CHAPTER 2

REGULATORY REQUIREMENTS

INTRODUCTION

Water system planning includes an analysis of the District's ability to comply with the applicable regulatory requirements while providing a high level of service for existing and future customers. These requirements are outlined in various state and federal legislation that are monitored and enforced by a number of agencies. This chapter presents the various legislation, regulations, permits, agencies, and design standards that may affect District water operations. The discussion presented here is general in nature; specific issues will be addressed as they occur within the context of the following chapters.

LEGISLATION, REGULATIONS, AND PERMITS

In this section, some of the various state and federal laws and regulations that may affect District operations are discussed, as well as other relevant permits, programs, and regulations.

WASHINGTON ADMINISTRATIVE CODE

The Washington Administrative Code (WAC) provides requirements and regulations for State agencies and boards. With respect to water systems, its purpose is to define basic regulatory requirements and to protect the health of consumers using public drinking water supplies. These include adequate design, construction, sampling, management, maintenance, and operation practices.

KING COUNTY CODE

Title 13 of the King County Code establishes several rules that apply to water and sewer systems. The primary purposes are to assure that sewer and water system comprehensive plans are consistent with adopted county plans, policies and land use controls, to provide information to assist in the preparation of future county plans and policies, and to provide information to assist in the review of new development proposals and right-of-way construction permits.

ENDANGERED SPECIES ACT

In 1999, the National Marine Fisheries Service (NMFS) listed the Puget Sound Chinook as "threatened," and the United States Fish and Wildlife Service (USFWS) listed the Bull Trout as "threatened" under the Endangered Species Act (ESA). Lake Washington was designated as critical habitat for Chinook salmon on September 2, 2005. North Lake

Washington tributaries were excluded from the designation. Lake Washington was also designated as critical habitat for Puget Sound Bull Trout on September 26, 2005; Sammamish River was excluded from this designation. On May 7, 2007, the Puget Sound distinct population segment of steelhead trout was listed as threatened and the critical habitat designated on January 14, 2013. ESA listings are expected to significantly impact activities that affect salmon and trout habitat, such as water use, land use, construction activities, and wastewater disposal. Impacts to the District may include longer timelines for permit applications and more stringent regulation of construction impacts and activities in riparian corridors.

Subsequent to the ESA listings of salmon, steelhead, and trout species in the Puget Sound region, state and local government officials, in conjunction with the federal ESA-Regulatory services (i.e., NMFS/USFWS) developed a document entitled the "Shared Strategy." The Shared Strategy is a regional salmon recovery plan designed to restore populations of ESA-listed salmonid species in the Puget Sound area through use of both voluntary and regulatory-based actions. Implementation of the Shared Strategy by state and local governments is now underway, with the delisting of ESA-listed salmonid species as its ultimate goal.

FEDERAL CLEAN WATER ACT

The Federal Water Pollution Control Act is the principal law regulating the water quality of the nation's waterways. Although originally enacted in 1948, it was significantly revised in 1972 and 1977, when it was given the common title of the "Clean Water Act." The Clean Water Act has been amended several times since 1977. The 1987 amendments replaced the Construction Grants program with the State Revolving Fund (SRF), which provides low-cost financing for a range of water quality infrastructure projects.

A 401 Water Quality Certification is required under the Clean Water Act for any activity that may result in discharge to surface waters, including excavation activities that occur in streams, wetlands, or other waters of the nation. Figure 3-2 identifies the wetland areas in and around the District.

Section 404 of the Clean Water Act regulates discharges of fill or dredged materials in wetlands, including any related draining, flooding, and excavation. Pipeline and pump station projects in wetlands will require a Section 404 permit, in addition to any related local permits. Activities impacting greater than 1/3 of an acre will also require a Section 401 Certification.

FLOODPLAIN DEVELOPMENT PERMIT

Local governments that are participating in the National Flood Insurance Program are required to review projects (including water system facilities) in a mapped flood plain and impose conditions to reduce potential flood damage from floodwater. A Floodplain

Development Permit is required prior to construction. Areas where a Floodplain Development Permit may be required include the flood hazard areas shown in Figure 3-3. Within the District's service area boundary, these areas are primarily located adjacent to the Sammamish River and Lake Washington.

GROWTH MANAGEMENT ACT

The 1990 Washington State Growth Management Act (GMA) established requirements for counties and cities experiencing or predicting a high rate of growth to prepare comprehensive plans for the population growth projected to occur within an established Urban Growth Area (UGA) over a 20-year planning horizon. The GMA also requires cities to classify critical areas (wetlands, aquifer recharge areas, fish and wildlife habitat areas, geologically hazardous areas, and frequently flooded areas) and to establish development regulations to protect these areas.

The District is not required to plan under the GMA; however, the District's Water System Comprehensive Plan must be approved by the Department of Health (DOH). In addition, the GMA requires that the District's plans be consistent with planning efforts of local governments within the District's boundary.

HYDRAULIC PROJECT APPROVAL

The Revised Code of Washington (RCW) directs the Washington Department of Fish and Wildlife (WDFW) to "preserve, protect, perpetuate, and manage" the fish and wildlife species of the state as its paramount responsibility (RCW 77.04.012). Under RCW 77.55, any construction or work that uses, diverts, obstructs, or changes the natural bed or flow of state waters requires a Hydraulic Project Approval (HPA) issued by WDFW. The purpose of the HPA program is to ensure that hydraulic projects are completed in a manner that prevents damage to public fish and shellfish resources and their habitats. To ensure that the HPA program complies with the Endangered Species Act (ESA), WDFW is developing a programmatic multispecies Habitat Conservation Plan (HCP) to obtain Incidental Take Permits from the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service (also known as NOAA Fisheries), in accordance with Section 10 of the ESA. For WDFW, the objective is to avoid and/or minimize the incidental take of those aquatic species potentially considered for coverage under the HCP resulting from activities conducted under an HPA.

LOCAL PERMITS

The District has agreements with the cities within its service area boundary for the construction and maintenance of facilities in their respective rights-of-way. Under these agreements, a Right-of-Use permit is issued that specifies construction standards such as traffic control, work hours, and safety issues, as well as design and restoration standards.

MUNICIPAL WATER LAW

The Municipal Water Supply – Efficiency Requirements Act, Chapter 5, Laws of 2003 (MWL), amended several provisions of the State Water Code (RCW Chapters 90.03, 90.46, etc.) to provide municipal water systems more flexibility in managing their systems and greater certainty regarding the legal status of their water rights. In addition to providing these benefits, the MWL imposes new conservation and water use efficiency requirements. The Municipal Water Law, among other things, directed DOH to develop the Water Use Efficiency Rule (WUE Rule), which is outlined in the Water Use Efficiency Guidebook. The latest update to the WUE Guidebook was released in January 2011 and provides guidelines and requirements regarding the development and implementation of conservation programs for public water systems.

Under the MWL, DOH was expressly charged with ensuring that new services described in water system plans are consistent with adopted local comprehensive plans and development regulations of the county or other general purpose government(s) where a municipal system may serve. To this end, DOH has developed a Consistency Statement to be signed by utility officials and attached to water system plans (and updates) for review and concurrence by county officials. Because the District provides water in multiple jurisdictions, including Kenmore, Bothell, Woodinville, Lake Forest Park, and Kirkland, it must review its water system plan updates to ensure consistency with the comprehensive land use plans of those jurisdictions. Municipal water systems must also delineate where appropriate, retail, future, and wholesale service areas in their water system plan updates.

NATIONAL ENVIRONMENTAL POLICY ACT

The National Environmental Policy Act (NEPA) was established in 1969 and requires federal agencies to determine environmental impacts on all projects requiring federal permits or funding. If the project is determined to be environmentally insignificant, a Finding of No Significant Impact is issued, otherwise an Environmental Impact Statement (EIS) is required. It is not anticipated that District activities will fall under the National Environmental Policy Act. However, use of the Drinking Water State Revolving Fund loans requires compliance with the similar State Environmental Review Process (SERP).

RECLAIMED WATER REGULATIONS AND STANDARDS

Reclaimed water is the effluent derived in any part from wastewater from a wastewater treatment system that has been adequately and reliably treated, so that it is no longer considered wastewater and is suitable for a beneficial use or a controlled use that would not otherwise occur. Regulations governing the use of reclaimed water are outlined in RCW 90.46. DOH and the Department of Ecology (Ecology) have jointly issued standards for reclaimed water treatment and reuse in a document entitled "Water Reclamation and Reuse Standards." The legislature has declared that "the utilization of

reclaimed water by local communities for domestic, agricultural, industrial, recreational, and fish and wildlife habitat creation and enhancement purposes (including wetland enhancement) will contribute to the peace, health, safety, and welfare of the people of the State of Washington." Reuse options for the District are addressed in Chapter 9.

SAFE DRINKING WATER ACT

The Federal Safe Drinking Water Act (SDWA) was passed in 1974 and amended in 1986 and 1996. Washington State's adoption of the SDWA is outlined in Chapter 70.119A of the Revised Code of Washington (RCW). All public water systems as defined by the Environmental Protection Agency (EPA) are affected by the SDWA. A "Group A" public water system is defined as one that serves piped water to at least 25 people or 15 connections for at least 60 days per year. The SDWA contains regulations regarding water quality, sampling, treatment, and public notification requirements that are applicable to the District.

SHORELINE MANAGEMENT ACT PERMIT

The Shoreline Management Act of 1971, Chapter 90.58 RCW, established the requirement for a Shoreline Substantial Development Permit on all projects of $2,500 or more that are located on the water or shoreline area. Shorelines are lakes or reservoirs of 20 acres or greater, streams with a mean annual flow of 20 cubic feet per second or greater, marine waters, and an area inland 200 feet from the ordinary high water mark. Based on these criteria, areas within the District that are classified as shoreline are those areas within 200 feet of Lake Washington, the Sammamish River, and Swamp and Juanita Creeks.

STATE ENVIRONMENTAL POLICY ACT

The WAC 173-240-050 requires a statement in all water comprehensive plans regarding proposed projects in compliance with the State Environmental Policy Act (SEPA), if applicable. The capital improvements proposed in this Plan will fall under SEPA regulations. A non-project SEPA checklist is included in Appendix C of the Plan to comply with the requirements of SEPA. In most cases, a Determination of Non-Significance is issued; however, if a project will have a probable significant adverse environmental impact an Environmental Impact Statement will be required. Utility lines smaller than 12 inches in diameter are categorically exempted from SEPA review; however, the District may wish to prepare a SEPA review for construction projects in environmentally sensitive areas.

WATER RIGHTS

A water right is the legal authorization to use a specified amount of public water for a certain beneficial purpose. Washington State law requires that permission in the form of a

water right permit, certificate, or valid claim be granted for most appropriations of public water. Water rights are required to ensure proper allocation and management of water resources. Water rights are issued by the Ecology. The following sections provide definitions of key terms with regard to water rights.

Water Right Claim

A water right claim is a statement of claim to water use that began before the State Water Codes were adopted and is not covered by a permit or certificate. A claim may represent a valid water right if it describes the use of a surface water source that began before 1917 or the use of groundwater source that began before 1945. It can also represent a water right claim that was filed with the State during an open filing period designated under RCW Chapter 90.14 or is covered by the groundwater exemption.

Water Right Permit

A water right permit is issued by Ecology to water right applicants subject to an investigation of the following issues: (1) is water available; (2) will the water proposed to be applied to a recognized beneficial use; (3) is the appropriation of water in the public interest; and (4) will the exercise of the right impair existing rights. A water right may be beneficially used by a permittee subject to the place, purpose of use, point of withdrawal of the source, development schedule, and other conditions prescribed by the agency. A water right permit will remain in effect until a Proof of Appropriation is submitted at the end of the development schedule that documents the quantities perfected through actual use. At this time, a water right certificate may be issued, or a permit extension may be requested for good cause. Prolonged non-use of a municipal right may result in a determination of abandonment.

Water Right Certificate

A water right certificate is issued by Ecology upon submittal to Ecology of a Proof of Appropriation that documents that the quantities authorized by a permit, and/or lesser quantities, have been beneficially used and perfected pursuant to actual use by the permittee. The water right certificate is a legal document recorded at the county auditor's office. Issuance of the water right certificate is the final step in obtaining a water right.

REGULATORY AGENCIES

The above regulations, permits, and programs are administered by various local, state, and federal agencies. The history, purpose, and authority of these agencies are discussed below.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

The stated mission of the Environmental Protection Agency (EPA) is to protect human health and to safeguard the natural environment upon which life depends. The EPA's purpose includes protecting all Americans from significant human health risks, ensuring that national environmental efforts are based on the best available scientific information, ensuring that federal laws are enforced fairly, and that environmental protection contributes to making our communities and ecosystems diverse, sustainable, and economically productive. Ecology currently administers the State Revolving Fund (SRF) loans for the EPA.

UNITED STATES FISH AND WILDLIFE SERVICE

Under the ESA, USFWS is responsible for the protection of all non-marine life, such as Bull Trout. Although USFWS may choose to invoke the blanket prohibitions of Section 9, the "threatened" status of bull trout allows more flexibility to establish regulations designed to protect these species. These regulations, known collectively as a Section 4(d) rule, outline activities likely to result in a "take" of a threatened species, as well as exempted activities. Many jurisdictions in Washington have updated their infrastructure and road maintenance protocol in accordance with the 4(d) rule which affords them greater regulatory flexibility.

NATIONAL MARINE FISHERIES SERVICE

Under the ESA, NMFS is responsible for the protection of marine life, including marine mammals and anadromous salmon, such as the Puget Sound Chinook. When a species is listed as "endangered," the prohibitions against "take" of the species are immediate under Section 9 of the ESA of the Act. Although NMFS may choose to invoke the blanket prohibitions of Section 9, the "threatened" status of the Puget Sound Chinook and Puget Sound Steelhead allows more flexibility to establish regulations designed to protect these species. These regulations, known collectively as a Section 4(d) rule, outline activities likely to result in a "take" of a threatened species, as well as exempted activities.

UNITED STATES ARMY CORPS OF ENGINEERS

Under the Clean Water Act, the US Army Corps of Engineers (Corps) is authorized to regulate discharge of fill and dredged material to waters of the United States, including wetlands. The Corps employs a system of General or Nationwide Permits for blanket authorization of activities, such as utility lines that have minimal adverse impact on the environment. In situations where adverse impact is probable, the Corps may issue an Individual Permit after reviewing an alternative analysis. Enforcement actions may be brought by the Corps or the EPA. Dredge and fill permits issued under Section 404 of the Clean Water Act (CWA) must generally be preceded by an approved HPA issued by the WDFW and successful ESA consultation.

WASHINGTON STATE DEPARTMENT OF HEALTH

The Washington State Department of Health (DOH) has three primary functions: to regularly assess the State's health needs and resources, to develop and implement sound public policy, and to ensure the capacity of public health agencies to manage daily operations and respond to public health emergencies. DOH was granted full authority and responsibility for the regulation and enforcement of the SDWA by the federal government in 1976. DOH also publishes guidelines for the preparation of water system plans, water conservation programs, design and drinking water quality standards, and watershed control programs. Water system comprehensive plans must also be reviewed and approved by DOH.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

The mission of Ecology's Water Quality Program is to protect, preserve, and enhance the state surface and ground water quality and to promote the wise management of water for the benefit of current and future generations. Ecology performs various functions under state and federal authorities and has both local and regional offices. Ecology is also responsible for awarding low interest loans for pollution control projects through the State Revolving Fund, Centennial Clean Water Fund, and the CWA section 319 program for nonpoint pollution prevention water quality protection, and habitat enhancement projects.

WASHINGTON STATE DEPARTMENT OF FISH AND WILDLIFE

In accordance with WAC 220-110 and RCW 75.20, any form of work that uses, diverts, obstructs, or changes the natural flow or bed of any fresh water of the state requires hydraulic project approval from the Department of Fish and Wildlife. Approval would be required for all District construction projects that cross or otherwise take place in streams or shorelines.

LOCAL HEALTH DEPARTMENTS

The Seattle and King County Department of Health is the local health department governing the District. In general, local health departments may adopt and enforce local regulations when they are consistent with and more stringent than state regulations.

CITY AND COUNTY PLANNING POLICIES

District planning policies should be consistent with those of the affected cities and King County. Accordingly, this Plan will require approval by the cities as well as King County. The District also needs to obtain local approvals, such as building and right-of-way permits from the appropriate municipalities, when required.

DISTRICT POLICIES

Planning policies are important in guiding the development of a water system. The District has adopted many resolutions regarding water system planning that are included in the District Code. Table 2-1 lists various District policies and references where the policy is stated. These policies are included in Appendix D.

TABLE 2-1

Water System Policies

Policy Name	District Policy	Reference
Cross-Connection Control	A cross-connection control policy has been adopted by the District that provides written procedures for the abatement of cross connections and the installation of backflow prevention devices.	Appendix L
Late-comer Agreements	Late-comer agreements may be granted when the cost of constructing water main extensions identified in the Comprehensive Plan exceeds the System Development Charges to be collected from a plat.	Policy and Procedure Code No. ENG5
Developer Extensions/ Minimum Standards	Standards have been adopted that provide the minimum general standards required by the District for developer constructed water main extensions and improvements to be acquired by the District	2014 Engineering Specification, Methods of Construction, and Materials of Construction and Standard Water Details
Emergency Water Use Restrictions	A policy has been adopted that provides guidelines for emergency water use restrictions in conjunction with restrictions mandated by Seattle Public Utilities.	—
Water Availability	The managers are directed to present requests for execution of certificates of water availability by developers to the board of commissioners when there may be a significant impact on the water facilities in the District.	—
Utility Rates and Charges	Utility service rates and charges have been adopted by the District that outline the service rates and charges, billing, connection fees, and miscellaneous charges.	Resolution No. 2015-03-06

Table 2-2 lists other District policies and the date the policy was approved.

TABLE 2-2

Other District Policies

Policy Number	Policy Name	Date
Admin1	Policy and Procedures Guidelines	12/3/03
Admin2	Hiring Procedures and Employee Orientation	4/5/04
Admin3	Sexual and Other Harassment Policy	4/5/04
Admin4	Rules for Use of Exercise Equipment	7/12/04
Admin5	Misread Correction Guidelines	4/5/04
Admin6	Job Descriptions	6/2/03
Admin7	Employee Separation from Employment	4/5/04
Admin9	Alternative Work Schedules	4/5/04
Admin10	Transitional Work	10/6/04
Admin11	Authorized Travel	3/21/05
Admin13	Use of Meeting Rooms	4/25/05
Engineering1	Easements for Utility Infrastructure	11/3/03
Engineering2	Water and Sewer Line Extensions	2/6/06
Engineering5	Assessment and Administration of Connection Charges	1/26/04
Operations1	Crossed Customer Service Lines	4/5/04
Finance1	Accounts Payable Procedures	4/5/04
Finance3	District Credit Card Usage	1/24/04
Finance4	Installment Contracts	4/5/04
Finance7	Financial Policy	4/5/04

DESIGN, CONSTRUCTION, OPERATION AND MAINTENANCE STANDARDS

Performance and design criteria typically address the sizing and reliability requirements for source, storage, distribution, fire flow, and water quality. DOH has developed minimum standards pertaining to the performance and design of Group A Public Water Systems. The following sections describe DOH standards that are used to evaluate the District's system in Chapter 7.

MINIMUM DEPARTMENT OF HEALTH DESIGN STANDARDS

DOH relies on various publications, agencies and the utility itself to develop and establish design criteria. The WAC 246-290-200, Design Standards, lists the various criteria allowed by the DOH. This Plan uses DOH's *Water System Design Manual (December 2009)* as the criteria for assessing the District's standards. This Manual serves as a guideline for the evaluation of existing facilities and in the preparation of plans and specifications for all Group A public water systems in accordance with WAC 246-290, which includes the District's water utility.

Level of Service

Water systems should be designed to maintain a certain level of service for their customers. This includes maintaining a minimum of 30 pounds per square inch (psi) in the distribution system under peak hour demand and 20 psi under fire flow conditions with maximum day demands. On-site back-up power equipment or gravity standby storage is necessary to maintain service during power outages unless the power grid meets the DOH minimum reliability criteria. The system should also be designed so that sufficient valving is in place to minimize the number of customers out of service when water is turned off for maintenance or repair. The District's water system meets or exceeds the minimum pressure requirements, maintains auxiliary power for its pumped storage, and provides sufficient valving.

Minimum Pipe Sizes

The DOH Design Manual states that the minimum size distribution line shall not be less than 8 inches in diameter. Hydraulically justified smaller lines may be used on short line extensions. The District standards require that 8-inch lines be installed on all lines supplying fire hydrants except on short, dead-end lines into cul-de-sacs and fire lines.

Storage

Several components are considered when determining the amount of storage required for the operation of a water system. The following sections describe these storage components. The formulas presented in these sections will later be used to evaluate the District's existing storage facilities in Chapter 7.

Operational Storage

Operational storage is the volume of water in the reservoirs that, under normal operating conditions, supplies water to the system while the sources are not in operation. Operational storage for the District can be controlled by adjusting the reservoir levels with the District's Supervisory Control and Data Acquisition (SCADA) system.

Equalizing Storage

Equalizing storage must be provided as part of the total storage for the system to provide water during periods of peak demand that cannot be met by the source production capacity. The volume of equalizing storage required depends on the peak hour system demands, duration of the peak demand period, and source production rate. The Design Manual recommends calculating equalizing storage using the following equation:

$$ES = (PHD - Q_S)*(150 \text{ minutes})$$

Where: ES = Equalizing storage (gallons)
PHD = Peak hour demand (gpm)
Q_S = Source capacity (gpm)

The District's contract with Seattle Public Utilities (SPU) does not impose monetary penalties for peak instantaneous flows through the master meter connections. However, in order to maintain minimum hydraulic gradients upstream, SPU has established maximum flow rates for each intertie, which the District is expected to follow. As a result, equalizing storage is an important component of the District's storage because it allows for greater operational flexibility in controlling the master meter settings.

Standby Storage

Standby storage provides reliability for the system should sources fail or unusual conditions create higher than anticipated system demands. The District is supplied exclusively by SPU, which is considered a single source for purposes of calculating standby storage volumes. Therefore, the standby storage volume is calculated based on two times the average day demand.

Fire Suppression Storage

Water systems must be capable of delivering pressurized flows in accordance with the adopted fire flow requirements. The required fire suppression storage is the product of the fire flow rate and duration. The amount of fire suppression storage required is calculated using the following equation:

$V_{FSS} = FFR * T_m$
V_{FSS} = Fire suppression storage
FFR = Fire Flow Rate (gallons per minute)
T_m = Time (minutes)

There are various fire flow requirements within the District depending on the type of building and the city in which the fire is located. The fire suppression storage component, however, just considers the maximum fire flow requirement. The maximum adopted fire flow requirement for the District is equal to 4,000 gallons per minute (gpm) for 4 hours, or a total of 960,000 gallons.

Dead Storage

Dead storage is the amount of storage in a reservoir that is considered unusable because the hydraulic grade of the system cannot be maintained once the water level drops below a certain point.

Source

DOH requires that all water systems have sufficient source capacity and water rights to meet the annual average day demand and peak day demand requirements on a reliable basis. The District has redundancy of source in its three independent connections from SPU: the Tolt I Pipeline, Tolt II Pipeline, the Tolt Eastside Supply Line, and the Maple Leaf Line. SPU's water rights are also adequate to meet the needs of its wholesale customers. The District has a policy for imposing emergency water use restrictions and has an active emergency response program as a means of ensuring system reliability.

Fire Flow

Fire flow rate and duration requirement is as required by the local fire authority set under WAC 246-293-640. The District's maximum adopted fire flow requirement is 5,000 gpm for 4 hours.

Construction Standards

Construction standards set forth the actual materials and construction methods that contractors, developers, and the District must follow when constructing water system facility improvements.

DISTRICT DESIGN STANDARDS

The District adopted design standards for the design and construction of water system facilities in February 2014. These standards identify the criteria for both the materials and the methods of construction for the District's water system. The District's design standards are included in Appendix D.

WATER QUALITY STANDARDS

The 1974 SDWA and its 1986 and 1996 amendments established specific legislation for regulation of public water systems by federal and state governments. The federal government, specifically the EPA, is authorized to develop national drinking water regulations and oversee the implementation of the SDWA. Once federal regulations are promulgated and become effective, the states may adopt the federal law as state law and accept the primary responsibility for implementation and enforcement of the law.

The State of Washington has adopted as state law all of the SDWA regulations promulgated by the EPA. The EPA has delegated the authority to oversee drinking water regulations to the State DOH. State drinking water regulations are published in WAC 246-290 and establish monitoring requirements, maximum contaminant levels, and requirements for follow-up actions. WAC 246-290 establishes the water quality standards that must be followed for Group A Public Water Systems. Group A Public Water

Systems are defined as all systems serving 15 or more connections or 25 or more people per day for 60 or more days per year.

Minimum standards for water quality are often specified in terms of maximum contaminant levels (MCLs). Primary MCLs are based on chronic and/or acute human health effects. Secondary MCLs are based on factors other than health effects, such as the aesthetic quality of the water. Public water purveyors have the responsibility of meeting the requirements of the regulations on a day-to-day basis. Monitoring requirements are often established for regulated contaminants to ensure that water systems demonstrate compliance with MCLs or treatment technique requirements. Public water suppliers are also required to retain certain records and submit reports to the State DOH. The 1996 amendments updated the development of regulations concerning arsenic, radon, groundwater disinfection, and filtration.

EXISTING DRINKING WATER STANDARDS

Existing state law contains regulations of bacteriological contaminants, inorganic chemicals and inorganic physical parameters (IOCs), volatile organic chemicals (VOCs), synthetic organic chemicals (SOCs), radionuclides, and trihalomethanes (THMs). New regulations have been proposed and will define new regulatory requirements for sulfate, radionuclides, additional IOCs and SOCs, arsenic, additional disinfection byproducts, and bacteriological contaminants. The current drinking water standards are described below.

Many of the federal and state water quality monitoring requirements do not apply to the District, since it does not have its own source. However, the District must be familiar with the requirements described in this section, since they affect both the quality and cost of water purchased from SPU. The District has a contract with SPU to do all water quality tests as part of the Regional Monitoring Plan. The District can participate in the plan under the condition that the District does not blend its water with other sources. Conditions of the Regional Monitoring Plan and the District's role in water quality monitoring may be subject to change in the future.

Bacteriological

Many serious diseases are caused by bacteria, a class of single-celled organisms. Indicator organisms are often used in monitoring of bacterial contamination of drinking water. Typical indicator organisms are total coliform, fecal coliform, and *E. coli*. Coliforms are naturally occurring in the digestive systems of animals. Violations of bacteriological MCLs are as follows (WAC 246-290):

- During routine sampling, coliform is detected in more than one sample in a single month (for systems taking less than 40 samples per month).

- Fecal coliform is present in a repeat sample, which is a sample collected to confirm the presence of fecal coliform detected in a previous analysis.

- *E. coli* is present in a repeat sample.

- Coliform is present in a set of repeat samples collected as a follow-up to a sample with fecal coliform or *E. coli* present.

Residual Disinfectant

Water entering the distribution system must contain a residual disinfectant concentration of free chlorine of at least 0.2 mg/L. Distribution system residual disinfectant concentrations measured as free chlorine must be detectable in at least 95 percent of the samples taken each calendar month. Residual disinfectant concentration within the distribution system is measured at the same time and location that routine bacteriological samples are collected.

Consumer Confidence Reports

All water utilities must provide annual reports to their customers on the quality of their drinking water. These "consumer confidence" reports will tell customers whether their water meets state and federal drinking water standards, and if not, why not. The reports include information on the water source, the regulated and unregulated contaminants that have been detected in the water during the year and their concentration, disinfection byproducts or microbial contaminants in the water and their concentration, descriptions of possible health effects of contaminants present at concentrations greater than the MCL, identification of the likely source of any contamination, and a summary of any violations in monitoring, reporting, or record keeping from the previous year. The District provided information regarding water quality to its customers in their consumer confidence report entitled *Northshore Utility District Annual Water Quality Report*, which was published in 2014. A copy of this report is provided in Appendix E.

IOCs, VOCs and SOCs

The State of Washington has adopted Federal MCLs and monitoring regulations for inorganic chemicals and physical parameters (IOCs), volatile organic compounds (VOCs), and synthetic organic compounds (SOCs). The Federal standards were originally promulgated in the Phase I Rule and updated in the Phase II and Phase V rules. Monitoring for these chemicals is conducted prior to entry to the distribution system.

Arsenic Rule

The EPA set the standard for arsenic in drinking water at a maximum of 0.01 mg/L in 2002. As of January 23, 2006, compliance with the MCL standard of 0.01 mg/L became mandatory.

Lead and Copper

The Lead and Copper Rule (LCR) requires an initial monitoring phase in which two rounds of water sampling for lead and copper are conducted. Lead samples collected according to Section 40 of the Code of Federal Regulations (CFR) must have concentrations below the "Action Level" of 0.015 mg/L in the 90th percentile. Similarly, copper samples must have concentrations less than 1.3 mg/L in the 90th percentile. Systems exceeding the action levels are required to provide public education and implement a program for reducing lead and copper levels.

Radionuclide Rule

The WAC 246-290 requires radionuclide sampling once every 4 years. A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis provided that the measured gross alpha particle activity does not exceed 5 pCi/L at a confidence interval of 95 percent.

Though a radon MCL was included in the originally proposed Radionuclide Rule, it was determined that a radon MCL will now be issued as a separate rule. Radon is discussed later in this Chapter.

Disinfectants/Disinfection Byproducts

WAC 246-290-300 mandates that purveyors of public water systems that serve a population of 10,000 or greater and provide water treated with chlorine or other halogenated disinfectants must monitor the system for disinfection byproducts. The Disinfectants/Disinfection Byproducts (D/DBP) Rule establishes residual disinfectant concentrations and maximum contaminant levels for disinfection byproducts.

Trihalomethanes (THMs) and five haloacetic acids (HAA5) are a group of organic compounds that can be formed as a result of drinking water disinfection by chlorine and are therefore often referred to as disinfection byproducts. Total trihalomethanes (TTHMs) include the sum of the concentrations of four disinfection byproducts: chloroform, bromoform, bromodichloromethane, and dibromochloromethane.

Stage 2 of the D/DBP Rule was published in January 2006 and compliance with the new regulations began in 2012 after Stage 1 expired. Under Stage 2 of the D/DBP Rule, the MCLs for TTHM and HAA5 remain 80 mm/L and 60 mm/L, respectively; however, eight

quarterly samples must be taken and the running annual average of each individual sample must meet the MCL instead of the running annual average of all samples combined.

Surface Water Treatment Rule

The Surface Water Treatment Rule (SWTR), WAC 246-290, establishes water quality requirements for surface water sources and groundwater sources that are under the direct influence of surface water (i.e., GWI sources). The purpose of the SWTR is to protect against acute health risks from waterborne microbiological contaminants. Requirements for adequate disinfection and contact time are established. Filtration may be required in order to meet water quality standards and source requirements. Treatment technique requirements are established, instead of MCLs, for *Giardia lamblia*, viruses, heterotrophic plate count bacteria, *Legionella*, and turbidity. Disinfection with or without filtration must achieve at least 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts and 99.99 percent removal and/or inactivation of viruses.

Interim Enhanced Surface Water Treatment Rule

The purpose of the Interim Enhanced Surface Water Treatment Rule (IESWTR) is to improve control of microbial pathogens, specifically the protozoan Cryptosporidium, in drinking water and address risk trade-offs with disinfection byproducts. The rule requires systems to meet strengthened filtration requirements as well as to calculate levels of microbial inactivation to ensure that microbial protection is not jeopardized if systems make changes to comply with disinfection requirements of the D/DBP Rule. The IESWTR applies to public water systems that use surface water or ground water under the direct influence of surface water and serve more than 10,000 people.

Long-Term 1 Enhanced Surface Water Treatment Rule

The Long-Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) applies to public water systems that use surface water or groundwater under the direct influence of surface water and serve fewer than 10,000 persons. The LT1ESWTR builds upon the framework established for systems serving a population of 10,000 or more in the IESWTR.

Long-Term 2 Enhanced Surface Water Treatment Rule

The Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) further enhances requirements established in other surface water regulations. LT2ESWTR applies to public water systems that use surface water or a groundwater source that is under the direct influence of surface water.

Unregulated Contaminant Monitoring Rule

The SDWA requires EPA to publish a list of non-regulated contaminants every 5 years, which may warrant regulation due to their health effects and their potential for occurrence in public water systems. The data generated by the UCMR will be used to evaluate and prioritize contaminants on the Drinking Water Contaminant Candidate List.

A summary of the existing drinking water requirements are provided in Table 2-3. Many of the items listed are monitored by SPU on behalf of the District, but monitoring and public notification is ultimately the responsibility of the District.

Groundwater Rule

The Groundwater Rule establishes a method for determining if disinfection of a groundwater source is required. It also establishes disinfection standards for those sources where disinfection is required. Disinfection standards are established in terms of a residual disinfectant concentration and a disinfection contact time requirement. These standards depend in part on characteristics of the water, such as pH and temperature. In general, disinfection is more effective at lower pH values and higher temperatures.

SPU Groundwater Exemption

SPU performed an analysis of which wholesale customers could receive water from their wells. Based on the analysis, SPU determined the District's water system will not receive well water when they are operating. A copy of this groundwater exemption is in Appendix D.

TABLE 2-3

Summary of Existing Drinking Water Requirements

Rule	Contaminants Affected	Notes
Bacteriological	Coliform	SPU collects samples and provides results to the District. The District is responsible for collecting any repeat samples.
Residual Disinfectant	Total Free Chlorine	SPU collects samples and provides results to the District. The District monitors for residual disinfectant at each of the five tank sites.
Consumer Confidence Report	Reporting Only	The District publishes a CCR annual based on data collected by SPU and the District.

TABLE 2-3 – (continued)

Summary of Existing Drinking Water Requirements

Rule	Contaminants Affected	Notes
Inorganic Chemicals, and Physical Parameter	IOCs	SPU collects samples and provides results to the District.
Arsenic Rule	Arsenic	SPU collects samples and provides results to the District.
Volatile and Synthetic Organic Compounds	VOCs, SOCs	SPU collects samples and provides results to the District.
Lead and Copper Rule	Lead, Copper	The District collects samples and delivers them to the SPU Lab for analysis.
Radionuclide Rule	Radionuclides	SPU collects samples and provides results to the District.
Disinfectant/Disinfection By-Products Rule	TTHMs, HAA5, Chlorite, Bromate	SPU collects samples and provides results to the District.
Surface Water Treatment Rule	Microbial Contaminants	SPU collects samples and provides results to the District.
Interim Enhanced Surface Water Treatment Rule	Bacteriological	SPU collects samples and provides results to the District.
Long Term 1 Enhanced Surface Water Treatment Rule	Bacteriological	SPU collects samples and provides results to the District.
Unregulated Contaminant Monitoring Rule	Acanthamoeba, Aldrin, Dieldrin, Hexachlorobutadience, Manganese, Metribuzin, Napathalene, Sodium, and Sulfate	The District collects samples and contracts with an approved lab for analysis.
Long Term 2 Enhanced Surfaces Water Treatment Rule	Bacteriological	SPU collects samples and provides results to the District

ANTICIPATED FUTURE DRINKING WATER STANDARDS

Sulfate Rule

Sulfate is currently a secondary drinking water regulation with the MCL of 250 mg/L. Secondary regulations are not required but it is recommended for water systems to comply based on aesthetic effects. The EPA completed its review of the health effects of Sulfate in 2001 but has not published a final ruling on the primary MCL level or timeframe for conformance.

Radon

A radon MCL was originally proposed as part of the Radionuclide Rule, but EPA decided to separate the two rules. In November of 1999, EPA proposed a preliminary radon MCL of 300 pCi/L. EPA is considering an alternative MCL of 4,000 pCi/L if states or water purveyors implement a multimedia mitigation program aimed at reducing household indoor-air health risks from radon gas and soil, as well as tap water. The date for publication of the final Radon Rule is unknown at this time.

Aldicarb Rule

Final MCLs for the pesticides aldicarb, aldicarb sulfone, and aldicarb sulfoxide have been established under the Phase II Rule for SOCs and IOCs. However, the effective date for these MCLs was postponed when the EPA agreed to reexamine the health effects data for aldicarb compounds. The EPA is expected to propose MCLs of 7 mg/L for each pesticide with a 9 mg/L composite total.