**	**3,509 acre-foot**	**1,128 gpm (deficiency)**	**1,333 acre-foot (excess)**
4. **Intertie No. 6 - Primary Supply**	**Seattle Public Utilities (SPU)**	**1,500 gpm**	**2,421 acre-foot**	**1,753 gpm**	**526 acre-foot**	**253 gpm (deficiency)**	**1,895 acre-foot (excess)**
5. **KCWD111 Intertie - External only - Emergency Supply**	**King County Water District No. 111**	**500 gpm**	**807 acre-foot**	**0 gpm**	**0 acre-foot**	**N/A**	**N/A**
6. **City of Kent Intertie - Bi-directional - Emergency Supply**	**City of Kent**	**800 gpm**	**1,291 acre-foot**	**0 gpm**	**0 acre-foot**	**N/A**	**N/A**
TOTAL	**********	**12,050 gpm**	**19,449 acre-foot**	**10,181 gpm**	**4,300 acre-foot**	**569 gpm (excess)**	**13,051 acre-foot (excess)**

PENDING WATER RIGHT APPLICATION (New/Change)	NAME ON APPLICATION	DATE SUBMITTED	ANY PORTION SUPPLEMENTAL? (If yes, explain in footnote)	PENDING WATER RIGHTS	
				Maximum Instantaneous Flow Rate (Qi) Requested	Maximum Annual Volume (Qa) Requested

1.					
2.					
3.					
4.					

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☐ Northwest Drinking Water
Department of Health
20435 72nd Ave S, Suite 200
Kent, WA 98032-2358
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Spokane Valley, WA 99216
Phone: (509) 329-2100
Fax: (509) 329-2104

APPENDIX L

SOOS CREEK WATER & SEWER DISTRICT
2002 WATER PURCHASES

SEATTLE CITY TREASURER #9747 **CHARGE TO #432-204-534-601-33**

STATION #1(SWD #29) CRPL AND 114TH SE	STATION #2 (SWD #28) SE 164TH & 132ND SE	STATION #4 (SWD #27) 148TH SE & SE 192ND	STATION #6 PETROVITSKY & 147TH	GROWTH CONS. CUBIC FEET	TOTAL CONSUMPTION	DAYS IN CYCLE	UTILITY BILLING CONSUMPTION	MONTH USED
87,000	143,100	13,437,500	1,625,200	5,531,400	15,292,800	30	15,240,600	DEC
160,200	214,800	15,254,700	1,908,800	8,933,100	17,538,500	34	11,362,600	JAN
202,700	199,500	12,636,700	1,543,800	5,610,400	14,582,700	29	17,087,800	FEB
53,800	125,600	12,564,800	1,510,300	5,054,100	14,254,500	28	10,835,900	MAR
153,100	183,100	14,858,500	1,783,500	7,830,300	16,978,200	33	15,620,800	APR
207,700	601,000	12,917,900	1,613,700	4,622,100	15,340,300	28	10,987,300	MAY
369,200	1,026,500	15,190,300	2,054,000	6,427,800	18,640,000	30	17,895,400	JUN
769,700	3,251,500	14,876,400	2,700,600	8,183,500	21,598,200	28	14,803,700	JUL
1,118,600	5,676,200	17,637,100	3,685,700	5,098,700	28,117,600	33	24,487,100	AUG
662,200	2,213,800	16,983,700	2,692,200	15,379,300	22,551,900	30	19,191,100	SEP
233,100	1,260,500	14,633,500	2,132,200	9,953,200	18,259,300	32	22,803,000	OCT
32,700	70,400	12,556,900	1,582,600	5,980,500	14,242,600	28	13,414,500	NOV
			TOTAL CUBIC FEET		217,396,600		193,729,800	
			TOTAL IN GALLONS		1,626,126,568		1,449,098,904	

SOOS CREEK WATER & SEWER DISTRICT
2003 WATER PURCHASES

SEATTLE CITY TREASURER #97475 **CHARGE TO #432-204-534-601-33**

STATION #1(SWD #29) CRPL AND 114TH SE	STATION #2 (SWD #28) SE 164TH & 132ND SE	STATION #4 (SWD #27) 148TH SE & SE 192ND	STATION #6 PETROVITSKY & 147TH	GROWTH CONS. CUBIC FEET	TOTAL CONSUMPTION	DAYS IN CYCLE	UTILITY BILLING CONSUMPTION	MONTH USED
8,000	170,000	13,415,500	1,652,600	5,484,700	15,246,100	30	15,631,900	DEC
0	263,700	15,094,400	1,918,400	8,671,100	17,276,500	34	11,653,300	JAN
18,000	69,200	12,876,200	1,562,600	5,553,700	14,526,000	29	15,941,000	FEB
35,900	56,300	12,299,000	1,545,500	4,736,300	13,936,700	28	10,957,200	MAR
455,300	435,100	14,186,900	1,882,500	7,811,900	16,959,800	33	14,952,600	APR
1,224,900	3,256,200	8,730,300	1,664,200	4,157,400	14,875,600	28	11,238,900	MAY
733,900	2,433,100	15,552,200	2,534,200	9,041,200	21,253,400	30	19,568,400	JUN
3,554,200	5,248,900	17,025,100	3,707,000	16,120,500	29,535,200	33	17,211,600	JUL
4,534,200	7,204,900	13,944,300	3,778,800	6,443,300	29,462,200	30	30,687,800	AUG
2,144,700	2,491,500	17,108,000	3,406,500	17,978,100	25,150,700	33	19,970,800	SEP
76,000	0	14,315,200	1,962,700	8,047,800	16,353,900	28	37,649,700	OCT
53,100	56,600	13,970,300	1,786,500	7,604,400	15,866,500	30	13,332,300	NOV
		TOTAL CUBIC FEET			230,442,600		218,795,500	
		TOTAL IN GALLONS			1,723,710,648		1,636,590,340	

SOOS CREEK WATER & SEWER DISTRICT
2004 WATER PURCHASES

SEATTLE CITY TREASURER #97475 — **CHARGE TO #432-204-534-601-33**

STATION #1(SWD #29) CRPL AND 114TH SE	STATION #2 (SWD #28) SE 164TH & 132ND SE	STATION #4 (SWD #27) 148TH SE & SE 192ND	STATION #6 PETROVITSKY & 147TH	GROWTH CONS. CUBIC FEET	TOTAL CONSUMPTION	DAYS IN CYCLE	UTILITY BILLING CONSUMPTION	MONTH USED
83,800	126,000	12,640,900	1,562,700	4,652,000	14,413,400	30	15,969,300	DEC
365,600	68,800	15,778,400	1,983,100	9,590,500	18,195,900	32	12,446,000	JAN
81,200	66,500	13,511,300	1,731,200	6,417,900	15,390,200	29	16,326,000	FEB
1,698,300	2,361,600	11,593,000	1,866,500	8,319,000	17,519,400	33	10,582,800	MAR
189,900	345,800	13,761,300	1,714,100	6,863,200	16,011,100	29	15,886,800	APR
719,500	707,300	14,918,700	2,164,000	7,791,300	18,509,500	29	12,374,900	MAY
695,500	1,476,900	17,845,900	2,548,900	10,355,000	22,567,200	33	18,460,700	JUN
2,864,600	3,824,500	16,143,800	3,444,500	12,862,700	26,277,400	29	18,327,000	JUL
3,106,900	6,015,300	16,027,700	3,757,000	588,000	28,906,900	29	29,404,300	AUG
16,600	850,500	17,492,000	2,386,500	13,573,000	20,745,600	33	19,032,100	SEP
0	307,500	14,880,700	1,761,500	8,643,600	16,949,700	31	21,892,900	OCT
251,700	188,800	12,567,800	1,558,800	6,305,000	14,567,100	28	11,603,500	NOV
			TOTAL CUBIC FEET		230,053,400		202,306,300	
			TOTAL IN GALLONS		1,720,799,432		1,513,251,124	

SOOS CREEK WATER & SEWER DISTRICT
2005 WATER PURCHASES

SEATTLE CITY TREASURER #97475 — **CHARGE TO #432-204-534-601-33**

STATION #1(SWD #29) CRPL AND 114TH SE	STATION #2 (SWD #28) SE 164TH & 132ND SE	STATION #4 (SWD #27) 148TH SE & SE 192ND	STATION #6 PETROVITSKY & 147TH	GROWTH CONS. CUBIC FEET	TOTAL CONSUMPTION	DAYS IN CYCLE	UTILITY BILLING CONSUMPTION	MONTH USED
260,200	109,100	15,826,400	1,807,100	8,241,400	18,002,800	33	23,363,400	DEC
29,500	124,700	15,121,000	1,632,400	8,302,200	16,907,600	31	12,235,100	JAN
152,500	195,200	11,569,400	1,496,500	4,441,300	13,413,600	27	15,741,400	FEB
14,500	58,200	14,950,100	1,851,500	7,673,900	16,874,300	33	10,084,300	MAR
0	0	13,651,500	1,624,000	6,127,600	15,275,500	30	16,471,400	APR
159,500	149,300	12,923,100	1,592,500	4,106,200	14,824,400	28	10,776,400	MAY
91,000	491,500	15,632,200	2,035,000	6,037,500	18,249,700	33	17,054,400	JUN
1,029,500	1,473,300	14,496,800	2,415,000	5,999,900	19,414,600	30	11,606,700	JUL
4,747,000	3,933,300	15,891,600	3,810,500	5,363,500	28,382,400	33	23,607,700	AUG
1,817,500	964,200	14,974,900	2,484,000	13,068,000	20,240,600	29	16,630,100	SEP
0	197,100	14,260,700	2,029,500	8,181,200	16,487,300	29	24,267,300	OCT
56,500	65,200	15,702,700	1,967,500	9,529,800	17,791,900	34	12,631,400	NOV
			TOTAL CUBIC FEET		215,864,700		194,469,600	
			TOTAL IN GALLONS		1,614,667,956		1,454,632,608	

SOOS CREEK WATER & SEWER DISTRICT
2006 WATER PURCHASES

SEATTLE CITY TREASURER #97475

CHARGE TO #432-204-534-601-33

STATION #1(SWD #29) CRPL AND 114TH SE	STATION #2 (SWD #28) SE 164TH & 132ND SE	STATION #4 (SWD #27) 148TH SE & SE 192ND	STATION #6 PETROVITSKY & 147TH	GROWTH CONS. CUBIC FEET	TOTAL CONSUMPTION	DAYS IN CYCLE	UTILITY BILLING CONSUMPTION	MONTH USED
0	160,000	12,870,500	1,685,000	6,110,100	14,715,500	29	11,934,800	JAN
1,667,500	1,853,400	11,487,900	1,844,500	7,881,000	16,853,300	33	15,676,700	FEB
226,000	292,500	12,168,800	1,585,000	5,071,900	14,272,300	28	10,294,700	MAR
59,500	78,900	13,286,200	1,684,000	5,960,700	15,108,600	30	15,803,100	APR
393,000	625,900	13,272,700	1,935,500	5,508,900	16,227,100	28	11,008,000	MAY
348,500	252,500	16,126,600	2,343,000	6,858,400	19,070,600	33	17,962,200	JUN
2,827,000	5,575,700	12,567,400	3,026,000	10,581,400	23,996,100	29	15,912,900	JUL
3,910,500	8,458,900	14,766,800	4,297,500	8,414,800	31,433,700	34	27,213,500	AUG
1,614,000	3,545,000	13,252,400	2,862,500	14,101,300	21,273,900	28	19,957,400	SEP
424,000	0	13,802,200	1,900,000	7,820,100	16,126,200	30	25,372,000	OCT
83,500	121,900	14,265,100	1,786,000	7,994,400	16,256,500	32	11,593,000	NOV
0	112,700	13,668,300	1,393,500	5,413,100	15,174,500	30	17,617,300	DEC
			TOTAL CUBIC FEET		220,508,300		200,345,600	
			TOTAL IN GALLONS		1,649,402,084		1,498,585,088	

SOOS CREEK WATER & SEWER DISTRICT
2007 WATER PURCHASES

SEATTLE CITY TREASURER #97475 — **CHARGE TO #432-204-534-601-33**

STATION #1(SWD #29) CRPL AND 114TH SE	STATION #2 (SWD #28) SE 164TH & 132ND SE	STATION #4 (SWD #27) 148TH SE & SE 192ND	STATION #6 PETROVITSKY & 147TH	GROWTH CONS. CUBIC FEET	TOTAL CONSUMPTION	DAYS IN CYCLE	UTILITY BILLING CONSUMPTION	MONTH USED
870,500	840,800	15,803,100	549,000	9,458,000	18,063,400	34	11,887,300	JAN
0	303,800	12,703,600	1,563,000	5,598,100	14,570,400	28	18,768,500	FEB
0	151,200	13,153,700	1,604,000	5,708,500	14,908,900	29	9,986,400	MAR
0	36,500	13,006,700	1,616,000	5,511,300	14,659,200	29	20,103,700	APR
22,500	423,500	14,953,600	2,127,000	6,808,400	17,526,600	32	10,865,800	MAY
544,000	1,112,400	14,800,000	2,339,500	6,583,700	18,795,900	29	18,992,700	JUN
2,991,000	3,690,800	16,559,200	3,387,000	13,213,300	26,628,000	34	17,468,300	JUL
2,432,500	2,470,800	2,795,500	14,000,100	(1,320,000)	21,698,900	29	24,712,600	AUG
3,063,500	0	13,782,800	2,393,000	12,066,700	19,239,300	29	14,653,300	SEP
0	1,000	13,609,800	1,781,500	7,086,200	15,392,300	29	21,515,200	OCT
0	80,100	14,739,400	1,780,900	8,338,300	16,600,400	33	11,639,900	NOV
0	1,100	13,000,900	1,565,500	4,806,100	14,567,500	29	16,613,200	DEC
			TOTAL CUBIC FEET		212,650,800		197,206,900	
			TOTAL IN GALLONS		1,590,627,984		1,475,107,612	

SOOS CREEK WATER & SEWER DISTRICT
2008 WATER PURCHASES

SEATTLE CITY TREASURER #97475 — **CHARGE TO #432-204-534-601-33**

STATION #1(SWD #29) CRPL AND 114TH SE	STATION #2 (SWD #28) SE 164TH & 132ND SE	STATION #4 (SWD #27) 148TH SE & SE 192ND	STATION #6 PETROVITSKY & 147TH	GROWTH CONS. CUBIC FEET	TOTAL CONSUMPTION	DAYS IN CYCLE	UTILITY BILLING CONSUMPTION	MONTH USED
0	6,700	14,465,600	1,762,600	7,629,500	16,234,900	32	10,209,000	JAN
0	4,600	13,505,400	1,634,100	6,171,800	15,144,100	30	16,102,300	FEB
0	500	13,178,000	1,640,100	5,618,200	14,818,600	30	11,763,500	MAR
0	100	13,859,000	1,742,300	6,453,500	15,601,400	32	16,669,400	APR
0	295,000	10,532,600	1,649,200	1,758,600	12,476,800	28	11,027,500	MAY
0	449,300	10,089,000	1,983,500	309,600	12,521,800	30	15,534,700	JUN
2,490,400	3,774,600	13,134,200	3,468,400	9,452,900	22,867,600	34	13,612,100	JUL
1,399,000	3,346,900	13,198,200	2,870,900	(2,203,900)	20,815,000	28	24,341,600	AUG
831,800	76,400	15,095,600	2,318,000	11,149,200	18,321,800	30	16,018,000	SEP
2,900	104,800	15,361,400	1,835,300	8,998,300	17,304,400	33	20,320,600	OCT
44,200	173,100	13,186,900	1,593,800	6,735,900	14,998,000	30	11,073,600	NOV
2,200	2,500	15,228,900	1,788,400	7,260,600	17,022,000	33	16,551,000	DEC
			TOTAL CUBIC FEET		198,126,400		183,223,300	
			TOTAL IN GALLONS		1,481,985,472		1,370,510,284	

Corrected Sept 08

NON-REVENUE WATER **8.133%**

SOOS CREEK WATER & SEWER DISTRICT
2009 WATER PURCHASES

SEATTLE CITY TREASURER #97475

CHARGE TO #432-204-534-601-33

STATION #1(SWD #29) CRPL AND 114TH SE	STATION #2 (SWD #28) SE 164TH & 132ND SE	STATION #4 (SWD #27) 148TH SE & SE 192ND	STATION #6 PETROVITSKY & 147TH	GROWTH CONS. CUBIC FEET	TOTAL CONSUMPTION	DAYS IN CYCLE	UTILITY BILLING CONSUMPTION	MONTH USED
2,400	3,100	12,943,800	1,502,800	5,846,700	14,452,100	28	12,069,600	JAN
0	0	13,805,500	1,598,300	6,431,500	15,403,800	31	15,177,800	FEB
22,000	133,400	11,872,400	1,404,900	4,232,300	13,432,700	28	9,985,000	MAR
223,700	0	13,980,000	1,667,600	6,723,400	15,871,300	32	15,355,300	APR
65,200	604,200	11,686,000	1,480,200	3,117,400	13,835,600	27	9,996,300	MAY
978,000	3,813,300	14,243,700	3,229,900	10,052,700	22,264,900	35	16,164,800	JUN
988,500	5,593,700	13,652,600	3,347,700	10,167,800	23,582,500	29	15,298,100	JUL
2,776,300	5,675,200	13,962,500	3,539,400	2,934,500	25,953,400	31	27,378,700	AUG
908,600	601,300	16,997,500	2,747,100	14,081,900	21,254,500	34	18,277,100	SEP
0	0	12,381,900	1,601,300	5,677,100	13,983,200	26	23,165,600	OCT
0	0	13,399,100	1,650,700	6,787,700	15,049,800	30	12,682,600	NOV
1,700	2,500	15,011,200	1,863,700	7,117,700	16,879,100	33	14,833,500	DEC
			TOTAL CUBIC FEET		211,962,900		190,384,400	
			TOTAL IN GALLONS		1,585,482,492		1,424,075,312	

Water Loss 10.18%

Modified 02/25/2010

SOOS CREEK WATER & SEWER DISTRICT
2010 WATER PURCHASES

SEATTLE CITY TREASURER #97475 — **CHARGE TO #432-204-534-601-33**

STATION #1(SWD #29) CRPL AND 114TH SE	STATION #2 (SWD #28) SE 164TH & 132ND SE	STATION #4 (SWD #27) 148TH SE & SE 192ND	STATION #6 PETROVITSKY & 147TH	GROWTH CONS. CUBIC FEET	TOTAL CONSUMPTION	DAYS IN CYCLE	UTILITY BILLING CONSUMPTION	MONTH USED
1,600	1,800	13,453,200	1,641,700	6,492,900	15,098,300	29	10,727,200	JAN
0	0	13,063,000	1,676,500	5,767,200	14,739,500	30	16,413,300	FEB
99,700	300	11,790,300	1,513,400	4,203,300	13,403,700	28	10,062,400	MAR
376,300	2,490,100	9,976,700	1,888,500	5,583,700	14,731,600	34	12,858,600	APR
71,800	411,500	9,390,200	743,500	-101,200	10,617,000	28	8,912,000	MAY
16,000	0	12,039,200	2,770,200	2,613,200	14,825,400	34	16,598,300	JUN
842,300	2,689,300	10,594,400	2,227,200	2,938,500	16,353,200	27	13,376,200	JUL
1,167,500	3,111,600	18,762,500	3,684,600	3,707,300	26,726,200	35	21,176,700	AUG
117,800	0	14,482,800	2,057,000	9,485,000	16,657,600	28	16,157,600	SEP
0	0	13,632,300	1,699,500	7,025,700	15,331,800	30	19,358,100	OCT
0	0	12,678,100	1,461,500	5,877,500	14,139,600	28	9,467,900	NOV
81,400	0	13,026,500	1,586,500	4,933,000	14,694,400	28	14,394,300	DEC
			TOTAL CUBIC FEET		187,318,300		169,502,600	
			TOTAL IN GALLONS		1,401,140,884		1,267,879,448	

Water Loss 9.51%

Modified 01/11/2011

APPENDIX M

King County

King County Water Reclamation Evaluation
For Systems with 1,000 or more Connections

In 2003, Chapter 90.46 of the Revised Code of Washington (RCW) was amended to require public water systems serving 1,000 or more connections to evaluate opportunities for reclaimed water when completing their water system plans.

Please use this checklist, including the inventory form, to ensure that your water system plan includes sufficient information about opportunities for reclaimed water and your system's efforts to develop those opportunities. If a question is not applicable or you do not know, you need only say that as you answer the question(s). King County will consider the checklist to have been completed if it is filled in, even if the utility states that it is not aware of any reclaimed water opportunities within its service area.

Water System Name: Soos Creek Water & Sewer District **Date: 8/30/11**

PWS ID# 40100

1. Identify potential reclaimed water users by including the following:
   - An inventory of large water users served by the water utility (at a minimum the top 20). **(See attached list of top 50 Consumers in 2010)**
     - Name
     - Address
     - Estimated annual water usage (if information available, separate potable uses from non-potable uses).
     - Water uses not requiring potable water, if known.
   - Identification of any other customers that might be likely candidates for reclaimed water use, if known. **None**
   - An inventory of known large self-supplied water users, if any, within the water utilities service boundaries. **None**
     - Site Owner name
     - Site Owner address
     - Estimated annual water usage (if information available, separate potable uses from non-potable uses)
     - Water uses not requiring potable water
   - Identification of any other customers that might be likely candidates for reclaimed water use, if known. **None**
   - Identification of self-supplied water users (especially those near wastewater facilities) that might be potential candidates for reclaimed water use. **None**
   - Identification of any potential environmental enhancement locations (wetlands enhancement, aquifer recharge, stream flow augmentation) that might be candidates for reclaimed water use. **None**
     - Site name
     - Site address
     - Estimated potential water usage (if known)

2. Do you have water rights that are limited by instream flows? **Yes – by contract with Seattle Public Utilities for our water supply.** If so, is there a known potential opportunity for reclaimed water to enhance instream flows? **Not in the Soos Creek Water & Sewer District service area**

3. If you are a city or town, or providing service to a city or town, has the city or town made commitments within resource management plans, such as salmon recovery plans, where there is a potential opportunity for reclaimed water to assist in meeting commitments? **Not to our knowledge**

4. If you are in a groundwater management area, or withdraw from a declining aquifer, is there a potential to use reclaimed water to replenish or maintain the aquifer water levels? **n/a**

5. If you are pursuing, or planning to pursue, new or additional water rights, is there an opportunity to use reclaimed water for mitigation of those new water rights? **n/a**

6. If reclaimed water opportunities are not available, include a brief description of your interaction with any wastewater facility (or other entity within the area you serve that may be a generator of reclaimed water) to evaluate opportunities to develop reclaimed water. **n/a**

7. If water reclamation is mandated for this water system through local government agreement, contract, local regulations, ordinances, or other mechanism, please provide a copy of the governing mechanism. **n/a**

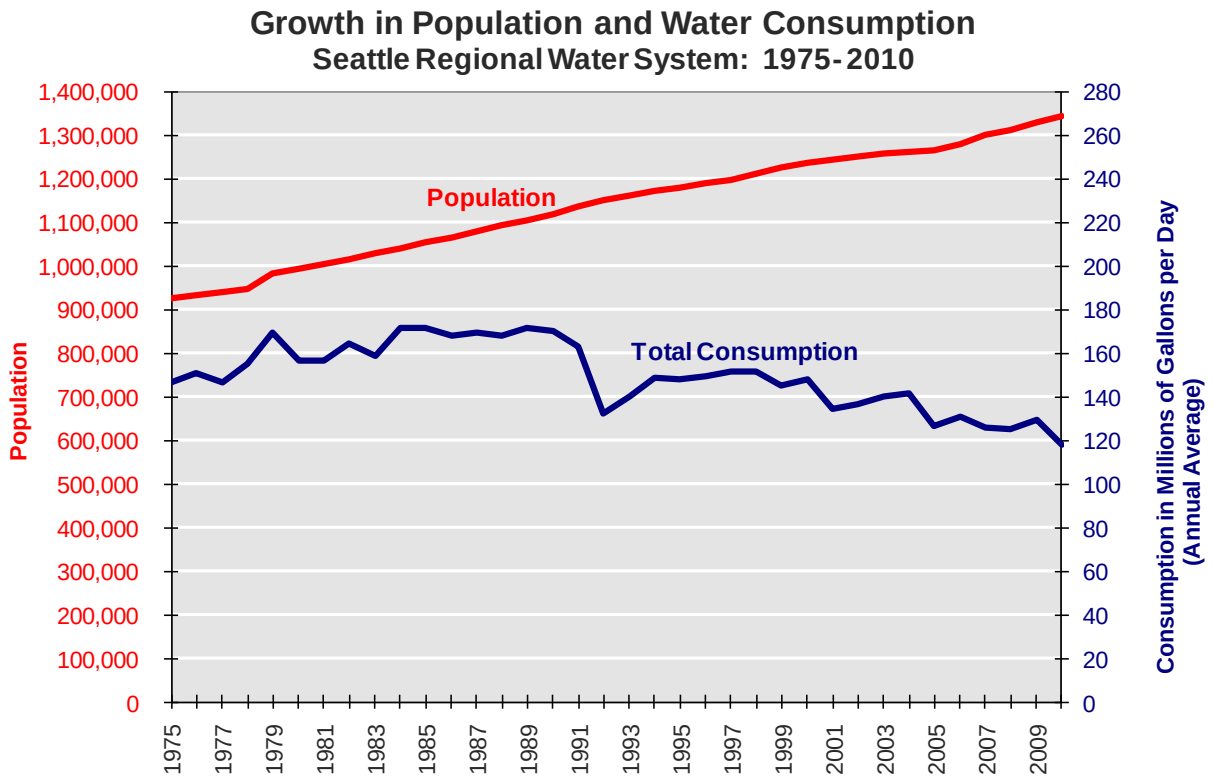
Inventory of Water Users and Identification of Potential Reclaimed Water Users

Site Owner or Site Name	Address	Estimated Annual Water Use	Water Uses[1]	Potential Reclaimed Water Customer?
(See Attached List of the Top 50 Consumers in 2010)				

(In addition to Section 6.2 of the current Water Comprehensive Plan, Please include the following information)

Two factors that must be overcome to develop reclaim water usage in Soos Creek's service area:

1. Cost of potable water is less expensive than water reuse.
2. The District's conservation program has been effective and we have reduced our consumption in the last ten years to the extent that our water supply has increased even though we have had significant growth. See graphs below.



[1] See Washington State Reclamation and Reuse Standards, September 1997, Section 1, Articles 1-5 for allowable uses of reclaimed water. http://www.ecy.wa.gov/PROGRAMS/WQ/reclaim/standards.html

Top 50 Consumers 2010

1/20/2011 9:47:01AM

	Account #		* Total Consumption
1	0708-050600	11500 SE 208TH ST	7,122
2	0708-019100	22425 BENSON RD S	5,812
3	0708-018600	21700 107TH AVE SE	4 625
4	0708-018620	22111 108TH AVE SE	3,774
5	0708-002334	10404 SE 174TH ST BLDG B	3,655
6	0708-011025	LK YOUNGS HOUSING	3,460
7	0708-002870	10413 SE 174TH ST	3,163
8	0708-002330	10406 SE 174TH ST UNIT A	2,889
9	0708-017040	20617 108TH AVE SE	2,871
10	0708-000371	PETROVITSKY PARK - SPRINKLER	2,647
11	0708-002860	10411 SE 174TH ST	2,583
12	0708-002855	10409 SE 174TH ST	2,533
13	0708-002850	10407 SE 174TH ST	2,481
14	0708-019800	20942 108TH AVE SE	2,476
15	0708-019817	20830 108TH AVE SE	2,459
16	0708-006424	17923 108TH AVE SE	2,259
17	0708-006418	17801 108TH AVE SE	2,204
18	0708-000300	17007 SE 184TH ST	2,146
19	0708-050415	12430 SE 208TH ST	1,972
20	0708-006380	17941 108TH AVE SE	1,960
21	0708-006505	17735 105TH PL SE	1,893
22	0708-002650	17406 103RD AVE SE	1,879
23	0708-002875	10415 SE 174TH ST	1,761
24	0708-002338	10400 SE 174TH ST BLDG C	1,717
25	0708-017035	20603 108TH AVE SE	1,629
26	0708-021400	11645 SE 208TH ST	1,614
27	0708-006397	17801 108TH AVE SE-BLDG K	1,600
28	0708-019928	11101 SE 208TH ST #10	1,575
29	0708-002670	17406 103RD AVE SE	1,568
30	0708-000708	12210 SE PETROVITSKY RD	1,546
31	9920-000550	VLG @ SOOS CREEK IRRIGATION ME	1,515
32	0708-017020	20450 106TH AVE SE	1,507
33	0708-018200	10200 SE 216TH ST	1,503
34	0708-000675	LINDBERG HIGH SCHOOL	1,481
35	0708-002955	17423 108TH AVE SE	1,475
36	0708-000700	12210 SE PETROVITSKY RD	1,456
37	0708-004354	16818 108TH AVE SE	1,437
38	0708-019660	10918 SE 211TH PL	1,436
39	0708-004350	16818 108TH AVE SE	1,423
40	0708-000990	17128 120TH TER SE	1,417
41	0708-009224	19235 108TH AVE SE	1,387
42	0708-009222	19221 108TH AVE SE	1,385
43	0708-001008	11813 SE 171ST LN	1,384
44	0708-002336	10402 SE 174TH ST BLDG D	1,381
45	0708-017032	10616 SE 205TH ST	1,363
46	0708-000732	12210 SE PETROVITSKY RD	1,358
47	0708-006495	17735 105TH PL SE	1,357
48	0708-000784	12210 SE PETROVITSKY RD-B	1,357
49	0708-005018	11100 SE PETROVITSKY RD-BLDG J	1,353
50	0708-000940	MISSION RIDGE - Q	1,345

* Consumption in CCF

APPENDIX N

Soos Creek Water and Sewer District
2012 Water Comprehensive Plan Update
Fire Hydrant Flow Test Data Spreadsheet

			Hydrant Flow Test Data													Tank Levels								Booster Pump Data																	
						Pressure Reading										Reservoir 1		Tank 2		Tank 5		Tank 6		Pump Station No. 1			Pump Station No. 2			Pump Station No. 4			Pump Station No. 5			Pump Station No. 6		
Test #	Location	Pressure Zone	Date/Time (start)	Date/Time (finish)	Hydrant Flow (gpm)	Before Test (psi)			During Test (psi)			After Test (psi)			Pressure Change (psi)			Tank Level Before (ft)	Tank Level After (ft)	Tank Level Before (ft)	Tank Level After (ft)	Tank Level Before (ft)	Tank Level After (ft)	Pump Rate Before Test	Pump Rate During Test	Pump Rate After Test	Pump Rate Before Test	Pump Rate During Test	Pump Rate After Test	Pump Rate Before Test	Pump Rate During Test	Pump Rate After Test	Pump Rate Before Test	Pump Rate During Test	Pump Rate After Test	Pump Rate Before Test	Pump Rate During Test	Pump Rate After Test
1	8" DI on 129th Pl north of SE 159th St	627	6/10/2013	6/10/2013	Q_1	P_{1A}	P_{1B}	P_{1C}	P_{1A}	P_{1B}	P_{1C}	P_{1A}	P_{1B}	P_{1C}	P_{1A}	P_{1B}	P_{1C}																						
			3:00pm	3:06pm	908 29psi	73	76	71	61	66	63	73	76	71	12	10	8	26	26	89.9	89.9	81.9	81.9																
			Model	Test#1		71	76.2	70.1	58.6	65.7	62.5				12.4	10.5	7.6																						
2	8" CI southwest of Pump Station 2 on Renton Elementary School/Lindbergh High School property	627	6/20/2013	6/20/2013	Q_2	P_{2A}	P_{2B}	P_{2C}	P_{2A}	P_{2B}	P_{2C}	P_{2A}	P_{2B}	P_{2C}	P_{2A}	P_{2B}	P_{2C}																						
			2:42pm	2:48pm	1273 57psi	90	Hydrant damaged - Not available for testing	85	86		81	90		85	4		4	22.3	22.3	84.6	84.6	76.8	76.8																
			Model	Test#1		88.4		82.9	82.2		78				6.2		4.9																						
3	8" DI on Main Ave and S 35th St	627	5/1/2013	5/1/2013	Q_3	P_{3A}	P_{3B}	P_{3C}	P_{3A}	P_{3B}	P_{3C}	P_{3A}	P_{3B}	P_{3C}	P_{3A}	P_{3B}	P_{3C}																						
			10:00 AM	10:10am	1646 95psi	150	130	140	141	122	131	150	130	140	9	8	9	20.5	20.5	87.7	87.6	79.6	79.5																
			Model	Test#1		148.8	126.7	137.1	137.7	116.7	127.2				11.1	10	9.9																						
4	8" DI in Vantage Glen Mobile Home Park	627	5/1/2013	5/1/2013	Q_4	P_{4A}	P_{4B}	P_{4C}	P_{4A}	P_{4B}	P_{4C}	P_{4A}	P_{4B}	P_{4C}	P_{4A}	P_{4B}	P_{4C}																						
			12:55 PM	1:05 PM	1317 61psi	116	108	106	113	103	100	115	107	105	3	5	6	20.4	20.3	86.7	86.6	78.7	78.6																
			Model	Test#1		113.1	107.1	104.1	107.8	101.9	97.9				5.3	5.2	6.2																						
5	8" DI on Lake Desire Dr SE	710	4/25/2013	4/25/2013	Q_5	P_{5A}	P_{5B}	P_{5C}	P_{5A}	P_{5B}	P_{5C}	P_{5A}	P_{5B}	P_{5C}	P_{5A}	P_{5B}	P_{5C}							74	74												Pumps off		
			10:40am	10:46am	908 29psi	86	81	76	68	66	64	86	81	76	18	15	12																						
			Model	Test#1		84.8	80.4	74.8	67.6	66.8	65.2				17.2	13.6	9.6																						
6*	8" DI on S. 47th St/S 48th St/102nd Ave SE	627	4/30/2013	4/30/2013	Q_6	P_{6A}	P_{6B}	P_{6C}	P_{6A}	P_{6B}	P_{6C}	P_{6A}	P_{6B}	P_{6C}	P_{6A}	P_{6B}	P_{6C}																						
			9:04am	9:12am	1216 52psi	93	92	109	81	82	97	93	92	109	12	10	12	21.9	21.8	90.4	90.2	82	81.9																
			Model	Test#1		92.1	91.2	105.3	76.5	74.7	87.9				15.6	16.5	17.4																						
7	6" AC on SE 186th St between 108th Ave SE and 116th Ave SE	627 Q7 and P7B switched	6/11/2013	6/11/2013	P_{7B}	P_{7A}	Q7	P_{7C}	P_{7A}	Q7	P_{7C}	P_{7A}	Q7	P_{7C}	P_{7A}	Q7	P_{7C}																						
			11:45am	11:55am	924 30psi	64	52	63	62	52	62	64	52	63	2	0	1	21.5	21.5	85.5	85.5	77.6	77.6																
			Model	Test#1		64.7	49.7	62.6	62.8	48.7	61.2				1.9	1	1.4																						
8	Tests not performed at this location				Q_8	P_{8A}	P_{8B}	P_{8C}	P_{8A}	P_{8B}	P_{8C}	P_{8A}	P_{8B}	P_{8C}																										
9	6" AC on SE 203rd Pl /127th Pl SE/SE 202nd Pl /130th Ave SE/SE 201st St	627	4/29/2013	4/29/2013	Q_9	P_{9A}	P_{9B}	P_{9C}	P_{9A}	P_{9B}	P_{9C}	P_{9A}	P_{9B}	P_{9C}	P_{9A}	P_{9B}	P_{9C}																						
			2:56 PM	3:05 PM	843 25psi	75	68	75	62	58	70	75	68	75	13	10	5	24.7	24.7	90.7	90.7	83	83																
			Model	Test#1		77.6	66.1	71.7	61.6	57.4	68.2				16	8.7	3.5																						
10	6" AC on SE 204th Pl/147th Ave SE	627	4/29/2013	4/29/2013	Q_{10}	P_{10A}	P_{10B}	P_{10C}	P_{10A}	P_{10B}	P_{10C}	P_{10A}	P_{10B}	P_{10C}	P_{10A}	P_{10B}	P_{10C}																						
			1:45 PM	1:50 PM	533 10psi	52	52	60	30	32	50	52	52	60	22	20	10	25	25	90.7	90.7	83	83																
			Model	Test#1		50.5	49.2	55.7	27.5	32.1	44.4				23	17.1	11.3																						
11	6" AC on 142nd Ave SE/SE 213th St/143rd Ave SE	710	4/25/2013	4/25/2013	Q_{11}	P_{11A}	P_{11B}	P_{11C}	P_{11A}	P_{11B}	P_{11C}	P_{11A}	P_{11B}	P_{11C}	P_{11A}	P_{11B}	P_{11C}							73	73												Pumps off		
			11:50 AM	11:56 AM	716 18psi	80	90	80	44	59	44	80	90	80	36	31	36																						
			Model	Test#1		77.1	89.7	79.7	44.2	61.2	45.7				32.9	28.5	34																						
12	8" DI on SE 220th Pl @ 110th Ave SE	627	6/10/2013	6/10/2013	Q_{12}	P_{12A}	P_{12B}	P_{12C}	P_{12A}	P_{12B}	P_{12C}	P_{12A}	P_{12B}	P_{12C}	P_{11A}	P_{11B}	P_{11C}																						
			12:55pm	1:00pm	984 34psi	70	72	74	65	70	72	70	72	74	5	2	2	26.3	26.3	90.8	90.8	82.5	82.5																
			Model			68	70.9	72.2	63	69.3	70.7				5	1.6	1.5																						
13	6" CI/AC/DI on SE 227th Pl between 109th Pl SE and 116th Ave SE	627	6/10/2013	6/10/2013	Q_{13}	P_{13A}	P_{13B}	P_{13C}	P_{13A}	P_{13B}	P_{13C}	P_{13A}	P_{13B}	P_{13C}	P_{13A}	P_{13B}	P_{13C}																						
			10:00am	10:10am	860 26psi	80	81	69	71	73	63	80	81	69	9	8	6	26.6	26.6	92.8	92.8	84.5	84.5																
			Model	Test#1		77.3	76.4	70.4	67.4	69.4	64.8				9.9	7	5.6																						
14	Tests not performed at this location				Q_{14}	P_{14A}	P_{14B}	P_{14C}	P_{14A}	P_{14B}	P_{14C}	P_{14A}	P_{14B}	P_{14C}																										

Note: Turn off pumps at all Pump Station No. 1, Pump Station No. 2, and Pump Station No. 4 for all tests.

Note: Data not required for any cell blocked out in gray.

*Location 6 calibration results differed significantly from the field data. This is likely due to improper guage readings taken at the time of the test.