NORTH BEACH WATER DISTRICT

PACIFIC COUNTY **WASHINGTON**

WATER SYSTEM PLAN

G&O #22655
DECEMBER 2024

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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1/29/25

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µg/L	Micrograms per Liter
AC	Asbestos Cement (pipe)
ac-ft	Acre-foot or Acre-feet
ac-ft/yr	Acre-Foot per Year or Acre-Feet per Year
ADD	Average Day Demand (per ERU)
AVB	Air Vacuum Breaker
AWWA	American Water Works Association
BAT	Backflow Assembly Tester
CAD	Computer Aided Drafting
CCC	Cross Connection Control
CCS	Cross Connection Control Specialist
CEU	Continuing Education Unit
CFR	Code of Federal Regulations Calculated Fixed Radius (a WHPA determination methodology)
cfs	Cubic Feet per Second
CIP	Capital Improvement Program
Comm	Community Water System
DBP	Disinfectant Byproduct
DCVA	Double Check Valve Assembly
DI	Ductile Iron Pipe
DOH	Washington State Department of Health
DOT	Washington State Department of Transportation
DSL	Distribution System Leakage
Ecology	Washington State Department of Ecology
EIS	Environmental Impact Statement
EPA	US Environmental Protection Agency
ERU	Equivalent Residential Unit
ft	Foot or Feet
GIS	Geographic Information System
GMA	Growth Management Act
gpcd	Gallons per Capita per Day
gpd	Gallons per Day
gpm	Gallons per Minute
HAA5	Haloacetic Acid 5, a group of regulated disinfection byproducts
HDPE	High Density Polyethylene Pipe
HOA	Homeowners Association
HP	Horsepower
ID	Identification
IDSE	Initial Distribution System Evaluation
IOC	Inorganic Chemical
kW	Kilowatts
LID	Local Improvement District
LRAA	Locational Running Annual Average
LUST	Leaking Underground Storage Tank
MCL	Maximum Contaminant Level

LIST OF ABBREVIATIONS AND ACRONYMS – (CONTINUED)

MDD	Maximum Day Demand (per ERU)
MFL	Million Fibers per Liter (referring to asbestos fibers)
MFL>10µm	Million Fibers per Liter greater than 10 microns in length
MG	Million Gallons
mg/L	Milligrams per Liter
MGD	Million Gallons per Day
MHI	Median Household Income
MSL	Feet Above Mean Sea Level (Elevation)
MWL	Municipal Water Law
N/A or NA	Not Applicable, Not Available, or Not Analyzed
No.	Number
NTNC	Non-Transient Non-Community water system
O&M	Operation and Maintenance
OFM	Washington State Office of Financial Management
PE	Polyethylene Pipe
PHD	Peak Hour Demand
PLC	Programmable Logic Controller
PM	Preventive Maintenance
ppb	Parts per Billion
ppm	Parts per Million
PRV	Pressure Reducing Valve
psi	Pounds per Square Inch
PVC	Polyvinyl Chloride Plastic
RAD	Radionuclide
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
RPBA	Reduced Pressure Principle Backflow Prevention Assembly
SEPA	Washington State Environmental Policy Act
SOC	Synthetic Organic Chemical
TDH	Total Dynamic Head
THM	Trihalomethane
TNC	Transient Non-Community Water system
TTHM	Total Trihalomethanes
UGA	Urban Growth Area
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
VFD	Variable Frequency Drive
VOC	Volatile Organic Chemical
WAC	Washington Administrative Code
WD	Water District
WDM	Water Distribution Manager
WETRC	Washington Environmental Training Resource Center
WFI	Water Facilities Inventory Report
WHPA	Wellhead Protection Area
WMR	Water Main Replacement (program)

LIST OF ABBREVIATIONS AND ACRONYMS – (CONTINUED)

WSP	Water System Plan
WTPO	Water Treatment Plant Operator
WUE	Water Use Efficiency
ZOC	Zone of Contribution (to a WHPA)

CHAPTER 1

WATER SYSTEM DESCRIPTION

INTRODUCTION

This Water System Plan (Plan) is an update of previous water system plans prepared for and adopted by North Beach Water District (NBWD) in accordance with requirements set forth in Chapter 246-290 of the Washington Administrative Code (WAC). The previous 2015 Water System Plan was completed by Gray & Osborne, Inc. This updated Plan is intended to meet all requirements of Part 246-290-100 WAC, including the Water Use Efficiency Rule and meet the requirement outlined further in the Washington State Department of Health (DOH) Water System Design Manual (June 2020) and the DOH Water System Planning Guidebook (August 2020) while also addressing the needs and concerns of NBWD. Once complete, this Plan will have been reviewed and commented on by neighboring utilities, Pacific County Planning Department, DOH, and Washington State Department of Ecology (DOE) and revisions and correction will have been made accordingly.

OWNERSHIP AND MANAGEMENT

SYSTEM NAME AND DOH ID NUMBER

The water system name according to the DOH water system database is North Beach Water, and the DOH ID No. is 63000C.

TYPE OF OWNERSHIP

NBWD operates a Group A public water system that serves customers on the North Beach Peninsula. The DOH water system identification number for NBWD is 63000C and a copy of the District's 2023 Water Facilites Inventory (WFI) form can be found in Appendix B. The District's contact information is:

Owner:.....North Beach Water District
Primary Contact: .....Rick Gray (General Manager)
Mailing Address:.....P.O. Box 618
Street Address: .....2212 272nd Street
Ocean Park, WA 98640
Daytime Phone:.....(360) 665-4144

MANAGEMENT STRUCTURE AND DECISION-MAKING PROCEDURES

In addition to the three elected NBWD commissioners, NBWD staff consists of a General Manager, an Office Manager, a Billing Clerk, a Field Supervisor, and a Treatment Plant Operator. The Commissioners directly hire the General Manager and approve policy which guides the General Manager in the hiring all other NBWD staff. The General Manager is responsible for day to day operations of the water system, and reports directly to the Commissioners. All other staff report to the General Manager. At the writing of this Plan the Commissioners and staff are as follows:

Commissioner	Brian Sheldon
Commissioner	Gary Flood
Commissioner	Glenn Ripley
General Manager	Rick Gray
Office Manager	John Bell
Billing Clerk	Amanda Jordan
Field Supervisor	Jon Fleming
Treatment Plant Operator	Austin Benson

SYSTEM BACKGROUND

HISTORY AND SETTING

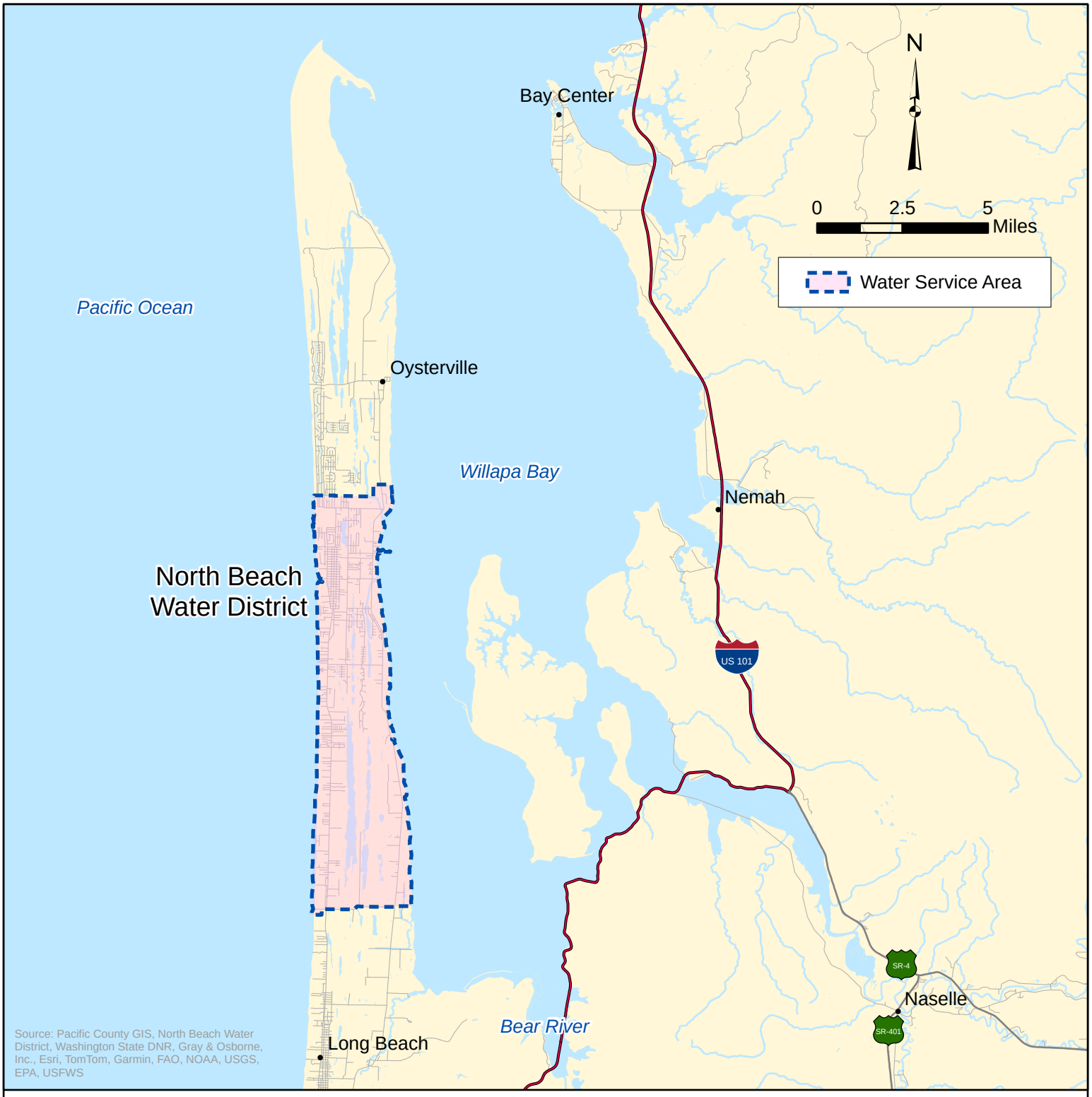
Location

NBWD is located on the North Beach Peninsula (also known informally as the Long Beach Peninsula) north of the City of Long Beach. The location of the NBWD water system is shown in Figure 1-1.

History

The NBWD water system was formed by the merger of two investor-owned water systems, Ocean Park Water Company (OPWC) and Pacific Water Company (PWC). OPWC was formed in 1962 with initial plans to serve 300 customers. The first Water System Plan for OPWC was completed in 1966. The company changed ownership in 1979, and by 1998 the OPWC had expanded to serve over 2,200 customers.

PWC was originally formed as Ocean Bay Water Company in 1970. Ocean Bay Water Company was formed utilizing existing aging infrastructure from the vacated Rushlight dairy farm (AKA John Paul dairy farm). The first Water System Plan for Ocean Bay Water Company, completed in 1981, planned to serve 279 customers. Ocean Bay Water Company was purchased by PWC in 1987.



NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

FIGURE 1-1

VICINITY MAP

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In 2004, PWC and OPWC entered into an intertie agreement by which PWC would construct a reservoir and water transmission line to provide fire flow to OPWC. Construction of the intertie was completed in May 2007.

Also in 2004, the North Beach Public Development Authority (NBPDA) was formed for the purpose of assisting the community of Ocean Park to acquire ownership of the water utilities serving the community. In February 2006, the NBPDA acquired ownership of both PWC and OPWC, and the combined system was named North Beach Water. A Water System Plan for North Beach PDA was completed in 2008. Later in 2008, the NBWD was formed, ownership of the North Beach Water System was transferred to NBWD, and the NBPDA was disbanded.

Since the original formation of the OPWC in 1962 and the PWC in 1970, both systems have added water sources, water storage, water pumping, water distribution facilities, and water treatment facilities. The North Wellfield (NWF), including Wells N-1, N-2, N-3, N-4, N-5, N-6, N-7 and N-8, was originally part of the OPWC system. The South Wells 1, 2, and 4 (S-1, S-2 and S-4) was originally part of the PWC system. Three 179,000-gallon reservoirs located at the NWF site were originally part of the OPWC system, and one 211,000-gallon reservoir, located near the south wells, was originally part of the PWC system. All reservoirs are ground level with booster pumps to provide system pressure. The NWF booster pump system was part of the OPWC system and the booster pump system serving the south wells was part of the PWC system. In 2002, both OPWC and PWC added treatment for iron and manganese. The treatment system at the NWF was originally part of the OPWC system and the treatment system near the south wells was originally part of the PWC system.

PROJECTS COMPLETED SINCE THE 2015 WATER SYSTEM PLAN

Between 2015 and 2023 NBWD completed several Capital Improvement Program (CIP) projects identified in the 2015 Water System Plan and several more which were not included in the plan at that time. The projects and their CIP project numbers (if applicable) are listed below.

- **E-01: Acquire an Excavator and Dump Truck to Facilitate Water Main Construction and Repair**

- **M-01: Install AMR Service Meter System**

- **S-01A: South Wellfield Improvements**

  The Wiegardt Wells 1, 2, and 3 were equipped; new flow meters and transmission piping were installed; a new treatment system was installed; and the control system was replaced.

- **S-01B: North Wellfield Improvements**

  The north wellfield was rehabilitated and the piping and treatment system and treatment building were improved. The controls were replaced and tied in to the SCADA system.

- **D-01: 245th Street from U Street to Birch Place**

  Approximately 1,700 feet of 8-inch PVC water main was installed from U Street to Y Street to create a system loop.

- **D-04: Install 20 New Water System Sampling Stations**

- **D-08: Vernon Avenue from 276th Place to Joe John's Road**

  Approximately 2,400 feet of 8-inch PVC water main was installed along Vernon from 276th Place to Block 286.

- **Bay Avenue from Park Avenue to U Street**

  The existing 6-inch AC main was replaced with approximately 2,100 feet of 8-inch PVC.

- **L Street from 273rd Street to 272nd Street**

  Approximately 250 feet of new 2-inch PVC water main was installed to create a system loop.

- **Z Street from 255th to Block 257**

  Approximately 500 feet of new 6-inch PVC water main was installed to create a system loop.

- **U Street from 250th to 255th**

  Approximately 1,400 feet of new 8-inch PVC water main was installed.

- **187th Place Water Main**

  Approximately 800 feet of 4-inch PVC water main was installed along 187th Place west of State Route 103.

The water main improvements described also include the installation of new valves and fire hydrants at the spacing dictated by Pacific County standards (discussed further in Chapter 3). Along with the projects listed, which make up close to 10,000 feet of new water main, the District regularly improves small segments of the system in response to system leaks or to create better looping.

ADJACENT PURVEYORS

Water purveyors in the vicinity of NBWD are depicted in Figure 1-2 and described below.

Oysterville – DOH ID #29240X

This water system is located north of NBWD, and serves a development known as Espy Ridge Tracts. Information regarding this system was obtained from the WFI form, updated February 8, 2023. The WFI indicates that the Oysterville water system is owned by Oysterville Water. According to the WFI, this system serves 32 full-time single-family residential connections, 30 part-time single-family residential connections, five apartments, condos or duplexes in one multi-family building, no recreational connections, and 9 commercial connections, for a total of 76 active connections, and is approved for up to 99 connections. The WFI indicates a full-time residential population of 59 people, a part-time residential population ranging from 10 to 25 people for 5 to 10 days per month, and a transient population of 90 people per month. The source of supply is a single, 69-foot drilled well with a reported capacity of 40 gallons per minute (gpm). The WFI indicates that treatment is provided via chlorination, and that there is 60,000 gallons of storage provided.

Oysterville water has recently indicated an interest in potentially pursuing consolidation with the North Beach Water DIstrict. In the future, NBWD may conduct a consolidation study to assess the feasibility of this consolidation.

Surfside Homeowners Association – DOH ID #86470Y

This water system is located north of NBWD, and serves the Surfside Estates subdivision as well as several smaller neighboring developments. Information regarding this system was obtained from the WFI form, updated January 18, 2023. The Surfside water system is owned by Surfside Homeowners Association, a non-profit corporation. According to the WFI, this system serves 632 full-time single-family residential connections, 706 part-time single-family residential connections, 45 apartments, condos or duplexes in 12 multi-family buildings, no recreational services, and 392 commercial services, for a total of 1,775 active connections. The WFI indicates a full-time residential population of 1,264 and a part time residential population ranging from a low of 150 individuals in the winter, to a high of 1,000 individuals in the summer. The WFI further indicates a transient population ranging from 110 per month in winter to a high of 5,800 per month during summer. The WFI indicates that the Surfside Homeowners Association water

system has seven wells ranging in depth from 180 to 193 feet, with production rates ranging from 160 gpm to 175 gpm. The WFI indicates that the system provides 630,000 gallons of water storage, and provides treatment including chlorination and filtration. The treatment system is for removal of iron and manganese from the source water.

City of Long Beach – DOH ID #48000M

This water system is located south of NBWD, and serves the City of Long Beach. Information regarding this system was obtained from the WFI form, updated May 25, 2022. The City of Long Beach water system is owned by the City of Long Beach, a Code City. According to the WFI, this system serves 1,489 full-time single-family residential connections, 315 part-time single-family residential connections, 833 apartments, condos or duplexes in 100 multi-family buildings, no recreational services, and 214 commercial services, for a total of 2,861 active connections. The WFI indicates a full-time residential population of 3,052 and a transient population ranging from 3,000 per month in winter to a high of 15,000 per month during summer. The WFI indicates that the City of Long Beach water system has four surface water sources with capacities ranging from 125 gpm to 686 gpm, and an intertie with the City of Ilwaco with a capacity of 800 gpm. The WFI indicates that the system provides 2,000,000 gallons of water storage, and provides treatment including chlorination and filtration. The treatment system is for compliance with surface water treatment requirements.

Other Water Systems

Based on the DOH Sentry Internet system, there are 15 additional small public water systems listed as existing within or near the area served by NBWD. These systems are Group B water systems and small Group A water systems. Table 1-1 lists the other small water systems in the vicinity of NBWD.

TABLE 1-1

Other Water Systems In or Near NBWD Service Area

DOH ID No.	System Name	Group	Residential Population	Total Connections
02243Y	Andersens RV Park	A	0	63
37320E	Ocean Bay Mobile and RV Park	A	5	39
62998X	Ocean Park Retreat Ctr and U M Cmp	A	3	32
15813	Cranberry Community, LLC	A	6	38
20275P	Dunes Bible Camp	A	4	26
07151C	Dunes Loomis Lake	A	4	13
758878	Sands Motel	B	8	11
66764	The Lamp Camp LLC	A	4	34
13932	Pacific Coast Cranberry Research	A	4	3

Oysterville
Willapa Bay
US 101
Nemah
Pacific Ocean
Ocean Park
US 101
Long Beach
Bear River

Source: Pacific County GIS, North Beach Water District, Washington State DNR, Gray & Osborne, Inc.

Long Beach Water Department
Oysterville Water
Surfside Homeowners
Roads
U.S. Highway
Surface Water
North Beach Water District

N

0 0.5 1 2 Miles

NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

FIGURE 1-2

ADJACENT PURVEYORS

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TABLE 1-1 – (continued)

Other Water Systems In or Near NBWD Service Area

DOH ID No.	System Name	Group	Residential Population	Total Connections
655150	Pacific West Mobile Home Park	B	18	10
AD783	Peninsula Moose Lodge	A	0	9
77757F	Shady Dell Condominiums	B	8	5
76890Y	Sea Mist Apartments	B	10	5
07512C	Blue Horizon Apartments	B	15	5
37094X	Ocean Spray Cranberries	B	0	1

GEOGRAPHY

Topography of the NBWD area is shown in Figure 1-3. Elevations generally range from sea level to a high elevation of about 60 feet, with an average elevation of about 20 feet above sea level. Large sand dunes parallel the Ocean Beach area with lakes, marshes and manmade drainage canals located within the interdunal depressions. Major lakes in the area include Loomis Lake, Island Lake, Lost Lake, Tape Lake, Cranberry Lake, and Mallard Lake. Further inland, boggy areas exist.

The geology of this area was first documented in a 1977 report prepared by the U.S. Department of the Interior, Geologic Survey, titled *Groundwater Resources of the North Beach Peninsula, Pacific County, Washington,* report number 77-647. More recently, the U.S. Geological Survey published a 1995 report, titled *Groundwater Flow and Water Quality in the Sand Aquifer of Long Beach Peninsula, Washington,* report number 95-4026. This report is a comprehensive groundwater study of the local aquifer.

Soils are primarily deeply weathered and eroded basalt-derived fine sand, gravel, and clay. The upper soil strata are predominantly dune sand with clay lenses to depths of 80 to 180 feet before silt, blue and gray clay, and gravel deposits are reached that extend to basalt layers near a depth of 700 feet.

SITE SENSITIVE AREAS

Site sensitive areas in the District's vicinity include erosion hazard areas, flood hazard areas, and water bodies. The site sensitive areas within the NBWD are shown in Figure 1-4.

Erosion Hazard Areas

These areas are prone to unstable behavior due to steel slopes, lack of vegetation, or unconsolidated soils. Erosion Hazard Areas are especially subject to erosion, if disturbed, and may not be well suited for high-density developments or intensive land uses.

Flood Hazard Areas

Flood hazard areas are areas adjacent to wetlands, lakes, rivers, and streams that are prone to flooding during peak runoff periods. Flood hazard areas deserve special attention due to the sensitive nature of their ecosystems as well as the potential for damage to structures located in the floodplain. The 100- and 500-year flood plains are shown on Figure 1-4.

WATER RIGHTS

NBWD has a total of five water rights covering its fourteen wells. Four of these water rights (G2-00759C, G2-21399C, G2-25737C, and G2-27073C) come from the OPWC system and one (G2-00174C) comes from the PWC system. Total water available under these rights is 1,100 gpm and 696 ac-ft/yr. A summary of NBWD water rights is included in Table 1-2. Copies of water rights certificates are included in Appendix C.

Source: Pacific County GIS, North Beach Water District, Washington State DNR, Gray & Osborne, Inc., Esri, NASA, NGA, USGS, FEMA

Pacific Ocean

Willapa Bay

Elevation (Ft.)

68'

0'

Contours (Ft.)

25'

10'

Roads

North Beach Water District Service Area

Surface Water

N

0 1,250 2,500 5,000

Feet

NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

FIGURE 1-3

TOPOGRAPHY

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M:\North Beach WD\23473.00 Water System Plan\GIS\APRX\NorthBeachWSP2023Figures\NorthBeachWSP2023Figures.aprx

Source: Pacific County GIS, North Beach Water District, Washington State DNR, Gray & Osborne, Inc.

Pacific Ocean

Willapa Bay

Bay Ave
Joe Johns Rd
Sandridge Rd
Vernon Ave
Ridge Ave
Stackpole Ln
Joy Ln
Birch St
Birch Ln
Birch Pl
Gile Pl
Mill Ln
Teal Ln
Cranberry Rd
State Park
State Game
State Rt 103 - Pacific Way
N Alley
305Th Pl
304Th Ln
297Th Ln
292Nd Ln
287Th Ln
285Th Ln
281St Pl
280Th Pl
277Th Ln
273Rd St
272Nd St
270Th St
267Th Ln
266Th Pl
265Th Pl
256Th Ln
254Th Ln
252Nd Ln
250Th St
248Th Ln
247Th Ln
245Th St
242Nd Pl
232Nd Ln
231St Ln
228Th Ln
227Th Ln
227Th Pl
225Th Ln
222Nd Pl
221St Ln
218Th Ln
217Th Ln
215Th Ln
208Th Pl
207Th St
205Th Ln
204Th Ln
203Rd Ln
201St Ln
200Th Ln
199Th Pl
198Th Pl
197Th St
189Th Pl
188Th Pl
184Th Pl
179Th Ln
178Th Pl
178Th Ln
177Th St
177Th Ln
174Th Ln
168Th Ln
162Nd Ln
158Th Pl
158Th Ln
155Th St
152Nd Ln
148Th Pl
148Th Ln
144Th Ln
142Nd Ln
138Th Ln
137Th Ln
134Th Ln
136Th Ln
126Th Ln
120Th Pl
117Th Ln
116Th Ln
115Th Ln
US 101

100-Year Flood Hazard
North Beach Water District Service Area
Roads
Parcels
Surface Water

N

0 1,250 2,500 5,000 Feet

NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

FIGURE 1-4

SITE SENSITIVE AREAS

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TABLE 1-2

Summary of Water Rights

Number	POW[1]	Location of POW[2]	Priority Date	Q_i[3] (gpm)	Additive Q_a[4] (ac-ft/yr)	Non-Additive Q_a[5] (ac-ft/yr)
G2-00174C	S-1, S-2, S-4, SW-1, SW-2, SW-3	N 1/2 NE 1/4 Section 33	12/15/1969	500	168	
G2-00759C	N-1, N-7R, N-8	SW 1/2 NE 1/4 Section 28	7/14/1965	200	320	
G2-21399C	N-3, N-6	SW 1/2 NE 1/4 Section 28	8/23/1973	100	128[6]	32[6]
G2-25737C	N-4	SW 1/2 NE 1/4 Section 28	10/22/1980	130	[7]	140
G2-27073C	N-5	SW 1/2 NE 1/4 Section 28	3/16/1987	105		252
G2-29907P	N-3, N-4, N-5, N-6, N-7R, N-8	SW 1/2 NE 1/4 Section 28	3/10/2000	65	80[8]	
Total Water Rights				**1,100**	**696**	

(1) POW = Point(s) of Withdrawal.

(2) All POW locations are in Township 12N, Range 11W.

(3) Q_i = Instantaneous Water Right.

(4) Q_a = Annual Water Right. Additive water rights, formerly referred to as Primary water rights, may be added to other water rights.

(5) Non-Additive water rights, formerly referred to as supplemental water rights, may not be added to other water rights.

(6) Water Right Certificate G2-21399 indicates an annual right of 160 ac-ft/yr, with no indication of primary, supplemental, additive or non-additive annual quantities. However, under Provisions of Permit G2-21399P issued 8/16/1974, and Certificate G2-21399C issued 11/29/1978, it is stated that the total annual right under water rights G2-21399 and G2-00759 is 448 ac-ft/yr, which makes 32 ac-ft/yr of water right G2-21399 supplemental, or non-additive. Reissued Certificate G2-21399, dated 12/2/2002, lacks this statement in the provisions, but does state, "All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below," and no exception to this provision is noted.

(7) Certificate G2-25737C does not indicate that this right is supplemental or non-additive to prior rights; however, under the provisions of this right it is stated, "Under existing rights there is 448 acre-feet per year as primary right for municipal supply." Also, in the Report of Examination for this right it is recommended that "total annual withdrawal shall not exceed 448 acre-feet per year." Rights G2-00759 and G2-21399 already limited total withdrawals to 448 ac-ft/yr, so the effect is that all rights in G2-25737 are non-additive.

(8) On Permit G2-29907 under *QUANTITY, TYPE OF USE, PERIOD OF USE,* it is stated, "Both Qi and Qa are additive quantities to the 4 existing certificates for the North Wellfield, totaling 600 gpm and 515 afy." However, on request, Ecology has reviewed this and determined that the stated 515 afy (ac-ft/yr) is in error, and the total annual quantity for the NWF is 528 ac-ft/yr. See copy of email correspondence, dated June 11, 2014, in Appendix C.

INVENTORY OF EXISTING FACILITIES

SOURCE FACILITIES

NBWD has a total of two wellfields and fourteen water wells, of which nine are currently active. In the North Wellfield (NWF) are six active wells, one emergency well, and one inactive well. In the South Wiegardt Wellfield (SWWF) are three active wells. Three additional wells, South Wells 1, 2, and 4, are not within a wellfield though they are in close proximity to the Wiegardt Wellfield. South Wells 1, 2, and 4 are all inactive. Copies of all available well construction reports for the NBWD wells are included Appendix D. Table 1-3 details all NBWD wells and their status.

FIGURE 1-5

North Wellfield

TABLE 1-3

Existing Water Sources

Source Name	DOH Source ID No.	Year Drilled	Casing Diameter, inches	Depth, feet	Screened Interval, feet	Applicable Water Rights	Status[1]	Installed Pumping Capacity (gpm)[2]
North Wellfield								
N-1	S-01	Unknown	8[3]	80[3]	59-79[3]	G2-00759C	A	87
N-3	S-03	Unknown	8	124	114-124	G2-21399C, G2-29907P	E	100
N-4	S-04	1981	8	120	100-120	G2-25737C, G2-29907P	A	80
N-5	S-05	1986	8	124	104-124 [4]	G2-27073C, G2-29907P	A	100
N-6	S-07	1996	8	130	107-127	G2-21399C, G2-29907P	A	105
N-7	S-08	Unknown	6	120	100-120	G2-00759C, G2-29907P	I	-
N-7R	S-17	2017	8	129	103-124	G2-00759C, G2-29907P	A	140
N-8	S-09	1996	8	130	106-126	G2-00759C, G2-29907P	A	143
South Wiegardt Wellfield								
SW-1	S-13	2013	8	149	118-138	G2-00174C	A	167
SW-2	S-14	2014	8	149	120-141	G2-00174C	A	167
SW-3	S-15	2014	8	150	121-142	G2-00174C	A	167
Wells Not in a Wellfield								
S-1	S-10	1964	8	56	41-56	G2-00174C	I	-
S-2	S-11	1964	8	100	85-100	G2-00174C	I	-
S-4	S-12	1996	8	121	101-121	G2-00174C	I	-
Total Installed Source Pumping Capacity								**1,256**
Total Active Installed Source Pumping Capacity								**1,016**
Total Installed Source Pumping Capacity with Largest Source out of Service								**1,089**

(1) Status indicators are: E – Emergency Use Only; A – Active; I – Inactive.
(2) Well pumping capacities are based on field observations.
(3) An undated well log identified in the 2007 Water System Plan as NWF Well 1 indicates the well as having a 10-inch casing, drilled to a depth of 276 feet, completed at 102 feet, and screened between 82 and 102 feet. However, a video inspection of the well dated 3/16/2007 found the well casing to be 8 inches and to be screened between 59 feet and 79 feet.
(4) Well log indicates no screen is installed. However, well log also indicates well is cased to 104 feet and completed at 124 feet, so it is presumed that the well is screened between 104 and 124 feet.

Wells N-1 and N-3 are the system's oldest wells. Well N-7 is inactive and has been replaced by Well N-7R. Wells S-1, S-2, and S-3 have been capped and their water rights transferred to the South Wiegardt Wells. The District's four inactive wells, N-7, S-1, S-2, and S-3 are maintained as monitoring wells.

TREATMENT

Two water treatment systems are provided, one at each wellfield. The North Wellfield treatment system is used for iron, manganese and arsenic removal. This treatment system uses air as oxidant, polymer as a filtration aid, and a granular media filtration using a manganese oxide filter medium similar to manganese greensand. The NWF treatment system consists of four filter trains, with each filter train consisting of a single 345-gallon contact tank followed by three 345-gallon filter vessels operating in parallel. The NWF treatment system is shown in Figure 1-6. Following the filtration process, sodium hypochlorite is added for disinfection.

FIGURE 1-6

North Wellfield Treatment System

The wells at the WWF are treated to remove arsenic and hydrogen sulfide. The treatment process consists of air injection for oxidation, ferric chloride injection to co-precipitate arsenic with iron oxide, potassium permanganate injection to improve oxidation, and filtration using a catalytic carbon to remove hydrogen sulfide. Following the filtration process, sodium hypochlorite is added for disinfection.

FIGURE 1-7

South Wiegardt Wellfield Treatment System

STORAGE

The NBWD has a total of four reservoirs. All reservoirs are cast-in-place concrete Mount Baker Silos. Three reservoirs are located at the NWF site and one reservoir is located at the SWWF site. The NWF reservoirs were all constructed in 1990. All are 26 feet in diameter by 45-feet tall, with nominal capacities of 179,000 gallons each. The SWWF reservoir was constructed in 2006, is 30 feet in diameter by 40-feet tall, with a nominal capacity of 211,000 gallons. The combined total gross storage volume is 748,000 gallons. All reservoirs are equipped with interior and exterior ladders with

access control, locking access hatches, screened downward-opening vents, and exterior water level indicators. Each reservoir is valved separately from the system to allow for isolation of any reservoir for occasional maintenance. The NWF and SWWF reservoirs are shown in Figures 1-8 and 1-9, respectively.

FIGURE 1-8

North Wellfield Reservoirs

FIGURE 1-9

South Wiegardt Wellfield Reservoir

BOOSTER STATIONS

The storage reservoirs are not tall enough to provide adequate system pressure by gravity, so all water must be continuously pumped into the water distribution system to maintain system pressure. The NBWD has two booster pump stations, one located at each wellfield.

The NWF booster pump station, shown in Figure 1-10, consists of four electric motor driven booster pumps ranging in power from 15 to 25 hp. All pumps at the NWF are switched with across-the-line starters. The booster pumps are automatically switched on and off based on system pressure, as shown in Table 1-4. Pump station discharge pressure is maintained at 60 psi by a 6-inch pressure reducing valve on the pump station discharge header. A pressure relief valve recycles water from the pump discharge manifold to the pump suction manifold when pressure in the discharge manifold exceeds 90 psi.

The SWWF booster pump station, shown in Figure 1-11, consists of four electric motor driven booster pumps: two 10-hp pumps and two 40-hp pumps. The two 10-hp pumps are controlled by variable speed drives such that the pump speeds vary to maintain a constant system output pressure of 60 psi. The two 40-hp pumps are switched by solid state "soft" starters.

TABLE 1-4

Pumping Facilities

Pump ID	Pump Make and Model	Horse-power	Starter Type	Start Criteria	Stop Criteria	Capacity, gpm
North Wellfield Booster Pumps						
N-2	Grundfos 20709 LC	15	DOL(1)	55 psi	59 psi	200
N-3	Grundfos 20709 LC	15	DOL	54 psi	56.5 psi	200
N-4	Peerless C-825A	25	DOL	49 psi	51 psi	500
N-5	Peerless C-825A	25	DOL	48 psi	50 psi	500
Subtotal, NWF						1,560
South Wiegardt Wellfield Booster Pumps						
S-1	Grundfos 12709 LC	15	VFD(2)	Lead(4) 56 psi	58 psi	175
S-2	Grundfos 12709 LC	15	VFD	Lag(4) 53 psi	56 psi	175
S-3	PACO 10-30707ES	40	Soft(3)	Lead 230 gpm	225 gpm	750
S-4	PACO 10-30707ES	40	Soft	Lag 500 gpm	425 gpm	750
Subtotal, SWWF Pumps						1,850
Total, All Wellfields						3,410
Total Capacity with Largest Pump Out of Service						2,660

(1) Direct On Line (DOL) motor starters, also called Across The Line motor starters. DOL motor starters start motors by direct connection to full line voltage.

(2) Variable Frequency Drive (VFD) motor controllers control motor speed by varying the frequency of the alternating current fed to the motors.

(3) Soft starters use solid state electronic control systems to start motors on reduced voltage, then gradually increase the voltage as the motor speed increases.

(4) Lead/Lag are alternating for each type.

The NWF and SWWF booster pump stations are shown in Figures 1-10 and 1-11.

FIGURE 1-10

North Wellfield Booster Pump Station

FIGURE 1-11

South Wiegardt Wellfield Booster Pump Station

BACKUP POWER SUPPLY

Three emergency standby generators are provided to keep the water system operating in the event of a power outage. One 150 KW Katolight diesel generator is located at the NWF. One 150 KW Katolight diesel generator at the SWWF supports the water treatment plant and booster pump station. An additional, 30-KW propane generator at the SWWF supports the Wiegardt wells. All three generators have automatic start and power transfer capabilities on loss of power to the elements noted. The SWWF 150 KW generator is shown in Figure 1-12.

FIGURE 1-12

South Wiegardt Wellfield 150 KW Generator

TRANSMISSION AND DISTRIBUTION SYSTEM

Description

Based on the system mapping, the transmission and distributions system consist of over 60 miles of pipes ranging in size from 1 inch to 12 inches in diameter. Piping installed prior to 1980 was a combination of asbestos concrete (AC) pipe and polyvinyl chloride (PVC) pipe. In the early 1980s the standard was changed to a minimum of 160 psi pressure rated PVC pipe. A water system base map showing distribution system facilities is shown in Figure 1-13.

Pipe Inventory

Almost half of the system is 2-inch water main. Almost 18 percent is 6-inch and almost 17 percent is 8-inch water main. Table 1-5 summarizes the system water distribution system by size.

TABLE 1-5

Pipe Size and Length

Pipe Diameter (inches)	Material	Approximate Length of Pipe in System (lineal feet)	Approximate Length of Pipe in System (miles)	Percent of System
1	PVC	1,321	0.25	0.4%
2	PVC	159,604	30.23	49.6%
3	PVC	2,908	0.55	0.9%
4	PVC	42,009	7.96	13.1%
6	STEEL	5,923	1.12	1.8%
	PVC	43,271	8.20	13.5%
	AC	7,810	1.48	2.4%
8	PVC	14,237	2.70	4.4%
	AC	40,059	7.59	12.5%
12	PVC	4,406	0.83	1.4%
Total		**321,548**	**60.90**	**100%**

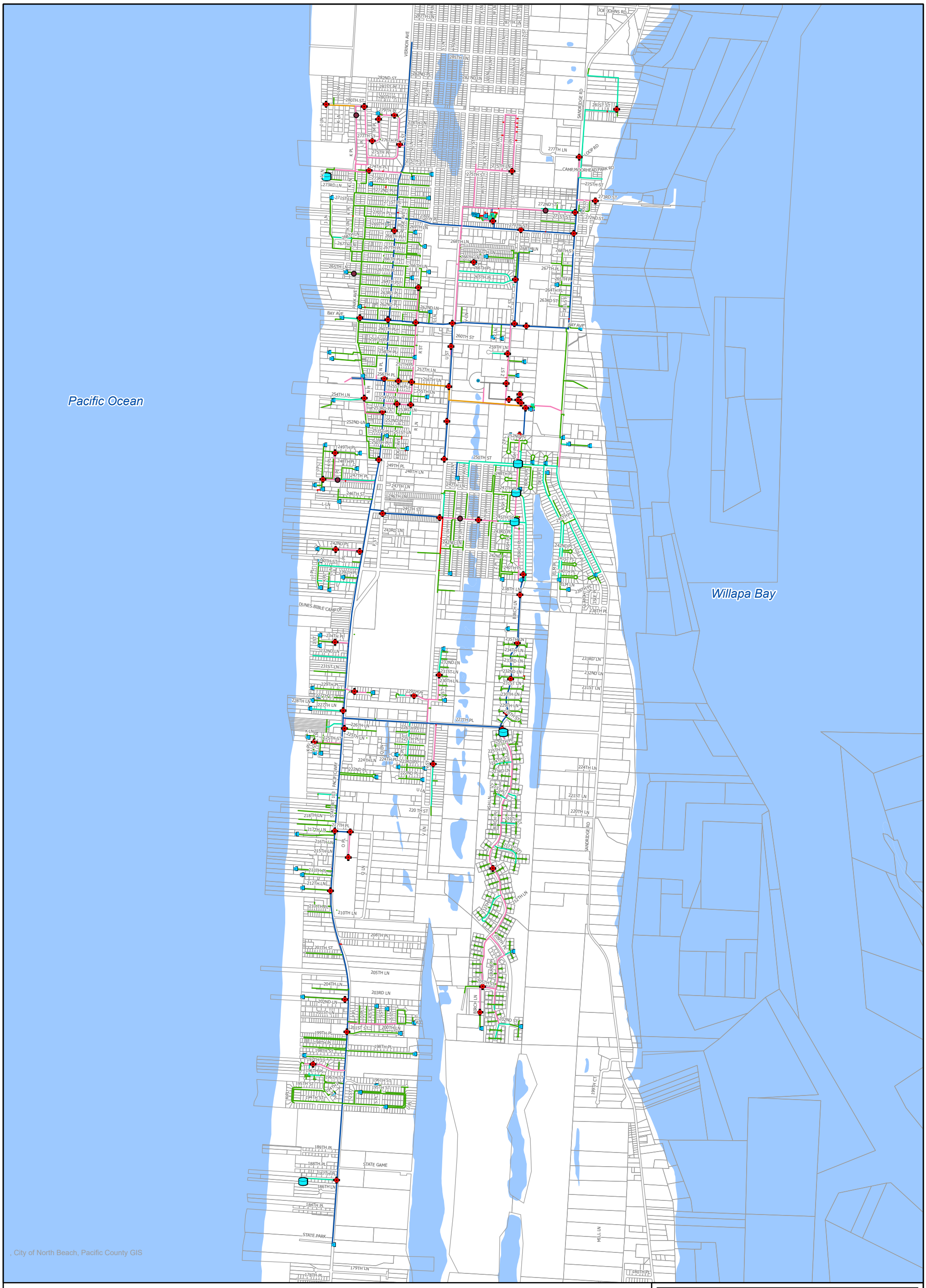
INTERTIES

NBWD currently has no interties with neighboring water utilities. To make an intertie viable, the water mains feeding to the intertie location need to be capable of conveying enough water to make the intertie feasible. Currently, there is a separation of approximately 1.2 miles by road between adequately sized water mains in NBWD and Surfside HOA water system, approximately 2 miles between NBWD and Oysterville Water, and approximately 2.7 miles between NBWD and City of Long Beach water mains. The cost of installing water mains of these lengths make interties impractical at this time. When development brings existing water mains closer, interties may become feasible in the future.

RELATED PLANNING DOCUMENTS

PREVIOUS WATER SYSTEM PLANS

In 2015, a Water System Plan was completed for the NBWD by Gray & Osborne and approved by DOH that same year. In 2007, a Water System Plan for North Beach Water was prepared by TJF & Associates of Olympia, Washington. That Plan was approved by DOH by letter dated November 12, 2008. The 2007 Plan was the first plan prepared for the combined OPWC/PWC water system. Prior to that Plan, Water System Plans had been prepared separately for OPWC and PWC. According to the 2007 Plan, the first Water System Plan for OPWC was approved by the State Board of Health January 31, 1966, and the last Water System Plan prepared by OPWC was dated December 1998. Also, according to the 2007 Plan, the first water system plan prepared



Wells
Stand Pipe
Fire Hydrants
Blowoff
AirRelease

Water Mains
Unknown
1-INCH
1.5-INCH
2-INCH
3-INCH
4-INCH
6-INCH
8-INCH
12-INCH

N

0 1,000 2,000 4,000 Feet

NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

FIGURE 1-13

EXISTING DISTRIBUTION SYSTEM

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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for PWC was approved on July 23, 1981, and the last water system plan prepared for PWC was completed in August 1994.

COORDINATED WATER SYSTEM PLAN

Economic and Engineering Services, Inc. in Association with American Engineering Associates, Pacific County Long Beach Peninsula Coordinated Water System Plan (PCCWSP), August 1985
This document was developed to coordinate the planning and development of water facilities in order to provide future water service in the most efficient and effective manner possible. It outlines physical features, land use and zoning, population, water consumption, and describes existing water systems. It provides specific information regarding source, storage, distribution system requirements, minimum design standards, service areas, and review procedures. It discusses regional issues and provides recommendations. The PSSWSP was never adopted by Pacific County, so while it is a useful source of information, it has no legal standing.

GMA RELATED PLANS, POLICIES, AND DEVELOPMENT REGULATIONS

Pacific County, Washington – Comprehensive Plan, Final Draft, February 2021
This document is intended as a reference guide to the public and is intended to notify citizens, the development community, builders, and other government agencies of how the county is directing its energies and resources to manage growth. It seeks to establish a clear intent and policy base that can be used to develop and interpret county regulations.

WATERSHED PLANNING – WRIA 24, WILLAPA

Watershed Planning is not being pursued under the Watershed Planning Act in the Willapa watershed basin, WRIA 24. There are no current watershed-planning activities related to this basin.

ANALYSIS OF COMPATIBILITY WITH EXISTING PLANS

Pursuant to the GMA, Pacific County and its constituencies worked together to adopt *County-Wide Planning Policies*. These policies address issues such as urban growth, affordable housing, economic development, and public facilities to achieve consistency between County and City Comprehensive Plans. It is the intent of this Water System Plan to be consistent with county wide planning policies. A DOH "Local Government Consistency Review Checklist" has been reviewed and signed by Pacific County Planning Director, indicating that Pacific County Planning finds this Water System Plan to be consistent with county-wide planning policies. A copy of the signed form is included at the front of this Water System Plan.

EXISTING SERVICE AREA CHARACTERISTICS

Historically, Pacific County has been dominated by the timber and shellfish industries. As the timber industry has declined in the area, the overall economic base for the county has declined. The North Beach Peninsula relies predominantly on tourism, cranberry production, shellfish industry, retirement and government employment for its economic base. NBWD serves a large number of seasonally occupied homes and tourism related businesses.

SERVICE AREA

WAC 246-290-010 defines "Service Area" as "means the specific area a water system currently serves and areas where future water service is planned. The current NBWD Service Area is shown in Figure 1-14.

RETAIL SERVICE AREA

Retail Service Area is defined in WAC 246-290-010 as "the specific area defined by the municipal water supplier where the municipal water supplier has a duty to provide service to all new service connections. This area must include the municipal water supplier's existing service area and may also include areas where future water service is planned if the requirements of RCW 43.20.260 are met." Since NBWD does not wholesale water to any other water purveyor, the retail service area is the same as the service area.

SERVICE AREA AGREEMENTS

An Interlocal Service Area Agreement normally formalizes service area boundaries in a Critical Water Supply Service Area. However, since the Pacific County Commissioners have never formally adopted the PCCWSP, there is no binding mandate to honor service area boundaries. It has, nevertheless, been the practice of purveyors on the North Beach Peninsula to honor the service areas designated by the PCCWSP, and there are no known territorial disputes regarding service areas.

PACIFIC COUNTY COORDINATED WATER SYSTEM PLAN

The establishment of service area boundaries by the PCCWSP includes two basic obligations:

- County and state government should recognize each utility as the responsible agency for providing all public water service within the designated area by Interlocal Agreement; and

Source: Pacific County GIS, North Beach Water District, Washington State DNR, Gray & Osborne, Inc.

Pacific Ocean

Willapa Bay

North Beach Water District Service Area & Retail Service Area

Roads

Parcels

Surface Water

N

0 1,250 2,500 5,000 Feet

NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

FIGURE 1-14

RETAIL SERVICE AREA

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CONSULTING ENGINEERS

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- It is the utility's responsibility for providing satisfactory water service within a reasonable time frame to customers within that geographical area designated as their future service area.

If the PCCWSP had been adopted for this geographical area, no new water systems would be allowed within a utility's designated future service area unless the existing utility was unable or unwilling to provide service. The County and utilities in the North Beach Peninsula have been operating in the spirit of the 1985 PCCWSP, although, since the PCCWSP was never adopted by the County, it has no legal standing.

NBWD RULES AND REGULATIONS

The NBWD Rules and Regulations address a wide range of water system operations, maintenance and customer relations issues. These Rules and Regulations cover many, though not all, of the service area policies listed above from the Water System Planning Handbook, as well as many issues not listed in the Water System Planning Handbook. A copy of the NBWD Rules and Regulations is included in Appendix F of this Plan, and the NBWD Water System Construction Standards are included in Appendix G. Following is a summary of how the NBWD Rules and Regulations address the policy list from the Water System Planning Handbook.

ZONING AND FUTURE LAND USE

The *Pacific County Comprehensive Land Use Plan* sets forth zoning for the service area. This document was adopted in February 2021. Zoning in the NBWD service area is primarily Rural Residential (RR) and Restricted Residential (R1), with substantial areas also zoned Agricultural (AG) and Conservation (CD). There are also areas zoned Resort (R3), areas zoned Community Commercial (CC) and two areas zoned Industrial (IND). Zoning is shown in Figure 1-15.

WATER SYSTEM POLICIES

The Water System Planning Handbook recommends that water system plans address, at a minimum, the following water system policies:

- Wholesaling Water
- Wheeling Water
- Annexation
- Direct Connection and Satellite/Remote Systems
- Design Performance Standards
- Surcharge for Outside Customers
- Formation of Local Improvement Districts Outside Legal Boundaries
- UGA
- Late-Comer Agreements

- Oversizing
- Cross-Connection Control Program
- Extension
- Duty to Serve

The PCCWSP, while never formally adopted, has been used as a guide for service area extension policies. In addition, the NBWD has adopted a written set of Rules and Regulations, most recently revised December 22, 2014. These regulations address many water service area policies. The following sections discuss the policies of NBWD with regard to the Planning Handbook.

Wholesaling Water

NBWD Rule 1000 addresses wholesaling of water. The rule includes Paragraphs one through seven. The first sentence of paragraph one reads as follows:

> "The Board may authorize, by resolution, water service to a community or number of contiguous real properties to be furnished through a master meter upon finding that service through individual meters is not practical."

The rule goes on to spell out specific conditions to be met by wholesale customers.

Wheeling Water

Wheeling of water consists of allowing two outside water systems to exchange water through the NBWD water system pipes. NBWD does not currently wheel water and has no formal policy regarding this issue. NBWD will evaluate any future requests to wheel water through the NBWD system on a case-by-case basis.

Annexation

Parcels not currently included in the NBWD district boundaries must annex to NBWD to receive direct water service from NBWD.

Direct Connection and Satellite/Remote Systems

NBWD will provide piped water to any platted parcel on request for service and payment of applicable fees. If water mains are not present at the parcel, the applicant may apply to extend water mains as necessary to obtain service, or the applicant may request that NBWD install a water main extension at the applicant's cost. NBWD does not wish to have separate water systems installed within their service area and does not wish to be a satellite water system operator.

Source: Pacific County GIS, North Beach Water District, Washington State DNR, Gray & Osborne, Inc.

Pacific Ocean

Willapa Bay

Land Use
- Community Crossroad - Klipsan Crossing
- General Rural
- Public Preserve
- Rural Agricultural
- Rural Village - Ocean Park
- Shoreline Development
- Unknown

- Roads
- North Beach Water District Service Area
- Parcels
- Surface Water

N

0 1,250 2,500 5,000 Feet

NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

FIGURE 1-15

EXISTING LAND USE

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CONSULTING ENGINEERS

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Source: Pacific County GIS, North Beach Water District, Washington State DNR, Gray & Osborne, Inc.

Pacific Ocean

Willapa Bay

Zoning
- Agricultural
- Community Commercial
- Conservation
- General Residential
- Industrial
- Mixed Use
- Resort
- Restricted Residential
- Rural Residential
- Parcels
- Surface Water
- North Beach Water District Service Area

N

0 1,250 2,500 5,000 Feet

NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

FIGURE 1-16

ZONING

Gray & Osborne, Inc.
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Design Performance Standards

NBWD has developed minimum water system construction standards. A copy of these standards is included in Appendix G. An outline of these standards is provided Chapter 7.

Surcharge for Outside Customers

NBWD does not provide water service outside of its jurisdictional boundary and therefore has no outside customers.

Urban Growth Area (UGA)

NBWD Rules and Regulations Section 1100 – *Main Extensions* states that water main extensions shall be installed at the cost of the party requesting water service. The exceptions to this are covered in Section 1102, which allows the district to finance a developer extension in the manner and to the extent authorized by the board, and in Section 110.22 which allows reduced connection charges for low income property owners.

Late-Comer Agreements

NBWD Rules and Regulations Section 1110 states that an individual installing a water main may request a latecomer agreement requiring properties fronted by the water main installed by the developer to pay a portion of the cost of the water mains as a condition for connecting to the water main.

Oversizing

NBWD Rules and Regulations Section 1101 – *District Participation in Extension-Oversizing* states that the district may participate in developer oversizing through a three step process. The developer must first determine whether the extension should be larger in size than is necessary to serve the developer's property, in order to serve other real property in the vicinity. The developer must present a report with engineer approval of oversizing the extension. Finally, the district reviews this report and any other relevant information and the board of commissioners move to approve or disapprove the proposed oversizing and reimbursement method. The district is entitled to latecomer reimbursement for its costs of oversizing in the same manner as the developer.

Cross-Connection Control Program

NBWD Rules and Regulations Section 250 states that cross connections are prohibited, and that owners of existing or potential cross-connection hazards that cannot be eliminated must have a proper backflow prevention device installed, inspected, and

regularly tested. Chapter 6 further elaborates on the NBWD Cross-Connection Control Program.

Extension

NBWD Rules and Regulations Section 1100 states, in part, that water main extensions shall be constructed by NBWD or in accordance with the Rules and Regulations of NBWD and subject to approval of the board of commissioners. A party requesting water service where there is no existing water main may request NBWD to extend the water main, or may install the water main using a private contractor, subject to NBWD approval. In either case, service will be provided after the main has been installed, tested, and accepted by NBWD, and the party requesting service has paid all applicable fees and reimbursed NBWD for its costs.

NBWD established a Customer Generated Infrastructure Agreement policy on July 22, 2013 with the adoption of Resolution 18-2013, and amended the policy on April 21, 2014 with the adoption of Resolution 10-2014. The policy is designed to promote the installation of water mains on the many streets, roads, and lanes off of SR 103 and Pacific County roads where NBWD has a water main. The policy states if 30 percent of the property owners on a road to request a water main be installed on their road and, provided certain conditions are achieved, NBWD will install the water main and develop a pro rata cost for each property on the road, street, or lane.

Duty to Serve

The North Beach Water District recognizes its duty to provide water service within its designated retail water service area in a timely and reasonable manner, as required by the Municipal Water Law.

Property owners requesting service must first provide the District with their requested service address. NBWD then uses GIS maps to identify if there is a water main parallel to one side of the applicant's property. In the case that a water main is present, the property owner is provided an application for service. NBWD will then install a water service at the property within 3 months from the time of payment. If a water main is not present in the property vicinity, the property owner may construct a water main extension, at their expense and with adherence to District construction standards.

CONDITIONS OF SERVICE

Purveyor Responsibilities

NBWD will provide service for lots within NBWD service area subject to the availability of water and the number of approved connections permitted by DOH, payment of fees as adopted by the NBWD Board, and, if necessary, completion of any water main extension necessary to obtain water service.

Customer Responsibilities

NBWD Rules and Regulations include responsibilities that customers have to NBWD. Some of these responsibilities are summarized as follows:

Code Section	Customer Responsibility
1.01.060	Use water only for the purposes specified in their application for service
240	Prevent water waste
700.10	Maintain the service line between the water meter and place of use
510	Restrict irrigation water usage during fire emergencies
250	Prevent cross connections
1.01.140	Allow for inspection of premises for conformance with rules
1.01.160	Maintain adequate separation of sewer facilities from water facilities
200.2	Pay water service charges when due

CONSENT AGREEMENTS FOR INSPECTION, MAINTENANCE AND REPAIRS THAT DISRUPT SERVICE

NBWD Rules and Regulations Section 1.01.120 states that NBWD may reduce or interrupt water service without prior notice in emergency situations.

COMPLAINTS

POLICY FOR DEALING WITH COMPLAINTS

Complaints may be submitted in writing at the NBWD office, called in by phone to the NBWD office, or sent by email to the NBWD office. Complaints are forwarded to the NBWD General Manager for investigation. The Field Supervisor makes contact with the complainant, investigates the complaint when necessary, resolves the complaint when possible, or recommends a solution to the NBWD General Manager. The NBWD General Manager is responsible for recording the resolution of the complaint in the complaint log. Complaints unresolved by the Field Supervisor or the General Manager may be appealed to the NBWD Board.

COMPLAINT RECORD KEEPING

Telephone and written complaints are logged by NBWD office staff and forwarded to the General Manager and the Field Supervisor. The telephone logs and written complaints are maintained in the business office.

CHAPTER 2

BASIC PLANNING DATA

INTRODUCTION

The objective of this chapter is to present basic planning data and derive characteristic water parameters for North Beach Water District's (NBWD) water system. These characteristic parameters will then be used for forecasting the District's future water demand. This chapter provides existing and projected future water demand, population, service connections, and Equivalent Residential Units (ERU). The chapter also includes projected land use and water demands for the 10- and 20-year planning periods. These forecasted demands will later inform the system capacity analysis in Chapter 3.

HISTORIC WATER USE DATA

SERVICE CONNECTIONS

The North Beach Water District has three categories for their service connections, residential, commercial, and private fire flow. Residential connections include both multi-family and single-family residences. Private fire flow connections are those which provide fire prevention water for private use.

TABLE 2-1

Historic Year-End Water Services by Customer Class

	Residential[(1)]	Commercial	Private Fire Prevention	Total
2018	2,631	102	4	2,737
2019	2,646	101	4	2,751
2020	2,675	100	4	2,779
2021	2,717	99	4	2,820
2022	2,758	101	4	2,863

(1) NBWD billing software does not track multi-family residential connections separately from single-family residential connections. The WFI from February 2023 reports 519 multi-family connections, which represents the number of multi-family units rather than the number of service meters.

Commercial connections have remained fairly constant over the data period, while residential connection have steadily increased. The COVID-19 pandemic began in 2020 and had a statewide effect on business operations, which could explain the slight decrease in commercial connections for 2020 and 2021.

The peninsula where NBWD is located has a substantial tourism industry, and many of the residential service connections support vacation rentals or other forms of part-time occupancy. The District does not have a separate customer class for homes used as vacation rentals, but evaluating connections with zero or very little water use each month can provide an estimate of part time versus full time users and their water use.

Individual customer accounts between 2020 and 2022 were gathered to note water use patterns. Many customer accounts have months with zero water use, this indicates that the account has only part time use. Some customer accounts have minimal average daily water use throughout the year. While there are not definitive numbers on average daily individual water use, the Water Footprint Calculator Organization estimates 60 gallons per day per person and the US Geological Survey estimates between 80 and 100 gallons per day per person. For the purpose of estimating average water use for full time users, we have broken out the connections which fit two conditions: (1) some amount of water is used every month in the calendar year; and (2) the account's average daily use was 60 gpd or greater. The number of these 'full time' connections is provided in Table 2-2.

TABLE 2-2

Full-Time Residential Connections

	Residential Connections	Full-Time(1) Residential Connections	Part-Time(2) Residential Connections	Percentage of Residential Connections which are Full Time(1)
2020	2,675	899	1,776	34%
2021	2,717	963	1,754	35%
2022	2,764	933	1,831	34%

(1) Defined as connections with some water use every month AND average demand greater than 60 gallons per day (2,900 cubic feet per year).

(2) Defined as connections with at least one month of zero water use AND average demand less than 60 gallons per day (2,900 cubic feet per year).

The ratio of full-time to part-time residential connections has remained around 34 to 35 percent over the available data period. When full time connections increased between 2020 and 2021, part-time connections decreased. The opposite happened between 2021 and 2022, when full-time connections decreased while part-time connections increased. The available data set is small, and the method by which a separation was made between full-time and part-time connections is inexact. For this reason, and backed up by 3 years of consistency, the growth of all connections will be evaluated as a whole. The number of full-time connections and their associated water use will be used later in this chapter to find average daily full-time water use.

HISTORIC WATER USE

This section summarizes NBWD's historical water data and identifies trends which will be used to forecasted water use needs at the conclusion of this chapter. The system's data are the result of a properly metered system. Production data is collected from NBWD's sources on a daily basis, while customer service meters have historically been read on a monthly basis.

WATER PRODUCTION

NBWD has two wellfields and nine active wells. Total annual production by well is summarized in Table 2-3. Water production has steadily increased during the data period and the maximum annual production for the data period was in 2022.

North Well 6 is responsible for the largest portion of total production, followed by North Well 1. South Wiegardt Wells 1, 2, and 3 have increased from each contributing 10 to 11 percent of the total production, to each producing 16 to 17 percent of the total. North Wells 3, 5, and 7R are not commonly utilized due to their concentrations of arsenic, which will be discussed further in Chapter 3.

TABLE 2-3

Annual Water Production Records, MG(1)

Well	2019	2020	2021	2022	Average Percentage of Total Production
North Wellfield					**56.7%**
N-1	25.42	22.22	22.30	23.07	20.8%
N-3	0.00	0.00	0.00	0.00	0.0%
N-4	0.55	0.18	1.30	0.07	0.5%
N-5	0.19	0.14	0.01	0.03	0.1%
N-6	38.34	34.91	27.85	29.92	29.4%
N-7R	0.07	0.01	1.91	0.09	0.4%
N-8	5.19	3.63	9.12	6.95	5.5%
South Wiegardt Wellfield					**43.3%**
SW-1	11.28	SW-1	11.28	SW-1	11.28
SW-2	10.16	SW-2	10.16	SW-2	10.16
SW-3	10.17	SW-3	10.17	SW-3	10.17

(1) MG is million gallons produced for the indicated year.

Average and Maximum Day Production and Maximum Day Peaking Factor

The terms average day production and maximum day production are intended to be used equivalently with the terms Average Day Demand (ADD) and the Maximum Day Demand (MDD) respectively as described in the DOH 2020 *Water System Design Manual*. The average day production is determined by taking the total well production for a given year and dividing it by the number of days in the given year. The maximum day production corresponds the actual amount of water produced during the day of maximum demand of the given year.

A maximum day peaking factor is a unit-less ratio between the average day and maximum day of water demand. Each year's maximum day peaking factor can then be determined by dividing the maximum day production by the average day production of any given year. Average day production and maximum day production for 2020 through 2022 are shown in Table 2-4, along with each year's maximum day peaking factor.

TABLE 2-4

Maximum Day to Average Day Ratio

Year	Average Day Production (gpd)	Maximum Day Production (gpd)	Maximum Day Production Date	Maximum Day Peaking Factor(1)
2019	277,734	(2)	(2)	(2)
2020	305,825	545,398	February 15th	1.78
2021	323,206	604,220	June 27th	1.87
2022	327,314	521,494	September 10th	1.59
Average	**308,520**		**-**	**1.75**

(1) Maximum Day Peaking Factor = Max Day Production/Average Day Production.
(2) Daily production records for 2019 are not available.

The true maximum production days for 2020 and 2022 are June 6 and October 19, respectively; however, both days represent water main breaks and subsequent flushing, as reported by NBWD staff. The second maximum days for 2020 and 2022 are provided in Table 2-4 because they represent maximum consumer use rather than an emergency situation.

A maximum production day in February, as was the case in 2020, is atypical in general, and especially so in areas where tourism is a major industry. However, the days surrounding February 15th report values within 70 percent of 545,398 gallons, indicating the peak to be normal rather than anomalous. Beginning in March of 2020, much of the state entered into a mandatory lockdown due to the COVID-19 pandemic and travel was limited. The lack of summer days with use higher than February 15th may be due to this shutdown.

The average Maximum Day Peaking Factor over the data period is 1.75. While this number is somewhat low, it falls within the range of 1.5 to 3 recommended by the 2020 DOH *Water System Design Manual.*

WATER CONSUMPTION

Table 2-5 summarizes the water consumption by customer class for NBWD between 2019 and 2021. Water consumption data was provided by the District's billing records, except for the distinction between "Full-Time" and "Part-Time" residential consumption in the years 2020, 2021 and 2022. For the purpose of this analysis, "Full-Time" residential consumption is defined as the water used by residential accounts meeting two criteria, accounts which have been active 12 months out of the year and have average daily use greater than 60 gallons per day. "Part Time" represents the water used by accounts not categorized as full time.

TABLE 2-5

Metered Consumption by Customer Class 2018 through 2022

		Customer Consumption (MG)				
		2018	**2019**	**2020**	**2021**	**2022**
Residential	Full Time	64.47	66.63	45.24	48.64	43.57
	Part Time			23.04	22.11	20.78
Commercial		17.43	17.85	17.65	17.65	15.80
Total		**81.90**	**84.48**	**85.92**	**85.93**	**86.55**

As is the case with total water production (see Table 2-3), annual consumption has tended to increase over the data period, with some outliers. The COVID-19 pandemic related shutdowns in 2020 and 2021 were likely the cause of the decrease in commercial consumption during that time.

Between 2020 and 2021 full-time residential consumption increased while part time decreased, however in 2022 full-time residential consumption decreased alongside part time. Total residential use in 2022 was significantly lower than the previous year while the opposite is true for commercial use. This may also be related to the COVID-19 pandemic, as customers were once again able to visit businesses freely rather than shelter-in-place at home.

OTHER AUTHORIZED USE

In addition to water sales, NBWD utilizes water to backwash treatment filters, to sample for water quality, to operate utilities at the District office, and to flush service lines as needed. Table 2-6 illustrates authorized NBWD water usage which is not billed.

TABLE 2-6

2019-2022 Non-Billed Authorized Use

	Filter Backwash		Other Authorized Use(1)		Total Non-Billed Use (MG)
	MG	Percent of Total Production	MG	Percent of Total Production	
2019	6.71	7 %	2.49	2%	9.203
2020	10.85	10 %	1.55	1%	12.401
2021	13.97	12 %	5.10	4%	19.062
2022	15.04	13 %	4.80	4%	19.839

(1) The Other Authorized Use category includes metered water use at the NBWD District Office, raw water used for sampling and testing, and system flushing.

Total non-billed authorized use has increased each year since 2019. Filter backwash has seen a significant increase since 2019. Between 2019 and 2022, the North Wellfield reported an average 4 percent of total wellfield production used for filter backwash, while the South Wiegardt Wellfield has reported an average 17 percent of total wellfield production. Backwash as a percentage of total water use at each wellfield has increased since 2019, and the production contribution of the SWWF has also increased during that time. The SWWF currently requires frequent filter backwash cycles due to water quality concerns which will be discussed further in Chapter 3.

Other authorized use has fluctuated since 2019, most notably dropping in 2020 when the COVID-19 pandemic caused the district office to close for much of the year. For planning purposes, filter backwash will be assumed to make up 13 percent of total production and other authorized use 4 percent of production in the future water use projections. This totals 17 percent of production for non-billed, authorized use. Capital improvement projects proposed in Chapter 8 may decrease the high percentage of water used for filter backwash, so this value is conservative.

DISTRIBUTION SYSTEM LEAKAGE

Distribution System Leakage (DSL) is the difference between a system's total water produced and authorized consumption over a full year. Authorized consumption includes water purchased by customers and other authorized uses described above. Annual production, water usage and distribution system leakage are summarized in Table 2-7.

TABLE 2-7

Distribution System Leakage

	Total Water Produced (MG)	Total Billed Use (MG)	Other Authorized Use (MG)	DSL (MG)	Percent DSL	Rolling 3-Year Average
2019	101.37	84.48	9.20	7.69	8%	-
2020	111.93	85.92	12.40	13.61	12%	-
2021	117.97	86.55	19.06	12.36	10%	10%
2022	119.47	82.53	19.84	17.10	14%	12%

Based on data available, water production typically exceeds water usage with a DSL averaging 12 percent for 2020 through 2022. Increased DSL in 2020 and 2022 is likely due to the water main breaks in June 2020 and October 2022 previously discussed. More about the District's DSL and water use efficiency plans will be covered in Chapter 4.

EQUIVALENT RESIDENTIAL UNITS

The concept of Equivalent Residential Units (ERUs) is used as a means to express water use by non-residential customers as an equivalent number of residential customers. Typical ERU consumption is calculated by dividing the total volume of water utilized in the single-family residential (SFR) customer class by the total number of active SFR connections. As previously discussed, in NBWD there is no distinction between single-family and multi-family customers, and the majority of residential connections do not represent full time occupancy (see Table 2-2). In order to accurately estimate the average daily demand for a typical full-time resident, we will divide the volume of full-time residential consumption (Table 2-5) by the number of full-time residential connections (Table 2-2). This number defines the average consumption per ERU, which can be referred to as ERU_{ADD}. The volume of water used by part time residential connections and other customer classes can then be divided by ERU_{ADD} in order to determine the number of ERUs for that customer category. The maximum day consumption per ERU (ERU_{MDD}) can also be determined by multiplying a given year's computed ERU_{ADD} by the corresponding maximum day peaking factor found in Table 2-4. The equivalent residential unit calculations for both ERU_{ADD} and ERU_{MDD} for years 2020 through 2022 are summarized in Table 2-8.

TABLE 2-8

Water Use per Full-Time Residential Connection

Year	Full-Time Residential Water Consumption[1] (MG)	Number of Full-Time Residential Connections[2]	ERU_{ADD}[3] (gpd)	ERU_{MDD}[4] (gpd)
2020	45.24	899	138	246
2021	48.64	963	138	259
2022	43.57	933	128	204
Average			135	236

(1) From Table 2-5.
(2) From Table 2-2.
(3) ERU_{ADD} = Full Time Residential Water Consumption/Full Time Residential Connections.
(4) ERU_{MDD} = ERU_{ADD} * Maximum Day Peaking Factor for the given year from Table 2-4.

ERU_{ADD} was the same in 2020 and 2021 then decreased in 2022. This trend echoes that of total residential consumption between 2021 and 2022 (see Table 2-5). The average ERU_{ADD} over the data period is 135 gpd and the average ERU_{MDD} over the data period is 236 gpd.

This is a fairly low water use rate compared to DOH's reported typical values of 200 gpd for ERU_{ADD} and 350 gpd for ERU_{MDD}. This could be due to the area's relatively cool and damp weather, which means that outdoor irrigation is minimal in the service area. It could also be due to the fact that many customers in the area are retirees rather than families with children. US Census data reports that 32.5 percent of the population of Pacific County is over 65. This is more than double the state of Washington's percent of the population over 65, which is 17.1 percent (2022 American Community Survey 5-Year Estimates). Due to these contributing factors, as well as the elimination of all water accounts with only part time use, we are confident that the average value for ERU_{ADD}, 135 gpd, is representative of an average full-time water user in North Beach Water District.

Consumption as ERUs

Table 2-9 presents ERU values for part time residential connections, commercial connections, and other water uses for the year 2022

TABLE 2-9

2022 Equivalent Residential Units

	Number of Connections	Average Daily Consumption	ERUs[(1)]	Average ERUs per connection
Full-Time Residential	933	119,362	933	1.0
Part-Time Residential	1,831	56,939	423	0.2
Commercial	101	49,827	370	3.7
Private Fire Connections	4	0	0	0
Filter Backwash	-	41,191	306	-
Other Authorized Use	-	13,163	98	-
DSL	-	46,833	348	-
Total	**2,869**	**327,314**	**2,478**	

(1) Based on the value of 135 ERU_{ADD}.

PEAK HOUR FACTOR

To estimate peak hour demands for NBWD, a peak hour peaking factor must be calculated from the ratio of peak day demand to peak hour demand. Peak hour demand was determined by using the DOH 2020 Water System Design Manual guidelines for estimating peak hour demand. The equation used to estimate the peak hour demand is given as:

$$PHD = (ERU_{MDD}/1440)[(C)(N) + F] + 18$$

Where:

PHD= Peak Hour Demand (gallons per minute)
ERU_{MDD} = Maximum Day Demand per ERU (Table 2-8)
C = Coefficient associated with ranges of the number of ERUs
N = Number of ERUs served
F = Factor from associated with ranges of the number of ERUs

For a system with more than 500 service connections, C = 1.6 and and F = 225, according to the DOB *Water System Design Manual* Table 3-1. Using the above equation, the peak hour demand for 2020 through 2022 is calculated and shown in Table 2-10.

TABLE 2-10

Peak Hour Demand Peaking Factor

	Number of System ERUs[(1)]	ERU_{MDD}[(2)] (gpd/ERU)	Peak Hour Demand (gpm)	Maximum Day Production[(3)] (gpm)	Peak Hour Peaking Factor[(4)]
2020	2,218	246	662	379	1.7
2021	2,336	259	730	420	1.7
2022	2,558	204	629	362	1.7
Average					**1.7**

(1) Number of System ERUs = Average Day Production (from Table 2-4)/ERU_{ADD} (from Table 2-8).
(2) From Table 2-8.
(3) From Table 2-5, converted from gpd to gpm.
(4) Peak Hour Peaking Factor = Peak Hour Demand/Maximum Day Production.

WATER DEMAND PROJECTIONS

PROJECTED GROWTH

The NBWD service area is unincorporated, and population estimates and projections from the Washington State Office of Financial Management (OFM) are not available. However, the OFM reports that Pacific County as a whole has grown at an average annual rate of 0.54 percent between 2000 and 2020 and Unincorporated Pacific County with an average annual growth of 0.48 percent between 2010 and 2020.

The 2020 Pacific County Comprehensive Plan includes projected growth, and reports an anticipated 0.09 percent growth for Pacific County and a 0.04 percent growth for Unincorporated Pacific County from 2020 to 2040.

NBWD connection history indicates a 1.1 percent average annual growth rate between 2018 and 2022, and a 0.71 percent average annual growth from 2013 to 2022. Both of these values are considerably higher than the past and projected growth rates for Unincorporated Pacific County. This may be due to the area's geographic location, or possibly the availability of services.

Connection history data is more specific to NBWD than county-wide data. Thus, annual connection growth rates will be used for planning purposes. Due to its wider range of data and closer proximity to estimates from OFM and the Pacific County Comprehensive Plan projections, 0.71 percent will be used for the water use annual growth rate. As discussed previously in this chapter, full-time and part-time connections fluctuated between 2020 and 2022. When full-time connections grew the other shrank and vice-versa, though not at equivalent levels. The number of connections as a whole increased during that time. To be conservative, we will estimate that both types of connections grow equally. If the water system drastically changes over the next 10 years and

demographics are witnessed changing from many part-time rentals to full-time residences these projections should be reevaluated.

WATER DEMAND FORECASTING

Forecasted water demand through the 10- and 20-year planning horizons are summarized in Table 2-10 below. In addition to the steady annual percent increase in ERUs, DSL is held steady and a constant rate of 48,850 gpd, which was the average daily volume of DSL in 2022. Maximum and peak hour demands are determined using their respective peaking factors calculated earlier in this chapter.

TABLE 2-11

Forecasted Water Demands

	Full-Time Residential Consumption[(1)] (gpd)	Part-Time Residential Consumption[(1)] (gpd)	Commercial Consumption[(1)] (gpd)	Other Authorized Consumption[(2)] (gpd)	Total Consumption (gpd)	DSL[(3)] (gpd)	Number of ERUs[(4)]	Average Day Demand[(5)] (gpd)	Maximum Day Demand[(6)] (gpd)	Peak Hour Demand[(7)] (gpm)
2023	120,200	57,300	50,200	56,200	283,900	46,850	2,455	330,750	578,400	683
2024	121,100	57,700	50,600	56,600	286,000	46,850	2,470	332,850	582,100	687
2025	122,000	58,100	51,000	56,900	288,000	46,850	2,485	334,850	585,500	691
2026	122,900	58,500	51,400	57,300	290,100	46,850	2,501	336,950	589,200	696
2027	123,800	58,900	51,800	57,600	292,100	46,850	2,516	338,950	592,700	700
2028	124,700	59,300	52,200	58,000	294,200	46,850	2,531	341,050	596,400	704
2029	125,600	59,700	52,600	58,300	296,200	46,850	2,546	343,050	599,900	708
2030	126,500	60,100	53,000	58,700	298,300	46,850	2,562	345,150	603,600	713
2031	127,400	60,500	53,400	59,000	300,300	46,850	2,577	347,150	607,100	717
2032	128,300	60,900	53,800	59,400	302,400	46,850	2,592	349,250	610,700	721
2033	129,200	61,300	54,200	59,700	304,400	46,850	2,607	351,250	614,200	725
2034	**130,100**	**61,700**	**54,600**	**60,100**	**306,500**	**46,850**	**2,623**	**353,350**	**617,900**	**729**
2035	131,000	62,100	55,000	60,400	308,500	46,850	2,637	355,350	621,400	734
2036	131,900	62,500	55,400	60,800	310,600	46,850	2,653	357,450	625,100	738
2037	132,800	62,900	55,800	61,100	312,600	46,850	2,668	359,450	628,600	742
2038	133,700	63,300	56,200	61,500	314,700	46,850	2,683	361,550	632,200	746
2039	134,600	63,700	56,600	61,800	316,700	46,850	2,698	363,550	635,700	750
2040	135,600	64,200	57,000	62,200	319,000	46,850	2,715	365,850	639,800	755
2041	136,600	64,700	57,400	62,600	321,300	46,850	2,732	368,150	643,800	760
2042	137,600	65,200	57,800	63,000	323,600	46,850	2,750	370,450	647,800	765
2043	138,600	65,700	58,200	63,400	325,900	46,850	2,767	372,750	651,800	769
2044	**139,600**	**66,200**	**58,600**	**63,800**	**328,200**	**46,850**	**2,784**	**375,050**	**655,800**	**774**

(1) Increase at rate of 0.71 percent per year.
(2) Other Authorized Consumption in years 2023-2044 is estimated to be 17 percent of that year's total water production (Total Consumption + DSL).
(3) DSL is held steady at 46,850 gpd, which is the average day volume for 2022 (from Table 2-7).
(4) Number of ERUs = (Total Consumption + DSL)/ERU_{ADD}; where ERU_{ADD} = 91 gpd/ERU in 2022 and 100 gpd/ERU in the years thereafter.
(5) Average Day Demand = Total Consumption + DSL.
(6) Maximum Day Demand = Average Day Demand * Maximum Day Peaking Factor; where Maximum Day Peaking Factor = 1.75.
(7) Peak Hour Demand = Maximum Day Demand (in gpm) * Peak Hour Peaking Factor; where Peak Hour Peaking Factor = 1.7.

CHAPTER 3

WATER SYSTEM ANALYSIS

Water system planning is based on a methodological analysis of a water utility's ability to meet level of service standards for existing and future customers. The water system's ability to meet current and future demands is an important consideration in water system planning. In addition to demand considerations, water quality plays a major role in determining the adequacy and compliance of a water system. The five components analyzed in this chapter's system analysis include:

- System Design and Construction Standards
- Water Quality Monitoring and Compliance
- Asset Management
- Capacity Analysis of Water System Components
- Summary of System Deficiencies

Proposed improvement projects to address system deficiencies are presented in Chapter 8.

SYSTEM DESIGN AND CONSTRUCTION STANDARDS

BASIS OF DESIGN STANDARDS

State Standards

The Washington State Department of Health (DOH) relies on various publications of standards, agencies, and the utility itself to establish design criteria. The following is a brief description of three of the most widely recognized performance and design standards.

- **WAC 246-290, Group A Public Water Systems, Washington State Board of Health (March 2022)**

  This is the primary drinking water regulation utilized by the Washington State Department of Health (DOH) to assess capacity, water quality, and overall compliance with drinking water standards.

- **Water System Design Manual (WSDM), Washington State Department of Health (DOH) (June 2020)**

  Significant revisions to the Water System Design Manual have recently been adopted. These standards will serve as guidance for the preparation

of plans and specifications for Group A public water systems in compliance with WAC 246-290.

- **Water System Planning Guidebook, Washington State Department of Health (August 2020)**

  The Water System Planning Guidebook outlines planning requirements as well as a process framework for water system to create a WSP that best fits their size and needs. Significant revisions to the former Water System Guidebook were adopted in August 2020.

District Standards

DOH relies on the District itself to establish design criteria. NBWD uses the following for design standards.

- **North Beach Water District Standard Specifications for Water Main Construction**

  These standards include detailed specifications for materials and workmanship for installation of water main extensions, including piping installation details, thrust blocking, in-line valves, fire hydrants, air release valves, service connections of various types, sample stations, blow offs, and pavement restoration applicable to developer extensions. A copy of these standards is contained in Appendix G.

GENERAL FACILITY DESIGN STANDARDS

Design criteria typically address the sizing and reliability requirements for source, storage, distribution, fire flow, and water quality. Construction standards set forth the materials and construction methods that contractors, developers, and NBWD must follow when constructing water system facility improvements. General facility design standards are summarized in Table 3-1 and cover the following categories:

- Average and Peak Day Demand
- Peak Hour Demand
- Storage Requirements
- Fire Flow Rate and Duration
- Minimum System Pressure
- Minimum Pipe Sizes
- Reliability Recommendations
- Valve and Hydrant Spacing

TABLE 3-1

General Facility Requirements

Standard	DOH Water System Design Manual	NBWD Standard
Average Day and Maximum Day Demand	Average day demand should be determined from previous actual water use data. Maximum day demand is estimated at 1.35 to 1.65 times the maximum month's average day demand if daily metered data is not available.	ADD = 135 gpd, Calculated from metered monthly production data MDD = 1.75 * ADD; with 1.75 being the maximum day peaking factor (See Table 2-4)
Peak Hour Demand	Peak hour demand is determined using the following equation: $PHD = (ERU_{MDD}/1440)[(C)(N) + F] + 18$ ERU_{MDD} = Daily demand per ERU, calculated using peak day single-family housing unit demand (gpd) C = Coefficient from DOH Design Manual Table 3-1. N = Number of connections, ERUs using max day demand and ERU_{MDD} F = Factor of range from DOH Design Manual Table 3-1.	PHD = 1.7 * MDD; with 1.7 being the peak hour peaking factor
Storage	Water systems must account for and provide storage equal to the sum of: • Operational Storage • Equalizing Storage • Standby Storage* • Fire Suppression Storage* • Dead Storage *Standby storage and fire suppression storage may be nested if permitted by the local fire authority.	Water systems must account for and provide storage equal to the sum of: • Operational Storage • Equalizing Storage • Standby Storage* • Fire Suppression Storage* • Dead Storage *Standby storage and fire suppression storage are nested
Fire Flow Standard (Rate & Duration)	The minimum fire flow shall be determined by the local fire authority or WAC 246-293 for systems within a critical water supply service area (CWSSA).	Residential: 500 gpm for 30 minutes Commercial: 750 gpm for 60 minutes
Minimum System Pressure	The system should be designed to maintain a minimum of 30 psi in the distribution system under peak hour demand when all operational and equalizing storage is depleted and 20 psi under fire flow plus maximum day demand conditions when all fire suppression storage is depleted.	Same as DOH Water System Design Manual

TABLE 3-1 – (continued)

General Facility Requirements

Standard	DOH Water System Design Manual	NBWD Standard
Minimum Pipe Sizes	The diameter of a transmission line shall be determined by hydraulic analysis. The minimum size distribution system line shall not be less than 6 inches in diameter unless a hydraulic analysis justifies another size.	Same as DOH Water System Design Manual
Reliability Recommendations	1. Sources should be capable of replenishing fire suppression storage within a 72-hour period while concurrently supplying MDD. 2. Sources capable of supplying MDD within a 20-hour period. 3. Sources must meet ADD with largest source out of service. 4. Source reliability sufficient to limit system-imposed water use restrictions to once every 50 years, on average. 5. In-place, auto-transfer auxiliary power equipment for pump stations and/or two independent primary public power sources and/or adequate gravity standby storage. 6. Standby storage equivalent to MDD, unless lack of source redundancy justifies higher SB volume or good source redundancy justifies lower SB volume. 7. Looping of distribution mains when feasible. 8. Pipeline velocities <8 ft/s at PHD. 9. Flushing velocities of a minimum of 3 fps for all pipelines.	Same as DOH Standard.
Valve and Hydrant Spacing	Sufficient valving should be placed to keep the minimum number of customers out of service when water is turned off for maintenance or repair. Fire hydrants on lateral should be provided with their own auxiliary gate valve.	Hydrant Spacing: Minimum every 900 feet Valve Spacing: Minimum every 1,400 feet

WATER QUALITY STANDARDS

Water quality monitoring is an important part of both regulatory compliance and water system oversight. Table 3-2 lists the existing drinking water regulations and action taken by the District. Some regulations are not included, as they do not apply to the District's water system. For example, the Filter Backwash Water Recycling Rule is not listed or discussed as it is not applicable.

Existing state law regulates bacteriological contaminants, inorganic chemicals and inorganic physical parameters (IOCs); volatile organic chemicals (VOCs); synthetic organic chemicals (SOCs); radionuclides; disinfection byproducts (DBPs) including total trihalomethanes (TTHMs), haloacetic acids (HAA5s), bromate, and chlorite; and disinfectant residuals. Upcoming water quality regulations include the revised lead and copper rule as well as per- and polyfluoralkyl substances (PFAS) monitoring. Together all these regulations define treated water quality standards and establish treated and/or source water quality monitoring schedules. North Beach Water District performs all source and distribution system monitoring.

Minimum standards for water quality are 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, including aesthetics. MCLs are specified in WAC 246-290 and described in the following pages and tables in this chapter.

TABLE 3-2

Applicable Drinking Water Regulations(1)

Drinking Water Regulation(1)	Regulated Contaminant	NBWD Action
Arsenic Rule	Arsenic	Monitoring
Asbestos Rule	Asbestos	Monitoring
Consumer Confidence	N/A	Monitoring
Disinfectants/Disinfection Byproducts Rule (D/DBPR) (Stage 1 & 2)	TTHMs(2), HAA5(2), Chlorite, Bromate	Monitoring
Inorganic Chemicals and Physical Parameters	IOCs	Monitoring
Lead and Copper Rule	Lead, Copper	Monitoring
Revised Lead and Copper Rule	Lead, Copper	Future Monitoring: Monitoring requirements change October, 2024
Per- and Polyfluoroalkyl Substances	PFAS	Monitoring
Radionuclides Rule	Radionuclides	Monitoring
Groundwater Rule	Coliform - Sources	Monitoring
Unregulated Contaminant Monitoring Rule	VOCs, SOCs	Monitoring

(1) Drinking water regulations as of April 2024.
(2) TTHM = Total Trihalomethanes; HAA5 = Five Haloacetic Acids; IOCs = Inorganic Chemical and Physical Characteristics; VOCs = Volatile Organic Chemicals; SOCs = Synthetic Organic Compounds.

Many of the regulations shown in Table 3-2 define water quality standards and establish water quality monitoring schedules. A copy of the District's most recent Water Quality Monitoring Schedule, a guidance document prepared by DOH, is included in Appendix H and summarized below in Table 3-3. This schedule is current as of April 2024. The schedules for both future and existing regulations are subject to revision and NBWD should continue to stay informed regarding regulatory deadlines – particularly regarding upcoming lead and copper regulations.

TABLE 3-3

North Beach Water District's Water Quality Monitoring Schedule(1)

Parameter	Sample Location	Frequency	Last Sampled
Arsenic	Source 06: NWF	Monthly	-
	Source 16: SWWF		-
Asbestos	Distribution System	9 Years	7/20/21
Consumer Confidence	N/A	Yearly	-
Disinfectants/Disinfection Byproducts Rule (D/DBPR) (Stage 1 & 2)	Distribution System	Yearly	6/13/2023
Inorganic Chemicals and Physical Parameters (Inorganics, Nitrite, Nitrate)	Source 06: NWF	IOC: 9 years	4/21/2021
		Iron: 3 years	4/21/2021
		Manganese: 3 years	4/21/2021
		Nitrate: Yearly	4/11/2023
	Source 16: SWWF	IOC: 9 years	10/14/2021
		Nitrate: Yearly	10/10/2023
Lead and Copper	Distribution System	3 Years	10/2/2023
PFAs	Source 06: NWF	3 Years	6/21/23
	Source 16: SWWF		
Radionuclides Rule	Source 06: NWF	6 Years	5/13/2020
	Source 16: SWWF		5/3/2023
Coliform Bacteria	Distribution	Monthly	-
Unregulated Contaminants (VOCs, SOCs)	Source 06: NWF	VOC: 6 Years	10/11/2022
		Herbicides: 9 Years	5/21/2019
		Pesticides: 3 Years	9/12/2017
		Soil Fumigants: 3 Years (waived)	9/12/2017
	Source 16: SWWF	VOC: 6 Years	9/28/2022
		Herbicides: 9 Years	9/15/2022
		Pesticides: 3 Years	9/15/2022
		Soil Fumigants: 3 Years (waived)	2/28/2014

(1) Schedule current as of October 2023.

WATER QUALITY MONITORING AND ANALYSIS

Arsenic Rule

Long-term exposure to low concentrations of arsenic in drinking water can lead to skin, bladder, lung, or prostate cancer. Non-cancer effects of ingesting arsenic at low levels include cardiovascular disease, diabetes, and anemia, as well as reproductive, developmental, immunological, and neurological effects. The EPA's Arsenic MCL is 0.01 mg/L.

Monitoring Requirements and Analysis

The Arsenic Rule makes monitoring requirements consistent with monitoring for other IOCs; however, any system that has a sampling point monitoring result which exceeds the MCL must increase the frequency of monitoring at that sampling point as required by DOH. North Beach Water District has increased sampling frequency to monthly at the North and South Wiegardt Wellfields (Sources 06 and 16) due to elevated detection levels. During increased sampling, compliance with the MCL is based on the running annual average of the samples. Systems triggered into increased monitoring are not considered to be in violation of the MCL until they have completed 1 year of monthly sampling.

The results of sampling post treatment water for the last two years are listed in Table 3-4. In August 2023, samples at each of the South Wiegardt Wellfield exceeded the MCL of 0.01 mg/L. While follow up samples taken the next day (August 8, 2023) were compliant, a pilot study to improve the treatment capabilities at the SWWF was launched later that year and will be discussed further later in this chapter and in Chapter 8.

TABLE 3-4

Arsenic Testing Pretreatment 2021-2022

Sample Date		Unit	MCL	S06 (North Wellfield)			S16 (Wiegardt Wellfield)		
				S01 (N-1)	S07 (N-6)	S09 (N-8)	S13 (SW-1)	S14 (SW-2)	S15 (SW-3)
2022	December	mg/L	0.01	0.005			-		
	November			0.005	0.005	-	0.004		
	October			0.005	0.005	-	0.003		
	September			0.005	0.005	-	0.003		
	August			0.005	0.005	-	0.018	0.022	0.020
	July			0.005	0.005	-	0.002		
	June			0.006	0.006	-	0.002		
	May			0.005			0.001		
	April			0.002	0.002	-	0.005		
	March			0.005	0.005	-	0.002		
	February			0.005	0.005	-	0.001		
	January			0.005	0.005	-	0.001		

TABLE 3-4 – (continued)

Arsenic Testing Pretreatment 2021-2022

Sample Date		Unit	MCL	S06 (North Wellfield)			S16 (Wiegardt Wellfield)		
				S01 (N-1)	S07 (N-6)	S09 (N-8)	S13 (SW-1)	S14 (SW-2)	S15 (SW-3)
2021	December			0.004	0.004	-	0.002		
	November			0.004	0.004	-	0.002		
	October			0.003			0.003		
	September			0.005			0.002		
	August			0.004		-	0.002		
	July			0.004		-	0.001		
	June			0.004			0.002		
	May			0.004			0.002		
	April			0.004			0.002		
	March			0.004			(1)		
	February			0.004			(1)		
	January			0.005			0.002		

(1) Test result is less than state reporting limit.

Asbestos

Asbestos is the name for a group of naturally occurring, hydrated silicate minerals with fibrous morphology. Included in this group are chrysotile, corcidolite, amosite, and the fibrous varieties of anthophyllite, tremolit, and actinolite. Most commercially mined asbestos is chrysotile. Asbestos' flexibility, strength, and chemical and heat resistance properties have made it a useful material for building insulation, brake linings, and water pipes.

There is concern regarding the health risks associated with asbestos. Several studies have documented hazards to internal organs as a result of inhalation of asbestos fibers. Data is limited on the effects of ingestion of asbestos fibers or the effects of inhalation exposure from drinking water. Ingestion studies have not caused cancer in laboratory animals, though studies of asbestos workers have shown increased rates of gastrointestinal cancer.

Monitoring Requirements and Analysis

NBWD's distribution system contains some asbestos cement (AC) water mains; therefore, it is required to monitor for asbestos. For utilities with asbestos pipe in the distribution system, one sample in an area with AC pipe is required every 9 years in accordance with Part 40 Code of Federal Regulations 141,23 (b). The MCL for asbestos is 7 million fibers/liter. Asbestos analysis was carried out in July of 2021 and a concentration of (less than) 0.164 million fibers/liter was detected, which is well below the MCL.

Consumer Confidence Report

The Consumer Confidence Report Rule requires community water system purveyors to prepare and distribute an annual report of water quality analyses to their customers. The District is required to submit the Consumer Confidence Report (CCR) to its customers before the 1st of July each year. A copy of NBWD's 2022 CCR is included in Appendix I.

Disinfectants and Disinfection Byproducts Rule (Stage 1 and 2)

WAC 246-290-300(6) requires purveyors of public systems that provide water treated with chemical disinfectants to monitor for disinfectants and disinfection byproducts. The Disinfectants and Disinfection Byproducts (D/DBP Rule) establishes residual disinfectant concentrations and MCLs for disinfection byproducts.

Trihalomethanes (THMs) and 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 THMs include the sum of the concentrations of four disinfection byproducts: chloroform, bromoform, bromodichloromethane, and dibromochloromethane.

Monitoring Requirements and Analysis

Stage 1 of the D/DBP Rule became effective in 2000 and established the MCLs for TTHM and HAA5 is 80 micrograms per liter (µg/L) and 60 µg/L, respectively. Stage 2 of the D/DBP Rule began on October 1, 2013 and maintained the same MCLs but based compliance on the locational running annual average (LRAA) of each individual sample site instead of the running annual average of all sample sites combined. This means that the annual average at each site must be below the MCL. The number of samples taken is dependent on the population served. Systems serving between 500 and 9,999 people must collect two samples per year.

The District last tested for TTHM and HAA5 in June of 2023. Samples results showed a concentration of 25.7 µg/L of TTHM and 6.1 µg/L of HAA5. This is well below the MCLs for TTHM (80 µg/L) and HAA5 (60 µg/L).

Inorganic Chemicals and Physical Parameters

WAC 246-290-310 specifies primary and secondary MCLs for inorganic physical and chemical characteristics. Three chemicals, lead, copper, and sodium do not have primary or secondary MCLs, but are required to be monitored along with other IOCs. Lead and copper are regulated under the Lead and Copper Rule, described in detail later in this chapter. Primary and secondary MCLs for inorganic chemical and physical characteristics are summarized in Tables 3-4 and 3-5, respectively.

Monitoring Requirements and Analysis

Groundwater sources must be sampled for inorganics once every three years, unless a monitoring waiver is granted by DOH. NBWD has a monitoring waiver granting a complete IOC panel every 9 years. Nitrate must be sampled for annually at both sources and sampling for Iron and Manganese at Source 06 (North Wellfield) is required every 3 years. Sampling results from 2022 for the North and South Wiegardt Wellfields (S06 and S16, respectively) are provided in Tables 3-5 and 3-6.

TABLE 3-5

Primary Water Quality Standards Inorganic Chemical Characteristics

Chemical	Primary MCL[1]	S06	S16
Sample Date		**4/21/2021**	**10/14/2022**
Antimony (Sb)	0.006 mg/L	(2)	(2)
Barium (Ba)	2.0 mg/L	(2)	(2)
Beryllium (Be)	0.004 mg/L	(2)	(2)
Cadmium (Cd)	0.005 mg/L	(2)	(2)
Chromium (Cr)	0.1 mg/L	(2)	(2)
Fluoride (F)	4.0 mg/L	(2)	(2)
Mercury (Hg)	0.002 mg/L	(2)	(2)
Nickel (Ni)	0.1 mg/L	(2)	(2)
Selenium (Se)	0.05 mg/L	(2)	(2)
Sodium (Na)	20 mg/L (EPA recommendation)	17.8 mg/L	15.4 mg/L
Thallium (Tl)	0.002 mg/L	(2)	(2)
Sample Date		**4/11/2023**	**10/10/2023**
Nitrate (as N)	10.0 mg/L	(2)	(2)

(1) Source: WAC 246-290-310.
(2) Test result is less than state reporting limit.

TABLE 3-6

Secondary Water Quality Standards Inorganic Chemical and Physical Characteristics

Chemical/ Characteristic	Secondary MCL[1]	S06 4/21/2021	S16 10/14/2021
Chloride (Cl)	250.0 mg/L	24.5 mg/L	39.9 mg/L
Iron (Fe)	0.3 mg/L	0.016 mg/L	1.86 mg/L[3]
Manganese (Mn)	0.05 mg/L	0.029 mg/L	0.184 mg/L[3]
Silver (Ag)	0.1 mg/L	[2]	[2]
Sulfate (SO4)	250.0 mg/L	6.88 mg/L	3.92 mg/L
Zinc (Zn)	5.0 mg/L	[2]	0.03
Color	15 Color Units	5 CU	10 CU
Specific Conductivity	700 umhos/cm	234 umhos/cm	260 umhos/cm

(1) Source: WAC 246-290-310.
(2) Test result is less than state reporting limit.
(3) Iron and manganese results are from a sample taken 11/11/2023.

As shown in Table 3-5 and Table 3-6, all analytes except Iron and Manganese are below the MCLs. Due to increasing iron and manganese exceedances at this location, NBWD began a pilot study in 2024 to determine a suitable treatment method for removal. When the Wiegardt wells were first constructed in 2013 and 2014, the south treatment system was designed to remove arsenic and hydrogen sulfide. The installed system utilizes catalytic carbon to remove hydrogen sulfide and filter out co-precipitated iron and arsenic, and was designed before the water system was chlorinated. The pilot study will evaluate and recommend a filter media more suitable for removing iron and manganese alongside the removal of arsenic. The Capital Improvement Program discussed in Chapter 8 will include this pilot study and a project to replace the existing filter media at the SWWF.

Lead and Copper Rule

In 1991, the EPA promulgated the Federal Lead and Copper Rule. The State of Washington adopted this rule in 1995, with minimal changes. The Lead and Copper Rule is intended to reduce the tap water concentrations of lead and copper that can occur when corrosive source water causes lead and copper to leach from water meters and other plumbing fixtures.

Monitoring Requirements and Analysis

Based on the requirements of the EPA Lead and Copper Rule (40 CFR 141), lead and copper monitoring had to be completed for two consecutive 6-month monitoring periods initially. If lead and copper action levels were not exceeded, then the number of samples could be reduced to one-half the original number for three consecutive annual periods. If

compliance with the action level was maintained, reduced sampling continued once every 3 years thereafter.

Ninety percent of the distribution system lead samples collected according to the procedures outlined in WAC 246-290 must have concentrations below the "Action Level" of 0.015 mg/L. Similarly, 90 percent of the copper samples must have concentrations less than 1.3 mg/L. Systems exceeding the action levels are required to provide public notification and implement a program for reducing lead and copper levels.

In 2023, NBWD took 20 lead and copper samples throughout the District's distribution. Table 3-7 provides the results of NBWD's lead and copper testing. NBWD's distribution system is below the Action Level for copper, but was slightly above the Action Level for lead.

The District believes the reported levels were influenced by incorrect sampling. Follow up samples showed lead levels below the Action Level. The pH levels at the South Wiegardt Wellfield have also been lower than previously typical, which could influence the concentration of lead present. Improvements to the existing treatment system will be addressed further at the end of this chapter and in Chapter 8.

TABLE 3-7

Lead and Copper Testing

	Action Level	90th Percentile Concentration(1) 9/7/2023
Copper	1.3 mg/L	0.499 mg/L
Lead	0.015 mg/L	0.020 mg/L

(1) 90th percentile concentration represents the concentration ranked 3rd of 20 samples taken.

Revised Lead and Copper Rule

The Revised Lead and Copper Rule (RLCR) set by the EPA will take effect in October 2024. It will focus on replacing all lead service lines and establishing a "trigger level" for each containment. The EPA has also signaled its intent to emphasize testing for lead and copper in schools and child care facilities. Water systems will be required to identify and make public the locations of lead service pipes.

Per- and Polyfluoroalkyl Substances

Per- and polyfluoroalkyl substances (PFAS) have become an increased concern for groundwater contamination in recent years. The substances are used to manufacture heat-, grease-, oil-, stain-, and water-resistant materials and are commonly found in consumer goods such as clothing, nonstick cookware and food packaging, as well as fire retardants and surfactants. PFAS are resistant to heat and chemical degradation and can

build up in people, animals and the environment over time. The chemicals in the group known as PFAS may lead to negative health effects, including cancer, liver damage, and negative effects on developing babies. PFAS are typically found in groundwater near military bases, airports, and local fire departments.

Monitoring Requirements and Analysis

In Washington State, DOH's PFAS rule took effect in January 2022 and establishes state action levels (SAL) for five PFAS commonly found in drinking water (WAC 246-290-315(4)). The rule will require water systems to monitor all active, permanent, and seasonal sources beginning in 2023 and no later than 2025. In March, 2023 the EPA established federal regulatory levels for six PFAS, including the five PFAS regulated by Washington State. The EPA Maximum Contaminant Levels (MCLs) are more stringent than those established by Washington State, thus adhering to federal MCLs will achieve compliance with both regulations. State Action Levels and EPA MCLs are displayed in Table 3-8.

TABLE 3-8

PFAS State Action Level and Federal Minimum Contaminant Level

Chemical	SAL	MCL
PFOA	10 µg/L	4.0 ng/L(1)
PFOS	15 µg/L	4.0 ng/L(1)
PFHxS	65 µg/L	Hazard Index = 1.0(2)
PFNA	9 µg/L	
PFBS	345 µg/L	
HFPO-DA (Commonly known as GenX Chemicals)	N/A	

(1) One nanogram per liter (µg/L) is equal to part per trillion (ppt).

(2) The PFA Hazard Index (HI) is made up of a sum of fractions. Each fraction compares the amount of four PFAs measured to the level determined not to cause health effects. HI can be found using the following equation: $PFHxS_{measured}/9 + PFNA_{measured}/10 + PFBS_{measured}/2000 + GenX_{measured}/10$.

NBWD first tested for PFAS in June of 2023. The results were "Non-Detect" for the full panel of contaminants.

Radionuclides

Radionuclides include radioactive substances occurring naturally in subsurface waters. Regulated substances include radium-226, radium-228, uranium, and gross alpha and beta particles.

Monitoring Requirements and Analysis

WAC 246-290-300(10) and 40 CFR 141.26 require radionuclide samples at a frequency determined by initial sampling. 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 level of 95 percent.

NBWD is responsible for monitoring radionuclide and radon level and is required to do so at least every 6 years on each source. The Wiegardt Wellfield, Source 16, last sampled for radionuclides in May, 2023. The North Wellfield, Source 06, last sampled for radionuclides in May, 2020. The most recent sample results for both wellfields found less than detection levels for both gross alpha particles and radium-228.

Residual Disinfectant

According to WAC 246-290-300, systems providing surface water disinfection treatment or receiving water that has been disinfected, shall measure residual disinfectant concentration within the distribution system daily. A disinfectant residual must be maintained throughout the distribution system.

Monitoring Requirements and Analysis

Water in the distribution system must maintain a residual disinfectant concentration of at least 0.2 mg/L. NBWD staff report a consistent chlorine residual of 0.2 to 0.5 mg/L.

Groundwater Rule

The Groundwater Rule (GWR) is one of the requirements of the 1994 Amendments to the Safe Drinking Water Act. EPA published the final rule on November 8, 2006. This rule establishes methods for determining if disinfection of a groundwater source is required, and it establishes disinfection standards for those sources where disinfection is required. New federal requirements to the GWR became effective in December 2009. EPA oversaw the GWR until November 2010; DOH took over after that date. Additions to the GWR include source water monitoring, compliance monitoring, sanitary surveys and corrective actions, and public notifications.

The GWR requires triggered source water monitoring within 24 hours of receiving a positive total coliform distribution system sample. To comply with the GWR, water systems must take at least one sample directly from each individual well that contributes to the zone with the positive sample. Source water samples are to be analyzed for total, fecal and *E. coli* coliform in accordance with EPA guidelines, and the results reported to DOH. If DOH does not require corrective actions after a first positive triggered source sample the water system must collect five additional source water samples from the same source within 24 hours of being notified of the fecal indicator-positive sample (40 CFR

141.402). The GWR also requires that the DOH conduct sanitary surveys on water system facilities. The purpose of the sanitary survey is to identify deficiencies in the system where contamination can occur. The DOH is required to conduct sanitary surveys on water systems every 3 years.

The GWR requires corrective action if a significant deficiency is identified for the initial triggered source sample or if one of the five additional source sample test positive for fecal contamination. Water systems are required to implement at least one of the following corrective actions:

- Correct all significant deficiencies identified by sanitary surveys.
- Provide an alternative source of water.
- Eliminate the source of contamination.
- Provide treatment that reliably achieves at least 4-log treatment of viruses before or at the first customer for the groundwater source.

Coliform Bacteria Monitoring

WAC 246-290-300(3) sets distribution system coliform monitoring requirements, and WAC 246-290-310(2) sets coliform bacteria maximum contaminant levels. The number of routine coliform samples required per monitoring period is based on the population served during the monitoring period as reported on the system's WFI form. Each monitoring period is a calendar month. The number of coliform samples required for NBWD per monitoring period varies by month due to seasonal variations in reported population served. Required sampling is as follows:

- January through March: six samples per month
- November and December: seven samples per month
- April, May, and October: eight samples per month
- June through September: nine samples per month

As the population changes, the monitoring requirements also change. Monitoring requirements in past years may have been different from these, as monitoring in future years may also change due to shifting spatial and temporal population distribution.

In general, a coliform MCL violation occurs when two or more coliform samples in one sampling period, or greater than five percent of all samples, have detectable coliform bacteria. An Acute MCL occurs if there is an MCL violation and any of the coliform positive samples are positive for Fecal Coliform or E. Coli. A Non-Acute MCL occurs if there is an MCL violation and none of the coliform positive samples are positive for Fecal Coliform or E. Coli.

The coliform monitoring record since 2016 was reviewed for this report. There were no samples positive for fecal coliform or E. Coli, but there have been other samples positive for total coliform. Dates of coliform detections and number of positive samples are as follows:

- July 10, 2017 1 positive, total
- April 2, 2018 1 positive, total
- April 16, 2018 1 positive, total
- September 10, 2018 1 positive, total
- September 17, 2018 2 positive, total
- September 16, 2019 2 positive, total
- September 23, 2019 1 positive, total
- October 21, 2019 2 positive, total
- November 18, 2019 2 positive, total
- August 8, 2023 1 positive, total

Since two or more positive samples are required for a coliform MCL violation, the above positive samples only include four coliform MCL violations: September 2018, September 2019, October 2019 and November 2019. All of the positive coliform samples, except the September 17, 2018 and September 23, 2019, were routine samples, and the associated repeat samples were negative.

Due to the repeated coliform issues in 2018 and 2019, the NBWD installed permanent chlorine disinfection in 2020.

Volatile Organic and Synthetic Organic Compounds

There are currently 21 regulated VOCs and 30 regulated SOCs. Water samples are taken and monitored from water system sources. A list of these compounds and their MCLs is included in Table 3-9.

Monitoring Requirements and Analysis

NBWD takes a full panel sample for volatile and synthetic organic compounds at its sources every six years, samples for herbicides every nine years, samples for pesticides every three years, and currently has a waiver from DOH to sample for soil fumigants on an as-needed basis. Full panel analyses for VOCs at sources 06 and 16 were last taken in 2022. All analytes were below detection levels.

TABLE 3-9

Regulated VOCs and SOCs

Organic Chemical	Primary MCL (mg/L)		Organic Chemical	Primary MCL (mg/L)
1,1,1-Trichloroethane	0.2		Endothal	0.1
1,1,2-Thrichloro-ethane	0.005		Endrin	0.002
1,1-dichloroethylene	0.007		Ethylbenzene	0.7
1,2,4-Trichloro-benzene	0.07		Ethylene dibromide	0.00005
1,2-Dichloroethane	0.005		Glyphosate	0.7
1,2-Dichloropropane	0.005		Heptachlor	0.0004
2,3,7,8-TCDD (dioxin)	$3x10^{-8}$		Heptachlor epoxide	0.0002
2,4,5-TP	0.05		Hexachlorobenzene	0.001
2,4-D	0.07		Hexachlorocyclopentadiene	0.05
Aldicarb	0.003		Lindane	0.0002
Aldicarb sulfone	0.002		Methoxychlor	0.04
Aldicarb sulfoxide	0.004		Monochlorobenzene	0.1
Arochlor	0.002		*Ortho*-Dichlorobenzene	0.6
Atrazine	0.003		Oxamyl (vydate)	0.2
Benzene	0.005		*Para*-Dichlorobenzene	0.075
Benzo(a)pyrene	0.0002		Pentachlorophenol	0.001
Carbofuran	0.04		Picloram	0.5
Carbon Tetrachloride	0.005		Polychlorinated biphenyls (PCBs)	0.0005
Chlordane	0.002		Simazine	0.004
cis-1,2-Dichloroethylene	0.07		Styrene	0.1
Dalapon	0.2		Tetrachloroethylene	0.005
Di(2-ethylhexyl) adipate	0.4		Toluene	1
Di(2-ethylhexyl) phthalate	0.006		Toxaphene	0.003
Dibromochloro-propane	0.0002		*Trans*-1,2-Dichloroethylene	0.1
Dichloromethane	0.005		Trichloroethylene	0.005
Dinoseb	0.007		Vinyl Chloride	0.002
Diquat	0.02		Xylenes (total)	10

ASSET MANAGEMENT PLAN

BACKGROUND

Asset management is defined by DOH as "… the practice of managing all utility assets to address the total cost of owning, operating, upgrading, and replacing them, while delivering the appropriate level of service." As part of this Water System Plan, NBWD has completed an Asset Management Plan. This Asset Management Plan includes an Asset Inventory, which summarizes the age, condition rating, replacement cost, and criticality of the District's major water system assets and relates these items to planned Capital Improvement Projects described in depth in Chapter 8. This inventory is used to

assess the adequacy of NBWD's Capital Improvement Program to maintain current levels of service over the long term.

ASSUMPTIONS

The Condition Rating methodology used in preparing NBWD's Asset Management Plan is adapted from the document "Asset Management: The 5 Core Components" prepared by the Southwest Environmental Finance Center. The Condition Rating system used is summarized in Table 3-10.

TABLE 3-10

Asset Condition Rating System

Rank	Condition	Description
A	Excellent	Asset is new or nearly new; asset has no known or suspected condition issues
B	Very Good	Asset has no known or suspected condition issues, but is no longer a new asset
C	Good	Asset has few known or suspected issues
D	Average	Asset has known or suspected issues
E	Fair	Asset has known or suspected issues that may impact the asset's ability to continue to perform in the next several years
F	Poor	Asset has known or suspected condition issues and they are likely to impact the asset's ability to function in the near future (1 to 2 years)

Each asset is assigned a Consequence of Failure (CoF) and a Likelihood of Failure (LoF) on a scale of 1 to 5 in accordance with the rating system shown in Table 3-11. The Criticality of each asset is defined as the product of the CoF rating and the LoF rating, with the lowest possible Criticality being 1 (1 x 1 = 1) and the highest possible Criticality being 25 (5 x 5 = 25).

TABLE 3-11

Consequence of Failure Rating System

Rank	Description
1	Very Low
2	Low
3	Moderate
4	High
5	Very High

ASSET INVENTORY

North Beach Water District's Asset Inventory is shown in Table 3-12. The inventory includes all major components of the District's water system.

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TABLE 3-12

Asset Management Table

No.	Item	Asset Description	Year Installed	Condition[4]	Life Expectancy (Years)	Remaining Useful Life (Years)	Consequence of Failure[5]	Likelihood of Failure[5]	Criticality of Failure[6]	Replacement Cost (2024 Dollars)	Annualized Replacement Cost[7]
Wells											
1	North Well 1 - AGP146	100-gpm Production Well, 80 feet deep	Unknown[1]	B	75	4-16	3	3	9	$550,000	$34,375
2	North Well 3 - AGP147	100-gpm Emergency Well, 124 feet deep	Unknown[1]	C	75	4-16	1	2	2	$600,000	$37,500
3	North Well 4 - WW AGP149	100-gpm Production Well, 120 feet deep	1981	C	75	33	2	2	4	$600,000	$18,182
4	North Well 5 - WW NO TAG	100-gpm Production Well, 124 feet deep	1986	C	75	38	2	2	4	$600,000	$15,789
5	North Well 6 - WW AGP152	112-gpm Production Well, 130 feet deep	1996	C	75	48	3	2	6	$600,000	$12,500
6	North Well 7R - BAF123	150-gpm Production Well, 129 feet deep	2018	B	75	70	2	2	6	$600,000	$8,571
7	North Well 8 - WW AGP151	123-gpm Production Well, 130 feet deep	1996	B	75	48	3	2	6	$600,000	$12,500
8	Wiegardt Well 1 - BAF021	150-gpm Production Well, 149 feet deep	2013	B	75	65	4	2	8	$700,000	$10,769
9	Wiegardt Well 2 - BAF024	150-gpm Production Well, 149 feet deep	2014	B	75	66	4	2	8	$700,000	$10,606
10	Wiegardt Well 3 - BAF025	150-gpm Production Well, 150 feet deep	2014	B	75	66	4	2	8	$700,000	$10,606
Reservoirs											
10	North Tank 1	0.179 MG Mount Baker Silo Reservoir	1990	C	75	42	3	2	6	$600,000	$14,286
11	North Tank 2	0.179 MG Mount Baker Silo Reservoir	1990	C	75	42	3	2	6	$600,000	$14,286
12	North Tank 3	0.179 MG Mount Baker Silo Reservoir	1990	C	75	42	3	2	6	$600,000	$14,286
13	South Tank	0.211 MG Mount Baker Silo Reservoir	2006	B	75	58	5	2	10	$800,000	$13,793
Generators											
14	North Wellfield Generator 1	150-kW Diesel Katolight Generator	1995	B	25	0	2	2	4	$115,000	$115,000
15	North Generator for maintenance shop below NBWD Office	125-kW Generator	<2000	C	25	0-2	1	3	3	$100,000	$50,000
16	South Wiegardt Wellfield Generator 1	70-kW Gas Cummins Generator	2016	B	25	18	2	2	4	$100,000	$5,556
17	South Water Treatment Plant & Booster Pump Station Generator	150-kW Diesel John Deere Generator	<2016	B	25	<18	2	2	4	$115,000	$6,389
Booster Pumps											
18	Pump N-2	15-hp Grundfos 20709 LC	2024	A	20	20	4	1	4	$5,500	$275
19	Pump N-3	15-hp Grundfos 20709 LC	2024	A	20	20	4	1	4	$5,500	$275
20	Pump N-4	25-hp Peerless C-825A	<2000	E	20	0	3	3	9	$9,000	$9,000
21	Pump N-5	25-hp Peerless C-825A	<2000	E	20	0	3	3	9	$9,000	$9,000
22	Pump S-1	10-hp Grundfos 12709 LC	2024	A	20	20	4	1	4	$3,800	$190
23	Pump S-2	10-hp Grundfos 12709 LC	2024	A	20	20	4	1	4	$3,800	$190
24	Pump S-3	40-hp PACO 10-30707ES	<2000	C	20	0	3	2	6	$8,200	$8,200
25	Pump S-4	40-hp PACO 10-30707ES	<2000	C	20	0	3	2	6	$8,200	$8,200
Treatment Systems											
26	North Wellfield Treatment System	Contact tank, filter vessels, backwash pumps, chlorine injection (chlorine injection began in 2020)	Varies	C	30	0-27	5	2	10	$1,500,000	$55,556
27	South Wiegardt Wellfield Treatment System	Oxygen injection, filter vessels, backwash pumps, chlorine injection (chlorine injection began in 2020)	Varies	B	30	0-27	5	2	10	$1,000,000	$37,037

TABLE 3-12 – (continued)

Asset Management Table

No.	Item	Asset Description	Year Installed	Condition	Life Expectancy (Years)	Remaining Useful Life (Years)	Consequence of Failure	Likelihood of Failure	Criticality of Failure	Replacement Cost (2024 Dollars)	Annualized Replacement Cost
Miscellaneous											
28	SCADA System	Telemetry and SCADA	2016	B	30	23	3	3	9	$300,000	$13,043
29	Water Main and Appurtenances	Approximately 192,900 lineal feet of ≤4-inch water main and appurtenances	Varies[(2)]	Varies	60	0-60	3	3	9	$38,580,000	$643,000
30	Water Main and Appurtenances	Approximately 103,500 lineal feet of ≥6-inch water main and appurtenances	Varies[(2)]	Varies	75	0-75	3	3	9	$31,050,000	$414,000
31	Water Service Connections	2,863 Service Connections	Varies	Varies	50	1-20	3	3	9	$4,294,500	$214,725
32	Water Meters	2,863 Service Meters	Varies	Varies	20	1-10	3	1	3	$1,431,500	$143,150
33	Fire Hydrants	85 Fire Hydrants	Varies	Varies	50	1-50	3	1	3	$595,000	$11,900
34	Excavator	Takeuchi TB235	2011[(3)]	D	20	8	1	3	3	$50,000	$6,250
35	Dump Truck	International 4300 PT466, 5 yard box	2001[(3)]	C	20	0	1	3	3	$75,000	$75,000

(1) The years of construction for North Wells 1 and 3 are unknown but they are likely between 1962 (the year what is now NBWD was formed) and 1964 (the year South Wells 1 and 2 were constructed).
(2) The oldest water mains in the system are from the formation of what is now NBWD in 1962.
(3) Year of vehicle.
(4) See Table 3-10 for Condition rating system descriptions.
(5) See Table 3-11 for Consequence of Failure and Likelihood of Failure rating system descriptions.
(6) Criticality of Failure = Consequence of Failure * Likelihood of Failure.
(7) Annualized Replacement Cost = Replacement Cost / Remaining Useful Life.

SYSTEM COMPONENT ANALYSIS

WATER RIGHTS ANALYSIS

North Beach Water District's held water rights are detailed in Table 1-2 in Chapter 1. A comparison of the annual water use and available water rights are shown in Table 3-13 and the District's Water Rights Self-Assessment is available under Appendix J. The average annual and instantaneous withdrawal includes raw water for filter backwash and system flushing for average and peak production days.

TABLE 3-13

Water Rights Analysis

Year	Annual Withdrawal			Instantaneous Withdrawal		
	Allowed By Water Right (acre-ft)	Projected Withdrawal[(1)] (acre-ft)	Surplus/ Deficit (acre-ft)	Instantaneous Water Right[(2)] (gpd)	Maximum Day Demand[(1)] (gpd)	Surplus/ Deficit (gpd)
2023	696	370	326	1,584,000	578,400	1,005,600
2024		373	323		582,100	1,001,900
2025		375	321		585,500	998,500
2026		377	319		589,200	994,800
2027		380	316		592,700	991,300
2028		382	314		596,400	987,600
2029		384	312		599,900	984,100
2030		387	309		603,600	980,400
2031		389	307		607,100	976,900
2032		391	305		610,700	973,300
2033		393	303		614,200	969,800
2034		396	300		617,900	966,100
2035		398	298		621,400	962,600
2036		400	296		625,100	958,900
2037		403	293		628,600	955,400
2038		405	291		632,200	951,800
2039		407	289		635,700	948,300
2040		410	286		639,800	944,200
2041		412	284		643,800	940,200
2042		415	281		647,800	936,200
2043		418	278		651,800	932,200
2044		420	276		655,800	928,200

(1) Projected data sourced from Table 2-11.
(2) The instantaneous water right is 1,100 gpm.

The above water rights analysis indicates that the District has a surplus of annual and instantaneous water rights for the 10- and 20-year planning horizons.

To provide reliable service, water system sources should also be able to replenish depleted fire suppression storage within 72 hours while concurrently supplying the Maximum Day Demand of the water system. For the 20-year planning horizon, NBWD minimum instantaneous withdrawal surplus of 566,000 gpd is more than sufficient to replenish the required fire suppression storage determined later.

Table 3-14 presents an analysis of the total number, or maximum capacity, of ERUs that the existing water rights can support based on the average ERU_{ADD} and ERU_{MDD} found in Chapter 2, which are 135 gpd and 236 gpd, respectively.

TABLE 3-14

Water Rights Capacity Analysis

Water Right Component	Maximum Permitted Withdrawal (gpd)	ERU Capacity
Annual Withdrawal	621,390	4,603(1)
Instantaneous Withdrawal	1,584,000	6,712(2)

(1) Based on ERU_{ADD} of 135 gpd/ERU.
(2) Based on ERU_{MDD} of 236 gpd/ERU.

SOURCE OF SUPPLY

Source Capacity Analysis

The nine active wells and one emergency well have a combined installed withdrawal capacity of 1,256 gpm (see Table 1-3). DOH recommends that systems relying on pumped water determine capacity using 20 hours of constant pumping for one day. While withdrawal capacity exceeds the NBWD instantaneous water right of 1,100 gpm, 20-hour source capacity has been evaluated in Table 3-15 for planning purposes, should the District obtain additional water rights.

TABLE 3-15

Source Pumping Capacity Analysis, 20 Hours

	20-Hour Source Pumping Capacity (gpd)	Maximum Day Demand[(1)] (gpd)	Surplus/Deficit (gpd)
2023	1,507,200	578,400	928,800
2024		582,100	925,100
2025		585,500	921,700
2026		589,200	918,000
2027		592,700	914,500
2028		596,400	910,800
2029		599,900	907,300
2030		603,600	903,600
2031		607,100	900,100
2032		610,700	896,500
2033		614,200	893,000
2034		617,900	889,300
2035		621,400	885,800
2036		625,100	882,100
2037		628,600	878,600
2038		632,200	875,000
2039		635,700	871,500
2040		639,800	867,400
2041		643,800	863,400
2042		647,800	859,400
2043		651,800	855,400
2044		655,800	851,400

(1) Projected data sourced from Table 2-11.

Backup Power Supply

Both wellfields have backup generators, one at the NWF and two at the SWWF. All three are on automatic transfer switches and have fuel stored on site to operate in case of an emergency. The generators are in good condition and exercised regularly so they are ready to operate when needed.

WATER TREATMENT

NBWD has water treatment facilities at both well fields. The North Wellfield treatment capacity is 535 gpm, 70 percent of total pumping capacity (755 gpm, see Table 1-3). At the North Wellfield, treatment capacity is limited by high concentrations of arsenic present in wells N-3 and N-7R. Water at the north treatment facility is blended to maintain arsenic levels below the acceptable MCL (see Table 3-4 for the MCL and testing results). At the South Wiegardt Wellfield, changing groundwater chemistry has resulted in increased levels of iron and manganese. To maintain acceptable levels of these two IOCs (see Table 3-6 for the MCLs and testing results), frequent filter backwash cycles are conducted. Projects to address water treatment needs at both wellfields are proposed in Chapter 9.

The South Wiegardt Wellfield treatment facility has a capacity of 450 gpm, 90 percent of total pumping capacity (500 gpm, see Table 1-3).

Assuming 20 hours of operational time in a 24-hour day, Table 3-16 displays treatment capacity analysis for the maximum day demand.

TABLE 3-16

Treatment Facility Capacity Analysis, 20 Hours

	20-Hour Treatment Facility Capacity (gpd)	Maximum Day Demand[(1)] (gpd)	Surplus/Deficit (gpd)
2023	1,182,000	578,400	603,600
2024		582,100	599,900
2025		585,500	596,500
2026		589,200	592,800
2027		592,700	589,300
2028		596,400	585,600
2029		599,900	582,100
2030		603,600	578,400
2031		607,100	574,900
2032		610,700	571,300
2033		614,200	567,800
2034		617,900	564,100
2035		621,400	560,600
2036		625,100	556,900
2037		628,600	553,400
2038		632,200	549,800
2039		635,700	546,300

TABLE 3-16 – (continued)

Treatment Facility Capacity Analysis, 20 Hours

	20-Hour Treatment Facility Capacity (gpd)	Maximum Day Demand[(1)] (gpd)	Surplus/Deficit (gpd)
2040		639,800	542,200
2041		643,800	538,200
2042		647,800	534,200
2043		651,800	530,200
2044		655,800	526,200

(1) Projected data sourced from Table 2-11.

STORAGE ANALYSIS

Storage requirements for NBWD are determined by applying the criteria outlined in Chapter 7 of the June 2020 DOH Water System Design Manual. The storage recommended according to this guidance document is based on the sum of the following:

- Dead Storage
- Fire Suppression Storage
- Equalizing Storage
- Operational Storage
- Standby Storage

As mentioned in Chapter 1, NBWD has four reservoirs. There are three reservoirs at the North Wellfield, all 26 feet in diameter and 45 feet tall; the fourth reservoir is at the South Wiegardt Wellfield, it is 30 feet in diameter and 40 feet tall. The specifications, gross volume and effective volume for all reservoirs is in Table 3-19, below.

Dead Storage

Storage in a reservoir which is below the minimum elevation for serving residences is termed dead storage. The WAC requires that distribution system pressure be maintained above 30 psi during normal operation and above 20 psi during fire flow. Any storage volume below the level required to maintain those pressures is considered dead storage.

The North and South Reservoirs are not tall enough to provide adequate system pressure by gravity, so all water is pumped via booster station. Thus, dead storage is the storage below the minimum pump operating level. Storage volumes are calculated based on each reservoir's diameter and shown in Table 3-17. The available storage of each reservoir, which corresponds to the total storage minus dead storage (total storage is the volume up to the overflow height), is shown in Table 3-17 as well.

TABLE 3-17

Dead and Effective Storage

Reservoir	Diameter (ft)	Height (ft)	Overflow Height (ft)	Minimum Operating Level (ft)	Gross Volume (gal)	Dead Storage Volume (gal)	Available Storage (gal)
North 1	26	45	44	1.3	178,735	5,163	169,599
North 2					178,735	5,163	169,599
North 3					178,735	5,163	169,599
South	30	40	39		211,520	6,874	199,358
Total					**747,724**	**22,365**	**708,156**

Fire Suppression Storage

Fire Suppression Storage is provided to ensure that the volume of water required for fighting fires is available when necessary. Fire suppression storage also reduces the impact of firefighting on distribution system water pressure. The amount of water required for firefighting purposes is specified in terms of rate of flow in gallons per minute (gpm) and an associated duration. Fire flows must be provided at a residual water system pressure of at least 20 pounds per square inch (psi).

Fire suppression storage is calculated using the following equation:

$$V_{FSS} = FF * T_m$$

Where:

V_{FSS} = Volume of fire suppression storage component, gallons
FF = Fire flow rate, gpm
T_m = fire flow duration, minutes

NBWD's maximum fire flow standard is 750 gpm for 60 minutes. The associated fire suppression storage for this fire flow standard is 45,000 gallons. The fire suppression storage volume of 45,000 gallons is shown in Table 3-18.

One method the DOH recommends to evaluate system capacity is the ability to replenish fire suppression storage within 72 hours alongside maximum day demand. As indicated by Tables 3-14, 3-15, and 3-16, when operating at full capacity for 20 hours there is a production surplus well beyond 45,000 gpd for the 20-year planning horizon.

Water systems are allowed to consolidate standby storage and fire suppression storage; which is referred to as "nesting." This allows the system to exclude the smaller of the two volumes from the storage analysis, as long as there is no local ordinance or

coordinated water system plan that prohibits it and it has been deemed acceptable to the local fire jurisdiction. NBWD allows nesting for their system.

Equalizing Storage

Equalizing storage is typically used to meet diurnal demands that exceed the average day and maximum day demands. The volume of equalizing storage required depends on maximum system demands, the magnitude of diurnal water system demand variations, the source production rate, and the mode of system operation. Sufficient equalizing storage must be provided in combination with available water sources and pumping facilities such that maximum system demands can be satisfied.

Equalizing storage is calculated using the following equation:

$$V_{ES} = (PHD – Q_S) \times 150 \text{ minutes}$$

Where:

V_{ES} = Equalizing storage component (gallons)
PHD = Peak hourly demand (gpm)
Q_S = Total source of supply capacity, excluding emergency sources (gpm)

Peak hour demand for a given year is taken from the forecasts in Table 2-12. The Qs for NBWD is 1,016 gpm (See Table 1-3), however the treatment capacity is a bit lower at 975 gpm. In this case, the lower of these values will be used for estimating equalizing storage. Equalizing storage requirements through the 20-year planning horizon are summarized in Table 3-18.

Operational Storage

Operational storage is the volume of the reservoir devoted to supplying the water system while under normal operating conditions with the source(s) of supply in "off" status. This volume is dependent upon the sensitivity of the reservoir water level sensors, and the tank configuration necessary to prevent excessive cycling of source pump motors. Operational storage is in addition to other storage components, thus providing a factor of safety for equalizing, standby, and fire suppression components.

Under present operating conditions the North and South Reservoirs all have dedicated the top 3.5 feet of storage towards operations storage, resulting in 60,200 total gallons of operational storage. Cumulative storage requirements are summarized in Table 3-18.

Standby Storage

Standby storage is provided in order to meet demands in the event of a system failure such as a power outage, an interruption of supply, or a break in a major transmission line. The amount of emergency storage should be based on the reliability of supply and pumping equipment, standby power sources, and the anticipated length of time the system could be out of service.

Standby storage is calculated using the following equation:

$$V_{SB} = (N * SB_i * T_d)$$

Where:

V_{SB} = Standby storage component for a multiple source system (gallons)
SB_i = ERU_{MDD}
N = Number of ERUs
T_d = 1 day

Although standby storage volumes are intended to satisfy the requirements imposed by system customers for unusual situations and are addressed by WAC 246-290-420, DOH recommends that standby storage volumes be no less than 200 gallons/ERU.

Standby storage requirements are presented in Table 3-18.

Storage Capacity Analysis

An analysis of the existing storage capacity that compares the projected needs for the present, 10-year, and 20-year planning horizons is summarized in Table 3-18 below. This analysis assumes that the fire suppression storage and standby storage are nested.

TABLE 3-18

Storage Analysis

	Fire Suppression Storage (gal)	Equalizing Storage (gal)	Operational Storage (gal)	Standby Storage (gal)	Total Storage Required[(1)] (gal)	Available Storage[(2)] (gal)	Storage Surplus/ (Deficit) (gal)
2023	45,000	0[(3)]	60,200	579,373	639,573	708,156	68,583
2024				583,052	643,252		64,904
2025				586,555	646,755		61,401
2026				590,234	650,434		57,722
2027				593,737	653,937		54,219
2028				597,415	657,615		50,540
2029				600,919	661,119		47,037
2030				604,597	664,797		43,358
2031				608,101	668,301		39,855
2032				611,779	671,979		36,176
2033				615,283	675,483		32,673
2034				618,961	679,161		28,995
2035				622,465	682,665		25,491
2036				626,143	686,343		21,813
2037				629,647	689,847		18,309
2038				633,325	693,525		14,631
2039				636,829	697,029		11,127
2040				640,858	701,058		7,098
2041				644,886	705,086		3,069
2042				648,915	709,115		(959)
2043				652,944	713,144		(4,988)
2044				656,975	717,175		(9,019)

(1) Fire suppression storage and standby storage are nested. Total Storage Required = Equalizing Storage + Operational Storage + Standby Storage.
(2) Effective Storage.
(3) Equalizing storage is always zero, because source capacity of 975 gpm always exceeds peak hour demand.

At present the District has a 68,583-gallon storage surplus. This surplus is projected to decrease to 28,995 gallons by 2034, and the system is projected to be in a storage deficit by 2042. A project to address this anticipated storage deficit is included in Chapter 8.

The storage system's ERU capacity is typically based on both standby and equalizing storage. For the purposes of these calculations, the maximum available storage for standby and equalizing storage is based on the remaining available storage with dead storage and operation storage subtracted. Because the NBWD source capacity (limited by treatment facility capacity) is larger than the highest PHD projected, equalizing storage is set to zero and only standby storage has an associated maximum available storage and ERU capacity, shown in Table 3-19. Based on the MDD found in Chapter 2, equalizing storage remains at zero until ERUs surpass 4,785.

TABLE 3-19

Storage ERU Capacity Analysis

Storage Component	Maximum Storage (gal)	ERU Capacity
Standby Storage	647,850	2,745
Equalizing Storage	0(1)	

(1) Equalizing storage remains zero until ERUs reach 3,499 and PHD surpasses the source capacity of 975.

BOOSTER PUMP SYSTEM

Booster Pump System Capacity

As shown in Table 1-4, the two booster pump systems are capable of up to 2,969 gpm with one of the large pumps out of service, and up to 3,719 gpm with all pumps operational. The booster pump system must be capable of meeting average flow on a maximum demand day plus fire flow, or capable of meeting peak hour demand, whichever is greater, with one pump out of service. The 20-year projected peak hour demand shown in Table 2-11 is 774 gpm. The 20-year projected maximum day demand is 655,800 gpd, which is an average flow of 455 gpm. With a fire flow standard of 750 gpm, the maximum capacity the pumping system must meet is 1,205 gpm. From a capacity standpoint, the existing booster pump system is adequate to meet projected demands.

Booster Pump System Reliability

The fact that there are two separate booster pump systems that feed the system from two different locations adds a degree of reliability to the system. If for any reason one pump system becomes inoperable, the other pump system can supply the distribution system. As shown in Table 1-4, the NWF booster pump system is capable 1,560 gpm. The SWWF booster pump system is capable of 1,900 gpm. So, with either booster pump system completely out of service, the pumping system is capable of meeting maximum system demand.

ERU Capacity Analysis

Table 3-20, which is derived from DOH Worksheet 4-1, outlines the water system's ERU capacity. Table 3-20 also indicates the year in which the water system is projected to exceed a given component's ERU capacity, provided it is anticipated to occur within the 20-year planning period.

TABLE 3-20

ERU System Capacity Analysis Summary (DOH Worksheet 4-1)

Water System Connections Correlated to ERUs			
ADD (gpd/ERU)	135[1]		
MDD (gpd/ERU)	236[1]		
Service Classification	**MDD[1] (gpd)**	**Number of Connections[2]**	**ERUs[3]**
Residential			
Full Time Residential	209,096	933	886
Part Time Residential	99,828	1,831	423
Nonresidential			
Commercial	87,320	101	370
Filter Backwash	72,216	-	306
Other Authorized Use	23,128	-	98
DSL	82,128	-	348
Total ERUs (2022)			**2,431**
Service Capacity as ERUs and Gallons Per Day			
Water System Component		**ERU Capacity[4]**	**GPD Capacity[5]**
Source(s)		6,386	1,507,200
Treatment		5,008	1,182,000
Equalizing Storage		3,499[6]	825,764[6]
Standby Storage		2,745	647,850
Water Rights, Annual Withdrawal		4,603[7]	621,390
Water Rights, Instantaneous Withdrawal		6,712	1,584,000
Water System Service Capacity (limiting value)			**2,745**

(1) MDD for each service classification = MDD * Number of ERUs.
(2) For the year 2022.
(3) ERUs for each service classification = Average Daily Demand (Table 2-11) / ADD.
(4) ERU Capacity = gpd Capacity / MDD unless otherwise noted.
(5) GDP Capacity is found in Tables 3-13 through 3-16 and Table 3-18 unless otherwise noted.
(6) The system's instantaneous pumping capability exceeds the PHD, meaning Equalizing Storage is not needed, until the PHD reaches 975 gpm. PHD will exceed 975 gpm once system ERUs = 3,499. 3,499 * MDD = 825,764.
(7) The ERU capacity for Annual Withdrawal = GPD Capacity / ADD.

The capacity summary in Table 3-20 indicates that NBWD is limited to 2,745 ERUs due to existing storage infrastructure and 4,603 ERUs due to water rights limitations. As of 2022, NBWD serves 2,431 ERUs and is projected to surpass 2,745 ERUs in 2042.

The system currently has three storage reservoirs at the north facility and one at the south facility. To address the anticipated storage deficit, the District intends to construct a new storage reservoir at the South Wiegardt Wellfield. Chapter 8 discussed this project further (CIP project ST-1) and presents a cost estimate and schedule for the work. A new reservoir matching the dimensions of the existing south reservoir would provide 199,358

more gallons of available storage (see Table 3-17). This would raise both Equalizing Storage and Standby Storage capacity to 3,578 ERUs which is 29 percent more ERUs than the maximum anticipated for the planning period (2,784 in 2044).

After storage capacity, the second most limiting water system component is Annual Water Withdrawal, at 4,603 ERUs. This is 65 percent more ERUs than what is projected for 2044 (2,784 ERUs). The District does not anticipate this level of growth for the planning period. Thus, ERU capacities for annual and instantaneous water rights, source pumping, and treatment are not concerns for the planning period.

DISTRIBUTION SYSTEM HYDRAULIC MODELING

The operation of a municipal water system involves dynamic interactions between various water system components, including source, storage, transmission, and distribution system facilities. These interactions and their effect on the level of service provided to NBWD's customers are dependent on the distribution and magnitude of water demands within the system as well as the performance characteristics of the water system facilities. In addition, infrequent high water demand events, such as firefighting and other emergencies, can significantly alter the normal flow patterns and pressures in the municipal water system and its components. These factors must be considered in analyzing the ability of a water system to provide for future demands, while maintaining an adequate level of water service to customers.

The development of a computer hydraulic model, which can accurately and realistically simulate the performance of a water system in response to a variety of conditions and scenarios, has become an increasingly important element in the planning, design, and analysis of municipal water systems. The Washington State Department of Health's WAC 246-290 requires hydraulic modeling as a component of water system plans.

HYDRAULIC MODELING SOFTWARE

NBWD's water system was analyzed using Innovyze's InfoWater Pro hydraulic modeling software, which operates in an ArcGIS Pro environment. The InfoWater model was developed from maps provided by the District which showed diameter and pipe material for the distribution system, and some information from the previous Water System Plan. The model was updated to include new transmission and distribution mains constructed since the last Plan.

The InfoWater model is configured with a graphical user interface. Each water system element, including pipes, valves, sources, and reservoirs, is assigned a unique graphical representation within the model. Each element is assigned a number of attributes specific to its function in the actual water system. Typical element attributes include spatial coordinates, elevation, water demand, pipe lengths and diameters, and critical water levels for reservoirs. With attributes of each system element as the model input, the

InfoWater software produces the model output in the form of flows and pressures throughout the simulated water system.

DEVELOPMENT AND CALIBRATION OF HYDRAULIC MODEL

The calibration of a hydraulic model provides a measure of assurance that the model is an accurate and realistic representation of the actual system. The hydraulic model of NBWD's water system was calibrated using data obtained from fire hydrant tests at various locations throughout the water system. This hydrant testing coincided with the evaluation of system booster pumps in 2018. The model has since been updated to include any new or replaced mains that have been installed in recent years. Five fire hydrant tests were conducted in 2018, with the assistance of NBWD personnel. A hydrant test uses two hydrants, one outfitted with a pressure gauge and one with a diffuser nozzle. The diffuser nozzle is equipped with a device called a pitot tube which is used to measure flow.

Testing procedures were as follows: static pressure was read at the hydrant with the pressure gauge before the second hydrant with the diffuser nozzle was opened and flow was measured with the pitot tube; while the second hydrant was flowing, a residual pressure was recorded at the first hydrant. Field results were used to calibrate the hydraulic model through verification and adjustment of pipe type, sizes, roughness coefficients, and elevations. Locations for hydrant flow tests are presented in Table 3-21 and are shown in Figure 3-1.

TABLE 3-21

2018 Hydrant Field Testing Locations

Test Number	Pressure Testing Location		Flow Testing Location	
	Intersection	Node	Intersection	Node
1	272nd Place and Sandridge Road	J814	277th Place and Sandridge Road	J794
2	The west end of 280th Place	J692	280th Place and L Place	J688
3	197th Street, approximately 700 feet west of SR 103	FH-1	200th Lane and SR 103	FH-2
4	238th Lane and Birch Place	J1716	240th Place and Birch Place	J952
5	205th Street and Birch Place	J1480	Birch Place, approximately 600 feet north of the intersection with 212th Place	J1670

The system is relatively flat and provides pressure through booster pump stations at each wellfield (see Table 1-4) rather than through gravity. The North Wellfield has a pressure reducing valve (PRV) set to 60 psi to maintain system pressure, while the South Wiegardt Wellfield utilizes pumps with variable frequency drives (VFD). The system model uses two PRVs at the SWWF to imitate the conditions of the VFD pumps. The simulated

PRVs at the SWWF were originally set at 60 psi, but during model calibration, this simulated PRV's settings were increased to 61.5 psi to more accurately simulate the system conditions.

The water pressure upstream of the booster pumps was recorded at both wellfields during each hydrant test, along with the flow downstream of the booster pumps. Water pressure readings were used to calculate reservoir levels. The flow downstream the booster pumps reflects the domestic demands during each test. Static pressure results were generated by running the model with only domestic demands. Residual pressure results were generated by placing an additional demand at the location of the hydrant test equal to the measured flow rate.

The system pressure and pipe flow rates determined in the calibration process are highly dependent on the friction loss characteristics established for each pipe. The friction losses occurring in lengths of pipe, fittings, and isolation valves were accounted for in the hydraulic model through the use of frictional factors. The friction factors for the model pipes are adjusted throughout the calibration process until the model output best approximates the measured values. Hazen-Williams C-factors were assigned based on pipe material from the NBWD base maps.

During modeling, a few system simplifications were made. As discussed earlier, the VFDs at the SWWF were simulated using two PRVs set to 61.5 psi. Also, because the reservoir head does not affect the system pressure and the wells can be run 24 hours a day during high demand, the model was set up using a constant-head source condition. During model calibration, the head was set at the pressure recorded at each reservoir during hydrant testing. During later model scenarios, the head was set to the reservoir's water elevation with the appropriate storage components depleted (operational and equalizing storage during PHD modeling, and so long as the booster pumps have adequate head to operate, the reservoir water elevation will not affect system pressure.

The model output has been produced for the two conditions measured during the hydrant tests: static pressure and residual pressure during fire flow. Table 3-22 provides the flow rates, measured static and residual pressures, and modeled static and residual pressures.

2. Residual

2. Flow

1. Flow

1. Residual

4. Residual

4. Flow

5. Residual

5. Flow

3. Residual

3. Flow

Pacific Ocean

Willapa Bay

Esri, NASA, NGA, USGS, FEMA, WA State Parks GIS, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS , City of North Beach, Pacific County GIS

Wells
Blowoffs
Fire Hydrants
Air Release Valves

Water Mains
Unknown
1-INCH
1.5-INCH
2-INCH
3-INCH
4-INCH
6-INCH
8-INCH
12-INCH

N

0 1,000 2,000 4,000 Feet

NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

FIGURE 3-1

TEST HYDRANT LOCATIONS

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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TABLE 3-22

Model Calibration

Test	Flow Node	Pressure Node	Field Flow (gpm)	Field Pressures (psi)			Model Pressure (psi)			Model vs Field Δ (psi)
				Static	Residual	ΔP	Static	Residual	ΔP	
1	J794	J814	411	64	62	2	65	63	2	0
2	J692	J688	692	62	39	23	60	38	23	0
3	FH-1	FH-2	617	60	22	38	59	21	38	0
4	J1716	J952	839	60	31	29	62	34	29	0
5	J1476	J1670	503	64	33	31	62	25	37	-6

Calibration of the hydraulic model produced results that were within 1 to 2 psi of static pressure and 1 to 8 psi of residual pressure. The difference in the relative drop from static to residual pressure between the model and field results varied by 0 to 6 psi.

Test 5 had the largest difference between field and model pressures. The hydrants tested were at the very southeast end of the system, through a network of moderately aged, 6-inch, PVC pipes. Due to these conditions, it is surprising that field results indicated the static pressure to be 64 psi, equal to that of Test 1, which is just down the street from the north booster station. The previous model calibration effort in 2018, when the hydrant tests were originally conducted, was also unable to match the field pressures for Test 5. Due to this precedence, as well as staff accounts of low water pressure in that area of the system, and the added conservativeness of the model pressure values, this discrepancy between field and model pressures will be left as-is.

The DOH Water System Design Manual does not require any set standard for hydraulic model calibration. However, static pressure results within 2 psi and residual pressure results within 5 psi are generally considered acceptable. The calibration produced results within an acceptable range, with the exception of Test 5 being within 6 psi. This is within reasonable range and, with the caveats noted above, the model is considered an accurate representation of field conditions.

PEAK HOUR DEMAND MODELING RESULTS

In order to evaluate the water system's ability to meet future demands, the existing system has been modeled under the existing and projected peak hour demand conditions for 2022, 2034, and 2044. WAC 246-290-230 (5) requires that public water systems be designed to deliver peak hour demand while maintaining minimum system-wide pressures of 30 psi, with equalizing and operational storage depleted from any reservoirs. Model data for all nodes during 2022, 2034, and 2044 PHD is available in Appendix K.

TABLE 3-23

Modeled System Conditions During Peak Hour Analysis

	2022	2034	2044
Peak Hour Demand (gpm)	676	729	774
System Conditions			
North Reservoir(s)[1] Level (ft)			40.5[2]
South Reservoir Level (ft)			35.5[2]
North Wellfield PRV setting (psi)			60
South Wiegardt Wellfield Simulation PRV[3] setting (psi)			61.5
North Booster Pumps		**South Booster Pumps**	
N-2	ON	S-1	ON
N-3	ON	S-2	ON
N-4	ON	S-3	ON
N-5	OFF[4]	S-4	ON

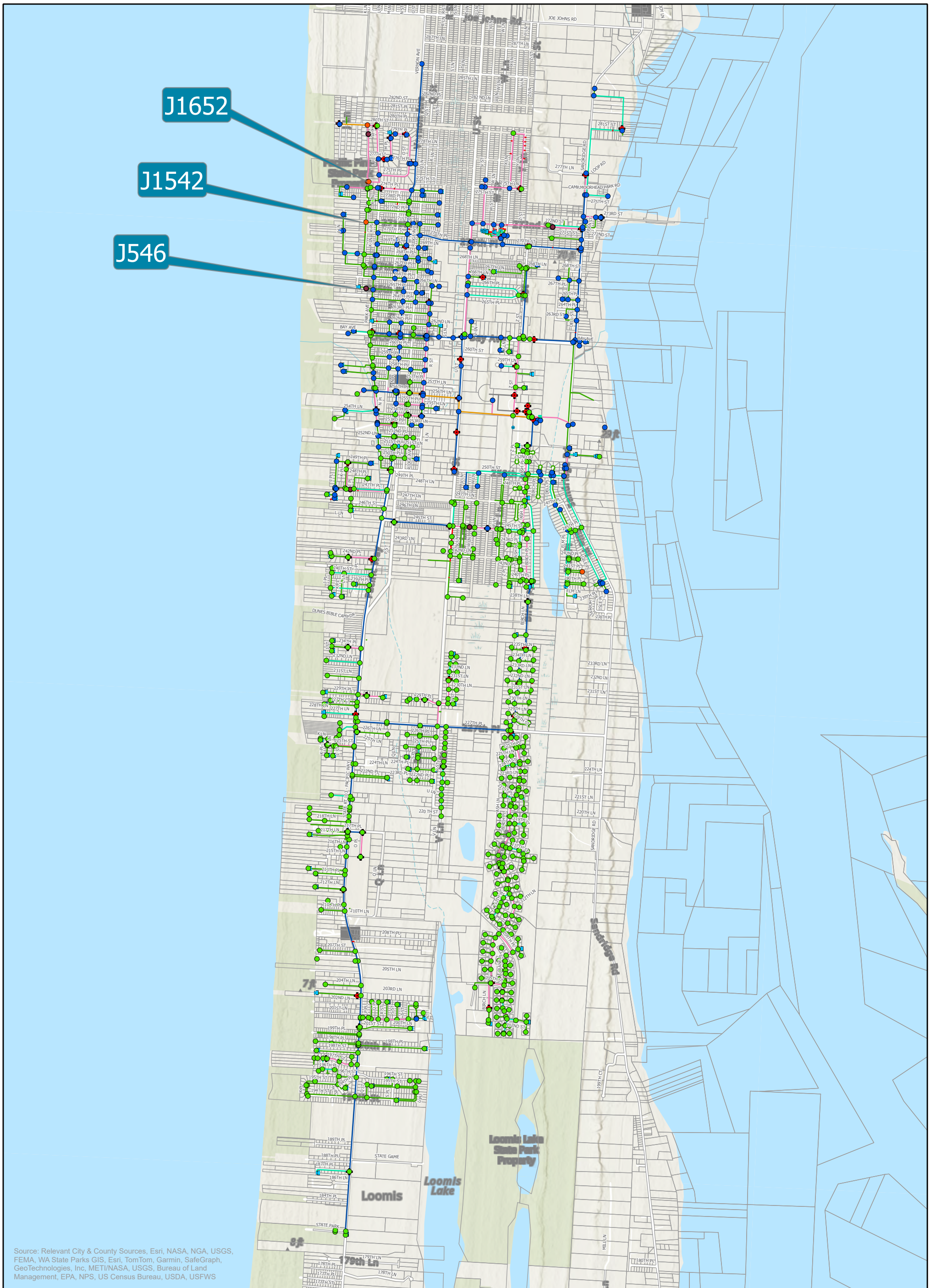
(1) This represents the level in each of the three north reservoirs with storage shared equally between each.
(2) For peak hour conditions the reservoirs were depleted of operational and equalizing storage (See Table 3-18).
(3) Used to simulate the VFD pumps at the SWWF.
(4) Flow conditions are not high enough for both high-flow pumps at the North Wellfield to operate.

Modeling results indicate that the existing water system has no deficiencies under peak hour demands within the 20-year planning period. Three of the lowest peak hour pressures system-wide are shown in Figure 3-2 and summarized in Table 3-24. As shown, the minimum pressure at a service location in 2044 is 48 psi, well above the 30 psi minimum. All three of these locations are atop a sand dune ridge on the west side of the peninsula and have the highest node elevations in the system.

TABLE 3-24

Peak Hour Demand Model Results

Node	Location Description	Elevation (ft)	PHD Pressure (psi)		
			2022	2034	2044
J546	265th Lane, about 220 feet west of Park Avenue	54	48	48	48
J1652	K Street, about 150 feet north of 274th Place	52	49	49	48
J1542	K Place and 271st Place	52	49	49	49



NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

FIGURE 3-2

SYSTEM PRESSURES AT PEAK HOUR DEMAND

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FIRE FLOW MODELING RESULTS

The hydraulic model was used to assess the availability of fire flows throughout the water system. WAC 246-290-230 (6) requires systems providing fire flow to be designed to provide maximum day demands plus the required fire flow, while maintaining system-wide pressure of 20 psi, with the largest source out of service. The fire flow analyses also incorporate the depletion of operational, equalizing, and fire suppression storage as recommended by the DOH June 2020 Water System Design Manual.

NBWD's fire flow requirements are established by the Pacific County fire marshal and require 750 gpm in commercial areas and 500 gpm in residential areas.

NBWD's distribution system was modeled with the fire flow conditions provided in Table 3-25. Figure 3-3 and Table 3-26 display the locations which are not able to meet the fire flow standard. Model data for all nodes during 2022, 2034, and 2044 fire flow testing is available in Appendix K.

TABLE 3-25

Modeled System Conditions During Fire Flow Analysis

	2022	2034	2044
Maximum Day Demand (gpm)	398	429	455
System Conditions			
North Reservoir(s)[1] Level (ft)			37.9[2]
South Reservoir Level (ft)			32.9[2]
North Wellfield PRV setting (psi)			60
South Wiegardt Wellfield Simulation PRV setting (psi)			61.5

North Booster Pumps		**South Booster Pumps**	
N-2	ON	S-1	ON
N-3	ON	S-2	ON
N-4	ON	S-3	ON
N-5	OFF	S-4	OFF

(1) This represents the level in each of the three north reservoirs with storage shared equally between each.

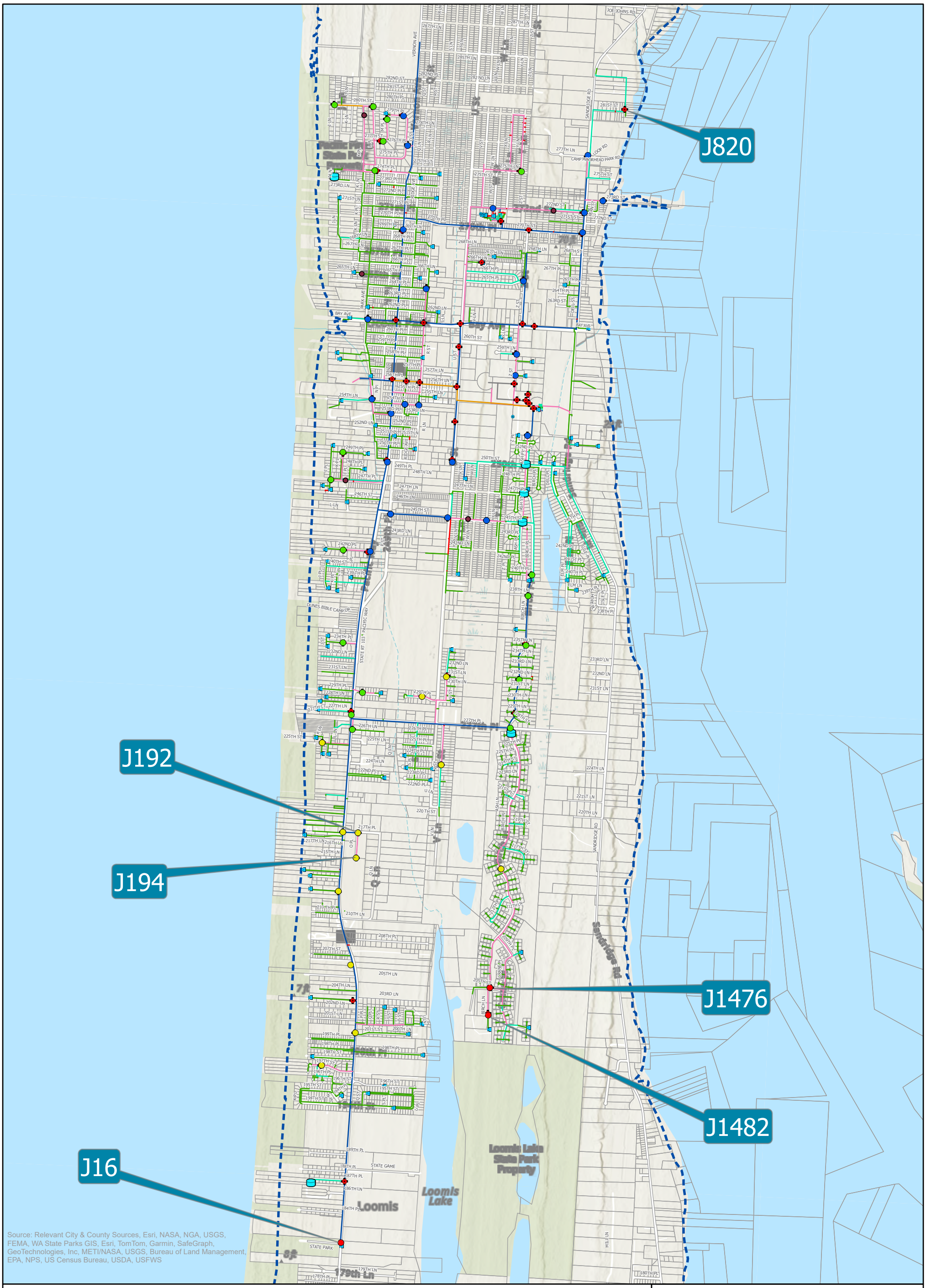
(2) For fire flow conditions the reservoirs were depleted of operational, equalizing, and fire flow storage (See Table 3-18).

TABLE 3-26w

Fire Flow Deficiencies During Maximum Day Demand Conditions

Node	Location	Required Fire Flow (gpm)	2022 Modeled Fire Flow(1) (gpm)	2044 Modeled Fire Flow(1) (gpm)	2044 Modeled Fire Flow w/CIPs (gpm)	CIP Project No.
J820	The east end of 281st Street	500	280	279	754	D-7
J1482	Birch Lane, approximately 550 feet south of 205th Street	500	466	452	614	D-6
J1476	Birch Lane and 205th Street	500	463	447	594	D-6
J16	Pacific Highway and State Park Place(1)	500	510	495	525	D-6
J194	The south end of O Lane	750	754	728	760	D-8
J192	O Lane and 217th Lane	750	761	735	765	D-6

(1) The available fire flows shown are the flows available while maintaining a minimum pressure of 20 psi at all service locations within the system. Available fire flows do not include CIP improvements.



NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

FIGURE 3-3

2044 FIRE FLOW AVAILABILITY

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At present, fire flows cannot be met in a few residential areas at the southmost and northmost ends of the system, and in a small commercial area at 217th Lane and O Lane. Chapter 8 will discuss the projects listed in the last column of Table 3-26 which would correct these issues.

SYSTEM DEFICIENCIES

Existing and future system deficiencies in NBWD's water system are summarized below. Improvements to address these deficiencies are presented in Chapter 8.

WATER QUALITY

Several water quality issues limit the capability and capacity of the NBWD system. Arsenic contamination has historically been an issue at the NWF, limiting the ability to use Wells N-3, N-4, N-5, and N-7R without blending water, thus limiting the treatment system water capacity. Recently, levels of arsenic greater than the MCL have also been found at the SWWF,

In 2023, levels of lead above the MCL were found in the distribution system. The District believes this could be a sampling issue, or the result of low pH water at the SWWF. To determine the best option to solve these water treatment deficiencies, a pilot study for analyzing treatment improvements has been initiated for the SWWF. The Capital Improvement Program (CIP) in Chapter 8 includes this plan (project SO-1), as well as the replacement of filter media at the SWWF (project SO-2), and new treatment methods at the NWF (project SO-4), as projects to address water quality.

The District will also stay up to date on upcoming changes to water quality monitoring including the Revised Lead and Copper Rule and PFAS regulations, both of which are discussed earlier in this chapter.

WATER RIGHTS

The District has adequate instantaneous and annual water rights through the 10- and 20-year planning periods.

SOURCE OF SUPPLY

Assuming 20 hours of run time during periods of peak demand, NBWD's source capacity operates at a surplus through the 10- and 20-year planning periods.

STORAGE

NBWD has a storage capacity surplus through the 20-year planning horizon, though the surplus shrinks to only approximately 6,000 gallons in 2044. The majority of the system storage, 69 percent, is located at the North Wellfield, while the South Wiegardt Wellfield is responsible for 49 percent of active source capacity. This discrepancy in storage capacity at the SWWF may prove limiting in the future. The CIP provided in Chapter 8 includes a project to construct a second reservoir at the South Wiegardt Wellfield, project ST-1 to provide sufficient storage for the South Wiegardt Wells and to provide system redundancy.

DISTRIBUTION SYSTEM

There are no areas of the system with insufficient pressure during peak hour demand. Table 3-26 indicates that 6 hydrants in the system were identified as fire flow deficient during the hydraulic modeling. Projects D-6, D-7 and D-8 from the CIP in Chapter 8 will address these deficient hydrant locations.

CHAPTER 4

WATER USE EFFICIENCY PROGRAM

INTRODUCTION

A viable water use efficiency plan is a requirement of water system planning. This chapter identifies conservation and water use efficiency requirements and outlines the North Beach Water District (NBWD) Water Use Efficiency (WUE) Program for the next 10 years.

WATER USE EFFICIENCY PLANNING REQUIREMENTS

The Washington Legislature passed the Water Use Efficiency Act of 1989 (43.20.230 RCW), which directs the Department of Health (DOH) to develop procedures and guidelines relating to water use efficiency.

In 2003, the Municipal Water Supply – Efficiency Requirements Act (Municipal Water Law) was passed and amended RCW 90.46 to require additional conservation measures. The Municipal Water Law, among other things, directed DOH to develop the Water Use Efficiency (WUE) Rule, which was adopted in October 2006. The WUE Rule is outlined in the Water Use Efficiency Guidebook (Third Edition).

These documents provide guidelines and requirements regarding the development and implementation of conservation and efficiency programs for public water systems. Conservation and efficiency programs developed in compliance with these documents are required by DOH as part of water system planning documents, and by the Washington State Department of Ecology (Ecology) as part of a public water system water right application. Conservation must be evaluated and implemented as an alternate source of supply before state agencies approve applications for new or expanded water rights.

Conservation can be used effectively to help meet the increased demand for water, to protect the environment, to delay the development of costly infrastructure, and to ensure that water is available to meet economic and population growth consistent with the Growth Management Act by using existing supplies more efficiently. Public awareness and participation are necessary for NBWD to develop an active and beneficial conservation plan.

The third and most recent edition of the WUE Guidebook was released in January 2017. The WUE Rule sets stringent requirements for public water purveyors. The WUE Rule is comprised of the following seven sections:

1. WUE Requirements
2. Water Metering
3. Data Collection
4. Distribution System Leakage (DSL)
5. Water Demand Forecasting
6. WUE Goals
7. WUE Measures

WATER USE EFFICIENCY REQUIREMENTS

The WUE Guidebook establishes varying implementation and evaluation requirements for municipal water suppliers. The requirements focus on the importance of measuring water usage and evaluating the effectiveness of the WUE program. The Rule outlines three fundamental elements which include planning, Distribution System Leakage (DSL) standards, and goal setting and performance reporting.

Table 4-1 provides a summary of the WUE Rule requirements applicable to NBWD.

TABLE 4-1

Summary of WUE Requirements

Requirement	District Compliance
Include WUE Program in Planning Documents	✓
Set WUE Goals	✓
Submit Service Meter Installation Schedule	✓
Submit First Annual Performance Report	✓
Meet DSL Standard (Based on a 3-Year Rolling Average)	(1)
Complete Installation of All Service Meters	✓

(1) NBWD has a 3-year rolling average of 12 percent DSL, greater than the WUE DSL Standard of 10 percent. To address this non-compliance, the District has implemented a Water Loss Control Action Plan.

WATER METERING

The WUE Rule requires all sources and customer service connections to be metered by 2017. NBWD currently meters all sources and customers and is, therefore, in full compliance with this requirement. All new sources and customers will continue to be metered.

DATA COLLECTION AND REPORTING

The WUE Rule requires regular collection of production and consumption data. Data must be reported in the District's planning documents and an annual performance report submitted to DOH. Water use data will be used for the following:

- Calculating leakage;
- Forecasting demand for future water needs;
- Identifying areas for more efficient water use;
- Evaluating the success of the WUE program enacted;
- Describing water supply characteristics;
- Aiding in decision-making about water management.

Table 4-2 Summarizes the water use data collection requirements.

TABLE 4-2

Summary of Water Use Data Collection

Required Data Type	Unit of Measure	Collection Frequency
Source of Supply Meter Readings	Cubic Feet	Daily
Peak Month(1)	Cubic Feet	-
Distribution System Leakage(2)	Gallons and Percent	-
Unmetered, Unbilled Authorized Uses(3)	Gallons	Annually
Single-Family Service Meter Readings	Cubic Feet	Every 2 Months
Multi-Family Service Meter Readings	Cubic Feet	Every 2 Months
Industrial/Commercial Service Meter Readings	Cubic Feet	Monthly

(1) Peak month is tabulated monthly based on water production reports.
(2) Distribution System Leakage (DSL) is based on the annual difference of water produced and consumed. Reported to DOH annually.
(3) Unmetered, unbilled authorized uses are calculated from District records of flushing and testing.

This data is needed to meet the planning and performance reporting requirements and check compliance with the distribution system leakage (DSL) standard of the WUE Rule.

NBWD currently meters all sources. Water production is measured at each of the wells and all three interties, and is recorded daily. Water production data from the years 2019 through 2022 are summarized in Table 2-3 of this Plan.

NBWD's distribution system is fully metered and these meters are replaced and calibrated regularly to ensure accurate readings. Residential and commercial service meters are read monthly year-round. As part of District policy, all new connections are required to be metered. Consumption data is shown in Table 2-5 of this Plan.

WATER USE EFFICIENCY PROGRAM

Under the WUE Rule, NBWD must develop a water use efficiency program as part of its planning documents. This program includes several elements, such as evaluating past conservation efforts, evaluating distribution system leakage, setting water use efficiency goals, and evaluating and implementing measures to meet these goals. NBWD's water use efficiency program was established in 2008 and updated in 2015.

PAST WATER USE EFFICIENCY PROGRAM

In the 2015 Water System Plan, NBWD placed two goals for the WUE Program: to maintain DSL at no more than 10 percent of net production and reduce water usage per ERU by an average of 1 percent per year over the 6-year planning horizon. The District has seen an increase in DSL since the 2015 WSP, possibly due to aging infrastructure leading to leaks along the system. The District has succeeded in meeting and surpassing a 1 percent decrease in ERU volume per year since 2015.

This Plan builds upon the District's previous conservation goals and measures to continue the formal Water Use Efficiency Program.

WATER SHORTAGE RESPONSE PLAN

In the future, the District may consider implementing a Water Shortage Plan. Such plans typically have tiered measurable trigger points, which may include for example, consecutive dry days, change in aquifer levels, or some number of sources that are offline. Increasingly stringent conservation measures as higher tiers of these trigger points are reached, with the goal of limiting consumption during periods of high water demand and low water supply. Possible triggered conservation measures (in order of severity) include issuing an advisory notice, calling for voluntary conservation, implementing an odd/even address irrigation schedule, only allowing 2 or 1 day(s) of irrigation per week, and forbidding outdoor irrigation.

A draft Water Shortage Plan can be found in Appendix P. It is recommended that the District review and revise the plan as necessary and that a final Water Shortage Plan is adopted by the North Beach Water District.

DISTRIBUTION SYSTEM LEAKAGE

The WUE Rule requires that water distribution systems maintain a DSL rate less than 10 percent of finished water production based on a 3-year rolling average. Distribution system leakage (DSL) is defined as the difference between production (by sources) and authorized consumption measured by service meters (plus other credibly estimated usage). DSL includes water loss due to leaks or unauthorized uses such as illegal service connections, accounting errors, inaccurate source and customer meters, and water leaving

the system for any unmetered use. Unmetered uses typically include flushing of mains and fire flows, accounting errors, inaccurate source and customer meters, and water leaving the system for any unmetered use.

Table 4-3 provides annual data on distribution system leakage from 2019 to 2022. NBWD's 3-year rolling average DSL is currently 12 percent which is higher than the WUE Rule's 10 percent maximum allowable leakage requirement. As a result, a Water Loss Control Action Plan must be implemented and will be discussed later in this chapter.

TABLE 4-3

Distribution System Leakage

Year	Metered Production (MG)	Metered Consumption (MG)	DSL (MG)	DSL (Percent)	Rolling 3-year Average DSL (Percent)
2019	92.17	84.48	7.69	8%	-
2020	99.53	85.92	13.61	12%	-
2021	98.91	86.55	12.36	10%	10%
2022	99.63	82.53	17.10	14%	12%

NBWD's DSL has increased in recent years, possibly due to aging infrastructure, particularly asbestos concrete (AC) water main pipes. To address the increased DSL, the District has recently improved their data management system to more quickly recognize leaks in the system and address them as needed. Additionally, the CIP in Chapter 7 includes projects to replace aging AC pipes, and to loop the south end of the system to eliminate the need for flushing.

AVERAGE DAILY CONSUMPTION

The 2015 WSP set a consumption goal to reduce water usage per ERU by an average of 1 percent per year over the next 6 years. In the 2015 WSP, ERUs were calculated using the total volume of residential consumption divided by 'average active' residential connections. Average active residential connections were found by taking the average amount of connections with some amount of water use over a 12-month calendar year.

Because ERUs have been derived in a different way for this plan, and we do not have data to separate full time from part time customers in the 2015 plan, direct comparisons are not possible.

ADD per ERU for the years 2020 through 2022, and the annual percent change, is shown in Table 4-4.

TABLE 4-4

2015 Consumption Goal Evaluation

Year	Average Consumption per ERU (gpd)	Change in Consumption over previous years
2020	138	-
2021	138	0%
2022	128	-7.8%
Average		-3.9%

The 3 years of available data do not show any clear trend, except that Average Consumption per ERU has not gone up.

The District will continue to observe consumption trends to ensure that future WUE goals are trackable and met.

REVISED GOALS

Under the new WUE Rule, NBWD must outline new water use efficiency goals as part of the WSP update, adopt these goals through a public process, and measure progress towards these goals each year. These goals must include a measurable outcome and address water demands and supply characteristics. The District's two new goals are summarized below.

- Goal 1 (Supply) - Reduce Distribution System Leakage (DSL) to no more than 10 percent of net production by 2030, a 4.5 percent annual decrease from 17.1 MG in 2022.

- Goal 2 (Demand) – Reduce ERU_{ADD} by 0.5 percent per year.

TABLE 4-5

Water Use Savings With Supply and Demand Goals

	Projected ERUs (Excluding DSL)	No Conservation				Conservation				
				DSL				DSL		Annual Water Savings (MG/Y)
		ERU_{ADD}	Annual Consumption (MG/Y)	MG/Y	%	ERU_{ADD}	Annual Consumption (MG/Y)	MG/Y	%	
2024	2,346	135	115.6	17.1	12.9%	135	115.6	16.3	12.4%	0.8
2025	2,360		116.3	17.1	12.8%	134	115.7	15.6	11.9%	2.1
2026	2,376		117.1	17.1	12.7%	134	115.9	14.9	11.4%	3.4
2027	2,391		117.8	17.1	12.7%	133	116.1	14.2	10.9%	4.6
2028	2,407		118.6	17.1	12.6%	132	116.2	13.6	10.5%	5.9
2029	2,421		119.3	17.1	12.5%	132	116.4	13.0	10.0%	7.1
2030	2,437		120.1	17.1	12.5%	131	116.5	12.4	9.6%	8.3
2031	2,452		120.8	17.1	12.4%	130	116.6	11.8	9.2%	9.4
2032	2,467		121.6	17.1	12.3%	130	116.8	11.3	8.8%	10.6
2033	2,482		122.3	17.1	12.3%	129	116.9	10.8	8.4%	11.7
2034	2,498		123.1	17.1	12.2%	128	117.1	10.3	8.1%	12.8
Total Water Savings over 10 years with Proposed Conservation Metrics										**76.6 MG**

WATER USE EFFICIENCY MEASURES

The WUE Rule requires the evaluation or implementation of water use efficiency measures to help meet the WUE goals. The WUE Guidebook states several measures that must be implemented or evaluated and provides a list of measures that can be counted as supplemental measures in the WUE Program. WAC 246-290-810 identifies the minimum number of water use efficiency measures that must be evaluated based on system size. Because the District serves between 2,500 and 9,999 customers, a minimum of six water use efficiency measures must be implemented. As stated in the WUE Guidebook, any WUE measure implemented across multiple customer classes counts as one measure for each customer class to which it is applied.

The following sections describe both the mandatory and supplementary water use efficiency measures evaluated and indicate which have been or will be implemented by NBWD.

Implement Source and Service Metering and Meter Calibration (Mandatory)

As stated previously, NBWD currently meters all existing customers and sources and plans to meter all new customers and sources. They will also continue to calibrate source meters as scheduled and service meters as requested. Additionally, the District has converted all water meters to radio read technology in order to reduce manpower requirements associated with meter reading.

Implement Water Loss Control Action Plan (Mandatory if DSL >10 Percent)

NBWD's DSL rate was 12 percent based on a 3-year rolling average in 2022, which was close, but did not meet the DOH requirement of 10 percent. As a result, the District is required to implement a Water Loss Control Action Plan (WLCAP) to remain in compliance per WAC 246-290-820(4). The District's WLCAP is included at the end of this Chapter.

North Beach Water District has established measures to reduce the 3-year rolling average DSL to 10 percent or less. Some of these measures include leak detection, meter replacement and calibration, and replacement of old, aging, and undersized pipe segments.

Customer Education (Mandatory)

NBWD educates customers about efficient water use by providing inserts with utility bills on an annual basis, at minimum. The inserts inform the customers of ways to reduce their water demands and also educate customers about the ways the District is working to improve system efficiency. The District will continue to distribute water use efficiency information to its customers annually.

Evaluate Conservation Rate Structure (Mandatory)

The NBWD rate structure includes a base rate for all customers, regardless of water use, and a water volume charge based on customer usage, which encourages water conservation. Base and water use rates are discussed further in Chapter 9. The District does not currently have an inclining block rate or seasonal block rate, which would qualify as additional WUE measures for residential and commercial customers. Water rates are currently in place through the year 2025 with incremental increases each year. The District regularly conducts rate studies and a current study is in progress for the implementation of rates post-2025.

Evaluate Reclamation Opportunities (Mandatory)

Neither NBWD nor any other entity has a municipal wastewater collection, treatment or disposal system serving the NBWD service area. Therefore, the only opportunities for wastewater reclamation would have to be by individual water users or by use of reclaimed wastewater from a neighboring area. The nearest community with a wastewater collection and treatment system is the City of Long Beach, located approximately nine miles south of NBWD.

Due to lack of a central wastewater collection and treatment system, and the costs associated with implementing such system, NBWD will not be pursuing a water reuse project at this time.

Bills Showing Consumption History (Supplementary)

Water utility bills that show consumption history can help customers monitor their water consumption trends. These bills give feedback to customers on their own attempts to conserve and give a reference that helps in identifying leaks or changes in water usage that customers might otherwise not be aware of. NBWD currently presents a summary of past usage on all bills that go to both residential and commercial customers.

Notifying Customers of Leaks (Supplementary)

NBWD notifies customers who, based on water system meter reading data, appear to possibly have a leak on their side of the water service meter.

Water Use Audits (Supplementary)

NBWD provides water use audits upon customer request. The District provides technical assistance to find and repair leaks for customers who suspect that they may have a leak on their side of the water service meter.

Summary of Measures

The WUE Rule requires all municipal water systems with between 2,500 and 9,999 connections to implement five mandatory water use efficiency measures, to evaluate two mandatory measures, and to either implement or evaluate six additional measures. The District's water use efficiency measures are listed in Table 4-6.

TABLE 4-6

Water Use Efficiency Measures

Requirement	Measure	District Compliance	Number of Measures
Mandatory Implementation	Install Production Meters	✓	5
	Install Consumption Meters	✓	
	Perform Meter Calibration	✓	
	WLCAP if DSL >10 percent	✓	
	Educate Customers about WUE Practices Once Per Year	✓	
Mandatory Evaluation	Conservation Rate Structure	✓	2
	Reclaimed Water Use	✓	
Supplementary Implementation	Bills Showing Consumption History	✓	6(1)
	Notifying Customers of Leaks	✓	
	Water Use Audits	✓	

(1) These three measures are applied to both Residential and Commercial customers. Measures implemented across multiple customer classes count as one measure for each customer class to which they are applied.

EVALUATING WATER USE EFFICIENCY EFFECTIVENESS

NBWD plans to evaluate the effectiveness of its production side WUE efforts through an annual review of DSL. The District can then prioritize projects (such as waterline replacement and meter replacement) based on the DSL percentage trend. The District plans to evaluate the effectiveness of its consumption side WUE efforts through annual review of the residential per capita water use. This evaluation will determine if education efforts are having the desired effect.

PERFORMANCE REPORTING

The District must submit a performance report to DOH by July 1 each year. This annual report must include:

- Total source production and customer consumption;
- Distribution system leakage in percentage and volume; and
- Description of current WUE goals, schedule and progress toward meeting goals.

DOH has developed an online reporting form that must be used by water systems to file their annual report. Previous year's WUE annual performance reports are available on the DOH website.

WATER LOSS CONTROL ACTION PLAN

In 2022, NBWD's DSL was 14 percent with a 3-year rolling average of 12 percent. Both values are above the DSL standard of 10 percent. As a result, the District must implement a Water Loss Control Action Plan (WLCAP). The following elements are included in the WLCAP:

- The water loss control methods include pipe replacement to reduce leakage and replacing fault water meters. NBWD plans to routinely replace service meters to maintain radio read capability and accuracy.

- NBWD has recently improved their data management system to more quickly recognize leaks in the system and address them as needed.

- NBWD's Capital Improvement Program, which is detailed in Chapter 8, outlines future continued meter replacement and pipe replacement programs. Aging and undersized pipes can be at increased risk of leakage and projects to replace these pipes are included in the District's CIP budget. A continuous meter replacement program will also keep the maximum meter age within an acceptable range. Meters showing signs of faulty readings will be replaced first.

- NBWD's Capital Improvement Program includes a system loop at the south end of the system (D-7) which would eliminate the current need to frequently flush the dead ends present there.

- There are no anticipated technical or financial concerns that could prevent NBWD from complying with the standard. The District's financial information can be found in Chapter 9.

CHAPTER 5

WELLHEAD PROTECTION PROGRAM

OVERVIEW

Water from underground aquifers, commonly referred to as groundwater, forms the primary source of drinking water for an estimated 65 percent of Washington state residents. NBWD relies on groundwater as its primary source. Groundwater is pumped from two wellfields designated the North Wellfield (NWF) and the South Wiegardt Wellfield (SWWF). As shown in Table 1-3, the NWF consists of seven wells ranging in depth from 80 feet to 130 feet. The SWWF currently consists of three wells ranging in depth from 149 to 150 feet. Locations of the wellfields are shown in Figure 1-11 and in Figure 5-1.

To protect groundwater supplies, the Environmental Protection Agency (EPA) and the Department of Health (DOH) require public water utilities to develop a wellhead protection program as a component of their water system comprehensive plans. The purpose of a wellhead protection program is to provide local utilities with a proactive program for preventing groundwater contamination. A successful wellhead protection program consists of a number of components which must be developed before the plan can be fully implemented. The major components of the plan are described below and form the basis of the following chapter.

- A *Susceptibility Assessment* determining the susceptibility to contamination.
- A *delineated Wellhead Protection Area* (WHPA), based on all reasonably available hydrogeologic information, including the Susceptibility Assessment.
- An *inventory* within each WHPA of potential sources of contamination.
- A *spill response plan* for each WHPA containing documentation for coordination with local first responders.
- *Contingency plans* for providing alternate sources of drinking water in the event that contamination does occur and management recommendations to reduce the likelihood that potential contaminant sources will pollute the drinking water supply.

SUSCEPTIBILITY ASSESSMENT

Separate susceptibility assessments have been completed for all of NBWD's wells. Copies of these susceptibility assessments are on file at DOH. Susceptibility assessments are an important initial step in selecting appropriate delineation methods to define the WHPA boundaries. Drinking water supplies vary in their susceptibility to contaminants discharged at the surface. Wells that have been poorly constructed or have been improperly cased have an increased susceptibility. Additionally, wells located in an unconfined aquifer with no confining layer (layer of low permeability) between the aquifer and surface have a much higher susceptibility than those drawing water from confined aquifers deep below the ground surface.

After review of the susceptibility assessments, DOH has given all eight wells in the NWF, and all three of the Wiegardt Wells "Moderate" susceptibility ratings.

WHPA DELINEATIONS

The first step in developing a wellhead protection program is to establish the land areas around each well from which groundwater may be flowing to the well. These areas which most likely contribute pollutants to the groundwater are referred to as Zones of Contribution (ZOCs). The time-of-travel for a given ZOC is determined by estimating the travel distance in feet of a hypothetical particle of water traveling through the aquifer to a pumping well over a selected period of time. ZOCs require proper land use management to minimize the possibility of contaminants entering the groundwater system.

ANALYSIS

The CFR method was used to analyze the WHPA ZOCs for each of the NBWD wellfields. This method is the simplest acceptable method of delineation, and generally provides the most conservative area of delineation. The wells in the NWF are near each other, and the wells in the SWWF are also near each other. Per the methodology depicted on page 40 of the DOH *Wellhead Protection Program Guidance Document,* April 1995, the ZOCs in the NWF are combined, and the ZOCs in the SWWF are also combined, with the center of each WHPA at the geometric center of the wells in each wellfield, as shown on Figure 5-1. ZOCs were calculated using the following CFR formula:

$$r = \sqrt{\frac{Q \times t}{\pi \times n \times H}}$$

Where:
r = Radius of the ZOC
Q = Pumping Rate of Wells, cubic feet per year
t = Time of travel to well, years
n = Aquifer porosity
H = Open interval of wells, feet

North Wellfield

South Wiegardt Wellfield

Willapa Bay

Pacific Ocean

Number	Identified Hazard
01	Guelfis West (Chrome Dome Automotive Repair)
02	Heckes Clams Inc.
03	Hill Auto Body & Towing Inc.
04	Jacks Country Store/Ocean Park Texaco
05	Kitchen Wrecking Yard
06	Ocean Auto
07	Ocean Park Concrete
08	Peninsula Plumbing & Heating Co.
09	Peninsula Port
10	Precision Coast Painting, Inc.
11	Station House Oyster Company
12	T Reardon Plumbing Inc.
13	Taylor Shellfish Company, Inc.
14	Wiegardt & Sons
15	Wiegardt Bros.
16	Willapa Bay Shelfish
17	Nahcotta Boat Basin Boatyard

Sources: Washington State DNR, Pacific County North Beach Water District, Gray & Osborne, Inc., Esri, NASA, NGA, USGS, FEMA

Identified Hazards
Air Release
Fire Hydrants
Blowoffs
Valves
Wells

Water Mains
Unknown
1-INCH
1.5-INCH
2-INCH
3-INCH
4-INCH
6-INCH
8-INCH
12-INCH

Wellhead Protection Zones
0.5-Year Time of Travel
1-Year Time of Travel
5-Year Time of Travel
10-Year Time of Travel
Roads

N

0 1,000 2,000 4,000 Feet

NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

FIGURE 5-1

WELLHEAD PROTECTION AREAS AND IDENTIFIED HAZARDS

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\North Beach WD\23473.00 Water System Plan\GIS\APRX\NorthBeachWSP2023Figures\NorthBeachWSP2023Figures.aprx

WHPA ZOCs were calculated for the NWF based on the total annual water right of 528 ac-ft/yr available to that wellfield, and WHPAs were calculated for the SWWF based on the total annual water right of 168 ac-ft/yr available to that wellfield, as shown in Table 1-2. The screened open interval used, H, is 20 feet for both wellfields, because, as shown in Table 1-3, most of the wells in both wellfields have 20-foot screens. The aquifer porosity used is 0.22 as recommended in the Wellhead Protection Program Guidance Document. Radius values calculated for the various times of travel are presented in Table 5-1. Figure 5-1 depicts the delineation of the ZOCs for the both wellfields.

TABLE 5-1

NBWD Wellhead Protection Zones of Contribution (CFR Method)

	North Wellfield	South Wiegardt Wellfield
Annual Use, ac-ft/yr(1)	528	168
Time of Travel, Years	**Zone of Contribution, feet(2)**	
0.5	912	514
1	1,290	728
5	2,884	1,627
10	4,079	2,301

(1) Annual usage for the NWF and the SWWF are based on full utilization of the annual water rights for each wellfield.

(2) A screened interval of 20 feet was used for both wellfields based on construction records available for wells in the wellfields. The ZOCs are centered on the geometric center of each wellfield.

CONTAMINANT SOURCE INVENTORY

An essential element of wellhead protection is an inventory of all potential sources of groundwater contamination in and around the delineated WHPAs. The purpose of the inventory is to identify past, present and proposed activities that may pose a threat to the well or surrounding area. The inventory can also help to plan management strategies and establish a mailing list to notify businesses located within the WHPAs.

INVENTORY DATA SOURCES

The inventory of potential contaminant sources was compiled using various data sources. Ecology maintains a contaminant database that lists businesses that handle and store potential contaminants. The following databases were used to create the inventory for the NBWD WHPAs:

- *Washington State Department of Ecology Facility Site Atlas:* The Washington State Department of Ecology maintains an interactive map showing regulated facilities and locations of historic spills and leaks at the following website:

  https://apps.ecology.wa.gov/facilitysite/Map/MapSearch

  The web site links to the Underground Storage Tank Program, including records of registered underground storage tanks and underground storage tanks that are known to have leaked, the Dangerous Waste and Materials Generators program, including locations of registered dangerous waste and materials handlers, Title III Hazardous Materials sites, including locations of regulated facilities that treat, store or dispose of hazardous materials in sufficient quantity to pose a threat to the community, regulated Waste Dischargers, and Confirmed and Suspected Contamination Sites. This web site was accessed and a list of facilities in the NBWD area was obtained.

- General Web Searches: General web searches were made for various business that have a potential to cause groundwater contamination, including dry cleaners, auto repair shops, paint shops, and metal plating.

POTENTIAL CONTAMINANT SOURCES

Seventeen facilities were identified by the search methods described above. Facilities identified are listed in Table 5-2, and shown in Figure 5-1. Note that this inventory of potential contaminate source should be routinely updated at least every 2 years.

TABLE 5-2

Wellhead Protection Area Potential Sources of Contamination

No.	Site Name	Site Address	Description
1	Guelfis West (Ocean Auto)	1702 Bay Avenue	Leaking Underground Storage Tank (LUST) Facility
2	Heckes Clams Inc	28107 Sandridge Road	Pesticide storage, application outside WHPA
3	Hill Auto Body & Towing(3)	25901 Vernon Avenue	Possibility for auto shop associated contaminates.
4	Jacks Country Store (Chevron)	26006 Highway 103	Underground Storage Tank (UST)
5	Kitchen Wrecking Yard(1)	24621 Birch Place	State Cleanup Site
6	Ocean Auto(3)	1702 Bay Avenue	Possibility for auto shop associated contaminates.
7	Ocean Park Concrete (Ken Carlson Company)(1)	2308 270th Place	Enforcement Final(2)
8	Peninsula Plumbing & Heating Co.(1)	25216 Sandridge Road	Enforcement Final(2)
9	Peninsula Port	3311 275th Street	Strategic Environmental Assessment (SEA) Project Site
10	Precision Coast Painting, Inc.(3)	28407 West Lane	Possibility for painting associated contaminates.
11	Station House Oyster Company(1)	273rd Street and Sandridge Road	SEA Project Site
12	T Reardon Plumbing(1)	25014 R Street	Enforcement Final(2)
13	Taylor Shellfish Company, Inc	3201 Bay Avenue	Pesticide storage, application outside WHPA
14	Wiegardt & Sons Inc	273rd Street and Sandridge Road	Pesticide storage, application outside WHPA
15	Wiegardt Brothers	3215 273rd Street	LUST Facility, UST, Industrial NPDES
16	Willapa Bay Shellfish Inc	27718 Sandridge Road	Pesticide storage, application outside WHPA
17	Nahcotta Boat Basin Boatyard	3311 275th Street	Possibility for boatyard associated contaminates.

(1) This facility/business is no longer in operation but remains an active potential contaminate listing with the Washington Department of Ecology.
(2) Indicates a remediation plan has been determined for this site.
(3) This business is included due to its potential to cause groundwater contamination.

In addition to facilities identified on the Ecology Site Atlas and located by internet web searches, it should also be noted that there is no sewer system in the Ocean Park area. That means that all wastewater from all businesses and homes is disposed of into septic tank/drain field disposal systems.

Potential Sources of Contamination by Wellhead Protection Zone

Within a wellhead protection zone, there are many diverse activities, which may contaminate an aquifer, thereby impacting the water supply. A discussion of these activities, their potential effects on groundwater, and the regulatory requirements that may apply are included in the following sections. Potential sources of contamination identified in Table 5-2 are indicated by ZOC in Table 5-3.

TABLE 5-3

Sites by Wellhead Protection Zone

Source	Zone of Contribution	Sites
NWF	6-month	2, 9
	1-year	None
	5-year	1, 4, 12, 19
	10-year	3, 5, 6, 8, 10, 13, 14, 16, 17, 18, 20
SWWF	6-month	None
	1-year	None
	5-year	None
	10-year	7, 11, 15, 20

In addition to the sites identified in Tables 5-2 and 5-3, on-site wastewater treatment and disposal systems are located throughout the entire area. Figures 5-2 and 5-3 are aerial views of the 1-year ZOCs for the NWF and the SWWF. It can be seen that there is development in these areas, and it must be assumed that all facilities in the area dispose of wastewater to on-site wastewater treatment and disposal systems.

Seawater Intrusion

Due to close proximity to Pacific Ocean and Willapa Bay, the North Beach area aquifers are most likely in continuity with the one or both of those saltwater bodies and therefore at risk from seawater intrusion. The potential for seawater intrusion is increased by excessive drawdown on one or more of the wells in the wellfield. Should pumping levels be excessively lowered, elevated chloride concentrations, the most common indicator of advancing saline waters, would be the first indicator that seawater intrusion potential was increasing. Although none of NBWD's wells have exhibited elevated chlorides, this risk should continue to be considered, and steps to minimize the potential and monitor for indications of increased risk should be included in the operations and management of the water system. Specifically,

- Operate the wells at a rate that results in no more than one third of available drawdown.

- Monitor, record, and analyze the drawdown and pumping levels (preferably pressure transducers in each well).

- Monitor, record and analyze monthly chloride residuals from each well for trends.

TYPICAL CONTAMINANTS FROM TYPICAL CONTAMINANT SOURCES

The following sections identify typical contaminants that may come from some typical contaminant sources. Note that only the potential contaminant sources identified in the previous section are known to exist within the NBWD WHPA. Other potential contaminant sources may exist that have not been identified or recorded.

Landfills

There are no known active or abandoned landfills within the wellhead protection ZOCs for any of NBWD's wellfields.

Commercial and Industrial Activity

Areas of commercial and industrial land use are located within most wellhead protection boundaries. Businesses that may contribute contaminants to the groundwater include dry cleaners, gas stations and other businesses with fuel storage tanks, auto repair shops, metal plating facilities, asphalt and concrete facilities, and machine shops. Wastes generated at these businesses include substances such a petroleum products, solvents, surfactants, heavy metals, and other organic and inorganic materials. These pollutants can potentially enter the groundwater system through inadequate disposal practices or accidental spills. Table 5-5 presents some typical commercial and industrial activities and the potentially hazardous chemicals that may be associated with them.

TABLE 5-4

Chemicals Associated with Commercial and Industrial Activities

Commercial/Industrial Activity	Contaminants
Automobile/Truck Service	waste oils, solvents, acids, paints, soaps
Dry Cleaners	solvents (perchloroethelyene, petroleum solvents, Freon) spotting chemicals (trichloroethane, methylchloroform, ammonia, peroxides, hydrochloric acid, rust removers, amyl acetate)
Cemeteries	fertilizers, pesticides
Country Clubs/Golf Courses	fertilizers, herbicides, pesticides, swimming pool chemicals, automotive wastes

TABLE 5-4 – (continued)

Chemicals Associated with Commercial and Industrial Activities

Commercial/Industrial Activity	Contaminants
Electric/Electronic Equipment Manufacturers	nitric, hydrochloric and sulfuric acids, heavy metal sludges, ammonium persulfate, cutting oil and degreasing solvent, corrosive soldering flux, waste plating solution, cyanide, methylene chloride, perchloroetheylene, trichloroethane, acetone methanol
Furniture/Wood Manufacturing	paints, solvents, degreasing and solvent recovery sludge
Metal Plating Shops	sodium and hydrogen cyanide, metallic salts, alkaline solutions, acids, solvents, heavy metal contaminated wastewater/sludge
Lawns and Gardens	fertilizers, herbicides, pesticides
Painters, Publishers	solvents, inks, dyes, oils, miscellaneous organics, photographic chemicals
Sand and Gravel Mining	diesel fuel, motor oil, hydraulic fluids
Scrap, Salvage and Junkyards	used oil, gasoline, antifreeze, PCB contaminated oils, lead acid batteries

The siting and operation of facilities that treat, store, or dispose of hazardous waste are subject to the requirements of the Resource Conservation and Recovery Act (RCRA), subtitle C. In Washington State, the Department of Ecology regulates facilities that generate more than 220 pounds of hazardous waste per month under WAC 173-303, Dangerous Waste Regulations. The regulations are significant in that they establish a number of requirements for these facilities including surveillance and monitoring, record keeping, performance and design criteria, and siting and closure procedures. Ecology divides the facilities into three levels of hazardous waste accumulation: Level one facilities generate 2,200 pounds of waste per month or more; level two facilities generate between 220 and 2,200 pounds per month; and level 3 facilities generate less than 220 pounds. Level three generators are exempt from the regulations. All level one and two facilities must initially file a report of their activities with Ecology and update those activities annually.

Underground Storage Tanks

Underground storage tanks (USTs) and leaking underground storage tanks (LUSTs) can be a major threat to groundwater quality. Petroleum products, which may contain impurities that are mobile in the groundwater system, are the most commonly stored substances in USTs. The EPA estimates that 35 percent of all USTs could be leaking. The most common causes of leaks are structural failure, corrosion, improper fittings, and improper installation.

Ecology regulates underground storage tanks in Washington State under WAC 173-360. The regulations require that owners and operators of underground storage tanks comply with the following sections of the regulations:

- Notification, reporting, and record keeping
- Performance standards and operating closure requirements
- Registration and licensing
- Financial responsibility

As of July 1, 1991, owners and operators of all existing nonexempt underground storage tanks must have a permit from Ecology. A valid permit is a requirement for delivery of regulated substances. The permit must be updated annually.

Underground storage tank inspections are performed by Ecology primarily through the information developed in the permitting process. Ecology maintains a file on all permitted USTs in Washington State, as required by RCRA, Subtitle 1. The file provides the site name and address, tank identification number, date of installation, size, tank status, and the substance stored at the site.

Septic Systems

Pacific County Health Department is responsible for regulating and permitting residential and small commercial on-site sewage treatment systems within the county, excluding federal facilities. Contaminants associated with septic tank effluent include pathogenic organisms, toxic substances, and various nitrogen compounds, including ammonia and nitrate, that are highly soluble in water. Most septic drainfields discharge treated sewage effluent to the unsaturated zone above unconfined aquifers. Contaminants from drain fields can percolate to the saturated zone and contaminate groundwater supplies.

A properly designed septic system can provide reasonable protection from groundwater contamination by pathogenic organisms. Nitrate and ammonia discharging from septic systems are generally in small enough amounts that they are sufficiently diluted in the groundwater. An improperly designed septic tank/drainfield in excessively porous soils, however, can allow pathogens to reach groundwater unimpeded. Evidence of this type of septic system failure is not readily visible since drainage from these systems does not cause ponding or odor problems. Contamination from this type of source is very difficult to trace. There are three practical means of protecting a water supply from this type of problem: (1) Make sure that all new septic systems installed in areas of the wellhead protection zone are carefully designed and properly installed. (2) Ensure that existing systems are properly maintained by pumping septic tanks on a regular basis. (3) Educate property owners regarding the proper use and maintenance of their systems.

Perhaps the largest threat to groundwater from septic systems is their improper use. Septic systems are neither designed to remove most chemical wastes from water nor are they capable of removing these substances. Solvents, fuels, waste oil, photo chemicals and a large number of other wastes pass through septic systems without any effective treatment. Many solvents also pass relatively easily through low permeability geologic strata. Therefore, one of the most effective actions that can be taken within a WHPA to improve protection from septic systems is to reduce the amount of inappropriate materials being disposed of through these systems. This may be done through public education and assistance with proper toxic waste disposal. If people are informed as to what should not be dumped into a septic system and the reasons why, and if they are assisted in finding a more appropriate way to dispose of toxic wastes, the likelihood that they will dispose of toxic wastes to their septic systems will be reduced. Generally, information regarding the proper storage and disposal of hazardous wastes and a convenient location for waste drop-off will reduce dumping into septic systems more effectively than an enforcement program. It is virtually impossible to police or regulate the dumping of toxic wastes into individual septic systems.

Improperly Sealed or Secured Wells

Improperly sealed or secured wells can act as direct conduits for contaminants to reach groundwater. It is unknown if there are abandoned wells in the general vicinity of NBWD wellfields.

Accidental Spills

Accidental spills or releases of contaminants can potentially impact groundwater supplies. Potential sources of spills and leaks include underground storage tanks, accidents and poor disposal practices. The Pacific County Emergency Management Agency will respond to emergency situations, such as public water supply contamination. The Pacific County contact number is (360) 875-9338.

The Washington State Patrol is the first responder for hazardous material spills on state and interstate highways. The State Patrol then notifies the Ecology, who in turn authorizes an independent contractor to clean up the spill. In addition to State Highway 103, there are several gravel and paved roadways within the WHPAs of NBWD. The road system is for residential access and not subject to heavy truck transport of hazardous materials. In the case of NBWD, the first responder to a spill will be the water district staff and/or local fire district in coordination with the Pacific County Emergency Management Agency.

Confirmed or Suspected Contamination Sites

Under the Model Toxics Control Act Cleanup, WAC 173-340, the Department of Ecology is responsible for ensuring all hazardous waste sites are properly remediated. This includes confirmed and suspected sites of contamination as well as LUSTs. A separate inventory for each, which includes the status of cleanup efforts, is maintained by Ecology. Ecology conducts an initial site investigation within 90 days of learning of a potentially contaminated site. If this investigation shows that remediation action is required, the site will appear on the Confirmed and Suspected Contaminated Sites Report. The sites are also given a Washington Ranking Mode BIN number between one and five. A rank of one indicates the greatest assessed risk to human health and the environment. The contaminant type and the affected media, such as groundwater, is also noted. Once the remedial action has been completed, Ecology's Toxics Cleanup Program determines if the site can be removed from the list.

MANAGEMENT STRATEGIES

WHPAs have been defined and potential sources of contamination have been identified. In order for this to result in actual protection for NBWD's wells, a management plan must be put into place. The goals of a management plan are to:

- Reduce the likelihood that potential groundwater contaminants will be disposed, spilled, leaked or otherwise discharged in the WHPA such that they could contaminate groundwater.

- Increase the likelihood that any potential groundwater contaminants which do get disposed, spilled, leaked or otherwise discharged in the WHPA will get cleaned up before they reach the public water supply wells.

- Detect any groundwater contamination that may occur before public health is affected.

- Develop a plan of action for the possible event that a major source of NBWD's water supply should become contaminated.

- Support a follow-up study of the USGS study dated 1995 of the groundwater flow and water quality in the sand aquifer of Long Beach Peninsula, Washington.

Minimum requirements for a WHPA management plan are specified in WAC 246-290-135(c). These requirements include the following:

1. Notification to owners/operators of known or potential sources of contamination within the WHPA of the findings of the wellhead protection plan every 2 years.

2. Notification to regulatory agencies and local governments of the boundaries and findings of the WHPA every 2 years. Copies of these notification letters should be archived.

3. Documentation of coordination with local emergency incident responders (including police, fire and health departments), including notification of WHPA boundaries, results of the susceptibility assessment, inventory findings, and a contingency plan.

4. Completion of a contingency plan to assure that water system customers will have an adequate supply of potable water in the event of temporary or permanent loss of the principal source of supply.

In order for NBWD to protect its existing wellfields from contamination and manage its resources in a responsible manner if contamination should occur, the association will take the following actions.

- NBWD will ensure that any business that could potentially contaminate the NBWD wellfields be aware that they are located within the WHPA. Notification letters and wellhead protection inventory maps will be sent to the owners/operators of potential contaminant sources every 2 years.

- Notify private property owners and their tenants with existing on-site septic systems and undeveloped lots of their location within the NBWD WHPA every 2 years.

  NBWD will ensure that the owners/tenants with on-site septic systems that could potentially contaminate the NBWD wellfields be aware that they are located within the WHPA. Notification letters and wellhead protection inventory maps will be sent to the owners/occupants of potential contaminant sources.

- Monitor for nitrates annually.

  Contaminants associated with failing septic systems include pathogenic organisms, toxic substances, and nitrogen compounds. NBWD will not only be aware of non-compliance with MCLs for nitrates, but also trends of increased nitrate levels over a period of time. Increasing nitrate levels could be an indication of source contamination.

- Coordinate with county and local emergency incident responders to implement a spill/response program as outlined further in this chapter.

  NBWD will ensure that local and county agencies are aware of the location of the WHPAs. Notification letters and wellhead protection inventory maps will be sent to the local fire department, Pacific County planning, health and emergency management agencies, and the Department of Ecology.

- Implement the contingency plan outlined in this chapter to ensure that an adequate supply of potable water is provided in the event of temporary or permanent loss of the principal supply.

SPILL/INCIDENT RESPONSE PROGRAM

Spill response planning is an important aspect of both an emergency management plan and a wellhead protection program. Specific response procedures for WHPAs must be determined prior to the occurrence of a contamination incident. The information obtained as a result of the susceptibility assessment and the WHPA inventory can be used to determine what types of spill response measures are necessary for the protection of drinking water sources. In order to be accepted by local emergency responders, spill response procedures for WHPAs will be realistic and easily implemented.

In order for spill response procedures to be effectively executed, coordination, cooperation, and communication among the responding agencies, organizations, and individuals is imperative. Depending on the magnitude and type of the release, any of the following organizations may be involved in a spill response for a WHPA in Washington State.

- *Department of Ecology (Ecology):* The Department of Ecology website guides users to the appropriate response time and required contact based on the type of spill. Their website can be accessed here:

  https://ecology.wa.gov/footer-pages/report-an-environmental-issue/report-a-spill

  The Ecology website also instructs those reporting a spill to contact the Washington Emergency Management Division's 24/7 line at 1-800-OILS-911 (1-800-645-7911).

- *Department of Health (DOH):* The Department of Health is developing a set of standard operating procedures, in conjunction with organizations such as Ecology's Spill Operations Section and the Association of Fire Chiefs that first responders can use in WHPAs, critical aquifer recharge areas, and other sensitive groundwater areas. DOH also provides

assistance through laboratory support and services if necessary to the clean-up effort.

- *Department of Transportation (DOT):* The Washington State DOT can provide spill response assistance through traffic control, equipment, and personnel for non-hazardous clean-up activities on state and interstate highways.

- *Pacific County Emergency Management Agency:* Pacific County has a department designated to respond to emergency situations, such as public water supply contamination. The Pacific County Emergency Management Agency phone number is (360) 875-9338.

- *NBWD Staff:* Initial response to a hazardous spill will most likely be made by NBWD staff or first responders from the local fire department.

CONTINGENCY PLANNING

Contingency planning is an important component of a wellhead protection program. If one or more of NBWD's wells must be taken offline due to contamination, a contingency plan provides immediate mitigation. A properly prepared and updated contingency plan helps ensure the water system, and local officials, are prepared to respond to emergency situations. Contingency planning also includes provision of alternative sources of drinking water. The following steps are necessary for the development of an effective contingency plan:

- Identify maximum capacities of the existing system as to source, distribution system and water rights restrictions. Assume loss of the largest source and reevaluate.

- Evaluate the expansion options of the existing system's capacities relative to existing water rights.

- Identify existing or potential interties with other public water systems.

- Evaluate current procedures and make recommendations on contingency plans for emergency events.

Chapters 2 and 3 of this Plan have documented the existing and future capacity of the water supply, storage and distribution system. It is recommended that NBWD develop its water resources to the full extent provided under existing water rights. Fortunately, NBWD is serviced by wellfields in two distinct locations, so it would be highly unlikely that both of the wellfields will become contaminated at the same time. If any single wellfield becomes contaminated, the remaining wellfield is capable of maintaining a reduced level of service.

Currently, there are no immediate recommendations for interties with adjacent public water systems. NBWD may consider a possible emergency use intertie with Surfside Homeowners Association water system in the future.

If, in spite of the best efforts of NBWD and the owners/operators of potential contamination sources to protect the groundwater resources, contamination does occur, the following contingency plan elements will be implemented:

- Contact the appropriate agency to deal with any spill, leak, or contamination event.
- Isolate the contaminated source from the system and utilize the remaining wellfields and storage to supply customers.
- Inform NBWD customers through use of local media and door to door notification.
- Impose outdoor watering restrictions and usage curtailment as required.
- Supplement the storage tanks with water hauled from a nearby public water system and/or provide bottled water.
- In the event of long-term loss of use of a wellfield, a site for additional source capacity will be investigated.

CHAPTER 6

OPERATION & MAINTENANCE PROGRAM

INTRODUCTION

The objective of this chapter is to provide an evaluation of North Beach Water District's (NBWD's) operation and maintenance (O&M) program and its ability to assure satisfactory management of the water system operations in accordance with WAC 246-290. NBWD's Operation and Maintenance Manual and specific component related documentation are maintained by NBWD for use by operations personnel.

The O&M Program includes the following elements:

- Water System Management and Personnel
- Operator Certification
- System Operation and Control
- Water Quality Monitoring
- Preventive Maintenance
- Emergency Response Program
- Cross-Connection Control Program
- Customer Complaint Response Program
- O&M Improvements

WATER SYSTEM MANAGEMENT AND PERSONNEL

NBWD's water system is managed and operated by NBWD staff under general direction of the NBWD Board of Commissioners. Rick Gray is NBWD General Manager, John Bell is the NBWD Office Manager, Amanda Jordan is the NBWD Billing Clerk, Jon Flemming is the NBWD Field Supervisor, and Austin Benson is the NBWD Treatment Plant Operator.

OPERATOR CERTIFICATION

The Department of Health (DOH) requires all Group A water systems to have at least one certified Water Distribution Manager (WDM) under WAC 246-292-050. The WDM must be certified at a level equal to or higher than the water system's classification rating as described in Table 6-1 and in accordance with WAC 246-292-040.

TABLE 6-1

Water System Group Classification

Classification	Population Served
Group 1	Less than 1,500
Group 2	1,501 to 15,000
Group 3	15,501 to 50,000
Group 4	Greater than 50,000

NBWD serves between 1,501 and 15,000 people on a full-time basis, and, therefore, is required to have a WDM Level 2. NBWD operates two water treatment facilities, rated by DOH as requiring a Water Treatment Plant Operator 2 (WTPO 2) in charge of the water treatment facility. Additionally, NBWD is required to have a Cross-Connection Control (CCC) Program and must ensure that a Cross-Connection Specialist (CCS) is responsible for overseeing the program and for periodic inspections of premises for cross-connections. Finally, NBWD must ensure that a Backflow Assembly Tester (BAT) is responsible for inspecting, testing, and monitoring backflow prevention assemblies in accordance with WAC 246-290-490. NBWD can have a CCS on staff or can contract with an outside CCS specialist to review their CCC program. NBWD can also have a BAT on staff to perform the backflow assembly tests or can allow the customers to have their device tested by an approved BAT. Table 6-2 provides a list of NBWD personnel, positions and certifications.

TABLE 6-2

NBWD Water System Personnel Certifications

Staff	Position	Operator No.	Certifications
Rick Gray	General Manager	7744	WTPO4, WDM3, CCS
Jon Flemming	Field Supervisor	013551	WDM 1
Austin Benson	Treatment Plant Operator	14031	WTPO3, WDM2
Aaron Christman	Water Service Worker	015572	WDM1
Josh Maxey	Water Service Worker	014052	WDM2, BAT #6662, CCS

PROFESSIONAL GROWTH REQUIREMENTS

In order to promote and maintain expertise for the various grades of operator certification, Washington State regulations require all certified operators meet professional growth requirements by completing no less than three continuing education units (CEUs) every 3 years. Programs sponsored by both Washington Environmental Training Resource Center (WETRC) and the American Water Works Association (AWWA) Pacific Northwest Subsection are the most popular sources of CEUs for certified operators in Washington State. The professional growth requirement may also be met by advancement, by examination, or by certification in a different classification.

The NBWD General Manager monitors the status of staff CEUs and assures that resources to obtain training are provided by NBWD as necessary to maintain these credits.

SYSTEM OPERATION AND CONTROL

MAJOR SYSTEM COMPONENTS

The locations of the major system components are shown on Figure 1-13, the system facilities map. System facilities are described in Chapter 1 of this Plan under the heading Inventory of Existing Facilities. A description of the normal operation of each facility is given in the following sections.

Sources of Supply

Water from the North Wellfield (NWF) is pumped by the individual well pumps through the NWF treatment system and into the NWF Reservoirs. Similarly, water from the South Wiegardt Wellfield (SWWF) is pumped by the individual well pumps through the SWWF treatment system and into the SWWF Reservoir. Systems are in place to turn the wells on and off based on water levels in the reservoirs.

Treatment

Water flows through the treatment systems when the well pumps are running. The aeration systems run when the well pumps run. Backwash of the filter units is triggered either by volume of water filtered or by elapsed time since the last backwash, whichever comes first. Backwash water is discharged to local infiltration areas where it is allowed to percolate into the ground.

Reservoirs

As described in Chapters 1 and 3, NBWD operates three reservoirs at the NWF site and one reservoir at the SWWF site. These reservoirs are depicted in Figures 1-6 and 1-7. Capacity analysis of the reservoirs is provided in Table 3-9. Water from the wells is pumped to the reservoirs through the treatment systems. As shown in Table 3-9, the NWF reservoirs are 45 feet tall, and the SWWF reservoir is 40 feet tall. This is not enough elevation to provide adequate pressure to system customers, so water from the reservoirs is pumped into the water distribution system to maintain system pressure.

Pumping Facilities

In order to maintain adequate distribution system pressure, a booster pump station is located at each of the NWF and the SWWF sites. The pumping systems maintain output pressures of 60 psi.

The SWWF booster pump system output pressure is controlled by a Variable Frequency Drive (VFD) system, which adjusts the booster pump speed to control distribution system pressure. The NWF booster pump system is controlled with across-the-line starters and pumps are automatically switched on and off based on distribution system pressure. Both the north and south pumps systems are set to maintain outlet pressures of 60 psi. There is no communication between the systems of both wellfields, and currently staff manually initialize the north or south systems as needed.

System Control

As discussed above, the control systems for the NWF and SWWF facilities are not configured to operate as efficiently as possible. This results in wasted water, wasted energy, additional staffing needs, and reduced system reliability. In addition, there is no centralized control system. Since both booster pump systems are controlled by outlet pressure, and both pump into the same pressure zone, the booster pumps are often in competition with each other. A centralized control system could be designed to operate the booster pump systems as needed to meet varying system demand in different parts of the system at different times. In addition, a centralized control system could allow for centralized monitoring and alarm systems to facilitate operations and maintenance.

As described in Chapter 1, the NBWD water system is a merged composite of two separate systems. This is the major reason why there is currently no centralized control system and why the existing control systems at the NWF and SWWF facilities are not operating properly. Neither of the previous system owners invested in improvements to the in control systems that would soon be the responsibility of the future owner. However, now that the system is under unified and stable ownership, NBWD views improvements and consolidation of the control system as a high priority.

Distribution System

NBWD maintains more than 60 miles of pipeline, which interconnects the wells, storage, and pumping stations with consumer service connections. A list of total pipe by size is presented in Table 1-5. Figure 1-11 shows the location of all distribution pipelines and their size. Nearly 50 percent of the distribution piping system is made up of 2-inch pipe, which is adequate for existing domestic demands, but is not adequate for fire flow. There are no existing fire hydrants on the 2-inch water mains so this does not show as a deficiency in the hydraulic analysis described in Chapter 3. However, if fire hydrants are to be installed at 900-foot intervals as required by WAC 246-293-640, then significant amounts of 2-inch water main will need to be replaced with larger mains.

Operation and maintenance of the water distribution system includes water quality sampling, water main flushing, valve exercising, and regular inspection and repair of water main leaks and breaks.

WATER QUALITY MONITORING

NBWD receives an annual report from DOH that indicates the required water quality testing schedule. In addition, NBWD is required to prepare a Coliform Monitoring Plan (WAC 246-290-300 (3) (b)), and Inorganic Chemical Monitoring Plan (WAC 246-290-300 (4) (f)), and an Organic Chemical Monitoring Plan (WAC 246-290-300 (7) (e)). Copies of the monitoring requirements for 2014, and the coliform, inorganic chemical, and organic chemical monitoring plans are included in Appendix G. An analysis of NBWD's most current water quality test results can be found in Chapter 3. NBWD is also required to publish a Consumer Confidence Report (CCR) every year to provide customers with water quality data and system information. A copy of the 2023 CCR can be found in Appendix I.

PREVENTIVE MAINTENANCE

The most cost-effective method for maintaining a water system is to provide a planned Preventive Maintenance (PM) program. A planned PM program can provide the optimum level of maintenance activities for the least maintenance cost. Typical tasks that are performed on a daily, monthly, or annual basis are listed below in Table 6-3, and described further below.

TABLE 6-3

Preventive Maintenance Tasks

Preventive Maintenance Tasks and Frequency	
Daily • Respond to customer inquiries. • Respond to service requests. • Monitor for leaks in the system. • Visit well sites to record meter readings and ensure proper operation of disinfection facility and wells. • Monitor water level in the reservoir. • Record production and backwash meter readings. • Inspect booster stations. • Inspect reservoir exteriors. • Observe wellhead protection area and note any potential contaminate sources.	**Weekly** • Test and record finished water color. • Test and record finished water iron and manganese. • General cleaning and housekeeping. **Monthly** • Collect routine coliform samples. • Inspect reservoir hatches, vents, and screens. **Annual** • Inspect all backflow prevention devices. • Flush distribution system and repair leaks (more often as needed). • Inspect and exercise hydrants and valves. **Every 5 Years** • Inspect and clean reservoir interiors. • Clean reservoir exteriors as needed. • Check filter media.

Reservoirs

Improperly maintained reservoirs can cause contamination in public water systems. This can result from contaminants entering the reservoir through cracks or openings at the vent, overflow or drain screens. Deteriorating hatch covers and vandalism can also compromise reservoir water quality. Poorly designed and maintained reservoirs can hamper the emergency operation of a water system. If reservoir drains are not functioning properly, it may be difficult to purge a contaminant from the system. Written documentation of reservoir maintenance must be completed with each inspection and repair, and a copy of the report retained on file.

All four of NBWD's reservoirs received interior inspections and cleaning in 2022 and it was determined no further maintenance actions were necessary at that time.

One problem that can occur in reservoirs, particularly in tall narrow reservoirs such as the ones at NBWD, is stratification and stagnation of water. Stratification occurs when the water in the reservoir is warmer than the water entering the reservoir. Colder water is denser than warmer water, and sinks to and remains at the bottom of the reservoir until it exits the reservoir. Older, warmer water above this cold layer can remain in the reservoir for months, potentially growing bacteria. Then when a large water demand occurs that draws this water out of the reservoir, or when colder ambient temperature causes the water in the reservoir to cool to or below the temperature of the water entering the reservoir, bacteria can move into the distribution system, potentially resulting in coliform MCL violations. If this becomes a problem, the common remedy is reservoir mixing.

The NBWD reservoirs have separate inlets and outlets, with the inlets discharging to the reservoirs approximately half way up the sides of the reservoirs. This design may help to prevent water stratification. Also, if ambient temperatures never get high enough to significantly raise water temperature in the reservoirs, or if the reservoir materials provide adequate insulation to prevent the temperature differential, then stratification is less likely to occur and water stagnation in the reservoirs may not be a problem.

To determine if stratification and stagnation of water in the NBWD reservoirs is a problem, NBWD may consider conducting stratification studies on the reservoirs. A temperature profile can be obtained by lowering a temperature probe into each reservoir and recording the temperature at different depths at different times of year. If these studies show reservoir stratification and/or water stagnation, options will be considered to facilitate reservoir mixing.

Wells

Routine maintenance for the wells includes keeping records of water meter readings, discharge pressures, sounding of static and pumping water levels in each well, and keeping the well facilities clean. Water quality samples are taken at each well as required

by DOH. Summaries of the total annual production of each wellfield, as well as peak daily production are maintained.

Distribution System Valves

Good preventive maintenance dictates that all valves be exercised regularly. An important aspect of distribution system valve maintenance and record keeping is to ensure that distribution valves are completely open. A partially closed valve can reduce system capacity during peak day operation and fire flow. NBWD is currently developing and implementing a plan that exercises valves in the system on an annual basis. NBWD keeps records of valve maintenance.

Hydrants

Hydrants should be inspected regularly and repaired if necessary. It is important to maintain good records of hydrant maintenance. NBWD flushes and inspects fire hydrants annually. The following recommended procedure for testing fire hydrants has been adapted from the American Water Works Association (AWWA) (1989).

- Check appearance of hydrants for visible damage or leaks. Check for residue stains on the hydrant.
- Remove an outlet nozzle cap and sound for leakage.
- Check for presence of water or ice in the hydrant body with a plumb bob.
- Replace the outlet nozzle cap. Open the hydrant a few turns and allow air to vent. Tighten cap.
- Open the hydrant fully.
- Check for leakage at flanges and around outlet nozzles, packing, and seals.
- Partially close the hydrant so the drains open and water flows through under pressure for about 10 seconds, flushing the drain outlets.
- Close the hydrant completely.
- Remove an outlet nozzle cap and attach a fire hose or some other deflector.
- Open the hydrant and flush.
- Close the hydrant and check for operation of the drain valve.

- Check the main valve for leakage.
- Remove all outlet nozzle caps, clean and lubricate threads.
- Check chains and cables for free action.
- Replace caps and tighten.
- Check lubrication of operating nut threads.
- Locate and exercise auxiliary valve. Leave open.

Distribution System Flushing

Distribution system flushing is conducted on an annual basis.

Meters

Accurate water metering is an essential financial and conservation-oriented component of water system infrastructure. The NBWD water distribution system is fully metered, per the Water Use Efficiency Rule requirements. Tracking of total water sales and regular comparison to total water production is important to monitor the condition of the water distribution system. As water meters age, they tend to under-report usage. Low reading meters can result in lost revenue and artificial inflation of DSL rates. Typical water meter life is approximately 10 years, and water meters can generally be replaced for less than the cost of testing and repairing water meters. Therefore, a water meter replacement program on approximately a 10-year cycle will help to keep water consumption and sales data accurate.

Water Billing

Water billing software has several important functions: creating water bills and tracking payments to support the operation of the water system, and regular tabulation of total volume of water sold. Comparing water sales with the volume of water produced can indicate whether system leakage is occurring.

EMERGENCY RESPONSE PROGRAM

Water utilities have the responsibility to provide an adequate and reliable quantity of high quality of water at all times. To meet this requirement, utilities must reduce or eliminate the effects of natural disasters, accidents, and intentional acts. Although it is not possible to anticipate all potential disasters that may impact NBWD's water system, formulating procedures to manage and remedy common emergencies is appropriate.

NBWD will regularly review and practice its emergency response plan. An Emergency Response Planning Guide is available at the following website:

https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs//331-211.pdf

Following is a summary of emergency response information and actions that may be required in typical emergency situations.

WATER SYSTEM PERSONNEL EMERGENCY CALL-UP LIST

Table 6-4 provides phone numbers for emergency contacts including response agencies, governments, and material suppliers.

TABLE 6-4

Water System Emergency Phone List

Agency/Group	Contact	Phone Number
Fire/Police		911
NBWD Business Office	Rick Gray, General Manager	Office: (360) 665-4144 Mobile: (360) 581-7823
	John Bell, Office Manager	Office: (360) 665-4144
	Jon Flemming, Field Supervisor	Office: (360) 665-4144
Electrical	Public Utility District No. 2	(360) 642-3191
Washington State Department of Health	SW Regional Office, Andy Anderson, P.E.	(360) 236-3030 (360) 236-3025
	24-Hour Emergencies	(877) 539-4344
Washington State Department of Ecology	Emergency Spill Response	(800) 645-7911
Pacific County	Emergency Management	(360) 875-9338
	Public Works	(360) 642-9368
	Planning Department	(360) 642-9382
Washington Utility Notification Center	Utility Locates	(800) 424-5555
Gray & Osborne, Inc. Engineering Services	Seattle Office	(206) 284-0860

EMERGENCY PROCEDURES

Bacterial Contamination of Water Supply

Bacterial contamination of the water supply can result from events such as main breaks, backflow events, or pollution from an isolated source. Whenever coliform bacteria are detected in a water system sample, the DOH regional office should be notified as soon as possible. The contact number is listed in Table 6-4. WAC 246-290-320 (2) further specifies specific follow-up procedures in the event coliform bacteria are detected in the water system. Table 6-5 lists additional appropriate actions to be taken in the event of the contamination of the water supply.

TABLE 6-5

Water System Bacterial Contamination Response Actions

Distribution System Contamination
• Close valves where possible to isolate the contamination source. • Flush the distribution system until a chlorine residual of 0.2 mg/L is detected. • Allow 24 hours of chlorine contact time in the distribution system. • Collect repeat samples and return the system to service when results are satisfactory.
• Disinfect distribution lines as dictated by the nature of the contamination.
Reservoir Contamination
• Isolate reservoir from system.
• Inspect vent screens, hatches, and piping to identify source of contamination.
• Resample to confirm contamination. Take multiple samples at different locations in reservoir, if possible.
• Check distribution system for presence of contamination.
• If reservoir water is contaminated and considered unsuitable for consumption, drain and clean reservoir.
• Disinfect reservoir if bacteriological standards are exceeded. Follow AWWA Standards. A 50-ppm chlorine solution in the reservoir can be obtained by adding 97 gallons of 5.25 percent chlorine bleach per 100,000 gallons of storage.

Inorganic Chemical/Physical Characteristics Exceedance

Inorganic Chemical/Physical Characteristics (IOC) samples are routinely collected from water supply sources, generally once every three years, unless monitoring waivers have been issued or a higher frequency has been required. IOC tests include numerous different chemicals. If routine IOC samples detect one or more chemicals in excess of an MCL, additional samples may be collected specifically for that chemical alone. If practical, the source of supply that exceeds the IOC MCL should be taken out of service

until the cause of the problem is identified and corrected. If the exceedance is caused by treatment system deficiencies, alternate treatment options should be pursued. Follow-up procedures in the event of an Inorganic Chemical/Physical Characteristics MCL violation are specified in WAC 246-290-320 (3). Follow-up actions may vary depending on the specific chemical detected and the level at which it is detected. The DOH regional office should be contacted at the number listed in Table 6-4 to coordinate follow-up sampling and appropriate responses.

Organic Chemical VOC and SOC

Organic Chemical VOC and SOC samples are routinely taken from water supply sources, generally once every three years, unless monitoring waivers have been issued, or a higher frequency has been required. VOC and SOC tests include numerous different chemicals. VOCs and SOCs are generally not detected in water supply sources, so any detection of VOCs or SOCs may warrant follow-up investigation even if the MCL is note exceeded. If routine VOC or SOC samples detect one or more chemicals, additional samples may be taken specifically for that chemical or possibly for a surrogate such as Total Organic Carbon if this is more cost effective. If practical, the source of supply from which the VOCs or SOCs have been detected should be taken out of service until the cause of the problem is identified and corrected. Follow-up procedures in the event of a VOC or SOC detection are specified in WAC 246-290-320 (6). Follow-up actions may vary depending on the specific chemical detected and the level at which it is detected. The DOH regional office should be contacted at the number listed in Table 6-4 to coordinate follow-up sampling and appropriate responses.

Power Failure

Various types of weather can cause a loss of power. These weather conditions include wind, lightning, freezing rain, or snowstorm. Commonly trees or tree branches fall on power lines due to wind, freezing rain or snow, causing power disruptions. Downed trees can also make it difficult to access the location of the power outage to implement repairs. Additionally, power can be lost through traffic accidents.

In the event of a power outage, NBWD staff will first check reservoir levels visually. The possible length of the power outage will be estimated, and customers will be notified of the emergency, and water conservation will be requested through radio, television, and newspaper and, if needed and available, through a police loudspeaker system.

The NBWD has three emergency standby generators to keep the water system operating in the event of a power outage. One 150-kW diesel generator is present at the North Wellfield to support all north system power needs. A 150-kW diesel generator and 30-kW propane generator are present at the South Wiegardt Wellfield to power the south booster pump station and South Wiegardt well pumps, respectively. Automatic transfer switches automatically start each generator upon power failure. Additionally, the maintenance shop located at the North Wellfield has an assigned, 125-kW generator.

Severe Earthquake

A severe earthquake can result in distribution system breaks and structural damage to the wells and reservoirs. Table 6-6 provides procedures to follow in the event of a severe earthquake. A severe earthquake can also cause a power failure. See Power Failure, above.

In the event of a large earthquake along the Pacific coast there is a possibility of a resultant tsunami. The possibility of a tsunami should be taken into consideration when determining appropriate follow-up action immediately following a large earthquake. Tsunami response measures are discussed later in this chapter.

TABLE 6-6

Severe Earthquake Response Actions

System Component	Proposed Actions
Reservoir	• Observe reservoir for visual signs of structural damage. • If structural damage is apparent, drain reservoir and inspect the interior, exterior, and roof of the reservoir. • If leakage is suspected, isolate reservoir and monitor water level.
Distribution Lines	• Close valves to isolate breaks. • Check reservoir level. • Notify water customers of emergency and request water conservation.
Wells	• Inspect wells and treatment for operation. • Inspect well seals to prevent contamination from entering the wellhead. • Inspect for alignment of pump column and casing.

High Wind

High wind can cause downed trees and tree limbs. These in turn can block roads and cause power outages. Chainsaws, cables, and winches may be necessary to clear downed trees to access facilities. Additional measures are discussed in the section on Power Failure, above.

Cold Weather Conditions/Severe Snow Storm

Extended cold weather conditions could cause freezing problems at shallow service connections, valve vaults without an insulating earth cover, reservoirs, and water supply and treatment facilities. Heavy snowfall may impede employees from reaching a problem area and can cause collapse of structures. Water supply should not be

interrupted because flowing water can prevent pipes from freezing unless temperatures are extremely low. Heavy snow and/or freezing rain can cause power outages. Commonly, trees or tree branches fall on power lines due to wind, freezing rain or snow, causing power disruptions. Downed trees can also make it difficult to access the location of the power outage to implement repairs. Additional measures are discussed in the section on Power Failure, above. Table 6-7 addresses the possible emergency events and response actions that will be taken in the event of a severe snowstorm.

TABLE 6-7

Severe Freezing/Snowstorm Response Actions

System Component	Proposed Actions
Facilities Access	• Have chains and snow gear ready for maintenance equipment and vehicles. • Contact Pacific County Public Works to expedite plowing to any problem area. • Heavy snow and/or freezing rain can cause downed trees and tree branches, blocking access to some areas. Chain saw, cable, and winch may be necessary to clear downed trees to access facilities.
Reservoir	• Clear snow from roads and walkways. • Clear ice from level gauges, overflows, and vents.
Distribution Lines	• Maintain mapping of valve locations to locate valves as needed. • Frozen lines can be wrapped with heat tape.
Wells	• Clear snow from well access roads. • Inspect wells and treatment for operation. • Install space heater at wells as necessary.

During a significant freeze event in 2012, the District dispatched all of its Operators to the field with route books to read approximately 1,100 meters on known vacant or inactive services (i.e., R.V. lots, vacation cabins, beach houses, etc.). If the meter recorded use, the Operator shut and locked the service, and a notice was sent to the owner of the potential leak. One Operator was able to visit and check 12 services an hour. The District had five operators working in 12-hour shifts, and all of the significant leaks were under control within 24 hours, and all of the leaks under control within 36 hours. In the past the District solicited the help of Pacific County Fire District #1 personnel in locating and isolating leaks due to freeze damage. In 2012 the District started locating and isolating leaks early in the thaw. Careful planning was used during the freeze to be ready as soon as the thaw began so that a systematic coverage of targeted services would control the water loss.

High Water and Flooding

Heavy rains and/or snowmelt can cause the water levels to rise and reach a flood level. Table 6-8 addresses the possible emergency events and response actions that will be taken in the event of high water or flooding. The NBWD service area is in Pacific County Flood Control District #1 which provides flood control facilities including ocean outfalls, surface drains, and pipes that control surface water during the heavy winter storms. Generally, flooding is confined locally as the groundwater level rises above ground level. Onsite septic systems may become flooded and non-operative. Flooded systems could become sources of contamination in the distribution system. If flooding overtops wells, the wells should be considered contaminated until sampling indicates acceptable water quality.

TABLE 6-8

High Water/Flooding Emergency Response Actions

System Component	Proposed Actions
Reservoir	• No action should be required as reservoirs are above flood level.
Distribution Lines	• Test for coliform bacteria.
Wells	• Inspect wells and treatment for operation. • Test for coliform bacteria.

Tsunami

The North Beach area is vulnerable to tsunami (tidal wave). A tsunami could be caused by a large earthquake felt locally, or could be caused by a large earthquake at a distant location such as Japan. For tsunamis generated by distant events, a tsunami early warning system is in place. For locally generated tsunamis there may not be time for an early warning system to provide notification. The primary defense against a tsunami is to move to high ground. In the event of a major earthquake all people should move to high ground until the threat of a tsunami has passed.

Damage caused by a tsunami can include flooding of facilities and washing away of structures and water mains. Wells in areas that have been inundated should be considered contaminated until they can be cleaned, disinfected and tested. If storage reservoirs are not over-topped or damaged, water in the reservoirs can most likely be considered safe. If a tsunami were to flood the NBWD wellfields, then the water booster pump systems would most likely be inundated, and would require major repairs to be placed back in service. It is also possible that a tsunami could damage power supply to the entire North Beach Peninsula, so that only emergency power supplies, such as the North Beach backup power generators, may be available. Water from the NBWD reservoirs could be supplied to local residents in need of safe water supply from the piping at the wellfield control buildings. It would be important to maintain the safe

supply of water in the NBWD reservoirs until water supply can be restored. Therefore, valves at the reservoir site should be closed as necessary to prevent loss of water from the reservoirs.

CROSS-CONNECTION CONTROL PROGRAM

WAC 246-290-490 (3) establishes the minimum requirements for a cross-connection control program. The regulation identifies ten elements that must be addressed in a cross-connection control program. These elements are further detailed in the DOH Publication *Guidance Document: Cross-Connection Control for Small Water Systems, March 2004*. These elements are summarized as follows:

1. Instrument of Legal Authority to Implement Program.
2. Procedures and Schedules for Evaluating Service Connections.
3. Procedures and Schedules for Eliminating and Controlling Cross-Connections.
4. Qualified Personnel to Implement Program.
5. Ensure that Approved Backflow Preventers Are Operating Correctly.
6. Ensure that Backflow Preventers Are Tested Properly.
7. Procedures for Responding to Backflow Incidents.
8. Consumer Education.
9. Cross-Connection Control Record Keeping.
10. Additional Requirements if Reclaimed Water Is Used.

NBWD Rules and Regulations Part 1.01.100, revised September 16, 2013, state that cross connections are prohibited, identifies authority of NBWD to enforce their cross connection control rules and requires backflow prevention where cross connections cannot be eliminated. A copy of NBWD Rules and Regulations are included in Appendix F. The District's Cross-Connection Control Program adopted in 2014, is included in Appendix N. The ten required elements of a cross-connection control program summarized above are addressed in the NBWD Cross-Connection Control Program.

PRIORITY SERVICE LIST

There are three categories of business establishments that may pose a hazard to the water system.

Category One Services

Category one services pose the highest degree of hazard and includes the following facilities:

- Printers
- Medical laboratories
- Chemical companies
- Radiator shops
- Battery, fertilizer, and paint manufacturers
- Pest control businesses
- Janitorial companies

Category Two Services

Category two services are considered less hazardous and include the following:

- Doctor, dentist, and veterinarians' offices
- Blood banks
- Drug rehabilitation centers
- Car washes
- Photo labs
- Commercial laundries
- Nursing homes and hospitals

Category Three Services

The least hazardous service category includes the following types of businesses:

- Food processing facilities
- Dairy establishments
- Beverage and candy manufacturers
- Massage and health spas
- Motels and schools with pool, spa, or sauna facilities

NEW AND EXISTING CROSS-CONNECTION DEVICES

The District currently owns 42 cross-connection control devices located within the water system and maintains an additional 28. An additional 7 cross-connection control devices within the NBWD service area are owned and maintained by third parties. All devices are tested annually and testing is recorded by the District. All operating backflow prevention devices are listed in Appendix N.

CUSTOMER COMPLAINT RESPONSE

Customer complaints are logged in at the NBWD office and a water system operator is sent to investigate the complaint. Depending on the findings of the complaint investigator, appropriate actions are taken to resolve the complaint. If a customer feels that their complaint is not being addressed properly, all customers of the water system have access to the NBWD Board at regularly scheduled meetings to be heard regarding their concerns or complaints.

CHAPTER 7

DISTRIBUTION FACILITIES DESIGN AND CONSTRUCTION STANDARDS

OBJECTIVE

The objective of this chapter is to document the North Beach Water District's (NBWD's) design and construction standards to allow NBWD to obtain DOH approval to utilize the alternative review process for construction of new and replaced water distribution facilities. Through this process, a purveyor needs no further approval from DOH for distribution project reports, construction documents, or installation of distribution mains.

This chapter includes the following elements:

- System Standards, Policies and Procedures
- Project Review Procedures
- Policies and Requirements for Outside Parties
- Design Standards
- Construction Standards
- Construction Inspection Procedures

NBWD's *Standard Specifications for Water Main Construction* are located in Appendix G.

SYSTEM STANDARDS, POLICIES AND PROCEDURES

NBWD has developed the *Standard Specifications for Water Main Construction* to govern design and construction of all new and replacement water mains to be constructed by NBWD, or by private developers or property owners within the public right-of-way and/or public easements, and for all improvements intended for maintenance by NBWD.

PROJECT REVIEW PROCEDURES

PERMIT APPLICATION

All applications for line extension shall be submitted in writing to NBWD at least 90 days in advance of the proposed commencement date of construction. No construction will be authorized until such time as NBWD has approved the construction drawings. Each line extension application shall be accompanied by:

- A plot plan showing the location of all lots and details relating to the proposed construction. Written proof of right-of-way and/or easement dedications shall be submitted with the plot plan unless explicitly waived by NBWD.

- Construction drawings showing locations, sizes, and types of all mains, valves, hydrants, and fittings and exact distances from property lines, septic tanks, drainfields, storm drain facilities, paved areas and structures, typical sections, topography, and profiles (where required for plan interpretation) and miscellaneous typical details.

- An estimate of the cost of construction.

- A completed environmental checklist, when required by NBWD, on a form provided by NBWD.

- An agreement by the applicant to pay NBWD's cost and fees incurred in the course of reviewing and processing the line extension application, enforcing obligations of the line extension applicant and otherwise incurred as a result of the line extension application.

- Latecomer agreement proposal (if applicable).

APPLICATION REVIEW

Each application for a line extension will be reviewed initially to ascertain whether the proposed line extension application is complete. Complete applications wall be reviewed by the NBWD General Manager and NBWD Legal Counsel in order to determine whether the proposed project meets NBWD construction standards and will not impair NBWD's ability to provide full water service to its other customers, and by NBWD's SEPA official, who will determine if the proposed project complies with NBWD's SEPA guidelines.

Applications will then be forwarded to NBWD Board of Commissioners with recommendations. The Board will then consider the recommendations, make the necessary environmental determinations and either order the issuance of the applicant's

line extension permit or reject the application. The issuance of a line extension permit may be made contingent upon any reasonable conditions.

APPROVAL OF PLANS

Proposed extensions of water mains shall be constructed and installed in accordance with plans prepared by a licensed civil engineer and such plans must be approved by NBWD's Engineer. All such extensions must be installed in accordance with the requirements of NBWD's Engineer. Construction and all other matters shall be approved by NBWD prior to construction.

POLICIES AND REQUIREMENTS FOR OUTSIDE PARTIES

EXTENSIONS – WHERE TO BE CONSTRUCTED

All extensions to the existing water mains, water service connections and customer service lines not located upon the premises to be served shall be constructed only upon public street or alleys or parcels where NBWD has recorded easements for such utility purposes. Proof that the applicant has secured required easements shall be delivered to NBWD prior to commencing construction.

PERFORMANCE BOND

The developer shall furnish to NBWD a surety bond in a form, and with a surety license to do business as a surety by the State of Washington and approved by NBWD and in an amount acceptable to NBWD, which bond shall guarantee the faithful performance of the work on the line extension, payment of all individuals or entities, including state and municipal entities and agencies, who are empowered to create a lien upon the line extension for nonpayment of obligations to those individuals or entities and the replacement of all defective material and workmanship within 1 year after acceptance of the line extension by NBWD. In some cases, a 2-year bond may be required because of County rules on road restoration.

AGREEMENT

The developer shall sign an agreement, on a form approved by NBWD, to indemnify, defend and hold harmless NBWD from any and all liability for damages arising from acts done during or in the preparation for construction of the line extension.

PROOF OF INSURANCE

The developer shall submit proof of the applicant's comprehensive general and automobile liability and property damage insurance, before commencing work, in limits of $5,000,000 bodily injury including death, and $1,000,000 property damage protecting

against all claims for personal injury or collapse or explosion damage, arising during or in preparation for construction of line extension.

COSTS AND INSPECTION DEPOSIT

Persons obtaining extensions of NBWD water mains shall pay NBWD's engineering costs incurred in reviewing the plans, consultations regarding NBWD's requirement, inspection of the work and administration of the extension of the utility system. An inspection and engineering fee deposit shall be paid to NBWD at the time application for the extension is made. The deposit shall be as calculated by the NBWD General Manager.

Before NBWD will accept the completed extension, the applicant shall pay all NBWD costs that exceed the engineering and inspection fee deposit, and if NBWD's actual costs are less than the deposit, the differences will be refunded to the applicant.

LINE EXTENSION CONSTRUCTION

Upon receipt of NBWD's line extension permit, the applicant may commence construction of the proposed line extension. In addition to being subject to any conditions placed upon the line extension permit, construction of the line extension shall be subject to the following conditions:

- The applicant shall be responsible for paying all costs of the line extension.

- The applicant shall procure and pay for all permits, licenses, easements, environmental notices, reports, impact statements and for the review thereof, shoreline permits, railroad and highway crossing permits and other permits or exemptions necessary for construction of the line extension.

- All line taps on an existing NBWD main shall be made by NBWD crews or under direct supervision of NBWD personnel, with material supplied by the owner, contractor or NBWD. Payment must be made in advance for this work and for any material required, if done by NBWD, unless prior financial arrangements have been made with NBWD.

- All trenches shall be inspected for proper bedding and pipe installation prior to back filling. No exceptions will be allowed.

- A hydrostatic test shall be made by the applicant under the supervision of NBWD.

- NBWD will obtain water samples after the line has been sanitized by the contractor and send them to an appropriate health department agency for testing.

- The procedures and acceptance criteria used for sanitizing the line, pressure testing the line and water testing shall conform to state and NBWD standards.

EXTENSION TO BE COMPLETED WITHIN 1 YEAR

The extension shall be complete and offered for acceptance within one year of the date for approval of the application. If the extension is not completed and offered for acceptance within 1 year from the date of approval, the applicant's rights shall cease and they shall make new or amended application and pay the additional administrative, legal, engineering, and inspection costs.

NBWD COSTS TO BE BORNE BY DEVELOPER

Any costs reasonably incurred by NBWD for legal services, accounting services and other services incident to the receipt, study and approval or rejection of this application shall be borne by the developer, and the developer agrees to pay such costs within thirty days of billing by NBWD. If legal proceedings are instituted to enforce any provision of this agreement, the applicant will pay a reasonable attorney's fee to NBWD.

CONSTRUCTION CERTIFICATION AND FOLLOW-UP PROCEDURES

ACCEPTANCE OF LINE EXTENSION

Upon certification of completion of the line extension construction by the NBWD engineer, the applicant shall convey and transfer to NBWD on forms approved by NBWD, including but not limited to, warranty bill of sale, the line extension and all easements, permits and rights necessary to run, operate and maintain the line extension.

The line extension will not be accepted by NBWD until:

- Receipts of all material used, labor utilized and the cost thereof are provided NBWD along with receipts indicating the payment of those costs.

- "As Built" drawings are provided to NBWD.

- The posting of surety for maintenance for a term of 1 year.

Upon acceptance of the line extension, NBWD will assume ownership of the line extension and the responsibility for its operation and maintenance.

CHAPTER 8

CAPITAL IMPROVEMENT PROGRAM

INTRODUCTION

This chapter presents the North Beach Water District (NBWD) Capital Improvement Program (CIP) for the 10- and 20-year planning periods. Locations of the projects described in this chapter are displayed in Figure 8-1 and preliminary project cost estimates for the projects described in this chapter are provided in Appendix O.

This chapter also includes the schedule for NBWD's 10-year water system capital improvements program. These projects are scheduled and prioritized on the basis of capacity limitations, water quality concerns, growth, regulatory requirements, component reliability, system benefit, and financial priority. When the Water System Plan is updated after 10 years, the projects presented for the 20-year planning period should be reevaluated and scheduled for the subsequent 10-year planning period, as necessary.

Over the next 10 years, other projects may arise that are not identified as part of NBWD's CIP. Such projects may be deemed necessary for ensuring water quality, preserving emergency water supply, accommodating transportation improvements proposed by other agencies, taking advantage of cost saving opportunities with another agency, or addressing unforeseen problems within NBWD's water system. Budgetary constraints can lead to the delayed completion of certain projects that require the CIP to be rescheduled. NBWD retains the authority to reschedule proposed projects and to expand or reduce the scope of proposed projects, as best determined by the needs of the District. As the proposed completion date for the project approaches, each capital improvement project should be re-evaluated to consider the most recent planning efforts and system needs.

CAPITAL IMPROVEMENT PROGRAM

Table 8-1 summarizes the proposed capital improvement projects for the 10-year and 20-year planning periods and project locations are shown on Figure 8-1. All costs discussed in this chapter are in April 2024 dollars, which corresponds to an Engineering News Record (ENR) Construction Cost Index (CCI) of 15,475 for the Seattle metropolitan area. Each project is discussed further in the following sections. Detailed cost estimates for the capital improvement projects are included in Appendix O. All project cost estimates include a 20 percent contingency cost. The cost estimates for both of the pump improvement projects (P-1 and P-2) and the source improvement project SO-2, which involves removing and replacing filter media, include a 15 percent engineering and administration cost. All other project cost estimates include a 30 percent engineering and administration cost.

All distribution improvement cost estimates were created with the assumption that native backfill would be suitable for reuse, and that projects would be constructed in the gravel shoulder wherever possible. To account for road crossings and locations where constructing in the roadway is unavoidable, sawcutting and asphalt pavement patching costs have been included for 30 percent of each project length (excluding projects D-4 and D-6 where no pavement patching is anticipated). During each project's design these assumptions can be evaluated with greater accuracy.

The CIP Projects are categorized as follows:

- Source Improvements (SO);
- Storage Improvements (ST);
- Pump Improvements (P);
- Distribution System Improvements (D); and
- General Improvements (G);
- Assess Management (AM);
- Planning Documents (PL).

SOURCE IMPROVEMENTS

SO-1: South Wiegardt Wellfield Treatment Pilot Study

Project Cost: $49,500 (project initiated November 2023)

The current treatment system at the SWWF is designed to treat hydrogen sulfide and arsenic; however, recent samples have shown elevated levels of iron and manganese in finished water. A Treatment Pilot Study will evaluate treatment methods to meet the system's needs and propose a treatment solution.

SO-2: South Wiegardt Wellfield Treatment System Improvements

Estimated Project Cost: $347,000

Based upon findings from the Treatment Pilot Study, the filter media at the SWWF and possibly the filters themselves would be replaced. A new flowmeter would also be installed as part of this project.

SO-3: Backwash Basin at South Wiegardt Wellfield

Estimated Project Cost: $115,000

Filter backwash at the SWWF is currently discharged into a shallow land depression near the treatment facility. This method is not always effective for infiltrating backwash water and has been known to cause excessive runoff. A two-cell earthen backwash basin would be installed to improve backwash capability at the SWWF.

Sources: Washington State DNR, Pacific County North Beach Water District, Gray & Osborne, Inc., Esri, NASA, NGA, USGS, FEMA

- Non-Distribution CIP Locations
- Wells
- Blowoffs
- Fire Hydrants
- Air Release Valves

Water Mains (Diameter)

- Unknown
- 1-Inch
- 1.5-Inch
- 2-Inch
- 3-Inch
- 4-Inch
- 6-Inch
- 8-Inch
- 12-Inch
- Distribution CIP Locations
- Roads

N

0 1,000 2,000 4,000 Feet

NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

FIGURE 8-1

CAPITAL IMPROVEMENT PROJECTS

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\North Beach WD\23473.00 Water System Plan\GIS\APRX\NorthBeachWSP2023Figures\NorthBeachWSP2023Figures.aprx

SO-4: North Wellfield Treatment System Improvements

Estimated Project Cost: $742,000

The North Wellfield's treatment flow capacity and high levels of arsenic found in Wells N-4 and N-7 limit its output. A recent pilot study at the NWF indicated that pyrolusite would be a promising alternative to remedy these issues. The treatment filters at the NWF would be replaced to better support pyrolusite and new filter media would be obtained. Additionally, a sand separator would be added to the NWF treatment facility.

PUMP IMPROVEMENTS

P-1: Replace and Improve North Wellfield Booster Pumps

Estimated Project Cost: $411,000

The NWF booster pumps are at the end of their life cycle and the District wishes to replace them with Variable Frequency Drive (VFD) pumps to improve efficiency.

P-2: Retrofit South Wiegardt Wellfield Booster Pumps

Estimated Project Cost: $411,000

The District wishes to add Variable Frequency Drives (VFD) to the two large SWWF pumps to improve efficiency. The pump motors would be upgraded and VFDs added.

STORAGE IMPROVEMENTS

ST-1: New Reservoir at the South Wiegardt Wellfield

Estimated Project Cost: $1,651,000

A second concrete Mount Baker Tank reservoir with the same dimensions as South Reservoir 1 (30 feet in diameter and 40 feet tall) would resolve NBWD's future storage deficit. An additional reservoir at the SWWF would also improve redundancy and provide adequate storage for the South Wiegardt Wells, which contribute over 40 percent of the system's supply capacity.

DISTRIBUTION SYSTEM IMPROVEMENTS

D-1: Replace the "Hog's Back" – Birch Place from 240th Place to 252nd Street

Estimated Project Cost: $967,000

The stretch of 6-inch steel water main known colloquially as the "Hog's Back" has known condition issues and is constructed through easements on private land. This project would involve installing a new, 3,300 LF, 8-inch water main in the Birch Place right-of-way, moving service connections to this new location, and abandoning the "Hog's Back" water main.

D-2: Park Avenue from 249th Place to Bay Avenue

Estimated Project Cost: $1,044,000

This stretch of water main is made up of a piecemeal collection of 6-inch and 2-inch pipe, as well as incongruous service connection locations. This project would replace the mains with 3,200 LF of new 8-inch water main on Park Avenue, and bring service connections for the lots along Park Avenue to the new water main.

D-3: Park Avenue from Bay Avenue to 270th Place

Estimated Project Cost: $861,000

This project would create additional system looping and increase flow capacity for the surrounding residential and commercial areas growing area by installing 2,400 LF of new 8-inch water main replacing the 2-inch water main which currently extends from 262nd Place to 270th Place.

D-4: U Street North Extension

Estimated Project Cost: $502,000

Growth is expected for the northern portion of the system and NBWD will position itself to serve more residential customers in this area with a 2,200 LF, 6-inch water main extension along U Street between 272nd Street and Block 280.

D-5: Replace AC Water Main Along SR 103

Estimated Project Cost: $7,991,000

The water main along SR 103 (Pacific Highway), except the northmost portion, is made from 8-inch diameter asbestos concrete pipe. The District would like to replace all asbestos concrete pipe in their system and especially on this route as it is the main supply pipe to the southmost portion of the system. The cost estimate assumes 25,000 LF would be replaced with 8-inch C900 PVC.

D-6: 201st Lane from T Street to Birch Lane

Estimated Project Cost: $1,015,000

The southmost end of the system lacks adequate fire flow capacity and requires regular flushing to achieve necessary residual chlorine levels. A system loop between the southeast and southwest ends of the system would improve both of these concerns. A feasibility study may be beneficial to determine an ideal location for this system connection, and the preferred method for crossing under Loomis Lake. Modeling conducted in Chapter 3 found that connecting the system with a 6-inch diameter main along 201st Lane, from T Street to Birch Lane, would be a possible fix for fire flow capability at ten fire hydrants. Trenchless excavation will likely be required to construct beneath Loomis Lake. The cost estimate assumes 2,230 LF of 6-inch main, including 700 LF of trenchless installation.

D-7: North Sandridge Road and 281st Street

Estimated Project Cost: $629,000

As indicated by the fire flow modeling done in Chapter 3, the fire hydrant located at the east end of 281st Street is unable to provide the required 500-gpm fire flow. This is likely due to the undersized water main connecting this hydrant with the rest of the system. When modeled with a 6-inch diameter pipe, rather than the existing 4-inch, model indicates sufficient fire flow for the 20-year planning horizon. Therefore, this project will involve extending the 6-inch water main on the west side of Sandridge Road from 277th Lane to 281st Street and along 281st Street from Sandridge Road to the subject fire hydrant at Block 3500.

D-8: O Lane Fire Flow Improvements

Estimated Project Cost: $100,000

The fire hydrants on O Lane were shown by the modeling to be insufficient for commercial flow requirements in Chapter 3. The main which tees off the Pacific Highway water main and runs down 217th Lane before turning south down O Lane dead-

ends at the fire hydrant serving Peninsula Senior Center and Golden Sands Retirement Community. If a system loop was created by connecting this dead-end with the Pacific Highway water main to the west, fire flow would be compliant with area standards according to the system model. The cost estimate assumes this loop will consist of 300 LF of 8-inch C900 PVC pipe.

D-9: Replace AC Pipe with PVC

Estimated Project Cost: Approximately $250,000/year

The system currently has 47,900 LF of asbestos concrete (AC) water main. The District would like to eventually replace all mains constructed from AC, as the pipes are aging, are at risk of breaking, and the material is not the current District standard. Project D-5 includes the replacement of about 25,000 LF of AC pipe along SR 103. The remaining AC pipe in the system will be replaced in increments each year.

D-10: State Route 103 Extension

Estimated Project Cost: $1,681,000

The water main along State Route 103 currently terminates at State Park Road (184th Place). The RSA extends approximately 2.5 miles further south to Cranberry Road. This project would extend the 8-inch water main along SR 103 by approximately 6,200 LF to the south with 8-inch C900 PVC pipe. The main would provide water and fire flow to a new Pacific County Fire Department building and offer opportunities for connections to the residents adjacent to SR 103.

GENERAL IMPROVEMENTS

G-1: Meter Antennas

Estimated Project Cost: $76,000

The District will install two antennas to assist with collection and transmission of source water meter data. These antennas would be free standing structures located at the North Wellfield and South Wiegardt Wellfield.

G-2: Annual Meter Replacement

Estimated Project Cost: $6,000/year

Water meters have an approximate 20-year lifetime and need to be replaced once they are not able to maintain an accurate accounting of customer water use. NBWD replaces customers meters as needed throughout the year.

ASSET MANAGEMENT

AM-1: Equipment Replacement

Estimated Equipment Cost: $290,000

Indicated by the Asset Management Table in Chapter 3 (Table 3-12) there are several pieces of equipment which will be due for replacement within the 10-year planning period. The two large pumps at each wellfield have been discussed previously under Pump Improvement Projects. The other anticipated pieces of equipment which will require replacement are as follows:

North Wellfield Generator 1.	$115,000
North Generator for maintenance shop	$50,000
Excavator	$50,000
Dump Truck	$75,000
Total Equipment	**$290,000**

PLANNING DOCUMENTS

PL-1: Water System Plan Update

Estimated Project Cost: $93,000

The District will be required to update this Water System Plan 10 years after its approval by DOH. This improvement is placed in the 10-year planning period.

CAPITAL IMPROVEMENT SUMMARY AND SCHEDULE

Table 8-1 provides a summary and proposed schedule for the identified projects. Costs shown in Table 8-1 are in year 2024 dollars.

TABLE 8-1

Capital Improvement Program Schedule

Project Number	Project Name	Estimated Project Cost 2024 Dollars[(1)]	Projected Date
D-9	Annual AC Pipe Replacement	$250,000/year	-
G-2	Annual Meter Replacement	$6,000/year	-
AM-1a	North Wellfield Generator	$115,000	2024
SO-1	South Wiegardt Wellfield Treatment Pilot Study	$49,500	2024
P-1	Replace and Improve North Wellfield Booster Pumps	$411,000	2024
G-1	Meter Antennas	$76,000	2024
SO-2	South Wiegardt Wellfield Treatment System Improvements	$347,000	2025
SO-4	North Wellfield Treatment System Improvements	$742,000	2025
SO-3	Backwash Basin SWWF	$115,000	2026
D-1	Replace the "Hog's Back" – Birch Place from 240th Place to 252nd Street	$967,000	2026
D-8	O Lane Fire Flow Improvements	$100,000	2026
AM-1d	Dump Truck	$75,000	2026
P-2	Replace and Improve South Wiegardt Wellfield Booster Pumps	$411,000	2027
ST-1	New Reservoir at the South Wiegardt Wellfield	$1,651,000	2027
D-6	201st Lane from T Street to Birch Lane	$1,015,000	2028
AM-1b	North Generator for maintenance shop	$50,000	2028
D-4	U Street North Extension	$502,000	2029
D-2	Park Avenue from 249th Street to Bay Avenue	$1,044,000	2030
D-3	Park Avenue from Bay Avenue to 270th Place	$861,000	2030
AM-1c	Excavator	$50,000	2031
D-7	North Sandridge Road and 281st Street	$629,000	2032
PL-1	Water System Plan	$93,000	2034
D-5	Replace 8-inch water main along State Route 103	$7,991,000	2035-2040
D-10	State Route 103 Extension	$1,681,000	2040

(1) Capital project cost estimates are tied to the April 2024 Seattle Engineering News Record (ENR) Construction Cost Index (CCI) or 15,475.

CHAPTER 9

FINANCIAL ANALYSIS

INTRODUCTION

This chapter discusses North Beach Water District's (NBWD) existing rate and fee structure as well as historical revenues and expenditures for NBWD's water utility fund. The chapter also presents future projections for the water fund and is balanced to adequately support operation and maintenance and capital improvement projects outlined in the Capital Improvement Program in Chapter 8. Potential external funding sources, such as grants and loans, are discussed before the recommendation section which concludes this chapter.

FINANCIAL STATUS OF EXISTING WATER UTILITY

CURRENT WATER RATES

Water rates and charges for NBWD increase annually. Rates for 2020 through 2025 were set by the adoption of Resolution 18-2019. Water service rates consist of a monthly base charge that is dependent on the meter size. All water consumed is charged per 100 cubic feet (cf) based on meter readings every month. Table 9-1 lists NBWD's base rates for 2022 through 2025. while Table 9-2 lists NBWD's volume charges.

TABLE 9-1

Base Water Rates 2023-2025

Customer Class	Meter Size (Inch)	2023	2024	2025	Annual Increase
Residential	5/8 – 3/4	$49.15	$50.63	$52.14	3%
	1	$82.06	$84.53	$87.06	3%
Commercial	5/8 – 3/4	$52.07	$54.67	$57.41	5%
	1	$86.94	$91.28	$95.85	5%
	1-1/2	$172.64	$182.33	$191.44	5%
	2	$268.57	$282.00	$296.10	5%
	3	$303.30	$318.46	$334.39	5%
	4	$360.74	$369.12	$377.73	2%
	6	$700.53	$716.81	$733.51	2%
Average Annual Increase					4%
Private Fire Flow(1)	2	$38.67	$39.59	$40.51	2%

(1) Costs have been determined for meter sizes 2-, 3-, 4-, 6-, and 8-inch but only 2-inch is displayed here. For larger meter size Fire Flow costs, see the NBWD Rules and Regulations in Appendix D.

TABLE 9-2

Volume Charges Per 100 Cubic Feet 2023-2025

Customer Class	2023	2024	2025	Annual Increase
Residential	$5.25	$5.49	$5.73	4%
Commercial	$5.33	$5.59	$5.87	5%

CURRENT SYSTEM DEVELOPMENT FEES

NBWD's system development fees (SDFs), also known as connection charges or general facilities charges (GFCs), are specified in the District *Rules, Regulations, and Rates* adopted in December 2014 and available in full in Appendix F. These charges are applicable only to new customers connecting to the system and are intended to repay existing customers for facilities already installed and to provide funds for constructing new facilities. In addition to the system development fee, a new customer is charged an installation fee to cover the cost of installing the service connection and meter. Table 9-3 lists system development and installation fees.

TABLE 9-3

Water System Development Fees

Customer Class	Meter Size (Inch)	GCF	Installation Fee	Total
Residential	5/8 – 3/4	$2,000	$1,100	$3,100
	1	$3,250	$2,450	$5,700
Commercial	5/8 – 3/4	$2,000	$1,100	$3,100
	1	$3,250	$2,450	$5,700
	1-1/2	$6,500	$3,550	$10,050
Commercial/Private Fire Flow	2	$10,500	$3,950	$14,450
	3	$35,000	Priced on Request	> $35,000
	4	$50,000		> $50,000
	6	$80,000		> $80,000
	8	$150,000		> $150,000

HISTORIC REVENUE AND EXPENSES

NBWD owns and operates an Operation Fund which funds utility operations, maintenance, and capital improvements, a Capital Reserve account to put revenue aside for capital improvement projects, and a Reserve Fund which holds a year's worth of water payments to fulfill their bond agreement. The utility also operates a Retainage Fund and a Deposit Fund, used to collect or distribute money as needed. The Operation Fund draws revenue from water bills, connection charges and fees, and bank interest. A

minimum balance of $450,000 is maintained in the Operation Fund. Once the Operation Fund balance exceeds $550,000 the excess above $450,000 is transferred to the Capital Reserve account. The Capital Reserve account balance at the close of 2022 was reported to be $825,158. Table 9-4 provides the historic operating revenue and expenses for the years 2020 through 2022, as well as the Capital Improvement account's year-end balance from 2022.

TABLE 9-4

Historic NBWD Revenue and Expenses

		2020	2021	2022
401 – Operation Fund	**Revenue**			
	Base Rates	$1,540,792	$1,615,366	$1,684,567
	Metered Water Sales	$415,957	$441,337	$460,845
	New Account Fees	$11,840	$12,132	$12,626
	Delinquent and Lock Off Fees	$31,123	$16,024	$50,362
	Bank Interest	$6,833	$1,399	$23,285
	Connection Fees	$104,450	$148,800	$135,185
	Customer Service Charges	$4,597	$7,591	$7,981
	Misc. Revenue	$16,169	$3,479	$3,923
	Expenses			
	Salaries and Benefits	$792,361	$730,811	$770,869
	Operating Supplies & Tools	$111,403	$123,253	$95,692
	Distribution Expenses	$41,634	$43,608	$33,908
	Production Expenses	$94,006	$151,496	$169,319
	Office Expenses	$59,787	$62,683	$60,850
	Professional Services	$47,416	$46,652	$46,478
	Other Expenses	$229,735	$231,547	$266,416
	Debt Service	$539,730	$534,882	$520,696
	Interfund Transfers (Out)	$827	-	-
	Capital Improvements	$127,967	$103,927	$150,235
	Capital Expenditures	-	$12,928	$61,868
	Ending Cash	($1,375)	($974)	($1,380)
403 – DWSRF Loan Fund	**Expenditures**			
	Interfund Transfers	($827)	$0	$0
630 – Deposit Fund	**Revenue**			
	Deposits Collected	$6,895	$810	$125
	Expenditures			
	Utility Deposits Paid	$8,837	$589	$680
631 – Retainage Fund	**Revenue**			
	Retainage Withheld	$0	$0	$0
	Expenditures			
	Retainage Paid	$24,097	$0	$0
Totals	**Total Revenue**	**$2,138,656**	**$2,246,937**	**$2,378,899**
	Total Expenditures	**$2,075,599**	**$2,041,403**	**$2,175,629**
	Net Revenue	**$63,057**	**$205,534**	**$203,269**

Table 9-4 shows that NBWD has remained financially viable in recent years, with revenues consistently higher than expenses. Service revenue from base rates, metered water sales, and new account fees have increased annually. Some operational expenses, such as operating supplies and tools, distribution expenses, and office expenses, decreased between 2021 and 2022.

NBWD makes annual payments on two Public Works Trust Fund (PWTF) loans, two Drinking Water State Revolving Fund (DWSRF) loans, and one Revenue Bond. These are categorized together as "Debt Service" under operating expenses. The PWTF loans will be paid off in 2025, the DWSRF loans will be paid off in 2036, and the Revenue Bond will be paid off in 2032.

FORECASTED FINANCIAL ANALYSIS

The District is committed to maintaining balanced water operations reserve funds that can adequately support operations, maintenance, and capital improvements. This section includes forecast factors used for the financial projections, a summary of the 10-year capital improvement schedule, and 10-year revenue and expenditure forecasts for the Operating Fund.

FORECAST FACTORS

Various projection factors that will be used to forecast future expenses and revenues are summarized in Table 9-5. These factors will be used to develop year-over-year cost increases for the Water and Water Reserve Fund Projects. Projected revenue items which are not related to general water rates, including all general facilities charges and "Miscellaneous Revenue" have been projected to increase at the annual Water ERU Growth Rate. The expenditure item "Professional Services" is projected to increase at the same rate as Salary and Benefits Inflation.

TABLE 9-5

Summary of Financial Forecast Factors

Forecast Factors	Annual Value
Water ERU Growth Rate	0.71%
General Rate Increase	4%
Salary and Benefits Inflation	5%
Other O&M Inflation	3%
Construction Cost Inflation Rate	4%

PROJECTED REVENUES AND EXPENDITURES

Revenue

Future revenues have been projected based on a review of the historical financial data provided by NBWD, in conjunction with the forecast factors summarized in Table 9-5.

Several revenue categories have shown consistent growth between 2020 and 2022. Base rates, metered water sales, new account fees, and customer service charges increase based on the number of added connections noted in Chapter 2 and based on the District's annual rate increases. For these values, the reported 2022 revenue will be projected to increase annually both at the 0.71 percent ERU growth rate and at the 4 percent general rate increase. Some revenue items, such as delinquent and lock out fees, bank interest, and connection fees, are less consistent year-to-year. Thus, the average between 2020 and 2022 for these items will be used as a starting place and increased annually based on projected growth. Miscellaneous revenue in 2020 includes a one-time charge for a contract with the City of Ilwaco which will not be factored in to miscellaneous revenue projections.

Projected revenue for the Water Fund is summarized, along with expenditures and year end balances in Table 9-7.

Expenditures

Future expenses have been projected based on a review of the historical financial data provided by NBWD, in conjunction with the forecast factors given in Table 9-5. As is the case with revenue, some of the expense categories do not show a consistent increase year to year. Therefore, average expenses between 2020 and 2022 will be used as a starting place to project expected expenses for the planning period. Salaries and benefits and professional services are forecasted to increase at a rate of 5 percent per year while tools, office and operating supplies, vehicles and equipment, and miscellaneous expenditures, and projected to increase by 3 percent per year. The District currently makes annual payments on the outstanding loans and bond discussed above and those amounts will follow the debt service schedule provided by NBWD. Projected expenditures for the Operation Fund are summarized, along with forecasted revenue and year end balances, in Table 9-7.

The CIP schedule is detailed in Chapter 8. Estimated project costs are adjusted based on the scheduled year by applying a 4 percent per year inflation factor. Estimated equipment costs (AM projects) are adjusted by applying a 3 percent per year inflation factor.

Some of the projected CIPs are anticipated to be self-funded while some are anticipated to be loan funded. Monthly loan payments were determined by assuming a 20-year loan period and 4 percent fixed interest. Monthly expenses for these loans are displayed in Table 9-6 and combined under "New Debt Service" in Table 9-7. Footnotes for Table 9-6 display each project's cost estimate inflated to the schedule year and the anticipated loan pay off year. As further discussed below, there are funding opportunities for loans with interest rates below 4 percent. These funding opportunities should be evaluated during project planning. All projects with estimated costs above $1,000,000 are anticipated to be loan funded, along with the North Wellfield Treatment System Improvement project scheduled for 2025.

TABLE 9-6

10-Year Capital Improvement Schedule Expenses[(1)(2)]

Project Number	Project Name	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
D-9	Annual AC pipe replacement	$250,000	$250,000	$250,000	$250,000	$250,000	$250,000	$250,000	$250,000	$250,000	$250,000	$250,000
G-2	Annual Meter Replacement	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000
AM-1a	North Wellfield Generator	$115,000										
SO-1	South Wiegardt Wellfield Treatment Pilot Study	$49,500										
P-1	Replace and Improve North Wellfield Booster Pumps	$41,100										
G-1	Meter Antennas	$76,000										
SO-2	South Wiegardt Wellfield Treatment System Improvements		$361,000									
SO-4	North Wellfield Treatment System Improvements		$40,100[(2)]	$40,100	$40,100	$40,100	$40,100	$40,100	$40,100	$40,100	$40,100	$40,100
SO-3	Backwash Basin SWWF			$124,000								
D-1	Replace the "Hog's Back" – Birch Place from 240th Place to 252nd Street			$54,400[(3)]	$54,400	$54,400	$54,400	$54,400	$54,400	$54,400	$54,400	$54,400
D-8	O Lane Fire Flow Improvements			$108,000								
AM-1d	Dump Truck			$79,600								
P-2	Replace and Improve South Wiegardt Wellfield Booster Pumps				$462,000							
ST-1	New Reservoir at the South Wiegardt Wellfield				$96,600	$96,600	$96,600	$96,600	$96,600	$96,600	$96,600	$96,600
D-6	201st Lane from T Street to Birch Lane					$61,700	$61,700	$61,700	$61,700	$61,700	$61,700	$61,700
AM-1b	North Generator for maintenance shop					$56,200						
D-4	U Street North Extension						$61,100					
D-2	Park Avenue from 249th Street to Bay Avenue							$125,321	$125,322	$125,323	$125,324	$125,325
D-3	Park Avenue from Bay Avenue to 270th Place											
AM-1c	Excavator								$61,400			
D-7	North Sandridge Road and 281st Street									$44,800	$44,800	$44,800
PL-1	Water System Plan											$140,000
Total		**$537,600**	**$657,100**	**$662,100**	**$909,100**	**$565,000**	**$569,900**	**$634,121**	**$695,522**	**$678,923**	**$678,924**	**$830,425**

(1) Reflects project schedule established in Table 8-1.
(2) 5 percent annual inflation applied to costs summarized in Table 8-1.
(3) SO-4 total project cost is estimated to be 789,000 in 2025. These annual costs reflect a 20-year loan with 4 percent fixed interest to be 2045.
(4) D-1 total project cost is estimated to be $1,126,000 in 2026. These annual costs reflect a 20-year loan with 4 percent fixed interest to be 2046.
(5) ST-1 total project cost is estimated to be $1,930,000 in 2027. These annual costs reflect a 20-year loan with 4 percent fixed interest to be 2047.
(6) D-6 total project cost estimated to be $1,245,000 in 2028. These annual costs reflect a 20-year loan with 4 percent fixed interest to be 2048.
(7) D-2 and D-3 are adjacent and their combined total project cost is estimated to be $2,681,000 in 2030. These annual costs reflect constructing these concurrently and acquiring a 20-year loan with 4 percent fixed interest to be 2050.
(8) D-7 total project cost is estimated to be $915,000 in 2032. These annual costs reflect a 20-year loan with 4 percent fixed interest to be 2052.
(9) D-10 total project cost is estimated to be $2,001,000 in 2033. These annual costs reflect a 20-year loan with 4 percent fixed interest to be 2053.

TABLE 9-7

Forecasted Water Fund Revenue and Expenses

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Revenues											
Base Rates	$1,848,000	$1,935,600	$2,027,300	$2,123,400	$2,224,000	$2,329,400	$2,439,800	$2,555,400	$2,676,500	$2,803,300	$2,936,100
Metered Water Sales	$505,600	$529,600	$554,700	$581,000	$608,500	$637,300	$667,500	$699,100	$732,200	$766,900	$803,200
New Account Fees	$13,300	$13,400	$13,500	$13,600	$13,700	$13,800	$13,900	$14,000	$14,100	$14,200	$14,300
Delinquent and Lock Off Fees	$33,800	$33,800	$33,800	$33,800	$33,800	$33,800	$33,800	$33,800	$33,800	$33,800	$33,800
Bank Interest	$11,300	$11,800	$12,300	$12,800	$13,300	$13,800	$14,400	$15,000	$15,600	$16,200	$16,800
Connection Fees	$135,700	$136,700	$137,700	$138,700	$139,700	$140,700	$141,700	$142,700	$143,700	$144,700	$145,700
Customer Service Charges	$8,400	$9,000	$9,600	$10,300	$11,000	$11,800	$12,600	$13,500	$14,500	$15,500	$16,600
Misc Revenue	$4,100	$4,400	$4,700	$5,000	$5,400	$5,800	$6,200	$6,600	$7,100	$7,600	$8,100
Expenditures											
Salaries and Benefits	$843,000	$885,200	$929,500	$976,000	$1,024,800	$1,076,000	$1,129,800	$1,186,300	$1,245,600	$1,307,900	$1,373,300
Operating Supplies & Tools	$116,800	$120,300	$123,900	$127,600	$131,400	$135,300	$139,400	$143,600	$147,900	$152,300	$156,900
Distribution Expenses	$42,100	$43,400	$44,700	$46,000	$47,400	$48,800	$50,300	$51,800	$53,400	$55,000	$56,700
Production Expenses	$146,700	$151,100	$155,600	$160,300	$165,100	$170,100	$175,200	$180,500	$185,900	$191,500	$197,200
Office Expenses	$64,800	$66,700	$68,700	$70,800	$72,900	$75,100	$77,400	$79,700	$82,100	$84,600	$87,100
Professional Services	$50,700	$53,200	$55,900	$58,700	$61,600	$64,700	$67,900	$71,300	$74,900	$78,600	$82,500
Other Expenses	$257,300	$265,000	$273,000	$281,200	$289,600	$298,300	$307,200	$316,400	$325,900	$335,700	$345,800
Capital Improvement Projects	$907,500	$617,000	$567,600	$718,000	$312,200	$867,000	$256,000	$317,400	$1,117,000	$256,000	$396,000
Debt Service											
PWFT #117	$53,158	$52,895	$0	$0	$0	$0	$0	$0	$0	$0	$0
PWFT #129	$53,158	$52,895	$0	$0	$0	$0	$0	$0	$0	$0	$0
DWSRF - 129	$94,331	$93,147	$91,963	$90,779	$89,595	$88,411	$87,227	$86,043	$84,859	$83,675	$82,491
DWSRF - 121	$54,918	$54,229	$53,540	$52,850	$52,161	$51,472	$50,782	$50,093	$49,404	$48,714	$48,025
Revenue Bond	$265,931	$259,075	$261,567	$258,327	$259,299	$259,630	$258,755	$262,755	$261,630	$0	$0
New Debt Service	$0	$40,100	$94,500	$191,100	$252,800	$252,800	$378,120	$378,120	$378,120	$378,120	$378,120
Operating Cash Flows											
Beginning Cash Balance	$1,475,200	$1,085,003	$1,005,063	$1,078,193	$965,137	$1,255,682	$1,054,469	$1,406,285	$1,762,374	$1,393,162	$2,223,253
Total Revenues	$2,560,200	$2,674,300	$2,793,600	$2,918,600	$3,049,400	$3,186,400	$3,329,900	$3,480,100	$3,637,500	$3,802,200	$3,974,600
Total Expenditures	$2,950,397	$2,754,241	$2,720,469	$3,031,656	$2,758,855	$3,387,613	$2,978,084	$3,124,011	$4,006,712	$2,972,109	$3,204,136
Ending Cash Balance	$1,085,003	$1,005,063	$1,078,193	$965,137	$1,255,682	$1,054,469	$1,406,285	$1,762,374	$1,393,162	$2,223,253	$2,993,717

RECOMMENDATIONS

The forecasts for the Water and Capital Improvement Funds indicate that the District is equipped to self-fund many of their planned Capital Improvement Projects. The District will likely use loans or other funding methods for the larger and more expensive projects as described above. Projections have been made using a flat, fixed interest rate of 4 percent for these anticipated loans. Some opportunities for lower interest loans or grants available to public utilities are discussed in the following section.

AVAILABLE CAPITAL PROJECT FUNDING SOURCES

This section describes several funding sources available to NBWD without reference to any specific project. These sources include the following:

Loans:	Public Works Trust Fund Loan
	Drinking Water State Revolving Fund
	USDA Rural Development (RD)
	Community Economic Revitalization Board
Bonds:	Revenue Bonds

PUBLIC WORKS TRUST FUND

The Public Works Trust Fund (PWTF) is a revolving loan fund designed to help local governments finance needed public works projects through low-interest loans and technical assistance. The PWTF, established in 1985 by the legislature, offers loans below market rates, payable over periods ranging up to 20 years.

Interest rates are 0.5 percent, 1.0 percent, or 2.0 percent, with the lower rates providing an incentive for a higher financial share. For the local community to qualify for a 2.0-percent loan, it must provide a minimum of 5 percent of the project's costs. A 10-percent local share qualifies the applicant for a 1.0 percent interest rate and a 15-percent local share qualifies for a 0.5-percent loan. The useful life of the project determines the loan term, with a maximum term of 20 years.

To be eligible, an applicant must be a local government such as a city, town, county, or special purpose utility district, and have a long-term plan for financing its public work needs. If the applicant is a city, town, or county it must adapt the 1/4-percent real estate excise tax dedicated to capital purposes. Eligible public works systems include streets and roads, bridges, storm sewers, sanitary sewers, and domestic water. Loans are presently offered only for purposes of repair, replacement, rehabilitation, reconstruction or improvement of existing service users. A recent change has now made projects intended to meet reasonable growth (as detailed in a 20-year growth management plan) eligible for PWTF funding.

An applicant can apply to the construction program for up to $10,000,000 per biennium. Applications for the construction program are due in May of each year, with funds available approximately 1 year later. Preconstruction loans are limited to $1,000,000 per biennium and can be submitted throughout the year. A preconstruction application must be submitted to the Public Works Board on or before the 15th of each month. The Board meets on a monthly basis and makes the award decisions at that time. Preconstruction funds are available as soon as the contracts can be issued.

DRINKING WATER STATE REVOLVING FUND

DWSRF will provide loan funding for water system projects. Health and safety projects will receive the highest rankings and receive funding. Water main projects, even those projects that improve fire flow typically do not receive a ranking high enough to receive funding.

COMMUNITY ECONOMIC REVITALIZATION BOARD (CERB)

The Community Economic Revitalization Board's prime mission is to partner with business and industry and local governments to maintain and create jobs. Established by the Legislature in 1982, CERB provides low-interest loans or, in unique circumstances, grants to help finance local public infrastructure necessary to develop or retain stable business and industrial activities. Projects eligible for funding include domestic and industrial waters systems, sanitary and storm sewers, port facilities, and telecommunications.

Typically, CERB provides loans in the amount of $1 million and, where applicable, grants in the amount of $300,000. The interest rate is tied to the current cost of a 10-year bond and a local match of 10 percent is required.

Eligible applicants include Washington State subdivisions in partnership with private enterprise. If there is no economic partner, a local government can produce a feasibility study that documents realistic job retention or creation. Applications must be submitted 45 days prior to a regularly scheduled CERB Meeting, which typically meets in January, March, July, and November.

REVENUE BONDS

The most common source of funds for construction of major utility improvements is the sale of revenue bonds. These are tax-free bonds are issued by a municipality or district. The major source of funds for debt service on revenue bonds is from monthly water or sewer service charges. In order to qualify to sell revenue bonds marketable to investors, the bonds typically have contractual provisions for the public entity to meet debt coverage requirements. The municipality or district must show that its annual net operating income (gross income less operation and maintenance expenses) must be equal to or greater than a factor, typically 1.2 to 1.4 times the annual debt service on all par

debt. If a coverage factor has not been specified it will be determined at the time of any future bond issues.

DEVELOPER FINANCING

Developers may fund the construction of extensions to the water system to property within new plats. The developer extensions are turned over to the Utility District for operation and maintenance when completed.

It may be necessary, in some cases, to require the developer to construct more facilities than those required by the development in order to provide either extensions beyond the plat and/or larger pipelines for the ultimate development of the water system. The Utility District may, by policy, reimburse the Developer through either direct outlay, latecomer charges, or reimbursement agreements for the additional cost of facilities, including increased cost to install pipelines larger than those required to serve the property under development. Compensation for oversizing is usually considered when it is necessary to construct a pipe larger than eight inches in diameter in a residential area to comply with the intent of the County's comprehensive plan. Construction of any pipe in commercial or industrial areas that is larger than the size required to serve the development should also be considered as an oversized line, therefore possibly eligible for compensation. Developer reimbursement (latecomer) agreements provide up to 10 years or more for developers to receive payment form other connections made to the developer-financed improvements.

APPENDIX A

CORRESPONDENCE AND APPROVAL

Drinking Water

Project Approval Application (PAA) Form

331-149 F • Revised 1/10/2022

Please complete all appropriate sections of this application form and include it with your project.

WATER SYSTEM Information

North Beach Water — Water System Name
63000 — PWS ID #
Water System Plan — Submittal Description
Pacific — County
A-Communinty — Classification
1,000 - 9,000 — # of Service Connections

OWNER Information

North Beach Water District — Name
63000 — Owner ID #
RGray@northbeachwater.com — E-mail address
(360) 665-4144 — Phone
PO Box 618 — Mailing address
Ocean Park — City
State
Zip

PROJECT CONTACT Information

Mike Johnson / Gray and Osborne — Name/Position
Enter text
mjohnson@g-o.com — E-mail address
(206) 284-0860 — Phone
Rainier Ave S, Suite 300 — Mailing address
Seattle — City
WA — State
98144 — Zip

CONSULTING/DESIGN ENGINEER Information

Mike Johnson / Gray and Osborne — Name/Firm
Enter text
mjohnson@g-o.com — E-mail address
(206) 284-0860 — Phone
1130 Rainier Ave S, Suite 300 — Mailing address
Seattle — City
WA — State
98144 — Zip

SMA Information

Enter text — Name/SMA
Enter text — SMA #
Enter text — E-mail address
Enter text — Phone
Enter text — Mailing address
Enter text — City
WA — State
Zip

BILLING Information*

Enter text — Name
Enter text — E-mail address
Enter text — Phone
Enter text — Mailing address
Enter text — City
WA — State
Zip

GENERAL Submittal Information

☒ Check here if you need a Box.com folder set up for transferring your project to us electronically. (You will receive an invite by email after we have received the PAA form.)

Do you have projects currently under review by us? ☐ Yes ☒ No

☐ This is a new water system (if so, include a completed Water Facilities Inventory Report Form with your project).

☐ DWSRF Loan
Application # Enter Number
Loan # Enter Number

☐ Enforcement
Docket # Enter Number
Type Enter Text

☒ Water System Plan (complete Planning Information)

☐ Small Water System Management Program (complete Planning Information)

☐ Engineering (complete Engineering Information)

☐ Group B (complete Engineering Information)

☐ Satellite Management Agency Plan (complete SMA Information)

☐ Alternate Technology (complete Engineering Information)

ENGINEERING Information

Choose Project Report — Project Report Type
Choose Special Report or Plans — Special Report or Plans
Choose Predesign Study — Predesign Study
Choose Existing System Approval — Existing System Approval
Choose Construction Documents — Construction Documents
Choose Waiver — Waiver
Choose Other — Other

PLANNING Information

How many connections does system currently have? 2863

If system is private-for-profit, is it regulated by UTC? ..... ☐ Yes ☒ No

Is system expanding? ..... ☐ Yes ☒ No

- Expanding service area? ..... ☐ Yes ☒ No
- Increasing number of approved connections? ..... ☐ Yes ☒ No

If the number of connections is expected to increase, how many *new* connections are proposed in the next ten (10) years? 482

Is your system pursuing additional water rights from Department of Ecology in the next 20 Years? ..... ☐ Yes ☒ No

Is a new intertie proposed? ..... ☐ Yes ☒ No

Is the system located in a Critical Water Supply Service Area (is there a Coordinated Water System Plan)? ..... ☐ Yes ☒ No

- If yes, have you sent a copy of the plan to the county or responsible agency for the CWSP? ..... ☐ Yes ☒ No

Are you requesting distribution main project report and construction document submittal exception? ☒ Yes ☐ No

- If so, does the WSP contain standard construction specifications for distribution mains? ..... ☒ Yes ☐ No

The water system/purveyor is responsible for sending a copy of the plan to:

- Adjacent utilities for review or a letter notifying them that a copy is available for their review and where it is located. ..... ☒ Yes ☐ No
- All local governments within the service area. ..... ☒ Yes ☐ No
- County and city planning departments, one or both if applicable, adjacent water systems, etc.. ☒ Yes ☐ No

List who have you sent the WSP to for review other than ODW? ..... Pacific County

Are you proposing a change in the place of use of your water right? ..... ☐ Yes ☒ No

- If "yes," the purveyor must send a copy of the WSP or SWSMP to all local governments within the service area (county and city planning departments) for a local consistency determination. Has this been completed? ..... ☐ Yes ☒ No

What are the years of the requested plan approval period (for example 2022 to 2032)? 2024-2044

Does your plan follow your preplan checklist? ..... ☒ Yes ☐ No

SMA Information

☐ Ownership only ☐ Management and Operations only ☐ Ownership, Management & Operations

Where can we find the *SMA Notice of Intent* 331-590, in your plan ..... Enter Text

Please submit all documents electronically. We request one paper copy of planning documents be submitted to the address for your regional office below.

☐ **Eastern Regional Office**
Department of Health
eroadmin@doh.wa.gov
Phone: 509-329-2100

☐ **Northwest Regional Office**
Department of Health
dw.nwro.wsprojects@doh.wa.gov
Phone: 253-395-6750

☒ **Southwest Regional Office**
Department of Health
swro.admin@doh.wa.gov
Phone: 360-236-3030

Gray & Osborne, Inc.
CONSULTING ENGINEERS

December 23, 2024

Ms. Meredith Jones
Regional Planner
Mr. R. Scott Pollock, P.E.
Regional Engineer
Washington State Department of Health
Northwest Drinking Water Operations
111 Israel Road Southeast
Olympia, Washington 98504

SUBJECT: WATER SYSTEM PLAN
NORTH BEACH WATER DISTRICT, PACIFIC COUNTY, WASHINGTON
G&O #23473.00 ODW PROJECT 24-0703

Dear Ms. Jones and Mr. R. Scott Pollock:

Thank you for your comments regarding the North Beach Water District Water System Plan provided electronically, via email letter attachment, on November 8, 2024. In order to more easily respond to the comments, we have placed the original comments in italics, followed by our response below.

CHAPTER 1 – WATER SYSTEM DESCRIPTION

1. *Page 21, 1-5, Adjacent Purveyors – Please confirm that the Water System Plan was made available to adjacent utilities and include any comments provided.*

   The Draft Water System Plan was provided to Long Beach Water, Oysterville Water, Surfside Homeowners Association, and Pacific County. There were no comments provided and the Local Government Consistency Form has been added to Appendix E.

2. *Page 48, 1-25, Formation of Local Improvement Districts Outside North Beach Water District's Legal Boundaries – Terms to describe service areas have changed over time. The terms that should now be used are Retail Service Area and Service Area, not Existing or Future Service Area. (Future Service Area only applies to systems within adopted Coordinated Water System Plans.) The Service Area should be the largest boundary and will represent the system's Water Right Place of Use if the conditions of WAC 246-290-107 are met. Please clarify that service will not be provided outside of the system's Service Area/Water Rights Place of Use and whether this Service Area boundary is the same as the corporate boundary.*

   Noted. This Section's description of North Beach Water District's Utility Local Improvement District policy is no longer relevant and has been removed entirely from the Plan.

3. *Page 49, 1-26, Duty to Serve – Please elaborate on how North Beach Water (NBW) meets the four Duty to Serve requirements of WAC 246-290-106, including how it defines timely and reasonable. Is there an appeals process in place to address instances when an Applicant disagrees with a timely and reasonable determination?*

   The following has been added to page 1-26: "Property Owners requesting service must first provide the District with their requested service address. North Beach Water District then uses GIS maps to identify if there is a water main parallel to one side of the Applicant's property. In the case that a water main is present, the Property Owner is provided an application for service. North Beach Water District will then install a water service at the property within 3 months from the time of payment.

   If a water main is not present in the property vicinity, the Property Owner may construct a water main extension, at their expense and with adherence to District construction standards."

CHAPTER 2 – BASIC PLANNING DATA

4. *This chapter states that very low water-use rates that are used in the Plan might be the result of part-time connections being included in data. Please assure that Equivalent Residential Unit (ERU) demands are based on connections with full-time occupancy and revise all affected calculations.*

   The ERU demand has been recalculated to more closely represent full-time water users. Individual account data between 2020 and 2022 was evaluated and all accounts with at least 1 month of no activity, as well as those which show an average daily use of less than 60 gallons per day have been categorized as "Part-Time" users. Full-time and part-time connections and water use has informed changes to Chapter 2, Chapter 3, Chapter 4, and the hydraulic model.

5. *Estimations of Peak Hour Demand (PHD) using the Water System Design Manual equation 3-1 must use the same ERU Maximum Day Demand (MDD) value determined for the system.*

   See the response to question 4. This change has been made.

CHAPTER 3 – WATER SYSTEM ANALYSIS

6. *Capacity values must be reported in terms of the number of ERUs, based on common ERU demands determined for the system for the entire period under consideration. Different years cannot use different ERU demand values.*

   This change has been made.

7. *Hydraulic modeling must be updated if PHD values change as a result of the ERU demand revision.*

   See the response to question 4. Changes to the PHD and the storage have been incorporated into the hydraulic model.

8. *Please provide capacity analysis results in a format similar to Worksheet 4-1 in our Water System Design Manual. Please also identify and discuss system deficiencies and the limiting factor for the system's physical capacity.*

   Table 3-20 has been updated to closely resemble Worksheet 4-1 and system deficiencies have been summarized in the paragraphs following (pages 3-33 and 3-34).

CHAPTER 4 – WATER USE EFFICIENCY PROGRAM

9. *Page 112, 4-6, Revised Goals and page 113, 4-7, Water Use Savings with Supply and Demand Goals – The demand side goal indicates the intent to maintain the 2022 consumption level. If feasible, please provide a goal of reducing consumption over the planning period, such as 0.5 percent per year for the next 10 years, or another metric that works for the system. Some great examples can be found in Appendix I of our Water Use Efficiency Guidebook.*

   If North Beach Water determines that further reductions in consumption levels are not reasonably achievable, please refer to WAC 246-290-830(3) and provide justification to support this assessment.

   The District has proposed a new consumption goal, to decrease ERU_{ADD} by 0.5 percent per year, over the planning period. This, along with the supply side goal of decreasing distribution system leakage by 4.5 percent annually, would save as much as 76.6 million gallons over the 10-year planning period.

CHAPTER 5 – WELLHEAD PROTECTION PROGRAM

10. *Page 121, 5-3, Contaminant Source Inventory – Please ensure that the inventory of potential sources of groundwater contamination is updated every 2 years.*

    The following has been added to page 5-4: "Seventeen facilities were identified by the search methods described above. Facilities identified are listed in Table 5-2, and shown in Figure 5-1. Note that this inventory of potential contaminate sources should be routinely updated at least every 2 years."

11. *Page 129-130, Management Strategies – This Section indicates that notification letters and wellhead protection inventory maps will be sent to Owners/Operators of properties in the Wellhead Protection Area (WHPA) with potential sources of contamination. They will also be sent to the local fire department, Pacific County Planning, health and emergency*

management agencies, and the Department of Ecology (Ecology). However, the only sample letter provided is to Property Owners with septic systems. We recommend including templates for all types of recipients.

To fully implement the Wellhead Protection Program, notification letters should be sent every 2 years. Please provide your status for meeting this requirement. If any Property Owners or other entities have not been notified routinely, please discuss how this will be reliably accomplished, going forward. Also, to document compliance with this requirement the water system should:

a. *Maintain a list of the names and addresses for all properties with septic systems within the WHPA that require notification.*

b. *Save copies of letters sent to the other entities that require notification.*

Noted. Sample notification letters for agencies have been added to Appendix L, and the required frequency for sending notification letters (every 2 years) has been added to the text wherever notification letters are mentioned.

CHAPTER 6 – OPERATION AND MAINTENANCE PROGRAM

12. *Please provide a Water Shortage Response Plan, WAC 246-290 420.*

A Draft Water Shortage Response Plan has been included as Appendix P and a reference to it has been added to page 4-4.

APPENDIX E – LOCAL GOVERNMENT CONSISTENCY FORMS

13. *Page 375 – When ready, please provide the Local Government Consistency (LGC) form signed by the Pacific County Planning Department.*

The signed Local Government Consistency form has been added to Appendix E.

APPENDIX G – WATER SYSTEM CONSTRUCTION STANDARDS

14. *Please confirm that Construction Standards include explicit material requirements for the National Sanitation Foundation (NSF) 61 and Lead-Free Compliance, per WAC 246-290-220.*

The District's Construction Standards, included in Appendix G, has been edited to include this requirement. Section 2.1(b) now states: "All materials that will come in substantial contact with potable water shall be ANSI/NSF Standard 61-Certified for potable water use and shall be lead free, per WAC 246-290-220."

APPENDIX O – SEPA CHECKLIST

15. *Page 651 – Please provide documentation of State Environmental Policy Act (SEPA) compliance, including the signed and dated Checklist and determination. Ensure that required public notice is provided and submit the Checklist and determination to the SEPA register.*

    The signed SEPA Checklist has been included in Appendix O.

MISCELLANEOUS DOCUMENTS

16. *The final Water Use Efficiency (WUE) goal(s) must be presented to the public (not just consumers) and then adopted by the Board. Please ensure the public forum requirements of WAC 246-290-830 are met and provide the following.*

    a. *Documentation of a 2-week public notice that includes the following.*

        i. *The purpose of the meeting (this must specify the intent to present and adopt the WUE goal).*

        ii. *The date, time, and location of the meeting.*

        iii. *Where additional information was made available, such as a website, or office.*

    b. *Any comments received about the proposed goals and how they were considered prior to formal adoption.*

    c. *Approved meeting minutes showing that the WUE goals have been adopted by the Board.*

        This meeting was held on Monday, December 16, 2024. Proof of public notice, the approved ordinance, and the meeting minutes are included in Appendix A.

17. *The final version of the WSP must be presented to consumers and then approved by the Board. When this has been completed, please provide the following.*

    a. *Documentation that consumers were notified of the meeting in a way appropriate to the size of the water system that includes:*

        i. *The purpose of the meeting (to present and approve the WSP).*

        ii. *The date, time, and location of the meeting.*

        iii. *Where additional information was made available (such as a website or office).*

b. *Public comments received (if any), and how they were considered prior to formal approval.*

c. *Approved meeting minutes indicating the Board approval of the WSP.*

The WUE goals and the WSP may be presented and adopted in the same meeting, as long as the more stringent WUE public forum requirements are met.

This meeting was held on Monday, December 16, 2024. Proof of public notice, the approved ordinance, and the meeting minutes are included in Appendix A.

RECOMMENDATIONS AND ADDITIONAL INFORMATION

Thank you for reviewing and correcting errors in the North Beach Water District Coliform Monitoring Plan. These comments will be promptly addressed.

DEPARTMENT OF ECOLOGY COMMENTS

18. *Consistent with the Joint Review Procedures for Planning and Engineering Documents between the ODW and Ecology, regarding joint review and approval of the Water System Planning Documents and Water Right Permits, a copy of this Planning Document was sent to Ecology on July 16, 2024. Ecology submitted written comments dated August 28, 2024.*

    The Response Letter addressing the Department of Ecology's comments can be found in Appendix A, and the WSP has been revised accordingly.

We have revised the final copy of the WSP to reflect your comments and the comments of other agencies. All Comments and Response Letters will also be included in Appendix A of the WSP. Please contact the undersigned if you have any additional questions or concerns.

Sincerely,

GRAY & OSBORNE, INC.

Michael B. Johnson, P.E.

MBJ/sr

Gray & Osborne, Inc.
CONSULTING ENGINEERS

November 25, 2024

Ms. Jamie Barron
Environmental Specialist 2
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, Washington 98503

SUBJECT: WATER SYSTEM PLAN
NORTH BEACH WATER DISTRICT, PACIFIC COUNTY, WASHINGTON
G&O #23473.00

Dear Ms. Barron:

We have revised the final copy of the Water System Plan to reflect your comments and the comments of the other agencies. All Comments and Response Letters will also be included in Appendix A of the Water System Plan. Please contact the undersigned if you have any additional questions or concerns.

Thank you for your comments regarding the North Beach Water District (District) Water System Plan, provided via email on August 28, 2024. In order to more easily respond to the comments, we have placed the original comments in italics, followed by our response below.

GENERAL

1. *Ecology did not identify any issues of concern during review of the Water System Plan and supplemental documentation. Ecology found that North Beach has multiple source wells (S-1, S-2, S-3, and N-7) listed as "inactive" or as "being replaced." Per WAC 173-160-381, these inactive well should be properly decommissioned.*

   The District desires to retain all existing wells for use as monitoring wells, as needed. The following has been added to Chapter 1 page 1-11: "The District's four inactive wells, N-7, S-1, S-2, and S-3 are maintained as monitoring wells.

Sincerely,

GRAY & OSBORNE, INC.

Michael B. Johnson, P.E.

MBJ/sr

Jenny Goetz

From: WA Dept. of Health - No Reply <DoNotReply@doh.wa.gov>
Sent: Wednesday, November 27, 2024 2:09 PM
To: Jgoetz@g-o.com
Subject: [External] Copy of Your Responses: Water Use Efficiency Goal Setting Public Forum *

Copy of your responses submitted for: Water Use Efficiency Goal Setting Public Forum *

1. Water System Name:
North Beach Water District

2. ID Number:
63000

3. County:
Pacific

4. Contact Name:
Rick Gray

5. Phone Number with Area Code:
(360) 665-4144

6. Date and Time of Public Forum:
12/16/2024

7. Location of Public Forum: Street Address:
2212 272nd Street

8. Location - City, State and Zip Code:
Ocean Park, WA 98640

9. Purpose of Forum:

North Beach Water District (NBWD) will hold a board meeting on December 16th, 2024. During this board meeting, NBWD will present the 2024 Water System Plan and evaluate and adopt Water Use Efficiency (WUE) Goals for 2025 -2035. The Washington Legislature passed the Water Use Efficiency Act of 1989 Which Directs the Department of Health to develop procedures and guidelines relating to water use efficiency. The DOH and Washington State Department of Ecology have developed levels of compliance that NBWD must meet. NBWD collects water data from every customer in our system and use it for a variety of reasons like evaluating system leakage, setting water use efficiency goals, evaluating past conservation efforts, and evaluating and implementing measures to meet goals. Please join us on December 16th, 2024, at 4:00 PM. We are located at 2212 272nd Street in Ocean Park, WA. There will be more information at this meeting about the 2024 Water System Plan, our Water Use Efficiency program and potential upcoming changes.

10. Where to find more information about goal:

https://northbeachwater.com/water-system-plan/

11. Directions to Public Forum:

The meeting will be held at the North Beach Water District Office. From Sandridge Road head west on 272nd Street and the office is on the left. From Pacific Way (Vernon Ave) head east on 270th Place then left on U Street and right on 272nd Street. The office will be on the right.

12. If you would like to receive email confirmation of your submission, please enter your email address in the space below.

Jgoetz@g-o.com

Minutes of the Regular Meeting of the Board of Commissioners
of North Beach Water District

These are the minutes of the public hearing for the 2025 operations budget and the regular meeting of the Board of Commissioners of North Beach Water District held at 4:00 p.m., Monday December 16, 2024 at the office of North Beach Water District, 2212 272nd Street, Ocean Park, Washington.

Public Hearing 2025 Operation Budget & Water Use Efficiency Goals

1. Call to Order:

Commissioner Ripley called the regular meeting to order at 4:00 p.m.

2. Roll Call:

Commissioners present:

Brian Sheldon, Glenn Ripley & Gary Flood

Staff present:

Rick Gray, general manager, John Bell, office manager

Others present:

Ed & Kathy Vesser – Customers

Jenny Goetz – Gray & Osborne

3. Adopt Agenda:

Commissioner Sheldon moved to adopt the agenda.

Commissioner Ripley seconded the motion.

Commissioner Ripley called for a vote on the agenda.

The motion to adopt the agenda passed unanimously.

4. Public Hearing – 2025 Operation Budget

A. President of the Board Glenn Ripley gave an opening statement.

B. General Manager Rick Gray gave a presentation on the 2025 Operation Budget. There was discussion between the general manager and the board on the operation budget.

Public Comment – None.

Board Member Comment – Commissioner Sheldon wanted clarification on the Capital Projects and the amount of money to be spent.

C. Presentation of the Water System Plan & Water Use Efficiency Goals

Jenny Goetz from Gray & Osborne presented the Water System Plan.

In her presentation she discussed the Water Efficiency goals and reviewed revisions made to the Water System Plam based on Ecology and DOH recommendations.

The Water Use Efficiency Goals & Measures Jenny presented to the board are:

5. Reduce the average day consumption for a equivalent residential unit by 0.5 percent per year for 10 years
6. Decrease DSL volume by 4.5 percent per year over the next 10 years and have DSL below 10 percent by 2030

If goals are met, approximately 77 million gallons of would be saved over the next 10 years.

Public Comment – None

Board Member Comment – Commissioner Sheldon mentioned the wording in the Water System Plan regarding Oysterville Water. Wanted some of that changed to show North Beach Water is not responsible in any way for Oysterville Water.

7. Adjourn Public Hearing – 4:44 p.m.

December 2024 Regular Meeting

8. Call to Order:

Commissioner Ripley called the regular meeting to order at 4:44 p.m.

9. Public Comment:

None.

10. Consent Calendar:

A. 11-18-24 Regular Meeting Minutes

B. Lien Report

C. Budget To Date

D. Financial Summary

E. District Expenses

Commissioner Sheldon moved to approve the consent calendar.

Commissioner Flood seconded the motion.

There was discussion on the consent calendar.

Commissioner Ripley called for a vote.

The motion to approve the consent calendar passed unanimously.

11. Old Business:

Emergency Response Plan

None.

12. New Business:

A. Resolution 2-2024 – Adopting the Water Use Efficiency Goals 2025 - 2034

Commissioner Sheldon made a motion to approve Resolution 2-2024.

Commissioner Flood seconded the motion.

Commissioner Ripley called for a vote on Resolution 2-2024.

The vote to approve Resolution 2-2024 passed unanimously.

B. Resolution 3-2024 – Adopting the Water System Plan

Commissioner Sheldon made a motion to approve Resolution 2-2024.

Commissioner Flood seconded the motion.

Commissioner Ripley called for a vote on Resolution 3-2024.

The vote to approve Resolution 3-2024 passed unanimously.

C. Resolution 4-2024 – 2025 Regular Meeting Calendar

Commissioner Sheldon moved to adopt Resolution 4-2024.

Commissioner Flood seconded the motion.

Commissioner Ripley called for a vote to adopt Resolution 4-2024.

The motion to adopt Resolution 4-2024 passed unanimously.

D. Resolution 5-2024 – Cost of Living Adjustment – 2025

There was discussion between the board and the general manager regarding the Cost of Living Adjustment.

Commissioner Sheldon recommended a 2.5% Cost of Living increase for the 2025 calendar year.

Commissioner Sheldon made a motion to approve Resolution 5-2024.

Commissioner Flood seconded the motion.

Commissioner Ripley called for a vote on Resolution 5-2024.

The vote to approve Resolution 5-2024 passed unanimously.

E. Resolution 6-2024 – Adopting 2025 Operation Budget

Commissioner Sheldon made a motion to approve Resolution 6-2024.

Commissioner Flood seconded the motion.

Commissioner Ripley called for a vote on Resolution 6-2024.

The vote to approve Resolution 6-2024 passed unanimously.

F. New Property Discussion (25210 Z Place)

The general manager presented to the board the new owners request to purchase an additional small area of land so they would be able to move a travel trailer onto and off of the property without any issues.

The board and general manager discussed the issues with this offer and decided to pass on selling any of that property.

The board advised the general manager to inform the owners that we have declined the offer.

13. General Managers Report:

The general manager reported on (1) the use, sale, and loss of water, (2) line breaks, and (3) the

different classes/courses the crew has been or will be attending in the next few months.

14. Executive Session:

None.

15. Report on Executive Session:

16. Board Member Comments:

None.

17. Future Agenda Items:

18. Adjournment:

Commissioner Ripley adjourned the meeting at 5:40 p.m.

Brian Sheldon, Commissioner
Position #1

Gary Flood, Commissioner
Position #2

Glenn Ripley, Commissioner
Position #3

Respectfully submitted for review and approval by:

John Bell,
Office Manager

Bear witness to reference the Commissioner's signatures, does hereby approve this set of Minutes to become an Official Record of North Beach Water District on:

Date: 1-17-2025

NORTH BEACH WATER DISTRICT
RESOLUTION 2-2024

A RESOLUTION OF THE NORTH BEACH WATER DISTRICT, ADOPTING WATER USE EFFICIENCY GOALS

WHEREAS, the North Beach Water District ("District") owns and operates a water system which provides potable water and fire protection water flow to residents and businesses within the North Beach Water District Retail Service Area; and

WHEREAS, the North Beach Water District desires to establish a water conservation goal to comply with Department of Health regulations and to conserve water resources; and

WHEREAS, the water conservation goals adopted hereunder are consistent with the relevant provisions of the District's Water System Plan;

NOW, THEREFORE, THE BOARD OF COMMISSIONERS OF THE NORTH BEACH WATER DISTRICT, DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. The North Beach Water District hereby adopts the following goals:

- Goal 1 (Demand) – Reduce the average day consumption per Equivalent Residential Unit (ERU_{ADD}) by 0.5 percent per year for the next 10 years (2025-2034).
- Goal 2 (Supply) – Reduce Distribution System Leakage (DSL) to no more than 10 percent of net production by 2030.

Section 2. This resolution shall take effect immediately upon passage.

PASSED by the Board of Commissioners this 16th day of December, 2024.

APPROVED by the Board of Commissioners this 16th day of December, 2024.

Brian Sheldon, Commissioner
Position #1

Gary Flood, Commissioner
Position #2

Glenn Ripley, Commissioner
Position #3

NORTH BEACH WATER DISTRICT
RESOLUTION NO. 3-2024

A RESOLUTION OF THE NORTH BEACH WATER DISTRICT, ADOPTING THE UPDATED WATER SYSTEM PLAN

WHEREAS, the North Beach Water District ("District") owns and operates a water system; and

WHEREAS, the previous September 2015 Water System Plan was previously adopted by the board;

WHEREAS, the District's chosen contractor, Gray and Osborne finalized the Water System Plan in December 2024 in accordance with WAC 246-290-100; and

WHEREAS, the updated Water System Plan adopted hereunder has been submitted to the Department of Health for approval pursuant to WAC 296-290-100; and

WHEREAS, the District has reviewed, held a public hearing and acted on the Water System Plan; and

NOW, THEREFORE, THE BOARD OF COMMISSIONERS OF THE NORTH BEACH WATER DISTRICT, DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. The attached "Water System Plan" is hereby adopted and is incorporated herein by this reference as if set forth in full. The attached Water System Plan shall supersede and replace the existing Water System Plan dated September 2015.

Section 2. This resolution shall take effect immediately upon passage.

PASSED by the Board of Commissioners this 16th day of December, 2024.

APPROVED by the Board of Commissioners this 16th day of December, 2024.

Brian Sheldon, Commissioner
Position #1

~~Gary Flood~~, Commissioner
Position #2 ~~3~~ Glenn Ripley

Gary Flood

~~Glenn Ripley~~, Commissioner
Position #3 ~~2~~ Gary Flood

APPENDIX B

WFI

WATER FACILITIES INVENTORY (WFI) FORM

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

ONE FORM PER SYSTEM

Quarter: 1
Updated: 10/20/2023
Printed: 5/23/2024
WFI Printed For: On-Demand
Submission Reason: Source Update

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822 or email wfi@doh.wa.gov

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
63000 C	NORTH BEACH WATER	PACIFIC	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS

RICK GRAY [MANAGER]
PO BOX 618
OCEAN PARK, WA 98640

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

7. OWNER NAME & MAILING ADDRESS

NORTH BEACH WATER DISTRICT MANAGER
RICK GRAY
P.O. BOX 618
OCEAN PARK, WA 98640

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS 25902 VERNON AVE STE C
CITY OCEAN PARK STATE WA ZIP 98640

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone: (360) 665-4144		Owner Daytime Phone: (360) 665-4144	
Primary Contact Mobile/Cell Phone: (360) 214-9365		Owner Mobile/Cell Phone: (360) 214-9365	
Primary Contact Evening Phone: (xxx)-xxx-xxxx		Owner Evening Phone: (xxx)-xxx-xxxx	
Fax:	E-mail: rxxxy@northbeachwater.com	Fax: (360) 665-4641	E-mail: rxxxy@NorthBeachWater.com

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
- [x] 1,000 or more person event for 2 or more days per year
- [x] Hospital/Clinic
- [x] Industrial
- [ ] Licensed Residential Facility
- [x] Lodging
- [x] 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)

748,000

- SEE NEXT PAGE FOR A COMPLETE LIST OF SOURCES -

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
63000 C	NORTH BEACH WATER	PACIFIC	A	Comm

15	16	17	18 SOURCE CATEGORY									19 USE			20	21 TREATMENT						22	23	24 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	NORTH WELL #1 AGP146				X							X			Y	X						82	100	SW NE	28	12N	11W
S03	NORTH WELL #3 AGP147				X									X	Y	X						114	100	SW NE	28	12N	11W
S04	NORTH WELL #4 WW AGP149				X							X			Y	X						100	100	SW NE	28	12N	11W
S05	NORTH WELL #5 WW NO TAG				X							X			Y	X						104	100	SW NE	28	12N	11W
S06	NORTH WF (S01,3,4,5,7,8,9,17)			X								X					X	X			X	82	835	SW NE	28	12N	11W
S07	NORTH WELL #6 WW AGP152				X							X			Y	X						107	112	SW NE	28	12N	11W
S08	InAct 11/15/2018 NORTH WELL #7 WW A				X							X			Y	X						100	100	SW NE	28	12N	11W
S09	NORTH WELL #8 WW AGP151				X							X			Y	X						106	123	SW NE	28	12N	11W
S10	SOUTH WELL #1 20051/PWC S01 AGP154		X											X	Y	X						41	30	SE NE	33	12N	11W
S11	SOUTH WELL #2 20051/PWC S02 AGP155		X											X	Y	X						85	60	NW NE	33	12N	11W
S12	InAct 11/04/2008 SOUTH WELL #4 20051		X											X	Y	X						101	80	SE NE	33	12N	11W
S13	Wiegardt Well #1 BAF021				X							X			Y	X						118	150	SW NE	33	12N	11W
S14	Wiegardt Well #2 BAF024				X							X			Y	X						120	150	SW NE	33	12N	11W
S15	Wiegardt Well #3 BAF025				X							X			Y	X						121	150	SW NE	33	12N	11W
S16	South Wiegardt WF (S13, 14, 15)			X								X			Y		X	X			X	118	150	SW NE	33	12N	11W
S17	NORTH WELL #7R BAF123				X							X			Y	X						103	150	SW NE	28	12N	11W

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
63000 C	NORTH BEACH WATER	PACIFIC	A	Comm

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED CONNECTIONS
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)		3119	Unspecified
A. Full Time Single Family Residences (Occupied 180 days or more per year)	1510		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	1090		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	14		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	94		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	425		
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.	75	75	
28. TOTAL SERVICE CONNECTIONS		3194	

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 4010

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?	500	500	1000	2000	2500	3000	3000	3000	3000	2000	1000	1500
B. How many days per month are they present?	30	30	30	30	30	30	30	30	30	30	30	30

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?	2200	2200	2800	3000	3600	4400	7000	7000	10000	5000	4000	5000
B. How many days per month is water accessible to the public?	30	30	30	30	30	30	30	30	30	30	30	30

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population?	665	665	670	680	680	690	490	500	750	680	680	690
B. How many days per month are they present?	30	30	30	30	30	30	30	30	30	30	30	30

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	6	6	6	8	8	9	9	9	9	8	7	7

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

35. Reason for Submitting WFI:

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

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

SIGNATURE: _____ **DATE:** _____

PRINT NAME: _____ **TITLE:** _____

Intentionally left blank

WS ID	WS Name
63000	NORTH BEACH WATER

Total WFI Printed: 1

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

Water Facilities Inventory (WFI)

Report Create Date:	5/23/2024		
Water System Id(s):	63000		
Print Data on Distribution Page:	ALL		
Print Copies For:	DOH Copy		
Water System Name:	ALL		
County:	-- Any --		
Region:	ALL		
Group:	ALL		
Type:	ALL		
Permit Renewal Quarter:	ALL		
Water System Is New:	ALL		
Water System Status:	ALL		
Water Status Date From:	ALL	**To**	ALL
Water System Update Date	ALL	**To**	ALL
Owner Number:	ALL		
SMA Number:	ALL		
SMA Name:	ALL		
Active Connection Count From:	ALL	**To:**	ALL
Approved Connection Count	ALL	**To:**	ALL
Full-Time Population From:	ALL	**To:**	ALL
Water System Expanding	ALL		
Source Type:	ALL		
Source Use:	ALL		
WFI Printed For:	On-Demand		

APPENDIX C

WATER RIGHTS CERTIFICATE

Pacific Water Company Inc
PO Box 683
Longbeach, Washington 98631-0683

WASHINGTON STATE DEPARTMENT OF ECOLOGY

STATE OF WASHINGTON
CERTIFICATE OF WATER RIGHT
SUPERSEDING

Document Title: Certificate of Water Right

Agency: Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Applicant: Pacific Water Company Inc
PO Box 683
Longbeach, WA 98631-0683

Reference Number:

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
December 15, 1969	G2-00174	G2-00174	G2-00174

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

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
3 Wells	

MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR
	500	168

QUANTITY/TYPE OF USE/PERIOD OF USE

168 Acre-feet per year Multiple domestic supply Year-round, as needed

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
N1/2 NE1/4	33	12	11W	24	Pacific

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
N/A	N/A	N/A	N/A	24	Pacific

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

Well #1 - 780 feet West and 1300 feet South of the Northeast corner of Section 33.

Well #2 - 1970 feet West and 810 feet South of the Northeast corner of Section 33.

Well #3 - 2070 feet West and 910 feet South of the Northeast corner of Section 33.

CONTINUED LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

The plats of Rushton-on-the-Bay; Rushlight Farm Estates; and South addition of Ocean Park; all within Section 33, T. 12 N., R. 11 W.W.M.

PROVISIONS

All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below.

"The combined withdrawal rate from Wells #1, #2 and #4 may at no time exceed 500 gpm. The annual withdrawal from all three wells is limited to 168 acre-feet per year."

The well access port shall be maintained at all times.

An approved metering device shall be installed and maintained in accordance with RCW 90.03.360, 90.44.450 and WAC 508-64-020 through –040, and WAC 508-12-030. Meter readings shall be recorded at least monthly.

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.100.

This certificate of water right is specifically subject to relinquishment for non-use of water as provided in Chapter 90.14 RCW.

Given under my hand and the seal of this office at Olympia, Washington, this 6th *day of* December, *1999.*

DEPARTMENT OF ECOLOGY STATE OF WASHINGTON

Tom Fitzsimmons
Department of Ecology

By _____
J. Mike Harris, Section Supervisor

ENGINEERING DATA
OK _____
ECY 040-1-2 (Rev. 8-97)

March 2, 2000

Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

SUBJECT: Water Rights Application
Ocean Park Water Company
Pacific County, Washington

Attached is an application to increase the water rights for the Ocean Park Water Company by 65 gpm. The water system currently has 8 wells with a combined water right of 535 gpm. The expansion is necessary to accommodate the growth projected in the current water system plan.

We would like the ability to draw the additional water from the 4 wells (1, 2, 7 & 8) currently authorized under water right G2-00759C. The wells are installed and equipped and no additional construction is necessary.

Thank you for your assistance in this matter. If you have any question please give me a call.

Sincerely

Thomas J. Frare, P.E.

cc: Pete Christoson, Ocean Park Water Company, Inc.

Ocean Park Water Company
PO Box 618
Ocean Park, Washington 98640-0618

STATE OF WASHINGTON
CERTIFICATE OF WATER RIGHT
SUPERSEDING

Document Title: Certificate of Water Right

Agency: Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Applicant: Ocean Park Water Company
PO Box 618
Ocean Park, WA 98640-0618

Reference Number:

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
July 14, 1965	G2-00759	G2-00759	G2-00759

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

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
Four Wells (1, 2, 7 and 8)	

MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR
	200	320

QUANTITY/TYPE OF USE/PERIOD OF USE

320 Acre-feet per year | Multiple domestic supply | Year-round, as needed

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼ NE¼	28	12	11W	24	Pacific

PARCEL # Well #7 – 1878 and Well #8 – 23256

ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
N/A	N/A	N/A	N/A	24	Pacific

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

Wells 1 & 2: 830 feet East and 315 feet North of the Center of Section 28,

Well 7: 534 feet East and 295 feet North of the Center of Section 28,

Well 8: 365 feet East and 325 feet North of the Center of Section 28.

CONTINUED LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

Area served by Ocean Park Water Company.

PROVISIONS

All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below.

The well access port shall be maintained at all times.

An approved metering device shall be installed and maintained in accordance with RCW 90.03.360, 90.44.450 and WAC 508-64-020 through -040. Meter readings shall be recorded at least monthly.

All wells constructed in the State shall meet the construction requirements of Chapter 173-160 WAC entitled "Minimum Standards for the Construction and Maintenance of Wells" and Chapter 18-104 RCW entitled "Water Well Construction, Act (1971)."

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.100.

This certificate of water right is specifically subject to relinquishment for non-use of water as provided in Chapter 90.14 RCW.

Given under my hand and the seal of this office at Olympia, Washington, this 17th *day of* March, *1998.*

DEPARTMENT OF ECOLOGY STATE OF WASHINGTON

Tom Fitzsimmons
Department of Ecology

By _____
J. Mike Harris, Section Supervisor

ENGINEERING DATA
OK _____
ECY 040-1-2 (Rev. 8-97)

Section 1. APPLICANT - PERSON, ORGANIZATION, OR WATER SYSTEM

Name Ocean Park Water Company, Inc Home Tel: (____)____ - ____

Mailing Address P.O. Box 618 Work Tel: (360) 665 - 4144

City Ocean Park State WA Zip+4 98 _+ ____ FAX: (360) 665 - 4661

Section 2. CONTACT - PERSON TO CALL ABOUT THE APPLICATION

☐ Same as above

Name Thomas J. Frare Home Tel: (360) 459 - 3159

Mailing Address 3227 74th Avenue S.E. Work Tel: (360) 459 - 3159

City Olympia State WA Zip+4 98501 + ____ FAX: (____)____ - ____

Relationship to applicant Engineer

Section 3. STATEMENT OF INTENT

The applicant requests a permit to use not more than 65 (☒ gallons per minute or ☐ cubic feet per second) from a ☐ surface water source or ☒ ground water source (check only one) for the purpose(s) of Domestic / Community Water System. **ATTACH A "LEGAL" DESCRIPTION OF THE PLACE OF USE.** (See instructions.) *NOTE: A tax parcel number or a plat number is not sufficient.* SERVICE AREA

Estimate a maximum annual quantity to be used in acre-foot per year: 80

☐ Check if the water use is proposed for a short-term project. Indicate the period of time that the water will be needed:

From ___/___/___ to ___/___/___

Section 4. WATER SOURCE

If SURFACE WATER	If GROUNDWATER
Name the water source and indicate if stream, spring, lake, etc. If unnamed, write "unnamed spring," "unnamed stream," etc.: Number of diversions: ____	A permit is desired for ____ well(s). Addition volume from wells 1,2,7,8 under permit #G2-00759C
Source flows into (name of body of water):	Size & depth of well(s): #1 - 8"-102', #2-6"-122', #7-6"-120', #8-8"-116

LOCATION

Enter the north-south and east-west distances in feet from the point of diversion or withdrawal to the nearest section corner: on file shown on G2-00759C

1/4 of	1/4 of	Section	Township	Range (E/W)	County	If location of source is platted, complete below:		
						Lot	Block	Subdivision

THE SYSTEM CURRENTLY HAS 8 WELLS WHICH PUMP TO STORAGE AND IS IN TURN REPUMPED TO THE SYSTEM. WATER RIGHTS EXIST FOR 535 GPM AND MAXIMUM ANNUAL of 448 ACRE-FEET PRIMARY RIGHT.

C. Do you already have any water rights or claims associated with this property or system? ☒ YES ☐ NO
PROVIDE DOCUMENTATION. G2-00759C, G2-21399C, G2-25737C, G2-27073C

Section 6. DOMESTIC/PUBLIC WATER SUPPLY SYSTEM INFORMATION
(Completed for all domestic/public supply uses.)

A. Number of "connections" requested: AS PER WATER SYSTEM PLAN Type of connection MIXED
(Homes, Apartment, Recreational, etc.)

B. Are you within the area of an approved water system? ☐ YES ☐ NO
If yes, explain why you are unable to connect to the system. *Note: Regional water systems are identified by your County Health Department.*

Complete C. and D. only if the proposed water system will have fifteen or more connections.

C. Do you have a current water system plan approved by the Washington State Department of Health? ☒ YES ☐ NO
If yes, when was it approved? PENDING Please attach the current approved version of your plan.

D. Do you have an approved conservation plan? ☒ YES ☐ NO
If yes, when was it approved? PENDING Please attach the current approved version of your plan.

Section 7. IRRIGATION/AGRICULTURAL/FARM INFORMATION
(Completed for all irrigation and agriculture uses.)

A. Total number of acres to be irrigated: _____

B. List total number of acres for other specified agricultural uses:

Use _____ Acres _____
Use _____ Acres _____
Use _____ Acres _____

C. Total number of acres to be covered by this application: _____

D. Family Farm Act (Initiative Measure Number 59, November 3, 1977)
Add up the acreage in which you have a controlling interest, including only:
‡ Acreage irrigated under water rights acquired after December 8, 1977;
‡ Acreage proposed to be irrigated under this application;
‡ Acreage proposed to be irrigated under other pending application(s).

1. Is the combined acreage greater than 2000 acres? ☐ YES ☐ NO
2. Do you have a controlling interest in a Family Farm Development Permit? ☐ YES ☐ NO
If yes, enter permit no.: _____

E. Farm uses:
Stockwater - Total # of animals _____ Animal Type _____ (If dairy cattle, see below)
Dairy - # Milking # Non-milking

3 CONCRETE [illegible]

NOTE: If you will be storing 10 acre-feet or more of water and/or if the water depth will be 10 feet or more at the deepest point, and some portion of the storage will be above grade, you must also apply for a reservoir permit. You can get a reservoir permit application from the Department of Ecology.

Section 9. DRIVING DIRECTIONS

Provide detailed driving instructions to the project site.

EXICTING well field. FROM SR103 & BAY AVENUE IN OCEAN PARK PROCEED NORTH ON VERNON AVE. about ½ mile; turn RIGHT ON 270th for ¼ mile; turn left of "U" St. one block; turn RIGHT ON 272ND to wellfield ON RIGHT.

Section 10. REQUIRED MAP

A. Attach a map of the project. (See instructions.)

on file with water right G2-00759 C

Section 11. PROPERTY OWNERSHIP

A. Does the applicant own the land on which the water will be used? ☐ YES ☒ NO
If no, explain the applicant's interest in the place of use and provide the name(s) and address(es) of the owner(s):

WATER SERVICE AREA

B. Does the applicant own the land on which the water source is located? ☒ YES ☐ NO
If no, submit a copy of agreement:

I certify that the information above is true and accurate to the best of my knowledge. I understand that in order to process my application, I grant staff from the Department of Ecology access to the site for inspection and monitoring purposes. Even though I may have been assisted in the preparation of the above application by the employees of the Department of Ecology, all responsibility for the accuracy of the information rests with me.

[signature] 3-06-00

Applicant (or authorized representative) Date

SAME SERVICE AREA

Landowner for place of use (if same as applicant, write "same") Date

We are returning your application for the following reason(s):	
_____ Examination fee was not enclosed	APPLICANT PLEASE RETURN TO CASHIER, PO BOX 5128, LACEY, WA 98509-5128
_____ Section number(s) _____ is/are incomplete	APPLICANT PLEASE RETURN TO THE APPROPRIATE REGIONAL OFFICE
Explanation:	
Please provide the additional information requested above and return your application by _____ _____ *(date).*	

Ecology staff _____ Date _____

Ecology is an Equal Opportunity and Affirmative Action employer.

To receive this document in alternative format, contact the Water Resources Program at (360) 407-6604 (Voice)

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

THIS IS TO CERTIFY *That* OCEAN PARK WATER COMPANY

of Ocean Park, Washington, *has made proof to the satisfaction of the Department of Ecology of a right to the use of the public ground waters of the State of Washington from* two (2) wells *located within* SE¼SW¼NE¼ *Sec.* 28, *Twp.* 12 *N., R.* 11 W.W.M., *for the purpose(s) of* municipal supply *under and specifically subject to provisions contained in Ground Water Permit No.* 7301 *issued by the Department of Ecology and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the Department of Ecology and entered of record in Volume* - *at page* G 2-00759 C *; that the priority of the right hereby confirmed dates from* July 14, 1965 *: that the quantity of ground water under the right hereby confirmed for the aforesaid purposes, is limited to an amount actually beneficially used for said purposes, and shall not exceed* 200 gallons per minute; 320 acre-feet per year, during entire year for municipal supply.

A description of the lands to which such ground water right is appurtenant is as follows:

Area served by Ocean Park Water Company.

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

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

Given under my hand and seal of this office at Olympia, Washington, this 16th *day of* November, *19* 73.

Ground Water Permit No. 7301

Certificate of Ground Water Right

Recorded in the Department of Ecology, Olympia, Washington, in Book No. - ..... of Ground Water Right Certificates, on page G 2-00759 C, on the 16th day of November 19 73

STATE OF WASHINGTON. }
County of ..... } ss.

I certify that the within was received and duly recorded by me in Volume ..... of Book of Water Right Certificates, at page ..... on the ..... day of ....., 19.....

.....

STATE PRINTING PLANT, OLYMPIA, WASHINGTON

86919

Filed for record at the request of Dept. of Ecology
Nov. 26 A.D. 19 73, at 33 min. past 9A M. and recorded in vol. 262 of ..... page 494 records of Pacific County, Wash.
VERNA JACOBSON
County Auditor
By Violet Robbins
Deputy

Ocean Park Water Co
Herman R. Clark
P. O. Box 32
Ocean Park, Wa. 98640

Ocean Park Water Company
PO Box 618
Ocean Park, Washington 98640-0618

STATE OF WASHINGTON
CERTIFICATE OF WATER RIGHT

Document Title: Certificate of Water Right

Agency: Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Applicant: Ocean Park Water Company
PO Box 618
Ocean Park, WA 98640-0618

Reference Number:

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
August 23, 1973	G2-21399	G2-21399	G2-21399

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

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
Wells #3 & #6	

MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR
	100	160

QUANTITY/TYPE OF USE/PERIOD OF USE

160 Acre-feet per year | Multiple domestic supply | Year-round, as needed

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼ NE¼	28	12	11E	24	Pacific

PARCEL # Well #3: Government Tax Lot 15, West 200', Well #6: Sailfish Parcel 01-02

ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
N/A	N/A	N/A	N/A	24	Pacific

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

Well #3: 870 feet East and 335 feet North of the center of Section 28.Well #6: 305 feet East and 325 feet North of the center of Section 28.

CONTINUED LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

Area served by Ocean Park Water Company.

PROVISIONS

All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below.

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

Water use data shall be recorded monthly. The maximum rate of diversion/withdrawal and the annual total volume shall be submitted to Ecology by January 31st of each calendar year.

The following information shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, WRIA, Permit/Certificate/Claim No., source name, annual quantity used including units, maximum rate of diversion including units,

1. monthly meter readings including units,
2. Department of Health WFI water system number and source number(s),
3. well tag number, and period of use. In the future, Ecology may require additional parameters to be reported or more frequent reporting. Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.100.

This certificate of water right is specifically subject to relinquishment for non-use of water as provided in Chapter 90.14 RCW.

Given under my hand and the seal of this office at Olympia, Washington, this 2nd *day of* December, *2002.*

Tom Fitzsimmons, Director
Department of Ecology

By _____
J. Mike Harris, Section Supervisor

ENGINEERING DATA
OK _____
ECY 040-1-2 (Rev. 8-97)

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

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
October 22, 1980	G 2-25737	G 2-25737 P	

NAME
OCEAN PARK WATER COMPANY

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
P.O. Box 618 - 263rd "N" Street	Ocean Park	Washington	98640

The applicant is, pursuant to the Report of Examination which has been accepted by the applicant, hereby granted a permit to appropriate the following described public waters of the State of Washington, subject to existing rights and to the limitations and provisions set out herein.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
well (#4)

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	200	252

QUANTITY, TYPE OF USE, PERIOD OF USE		
252 acre-feet per year	municipal supply	continuously

(1500 services)

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
454 feet East and 265 feet North from center, Section 28.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼NE¼	28	12	11 W	24	Pacific

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by Ocean Park Water Company.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
October 1, 1981	October 1, 1982	October 1, 1983

PROVISIONS

All water wells constructed within the state shall meet the minimum standards for construction and maintenance as provided under RCW 18.104 (Washington Water Well Construction Act of 1971) and Chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Water Wells.)

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

At such time that the Department of Ecology determines the regulation and management of the subject waters is necessary and in the public interest, an approved measuring device shall be installed and maintained in accordance with RCW 90.03.360 and WAC 508-64-020 through WAC 508-64-040.

A well log of the completed well shall be submitted by the driller to the Department of Ecology within thirty (30) days of completion of this well. This well log shall be complete and all information concerning the static water level in the completed well, in addition to any pump test data, shall be submitted as it is obtained.

In all cases, applicants are urged to locate their wells as far inland as is reasonable because of the uncertainty of the amount of sea-water intrusion that may be experienced in the future.

When the chloride concentration exceed 250 mg/L, the withdrawal rate shall be reduced or the pump setting raised to reduce the chloride level to below 250 mg/L.

Permittee is advised that notice of proof of appropriation of water (under which final certificates of water right issues) should not be filed until the permanent diversion facilities have been installed together with a mainline system capable of delivering the recommended quantity of water to an existing or proposed distribution system within the area to be serve

*Under existing rights there is 448 acre-feet per year as primary right for minicipal supply.

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or fail to give notice to the Department of Ecology on forms provided by that Department documenting such compliance.

Given under my hand and the seal of this office at Olympia *Washington, this* 22 *day of* June, *19* 81.

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

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
October 22, 1980	G 2-25737	G 2-25737 P	G 2-25737 C

NAME
OCEAN PARK WATER COMPANY

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
P.O. Box 618 - 263rd "N" Street	Ocean Park	Washington	98640

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

PUBLIC WATER TO BE APPROPRIATED

SOURCE
well (#4)

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	130	140

QUANTITY, TYPE OF USE, PERIOD OF USE

140 acre-feet per year	municipal supply	continuously
	(1500 services)	

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
454 feet East and 265 feet North from center, Section 28.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼NE¼	28	12	11 W	24	Pacific

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by Ocean Park Water Company.

FILED
AT THE REQUEST OF:
State of Wash
84 MAR 19 A 9:24

ROBERT M. JOHNSON
AUDITOR & RECORDER
COUNTY OF PACIFIC

subject waters is necessary and in the public interest, an approved measuring device shall be installed and maintained in accordance with RCW 90.03.360 and WAC 508-64-020 through WAC 508-64-040.

All water wells constructed within the state shall meet the minimum standards for construction and maintenance as provided under RCW 18.104 (Washington Water Well Construction Act of 1971) and Chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Water Wells.)

In all cases, applicants are urged to locate their wells as far inland as is reasonable because of the uncertainty of the amount of sea-water intrusion that may be experienced in the future.

When the chloride concentration exceeds 250 mg/L, the withdrawal rate shall be reduced or the pump setting raised to reduce the chloride level to below 250 mg/L.

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

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

Given under my hand and the seal of this office at Olympia *Washington, this* 16th *day of* March, *19* 84.

ENGINEERING DATA
OK

DONALD W. MOOS, Director
Department of Ecology

by Norman L. Glenn
Norman L. Glenn, Regional Manager

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

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
March 16, 1987	G2-27073	G2-27073 P	G2-27073 C

NAME
Ocean Park Water Company, Inc.

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
Post Office Box 618	Ocean Park	Washington	98640

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

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well No. 5

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	105	252

QUANTITY, TYPE OF USE, PERIOD OF USE		
252 acre-feet per year (supplemental)	Municipal supply	Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION–WITHDRAWAL
504 feet east and 265 feet north of the center of Section 28.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼NE¼	28	11 W	11 W	24	Pacific

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by Ocean Park Water Company Inc.

21399 C, and G2-25737 C.

The Water Resources Act of 1971 specifies certain criteria regarding utilization and management of the waters of the state in the best public interest. Use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

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

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.160.

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

this 2nd *day of* January, *19* 91.

Christine O. Gregoire, Director
Department of Ecology

ENGINEERING DATA
OK AP

by Gale Blomstrom

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

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
March 16, 1987	G2-27073	G2-27073 P	G2-27073 C

NAME
Ocean Park Water Company, Inc.

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
Post Office Box 618	Ocean Park	Washington	98640

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

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well No. 5

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	105	252

QUANTITY, TYPE OF USE, PERIOD OF USE		
252 acre-feet per year (supplemental)	Municipal supply	Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION–WITHDRAWAL
504 feet east and 265 feet north of the center of Section 28.

Should be 11 west 1W

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼NE¼	28	12	1W	24	Pacific

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by Ocean Park Water Company, Inc.

raised to reduce the chloride level to below 250 mg/L.

Issued as a supplemental source of supply to rights enjoyed under Ground Water Certificates G2-00759 C, G2-21399 C, and G2-25737 C.

The Water Resources Act of 1971 specifies certain criteria regarding utilization and management of the waters of the state in the best public interest. Use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

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

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

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

this 14th *day of* November, *19* 90.

Christine O. Gregoire, Director
Department of Ecology

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

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
March 10, 2000	G2-29907	G2-29907	

NAME
North Beach Water (formerly Ocean Park Water Company, Inc.)

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
25902 Vernon Avenue Suite C	Ocean Park	Washington	98640

The applicant is pursuant to the Report of Examination which has been accepted by the applicant, hereby granted a permit to appropriate the following public waters of the State of Washington, subject to existing rights and to the limitations and provisions set herein.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
North Wellfield – Eight Wells (No's. 1 through 8)

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE FEET PER YEAR
	65*	80*

QUANTITY, TYPE OF USE, PERIOD OF USE
*Both Qi and Qa are additive quantities to the 4 existing certificates for the North Wellfield, totaling 600 gpm and 515 afy.
80* Acre-feet per year Multiple domestic supply Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL

Wells 1 and 2 – 830 feet east and 315 feet north of the center of Section 28;
Well 3 – 870 feet east and 335 feet north of the center of Section 28;
Well 4 – 454 feet east and 265 feet north of the center of Section 28;
Well 5 – 504 feet east and 265 feet north of the center of Section 28;
Well 6 – 305 feet east and 325 feet north of the center of Section 28;
Well 7 – 534 feet east and 295 feet north of the center of Section 28; and
Well 8 – 365 feet east and 325 feet north of the center of Section 28.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW1/4 NE1/4	28	12	11W	24	Pacific

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The place of use (POU) of this water right is the service area described in the most recent Water System Plan/Small Water System Management Program approved by the Washington State Department of Health, so long as *name of water right holder* is and remains in compliance with the criteria in RCW 90.03.386(2). RCW 90.03.386 may have the effect of revising the place of use of this water right.

system (PWS) and is identified by the Washington State Department of Health (DOH) by PWS ID 65000C. North Beach Water currently services 2,644 connections.

DEVELOPMENT SCHEDULE		
BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	Completed	July 1, 2026

PROVISIONS

The applicant is advised that the quantity of water allocated by this permit may be reduced at the time of final certification to reflect system capacity and actual usage.

A certificate of water right will not be issued until a final investigation is made.

An approved measuring device shall be installed and maintained for each diversion/withdrawal of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use," Chapter 173-173 WAC.

Water use data shall be recorded weekly. The maximum monthly rate of diversion/withdrawal and the monthly total volume shall be submitted to Ecology by January 31st of each calendar year. Ecology is requiring submittal of monthly meter readings to collect seasonal information for water resource planning, management and compliance.

Reported water use data shall be submitted via the Internet or by using the enclosed forms. To set up an internet account, access Https://fortress.wa.gov/ecy/wrx/Meteringx/. If you have questions or need additional forms, contact the Southwest Regional office.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

WAC 173-173 describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements. Installation, operation and maintenance requirements are enclosed as a document titled "Water Measurement Device Installation and Operation Requirements". http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or to give notice to the Department of Ecology on forms provided by that Department documenting such compliance.

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

this 11th *day of* December, *2008.*

Karl Johnson

From: Clark, Susan (ECY) [sucl461@ECY.WA.GOV]
Sent: Wednesday, June 11, 2014 11:49 AM
To: kjohnson@g-o.com
Subject: Water right question
Attachments: NorthBeach2007ReviewLetter.pdf

Karl: I have completed my review of the water rights for the North Beach Water District, paying particular attention to G2-29907. As detailed in the attached letter provided to the North Beach Water District Ecology confirmed in 2007 that the system's North Wellfield water rights totaled 535 gpm (Qi) and 448 acre-feet (Qa), excluding G2-29907. In December 2008 Ecology authorized an additional 65 gpm (Qi) and 80 acre-feet (Qa) via Permit G2-29907 as noted in both the recommendation on page 7 of the ROE and in the "public waters to be appropriated" chart on the Permit cover page. Because the ROE does not provide an explanation of the reduced Qa contained in the footnote (515 acre-feet) and both the recommendation and "public waters to be appropriated" chart acknowledge the authorization of 80 acre-feet (Qa), Ecology is in agreement that with the addition of the 80 acre-feet authorized by Permit G2-29907, the total annual authorization for the North Wellfield is indeed 528 acre feet/year. For future reference, I will add this correspondence to file G2-29907.

Should you have any questions, feel free to contact me.

Thank you. Susan

Susan Clark, Permit-Writer
Department of Ecology, Southwest Regional Office
360 407 7667

From: Karl Johnson [mailto:kjohnson@g-o.com]
Sent: Thursday, June 05, 2014 1:43 PM
To: Mike Gallagher
Subject: Water right question

Mike:

I am working on a water system plan for North Beach Water District in Ocean Park Washington. I am going through water rights and trying to make sense of the latest right, G2-29907P. On the permit it states that the annual quantity is 80 ac-ft/yr and that this amount is additive to the other four pre-existing rights for the north wellfield (G2-00759C, G2-21399C, G2-25737C, and G2-27073C). Right G2-27073C states that it is supplemental to rights G2-00759C, G2-21399C and G2-25737C. Right G2-25737C states that it is supplemental to rights G2-00759C, G2-21399C. Right G2-21399C is partially supplemental to right G2-00759C, with a total annual right of 448 ac-ft/yr between the two rights, making it 128 ac-ft/yr primary and 32 ac-ft/yr supplemental. So it looks on the surface like the total annual rights should be 448 + 80 = 528 ac-ft/yr. And in fact in the ROE for permit G2-29907P in the table on Page 3 a total of 448 ac-ft/yr preexisting rights is indicated for the north wellfield, and in the Recommendation on page 7 of the ROE it is recommended that the requested 80 ac-ft/yr annual right, as well as the requested 65 gpm instantaneous right, be issued, and it states that the total annual right for the north wellfield would then be 528 ac-ft/yr, same as I figure. The permit was in fact issued for 65 gpm and 80 ac-ft/yr, and does state that this is entirely additive to existing rights, but then it states that the total of rights for the north wellfield is 515 ac-ft/yr. I do not see anything that would limit the total of rights to 515 ac-ft/yr. Why isn't this 528 ac-ft/yr?

It would be most helpful if you could clarify this for me.

Thanks.

Karl Johnson, P.E.
Gray & Osborne, Inc., Olympia
2102 Carriage Drive SW, Building I
Olympia, WA 98502
Phone: (360) 292-7481 Ext 1506
Fax: (360) 292-7517
kjohnson@g-o.com

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

January 14, 2007

RD Williams
North Beach Water
P O Box 618
Ocean Park WA 98640

Karen Klocke
Department of Health
Southwest Drinking Water Operations
PO Box 47823
Olympia, WA 98504-7823

Re: North Beach Water System Plan, ID #63000, Pacific County, ODW Project 07-1202

Thank you for the opportunity to review the Water System Plan (WSP) for the North Beach Water System. Consistent with the Memorandum of Understanding between the Department of Health and Ecology, I reviewed the relevant portions of the WSP and offer the following comments.

Water Rights Analysis

The Water Rights analysis in the WSP appears to coincide with Ecology's records. The system holds a total of five water right certificates. The WSP divides the wells between the North and South Wellfields.

The North Wellfield holds four water right certificates:

- G2-00759 (Wells 1,2,7,&8) for 200 gpm and 320 afy, additive
- G2-21399 (Wells 3,6) for 100 gpm and 160 afy, partially additive. Total between the two cannot exceed 448 afy.
- G2-25737 (Well 4) for 130 gpm and 140 afy (non-additive)
- G2-27073 (Well 5) for 105 gpm and 252 afy (non-additive)

The total instantaneous and annual quantities for these wells are 535 gpm and 448 afy.

The South Wellfield holds one water right certificate:

- G2-00174 (Wells 1,2,4) for 500 gpm and 168 afy (additive)

The whole system holds an instantaneous and annual quantity of 1035 gpm and 616 afy.

Application G2-29907 was submitted to Ecology in March 2000 for additional instantaneous and annual quantities. To date, Ecology has not acted on the application.

Future Demand

The Water Demand Projections (Exhibit 2-3) shows the system holds adequate water rights through 2018, but will exceed their water rights by 2026.

Instantaneous Capacities

It appears that the pumping capacities in some wells in the North Wellfield exceed the instantaneous allocations of their individual water rights. Exhibit 3-6 (Page 68) shows Wells 1, 2,7, & 8 have a total capacity of 420.5 gpm. The water right for these wells allows 200 gpm. In addition, Wells 3 & 6 have the capacity to pump 217 gpm. The water right for these wells allows 100 gpm.

Though the system may not be exceeding total instantaneous capacity of all the wells, some individual wells may be exceeding their water rights.

- **Action**: The final WSP should clarify how the system is operating the wells to stay within the authorized rights.

"Not Inconsistent" Determination with Watershed Plan

A "not inconsistent" determination is not required because there is not an approved/adopted watershed plan for WRIA 24.

Thank you for the opportunity to review this WSP. Please contact me at (360) 407-0290 if you have questions regarding my review or need additional information.

Sincerely,

Deb Hunemuller
Water Resources Program

DH:th

cc: Teresa Walker, DOH
Tom Frare, P.E., TJF & Associates

APPENDIX D

WELL CONSTRUCTION REPORTS AND SUSCEPTIBILITY ASSESSMENTS

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES

WELL SCHEDULE No. 12/11W-28G

Date 4-17, 1974

Record by P. GRIMSTAD

Source

1. **Location:** State of WASHINGTON
   County PACIFIC
   Area NAHCOTTA
   Map OCEAN PARK QUAD
   SW ¼ NE¼ sec. 28 T. 12 N., R. 11 W.
   Details 1551 ft. S. OF VAIO RD. — 0.35 MILE W. OF INTERSECTION — PENINSULA HWY & VAIO RD.

"DIAGRAM OF SECTION"

2. **Owner or Tenant** OCEAN PARK (His No.)
   Address (MR. LYLE CLARK, SUP.)
3. **Driller:** Address
4. **Land-surface datum:** ft. above / below
   Topography:
5. **Type:** Dug (Drilled) Driven Bored Jetted **Depth:** Rept. 200+ feet Meas. feet
   Date , 19
6. **Casing:** Diam. 6" to in. ft. Type
   Depth ft. Finish
7. **Chief aquifer(s):** from ft. to ft.
8. **Water level:** Rept. Meas. 3.8 ft. 4/17, 1974, above below TOTCOL
   PUMP VOL. 405' 1971 which is 1± ft. above ~~below~~ datum
9. **Pump:** Type NONE Capacity Size gal. min.
   Driven by horsepower
10. **Yield:** Flow gal. min. Pump gal. min. Meas. Rept. Est.
    Drawdown ft. after hours pumping gal. min.
    Adequacy, permanence
11. **Use:** Dom. Stock. PS. Ind. Irr. Obs.
12. **Quality:** Sample No. , 19 Temp. °F.
    Taste, color, hardness, sanitation, etc.
13. **Other data:** Log Water levels Draft Pump test Analyses

Turn up

Third Copy — Driller's Copy

Permit No. ....

(1) OWNER: Name Lyle C. Art NBWN-SO3 Address

(2) LOCATION OF WELL: County ... ¼ ... ¼ Sec ... T ... N., R ... W.M.

Bearing and distance from section or subdivision corner

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

(4) TYPE OF WORK: Owner's number of well (if more than one) #3

New well ☑ Deepened ☐ Reconditioned ☐

Method: Dug ☐ Cable ☑ Rotary ☐ Bored ☐ Driven ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well ... inches. Drilled ... ft. Depth of completed well ... ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 124" Diam. from 1 ft. to 124 ft.

Threaded ☐ ..." Diam. from ... ft. to ... ft.

Welded ☐ ..." Diam. from ... ft. to ... ft.

Perforations: Yes ☐ No ☑

Type of perforator used ...

SIZE of perforations ... in. by ... in.

... perforations from ... ft. to ... ft.

... perforations from ... ft. to ... ft.

... perforations from ... ft. to ... ft.

Screens: Yes ☑ No ☐

Manufacturer's Name Johnson Div

Type ... Model No. ...

Diam. 5 Slot size 80 from 114 ft. to 124 ft.

Diam. ... Slot size ... from ... ft. to ... ft.

Gravel packed: Yes ☐ No ☑ Size of gravel: ...

Gravel placed from ... ft. to ... ft.

Surface seal: Yes ☐ No ☑ To what depth? ... ft.

Material used in seal ...

Did any strata contain unusable water? Yes ☐ No ☐

Type of water? ... Depth of strata ...

Method of sealing strata off ...

(7) PUMP: Manufacturer's Name ...

Type: ... H.P. ...

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft.

Static level 4 ft. below top of well Date ...

Artesian pressure ... lbs. per square inch Date ...

Artesian water is controlled by ... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? Yes ☐ No ☐ If yes, by whom? ...

Yield: gal./min. with ft. drawdown after hrs.

" " " "

" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ...

Bailer test 50 gal./min. with 20 ft. drawdown after 24 hrs.

Artesian flow ... g.p.m. Date ...

Temperature of water ... Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Brown SAND	1	28
Blue Brown SAND	28	124

Work started ..., 19... Completed ..., 19...

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Smith Drilling Co (Person, firm, or corporation) (Type or print)

Address Box 32 Star R. C[illegible]

[Signed] [illegible signature] (Well Driller)

License No. ... Date ..., 19...

S. F. No. 7356—OS—(Rev. 4-71).

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No. .....
Permit No. G2-2573

(1) OWNER: Name Ocean Park Water Co. Address Ocean Park

(2) LOCATION OF WELL: County Pacific NW ¼ SE ¼ Sec. 28 T. 12 N., R. 11 W.M.

Bearing and distance from section or subdivision corner

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

(4) TYPE OF WORK: Owner's number of well (if more than one) .....
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 120 ft. Depth of completed well 120 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8 " Diam. from 0 ft. to 100 ft.
Threaded ☐ ..... " Diam. from ..... ft. to ..... ft.
Welded ☐ ..... " Diam. from ..... ft. to ..... ft.

Perforations: Yes ☐ No ☒
Type of perforator used .....
SIZE of perforations ..... in. by ..... in.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.

Screens: Yes ☒ No ☐ Manufacturer's Name Johnson
Type Telescope Model No. .....
Diam. 8 Slot size 18 from 100 ft. to 120 ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

(7) PUMP: Manufacturer's Name .....
Type: ..... H.P. .....

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 14 ft. below top of well Date .....
Artesian pressure ..... lbs. per square inch Date .....
Artesian water is controlled by ..... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom? .....
Yield: ..... gal./min. with ..... ft. drawdown after ..... hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test .....
Bailer test 50 gal./min. with 6 ft. drawdown after 1 hrs.
Artesian flow ..... g.p.m. Date .....
Temperature of water ..... Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:
Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Brown Sand	0	62
Grey Sand	62	120

RECEIVED
JUN 2 - 1981
DEPARTMENT OF ECOLOGY
SOUTHWEST REGIONAL OFFICE

Work started April 21, 19 81 Completed April 25, 19 81

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report true to the best of my knowledge and belief.

NAME Smith Drilling Inc. (Person, firm, or corporation) (Type or print)
Address St. Rt. Bx. 32 Casmopolis
[Signed] Randy Smith (Well Driller)
License No. 0479 Date April 25, 19 81

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No. ....

Permit No. G2-27073

(1) OWNER: Name Ocean Park Water Address Ocean Park Wash

(2) LOCATION OF WELL: County Pacific County — NW ¼ SE ¼ Sec 28 T 12 N., R 11 W.

Bearing and distance from section or subdivision corner

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

(4) TYPE OF WORK: Owner's number of well (if more than one) #5
New well ☒ Deepened ☐ Reconditioned ☐
Method: Dug ☐ Bored ☐ Cable ☒ Driven ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 125 ft. Depth of completed well 124 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 8" Diam. from +2 ft. to 104 ft.
Threaded ☐ ......" Diam. from ...... ft. to ...... ft.
Welded ☐ ......" Diam. from ...... ft. to ...... ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations ...... in. by ...... in.
...... perforations from ...... ft. to ...... ft.
...... perforations from ...... ft. to ...... ft.
...... perforations from ...... ft. to ...... ft.

Screens: Yes ☐ No ☒
Manufacturer's Name
Type ...... Model No.
Diam. ...... Slot size ...... from ...... ft. to ...... ft.
Diam. ...... Slot size ...... from ...... ft. to ...... ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ...... ft. to ...... ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? ...... Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: ...... H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level...... ft.
Static level 12 ft. below top of well Date July 86
Artesian pressure ...... lbs. per square inch Date
Artesian water is controlled by ...... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?
Yield: ...... gal./min. with ...... ft. drawdown after ...... hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test 56 gal./min. with 70 ft. drawdown after 1 hrs.
Artesian flow ...... g.p.m. Date
Temperature of water ...... Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Top Soil Dark Brown	0	3
Sand Brown	3	47
[illegible] Sand	47	90
Sand-Blue & Clay	90	104

Received with Permit Fee 4/13/88 [illegible]

Work started July, 1986. Completed July, 198[illegible]

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Pete Smith Well Drilling (Person, firm, or corporation) (Type or print)

Address Rt 1 Box 266 [illegible] Wash

[Signed] John A Hall (Well Driller)

License No. 0195 Date July, 198[illegible]

(USE ADDITIONAL SHEETS IF NECESSARY)

S. F. No. 7356—OS—(Rev. 4-71).

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W16437

UNIQUE WELL I.D. # 228

Water Right Permit No. _____

(1) **OWNER:** Name Ocean Park Water Address PO Box 618 Ocean Park WA 98640

(2) **LOCATION OF WELL:** County Pacific NE 1/4 NE 1/4 Sec 6 T. 12 N., R. 11 W W.M.

(2a) **STREET ADDRESS OF WELL** (or nearest address) _____

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

(4) **TYPE OF WORK:** Owner's number of well (if more than one) #1
Abandoned ☐ New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) **DIMENSIONS:** Diameter of well 8" inches.
Drilled 130 feet. Depth of completed well 130 ft.

(6) **CONSTRUCTION DETAILS:**
Casing installed: 8" Diam. from +2 ft. to 107 ft.
Welded ☐ " Diam. from _____ ft. to _____ ft.
Liner installed ☐
Threaded ☐ " Diam. from _____ ft. to _____ ft.

Perforations: Yes ☐ No ☐
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type _____ Model No. _____
Diam. 2" Slot size 10 from 107 ft. to 117 ft.
Diam. 1" Slot size 8 from 127 ft. to 117 ft.

Gravel packed: Yes ☐ No ☐ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 20' ft.
Material used in seal Bentonite Chips
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) **PUMP:** Manufacturer's Name _____
Type: _____ H.P. _____

(8) **WATER LEVELS:** Land-surface elevation above mean sea level _____ ft.
Static level 8' ft. below top of well Date 3-4-96
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) **WELL TESTS:** Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test 45 gal./min. with 2' ft. drawdown after 1 hrs.
Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes ☐ No ☐

(10) **WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION**

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Brown Sand	0	56
Grey Sand & wood	56	130

Work Started 2-28 19 96 Completed 3-4 19 96

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Holt Drilling Inc (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 10621 Todd Rd E Puyallup WA 98373

(Signed) _____ (WELL DRILLER) License No. 597

Contractor's Registration No. HOLTDI*13606 Date 5-2 19 96

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

ECY 050-1-20 (9/93) * * *

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W18362

UNIQUE WELL I.D. # 229

Water Right Permit No. _____

(1) **OWNER:** Name Ocean Park Water Address PO Box 618 Ocean Park WA 98640

(2) **LOCATION OF WELL:** County Pacific - NE 1/4 NE 1/4 Sec 6 T. 12 N., R. 11 W.M.

(2a) **STREET ADDRESS OF WELL** (or nearest address) off 128th

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

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

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

(5) **DIMENSIONS:** Diameter of well 8 inches.
Drilled 130 feet. Depth of completed well 130 ft.

(6) **CONSTRUCTION DETAILS:**

Casing Installed: 8" Diam. from +4 ft. to 106 ft.
Welded ☐ Liner installed ☐ Threaded ☐ _____" Diam. from _____ ft. to _____ ft.
_____" Diam. from _____ ft. to _____ ft.

Perforations: Yes ☐ No ☐
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type _____ Model No. _____
Diam. 7" Slot size 8 from 106 ft. to 116 ft.
Diam. 7" Slot size 10 from 126 ft. to 116 ft.

Gravel packed: Yes ☐ No ☐ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal Bentonite Chip
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) **PUMP:** Manufacturer's Name _____
Type: _____ H.P. _____

(8) **WATER LEVELS:** Land-surface elevation above mean sea level _____ ft.
Static level 5' ft. below top of well Date 3-6-96
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) **WELL TESTS:** Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test 40 gal./min. with 8' ft. drawdown after 1 hrs.
Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes ☐ No ☐

(10) **WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION**

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Brown Sand	0	80
Gray Fine Sand	80	130

Work Started 3-5 19 96 Completed 3-6 19 96

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Holt Drilling Inc. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 0621 Todd Rd E Puyallup WA 98372

(Signed) Wade Iverson (WELL DRILLER) License No. 597

Contractor's Registration No. HOLTDI*13606 Date 5-2 19 96

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

ECY 050-1-20 (9/93) * * 1

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W16361
UNIQUE WELL I.D. # 270
Water Right Permit No. _____

(1) **OWNER:** Name Pacific Water Co. Address PO Box 982

(2) **LOCATION OF WELL:** County Pacific NE 1/4 NW 1/4 Sec 6 T. 12 N., R 11 W W.M.

(2a) **STREET ADDRESS OF WELL** (or nearest address) off 150 Hwy

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

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

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

(5) **DIMENSIONS:** Diameter of well 8 inches.
Drilled 121 feet. Depth of completed well 121 ft.

(6) **CONSTRUCTION DETAILS:**

Casing Installed: 8 " Diam. from +2 ft. to 101 ft.
Welded ☒ _____ " Diam. from _____ ft. to _____ ft.
Liner Installed ☐
Threaded ☐ _____ " Diam. from _____ ft. to _____ ft.

Perforations: Yes ☐ No ☐
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type _____ Model No. _____
Diam. 7" Slot size 8 from 121 ft. to 101 ft.
Diam. 7" Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☐ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal Bentonite Chip
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) **PUMP:** Manufacturer's Name _____
Type: _____ H.P. _____

(8) **WATER LEVELS:** Land-surface elevation above mean sea level _____ ft.
Static level 8' ft. below top of well Date 3-11-96
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) **WELL TESTS:** Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test 55 gal./min. with 4 ft. drawdown after 1 hrs.
Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes ☐ No ☐

(10) **WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION**

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Brown Sand	0	55
Gray Sand	55	121

Work Started 7-5 19 95 Completed 3-11 19 96

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Holt Drilling Inc (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 10621 Todd Rd E Puyallup WA 98372

(Signed) Wade Jansen (WELL DRILLER) License No. 597

Contractor's Registration No. Holt DI*13606 Date 5-2 19 96

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

ECY 050-1-20 (9/93)

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.2

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : Phillip C. Leach

Water system name : Pacific Water Company Inc

County: Pacific

Water system number: 20051V Source number: SO-4-#4

Well depth: 121-ft (ft.) (*From WFI form*)

Source name: SO-1 (Old Farm)Well Field

WA well identification tag number: A B Y-2 3 0

_____ well not tagged

Number of connections: 300 Population served: _____

Township: 12N Range: 11W

Section: 33 1/4 1/4 Section: SW 1/4 of NE 1/4

Latitude/longitude (if available): N 46 29 194 / W 124 02 239

How was lat./long. determined?

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

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 03/ 05 /96 month/day/year

last reconstruction: __ / __ /__ month/day/year

_____ information unavailable

2) Well driller: Holt Drilling Inc.

10621 Todd Rd E.

Puyallup, WA 98372

___ well driller unknown

3) Type of well:

___Drilled: ___ rotary ___ bored XX cable (percussion) ___ **Dug**

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

___ driven ___ jetted ___ other: _____

Additional comments: _____

_____

4) Well report available? XXX YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 120 (gallons/min)

Source of information: Pump test data 4-10-96

If not documented, how was pumping rate determined? _____

_____

___ Pumping rate unknown

6) Is this source treated? XXX YES ___ NO

If so, what type of treatment:

___ disinfection XXX filtration ___ carbon filter XXX air stripper XX other

Purpose of treatment (describe materials to be removed or controlled by treatment):

Remove, color, H2S, irom & mang

This new well is not on line yet, the water will be blended with better water I hope.

7) If source is chlorinated, is a chlorine residual maintained: XX YES ___ NO

Residual level: 0.5 PPM (*At the point closest to the source.*)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ (less than) 20 ft ___ 20–50 ft ___ 50–100 ft xx 100–200 ft ___ (greater than) 200 ft

___ information unavailable

2) Depth to ground water (static water level):

xxx (less than) 20 ft ___ 20–50 ft ___ 50–100 ft ___ (greater than) 100 ft

___ flowing well/spring (artesian)

How was water level determined?

xx well log ___ other: _____

___ depth to ground water unknown

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

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

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

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

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

___ other: _____

xxx information unavailable

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

___ evidence of a confining layer in well log

xxx no evidence of a confining layer in well log

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

___ information unavailable

7) Sanitary setback:

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

8) Wellhead construction:

XX wellhead enclosed in a wellhouse

___ controlled access (describe): _____

Not Constructed yet.

___ other uses for wellhouse (describe): _____

___ no wellhead control

9) Surface seal:

___ 18 ft

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

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

XXX (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ (less than) 10 in/yr ___ 10–25 in/yr XXX (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 34,000,000 (gallons)

How was this determined?

XXXmeter

___ estimated: ___ pumping rate (65 gpm)

___ pump capacity (80 gpm)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 440 (ft)

1 year ground water travel time : 620 (ft)

5 year ground water travel time: 1390 (ft)

10 year ground water travel time: 1970 (ft)

Information available on length of screened/open interval?

XXXYES ___ NO

Length of screened/open interval: 20 (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? XX YES ___ NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES XXXNO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application	____	____	____	____
stormwater injection wells	____	____	____	____
other injection wells	____	____	____	____
abandoned ground water well	____	____	____	____
landfills, dumps, disposal areas	____	____	____	____
known hazardous materials clean-up site	____	____	____	____
water system(s) with known quality problems	____	____	____	____
population density (greater than) 1 house/acre	____	____	____	____
residences commonly have septic tanks	____	____	____	____
Wastewater treatment lagoons	____	____	____	____
sites used for land application of waste	____	____	____	____

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

_____

_____

_____

_____

_____

_____

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

	YES
A. Nitrate: (Nitrate MCL = 10 mg/l)	
Results greater than MCL	____
(less than) 2 mg/liter nitrate	XXX
2–5 mg/liter nitrate	____
(greater than) 5 mg/liter nitrate	____
Nitrate sampling records unavailable	____
B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES
Results greater than MCL or SAL	____
VOCs detected at least once	____
VOC test performed but never detected	____
VOC sampling records unavailable	XXX
C. EDB/DBCP:	YES
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)	
EDB/DBCP detected below MCL at least once	____
EDB/DBCP detected above MCL at least once	____
EDB/DBCP never detected	____
EDB/DBCP tests required but not yet completed	____
EDB/DBCP tests not required	XX
D. Other SOCs (pesticides and other synthetic organic chemicals):	YES
Other SOCs detected	____
Other SOC tests performed but none detected *	____
Other SOC tests not performed	____

*If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination: YES

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records). ____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source. ____

Source sampling records for bacteria unavailable ____

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1)Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

XXX YES ___ NO

Describe with references to map produced in Part IV:

SO-4 10-year time travel touches the East tip of the Willapabay and crosses the drainage outfall from Rushlight Lake to the Willapabay, and Back-Wash Pond and swamp to the west.

2) Aquifer Material:

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

___ YES XXX NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

___ YES XXX NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES XXX NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
6 month travel time	___	XX	___
6 month–1 year travel time	___	XX	___
1–5 year travel time	___	XX	___
5–10 year travel time	___	XX	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
1 year travel time	___	XX	___
1–5 year travel time	___	XX	___
5–10 year travel time	___	XX	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES ___ NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES ___ NO

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

EDGE Analytical, Inc.
1151 Knudson Rd.
Burlington, WA 98233
(360) 757-1400 - FAX (360) 757-1402

INORGANIC COMPOUNDS (IOC) REPORT

Client Name: Pacific Water Company
Box 982
Long Beach, WA 98631

Reference Number: 96-0822
Project: New Well

System Name: PACIFIC WATER COMPANY INC.
System ID Number: 20051V
DOH Source Number: 04
Multiple Sources:
Sample Type:
Sample Purpose:
Sample Location: new pump S04
County: Pacific

Sample Number: water
Lab Number: 0461278
Supervisor: [illegible]
Review: 4/30/96
Collect Date: 4/ 9/96
Report Date: 4/30/96

EPA CODE	DOH #	COMPOUNDS	AMOUNT mg/L*	MCL mg/L**	SRL mg/L***	Lab MDL****	COMMENT
		EPA Primary					
1005	4	ARSENIC	0.015	0.05	0.01	0.005	
1010	5	BARIUM	ND	2	0.1	0.010	
1015	6	CADMIUM	ND	0.005	0.01	0.001	
1020	7	CHROMIUM	ND	0.1	0.04	0.001	
1030	9	LEAD	ND	0.015	0.002	0.001	
1035	11	MERCURY	ND	0.002	0.0005	0.0005	
1045	12	SELENIUM	ND	0.05	0.005	0.005	
1050	13	SILVER	ND	0.05	0.01	0.001	
1052	14	SODIUM	19.2		1	1.0	
100	17	TURBIDITY	0.28	1	0.1	0.1	
1025	19	FLUORIDE	ND	4	0.5	0.1	
1040	20	NITRATE-N	ND	10	0.5	0.1	
1022	23	COPPER	ND	1.3	0.02	0.01	
1095	24	ZINC	ND	5	0.02	0.005	
1075	110	BERYLLIUM	ND	0.004	0.002	0.001	
1036	111	NICKEL	ND	0.1	0.1	0.001	
74	112	ANTIMONY	ND	0.006	0.05	0.001	
1085	113	THALLIUM	ND	0.002	0.002	0.001	
1041	114	NITRITE-N	ND	10	0.5	0.1	
1024	116	CYANIDE	ND	0.2	0.1	0.01	
		EPA Secondary					
1028	8	IRON	4.51	0.3	0.05	0.050	
1032	10	MANGANESE	0.58	0.05	0.01	0.001	
1915	15	HARDNESS	74.8		10	10	
1064	16	ELECTRICAL CONDUCTIVITY	268	700	10	10	
1905	18	COLOR	>50	15	5	5	
1017	21	CHLORIDE	32.47	250	20	1	
1055	22	SULFATE	ND	250	10	2	
1057	26	TOTAL DISSOLVED SOLIDS	210	500	150	10	

*. An amount of "ND" indicates that the compound was not detected above the Specified Reporting Limit (SRL).
**. Maximum Contaminant Level, maximum permissible level of a contaminant in water established by EPA, NPDWR. A Blank value indicates that an MCL has not been established for that analyte.
***. SRL = Specified Reporting Limit (WSDOH required detection limit). A value of one-half the SRL may result in increased monitoring.
****. Method Detection Limit is the lab's minimum concentration a compound can be measured and reported with 99% confidence that the compound concentration is greater than zero.

File Original and First Copy with Department of Ecology
Second Copy → Owner's Copy
Third Copy → Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. W16361
UNIQUE WELL I.D. # 230
Water Right Permit No. _____

) OWNER: Name Pacific Water Co. Address PO Box 982

(2) LOCATION OF WELL: County _____ NE 1/4 NW 1/4 Sec 6 T. 12 N., R 01 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 0f6 150th

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

(4) TYPE OF WORK: Owner's number of well (if more than one) #2
Abandoned ☐ New well ☒ Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☒ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 121 feet. Depth of completed well 121 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed: 8" Diam. from +2 ft. to 101 ft.
Welded ☒ Liner Installed ☐ Threaded ☐ _____" Diam. from _____ ft. to _____ ft.
_____" Diam. from _____ ft. to _____ ft.

Perforations: Yes ☐ No ☐
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type _____ Model No. _____
Diam. 7" Slot size 8 from 121 ft. to 101 ft.
Diam. 7" Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☐ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal Bentonite Chip
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____
Type: _____ H.P. _____

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 8' ft. below top of well Date 7-11-96
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test 55 gal./min. with 4 ft. drawdown after 1 hrs.
Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Brown Sand	0	55
Gray Sand	55	121

Work Started 7-5 19 96 Completed _____ 19 ____

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

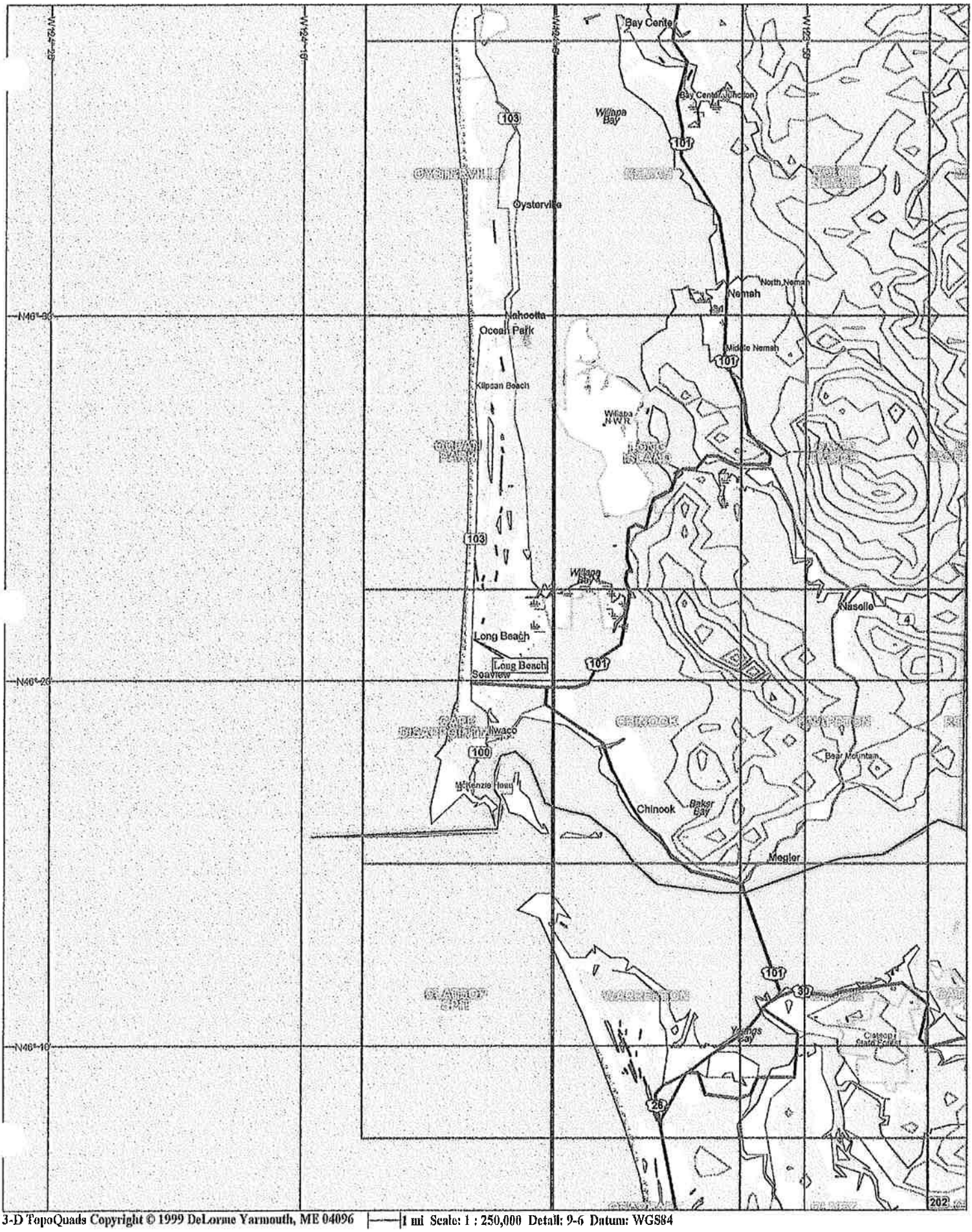
NAME Holt Drilling Inc (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 10621 Todd Rd E Puyallup WA 98373

(Signed) Wade Larson (WELL DRILLER) License No. 597

Contractor's Registration No. HOLTDI*176QG Date 5-2 1996

(USE ADDITIONAL SHEETS IF NECESSARY)



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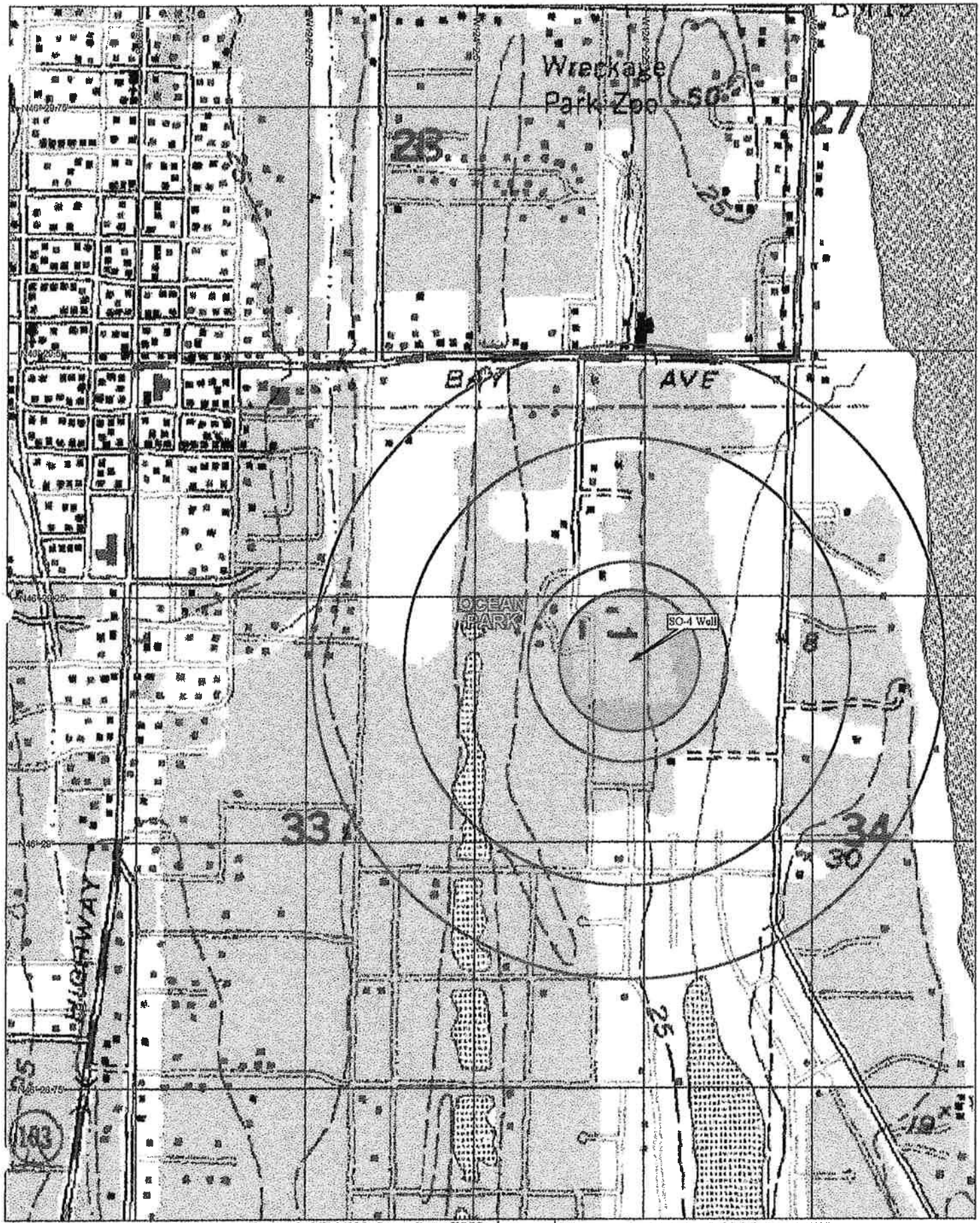
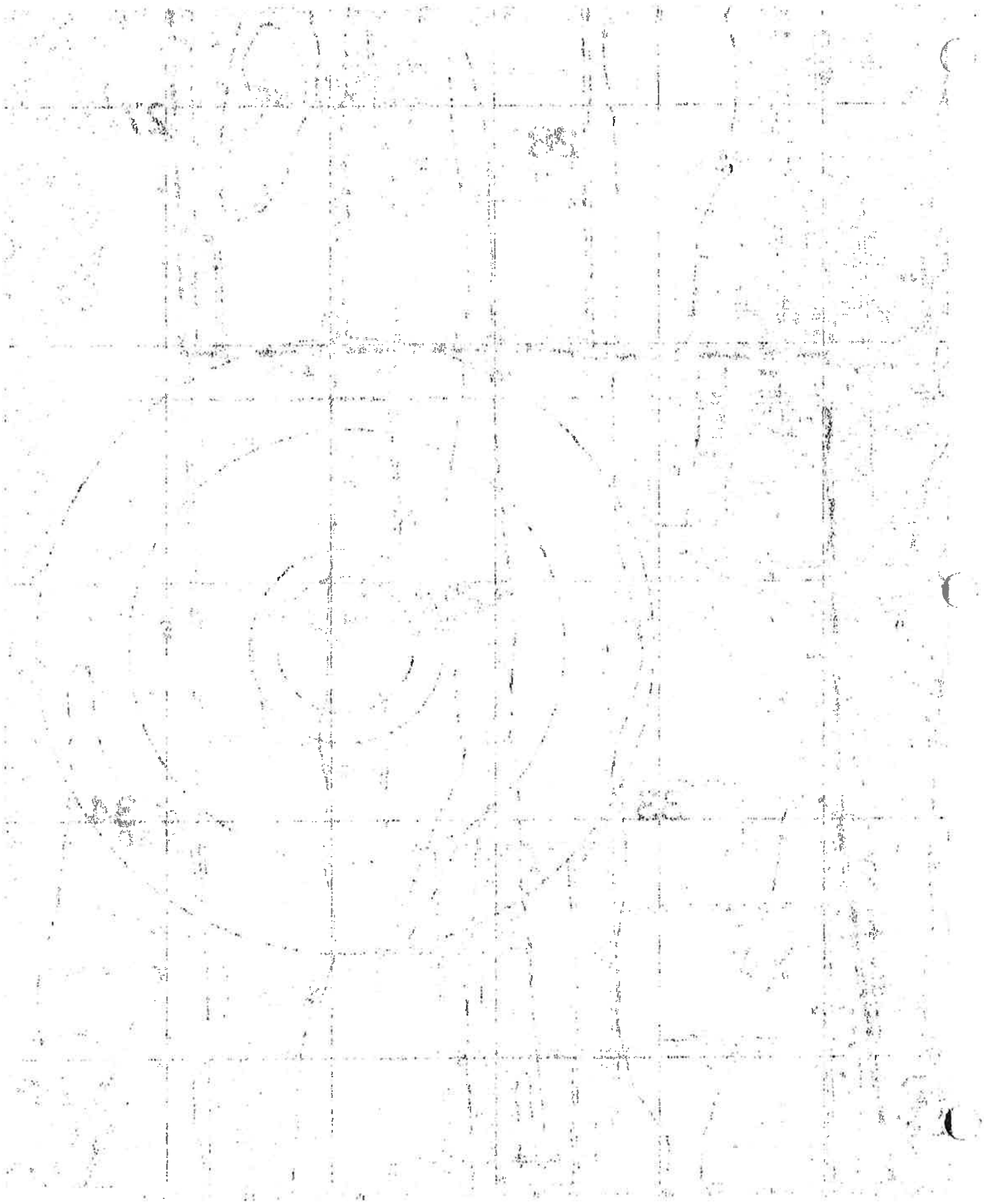
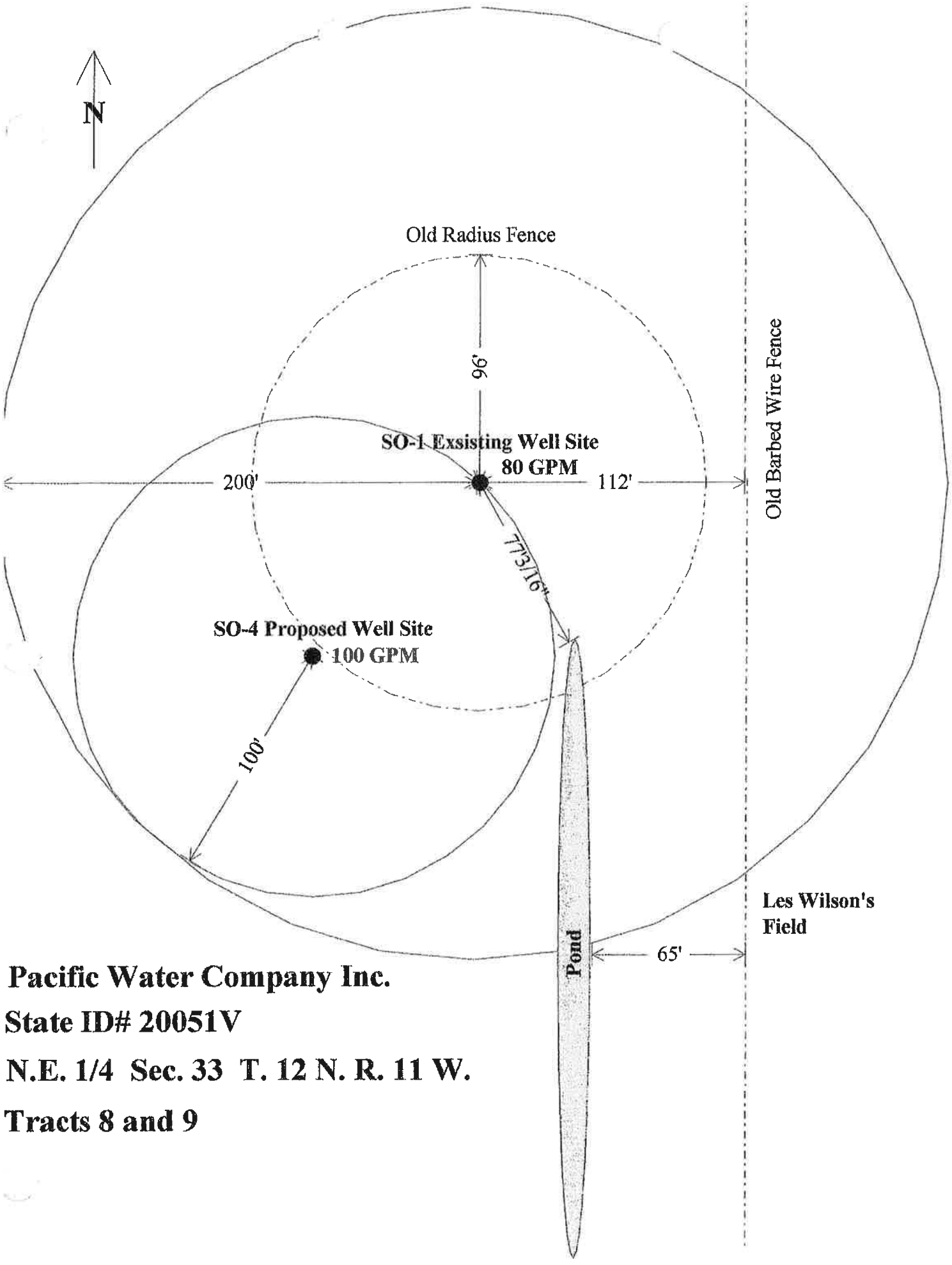


 350 ft Scale: 1 : 9,600 Detail: 14-4 Datum: WGS84





Pacific Water Company Inc.

State ID# 20051V

N.E. 1/4 Sec. 33 T. 12 N. R. 11 W.

Tracts 8 and 9

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.1b

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : Pacific Water Company Inc./Phillip C. Leach Pres. Water Treatment Plant Operator 3

Water system name : Pacific Water Company, Inc.

County: Pacific

Water system number: 2005IV Source number: SO-1

Well depth: 56 (ft.) (*From WFI form*)

Source name: Well number 1 at Old Farm

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

___x___ well not tagged

Number of connections: _____ Population served: _____

Township: 12N Range: 11W

Section: 33 1/4 1/4 Section: NW/NE

Latitude/longitude (if available): 462920 / 240211

How was lat./long. determined?

_____ global positioning device ___x___ survey _____ topographic map
___other: U.S. Geological Survey

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 8 / 1 / 53 month/day/year

last reconstruction: 3 / 27 / 95 month/day/year

_____ information unavailable

2) Well driller: A.M. Jannsen Drilling Company

21075 S.W. T.V. Hwy

Aloha, Oregon 97006 (503) 649-5015

___ well driller unknown

3) Type of well:

___Drilled: _x_ rotary ___ bored ___ cable (percussion) ___ Dug

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

___ driven ___ jetted ___ other: _____

Additional comments: _____

4) Well report available? _x_ YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 83 (gallons/min)

Source of information: Gardner Engineers, Inc. Report (copy)

If not documented, how was pumping rate determined? _____

___ Pumping rate unknown

6) Is this source treated?

If so, what type of treatment:

_x_ disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is chlorinated, is a chlorine residual maintained: _x_ YES ___ NO

Residual level: 0.4mg/L (*At the point closest to the source.*)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft _x_ 20–50 ft ___ 50–100 ft ___ 100–200 ft ___ >200 ft

___ information unavailable (*'<' means less than; '>' means greater than*)

2) Depth to ground water (static water level):

_x_ < 20 ft ___ 20–50 ft ___ 50–100 ft ___ > 100 ft

___ flowing well/spring (artesian)

How was water level determined?

_x_ well log ___ other: _____

___ depth to ground water unknown

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

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

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

5) Wellhead elevation (height above mean sea level): 20 (ft)

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

___ other: U.S. Geological Survey

___ information unavailable

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

___ evidence of a confining layer in well log

_x_ no evidence of a confining layer in well log

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

___ information unavailable

7) Sanitary setback:

___ < 100 ft* ___ 100–120 ft x 120–200 ft ___ > 200 ft

* if less than 100 ft describe the site conditions:

8) Wellhead construction:

x x wellhead enclosed in a wellhouse

x controlled access (describe): Lock on Well House Private Property

___ other uses for wellhouse (describe): Aux. Generator Power in adjacent Building small maintenance shed

___ no wellhead control

9) Surface seal:

x 18 ft

___ < 18 ft (no Department of Ecology approval) ('< ' *means less than*)

___ < 18 ft (Approved by Ecology, include documentation) ('< ' *means less than*)

___ > 18 ft ('> ' *means greater than*)

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10–25 in/yr x > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 360,000 (gallons)

How was this determined?

_x meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 140 (ft)

1 year ground water travel time : 200 (ft)

5 year ground water travel time: 440 (ft)

10 year ground water travel time: 620 (ft)

Information available on length of screened/open interval?

_x YES ___ NO

Length of screened/open interval: 15 (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? ___ YES _x NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES _x NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application	____	____	____	____
stormwater injection wells	____	____	____	____
other injection wells	____	____	____	____
abandoned ground water well	____	____	____	____
landfills, dumps, disposal areas	____	____	____	____
known hazardous materials clean-up site	____	____	____	____
water system(s) with known quality problems	____	____	____	____
population density > 1 house/acre	____	____	____	____
residences commonly have septic tanks	____	____	____	____
Wastewater treatment lagoons	____	____	____	____
sites used for land application of waste	____	____	____	____

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

_____

_____

_____

_____

_____

_____

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES	NO
Results greater than MCL		X
< 2 mg/liter nitrate	X	X
2–5 mg/liter nitrate		X
> 5 mg/liter nitrate		X
___ Nitrate sampling records unavailable		

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES	NO
Results greater than MCL or SAL		X
VOCs detected at least once		X
VOCs never detected	X	X
___ VOC sampling records unavailable		

C. EDB/DBCP:	YES	NO
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)		
EDB/DBCP detected below MCL at least once		X
EDB/DBCP detected above MCL at least once		X
EDB/DBCP never detected		X
___ EDB/DBCP tests required but not yet completed		
X EDB/DBCP tests not required		

D. Other SOCs (Pesticides):	YES	NO	
Other SOCs detected		X	may not have been tested.
(pesticides and other synthetic organic chemicals)			

___ Other SOC tests performed but none detected
(list test methods in comments

___ Other SOC tests not performed

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination:

	YES	NO
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	____	x
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	____	x

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

___ YES X NO

Describe with references to map produced in Part IV:

_____

_____

2) Aquifer Material:

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

___ YES x NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

___ YES x NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES x NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	x	___
6 month–1 year travel time	___	x	___
1–5 year travel time	___	x	___
5–10 year travel time	___	x	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	x	___
1–5 year travel time	___	x	___
5–10 year travel time	___	x	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES X NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES X NO

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

WATER WELL REPORT
STATE OF WASHINGTON

File Original and First Copy with the Division of Water Resources
Second Copy – Owner's Copy
Third Copy – Driller's Copy

#1

Application No. 7132
Permit No. ....

(1) OWNER:
Name Coos Bay Development, Well #1
Address Ocean Park, Washington

(2) LOCATION OF WELL:
County Pacific Owner's number, if any
SE ¼ NE ¼ Section 33 T. 12 R. 11 W.M.
Bearing and distance from section or subdivision corner
being located on Tract 9, of Rushton on the Bay, as per plat recorded in Vol. 0 of plats, page 182, records of Pacific County Wash. ~~1320 E 730 S of N 4 cor 33~~

(3) TYPE OF WORK (check):
New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):
Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☒ Test Well ☐ Other ☐

(5) TYPE OF WELL:
Rotary ☒ Driven ☐
Cable ☐ Jetted ☐
Dug ☐ Bored ☐

(6) CASING INSTALLED: Threaded ☐ Welded ☒
8 " Diam. from 0 ft. to 41 ft. Gage .277
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

(7) PERFORATIONS: Perforated? ☐ Yes ☒ No
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(8) SCREENS: Well screen installed ☒ Yes ☐ No
Manufacturer's Name Johnson
Type Stainless Steel Model No. 304
Diam. 8" Slot size #20 Set from 41 ft. to 56 ft.
Diam. Slot size Set from ft. to ft.

(9) CONSTRUCTION:
Was well gravel packed? ☒ Yes ☐ No Size of gravel: 3/32-
Gravel placed from 20 ft. to 56 ft.
Was a surface seal provided? ☒ Yes ☐ No To what depth? 20 ft.
Material used in seal – Clay
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? Depth of strata
Method of sealing strata off

(10) WATER LEVELS:
Static level 15 ft. below land surface Date 8/53
Artesian pressure lbs. per square inch Date
Water is controlled by (Cap, valve, etc.)

(11) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☒ Yes ☐ No If yes, by whom? Driller
Yield: 110 gal./min. with 30 ft. drawdown after 4 hrs.
" " " "
" " " "
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level

Date of test 8/53
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? ☐ Yes ☒ No

(12) WELL LOG: Diameter of well 8 inches.
Depth drilled 56 ft. Depth of completed well 56 ft.
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Fine Sand	0	56

Pacific Water Co
Sat

Work started 19 Completed 8/53 19

(13) PUMP:
Manufacturer's Name
Type H.P.

Well Driller's Statement:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME A. M. Jannsen Drilling Company
(Person, firm, or corporation) (Type or print)
Address 21075 S. W. T. V. Hwy., Aloha, Oregon
[Signed] Edward M Jannsen
(Well Driller)
License No. 79 Date 7/30 19 61

USE ADDITIONAL SHEETS IF NECESSARY

S. F. No. 3354—(Rev. 9-62)—8-62 331 75108

S. F. No. 1361—(Rev. 8-70)

CERTIFICATE RECORD NO. EXHIBIT III c 3-00174 C PAGE NO.

STATE OF WASHINGTON, COUNTY OF Pacific

CERTIFICATE OF GROUND WATER RIGHT

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

THIS IS TO CERTIFY That OCEAN BAY WATER COMPANY

of Seattle, Washington, has made proof to the satisfaction of the Department of Ecology of a right to the use of the public ground waters of the State of Washington from two (2) wells

located within NW¼NE¼ and Tract C of the plat of Rushton-on-the-Bay,

Sec. 33, Twp. 12 N., R. 11 W.W.M.,

for the purpose(s) of community domestic supply

under and specifically subject to provisions contained in Ground Water Permit No. 10351 issued by the Department of Ecology and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the Department of Ecology and entered of record in Volume - at page / ; that the priority of the right hereby confirmed dates from December 15, 1969 ; that the quantity of ground water under the right hereby confirmed for the aforesaid purposes, is limited to an amount actually beneficially used for said purposes, and shall not exceed 500 gallons per minute; 168 acre-feet per year, during entire year for community domestic supply.

C 2-00174 C

A description of the lands to which such ground water right is appurtenant is as follows:

The plats of Rushton-on-the-Bay; Rushlight Farm Estates; and South Addition to Ocean Park; ALL within Sec. 33, T. 12 N., R. 11 W.W.M.

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

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

Given under my hand and seal of this office at Olympia, Washington, this 17th day of August, 19 72.

JOHN A. BIGGS, Director
Department of Ecology

by

Engineering Data

OK

III 14

DATE PRINTED: 01/19/95

Health
Environmental Health

WATER FACILITIES INVENTORY (WFI)

Read Instructions on back before completing

DATE UPDATED: 02/17/94

SYSTEM ID NO.	2. COUNTY	GROUP	TYPE	WRIA
20051V	PACIFIC	A	COMM	24

3. SYSTEM NAME: PACIFIC WATER COMPANY INC

STREET ADDRESS:

P.O. BOX (IF APPLICABLE): P.O. BOX 982

CITY: LONG BEACH | STATE: WA | ZIP CODE: 98631

4. OWNER'S NAME (LAST, FIRST): LEACH, PHILLIP C. | OWNER NO.: 10183

STREET ADDRESS: PO BOX 982

P.O. BOX (IF APPLICABLE):

CITY: LONG BEACH | STATE: WA | ZIP CODE: 98631

5. SYSTEM CONTACT PERSON: PHILLIP C. LEACH - MANAGER | TITLE:

DAY TELEPHONE: 206-777-8786 | EVENING TELEPHONE: 206-777-8238

6. OWNERSHIP (CHECK ONE ONLY)

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

7. PREDOMINANT CHARACTERISTIC (CHECK ONE ONLY)

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

WFI COMPLETED BY: Phillip C Leach | TITLE: Pres.

DAY TELEPHONE: 360-777-8786 | DATE: 3-19-95

8. SUBMITTED FOR:

- [ ] NEW SYSTEM
- [ ] SYSTEM NAME CHANGE*
- [ ] NO CHANGE
- [X] UPDATE
- [ ] REACTIVATE
- [ ] DELETE

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

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

9. NUMBER ACTIVE RESIDENTIAL **CONNECTIONS**: ~~80~~ 80

10. NUMBER ACTIVE RESIDENTIAL **POPULATION**: ~~200~~ 200

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

11. NUMBER NON-RESIDENTIAL CONNECTIONS: 140

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

JAN	10	APR	10	JUL	150	OCT	10
FEB	10	MAY	25	AUG	150	NOV	10
MAR	10	JUN	150	SEP	10	DEC	10

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

- [ ] YES
- [X] NO

14. TOTAL NUMBER CONNECTIONS METERED: ~~80~~ 182

15. DISTRIBUTION RESERVOIR(S) TOTAL CAPACITY: 2,000 GALLONS

16. DOH SOURCE NUMBER	17. SOURCE NAME (LIST UTILITY'S NAME FOR SOURCE. IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S ID # AND NAME USING FOLLOWING FORMAT: XXXXXX / NAME EXAMPLE: 77050Y / SEATTLE)	18. SOURCE CATEGORY: WELL	WELL FIELD	SURFACE	SPRING	RANNEY / INF. GAL	INTERTIE	PURCHASE-TREATED	PURCHASE-UNTREATED	19. USE: PERMANENT	SEASONAL	EMERGENCY	20. SOURCE METERED	21. TREATMENT: NONE	CHLORINATION	FILTRATION	FLUORIDATION	OTHER	22. WELL DEPTH (FEET)	23. SOURCE CAPACITY (GPM)	24. SOURCE LOCATION: 1/4, 1/4 SEC.	SEC. NO.	TWP	RNG.	SWTR EVALUATION / VOC EVALUATION
001	WELL #1	X								X					X				56	140	SE/NE	33	12N	11W	
002	WELL #2	X								X					X				100	250	NW/NE	33	12N	11W	
003	WELL 3	X																X	100	80	SW/NE	33	00N			

MINIMUM REQUIRED BACTERIOLOGICAL SAMPLING SCHEDULE

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

APPROVED SERVICES (PER PLANS): 279 | DATE OF LAST SANITARY SURVEY: 00 0000 | BY DOH: | LHD:

SYSTEM IN CRITICAL WATER SUPPLY SERVICE AREA? [X] YES [ ] NO | GW MGMT AREA? [ ] YES [ ] NO | FOR LHO USE ONLY

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

WATER SYSTEM

DOH 331-011 (Rev. 5/92)

ase Print Plainly and Heavily

State of Washington
Department of Health
PUBLIC HEALTH LABORATORIES
1610 NE 150th Street, Seattle, WA 98155-9701 Tel. (206) 361-2898

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

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

TORY NUMBER: 511 5215

ATE RECEIVED: 3-15-95

DATE COLLECTED: 3-13-95

SYSTEM NAME: Pacific Water Comp. Inc.

SYSTEM ID #: 20051V

4. CIRCLE GROUP: (A) B

COUNTY: Pacific

SOURCE TYPE:
- ☐ SURFACE
- ☒ WELL
- ☐ SPRING
- ☐ PURCHASE

SAMPLE TAKEN:
- ☐ BEFORE TREATMENT
- ☒ AFTER TREATMENT

SOURCE NO.: SO-1

9. SOURCE NAME: Old Farm

0. COLLECTED BY: Phil Leach

IONE: 360, 777-8786

1. IF TAKEN AFTER TREATMENT, CHECK TREATMENT:
- ☐ FLUORIDATION
- ☒ CHLORINATION
- ☐ FILTRATION
- ☐ WATER SOFTENER, TYPE:
- ☐ OTHER:

2. IF TAKEN FROM DISTRIBUTION, INDICATE ADDRESS:

SO-1 Pump House

3. PARTY TO PAY FOR TESTING:

SIGNATURE: Phillip C Leach

NAME: Phillip C Leach

ADDRESS: Box 982
Long Beach WA.
98631

TELEPHONE: 360, 777-8238

14. REMARKS: (water quality problems, address for extra copies, etc.)

IRB problem, Well Tech. Rehab. Corp. coming on thru. 3-16-95 to Rehab. Well. Will send another sample after Rehab. is done.
Phil Leach. Pres.

LABORATORY REPORT
(DO NOT WRITE INSIDE THIS BOX)

TESTS		MCL[1]	LESS THAN <	RESULTS	UNITS	COMPLIANCE YES	COMPLIANCE NO	CHEMIST INITIALS
Antimony P	Sb	0.006	<	0.002	mg/l	✓		CRW
Arsenic P	As	0.05	<	0.005	mg/l	✓		JDW
Barium P	Ba	2.0	<	0.10	mg/l	✓		PO/JDW
Beryllium P	Be	0.004	<	0.003	mg/l	✓		PO/JDW
Cadmium P	Cd	0.005	<	0.001	mg/l	✓		JDW
Chromium P	Cr	0.1	<	0.010	mg/l	✓		PO/JDW
Copper P	Cu	* ~~1.0~~ 2	<	0.2	mg/l	✓		PO/JDW
Iron	Fe	0.3		0.24	mg/l	✓		PO/JDW
Lead P	Pb	* ~~0.05~~ 2	<	0.002	mg/l	✓		JDW
Manganese	Mn	0.05		0.030	mg/l	✓		PO/CRW
Mercury P	Hg	0.002	<	.0005	mg/l	✓		KK
Nickel P	Ni	0.1	<	0.02	mg/l	✓		PO/JDW
Selenium P	Se	0.05	<	0.005	mg/l	✓		JDW
Silver	Ag	0.1	<	0.010	mg/l	✓		PO/JDW
Sodium P	Na			8	mg/l			PO/JDW
Thallium P	Tl	0.002	<	0.001	mg/l	✓		CRW
Zinc	Zn	5.0	<	0.2	mg/l	✓		PO/JDW
Hardness				29	mg/l as $CaCO_3$			PO/JDW
Conductivity		700		110	µmhos/cm 25° C	✓		[illegible]
Turbidity P		1.0		0.2	NTU	✓		[illegible]
Color		15.0		10.0	Color Units	✓		[illegible]
Chloride	Cl	250		10	mg/l	✓		KK
Cyanide P	CN	0.2	<	0.005	mg/l	✓		JDW
Fluoride P	F	2.0	<	0.2	mg/l	✓		[illegible]
Nitrate P	as N	10.0		0.9	mg/l	✓		KK
Nitrite P	as N	1.0	<	0.05	mg/l	✓		KK
Sulfate	SO_4	250		—	mg/l			
TDS		500		—	mg/l			

LABORATORY COMMENTS:
CN tested at Laucks. work order # 95-03-590

NOT A BILL
CHARGE: $ [illegible]
Invoice to follow

CRW

LABORATORY SUPERVISOR: [signature]

DATE OF REPORT: 4/4/95

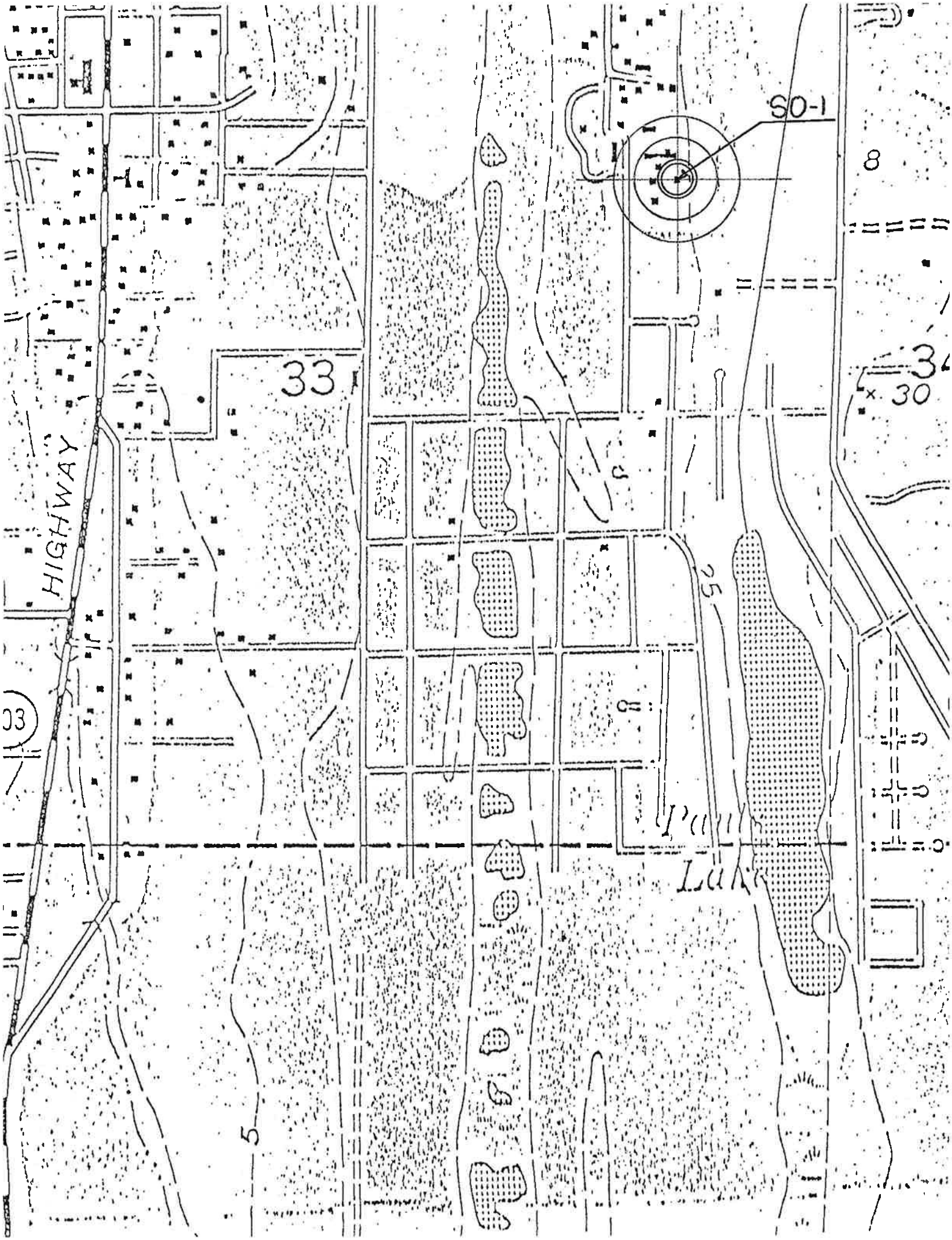
1 - MCL: Maximum Contamination Level; * ~~This is the State MCL;~~ Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper; P - Primary Standard; TDS - Total Dissolved Solids

DOH 307-001 (7/04)

WATER SUPPLIER COPY

COOS BAY DEVELOPMENT August 1953
Ocean Park, Wash.

Well #1
0-56 fine sand
Drilled 20" diameter hole
casing 41ft of 8" I.D.
Screen 15 ft #20 slot Johnson Stainless Steel
type 304 with std. fittings
Gravel 3/32 minus app. 15 yds.
Static water level 15 ft below surface tested
to 140 gpm at 45 ft. pumping level


SO-1
8
33
34
30
HIGHWAY
25
5

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.1b

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : ~~Pacific Water Company, Inc./Phillip C. Leach Pres~~ Water Treatment Plant Operator 3

Water system name : Pacific Water Company, Inc.

County: Pacific

Water system number: 2005IV Source number: SO-2

Well depth: 100 (ft.) *(From WFI form)*

Source name: Well No. 2 at Broadway Ave

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

__X__ well not tagged

Number of connections: _____ Population served: _____

Township: 12N Range: 11W

Section: 33 1/4 1/4 Section: NW/NE

Latitude/longitude (if available): 462923 / 1240302

How was lat./long. determined?

_____ global positioning device __x__ survey _____ topographic map
___other: U.S. Geological Survey

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 8 / 1 / 53 month/day/year

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

_____ information unavailable

2) Well driller: A.M. Jannsen Drilling Company

21075 S.W.T.V. Hwy

Aloha, OR 97006 (503) 649-5015

___ well driller unknown

3) Type of well:

___Drilled: x rotary ___ bored ___ cable (percussion) ___ Dug

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

___ driven ___ jetted ___ other: _____

Additional comments: _____

4) Well report available? x YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 230 (gallons/min)

Source of information: Gardner Engineers, Inc. Report

If not documented, how was pumping rate determined? _____

___ Pumping rate unknown

6) Is this source treated?

If so, what type of treatment:

x disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is chlorinated, is a chlorine residual maintained: x YES ___ NO

Residual level: 0.4 mg/L (*At the point closest to the source.*)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20–50 ft _X_ 50–100 ft ___ 100–200 ft ___ >200 ft

___ information unavailable (*'< ' means less than; '> ' means greater than*)

2) Depth to ground water (static water level):

_X_ < 20 ft ___ 20–50 ft ___ 50–100 ft ___ > 100 ft

___ flowing well/spring (artesian)

How was water level determined?

_X_ well log ___ other: _____

___ depth to ground water unknown

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

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

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

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

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

___ other: _____

_x_ information unavailable

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

___ evidence of a confining layer in well log

_x_ no evidence of a confining layer in well log

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

___ information unavailable

7) Sanitary setback:

___ < 100 ft* x 100–120 ft ___ 120–200 ft ___ > 200 ft
* if less than 100 ft describe the site conditions:

8) Wellhead construction:

x wellhead enclosed in a wellhouse

x controlled access (describe): Gates, locked. Lock on well house

___ other uses for wellhouse (describe): _____

___ no wellhead control

9) Surface seal:

x 18 ft

___ < 18 ft (no Department of Ecology approval) ('< ' *means less than*)

___ < 18 ft (Approved by Ecology, include documentation) ('< ' *means less than*)

___ > 18 ft ('> ' *means greater than*)

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10–25 in/yr x > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped 6,700,000 (gallons)

How was this determined?

_x_ meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 200 (ft)

1 year ground water travel time : 280 (ft)

5 year ground water travel time: 620 (ft)

10 year ground water travel time: 880 (ft)

Information available on length of screened/open interval?

x YES ___ NO

Length of screened/open interval: 15 (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? x YES ___ NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES x NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application	____	____	____	____
stormwater injection wells	____	____	____	____
other injection wells	____	____	____	____
abandoned ground water well	____	____	____	____
landfills, dumps, disposal areas	____	____	____	____
known hazardous materials clean-up site	____	____	____	____
water system(s) with known quality problems	____	____	____	____
population density > 1 house/acre	____	____	____	____
residences commonly have septic tanks	____	X	____	____
Wastewater treatment lagoons	____	____	____	____
sites used for land application of waste	____	____	____	____

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

Please note A on map. There are Seven mobile home sites with septic systems in that area. There is a potential for more development if the local Department of Health allows it. This is also our primary well site. This is a personal concern of ours, that we have not been contacted regarding these installations.

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES	NO
Results greater than MCL	___	X
< 2 mg/liter nitrate	(X)	X
2-5 mg/liter nitrate	___	X
> 5 mg/liter nitrate	___	X
___ Nitrate sampling records unavailable		

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES	NO
Results greater than MCL or SAL	___	X
VOCs detected at least once	___	X
VOCs never detected	(X)	X
___ VOC sampling records unavailable		

C. EDB/DBCP:	YES	NO
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)		
EDB/DBCP detected below MCL at least once	___	X
EDB/DBCP detected above MCL at least once	___	X
EDB/DBCP never detected	___	X
___ EDB/DBCP tests required but not yet completed		
(X) EDB/DBCP tests not required		

D. Other SOCs (Pesticides):	YES	NO
Other SOCs detected	___	X
(pesticides and other synthetic organic chemicals)		

___ Other SOC tests performed but none detected
(list test methods in comments

___ Other SOC tests not performed

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination:

	YES	NO
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	___	X
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	___	X

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

X YES ___ NO

Describe with references to map produced in Part IV:

10 year travel zone has approximately 15 foot ridge

2) Aquifer Material:

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

___ YES X NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

___ YES X NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES X NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES _X_ NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES _X_ NO

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

WATER WELL REPORT
STATE OF WASHINGTON

Application No. 7132

Permit No. .....

File Original and First Copy with the Division of Water Resources
Second Copy — Owner's Copy
Third Copy — Driller's Copy

(1) OWNER:
Name Coos Bay Development - Well #2
Address Ocean Park, Washington

(2) LOCATION OF WELL:
County Pacific Owner's number, if any
NW ¼ NE ¼ Section 33 T. 12 N. 11 W.M.
Bearing and distance from section or subdivision corner
1720 ft. S. of N ¼ cor. 33
750 ft. E.

(3) TYPE OF WORK (check):
New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):
Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) TYPE OF WELL:
Rotary ☐ Driven ☐
Cable ☐ Jetted ☐
Dug ☐ Bored ☐

(6) CASING INSTALLED: Threaded ☐ Welded ☒
8 " Diam. from 0 ft. to 83 ft. Gage .277
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

(7) PERFORATIONS: Perforated? ☐ Yes ☒ No
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(8) SCREENS: Well screen installed ☒ Yes ☐ No
Manufacturer's Name Johnson Stainless Steel
Type Stainless Steel Model No 304
Diam. 8" Slot size #20 Set from 85 ft. to 100 ft.
Diam. Slot size Set from ft. to ft.

(9) CONSTRUCTION:
Was well gravel packed? ☒ Yes ☐ No Size of gravel: 3/32-
Gravel placed from 20 ft. to 100 ft.
Was a surface seal provided? ☒ Yes ☐ No To what depth? 20 ft.
Material used in seal: Clay
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? Depth of strata
Method of sealing strata off

(10) WATER LEVELS:
Static level 5 ft. below land surface Date 8/53
Artesian pressure lbs. per square inch Date
Water is controlled by (Cap valve etc.)

(11) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☒ Yes ☐ No If yes, by whom? Driller
Yield: 250 gal./min. with 78 ft. drawdown after 4 hrs.
" " " "
" " " "
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level

Date of test 8/53
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? ☐ Yes ☐ No

(12) WELL LOG: Diameter of well 8" inches.
Depth drilled 100 ft. Depth of completed well 100 ft.
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Fine Sand	0	43
Sand and Drift Wood	43	76
Fine Sand	76	100

Work started 8/53 19 Completed 8/53 19

(13) PUMP:
Manufacturer's Name H.P.
Type:

Well Driller's Statement:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME A. M. Jannsen Drilling Company (Person, firm, or corporation) (Type or print)
Address 21075 S. W. T. V. Hwy., Aloha, Oregon
(Signed) Edward McJannsen (Well Driller)
License No. 79 Date 7/30 19 64

(USE ADDITIONAL SHEETS IF NECESSARY)

S. F. No. 7356 (Rev. 9-62) 8-62—3M. 75108

S. F. No. 1361—(Rev. 4-70)

EXHIBIT III c 3

CERTIFICATE RECORD NO. ..... PAGE NO. G 2-00174 C

STATE OF WASHINGTON, COUNTY OF Pacific

CERTIFICATE OF GROUND WATER RIGHT

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

THIS IS TO CERTIFY That OCEAN BAY WATER COMPANY

of Seattle, Washington, has made proof to the satisfaction of the Department of Ecology of a right to the use of the public ground waters of the State of Washington from two (2) wells

located within NW¼NE¼ and Tract 5 of the plat of Rushton-on-the-Bay,

Sec. 33, Twp. 12 N., R. 11 W.W.M.,

for the purpose(s) of community domestic supply

under and specifically subject to provisions contained in Ground Water Permit No. 10351 issued by the Department of Ecology and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the Department of Ecology and entered of record in Volume - at page 1 ; that the priority of the right hereby confirmed dates from December 15, 1969 ; that the quantity of ground water under the right hereby confirmed for the aforesaid purposes, is limited to an amount actually beneficially used for said purposes, and shall not exceed 500 gallons per minute; 168 acre-feet per year, during entire year for community domestic supply.

A description of the lands to which such ground water right is appurtenant is as follows:

The plats of Rushton-on-the-Bay; Rushlight Farm Estates; and South Addition to Ocean Park; ALL within Sec. 33, T. 12 N., R. 11 W.W.M.

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

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

Given under my hand and seal of this office at Olympia, Washington, this 17th day of August, 19 72.

JOHN A. BIGGS, Director
Department of Ecology

by

Engineering Data

OK

STATE OF WASHINGTON
Public Water System

Operating Permit

The Department of Health Division of Drinking Water issues a permit to operate
PACIFIC WATER COMPANY INC. (I.D# 20051 V)

to owner: LEACH, PHILLIP C. COUNTY# PACIFIC

LEACH, PHILLIP C.
PO BOX 962

LONG BEACH WA 98631

This permit is valid through AUG 1, 1995

PERMIT CATEGORY: **** YELLOW ****

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

OBTAIN WATER SYSTEM PLAN APPROVAL PER WAC 246-290-100
FIN VIABILITY PLAN APPROVAL PER WAC 246-290-100

NOTE: SYSTEM IS APPROVED FOR 277 SERVICE CONNECTIONS, WE1 SHOWS 60 ACTIVE RESIDENTIAL SERVICE CONNECTIONS

NOTE: WAC 246-294 requires water system plan approval and issuance of a new operating permit before transfer of ownership of a Public Water System.

DATE PRINTED: 01/19/22

Health
Environmental Health

WATER FACILITIES INVENTORY (W. .)

Read Instructions on back before completing

DATE UPDATED: 02/17/94

SYSTEM ID NO.	2. COUNTY	GROUP	TYPE	WRIA
70[illegible]1V	PACIFIC	A	COMM	24

3. SYSTEM NAME: PACIFIC WATER COMPANY INC.

STREET ADDRESS:

P.O. BOX (IF APPLICABLE): P.O. BOX 982

CITY: LONG BEACH | STATE: WA | ZIP CODE: 98631

4. OWNER'S NAME (LAST, FIRST): LEACH, PHILLIP C. | OWNER NO.: 10103

STREET ADDRESS: PO BOX 982

P.O. BOX (IF APPLICABLE):

CITY: LONG BEACH | STATE: WA | ZIP CODE: 98631

5. SYSTEM CONTACT PERSON: PHILLIP C. LEACH - MANAGER | TITLE:

DAY TELEPHONE: 206-777-8786 | EVENING TELEPHONE: 206-777-8238

6. OWNERSHIP (CHECK ONE ONLY)

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

7. PREDOMINANT CHARACTERISTIC (CHECK ONE ONLY)

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

WFI COMPLETED BY: Phillip C Leach | TITLE: Pres.

DAY TELEPHONE: 360-722-8786 | DATE: 3-19-95

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

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

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

9. NUMBER ACTIVE RESIDENTIAL CONNECTIONS	10. NUMBER ACTIVE RESIDENTIAL POPULATION
~~80~~ 80	~~200~~ 200

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

11. NUMBER NON-RESIDENTIAL CONNECTIONS: 140

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

JAN	10	APR	10	JUL	150	OCT	10
FEB	10	MAY	25	AUG	150	NOV	10
MAR	10	JUN	150	SEP	10	DEC	10

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

[ ] YES [X] NO

14. TOTAL NUMBER CONNECTIONS METERED	15. DISTRIBUTION RESERVOIR(S) TOTAL CAPACITY
~~80~~ 182	2,000 GALLONS

16. DOH SOURCE NUMBER	17. SOURCE NAME (LIST UTILITY'S NAME FOR SOURCE. IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S ID # AND NAME USING FOLLOWING FORMAT: XXXXXX / NAME EXAMPLE: 77050Y / SEATTLE)	18. SOURCE CATEGORY: WELL	WELL FIELD	SURFACE	SPRING	RANNEY / INF. GAL	INTERTIE	PURCHASE-TREATED	PURCHASE-UNTREATED	19. USE: PERMANENT	SEASONAL	EMERGENCY	20. SOURCE METERED	21. TREATMENT: NONE	CHLORINATION	FILTRATION	FLUORIDATION	OTHER	22. WELL DEPTH (FEET)	23. SOURCE CAPACITY (GPM)	24. SOURCE LOCATION: 1/4, 1/4 SEC.	SEC. NO.	TWP	RNG.	SWTR EVALUATION / VOC EVALUATION
501	WELL #1	X								X				X					56	140	SE/NE	33	12N	11W	
502	WELL #2	X								X				X					100	250	NW/NE	33	12N	11W	
503	WELL 3	X									X			X					100	80	SW/NE	33	OON		

MINIMUM REQUIRED BACTERIOLOGICAL SAMPLING SCHEDULE

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

APPROVED SERVICES (PER PLANS): 279 | DATE OF LAST SANITARY SURVEY: 00 0000 | BY DOH [ ] LHD [ ]

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

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

WATER SYSTEM

DOH 331-011 (Rev. 5/92)

lease Print Plainly and Heavily

State of Washington
Department of Health
PUBLIC HEALTH LABORATORIES
1610 NE 150th Street, Seattle, WA 98155-9701 Tel. (206) 361-2898

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

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

'ATORY NUMBER: 5115216

DATE RECEIVED: 3-15-95

1. DATE COLLECTED: 3-13-95

2. SYSTEM NAME: Pacific Water Comp Inc.

3. SYSTEM ID #: 20051V

4. CIRCLE GROUP: (A) B

5. COUNTY: Pacific

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

7. SAMPLE TAKEN:
☒ BEFORE TREATMENT ☐ AFTER TREATMENT

8. SOURCE NO.: SO-2

9. SOURCE NAME: Broadway Pump

10. COLLECTED BY: Phi Leach

PHONE: 360 777-8786

11. IF TAKEN AFTER TREATMENT, CHECK TREATMENT:
☐ FLUORIDATION
☐ CHLORINATION
☐ FILTRATION
☐ WATER SOFTENER,
TYPE: _____
☐ OTHER: _____

12. IF TAKEN FROM DISTRIBUTION, INDICATE ADDRESS:

Pump House at Meter

13. PARTY TO PAY FOR TESTING:

SIGNATURE: Phillip Cleach
NAME: Phillip Cleach

ADDRESS: BOX 982
Long Beach WA.
98631

TELEPHONE: (360) 777-8238

14. REMARKS; (water quality problems, address for extra copies, etc.)

LABORATORY REPORT
(DO NOT WRITE INSIDE THIS BOX)

TESTS		MCL[1]	LESS THAN <	RESULTS	UNITS	COMPLIANCE YES	COMPLIANCE NO	CHEMIST INITIALS
Antimony P	Sb	0.006	<	0.002	mg/l	✓		CRW
Arsenic P	As	0.05		0.011	mg/l	✓		JDW
Barium P	Ba	2.0	<	0.10	mg/l	✓		RO/JDW
Beryllium P	Be	0.004	<	0.003	mg/l	✓		RO/JDW
Cadmium P	Cd	0.005	<	0.001	mg/l	✓		JDW
Chromium P	Cr	0.1	<	0.010	mg/l	✓		RO/JDW
Copper P	Cu	~~*1.0~~ [2]	<	0.2	mg/l	✓		RO/JDW
Iron	Fe	0.3		0.19	mg/l	✓		RO/JDW
Lead P	Pb	~~*0.05~~ [2]	<	0.002	mg/l	✓		JDW
Manganese	Mn	0.05		0.054	mg/l		✓	RO/JDW
Mercury P	Hg	0.002	<	0.0005	mg/l	✓		KK
Nickel P	Ni	0.1	<	0.02	mg/l	✓		RO/JDW
Selenium P	Se	0.05	<	0.005	mg/l	✓		JDW
Silver	Ag	0.1	<	0.010	mg/l	✓		RO/JDW
Sodium P	Na			10	mg/l			RO/JDW
Thallium P	Tl	0.002	<	0.001	mg/l	✓		CRW
Zinc	Zn	5.0	<	0.2	mg/l	✓		RO/JDW
Hardness				27	mg/l as $CaCO_3$			RO/JDW
Conductivity		700		100	µmhos/cm 25° C	✓		
Turbidity P		1.0		0.5	NTU	✓		
Color		15.0		10.0	Color Units	✓		
Chloride	Cl	250		10	mg/l	✓		KK
Cyanide P	CN	0.2	<	0.005	mg/l	✓		JDW
Fluoride P	F	2.0	<	0.2	mg/l	✓		
Nitrate P	as N	10.0	<	0.2	mg/l	✓		KK
Nitrite P	as N	1.0	<	0.05	mg/l	✓		KK
Sulfate	SO_4	250			mg/l			
TDS		500			mg/l			

LABORATORY COMMENTS:
CN tested at Lavcks, Work order 95-03-590

NOT A BILL
Invoice to follow CRW

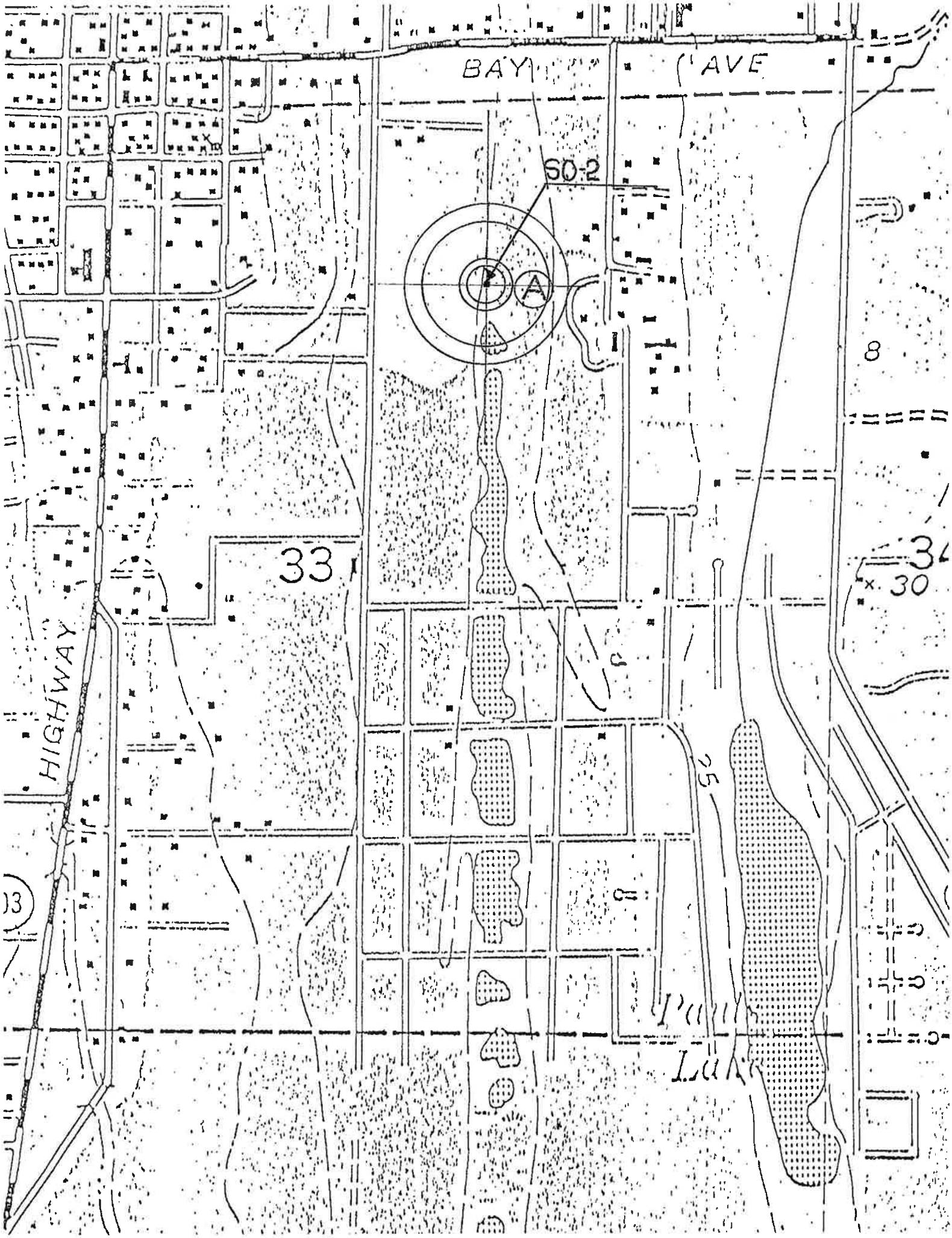
CHARGE:	LABORATORY SUPERVISOR:	DATE OF REPORT:
~~$95~~ 00		4-4-95

1 - MCL: Maximum Contamination Level ~~*~~ This is the State MCL, Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper; P - Primary Standard; TDS - Total Dissolved Solids

DOH 307-001 (7/94) Frame

WATER SUPPLIER COPY

Well #2
0-43 fine sand
43-76 sand and drift wood
76-100 fine sand
Drilled 20" diameter hole
casing 83' of 8" I.D.
Screen 15 ft #20 slot Johnson Stainless Steel
type 304 with std. fittings
Gravel 3/32 minus app. 35 yds
Static water level 8 ft. below surface tested
to 250 gpm at 85 ft. pumping level


BAY AVE
SD-2
A
8
33
30
HIGHWAY
25

507

Ground Water Contamination Susceptibility Assessment Survey Form

Version 2.2

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : Pete Christoson

Water system name : Ocean Park Water Company

County: Pacific

Water system number: 63000C Source number: S 07

Well depth: 136 (ft.) (*From WFI form*)

Source name: Well #6 Well Field S 06

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

_____ well not tagged

Number of connections: _____ Population served: _____

Township: 12N Range: 11

Section: 28 1/4 1/4 Section: ~~SW¼ of NE¼~~

Latitude/longitude (if available): _____/_____

How was lat./long. determined?

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

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 5 /2 /96 month/day/year

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

_____ information unavailable

2) Well driller: Holt Drilling Inc.

10621 Todd Rd. E.

Puyallup, Washington 98372

___ well driller unknown

3) Type of well:

__Drilled: ___ rotary ___ bored X ___ cable (percussion) ___ **Dug**

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

___ driven ___ jetted ___ other: _____

Additional comments: _____

_____

4) Well report available? X YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 123 (gallons/min)

Source of information: Pump Test Data 04/09/96

If not documented, how was pumping rate determined? _____

_____

___ Pumping rate unknown

6) Is this source treated? ___ YES X NO

If so, what type of treatment:

___ disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

_____

_____

7) If source is chlorinated, is a chlorine residual maintained: ___ YES X NO

Residual level: _____ (*At the point closest to the source.*)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ (less than) 20 ft ___ 20–50 ft ___ 50–100 ft X 100–200 ft ___ (greater than) 200 ft

___ information unavailable

2) Depth to ground water (static water level):

X (less than) 20 ft ___ 20–50 ft ___ 50–100 ft ___ (greater than) 100 ft

___ flowing well/spring (artesian)

How was water level determined?

___ well log X other: Pump Test Data 04/09/96

___ depth to ground water unknown

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

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

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

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

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

___ other: _____

X information unavailable

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

___ evidence of a confining layer in well log

X no evidence of a confining layer in well log

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

___ information unavailable

7) Sanitary setback:

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

_____

_____

_____

_____

8) Wellhead construction:

_x_ wellhead enclosed in a wellhouse

_x_ controlled access (describe): _____

_____

___ other uses for wellhouse (describe): _____

_____

___ no wellhead control

9) Surface seal:

___ 18 ft

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

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

_x_ (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ (less than) 10 in/yr ___ 10–25 in/yr _x_ (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 78,310 (gallons)

How was this determined?

X meter

___ estimated: ___ pumping rate (100)

___ pump capacity (123)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 140 (ft)

1 year ground water travel time : 200 (ft)

5 year ground water travel time: 440 (ft)

10 year ground water travel time: 620 (ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/open interval: 20 (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application				
stormwater injection wells				
other injection wells				
abandoned ground water well				
landfills, dumps, disposal areas				
known hazardous materials clean-up site				
water system(s) with known quality problems				
population density (greater than) 1 house/acre		X	X	
residences commonly have septic tanks		X	X	
Wastewater treatment lagoons				
sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

Population density 1 House per/ ac.

Residence commonly have septic tanks

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	___
(less than) 2 mg/liter nitrate	X
2-5 mg/liter nitrate	___
(greater than) 5 mg/liter nitrate	___
Nitrate sampling records unavailable	___

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES
Results greater than MCL or SAL	___
VOCs detected at least once	___
VOC test performed but never detected	___
VOC sampling records unavailable	___

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

D. Other SOCs (pesticides and other synthetic organic chemicals):	YES
Other SOCs detected	___
Other SOC tests performed but none detected *	___
Other SOC tests not performed	___

*If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination: YES

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records). ____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source. ____

Source sampling records for bacteria unavailable ____

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1)Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

___ YES X NO

Describe with references to map produced in Part IV:

_____

_____

2) Aquifer Material:

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

___ YES X NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

___ YES X NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

__ YES X NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
6 month travel time	__	X	___
6 month–1 year travel time	__	X	___
1–5 year travel time	__	X	___
5–10 year travel time	__	X	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
1 year travel time	__	X	___
1–5 year travel time	__	X	___
5–10 year travel time	__	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES ___ NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES ___ NO

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

OCEAN PARK WATER CO., INC.
P.O. BOX 618
1407 263 PLACE
OCEAN PARK, WASHINGTON 98640
PHONE: (360) 665-4144

PUMP TEST DATA

DATE April 9, 1996

TESTED BY Pete

TIME	G.P.M.	DEPTH TO WATER LEVEL	DRAWDOWN
0	0	11' 10"	0
1 min	123	26' 0"	14' 2"
5 min	123	29' 5"	17' 7"
30 min	123	29' 9"	17' 11"
1 Hr	123	29' 8"	17' 10"
2 Hr	123	29' 9"	17' 11"
3 Hr	123	29' 9"	17' 11"
4 Hr	123	29' 9"	17' 11"

SYSTEM NAME	Ocean Park Water Co.
SOURCE	Deep Well
LOCATION	well #6
STATIC LEVEL	11' 10"
PUMP	Jacuzzi
MODEL	7SS675-8
OUTLET DIA.	2½"
MOTOR	Franklin 230 V 3Ø
H. P.	7.5 hp

RECOVERY

1 min	13' 0"
5 min	12' 4"
30 min	12' 1"
1 Hr	11' 10"
2 Hr	11' 10"
3 Hr	11' 10"

REMARKS:

TOTAL GALLONS PUMPED	29,520
TOTAL PUMP TIME	4 Hrs.
AVERAGE G.P.M.	123 gpm

IV-16

EXHIBIT IV-1

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. 16437
UNIQUE WELL I.D. # ZZ8
Water Right Permit No. G2-21399

(1) OWNER: Name Ocean Park Water Address PO Box 618 Ocean Park WA 986

(2) LOCATION OF WELL: County Pacific NE 1/4 NE 1/4 Sec 6 T. 12 N., R. 11

(2a) STREET ADDRESS OF WELL (or nearest address)

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

(4) TYPE OF WORK: Owner's number of well (if more than one) DOE #6
Abandoned ☐ New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8" inches.
Drilled 130 feet. Depth of completed well 130 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Diam. from +2 ft. to 107 ft.
Welded ☐ " Diam. from ft. to ft.
Liner installed ☐ " Diam. from ft. to ft.
Threaded ☐

Perforations: Yes ☐ No ☐
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type Model No.
Diam. 7" Slot size 10 from 107 ft. to 117 ft.
Diam. 7" Slot size 6 from 127 ft. to 117 ft.

Gravel packed: Yes ☐ No ☐ Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 20' ft.
Material used in seal Bentonite Chips
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land surface elevation above mean sea level ft.
Static level 8' ft. below top of well Date 5-4-96
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test 45 gal./min. with 2' ft. drawdown after 1 hrs.
Airtest gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aq and the kind and nature of the material in each stratum penetrated, with at least one entry for change of information.

MATERIAL	FROM	TO
Brown Sand	0	5
Grey Sand & wood	56	13

COPY

507

Work Started 2-25 19 96 Completed 5-4 19 96

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and i compliance with all Washington well construction standards. Materials used an the information reported above are true to my best knowledge and belief.

NAME Holt Drilling Inc (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

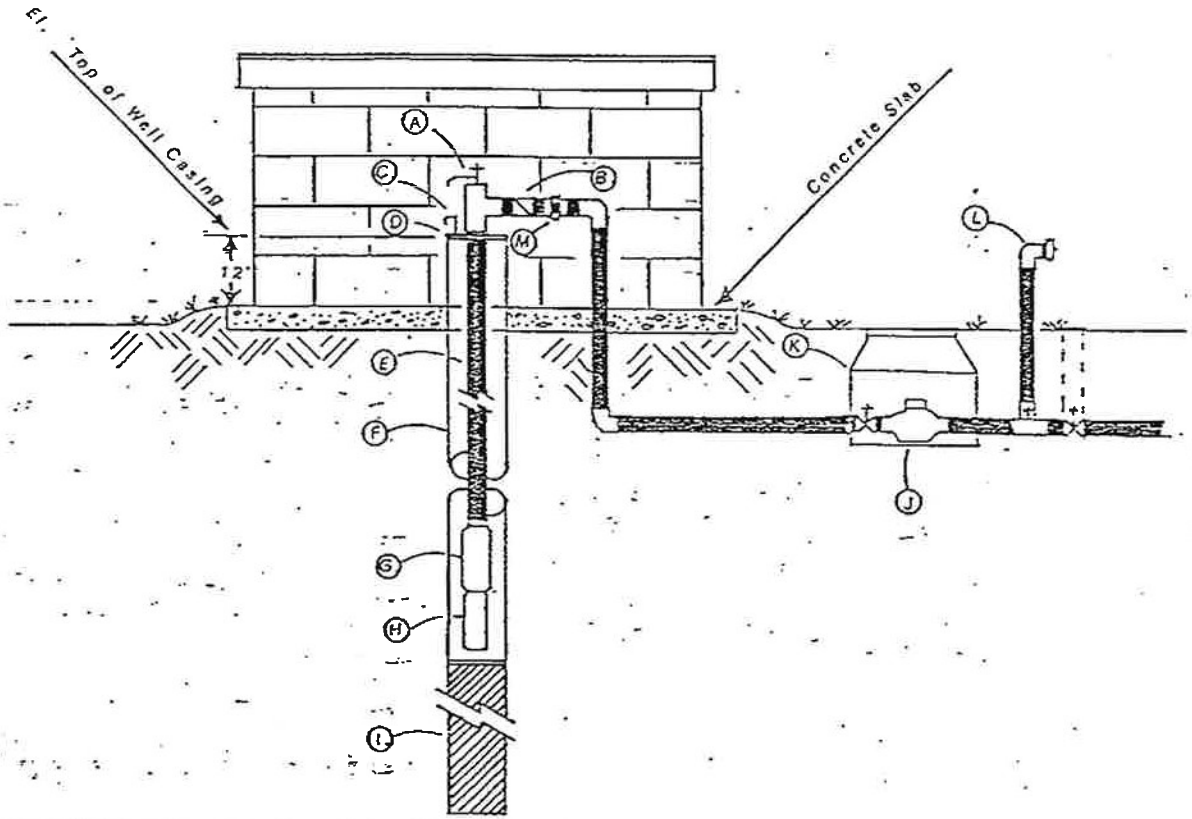
Address 10621 Todd Rd E Puyallup WA 9

(Signed) (WELL DRILLER) License No. 577

Contractor's Registration No. HOLTDI*176D6 Date 5-2 19 96

(USE ADDITIONAL SHEETS IF NECESSARY)

TW-22

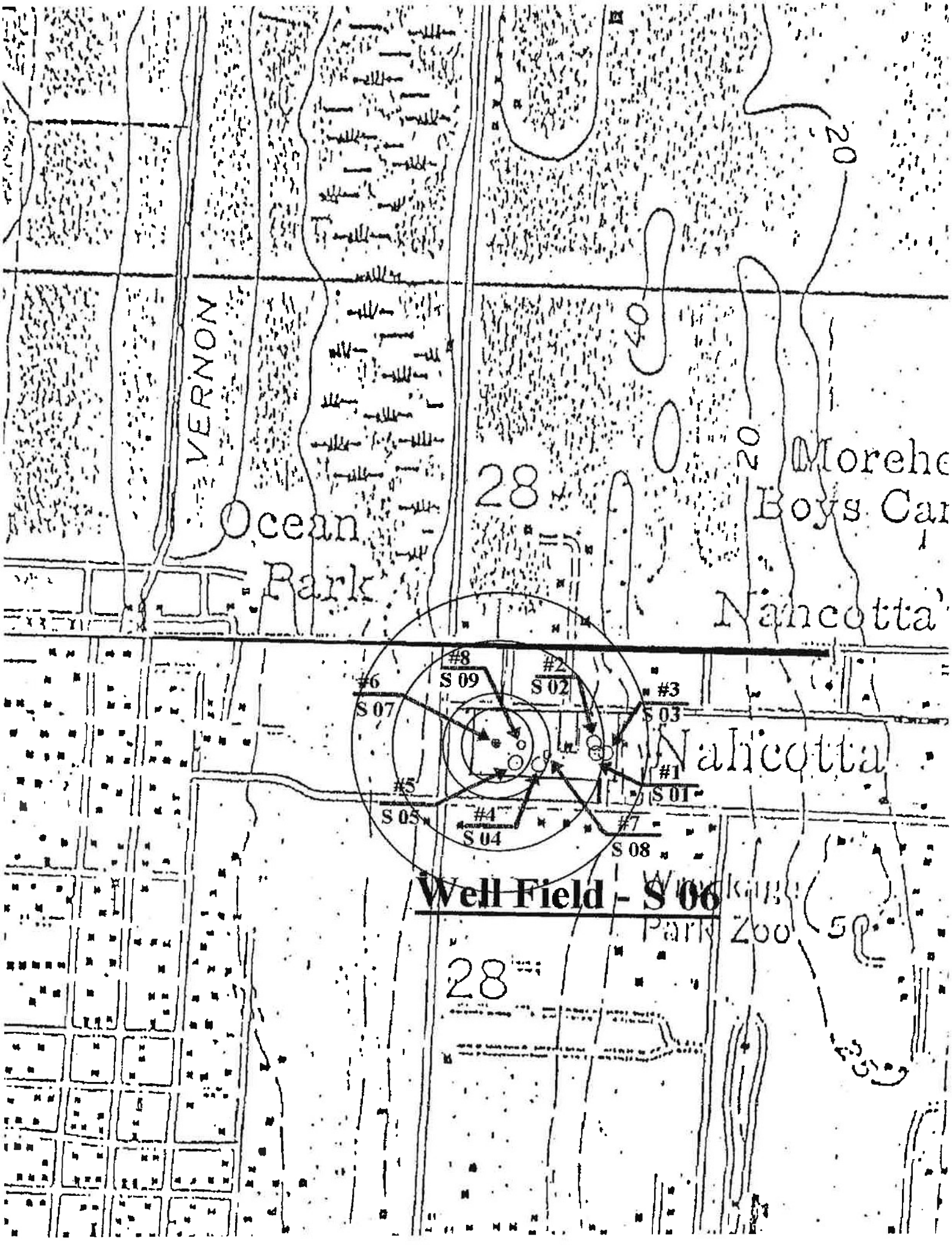


A	Raw Water Sample Tap
B	Swing Check Valve
C	Screened Air Vent / Access Port
D	Well Seal
E	Galvanized Iron Pipe Pump Column
F	Steel Well Casing
G	Jacuzzi Submersible Pump
H	Franklin Motor 230 v. / 3 ph.
I	20' Stainless Steel Well Screen
J	Water Metering Device
K	Meter Vault
L	B/Off Stand Pipe
M	Galvanized Ground Joint Union

TYPICAL:

Deep Well with Submersible Pump, Plumbing and Appurtenance

OCEAN PARK WATER CO.


VERNON
Ocean
Park
28
Nahcotta
#8
S 09
#2
S 02
#6
S 07
#3
S 03
#1
S 01
#5
S 05
#4
S 04
#7
S 08
Well Field - S 06
28

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.2

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : Pete Christoson

Water system name : Ocean Park Water Co.

County: Pacific

Water system number: 63000C Source number: S 0 8

Well depth: 120' (ft.) (*From WFI form*)

Source name: Well #7 Well Field S 06

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

_____ well not tagged

Number of connections: _____ Population served: _____

Township: 12 N Range: 11

Section: 28 1/4 1/4 Section: SW¼ of NE¼

Latitude/longitude (if available): _____/_____

How was lat./long. determined?

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

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 11 / 6 / 78 month/day/year

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

_____ information unavailable

2) Well driller: Pete Smith Well Drilling

St Rt 32

Cosmopolis, Washington 98537

___ well driller unknown

3) Type of well:

__Drilled: ___ rotary ___ bored X cable (percussion) ___ **Dug**

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

___ driven ___ jetted ___ other: _____

Additional comments: _____

_____

4) Well report available? X YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 100 (gallons/min)

Source of information: Pump Test Data 10/10/96

If not documented, how was pumping rate determined? _____

_____

___ Pumping rate unknown

6) Is this source treated? ___ YES X NO

If so, what type of treatment:

___ disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

_____

_____

7) If source is chlorinated, is a chlorine residual maintained: ___ YES X NO

Residual level: _____ (*At the point closest to the source.*)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ (less than) 20 ft ___ 20-50 ft ___ 50-100 ft _X_ 100-200 ft ___ (greater than) 200 ft

___ information unavailable

2) Depth to ground water (static water level):

_X_ (less than) 20 ft ___ 20-50 ft ___ 50-100 ft ___ (greater than) 100 ft

___ flowing well/spring (artesian)

How was water level determined?

___ well log _X_ other: Pump Test Data 10/10/96

___ depth to ground water unknown

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

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

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

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

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

___ other: _____

_X_ information unavailable

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

___ evidence of a confining layer in well log

_X_ no evidence of a confining layer in well log

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

___ information unavailable

7) Sanitary setback:

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

8) Wellhead construction:

X wellhead enclosed in a wellhouse

X controlled access (describe): Lock on Well house

___ other uses for wellhouse (describe): None

___ no wellhead control

9) Surface seal:

X 18 ft

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

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

___ (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ (less than) 10 in/yr ___ 10-25 in/yr X (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 4,618,236 (gallons)

How was this determined?

X meter

___ estimated: X pumping rate (100.5 gpm)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 140 (ft)

1 year ground water travel time : 200 (ft)

5 year ground water travel time: 440 (ft)

10 year ground water travel time: 620 (ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/open interval: 20' (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application	____	____	____	____
stormwater injection wells	____	____	____	____
other injection wells	____	____	____	____
abandoned ground water well	____	____	____	____
landfills, dumps, disposal areas	____	____	____	____
known hazardous materials clean-up site	____	____	____	____
water system(s) with known quality problems	____	____	____	____
population density (greater than) 1 house/acre	____	X	X	____
residences commonly have septic tanks	____	X	X	____
Wastewater treatment lagoons	____	____	____	____
sites used for land application of waste	____	____	____	____

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

Population Density 1 house Per/Ac.

Residence commonly have septic tanks

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	___
(less than) 2 mg/liter nitrate	X
2-5 mg/liter nitrate	___
(greater than) 5 mg/liter nitrate	___
Nitrate sampling records unavailable	___

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES
Results greater than MCL or SAL	___
VOCs detected at least once	___
VOC test performed but never detected	___
VOC sampling records unavailable	___

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

D. Other SOCs (pesticides and other synthetic organic chemicals):	YES
Other SOCs detected	___
Other SOC tests performed but none detected *	___
Other SOC tests not performed	___

*If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination:

YES

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records). ____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source. ____

Source sampling records for bacteria unavailable ____

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1)Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

___ YES X NO

Describe with references to map produced in Part IV:

_____

_____

2) Aquifer Material:

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

___ YES X NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

___ YES X NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES X NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES ___ NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES ___ NO

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

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

EXHIBIT IV-3

WATER WELL REPORT

STATE OF WASHINGTON P.O. 4/25

DOE #7
Application No. .....
Permit No. G2-00759

(1) OWNER: Name DOE Address Ocean Park WA

(2) LOCATION OF WELL: County Pacific NE ¼ ¼ Sec 2 T 15 N., R ..... W.M.
Bearing and distance from section or subdivision corner

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

(4) TYPE OF WORK: Owner's number of well (if more than one) DOE #7
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 120 ft. Depth of completed well 120 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Diam. from ..... ft. to 120 ft.
Threaded ☐ ..... " Diam. from ..... ft. to ..... ft.
Welded ☐ ..... " Diam. from ..... ft. to ..... ft.

Perforations: Yes ☐ No ☐
Type of perforator used .....
SIZE of perforations ..... in. by ..... in.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.

Screens: Yes ☐ No ☐
Manufacturer's Name Johnson
Type ..... Model No. .....
Diam. 5 Slot size 8 from 100 ft. to 120 ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☐ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

Surface seal: Yes ☐ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

(7) PUMP: Manufacturer's Name .....
Type: ..... H.P. .....

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 12 ft. below top of well Date .....
Artesian pressure ..... lbs. per square inch Date .....
Artesian water is controlled by ..... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom? .....
Yield: ..... gal./min. with ..... ft. drawdown after ..... hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test .....
Bailer test 30 gal./min. with 8 ft. drawdown after 1 hrs.
Artesian flow ..... g.p.m. Date .....
Temperature of water ..... Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation

MATERIAL	FROM	TO
Sand Brown fine	0	72
Sand Grey coarse	72	120

Ocean Park

508

Work started ..... 19 ..... Completed ..... 19 .....

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

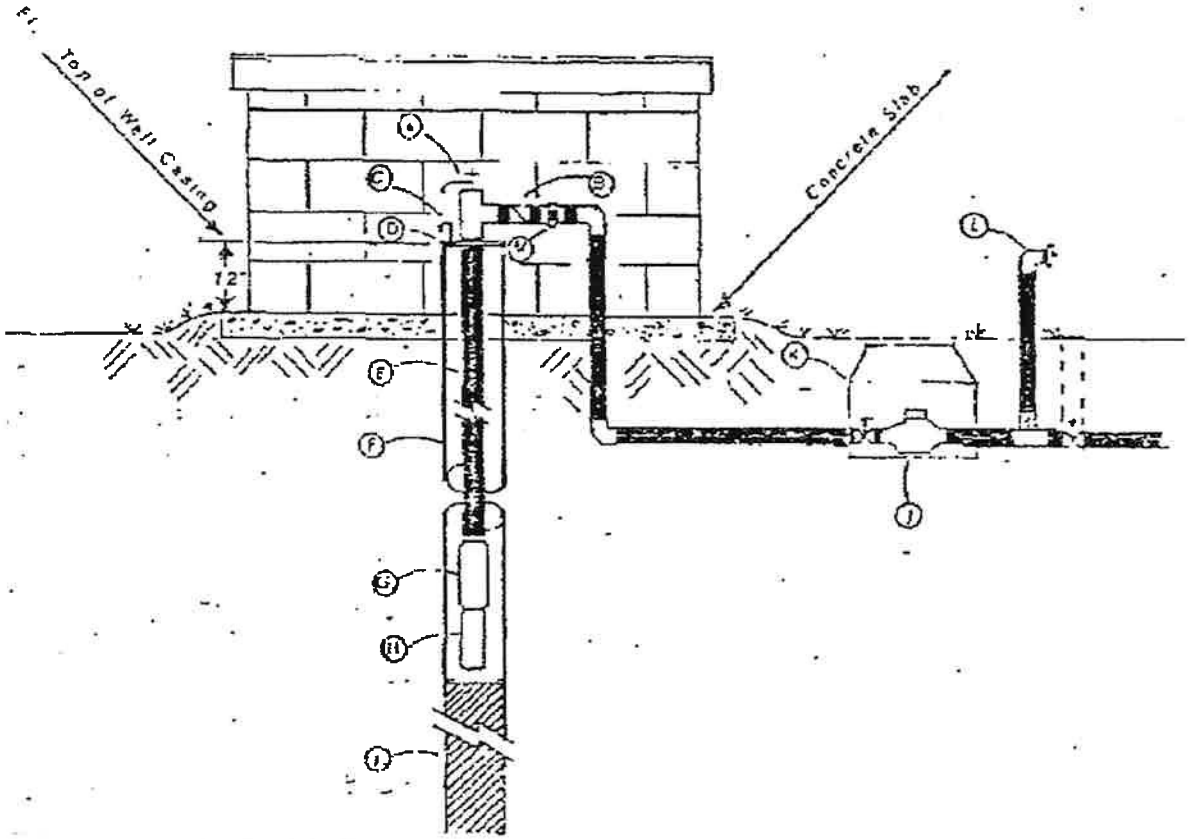
NAME ..... (Person, firm, or corporation) (Type or print)

Address .....

[Signed] ..... (Well Driller)

License No. ..... Date ....., 19.....

ECY 050-1-20

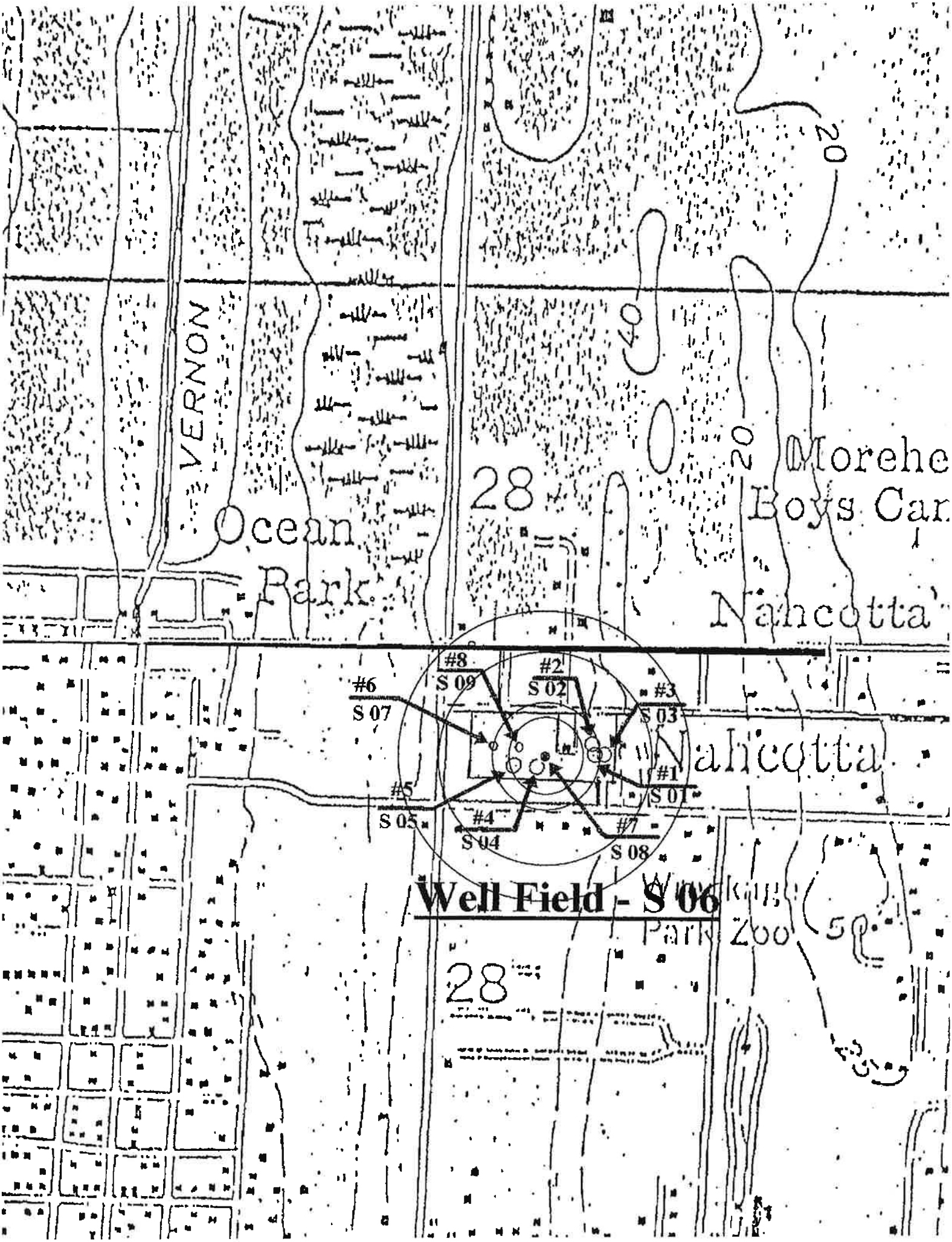


A	Raw Water Sample Tap
B	Swing Check Valve
C	Screened Air Vent / Access Port
D	Well Seal
E	Galvanized Iron Pipe Pump Column
F	Steel Well Casing
G	Jacuzzi Submersible Pump
H	Franklin Motor 230 v. / 3 ph.
I	20' Stainless Steel Well Screen
J	Water Metering Device
K	Meter Vault
L	B Off Stand Pipe
M	Galvanized Ground Joint Union

TYPICAL:

Deep Well with Submersible Pump, Plumbing and Appurtenance

OCEAN PARK WATER CO.


VERNON
Ocean
Park
28
20
40
20
Morehe
Boys Car
Nahcotta
#8
S 09
#2
S 02
#3
S 03
#6
S 07
#1
S 01
#5
S 05
#4
S 04
#7
S 08
Well Field - S 06
Nahcotta
Park Zoo
28

Data rec'd 5/16/01 -DG

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.2

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : Pete Christoson

Water system name : Ocean Park Water Company

County: Pacific

Water system number: 63000C Source number: S 0 9

Well depth: 136 (ft.) (*From WFI form*)

Source name: Well #8 Well Field S 06

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

_____ well not tagged

Number of connections: _____ Population served: _____

Township: 12 N Range: 11

Section: 28 1/4 1/4 Section: SW¼ of NE¼

Latitude/longitude (if available): _____/_____

How was lat./long. determined?

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

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 05 / 03 / 96 month/day/year

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

_____ information unavailable

2) Well driller: Holt Drilling Inc.

10621 Todd Rd. E.

Puyallup, Washington 98372

___ well driller unknown

3) Type of well:

___Drilled: ___ rotary ___ bored X cable (percussion) ___ Dug

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

___ driven ___ jetted ___ other: _____

Additional comments: _____

_____

4) Well report available? X YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 123 (gallons/min)

Source of information: Pump Test Data 04/09/96

If not documented, how was pumping rate determined? _____

_____

___ Pumping rate unknown

6) Is this source treated? ___ YES X NO

If so, what type of treatment:

___ disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

_____

_____

7) If source is chlorinated, is a chlorine residual maintained: ___ YES X NO

Residual level: _____ (*At the point closest to the source.*)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ (less than) 20 ft ___ 20-50 ft ___ 50-100 ft _X_ 100-200 ft ___ (greater than) 200 ft

___ information unavailable

2) Depth to ground water (static water level):

_X_ (less than) 20 ft ___ 20-50 ft ___ 50-100 ft ___ (greater than) 100 ft

___ flowing well/spring (artesian)

How was water level determined?

___ well log ___ other: _____

___ depth to ground water unknown

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

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

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

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

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

___ other: _____

_X_ information unavailable

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

___ evidence of a confining layer in well log

_X_ no evidence of a confining layer in well log

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

___ information unavailable

7) Sanitary setback:

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

8) Wellhead construction:

X wellhead enclosed in a wellhouse

X controlled access (describe): Lock on well house door

___ other uses for wellhouse (describe): None

___ no wellhead control

9) Surface seal:

___ 18 ft

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

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

X (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ (less than) 10 in/yr ___ 10–25 in/yr X (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 44,437,360 (gallons)

How was this determined?

X meter

___ estimated: ___ pumping rate (100)

___ pump capacity (123)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 440 (ft)

1 year ground water travel time : 620 (ft)

5 year ground water travel time: 1,390 (ft)

10 year ground water travel time: 1,970 (ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/open interval: 20' (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES X NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application				
stormwater injection wells				
other injection wells				
abandoned ground water well				
landfills, dumps, disposal areas				
known hazardous materials clean-up site				
water system(s) with known quality problems				
population density (greater than) 1 house/acre		X	X	
residences commonly have septic tanks		X	X	
Wastewater treatment lagoons				
sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

Population density 1 House per/ac.

Residence commonly have septic tanks

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	___
(less than) 2 mg/liter nitrate	X
2-5 mg/liter nitrate	___
(greater than) 5 mg/liter nitrate	___
Nitrate sampling records unavailable	___

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES
Results greater than MCL or SAL	___
VOCs detected at least once	___
VOC test performed but never detected	___
VOC sampling records unavailable	___

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

D. Other SOCs (pesticides and other synthetic organic chemicals):	YES
Other SOCs detected	___
Other SOC tests performed but none detected *	___
Other SOC tests not performed	___

*If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination:

	YES
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	____
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	____
Source sampling records for bacteria unavailable	____

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1)Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

___ YES X NO

Describe with references to map produced in Part IV:

_____

_____

2) Aquifer Material:

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

___ YES X NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

___ YES X NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES _x_ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES ___ NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES ___ NO

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

OCEAN PARK WATER CO., INC.
P.O. BOX 618
1407 263 PLACE
OCEAN PARK, WASHINGTON 98640
PHONE: (360) 665-4144

PUMP TEST DATA

DATE April 9, 1996

TESTED BY Pete

TIME	G.P.M.	DEPTH TO WATER LEVEL	DRAWDOWN
0	0	11' 10"	0
1 min	123	26' 0"	14' 2"
5 min	123	29' 5"	17' 7"
30 min	123	29' 9"	17' 11"
1 Hr	123	29' 8"	17' 10"
2 Hr	123	29' 9"	17' 11"
3 Hr	123	29' 9"	17' 11"
4 Hr	123	29' 9"	17' 11"

SYSTEM NAME	Ocean Park Water Co.
SOURCE	Deep Well
LOCATION	Well #8
STATIC LEVEL	11' 10"
PUMP	Jacuzzi
MODEL	7SS675-8
OUTLET DIA.	$2\frac{1}{2}$"
MOTOR	Franklin 230 V 3Ø
H. P.	7.5 hp

RECOVERY

1 min	13' 0"
5 min	12' 4"
30 min	12' 1"
1 Hr	11' 10"
2 Hr	11' 10"
3 Hr	11' 10"

REMARKS:

TOTAL GALLONS PUMPED	29,520
TOTAL PUMP TIME	4 Hrs.
AVERAGE G.P.M.	123 gpm

EXHIBIT IV-1

EXHIBIT IV-3 WELL 8 OF DOE #8

...e Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. 60 10362
UNIQUE WELL I.D. # 229
Water Right Permit No. G2-00759

(1) OWNER: Name Ocean Park Water Address PO Box 618 Ocean Park WA 98640

(2) LOCATION OF WELL: County Pacific NE 1/4 NE 1/4 Sec 6 T. 12 N. R. 11 W

(2a) STREET ADDRESS OF WELL (or nearest address) 0-CC 128th

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

(4) TYPE OF WORK: Owner's number of well (if more than one) WELL 8
Abandoned ☐ New well ☒ Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☒ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches. Drilled 130 feet. Depth of completed well 130 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Diam. from +4 ft. to 106 ft.
Welded ☐ Liner installed ☐ Diam. from ft. to ft.
Threaded ☐ Diam. from ft. to ft.

Perforations: Yes ☐ No ☐
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type Model No.
Diam. 7" Slot size 8 from 106 ft. to 116 ft.
Diam. 7" Slot size 10 from 126 ft. to 116 ft.

Gravel packed: Yes ☐ No ☐ Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal Bentonite Chips
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 5 ft. below top of well Date 3-6-86
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test 40 gal./min. with 5' ft. drawdown after 1 hrs.
Artesian gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Brown Sand	0	80
Gray Fine Sand	80	130

COPY

SO4 Ocean Park

Work Started 3-5 19 86 Completed 3-6 19 86

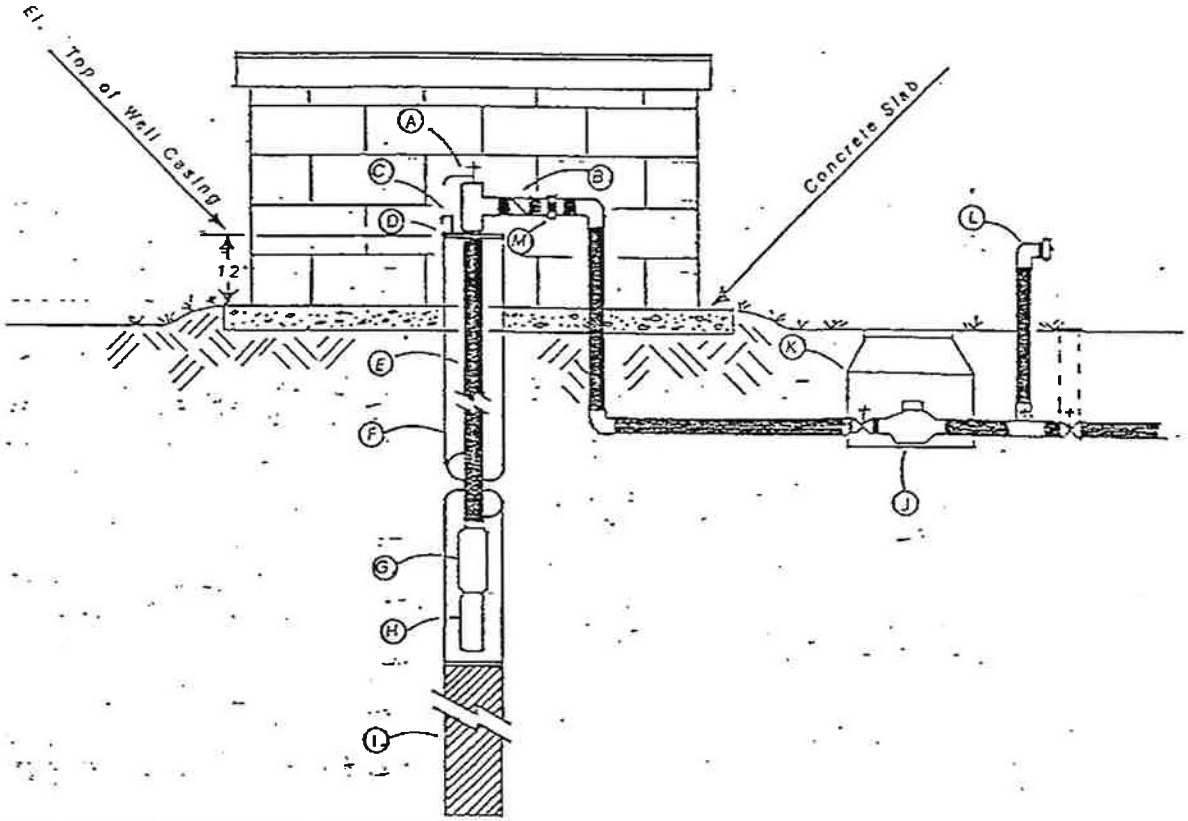
WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Holt Drilling, Inc. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 6611 Todd Rd E Puyallup WA 98372
(Signed) [signature] (WELL DRILLER) License No. 587
Contractor's Registration No. HOLTOX*3606 Date 5-7 19 9

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

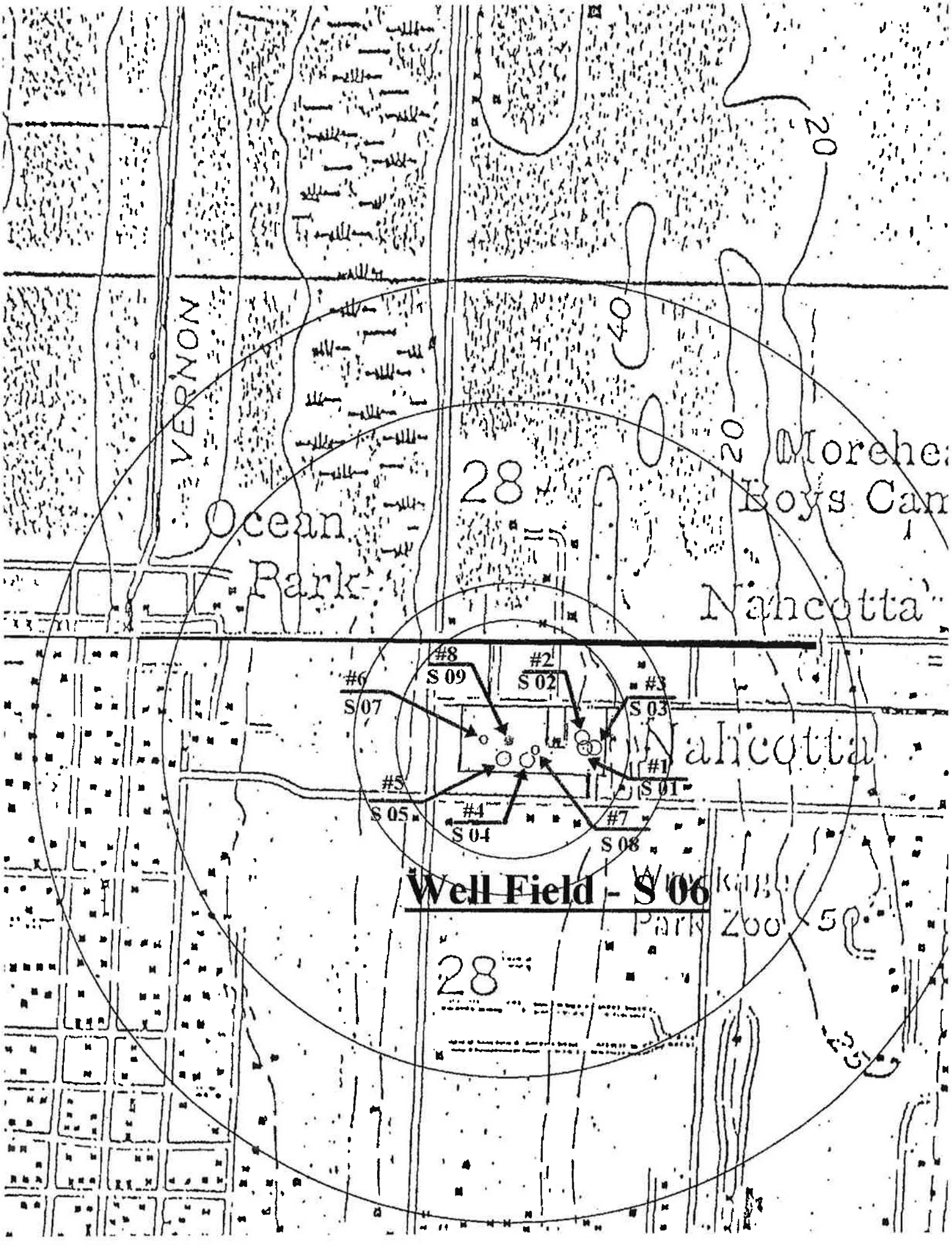


A	Raw Water Sample Tap
B	Swing Check Valve
C	Screened Air Vent / Access Port
D	Well Seal
E	Galvanized Iron Pipe Pump Column
F	Steel Well Casing
G	Jacuzzi Submersible Pump
H	Franklin Motor 230 v. / 3 ph.
I	20' Stainless Steel Well Screen
J	Water Metering Device
K	Meter Vault
L	B:Off Stand Pipe
M	Galvanized Ground Joint Union

TYPICAL:

Deep Well with Submersible Pump, Plumbing and Appurtenance

OCEAN PARK WATER CO.


VERNON
Ocean
Park
28
Nahcotta
#8
S 09
#2
S 02
#6
S 07
#3
S 03
#1
S 01
#5
S 05
#4
S 04
#7
S 08
Well Field - S 06
Park Zoo
28

Ground Water Contamination Susceptibility Assessment Survey Form

Version 2.2

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : OCEAN PARK WATER CO. / PETE CHRISTOSON

Water system name : OCEAN PARK WATER CO.

County: PACIFIC

Water system number: 63000 C Source number: #5 05

Well depth: 124 (ft.) (*From WFI form*)

Source name: WELL #5

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

✓ well not tagged

Number of connections: 1913 Population served: _____

Township: 12 N Range: 11

Section: 28 1/4 1/4 Section: SW 1/4 of NE 1/4

Latitude/longitude (if available): _____/_____

How was lat./long. determined?

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

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 7 / 1 / 86 month/day/year

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

_____ information unavailable

2) Well driller: PETE SMITH WELL DRILLING

RT 1 BOX 266

ABERDEEN, WA. 98520

___ well driller unknown

3) Type of well:

___Drilled: ___ rotary ___ bored ✓ cable (percussion) ___ Dug

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

___ driven ___ jetted ___ other: _____

Additional comments: _____

_____

4) Well report available? ✓ YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 90 (gallons/min)

Source of information: PUMP TEST DATA

If not documented, how was pumping rate determined? _____

_____

___ Pumping rate unknown

6) Is this source treated? ___ YES ✓ NO

If so, what type of treatment:

___ disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

_____

_____

7) If source is chlorinated, is a chlorine residual maintained: ___ YES ___ NO

Residual level: _____ *(At the point closest to the source.)*

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ (less than) 20 ft ___ 20-50 ft ___ 50-10 ft ✓ 100-200 ft ___ (greater than) 200 ft

___ information unavailable

2) Depth to ground water (static water level):

✓ (less than) 20 ft ___ 20-50 ft ___ 50-100 ft ___ (greater than) 100 ft

___ flowing well/spring (artesian)

How was water level determined?

___ well log ✓ other: PUMP TEST DATA- 12/1/87

___ depth to ground water unknown

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

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

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

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

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

___ other: _____

✓ information unavailable

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

___ evidence of a confining layer in well log

✓ no evidence of a confining layer in well log

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

___ information unavailable

7) Sanitary setback:

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

8) Wellhead construction:

✓ wellhead enclosed in a wellhouse

✓ controlled access (describe): LOCK ON WELLHOUSE

___ other uses for wellhouse (describe): _____

___ no wellhead control

9) Surface seal:

✓ 18 ft

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

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

___ (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ (less than) 10 in/yr ___ 10-25 in/yr ✓ (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 13,942,580 (gallons)

How was this determined?

✓ meter

__ estimated: ✓ pumping rate (90 GPM)

__ pump capacity (_____)

__ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 280 (ft)

1 year ground water travel time : 390 (ft)

5 year ground water travel time: 880 (ft)

10 year ground water travel time: 1,240 (ft)

Information available on length of screened/open interval?

✓ YES __ NO

Length of screened/open interval: 20 (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? __ YES ✓ NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? __ YES ✓ NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application	—	—	—	—
stormwater injection wells	—	—	—	—
other injection wells	—	—	—	—
abandoned ground water well	—	—	—	—
landfills, dumps, disposal areas	—	—	—	—
known hazardous materials clean-up site	—	—	—	—
water system(s) with known quality problems	—	—	—	—
population density (greater than) 1 house/acre	—	✓	✓	—
residences commonly have septic tanks	—	✓	✓	—
Wastewater treatment lagoons	—	—	—	—
sites used for land application of waste	—	—	—	—

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

POPULATION DENSITY > 1 HOUSE PER/AC.

RESIDENCE COMMONLY HAVE SEPTIC TANKS

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	___
(less than) 2 mg/liter nitrate	X
2-5 mg/liter nitrate	___
(greater than) 5 mg/liter nitrate	___
Nitrate sampling records unavailable	___

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES
Results greater than MCL or SAL	___
VOCs detected at least once	___
VOC test performed but never detected	X
VOC sampling records unavailable	___

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

D. Other SOCs (pesticides and other synthetic organic chemicals):	YES
Other SOCs detected	___
Other SOC tests performed but none detected *	___
Other SOC tests not performed	___

*If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination: YES

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records). ___

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source. ___

Source sampling records for bacteria unavailable ___

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1)Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

___ YES ✓ NO

Describe with references to map produced in Part IV:

_____

_____

2) Aquifer Material:

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

___ YES ✓ NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

___ YES ✓ NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES ✓ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
6 month travel time	___	✓	___
6 month–1 year travel time	___	✓	___
1–5 year travel time	___	✓	___
5–10 year travel time	___	✓	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
1 year travel time	___	✓	___
1–5 year travel time	___	✓	___
5–10 year travel time	___	✓	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES ___ NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES ___ NO

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

Third Copy — Driller's Copy

STATE OF WASHINGTON

WELL 5

Permit No. ......

(1) OWNER: Name Ocean Park Water Address Ocean Park Wash

(2) LOCATION OF WELL: County Pacific County NW SE ¼ Sec 28 T 11 N., R 11 W.M.

Bearing and distance from section or subdivision corner

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

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

New well ☒ Method: Dug ☐ Bored ☐

Deepened ☐ Cable ☒ Driven ☐

Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches.

Drilled 125 ft. Depth of completed well 124 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 8 " Diam. from +1 ½ ft. to 104 ft.

Threaded ☐ ...... " Diam. from ...... ft. to ...... ft.

Welded ☐ ...... " Diam. from ...... ft. to ...... ft.

Perforations: Yes ☐ No ☒

Type of perforator used......

SIZE of perforations ...... in. by ...... in.

...... perforations from ...... ft. to ...... ft.

...... perforations from ...... ft. to ...... ft.

...... perforations from ...... ft. to ...... ft.

Screens: Yes ☒ No ☐

Manufacturer's Name......

Type SS Model No. ......

Diam. 8 Slot size 10 from 104 ft. to 124 ft.

Diam. ...... Slot size ...... from ...... ft. to ...... ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: ......

Gravel placed from ...... ft. to ...... ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.

Material used in seal Bentonite

Did any strata contain unusable water? Yes ☐ No ☐

Type of water? ...... Depth of strata ......

Method of sealing strata off ......

(7) PUMP: Manufacturer's Name ......

Type: ...... H.P. ......

(8) WATER LEVELS: Land-surface elevation above mean sea level.... ft.

Static level 12 ft. below top of well Date July 86

Artesian pressure ...... lbs. per square inch Date ......

Artesian water is controlled by ...... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? Yes ☐ No ☐ If yes, by whom? ......

Yield: gal./min. with ft. drawdown after hrs.

" " " "

" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ......

Bailer test 56 gal./min. with 13 ft. drawdown after ...... hrs.

Artesian flow ...... g.p.m. Date ......

Temperature of water ...... Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Top Soil Dark Brown	0	3
Sand Brown	3	47
Grey Sand	47	90
Sand Blue & Grey	90	124

Work started July 19 86 Completed July 19 86

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Pete Smith Well Drilling (Person, firm, or corporation) (Type or print)

Address Rt 1 Box 261 Montesano Wash

[Signed] [signature] (Well Driller)

License No. 0195 Date July 19 86

(USE ADDITIONAL SHEETS IF NECESSARY)

S. F. No. 7356—OS—(Rev. 4-71).

Ocean Park Water Co., Inc.
Box 618
Ocean Park, WA 98640

PUMP TEST DATA

DATE 12-01-87

TESTED BY Pete Christoson

TIME	G.P.M.	DEPTH TO WATER LEVEL	DRAWDOWN
0	0	13'-0"	Static
2 min	90	42'-9"	29'-9"
5 min	90	46'-6"	33'-6"
10 min	90	47'-0"	34'-0"
20 min	90	48'-6"	35'-6"
30 min	90	48'-6"	35'-6"
45 min	90	48'-6"	35'-6"
1 hr	90	48'-6"	35'-6"
2 hr	90	48'-6"	35'-6"
3 hr	90	48'-6"	35'-6"
4 hr	90	48'-6"	35'-6"

RECOVERY

0	48'-6"
30 sec	29'-0"
1 min	21'-0"
5 min	14'-3"
10 min	13'-0"

SYSTEM NAME	Ocean Park Water Co. Inc.
SOURCE	Deep Well
LOCATION	Well #5
STATIC LEVEL	13'-0"
PUMP	Jacuzzi
MODEL	5S6B5
OUTLET DIA.	2½"
MOTOR	Franklin
H. P.	5 230V.

NOTE: No appreciable influence on well #4 or #5 durring the drawdown test

REMARKS:

TOTAL GALLONS PUMPED	21,600 gal.
TOTAL PUMP TIME	4 hr
AVERAGE G.P.M.	90

ase Print Plainly
E HEAVY PENCIL
NOT WRITE IN SHADED AREAS

LAUCKS TESTING LABS
940 S. HARNEY
SEATTLE, WA 98108

SEE BACK FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

NUMBER	CO.	CITY	DATE RECEIVED	DATE COLLECTED	COLLECTED BY: GREG CHRISTOSON
10769			11/05/82	11/03/82	Telephone: (206) 665-[illegible]

this a follow up of a previous out of compliance sample? Yes ☐ No ☒

es, what was the laboratory number of the previous sample? — — — — — — —

STEM I.D. NO.	SYSTEM NAME:	SYSTEM CLASS (circle one)	COUNTY
2 0 0 0 6	OCEAN PARK WATER CO. INC.	① 2 3 4	PACIFIC

IPLE LOCATION	THIS SAMPLE TAKEN BEFORE ☒ (U) AFTER ☐ (T) TREATMENT	IF TAKEN *AFTER* TREATMENT WAS IT ___FILTERED ___FLUORIDATED ___CHLORINATED ___WATER SOFTENER: TYPE USED
1		

URCE E: 1. SURFACE 3. WELL 2. SPRING 4. PURCHASE	SOURCE NO.	IF SOURCE IS LAKE OR STREAM, ENTER NAME	IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (ADDRESS)
3	05		

DATE OF FINAL REPORT: 11/18/82

SEND REPORT TO: (PRINT FULL NAME & ADDRESS)
OCEAN PARK WATER CO.
Name
PO Box 618
Street
OCEAN PARK, WA 98640
CITY ZIP CODE
Telephone: (206) 665-[illegible]
Area Code

EMARKS:
BOTH SAMPLE CONTAINERS HAD DUST & FILTH IN THEM WHEN WE RECEIVED THEM?

LABORATORY REPORT
(DO NOT WRITE BELOW THIS LINE)

TESTS	*MCL	Less Than	RESULTS		Compliance YES	Compliance NO	Chemist Initials	Laboratory Number (If different than above)
senic As	0.05 P		.011	mg/l	✓		HK	
rium Ba	1.0 P	<	.25	mg/l	✓			
dmium Cd	0.01 P	<	.002	mg/l	✓			
romium Cr	0.05 P	<	.01	mg/l	✓			
n Fe	0.3		.19	mg/l	✓			
d Pb	0.05 P	<	.01	mg/l	✓			
nganese Mn	0.05		.033	mg/l	✓			
cury Hg	0.002 P	<	.001	mg/l	✓			
enium Se	0.01 P	<	.005	mg/l	✓			
er Ag	0.05 P	<	.01	mg/l	✓			
lium Na			23	mg/l				
dness			140	mg/l As CaCO3				
nductivity	700		00	Micromhos/cm 25° C	✓			
bidity	1.0 P	<	.5	NTU	✓			
or	15.0		5.0	Color Units	✓			
oride F	2.0 P	<	.2	mg/l	✓			
ate as N	10.0 P	<	.2	mg/l	✓			
oride Cl	250		20	mg/l	✓			
fate SO_4	250			mg/l				

*MCL is the Maximum Contaminant Level Allowed
Primary Standard

Laboratory Supervisor

DSHS 4-92G (10-79)

WATER SUPPLIER COPY

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1(. amendments thereto, and the rules and regulations of the Department of Ecology.)

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

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
March 16, 1987	G2-27073	G2-27073 P	G2-27073 C

NAME
Ocean Park Water Company, Inc.

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
Post Office Box 618	Ocean Park	Washington	98640

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

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well No. 5

TRIBUTARY OF (IF SURFACE WATER)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	105	252

QUANTITY, TYPE OF USE, PERIOD OF USE		
252 acre-feet per year (supplemental)	Municipal supply	Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION/WITHDRAWAL
504 feet east and 265 feet north of the center of Section 28.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼NE¼	28	11 W	11 W	24	Pacific

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by Ocean Park Water Company Inc.

FILED AT THE REQUEST OF
1987 JUN 30 PM 1:11
ROBERT A. JOHNSON
AUDITOR & RECORDER
COUNTY OF PACIFIC

9101 PAGE 809

When the chloride concentration exceeds 250 mg/L, the withdrawal rate shall be reduced or the pump setting raised to reduce the chloride level to below 250 mg/L.

Issued as a supplemental source of supply to rights enjoyed under Ground Water Certificates G2-00759 C, G2-21399 C, and G2-25737 C.

The Water Resources Act of 1971 specifies certain criteria regarding utilization and management of the waters of the state in the best public interest. Use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

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

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

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

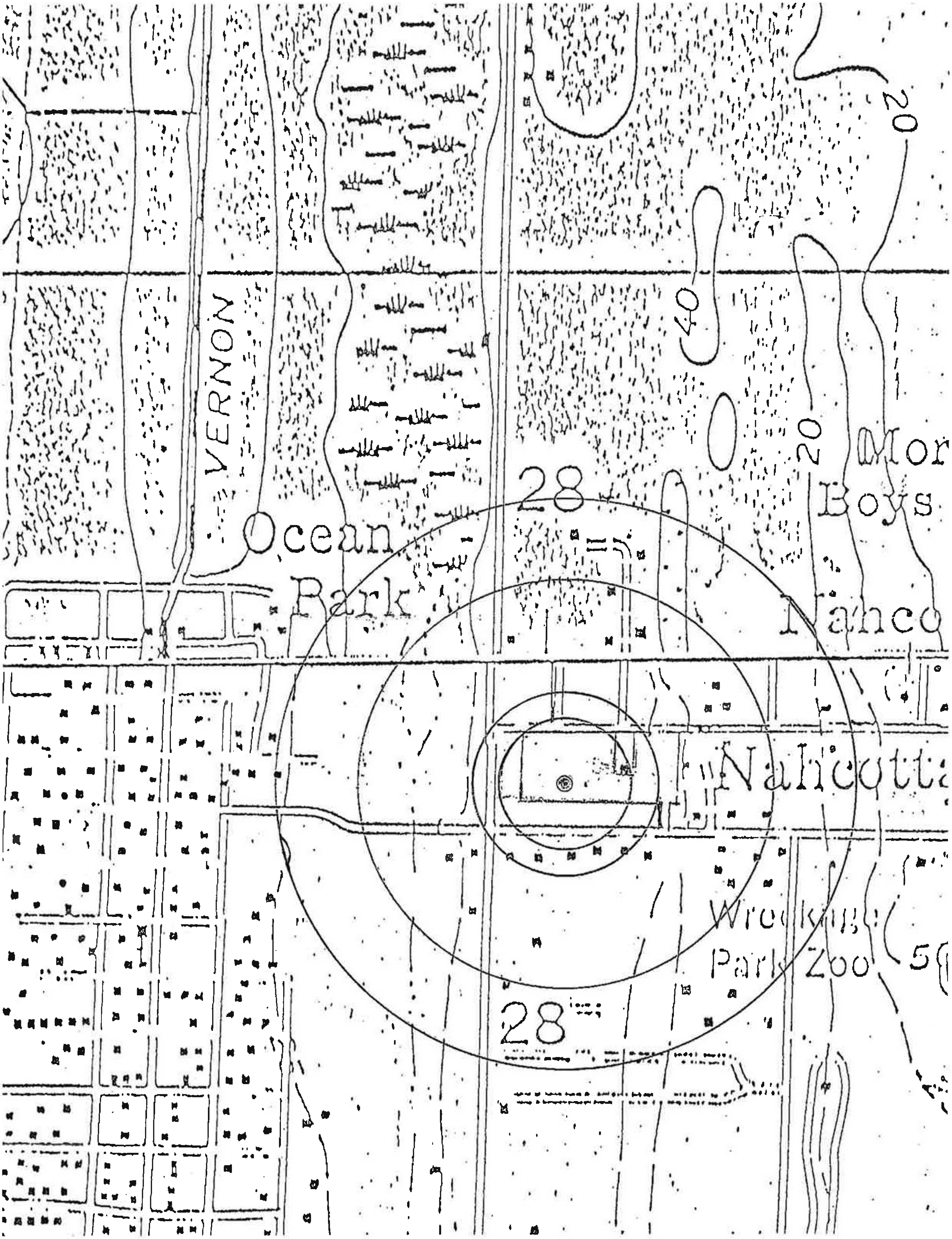
this 2nd *day of* January, *19* 91.

Christine O. Gregoire, Director
Department of Ecology

ENGINEERING DATA
OK GD by Gale Blomstrom

FOR COUNTY USE ONLY

9101 PAGE 810


VERNON
Ocean
Park
28
28
20
20
40
Mor
Boys
Nahco
Nahcotta
Wreckage
Park Zoo

RECEIVED
MAR 2 4 1995
DOH-S.W. Drinking Water Operations

Ground Water Contamination Susceptibility Assessment Survey Form

Version 2.2

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system. Photocopy as necessary.

PART I: System Information

Well owner/manager : OCEAN PARK WATER CO. / PETE CHRISTOSON

Water system name : OCEAN PARK WATER CO.

County: PACIFIC

Water system number: 63000 C Source number: #S 04

Well depth: 120' (ft.) (*From WFI form*)

Source name: WELL #4

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

✓ well not tagged

Number of connections: 1913 Population served: ___

Township: 12 N Range: 11

Section: 28 1/4 1/4 Section: SW¼ of NE¼

Latitude/longitude (if available): ___/___

How was lat./long. determined?

___ global positioning device ___ survey ___ topographic map
___ other: ___

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 4 / 25 / 81 month/day/year

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

___ information unavailable

2) Well driller: SMITH DRILLING INC.

ST. RT. BOX 32

COSMOPOLIS, WA.

___ well driller unknown

3) Type of well:

___Drilled: ___ rotary ___ bored ✓ cable (percussion) ___ Dug

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

___ driven ___ jetted ___ other: _____

Additional comments: _____

_____

4) Well report available? ✓ YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 125 GPM (gallons/min)

Source of information: PUMP TEST DATA 5/10/81

If not documented, how was pumping rate determined? _____

_____

___ Pumping rate unknown

6) Is this source treated? ___ YES ✓ NO

If so, what type of treatment:

___ disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

_____

_____

7) If source is chlorinated, is a chlorine residual maintained: ___ YES ___ NO

Residual level: _____ *(At the point closest to the source.)*

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ (less than) 20 ft ___ 20-50 ft ___ 50-10 ft ✓ 100-200 ft ___ (greater than) 200 ft

___ information unavailable

2) Depth to ground water (static water level):

✓ (less than) 20 ft ___ 20-50 ft ___ 50-100 ft ___ (greater than) 100 ft

___ flowing well/spring (artesian)

How was water level determined?

___ well log ___ other: PUMP TEST DATA 5/10/81

___ depth to ground water unknown

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

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

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

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

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

___ other: _____

✓ information unavailable

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

___ evidence of a confining layer in well log

✓ no evidence of a confining layer in well log

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

✓ information unavailable

7) Sanitary setback:

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

8) Wellhead construction:

✓ wellhead enclosed in a wellhouse

___ controlled access (describe): LOCK ON WELLHOUSE

___ other uses for wellhouse (describe): PUMP CONTROL RM. #2

___ no wellhead control

9) Surface seal:

✓ 18 ft

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

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

___ (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ (less than) 10 in/yr ___ 10–25 in/yr ✓ (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 40,759,250 (gallons)

How was this determined?

✓ meter

___ estimated: ___ pumping rate (_____)

___ pump capacity (_____)

___ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 440 (ft)

1 year ground water travel time : 620 (ft)

5 year ground water travel time: 1390 (ft)

10 year ground water travel time: 1970 (ft)

Information available on length of screened/open interval?

✓ YES ___ NO

Length of screened/open interval: 20 (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? ___ YES ✓ NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? ___ YES ✓ NO (mark and identify on map).

Comments: _____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:.

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application	___	___	___	___
stormwater injection wells	___	___	___	___
other injection wells	___	___	___	___
abandoned ground water well	___	___	___	___
landfills, dumps, disposal areas	___	___	___	___
known hazardous materials clean-up site	___	___	___	___
water system(s) with known quality problems	___	___	___	___
population density (greater than) 1 house/acre	___	X	X	___
residences commonly have septic tanks	___	X	X	___
Wastewater treatment lagoons	___	___	___	___
sites used for land application of waste	___	___	___	___

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (*Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.*)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

POPULATION DENSITY > 1 HOUSE PER/AC.

RESIDENCE COMMONLY HAVE SEPTIC TANKS

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	___
(less than) 2 mg/liter nitrate	XX ok
2-5 mg/liter nitrate	___
(greater than) 5 mg/liter nitrate	___
Nitrate sampling records unavailable	~~X~~ no SOC data; system NO3 is <2

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES
Results greater than MCL or SAL	___
VOCs detected at least once	___
VOC test performed but never detected	X
VOC sampling records unavailable	___

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

D. Other SOCs (pesticides and other synthetic organic chemicals):	YES
Other SOCs detected	___
Other SOC tests performed but none detected *	___
Other SOC tests not performed	___

*If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination: YES

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records). ____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source. ____

Source sampling records for bacteria unavailable ____

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1)Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

__ YES X NO

Describe with references to map produced in Part IV:

_____

_____

2) Aquifer Material:

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

__ YES X NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

__ YES X NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

___ YES X NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

Suggestions and Comments

Did you attend one of the susceptibility workshops? ___ YES ___ NO

Did you find it useful? ___ YES ___ NO

Did you seek outside assistance to complete the assessment? ___ YES ___ NO

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

e Original and First Copy with
partment of Ecology
cond Copy — Owner's Copy
ird Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No. .....

Permit No. .....

(1) OWNER: Name Ocean Park Water Co. Address Ocean Park

(2) LOCATION OF WELL: County Pacific NW ¼ SE ¼ Sec. 28 T. 12 N., R. 11 W.M.

Bearing and distance from section or subdivision corner

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

(4) TYPE OF WORK: Owner's number of well (if more than one) .....
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 120 ft. Depth of completed well 120 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8 " Diam. from 0 ft. to 100 ft.
Threaded ☐ ..... " Diam. from ..... ft. to ..... ft.
Welded ☐ ..... " Diam. from ..... ft. to ..... ft.

Perforations: Yes ☐ No ☒
Type of perforator used .....
SIZE of perforations ..... in. by ..... in.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.

Screens: Yes ☒ No ☐ Manufacturer's Name Johnson
Type Telescope Model No. .....
Diam. 8 Slot size 18 from 100 ft. to 120 ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

(7) PUMP: Manufacturer's Name .....
Type: ..... H.P. .....

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 14 ft. below top of well Date .....
Artesian pressure ..... lbs. per square inch Date .....
Artesian water is controlled by ..... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom? .....
Yield: ..... gal./min. with ..... ft. drawdown after ..... hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test .....
Bailer test ..... gal./min. with ..... ft. drawdown after ..... hrs.
Artesian flow ..... g.p.m. Date .....
Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Brown Sand	0	62
Grey Sand	62	120

Work started April 21, 19 91 Completed April 25, 19 91

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Smith Drilling Inc.
(Person, firm, or corporation) (Type or print)

Address 51 Rt. Box 32 Cosmopolis

[Signed] Randy Smith (Well Driller)

License No. 0479 Date April 25, 19 91

(USE ADDITIONAL SHEETS IF NECESSARY)

PUMP TEST DATA

DATE 5-10-81

TESTED BY pete

TIME	G.P.M.	DEPTH TO WATER LEVEL	DRAWDOWN
-0-	-0-	12'-6"	static
2 min.	125	43'-0"	30'-4"
5 min.	"	47'-2"	34'-6"
10 min.	"	48'-2"	35'-6"
20 min	"	48'-10"	36'-8"
30 min.	"	48'-10"	36'-4"
1 hr.	125	"	"
2hr.	"	"	"
3 hr.	"	"	"
4 hr.	"	"	"

RECOVERY

-0-	48'-10"
30 sec.	30'-0"
1 min.	19'-6"
5 min.	13'-6"
10 min.	12'-6"
30 min.	12'-6"

SYSTEM NAME	Ocean Park Water Co. Inc.
SOURCE	deep well
LOCATION	well #4
STATIC LEVEL	12'-6"
PUMP	Jacuzzi
MODEL	7SS6A
OUTLET DIA.	2½"
MOTOR	Franklin
H. P.	7½ 230 v 3 phase

REMARKS:

TOTAL GALLONS PUMPED	30,000
TOTAL PUMP TIME	4 hrs.
AVERAGE G.P.M.	125

Laucks 83 years
Testing Laboratories, Inc.
940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063

Chemistry, Microbiology, and Technical Services

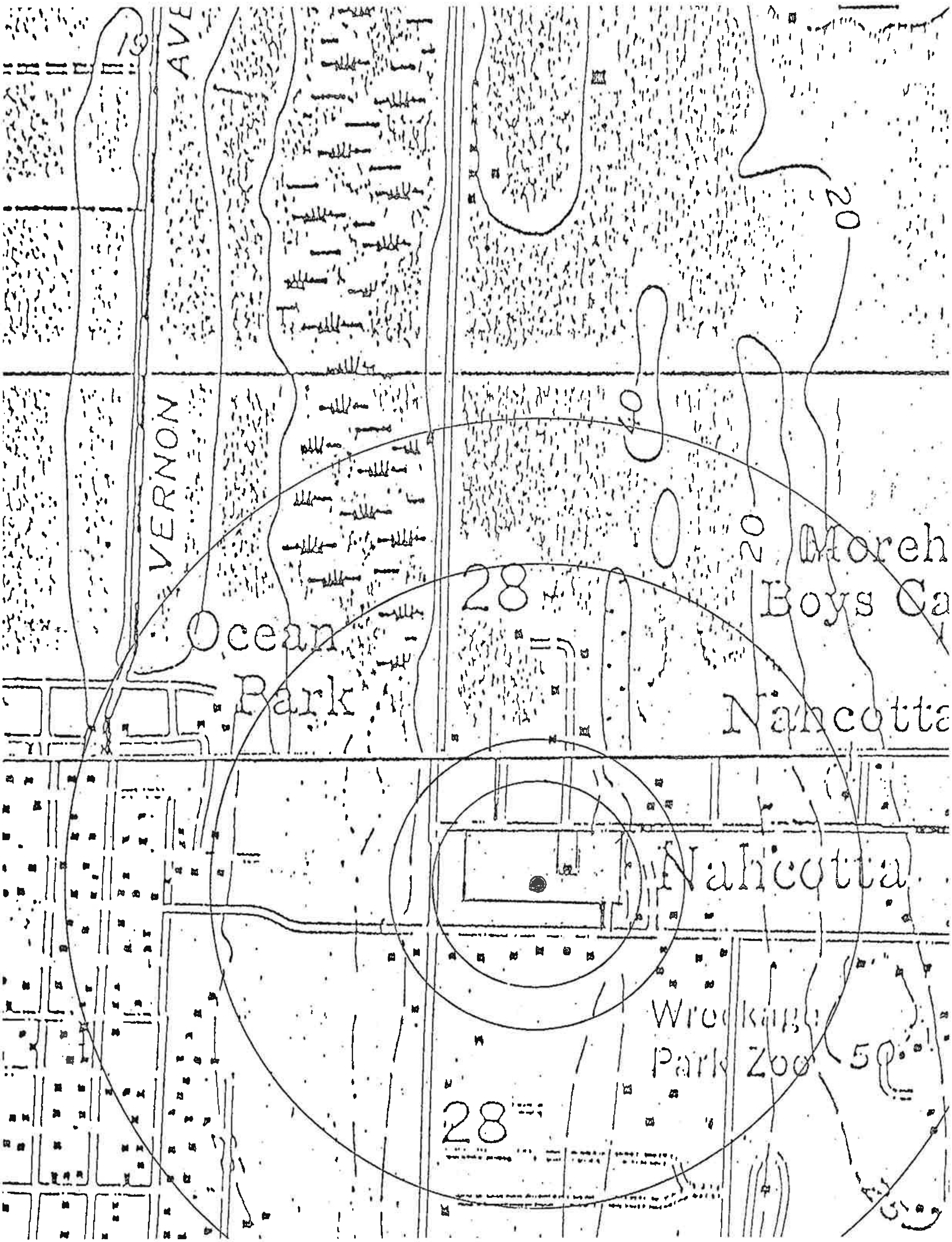
REPORT ON SAMPLE: 9105991-01
Client Sample ID: Ocean Park Water Co.

Date Received : 05/29/91 Collection Date : 05/24/91

Test	MCL		Results	
Arsenic	0.05	<	0.010	mg/L
Barium	1.0	<	0.25	mg/L
Cadmium	0.01	<	0.002	mg/L
Chromium	0.05	<	0.010	mg/L
Iron	0.3		0.15	mg/L
Lead	0.05	<	0.005	mg/L
Manganese	0.05		0.069	mg/L
Mercury	0.002	<	0.001	mg/L
Selenium	0.01	<	0.005	mg/L
Silver	0.05	<	0.010	mg/L
Sodium			21	mg/L
Hardness			79	mg/L, as CaCO3
Conductivity	700		250	Micromhos/cm, 25.C
Turbidity	1.0	<	0.5	NTU
Color	15.0	<	5.0	Color Units
Fluoride	2.0	<	0.2	mg/L
Nitrate	10.0		0.2	mg/L
Chloride	250		25	mg/L
Sulfate	250	<	10	mg/L
Copper	1.0	<	0.3	mg/L
Zinc	5.0	<	0.3	mg/L

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

The Maximum Contamination Level (MCL) for lead is 0.05 mg/L. The State of Washington's Department of Health and the EPA are asking your laboratory to advise you that if the level of lead in your drinking water is above 0.02 mg/L (even if it is below the MCL), the EPA recommends corrective action. You should follow the EPA's guidance, found in the EPA booklet 'Lead in School Drinking Water.' The laboratory does not have copies of this booklet; contact the EPA Safe Drinking Water Hotline at 1-800-426-4791.


VERNON AVE
Ocean Park
28
20
Moreh
Boys Ca
Nahcotta
Nahcotta
Park Zoo
28

Wiegardt Well No. 1
Proposed Point of Withdrawal

WELL NO. 1

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission *("x" in circle)*

- [x] Construction
- [ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

CURRENT Notice of Intent No. W353207

Unique Ecology Well ID Tag No. BAF-021

Water Right Permit No. 10351

Property Owner Name North Beach Water District

Well Street Address 252nd St. / between "U" St. & Ash Pl.

City Ocean Park County Pacific

Location SW 1/4-1/4 NE 1/4 Sec 33 Twn 12 R 11 EWM [ ] or WWM [x] circle one

Lat/Long (s, t, r Still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. 1211331300

PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal [ ] DeWater [ ] Irrigation [x] Test Well [ ] Other _____

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

[x] New well [ ] Reconditioned [ ] Deepened — *Method:* [ ] Dug [ ] Bored [ ] Driven [x] Cable [ ] Rotary [ ] Jetted

DIMENSIONS: Diameter of well 8" inches, drilled 175' ft. Depth of completed well 149' ft.

CONSTRUCTION DETAILS

Casing Installed: [x] Welded 8" Diam. from 12' ft. to 119' ft. [ ] Liner installed " Diam. from ft. to ft. [ ] Threaded " Diam. from ft. to ft.

Perforations: [ ] Yes [x] No

Type of perforator used _____

SIZE of perfs _____ in. by _____ in. and no. of perfs ____ from ____ ft. to ____ ft.

Screens: [x] Yes [ ] No [ ] K-Pac Location _____

Manufacturer's Name Johnson

Type 304 S.S. cont. wrap v-wire Model No. 304 S.S.

Diam. 5" Slot size 20 from 138' ft. to 118' ft.

Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: [x] Yes [ ] No [ ] Size of gravel/sand 10/20 silica

Materials placed from 149' ft. to 96.5 ft.

Surface Seal: [x] Yes [ ] No To what depth? 20' ft.

Material used in seal 3/8" bentonite chips

Did any strata contain unusable water? [ ] Yes [x] No

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

PUMP: Manufacturer's Name _____

Type: _____ H.P. _____

WATER LEVELS: Land-surface elevation above mean sea level 20 ft.

Static level 11.25 ft below top of well Date 08/14/13

Artesian pressure _____ lbs. per square inch Date _____

Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? [x] Yes [ ] No If yes, by whom? RobinsonNobl

Yield: 150 gal./min. with 18' ft. drawdown after 24.0 hrs.

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
1	12.96	10	11.5	30	11.25
3	12.04	20	11.4	60	11.18
5	11.80	25	11.3		

Date of test _____

Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.

Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.

Artesian flow _____ g.p.m. Date _____

Temperature of water 51F Was a chemical analysis made? [x] Yes [ ] No

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
brown silty sand	0	1
red silty sand	1	2
grey sand	2	4
brown silty sand	4	7
brown silt / grey sand - trace h20	7	23
brown silty sand	23	36
grey sand - slightly silty	36	47
grey sand - trace wood	47	49
grey sand	49	56
grey sand w/wood	56	63
grey sand - trace small gravel	63	81
grey silty sand	81	93
course grey sand - dirty	93	99
grey silty sand - getting tighter	99	103
grey sand - dirty	103	109
clean grey sand - trace wood	109	116
grey sand - siltier - trace wood	116	117
grey sand w/seashells & wood	117	119
grey sand - getting dirtier	119	121
trace clay lenses	121	124
grey sand w/grey clay layers & wood	124	137
grey sand - cleaner driving - better	137	142
grey sand - getting siltier	142	145
fine grey sand - silty w/wood	145	150
fine grey sand - cleaner	150	154
grey sand w/silt lenses w/wood & trace pebbles	154	172'6"
dirty grey sand w/wood - trace seashells	172'6"	173'6"
grey clay	173'6"	175

Start Date 08/14/2013 Completed Date 09/23/2013

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

[ ] Driller [ ] Engineer [ ] Trainee Name (Print) Driller - Darrell Feavel

Driller/Engineer/Trainee Signature _____

Driller or trainee License No 2398

IF TRAINEE, Driller's Licensed No. _____

Driller's Signature _____

Drilling Company Bison Well Drilling & Septic, LLC

Address PO Box 5142

City, State, Zip Spanaway, WA 98387

Contractor's Registration No. BISONWD945R9 Date 09/30/2013

Ecology is an Equal Opportunity Employer.

ECY 050-1-20 (Rev 3/05) **The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.**

Wiegardt Well No. 2
Proposed Point of Withdrawal

WELL NO. 2

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

ECOLOGY

Construction/Decommission *("x" in circle)*

☒ Construction

☐ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☒ Test Well ☐ Other _____

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

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

DIMENSIONS: Diameter of well 8" inches, drilled 150' ft.
Depth of completed well 149' ft.

CONSTRUCTION DETAILS

Casing Installed: ☒ Welded 8" Diam. from +2.5 ft. to 121' ft.
☐ Liner installed _____" Diam. from _____ ft. to _____ ft.
☐ Threaded _____" Diam. from _____ ft. to _____ ft.

Perforations: ☐ Yes ☒ No
Type of perforator used _____
SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.

Screens: ☒ Yes ☐ No ☐ K-Pac Location _____
Manufacturer's Name Johnson
Type 304 S.S. cont. wrap v-wire Model No. 304 S.S
Diam. 5" Slot size 20 from 141' ft. to 120' ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: ☒ Yes ☐ No ☐ Size of gravel/sand 10/20 silica
Materials placed from 149' ft. to 100' ft.

Surface Seal: ☒ Yes ☐ No To what depth? 18' ft.
Material used in seal 3/8" bentonite chips
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

PUMP: Manufacturer's Name _____
Type: _____ H.P. _____

WATER LEVELS: Land-surface elevation above mean sea level 22' ft.
Static level 10.18 ft. below top of well Date 01/16/14
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☒ Yes ☐ No If yes, by whom? Bison
Yield: 151' gal./min. with 20' ft. drawdown after 24.0 hrs.
Yield _____ gal./min. with _____ ft. drawdown after _____ hrs.
Yield _____ gal./min. with _____ ft. drawdown after _____ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
1 min	12.54	10 min	10.62	30 min	10.30
3 min	11.35	14 min	10.58	105min	10.18
5 min	10.95	23 min	10.39		

Date of test 01/16/14 > 01/17/2014
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs
Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water 51F Was a chemical analysis made? ☒ Yes ☐ No

CURRENT
Notice of Intent No. W35321
Unique Ecology Well ID Tag No. BAF- 024
Water Right Permit No. 10351
Property Owner Name North Beach Water District
Well Street Address 252nd St. / Between "U" St. & Ash Pl.
City Ocean Park **County** Pacific
Location SW 1/4-1/4 NE 1/4 Sec 33 Twn 12 R 11 EWM or WWM ☒ circle one
Lat/Long (s, t, r Still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____
Tax Parcel No. 1211331300

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
reddish brown silty sand	0	3
brown sand	3	9
brown silty sand	9	14
brown dirty sand - moist	14	28
brown silty sand - h20	28	37
brown slightly silty sand w/wood & h20	37	45
brown/grey slightly silty sand	45	49
grey clean sand w/trace mica	49	87
brown silty grey sand	87	95
brown silty grey sand - trace wood	95	97
clean grey sand	97	100
grey sand - trace gravel	100	104
finer grey sand - slghtly silty - driving lighter	104	112
grey silty sand w/hard thin clay lenses	112	115
grey silty sand w/wood	115	118
grey sand - loose	118	120
fine brown/grey sand - silty - hard to drive	120	122
dark grey dirty sand w/shells & wood	122	124
loose dark grey sand w/shells - hard clay lenses	124	127
large pieces of wood	127	128
clean grey/brown sand	128	135
thin grey silt lenses w/wood & mica	135	136
clean grey sand w/wood	136	139
brown sand - little finer - getting dirtier	139	150

Start Date 12/02/2013 Completed Date 01/22/2014

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print) Driller - Darrell Feavel
Driller/Engineer/Trainee Signature _____
Driller or trainee License No. 2396

Drilling Company Bison Well Drilling & Septic, LLC
Address PO Box 5142
City, State, Zip Spanaway, WA 98387
Contractor's Registration No. BISONWD945RQ Date 01/21/2014

If TRAINEE,
Driller's Licensed No. _____
Driller's Signature _____

Ecology is an Equal Opportunity Employer.

ECY 050-1-20 (Rev 3/05) **The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.**

Wiegardt Well No. 3
Proposed Point of Withdrawal

Well No 3

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission *("x" in circle)*

(•) Construction
( ) Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

PROPOSED USE: ☐ Domestic ☐ Industrial ☑ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other _____

TYPE OF WORK: Owner's number of well (if more than one) Well#3
☑ New well ☐ Reconditioned ☐ Deepened
Method ☐ Dug ☐ Bored ☐ Driven ☑ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 8" inches, drilled 172' ft.
Depth of completed well 150' ft.

CONSTRUCTION DETAILS
Casing Installed: ☑ Welded 8" " Diam. from +2'6" ft. to 121' BLS ft.
☐ Liner installed " Diam. from ft. to ft.
☐ Threaded " Diam. from ft. to ft.

Perforations: ☐ Yes ☑ No
Type of perforator used _____
SIZE of perfs _____ in. by _____ in. and no. of perfs ____ from ____ ft. to ____ ft

Screens: ☑ Yes ☐ No ☐ K-Pac Location _____
Manufacturer's Name Johnson
Type 304 S.S. cont. wrap v-wire Model No 304 S.S.
Diam. 5" Slot size 20 from 142' ft. to 121' ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: ☑ Yes ☐ No ☑ Size of gravel/sand 10/20 silica
Materials placed from 150' ft. to 101' ft.

Surface Seal: ☑ Yes ☐ No To what depth? 18' ft.
Material used to seal 3/8" bentonite chips
Did any strata contain unusable water? ☐ Yes ☑ No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

PUMP: Manufacturer's Name _____
Type: _____ H.P. _____

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 9.52 TOC ft. below top of well Date 02/25/14
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☑ Yes ☐ No If yes, by whom? Robinson Noble
Yield: 151 gal./min. with 18.47 ft. drawdown after 72.0 hrs
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
1 min	11.86	15 min	9.92	90 min	9.61
5 min	10.40	30 min	9.76		
10 min	10.04	60 min	9.54		

Date of test _____
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water 51 F Was a chemical analysis made? ☑ Yes ☐ No

CURRENT
Notice of Intent No. W353212
Unique Ecology Well ID Tag No. BAF-025
Water Right Permit No. 10351
Property Owner Name North Beach Water District
Well Street Address 252nd St / Between "U" St. & Ash Pl.
City Ocean Park **County** Pacific
Location SW 1/4-1/4 ne 1/4 Sec 33 Twn 12 R 11 EWM or WWM ☑ circle one
Lat/Long (s, t, r Still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____
Tax Parcel No. 1211331300

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
dark brown top soil	0	1
tan colored silty sand	1	5
brown silty sand w/trace wood	5	12
clog	12	14
brown silty grey sand - trace wood - trace h20	14	24
brown silty sand - h20	24	37
brown / grey silt w/ grey sand	37	49
grey silt lenses w/grey sand/wood	49	53
dirty grey sand - getting courser	53	61
grey silty sand w/wood - tight	61	66
dirty grey sand - bail/drive - heaving	66	69
clean heaving grey sand	69	82
brown silty grey sand w/wood	82	84
dirty grey sand - trace gravel/wood	84	89
dirty grey sand	89	100
dirty grey sand w/seashells	100	102
dirty grey/brown sand	102	112
dirty grey/brown sand w/wood-gravel-seashells	112	121
grey/brown sand - driving loosely	121	125
thin hard grey clay lenses	125	126
grey/brown sand - bail/drive	126	138
brown/grey sand w/trace wood-seashells	138	145
brown/grey sand - getting siltier	145	149
brown sand w/1" silt layers	149	150
dirty grey/brown sand w/wood	150	154
thin grey silt layers	154	155
silty grey/brown sand	155	170
grey silt w/clay layers	170	172'6"

Start Date 01/22/2014 Completed Date 02/28/2014

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☑ Driller ☐ Engineer ☐ Trainee Name (Print) Driller - Darrell Feavel
Driller/Engineer/Trainee Signature _____
Driller or trainee License No 2398

IF TRAINEE,
Driller's Licensed No. _____
Driller's Signature _____

Drilling Company Bison Well Drilling & Septic, LLC
Address PO Box 5142
City, State, Zip Spanaway, WA 98387
Contractor's Registration No. BISONWD945R9 Date 03/13/2014

Ecology is an Equal Opportunity Employer.

ECY 350-1-20 (Rev 3/05) **The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.**

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

Ground Water Contamination
Susceptibility Assessment Survey Form

Complete **one** form for **each** ground water source (well, wellfield, spring) used in your water system (photocopy as necessary).

PART I: System Information

Well owner/manager: North Beach Water District/Bill Neal, General Manager

Water system name: North Beach Water District

County: Pacific

Water system ID number: 63000C Source number: S13

Well depth: 149 feet

Source name: Wiegardt Well No. 1

WA well identification tag number: B A F - 0 2 1

☐ Well not tagged

Number of connections: 3,200 Population served: 4,010

Township: 12 N Range: 11 W

Section: 33 ¼ ¼ Section: SW, NE

Latitude/longitude (if available): 46 29 11.66 / 124 02 25.13

How was latitude/longitude determined?

_____Global positioning device_____survey_____topographical map
_X_ other: Air Photo

*Please refer the instructions for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 09/23/2013 month/day/year

last reconstruction: ___/___/___month/day/year

☐ Information unavailable

2) Well driller: Bison Well Drilling & Septic, LLC

☐ Well driller unknown

3) Type of well: _X_ Drilled: ☐ rotary ☐ bored ☑ cable (percussion) ☐ Dug

___ other: ☐ spring(s) ☐ lateral collector (Ranney)

☐ driven ☐ jetted ☐ other:

4) Well report available ☑ Yes (attach copy to form) ☐ No

5) Average pumping rate: 150 (gallons/min)

Source of information Well Testing Report

If not documented, how was pumping rate determined?

☐ Pumping rate unknown

6) Is this source treated?

If so, what type of treatment:

☐ disinfection ☑ filtration ☐ carbon filter ☐ air stripper ☐ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

Not currently treated, but will be treated to remove Arsenic and Hydrogen Sulfide

7) If source is chlorinated, is a chlorine residual maintained: ☐ Yes ☑ No

Residual level:_____ (At the point closest to the source.)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

☐ <20 ft ☐ 20-50ft ☐ 50-100ft ☑ 100-200ft ☐ >200ft

☐ information unavailable

2) Depth to ground water (static water level):

☑ <20ft ☐ 20-50ft ☐ 50-100ft ☐ >100ft

☐ flowing well/spring (artesian)

How was water level determined?

☑ well log ☐ other _____

☐ depth to ground water unknown

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

_____ psi (pounds per square inch) **or**

_____feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ☐ Yes ☐ No

5) Wellhead elevation (height above mean sea level): 20 feet

How was elevation determined? ☑ topographic map ☐ Drilling/Well Log ☐ altimeter

☐ other:_____

☐ information unavailable

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

_____X_____ evidence of a confining layer in well log

_____ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer**? ☑ Yes ☐ No

☐ information unavailable

7) Sanitary setback:

❑ < 100ft* ☑ 100-120ft ❑ 120-200 ft ❑ >200ft

* If less than 100ft, describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

❑ wellhead enclosed in a wellhouse

☑ controlled access (describe): Pitless Well Adapter

❑ other uses for wellhouse (describe): _____

_____

❑ no wellhead control

9) Surface seal:

☑ 18 ft

❑ <18 ft (no Department of Ecology approval)

❑ <18 ft (Approved by Ecology, include documentation)

❑ depth of seal unknown

❑ no surface seal

10) Annual rainfall (inches per year):

❑ <10 in/yr ❑ 10-25 in/yr ☑ >25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 54,740,000 (gallons)

How was this determined?

☐ meter

☑ estimated: ☐ pumping rate (_____)

☐ pump capacity (_____)

☑ other: Annual water right limit for wellfield

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6-month ground water travel time: 514 feet

1-year ground water travel time: 728 feet

5-year ground water travel time: 1,627 feet

10-year ground water travel time: 2,301 feet

Information available on length of screened/open interval?

☑ Yes ☐ No

Length of screened/open interval: 20 feet

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6- month time of travel boundary?

☑Yes ☐No (mark and identify on map)

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6-month time of travel boundary?

☐ Yes ☑No (mark and identify on map)

Comments: There is a small un-named pond approximately 180 feet west of the well.

PART V: Assessment of Water Quality

1) **Regional sources of risk to ground water:**

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five-year ground water travel time. If you do not know if one of the following is present, mark the "unknown" space.

	6-month	1-year	5-year	unknown
• likely pesticide application				
• stormwater injection wells				
• other injection wells				
• abandoned ground water well				X
• landfills, dumps, disposal areas				
• known hazardous materials clean-up site				
• water system(s) with known quality problems				
• population density >1 house/acre		X	X	
• residences commonly have septic tanks		X	X	
• wastewater treatment lagoons				
• sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6-month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

If other recorded or potential sources of ground water contamination exist within the ten-year time of travel circular zone around your water supply, please describe:

Six sites are identified on the Ecology Facilities Sites Map in the general vicinity of the wells. Of the six sites, three are within the 10-year ZOC and three are outside the 10-year ZOC. None are within the 5-year ZOC. Of the three sites identified within the 10-year ZOC, to are plumbing businesses with no contamination issue listed, and one is a foundation excavation project. Of the three sites identified outside the 10-year ZOC, one is a leaking underground storage tank identified in 1995, one is a permitted underground storage tank at the same location, and one is a drum site identified as a hazardous waste generator in 1993.

2) **Source-specific water quality records**: For each type of test below, **mark the row that applies to the sample results for this source**. Consider all the sample results from the past 12 years. (MCLs are noted next to the specific test or listed in assistance package.)

A. **Nitrate:** (Nitrate MCL = 10 mg/l)

Results greater than MCL	
<2 mg/liter nitrate	X
2-5 mg/liter nitrate	
<5 mg/liter nitrate	
Nitrate sampling records unavailable	

B. **VOCs:** (VOC detection level is 0.5 ug/l or 0.0005 mg/l)

Results greater than MCL or SAL	
VOCs detected at least once	
VOCs never detected	X
VOC sampling records unavailable	

C. **EDB/DBCP:**
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)

EDB/DBCP detected below MCL at least once	
EDB/DBCP detected above MCL at least once	
EDB/DBCP never detected	X
EDB/DBCP tests required but not yet completed	
EDB/DBCP tests not required	

D. **Other SOCs (Pesticides):**

Other SOCs detected	
(pesticides and other synthetic organic chemicals)	
Other SOC tests performed but none detected	
(list test methods in comments)	X
Other SOC tests not performed	

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: EPA 531.2, 515.1, 525.2

E. **Bacterial contamination:**

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records)? None

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source? _____

Source sampling records for bacteria unavailable _____

PART VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10-year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

☐ Yes ☑ No

Describe with references to map produced in Part IV:

There is a small un-named seasonal pond approximately 180 feet west of the well. This pond is likely an expression of the same groundwater that the well accesses and probably not a hydrologic boundary.

2) Aquifer Material:

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

☐ Yes ☑ No

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

☐ Yes ☑ No

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

☐ Yes ☑ No

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within…

	YES	NO	unknown
<6-month travel time	_____	X	_____
6 month—1 year travel time	_____	X	_____
1—5 year travel time	_____	X	_____
5—10 year travel time	_____	X	_____

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within…

	YES	NO	unknown
<1-year travel time	_____	X	_____
1—5 year travel time	_____	X	_____
5—10 year travel time	_____	X	_____

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

_____

_____

_____

_____

_____

_____

_____

FORM COMPLETED BY:

Karl Johnson, PE — October 3, 2014

Print Name — Date

_____

Signature

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

Ground Water Contamination
Susceptibility Assessment Survey Form

Complete **one** form for **each** ground water source (well, wellfield, spring) used in your water system (photocopy as necessary).

PART I: System Information

Well owner/manager: North Beach Water District/Bill Neal, General Manager

Water system name: North Beach Water District

County: Pacific

Water system ID number: 63000C Source number: S13

Well depth: 149 feet

Source name: Wiegardt Well No. 2

WA well identification tag number: B A F - 0 2 4

☐ Well not tagged

Number of connections: 3,200 Population served: 4,010

Township: 12 N Range: 11 W

Section: 33 ¼ ¼ Section: SW, NE

Latitude/longitude (if available): 46 29 11.66 / 124 02 25.13

How was latitude/longitude determined?

_____Global positioning device _____survey _____topographical map
__X__other: Air Photo

*Please refer the instructions for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 01/21/2014 month/day/year

last reconstruction: ___/___/___month/day/year

☐ Information unavailable

2) Well driller: Bison Well Drilling & Septic, LLC

☐ Well driller unknown

3) Type of well: _X_ Drilled: ☐ rotary ☐ bored ☑ cable (percussion) ☐ Dug

___ other: ☐ spring(s) ☐ lateral collector (Ranney)

☐ driven ☐ jetted ☐ other:

4) Well report available ☑ Yes (attach copy to form) ☐ No

5) Average pumping rate: 150 (gallons/min)

Source of information Well Testing Report

If not documented, how was pumping rate determined?

☐ Pumping rate unknown

6) Is this source treated?

If so, what type of treatment:

☐ disinfection ☑ filtration ☐ carbon filter ☐ air stripper ☐ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

Not currently treated, but will be treated to remove Arsenic and Hydrogen Sulfide

7) If source is chlorinated, is a chlorine residual maintained: ☐ Yes ☑ No

Residual level:_____ (At the point closest to the source.)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

☐ <20 ft ☐ 20-50ft ☐ 50-100ft ☑ 100-200ft ☐ >200ft

☐ information unavailable

2) Depth to ground water (static water level):

☑ <20ft ☐ 20-50ft ☐ 50-100ft ☐ >100ft

☐ flowing well/spring (artesian)

How was water level determined?

☑ well log ☐ other _____

☐ depth to ground water unknown

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

_____ psi (pounds per square inch) **or**

_____feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ☐ Yes ☐ No

5) Wellhead elevation (height above mean sea level): 20 feet

How was elevation determined? ☑ topographic map ☐ Drilling/Well Log ☐ altimeter

☐ other:_____

☐ information unavailable

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

_____X_____ evidence of a confining layer in well log

_____ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer**? ☑ Yes ☐ No

☐ information unavailable

7) Sanitary setback:

❑ < 100ft* ☑ 100-120ft ❑ 120-200 ft ❑ >200ft

* If less than 100ft, describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

❑ wellhead enclosed in a wellhouse

☑ controlled access (describe): Pitless Well Adapter

❑ other uses for wellhouse (describe): _____

_____

❑ no wellhead control

9) Surface seal:

☑ 18 ft

❑ <18 ft (no Department of Ecology approval)

❑ <18 ft (Approved by Ecology, include documentation)

❑ depth of seal unknown

❑ no surface seal

10) Annual rainfall (inches per year):

❑ <10 in/yr ❑ 10-25 in/yr ☑ >25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 54,740,000 (gallons)

How was this determined?

☐ meter

☑ estimated: ☐ pumping rate (_____)

☐ pump capacity (_____)

☑ other: Annual water right limit for wellfield

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6-month ground water travel time: 514 feet

1-year ground water travel time: 728 feet

5-year ground water travel time: 1,627 feet

10-year ground water travel time: 2,301 feet

Information available on length of screened/open interval?

☑ Yes ☐ No

Length of screened/open interval: 21 feet

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6- month time of travel boundary?

☑Yes ☐No (mark and identify on map)

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6-month time of travel boundary?

☐ Yes ☑No (mark and identify on map)

Comments: There is a small un-named pond approximately 180 feet west of the well.

PART V: Assessment of Water Quality

1) **Regional sources of risk to ground water**:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five-year ground water travel time. If you do not know if one of the following is present, mark the "unknown" space.

	6-month	1-year	5-year	unknown
• likely pesticide application				
• stormwater injection wells				
• other injection wells				
• abandoned ground water well				X
• landfills, dumps, disposal areas				
• known hazardous materials clean-up site				
• water system(s) with known quality problems				
• population density >1 house/acre		X	X	
• residences commonly have septic tanks		X	X	
• wastewater treatment lagoons				
• sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6-month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

If other recorded or potential sources of ground water contamination exist within the ten-year time of travel circular zone around your water supply, please describe:

Six sites are identified on the Ecology Facilities Sites Map in the general vicinity of the wells. Of the six sites, three are within the 10-year ZOC and three are outside the 10-year ZOC. None are within the 5-year ZOC. Of the three sites identified within the 10-year ZOC, to are plumbing businesses with no contamination issue listed, and one is a foundation excavation project. Of the three sites identified outside the 10-year ZOC, one is a leaking underground storage tank identified in 1995, one is a permitted underground storage tank at the same location, and one is a drum site identified as a hazardous waste generator in 1993.

2) **Source-specific water quality records**: For each type of test below, **mark the row that applies to the sample results for this source**. Consider all the sample results from the past 12 years. (MCLs are noted next to the specific test or listed in assistance package.)

A. **Nitrate:** (Nitrate MCL = 10 mg/l)

Results greater than MCL	____
<2 mg/liter nitrate	X
2-5 mg/liter nitrate	____
<5 mg/liter nitrate	____
Nitrate sampling records unavailable	____

B. **VOCs:** (VOC detection level is 0.5 ug/l or 0.0005 mg/l)

Results greater than MCL or SAL	____
VOCs detected at least once	____
VOCs never detected	X
VOC sampling records unavailable	____

C. **EDB/DBCP:**
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)

EDB/DBCP detected below MCL at least once	____
EDB/DBCP detected above MCL at least once	____
EDB/DBCP never detected	X
EDB/DBCP tests required but not yet completed	____
EDB/DBCP tests not required	____

D. **Other SOCs (Pesticides):**

Other SOCs detected (pesticides and other synthetic organic chemicals)	____
Other SOC tests performed but none detected (list test methods in comments)	X
Other SOC tests not performed	____

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: EPA 531.2, 515.1, 525.2

E. **Bacterial contamination:**

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records)? None

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source? _____

Source sampling records for bacteria unavailable _____

PART VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10-year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

❑ Yes ☑ No

Describe with references to map produced in Part IV:

There is a small un-named seasonal pond approximately 180 feet west of the well. This pond is likely an expression of the same groundwater that the well accesses and probably not a hydrologic boundary.

2) Aquifer Material:

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

❑ Yes ☑ No

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

❑ Yes ☑ No

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

❑ Yes ☑ No

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within…

	YES	NO	unknown
<6-month travel time	_____	X	_____
6 month—1 year travel time	_____	X	_____
1—5 year travel time	_____	X	_____
5—10 year travel time	_____	X	_____

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within…

	YES	NO	unknown
<1-year travel time	_____	X	_____
1—5 year travel time	_____	X	_____
5—10 year travel time	_____	X	_____

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

_____

_____

_____

_____

_____

_____

_____

FORM COMPLETED BY:

Karl Johnson, PE — October 3, 2014

Print Name — Date

_____

Signature

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

Ground Water Contamination
Susceptibility Assessment Survey Form

Complete **one** form for **each** ground water source (well, wellfield, spring) used in your water system (photocopy as necessary).

PART I: System Information

Well owner/manager: North Beach Water District/Bill Neal, General Manager

Water system name: North Beach Water District

County: Pacific

Water system ID number: 63000C Source number: S14

Well depth: 150 feet

Source name: Wiegardt Well No. 3

WA well identification tag number: B A F - 0 2 5

☐ Well not tagged

Number of connections: 3,200 Population served: 4,010

Township: 12 N Range: 11 W

Section: 33 ¼ ¼ Section: SW, NE

Latitude/longitude (if available): 46 29 11.66 / 124 02 25.13

How was latitude/longitude determined?

_____Global positioning device_____survey_____topographical map
__X__other: Air Photo

*Please refer the instructions for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 03/13/2014 month/day/year

last reconstruction: ___/___/___month/day/year

☐ Information unavailable

2) Well driller: Bison Well Drilling & Septic, LLC

☐ Well driller unknown

3) Type of well: _X_ Drilled: ☐ rotary ☐ bored ☑ cable (percussion) ☐ Dug

___ other: ☐ spring(s) ☐ lateral collector (Ranney)

☐ driven ☐ jetted ☐ other:

4) Well report available ☑ Yes (attach copy to form) ☐ No

5) Average pumping rate: 150 (gallons/min)

Source of information Well Testing Report

If not documented, how was pumping rate determined?

☐ Pumping rate unknown

6) Is this source treated?

If so, what type of treatment:

☐ disinfection ☑ filtration ☐ carbon filter ☐ air stripper ☐ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

Not currently treated, but will be treated to remove Arsenic and Hydrogen Sulfide

7) If source is chlorinated, is a chlorine residual maintained: ☐ Yes ☑ No

Residual level:_____ (At the point closest to the source.)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

❑ <20 ft ❑ 20-50ft ❑ 50-100ft ☑ 100-200ft ❑ >200ft

❑ information unavailable

2) Depth to ground water (static water level):

☑ <20ft ❑ 20-50ft ❑ 50-100ft ❑ >100ft

❑ flowing well/spring (artesian)

How was water level determined?

☑ well log ❑ other _____

❑ depth to ground water unknown

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

_____ psi (pounds per square inch) **or**

_____feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: ❑ Yes ❑ No

5) Wellhead elevation (height above mean sea level): 22 feet

How was elevation determined? ☑ topographic map ❑ Drilling/Well Log ❑ altimeter

❑ other:_____

❑ information unavailable

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

_____X_____ evidence of a confining layer in well log

_____ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer**? ☑ Yes ❑ No

❑ information unavailable

7) Sanitary setback:

☐ < 100ft* ☑ 100-120ft ☐ 120-200 ft ☐ >200ft

* If less than 100ft, describe the site conditions:

8) Wellhead construction:

☐ wellhead enclosed in a wellhouse

☑ controlled access (describe): Pitless Well Adapter

☐ other uses for wellhouse (describe): _____

☐ no wellhead control

9) Surface seal:

☑ 18 ft

☐ <18 ft (no Department of Ecology approval)

☐ <18 ft (Approved by Ecology, include documentation)

☐ depth of seal unknown

☐ no surface seal

10) Annual rainfall (inches per year):

☐ <10 in/yr ☐ 10-25 in/yr ☑ >25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 54,740,000 (gallons)

How was this determined?

☐ meter

☑ estimated: ☐ pumping rate (_____)

☐ pump capacity (_____)

☑ other: Annual water right limit for wellfield

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6-month ground water travel time: 514 feet

1-year ground water travel time: 728 feet

5-year ground water travel time: 1,627 feet

10-year ground water travel time: 2,301 feet

Information available on length of screened/open interval?

☑ Yes ☐ No

Length of screened/open interval: 21 feet

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6-month time of travel boundary?

☑Yes ☐No (mark and identify on map)

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6-month time of travel boundary?

☐ Yes ☑No (mark and identify on map)

Comments: There is a small un-named pond approximately 180 feet west of the well.

PART V: Assessment of Water Quality

1) **Regional sources of risk to ground water**:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five-year ground water travel time. If you do not know if one of the following is present, mark the "unknown" space.

	6-month	1-year	5-year	unknown
• likely pesticide application				
• stormwater injection wells				
• other injection wells				
• abandoned ground water well				X
• landfills, dumps, disposal areas				
• known hazardous materials clean-up site				
• water system(s) with known quality problems				
• population density >1 house/acre		X	X	
• residences commonly have septic tanks		X	X	
• wastewater treatment lagoons				
• sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6-month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

If other recorded or potential sources of ground water contamination exist within the ten-year time of travel circular zone around your water supply, please describe:

Six sites are identified on the Ecology Facilities Sites Map in the general vicinity of the wells. Of the six sites, three are within the 10-year ZOC and three are outside the 10-year ZOC. None are within the 5-year ZOC. Of the three sites identified within the 10-year ZOC, to are plumbing businesses with no contamination issue listed, and one is a foundation excavation project. Of the three sites identified outside the 10-year ZOC, one is a leaking underground storage tank identified in 1995, one is a permitted underground storage tank at the same location, and one is a drum site identified as a hazardous waste generator in 1993.

2) **Source-specific water quality records**: For each type of test below, **mark the row that applies to the sample results for this source**. Consider all the sample results from the past 12 years. (MCLs are noted next to the specific test or listed in assistance package.)

A. **Nitrate:** (Nitrate MCL = 10 mg/l)

Results greater than MCL	_____
<2 mg/liter nitrate	X
2-5 mg/liter nitrate	_____
<5 mg/liter nitrate	_____
Nitrate sampling records unavailable	_____

B. **VOCs:** (VOC detection level is 0.5 ug/l or 0.0005 mg/l)

Results greater than MCL or SAL	_____
VOCs detected at least once	_____
VOCs never detected	X
VOC sampling records unavailable	_____

C. **EDB/DBCP:**

(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)

EDB/DBCP detected below MCL at least once	_____
EDB/DBCP detected above MCL at least once	_____
EDB/DBCP never detected	X
EDB/DBCP tests required but not yet completed	_____
EDB/DBCP tests not required	_____

D. **Other SOCs (Pesticides):**

Other SOCs detected (pesticides and other synthetic organic chemicals)	_____
Other SOC tests performed but none detected (list test methods in comments)	X
Other SOC tests not performed	_____

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: EPA 531.2, 515.1, 525.2

E. **Bacterial contamination:**

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records)? None

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source? _____

Source sampling records for bacteria unavailable _____

PART VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10-year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

☐ Yes ☑ No

Describe with references to map produced in Part IV:

There is a small un-named seasonal pond approximately 180 feet west of the well. This pond is likely an expression of the same groundwater that the well accesses and probably not a hydrologic boundary.

2) Aquifer Material:

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

☐ Yes ☑ No

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

☐ Yes ☑ No

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

☐ Yes ☑ No

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within…

	YES	NO	unknown
<6-month travel time	_____	X	_____
6 month—1 year travel time	_____	X	_____
1—5 year travel time	_____	X	_____
5—10 year travel time	_____	X	_____

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within…

	YES	NO	unknown
<1-year travel time	_____	X	_____
1—5 year travel time	_____	X	_____
5—10 year travel time	_____	X	_____

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

_____

_____

_____

_____

_____

_____

_____

FORM COMPLETED BY:

Karl Johnson, PE — October 3, 2014

Print Name — Date

_____

Signature

APPENDIX E

LOCAL GOVERNMENT CONSISTENCY STATEMENTS

Local Government Consistency Determination Form

331-568 • 8/10/2023

Water System Name: North Beach Water PWS ID: 63000

Planning/Engineering Document Title: Water System Plan Plan Date: Click/tap here to enter text

Local Government with Jurisdiction Conducting Review: Pacific County

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, the reviewer should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on page 2.

Local Government Consistency Statement	For Use by Water System Identify page(s) in submittal	For Use by Local Government Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	1-23	Yes
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	2-9	Yes
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	N/A	Not Applicable
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	1-23	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	1-21	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

July 15th, 2024
Date

Zane Johnson, Sr. Planner, Pacific County
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 the elements; 1a), b), c), d), and e), when they apply.

For **water system plans (WSP)**, a consistency review is required for the municipal water supplier's service area. Municipal water suppliers may exclude wholesale areas from the consistency review provided the water system receiving the wholesale water complies with the requirements for a consistency review when developing a water system plan for any new connection within their service area.

For **small water system management programs**, a consistency review is only required for areas where a municipal water supplier wants to expand its water right's place-of-use. If no water right place-of-use expansion is requested, a consistency review is not required.

For **engineering documents,** a consistency review is required for areas where a municipal water supplier wants to expand its water right's place-of-use (water system plan amendment is required). For noncommunity water systems, a consistency review is required when requesting a place-of-use expansion. All engineering documents must be submitted with a service area map (WAC 246-290-110(4)(b)(ii)).

A) Documenting Consistency: The planning or engineering document must include the following when applicable.

a) A copy of the adopted land use/zoning map corresponding to the service area. The uses provided in the WSP should be consistent with the adopted land use/zoning map. Include any other portions of comprehensive plans or development regulations that relate to water supply planning.

b) A copy of the growth projections that correspond to the service area. If the local population growth projections are not used, explain in detail why the chosen projections more accurately describe the expected growth rate. Explain how it is consistent with the adopted land use.

c) Include water service area policies and show that they are consistent with the utility service extension ordinances within the city or town boundaries. (This applies to cities and towns only.)

d) All **service area policies** for how you will provide new water service to new customers.

e) **Other relevant elements** the Department of Health determines are related to water supply planning. See Local Government Consistency—Other Relevant Elements, Policy B.07

B) Documenting an Inconsistency: Please document the inconsistency, include the citation from the comprehensive plan or development regulation, and explain how to resolve the inconsistency.

C) Documenting a Lack of Local Review for Consistency: Where the local government with jurisdiction did ***not*** provide a consistency review, document efforts made, and the amount of time provided to the local government for review. Please include name of contact, date, and efforts made (letters, phone calls, and emails). To self-certify, please contact the DOH Planner.

APPENDIX F

NBWD RULE AND REGULATIONS

Welcome To

North Beach Water District

Rules, Regulations, Rates

ADOPTED BY RESOLUTION DECEMBER 22, 2014 30-2014
REPLACING RULES AND REGULATIONS ADOPTED JULY 7, 2008 BY RESOLUTION 12-2008

REVISED:

MISSION STATEMENT

The mission of North Beach Water District is to provide high-quality water for residential, commercial, industrial, and fire protection uses that meets or exceeds all local, state, and federal standards and to provide courteous and responsive service at the most reasonable cost to our customers.

Contents

The following rules, regulations, and rates are established for the district's operation of the water system serving the district:

100. RULES ESTABLISHED

These rules, regulations, specifications, and policies (rules) apply to all existing and new service connections and water system facilities, development or expansion, and water main extensions within the service area of the North Beach Water District. These rules are not exclusive and are now, and may hereafter be, supplemented by other rules, codes, or resolutions of the district.

105. RATES, FEES, CHARGES, FINES, AND DEPOSITS

All rates, fees, charges, fines, and deposits referred to in these rules are located in section 1200.

110. DEFINITIONS

For purposes of this resolution, the words or phrases defined below shall have the following meanings:

110.1. After-Hours Service Call is a customer-requested action or service that requires a district employee to accomplish at a time not during the district's normal business hours of 8:00 AM to 5:00 PM Monday through Friday, excluding district-recognized holidays.

110.2. Applicant is a person or entity applying for water service connection for a real property (premises). An applicant is either the legal owner of the real property water service is being applied for or the legal owner's authorized representative.

110.3. Application for Service Fee is a nonrefundable fee that is required to be submitted with applications for existing and new water service connections.

110.4. Authorized Agent is a person with signatory powers as per a company's bylaw (if the company is a corporation); a general partner, member, or proprietor if the company is a partnership, limited liability company, or sole proprietorship, respectively; or a person designated as the attorney-in-fact by a power of attorney. If none of the above applies, a person can be

recognized as an authorized agent by providing the district written documentation signed by the property owner authorizing them as an authorized agent.

110.5. Backflow Prevention Assembly is a district-approved assembly or device for the prevention of backflow from the customer's premises to the district's water system and may include but is not be limited to double-checking valve assemblies, reduced pressure backflow assemblies, vaults, valves, piping, and all appurtenances required for a fully operational installation. For more information, refer to the district's Cross Connection Control Plan Resolution 28-2014.

110.6. Backflow Preventer Assistance Program Fee is a fee charged to a ratepayer for a district owned, tested, maintained, backflow preventer installed to isolate the ratepayer's premises due to the existence of an actual or potential cross connection. The fee is established by the board by resolution.

110.7. Backflow Preventer Testing Fee is a fee charged to a customer for a district employee, certified as a Backflow Assembly Tester (BAT) per RCW 70.119.170, to perform a field test on a customer-owned backflow prevention assembly or backflow prevention device and report the results as required in WAC 246-290-490(7); and record inspection and field test results completely, accurately, and legibly on the test report in accordance with the requirements of WAC 246-292-036.

110.8. Base Rate is the monthly fee charged for each meter connected to the District's main regardless of the amount, if any water is used on the premises. This fee is billed monthly in addition to the meter or consumption rate. Base rates are established according to meter size and are designed in accordance with the AWWA meter equivalency standard.

110.9. Billing Cycle is the period of time between bill due dates, typically from the 15th of a month to the 15th of the next month.

110.10. Board is the Board of Commissioners of the North Beach Water District.

110.11. Commercial Customer is a customer whose meter is 5/8 X 3/4 inch or larger and who supplies water to a premises containing a business or businesses operating either for profit or not-for-profit, including, but not limited to, offices, stores, markets, service stations, medical facilities, manufacturing, and industrial as well as premises with more than

two single family dwelling units, multifamily dwelling units, mobile home parks, apartments, hotels, motels, and other uses not fitting the definition of "Residential Customer," "Wholesale Customer," or "Fire Flow Customer."

110.12. Cross Connection is any actual or potential connection between the district's water supply and a nonpotable source, where it is possible for a contaminant to enter the district's water supply.

110.13. Customer Classification is the different groups of customers based on type of water use and difference in cost of service for each group. The district's customer classifications are Residential, Commercial, Wholesale, and Fire Flow.

110.14. Deposits are monies held by the district as security to ensure future payment.

110.15. District is the district or, as indicated by the context, may mean the district, district general manager, district engineer, or other district employee or agent representing the district in the discharge of his or her duties.

110.16. District Engineer is the engineer designated by the district. Any act in this resolution required or authorized to be done by the district engineer may be done on behalf of the district engineer by an independent consulting engineer contracted by the district or by the general manager.

110.17. Fire Flow Customer is a customer whose meter is 2 inches in diameter or larger and supplies water to a premises for the sole purpose of fire protection.

110.18. General Facility Charge is the charge required of all applicants for service connections to real property, where a service connection does not exist or where a service is to be enlarged or added. The charge is to be paid based on meter size. The general facility charge is a connection charge equity buy-in so that all customers have an equal equity position in the district's existing general facilities.

110.19. Late Fee is a fee applied to all accounts not paid on or before the date on which they become delinquent.

110.20. Local Facility Charge is the charge required of all applicants for service connections to real property, where the service connection will originate from a water main extension that was installed per a customer or developer water main extension agreement. The local facility charge will be

established by the board, by resolution, at the time the water main is approved and incorporated into the water system. The local facility charge will be a pro rata cost of construction of the water main extension and facilities for each property the district determines can receive water service from the water main extension and facilities.

110.21. Lock-Off Fee is a fee charged to customers when their water service has been discontinued due to nonpayment, tampering, or other violations of this rule.

110.22. Low Income Connection Charge is a reduced cost and installment plan for all connection fees for those who qualify as low income pursuant to RCW 84.36.383.

110.23. Mains are the water mains designed or used to serve more than one premises.

110.24. Manager is the general manager of the district. Any act in this resolution required or authorized to be done by the manager may be done on behalf of the manager by an authorized employee of the district.

110.25. Meter Cycle is the period of time between meter readings, typically each calendar month.

110.26. Meter or Consumption Rate is the monthly fee based on the water consumption as recorded by the service meter during the meter cycle. This fee is billed monthly in addition to the base rate. This rate is designed in accordance with the cost of water production and delivery.

110.27. Permanent Disconnection Fee is a fee paid to the district to have a service connection removed, including the meter, meter box, meter setter, and all other appurtenances, back to the main. The permanent disconnection fee is based on the size of the meter.

110.28. Person, Customer, Owner, Occupant, or Ratepayer is the individual, association, partnerships, governmental agency, and corporation; the singular number shall be held to include the plural and the masculine pronoun to include the feminine.

110.29. Premises is a real property or multiple continuous real properties, building, or a group of buildings under a single control with respect to use of water and responsibility for payment thereof. Subdivisions of such use or responsibility shall constitute a division into separate premises as defined in this section.

110.30. Returned Check Fee is a fee charged to a customer to cover the reasonable administrative cost and banking charges for processing returned checks.

110.31. Residential Customer is a customer whose water meter is 1 inch in diameter or less and who executes no trade or business either for profit or not-for-profit on the premises and has no more than two single family residences on the premises.

110.32. Service Connection is the portion of the district water supply system connecting the supply system in a premises to the district water distribution main, including the tap into the main, the water meter, and appurtenances and the service line from the main to the meter and from the meter to the property line.

110.33. Standard or Permanent Mains are the water mains conforming to the standard specifications of the district with respect to materials and minimum diameter.

110.34. Standard Specifications are those specifications for public works construction that have been adopted by the board.

110.35. Substandard or Temporary Mains are water mains that do not conform to the standard specifications of the district with respect to materials and size.

110.36. Tamper or Tampering are acts by persons that cause damage to, or alteration of, district property, including, but not limited to, service connections, shutoff valves, hydrants, mains, meters, registers, AMR equipment, and service locks, and seals by any willful or negligent act. Such persons shall be responsible for payment of costs incurred and any and all penalties prescribed by these rules and by law.

110.37. Upsizing is an existing customer has increased the size of the service connection and meter serving their premises. Upsizing must be approved by the district, and an application and fees must be submitted for approval.

110.38. Water Adequacy Notification Fee is a fee charged to customer who request the district provide a Pacific County Water Availability Notification for their property.

110.39. Water Tankers/Tender Fee is a fee charged to customers for filling a tanker or tender with water from the district's fill station.

110.40. Wholesale Customer is a customer whose meter is 2 inches or larger and is a community or group of contiguous real

properties or a building or group of buildings that receive water through a single master meter.

120. WATER SYSTEM PLAN

Pursuant to WAC 246-290-100, the district will prepare and submit a Water System Plan for approval with the Washington State Department of Health at the time intervals required by law. The purpose of the district's Water System Plan is to demonstrate the district's operational, technical, managerial, and financial capability to achieve and maintain compliance with local, state, and federal plans and regulations. Appropriately then, the plan will include specific information regarding district infrastructure, standard design specifications, practices, policies, and procedures. It is the district's intent that the Water System Plan and these rules be in agreement. Considering the Water System Plan is updated infrequently, the district recognizes there may be conflicts between the Water System Plan and these rules. In the event of conflicts, these rules will prevail.

200. APPLICATION FOR SERVICE AND CONDITIONS OF WATER SERVICE

200.1. Person's seeking an account whereby they can purchase water from the district must complete an application for water service prior to water being sold to them either through a metered water service connection appurtenant to real property or through a metered water station that fills tankers or tenders.

200.2. Duty to Pay. It is the policy of the district to keep all accounts for water service in the name of the owner of the premises (owner). Therefore, district accounts for water service shall not be transferred into or opened in the name of a tenant, occupant, or property management agent. The owner shall be responsible for all service rates, charges, fines, and fees, notwithstanding the relationship of the occupant of the premises to the owner. Pursuant to RCW 57.08.081(7), if requested in writing by the owner, the district will forward copies of bills for service rates charges, fines, and fees to and accept payments from a tenant, occupant, or property management agent. However, the duty to pay any and all service rates, charges, fines, and fees remains with the owner.

200.3. Types of Applications. There are three applications for water service used at the district. An application to transfer an existing service connection appurtenant to real property into

the name of a new owner, an application to open an account to purchase water to fill a tanker or tender, and an application for a new service connection to a real property for a residential, commercial, wholesale, or fire flow service connection.

200.4. Apply at District Office. Applications for water service will be made at the district office or at such other place or places as the board may designate.

200.5. Fee Required. Applications for water service will not be accepted unless they are accompanied with the application fee.

200.6. Application Is for Existing Service Connection. If the application is to transfer an existing metered service connection appurtenant to real property, then the applicant must complete the following before water service will be initiated:

200.6.1. Submit to the district a completed application along with the fee;

200.6.2. Submit to the district a completed cross connection survey or questionnaire; and

200.6.3. Submit to the district all other requested statements, agreements, plans, specifications, documents, and information.

200.7. Application Is for Transport. If the application is to provide water to a tanker or tender through a metered water station, then the applicant must complete the following before water will be sold or tankers or tenders will be filled:

200.7.1. Submit to the district a completed application along with the fee. The application must be signed by the owner or principle of the company if the applicant is a corporation, business, municipality, government agency, or any other type of legal entity.

200.8. Application for New Service Connection Existing Main. If the application is to provide water to real property that does not have an existing service connection and there is a water main appurtenant to the property, then the applicant must complete the following before a metered water service will be installed and water service will be initiated:

200.8.1. Submit to the district a completed application along with the fee;

200.8.2. Submit to the district a completed cross connection survey or questionnaire with the completed application;

200.8.3. Submit to the district the general facility charge based on the size of the meter with the completed application;

200.8.4. If the board has attached a local facility charge to the property the applicant must submit to the district the local facility charge with the application;

200.8.5. Submit the meter installation charge based on the size of the meter with the completed application;

200.8.6. Submit to the district all other requested statements, agreements, plans, specifications, documents, and information.

200.9. Application for New Service Connection No Main. If the application is to provide water to real property that does not have an existing service connection and there is no water main appurtenant to the property, then the applicant must use one of the methods described in section 1000 Main Extensions before a water service connection can be applied for.

200.8. Conditions of Service

As a condition of service, the applicant must accurately supply all requested information on the application and sign the application confirming:

200.10.1. They are, if applying for water service appurtenant to real property, the owner of the real property described in the application or the owner's authorized agent;

200.10.2. They agree to obtain the district's approval in advance for any change, alteration, addition, or deduction in the plumbing fixtures or water use stated in the application;

200.10.3. They agree to comply with all of the rules and regulations of the district;

200.10.4. They agree to conserve water in general and to cooperate with all requests for conservation measures of the district;

200.10.5. They agree to install and maintain at all times plumbing on their premises that complies with the Uniform Plumbing Code (UBC) and repair all leaks, regardless of size, promptly and to the district's satisfaction;

200.10.6. They agree to protect plumbing on their premises from damage that can result in waste of water due to vandalism, neglect, freezing, and other natural disasters;

200.10.7. They agree that the district has no liability or responsibility for the adequacy or condition of the water facilities installed on the applicant's premises and has no obligation to repair or replace any water facilities in or upon the applicant's premises, other than the water meter and appurtenances that the district may install to the applicant's premises pursuant to this application;

200.10.8. They agree to keep all district valve and meter boxes at grade and readily visible and accessible at all times;

200.10.9. They agree to grant district employee's right of access to the premises at all reasonable hours for any purpose related to the furnishing of water service and protection of water quality. Except where specifically authorized, employees are prohibited from entering applicant's premises to engage in repair, installation, or alteration of applicant's plumbing, piping, or fixtures.

200.10.10. They agree if required by the district to install, maintain, and regularly test a backflow preventer in accordance with the district's Cross-Connection Control Program;

200.10.11. They agree to hold harmless and defend the district, its agents, or employees for damages or loss of production, sales, or service arising from the furnishing of this water service;

200.10.12. They agree to pay all fees, interest, and charges when due;

200.10.13. They agree to notify the district prior to the installation of a water well and to not interconnect the water well with the district's water system; and

200.10.14. They agree not to allow any other adjacent properties to connect to the water for your metered service without the district's expressed written consent.

200.10.15. They agree the district may, at any time with or without notice, shut off the water supply to make repairs or improvements to the infrastructure or for nonpayment of fees and charges.

205. FACILITY CHARGES

205.1. Local Facility Charge. Local facility charge is established pursuant to a Customer-Generated Infrastructure Agreement. The district will set a specific local facility charge for real property that enters into an agreement with the district for a water main extension. A "Notice of Local Facility Charge" will be recorded on all real property as a part of the Customer-Generated Infrastructure Agreement.

205.2. General Facility Charge. Applicants seeking to connect to or increase the size of an existing service from the district's water system to provide water service to real property within the district's boundaries shall pay an equitable share of the cost of district's water system infrastructure in the form of a general facility charge.

205.3. Upsizing. When an existing customer requests that an existing service be upsized, the manager will first determine if the increased water is available for the customer at the location requested. If the manager determines water is available, the customer will complete an application for service and pays the difference between the current general facility charge for their existing service and the current general facility charge (GFC) for the requested service size prior to the service being upsized. (Example: Customer requests that their 1-inch service be increased to a 2-inch service. A 1-inch GFC is $200. A 2-inch GFC is $500. Customer pays ($500 - $200 = $300) a $300 GFC for upsized service. There will be no refund for downsizing a service. The customer will pay the current meter installation fee for the upsized meter.

205.4. Low-Income Connection Charge Installment Payments. Low-income property owners may apply for payment of connection charges in installments in accordance with the terms and conditions of this section and any form installment payment agreement approved by the district. The district's participation in the installment payment program shall be capped at $25,000 for all participants and contracts in total, commencing on effective date of the resolution that adopts this section. The contract shall be for a maximum of $3,000 per connection and shall require a minimum of 20% of the total amount financed as a down payment. "Low-income" means "combined disposable income" as defined in RCW 84.36.383, of less than $40,000.00. The installment payment program shall authorize the low-income

property owner to pay the following charges and costs in installments: installation costs under Section 1.01.190(e); if applicable, connection charges under Section 1.01.230; if applicable, water main installation charges under Section 1.01.260 and Section 1.01.270; water system connection charges under Section 1.01.350; and any interest. The contract shall be for period not to exceed 5 (five) years, payable in equal monthly installments, with interest at a rate equal to the district's rate of interest on its investments in Washington State's local government investment pool (LGIP) at the time of execution of the contract. The contract shall be a covenant running with the land and shall be binding on successors. The contract shall provide that the unpaid balance of the charges, penalties, accrued interest and district collection and foreclosure costs shall be a lien upon the property, superior to all liens and encumbrances, except liens for general taxes and special assessments, and that the district shall enforce the lien by foreclosure in accordance with RCW 57.08.081. The contract shall be recorded in the office of the Pacific County auditor at the expense of the property owner, and upon payment in full, the district shall record a release of the lien. The contract shall further provide that in the event of delinquency in payment of an installment payment, the manager may disconnect temporarily the district's water service from and refuse to supply water to the property until the entire amount due and owing is paid in full. This remedy is to be concurrent with and in addition to the district's right to foreclosure of the lien. This section, and the contract authorized in this section, shall not prevent the district, as part of a street improvement program, from replacing any existing mains with new mains of any size to prevent future street destruction for water main repairs, and such replacement may be made without cost to the abutting property owner or upon such apportionment of cost as the Board of Commissioners shall deem reasonable. New consumers may be required to make a cash deposit with the district, based upon the estimate of the three months average water usage and service fees, based upon meter size.

210. Deposit For Water Service

210.1. New consumers may be required to make a deposit with the district, based upon meter size. The deposit will be held in a non-interest bearing account and be refunded to the customer as a credit on the water bill(s) if the customer, for a period of two years, keeps their account in good standing, i.e., not more than one past due notice or delinquency occurrence.

210.2. In the event of the customer closes their account and all claims against their account are paid, the customer shall receive a refund for their deposit, which the district shall issue within 60 days.

210.3. In lieu of a deposit, the consumer can elect to provide the district with a demonstrated regular payment history from another utility that shows no delinquent or late payments for a period of twelve months.

220. Billing Dispute

220.1. When a customer believes their water use is not accurate resulting in a high water bill they can request an adjustment.

220.2. Adjustment Request. All water service billing adjustment request must be made on forms provided by the district.

220.3. If the customer does not believe he has a leak, the meter will be re-read. If the high water bill is due to a meter reading error, the customer will be notified of the amount due on the current bill along with the amount of the adjustment on the next bill (if any). If the meter reading is correct, the customer will be notified that they are responsible for the full amount of the current bill.

220.4. If the customer believes he may have a leak, then the customer will, if eligible, use a Water Leak Repair Verification form to request a leak adjustment.

220.5. Challenges to Meter Accuracy. Should the customer desire to challenge the accuracy of the meter, the following protocol will be followed:

220.6. The customer shall submit a written request to have the meter tested. The meter will be tested by the district at no cost to the customer. The customer will be allowed to view the testing. The district will make reasonable accommodations to perform the test at a mutually acceptable time.

220.7. If the meter test indicates that the meter is overstating the water usage outside of industry accepted tolerances (AWWA Manual M6 §5), the amount of overcharged consumption will be calculated from the test report results and credited to the customer's account.

220.8. In the event the test indicates that the meter is accurate within industry accepted tolerances (AWWA Manual M6 §5) or understating water usage, the customer will be notified that they are responsible for the full amount of the bill.

220.9. In the event the customer disputes the accuracy of the district's meter test and desires a test of the meter accuracy by a third party, the following terms will be offered:

220.10. In the event the independent test indicates that the meter is accurate within industry accepted tolerances (AWWA Manual M6 §5) or understating water usage, the customer will have a meter testing fee of actual cost plus the meter cost added to their next bill. The customer is responsible for the full amount of the bill.

220.11. In the event the independent meter test indicates that the meter is overstating the water usage outside of industry accepted tolerances (AWWA Manual M6 §5), the amount of overcharge consumption will be calculated from the test report results and credited to the customer's account. The district will absorb the cost of the test

230. PACIFIC COUNTY WATER AVAILABILITY NOTIFICATION

230.1. Persons who request a Pacific County Water Availability Notification (PCWAN) from the District will be issued a PCWAN provided;

230.2. Their account is active and current (no past due or delinquencies) account; and

230.3. The water availability notification fee is paid.

240. WASTE OF WATER PROHIBITED

It is prohibited to waste water or allow it to be wasted. Waste of water is defined as:

240.1. Applying water to a landscape in a manner or in excessive quantity to cause significant runoff to impervious areas or to allow significant overspray onto non-landscaped areas;

240.2. Applying water to a landscape in sufficient quantity to cause substantial puddling of that water at the ground surface;

240.3. Allowing leaking valves, pipes, closets, faucets, or other fixtures; or any pipes or faucets to run open.

240.4. Customers may, during emergencies and to prevent property damage, take measures inconsistent with this section to resolve the emergency provided; they take all reasonable measures to resolve the emergency within 48 hours.

240.5. Refusal or failure to remedy conditions or practices that waste water will result in punitive action up to and including termination of water service.

250. Cross Connection Control

250.1. Cross Connections Prohibited. Cross-connections between any private water supply and the water supply of the district, as that term is defined in the WAC 249-290-010(62), whether or not such cross-connections are controlled by automatic devices, such as check valves, or by hand-operated mechanisms, such as gate valves or stopcocks, are prohibited.

250.2. Cross Connection Control Program. Rules applicable to cross-connections between ratepayer's premises and the district's water distribution facilities are established in the North Beach Water District's Cross Connection Control Program adopted by Resolution 29-2014 on December 22, 2014, or its most current amended version.

250.3. Backflow Preventer Testing. The district intends to employ at least one Backflow Assembly Tester (BAT) certified per RCW 70.118.170 at all times. The BAT will perform field tests on:

250.3.1. District owned backflow prevention assemblies and devices, and

250.3.2. For fee(s) established by resolution of the board, backflow preventers not owned by the district that are located within the district's service area or located within the service area of other water utilities on the North Beach Peninsula.

250.4. The BAT will perform all duties associated with backflow prevention assemblies and devices in accordance with WAC 246-292-034. If the district does not have a certified BAT in its employ the district will use contracted BAT services for field

tests on district owned backflow preventers and will not offer BAT services to ratepayers or others until the district has a certified BAT in its employ.

250.5. Backflow Preventer Assistance Program. The district has developed a policy to provide backflow preventers to ratepayers who have an actual or potential cross connection on their premises that requires the premises be isolated by a Washington State Department of Health approved backflow preventer. Ratepayer's desirous of entering into the Backflow Preventer Assistance Program must:

250.5.1. Sign a Backflow Preventer Assistance Agreement between the district and the property owner, and

250.5.2. Pay the Backflow Assistance Program Fee established by the board according to the meter size on their service connection when due.

250.5.3. Follow the terms and conditions of the Backflow Preventer Assistance Agreement, the Cross-Connection Control Program, and these rules and regulations.

260. PERMANENT DISCONNECTION

An owner who desires to permanently disconnect their service connection must follow this procedure:

260.1. Submit an application to the district to have their service connection permanently disconnected from the water system,

260.2. Pay the permanent disconnection fee.

260.3. The application will be approved provided, the account is not delinquent and if there is a habitable structure on the premises, Pursuant to Pacific County Ordinance 8(5); Pacific County Department of Environmental Health has approved an alternate potable water source.

260.4. Within 30 days after the application to permanently disconnect has approved, the district will:

260.4.1. Permanently remove the water service and all appurtenances from the premises, and

260.4.2. Close the customer's account thereby stopping all service rates, charges, fines and fees from being billed to the customer.

260.5. No Guarantee of Future Water. In the event the current or future property owner wants water service reestablished for the premises, application must be made in accordance with these rules or the district's rules in force at that time provided; the district has available water at that time.

300. Service Connection Classes and Use of Water

300.1. Pursuant to RCW 57.08.081 (3) and in accordance with district policy, all water service connections will be classified as either residential, commercial, wholesale, or fire flow for billing purposes.

300.2. Residential Service are all service connections 1-inch or less in diameter and supplies water to a premises containing no more than two single family dwelling units.

300.3. Commercial Service includes all service connections 5/8 X 3/4-inch diameter or larger and supplies water to a premises containing a business or business operating either for profit or not-for-profit, including, but not limited to, offices, stores, markets, service stations, medical facilities, manufacturing, and industrial as well as premises with more than two single family dwelling units, multi-family dwellings, mobile home parks, apartments, hotels, motels, and other uses not fitting the definition of "Residential Service" or "Fire Flow Service" or "Wholesale Service" found in this section.

300.4. Wholesale Service includes all service connections 2-inch diameter or larger and supplies water to a premises or premises through a master meter to single legal entity with multiple individual owners. A wholesale service will only be approved when the board has approved, by resolution, that providing water service to the owners through individual metered service connections is not practical. Wholesale services would typically be homeowners associations, condominium owners associations, or other similar legal entities.

300.5. Fire Flow Service includes all service of 2-inch diameter or larger and supplies water to a premises for the sole purpose of fire protection. Water from a Fire Flow Service may not be used for any other purpose without the expressed written permission of the district.

300.6. It is prohibited to use the water for purposes other than those identified in the application upon which rates for water are based, or for any other purposes than that for which the

application provides, or to use it in violation of any provision of this resolution.

310. BILLINGS FOR NEW ACCOUNTS

The billing procedure for newly established accounts with the district shall be as follows:

310.1. Residential Service. The district shall commence billing the applicable service charges for residential services after the installation of the water meter and verification from the field superintendent that the meter is functional and ready to supply water to the premises.

310.2. Commercial/Wholesale. The district shall commence billing the applicable service charges for commercial/wholesale services after the installation of the water meter and verification from the field superintendent that the meter is functional and ready to supply water to the premises.

310.3. Fire Flow Service. The district shall commence billing the applicable service charges for fire flow services after the installation of the water meter and verification from the field superintendent that the meter is functional and ready to supply water to the premises.

320. METER CYCLES AND BILLING CYCLES

320.1. Water service charges will be billed monthly for water service received during the previous calendar month.

320.2. The typical meter cycle is 30 days starting on the first day of the month and ending on the last day of the month. Work schedules, inclement weather, holidays, and other unforeseeable or uncontrollable events may necessitate a delay in reading the meters of up to ten (10) days. Therefore, a meter cycle may be as long as forty (40) days or as short as Twenty (20) days resulting in fluctuating meter use charges in billing cycles. The District will make every effort to keep meter cycles evenly spaced and consistent throughout the year.

320.3. The typical billing cycle is from the 16th of the month to the 16th of the following month. Bills will be mailed on or about the 16th of each month and are due upon receipt. Bills will become past due on the 16th of the following month and the customer's account will become delinquent. If the 16th falls on

a weekend or holiday, the bill will not become past due until the first business day following the 16th.

330. LATE FEE/PAST/DUE/DELINQUENCY/SERVICE LOCK-OFF

330.1. Pursuant to RCW 57.08.081(3) the district may assess penalties for failure to pay rates, fees and charges at the times fixed by resolution. Therefore, all delinquent accounts will be assessed a Late Fee.

330.2. Pursuant to RCW 57.08.081(5) the district may curtail all or part of the water service after charges for water service are delinquent for thirty (30) or more days. Therefore, twenty-two (22) days or more after delinquency, the general manager or his designee will send the customer a past due notice that will include at least the following:

330.2.1. The date on which the water service to the premises is scheduled to be lock-off, which will not be less than eight (8) days after the date of the past due notice;

330.2.2. The total amount past due on the account;

330.2.3. The total payment that must be received by the district on or before the date the water is scheduled to be locked-off to stop the scheduled lock-off; and

330.2.4. The total amount that will be required to resume water service after the water has been locked-off.

330.2.5. That the monthly base rate will be charged to the account each month the account is delinquent, notwithstanding the fact that the service connection is locked-off.

330.2.6. That a late fee will be charged to the account each month the account is delinquent, notwithstanding the fact that the service connection is locked-off.

330.2.7. Information about district and other community programs to provide financial assistance to low income or disadvantaged persons.

330.3. If the customer fails to pay the past-due amounts on or before the date the water service to the premises is scheduled to be lock-off the district will assess the account a lock-Off fee and significantly curtail or completely shut off the water to the premises and place a district lock on the service connection to prevent unauthorized access to district water.

330.4. Once a service connection has been lock-off pursuant to section 330 resumption of water service will require the account to be paid in full, including all past due charges, late fees, lock-off fees, and current charges.

330.5. The district will perform lock-offs Monday through Thursday from the hours of 10:00 AM to 3:00 PM with the exception that no lock-offs will be performed the day before a district recognized holiday.

330.6. The district will resume water service to a locked off water service Monday through Friday 8:30 AM to 4:30 PM with the exception that no resumption of water service will be performed on district observed holidays. After-hours resumption of service is available provided, the customer must pay the after-hours service call fee in cash with exact change at the time the water service is resumed.

340. INSTALLMENT PLAN FOR LARGE BALANCES

340.1. The district will offer customers with large account balances an installment agreement provided; the customer pay at least 30% of the outstanding bill at the time of executing the agreement, and the outstanding portion of the bill will be paid in no more than six (6) equal monthly payments bearing interest at the district's bank's prime lending rate plus four (4) points.

340.2. Payments on this account will be made in addition to regular monthly water bills and all payments received will be applied to interest and penalties first, then outstanding balance next, then current bill last.

340.3. No late penalties will be assessed on the outstanding balance provided; all payments are made on time and in accordance with the agreement.

340.4. Customers will be eligible for this installment agreement provided; the agreement is in writing and signed by the customer and approved by the general manager, and arrangements were made for the installment agreement prior to lock-off for nonpayment.

340.5. Failure to comply with the terms of the agreement will result in a penalty of 10% of the outstanding account balance being applied to the account and a lock-off after eight (8) days' notice.

350. DELINQUENT ACCOUNTS CERTIFIED TO THE COUNTY AUDITOR (LIEN)

350.1. Pursuant to RCW 57.08.081(3), after the second delinquent billing cycle, the district shall send the customer a notice of intent to lien letter. The notice of intent to lien letter shall advise the customer that a lien will be filed with the county auditor if the total delinquent amount, including penalties, is not paid within a time period specified by the district.

350.2. If the customer fails to pay the delinquent amount by such date, the district shall add an additional charge to the delinquent amount, equal to the county auditor recording and releasing fees, and shall certify to and record with the county auditor the total amount due, together with interest at the rate authorized by RCW 57.08.081. Interest shall accrue on the total amount due from and after the date of certification and recording. Monthly base rates and late fees will accrue on the total amount due from and after the date of certification and recording.

350.3. After certification and recording, the district shall send a lien letter to the customer, advising the customer of such charges, penalties, interest and certification.

350.4. At any time thereafter, the district may initiate a foreclosure lawsuit.

400. LEAK ADJUSTMENT

400.1. The district is not obligated to notify customers of suspected leaks on their premises. Notwithstanding the forgoing, the district will notify customers of any suspected leaks on their premises as they become aware of them with reasonable urgency commensurate with the seriousness of the leak. However, the district assumes no responsibility or liability for any damages resulting from the leak and specifically any property damages resulting from prolonged exposure to water from the leak.

400.2. A leak adjustment may be granted by the general manager or the general manager's designee. Approved leak adjustments must meet all of the following criteria:

400.2.1. The customer must request an adjustment by submitting a completed and signed district leak adjustment application form and provide proof to the district's satisfaction.

400.2.2. The leak must be not have been known, preventable, or detectable to the customer. Leaks that are apparent, or should have been reasonably apparent to the customer or the customer failed to take reasonable preventive measures to prevent are not eligible for a leak adjustment.

400.2.3. The customer must take action to repair the leak within thirty (30) days of when district employees notify the customer of a potential leak or when the customer discovers the leak or such time period approved by the general manager, and

400.2.4. Only one leak adjustment will be granted every three (3) years per premises.

400.2.5. Leak adjustments will be based on customer charges for one billing period only and will computed as 50% times the water volume charges for that billing period.

420. DAMAGE TO OR TAMPERING WITH DISTRICT PROPERTY

420.1. Persons who cause damage to, or tampering with, district property by any willful or negligent act shall be responsible for payment of cost incurred by the district to repair the damage and any and all penalties as prescribed by these rules and by law.

420.2. No person may open, close, turn or interfere with, or attempt to, connect with any fire hydrant, valve, or pipe belonging to the district unless authorized by the manager in writing, provided that this rule shall not apply to members of the fire district or such other fire department duly authorized to operate fire hydrants while acting in such capacity.

420.3. No person may deposit, or allow to be deposited, refuse or any substance into any district reservoir or to deposit, or allow to be deposited any deleterious matter in or upon any part of the district's watershed or water supply system.

420.4. No person may operate valves in the meter box or damage the meter, meter setter, meter valve, meter box or any other appurtenance that constitutes the water service. Operating valves inside the meter box or accessing the meter box for any reason is consider by the district tampering with district facilities.

420.5. Tampering Fee/Discontinuance of Service

Customers or property owners will be charged one tampering fee per incident for services that have been discontinued and/or locked-off due to damage or tampering of district facilities. When a service is disconnected at the main or restricted from use by means other than locking-off the service, the property owner or the property owner's authorized agent must pay a deposit, determined by the general manager as adequate to cover the actual cost to repair damages, all fees, fines and charges due before a resumption of water service will be scheduled. Once the actual costs to repair are determined, by the general manager, the property owner will be billed or refunded the difference between the actual costs to repair plus all fees, fines, and charges and the amount the property owner has on deposit with the district.

500. Customer-Requested Shutoffs

The district will shut off water to a premises at the request of a customer at no cost provided; the customer provides a minimum of 24 hours' notice prior to the requested shutoff, and the shutoff and resumptions of service are conducted between the hours of 8:30 AM and 4:30 PM Monday through Friday, except on district recognized holidays. After-hours shutoffs or resumptions of service are available for customers who are willing to pay the after-hours service call fee.

510. Sprinkling during fires prohibited

No person may knowingly use water for a lawn or garden sprinkling or irrigating purposes on any premises during the progress of a fire or conflagration within the district water system.

700. Service Connections General Rules

700.1. Meter Water Required. It is the policy of the district that all water delivered through a service connection will be metered and billed accordingly. Therefore the use of idlers and spacers to deliver water to a customer through a service connection is prohibited without the expressed written permission of the general manager.

700.2. Meter Size and Type. The district will determine the size and type of the service connection and meter to be

installed based on information provided by the applicant in the application. No service connection or meter will be approved by the district if the distribution system hydraulics is not capable of providing the water within system minimum design standards.

700.3. Undersized Main. In the event an existing main is determined to be inadequate to meet the requirements of an application for service the applicant may:

700.3.1. Submit a plan prepared by a civil engineer for district approval showing onsite water facilities that will mitigate demand constraints or limitations due to the undersized main;

700.3.2. Request a Water Main Extension Agreement with the District as prescribed in section 1100 of these rules.

700.4. Choice of Main. Whenever more than one (1) main is available from which a service connection can originate, the district shall determine which main is the best choice based on water system hydraulics not customer preference or convenience.

700.5. Location of Meter. Service connections shall be installed at nominal right angles to a main in accordance with district standard designs. The point of connection shall not be within a street intersection from curb return to curb return, nor shall any portion of the service connection be within an intersection. The meter location shall be directly adjacent to the parcel being served within the public right-of-way. In the event public right-of-way is not available, the district may approve installation within an easement or alley adjacent to or on the parcel to be served. In alleys or easements, meters shall be located at a point as close as practicable to the property line within which the main is located. All meters shall be located outside of driveways and other areas where access by district personnel for operation and maintenance may be restricted. The meter vault shall be located outside of travel lanes and driveways and shall be protected from vehicular traffic, as determined by the district. If the applicant feels extraordinary conditions exist that would prevent compliance with this requirement, he may submit to the district a written request for a waiver of this requirement at the time the water plan is submitted for review.

700.6. Relocation of Meter. In the event an applicant desires to have their service connection moved to an alternate location, or the general manager determines, due to grading or regarding of the public streets, that the service connection needs to be

moved to an alternate location, then the applicant and the general manager will determine a mutually acceptable location for the service. If a mutually acceptable location is not found the general manager will determine the alternate location for the service connection. The applicant will pay the actual cost, as determined by the district, for relocating the service connection.

700.7. Isolation Valve. Before initiating water service the applicant will verify that they have installed a separate isolation valve to the premises and each building located on the premises that has plumbing facilities. If the valve is installed below grade the valve must meet the ANSI/AWWA C800— "Underground Service Line Valves and Fittings" standard and be installed in an appropriate valve box for the application.

700.8. Unsatisfactory Service. In the event a premises in not being served satisfactorily and the general manager determines the meter is undersized for the water use on the premises, then the general manager may require the applicant to install a larger meter or provide separate meters for facilities within the premises to provide satisfactory service. The applicant must apply for and pay all fees and charges for the upsized or auxiliary service connections in accordance with these rules.

700.9. Composition of Materials. Specifications for materials, appurtenances, and construction techniques for service connections are approved by the district and can be found in the district's Water System Plan.

700.10. Ownership. Service connections, including laterals, meters, boxes, shutoff valves, backflow assemblies, and other appurtenances, shall be and remain the property of the district. Upon acceptance of the installation by the district, the district shall be responsible for the maintenance and repair of such facilities, subject to any agreements covering the installation of such facilities. All pipe and fittings on the customer's side of the meter or backflow prevention assembly, or all facilities within the customer's property shall be installed by and owned and maintained by the property owner. Any entry into, or work, including but not limited to operation, maintenance, repair, or relocation of district property by any unauthorized person is expressly prohibited.

700.11. Installation of Service. All service connections will be installed by the district. Service connections will be installed after the district has approved all of the applicant's applications, questionnaires, plans, and requests for

information and the applicant has paid all required fees and charges.

700.12. Temporary Service. Water service may be supplied to a premises on a temporary basis during the construction of a building on the premises or during the construction of a standard main to serve the premises as long as it meets requirements for adequate backflow prevention. Application for temporary service shall only be approved upon payment of all fees required by this resolution. This application shall state fully the purposes for which water is desired, the circumstances that require service by temporary means, and the duration for which temporary service is necessary. All costs necessary to install and remove the temporary service shall be paid by the applicant. Upon completion of the work for which the temporary service was necessary, the owner shall immediately apply for permanent service to the premises and the temporary service shall be removed. Failure to obtain permanent service shall be cause for immediate discontinuance of water supply to the premises.

710. Emergency Interruption of Service

In case of an emergency, or whenever the public health, safety, or equitable distribution of water so demands, the manager may reduce or limit the time for or temporarily discontinue the use of water. Water service may be temporarily discontinued for purposes of making repairs, extensions, or doing other necessary work. Before so changing, reducing, limiting, or discontinuing the use of water, the district shall notify, insofar as practicable, all water consumers affected. The district shall not be responsible for any damage resulting from interruption, change, or failure of the water supply.

800. Displacement of District Facilities

All persons, contractors, corporations, and municipalities performing construction work in streets or utility rights-of-way, such as grading, regarding, filling, trenching, or paving shall give the manager thirty days' written notice in case it becomes necessary during the work to remove, displace, or change any water mains, pipes, fittings, meters, valves, or other waterworks appurtenances that may interfere with the prosecution of such work. Damage to any part of the water system shall make such person, contractor, corporation, or municipality liable to the district for the cost of necessary repairs and replacements.

900. Service Agreements with Other Governmental Units

The board may enter into separate agreements with any other municipal corporation, or governmental unit, or legal entity for the purpose of obtaining or providing any service relating to water supply as provided by law. Terms of such agreements shall be approved, by resolution, by the board for each agreement.

1000. Wholesale Service Connections—Board Authorization Required

1000.1. The board may authorize, by resolution, water service to a community or number of contiguous real properties to be furnished through a master meter upon finding that service through individual meters is not practical. Where communities or a group of contiguous properties are granted service through a master meter, such meter shall be furnished, installed, maintained, and kept within the exclusive control of the district. The cost of the installation, including the master meter, shall be at the expense of the applicant.

1000.2. A legal entity such as a corporation, condominium association, or other form of organization, which is acceptable to the district, shall be the applicant set forth in the resolution.

1000.3. Applications for water service under the provisions of this section shall be made on district forms furnished for that purpose. The application shall include a detailed description of the premises to be served, the name and nature of the organization that is to be the applicant, the conditions or circumstances precluding service by individual meters and such other information as the board may deem pertinent.

1000.4. Applicants for wholesale service connections shall submit with the application detailed plans of their systems in such form as specified by the district engineer. Applicant shall, prior to commencement of and work, obtain from approval from the district engineer for all work or modifications to approved work and.

1000.5. Water service, under the terms of this section, shall be limited to those premises described in the application. Service to additional premises, not included in the original application shall require a separate application and approval.

1000.6. The ownership of the water system beyond the master meter shall belong to the applicant and the operation, repair,

expansion and renewal of the system shall be the responsibility of the applicant. The district's responsibility shall terminate with the master meter.

1000.7. Any violation of the procedures required by this section shall be cause for immediate discontinuance of service to the wholesale customer by the district.

1100. MAIN EXTENSIONS—BOARD APPROVAL REQUIRED

1100. Water Main Extension Agreements. At the request of an owner or owners of real property within the district, or the owner's authorized agent(s) (applicant), the board may approve water main extension agreements, by resolution, authorizing the applicant to construct a main extension(s) to the district's distribution system according to the terms and conditions set forth in the water main extension agreement. The main extension(s) shall be constructed by the applicant at their cost and expense and pursuant to developer extension agreements. The district may elect to participate in the construction or financing of the extension pursuant to this chapter.

1101. District Participation in Extension—Oversizing. The district may participate in developer extensions through oversizing as follows:

1101.1. Prior to execution by the district of a developer extension agreement, the developer shall determine whether the extension should be larger in size ("oversizing") than is necessary to serve the developer's property in accordance with the Water System Plan and district standard specifications, in order to serve other real property in the vicinity of the developer's property.

1101.2. If the engineer determines that the extension should have oversizing, based on either the review provided by the developer or based upon district review, the developer shall prepare a report regarding the proposed oversizing, including but not limited to the size required for the developer's property, the size of the oversizing for the development, the estimated cost of the oversizing, and the method for reimbursing the developer for the cost of the oversizing.

1101.3. Based on district review and concurrence with the report and any other relevant information, and prior to execution by the district of a developer extension agreement, the board of commissioners may by motion approve or disapprove

the proposed oversizing and the reimbursement method. Except to the extent modified by the board's motion, the oversizing shall be governed by the terms and conditions of a developer extension agreement, including the oversizing section of the agreement.

1101.4. The district shall be entitled to latecomer reimbursement for its costs of oversizing in the same manner as the developer. The district's latecomer reimbursement shall be determined in the same manner and to the same extent as the developer's latecomer reimbursement. All costs associated with the design and district review of the development extension and development extension agreement shall be fully borne by the developer.

1102. District Participation in Developer Extension—Financing. The district may participate in the financing of developer extensions in the manner and to the extent authorized by resolution of the board of commissioners.

1110. LATECOMERS AGREEMENT

Latecomer reimbursement for a portion of the costs of an extension constructed pursuant to a developer extension agreement shall be determined as follows:

1110.1. The owner or owners of the real property that is the subject of the extension, or the owner's representative ("developer"), shall advise the district of the completion of the extension. Upon receiving such notice, the engineer shall send by first class mail to the developer at the address shown in the developer extension agreement a written notice to submit within thirty days of the date of the notice, in a form and format approved by the district engineer, all extension cost information, which shall include but not be limited to design, engineering, installation, inspection and restoration. The developer shall submit any additional extension cost information that is requested by the district engineer within 10 days of the date of the request. If the developer fails to submit the additional cost information, within thirty days of the date of the request, the developer shall be deemed to have waived the latecomer reimbursement.

1110.2. The district engineer shall audit the information submitted by the developer. The extension costs for purposes of reimbursement shall be determined by the district engineer based on the audit.

1110.3. If the developer fails to submit the original or any supplemental extension cost information within the specified time periods, the district engineer shall send by first class mail to the developer at the address in the developer extension agreement a written notice that the developer will be deemed to have waived its statutory right to reimbursement of its extension costs unless the cost information is submitted within fourteen days of the date of the notice. If the developer does not submit the information within the fourteen-day period, the statutory right to reimbursement of extension costs shall be waived.

1110.4. Following the district engineer's determination of the extension costs, the engineer shall determine a preliminary reimbursement area and, based on a method selected by the district engineer, the preliminary pro rata share of the extension costs. The preliminary reimbursement area shall be based upon a determination of which parcels abutting the water lines can be served from the extension and are not at the time of the determination served by other water lines.

1110.5. After determining the preliminary reimbursement area and pro rata share, the district engineer shall prepare the reimbursement agreement and send it to the developer for signature.

1110.6. Following receipt of a signed reimbursement agreement and acceptance of the extension by the district engineer, the board of commissioners by motion shall set a hearing on the reimbursement. The general manager shall cause notice of the hearing to be sent by first class mail at least 10 days before the hearing to the developer, at the address in the developer extension agreement, and to the owners of real property that will be subject to reimbursement, as shown on the records of the county assessor.

1110.7. At the hearing, all persons desiring to speak shall be heard by the board of commissioners. Following the hearing, the board of commissioners shall by resolution approve a reimbursement agreement for signature by the general manager, and if applicable, authorize a cash deposit for completion of the extension.

1110.8. After execution by all parties, the general manager shall cause the reimbursement agreement to be recorded with the county auditor.

1110.9. The owner of a real property subject to reimbursement may submit a written request to the district to segregate the reimbursement. The request shall reference the original reimbursement agreement, identify the original real property, contain a legal description of the proposed divided parts, and show the proposed amounts of reimbursement for the divided parts. The board of commissioners may by resolution segregate the reimbursement. The owner shall pay the reimbursement segregation fee as determined.

1120. CUSTOMER-GENERATED INFRASTRUCTURE AGREEMENT (CGI)

CGI extension constructed pursuant to a developer extension agreement shall be determined as follows:

1120.1. Purpose. The Board of Commissioners may authorize construction and financing of water mains and facilities ("water extensions") to serve an area of existing single-family residences pursuant to this policy. Undeveloped properties in the area may also benefit from this policy provided, the properties that initiate the customer-generated infrastructure are developed single family residences.

1120.2. Property Owners Request. One or more property owners, on which are located existing single-family residences, may request the district in writing to construct and install a water extension to serve the residences. The request must be through an application, in a form approved by the general manager. The application must include the name, address, telephone number and email address of every property owner requesting water service. The application must be accompanied by a nonrefundable customer-generated infrastructure application fee identified in section 1.01.390 of the North Beach Water District's rules and regulations. For an application filed by the owner of one single-family residence to serve only that residence, the procedures and requirements of this chapter will apply, provided that the Board of Commissioners ("Board") will not hold a hearing pursuant to Section 5 or a supplemental hearing pursuant to Section 6, but instead will send a letter to the requesting owner, inviting the owner to attend the meeting at which the project or the quotes for the project will be considered by the board.

1120.3. District Review of Request. Upon receipt of the request and payment of the customer-generated infrastructure application fee, the district's general manager or designee will prepare a report on the request. The report will include the size and

location of the water extension necessary to serve the property of the requesting owner(s), the estimated cost of the proposed project, the estimated pro rata share of the cost to be borne by all benefited real property owners, the amount of the Water System Connection Charge, a statement of whether the proposed project may be constructed pursuant to the small works roster, and any other information deemed relevant by the general manager. The general manager may consider whether the water extension should be larger in size ("oversizing") than is necessary to serve the benefited real property. If the general manager determines that the water extension should have oversizing, the general manager will also include in the report all relevant information related to the oversizing, including but not limited to, the size and depth required for the water extension to serve the benefited real property, the size of the oversizing and the estimated cost of the oversizing, which will be paid for by the district. The general manager will send a copy of the report to all requesting property owners.

1120.4. Property Owner Support for Request. The board must proceed further with the request if it is supported by at least thirty percent (30%) of the owners of real property that will be served by the proposed project as shown on the records of the county assessor. The board, at its discretion, may determine by motion to proceed further with a request that is supported by less than thirty percent (30%) of the real property that will be served by the proposed project. Each requesting owner must execute and submit to the district, prior to the setting of a hearing on the proposed project as provided in Section 5, a participation agreement for customer-generated infrastructure ("CGI agreement") in a form approved by the general manager. The CGI agreement must include a provision that the owner appoints the general manager or designee as its "attorney-in-fact" to execute the contract amendment of Section 7 if the owner or its successors in interest fail to execute the installment payment contract of Section 10 within thirty days of a written request to do so by the general manager. The district will establish the interest rate and Water System Connection Charge at the date of execution of the CGI agreement.

1120.5. Hearing and Board Consideration. Following submission of the signed CGI agreement(s), the board will set a public hearing on the proposed project. Notice of the public hearing must be sent by first class mail to the owners of benefitted real property, as shown on the records of the county assessor, at least ten (10) days before prior to the hearing. The term

"benefitted real property" means real property that will abut (front) the water extension, provided the property does not currently have a district water main abutting a different property line through which they have access to water service. The owners hereafter shall be referred to as the "requesting property owners" and the "non-requesting but benefited property owners." The notice must include, in summary form, the information described in Section 3. The notice for the non-requesting but benefited property owners shall include a statement that such property owners are not required to connect to the district water system upon completion of the project, and that connection to the district water system thereafter is optional. The board may approve the project by motion. The board may approve oversizing of the project by resolution. If the board does not approve the project, the CGI agreement(s) will become void and the down payments will be refunded.

1120.6. Bid/Award/Contract/Completion of Project. After board approval of the project, the general manager will cause the project to be designed and obtain bids for the project, or at the general manager's discretion, use the small works roster for projects that qualify. If the general manager receives at least one responsive quote or bid from a responsible bidder that is not more than ten percent (10%) greater than the general manager's estimate, and the general manager recommends a contract for the project be awarded then, the board will award the contract by motion at a regular or special meeting. If the quotes or bids are more than ten percent (10%) above the general manager's estimate, the general manager must send a notice by first class mail to the benefitted real property owners, which notice will advise the benefitted real property owners of the general manager's estimate and the quote or bid, and will request such owners to indicate their interest in proceeding at the actual cost of the project. Based on the answers of such owners, the general manager must advise the board, at a meeting of the board, of the reasons for recommending acceptance or rejection of the quotes or bids. If the bids are acceptable to the board, the board will, by motion, accept the quotes or bids, and the project will proceed to construction. If the board rejects the quotes or bids, the board must set a supplemental hearing on the proposed project, notice of which must be given to the same owners in the same manner as the original hearing. The notice must include a short explanation of the reasons for recommending rejection of the quotes or bids. After the supplemental hearing, the board may authorize by motion continuation or termination of the project under such terms and

conditions as are approved by the board. If the project is terminated, the CGI agreement(s) will become void and the down payments will be refunded.

1120.7. Acceptance and Final Approval of Project. After final acceptance of the project, the board must by resolution approve the final cost and pro rata share of the project (without oversizing). The resolution must include the nature and extent of the project (without oversizing), the total costs, the method of determining the pro rata share, the pro rata share for each benefitted real property, the legal description of the benefitted real property, and any other information deemed appropriate by the board. The final cost of oversizing, as determined by adoption of a resolution of the board, will be considered a component of the district's Water System Connection Charge.

1120.8. Local Facility Charge. The pro rata share of the project that is assessed upon the benefitted real property shall be deemed to be an equitable share of the cost of local facilities, and payment thereof will satisfy the district's local facility charge.

1120.9. Segregation of Local Facility Charge. The owner of real property subject to a local facility charge may submit a written request to the district to segregate the charge. The request must reference the resolution establishing the local facility charge, identify the original real property, contain a description of the proposed divided parts, and show the proposed amounts of the charge for the divided parts. The board may by resolution segregate the local facility charge. The owner must pay a reimbursement segregation fee identified in Section 1.01.390 of the district's rules and regulations for this request.

1120.10. Connection Charges—Installment Agreement. Within seven days after the board adopts the resolution approving the final cost and pro rata share of the project, the general manager must send to all property owners who have signed a CGI agreement a copy of the resolution and the final installment payment agreement, in a form approved by the general manager. The general manager also must send a notice to all such property owners, requiring them to sign and return the final installment payment agreement within thirty days of the date of the notice, and requiring them to submit an application and related filing fee for connection to the district's water system within the same thirty-day period. If such property owners have not

returned a signed installment payment agreement within the thirty-day period, the general manager shall exercise the power of attorney granted in the CGI agreement to execute the installment payment agreement on behalf of the property owner. The general manager will cause all executed installment payment agreements to be recorded with the Pacific County auditor. The Water System Connection Charge for the property covered by an installment payment agreement shall be the amount of such charge in effect at the time the CGI agreement was executed, as long as the property owner connects the property to the project within thirty days of approval of the connection by the district.

1120.11. Required Connection. The property owners executing the CGI agreement must connect to the project. These property owners must submit the Water Service Application and Fee within thirty days of the date of the notice in Section 1129. These property owners must complete connection to the project within thirty days of the district's approval of the application. If these property owners fail to file the application and pay the fee by the deadline, or fail to connect within thirty days of the district's approval of the application, the district shall commence water service charges against the property owner and the property in accordance with district's rules and regulations.

1200. Schedule of Rates, Service Charges, Fees, and Fines

Section	General Fee and Charges	Rate
1200.1.	Tampering Fee	$180.00
1200.2.	Late Fee	$20.00
1200.3.	Lock-Off Fee	$80.00
1200.4.	After-Hours Service Call Fee	$115.00
1200.5.	Application for Service Fee	$60.00
1200.6.	Returned Check Fee	$30.00
1200.7.	Water Tankers/Tender Fee (plus 5x meter rate)	$120.00
1200.8.	Water Adequacy Notification Fee	$30.00

Section	Deposits	Rate
1200.9.	Residential 5/8″ X 3/4″	$125.00
1200.10.	Residential 1″	$175.00
1200.11.	Commercial 5/8″ X 3/4″	$150.00
1200.12.	Commercial 1″	$200.00
1200.13.	Commercial 1.5″	$450.00
1200.14.	Commercial/Wholesale/Fire Flow 2″–4″	$1,500.00
1200.15.	Commercial/Wholesale/Fire Flow 6″–8″	$4,000.00

Section	Meter Installation Fee	Rate
1200.16.	Residential 5/8″ X 3/4″	$1,100.00
1200.17.	Residential 1″	$2,450.00
1200.18.	Commercial 5/8″ X 3/4″	$1,100.00
1200.19.	Commercial 1″	$2,450.00
1200.20.	Commercial 1.5″	$3,550.00
1200.21.	Commercial/Wholesale/Fire Flow 2″	$3,950.00
1200.22.	Commercial/Wholesale/Fire Flow > 2″ Priced on Request	

Section	General Facility Charge	Rate
1200.23.	Residential 5/8″ X 3/4″	$2,000.00
1200.24.	Residential 1″	$3,250.00
1200.25.	Commercial 5/8″ X 3/4″	$2,000.00
1200.26.	Commercial 1″	$3,250.00
1200.27.	Commercial 1.5″	$6,500.00
1200.28.	Commercial/Wholesale/Fire Flow 2″	$10,500.00
1200.29.	Commercial/Wholesale/Fire Flow 3″	$35,000.00
1200.30.	Commercial/Wholesale/Fire Flow 4″	$50,000.00
1200.31.	Commercial/Wholesale/Fire Flow 6″	$80,000.00
1200.32.	Commercial/Wholesale/Fire Flow 8″	$150,000.00

Section	Local Facility Charge
1200.33.	As established by resolution of the board at the completion of a water main and/or facilities extension per the terms and conditions of a customer or developer water main extension agreement.

Section	Permanent Disconnection Fee	Rate
1200.46.	Residential 5/8″ X 3/4″	$350.00
1200.47.	Residential 1″	$350.00
1200.48.	Commercial 5/8″ X 3/4″	$350.00
1200.49.	Commercial 1″	$350.00
1200.50.	For Commercial/Wholesale/Fire Flow ≥ 1.5″ Actual cost of removal of meter and all appurtenances back to water main	

Section	Metered Rates Residential—per 100 cubic feet					
Starting Ending Rate	2020 ↓	2021 ↓	2022 ↓	2023 ↓	2024 ↓	2025
1200.34.	$4.60	$4.81	$5.02	$5.25	$5.49	$5.73

Section	Metered Rates Commercial/Wholesale/Fire Flow—per 100 cubic feet					
Starting Ending Rate	2020 ↓	2021 ↓	2022 ↓	2023 ↓	2024 ↓	2025 ↓
1200.35.	$4.60	$4.83	$5.07	$5.33	$5.59	$5.87

Section	Base Rates Residential—Billed Monthly Based on Meter Size						
Starting Ending Rate	Meter Size	2020 ↓	2021 ↓	2022 ↓	2023 ↓	2024 ↓	2025 ↓
1200.36.	5/8 X 3/4	$44.98	$46.33	$47.72	$49.15	$50.63	$52.14
1200.37.	1 inch	$75.10	$77.35	$79.67	$82.06	$84.53	87.06

Section	Base Rates Commercial/Wholesale—Billed Monthly Based on Meter Size						
Starting Ending Rate	Meter Size	2020 ↓	2021 ↓	2022 ↓	2023 ↓	2024 ↓	2025 ↓
1200.38.	5/8 X 3/4	$44.98	$47.23	$49.59	$52.07	$54.67	$57.41
1200.39.	1 inch	$75.10	$78.86	$82.80	$86.94	$91.28	$95.85
1200.40.	1.5 inch	$150.00	$157.50	$165.38	$173.64	$182.33	$191.44
1200.41.	2 inches	$232.00	$243.60	$255.75	$268.57	$282.00	$296.10
1200.42.	3 inches	$262.00	$275.10	$288.86	$303.30	$318.46	$334.39
1200.43.	4 inches	$348.69	$348.69	$352.58	$360.74	$369.12	$377.73
1200.44.	6 inches	$677.23	$677.23	$684.68	$700.53	$716.81	$733.51

Section	Base Rates Fire Flow—Billed Monthly Based on Meter Size						
Starting Ending Rate	Meter Size	2020 ↓	2021 ↓	2022 ↓	2023 ↓	2024 ↓	2025 ↓
1200.45.	2 inches	$37.75	$38.67	$39.59	$40.51	$41.43	$42.35
1200.51.	3 inches	$48.75	$55.96	$63.17	$70.38	$77.59	$84.80

1200.52.	4 inches	$62.55	$71.54	$85.24	$98.69	$115.19	$132.50
1200.53.	6 inches	$248.08	$260.49	$273.51	$287.18	$301.54	$316.62
1200.54.	8 inches	$363.66	$381.84	$400.94	$420.98	$442.03	$464.13

Section	Backflow Preventer Testing Fee	Rate
1200.55.	DCVA/RPBA ≤ 2″ unscheduled in district	$38.00 ea.
1200.56.	DCVA/RPBA ≥ 3″ unscheduled in district	$85.00 hr.
1200.57.	DCVA/RPBA ≤ 2″ unscheduled out district	$58.00 ea.
1200.58.	DCVA/RPBA ≥ 3″ unscheduled out district	$108.00 hr.
1200.59.	Scheduling Fee	$30.00 ea.

Section	Backflow Preventer Assistance Program Fee Double Check Valve Assembly (DCVA)	Rate
1200.60.	Residential 5/8″ X 3/4″	$6.95
1200.61.	Residential 1″	$7.45
1200.62.	Commercial 5/8″ X 3/4″	$6.95
1200.63.	Commercial 1″	$7.45
1200.64.	Commercial 1.5″	$13.00
1200.65.	Commercial/Wholesale 2″	$14.00
1200.66.	Commercial/Wholesale 3″	$50.00

Section	Backflow Preventer Assistance Program Fee Reduced Pressure Backflow Assembly (RPBA)	Rate
1200.67.	Residential 5/8″ X 3/4″	$18.25
1200.68.	Residential 1″	$19.00
1200.69.	Commercial 5/8″ X 3/4″	$18.25
1200.70.	Commercial 1″	$19.00
1200.71.	Commercial 1.5″	$42.00
1200.72.	Commercial/Wholesale 2″	$43.50
1200.73.	Commercial/Wholesale 3″	$80.00

1210. SEVERABILITY

The provisions of this resolution are declared separate and severable. If any provision of this resolution or its application to any person or circumstance is held invalid, the remainder of this resolution or application of the provision to other persons or circumstances shall be unaffected.

APPENDIX G

WATER SYSTEM CONSTRUCTION STANDARDS

NORTH BEACH WATER DISTRICT
(NBWD)

PACIFIC COUNTY, WASHINGTON

CONDITIONS and STANDARDS

FOR

CONSTRUCTION of DEVELOPER EXTENSIONS

(2014 EDITION)

ADOPTED BY RESOLUTION NO. _____

DATE: _____

Prepared by:

Gray & Osborne, Inc., Consulting Engineers
2102 Carriage Drive SW Building I
Olympia, Washington 98502

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Methods of Construction

SECTION 1

GENERAL CONDITIONS OF CONSTRUCTION

SECTION ONE

GENERAL CONDITIONS OF CONSTRUCTION

1. DEFINITIONS:

(a) "Board of Commissioners." The "Commissioners" of North Beach Water District (NBWD) or their authorized representative.

(b) "Concerned Parties." Those persons, companies, or agencies designated by NBWD as required to attend the preconstruction conference.

(c) "Contract Documents." The contract documents shall consist of the following and in case of conflicting provisions, the first mentioned shall have precedence; unless otherwise approved by NBWD:

(1) Developers Agreement for Water Main Extensions
(2) Change Orders (if NBWD approved)
(3) Addenda
(4) Conditions and Standards of Extensions to the NBWD Water System
(5) Standard Specifications (WSDOT Standard Specifications)
(6) Plans (Approved by NBWD)
(7) Standard Details (WSDOT)

These documents shall form the Contract.

(d) "Contractor." The person or firms employed by the Developer to do any part of the Work, all of whom shall be considered agents of the Developer.

(e) "Design." The preparation of the Plans for the extension to NBWD's water distribution system.

(f) "Developer." The party having an agreement with NBWD to cause the installation of water works improvements, to become a part of NBWD's water system upon completion and acceptance and includes the Developer's agents.

(g) "Developer's Engineer." The engineering firm, and that firm's representatives, retained by Developer to design the Plans for the Work and which shall be considered agent of the Developer.

(h) "NBWD Engineer or Engineer". The engineer employed by NBWD or the engineering firm, and that firm's representatives retained by NBWD to act as the Engineer for the Work.

(i) "Extension(s)". The water system to be constructed according to this agreement and connected to NBWD's water distribution and/or sewer collection system and transferred to NBWD for operation and maintenance.

(j) "Maintenance Bond." A bond furnished by the Developer and written by a corporate body qualified to write surety in the State of Washington,

guaranteeing that the Developer will repair any defects found in the work within one year of the date of formal acceptance of the work by NBWD.

(k) "Otherwise Specified", or "As Specified". The directions contained in the Plans, Special Specifications, if any, and otherwise as given by NBWD incident to the performance of the Work other than in these General Specifications.

(l) "Operations Manager." NBWD's duly appointed Water & Field Superintendant - Planning Manager.

(m) "Performance Bond." A bond furnished by the Developer and written by a corporate body qualified to write surety in the State of Washington, guaranteeing that the work will be completed in accordance with the plans and specifications.

(n) "Plans or Construction Drawings." NBWD approved drawings, including reproductions thereof, of the work to be done as an extension to NBWD's water distribution system, prepared by an Engineer licensed in the State of Washington.

(o) "Standard Specification." All work shall conform to the latest edition of The Standard Specification for Road, Bridge and Municipal Construction prepared by the Washington State Department of Transportation and the Washington State Chapter of American Public Works Association, and current amendments thereto, except as may be specifically modified herein.

(p) "Specifications." The directions, provisions, and requirements approved by NBWD Board of Comissioners for the performance of the work and for the quantity and quality of materials.

(q) "Work." The labor or materials or both, superintendence, equipment, transportation, and other facilities necessary to complete the Contract.

2. PURPOSE:

NBWD is responsible for insuring that water mains are constructed in accordance with currently accepted standards for public work. The requirements imposed upon developers and contractors are intended by NBWD as a contract with the Developer, which incorporates minimum standards prerequisite to acceptance of the Work by NBWD as part of its water distribution system. Privately constructed extensions will not be permitted to connect to NBWD's system unless the Work is performed and paid for in accordance with this Agreement.

3. AUTHORITY OF NBWD:

NBWD shall have authority to approve, reject or require changes in Plans designed by Developer's Engineer; to require such changes in the Plans during the course of work; to inspect the work; to stop work to insure compliance with the approved Plans and Specifications; to reject non-conforming work and materials; and to decide questions which may arise in the execution of the Work. NBWD shall have the authority to impose fines for violation of NBWD policies adopted pursuant to resolution.

4. DEVELOPER TO BE INFORMED:

The Developer shall keep fully informed regarding the nature, quality and extent of the work to be done, and if in doubt, to secure specific instructions from NBWD.

The Developer shall keep a competent supervisor on the Work site during its progress who shall represent the Developer, and to whom instructions may be given as though to the Developer. The Supervisor shall be familiar with the Plans and Specifications and shall promptly report to NBWD any error, inconsistency or omission which may be discovered.

The Developer shall enforce discipline and good order among its employees and shall not employ on the Work site any unfit person or anyone not skilled in the work assigned. Employees or agents of the Developer who may impair the quality of the construction shall be removed from the Work site upon the written request of NBWD.

5. PLANS AND SPECIFICATIONS ACCESSIBLE:

One copy of the Plans and Specifications shall be constantly accessible on the job.

6. FINAL INSPECTION:

All material and completed work are subject to final inspection and testing by NBWD to determine whether the Work complies with the Plans and Specifications.

7. "AS-BUILT" DRAWINGS:

The Developer will maintain "as-built" information about the project as it is constructed. The drawings shall be made available to NBWD upon completion of the project in the form of "as-built" records.

8. OWNERSHIP OF PLANS:

The originals of all "as built" Plans prepared by Developer's Engineer shall be delivered to NBWD as a condition of and prior to acceptance of the project, and shall become the property of NBWD. Neither Developer nor Developer's Engineer shall have any rights of ownership, copyright, trademark or patent in the Plans.

9. QUALITY OF MATERIALS AND WORKMANSHIP:

All materials shall be new, and workmanship and materials shall be of the highest quality commonly used. The Developer shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

10. MATERIAL AND EQUIPMENT LIST:

The Developer shall file a material and equipment list with NBWD prior to the preconstruction conference, including the quantity, manufacturer and model number, acceptability under any specified inspections and/or tests required by

AWWA specification, if applicable, of material and equipment to be installed as part of the Work. NBWD may reject materials and equipment which do not conform to NBWD specifications and the approved Plans. Failure of NBWD to reject materials and equipment when the list is filed shall waive NBWD's right to reject such materials or equipment thereafter.

11. DETERMINATION OF "AS EQUAL":

NBWD and its Engineer shall be the sole judge whether supplies or material qualify "as equal" substitutions under the Plans and Specifications.

12. OMISSIONS AND DISCREPANCIES:

Minor items of work or materials omitted from Plans and Specifications prepared by NBWD's Engineer, or Developer's Engineer, but clearly inferable therefrom and called for by good practice, shall be provided and/or performed by the Developer. In case of doubt, NBWD's decision shall be determinative.

13. INSPECTION AND TESTS:

All work shall be subject to inspection by NBWD. NBWD shall have access to the Work site at all times, and the Developer shall provide proper facilities for such access and inspection. The Developer shall make reasonable tests of the Work site at the Developer's expense upon NBWD's request. Whenever work must be specially tested or inspected for compliance with public regulations, or with the Plans and Specifications, the Developer shall give NBWD reasonable notice of the readiness of the Work for such test or inspection. NBWD will make inspections within 24 hours of notification by the Developer. Work site shall not be covered up without consent of NBWD, or it must be uncovered for inspection at the Developer's expense. Such inspections and tests shall not relieve the Developer of any of its responsibilities under this Agreement.

The presence or absence of a NBWD inspector on any job is discretionary with NBWD, and neither presence nor absence of a NBWD inspector will relieve the Developer of responsibility to obtain the construction results specified in this agreement.

NBWD is not a safety expert, and is not engaged in that capacity whenever performing inspections and tests. The authority of NBWD to perform inspection and tests shall not relieve the Developer of its responsibility for safety, as specified in 33.

14. COMPLIANCE WITH PUBLIC AUTHORITY:

The Work shall conform to the regulations of each public authority with jurisdiction over the manner and quality of performance of the Work. Construction in public roads or rights-of-way shall conform to the standards and requirements of the governmental agency having jurisdiction, and to the requirements of the franchise or permit therefor. The Developer shall be responsible for ascertaining the requirements of each public authority and the franchises and permits.

The Developer shall be responsible for coordinating construction activity with all interested parties and agencies.

15. CROSS-CONNECTION CONTROL:

Developer shall comply with all government and NBWD rules and regulations governing cross-connections. Developer shall install and maintain backflow prevention devices required by NBWD as a condition of final acceptance of the extension(s) by NBWD.

16. PRE-CONSTRUCTION CONFERENCE:

The Developer shall hold a pre-construction conference with all concerned parties at NBWD office at least five days before work on the extension(s) commences. The Developer shall arrange for the conference and for the attendance of concerned parties.

17. PRE-CONSTRUCTION PHOTOS:

Pre-construction photos acceptable to NBWD shall be submitted to NBWD at the pre-construction meeting.

18. PERMITS:

The Developer shall not hold a pre-construction conference until all necessary permits have been issued by public authority and are in NBWD possession. The Developer shall pay the cost of obtaining all required permits, and shall reimburse NBWD for all costs incurred by NBWD for permits, inspection fees and other charges imposed by public authority because of the Work. The Developer shall be responsible for assuring compliance with the requirements of all permits, franchises, and licenses.

19. SURVEY CONTROL:

The Developer shall provide all property corners and street centerline stakes, and shall provide reasonable and necessary opportunities and facilities for setting points and making measurements. The Work shall not commence until the Developer has made provision to establish such points necessary for the Work. The Work shall conform to such points and instructions. The Developer shall preserve bench marks, reference points and stakes, and, in case of destruction, shall be charged for any resulting expense and shall be responsible for any errors that may be caused by their absence or disturbance.

20. RESTORATION OF IMPROVEMENTS:

All existing improvements removed or disturbed during the Work shall be restored to their original condition. A signed release from the affected property owner will be required. All restoration shall be made at Developer's expense to the condition of the area prior to construction.

Whenever restoration of existing improvements will be necessary, the Developer shall provide photographs before and after construction acceptable to NBWD.

21. ACCESS:

Bridging (steel plating) shall be provided across private driveways and roadways whenever trenches are open to avoid interference with normal traffic flow.

22. SPECIFICATIONS INCORPORATED BY REFERENCE:

Where any standard specifications are referenced or included by reference herein, the latest issue and/or amendment thereto published as of the date of this agreement shall be incorporated into the contract. Should a conflict exist between the approved design drawings and any standard specifications or details referenced herein, NBWD will determine which will prevail.

23. USE OF COMPLETED PORTIONS:

NBWD may take possession of and use any completed or partially completed portions of the Work. Possession and use shall not constitute acceptance of any of the Work.

24. EXISTING UTILITIES OR OBSTRUCTIONS:

(a) Preparation of Plans by NBWD Engineer: Existing utilities and obstructions are shown on the Drawings so far as known to NBWD Engineer and NBWD. The information is not guaranteed and is provided only for such value as it may have. Incomplete or erroneous information shall not be the cause of claim against NBWD Engineer or NBWD and shall not relieve the Developer of responsibility for repairing any damage caused to such utilities during performance of the Work.

(b) Preparation of Plans by Developer Engineer: NBWD will provide to the Developer any information it may have regarding existing utilities and obstructions. The information is not guaranteed but is provided only for such value as it may have. Incomplete or erroneous information shall not be the cause of claim against NBWD Engineer or NBWD and shall not relieve the Developer of responsibility for repairing any damage caused to such utilities during performance of the Work.

(c) Notification of Utilities: The Developer shall contact all utilities and determine whether existing utilities and obstructions exist. The Developer shall reimburse NBWD for damage to the property of NBWD or damage to property of others for which NBWD is liable caused by the Developer and for other expenses, including reasonable attorneys' fees and court costs incurred by NBWD because of such damage. Whenever the Developer fails to repair or restore existing improvements damaged by its contractor within 72 hours of notice, NBWD may order the work done by others and all costs incurred shall be paid by the Developer; provided that if NBWD determines an emergency exists, it may notify the Developer who shall immediately commence repair or restoration work, or it may make repairs or restoration at the Developer's expense.

25. CLEANUP:

The construction site shall be kept clear during the Work. Before the Work shall be considered complete, the Developer shall clean out ditches filled during the

Work; replace damaged surfacing; remove surplus materials, trash and brush; repair all damages; and otherwise leave the job in a neat and orderly condition. Dust control shall be provided during the Work and during cleanup. The Developer shall keep existing roads and streets adjacent to or within the limits of the project open to and maintained in a good and safe condition for traffic at all times. The Developer shall remove, on a daily basis, any deposits or debris which accumulates on the roadway surface as a result of construction operations. Removal shall be performed on a more frequent basis should NBWD determine that such removal is necessary.

26. PUBLIC HAZARD OR INCONVENIENCE:

If performance of the Work results in hazard or inconvenience to the public, then NBWD may correct the same, and the Developer shall reimburse NBWD for expense incurred. The Developer shall also reimburse NBWD for the expense incurred in complying with any order of public authority lawfully made with respect to the Work during the performance of the Work or within two years after acceptance of the same.

27. PROTECTION OF WORK AND PROPERTY:

The Developer shall exercise due care to protect property and the Work and shall supervise the project to ensure the contractor exercises such care. The Developer shall be solely responsible for any loss or damage to property or the Work occurring prior to the completion of and acceptance of the Work by NBWD.

28. ROYALTIES AND PATENTS:

Developers shall pay all royalties and license fees and defend all suits or claims for infringement of any patent rights and shall save NBWD harmless on account thereof, unless a particular process or the product of a particular manufacturer is specified by NBWD and the Developer or its Contractor are unaware that the process or article is an infringement of a patent.

29. OTHER WORK:

NBWD may let contracts affecting the Work. The Developer shall afford reasonable opportunity to other contractors for introduction and storage of their materials and performance of their work. The Work and other contracts shall be properly coordinated.

30. CONTRACTORS:

Only contractors licensed and bonded with the State of Washington shall install extensions; a copy of the license shall be provided to NBWD. Developer shall submit in writing not less than fifteen (15) days before the pre-construction conference, the name(s), address(esp) and telephone number(s) of all contractors and subcontractors the Developer proposes to use in doing the Work. If NBWD disapproves, then it shall notify Developer within ten (10) days. Nothing contained in this agreement shall create any contractual rights between NBWD and any person or firm employed to do the Work.

31. TRAFFIC MAINTENANCE AND PROTECTION:

All work shall be performed with due regard for the safety and convenience of the public and in a manner that minimizes interference with automotive and pedestrian traffic. Flagging personnel, barricades, signs and traffic control shall be furnished as required by appropriate agency. Emergency vehicles shall be provided access at all times.

Prior to commencement of construction, the Developer shall be required to furnish a traffic plan, to show how access will be maintained. The Plan shall also show how restrictions to through traffic shall be kept to a minimum in keeping with good construction practice.

This Plan shall include a one sheet overall project map of scale not less than 1" = 400'. The map shall contain a total program indicating traffic flow patterns for the construction site. The map shall be supplemented by a signing plan in accordance with the State of Washington "Manual of Uniform Traffic Control Devices for Streets and Highways". This plan shall be subject to the review and approval of NBWD and Pacific County.

All lane closures shall be approved by NBWD and Pacific County prior to construction. Any approved lane closures will not be permitted prior to 8:30 a.m. (local time) and not after 3:30 p.m. (local time) without prior written NBWD approval.

The Developer shall be required to provide five (5) working days notice on any traffic revisions. NBWD will not furnish flagmen or any devices for the control of traffic. All flagmen employed by the Developer shall be state certified.

If at any time the Developer's activities result in closure, substandard condition, restrictions to traffic use of all or portions of the roadway which are specified to remain open to traffic, the Developer shall immediately, at his own expense, furnish all material, labor, equipment, necessary to restore the streets to the satisfaction of NBWD and the County. Work necessary to restore the streets to traffic shall continue on a round-the-clock basis until they are reopened to traffic in conformance with the specifications. Upon failure of the Developer to immediately provide the necessary material, labor, equipment, to restore the streets to traffic when ordered to do so by NBWD, NBWD will be at liberty without further notice to the Developer or his Surety, to provide the necessary material, labor, equipment to restore the streets to traffic and all costs thereof shall be at the Developer's own expense.

32. SANITATION:

Necessary sanitation convenience properly secluded if possible from public observation shall be provided and maintained during the Work as required by appropriate agency.

33. SAFETY:

The Developer and Developer's Contractor will be solely and completely responsible for conditions of the job site, including safety of all persons and property during the performance of the Work, and for compliance with all federal,

state and local safety laws and regulations. This requirement will apply continuously and will not be limited to normal working hours.

The right of NBWD or NBWD Engineer to conduct construction review of the Contractor's performance or inspection of the Work or the site is not intended to include review of the adequacy of the Contractor's safety measures in, on or near the construction site.

34. CONFINEMENT OF CONTRACTOR'S OPERATIONS:

The Developer shall ensure that the Contractor confines construction activities within the property of the Developer and the limits of easements and construction permits outside of the Developer's property. Damage to property or persons from any encroachment beyond these limits shall be the responsibility of the Developer.

35. ALIGNMENT:

The Developer shall furnish sufficient horizontal control, including lot stakes, for locating and staking the lines and appurtenances. Accuracy of such horizontal control is the sole responsibility of the Developer and any modification of horizontal location of any facility shall be at the Developer's expense.

The water main shall be installed on the ground or roadway rough grade with forty-two (42) inches minimum cover for transmission mains and thirty-six (36) inches minimum cover for distribution mains. The notice by the Developer to NBWD that the ground or roadway is ready for water main installation shall be considered a representation that the Developer has brought the ground or roadway to grade or subgrade, and that he intends no further grading work. Any modification of the main or appurtenances required to adjust to grade changes shall be at the Developer's expense. If the Developer contemplates off-roadway grading after installation of the water main that will affect the setting of fire hydrants or other appurtenances, he shall so state in writing prior to the installation of the main. Any adjustments required by such grading shall be at the Developer's expense.

NBWD will authorize the Developer to proceed with installation of the water main only after all necessary grading and fills are completed, and other utilities or pipes which, in the opinion of NBWD, should be installed prior to the water main have been completed. NBWD reserves the right to stop installation of portions of the water system which, in the opinion of NBWD, will be damaged or jeopardized by other utility or pipe installation until such other installations are complete.

36. TAPS, CUT-INS, AND LARGE METER TESTS:

All taps and cut-ins to the existing water mains, excluding manholes, shall be made by NBWD at fees established by the Board of Commissioners. If extensions require meters three inches or larger, then meter installation, including valves, piping, vaults, drain lines and meters shall be performed by the Developer's Contractor according to NBWD standards. The Developer shall pay the meter test fee established by NBWD and shall sign a NBWD meter application form and pay all fees and charges due at that time.

37. RECORDING:

NBWD will not approve the Plat for recording until all of the underground portion of the extension(s) have been installed and tested. A copy of the proposed final plat must be delivered to NBWD before recording for review of adequacy of easements. A copy of the final recorded plat and all necessary recorded easements shall be delivered to NBWD before service connections will be allowed to the extension.

38. COST OF WATER:

NBWD will furnish a reasonable amount of water without cost for the initial testing, flushing and purifying of the system. Developer shall pay the cost of all other water furnished by NBWD for testing, flushing or purifying the system based upon NBWD's estimates of the quantity of water use, which estimates shall be conclusive.

Construction water shall be furnished at NBWD's regular rates through a temporary certified meter provided by the Developer at rates established by NBWD resolution.

39. DEFECTIVE MATERIALS AND WORKMANSHIP:

Materials, work or workmanship which, in the opinion of the Engineer, do not conform to these Specifications and Plans or fail to meet the tests herein described or are not equal to the sample submitted to and approved by the Engineer, or are in any way unsatisfactory or unsuited to the purpose for which they are intended will be rejected. The Developer shall remove from the work and its vicinity, without delay, all rejected materials.

Unsatisfactory materials and workmanship may be rejected at any time, notwithstanding any previous testing, inspection or acceptance of such materials, equipment or workmanship.

40. DELAY IN COMPLETION:

The Developer is expected to carry on the work and to complete it without unnecessary delay once the work has begun. If the work is not completed within a reasonable time from the date the work is begun, NBWD may revoke its acceptance of the Developer's Agreement, or it may impose reasonable conditions as a prerequisite to continuation of the work, including a charge paid by the Developer for such cost or damage as NBWD has suffered because of the delay. In the event NBWD finds it necessary to complete the work to be performed by the Developer, or is otherwise damaged by the Developer's failure to complete the work, the Developer shall be liable to NBWD for its costs, expenses, and damages arising out of his failure to complete the work.

Should the Developer abandon the work, fail or refuse to complete the work embraced in the contract or fail to pay just claims for labor and materials, NBWD reserves the right to charge against the Developer all extra legal, engineering or other costs caused by such abandonment, failure or refusal. The legal costs will also include all attorney's fees and other costs to NBWD in defending or prosecuting any suits in connection with such abandonment, failure or refusal and

non-payment of claims, wherein NBWD is made a co-defender, and the Developer agrees to pay all such costs.

If the Developer abandons the work for any cause or refuses to comply with the provisions of the Plans and Specifications, NBWD has the right to notify the Developer's surety and require said surety to complete the work in accordance with the Plans and Specifications.

41. BILL OF SALE:

Upon completion of the work and approval of NBWD, the Developer shall, as a condition of acceptance by NBWD, convey the work lien-free to NBWD by bill of sale, in accordance with the form attached as an appendix to these regulations.

42. INDEMNITY:

The Developer shall indemnify, defend and hold NBWD and all of its representatives harmless from and against all losses and claims, demands, payments, suits, actions, recoveries and judgments of every nature and description brought or recovered against NBWD by reason of the act or omission of the Developer, its agents or employees, in the performance of the Work, and for any cost or expense incurred by NBWD in connection therewith, including overhead expense, legal expense, reasonable attorney's fees and costs attributable thereto; and if suit in respect to the foregoing is filed, then Developer shall appear and defend the same at its own cost and expense, and if judgment is rendered or settlement made requiring payment of damages by NBWD, then the Developer shall pay the same.

Developer shall indemnify, defend and hold NBWD harmless from any liability or expense, including reasonable attorney's fees incurred by NBWD by reason of Developer's (or Developer's employees or contractors) breach of any covenant contained in any franchise or permit granted by state, city, or public or private utility to NBWD for the purpose of enabling Developer to undertake construction within any right-of-way.

Developer further agrees that if any official complains to NBWD that Developer is violating such franchise or permit in any respect, or if Developer damages any NBWD's facilities, then the Developer upon reasonable notice shall comply with such franchise or permit or to make repairs or restoration. If NBWD deems it necessary to make any repairs or restoration (emergency or otherwise), then the Developer shall reimburse NBWD for the cost thereof.

In any claim against NBWD, its agents or employees by any employees of the Developer, its contractor, or any subcontractor, or anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation contained herein shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Developer, Contractor, or any subcontractor under Workmen's Compensation Acts, Disability Benefit Acts, or other employee benefit acts. THIS WAIVER HAS BEEN MUTUALLY NEGOTIATED BY THE PARTIES.

43. DEVELOPER'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE:

The Developer shall not commence work until it has furnished evidence (in duplicate copy) of insurance required hereunder, and such insurance has been approved by NBWD Attorney; nor shall the Developer allow any contractor or subcontractor to commence work on his contract or subcontract until the same insurance requirements have been complied with by such contractor or subcontractor.

The Developer shall purchase from insurance companies which have an A.M. Best rating of "A VII" or better commercial general liability and automobile liability insurance against liability to the developer, NBWD, NBWD's Engineer and NBWD employees for negligent injury to person or property resulting from performance, supervision, or inspection of the work. NBWD and NBWD's Engineer shall be named as an additional insured under such policy. Proof of the existence of such insurance shall be provided to NBWD in a form acceptable to NBWD. The minimum limits of coverage shall be as follows:

General Aggregate	$2,000,000.00
Products-Comp/OPS Aggregate	1,000,000.00
Personal Injury	1,000,000.00
Each Occurrence	1,000,000.00
Automobile Liability	1,000,000.00

Policies shall be kept in force until the project is accepted by NBWD. The Developer shall provide NBWD at least 45 days written notice by "certified mail" of cancellation, non-renewal, material reduction or modification of coverage.

The coverage provided by the Developer's insurance policies are to be primary to any insurance maintained by NBWD, except with respect to losses attributable to the sole negligence of NBWD. Any insurance that might cover this Agreement which is maintained by NBWD shall be in excess of the Developer's insurance and shall not contribute with it.

The Developer's insurance policy shall protect each insured in the same manner as though a separate policy had been issued to each. The inclusion of more than one insured shall not affect the rights of any insured with respect to any claim, suit or judgment made or brought by or for any other insured or by or for any employee of any other insured.

The general aggregate provisions of the Developer's insurance policy shall be amended to show that the general aggregate limit of the policies apply separately to this project.

The Developer's insurance policy shall not contain a deductible or self-insured retention in excess of $10,000 unless approved by NBWD."

Providing coverage in the stated amounts shall not be construed to relieve the Developer from liability in excess of such limits.

44. COMPENSATION AND EMPLOYER'S LIABILITY INSURANCE:

The Developer shall maintain Workmen's Compensation Insurance or Maritime Workmen's Insurance, as required by state or federal statute for all of his employees to be engaged in work on the Project and, in case any such work is sublet, the Developer shall require the contractor or subcontractor similarly to provide Workmen's Compensation Insurance or Maritime Workmen's Insurance for all of the latter's employees to be engaged in such work. The Developer's Labor & Industries account number shall be noted in the Proposal in the space provided.

In the event any class of employees engaged in work at the site of the Project is not covered under the Workmen's Compensation Insurance or Maritime Workmen's Insurance, as required by state and federal statute, the Developer shall maintain and shall cause each contractor or subcontractor to maintain Employer's Liability Insurance with a private insurance company for limits of at least One Hundred Thousand Dollars ($100,000.00), each person, and One Million Dollars (1,000,000.00), each accident, and furnish satisfactory evidence of same.

45. COSTS OF LITIGATION:

If either NBWD or the Developer commences any legal action relating to the provisions of this agreement, then the prevailing party shall be entitled, to recover all costs of litigation, including but not limited to costs, witness, expert and reasonable attorney's fees, including all such costs and fees incurred on appeal.

In any litigation arising out of this Agreement or related to this Project to which NBWD is not a party the Developer will reimburse NBWD for all of its costs and expenses, including attorney's or engineer's fees, incurred as a result of such litigation.

46. STIPULATION OF VENUE:

It is agreed by the Developer that venue for any lawsuit arising out of this contract shall be the county wherein the primary construction site for the Project is located. Developers shall include a stipulation of venue in said county clause in all subcontracts hereunder.

47. PERFORMANCE AND MAINTENANCE BOND:

The Developer shall, prior to the commencement of the work, furnish a surety bond by a licensed insurance company in the amount of not less than 100% of the cost of the work as estimated and/or approved by NBWD's Engineer, insuring NBWD that the work will be performed in accordance with NBWD approved plans, and that any defective work or material discovered by NBWD within one year after the work has been formally accepted by NBWD will be corrected or replaced by the Developer in accordance with the provisions of these regulations.

The Developer shall, prior to acceptance of the work by NBWD, furnish a Maintenance Bond or "Assignment of Funds" in an amount equal to $2,000.00 or in the amount of not less than 10% of the amount of the Performance Bond whichever is greater, insuring NBWD that any defective work or material discovered by NBWD within two years after the work has been accepted by NBWD will be corrected or replaced by the Developer in accordance with the

provisions of these regulations. The Surety Bond shall assure correction of any defect covered by the Developer's warranty within thirty days.

48. DUST AND/OR MUD CONTROL:

The Developer shall furnish all labor, equipment and means required and shall carry out protective measures, wherever and so often as necessary to prevent his operations from producing dust and/or mud in amounts damaging to property or causing nuisance. The Developer shall be responsible for any damage resulting from dust and/or mud originating from his operations. The dust and/or mud abatement measures shall be continued until all required resurfacing is complete, or until the Developer has completed arrangements with NBWD, whereby he is relieved of further responsibility.

49. DAMAGE TO EXISTING IMPROVEMENTS:

All damage done to existing improvements during the progress of the work on the structures covered by these Specifications shall be repaired or restored by the Developer to the satisfaction of NBWD, using for such repair materials and methods conforming to the requirements of the "Conditions and Standards" of NBWD Plans and Specifications, any additional instruction issued therefore by the Engineer, with the intent that such damaged improvements be restored to equal or superior condition existing prior to damage. If the Developer fails to furnish the necessary labor and materials for such repairs, when ordered, NBWD may cause said labor and materials for such repairs to be furnished by other parties, and the cost thereof shall be paid by the Developer.

50. EASEMENTS:

(a) General: The Developer shall deliver to NBWD recorded utility easements and rights of access for all properties over which his extension to the water system is to be constructed and such other easements as the Commissioners may require. Title reports for all easement encumbered properties shall proceed by the Developer and submitted to NBWD. The Developer shall hold NBWD harmless from all expenses of removing any encumbrances or restrictions on NBWD's right to use and have right-of-way to the property through which the water main and appurtenances are constructed.

Unless otherwise approved by NBWD, all easements shall be a minimum of fifteen (15) feet wide and shall grant NBWD the right of access over the Grantor's property to repair and maintain the water mains. All easements shall prohibit the construction of any structures, or other substantial objects over the easement. The easements shall be exclusive in nature to the extent that other utilities may be permitted to cross them but not run parallel to the water lines within the easement, without the express written permission of NBWD.

Easements may be submitted on forms provided by NBWD. However, no easement will be accepted by NBWD until the Developer has first submitted a fully executed copy of the proposed easement to NBWD Attorney for his review and approval.

(b) Plats: In the case of extensions which are part of a development done concurrently with the platting of the property involved, the easement granted NBWD shall be boldly shown on the face of the plat. The plat shall contain the following restriction and grant of right-of-way, boldly displayed:

BUILDING RESTRICTIONS AND RIGHTS-OF-WAY

No permanent structure shall be erected, and no large trees or large shrubs, fences, gates, or ornamental landscaping items shall be installed in the area of ground for which easements in favor of NBWD or its successors have been designated in this plat. NBWD and its successors shall have the right to enter upon property within this plat to install, lay, construct, renew, operate, and maintain water and utility lines and mains.

(c) Survey: After construction of the extension, the Developer shall provide NBWD with a survey map showing the legal description of the property involved, the location of easements granted by the Developer to NBWD and the location of all water mains and appurtenances thereto which are part of the extension. The survey map shall be prepared and signed by a surveyor or civil engineer registered in the State of Washington.

(d) Procedure: Before final approval of any application of extension of NBWD's system is effective, and before any service is given, NBWD's regulations with respect to easements must be fulfilled. One should begin as soon as possible to comply with these regulations by taking the following steps:

1. Complete and execute the easement document, including a legal description, and submit it to NBWD. Approved forms are available through NBWD offices at the address listed below, and as contained in the attached appendix. Both husband and wife must sign the easement and have their signatures notarized. If the easement is signed by a single person, this needs to be stated on the form.

2. Direct the Developer's surveyor to prepare a survey map showing the easements and the location of the water main, and to send copies along with the electronic version of the map to NBWD.

51. DESIGN STANDARDS:

(a) General Requirements:

1. Water mains shall be laid only in dedicated streets or in easements which have been granted to NBWD. A street is normally not considered dedicated until the plat which created it has been filed with the County Auditor. Water mains shall be extended to the far end of the property being developed.

2. All water distribution main construction shall have minimum 3'-0" cover from finished grade. Water transmission mains shall have a minimum cover of 3'-6" cover from finished grade. The maximum shall be 5'-0" cover unless approved by NBWD.

3. Whenever possible, loop water mains to minimize occurrence of dead end lines. Provide fire hydrant or blowoff assembly at dead end mains for flushing purposes.

4. Mains shall generally be located parallel to and ten feet northerly or easterly of street centerline unless approved by NBWD.

5. Valves shall be installed at intervals not to exceed 1,400 feet. Valves shall be installed at each end of easements. Valves shall be installed on the water main at each end of mains located in easements.

6. Fire hydrants shall not exceed every 900 feet. This is the minimum requirement. The Fire District providing protection may require closer spacing.

7. Fire hydrants on dead end streets and roads shall be located within approximately 350 feet from the frontage center of the farthest lot. Distances required herein shall be measured linearly along street or road.

8. Pipes connecting hydrants to mains shall be at least 6 inch in diameter and not longer than 50 feet.

9. Dead end lines are not permitted except where the Developer can demonstrate to NBWD's satisfaction that it would be improbable to extend the line at a future date. Water mains on platted cul-de-sacs shall extend to the plat line beyond the cul-de-sac to neighboring property for a convenient future connection, and a two (2) inch blow off assembly or fire hydrant shall be provided.

10. All materials shall be new and undamaged.

11. Water main shall be ductile iron, pipe class 52, or PVC C-900 class 150.

12. All pipe and fittings shall be cement-lined ductile iron.

13. Provide bends in field to suit construction and in accordance with pipe manufacturer's recommendations so as not to exceed allowable deflection at pipe joints.

14. Provide thrust blocking or restrained joints at all fittings and bends in accordance with NBWD Standards and conditions.

15. Provide anchor blocking or equivalent at all up-thrust vertical bends in accordance with NBWD Standards.

16. All valve markers shall be installed and marked with the distance to valve being referenced.

17. Water services shall be ¾" dia. standard and 1" dia. for elevated properties, service lines shall be high molecular (200 psi, SDR 7) "poly" pipe (no joints beneath pavement areas).

18. All residential lots to be served with a single. 3/4 inch (minimum) meter unless otherwise specified. All service lines shall be the minimum size otherwise specified by the County Plumbing Code in accordance with fixture units, unless otherwise specified. Provide restrained joint pipe and fittings when installed in site sensitive areas identified by the Developer or NBWD.

19. Meter services and meter boxes shall be set to final grade and all adjustments shall be made prior to final pressure testing of the system, centerline of service inlets shall be located to match bottom elevation of meter box in such a manner that meter inlet and outlet will be the same elevation as bottom of meter box. Contractor shall furnish angle dual check valve with neoprene gaskets for outlet connections to meter at NBWD offices for each service installed. Service inlet shall be centered at inlet end of box and faced toward outlet end of box parallel with long sides.

20. All water services shall end within road right-of-way or easements.

21. All services, meter setters, and meter boxes shall be installed by the Developer. NBWD will install the meters.

22. Contractor shall furnish water sample stations to the NBWD office. One station is required for development in size of 1 to 10 lots. One additional station is required for each additional 50 lots or portions thereof.

23. All new buildings and residences shall include in their water service a suitable pressure reducing valve to protect the plumbing from excessive pressures, unless waived on the application form of NBWD.

24. All new construction shall comply with the "Accepted procedure and Practice in Cross Connection Control Manual" as published by the Pacific Northwest Section of the American Water Works Committee", 1995, Fifth Edition, and current amendments thereto. A copy of such is available for review at NBWD office.

25. Cut in connections shall not be made on Fridays, holidays or weekends.

26. All tapping sleeves and tapping valves shall be pressure tested prior to making connection to existing mains.

27. Contractor shall notify NBWD and obtain approval prior to any water shut-off or turn-on, affecting the water system, a minimum of 48 hours in advance.

28. Road restoration shall be per Pacific County and/or State design and construction standards. Developer and Contractor shall

become familiar with all County, and State conditions of required permits, and shall adhere to all conditions and requirements.

(b) System Demand:

1. Minimum Fire Flow Requirements

Type of Development	Minimum Fire Flow Required (gpm)*	Minimum Duration (Minutes)
Single Family	500	30
Multi-Family	750	60
Commercial	750	60
Industrial	1,000	60

* Flows shown above are minimum flows only for main extensions required for land development. Actual fire flow requirements for building permit approval/acquisition shall be determined in accordance with Pacific County Code.

2. Minimum system pressures to be 30 psi under maximum hour demands conditions and 20 psi under maximum hour demands, plus fire flow demands.

3. Maximum design velocities in mainline to be eight (8') feet/ second under maximum hour demand, plus fire flow demand, but in no case shall watermains less than 8-inch be permitted unless approved by NBWD.

SECTION 2

ENGINEERING SPECIFICATIONS, MATERIALS OF CONSTRUCTION,

AND METHODS OF CONSTRUCTION

SECTION TWO

ENGINEERING SPECIFICATIONS, MATERIALS OF CONSTRUCTION and METHODS OF CONSTRUCTION

1- ENGINEERING SPECIFICATIONS

1. GENERAL:

   a. All work shall be constructed in conformance with the most current Standard Specifications for Road. Bridge & Municipal Construction and current amendments thereto, State of Washington revised as to form by the APWA Supplement to make reference to Local Governments, herein referenced to as "Standard Specifications" and the Conditions and Standards as adopted by NBWD, shall be included as a part of the Specifications.

   b. Where the Standard Specifications and Conditions and Standards conflict with one another, the Conditions and Standards shall take precedence.

2. MATERIALS OF CONSTRUCTION

1. GENERAL:

   a. The type and class of materials to be used shall be as shown on the project plans reviewed and approved by NBWD. Where no specific reference is shown, the following specifications shall govern the materials used. All materials shall be new and undamaged, of a known brand, with replacement parts readily available from the general regional area.

   b. All material that will come in substantial contact with potable water shall be ANSI/NSF standard 61 certified for potable water use and shall be Lead free per WAC 246-290-220.

   c. Prior to the installation of any facilities required for the project, all materials shall be approved by NBWD.

   d. All reference specifications herein shall be of the latest revision.

2. WATERMAIN:

   a. PVC pipe shall be AWWA C900 Pressure Class 150 PSI, D-1784, DR 18 Cast Iron Pipe Size w/Bell & Gasket. (All PVC pipe shall be push-on with ductile iron fittings.)

   b. All ductile iron pipes shall be push-on or mechanical joint. All joints shall conform to ANSI Standard A21.11 (AWWA C-111).

   c. The ductile iron pipe shall conform to ANSI Specification A21.51 or AWWA Specification C151, and current amendments thereto. Grade of iron shall be a minimum of 60-42.10. The pipe shall be cement-lined in

accordance with ANSI/AWWA C104/A21.4 and the exterior shall be coated with an asphalt coating. Each length shall be plainly marked with the manufacturer's identification, year cast, thickness, class of pipe and weight.

d. Bolts furnished for mechanical joint pipe shall be high strength cast iron, with a minimum tensile strength of 50,000 psi. The class of ductile iron pipe shall be Class 53 for 4-inch pipe and Class 52 for 6-inch and larger diameter pipe. Six (6) inch hydrant spools shall be Class 53 or an approved equivalent.

e. The pipe shall have a nominal inside diameter of the size indicated on the NBWD approved Plans or as otherwise stated herein. All pipe shall be of one manufacturer and be carefully installed in complete compliance with the manufacturer's recommendations and these Specifications.

f. Flanged joints shall conform to ANSI/AWWA C110/A21.10.

3. SERVICE LINE MATERIALS:

a. HDPE "Poly" Pipe:

All service connections from the water main to the customer's service shall be made with new high molecular "poly" pipe (size as noted in details) I.P.S. SDR7 (200 psi). Any two-inch diameter services shall be supplied and installed with a two-inch diameter threaded gate valve, with valve box at the main. Two (2) inch PVC "sleeves" are required to be installed beneath roadway sections for new service lines.

4. FITTINGS:

a. Ductile Iron Fittings:

Fittings for ductile iron pipe shall be ductile iron or Class 250 gray iron conforming to AWWA C110 and C111, or ductile iron conforming to AWWA Cl53, and shall be cement-mortar lined conforming to AWWA Cl04 (ANSI Standard A21.4).

Rubber gaskets for push-on (Tyton) or mechanical joint (M.J.) in accordance with ANSI Standard A21.11 (AWWA C-111).

5. TAPPING TEE and TAPPING VALVE:

a. The tapping tee shall be ductile iron or Stainless Steel. The tapping valve shall meet the specifications of the gate valves or an approved equivalent.

6. CASING (MAIN LINE):

a. Welded steel pipe casing shall meet or exceed ASTM Designation A53 or comparable. Minimum wall thickness shall be determined by NBWD depending on local conditions and applications. Casing spacers (Cascade or owner approved equivalent) shall be installed per the manufacturer's recommendations. After installation and satisfactory testing of the main is

completed, the casing shall be backfilled with sand or grout and the ends plugged with concrete to prevent backing of materials.

7. FIRE HYDRANTS:

   a. Fire hydrants shall be a breakaway type and conform to AWWA Standard C502-73 and be the following make and model: M&H Model 929 or NBWD approved equal.

   b. They shall be non-rising stem compression-type which open counter-clockwise, and close with pressure. The main valve opening diameter shall be 5-1/4 inches and the hydrant barrel shall have a diameter of 7 inches unless otherwise specified. The hydrant seat and hydrant seat retaining ring shall be bronze. All external bolts, nuts and studs shall be cadmium plated in accordance with ASTM A165 Type HS. Gaskets shall be of rubber composition.

   c. Fire hydrants shall be equipped with one 4-1/2" NST pumper port with a 4" Storz adapter and cap, and two 2-1/2" NST hose ports. Ports shall be fitted with renewable bronze nipples locked in place.

   d. The fire hydrants shall have a base primmer coat and painted with two (2) coats of Rustoleum Brand Fire Hydrant Paint, color Safety Yellow. See Standard Detail Fire Hydrant Assembly for additional specifications.

   e. Furnish and install one blue line marker at a location as determined in the field.

8. GATE and BALLVALVES:

   a. Valves 2-inch thru 12-inch shall be gate valves and conform with the requirements of AWWA Standard Specifications for gate valves for ordinary water works service number C-500 and C-509, except where superseded by the following:

   b. They shall be iron body with epoxy coating inside and out with fusion welded resilient rubber wedge seat. The valves shall be non-rising stem, open to the left "CCW", and shall be equipped with standard 2" square operating nuts. Valves shall be equipped with "0-ring" packing. Valves shall be M&H, Waterous, or Clow.

   c. 1-1/2" and smaller diameter valves shall be ball valves approved by NBWD. Said ball valves shall be equipped with a slotted operator, and with an adapting 2" square operating nut (Ford Cat. No. QT-67, or equal) secured with a stainless steel cotter pin.

9. BUTTERFLY VALVES:

   a. All valves larger than 12 inches shall be butterfly valves. Butterfly valves shall be Class 150 or better, either M&H 450 or 4500 or Pratt equivalent, and shall meet the requirements of AWWA C-504-70.

b. Valve shafts shall meet or exceed the strength requirements of AWWA C-504-70 and be one-piece. Packing shall be "0-ring", or other design approved by NBWD.

c. Butterfly valves to be installed underground shall have sealed mechanical operators, open to the left and have 2" standard square operating nuts.

d. Complete manufacturer's specifications for the valves proposed for use shall be submitted to NBWD for approval. No valves shall be used which have not been approved by NBWD.

10. BLOW-OFF ASSEMBLY:

a. Per NBWD standard plan for water system construction Section 4 for "Blow-off Assembly Details".

11. COUPLINGS:

a. Couplings 4" and larger shall only be used to join asbestos cement pipe to approved piping materials. The coupling shall have a 200-psi minimum working pressure rating; the body (middle ring) and followers shall be made from steel or ductile iron. The bolts and nuts shall be ANSI 304/303 Stainless Steel, or corrosion-resistant alloy bolts and nuts.

b. The coupling shall be Total Piping Solutions (TPS)-Hymax 2000, Dresser Style 253 Modular Cast Coupling, Smith Blair 413, or an approved equivalent.

c. The coupling shall have an NSF-61-registered fusion bonded powder epoxy coating, and shall meet all applicable requirements of AWWA C-219.

12. RETAINER GLANDS:

a. Mechanical Joint Restraints, 4 inch through 24 inch, shall meet or exceed the requirements of ASTM Fl674 of the latest revision.

b. Retainer glands: Retainer glands shall be designed to impart multiple wedging action against the pipe, increasing its resistance as the pressure increases. Glands shall be manufactured of ductile iron conforming to ASTM A536-80.

c. Restraining devices shall be of ductile iron heat-treated to a minimum harness of 370 BHN. Twist-off nuts shall be used to insure proper actuating of the retainer gland. Dimensions of the gland shall be such that it can be used with the standard mechanical joint bell and tee-headed bolts conforming to ANSI/AWWA A21.1 and ANSI/AWWA 153/A21.5

d. The retainer gland shall have a working pressure of 250 psi with a minimum safety factor of 2:1 and shall be certified by the manufacturer to be compatible with the pipe class and pipe manufacturer for all sizes provided on the job.

e. Mechanical joint retainer glands shall meet requirements of AWWA/ANSI C111/A21.11. Glands for ductile iron pipe shall be Mega-lug Series 1100 as manufactured by EBAA Iron MEGA-LUG System / Kit.
1104 to 1116, Painted Black MJ retainer gland for DI pipe.
1704 to 1716, Painted Black MJ retainer gland for DI pipe w/push on joints.
2004PV to 2012PV, Painted Red MJ retainer gland for PVC pipe.

f. A Mega-lug retainer gland system shall be used on all mechanical joints and shall meet UNI-B-13 for PVC and be UL/FM approved through twelve (12) inch diameter for both ductile iron and PVC pipe. As an alternate to the Mega-lug system, Ford Uniflange Series 1400 retainer glands and Series 1300 and 1390 joint restraints will be used. For PVC, Ford Uniflange Service 1500 retainer gland will be used or an approved equivalent.

g. Kits must consist of one gland, gasket, bolts, nuts, and grip ring and meet the requirements as outlined below.

h. Retainer Kits must be boxed and sealed and contents of box (part number, size of T-bolts, size of grip ring and gland, type of gland and type of gasket) must be clearly printed on outside of box.

13. AIR and VACUUM RELEASE ASSEMBLIES:

a. Per NBWD standard plan for water system construction Section 4.

14. VALVE BOXES:

a. Valves boxes shall be Rich 920 or NBWD approved equal and be cast iron with adjustable sections; 18" top section and regular 24" base section as required with a minimum inside diameter of 5 inches. A valve cover marked "WATER" shall be provided. Valve box "ears" shall be installed in the direction of flow.

15. VALVE STEM EXTENSIONS:

a. The materials for the valve stem extension shall be as shown on the standard detail.

16. CONCRETE MARKER POSTS:

a. A concrete valve marker post shall be 4" minimum square section and a minimum of 42" in length, with beveled edges and continuing at least one (1) 3/8" x 37" bar of reinforcing steel. Paint shall be as for fire hydrants (Section 8).

17. FIRE HYDRANT GUARD POSTS:

a. The guard posts shall be precast reinforced concrete, nine inches in diameter, six feet long. Paint shall be as for fire hydrants (Section 8).

18. LOCATING WIRE:

a. Locating wire shall be 14 gauge solid copper, with neoprene coating. All connections or splicing shall be made with ILSCO split bolt connectors, Catalog No. I KS, or equal.

19. METER BOXES:

a. Fog-Tite #I Meter Seal Company or owner approved equal.

20. SERVICE SADDLES:

a. All service connections shall be installed with service saddles which shall be manufactured by Romac or owner approved equivalent, and as further specified in the Standard Details (Section 4 of this document).

2l.METERS:

a. See Standard Details (Section 4 of this document) herein.

22. FOUNDATION GRAVEL:

a. Foundation gravel shall consist of standard 1-1/2-inch washed aggregate which is normally used as the coarse aggregate in concrete. This material shall not have a wear percentage exceeding fifteen percent (15%) in the abrasion test, ASTM Designation D-2 or D-289.

23. GRAVEL BASE:

a. This material shall conform to and be placed in accordance with Section 4-02 of the Standard Specifications for Road, Bridge & Municipal Construction, of the State of Washington, for gravel base formerly designated as Class "B". The material may also be used for select backfill of trenches, if and only if specifically approved by NBWD based on the approved location/installation of the pipeline.

3- METHODS OF CONSTRUCTION

I. GENERAL:

a. A pre-construction conference will be held at NBWD office prior to the start of construction.

b. The developer shall notify NBWD seven (7) calendar days in advance of proposed construction to allow for checking of materials, as may be applicable and warranted, to be used on the job.

c. Except as otherwise noted herein, all work shall be accomplished with adopted standards of NBWD, as recommended in applicable American Waterworks Association (AWWA) specifications, and according to the recommendations of the manufacturer of the material or equipment used.

d. The Contractor performing actual construction shall have a copy of the plans and specifications on the job site at all times.

2. ALIGNMENT:

a. All new water mains shall be placed ten (10) feet nmth or east of the centerline of the street right-of-way in all new Plats and/or undeveloped rights-of-way. New water mains in and along existing roadways will be installed at a location approved by Pacific County. Unless otherwise specified, the location of the water mains, hydrants, valves, and principal fittings will be in accordance with the approved plans. The Developer shall provide sufficient horizontal control, in the form of centerline stakes, property corners, or other markers, as required for proper pipe location.

3. CLEARING and GRUBBING:

a. Clearing and grubbing shall consist of the removal of all trees, stumps, brush, and debris and shall be confined within the limits of the easements obtained for the construction of this project, and/or existing public rights-of-way. Construction work in forested and native unimproved areas shall be conducted with extra precaution. Construction activity, stored materials and piles of earth shall not extend beyond the designated work limits. Trees and foliage which are not to be removed in construction shall be protected. Finish grades after completion shall match original grades, sloped to prevent ponding. Remove any surplus dirt or over burden piled around trees to prevent future damage; remove such material by hand if necessary. Clear and fell trees with sufficient care to prevent damage.

b. All trees which are removed by the Developer shall become the property of the Developer and shall become his responsibility to remove from the site, unless otherwise noted in the easement stipulations or elsewhere in these specifications. Removal of clearing and grubbing debris shall be subject to the approval of NBWD and shall, in no way, constitute a hazard to the continuous operation of any existing utilities. Any damage to the existing utilities shall be repaired by the respective utility company, at the expense of the Developer. Any private improvements in the rights-of-way

and easement areas shall not be removed until permission has been given by NBWD.

c. All fences adjoining any excavation or embankment that may be damaged or buried shall be carefully removed and temporarily erected on the adjoining property or stored for reinstallation.

d. No debris of any kind shall be deposited in any stream or body of water, or in any street or alley. All waste material shall be hauled to a waste site arranged for by the Developer. Any permits required for disposal shall be secured and paid for by the Developer.

e. The Developer shall be responsible for all damage to existing improvements resulting from his operations.

EXCAVATION and BACKFILL:

4. Traffic to be Maintained:

   a. The Developer shall make safe provision for necessary traffic around, over, or across the work in progress and shall schedule pavement patching to follow after backfill is completed.

5. Excavating in Paved Areas:

   a. Prior to excavating in paved areas, the existing road surface shall be cut one (1) foot (minimum) back from the outer edge of the excavation with a cutter and removed. The cuts shall be made in clean, straight lines to insure a minimum of damage to existing pavements. All cuts in existing asphalt or concrete pavement shall be made with an approved concrete saw, except that where the concrete has been overlaid with asphalt, the pavement shall be cut with a cutter 1 foot (minimum) from the outer edge of the excavation on each side of the trench section. If the Developer fails to protect the trench edges during trenching and backfilling, it shall be required, at his own expense, to re-cut the edges prior to repairing the pavement.

6. Trench Excavation:

   a. Trench excavation shall be unclassified. The terms earthwork or excavation include all materials excavated or removed regardless of material characteristics. The Developer shall make his own estimate of the kind and extent of materials which will be encountered in the excavation.

   b. Trenches shall be excavated to the line and depth so that all new transmission pipelines constructed shall have not less than 42 inches and all new distribution pipelines constructed shall have not less than 36 inches, nor more than five (5) feet of cover, measured from the top of the pipe to the approved finished grade, unless otherwise approved by NBWD.

   c. If a grade revision is made, the cover over the water main must remain within these limits. Otherwise, the water main shall be reconstructed. All added costs of inspecting such water main reconstruction shall be charged to the Developer.

d. The excavation shall be made in a straight grade through localized breaks in grade. The excavation shall be deepened gradually at changes in the street grades so that there are no abrupt changes in pipeline grade.

e. Where it is necessary to cross sanitary sewer or storm sewer trenches, all trench backfill shall be removed and replaced with mechanically compacted granular material to provide a uniform support for the full length of the pipe.

f. The root systems of all trees not to be removed which are located on or near easements and rights-of-way shall not be cut or disturbed, but shall be tunneled or otherwise protected by the Developer to ensure that no damage is done.

g. During trenching, installing of pipelines and appurtenances, and the placing of backfill, trenches shall be kept free of water. The Developer shall furnish all equipment necessary to dewater the trench and shall dispose of the water in such a manner as not to cause a nuisance or menace to the public. At no time will ground or storm water, mud, miscellaneous debris, etc., be allowed to enter the pipeline being constructed.

h. When deemed necessary by NBWD, the trench shall be extended below the pipeline grades to permit the placing of foundation materials.

i. Foundation material (gravel, spalls, etc.) required in the bottom of the trench to provide proper pipe support shall be furnished by the Developer. The Developer shall perform all excavation of every description and of whatever substance encountered.

j. Boulders, rocks, roots, and other obstructions shall be completely removed or cut out to the new width of the trench and to a depth 6 inches below the water main grade. Where material is removed from below water main grade, the trench shall be backfilled to grade with material satisfactory to NBWD and thoroughly compacted.

k. The maximum length of open trench permissible on any line, in advance of pipe laying, will be 100 feet, unless otherwise specifically approved by NBWD Operations Manager.

l. Upon completion of work each day, all open trenches shall be completely backfilled, leveled, and temporarily graveled or patched, unless otherwise approved by NBWD.

7. Trench Backfill:

a. No timber bracing, lagging, sheathing, lumber or other trench shoring materials shall be left in any excavation.

b. At all roadway and driveway crossings, as well as below existing or future pavement sections, the trench shall be immediately backfilled and compacted with 100% crushed rock after the pipe is installed and inspected, and shall be immediately provided with a temporarily graveled

surface, and continually maintained on a daily basis until replaced with permanent repair as required.

c. All paved crossings shall have a temporary asphalt (cold mix) paved surface installed, which surface shall be a minimum of four (4) inches in compacted thickness, and fully maintained level with existing undisturbed pavement until replaced with permanent repair. Sufficient cold mix to make immediate repairs and to maintain repairs until permanent repair is made, shall be on the job site.

d. The Developer shall be responsible for restoring to a condition equal to their original or superior condition, any and all exiting culvetts, ditches, drains, landscaping, or other facilities which are damaged as a result of the Developer's operations.

8. Timbering and Sheeting:

a. The Developer shall provide and install timbering and sheeting as necessary to protect workmen, the work, and existing utilities and other properties. All work involving timbering and sheeting shall be done in accordance with all applicable local, State and Federal safety regulations. All timbering and sheeting above the pipe shall be removed prior to backfilling. Sheeting below the top of the pipe may be cut off and left in place. Removal of timbering shall be accomplished in such a manner that there will be no damage to the work or to other properties. The design of all timbering and sheeting shall be the Developer's responsibility. Please see page 2-5, "Authority and Duties of Inspectors" in this regard.

9. Tunneling:

a. Tunneling may be ordered by NBWD and/or Pacific County under pavements or otherwise. The Developer may tunnel in lieu of open trenching for deep cuts. Except where authorized by NBWD, such tunneling shall not be longer than 20 feet between shafts. Tunneling shall not be less than 4 feet high and 2 feet wide and not less than 1 foot wider than the outside diameter of the pipe. Tunnels shall be backfilled with material acceptable to NBWD and Pacific County and backfill shall be mechanically compacted. Subsequent low pressure grouting may be required.

10. DEWATERING and CONTROL OF WATER:

a. The Developer shall dewater and dispose of the water so as not to cause injury to public or private property, or cause a nuisance or menace to the public.

b. Dewatering systems shall be designed and operated so as to prevent the removal of natural soils.

c. During excavating, installing of water mains, placing of trench backfill, and the placing and setting of concrete, excavations shall be kept free of water. The static water level shall be drawn down below the bottom of the excavation so as to maintain the undisturbed state of the natural soils, and allow the placement of backfill to the required density.

d. The dewatering system shall be installed and operated. so that the groundwater level outside the excavation is not reduced to the extent that would damage or endanger adjacent structures or property.

e. The control, routing, storage, release, etc., of storm, ground, and or surface water shall be the Contractor's (Developer's) responsibility and be in strict confonnance with all applicable regulatory agencies, applicable permits, and permit requirements. The Developer or his Contractor shall be responsible for obtaining and adhering to all relevant permits in this regard.

f. 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 stmctures, and water mains.

g. In carrying out the work within the limits of streams, or an area that will drain to a stream during a rain, the Developer is required to comply with the regulations of the appropriate local, State, and Federal agencies. Any isolated potholes remaining from the Developer's operations shall be provided with open water channels in such a manner that there will be a direct drainage outlet at the lowest elevation of the pothole.

h. Dust control water shall be applied as designated by NBWD and for such period of time as NBWD deems necessary.

i. The Developer shall contact the applicable agencies and secure such permits as may be necessary to cover his proposed method of operation within the areas described above. **If** no permit is necessary, and if deemed necessary by NBWD, he shall obtain a letter from the appropriate agency.

11. COMPACTION of TRENCH BACKFILL:

a. Unless otherwise approved in writing by NBWD Operations Manager, compaction of trench material is required. The density of compacted backfill material shall meet requirements outlined in the Standard Specifications, or as otherwise approved in writing by NBWD. The Contractor shall provide, procure and employ a NBWD approved soils laboratory to perform density tests of areas specified by NBWD. Any area which demonstrates non-compliance shall be excavated and re-compacted to the satisfaction of NBWD.

12. TRENCH SAFETY SYSTEMS:

a. All trenches which exceed a depth of four feet shall be provided with safety systems that meet the requirements of the Washington Industrial Safety & Health Act, Chapter 49.17 RCW.

FOUNDATION. BEDDING. and BACKF1LL GRAVEL:

13. Bedding Material:

a. Bedding material shall be carefully placed and firmly compacted to provide a firm, uniform cradle for the pipe. The minimum thickness of the required bedding material layer shall be six inches for pipelines greater than 18 inches, 4 inches under the bell for all pipe sizes of 18 inches and smaller, and 6 inches under the bell for all pipe diameter where rock is excavated.

b. To provide this firm, continuous support for the pipe, it shall be necessary to hand tamp or "slice" bedding material solidly under the pipe. NBWD reserves the sole right to require the installation of pipe bedding based on actual field conditions. Failure of the contractor to install the material when deemed necessary by NBWD shall be cause for rejection of the installation by NBWD.

c. After the pipe laying operation, additional bedding material shall be placed and compacted for the full width of the trench up to the crown of the pipe.

14. Trench Backfill Gravel Base:

a. NBWD may evaluate and approve, on a case-by-case basis, the utilization of suitable excavated material or import gravel base material for trench backfill. When so approved (in writing) suitable excavated material and/or gravel base, as specified in Section 4-02 of the Standard Specifications; or granular material commonly known as pit run gravel, may be utilized in those areas specifically approved by NBWD Operations Manager.

b. Trench backfill shall be free from wood, roots, bark, or other extraneous material. It shall have such characteristics of particle size and shape that it will compact readily to a firm, stable base. The maximum size of stone in the backfill shall not exceed that which will pass a 2-1/2 inch square sieve opening. Unless otherwise approved, gradation shall be as follows: 25 percent minimum passing 1/4 inch sieve; 10 percent minimum passing U.S. No. 200 sieve; dust ratio 2/3 maximum; sand equivalent 30 minimum.

15. WATER PIPE / SERVICE INSTALLATION:

a. All pipe shall be installed in accordance with these specifications and the instmctions of the manufacturer, subject to the approval of NBWD. All pipe ends shall be square with the longitudinal axis of the pipe, and any damage to the ends shall be cut off prior to installation, if approved by NBWD. When it is necessary to cut the pipe, the pipe shall be cut with approved cutting tools.

b. The pipe shall be laid in a straight grade through localized breaks in grade. The excavation shall be deepened gradually at changes in street grades so that there are no abrupt changes in pipeline grade. To maintain the required alignment, use short lengths and deflect the joints or use necessary bends.

c. Each pipe section shall be carefully lowered into place onto bedding matelial that is placed to a minimum depth of four inches in the trench after inspecting it for defects and removing any gravel or dirt, etc., from the interior of the pipe.

d. When necessary, water mains to be constructed under other utilities shall meet the minimum cover requirements. Where it is necessary to cross sanitary sewer or storm drain trenches, all trench backfill shall be removed and replaced with mechanically compacted granular material to provide a uniform support for the full length of the pipe.

e. The Washington State Deprutment of Health (DOH) requires a 10-foot holizontal separation between all sanitary sewer lines and all septic drain fields relative to all water mains and service lines. Furthermore all potable water lines must be positioned above all non-potable water lines whenever possible.

f. Whenever this horizontal separation of I0-foot cannot be achieved for residential/ commercial water mains and or water services or when the service line is located below a non-potable water source, a double check assembly shall be installed downstream of the service meter at Developer/ Homeowners expense. Furthermore the service line between the double check valve assembly and 10-feet past the non-potable water source shall be sleeved and sealed via a water tight sealer. A 5-foot horizontal separation is required between all water facilities and underground power, telephone, and other facilities unless otherwise approved. These dimensional separations shall be adhered to unless otherwise approved by NBWD.

g. Where a water line crosses over a wastewater (non-potable) line, use a full joint of pipe and center over the wastewater providing 18 inch separation. Where a water line is to be parallel to wastewater, lay it at least 10 feet from the wastewater. If it is not practical for the water and wastewater lines to be separated as described above, then lay the water line at least 18 inches above the top of the wastewater.

h. Section 3-15 paragraph e. - Is further governed and regulated by the NBWD Cross Connection Policy and related plans and documentation.

16. ROAD and STREAM CROSSINGS:

a. The Developer may use any method which produces satisfactory results, and is acceptable to NBWD and the regulatory agencies having jurisdiction of the road or stream, provided that the Developer restores the road or stream to its original or superior condition. Normally, highway and stream crossings require the placing of a steel pipe casing by jacking or tunneling and laying the water main inside the casing.

b. Steel casing shall be of sufficient diameter, size, and strength to enclose the water main and to withstand maximum highway loading. Sizing and wall thickness of the casing shall be subject to approval by NBWD and/or Pacific County.

c. Sand backfill between the casing and the water main, or other NBWD approved means of pipe support, will be required. The ends of the casing are to be sealed with grout concrete after installation, backfill, and testing of the pipe are completed.

17. EROSION CONTROL:

a. The contractor/developer shall prepare and submit an erosion control plan for NBWD's review, comment, and approval prior to initiating construction activities. The detrimental effects of erosion and sedimentation are to be minimized in conformance with the following general principles:

i. Leaving soil exposed for the shortest possible time.

ii. Reducing the velocity and controlling the flow of run-off.

iii. Detaining run-off on the site to trap sediment.

iv. Releasing run-off safely to downstream areas.

b. In applying these principles, the Developer shall provide for erosion control by conducting work in workable units; minimizing the disturbance to cover crop material, providing mulch and/or temporary cover crops, sedimentation basins, and/or diversions in critical areas during construction; properly controlling and conveying run-off; and establishing permanent vegetation and installing erosion control structures as soon as possible.

18. Trench Mulching:

a. Where, in the opinion of NBWD, there is danger of backfill material being washed away due to steepness of the slope along the direction of the trench, material shall be held in place by covering the disturbed area with straw and holding it in place with a covering of jute matting or wire mesh anchored down with wooden stakes, or as may otherwise be approved by NBWD.

19. Cover Crop Seeding:

a. A cover crop shall be sown in all areas disturbed or excavated during construction that were not paved, landscaped, and/or seeded prior to construction. Areas landscaped and/or seeded prior to construction shall be restored to their original condition. Cover crop seeding shall follow backfilling operations.

b. The Developer shall be responsible for protecting all areas from erosion until the cover crop affords such protection. The cover crop shall be reseeded, if required, and additional measures taken to provide protection from erosion until the cover crop is capable of providing protection.

20. CONCRETE BLOCKING:

a. Concrete blocking mix shall be Cement Concrete Class 3000, it shall be cast in place and have a minimum of 1/4 square foot bearing against the fittings and two square feet bearing against undisturbed soil. Blocking shall bear against fittings only and shall be clear of Joints so as to permit taking up or dismantling the joint. All bends and tees shall be adequately blocked. Minimum sized blocks are shown in the Standard Blocking Details. The developer shall install blocking which is adequate to withstand full test pressure as well as to continuously withstand operating pressures under all conditions of service.

b. For concrete blocking based on 200 psi test pressure, with safe soil load bearing of 2,000 pounds per square foot, see Standard Details (Section 4) for minimum dimensional requirements. The Developer shall be responsible for determining the actual size of blocking based on local conditions.

c. Calculations for same shall be provided to NBWD for verification of same and stamped by a Washington State licensed engineer employed by the Developer. Pea gravel or other smooth surfaced rocks are not acceptable as concrete mix aggregate.

21. FIRE HYDRANT INSTALLATION:

a. Fire hydrants shall be set as shown in the Standard Detail (Section 4 of this document). Shackle rods or Mega-lugs shall be used. The hydrant and gate valve must have lugs. Fire hydrant ports are to be oriented as determined by Pacific County Fire District No. 1.

b. In some instances, it may be necessary to provide cuts and fill hydrants. Where this occurs, the area for at least a three (3) foot radius around the hydrant shall be graded and leveled, and the cut or fill slopes shall be neatly graded by hand, unless otherwise approved by Pacific County Fire District No. 1.

c. No tool other than an approved hydrant operating wrench shall be used when opening or closing hydrants. Existing hydrants shall not be operated by the Contractor.

d. Existing fire hydrants shall be relocated, as shown on the Standard Details (Section 4), by installing new fittings, new ductile iron pipe and Mega-lugs between the gate valve and the fire hydrant. New gaskets shall be installed at each connection.

22. WATER SHUTOFF:

a. Where it is necessary to shut off the existing mains to make a connection, the Developer shall notify NBWD Operations Manager seventy-two (72) hours in advance of such shut off and NBWD will shut off the mains. Once the water has been shut off, the Developer shall diligently pursue the connection to completion so that the time required for the shut off may be held to a minimum.

b. All connections to existing mains shall be completed the same day as they are started. The Developer shall time his operations so that the water will not be shut off overnight or over weekends or during holidays. On shutdowns effecting commercial or emergency service, connections during non-peak periods may be required (at the discretion of NBWD), for example weekends or midnight hours.

23. SERVICE CONNECTIONS:

a. Prior to construction of the new water mains, and if so directed by NBWD, the Developer shall remove, tag and deliver existing meters to NBWD and provide an approved and temporary jumper (idler) for existing meter locations in order to maintain service. NBWD staff will then inspect and overhaul the meters, and deliver them to the construction site when the Developer is ready to reinstall the meters.

b. Any relocated meters shall be installed at the property line. A new meter box, per NBWD Standards, shall be furnished by the Developer for each service. Any meters damaged or clogged during construction will be replaced by NBWD and back charged to the Developer.

c. Service lines shall be installed up to the meter prior to conducting pressure testing and disinfection of water mains, the services shall then be connected to meters.

24. GATE VALVE INSTALLATION:

a. Gate valves shall be set in the ground vertically and shall be opened and shut under pressure to check operation and, at the same time, show no leakage. Valves 6 inches and larger that are not flanged to other fittings shaH be blocked in accordance with the Standard Details (Section 4). Concrete collars shall be placed around the valve boxes as also shown and referenced in the Standard Details.

25. BUTTERFLY VALVE INSTALLATION:

a. Butterfly valves shall be installed and tested in the same manner as gate valves. The Contractor is cautioned to test Butterfly Valves in strict compliance with manufacturer's recommendations. Test pressures may need to be adjusted accordingly.

26. VALVE BOX INSTALLATION:

a. Valve boxes shall be set flush in pavement. In gravel shoulder and in unimproved roadway areas, install a protective asphalt pad as shown in Standard Details. Valve boxes shall be installed such that the slots in the valve box lid shall be oriented in the direction of the pipe. Where valve boxes are in asphalt pavement, the cover shall be painted Blue.

27. INSTALLATION of VALVE MARKER POSTS:

a. Valve markers shall be installed for all valves except fire hydrant valves and NBWD designated valves located in paved areas. The markers shall be set to leave 18 inches exposed above ground. The exposed portion of the markers shall be painted the same as the fire hydrants. The valve size and the distance to the valve, rounded off to the nearest foot, shall be stenciled on the marker in two-inch-high numbers using black paint. A single valve marker can be utilized to identify valve clusters.

28. INSTALLATION of FIRE HYDRANT GUARD POSTS:

a. Guard posts shall be set with the tops of the posts at the same elevation as the top of the hydrant. The exposed portion of the posts shall be painted same as for fire hydrants.

29. BLOW-OFF ASSEMBLY INSTALLATION:

a. Per NBWD standard plans for water system construction for "End-Line and In-Line Blow off Assemblies" as applicable.

30. AIR and VACUUM RELEASE VALVE INSTALLATION:

a. Air and vacuum release valve assemblies shall be sized and approved by NBWD and installed as shown in the Standard Details (Section4). Location of air and vacuum release valves shall be at localized high points of the system. Air and vacuum release assemblies shall be installed in a location as "approved" by NBWD Operations Manager. Where required by NBWD Operations Manager, the new main shall be constructed with additional depths of cover to alleviate the need for these types of valve assemblies at localized system high points.

31. LOCATING WIRE:

a. All non-metallic water mains (service laterals) and services shall have 14 gauge solid copper wire and neoprene coating placed in the trench over the water line and the ends brought up into the valve or meter boxes.

32. CONNECTIONS TO EXISTING FACILITIES:

a. Unless otherwise specified by NBWD, where it is necessary to connect to existing facilities, the operation of the existing facility shall be maintained, if possible, while making the connection.

b. Wet tap connections shall be installed as shown on the approved Plans and further detailed in the Standard Details (Section 4). The tapping valve shall remain closed and operated only as directed by NBWD.

c. Cut-in tees and crosses shall be installed as shown on NBWD approved Plans and the valves on the branches of the tee or cross shall remain closed unless otherwise directed by NBWD. Unless otherwise specifically approved by NBWD, in writing, a maximum of one (1) connection to the existing system will be allowed until such time that pressure and purity tests of the "completed" system have been satisfactorily witnessed by

NBWD. NBWD will determine and approve of the initial "tie in" prior to constructing same.

d. At connections of new piping to existing piping where no valve is installed to separate the system, all of the new piping, appmtenances and blocking shall have been installed, disinfected and tested up to the point of cutting into the existing line before the connection is made.

e. Provide NBWD Operation Manager 72 hours notice prior to making connections to the existing system and proceed only after receiving permission. Assemble all necessary material and equipment 48 hours before starting work to allow NBWD inspector to examine the material for acceptability. NBWD will notify all affected customers. Generally, no cut-in connections or connections of new piping to existing piping will be scheduled on, weekends, NBWD recognized holidays, or non-work hours unless otherwise approved (in writing) or required by NBWD.

f. Bolts, flanges, gaskets, couplings and all accessories shall be checked and assembled where possible by the Developer and verified by NBWD prior to shut down of the water system. Before connection or cut-in, the fittings, pipes, valves, and couplings shall be cleaned and sterilized with chlorine solution in the same manner as provided for the pipeline. The cleaning and sterilizing shall be done immediately prior to installation and in the presence of NBWD. Once the water has been shut off, the Developer shall proceed rapidly and without interruption to complete the connection.

g. After connection to the existing system, the opening of the valves shall be done with the authorization of, and in the presence of, NBWD's authorized representative.

h. The Developer shall not operate any valves or make any connections to the existing water main without prior approval of NBWD. The Developer shall make the necessary arrangements with NBWD for the connection to the existing water main.

33. <u>TESTING and DISINFECTING:</u>

a. The water main pipes shall be substantially disinfected, purged and tested before being placed in service. All water for testing and disinfecting must be obtained by the Developer by arrangement with NBWD. All pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test shall be furnished, installed and operated by the Developer. When testing, "feed" for the pump shall be from a barrel or other suitable container, wherein the actual amount of "makeup" water can be measured periodically during the test period.

b. The pipeline shall be backfilled sufficiently to prevent movement of the pipe under pressure. All concrete blocking shall be in place and time allowed for the concrete to cure before testing. Where permanent blocking is not required, the Developer shall furnish and install temporary blocking.

c. The pipeline shall be subjected to a hydrostatic pressure test of 200 pounds per square inch (200 psi) or twice the system static pressure (whichever is

greater) for a period of not less than fifteen (15) minutes for all lines with gate valves 12-inch and smaller. All pipelines with valves larger than 12-inch shall be tested to one hundred fifty pounds per square inch (150 psi) maximum. All tests shall be made with the hydrant auxiliary gate valves open and pressure against the hydrant valve. Hydrostatic tests shall be perfom1ed on every complete section of water main between two valves, and each valve shall withstand the same test pressure as the pipe with no pressure active in the section of pipe beyond the closed valve.

d. The hydrostatic testing and leakage tests shall be satisfactorily completed and witnessed by NBWD after pavement restoration and/or new pavement installation is complete. The Contractor is strongly advised to test the system to its satisfaction in this regard prior to installation of permanent surface restoration items. Fire hydrants shall be individually tested at the conclusion of the water main testing to the same test pressures previously identified. The individual hydrant testing shall be pe1formed with the hydrant auxiliary gate valve and hose ports closed and the hydrant operating stem valve wide open. A maximum of 25 pounds per square inch shall be in the supply main beyond the hydrant auxiliary gate valve.

e. In addition to the hydrostatic pressure test, a leakage test shall be conducted on the pipeline. The leakage test shall be conducted at one hundred fifty pounds per square inch (150 psi) for a period of not less than two (2) hours.

f. The quantity of water lost from the main shall not exceed the number of gallons per hour determined by the formula:

$$L = \frac{ND(P)^{0.5}}{7{,}400}$$

In which L = allowable leakage, gallons/hour
N = number of joints in the length of pipeline tested
D = nominal diameter of the pipe in inches
P = average test pressure durng the leakage test, psi.

g. Defective materials or workmanship, discovered as a result of the tests, shall be replaced by the Developer at the Developer's expense. Whenever it is necessary to replace defective material or correct the workmanship, the tests shall be rerun at the Developer's expense, until a satisfactory test is obtained.

h. The pipe shall also be disinfected when being tested. As each length of pipe is laid, calcium hypochlorite or other disinfecting agent, having an available chlorine content of approximately sixty-five (65) percent shall be placed in the pipe in sufficient quantities to give a dosage of approximately fifty (50) parts per million available chlorine, calculated on the volume of water which the pipe will contain.

i. This may be placed in the upstream or high pressure end of the pipe. The following table shows the amount of high test calcium hypochlorite which should be used in each twenty (20) foot length of pipe of various sizes:

j. PIPESIZE HIGH TEST HYPOCHLORITE REQUIRED

(Inside Diameter In Inches)	(Ounces per 20-foot length to give 50 ppm available chlorine)
2, 3, 4 & 6	0.4
8, 10& 12	0.7

k. The calcium hypochlorite or other disinfecting agent used for this purpose shall be furnished by the Developer.

l. When the line is completed and ready to disinfect, water shall be allowed to flow in slowly, so not to displace the chlorine agent, until it appears at the far end of the line. The system shall then be allowed to stand for at least twenty-four (24) hours but not to exceed forty-eight (48) hours (unless otherwise approved by NBWD Operation Manager). The line shall then be flushed through the fire hydrants or into the next section, until a test shows no more than 0.2 parts per million available chlorine.

m. If any of the materials need to be replaced, the line shall again be disinfected and tested. The line may not be pressure tested at the same time it is disinfected unless specifically approved by NBWD Operations Manager.

n. Adequately sized and spaced blow-offs, including temporary blow-offs, if approved by NBWD, shall be provided to insure minimum flushing velocities can be maintained in the pipe per applicable AWWA standards and provisions.

o. The water system will not be acceptable to NBWD until receipt of a satisfactory report from the Washington State Department of Health (DOH) on water samples submitted to that office for bacteriological analysis, or other certified laboratory(ies).

p. The hypo-chlorinated water shall be discharged in strict compliance with regulatory guidelines and requirements. The contractor shall be responsible for procuring all permits, making adequate provisions, and incmTing all costs in this regard, to include, but not be limited to, NBWD approval of point and method(s) of discharge, hoses, trenching, hauling, etc.

34. ADJUSTMENT of NEW and EXISTING UTILITY STRUCTURES TO GRADE:

a. This work consists of constructing and/or adjusting all new and existing utility structures encountered on the project to finished grade.

General:

b. On asphalt concrete paving projects, the valve boxes shall not be adjusted until the pavement is completed, at which time the center of each valve box lid shall be relocated from references previously established by the Developer. The pavement shall be cut as further described, and base material removed to permit removal of the lid.

c. The asphalt concrete pavement shall be cut and removed to a neat circle, as further noted herein, and shown in the Standard Detail. The valve box and lid shall be brought up to desired grade, which shall conform to the surrounding road surface. A concrete collar shall be placed per the Standard Detail. Care shall be exercised to insure the valve box "ears" point in the direction of the new water main on which it is installed.

d. Asphalt concrete patching shall not be carried out during wet ground conditions or when air temperature is below 50 degrees F. Asphalt concrete mix must be at the required temperature when placed. Before making the asphalt concrete repair, the edges of the existing asphalt concrete pavement and the outer edge of the casting shall be tack coated with hot asphalt cement. The remaining 2" shall then be filled with Class B asphalt concrete and compacted with hand tampers and a patching roller.

e. The completed patch shall match the existing paved surface for texture, density, and unifmmity of grade. The joint between the existing pavement and the patch shall then be carefully painted with hot asphalt cement or asphalt emulsion, and shall be immediately covered with dry paving sand before the asphalt cement solidifies. All debris, such as asphalt pavement, cement bags, etc., shall be removed and disposed of by the Developer. Before acceptance of the job, valve and meter boxes shall be cleaned of all debris and foreign material. Any damage occurring to the existing facilities due to the Developer's operations shall be repaired at his own expense.

f. Adjustment of Monuments and Cast Iron Frames and Covers:

i. Monuments and monument castings shall be adjusted to grade in the same manner as for valve boxes.

35. FINISHING and CLEANUP:

a. Before acceptance of water main construction, all pipes, catch basins, and other surrounding facilities shall be cleaned of all debris and foreign material. After all other work on the project is completed, and before final acceptance, the entire roadway, including the roadbed, planting and sidewalk areas, shoulders, driveways, alley and side street approaches, slopes, ditches, utility trenches, and construction areas shall be neatly finished to the lines, grades, and cross-sections shown on the plans and as hereinafter specified.

b. On water main construction where all or portions of the construction is in undeveloped areas, the entire area which has been disturbed by the construction shall be so shaped that, upon completion, the area will present a uniform appearance, blending into the contours of adjacent prope1ties. All other requirements outlined previously shall be met. Slopes, sidewalk areas, planting areas, and roadway shall be smoothed and fimshed to the required cross-section and grade by means of a grading machine insofar as it is possible to do so without damaging existing improvements, trees and shrubs. Machine dressing shall be supplemented by hand work to meet the requirements herein, to the satisfaction of NBWD.

c. Upon completion of the cleaning and dressing, the project shall appear uniform in all respects. All graded areas shall be true to line and grade as shown on the typical sections and as required by NBWD or Pacific County. When the existing planting is below sidewalk and curb, the area shall be filled and dressed out to the walk regardless of the limits shown on the plans. Wherever fill material is required in the planting area, it shall be left enough higher to allow for final settlement, but nevettheless, the raised surface shall present a uniform appearance.

d. All rocks in excess of six (6) inches in diameter unless used as ornamental or landscaping rock shall be removed from the entire construction area and shall be disposed of in the same manner as required for other waste material. In no instance shall the rock be thrown onto private property. Overhang on slopes shall be removed and slopes shall be dressed neatly so as to present a uniform, well sloped surface.

e. All excavation material at the outer lateral limits of the project shall be removed entirely. Trash of all kinds resulting from the clearing and grubbing or grading operations shall be removed, and disposed of at Contractor's prearranged location. Where machine operations have broken down brush and trees beyond the lateral limits of the project, the Developer shall remove, dispose of and replace the same as applicable at his own expense.

f. Drainage facilities, such as catch basins, inlets, culverts, and open ditches, shall be cleaned of all debris which is the result of the Developer's operations.

g. All pavements and oil mat surfaces, whether new or old, shall be thoroughly cleaned. Existing improvements, such as Portland cement concrete curbs, curb and gutters, walls, sidewalks, and other facilities which have been sprayed by the asphalt cement shall be cleaned to the satisfaction of NBWD.

h. Castings for manholes, monuments, water valves, lamp poles, vaults, and other similar installations which have been covered with the asphalt material shall be cleaned to the satisfaction of NBWD.

36. FINAL INSPECTION:

a. The Developer shall bear all costs incurred in correcting any deficiencies found during inspection, including the cost of any additional inspection that may be required by NBWD to verify the correction of said deficiency.

37. GENERAL GUARANTEE and WARRANTY:

a. The Developer shall be required, upon completion of the work, and acceptance by NBWD, to furnish to NBWD a written guarantee covering the material and workmanship for a period of one year after the date of final acceptance, and he shall make all necessary repairs during that period at his own expense, if such repairs are necessitated as a result of furnishing, under this agreement, poor materials and/or workmanship. The Developer shall obtain warranties from the contracts, subcontractors, and suppliers of material or equipment where such warranties are specifically

required herein, and shall deliver copies of same to NBWD upon completion of the work.

38. SALVAGE:

a. When directed by NBWD (or shown on the approved construction plans), the Contractor shall salvage all abandoned fire hydrants, valve boxes, valve marker posts, hydrant guard posts and other related appurtenances and/or pipe, and deliver the material to NBWD. The Contractor shall pre-arrange delivery with NBWD's Operation Manager. Do not use salvaged materials in new construction unless approved in writing by NBWD. Remove hydrants by first cutting the supply pipe to avoid damage to the hydrant. The abandoned pipe shall be provided with a concrete plug and the excavation trench shall be satisfactorily backfilled and compacted. Excess waste shall be removed and waste hauled by the Contractor.

SECTION 3

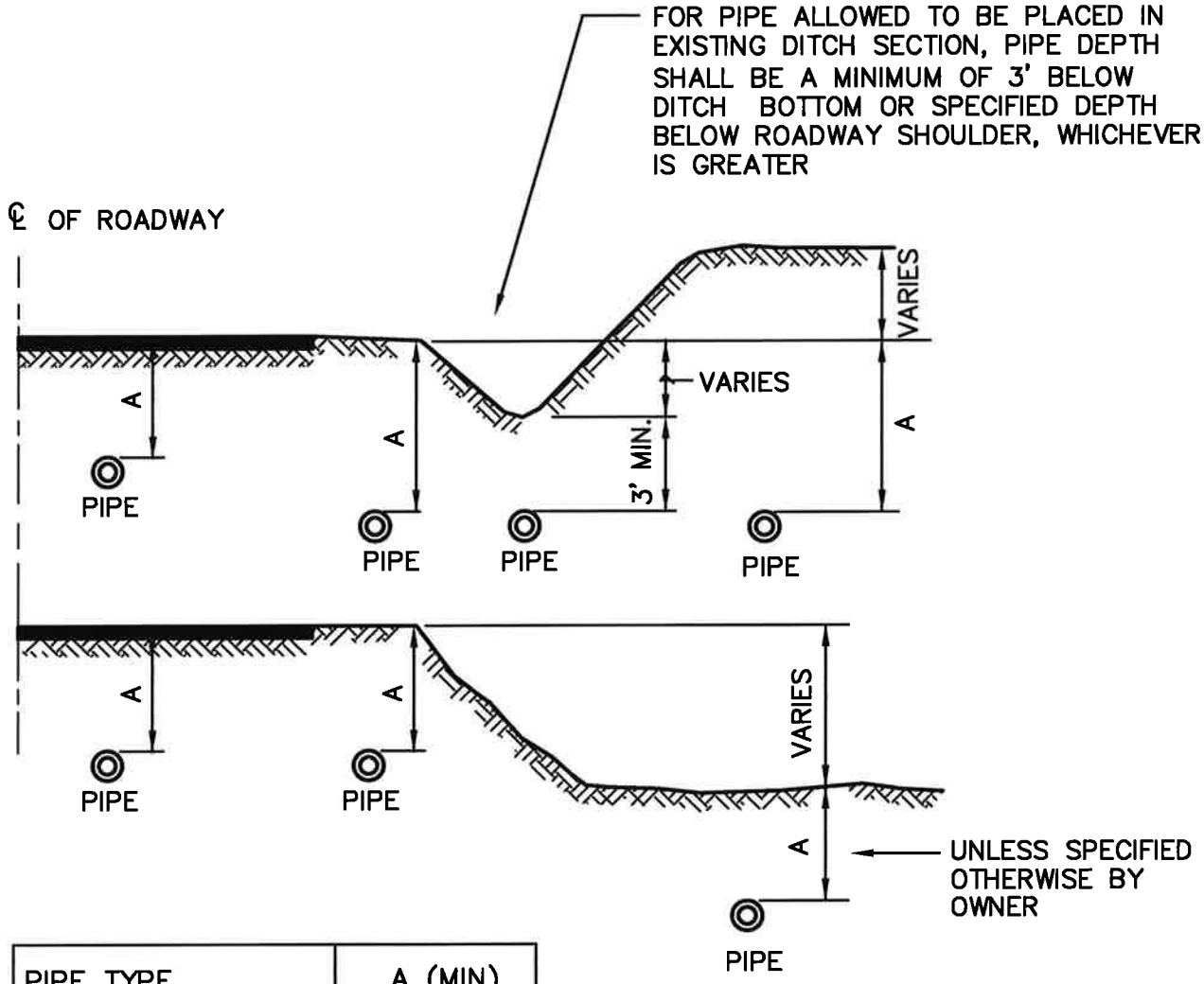
WATER MAIN STANDARD DETAILS

SECTION THREE

NORTH BEACH WATER DISTRICT

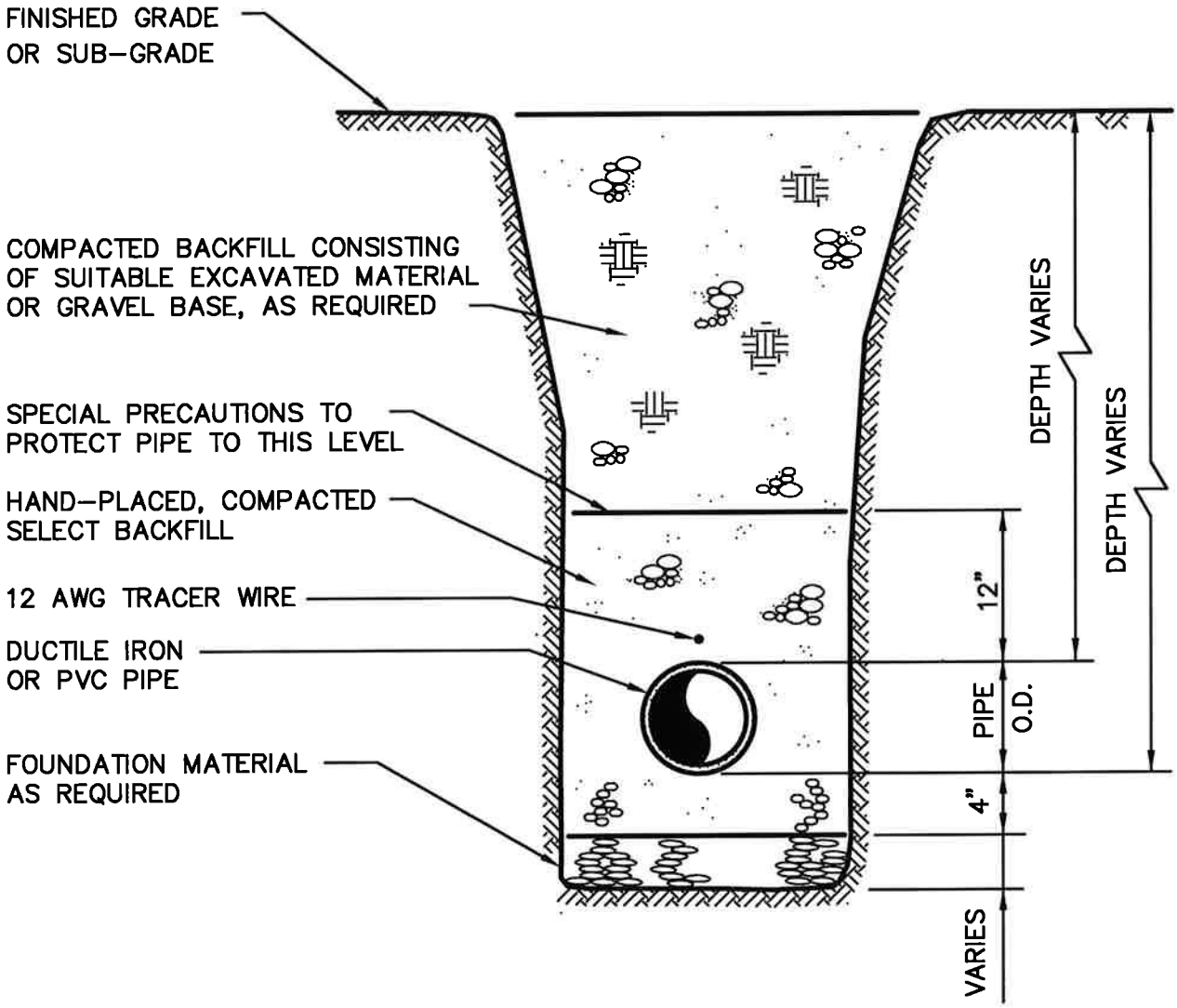
WATER MAIN STANDARD DETAILS

INDEX



PIPE TYPE	A (MIN)
TRANSMISSION	42"
DISTRIBUITION	36"

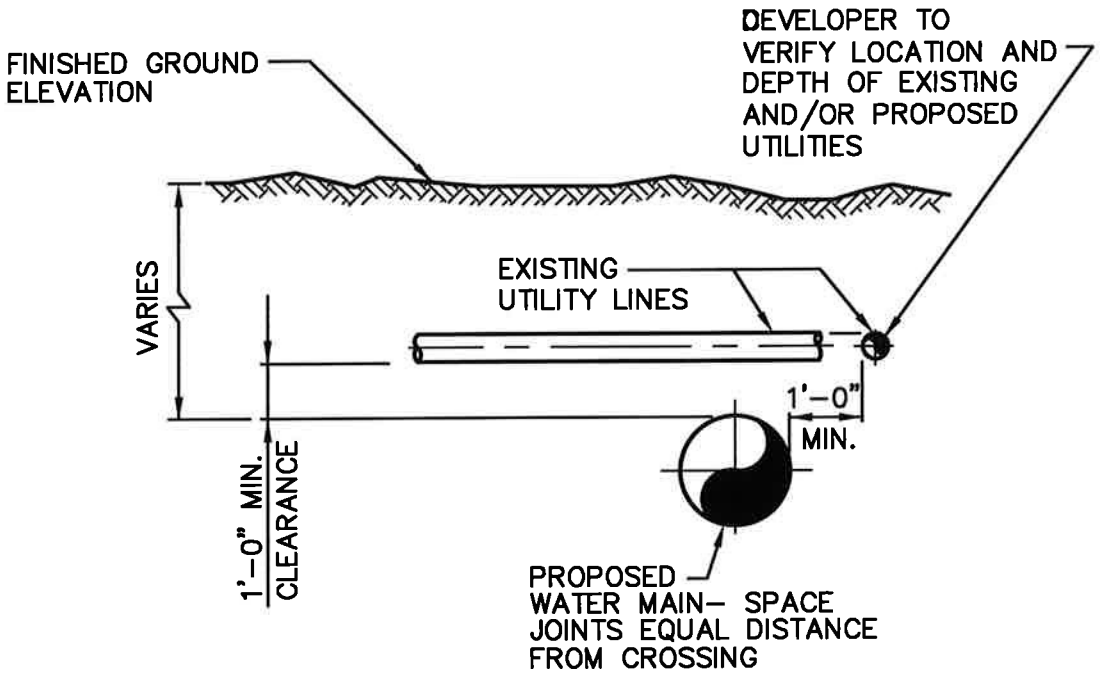
NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
WATER MAIN DEPTH REQUIREMENTS			
APPROVED: GENERAL MANAGER _____ DATE _____			DWG. NO. 1
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE



NOTE:

BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH NBWD STANDARDS AND/OR THE PACIFIC COUNTY PERMIT REQUIREMENTS, AS MAY BE APPLICABLE

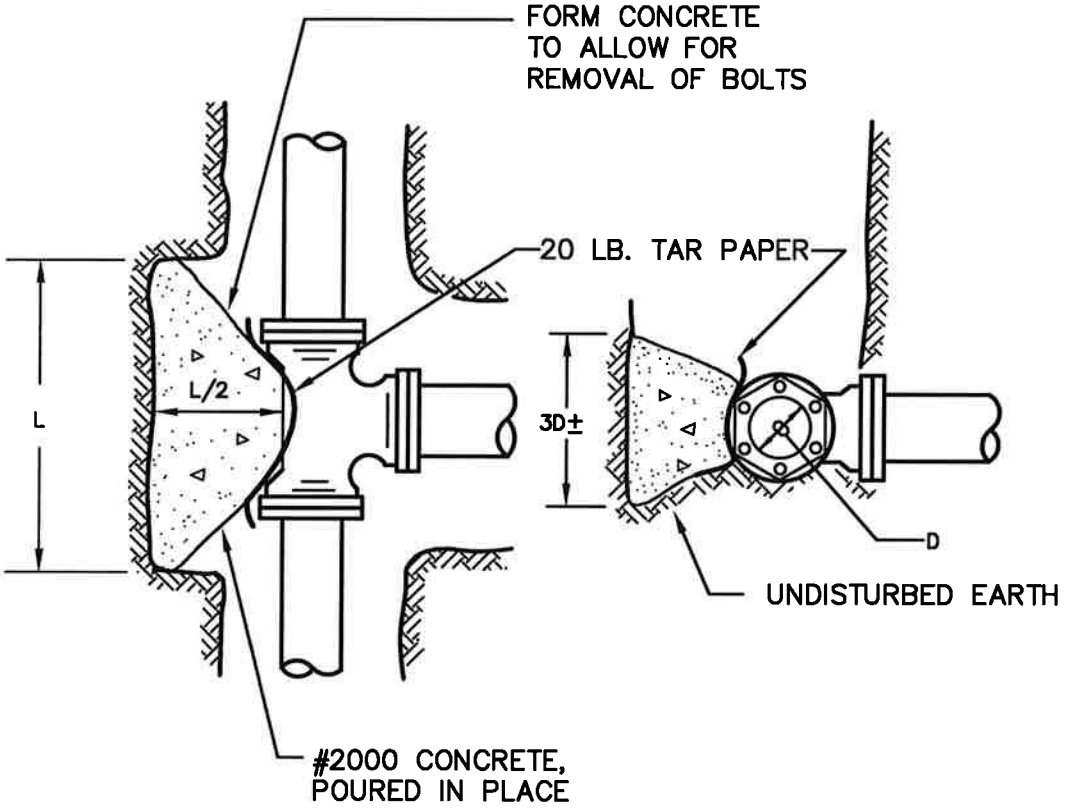
NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
WATER MAIN TRENCH SECTION			
APPROVED: GENERAL MANAGER _____ DATE			DWG. NO. 2
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE



NOTE: CONCRETE ENCASEMENT (BEDDING) SHALL BE UTILIZED, IF APPROVED BY THE OWNER, AT LOCALIZED UTILITY CROSSING IF MINIMUM PIPE SEPERATION (ELEVATION) CANNOT BE MAINTAINED / ACHIEVED.

NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
TYPICAL UTILITY CROSSING			
APPROVED: GENERAL MANAGER _____ DATE			DWG. NO. 3
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE

MINIMUM BEARING AREA TABLE					
FITTING D	TEE	90°	45°	22 1/2°	11 1/4°
6"	4 SQ.FT.	6 SQ.FT.	3 SQ.FT.	2 SQ.FT.	2 SQ.FT.
8"	7 SQ.FT.	10 SQ.FT.	6 SQ.FT.	3 SQ.FT.	2 SQ.FT.
10"	10 SQ.FT.	15 SQ.FT.	9 SQ.FT.	5 SQ.FT.	3 SQ.FT.
12"	14 SQ.FT.	22 SQ.FT.	12 SQ.FT.	6 SQ.FT.	4 SQ.FT.
16"	25 SQ.FT.	38 SQ.FT.	21 SQ.FT.	11 SQ.FT.	7 SQ.FT.
18"	32 SQ.FT.	48 SQ.FT.	27 SQ.FT.	14 SQ.FT.	8 SQ.FT.



PLAN **ELEVATION**

NOTE:
BEARING AREA TABLE BASED ON 250 PSI PRESSURE AND 2000 PSF SOIL BEARING. IF PRESSURE IS GREATER OR SOIL BEARING IS LESS, THE THRUST BLOCK SIZE SHALL BE INCREASED.

THIS TABLE REPRESENTS THE "MINIMUM" CONSTRUCTION STANDARDS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE SIZE OF ALL THRUST BLOCKS BASED ON EXISTING AND LOCAL CONDITIONS.

NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
CONCRETE THRUST BLOCK			
APPROVED: GENERAL MANAGER _____ DATE			DWG. NO. 4
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE

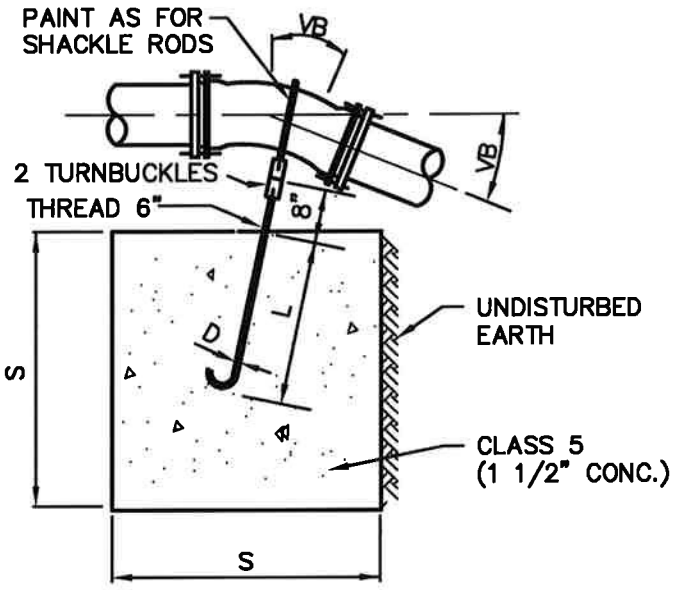
TYPE "A" BLOCKING
FOR 11 1/4°–22 1/2°–30° VERTICAL BENDS

PIPE SIZE NOMINAL DIAMETER– INCHES	TEST PRESSURE PSI	VB VERTICAL BEND DEGREES	No. OF CU. FT. OF CONC. BLOCKING	S SIDE OF CUBE LIN. FT.	D DIAM. OF SHACKLE RODS (2) INCHES	L DEPTH OF RODS IN CONCRETE LIN. FT.
4"	300	11 1/4	8	2	5/8"	1.5
		22 1/2	11	2.2		2.0
		30	17	2.6		
6"	300	11 1/4	11	2.2	5/8"	2.0
		22 1/2	25	2.9		
		30	41	3.5		
8"	300	11 1/4	16	2.5	5/8"	2.0
		22 1/2	47	3.6		
		30	70	4.1	3/4"	2.5
12"	250	11 1/4	32	3.2	5/8"	2.0
		22 1/2	88	4.5	7/8"	3.0
		30	132	5.1		
16"	225	11 1/4	70	4.1	7/8"	3.0
		22 1/2	184	5.7	1 1/8"	4.0
		30	275	6.5	1 1/4"	
20"	200	11 1/4	91	4.5	7/8"	3.0
		22 1/2	225	6.1	1 1/4"	4.0
		30	330	6.9	1 3/8"	4.5
24"	200	11 1/4	128	5.0	1"	3.5
		22 1/2	320	6.8	1 3/8"	4.5
		30	480	7.9	1 7/8"	5.5

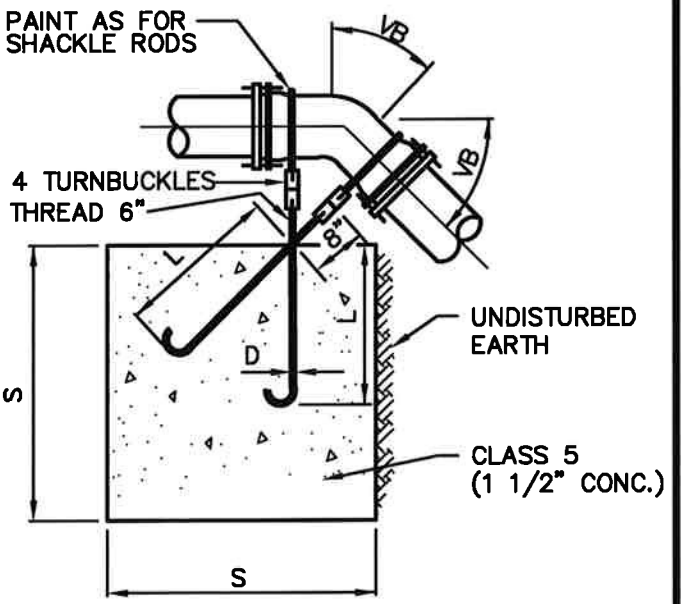
TYPE "B" BLOCKING
FOR – 45° VERTICAL BENDS

		VB		S	D	L
4"	300	45	30	3.1	5/8"	2.0
6"			68	4.1		
8"			123	5.0		
12"	250		232	6.1	3/4"	2.5
16"	225		478	7.8	1 1/8"	4.0
20"	200		560	8.2	1 1/4"	
24"			820	9.4	1 3/8"	4.5

THIS TABLE REPRESENTS THE "MINIMUM' CONSTRUCTION STANDARD. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE SIZE OF ALL ANCHOR BLOCKS BASED ON EXISTING AND LOCAL CONDITIONS.



TYPE "A" BLOCKING



TYPE "B" BLOCKING

NORTH BEACH WATER DISTRICT
WATER STANDARD DETAILS

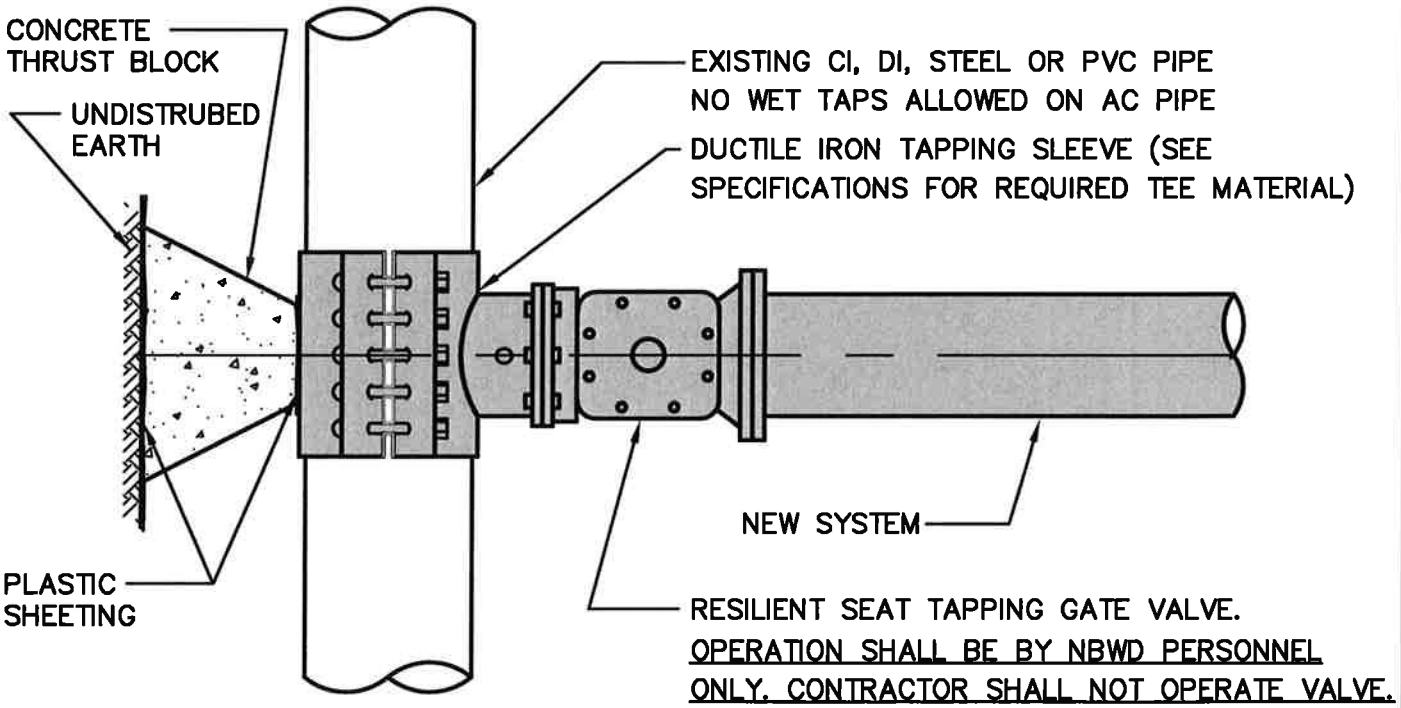
VERTICAL ANCHOR BLOCK

APPROVED:

GENERAL MANAGER _____ DATE _____

DWG. NO. 5

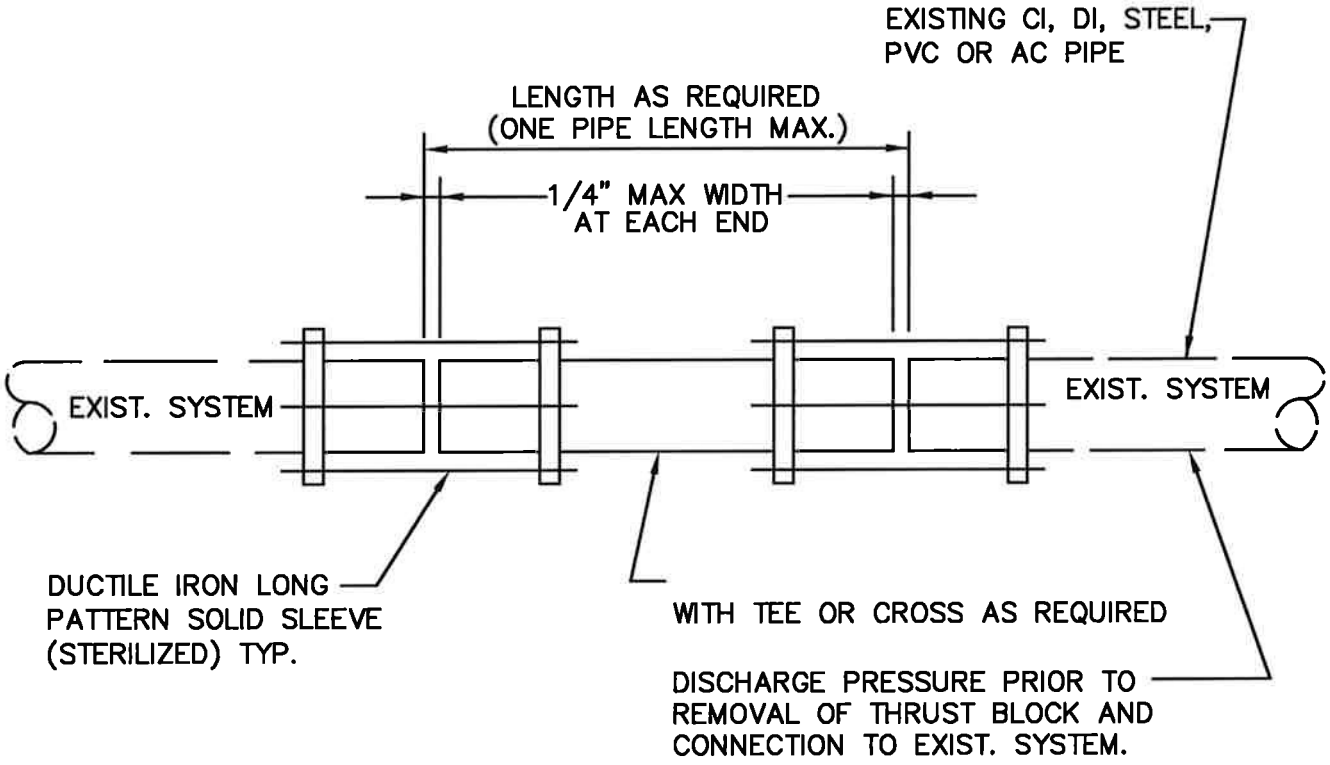
DATE:	DRWN:	CHKD:	SCALE:
10/14	C.D.G.	K.W.J.	NONE



NOTE:

1. VALVE BOX TO HAVE A LOCKING LID UNTIL ACCEPTED BY NBWD
2. O.D. STEEL PIPE SHALL USE S.S. SLEEVE (FUSION COATED)
3. STAINLESS STEEL SLEEVE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY

NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
WET TAP CONNECTION			
APPROVED: GENERAL MANAGER _____ DATE _____			DWG. NO. 6
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE



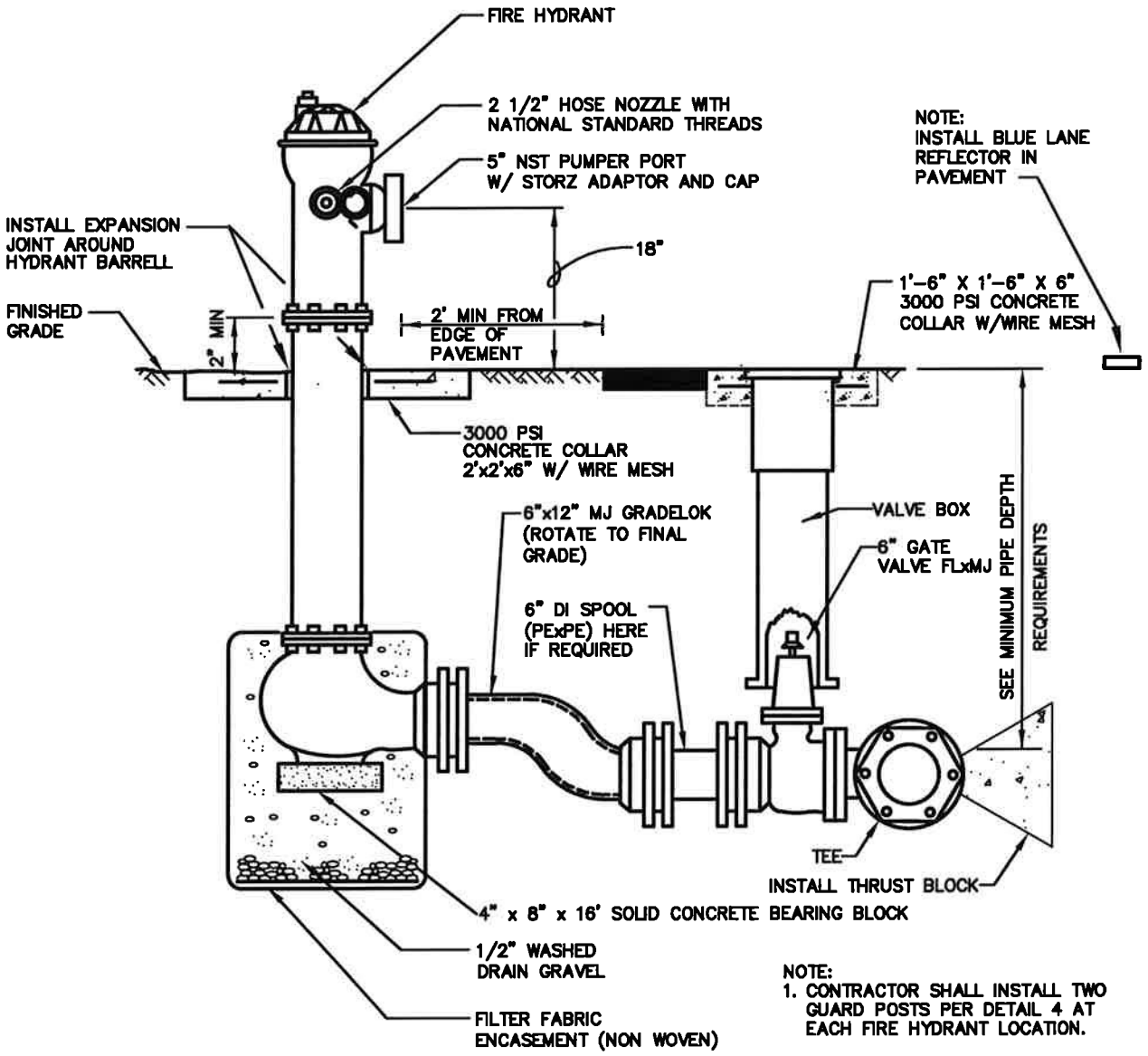
NOTE:

① NO DEFLECTION SHALL BE ALLOWED AT EITHER COUPLING.

② CUT-IN CONNECTIONS ON STEEL PIPE TO USE D.I. x O.D. STEEL TRANSITION COUPLINGS ROMAC OR EQUAL.

③ IN-LINE VALVE(S) IN EXISTING SYSTEM MAY BE REQUIRED AT THE SOLE DISCRETION OF SURFSIDE AT ALL NEW INTERTIE LOCATIONS. (NOTE: VALVE(S) ARE NOT SHOWN ABOVE FOR CLARITY)

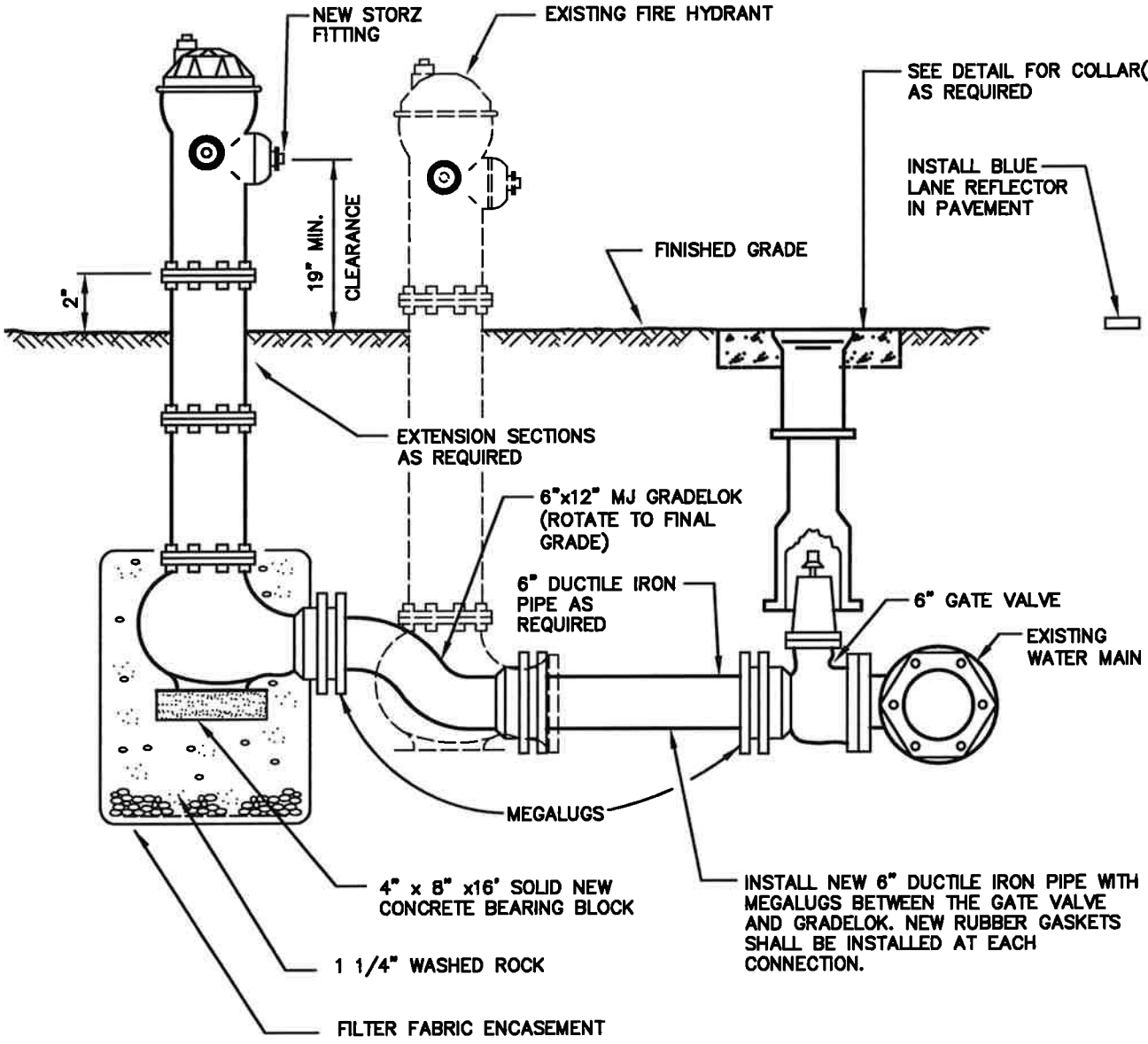
NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
CUT IN CONNECTION			
APPROVED: GENERAL MANAGER _____ DATE _____			DWG. NO. 7
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE



* PAINT FIRE HYDRANT RUSTOLEUM SAFETY YELLOW BASE No. 288-14, COLOR CODE AX-6732, T-4432

NOTE:
1. CONTRACTOR SHALL INSTALL TWO GUARD POSTS PER DETAIL 4 AT EACH FIRE HYDRANT LOCATION.
2. HYDRANT SHALL BE AS SPECIFIED IN THE ENGINEERING SPECIFICATIONS.
3. ALL MECHANICAL JOINTS SHALL BE PROVIDED W/ JOINT RESTRAINT GLANDS (MEGA-LUG, OR EQUAL)

NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
FIRE HYDRANT INSTALLATION			
APPROVED: GENERAL MANAGER _____ DATE _____			DWG. NO. 8
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE



NOTES :

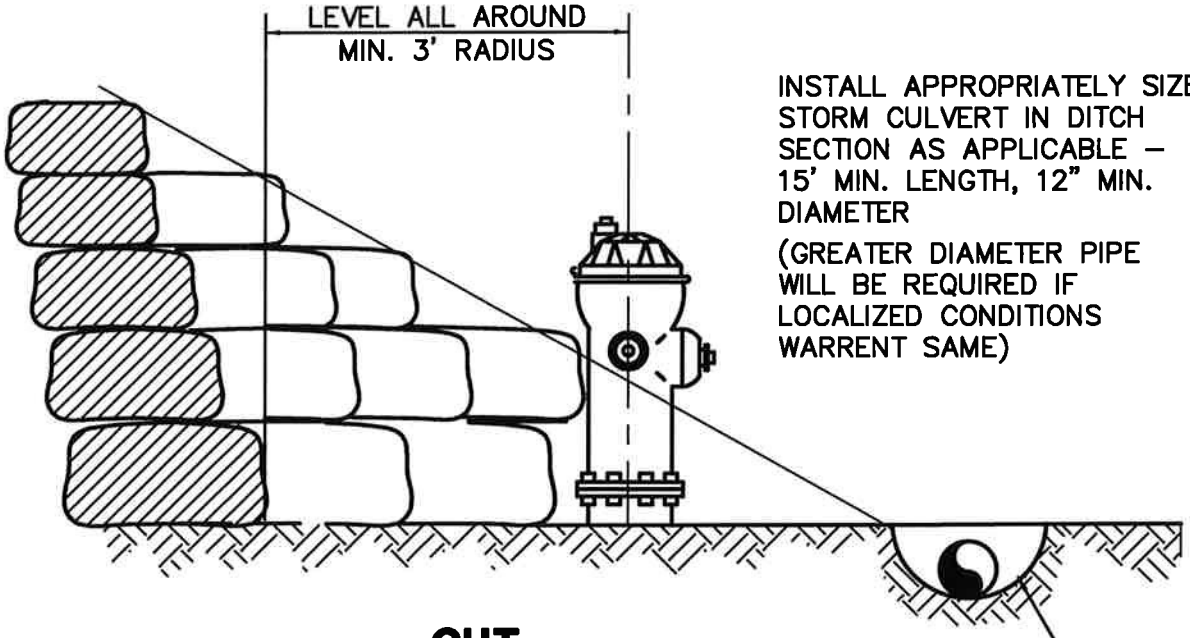
① ALL RELOCATED FIRE HYDRANTS SHALL HAVE 4 1/2" PUMPER PORTS WITH STORZ ADAPTOR (DEVELOPER PROVIDE)

② PROVIDE 15' OF 12" (MIN.) STORM PIPE IN ANY ADJACENT DITCH SECTION. RIP-RAP ENDS AND FILL ABANDONED DITCH SECTION

③ PROVIDE MIN. 3' – 0" CLEARANCE AND LEVEL AREA AROUND RELOCATED HYDRANT

④ REPAINT FIRE HYDRANT PER PACIFIC COUNTY FIRE PROTECTION DISTRICT No. 1 REQUIREMENTS

NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
FIRE HYDRANT RELOCATION			
APPROVED: GENERAL MANAGER _____ DATE			DWG. NO. 9
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE

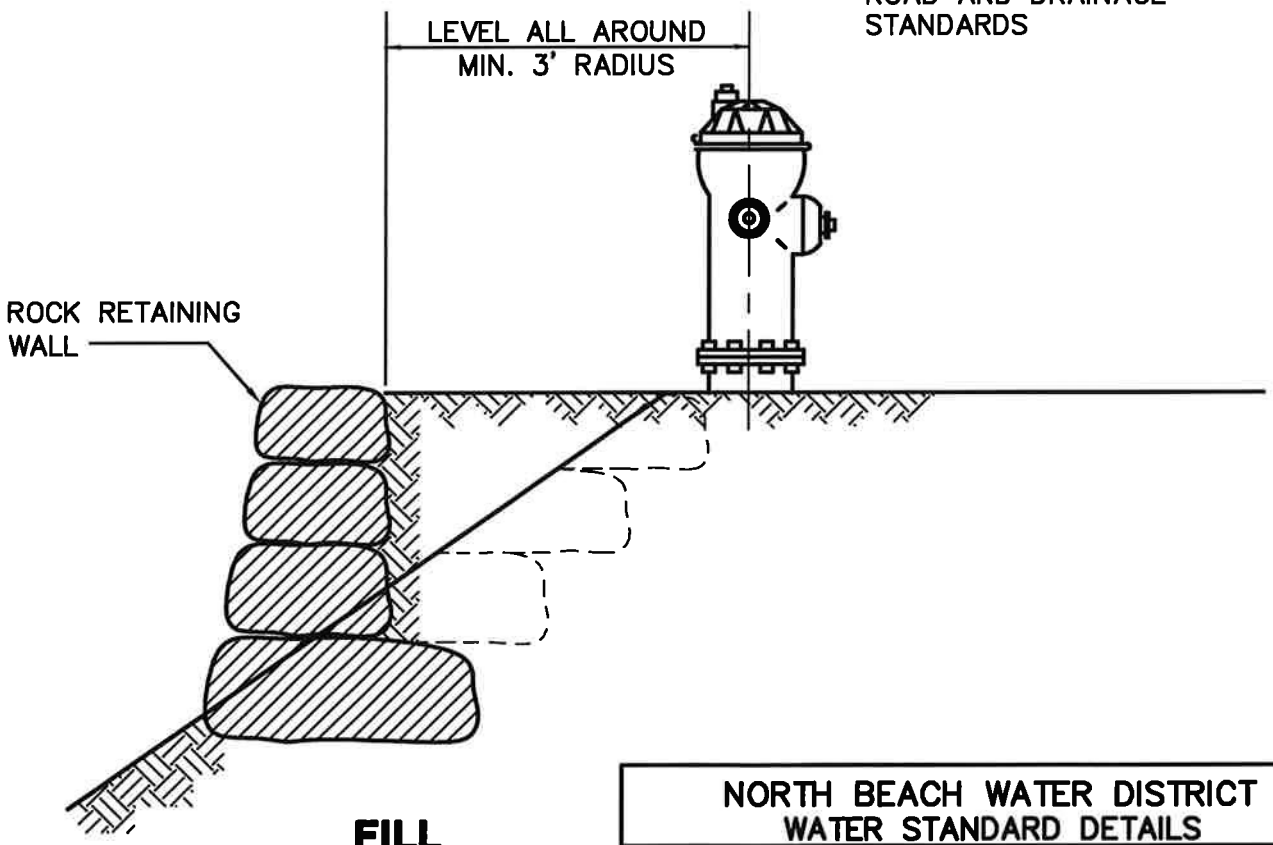


INSTALL APPROPRIATELY SIZED STORM CULVERT IN DITCH SECTION AS APPLICABLE – 15' MIN. LENGTH, 12" MIN. DIAMETER

(GREATER DIAMETER PIPE WILL BE REQUIRED IF LOCALIZED CONDITIONS WARRENT SAME)

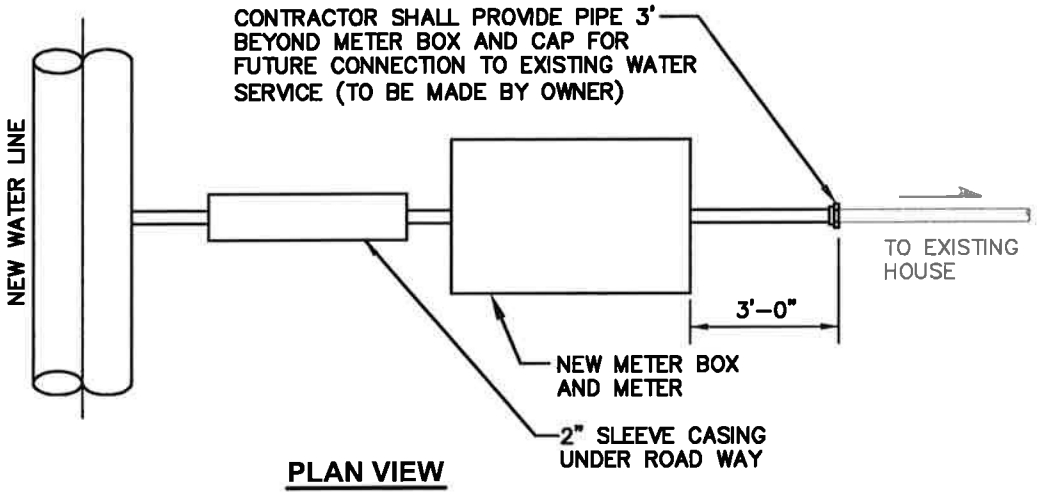
CUT

SEE PACIFIC COUNTY ROAD AND DRAINAGE STANDARDS

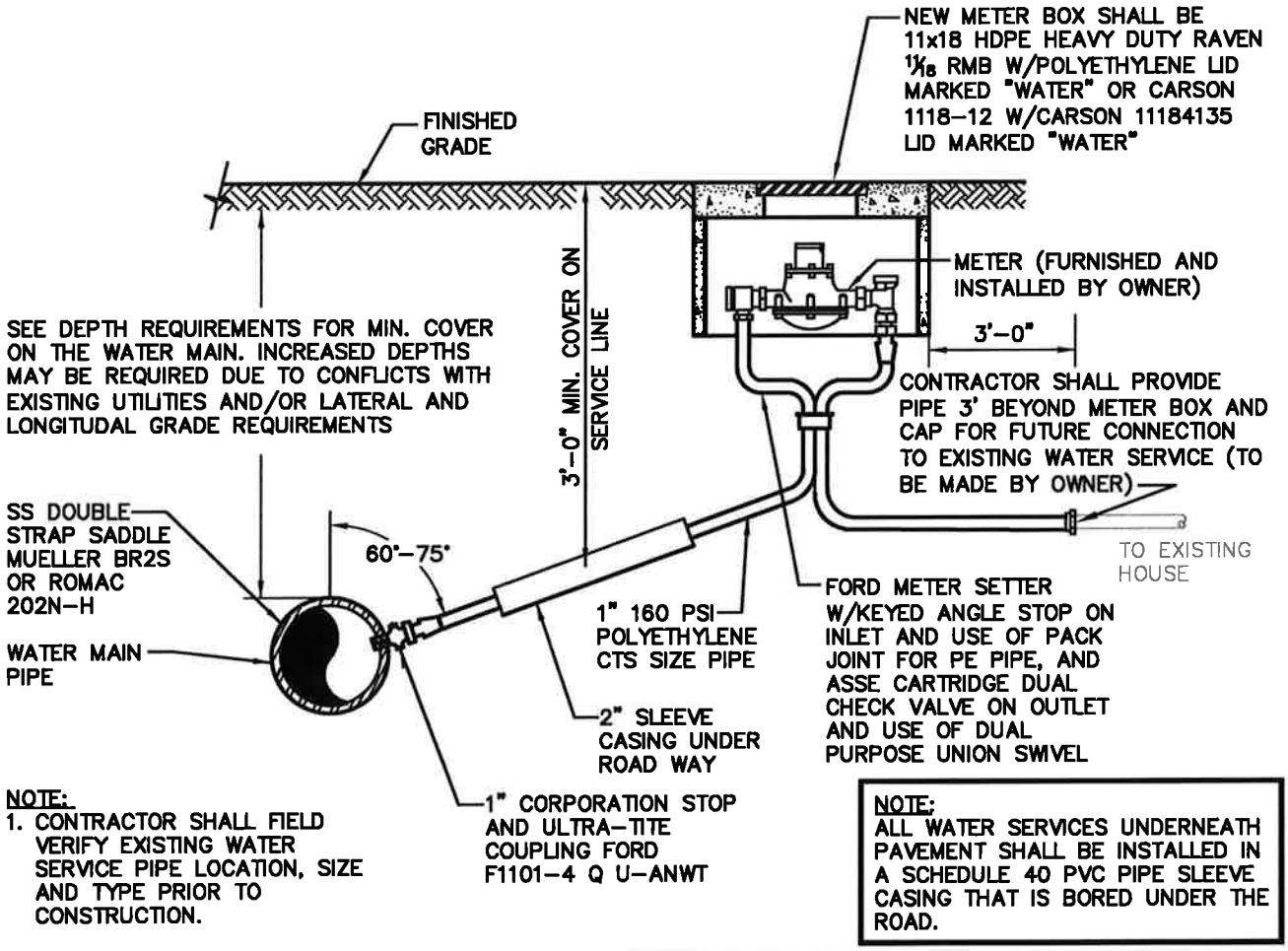


FILL

NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
FIRE HYDRANT LOCATION IN CUT OR FILL			
APPROVED: GENERAL MANAGER _____ DATE			DWG. NO. 10
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE



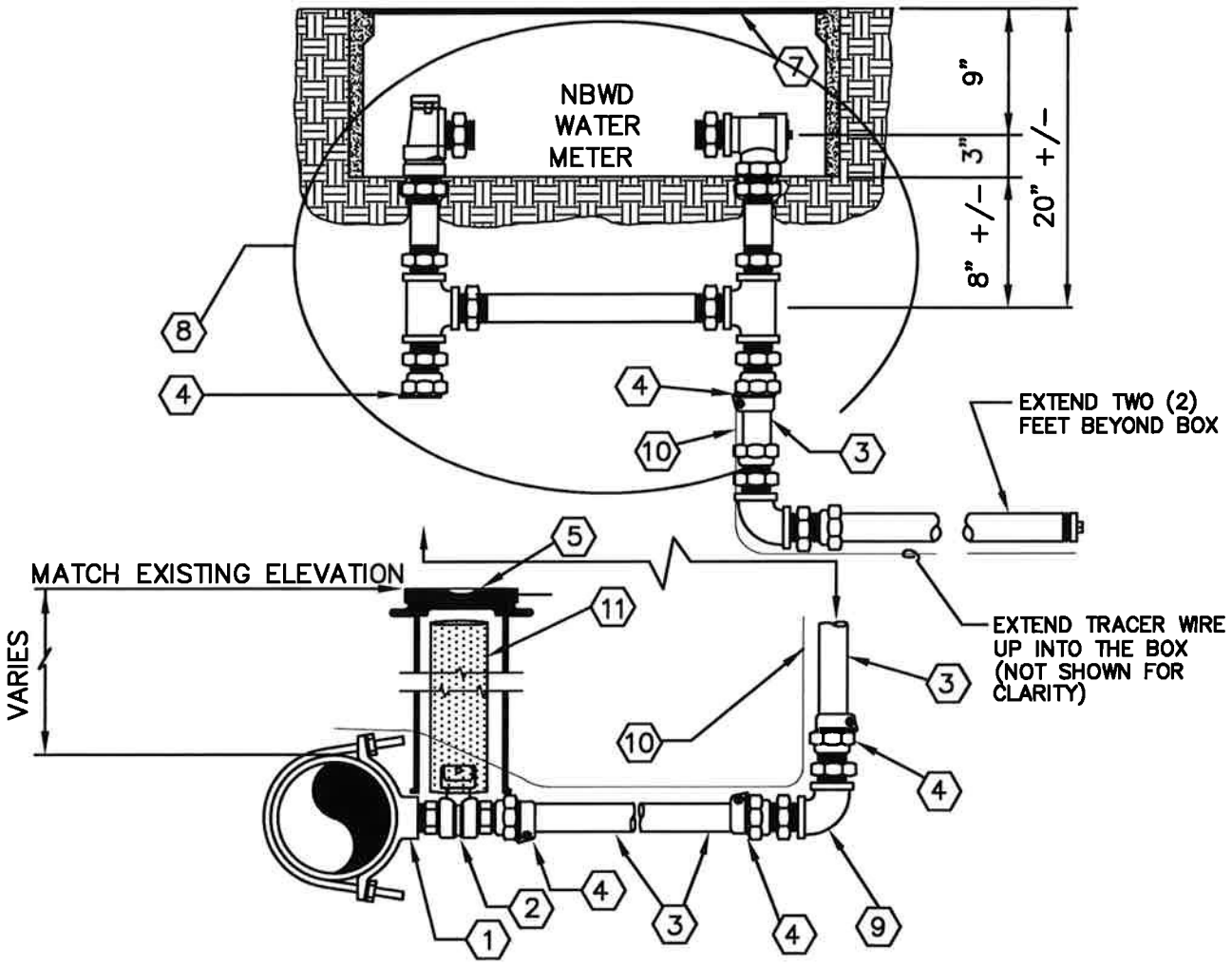
PLAN VIEW



NOTE:
1. CONTRACTOR SHALL FIELD VERIFY EXISTING WATER SERVICE PIPE LOCATION, SIZE AND TYPE PRIOR TO CONSTRUCTION.

NOTE:
ALL WATER SERVICES UNDERNEATH PAVEMENT SHALL BE INSTALLED IN A SCHEDULE 40 PVC PIPE SLEEVE CASING THAT IS BORED UNDER THE ROAD.

NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
1" AND SMALLER WATER SERVICE			
APPROVED: GENERAL MANAGER _____ DATE _____			DWG. NO. 11
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE



DESCRIPTION	MAKER OR RATING	1-1/2"	2"
1. DOUBLE STRAP SADDLE W/ S.S. STRAP	ROMAC OR EQUAL	202 IPT	202 IPT
2. BALL VALVE W/ 2" OPERATING NUT	FORD OR EQUAL	BALL VALVE	RESILIENT SEAT
3. PIPE - HIGH MOLECULAR POLYETHYLENE PIPE (I.P.S.)	SDR7(200PSI)	B11-666 W/QT67	GATE
4. COUPLING MALE	FORD OR EQUAL	C84-66	C84-77
5. VALVE BOX	RICH OR EQUAL		
6. NIPPLE BRASS		1-1/2" X 6"	2" X 6"
7. METER BOX	* SEE NOTE 2		
8. METER SETTER	FORD OR EQUAL	VFH 66-12 B	VFH 77-12 B
9. BRASS 90° ELBOW		1-1/2"	2"
10. TRACER WIRE	14 GAUGE COPPER WIRE	SOLID	SOLID
11. PVC SLEEVE BENEATH PAVEMENT	PVC-SCH.80	4" DIA.	4" DIA.
	SENSUS TOUCH READ		

NOTE:

1. TEMPORARILY INSTALL "SPACER" IN METER SETTER UNTIL METER IS INSTALLED
2. CARSON INDUSTRIES MODEL 1730 WITH CAST IRON READER IN NON-TRAFFIC AREAS; FOGTITE MODEL NO. 2 WITH HINGED METER READ LID, OR CARSON INDUSTRIES MODEL BC 1730 WITH CAST IRON READER LID IN TRAFFIC AREAS

NORTH BEACH WATER DISTRICT
WATER STANDARD DETAILS

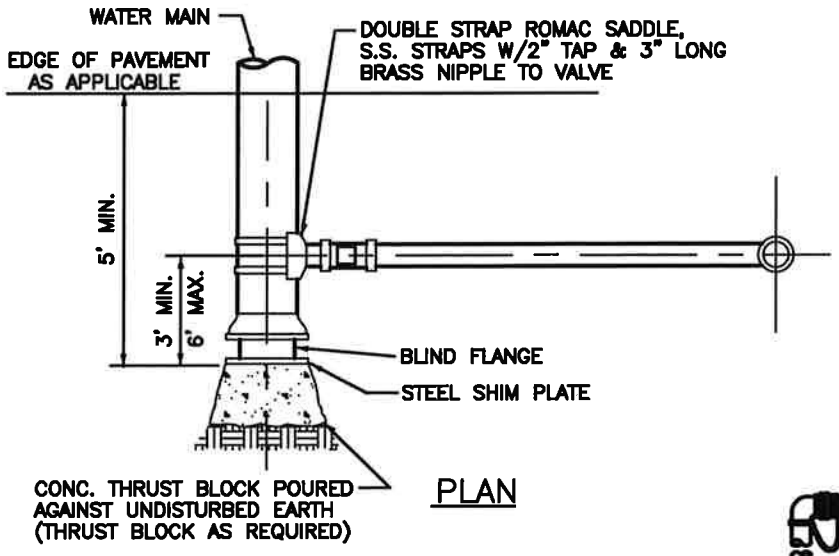
1-1/2" & 2" WATER SERVICE

APPROVED:

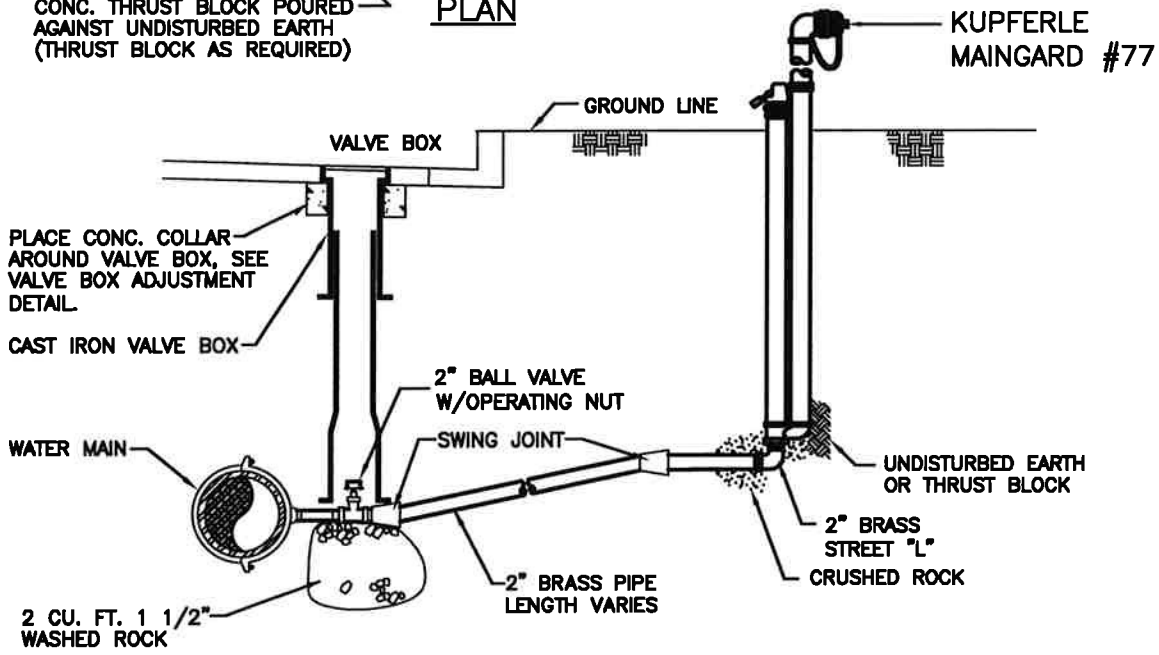
GENERAL MANAGER _____ DATE _____

DWG. NO. 12

DATE:	DRWN:	CHKD:	SCALE:
10/14	C.D.G.	K.W.J.	NONE



PLAN



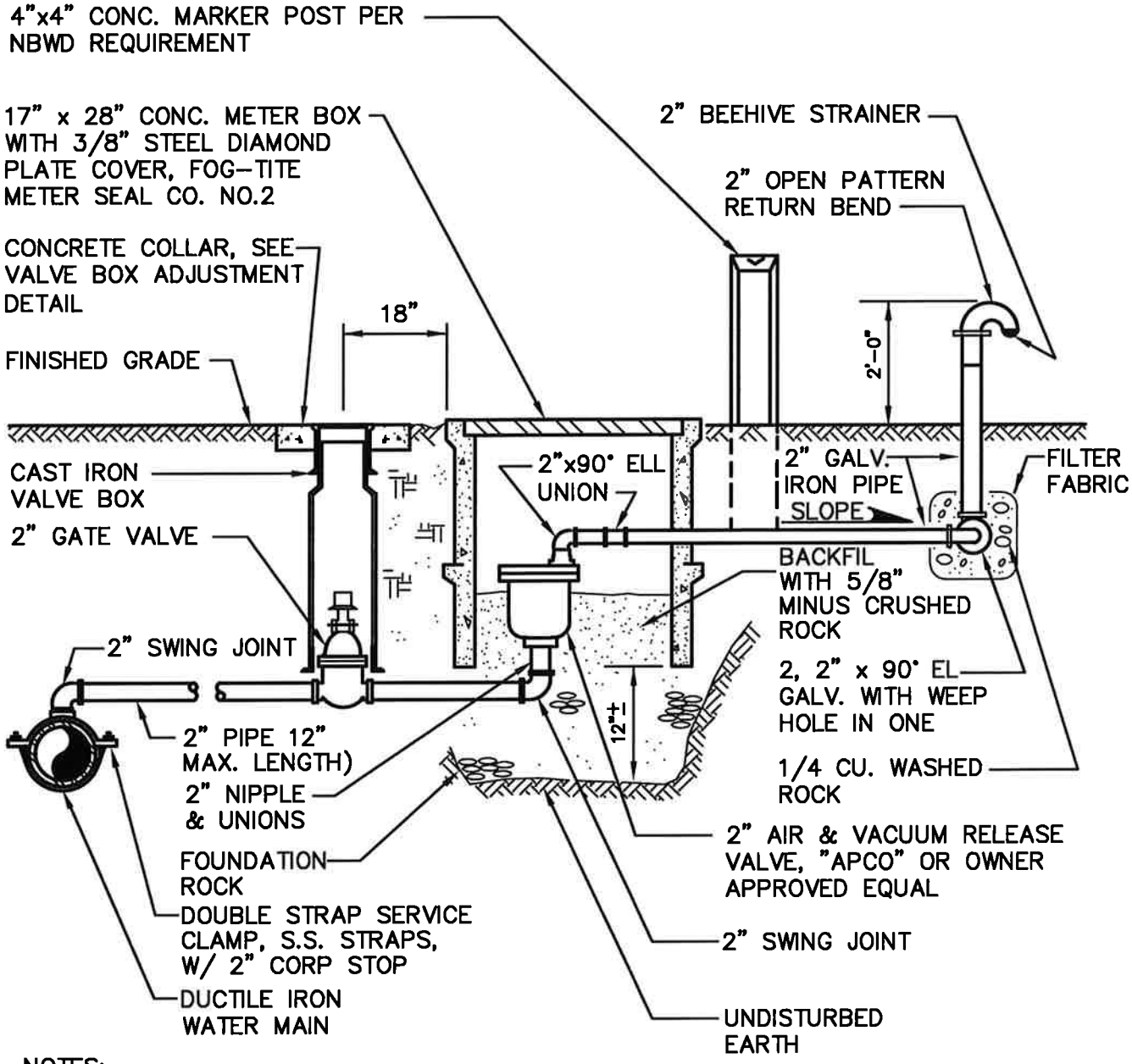
ELEVATION

BLOW-OFF HYDRANTS SHALL BE NON-FREEZING, SELF-DRAINING TYPE.

1. SET UNDERGROUND IN NBWD APPROVED METER BOX, THESE HYDRANTS SHALL BE FURNISHED WITH A 2" FIP INLET, A NON-TURNING OPERATING ROD, AND SHALL OPEN TO THE DESIGN, AND BE SERVICEABLE FROM ABOVE GRADE WITH NO DIGGING.
2. THE OUTLET SHALL BE BRONZE AND BE 2-1/2" NST.
3. HYDRANTS SHALL BE LOCKABLE TO PREVENT UNAUTHORIZED USE.

(SPECIFY OVERALL LENGTH 6" SHORTER THAN NORMAL DEPTH OF BURY. MINIMUM OPENING IN METER BOX SHALL BE 10".)

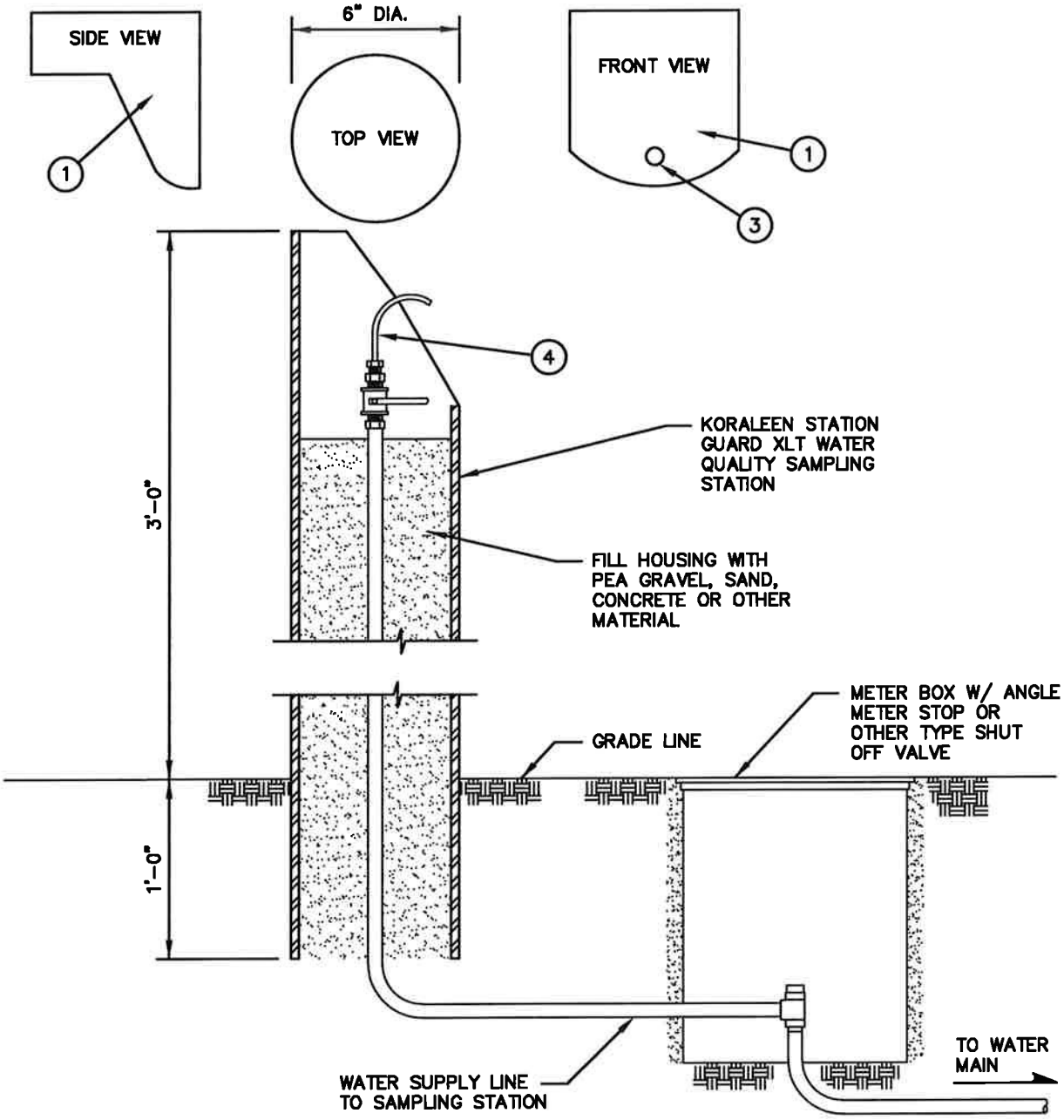
NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
2" BLOW-OFF ASSEMBLY			
APPROVED: GENERAL MANAGER _____ DATE			DWG. NO. 13
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE



NOTES:

1. GATE VALVE: AWWA RESILIENT SEAL, THRD x THRD WITH OPERATING NUT
2. ALL PIPING BETWEEN DOUBLE STRAP SADDLE AND INLET SIDE OF COMBINATION AIR & VAC ASSEMBLY SHALL BE BRASS
3. TAP MAIN AT SYSTEM HIGH POINT. LOCATION TO BE APPROVED BY THE SURFSIDE

NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
AIR & VACUUM RELEASE ASSEMBLY			
APPROVED: GENERAL MANAGER _____ DATE _____			DWG. NO. 14
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE



WATER QUALITY SAMPLING STATION	
1	ALUMINUM LID
2	ALUMINUM HOUSING – 6" DIA. (O.D.)
3	FLUSH MOUNTED LOCK
4	1/2"x3/8" BALL VALVE

NORTH BEACH WATER DISTRICT
WATER STANDARD DETAILS

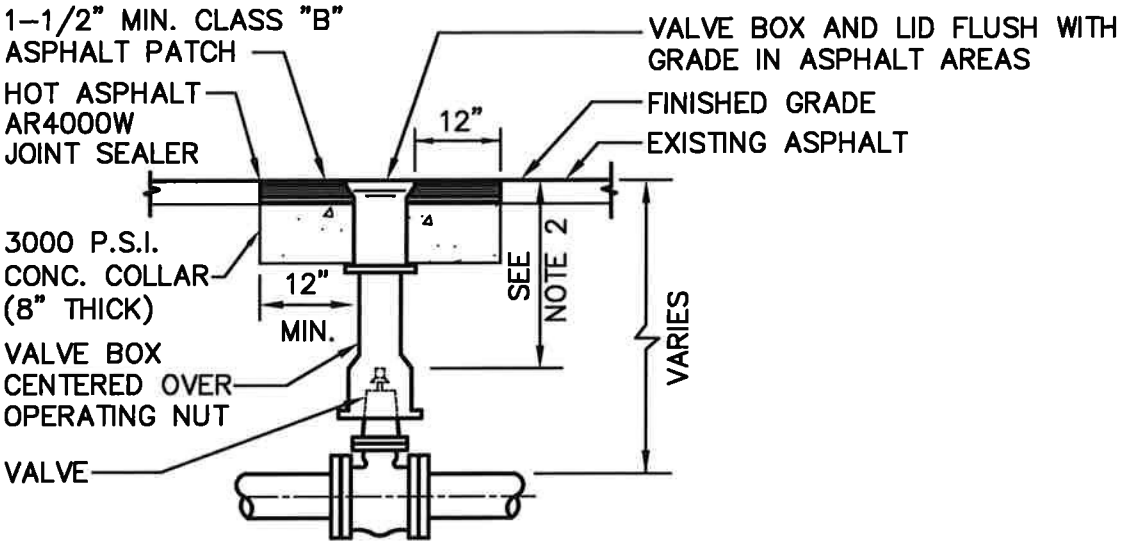
WATER SAMPLING STATION

APPROVED:

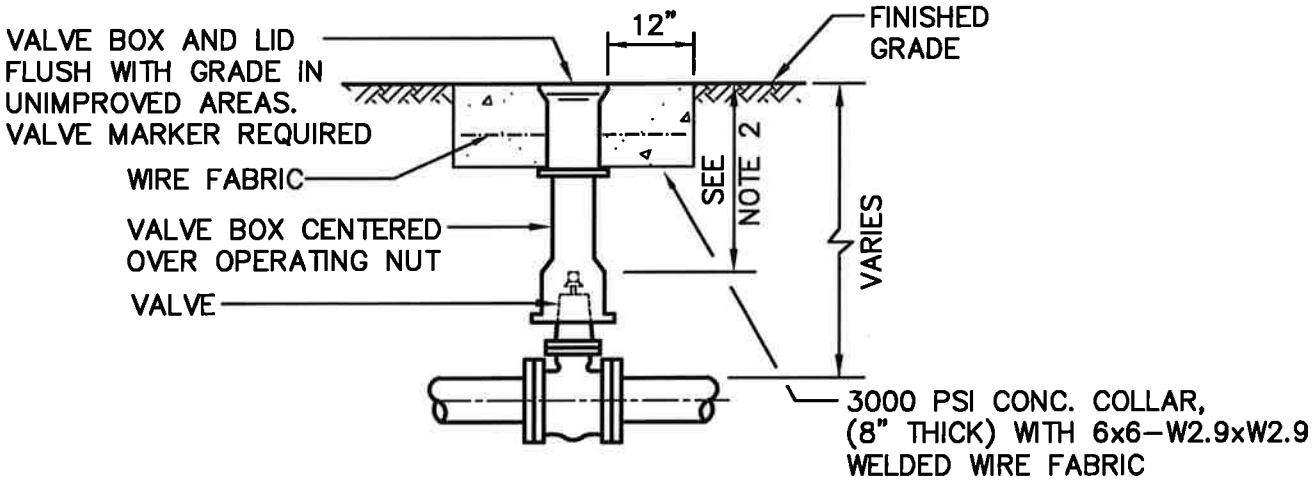
GENERAL MANAGER _____ DATE _____

DWG. NO. 15

DATE:	DRWN:	CHKD:	SCALE:
10/14	C.D.G.	K.W.J.	NONE



VALVE BOX IN ASPHALT AREA



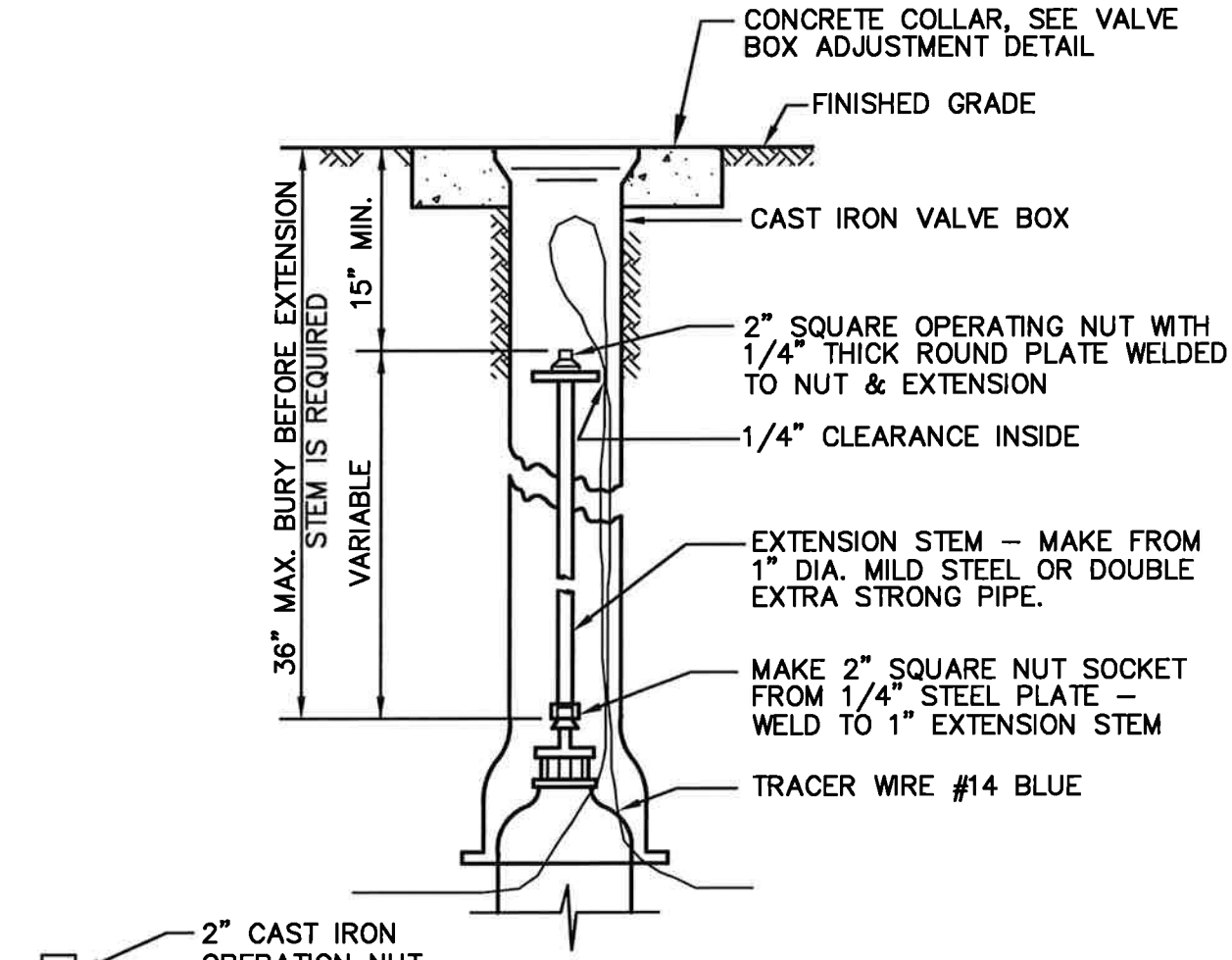
VALVE BOX IN UNIMPROVED AREA

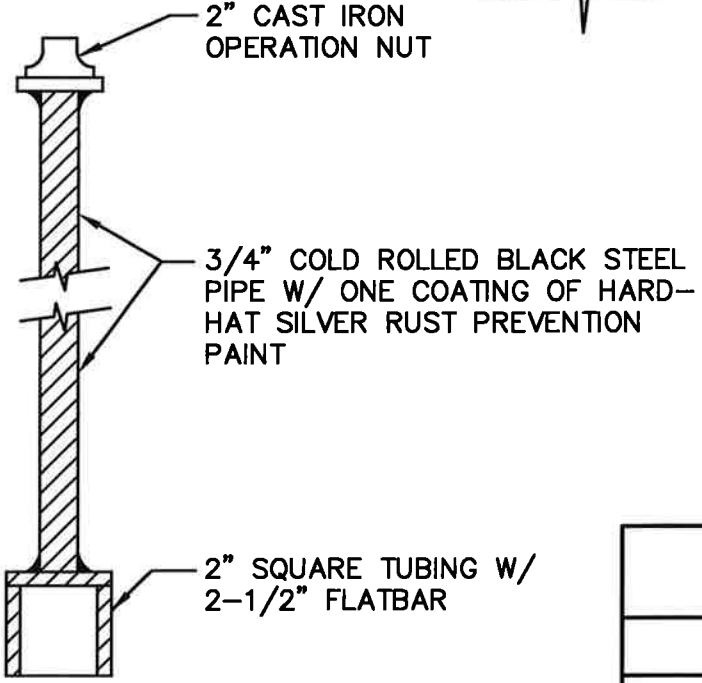
NOTES:

1. EACH VALVE SHALL BE PROVIDED WITH AND ADJUSTABLE CAST IRON VALVE BOX OF 5 INCHES (5") INSIDE DIAMETER. VALVE BOXES SHALL HAVE A TOP SECTION WITH AN EIGHTEEN INCH (18") MIN. LENGTH. THE VALVE BOX SHALL BE RICH No. 940 OR APPROVED EQUAL. VALVE BOX EARS SHALL BE PLACED IN LINE WITH PIPE IT SERVES.

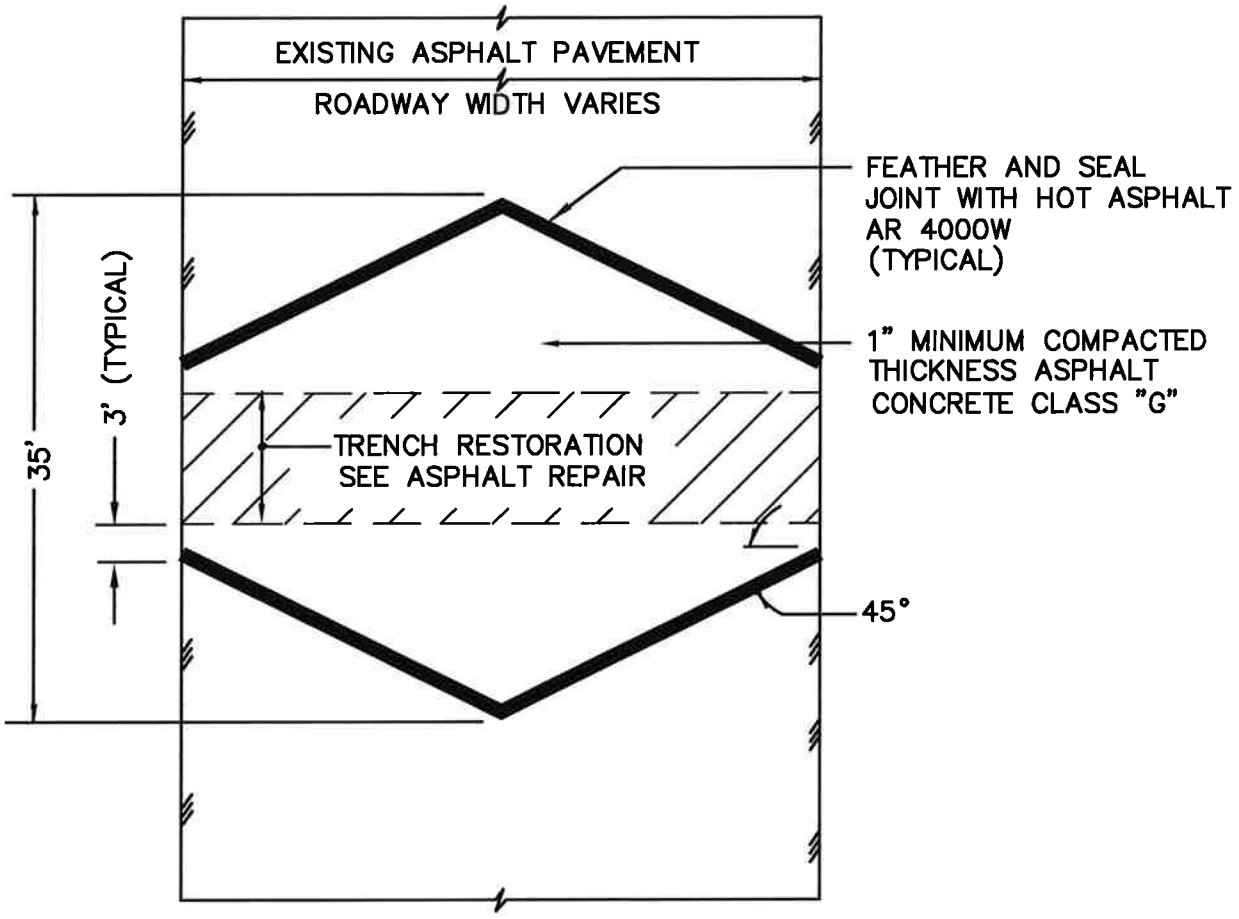
2. 15" MINIMUM, 36" MAXIMUM FOR OPERATOR NUT. EXTENSION MAY BE REQUIRED.

NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
VALVE BOX ADJUSTMENT			
APPROVED: GENERAL MANAGER _____ DATE			DWG. NO. 16
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE

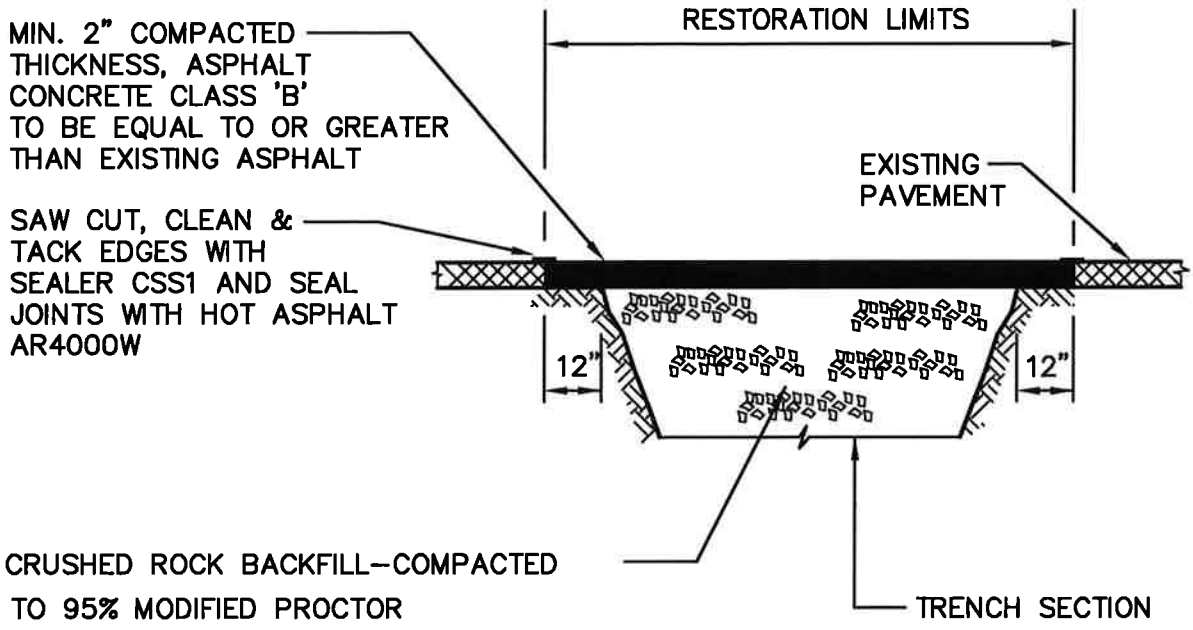




NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
WATER VALVE STEM EXTENSION			
APPROVED: GENERAL MANAGER _____ DATE _____			DWG. NO. 17
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE



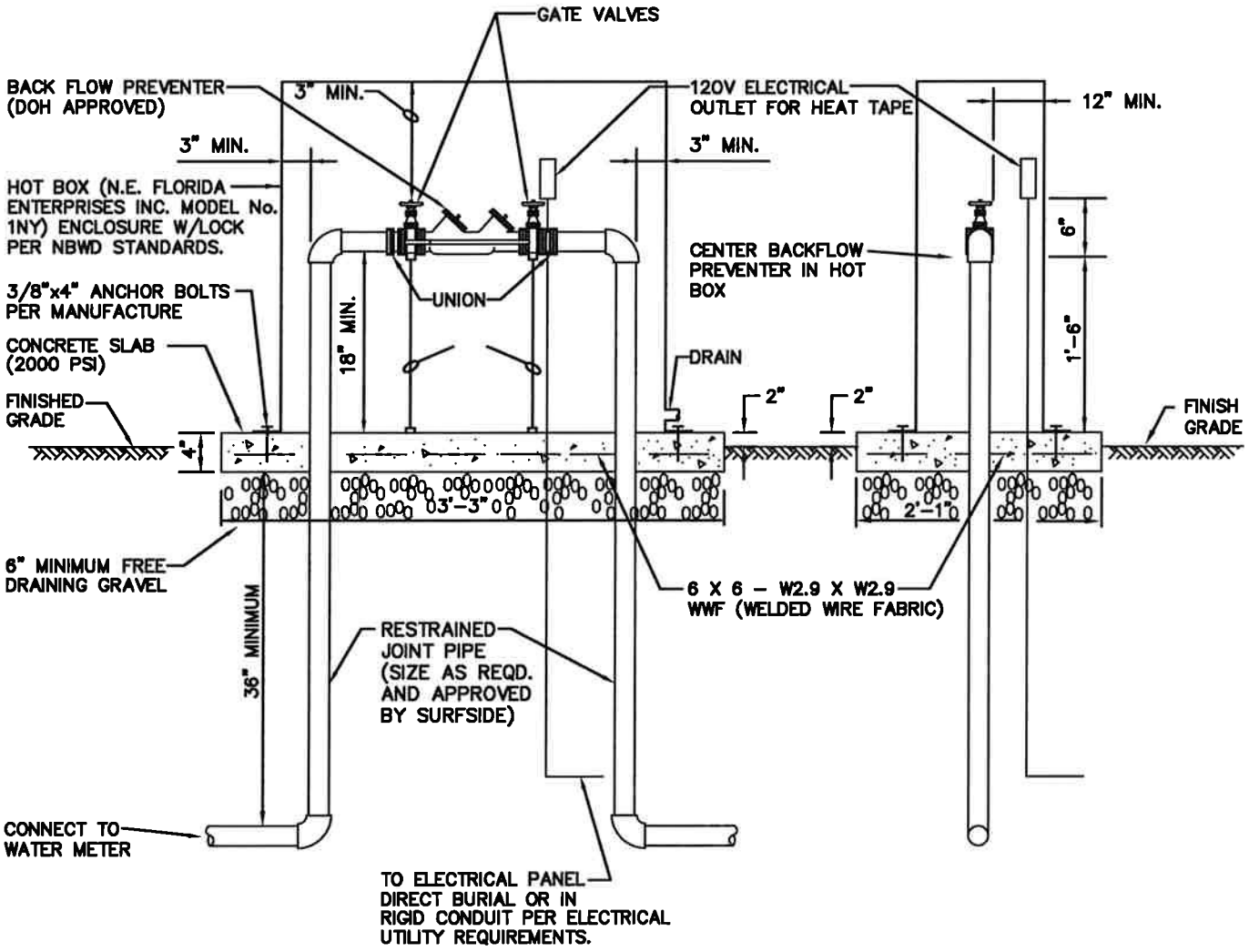
NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
ASPHALT DIAMOND PATCH			
APPROVED: GENERAL MANAGER _____ DATE _____			DWG. NO. 18
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE



NOTES:

1. PACIFIC COUNTY PUBLIC WORKS R.O.W CONSTRUCTION PERMITS MAY REQUIRE ALTERNATE RESTORATION
2. 100% CRUSHED ROCK BACKFILL REQUIRED ON ALL ROADWAY CUTS

NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
ASPHALT PAVEMENT REPAIR			
APPROVED: GENERAL MANAGER _____ DATE			DWG. NO. 19
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE



REDUCED PRESSURE BACKFLOW DEVICE

NOT TO SCALE

(1) PROVIDE SURFSIDE APPROVED SUPPORT FOR 2 1/2" AND LARGER DEVICES.

NORTH BEACH WATER DISTRICT WATER STANDARD DETAILS			
REDUCED PRESSURE BACKFLOW DEVICE			
APPROVED: GENERAL MANAGER _____ DATE			DWG. NO. 20
DATE: 10/14	DRWN: C.D.G.	CHKD: K.W.J.	SCALE: NONE

21. WATER MAIN INSTALLATION NOTES:

1. At least five (5) days prior to any construction activity, the developer/contractor shall schedule and attend a pre-construction conference with NBWD.

2. An approved copy of these plans must be on the job site whenever construction is in progress.

3. All work and material shall be in accordance with the DOH approved standards and specifications of NBWD.

4. All water system improvements shall be constructed in accordance with these approved plans. Any deviation from the plans will require approval from the owner, engineer, NBWD and appropriate public agencies.

5. Notify NBWD 72 hours (3 working days) prior to beginning construction and for any restarts of work.

6. The Contractor shall notify NBWD three working days prior to the time the contractor would like to connect to existing mains or for installation of tapping tees. The connection shall be done in accordance with district requirements. Contractor shall not operate any district valves; these will be operated by the NBWD personnel.

7. For aid in utility location, call 1-800-424-5555, 48 hours (2 working days) prior to beginning of construction. Existing utilities, whether shown or not, shall be located prior to construction, so as to avoid damage or disturbance, and the contractor shall assume all responsibility and costs connected therewith to protect, maintain and repair, where necessary.

8. Water line construction shall not commence until the street has been brought to sub grade, meeting NBWD's approval.

9. Water main shall be field staked prior to construction, with 25 foot stakes on curves. Lot corner stakes shall also be in place prior to construction.

10. Pipe shall be ductile iron, AWWA class 52 thickness, joints shall have rubber gasket, push-on type, or mechanical joint, meeting AWWA specifications, or PVC, AWWA C-900 class 150 with push-on joints and ductile iron fittings. Fittings shall be AWWA, cement lined, ductile iron, either mechanical joint or flanged, as indicated herein.

11. Unless otherwise specified valves 12" and smaller shall be ductile iron resilient seated (epoxy coated) gate valves: acceptable valves are Waterous, Clow and M&H; valves larger than 12" shall be butterfly valves, acceptable valves are Pratt and M&H.

12. All water works fittings and bolted assemblies shall be completely covered with visqueen plastic, 4 mil. The end of the plastic shall be taped to secure them to the pipe.

13. Hydrants shall be as specified in the Engineering Specifications. Hydrants shall be furnished with threaded outlets and Storz Adaptors, meeting Fire District / NBWD standards. Both thrust blocking and mega lugs restraints are required on each hydrant installation.

14. Provide thrust blocking at all fittings and bends and up-thrust fittings, in accordance with NBWD's standards, conditions and specifications.

15. All new connections to the existing system shall be in strict conformance with the appropriate subsections of the specifications of NBWD. No connection shall be made between the new main and the existing mains until the new piping has been flushed, disinfected and tested.

16. Where road grades are established, provide a minimum of 42" cover over 12" or larger water mains, provide a minimum of 36" cover over 8" mains; or additional depth, as directed by inspector, or as required to miss other utilities.

17. Water mains constructed within easement or private roads shall be installed with a 4'-0" minimum cover.

18. Minimum radius for 12" and smaller pipe lines constructed on curves (4 degree deflection per joint) is 258 feet. Contractor to provide additional fittings as required for pipe alignment with a radius of less than 258 feet.

19. Compaction-all trench backfill and roadway embankment shall be compacted to 95% of modified proctor maximum density, in accordance with ASTM d-698, except the top 6" in paved areas which shall be 100%.

20. Construction inspection will be done by NBWD and/or their designated engineer.

21. The water main construction phase will not be considered complete until the installation is acceptable to NBWD including satisfactory hydrostatic pressure test, a satisfactory disinfection test, satisfactory flow of service lines, and completion of all items on the inspector's punch list.

22. Water service is available only after transfer of ownership to NBWD and after payment of all current applicable fees.

SECTION 4

STANDARDS FOR "AS-BUILT" DRAWINGS

SECTION FOUR

NBWD Standards for As-Built Drawings

The following are requirements for all as-built drawings submitted for approval and/or acceptance to the NBWD.

1. Each and every sheet shall have a statement signed by a Registered Professional Engineer licensed by the State of Washington attesting to the completeness and accuracy of the as-built drawings. Easements for water facilities not located in the public rights-of-way shall be recorded and the recording number shall be shown on the as-built drawings.

2. The water system drawings shall show all valves, tees, fittings and hydrants. All dimensions shall be listed on the drawings.

3. Where services are tapped off of new or existing water mains, location of taps shall be shown on a separate table on the as-built drawings. Location of the meter box and setter, depth of service line, size of service line and address or addresses served shall also be shown on this table.

4. As-built drawings shall show distances to the water main from each near side property corner and/or right-of-way line at 100 foot intervals.

5. All hydrants shall show depth of bury and a completed hydrant installation report shall be submitted.

6. All valves shall show depth of bury and a complete valve installation report shall be submitted.

7. Hand drawn as-builts shall be on 24" x 36" reproducible fixed lined Mylar (no adhesive backed additions will be allowed). Digitally drawn as-builts may be printed on 24" x 36" white paper provided that a digital copy of the as-built drawing must be provided to NBWD on a compact disk, in a widely used standard version of AutoCad v2007 or less.

8. All meters shall clearly show that they are in the public rights-of-way or easements and the recording number shown on the as-built drawing. Distances from the meter to the nearest property corner or fixed point shall be shown on the as-built drawings.

9. NBWD's Auto-CADD file, latest revision, shall be furnished and supplied to the NBWD if requested. The computer file shall be supplied on a compact disk.

APPENDIX H

WQ MONITORING SCHEDULE AND COLIFORM MONITORING PLAN

Water Quality Monitoring Schedule

System: NORTH BEACH WATER **PWS ID: 63000 C** **Region: SOUTHWEST**
Contact: Rick Gray **Group: A - Comm** **County: PACIFIC**

NOTE: To receive credit for compliance samples, you must fill out laboratory and sample paperwork completely, send your samples to a laboratory accredited by Washington State to conduct the analyses, AND ensure the results are submitted to DOH Office of Drinking Water. There is often a lag time between when you collect your sample, when we credit your system with meeting the monitoring requirement, and when we generate the new monitoring requirement.

Coliform Monitoring Requirements

	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024	Jan 2025	Feb 2025	Mar 2025	Apr 2025
Coliform Monitoring Population	7229	7847	7636	7646	8093	6792	5823	6319	5232	5284	5741	6790
Number of Routine Samples Required	8	9	9	9	9	8	7	7	6	6	6	8

- Collect samples from representative points throughout the distribution system.
- Collect required repeat samples following an unsatisfactory sample. In addition, collect a sample from each operating groundwater source.
- For systems that chlorinate, record chlorine residual (measured when the coliform sample is collected) on the coliform lab slip.

Chemical Monitoring Requirements

Distribution Monitoring

Test Panel/Analyte	*# Samples Required*	*Compliance Period*	*Frequency*	*Last Sample Date*	*Next Sample Due*	
Lead and Copper	40	Jan 2024 - Jun 2024	standard - 6 month	04/17/2024		
Lead and Copper	40	Jul 2024 - Dec 2024	standard - 6 month	04/17/2024	***Oct 2024***	
Asbestos	1	Jan 2020 - Dec 2028	standard - 9 year	07/20/2021		
Total Trihalomethane (THM)	1	Jan 2024 - Dec 2024	reduced - 1 year	06/13/2023	***Jun 2024***	
Halo-Acetic Acids (HAA5)	1	Jan 2024 - Dec 2024	reduced - 1 year	06/13/2023	***Jun 2024***	

Water Quality Monitoring Schedule

Notes on Distribution System Chemical Monitoring

For *Lead and Copper*:
- Collect samples from the COLD WATER side of a KITCHEN or BATHROOM faucet that is used daily.
- Before sampling, make sure the water has sat unused in the pipes for at least 6 hours, but we recommend no more than 12 hours (e.g. overnight).
- If your sampling frequency is annual or every 3 years, samples must be collected between June 1 and September 30. Samples collected outside this time frame for systems with an annual or triennial schedule are invalid and may lead to a monitoring violation.

For *Asbestos:* Collect the sample from one of your routine coliform sampling sites in an area of your distribution system that has asbestos concrete pipe.

For *Disinfection Byproducts (HAA5 and THM):* Collect the samples at the locations identified in your Disinfection Byproducts (DBP) monitoring plan.
Reduced DBP monitoring for surface water systems requires:
12 consecutive months of initial, raw water TOC monitoring followed by quarterly TOC monitoring if your running annual TOC average is ≤ 4.0 mg/L and you have appropriate LRAA results for TTHM and HAA5.

Source Monitoring

- Collect 'source' chemical monitoring samples from a tap after all treatment (if any), but before entering the distribution system.
- Washington State grants monitoring waivers for various test panels /analytes. Please note that we may require some monitoring as a condition of some waivers. We have granted complete waivers for dioxin, endothal, glyphosate, diquat, and insecticides.
- Nitrate, arsenic, iron, and other individual inorganics are included as part of a Complete Inorganic (IOC) analysis when it is collected.

Source S06 % NORTH WF (S01,3,4,5,7,8,9,17) Well Field Use - Permanent Susceptility - Moderate

Test Panel/Analyte	*# Samples Required*	*Compliance Period*	*Frequency*	*Last Sample Date*	*Next Sample Due*
Nitrate	1	Jan 2024 - Dec 2024	standard - 1 year	11/14/2023	***Oct 2024***
Complete Inorganic (IOC)	1	Jan 2020 - Dec 2028	waiver - 9 year	11/14/2023	
Arsenic	1	Jan 2024 - Dec 2024	monthly	11/14/2023	monthly
Iron	1	Jan 2023 - Dec 2025	standard - 3 year	11/14/2023	
Manganese	1	Jan 2023 - Dec 2025	standard - 3 year	11/14/2023	
Volatile Organics (VOC)	1	Jan 2020 - Dec 2025	waiver - 6 year	10/11/2022	
Herbicides	1	Jan 2023 - Dec 2031	waiver - 9 year	05/21/2019	May 2028
Pesticides	0	Jan 2023 - Dec 2025	waiver - 3 year	09/12/2017	
PFAS	1	Jan 2023 - Dec 2025	standard - 3 year	06/21/2023	
Soil Fumigants	0	Jan 2023 - Dec 2025	waiver - 3 year	09/12/2017	
Gross Alpha	1	Jan 2020 - Dec 2025	standard - 6 year	05/13/2020	

Water Quality Monitoring Schedule

Source Monitoring

- Collect 'source' chemical monitoring samples from a tap after all treatment (if any), but before entering the distribution system.
- Washington State grants monitoring waivers for various test panels /analytes. Please note that we may require some monitoring as a condition of some waivers. We have granted complete waivers for dioxin, endothal, glyphosate, diquat, and insecticides.
- Nitrate, arsenic, iron, and other individual inorganics are included as part of a Complete Inorganic (IOC) analysis when it is collected.

Source S06 % *NORTH WF (S01,3,4,5,7,8,9,17)* *Well Field* *Use - Permanent* *Susceptility - Moderate*

Test Panel/Analyte	# Samples Required	Compliance Period	Frequency	Last Sample Date	Next Sample Due
Radium 228	1	Jan 2020 - Dec 2025	standard - 6 year	05/13/2020	

% Because this source has treatment to remove arsenic, you must collect a sample EVERY MONTH from that source after treatment and have an accredited lab analyze it for arsenic.

Source S16 % *South Wiegardt WF (S13, 14, 15)* *Well Field* *Use - Permanent* *Susceptility - Moderate*

Test Panel/Analyte	# Samples Required	Compliance Period	Frequency	Last Sample Date	Next Sample Due
Nitrate	1	Jan 2024 - Dec 2024	standard - 1 year	11/13/2023	***Oct 2024***
Complete Inorganic (IOC)	1	Jan 2020 - Dec 2028	waiver - 9 year	11/13/2023	
Arsenic	1	Jan 2024 - Dec 2024	monthly	11/13/2023	monthly
Iron	1	Jan 2023 - Dec 2025	standard - 3 year	11/13/2023	
Manganese	1	Jan 2023 - Dec 2025	standard - 3 year	11/13/2023	
Volatile Organics (VOC)	1	Jan 2023 - Dec 2028	waiver - 6 year	09/28/2022	***Sep 2024***
Herbicides	1	Jan 2023 - Dec 2031	waiver - 9 year	09/15/2022	Sep 2031
Pesticides	0	Jan 2023 - Dec 2025	waiver - 3 year	09/15/2022	
PFAS	1	Jan 2023 - Dec 2025	standard - 3 year	06/21/2023	
Soil Fumigants	0	Jan 2023 - Dec 2025	waiver - 3 year	02/28/2014	
Gross Alpha	1	Jan 2023 - Dec 2028	standard - 6 year	05/03/2023	
Radium 228	1	Jan 2023 - Dec 2028	standard - 6 year	05/03/2023	

% Because this source has treatment to remove arsenic, you must collect a sample EVERY MONTH from that source after treatment and have an accredited lab analyze it for arsenic.

Water Quality Monitoring Schedule

Other Information

Other Reporting Schedules	*Due Date*
Measure chlorine residuals and submit monthly reports if your system uses continuous chlorination:	monthly
Submit Consumer Confidence Report (CCR) to customers and ODW (Community systems only):	07/01/2024
Submit CCR certification form to ODW (Community systems only):	10/01/2024
Submit Water Use Efficiency report online to ODW and to customers (Community and other municipal water systems only):	07/01/2024
Send notices of lead and copper sample results to the customers sampled:	30 days after you receive the laboratory results
Submit Certification of customer notification of lead and copper results to ODW:	90 days after you notify customers
Submit Lead Service Line Inventory	10/16/2024
Homeowner notification of LSLI status for those with LSL, GRR or unknown	11/15/2024 or 30 days after completion

Special Notes

Because your water system has treatment and blending to remove/mitigate arsenic, you must monitor monthly for arsenic from S06 and S16. Collect the sample after all treatment but before entering the distribution system and have an accredited laboratory analyze and report the arsenic level.

Southwest Regional Water Quality Monitoring Contacts

For questions regarding chemical monitoring:	Sophia Petro: (564) 669-0856 or sophia.petro@doh.wa.gov
For questions regarding DBPs:	Regina Grimm, p.e.: (564) 669-0857 or regina.grimm@doh.wa.gov
For questions regarding coliform bacteria and microbial issues:	Southwest Office: (360) 236-3030 or SWRO.Coli@doh.wa.gov

Additional Notes

The information on this monitoring schedule is valid as of the date in the upper left corner on the first page. However, the information may change with subsequent updates in our water quality monitoring database as we receive new data or revise monitoring schedules. There is often a lag time between when you collect your sample and when we credit your system with meeting the monitoring requirement.

We have not designed this monitoring schedule to display all compliance requirements. The purpose of this schedule is to assist water systems with planning for most water quality monitoring, and to allow systems to compare their records with DOH ODW records. Please be aware that this monitoring schedule does not include constituents that require a special monitoring frequency, such as monitoring affiliated with treatment.

Any inaccuracies on this schedule will not relieve the water system owner and operator of the requirement to comply with applicable regulations.

If you have any questions about your monitoring requirements, please contact the regional office staff listed above.

NORTH BEACH WATER DISTRICT

COLIFORM MONITORING PLAN

Plan Date: July 17, 2015

Contents

Storage: **Mt. Baker Silo Concrete.**	Reservoir ID	Dimensions	Capacity (gal.)
	N. Wellfield #1	26' Dia. x 45' Ht	179,000
	N. Wellfield #2	26' Dia. x 45' Ht	179,000
	N. Wellfield #3	26' Dia. x 45' Ht	179,000
	S. Wellfield #1	30' Dia. x 50' Ht	211,000
Treatment: North Wellfield Iron Manganese Arsenic	Oxidation and Filtration for Iron and Manganese Removal. Oxidation by ambient air introduced through a venturi valve. (Mazzei) Media – MTM – a granular manganese dioxide media serves as a catalysis to precipitate iron and manganese via oxidation from ambient air. Arsenic removal is also achieved via adsorption of arsenic onto iron oxide in the filter bed.		
Treatment: Wiegardt Wellfield Arsenic Hydrogen Sulfide Gas	Oxidation (ambient air & $KMnO_4$) and Ferric Chloride for arsenic and Hydrogen Sulfide Gas Removal.		
Pressure Zones:	One Pressure Zone		
Population	Total Estimated Population: 4,010		

Number of Routine Monthly Samples by Regulation (2015):								**Sample Sites:**
Jan	6	Apr	8	Jul	9	Oct	8	**20**
Feb	6	May	8	Aug	9	Nov	7	
Mar	6	Jun	9	Sep	9	Dec	7	
Request DOH Approval of Triggered Source Monitoring Plan?								**Yes** **No ✓**

B. Laboratory Information:

Laboratory - Primary: **ALS Environmental - Kelso**	**Office Phone:** (360) 577-7222 (360) 501-3275 Chris DL
Address: 1317 13th Avenue South, Kelso, WA 98626	**After Hours Phone:** ( ) - .
Website: http://www.alsglobal.com	**Fax:** (360) 636-1068
Hours of Operation: Monday - Friday: 8 a.m. - 5 p.m., Saturday: 8 a.m. - 12 p.m. (noon)	
Contact Name: Chris Leif	
Email Address: Chris.leaf@alsglobal.com	
Laboratory - Secondary: **BSK Associates Engineers & Laboratories**	**Office Phone:** (360) 750-0055
Address: 2517 East Evergreen BLVD. Vancouver, WA 98661	**After Hours Phone:** (360) 558-0318 – Renea (360) 619-8248 - Elizabeth
Web Site: www.bskassociates.com	**Fax:** (360) 750-0057
Hours of Operation: Monday - Friday: 9 a.m. - 5 p.m. After hours by appointment	
Contact Name: Renea Rangell	
Email Address: rrangell@bskinc.com	
Laboratory - Emergency: **Water Management Laboratories**	**Office Phone:** (253) 531-3121
Address: 1515 80th Street Tacoma, WA 98404-3315	**After Hours Phone:** (253) 841-0732
Web Site:	**Fax:** (253) 531-5287
Hours of Operation: Monday - Friday: 9 a.m. - 5 p.m. After hours by appointment	
Contact Name: Chris Mueller	
Email Address: customerservice@watermanagementlabs.com	

D. Routine, Repeat, and Triggered Source Sample Locations:

Location/Address for Routine and Repeat Coliform Bacteria Sample Collection					
Routine Sample Site:		Upstream Repeat Site		Downstream Repeat Site:	
01	#06-3314 281st St.	01-1	3409 281st St.	01-2	315 281st St.
02	#07-26200 Sandridge Rd.	02-1	26215 Sandridge Rd.	02-2	26205 Sandridge Rd.
03	#08-1719 264th Pl.	03-1	1707 264th Pl.	03-2	26300 R St.
04	#09-27900 O St.	04-1	27811 0 St.	04-2	1501 279th Pl.
05	#10-1206 247th Pl.	05-1	1202 247th Pl.	05-2	1208 247th Pl.
06	#11-24010 Birch Pl.	06-1	24006 Birch Pl.	06-2	2704 240th Pl.
07	#12-23200 Birch Pl.	07-1	2811 231st Ln	07-2	2731 232nd Ln
08	#13-20500 Birch Pl.	08-1	20503 Birch Pl.	08-2	20407 Crane Pl.
09	#14-21700 O St.	09-1	21608 O St.	09-2	21610 O St.
10	#15-21401 Pacific Hwy.	10-1	21403 Pacific Hwy.	10-2	1325 213th St.
11	#16-1311 197th Pl.	11-1	1315 197th Pl.	11-2	1306 197th Pl
12	#17-2218 272nd St.	12-1	2212 272nd St.	12-2	2419 272nd St.
13	#18-27003 Sandridge Rd.	13-1	27005 Sandridge Rd.	13-2	3016 270th St.
14	#19-2807 270th St.	14-1	2812 270th St.	14-2	2608 270th St.
15	#20-26500 Vernon Ave.	15-1	26511 Vernon Ave.	15-2	26414 Vernon Ave.
16	#21-1711 255th Pl.	16-1	1716 256th Pl.	16-2	1803 255th Pl.
17	#22-245th & Ash Pl.	17-1	2709 245th St.	17-2	2705 245th St.
18	#23-24200 Sandridge Rd.	18-1	24215 Sandridge Rd.	18-2	24120 Gile Pl.
19	#24-23400 Pacific Hwy	19-1	23407 Pacific Hwy	19-2	1428 232nd Ln.
20	#25-227th & Birch Pl.	20-1	22608 Birch Pl.	20-2	2516 227th Pl.

F. Follow-up Action:

Compliance Maximum Contaminant Level (MCL) – All routine samples or all repeat samples collected for no more than **one** coliform, fecal coliform, or E. coli bacteria presence sample in one month are coliform, fecal coliform, or E. coli absent.

Nonacute Maximum Contaminant Level (MCL) – More than one routine has coliform bacteria sample presence and all repeat samples are coliform, fecal coliform, and E. coli bacteria absent.

Acute Maximum Contaminant Level (MCL) – Fecal coliform or E. coli bacteria in a repeat sample or coliform presence in any repeat samples collected as a follow-up to a sample with fecal coliform or E.coli bacteria presence.

1. Assure the laboratory analyzed the total coliform bacteria present sample(s) (unsatisfactory sample(s)) for fecal coliform or E.coli bacteria presence. (WAC 246-290-320 (2)(a)(i)

2. Contact the Department of Health Southwest Drinking Water Operations Office (Department) as soon as possible but not more than 24 hours after the violation is known. (WAC 246-290-320 (2)(a)(iv) & WAC 246-290-480(2)(a)

3. Inform the Board of Commissioners within 24 hours of notification of the unsatisfactory sample.

4. Collect repeat samples in accordance this plan and WAC 246-290-320 (2)(b)

a. No additional treatment, shock chlorination or other added disinfection of the water system will be allowed prior to collecting repeat samples unless authorized by the Department. (WAC 246-290-320 (2)(b)(i)

b. One set of repeat samples will be collected for each sample with a coliform bacteria presence. (WAC 246-290-320(2)(b)(iv)

c. All samples will be collected on the same day submitted for analysis within twenty-four hours after notification by the laboratory of a coliform presence or as directed by the Department. (WAC 246-290-320(2)(b)(iv)

d. Repeat samples will be collected based on the previous samples site with a coliform bacteria presence (unsatisfactory sample):

i. the original unsatisfactory sample site;

ii. within five active services upstream of the unsatisfactory sample site;

iii. within five active services downstream of the unsatisfactory sample site. (WAC 246-290-320(2)(b)(iii)

G. Ground Water Rule:

Triggered Source Water Monitoring is required when one or more routine distribution samples collected under the total coliform rule are **total coliform positive.**

1. The Operator in responsible charge, or their designee, will, within 24 hours of notification of the **total coliform positive** sample, collect and submit to a certified laboratory for analysis one e-coli[1] sample form each source that was in operation when the routine sample that tested **total coliform positive** was collected.

2. Samples will be collected pretreatment at designated sample sites.

3. The samples sites will be disinfected for surface contamination and flushed to obtain a representative sample but **no source disinfection** will be performed prior to collecting the Ground Water Rule (GWR) sample.

4. Samples size must be no less than 100 milliliters (mL)

5. Samples must be submitted to an accredited laboratory for analysis by an EPA-approved method for e-coli. (See footnote)

6. Results will be forwarded to the General Manager and the Department of Health as soon as they are returned form the laboratory.

[1] see 40 CFR 141.402(c)(2) E.coli, Enterococci, Coliphage.

J. Special Contact Facilities During Health Advisory:

Facility	Contact Person	Phone Number(s)
Ocean Park Elementary School	Cathy Meinhardt (Principal)	360.665.4815 O. 360.665.1275 F.
Golden Sands Assisted Living		360.665.0190 O. 360. . F.
Free By The Sea	Wendy Hemsley	360.665.4494 O. 360. . F.
Family Health Center		360.665.3000 O. 360. . F.
Evergreen Court (RV Park)		360.665.6351 O. 360. . F.
Ocean Park Resort (RV Park)		360.665.4585 O. 360. . F.

L. Routine Sample Rotation Schedule:

Month	No.	Week One			Week Two			Week Three		
Jan	6	X-4	X-10	X-17			X-1	X-7	X-19	
Feb	6	X-5	X-14	X-20			X-13	X-15	X-18	
Mar	6	X-6	X-11	X-12			X-8	X-9	X-16	
Apr	8	X-2	X-4	X-10	X-17		X-1	X-3	X-7	X-19
May	8	X-5	X-11	X-14	X-20		X-8	X-13	X-15	X-18
Jun	9	X-2	X-6	X-7	X-11	X-12	X-9	X-10	X-16	X-19
Jul	9	X-4	X-5	X-11	X-14	X-20	X-3	X-8	X-13	X-18
Aug	9	X-2	X-7	X-11	X-12	X-17	X-3	X-10	X-16	X-19
Sep	9	X-1	X-5	X-8	X-14	X-20	X-4	X-11	X-15	X-18
Oct	8	X-2	X-6	X-8	X-13		X-9	X-10	X-16	X-19
Nov	7	X-1	X-5	X-8	X-20		X-3	X-11	X-17	
Dec	7	X-2	X-6	X-8	X-12		X-9	X-10	X-16	

NBWD - Sample Station - 02

N. E. coli Present Sample Response Plan:

Distribution System E. coli Response Checklist				
Background Information	**Yes**	**No**	**N/A**	**To Do**
We inform staff members about activities within the distribution system that could affect water quality.	✓			
We document all water main breaks, construction & repair activities, and low pressure and outage incidents.	✓			
We can easily access and review documentation on water main breaks, construction & repair activities, and low pressure and outage incidents.	✓			
Our Cross-Connection Control Program is up-to-date.				✓
We test all cross-connection control devices annually as required, with easy access to the proper documentation.				✓
We routinely inspect all treatment facilities for proper operation.	✓			
We have procedures in place for disinfecting and flushing the water system if it becomes necessary.				✓
We can activate an emergency intertie with an adjacent water system in an emergency.		✓		
We have a map of our service area boundaries.	✓			
We have consumers who may not have access to bottled or boiled water.		✓		
There is a sufficient supply of bottled water immediately available to our customers who are unable to boil their water.		✓		
We have identified the contact person at each day care, school, medical facility, food service, and other customers who may have difficulty responding to a Health Advisory.				✓
We have messages prepared and translated into different languages to ensure our consumers will understand them.				✓
We have the capacity to print and distribute the required number of notices in a short time period.	✓			
Policy Direction	**Yes**	**No**	**N/A**	**To Do**
We have discussed the issue of *E. coli*-present sample results with our policy makers.				
If we find *E. coli* in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system customers.				
(Continued on Next Page)				

O. E. coli Triggered Source Sample Response Checklist:

E. coli-Present Triggered Source Sample Response Checklist				
Background Information	**Yes**	**No**	**N/A**	**To Do**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	✓			
We address any significant deficiencies identified during a sanitary survey.	✓			
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and		✓		
If yes, we can eliminate them.			✓	
We routinely inspect our well site(s).	✓			
We have a good raw water sample tap installed at each source.				✓
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	✓			
Public Notice	**Yes**	**No**	**N/A**	**To Do**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.				
We have prepared templates and a communications plan that will help us quickly distribute our messages.				

E. coli-Present Triggered Source Sample Response Checklist–Source S05				
Alternate Sources	**Yes**	**No**	**N/A**	**To Do**
We can stop using this source and still provide reliable water service to our customers.	✓			
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).		✓		
We can provide bottled water to all or part of the distribution system for an indefinite period.		✓		
We can quickly replace our existing source of supply with a more protected new source.		✓		
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L		✓		
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	✓			

E. coli-Present Triggered Source Sample Response Checklist–Source S07				
Alternate Sources	**Yes**	**No**	**N/A**	**To Do**
We can stop using this source and still provide reliable water service to our customers.	✓			
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).		✓		
We can provide bottled water to all or part of the distribution system for an indefinite period.		✓		
We can quickly replace our existing source of supply with a more protected new source.		✓		
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L		✓		
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	✓			

P. System Map:

Q. Sample Sites:

#06 3314 281st St.

#07 2620 Sandridge Rd

#08 1719 264th Pl.

#09 27900 O St.

#10 1206 247th Pl.

#11 24010 Birch Pl.

#12 23200 Birch Pl.

#13 20500 Birch Pl.

#24 23400 Pacific Hwy.

#25 227th & Birch Pl.

#26 TBD.

#27 TBD.

#28 TBD.

#29 TBD.

#30 TBD.

#31 TBD.

#32 TBD.

#33 TBD.

Water conservation tip
You can save the flushed water in a bucket for later use.

Step Four

There may be some liquid or powder in the sample bottle to neutralize chlorine. Do not rinse it out.

Step Five

To avoid contamination while taking the sample, hold the bottle near the bottom with one hand, hold the top of the cap with the other, and then unscrew the cap.

Do not set the cap down, touch any part of the cap that touches the bottle, or let anything touch the rim of the bottle or the inside of the cap.

Step Six

Hold the bottle under the stream of water. Be careful not to let the bottle touch the sample tap. Fill the bottle to the neck or indicated fill line, but do not allow it to overflow. Remove the bottle from the water flow and replace the cap.

Step Seven

Complete the lab slip. If there was anything unusual about the sample collection, note it on the lab slip.

Laboratory forms vary. It is important to include at least the following information:

- Water system ID number
- Water system name
- Collection date and time
- Type of sample (check ONLY ONE Type: Routine, Repeat, Raw, or For Information Only)
- Sample location (street address or other location identifier)
- System type (Group A or B)

Step Eight

Secure the lab slip to the bottle with the rubber band. Deliver the sample to a certified lab or to a designated drop-off location for the lab as soon as possible. Lab analysis must begin within 30 hours of sample collection.

For more information

If you have questions about coliform sampling collection procedures, call our regional office:

Eastern Region
Spokane Valley
509-329-2100

Northwest Region
Kent
253-395-6750

Southwest Region
Tumwater
360-236-3030

Washington State Department of Health

How to complete a Coliform Lab Slip

June 2011 DOH 331-247 (Revised)

It is important to fill out the lab slip completely. *The Office of Drinking Water (ODW) may not be able to give you credit for the sample result if the date, time, system ID number, system name, or type of sample is missing or incomplete.*

The numbers on this sample form match the instructions below.

1 Date Sample Collected: Enter date sample was collected.

2 Time Sample Collected: Enter time sample was collected. Please check AM or PM.

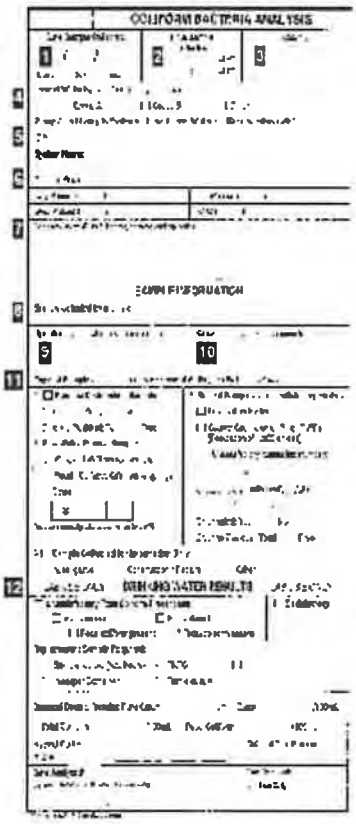
3 County: Enter name of the county where the water system is located.

4 Type of Water System: Check "Group A" or "Group B"

5 Group A and B System ID and System Name: Include all six characters of system ID and entire water system name. You can find both on your Water Facilities Inventory (WFI) Form.

6 Contact Person, Day and Evening Phone: Provide the name of the sample collector, system owner or manager. Include day, evening, and cell phone numbers in case the lab or ODW need to contact someone about the results.

7 Send Results To: Enter name and address where the lab should send the water system's copy of the results. The lab also sends a copy of the results to ODW.



8 Sample Collected By: The name of the sample collector.

9 Specific Location Where Sample Collected: Include the address and type of faucet where the sample was collected. For example, "bathroom faucet at 123 Ivy Lane."

10 Special Instructions: Enter instructions for the lab. For example, "This is a replacement sample for an unsuitable sample" or "Use 18-hour test."

11 Type of Sample: Choose ONLY ONE of the following.

Routine: Mark if sample is collected *within the distribution system* for compliance to meet monthly sampling requirements. Check "yes" if chlorinated, check "no" if not. If yes, provide free chlorine residual.

Repeat: Mark for samples required following an "unsatisfactory" routine sample.

Check "distribution system" or "source groundwater rule," as appropriate. See *Follow-up to an unsatisfactory routine coliform sample* (DOH 331-187) if you need further instruction.

Include the lab number and collect date from the original unsatisfactory routine sample (ask your lab for this information).

Check "yes" if chlorinated, check "no" if not. If yes, provide free chlorine residual.

Raw water source: Mark for samples taken at the source, prior to any treatment. Include the two-digit source number from your WFI.

Information only: Mark for investigative, construction, repairs, private residence, engineering, or other. These samples will not count for compliance purposes.

12 (Lab Use Only) Drinking Water Results: Do NOT write in this section. This is where the lab provides the sample results.

If any or all of your water supply comes from a **groundwater source**, you decide whether to take the fourth sample from the distribution system or the groundwater source.

Unchlorinated systems that choose to collect this repeat from a groundwater source may count this sample as a repeat and a triggered source sample. This option is limited to one source. You should collect a raw water sample from any additional sources in use when you collected the unsatisfactory routine sample.

Chlorinated systems should collect this repeat from the distribution system. You also must collect a raw water sample from every groundwater source that was in use when you collected the unsatisfactory routine sample and test it for *E. coli*.

If you collected TWO or MORE routine samples this month, you *must* collect **THREE REPEAT samples**.

1. The same tap as the original unsatisfactory routine sample.
2. An active service within five active connections upstream from the original unsatisfactory sample location.
3. An active service within five active connections downstream from the original unsatisfactory sample location.

You must also collect a raw water sample from each groundwater source that in use when you collected the unsatisfactory routine sample and test it for *E. coli*.

The month after an unsatisfactory sample

The month after an unsatisfactory routine sample, you must collect at least FIVE ROUTINE samples from the distribution system. You must mark these samples "Routine" on the lab slips submitted with the samples. If you usually take five or more routine samples each month, follow your regular schedule.

If any of these samples are unsatisfactory, we require further investigation, repeat samples, and triggered source samples.

Call us if:

- You cannot sample as outlined above.
- You would like to discuss the triggered source sample requirement.
- Any repeat samples or triggered source samples are unsatisfactory.

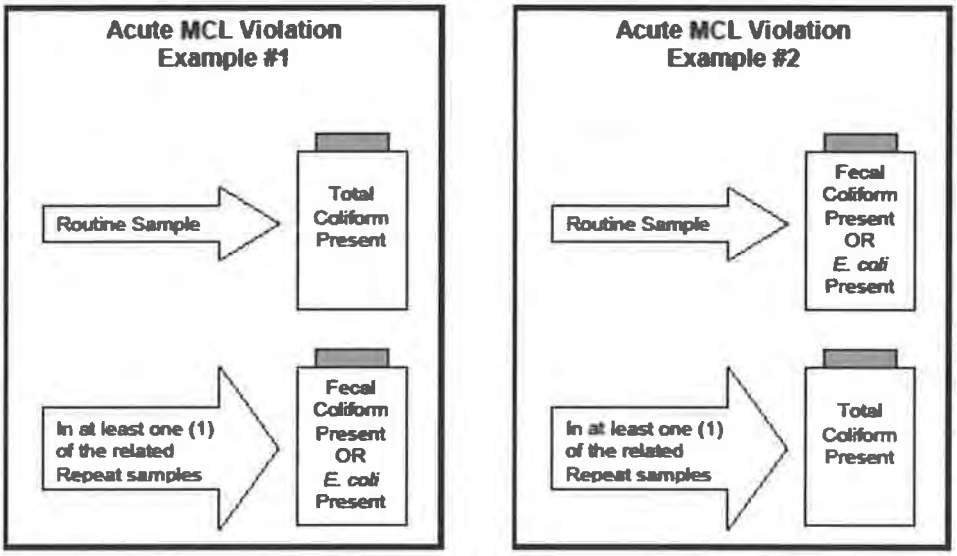
Northwest Region: Kent	Southwest Region: Tumwater	Eastern Region: Spokane Valley
253-395-6750	360-236-3030	509-329-2100

Our publications are online at https://fortress.wa.gov/doh/eh/dw/publications/publications.cfm

PUBLIC HEALTH
ALWAYS WORKING FOR A SAFER AND HEALTHIER WASHINGTON

For people with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).

The following shows how an acute MCL violation could occur:



Non-acute MCL violation

The non-acute MCL is the standard for the presence of total coliform bacteria. The presence of total coliform bacteria in a water sample generally indicates contamination from the environment (such as soils and plants). It is possible disease-causing organisms could be present as well.

Non-acute MCL violations are calculated on a monthly basis. As with acute MCL violations, a single sample with a coliform presence does not result in a violation. ***All routine and repeat samples collected for a specific month count towards determining compliance with the non-acute MCL.***

For a water system that collects less than 40 routine samples during the month:

- The water system has a non-acute MCL violation if two or more routine or repeat samples are unsatisfactory with coliform present.

For a water system that collects 40 or more routine samples during the month:

- The water system has a non-acute MCL violation if more than five percent of all routine and repeat samples are unsatisfactory with coliform present.

What to do if you have an MCL violation

If you have an MCL violation, contact your regional office as soon as possible to discuss public notification, follow-up requirements, and steps you can take to resolve the problem quickly. *There are requirements to notify everyone served by the water system:*

- Acute MCL violation – public notification is required within 24 hours. Due to the public health risk, a boil water advisory will typically be issued in response to an acute MCL violation.
- Non-acute MCL violation – public notification is required to be completed as soon as practical, no later than 30 days after the water system learns of the violation.

Notification forms are available on our website at http://www.doh.wa.gov/ehp/dw/default.htm.

Other types of coliform violations

There are two other types of coliform violations that are related to monitoring requirements for the water system:

Major repeat violation
A water system has a major repeat violation if the water system fails to collect repeat samples in response to an unsatisfactory routine sample(s). A major repeat violation is considered a water quality violation since the routine sample showed the presence of bacteria. *Public notification is required.*

Major monitoring violation
This type of violation occurs if a water system does not collect any samples during a month when one or more are required. Monitoring is important to assure that the water served to customers is free of coliform bacteria. *Public notification is required.*

State significant noncompliance with coliform requirements

We classify violations as either water quality or monitoring violations, and identify a water system as *state significant noncompliance* if the water system has one of the following violations within a 12-month period:

- Four water quality violations (MCL or major repeat).
- Six major monitoring violations.
- A combined total of six water quality and monitoring violations.

When a water system becomes a state significant noncompliance, we will pursue enforcement.

For more information

Eastern Region, Spokane Valley: (509) 329-2100
Northwest Region, Kent: (253) 395-6750
Southwest Region, Tumwater: (360) 236-3030

Disinfecting water in pressure tanks

You must disinfect the water in your pressure tanks, especially if you are responding to a coliform MCL violation or other known contamination event. You will need to drain the water from each tank and refill it with chlorinated water from your well or storage tank, depending on the layout of your water system. The chlorinated water should remain in the tanks for at least 6 hours (24 hours preferred). Drain or flush the chlorinated water from the tanks and then refill the tank with untreated water. Draining can affect air pressure, so you may need to recharge the air in your pressure tank.

Disinfecting a storage tank and distribution system

If you must chlorinate your source and your storage reservoir, disinfect the source first.

1. If the contamination doesn't appear to be from the water source, you can add disinfectant just to the storage tank rather than the water source.
2. Use Table 3 to determine the amount of chlorine needed to disinfect the storage tank. See "What chlorine dose is needed?" and "Notes related to the tables" on pages 3 and 4. If you have an extensive distribution system, calculate the volume of water in the distribution piping and add it to the volume of the storage tank. Use that total volume in Table 3 to determine how much chlorine to add to the storage tank.

   Table 4 shows common water distribution main sizes and volumes per foot of pipe. Estimate the total length of water pipes in your water system and multiply the total by the appropriate value from the table. You can use as-built drawings of the water system or a map to help estimate pipe diameters and lengths.
3. Draw down the water level in the storage tank, but keep enough for fire flow, if required.
4. As the tank refills, pour the chlorine in to get some mixing.
5. Use a blowoff, fire hydrant, or other outside faucet to draw chlorinated water from the tank out into the distribution system. Then, flush water from all the faucets in the water system until you detect chlorinated water. You probably will smell the chlorine, but to be more accurate use a chlorine test kit to measure chlorine residual.
6. Allow the chlorine to remain in the water system at least 6 hours (24 hours preferred). It takes time for chlorine to disinfect effectively.
7. Replace the chlorinated water with chlorine-free water from your source by using outside faucets, blowoffs, or hydrants to draw water out of the water system. During this process, make sure you don't damage a pump by drawing water down below a pump intake. Never discharge chlorinated water into any water

Table 3: Chlorine bleach needed to disinfect a reservoir

Well Volume Gallons	Desired dose Household-strength 8.25% bleach			Desired dose Commercial-strength 12% bleach		
	1 mg/L	***5 mg/L***	***10 mg/L***	***1 mg/L***	***5 mg/L***	***10 mg/L***
5,000	1 Cup	5 Cups	10 Cups	½ Cup	3 Cups	7 Cups
10,000	2 Cups	10 Cups	1¼ Gals.	1¼ Cups	7 Cups	1 Gal.
20,000	4 Cups	1¼ Gals.	2 ½ Gals.	3 Cups	1 Gal.	1¾ Gals.
50,000	10 Cups	3¼ Gals.	6 Gals.	7 Cups	2¾ Gals.	4½ Gals.
100,000	1¼ Gals.	6 Gals.	12 Gals.	¾ Gals.	4½ Gals.	9 Gals.

Table 4: Estimated volume of water in the distribution system

Pipe diameter	***Volume*** *Per linear foot of pipe*	***Volume*** *Per 100 feet of pipe*
1 Inch	0.04 Gallon	4 Gallons
2 Inches	0.16 Gallon	16 Gallons
4 Inches	0.65 Gallon	65 Gallons
6 Inches	1.47 Gallons	147 Gallons

Notes related to the tables

Volume of bleach needed, $V_1 = (C_2 \times V_2) / C_1$, in gallons, where:
C_2 = desired chlorine dose, ppm
V_2 = the volume water to be treated, gallons
C_1 = the concentration of the bleach solution, ppm

To calculate the bleach required for volumes not in the tables:
Add the volumes together (for 150 gallons, add the required bleach for 100 gallons to that needed for 50 gallons); or extrapolate between values on the table.

Well volume = $7.48 \times H \times 3.14 \times (D/12)^2 / 4$, in gallons, where:
H = the height of water standing in the well, in feet
D = the well casing diameter, in inches

6 percent household bleach = 60,000 parts per million hypochlorite
12 percent bleach = 120,000 parts per million hypochlorite
1 cubic foot of water = 7.48 gallons
1 gallon = 16 cups
1 cup = 16 tablespoons or 8 fluid ounces
1 Tablespoon (Tbsp) = ½ fluid ounce (14.8 mL)

PUBLIC HEALTH
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For people with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).

State and federal regulations require water systems to deliver a public notice to their customers within 24 hours after a water quality analysis shows the presence of acute contamination or any other situation that could lead to an acute health concern (WAC 246-290-71001 and 40 CFR 141.201 and 141.202(a)). Water systems must initiate consultation with ODW within 24 hours after learning of the violation to determine if we will require additional follow-up action.

Water systems must take the follow-up actions ODW determines appropriate (WAC 246-290-320(1)). Water systems must contact us when they:

- Violate the maximum contaminant level (MCL) for total coliform when fecal coliform or *E. coli* are present in the water distribution system.
- Fail to test for fecal coliform or *E. coli* when any repeat sample tests positive for coliform.
- Violate the MCL for nitrate, nitrite, or total nitrate and nitrite.
- Fail to take a confirmation sample within 24 hours after receiving the first sample showing they exceeded the nitrate, nitrite, or total nitrate and nitrite MCL.
- Have a maximum residual disinfectant level (MRDL) violation or exceedance.
- Have a turbidity MCL or treatment technique violation.
- Have a waterborne disease outbreak or other waterborne emergency.
- Detect E. coli or coliphage in source water samples.
- Have other violations or situations ODW determines to have serious adverse effects on human health because of short-term exposure.

If we determine there is significant potential for a situation to cause serious adverse effects on human health because of short-term exposure, we may require the water system to issue a health advisory (40 CFR 141.202(a) Table 1(9)). Systems must include specific health effects language in required public notice (WAC 246-290-72012 and 40 CFR 141.205(d)(2) and (3)).

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For More Information

Contact the nearest ODW Regional office:

Eastern Region (509) 329-2100
Northwest Region (253) 395-6750
Southwest Region (360) 236-3030

APPENDIX I

CONSUMER CONFIDENCE REPORT

North Beach Water System
2023 Water Quality Report

This Consumer Confidence Report (CCR) has been prepared for your information to comply with a Federal law, which requires that water utilities provide water quality information to customers each year. The information is based on water samples taken before 2023.

This report is a snapshot of the quality of the water that we have provided. Included are details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) and state standards.

Some of the people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Your water comes from two well fields located near the community.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791).

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves through naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- *Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.*
- *Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.*
- *Pesticides and herbicides, which may come from a variety of sources such as agriculture and residential uses.*
- *Radioactive contaminants, which are naturally occurring.*
- *Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.*

For more information about your water and water system, call Rick Gray at 360-665-4144.

In order to ensure that tap water is safe to drink, the Department of Health and EPA prescribes regulations, which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. These regulations require that water systems sample for lead and copper, Inorganic (iron, manganese, etc.), Volatile Organic (gasoline derivatives), radionuclides and Synthetic Organic Chemicals (pesticides) on a regular basis. In addition, we sample for coliform bacteria monthly.

Este informe contiene informacion muy importante sobre su aqua beber. Traduzcalo o hable con alguien que lo entienda bien.

The information attached to this report lists all the drinking water elements that were last detected. The presence of these elements in the water does not necessarily indicate that the water poses a health risk.

North Beach Water District
Water Quality Data Table

The table below lists all of the drinking water contaminants that we detected during the calendar year of this report. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently.

Important Drinking Water Definitions:

MCLG: Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
MCL: Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
AL: Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Contaminants (units)	MCLG	MCL	Your Water	Range Low	Range High	Sample Date	Violation	Typical Source
Arsenic (ppb)	NA	10		ND-5		2022	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Asbestos	7	7	0.164			2021	No	Decay of asbestos cement water mains; Erosion of natural deposits
Nitrate [measured as Nitrogen] (ppm)	10	10	ND-0.35	NA		2022	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits

Contaminant(s) (units)	MCLG	AL	Your Water	# of Samples > AL	Sample Date	Exceeds AL	Typical Source
Copper (ppm)	1.3	1.3	ND-.708	0	2020	No	Erosion of natural deposits; Leaching from wood preservatives; Corrosion of household plumbing systems
Lead (ppb)	0	15	ND-15	0	2020	No	Corrosion of household plumbing systems; Erosion of natural deposits

Disinfection By Products	MCL	LRAA		
Total Trihalomethane	80	ND-33.3	2022	No	By-Products of drinking water chlorination
Haloacetic Acids (HAA5) (ppb)	60	14.5	2022	No	By-Products of drinking water chlorination

Units Description:

NA: Not applicable
ND: Not detected
NR: Not reported
MNR: Monitoring not required, but recommended.
LRAA: Locational running annual average.
ppm: parts per million, or milligrams per liter (mg/l)
ppb: parts per billion, or micrograms per liter (µg/l)

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Your water system is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at *http://www.epa.gov/safewater/lead.*

APPENDIX J

WATER RIGHTS SELF ASSESSMENT

Water Right Self-Assessment Form for Water System Plan

Mouse-over any link for more information. Click on any link for more detailed instructions.

Water Right Permit, Certificate, or Claim # *If water right is interruptible, identify limitation in yellow section below	WFI Source # If a source has multiple water rights, list each water right on separate line	Existing Water Rights Qi= Instantaneous Flow Rate Allowed (GPM or CFS) Qa= Annual Volume Allowed (Acre-Feet/Year) This includes wholesale water sold				Current Source Production – Most Recent Calendar Year Qi = Max Instantaneous Flow Rate Withdrawn (GPM or CFS) Qa = Annual Volume Withdrawn (Acre-Feet/Year) This includes wholesale water sold				10-Year Forecasted Source Production (determined from WSP) This includes wholesale water sold				20-Year Forecasted Source Production (determined from WSP) This includes wholesale water sold			
		Primary Qi Maximum Rate Allowed	Non-Additive Qi Maximum Rate Allowed	Primary Qa Maximum Volume Allowed	Non-Additive Qa Maximum Volume Allowed	Total Qi Maximum Instantaneous Flow Rate Withdrawn	Current Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume Withdrawn	Current Excess or (Deficiency) Qa	Total Qi Maximum Instantaneous Flow Rate in 10 Years	10-Year Forecasted Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume in 10 Years	10-Year Forecasted Excess or (Deficiency) Qa	Total Qi Maximum Instantaneous Flow Rate in 20 Years	20-Year Forecasted Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume in 20 Years	20-Year Forecasted Excess or (Deficiency) Qa
1 G2-00174C	S10, S11, S12, S13, S14, S15	500 gpm		168 acre-feet/year		398 gpm	702 gpm	370 acre-feet/year	326 acre-feet/year	425 gpm	675 gpm	390 acre-feet/year	306 acre-feet/year	446 gpm	654 gpm	410 acre-feet/year	286 acre-feet/year
2 G2-00759C	S01, S17, S8	200 gpm		320 acre-feet/year													
3 G2-21399C	S03, S07	100 gpm		128 acre-feet/year (comment 1)	32 acre-feet/year (comment 1)												
4 G2-25737C	S04	130 gpm		(comment 2)	140 acre-feet/year												
5 G2-27073C	S05	105 gpm			252 acre-feet/year												
6 G2-29907P	S03, S04, S05, S07, S17, S09	65 gpm		80 acre-feet/year (comment 3)													
	TOTALS =	1,100 gpm		696 acre-feet/year													
Column Identifiers for Calculations:		A		B		C	=A-C	D	=B-D	E	= A-E	F	=B-F	G	=A-G	H	=B-H

PENDING WATER RIGHT APPLICATIONS: Identify any water right applications that have been submitted to Ecology.

Application Number	New or Change Application?	Date Submitted	Quantities Requested			
			Primary Qi	Non-Additive Qi	Primary Qa	Non-Additive Qa

INTERTIES: Systems receiving wholesale water complete this section. Wholesaling systems must include water sold through intertie in the current and forecasted source production columns above.

Name of Wholesaling System Providing Water	Quantities Allowed In Contract		Expiration Date of Contract	Currently Purchased Current quantity purchased through intertie				10-Year Forecasted Purchase Forecasted quantity purchased through intertie				20-Year Forecasted Purchase Forecasted quantity purchased through intertie			
	Maximum Qi Instantaneous Flow Rate	Maximum Qa Annual Volume		Maximum Qi Instantaneous Flow Rate	Current Excess or (Deficiency) Qi	Maximum Qa Annual Volume	Current Excess or (Deficiency) Qa	Maximum Qi 10-Year Forecast	Future Excess or (Deficiency) Qi	Maximum Qa 10-Year Forecast	Future Excess or (Deficiency) Qa	Maximum Qi 20-Year Forecast	Future Excess or (Deficiency) Qi	Maximum Qa 20-Year Forecast	Future Excess or (Deficiency) Qa
1															
2															
3															
TOTALS =															
Column Identifiers for Calculations:	A	B		C	=A-C	D	=B-D	E	=A-E	F	=B-F	G	=A-G	H	=B-H

INTERRUPTIBLE WATER RIGHTS: Identify limitations on any water rights listed above that are interruptible.

Water Right #	Conditions of Interruption	Time Period of Interruption
1		
2		
3		

ADDITIONAL COMMENTS:

(1) Water Right Certificate G2-21399 indicates an annual right of 160 ac-ft/yr, with no indication of primary, supplemental, additive or non-additive annual quantities. However, under Provisions of Permit G2-21399P issued 8/16/1974, and Certificate G2-21399C issued 11/29/1978, it is stated that the total annual right under water rights G2-21399 and G2-00759 is 448 ac-ft/yr, which makes 32 ac-ft/yr of water right G2-21399 supplemental, or non-additive. Reissued Certificate G2-21399, dated 12/2/2002, lacks this statement in the provisions, but does state, "All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below," and no exception to this provision is noted.

(2) Certificate G2-25737C does not indicate that this right is supplemental or non-additive to prior rights; however, under the provisions of this right it is stated, "Under existing rights there is 448 acre-feet per year as primary right for municipal supply." Also, in the Report of Examination for this right it is recommended that "total annual withdrawal shall not exceed 448 acre-feet per year." Rights G2-00759 and G2-21399 already limited total withdrawals to 448 ac-ft/yr, so the effect is that all rights in G2-25737 are non-additive.

(3) On Permit G2-29907 under QUANTITY, TYPE OF USE, PERIOD OF USE, it is stated, "Both Qi and Qa are additive quantities to the 4 existing certificates for the North Wellfield, totaling 600 gpm and 515 afy." However, on request, Ecology has reviewed this and determined that the stated 515 afy (ac-ft/yr) is in error, and the total annual quantity for the NWF is 528 ac-ft/yr. See copy of email correspondence, dated June 11, 2014, in Appendix B of the 2024 Water System Plan.

APPENDIX K

HYDRAULIC MODELING DATA

2023 Peak Hour Demand				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
FH-1	0.79	23.94	153.08	55.96
FH-2	0.79	28.66	153.12	53.93
J10	0.79	25.57	153.07	55.25
J100	0.79	27.75	153.12	54.32
J1000	0.79	20.81	157.58	59.26
J1002	0.79	20.58	158.52	59.77
J1004	0.79	20.94	158.52	59.61
J1006	0.79	20.79	158.51	59.67
J1008	0.79	22.97	158.59	58.76
J1010	0.79	23.23	158.6	58.65
J1012	0.79	24.27	158.67	58.24
J1014	0.79	23.09	158.6	58.72
J1016	0.79	23.73	158.59	58.43
J1018	0.79	22.24	158.42	59
J102	0.79	22.21	153.09	56.71
J1020	0.79	20.81	158.41	59.62
J1022	0.79	21.76	158.41	59.21
J1024	0.79	24.38	158.49	58.11
J1026	0.79	27.5	158.51	56.77
J1028	0.79	21.74	158.5	59.26
J1030	0.79	24.2	158.58	58.23
J1032	0.79	22.74	158.5	58.82
J1034	0.79	24.87	158.48	57.89
J1036	0.79	25.07	158.41	57.78
J1038	0.79	27.77	158.4	56.6
J104	0.79	29.32	153.13	53.65
J1040	0.79	25.24	158.67	57.82
J1042	0.79	24.92	158.65	57.95
J1044	0.79	25.13	158.67	57.86
J1046	0.79	24.55	158.65	58.11
J1048	0.79	31.8	154.11	52.99
J1050	0.79	26.69	154.1	55.21
J1052	0.79	27.72	154.03	54.73
J1054	0.79	28.23	154.02	54.5
J1056	0.79	18.2	154.02	58.85
J1058	0.79	29.12	153.96	54.09
J106	0.79	18.76	153.13	58.22
J1060	0.79	28.4	153.96	54.4
J1062	0.79	20.34	153.95	57.89
J1064	0.79	29.09	153.91	54.09
J1066	0.79	27.97	153.91	54.57
J1068	0.79	19.46	153.9	58.25
J1070	0.79	28.58	153.86	54.29
J1072	0.79	24.55	153.86	56.03

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J188	0.79	24.33	153.54	55.99
J190	0.79	28.44	153.55	54.21
J192	0.79	23.53	153.55	56.34
J194	0.79	24.73	153.52	55.81
J196	0.79	28.06	153.59	54.39
J198	0.79	20.69	153.58	57.58
J20	0.79	20.56	152.29	57.08
J200	0.79	28.06	153.59	54.39
J202	0.79	25.72	153.57	55.4
J204	0.79	27.97	153.61	54.44
J206	0.79	25.31	153.59	55.58
J208	0.79	28.22	153.64	54.34
J210	0.79	25.28	153.61	55.61
J212	0.79	28.26	153.64	54.33
J214	0.79	28.2	153.65	54.36
J216	0.79	27.37	153.69	54.73
J218	0.79	26.52	153.68	55.1
J22	0.79	18.85	152.23	57.79
J220	0.79	27.81	153.7	54.55
J222	0.79	20.17	153.7	57.86
J224	0.79	27.21	153.79	54.85
J226	0.79	27.02	153.8	54.93
J228	0.79	27.11	153.85	54.92
J230	0.79	26.41	153.85	55.22
J232	0.79	27.05	153.93	54.98
J234	0.79	24.52	153.63	55.94
J236	0.79	25.92	153.65	55.34
J238	0.79	22.02	153.61	57.02
J24	0.79	21.57	152.16	56.59
J240	0.79	27.16	153.94	54.93
J242	0.79	21.78	153.94	57.27
J244	0.79	21.12	153.91	57.54
J246	0.79	26.97	153.9	55
J248	0.79	26.58	153.9	55.17
J250	0.79	20.34	153.61	57.74
J252	0.79	19.61	153.62	58.07
J254	0.79	26.2	153.64	55.22
J256	0.79	27.3	154.05	54.92
J258	0.79	30.7	154.05	53.45
J26	0.79	24.01	150.43	54.78
J260	0.79	29.56	154.05	53.94
J262	0.79	30.43	154.05	53.56
J264	0.79	27.69	154.09	54.77
J266	0.79	27.17	154.08	54.99

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1074	0.79	20.56	153.86	57.76
J1076	0.79	27.25	153.81	54.84
J1078	0.79	26.05	153.81	55.36
J108	0.79	20.14	153.12	57.62
J1080	0.79	19.91	153.8	58.02
J1082	0.79	26.13	153.77	55.3
J1084	0.79	25.27	153.76	55.68
J1086	0.79	20.78	153.76	57.62
J1088	0.79	26.15	153.72	55.28
J1090	0.79	27.15	153.72	54.84
J1092	0.79	20.73	153.71	57.62
J1094	0.79	25.54	153.7	55.53
J1096	0.79	23.32	153.69	56.49
J1098	0.79	29.83	153.67	53.66
J110	0.79	19.56	153.13	57.87
J1100	0.79	23.84	153.68	56.26
J1102	0.79	23.4	153.66	56.44
J1104	0.79	23.38	153.64	56.44
J1106	0.79	24.94	153.42	55.67
J1108	0.79	34.12	153.42	51.69
J1110	0.79	25.03	153.4	55.62
J1112	0.79	25.73	153.39	55.32
J1114	0.79	27.34	153.13	54.5
J1116	0.79	28.21	153.13	54.12
J1118	0.79	28.03	152.63	53.99
J112	0.79	20.15	153.12	57.62
J1120	0.79	21.9	152.63	56.64
J1122	0.79	23.13	153.76	56.6
J1124	0.79	24.49	153.74	56
J1126	0.79	24.25	153.74	56.11
J1128	0.79	23.78	153.74	56.31
J1130	0.79	23.34	153.73	56.5
J1132	0.79	22.77	153.73	56.75
J1134	0.79	22.54	153.73	56.84
J1136	0.79	22.58	153.73	56.83
J1138	0.79	22.07	153.73	57.05
J114	0.79	21	153.12	57.25
J1140	0.79	22.82	153.73	56.72
J1142	0.79	22.61	153.73	56.81
J1144	0.79	25.54	153.73	55.54
J1146	0.79	23.75	153.73	56.32
J1148	0.79	29.3	153.73	53.91
J1150	0.79	26.73	153.73	55.03
J1152	0.79	29.53	153.73	53.82

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J268	0.79	26.9	154.08	55.11
J270	0.79	19.56	154.06	58.28
J272	0.79	27.54	154.41	54.97
J274	0.79	25.87	154.39	55.69
J276	0.79	27.57	154.49	54.99
J278	0.79	19.58	154.47	58.45
J28	0.79	23.84	150.4	54.84
J280	0.79	27.45	154.65	55.12
J282	0.79	28.75	154.63	54.54
J284	0.79	21.43	153.95	57.42
J286	0.79	21.51	153.95	57.39
J288	0.79	26.47	155.01	55.7
J290	0.79	23.38	154.99	57.03
J292	0.79	26.49	154.65	55.53
J294	0.79	25.9	155.35	56.09
J296	0.79	24.31	155.35	56.78
J298	0.79	25.29	155.67	56.5
J30	0.79	25.44	150.34	54.12
J300	0.79	19.76	155.67	58.89
J302	0.79	20.64	155.67	58.51
J304	0.79	19.73	155.67	58.9
J306	0.79	22.04	157.03	58.5
J308	0.79	21.07	157.4	59.07
J310	0.79	21.37	157.16	58.84
J312	0.79	27.1	157.15	56.35
J314	0.79	24.55	157.03	57.41
J316	0.79	29.12	157.1	55.45
J318	0.79	23.02	157.04	58.07
J32	0.79	25.62	150.32	54.03
J320	0.79	21.84	157.04	58.58
J322	0.79	23.14	157.03	58.01
J324	0.79	24.02	157.08	57.66
J326	0.79	19.55	157.82	59.91
J328	0.79	28.26	157.82	56.14
J330	0.79	21.85	157.81	58.92
J332	0.79	23.02	157.81	58.4
J334	0.79	22.35	159.25	59.32
J336	0.79	26.84	159.1	57.31
J338	0.79	25	159.1	58.11
J34	0.79	21.59	152.16	56.58
J340	0.79	29.23	159.1	56.27
J342	0.79	23	159.99	59.36
J344	0.79	19.26	159.99	60.98
J346	0.79	19.88	159.96	60.7

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1154	0.79	30.31	153.73	53.48
J1156	0.79	26.28	153.73	55.22
J116	0.79	20.89	153.11	57.29
J1160	0.79	20.79	153.74	57.6
J1162	0.79	22.93	153.73	56.68
J1164	0.79	21.9	153.81	57.15
J1166	0.79	22.06	153.78	57.07
J1168	0.79	20.45	153.75	57.76
J1170	0.79	21	153.74	57.51
J1174	0.79	21.54	153.48	57.17
J1176	0.79	20.28	153.43	57.69
J1178	0.79	22.69	153.77	56.8
J118	0.79	22.17	153.12	56.74
J1180	0.79	21.55	153.74	57.28
J1182	0.79	22.01	153.65	57.04
J1184	0.79	20.9	153.47	57.44
J1186	0.79	21.52	153.42	57.15
J1188	0.79	21.08	153.42	57.34
J1190	0.79	22.73	153.47	56.65
J1192	0.79	23.05	153.64	56.59
J1194	0.79	21.89	153.74	57.13
J1196	0.79	22.65	153.76	56.81
J1198	0.79	22.81	153.74	56.73
J12	0.79	27.32	153.07	54.49
J120	0.79	21.88	153.11	56.86
J1200	0.79	22.65	153.74	56.8
J1202	0.79	22.43	153.74	56.9
J1204	0.79	23.19	153.73	56.57
J1206	0.79	22.02	153.73	57.07
J1208	0.79	22.53	153.73	56.85
J1210	0.79	23.23	153.73	56.54
J1212	0.79	22.26	153.73	56.97
J1214	0.79	23.49	153.73	56.43
J1216	0.79	23.38	153.73	56.48
J1218	0.79	22.13	153.72	57.02
J122	0.79	21.4	153.12	57.07
J1220	0.79	24.39	153.72	56.04
J1222	0.79	24.87	153.72	55.83
J1224	0.79	25.16	153.72	55.71
J1226	0.79	24.98	153.72	55.78
J1228	0.79	25.41	153.72	55.6
J1230	0.79	25.69	153.01	55.17
J1232	0.79	22.9	153	56.37
J1234	0.79	25.97	153	55.04

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J348	0.79	27.74	159.96	57.29
J350	0.79	22.72	160.07	59.51
J352	0.79	25.76	160.04	58.18
J354	0.79	21.92	160.03	59.84
J356	0.79	22.09	160.04	59.77
J358	0.79	20.53	160.03	60.45
J36	0.79	23.22	150.31	55.07
J360	0.79	19.33	160.04	60.97
J362	0.79	22.23	159.99	59.69
J364	0.79	18.04	159.98	61.5
J366	0.79	19.7	159.99	60.79
J368	0.79	23.46	161.04	59.62
J370	0.79	24.09	161.47	59.52
J372	0.79	24.44	161.96	59.59
J374	0.79	24.61	162.39	59.7
J376	0.79	21.82	162.43	60.92
J378	0.79	21.05	161.96	61.06
J38	0.79	26	150.31	53.87
J380	0.79	23.79	161.48	59.66
J382	0.79	22.95	161.89	60.2
J384	0.79	26.86	161.89	58.51
J386	0.79	29.39	161.61	57.29
J388	0.79	22.63	161.61	60.22
J390	0.79	27.75	161.55	57.97
J392	0.79	21.3	161.54	60.77
J394	0.79	23.93	161.53	59.62
J396	0.79	24.52	161.54	59.37
J398	0.79	24.44	161.56	59.41
J40	0.79	21.13	150.38	56.01
J400	0.79	24.87	163.03	59.86
J402	0.79	25.02	162.97	59.77
J404	0.79	19.38	162.97	62.22
J406	0.79	20.17	162.97	61.88
J408	0.79	22.23	162.97	60.99
J410	0.79	24.63	163.5	60.17
J412	0.79	18.31	162.97	62.68
J414	0.79	24.74	162.96	59.89
J416	0.79	23.69	164.2	60.88
J418	0.79	23.72	164.2	60.87
J42	0.79	24.45	152.06	55.29
J420	0.79	30.26	164.2	58.03
J422	0.79	24.29	164.18	60.61
J424	0.79	24.34	164.2	60.6
J426	0.79	24.38	164.2	60.58

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1236	0.79	27.96	152.57	53.99
J1238	0.79	26.71	152.56	54.53
J124	0.79	22.57	153.11	56.56
J1240	0.79	25.82	152.56	54.92
J1242	0.79	33.39	152.56	51.64
J1244	0.79	31.35	152.55	52.52
J1246	0.79	33.72	152.56	51.49
J1248	0.79	32.51	152.55	52.01
J1250	0.79	28.8	152.36	53.54
J1252	0.79	23.34	152.36	55.91
J1254	0.79	28.43	152.18	53.62
J1256	0.79	23.1	152.18	55.93
J1258	0.79	28.76	152.12	53.45
J126	0.79	22.12	153.11	56.76
J1260	0.79	25.47	152.12	54.88
J1262	0.79	29.98	151.95	52.85
J1264	0.79	24.11	151.95	55.39
J1266	0.79	28.59	151.9	53.43
J1268	0.79	21.19	151.89	56.63
J1270	0.79	28.06	151.78	53.61
J1272	0.79	24.96	151.77	54.95
J1274	0.79	21.8	151.77	56.32
J1276	0.79	25.07	151.66	54.85
J1278	0.79	28.87	151.66	53.2
J128	0.79	22.33	153.12	56.67
J1280	0.79	30.36	151.65	52.56
J1282	0.79	32.89	151.65	51.46
J1284	0.79	23.01	151.55	55.7
J1286	0.79	23.03	151.51	55.67
J1288	0.79	27.24	151.5	53.84
J1290	0.79	22.05	151.3	56
J1292	0.79	27.98	151.3	53.43
J1294	0.79	22.86	151.16	55.59
J1296	0.79	31.16	151.16	52
J1298	0.79	21.53	150.97	56.09
J130	0.79	25.66	153.11	55.22
J1300	0.79	28	150.96	53.28
J1302	0.79	26.82	151.16	53.88
J1304	0.79	28.79	151.16	53.02
J1306	0.79	26.34	151.16	54.08
J1308	0.79	23.27	151.16	55.41
J1310	0.79	21.82	151.16	56.04
J1312	0.79	22.87	151.15	55.59
J1314	0.79	22.07	150.76	55.76

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J428	0.79	24.49	163.91	60.41
J430	0.79	26.17	163.97	59.71
J432	0.79	26.53	163.99	59.56
J434	0.79	26.16	164.08	59.76
J438	0.79	20.78	164.1	62.1
J44	0.79	24.74	151.92	55.11
J440	0.79	21.82	163.64	61.45
J442	0.79	21.31	163.64	61.67
J444	0.79	22.77	163.6	61.02
J446	0.79	24.95	163.58	60.07
J448	0.79	25.2	163.57	59.95
J450	0.79	21.64	164.25	61.8
J452	0.79	21.58	164.28	61.83
J454	0.79	25.94	164.2	59.91
J456	0.79	22.75	164.31	61.34
J458	0.79	24.77	164.25	60.44
J46	0.79	24.84	151.92	55.06
J460	0.79	24.21	164.26	60.69
J462	0.79	23.89	163.53	60.5
J464	0.79	23.35	163.15	60.57
J466	0.79	24.47	162.97	60.01
J468	0.79	24	162.99	60.22
J470	0.79	26	164.2	59.88
J472	0.79	24.12	164.2	60.69
J474	0.79	22.21	163.15	61.07
J476	0.79	19.88	163.14	62.07
J478	0.79	24.52	163.18	60.08
J48	0.79	24.39	151.91	55.26
J480	0.79	25.27	163.18	59.76
J482	0.79	22.23	163.16	61.06
J484	0.79	25.84	163.17	59.5
J486	0.79	23.73	164.3	60.91
J488	0.79	24.25	164.3	60.68
J490	0.79	23.81	164.34	60.89
J492	0.79	24.21	164.37	60.73
J494	0.79	26.49	164.34	59.73
J496	0.79	27.45	164.37	59.33
J498	0.79	21.39	164.41	61.97
J50	0.79	25.94	151.91	54.59
J500	0.79	22.2	164.37	61.6
J502	0.79	26.41	164.38	59.79
J504	0.79	20.02	164.38	62.55
J506	0.79	18.93	164.38	63.02
J508	0.79	23.12	164.39	61.21

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1316	0.79	24.65	150.75	54.64
J1318	0.79	21.06	150.75	56.2
J132	0.79	29.33	153.13	53.64
J1320	0.79	22.62	150.74	55.51
J1322	0.79	24.53	150.73	54.68
J1324	0.79	21.57	150.73	55.97
J1326	0.79	20.97	150.73	56.22
J1328	0.79	25.84	150.74	54.12
J1330	0.79	20.67	150.73	56.35
J1332	0.79	20.44	150.73	56.45
J1334	0.79	23.25	150.72	55.23
J1336	0.79	24.62	150.72	54.64
J1338	0.79	22.82	150.74	55.43
J134	0.79	26.4	153.13	54.91
J1340	0.79	24.82	150.61	54.5
J1342	0.79	29.47	150.61	52.49
J1344	0.79	23.24	150.52	55.15
J1346	0.79	29.56	150.51	52.41
J1348	0.79	23.41	150.5	55.07
J1350	0.79	20.95	150.49	56.13
J1352	0.79	21.92	150.4	55.67
J1354	0.79	24.95	150.4	54.36
J1356	0.79	28.44	150.4	52.85
J1358	0.79	23.27	150.31	55.05
J136	0.79	20.2	153.13	57.6
J1360	0.79	27.43	150.31	53.24
J1362	0.79	25.33	150.29	54.15
J1366	0.79	23.03	150.22	55.11
J1368	0.79	27.7	150.21	53.08
J1370	0.79	26.14	150.14	53.73
J1372	0.79	21	150.13	55.95
J1374	0.79	24.66	150.15	54.38
J1376	0.79	28.06	150.15	52.9
J1378	0.79	23.21	150.15	55
J138	0.79	28.21	153.19	54.15
J1380	0.79	22.76	150.14	55.19
J1382	0.79	22.77	150.14	55.19
J1384	0.79	25.22	150.14	54.13
J1386	0.79	21.87	150.14	55.58
J1388	0.79	23.18	150.13	55.01
J1390	0.79	23.15	150.14	55.02
J1392	0.79	22.65	150.13	55.24
J1394	0.79	22.96	150.13	55.1
J1396	0.79	26.54	150.08	53.53

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J510	0.79	24.9	164.39	60.44
J512	0.79	26.66	164.4	59.68
J514	0.79	26.51	164.4	59.75
J516	0.79	21.51	164.49	61.95
J518	0.79	21.65	164.42	61.86
J52	0.79	27.64	151.85	53.82
J520	0.79	21.99	164.42	61.72
J522	0.79	22.19	164.42	61.63
J524	0.79	24.14	164.4	60.78
J526	0.79	23.42	164.42	61.09
J528	0.79	22.1	164.39	61.66
J530	0.79	28.65	164.39	58.82
J532	0.79	21.93	164.41	61.74
J534	0.79	21.48	164.41	61.93
J536	0.79	24.77	164.42	60.51
J538	0.79	23.25	164.43	61.17
J54	0.79	26.97	151.84	54.11
J540	0.79	25.1	164.39	60.35
J542	0.79	23.89	164.45	60.9
J544	0.79	25.37	164.38	60.24
J546	0.79	53.66	164.38	47.98
J548	0.79	25.6	164.41	60.15
J550	0.79	24.16	164.41	60.77
J552	0.79	20.53	164.41	62.34
J554	0.79	20.55	164.4	62.33
J556	0.79	25.21	164.42	60.32
J558	0.79	23.5	164.47	61.08
J56	0.79	26.22	153.08	54.97
J560	0.79	23.62	164.48	61.03
J562	0.79	22.49	164.41	61.49
J564	0.79	21.3	164.41	62.01
J566	0.79	25.53	164.38	60.16
J568	0.79	33.43	164.36	56.73
J570	0.79	25.01	164.38	60.39
J572	0.79	25.06	164.38	60.37
J574	0.79	24.49	164.5	60.67
J576	0.79	24.79	164.5	60.54
J578	0.79	21.1	164.4	62.09
J58	0.79	28.25	153.08	54.09
J580	0.79	22.52	164.4	61.48
J582	0.79	24.26	164.39	60.72
J584	0.79	24.37	164.53	60.73
J586	0.79	24.39	164.54	60.73
J588	0.79	23.91	164.54	60.94

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1398	0.79	21.03	150.08	55.92
J14	0.79	28.33	153.08	54.05
J140	0.79	23.76	153.17	56.08
J1400	0.79	26.29	150.02	53.61
J1402	0.79	22	150.01	55.47
J1404	0.79	24.08	149.97	54.55
J1406	0.79	23.82	149.97	54.66
J1408	0.79	22.02	149.93	55.42
J1410	0.79	25.36	149.92	53.97
J1412	0.79	21.63	149.9	55.58
J1414	0.79	24.46	149.86	54.34
J1416	0.79	21.19	149.86	55.75
J1418	0.79	20.81	149.86	55.92
J142	0.79	24.93	153.24	55.6
J1420	0.79	21.66	149.86	55.55
J1422	0.79	24.71	149.86	54.23
J1424	0.79	22.48	149.85	55.19
J1426	0.79	22.4	149.85	55.22
J1428	0.79	21.02	149.85	55.82
J1430	0.79	23.83	149.85	54.6
J1432	0.79	25.81	149.85	53.75
J1434	0.79	23.33	149.85	54.82
J1436	0.79	22.08	149.84	55.36
J1438	0.79	23.48	149.84	54.75
J144	0.79	23.38	153.24	56.27
J1440	0.79	23.44	149.84	54.77
J1442	0.79	22.86	149.84	55.02
J1444	0.79	22.71	149.84	55.08
J1446	0.79	22.4	149.84	55.22
J1448	0.79	21.6	149.84	55.56
J1450	0.79	23.72	149.84	54.65
J1452	0.79	21.16	149.89	55.78
J1454	0.79	23.93	149.88	54.57
J1456	0.79	21.97	149.88	55.42
J1458	0.79	24.93	149.87	54.14
J146	0.79	26.43	153.22	54.94
J1460	0.79	21.52	149.87	55.62
J1462	0.79	24.63	149.86	54.26
J1464	0.79	20.49	149.86	56.06
J1466	0.79	23.06	149.86	54.94
J1468	0.79	21.04	149.85	55.81
J1470	0.79	24.93	149.85	54.13
J1472	0.79	22.08	149.85	55.36
J1474	0.79	24.6	149.84	54.27

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J590	0.79	20.83	164.53	62.27
J592	0.79	23.83	164.58	60.99
J594	0.79	23.77	164.58	61.02
J596	0.79	23.4	164.73	61.23
J598	0.79	23.08	164.4	61.23
J60	0.79	28.41	153.08	54.02
J600	0.79	23.8	164.39	60.92
J602	0.79	28.1	164.35	59.04
J604	0.79	18.13	164.32	63.35
J606	0.79	28.54	164.35	58.85
J608	0.79	19.13	164.29	62.9
J610	0.79	19.39	164.19	62.74
J612	0.79	19.22	164.18	62.81
J614	0.79	19.34	164.19	62.76
J616	0.79	24.84	164.58	60.55
J618	0.79	22.09	164.5	61.71
J62	0.79	22.8	153.08	56.45
J620	0.79	21.76	164.5	61.85
J622	0.79	24.85	164.47	60.5
J624	0.79	25.07	164.47	60.4
J626	0.79	25.39	164.62	60.33
J628	0.79	26.29	164.61	59.93
J630	0.79	43.59	164.44	52.37
J632	0.79	46.4	164.44	51.14
J634	0.79	26.17	164.59	59.98
J636	0.79	26	164.59	60.05
J638	0.79	21.42	164.58	62.03
J64	0.79	21.07	153.08	57.2
J640	0.79	23.05	164.67	61.37
J642	0.79	19.2	164.66	63.03
J644	0.79	23.76	164.67	61.06
J646	0.79	26.5	164.58	59.83
J648	0.79	25.89	164.58	60.09
J650	0.79	22.6	164.57	61.52
J652	0.79	20.1	164.57	62.6
J654	0.79	23.93	164.58	60.94
J656	0.79	21.71	164.53	61.88
J658	0.79	20.81	164.52	62.27
J66	0.79	23.1	153.08	56.32
J660	0.79	19.66	164.52	62.76
J662	0.79	24.35	164.56	60.75
J664	0.79	25.08	164.56	60.44
J666	0.79	47.13	164.56	50.89
J668	0.79	44.84	164.56	51.88

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1476	0.79	20.91	149.84	55.87
J1478	0.79	20.88	149.83	55.87
J148	0.79	24.55	153.27	55.77
J1482	0.79	19.92	149.84	56.3
J1484	0.79	20.58	149.84	56.01
J1486	0.79	23.54	149.78	54.7
J1488	0.79	22.83	149.78	55.01
J1490	0.79	22.23	149.77	55.27
J1492	0.79	23.44	149.73	54.72
J1494	0.79	21.83	149.72	55.42
J1496	0.79	22.92	149.72	54.94
J1498	0.79	23.34	149.69	54.75
J150	0.79	22.59	153.25	56.61
J1500	0.79	23.63	149.68	54.61
J1502	0.79	22.84	149.67	54.96
J1504	0.79	22.68	149.69	55.03
J1506	0.79	23.06	149.66	54.85
J1508	0.79	22.17	149.65	55.24
J1510	0.79	22.9	149.65	54.92
J1512	0.79	21.4	149.65	55.57
J1514	0.79	24.55	149.6	54.19
J1516	0.79	22.56	149.6	55.05
J1518	0.79	26.07	149.6	53.53
J152	0.79	27.58	153.36	54.5
J1520	0.79	22.33	149.63	55.16
J1522	0.79	22.29	149.63	55.18
J1524	0.79	22.73	149.62	54.98
J1526	0.79	23.22	149.62	54.77
J1528	0.79	21.61	149.62	55.46
J1530	0.79	22.15	149.62	55.23
J1532	0.79	19.79	150.4	56.59
J1534	0.79	21.89	150.33	55.65
J1536	0.79	21.95	153.77	57.12
J1538	0.79	21.29	153.65	57.35
J154	0.79	22.83	153.35	56.56
J1540	0.79	19.73	159.96	60.76
J1542	0.79	51.65	164.43	48.87
J1544	0.79	24.7	164.45	60.55
J1546	0.79	23.29	164.4	61.14
J1548	0.79	33.05	164.55	56.98
J1550	0.79	46.46	164.55	51.17
J1552	0.79	13.44	165.17	65.74
J1554	0.79	13.4	165.18	65.77
J1556	0.79	13.58	165.22	65.71

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J670	0.79	18.75	164.56	63.18
J672	0.79	19.35	164.54	62.91
J674	0.79	40.52	164.56	53.75
J676	0.79	22.5	164.57	61.56
J678	0.79	24.66	164.57	60.62
J68	0.79	24.78	153.08	55.59
J680	0.79	50.38	164.56	49.47
J682	0.79	23.54	164.56	61.1
J684	0.79	23.63	164.56	61.07
J686	0.79	50.5	164.56	49.42
J688	0.79	26.49	164.56	59.83
J690	0.79	22.39	164.56	61.6
J692	0.79	23.98	164.56	60.91
J694	0.79	23.74	165.2	61.29
J696	0.79	25.21	166.01	61.01
J698	0.79	23.82	166.02	61.61
J70	0.79	25.78	153.09	55.16
J700	0.79	21.22	166.03	62.75
J702	0.79	24.41	166.01	61.36
J704	0.79	24.64	166.01	61.26
J706	0.79	24.65	166.01	61.25
J708	0.79	27.01	166.01	60.23
J710	0.79	31.01	166.01	58.5
J712	0.79	35.03	166.01	56.76
J714	0.79	25.76	165.65	60.61
J716	0.79	32.16	165.12	57.61
J718	0.79	26.12	165.1	60.22
J72	0.79	26.46	153.08	54.87
J720	0.79	25.86	165.03	60.3
J722	0.79	30.76	165.09	58.21
J724	0.79	31.45	165.21	57.96
J726	0.79	32.14	165.21	57.66
J728	0.79	29.61	165.32	58.8
J730	0.79	29.69	165.33	58.77
J732	0.79	29.49	165.32	58.86
J734	0.79	27.09	165.31	59.89
J736	0.79	27.22	165.3	59.83
J738	0.79	29.32	165.29	58.91
J74	0.79	27.16	153.09	54.57
J740	0.79	21.57	165.32	62.29
J742	0.79	28.02	165.42	59.54
J744	0.79	21.3	164.57	62.08
J746	0.79	24.02	164.62	60.92
J750	0.79	25.14	164.66	60.45

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1558	0.79	13.71	165.25	65.66
J156	0.79	28.44	153.38	54.13
J1560	0.79	13.9	165.27	65.59
J1562	0.79	15.97	165.31	64.71
J1564	0.79	19.14	165.27	63.32
J1566	0.79	26.44	165.26	60.15
J1568	0.79	17.54	165.26	64.01
J1570	0.79	17.81	165.26	63.89
J1572	0.79	15.5	165.23	64.88
J1574	0.79	17.09	165.39	64.26
J1576	0.79	22.24	162.75	60.89
J1578	0.79	20.69	162.75	61.55
J158	0.79	20.23	153.37	57.69
J1580	0.79	22.79	162.75	60.65
J1582	0.79	26.55	157.43	56.71
J1586	0.79	20.11	163.99	62.34
J1590	0.79	23.51	164.29	61
J1592	0.79	28.56	164.38	58.85
J1594	0.79	13.07	165.16	65.9
J1596	0.79	13.27	165.16	65.81
J1598	0.79	12.76	165.16	66.03
J16	0.79	28.83	153.08	53.83
J160	0.79	28.18	153.42	54.27
J1600	0.79	24.86	162.43	59.61
J1602	0.79	24.8	162.45	59.64
J1604	0.79	29.48	162.36	57.58
J1606	0.79	47.96	162.36	49.57
J1608	0.79	38.21	162.36	53.79
J1610	0.79	25.2	157.43	57.29
J1612	0.79	22.76	164.34	61.34
J1614	0.79	21.97	158.38	59.1
J1616	0.79	20.73	158.39	59.65
J1618	0.79	20.62	150.72	56.37
J162	0.79	28.22	153.42	54.25
J1620	0.79	20.7	150.73	56.34
J1622	0.79	21.92	150.4	55.67
J1624	0.79	22.09	150.3	55.55
J1626	0.79	25.47	150.17	54.03
J1628	0.79	24.11	150.22	54.64
J1630	0.79	23.01	150.14	55.08
J1632	0.79	22.92	149.62	54.9
J1634	0.79	22.45	149.63	55.11
J1636	0.79	23.38	149.72	54.75
J1638	0.79	23.52	149.78	54.71

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J752	0.79	26.12	164.68	60.04
J754	0.79	24.17	164.7	60.89
J756	0.79	22.38	164.69	61.66
J758	0.79	21.12	164.9	62.3
J76	0.79	27.89	153.08	54.25
J760	0.79	29.82	164.96	58.56
J762	0.79	29.38	165.07	58.79
J764	0.79	21.01	164.89	62.34
J766	0.79	31.22	164.95	57.94
J770	0.79	27.87	164.98	59.41
J772	0.79	27.54	164.96	59.55
J774	0.79	22.45	164.96	61.75
J776	0.79	30.04	164.93	58.45
J78	0.79	27.93	153.09	54.23
J782	0.79	33.44	164.92	56.97
J788	0.79	33.56	164.92	56.92
J790	0.79	30.77	164.92	58.13
J792	0.79	24.21	164.48	60.78
J794	0.79	17.27	165.41	64.19
J796	0.79	16.57	165.41	64.49
J798	0.79	19.34	165.4	63.29
J80	0.79	28.26	153.1	54.09
J800	0.79	35.38	165.38	56.33
J802	0.79	27.43	165.41	59.79
J804	0.79	15.42	165.41	64.99
J806	0.79	15	165.41	65.17
J808	0.79	14.85	165.41	65.24
J810	0.79	17.33	165.4	64.16
J812	0.79	13.98	165.41	65.62
J814	0.79	13.46	165.41	65.84
J816	0.79	14.23	165.41	65.51
J818	0.79	14.81	165.41	65.25
J82	0.79	22.34	153.07	56.65
J820	0.79	12.96	165.4	66.05
J822	0.79	13.72	165.39	65.72
J824	0.79	12.87	165.39	66.09
J826	0.79	11.95	164.92	66.28
J828	0.79	12.61	164.92	66
J830	0.79	10.33	164.9	66.98
J832	0.79	12.57	164.91	66.01
J834	0.79	17.19	164.92	64.01
J836	0	23	240.75	94.35
J838	0.79	22.68	164.92	61.63
J84	0.79	28.52	153.1	53.98

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J164	0.79	24.49	153.4	55.86
J1640	0.79	27.31	153.03	54.47
J1642	0.79	27.42	153.05	54.43
J1644	0.79	22.8	153.08	56.45
J1646	0.79	21.85	153.81	57.18
J1648	0.79	20.92	153.74	57.55
J1650	0.79	25.1	159.99	58.45
J1652	0.79	52.49	164.56	48.56
J1654	0.79	22.36	164.56	61.62
J1656	0.79	22.75	164.56	61.45
J1658	0.79	23.8	164.57	60.99
J166	0.79	27.92	153.46	54.4
J1660	0.79	23.56	165.21	61.37
J1662	0.79	28	165.02	59.37
J1664	0.79	30.64	165.07	58.25
J1666	0.79	29.39	164.92	58.73
J1668	0	21	237.52	93.82
J1670	0.79	22.16	150.45	55.59
J1672	0.79	24.15	154.65	56.55
J1674	0.79	24.6	155.67	56.79
J1676	0.79	18.87	159.99	61.15
J1678	0.79	23.98	160.9	59.33
J168	0.79	24.41	153.44	55.91
J1680	0.79	26.4	164.22	59.72
J1682	0.79	27.9	165.42	59.59
J1684	0.79	23.7	166.02	61.67
J1686	0.79	24.12	165.19	61.13
J1688	0.79	23.11	164.56	61.29
J1690	0.79	22.43	164.56	61.59
J1692	0.79	22.41	164.56	61.59
J1694	0.79	25.91	153.72	55.38
J1696	0.79	25.65	164.55	60.19
J170	0.79	27.71	153.47	54.49
J1700	0.79	31.64	165.08	57.82
J1702	0.79	29.6	165.07	58.7
J1704	0.79	18.18	165.39	63.79
J1706	0.79	14.89	165.41	65.22
J1708	0.79	21.87	166.06	62.48
J1712	0	21	166.06	62.85
J1716	0.79	27.93	154.29	54.75
J1718	0.79	21.48	164.34	61.9
J172	0.79	26.55	153.45	54.98
J1720	0	23	243.79	95.67
J1724	0.79	23.74	153.08	56.04

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J840	0.79	30.03	164.92	58.45
J842	0.79	33.34	164.63	56.89
J844	0.79	33.68	164.41	56.65
J846	0.79	30.07	164.41	58.21
J848	0.79	33.55	164.1	56.57
J850	0.79	30.29	164.08	57.97
J852	0.79	31.59	162.96	56.92
J854	0.79	31.34	162.96	57.03
J856	0.79	32.75	162.96	56.42
J858	0.79	29.1	162.76	57.91
J86	0.79	20.62	153.06	57.39
J860	0.79	14.32	162.6	64.25
J862	0.79	14.86	162.59	64.01
J864	0.79	13.26	162.48	64.66
J866	0.79	13.23	162.47	64.67
J868	0.79	13.32	162.46	64.62
J870	0.79	31.06	161.28	56.43
J872	0.79	21.24	161.22	60.65
J878	0.79	20.56	159.45	60.18
J88	0.79	28.58	153.1	53.96
J880	0.79	29.85	160.33	56.53
J882	0.79	28.35	160.31	57.18
J884	0.79	28.96	159.7	56.65
J886	0.79	24.86	159.69	58.42
J888	0.79	29.2	159.34	56.39
J890	0.79	28.99	157.99	55.9
J892	0.79	29.48	157.99	55.68
J894	0.79	27.5	157.61	56.38
J896	0.79	30.57	156.99	54.78
J898	0.79	14.44	156.96	61.75
J90	0.79	28.53	153.1	53.98
J900	0.79	20.09	162.42	61.67
J902	0.79	13.29	162.41	64.61
J906	0.79	14.72	162.43	64
J908	0.79	13.31	162.43	64.61
J910	0.79	13.3	162.43	64.62
J912	0.79	13.06	162.43	64.72
J914	0.79	30.73	162.43	57.06
J916	0.79	25.2	162.37	59.43
J918	0.79	23.07	162.39	60.36
J92	0.79	24.22	153.09	55.84
J920	0.79	24.07	162.37	59.92
J922	0.79	20.78	162.36	61.35
J924	0.79	36.78	162.37	54.42

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1726	0.79	20.73	153.79	57.65
J1728	0.79	21.84	164.57	61.84
J1730	0.79	24.23	158.83	58.32
J1732	0.79	24.15	158.68	58.29
J1734	0.79	21.22	158.86	59.64
J1736	0.79	17.99	158.45	60.86
J174	0.79	27.84	153.53	54.46
J1740	0.79	28.75	153.86	54.21
J1742	0.79	22.59	162.97	60.83
J1744	0.79	14.19	165.18	65.42
J1746	0.79	13.93	165.18	65.54
J1748	0.79	28.71	153.17	53.93
J1750	0.79	27.99	153.08	54.2
J1752	0.79	26.39	165.13	60.12
J1754	0.79	20.86	153.74	57.58
J1756	0.79	27.05	164.88	59.72
J1758	0.79	23.81	164.74	61.06
J176	0.79	29.18	153.52	53.88
J1760	0.79	28.02	154.17	54.66
J1762	0.79	24.65	154.17	56.12
J1764	0.79	19.27	162.97	62.27
J1766	0.79	22.22	164.42	61.62
J1768	0.79	24.88	164.74	60.6
J1770	0.79	14.68	162.44	64.02
J1772	0.79	14.19	162.44	64.23
J1774	0.79	20.72	164	62.08
J1778	0	0	153.12	66.35
J178	0.79	27.95	153.54	54.42
J1780	0	20.43	149.84	56.07
J1782	0	27.79	153.51	54.48
J18	0.79	29.66	153.08	53.48
J180	0.79	26.97	153.54	54.84
J182	0.79	28.03	153.55	54.38
J184	0.79	24.97	153.52	55.7
J186	0.79	28.26	153.55	54.29
J990	0.79	21.6	158.4	59.27
J992	0.79	29.56	157.41	55.4
J994	0.79	25.99	157.32	56.9
J996	0.79	27.06	157.32	56.44
J998	0.79	29.14	157.31	55.54
J982	0.79	22.74	157.6	58.43
J984	0.79	24.45	157.44	57.62
J986	0.79	22.98	158.38	58.67
J988	0.79	22.48	158.4	58.89

2023 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J926	0.79	28.46	162.37	58.02
J928	0.79	23.33	162.36	60.24
J930	0.79	23.96	162.36	59.97
J932	0.79	24.29	162.36	59.82
J934	0.79	24.75	162.36	59.62
J936	0.79	24.19	162.36	59.87
J938	0.79	23.66	162.36	60.1
J94	0.79	23.78	153.08	56.03
J940	0.79	18.36	162.36	62.39
J942	0.79	18.2	162.29	62.43
J944	0.79	18.31	162.29	62.39
J946	0.79	18.98	162.28	62.09
J948	0.79	23.03	157	58.05
J950	0.79	20.82	154.46	57.91
J952	0.79	21.81	154.4	57.45
J954	0.79	21.9	154.45	57.43
J956	0.79	29.64	154.73	54.2
J958	0.79	33.21	154.73	52.65
J96	0.79	28.6	153.11	53.95
J960	0.79	29.93	156.97	55.05
J962	0.79	26.77	157.45	56.62
J964	0.79	27.2	157.44	56.44
J966	0.79	26.96	157.43	56.53
J968	0.79	26.39	157.43	56.78
J970	0.79	25.94	157.43	56.97
J972	0.79	25.95	157.43	56.97
J974	0.79	26.73	157.42	56.63
J976	0.79	25.51	157.43	57.16
J978	0.79	23.43	157.42	58.06
J98	0.79	28.68	153.11	53.92
J980	0.79	24.11	157.43	57.77

2044 Peak Hour Demand				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
FH-1	0.88	23.94	150.4	54.8
FH-2	0.88	28.66	150.45	52.77
J10	0.88	25.57	150.39	54.08
J100	0.88	27.75	150.45	53.17
J1000	0.88	20.81	155.9	58.54
J1002	0.88	20.58	157.04	59.13
J1004	0.88	20.94	157.04	58.97
J1006	0.88	20.79	157.03	59.03
J1008	0.88	22.97	157.12	58.13
J1010	0.88	23.23	157.14	58.02
J1012	0.88	24.27	157.23	57.61
J1014	0.88	23.09	157.14	58.08
J1016	0.88	23.73	157.12	57.8
J1018	0.88	22.24	156.91	58.35
J102	0.88	22.21	150.41	55.55
J1020	0.88	20.81	156.91	58.97
J1022	0.88	21.76	156.91	58.56
J1024	0.88	24.38	157.01	57.47
J1026	0.88	27.5	157.03	56.13
J1028	0.88	21.74	157.02	58.62
J1030	0.88	24.2	157.12	57.59
J1032	0.88	22.74	157.01	58.18
J1034	0.88	24.87	156.99	57.25
J1036	0.88	25.07	156.91	57.13
J1038	0.88	27.77	156.89	55.95
J104	0.88	29.32	150.46	52.49
J1040	0.88	25.24	157.22	57.19
J1042	0.88	24.92	157.2	57.32
J1044	0.88	25.13	157.22	57.23
J1046	0.88	24.55	157.2	57.48
J1048	0.88	31.8	151.65	51.93
J1050	0.88	26.69	151.65	54.14
J1052	0.88	27.72	151.56	53.66
J1054	0.88	28.23	151.55	53.43
J1056	0.88	18.2	151.55	57.78
J1058	0.88	29.12	151.48	53.02
J106	0.88	18.76	150.46	57.06
J1060	0.88	28.4	151.47	53.33
J1062	0.88	20.34	151.47	56.82
J1064	0.88	29.09	151.42	53
J1066	0.88	27.97	151.41	53.48
J1068	0.88	19.46	151.41	57.17
J1070	0.88	28.58	151.36	53.2
J1072	0.88	24.55	151.35	54.94

2044 Peak Hour Demand				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1074	0.88	20.56	151.35	56.67
J1076	0.88	27.25	151.3	53.75
J1078	0.88	26.05	151.29	54.27
J108	0.88	20.14	150.45	56.46
J1080	0.88	19.91	151.28	56.92
J1082	0.88	26.13	151.24	54.21
J1084	0.88	25.27	151.23	54.58
J1086	0.88	20.78	151.23	56.52
J1088	0.88	26.15	151.19	54.18
J1090	0.88	27.15	151.18	53.74
J1092	0.88	20.73	151.17	56.52
J1094	0.88	25.54	151.16	54.43
J1096	0.88	23.32	151.14	55.39
J1098	0.88	29.83	151.12	52.56
J110	0.88	19.56	150.46	56.72
J1100	0.88	23.84	151.13	55.15
J1102	0.88	23.4	151.11	55.33
J1104	0.88	23.38	151.08	55.33
J1106	0.88	24.94	150.82	54.54
J1108	0.88	34.12	150.82	50.56
J1110	0.88	25.03	150.79	54.49
J1112	0.88	25.73	150.78	54.19
J1114	0.88	27.34	150.46	53.35
J1116	0.88	28.21	150.46	52.97
J1118	0.88	28.03	149.85	52.79
J112	0.88	20.15	150.44	56.46
J1120	0.88	21.9	149.85	55.44
J1122	0.88	23.13	151.23	55.5
J1124	0.88	24.49	151.21	54.91
J1126	0.88	24.25	151.2	55.01
J1128	0.88	23.78	151.2	55.21
J1130	0.88	23.34	151.2	55.4
J1132	0.88	22.77	151.2	55.65
J1134	0.88	22.54	151.19	55.74
J1136	0.88	22.58	151.19	55.73
J1138	0.88	22.07	151.19	55.95
J114	0.88	21	150.45	56.09
J1140	0.88	22.82	151.19	55.63
J1142	0.88	22.61	151.19	55.71
J1144	0.88	25.54	151.19	54.44
J1146	0.88	23.75	151.19	55.22
J1148	0.88	29.3	151.19	52.81
J1150	0.88	26.73	151.19	53.93
J1152	0.88	29.53	151.19	52.72

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1154	0.88	30.31	151.19	52.38
J1156	0.88	26.28	151.2	54.12
J116	0.88	20.89	150.44	56.13
J1160	0.88	20.79	151.2	56.51
J1162	0.88	22.93	151.2	55.58
J1164	0.88	21.9	151.29	56.06
J1166	0.88	22.06	151.25	55.98
J1168	0.88	20.45	151.22	56.66
J1170	0.88	21	151.2	56.42
J1174	0.88	21.54	150.88	56.04
J1176	0.88	20.28	150.82	56.56
J1178	0.88	22.69	151.24	55.7
J118	0.88	22.17	150.45	55.59
J1180	0.88	21.55	151.21	56.18
J1182	0.88	22.01	151.09	55.93
J1184	0.88	20.9	150.88	56.32
J1186	0.88	21.52	150.82	56.03
J1188	0.88	21.08	150.81	56.21
J1190	0.88	22.73	150.87	55.52
J1192	0.88	23.05	151.09	55.48
J1194	0.88	21.89	151.2	56.03
J1196	0.88	22.65	151.23	55.72
J1198	0.88	22.81	151.21	55.64
J12	0.88	27.32	150.39	53.33
J120	0.88	21.88	150.44	55.71
J1200	0.88	22.65	151.2	55.7
J1202	0.88	22.43	151.2	55.8
J1204	0.88	23.19	151.2	55.47
J1206	0.88	22.02	151.2	55.97
J1208	0.88	22.53	151.19	55.75
J1210	0.88	23.23	151.19	55.45
J1212	0.88	22.26	151.19	55.87
J1214	0.88	23.49	151.19	55.33
J1216	0.88	23.38	151.19	55.38
J1218	0.88	22.13	151.19	55.92
J122	0.88	21.4	150.45	55.92
J1220	0.88	24.39	151.19	54.94
J1222	0.88	24.87	151.18	54.73
J1224	0.88	25.16	151.18	54.61
J1226	0.88	24.98	151.18	54.68
J1228	0.88	25.41	151.18	54.5
J1230	0.88	25.69	150.31	54
J1232	0.88	22.9	150.3	55.2
J1234	0.88	25.97	150.3	53.87

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1236	0.88	27.96	149.77	52.78
J1238	0.88	26.71	149.77	53.32
J124	0.88	22.57	150.44	55.41
J1240	0.88	25.82	149.76	53.7
J1242	0.88	33.39	149.76	50.43
J1244	0.88	31.35	149.76	51.31
J1246	0.88	33.72	149.76	50.28
J1248	0.88	32.51	149.76	50.8
J1250	0.88	28.8	149.52	52.31
J1252	0.88	23.34	149.52	54.68
J1254	0.88	28.43	149.3	52.37
J1256	0.88	23.1	149.3	54.68
J1258	0.88	28.76	149.23	52.2
J126	0.88	22.12	150.44	55.6
J1260	0.88	25.47	149.23	53.62
J1262	0.88	29.98	149.02	51.58
J1264	0.88	24.11	149.02	54.12
J1266	0.88	28.59	148.95	52.15
J1268	0.88	21.19	148.95	55.36
J1270	0.88	28.06	148.81	52.32
J1272	0.88	24.96	148.81	53.66
J1274	0.88	21.8	148.8	55.03
J1276	0.88	25.07	148.67	53.55
J1278	0.88	28.87	148.66	51.91
J128	0.88	22.33	150.45	55.51
J1280	0.88	30.36	148.66	51.26
J1282	0.88	32.89	148.66	50.16
J1284	0.88	23.01	148.53	54.39
J1286	0.88	23.03	148.48	54.36
J1288	0.88	27.24	148.47	52.53
J1290	0.88	22.05	148.23	54.67
J1292	0.88	27.98	148.22	52.1
J1294	0.88	22.86	148.06	54.25
J1296	0.88	31.16	148.05	50.65
J1298	0.88	21.53	147.82	54.72
J130	0.88	25.66	150.44	54.07
J1300	0.88	28	147.81	51.91
J1302	0.88	26.82	148.06	52.53
J1304	0.88	28.79	148.05	51.67
J1306	0.88	26.34	148.05	52.74
J1308	0.88	23.27	148.06	54.07
J1310	0.88	21.82	148.05	54.69
J1312	0.88	22.87	148.05	54.24
J1314	0.88	22.07	147.56	54.38

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1316	0.88	24.65	147.56	53.26
J1318	0.88	21.06	147.55	54.81
J132	0.88	29.33	150.46	52.49
J1320	0.88	22.62	147.55	54.13
J1322	0.88	24.53	147.53	53.3
J1324	0.88	21.57	147.53	54.58
J1326	0.88	20.97	147.53	54.84
J1328	0.88	25.84	147.54	52.73
J1330	0.88	20.67	147.53	54.97
J1332	0.88	20.44	147.52	55.06
J1334	0.88	23.25	147.52	53.85
J1336	0.88	24.62	147.52	53.25
J1338	0.88	22.82	147.55	54.05
J134	0.88	26.4	150.46	53.75
J1340	0.88	24.82	147.39	53.11
J1342	0.88	29.47	147.38	51.09
J1344	0.88	23.24	147.27	53.74
J1346	0.88	29.56	147.26	51
J1348	0.88	23.41	147.24	53.66
J1350	0.88	20.95	147.24	54.72
J1352	0.88	21.92	147.13	54.25
J1354	0.88	24.95	147.12	52.94
J1356	0.88	28.44	147.13	51.43
J1358	0.88	23.27	147.02	53.62
J136	0.88	20.2	150.46	56.44
J1360	0.88	27.43	147.01	51.82
J1362	0.88	25.33	147	52.72
J1366	0.88	23.03	146.9	53.67
J1368	0.88	27.7	146.9	51.65
J1370	0.88	26.14	146.8	52.28
J1372	0.88	21	146.8	54.51
J1374	0.88	24.66	146.83	52.94
J1376	0.88	28.06	146.82	51.46
J1378	0.88	23.21	146.82	53.56
J138	0.88	28.21	150.54	53
J1380	0.88	22.76	146.81	53.75
J1382	0.88	22.77	146.81	53.75
J1384	0.88	25.22	146.81	52.69
J1386	0.88	21.87	146.81	54.14
J1388	0.88	23.18	146.8	53.56
J1390	0.88	23.15	146.81	53.58
J1392	0.88	22.65	146.8	53.8
J1394	0.88	22.96	146.8	53.66
J1396	0.88	26.54	146.74	52.08

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1398	0.88	21.03	146.73	54.47
J14	0.88	28.33	150.4	52.89
J140	0.88	23.76	150.51	54.92
J1400	0.88	26.29	146.66	52.16
J1402	0.88	22	146.66	54.01
J1404	0.88	24.08	146.6	53.09
J1406	0.88	23.82	146.6	53.2
J1408	0.88	22.02	146.55	53.96
J1410	0.88	25.36	146.54	52.51
J1412	0.88	21.63	146.51	54.11
J1414	0.88	24.46	146.47	52.87
J1416	0.88	21.19	146.47	54.28
J1418	0.88	20.81	146.47	54.45
J142	0.88	24.93	150.6	54.45
J1420	0.88	21.66	146.47	54.08
J1422	0.88	24.71	146.46	52.76
J1424	0.88	22.48	146.46	53.72
J1426	0.88	22.4	146.46	53.75
J1428	0.88	21.02	146.45	54.35
J1430	0.88	23.83	146.45	53.13
J1432	0.88	25.81	146.45	52.27
J1434	0.88	23.33	146.45	53.35
J1436	0.88	22.08	146.45	53.89
J1438	0.88	23.48	146.45	53.28
J144	0.88	23.38	150.6	55.12
J1440	0.88	23.44	146.44	53.3
J1442	0.88	22.86	146.44	53.55
J1444	0.88	22.71	146.44	53.61
J1446	0.88	22.4	146.44	53.75
J1448	0.88	21.6	146.44	54.09
J1450	0.88	23.72	146.44	53.17
J1452	0.88	21.16	146.5	54.31
J1454	0.88	23.93	146.49	53.11
J1456	0.88	21.97	146.49	53.95
J1458	0.88	24.93	146.48	52.67
J146	0.88	26.43	150.57	53.79
J1460	0.88	21.52	146.48	54.15
J1462	0.88	24.63	146.47	52.79
J1464	0.88	20.49	146.47	54.59
J1466	0.88	23.06	146.46	53.47
J1468	0.88	21.04	146.46	54.34
J1470	0.88	24.93	146.46	52.66
J1472	0.88	22.08	146.45	53.89
J1474	0.88	24.6	146.45	52.8

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1476	0.88	20.91	146.45	54.4
J1478	0.88	20.88	146.44	54.4
J148	0.88	24.55	150.63	54.63
J1482	0.88	19.92	146.45	54.83
J1484	0.88	20.58	146.44	54.53
J1486	0.88	23.54	146.37	53.22
J1488	0.88	22.83	146.37	53.53
J1490	0.88	22.23	146.36	53.79
J1492	0.88	23.44	146.3	53.24
J1494	0.88	21.83	146.3	53.93
J1496	0.88	22.92	146.3	53.46
J1498	0.88	23.34	146.26	53.26
J150	0.88	22.59	150.6	55.47
J1500	0.88	23.63	146.24	53.13
J1502	0.88	22.84	146.24	53.47
J1504	0.88	22.68	146.25	53.54
J1506	0.88	23.06	146.22	53.36
J1508	0.88	22.17	146.22	53.75
J1510	0.88	22.9	146.22	53.43
J1512	0.88	21.4	146.21	54.08
J1514	0.88	24.55	146.16	52.69
J1516	0.88	22.56	146.15	53.55
J1518	0.88	26.07	146.15	52.03
J152	0.88	27.58	150.74	53.37
J1520	0.88	22.33	146.19	53.67
J1522	0.88	22.29	146.18	53.68
J1524	0.88	22.73	146.18	53.49
J1526	0.88	23.22	146.17	53.28
J1528	0.88	21.61	146.17	53.97
J1530	0.88	22.15	146.17	53.74
J1532	0.88	19.79	147.13	55.18
J1534	0.88	21.89	147.04	54.23
J1536	0.88	21.95	151.25	56.02
J1538	0.88	21.29	151.1	56.25
J154	0.88	22.83	150.73	55.42
J1540	0.88	19.73	158.79	60.26
J1542	0.88	51.65	164.2	48.77
J1544	0.88	24.7	164.22	60.45
J1546	0.88	23.29	164.16	61.04
J1548	0.88	33.05	164.34	56.89
J1550	0.88	46.46	164.33	51.08
J1552	0.88	13.44	165.08	65.7
J1554	0.88	13.4	165.09	65.73
J1556	0.88	13.58	165.13	65.67

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1558	0.88	13.71	165.15	65.62
J156	0.88	28.44	150.76	53
J1560	0.88	13.9	165.18	65.55
J1562	0.88	15.97	165.22	64.67
J1564	0.88	19.14	165.17	63.28
J1566	0.88	26.44	165.16	60.11
J1568	0.88	17.54	165.16	63.96
J1570	0.88	17.81	165.16	63.85
J1572	0.88	15.5	165.13	64.84
J1574	0.88	17.09	165.3	64.22
J1576	0.88	22.24	162.26	60.67
J1578	0.88	20.69	162.25	61.34
J158	0.88	20.23	150.75	56.55
J1580	0.88	22.79	162.26	60.43
J1582	0.88	26.55	155.72	55.97
J1586	0.88	20.11	163.71	62.22
J1590	0.88	23.51	164.07	60.91
J1592	0.88	28.56	164.17	58.76
J1594	0.88	13.07	165.06	65.86
J1596	0.88	13.27	165.06	65.77
J1598	0.88	12.76	165.06	65.99
J16	0.88	28.83	150.4	52.67
J160	0.88	28.18	150.81	53.14
J1600	0.88	24.86	161.81	59.34
J1602	0.88	24.8	161.83	59.37
J1604	0.88	29.48	161.77	57.32
J1606	0.88	47.96	161.77	49.32
J1608	0.88	38.21	161.77	53.54
J1610	0.88	25.2	155.71	56.55
J1612	0.88	22.76	164.12	61.25
J1614	0.88	21.97	156.87	58.45
J1616	0.88	20.73	156.89	59
J1618	0.88	20.62	147.52	54.98
J162	0.88	28.22	150.81	53.12
J1620	0.88	20.7	147.53	54.95
J1622	0.88	21.92	147.13	54.25
J1624	0.88	22.09	147	54.13
J1626	0.88	25.47	146.84	52.59
J1628	0.88	24.11	146.9	53.21
J1630	0.88	23.01	146.81	53.64
J1632	0.88	22.92	146.17	53.41
J1634	0.88	22.45	146.18	53.62
J1636	0.88	23.38	146.3	53.26
J1638	0.88	23.52	146.37	53.23

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J164	0.88	24.49	150.79	54.73
J1640	0.88	27.31	150.34	53.31
J1642	0.88	27.42	150.36	53.27
J1644	0.88	22.8	150.4	55.29
J1646	0.88	21.85	151.29	56.09
J1648	0.88	20.92	151.2	56.45
J1650	0.88	25.1	158.83	57.94
J1652	0.88	52.49	164.35	48.47
J1654	0.88	22.36	164.35	61.52
J1656	0.88	22.75	164.35	61.36
J1658	0.88	23.8	164.36	60.9
J166	0.88	27.92	150.86	53.27
J1660	0.88	23.56	165.08	61.32
J1662	0.88	28	164.92	59.33
J1664	0.88	30.64	164.97	58.21
J1666	0.88	29.39	164.91	58.72
J1668	0	21	252.46	100.29
J1670	0.88	22.16	147.19	54.18
J1672	0.88	24.15	152.32	55.53
J1674	0.88	24.6	153.56	55.88
J1676	0.88	18.87	158.83	60.64
J1678	0.88	23.98	159.94	58.91
J168	0.88	24.41	150.84	54.78
J1680	0.88	26.4	163.99	59.62
J1682	0.88	27.9	165.34	59.55
J1684	0.88	23.7	165.98	61.65
J1686	0.88	24.12	165.07	61.08
J1688	0.88	23.11	164.35	61.2
J1690	0.88	22.43	164.35	61.49
J1692	0.88	22.41	164.35	61.5
J1694	0.88	25.91	151.18	54.28
J1696	0.88	25.65	164.39	60.11
J170	0.88	27.71	150.87	53.37
J1700	0.88	31.64	164.98	57.78
J1702	0.88	29.6	164.98	58.66
J1704	0.88	18.18	165.3	63.75
J1706	0.88	14.89	165.32	65.18
J1708	0.88	21.87	166.02	62.46
J1712	0	21	166.02	62.84
J1716	0.88	27.93	151.87	53.7
J1718	0.88	21.48	164.14	61.82
J172	0.88	26.55	150.85	53.86
J1720	0	23	263.87	104.37
J1724	0.88	23.74	150.4	54.88

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1726	0.88	20.73	151.26	56.56
J1728	0.88	21.84	164.36	61.75
J1730	0.88	24.23	157.41	57.71
J1732	0.88	24.15	157.24	57.67
J1734	0.88	21.22	157.46	59.03
J1736	0.88	17.99	156.96	60.21
J174	0.88	27.84	150.94	53.34
J1740	0.88	28.75	151.35	53.12
J1742	0.88	22.59	162.47	60.61
J1744	0.88	14.19	165.08	65.38
J1746	0.88	13.93	165.08	65.5
J1748	0.88	28.71	150.51	52.78
J1750	0.88	27.99	150.4	53.04
J1752	0.88	26.39	165.01	60.06
J1754	0.88	20.86	151.2	56.48
J1756	0.88	27.05	164.85	59.71
J1758	0.88	23.81	164.66	61.03
J176	0.88	29.18	150.94	52.76
J1760	0.88	28.02	151.73	53.6
J1762	0.88	24.65	151.73	55.06
J1764	0.88	19.27	162.47	62.05
J1766	0.88	22.22	164.21	61.53
J1768	0.88	24.88	164.66	60.57
J1770	0.88	14.68	161.87	63.78
J1772	0.88	14.19	161.87	63.99
J1774	0.88	20.72	163.72	61.96
J1778	0	0	150.45	65.19
J178	0.88	27.95	150.96	53.3
J1780	0	20.43	146.44	54.6
J1782	0	27.79	150.93	53.36
J18	0.88	29.66	150.4	52.32
J180	0.88	26.97	150.96	53.73
J182	0.88	28.03	150.97	53.27
J184	0.88	24.97	150.94	54.58
J186	0.88	28.26	150.98	53.17
J188	0.88	24.33	150.96	54.87
J190	0.88	28.44	150.98	53.1
J192	0.88	23.53	150.97	55.22
J194	0.88	24.73	150.94	54.69
J196	0.88	28.06	151.02	53.28
J198	0.88	20.69	151.01	56.46
J20	0.88	20.56	149.43	55.84
J200	0.88	28.06	151.02	53.28
J202	0.88	25.72	151	54.28

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J204	0.88	27.97	151.05	53.33
J206	0.88	25.31	151.02	54.47
J208	0.88	28.22	151.08	53.24
J210	0.88	25.28	151.05	54.5
J212	0.88	28.26	151.09	53.22
J214	0.88	28.2	151.1	53.25
J216	0.88	27.37	151.14	53.63
J218	0.88	26.52	151.14	54
J22	0.88	18.85	149.36	56.55
J220	0.88	27.81	151.15	53.44
J222	0.88	20.17	151.15	56.76
J224	0.88	27.21	151.27	53.75
J226	0.88	27.02	151.28	53.84
J228	0.88	27.11	151.34	53.83
J230	0.88	26.41	151.34	54.13
J232	0.88	27.05	151.44	53.9
J234	0.88	24.52	151.07	54.83
J236	0.88	25.92	151.09	54.24
J238	0.88	22.02	151.05	55.91
J24	0.88	21.57	149.28	55.34
J240	0.88	27.16	151.45	53.85
J242	0.88	21.78	151.45	56.19
J244	0.88	21.12	151.42	56.46
J246	0.88	26.97	151.4	53.91
J248	0.88	26.58	151.4	54.08
J250	0.88	20.34	151.04	56.63
J252	0.88	19.61	151.06	56.96
J254	0.88	26.2	151.08	54.11
J256	0.88	27.3	151.59	53.85
J258	0.88	30.7	151.59	52.38
J26	0.88	24.01	147.17	53.36
J260	0.88	29.56	151.58	52.87
J262	0.88	30.43	151.58	52.5
J264	0.88	27.69	151.63	53.7
J266	0.88	27.17	151.62	53.92
J268	0.88	26.9	151.62	54.04
J270	0.88	19.56	151.6	57.21
J272	0.88	27.54	152.02	53.94
J274	0.88	25.87	152	54.65
J276	0.88	27.57	152.12	53.96
J278	0.88	19.58	152.1	57.42
J28	0.88	23.84	147.13	53.42
J280	0.88	27.45	152.32	54.11
J282	0.88	28.75	152.29	53.53

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J284	0.88	21.43	151.47	56.35
J286	0.88	21.51	151.47	56.31
J288	0.88	26.47	152.75	54.72
J290	0.88	23.38	152.73	56.05
J292	0.88	26.49	152.32	54.52
J294	0.88	25.9	153.17	55.14
J296	0.88	24.31	153.17	55.83
J298	0.88	25.29	153.57	55.58
J30	0.88	25.44	147.06	52.7
J300	0.88	19.76	153.56	57.98
J302	0.88	20.64	153.56	57.6
J304	0.88	19.73	153.56	57.99
J306	0.88	22.04	155.23	57.71
J308	0.88	21.07	155.67	58.32
J310	0.88	21.37	155.37	58.07
J312	0.88	27.1	155.36	55.58
J314	0.88	24.55	155.23	56.62
J316	0.88	29.12	155.3	54.68
J318	0.88	23.02	155.24	57.29
J32	0.88	25.62	147.02	52.6
J320	0.88	21.84	155.23	57.8
J322	0.88	23.14	155.22	57.23
J324	0.88	24.02	155.28	56.88
J326	0.88	19.55	156.18	59.2
J328	0.88	28.26	156.18	55.43
J330	0.88	21.85	156.18	58.21
J332	0.88	23.02	156.17	57.69
J334	0.88	22.35	157.93	58.75
J336	0.88	26.84	157.75	56.73
J338	0.88	25	157.75	57.52
J34	0.88	21.59	149.27	55.33
J340	0.88	29.23	157.75	55.69
J342	0.88	23	158.83	58.86
J344	0.88	19.26	158.83	60.47
J346	0.88	19.88	158.79	60.19
J348	0.88	27.74	158.79	56.78
J350	0.88	22.72	158.92	59.02
J352	0.88	25.76	158.9	57.69
J354	0.88	21.92	158.88	59.35
J356	0.88	22.09	158.89	59.27
J358	0.88	20.53	158.88	59.95
J36	0.88	23.22	147.02	53.64
J360	0.88	19.33	158.89	60.47
J362	0.88	22.23	158.83	59.19

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J364	0.88	18.04	158.81	61
J366	0.88	19.7	158.83	60.29
J368	0.88	23.46	160.11	59.21
J370	0.88	24.09	160.63	59.16
J372	0.88	24.44	161.23	59.27
J374	0.88	24.61	161.76	59.43
J376	0.88	21.82	161.8	60.65
J378	0.88	21.05	161.23	60.74
J38	0.88	26	147.02	52.44
J380	0.88	23.79	160.65	59.3
J382	0.88	22.95	161.14	59.88
J384	0.88	26.86	161.15	58.19
J386	0.88	29.39	160.81	56.94
J388	0.88	22.63	160.8	59.87
J390	0.88	27.75	160.73	57.62
J392	0.88	21.3	160.72	60.41
J394	0.88	23.93	160.71	59.27
J396	0.88	24.52	160.72	59.01
J398	0.88	24.44	160.75	59.06
J40	0.88	21.13	147.11	54.59
J400	0.88	24.87	162.53	59.65
J402	0.88	25.02	162.47	59.56
J404	0.88	19.38	162.47	62
J406	0.88	20.17	162.47	61.66
J408	0.88	22.23	162.47	60.77
J410	0.88	24.63	163.11	60
J412	0.88	18.31	162.46	62.46
J414	0.88	24.74	162.45	59.67
J416	0.88	23.69	163.96	60.78
J418	0.88	23.72	163.96	60.76
J42	0.88	24.45	149.16	54.04
J420	0.88	30.26	163.96	57.93
J422	0.88	24.29	163.93	60.51
J424	0.88	24.34	163.96	60.5
J426	0.88	24.38	163.96	60.48
J428	0.88	24.49	163.61	60.28
J430	0.88	26.17	163.69	59.59
J432	0.88	26.53	163.7	59.44
J434	0.88	26.16	163.81	59.65
J438	0.88	20.78	163.84	61.99
J44	0.88	24.74	148.99	53.84
J440	0.88	21.82	163.28	61.3
J442	0.88	21.31	163.28	61.52
J444	0.88	22.77	163.24	60.86

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J446	0.88	24.95	163.2	59.91
J448	0.88	25.2	163.19	59.79
J450	0.88	21.64	164.03	61.7
J452	0.88	21.58	164.05	61.73
J454	0.88	25.94	163.96	59.81
J456	0.88	22.75	164.09	61.24
J458	0.88	24.77	164.02	60.34
J46	0.88	24.84	148.98	53.79
J460	0.88	24.21	164.03	60.58
J462	0.88	23.89	163.14	60.34
J464	0.88	23.35	162.68	60.37
J466	0.88	24.47	162.47	59.8
J468	0.88	24	162.49	60.01
J470	0.88	26	163.96	59.78
J472	0.88	24.12	163.96	60.59
J474	0.88	22.21	162.68	60.87
J476	0.88	19.88	162.66	61.87
J478	0.88	24.52	162.72	59.88
J48	0.88	24.39	148.97	53.98
J480	0.88	25.27	162.71	59.55
J482	0.88	22.23	162.69	60.86
J484	0.88	25.84	162.71	59.3
J486	0.88	23.73	164.07	60.81
J488	0.88	24.25	164.07	60.59
J490	0.88	23.81	164.12	60.8
J492	0.88	24.21	164.16	60.64
J494	0.88	26.49	164.12	59.64
J496	0.88	27.45	164.15	59.23
J498	0.88	21.39	164.2	61.88
J50	0.88	25.94	148.97	53.31
J500	0.88	22.2	164.16	61.51
J502	0.88	26.41	164.17	59.69
J504	0.88	20.02	164.16	62.46
J506	0.88	18.93	164.16	62.93
J508	0.88	23.12	164.17	61.12
J510	0.88	24.9	164.17	60.35
J512	0.88	26.66	164.19	59.59
J514	0.88	26.51	164.19	59.65
J516	0.88	21.51	164.29	61.87
J518	0.88	21.65	164.21	61.77
J52	0.88	27.64	148.9	52.54
J520	0.88	21.99	164.22	61.63
J522	0.88	22.19	164.21	61.54
J524	0.88	24.14	164.19	60.68

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J526	0.88	23.42	164.2	61
J528	0.88	22.1	164.17	61.56
J530	0.88	28.65	164.17	58.72
J532	0.88	21.93	164.2	61.65
J534	0.88	21.48	164.2	61.84
J536	0.88	24.77	164.21	60.42
J538	0.88	23.25	164.22	61.08
J54	0.88	26.97	148.89	52.83
J540	0.88	25.1	164.17	60.26
J542	0.88	23.89	164.24	60.81
J544	0.88	25.37	164.16	60.14
J546	0.88	53.66	164.15	47.88
J548	0.88	25.6	164.2	60.06
J550	0.88	24.16	164.19	60.68
J552	0.88	20.53	164.19	62.25
J554	0.88	20.55	164.19	62.24
J556	0.88	25.21	164.2	60.23
J558	0.88	23.5	164.26	60.99
J56	0.88	26.22	150.4	53.81
J560	0.88	23.62	164.26	60.94
J562	0.88	22.49	164.19	61.4
J564	0.88	21.3	164.18	61.91
J566	0.88	25.53	164.14	60.06
J568	0.88	33.43	164.12	56.63
J570	0.88	25.01	164.14	60.29
J572	0.88	25.06	164.15	60.27
J574	0.88	24.49	164.29	60.58
J576	0.88	24.79	164.29	60.45
J578	0.88	21.1	164.17	61.99
J58	0.88	28.25	150.41	52.93
J580	0.88	22.52	164.17	61.38
J582	0.88	24.26	164.16	60.62
J584	0.88	24.37	164.33	60.64
J586	0.88	24.39	164.33	60.64
J588	0.88	23.91	164.33	60.84
J590	0.88	20.83	164.32	62.18
J592	0.88	23.83	164.38	60.9
J594	0.88	23.77	164.37	60.93
J596	0.88	23.4	164.54	61.15
J598	0.88	23.08	164.16	61.13
J60	0.88	28.41	150.4	52.86
J600	0.88	23.8	164.15	60.81
J602	0.88	28.1	164.11	58.93
J604	0.88	18.13	164.07	63.24

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J606	0.88	28.54	164.11	58.74
J608	0.88	19.13	164.04	62.79
J610	0.88	19.39	163.92	62.62
J612	0.88	19.22	163.9	62.69
J614	0.88	19.34	163.91	62.64
J616	0.88	24.84	164.37	60.46
J618	0.88	22.09	164.28	61.61
J62	0.88	22.8	150.4	55.29
J620	0.88	21.76	164.28	61.75
J622	0.88	24.85	164.24	60.4
J624	0.88	25.07	164.24	60.3
J626	0.88	25.39	164.42	60.24
J628	0.88	26.29	164.4	59.84
J630	0.88	43.59	164.21	52.26
J632	0.88	46.4	164.2	51.04
J634	0.88	26.17	164.39	59.89
J636	0.88	26	164.39	59.97
J638	0.88	21.42	164.37	61.94
J64	0.88	21.07	150.4	56.04
J640	0.88	23.05	164.48	61.28
J642	0.88	19.2	164.46	62.94
J644	0.88	23.76	164.47	60.97
J646	0.88	26.5	164.38	59.74
J648	0.88	25.89	164.38	60
J650	0.88	22.6	164.36	61.43
J652	0.88	20.1	164.35	62.51
J654	0.88	23.93	164.37	60.85
J656	0.88	21.71	164.3	61.79
J658	0.88	20.81	164.3	62.18
J66	0.88	23.1	150.4	55.16
J660	0.88	19.66	164.29	62.67
J662	0.88	24.35	164.35	60.66
J664	0.88	25.08	164.35	60.35
J666	0.88	47.13	164.35	50.79
J668	0.88	44.84	164.35	51.78
J670	0.88	18.75	164.35	63.09
J672	0.88	19.35	164.33	62.82
J674	0.88	40.52	164.34	53.65
J676	0.88	22.5	164.36	61.47
J678	0.88	24.66	164.36	60.53
J68	0.88	24.78	150.4	54.43
J680	0.88	50.38	164.35	49.38
J682	0.88	23.54	164.35	61.01
J684	0.88	23.63	164.35	60.97

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J686	0.88	50.5	164.35	49.33
J688	0.88	26.49	164.35	59.73
J690	0.88	22.39	164.35	61.51
J692	0.88	23.98	164.35	60.82
J694	0.88	23.74	165.08	61.24
J696	0.88	25.21	165.97	60.99
J698	0.88	23.82	165.97	61.59
J70	0.88	25.78	150.41	54
J700	0.88	21.22	165.99	62.73
J702	0.88	24.41	165.97	61.34
J704	0.88	24.64	165.97	61.24
J706	0.88	24.65	165.97	61.23
J708	0.88	27.01	165.97	60.21
J710	0.88	31.01	165.97	58.48
J712	0.88	35.03	165.97	56.74
J714	0.88	25.76	165.57	60.58
J716	0.88	32.16	164.99	57.56
J718	0.88	26.12	164.97	60.17
J72	0.88	26.46	150.4	53.71
J720	0.88	25.86	164.9	60.25
J722	0.88	30.76	164.97	58.15
J724	0.88	31.45	165.12	57.92
J726	0.88	32.14	165.12	57.62
J728	0.88	29.61	165.23	58.76
J730	0.88	29.69	165.24	58.73
J732	0.88	29.49	165.23	58.82
J734	0.88	27.09	165.21	59.85
J736	0.88	27.22	165.21	59.79
J738	0.88	29.32	165.19	58.87
J74	0.88	27.16	150.41	53.41
J740	0.88	21.57	165.23	62.25
J742	0.88	28.02	165.34	59.5
J744	0.88	21.3	164.39	62
J746	0.88	24.02	164.46	60.85
J750	0.88	25.14	164.5	60.39
J752	0.88	26.12	164.53	59.97
J754	0.88	24.17	164.54	60.83
J756	0.88	22.38	164.53	61.6
J758	0.88	21.12	164.78	62.25
J76	0.88	27.89	150.4	53.09
J760	0.88	29.82	164.85	58.51
J762	0.88	29.38	164.97	58.75
J764	0.88	21.01	164.77	62.29
J766	0.88	31.22	164.84	57.9

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J770	0.88	27.87	164.9	59.38
J772	0.88	27.54	164.89	59.52
J774	0.88	22.45	164.89	61.72
J776	0.88	30.04	164.87	58.43
J78	0.88	27.93	150.41	53.07
J782	0.88	33.44	164.91	56.97
J788	0.88	33.56	164.91	56.92
J790	0.88	30.77	164.87	58.1
J792	0.88	24.21	164.32	60.71
J794	0.88	17.27	165.33	64.15
J796	0.88	16.57	165.33	64.45
J798	0.88	19.34	165.31	63.25
J80	0.88	28.26	150.42	52.93
J800	0.88	35.38	165.29	56.29
J802	0.88	27.43	165.33	59.75
J804	0.88	15.42	165.33	64.95
J806	0.88	15	165.32	65.13
J808	0.88	14.85	165.32	65.2
J810	0.88	17.33	165.31	64.12
J812	0.88	13.98	165.32	65.58
J814	0.88	13.46	165.32	65.8
J816	0.88	14.23	165.32	65.47
J818	0.88	14.81	165.32	65.22
J82	0.88	22.34	150.39	55.48
J820	0.88	12.96	165.31	66.01
J822	0.88	13.72	165.3	65.68
J824	0.88	12.87	165.3	66.05
J826	0.88	11.95	164.91	66.28
J828	0.88	12.61	164.91	65.99
J830	0.88	10.33	164.89	66.97
J832	0.88	12.57	164.9	66
J834	0.88	17.19	164.91	64.01
J836	0	23	255.07	100.56
J838	0.88	22.68	164.91	61.63
J84	0.88	28.52	150.43	52.82
J840	0.88	30.03	164.91	58.44
J842	0.88	33.34	164.56	56.86
J844	0.88	33.68	164.29	56.59
J846	0.88	30.07	164.29	58.16
J848	0.88	33.55	163.91	56.48
J850	0.88	30.29	163.88	57.88
J852	0.88	31.59	162.51	56.72
J854	0.88	31.34	162.51	56.83
J856	0.88	32.75	162.51	56.22

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J858	0.88	29.1	162.27	57.7
J86	0.88	20.62	150.38	56.23
J860	0.88	14.32	162.07	64.02
J862	0.88	14.86	162.06	63.78
J864	0.88	13.26	161.93	64.42
J866	0.88	13.23	161.91	64.43
J868	0.88	13.32	161.9	64.38
J870	0.88	31.06	160.45	56.07
J872	0.88	21.24	160.37	60.29
J878	0.88	20.56	158.19	59.63
J88	0.88	28.58	150.43	52.8
J880	0.88	29.85	159.28	56.08
J882	0.88	28.35	159.26	56.72
J884	0.88	28.96	158.5	56.13
J886	0.88	24.86	158.49	57.9
J888	0.88	29.2	158.06	55.83
J890	0.88	28.99	156.41	55.21
J892	0.88	29.48	156.4	55
J894	0.88	27.5	155.94	55.65
J896	0.88	30.57	155.18	54
J898	0.88	14.44	155.14	60.96
J90	0.88	28.53	150.43	52.82
J900	0.88	20.09	161.86	61.43
J902	0.88	13.29	161.84	64.37
J906	0.88	14.72	161.86	63.76
J908	0.88	13.31	161.86	64.37
J910	0.88	13.3	161.87	64.37
J912	0.88	13.06	161.86	64.48
J914	0.88	30.73	161.86	56.82
J916	0.88	25.2	161.78	59.18
J918	0.88	23.07	161.81	60.11
J92	0.88	24.22	150.41	54.68
J920	0.88	24.07	161.79	59.67
J922	0.88	20.78	161.78	61.09
J924	0.88	36.78	161.79	54.17
J926	0.88	28.46	161.79	57.77
J928	0.88	23.33	161.78	59.99
J930	0.88	23.96	161.78	59.72
J932	0.88	24.29	161.78	59.57
J934	0.88	24.75	161.78	59.37
J936	0.88	24.19	161.78	59.62
J938	0.88	23.66	161.78	59.85
J94	0.88	23.78	150.4	54.87
J940	0.88	18.36	161.78	62.14

2044 Peak Hour Demand, Cont.				
ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J942	0.88	18.2	161.69	62.17
J944	0.88	18.31	161.69	62.13
J946	0.88	18.98	161.68	61.83
J948	0.88	23.03	155.19	57.27
J950	0.88	20.82	152.08	56.88
J952	0.88	21.81	152.02	56.42
J954	0.88	21.9	152.07	56.4
J956	0.88	29.64	152.41	53.2
J958	0.88	33.21	152.41	51.65
J96	0.88	28.6	150.44	52.79
J960	0.88	29.93	155.16	54.26
J962	0.88	26.77	155.74	55.88
J964	0.88	27.2	155.73	55.7
J966	0.88	26.96	155.72	55.79
J968	0.88	26.39	155.72	56.04
J970	0.88	25.94	155.71	56.23
J972	0.88	25.95	155.71	56.23
J974	0.88	26.73	155.71	55.88
J976	0.88	25.51	155.71	56.41
J978	0.88	23.43	155.7	57.31
J98	0.88	28.68	150.44	52.76
J980	0.88	24.11	155.72	57.02
J982	0.88	22.74	155.92	57.71
J984	0.88	24.45	155.73	56.88
J986	0.88	22.98	156.87	58.01
J988	0.88	22.48	156.89	58.24
J990	0.88	21.6	156.89	58.62
J992	0.88	29.56	155.69	54.65
J994	0.88	25.99	155.58	56.15
J996	0.88	27.06	155.58	55.69
J998	0.88	29.14	155.57	54.78

2023 - Run at storage = DS + SB								
ID	Total Demand (gpm)	Hydrant Availabl e Flow (gpm)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (gpm)	Hydrant Pressure at Design Flow (psi)
FH-1	500.47	515.16	J60	18.21	20.02	20	500.6	21.8
FH-2	500.47	568.93	J18	19.56	26.48	20	564.75	20.45
J1052	500.47	869.83	J1048	18.68	40.08	20	850.35	21.34
J1104	500.47	903.64	J1108	15.31	38.84	20	834.24	24.69
J1134	500.47	658.43	J1148	17.07	31.47	20	628.7	22.95
J1212	500.47	713.19	J1228	18.63	36.06	20	698.26	21.42
J144	500.47	631.06	J18	18.01	29.98	20	610.71	22.06
J1476	500.47	386.1	J1518	18.01	-2.69	20	373.82	22.06
J1482	500.47	370.44	J1484	19.71	-5.94	20	368.79	20.34
J16	500.47	479.69	J16	20	17.32	20	479.69	20
J162	500.47	683.18	J18	19.49	33.93	20	677.31	20.57
J1658	500.47	1,247.09	J1652	11.19	41.44	20	1,076.06	29.69
J1670	500.47	464.28	J1356	17.27	12.25	20	443.78	22.74
J1672	500.47	932.73	J292	18.99	43.38	20	917.77	21.01
J1674	500.47	943.99	J1674	20	44.81	20	943.99	20
J1676	500.47	944.07	J348	16.15	44.31	20	893.98	23.9
J1678	750.47	1,978.27	J1108	15.85	46.74	20	1,850.30	24.27
J1680	750.47	3,730.15	J1108	17.76	53.33	20	3,661.24	22.32
J1682	500.47	3,493.51	J1682	20	58.79	20	3,493.49	20
J1684	500.47	2,373.41	J712	15.17	54.63	20	2,238.80	24.84
J1686	500.47	3,393.46	J1686	20	60.14	20	3,393.50	20.04
J1688	500.47	1,035.24	J686	14.91	40.23	20	948.52	26.11
J1690	500.47	995.84	J686	19.77	40.93	20	991.61	20.33
J1692	500.47	1,014.82	J1692	20	50.17	20	1,014.82	20.01
J1694	500.47	889.65	J1108	17	39.1	20	844.26	23.06
J1696	750.47	3,565.35	J1696	20	58.37	20	3,565.36	20
J1700	750.47	3,306.25	J1700	20	55.78	20	3,306.25	20.01
J1702	750.47	3,470.47	J1702	20	56.99	20	3,470.47	20
J1704	750.47	3,062.53	J800	13.23	53.59	20	2,822.23	26.86
J1706	500.47	1,573.10	J1706	20	59.71	20	1,573.10	20
J1708	500.47	3,618.22	J1708	20	61.88	20	3,618.22	20
J1716	500.47	866.02	J1048	19.28	40.2	20	855.32	20.75
J1730	500.47	1,492.63	J1038	18.99	51.17	20	1,469.28	21.03
J1732	500.47	1,303.69	J1038	18.55	49.7	20	1,275.10	21.46
J1736	500.47	1,159.47	J988	19.27	50	20	1,147.29	20.76
J1740	500.47	866.77	J1108	19.32	39.38	20	856.16	20.72
J1742	750.47	1,447.40	J414	19.06	47.45	20	1,428.95	20.96
J1754	500.47	729.46	J1162	19.1	37.59	20	719.59	20.96
J1756	500.47	4,476.30	J546	14.32	48.15	20	4,239.08	26.16
J1758	500.47	4,236.57	J546	14.48	47.94	20	4,025.62	26.14
J1760	750.47	964.76	J258	18.86	31.03	20	946.13	21.18
J1766	500.47	1,530.23	J1766	20	56.31	20	1,530.23	20.01

2023 - Run at storage = DS + SB, Cont.								
ID	Total Demand (gpm)	Hydrant Availabl e Flow (gpm)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (gpm)	Hydrant Pressure at Design Flow (psi)
J1768	500.47	2,036.52	J1768	20	57.56	20	2,036.52	20
J190	500.47	740.49	J18	19.39	36.48	20	732.91	20.61
J192	750.47	755.09	J18	18.02	18.39	20	730.65	22.03
J194	750.47	729.02	J18	19.43	17.66	20	722.03	20.6
J242	500.47	768.63	J246	17.74	37.74	20	741.96	22.26
J268	750.47	877.32	J268	20	28.38	20	877.32	20.01
J326	500.47	1,369.81	J1108	14.8	46.42	20	1,256.33	25.48
J328	500.47	933.14	J328	20	44.26	20	933.14	20
J362	500.47	846.19	J362	20	44.47	20	846.19	20.04
J400	750.47	2,977.75	J1108	16.36	51	20	2,812.20	23.78
J440	500.47	2,087.36	J440	20	58.36	20	2,087.36	20
J446	750.47	2,388.65	J446	20	55.02	20	2,388.65	20
J450	500.47	3,812.88	J546	15.83	47.57	20	3,672.25	24.79
J472	750.47	3,588.65	J472	20	58.73	20	3,588.65	20
J502	750.47	2,478.31	J1592	19.07	54.31	20	2,446.39	20.97
J510	750.47	3,483.56	J546	13.37	46.3	20	3,291.57	27.16
J518	750.47	3,549.69	J546	17.27	46.67	20	3,463.55	23.2
J616	500.47	2,649.06	J1652	12.15	46.87	20	2,352.59	28.65
J662	500.47	1,114.36	J1652	13.56	40.39	20	996.72	27.53
J688	500.47	915.27	J686	11.53	36.85	20	797.07	28.91
J692	500.47	908.42	J686	9.4	35.97	20	767.97	30.84
J710	500.47	794.89	J710	20	42.03	20	794.89	20
J724	750.47	2,861.59	J724	20	55.1	20	2,861.59	20
J746	750.47	3,779.51	J546	18	47.15	20	3,712.51	22.36
J772	750.47	2,433.91	J772	20	55.07	20	2,433.91	20
J776	750.47	2,460.25	J790	19.68	53.88	20	2,449.15	20.32
J792	500.47	4,000.41	J546	13.95	47.72	20	3,791.04	26.67
J794	750.47	2,707.87	J802	15.6	56.07	20	2,573.93	24.4
J814	500.47	1,356.36	J814	20	58.53	20	1,356.36	20
J820	500.47	280.75	J822	19.67	-68.17	20	279.66	20.33
J842	500.47	2,893.51	J1606	16.34	48.78	20	2,754.36	23.98
J952	500.47	902.92	J958	17.08	40.15	20	859.56	23.08

2044 - Run at Storage = DS + SB								
ID	Total Demand (gpm)	Hydrant Available Flow (gpm)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (gpm)	Hydrant Pressure at Design Flow (psi)
J820	500.52	280.57	J822	19.67	-68.28	20	279.48	20.33
J1482	500.52	361.85	J1484	19.71	-7.79	20	360.2	20.29
J1476	500.52	376.76	J1518	17.98	-4.54	20	364.31	22.03
J1670	500.52	452.78	J1356	17.27	10.6	20	432.23	22.75
J16	500.52	470.34	J16	20	16.08	20	470.34	20
FH-1	500.52	505.27	J60	18.2	18.79	20	490.63	21.81
FH-2	500.52	556.72	J18	19.56	25.27	20	552.52	20.45
J144	500.52	617.93	J18	17.97	28.81	20	597.2	22.09
J1134	500.52	646.52	J1148	17.07	30.46	20	616.74	22.95
J162	500.52	668.02	J18	19.47	32.81	20	661.93	20.59
J1212	500.52	699.71	J1228	18.63	35.05	20	684.75	21.42
J1754	500.52	715.68	J1162	19.1	36.58	20	705.8	20.9
J190	500.52	723.69	J18	19.38	35.4	20	715.91	20.62
J242	500.52	753.83	J246	17.74	36.76	20	727.1	22.26
J692	500.52	906.39	J686	9.4	35.86	20	765.85	30.84
J710	500.52	794.41	J710	20	41.99	20	794.41	20
J688	500.52	913.16	J686	11.52	36.73	20	794.81	28.92
J1104	500.52	882.6	J1108	15.3	37.82	20	813.08	24.7
J1694	500.52	868.8	J1108	16.96	38.08	20	822.71	23.11
J1052	500.52	850.22	J1048	18.67	39.12	20	830.66	21.34
J1740	500.52	846.56	J1108	19.2	38.37	20	834.03	20.85
J1716	500.52	847.13	J1048	19.21	39.24	20	835.42	20.82
J362	500.52	838.95	J362	20	44.02	20	838.95	20.04
J952	500.52	884.35	J958	17.06	39.24	20	840.67	23.1
J1676	500.52	935.6	J348	16.15	43.86	20	885.45	23.91
J1672	500.52	913.22	J292	18.99	42.47	20	898.24	21.01
J328	500.52	919.11	J328	20	43.61	20	919.11	20
J1674	500.52	925.93	J1674	20	43.97	20	925.93	20
J1688	500.52	1,032.74	J686	14.88	40.11	20	945.48	26.15
J1690	500.52	993.54	J686	19.72	40.82	20	988.35	20.41
J662	500.52	1,111.54	J1652	13.53	40.28	20	993.35	27.56
J1692	500.52	1,012.47	J1692	20	50.06	20	1,012.47	20.01
J1658	500.52	1,243.78	J1652	11.17	41.33	20	1,072.29	29.72
J1736	500.52	1,144.14	J988	19.23	49.4	20	1,131.28	20.8
J326	500.52	1,345.08	J1108	14.59	45.68	20	1,227.66	25.66
J1732	500.52	1,284.49	J1038	18.53	49.16	20	1,255.46	21.48
J814	500.52	1,355.22	J814	20	58.49	20	1,355.22	20
J1730	500.52	1,468.63	J1108	18.85	47.44	20	1,439.09	21.31
J1766	500.52	1,527.00	J1766	20	56.23	20	1,527.00	20.02
J1706	500.52	1,571.55	J1706	20	59.67	20	1,571.55	20.01
J1768	500.52	2,033.86	J1768	20	57.52	20	2,033.86	20.01

2044 - Run at Storage = DS + SB								
ID	Total Demand (gpm)	Hydrant Available Flow (gpm)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (gpm)	Hydrant Pressure at Design Flow (psi)
J440	500.52	2,077.65	J440	20	58.24	20	2,077.65	20
J1684	500.52	2,367.26	J712	15.17	54.61	20	2,232.62	24.84
J616	500.52	2,637.42	J1652	12.11	46.79	20	2,339.89	28.68
J842	500.52	2,877.43	J1606	16.17	48.65	20	2,732.22	24.15
J1686	500.52	3,366.46	J1686	20	60.09	20	3,366.46	20
J1682	500.52	3,465.85	J1682	20	58.75	20	3,465.83	20
J1708	500.52	3,592.01	J1708	20	61.87	20	3,592.01	20
J450	500.52	3,774.94	J546	15.73	47.5	20	3,630.76	24.91
J792	500.52	3,961.64	J546	13.83	47.66	20	3,748.51	26.7
J1758	500.52	4,198.67	J546	14.29	47.9	20	3,980.48	26.36
J1756	500.52	4,437.29	J546	14.12	48.11	20	4,192.31	26.36
J194	750.52	713.33	J18	19.34	16.25	20	705.28	20.69
J192	750.52	738.74	J18	17.97	16.99	20	713.65	22.08
J268	750.52	858.18	J268	20	27.17	20	858.18	20.01
J1760	750.52	941.9	J258	18.85	29.82	20	923.17	21.18
J1742	750.52	1,439.63	J414	19.06	47.2	20	1,421.16	20.97
J1678	750.52	1,951.15	J1108	15.67	46.07	20	1,817.63	24.45
J446	750.52	2,375.07	J446	20	54.85	20	2,375.07	20
J772	750.52	2,431.40	J772	20	55.04	20	2,431.40	20
J502	750.52	2,470.11	J1592	19.07	54.21	20	2,438.19	20.98
J776	750.52	2,458.00	J790	19.68	53.85	20	2,446.89	20.32
J794	750.52	2,699.71	J802	15.6	56.03	20	2,565.77	24.4
J400	750.52	2,948.88	J1108	16.14	50.48	20	2,773.11	24.01
J1704	750.52	3,052.37	J800	13.22	53.54	20	2,811.83	26.87
J724	750.52	2,851.69	J724	20	55.05	20	2,851.69	20
J510	750.52	3,451.78	J546	13.28	46.21	20	3,256.94	27.23
J1700	750.52	3,280.20	J1700	20	55.74	20	3,280.20	20
J518	750.52	3,518.17	J546	17.08	46.57	20	3,425.93	23.44
J1702	750.52	3,442.24	J1702	20	56.95	20	3,442.24	20
J1696	750.52	3,534.22	J1696	20	58.29	20	3,534.23	20
J472	750.52	3,553.52	J472	20	58.61	20	3,553.52	20
J1680	750.52	3,692.38	J1108	17.48	52.89	20	3,615.16	22.5
J746	750.52	3,745.85	J546	17.78	47.06	20	3,671.39	22.62

APPENDIX L

SEPTIC SYSTEM NOTIFICATION LETTER

[Date]

[Customer address]

To protect the drinking water supply for the customers of the North Beach Water District (NBWD) System, NBWD has developed a wellhead protection program as required by state law, Washington Administrative code (WAC) 246-290-135. The attached figure indicates the areas overlying the short-term recharge zone of our drinking water supply well. The short-term recharge zone is called our wellhead protection area.

NBWD conducted an inventory of customers within the wellhead protection area who may have septic tanks on their property. NBWD is required by WAC 246-290-135(B).iii.iv to notify you of your proximity to NBWD's wellhead protection area in an effort to promote source water protection in the area. It is NBWD's and Department of Health's goal to promote awareness so that any activities in the area that may have the potential to affect drinking water quality can be addressed.

NBWD realizes you are already careful to protect the environment. We hope that learning that you are in our wellhead protection area will result in more awareness of your activities. If you have any questions regarding this letter please call or email Rick Gray at (360) 665-4144 or RGray@northbeachwater.com.

Sincerely,

Rick Gray

General Manager, North Beach Water District

Enclosure

REGULATORY AND EMERGENCY RESPONSE NOTIFICATION LETTER

[Date]

[Agency address]

To protect the drinking water supply for the customers of the North Beach Water District (NBWD) System, NBWD has developed a wellhead protection program as required by state law, Washington Administrative code (WAC) 246-290-135. The attached figure indicates the areas overlying the short-term recharge zone of our drinking water supply well. The short-term recharge zone is called our wellhead protection area.

NBWD conducted an inventory of customers within the wellhead protection area who may have septic tanks on their property. NBWD is required by WAC 246-290-135(B).iii.iv to notify these customers of their proximity to NBWD's wellhead protection area in an effort to promote source water protection in the area. It is NBWD's and Department of Health's goal to promote awareness so that any activities in the area that may have the potential to affect drinking water quality can be addressed.

WAC 246-290-135 requires the regulatory agency with jurisdiction over each contaminant source (i.e., the Department of Ecology for regulated underground storage tanks) and Emergency Response Agencies serving our area be notified by mail of the presence of potential contaminant sources within the Wellhead Protection Area. Local government entities must also be notified of the potential and known sources of ground water contamination within the Wellhead or Watershed Protection Areas.

Although we do not anticipate there ever being a problem, we hope that informing you of these potential contamination sources in our Wellhead or Watershed Protection Areas will result in an increase in precautions to ensure that activities will not impact our drinking water quality. If you have any questions regarding this letter please call or email Rick Gray at (360) 665-4144 or RGray@northbeachwater.com.

Sincerely,

Rick Gray
General Manager, North Beach Water District

Enclosure

H St
I Ln
J Ln
N St
R St
S Ln
T Ln
Joy Ln
Joe Johns Rd
Vernon Ave
W Ln
X Ln
Z St
285Th Ln
U St
Sandridge Rd
Q Ln
R Ln
V St
Y Ln
277Th Ln
North Wellfield
X Ln
273Rd St
272Nd St
270Th St
U St
267Th Ln
266Th Pl
265Th Pl
Z St
Pacific Ocean
Bay Ave
Willapa Bay
South Wiegardt Wellfield
U St
Sandridge Rd
State Rt 103 - Pacific Way
250Th St
248Th Ln
Y Ln
P St
245Th St
Sandridge Rd
Gile Pl
242Nd Pl
V Ln
Pauls Lake
U St
Birch Ln
Dunes Bible Camp Dr

Sources: Washington State DNR, Pacific County North Beach Water District, Gray & Osborne, Inc., Esri, NASA, NGA, USGS, FEMA

Wellhead Protection Zones
- 0.5-Year Time of Travel
- 1-Year Time of Travel
- 5-Year Time of Travel
- 10-Year Time of Travel
- Roads

N

0 375 750 1,500 Feet

NORTH BEACH WATER DISTRICT

WATER SYSTEM PLAN

WELLHEAD PROTECTION AREAS

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\North Beach WD\23473.00 Water System Plan\GIS\APRX\NorthBeachWSP2023Figures\NorthBeachWSP2023Figures.aprx

APPENDIX M

CROSS-CONNECTION CONTROL PROGRAM

CROSS CONNECTION CONTROL PROGRAM

Adopted December 22, 2014 by Resolution 29-2014

Revised:

MISSION STATEMENT

The mission of North Beach Water District is to provide high-quality water for residential, commercial, industrial, and fire protection uses that meets or exceeds all local, state, and federal standards and to provide courteous and responsive service at the most reasonable cost to our customers.

Table of Contents

Requirement for Program

North Beach Water District (District), pursuant to chapter 246-290-490 WAC, shall protect their public water system from contamination due to cross-connections. A cross-connection is defined, for the purpose of this program, as "any actual or potential physical connection between a potable water line and any pipe, vessel, or machine that contains or has a probability of containing a non-potable gas or liquid such that it is possible for a non-potable gas or liquid to enter the potable water system by backflow."

All public water systems are required to develop and implement cross-connection control (CCC) programs. The CCC program requirements are contained in chapter 246-290-490 WAC. The minimum required elements of a CCC program are:

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 preventers;
6. Quality control of testing process;
7. Response to backflow incidents;
8. Public education for consumers;
9. Record keeping for CCC program; and
10. Special requirements for reclaimed water use.

Other CCC program requirements include:

1. Coordination with the Local Administrative Authority (LAA), i.e., the local building or plumbing official, regarding CCC activities;
2. Prohibition of the return of used water into the public water system (PWS) distribution system; and

3. Inclusion of a written CCC program in a Water System Plan (WSP) or a Small Water System Management Program (SWSMP).

Note: Throughout this CCC program the term “customer” is used. “Customer” as used herein means the property owner and/or occupant of the premises served by the District (i.e., whoever interfaces with the District regarding water service). Also, unless otherwise defined, all CCC-related terms used in this program have the same definitions as those contained in chapter 246-290-010 WAC.

Program Objectives

The objectives of the CCC program are to:

1. Reasonably reduce the risk of contamination of the public water distribution system; and
2. Reasonably reduce the District’s exposure to legal liability arising from the contamination of the public water distribution system originating from a customer’s premise’s plumbing system; and
3. Reasonably reduce the onerous application of the law on District customers by working to mitigate the need for isolation through education and the elimination of actual or existing cross-connection hazards and reducing practices that create hazards.

Summary of Program Decisions

The following table summarizes the major policy and program decisions adopted by the Board of Commissioners of North Beach Water District. The items in the table represent CCC program areas that have more than one acceptable approach or option.

Decision Summary Table for the North Beach Water District

Summary Table

Decision Item	Decision
1. Type of Program [General, WAC 246-290-490(2)(e)]	
a. Premises isolation only	YES
b. Premises isolation and in-premises protection (combination program)	NO
2. Extent of Coordination with LAA [WAC 246-290-490(2)(d)]	
a. Information exchange	YES
b. Interaction	NO
c. Joint program	NO
3. Relationship with Customer [Element 1]	
a. Signed service agreement or contract	NO
b. Ordinance/resolution; implied service agreement	YES
4. Enforcement of Corrective Action [Element 1]	
a. Rely upon shut-off of water service	YES
b. Rely upon District installed/owned/maintained premises isolation	YES
5. Assessment and Re-assessment of Hazard [Element 2]	
a. By District’s staff or equivalent	YES
b. By CCS employed by customer; report reviewed by District’s CCS	YES
6. Location and Ownership of Premises Isolation Assembly [Element 3]	
a. On District’s service line	YES
b. On customer’s service line	YES
7. CCS Option – District’s Program Management [Element 4]	
a. District’s staff member certified	YES
b. Inter-agency agreement or use other agency’s CCS	NO
c. Contract with consultant CCS	NO
8. Testing of Assemblies [Element 5]	
a. By District-employed backflow assembly tester (BAT)	YES
b. By customer-employed (contractor) BAT	YES
9. Cost Recovery [WAC 246-290-100(4)(h) and –105(4)(p)]	
a. Borne by all customers (general water rates)	NO
b. Assessed to specific class (commercial meters)	NO
c. Each customer directly bears cost	YES

Required Elements of Program

This section describes how North Beach Water District intends to comply with each of the required program elements. Elements are numbered the same as they appear in WAC 246-290-490.

Element 1: Authorizing of a CCC Program.

The District's Board of Commissioners adopted Resolution 28-2014 on December 17, 2014, which authorizes the District to implement this CCC program. The resolution also authorizes the system to terminate water service to consumers who do not comply with the resolution. However, the primary method for protection of the distribution system will be the installation of a backflow preventer by the customer, at the customer's expense. The District, at its discretion, may install a backflow preventer if the customer fails to or refuses to install a required backflow preventer within the time allowed.

Element 2: Evaluating the Degree of Hazard.

Initial Cross-Connection Hazard Surveys

The procedures for evaluating the backflow prevention requirements for new and existing customers are as follows:

1. For all **new non-residential services**, the District will require that the customer submit with the application for water service an evaluation (performed at customer's expense) by a DOH-certified cross-connection control specialist (CCS) of the hazard posed, if any, by the proposed plumbing system, with recommendations for the installation at the meter of a double-check valve assembly (DCVA) or a reduced-pressure principle backflow assembly (RPBA) if needed. The District may accept the recommendations 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 approved air gap

(AG) or RPBA for premises isolation as a condition of service.

2. For all **new residential services**, the District will require that the customer submit with the application for water service a completed “Water Use Questionnaire” reproduced as Exhibit “A-2”. If the customer’s questionnaire indicates special plumbing, such as a lawn sprinkler system, or hazardous water use on the premises, the customer shall submit to the District an evaluation by a DOH-certified CCS of the hazard posed by the proposed special plumbing system, with recommendations for the installation at the meter of either a DCVA or an RPBA.

As an alternative to the above requirement for a survey by a DOH-certified CCS, the District’s CCS may specify the backflow preventer required to be installed as a condition of service.

3. For all **existing non-residential services**, the District will require the customer to submit to the District, within nine months of notification, an evaluation by a DOH-certified CCS of the hazard, if any, posed by the plumbing system, with recommendations for the installation at the meter of a DCVA or an RPBA if needed. The District may accept the recommendations 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 DOH-certified CCS, the customer may agree to install an AG or RPBA for premises isolation within 90 days of notification by the District or an alternate time period acceptable to the District.

4. For all **existing residential services**, the District will require the customer to submit to the District, within four months of notification, a completed “Water Use Questionnaire.” If the customer’s reply indicates special plumbing or water use on the premises, the customer shall submit an evaluation by a DOH-certified

CCS of the hazard posed to the water system by the customer's plumbing system, with recommendations for the installation at the meter of either a DCVA or an RPBA.

As an alternative to the above requirement for a survey by a CCS, the District may specify the backflow preventer required to be installed as a condition of service. The District's CCS will provide guidance on the type of backflow preventer to be installed.

5. For all existing services, should the customer fail to supply the required information for a hazard assessment or fail to submit a completed "Water Use Questionnaire," the District may require the installation of an RPBA for premises isolation, or take other such actions consistent with the previously stated policies and bill the customer for the associated costs.

Cross-Connection Hazard Survey Schedule for Initial Hazard Assessments

The schedule for initial hazard assessment is outlined in Table 2.1 below. The schedule starts from the date the CCC program is established.

Table 2.1

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 of Washington Administrative Code (WAC) 246-290-490	Within nine months
Identification and assessment of hazardous premises supplemental to Table 9 of WAC 246-290-490	Within 12 months
Identification of residential connections with special plumbing facilities and/or water use on the premises	Within 15 months

Cross-Connection Survey Schedule for Hazard Re-Assessments

For subsequent cross-connection hazard surveys, procedures for evaluating the backflow prevention requirements are:

1. For **residential services,** the District will require the customer to submit to the District, within two months of District notification, a completed "Water Use Questionnaire." The procedure used for evaluating the hazard re-assessment and the potential change in the required backflow prevention will be the same as used for the initial hazard assessment.
2. For all **non-residential services**, the District will require the customer to submit to the District, within two months of District notification, a hazard re-assessment (at the customer's expense) by a DOH-certified CCS.

The District's CCS will, for a fee and upon request, perform the hazard re-assessment on the premises.

The frequency of hazard re-assessments will be as shown in Table 2-2 below:

Table 2.2

Type of Service	**Frequency of Re-Evaluation**
Any services with an Air Gap or RPBA installed for premises isolation	None required as long as the Air Gap and/or RPBA passes annual tests and/or annual inspections
Commercial services with DCVA installed for premises isolation	Every two years and upon change in use or ownership
Residential services with RPBA or DCVA installed for premises isolation	Every 5 years and upon change in use, ownership, or plumbing system (questionnaire)
Residential services with no known special plumbing or water use on the premises	Every 3 years and upon change in use, ownership, or plumbing system (questionnaire)

The District will inform the customer that 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, and that the required backflow protection will be commensurate with the District's assessment of the degree of hazard.

The District will also inform the customer or any regulatory agencies 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 the District's personnel or agent do 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.

Element 3: Elimination or Control of Cross-Connections.

Backflow Preventer 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** where actual or potential cross-connection hazards exist be isolated at the meter by an air gap or a DOH-approved RPBA or DCVA commensurate with the level of hazard and acceptable to the District. All high-hazard connections of the type described in Table 9 of WAC 246-290-490, reproduced as Exhibit "B", shall be isolated with an air gap or an RPBA.
2. The District will require all **residential customers** with facilities of the type described in Table 9 of WAC 246-290-490, reproduced as Exhibit "B", to be isolated with an air gap or an RPBA. All other residential customers with special plumbing or water use on the premises that create an actual or potential cross-connection hazard will be isolated with an RPBA or a DCVA, as determined by the District's Cross-connection Specialist. "Special plumbing" includes, but is not limited to, the following:
    a. A lawn irrigation system;
    b. A solar heating system (some models are exempt);
    c. Piping for livestock watering, hobby farming, etc.;
    d. Hot tubs and swimming pools;
    e. Ornamental Fountains (some models are exempt);
    f. Residential fire sprinkler system;
    g. Boilers of hydronic heating systems;
    h. Property containing a small boat moorage;
    i. Repeat history of cross-connections.

3. All remaining residential customers will be isolated at the meter by a District-owned and -installed ASSE standard #1024-2004 dual check valve. These check valves provide a measure of practical protection but no regulatory protection from backflow hazards.

Customers are considered to have an implied contract with the District that requires the customer to bear all reasonable costs of service. In the event a customer is required to isolate their premises by RPBA or DCVA, the cost will include, but not be limited to, those necessary to:

- Purchase and immediately install approved RPBA or DCVA downstream of the water meter in accordance with the District's standards described hereinafter; and
- Maintain, test, and inspect the RPBA or DCVA 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.

Refusal or failure on the part of the customer to comply with the District's installation, testing, and maintenance requirements shall constitute a breach of contract by the customer and as a result, the District will:

1. Install the RPBA or DCVA at the customer's expense immediately upstream of the water meter in accordance with the Districts standards described hereinafter; and
2. Maintain, test and inspect, at the customer's expense, the RPBA or DCVA in accordance with the Districts standards described hereinafter; or
3. Discontinue water service until the customer complies with the installation, testing, or maintenance requirements to the District's satisfaction.

The District will only install an RPBA or DCVA to isolate a customer's premises after providing ninety (90) days' advance notice and a detailed estimate of the initial cost and annual cost of maintenance and testing of the RPBA or DCVA by

certified mail. During the ninety (90) days the customer will be encouraged to:

1. Eliminate the actual or potential cross-connection, or
2. Install a DOH-approved RPBA or DCVA based on the level of hazard, or
3. Enter into the District's Backflow Preventer Assistance Program described hereinafter.

The customer will pay the District all of their reasonable costs associated with the above actions.

Backflow Preventer Assistance Program

The Backflow Preventer Assistance Program (BPAP) is adopted as a customer service to the ratepayers of the District. When a ratepayer has a potential or actual cross-connection on their premises, they will be required to isolate their premises from the water system with a backflow preventer approved by the Washington State Department of Health (WSDOH). The backflow preventer will be maintained and tested at least annually and the results of the test will be forwarded to the ratepayer and the WSDOH upon request. The BPAP will provide District-owned, -maintained, and -tested backflow preventers to ratepayers' premises at a low monthly fee established by the Board of Commissioners. The fee schedule will be based on the principle that the BPAP will be self-supporting.

Customers desirous of entering the BPAP will execute a Backflow Preventer Assistance Agreement reproduced as Exhibit "J", whereby they will agree to pay the monthly fee identified in the District's Rules and Regulations for the specific Backflow Preventer installed abutting their premises.

Approved Backflow Preventers and Installation

All backflow preventers relied upon by the District to protect the public water system shall meet the definition of "approved backflow preventer" as contained in WAC 246-290-010. The District will obtain and maintain a current list of

assemblies approved for installation in Washington State from the DOH Office of Drinking Water.

All backflow preventers will be installed in:

1. The orientation for which they are approved;
2. A manner and location that facilitates their proper operation, maintenance, and testing or inspection;
3. A manner that will protect them from weather-related conditions such as flooding and freezing; and
4. Compliance with applicable safety regulations.

Installation standards contained in the most recently published edition of the Pacific Northwest Section, American Water Works Association (PNWS-AWWA) CCC Manual or the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USCFCCCHR) CCC Manual shall be followed unless the manufacturer's requirements are more stringent.

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 his/her plumbing system from sources within his/her 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.

The District will inform the customer that any action taken by the District shall not be construed by the customer as guidance on the safety or reliability of the customer's plumbing system. The District will not provide advice to the customer on the design and installation of plumbing other than through 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. In the event the existing water meter is located within the boundaries of the customer's property, the District, when it becomes aware of the condition, will remove the meter back to within the road easement or right of way.

Schedule for Installation of Backflow Preventers

Table 3.0 on the following page shows the schedule that the District will follow for the installation of backflow preventers when they are required (based on the hazard evaluation)

Table 3.0

Type of Service	**Schedule**
New connections with cross-connection hazards	Before service is initiated
Existing connections with Table 9-type hazards and other high cross-connection hazards	Within 90 days after notification
Existing connections with other than Table 9 of WAC 246-290-490 or high cross-connection hazards	Within 180 days after notification (suggested)
Existing fire protection systems using chemicals or supplied by unapproved auxiliary water source	Within 90 days after notification
Existing fire protection systems not using chemicals and supplied by District's water	Within 1 year after notification (suggested)

The District may consider granting an extension of time for installation of a backflow preventer for an existing connection if requested by the premise's owner.

Element 4: Qualified Person.

Program Administration

The responsibility for administration of the CCC Program rests with the District. General policy direction and risk management decisions are established by the Board of Commissioners of North Beach Water District.

The District's General Manager and at least one other employee will be certified by DOH as a Cross-connection Specialist (CCS) to develop and implement the CCC program. As an alternative, or when no staff or employees are properly qualified, the District may retain a DOH-certified CCS on contract to provide the necessary expertise and services.

The following cross-connection-related tasks will be performed by or under the direction of the District's General Manager or other CCS either on staff or under contract:

- Preparation of and recommendations regarding changes to the CCC program;
- Performance of and/or reviews of CCC hazard evaluations;
- Recommendations on the type of backflow preventer to be installed;
- Recommendations on schedules for retrofitting of backflow preventers;
- Inspections of backflow preventers for proper application and installation;
- Reviews of backflow preventer inspection and test reports;
- Reviews of backflow testing quality control information;
- Recommendations and/or 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 Backflow Incident Reports; and
- Completion of CCC Activity and Program Summary Reports.

The District may delegate other CCC program activities to other personnel who are not certified CCSs, including clerical support staff. These activities include:

- Administration of paperwork associated with service agreements;
- Mailing, collecting, and initial screening of hazard evaluation/water use questionnaires;
- Mailing of assembly testing notices;
- Receiving and screening of assembly testing reports;
- CCC program database administration and record keeping;
- Dissemination of public education material; and
- Assisting tasks associated with coordination with Pacific County Community Development Division.

Element 5: Inspection and Testing.

Inspection and Testing of Backflow Preventers

All backflow preventers that the District relies upon for protection of the water system will be subject to inspection and, if applicable, testing.

Inspection and testing of backflow preventers will be as follows:

- The District's DOH-certified CCS will inspect backflow preventers for proper application (i.e., to ensure that the preventer installed is commensurate with the assessed degree of hazard).
- Either a DOH-certified CCS or backflow assembly tester (BAT) will perform inspections of backflow preventers for correct installation.
- A DOH-certified backflow assembly tester will test all assemblies relied upon by the District to protect the public water system.

Frequency of Inspection and Testing

Inspection and testing of backflow preventers will be conducted:

- At the time of installation;
- Annually after installation;
- After a backflow incident; and
- After repair, reinstallation, relocation, or re-plumbing.

The District may require a backflow preventer to be inspected and/or tested more frequently than once a year, when it protects against a high-health hazard or when it repeatedly fails tests or inspections.

Responsibility for Inspection and Testing

The District will be responsible for inspection, testing, maintenance, and replacement of all District-owned backflow preventers. The customer whose premises is being isolated by

the District's backflow preventer will pay the District for all cost associated with inspection, testing, maintenance, and replacement of the District-owned backflow preventer.

The District will require the customer to be responsible for inspection and testing of backflow preventers owned by the customer. The customer shall employ, at customer expense, a DOH-certified BAT, pre-approved by the District, to conduct the inspection and test within the time period specified in the testing notice sent by the District. The test report shall be completed and signed by the BAT, then countersigned and returned by the customer to the District, before the due date specified by the District. The customer may request an extension of the due date for returning a test report by submitting a written request to the District. The District may grant one extension for up to 90 days.

Approved Test Procedures

The District will require that all assemblies relied upon to protect the public water system be tested in accordance with DOH-approved test procedures as specified in WAC 246-290-490(7)(d).

Notification of Inspection and/or Testing

The District will notify in writing all customers who own backflow preventers to have their backflow preventer(s) inspected and/or tested. Notices 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.

Enforcement

When a customer fails to send in the inspection/test report within 15 days after the due date specified, and the District has not approved an extension to the due date, the District will take the following enforcement action:

- The District will send a second notice giving the customer an additional 15 days to send in the inspection/test report.
- If the customer has not sent in the inspection/test report within 10 days of the due date given in the second notice, the District will send a third notice, by certified mail, giving the customer an additional 15 days to send in the report. The notice will also inform the customer that failure to satisfactorily respond to this notice will result in water service shut-off.
- The District will send copies of the third notice to the owner and occupants of the premises (if different from the customer).
- If the owner and/or occupants have not responded satisfactorily to the District within 10 days of the due date specified in the third notice, the District will implement water service shut-off procedures.
- At any time prior to shut-off, the District may, if requested by customer, arrange for the inspection and/or testing of the customer-owned backflow preventers by a certified BAT and will bill the customer the actual cost of inspection and/or testing plus reasonable administrative costs. Collection and enforcement procedures for such charges will be the same as for other water utility charges.

Element 6: Testing Quality Assurance Program.

List of Pre-Approved BATs

The District will maintain a list of local, DOH-certified BATs that are pre-approved by the District to perform the following activities:

- Backflow preventer inspection for proper installation; and
- Backflow assembly testing.

The list will be revised annually or more frequently if necessary.

Pre-Approval Qualifications

BATs who wish to be included on the District's pre-approved list and/or provide testing in the District's service area must apply to the District and furnish the following information:

- Evidence of current DOH certification in good standing;
- Make and model of testing equipment (BAT listing only);
- Evidence of test equipment verification of accuracy and/or calibration within the past 12 months (BAT listing only);
- Evidence showing possession of a license to operate a business in Washington State along with a valid bond and insurance.

Quality Assurance

The District's CCS will review within 30 days of receipt the backflow preventer inspection/test report forms submitted by the customer. The District's CCS may accept reports that are signed by a BAT not on the pre-approved BAT list provided that the same information as listed in "Pre-Approval Qualifications" is also submitted to the District along with the backflow preventer inspection/test report.

The District's CCS will provide follow-up on test reports that are deficient in any way.

The District’s CCS will report incidences of fraud or gross incompetence on the part of any BAT or CCS to DOH Operator Certification program staff.

Element 7: Responding to Backflow Incidents.

Backflow Incident Response Plan

The District has developed a backflow incident response plan, reproduced and attached as Exhibit “H”, 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 and Pacific County Environmental Health Division;
- 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; and
- Corrective action to prevent future backflow occurrences.

Technical Resources

The District will use the most recently published edition of the manual, Backflow Incident Investigation Procedures, published by the PNWS-AWWA as a supplement to the Backflow Incident Response Plan for North Beach Water District.

Element 8: Public Education Program.

Customer Education

The District will distribute with water bills or by other means, at regular intervals, public education brochures to system customers. For residential customers, such brochures will describe the cross-connection hazards in homes and the recommended assemblies or devices that should be installed by the homeowner to reduce the hazard to the public water system. The education program will emphasize the responsibility of the customer in preventing the contamination of the public water supply. The District's staff will produce the public education brochures or the District will obtain brochures from:

- PNWS-AWWA;
- Spokane Regional Cross-Connection Control Committee (SRC4);
- Western Washington Cross-Connection Prevention Professionals Group (The Group);
- USC FCCCHR;
- Other national backflow prevention associations, such as the American Backflow Prevention Association (ABPA); and/or
- Other water utilities (with prior approval).

The information distributed by the District will include, but not be limited to, the following subjects:

- Cross-connection hazards in general;
- Irrigation system hazards and corrective actions;
- Fire sprinkler cross-connection hazards;
- Importance of annual inspection and/or testing of backflow preventers; and
- Thermal expansion in hot water systems when backflow preventers are installed for premises isolation.

The District will distribute information brochures to all customers every two to three years, and to every new customer.

Element 9: Records.

Types of Records and Data to be maintained

The District will maintain records of the following types of information required by WAC 246-290-490:

- Service connections/customer premises information including:
  - Assessed degree of hazard; and
  - Required backflow preventer to protect the public water system.
- Backflow preventer inventory and information including:
  - Air gap (AG) location, installation and inspection dates, inspection results and identity of person conducting inspection;
  - Backflow assembly location, assembly description (type, manufacturer, make, model, size, and serial number), installation, inspection and test dates, test results and data, and identity of person performing test; and
  - Information on atmospheric vacuum breakers used for irrigation system applications, including manufacturer, make, model, size, dates of installation and inspections, and identity of person performing inspections.

The District will maintain records on all assemblies that protect the public water system from contamination. At a minimum, the District will maintain records on all premises isolation assemblies required to protect the public water system.

Reports to be Prepared and Submitted to DOH

The District will prepare the following reports required by WAC 246-290-490, which include:

- Cross-connection control program activities report 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 voluntarily to the PNWS-AWWA CCC Committee); and
- Documentation when exceptions to mandatory premises isolation are granted.

The District's CCS will prepare and sign all CCC-related reports required by WAC 246-290-490.

The General Manager of North Beach Water District shall sign all CCC reports before submission to DOH.

Element 10: Cross-connection Control for Reclaimed Water.

At this time, the District does not receive or distribute reclaimed water. In the event that reclaimed water use is proposed within the District's service area, the Board of Commissioners of North Beach Water District will make all cross-connection control requirements mandated by the Permitting Authority in accordance with Chapter 90.46 RCW part of the written CCC program plan and comply with such additional requirements.

Coordination with Local Administrative Authority

Both WAC 246-290-490 and the Uniform Plumbing Code amended for Washington require coordination between the water District and the Local Administrative Authority (LAA) in all matters pertaining to cross-connection control.

The District will provide a copy of this CCC program to Pacific County Department of Community Development via a copy of the District's water system plan or in a separate document. The District will inform the LAA of any changes in policy or procedure that may impact the LAA.

The District will provide information to the LAA in a timely manner regarding any:

- Requirement imposed on a residential customer for the installation of a DCVA or an RPBA on the service, with a description of the cross-connection hazard identified;
- Upgrade of the premises isolation backflow preventer, i.e., from a DCVA to an RPBA;
- Action taken to discontinue water service to a customer; and
- Backflow incident known by the District to have contaminated the public water system or a customer's plumbing system.

Prohibition of Return of Used Water

The District must prohibit the intentional return of used water to the District's distribution system per WAC 246-290-490 (2)(l).

Used water is defined as water that has left the control of the District. This includes water used for heating and cooling purposes and water that may flow back into the distribution system from customers with multiple connections.

It is the policy of the District to:

- Prohibit the intentional return of used water to the distribution system by any customer served by the public water system; and
- Require that all customers with multiple connections, where the hydraulics permit the potential return of used water, to install a backflow preventer (DCVA or RPBA) commensurate with the degree of hazard at each point of connection.

Unapproved Auxiliary Supplies (potable water or irrigation wells)

All water supplies other than those owned by the District are considered unapproved auxiliary supplies as defined in chapter 246-290-010 WAC. The District will require backflow protection for customers with auxiliary supplies on their premises as follows:

- Per Table 9 of WAC 246-290-490, the District will require the installation of an RPBA for premises isolation at the service connection to any customer having an unapproved auxiliary supply on the premises that is connected to or has the potential to be connected to the District's water system.
- The District may require the installation of a DCVA for premises isolation at the service connection to any customer with an unapproved auxiliary water supply not interconnected with the District's water system where the customer's plumbing is complicated or the

District's Cross-connection Specialist determines that the potential for cross-connection exists.

Tanker Trucks

The District may allow tanker trucks to obtain water from the District's water system under the following conditions:

- The tanker truck is equipped with an approved AG or an approved RPBA with a current satisfactory inspection or test report.
- The tanker truck will obtain water from District-designated watering points only and under the direct supervision of a District employee.

Temporary Connections

The District will not supply water through temporary connections, such as those used for construction projects or main disinfection, except through a backflow preventer arrangement approved by the District. The applicant for the temporary connection shall document that the backflow preventer is a DOH-approved model and has passed an inspection and/or test within the past 12 months and/or upon relocation, whichever is more recent.

The District will require that interties with other public water systems or wholesale customers be isolated at the point of delivery by:

- A minimum of a DCVA; and
- A minimum of an RPBA if the District considers the purchasing system or wholesale customer to pose a high-health hazard to the District's system.

The District may waive or reduce the level of protection at the intertie if the purchasing public water system or wholesale 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 has been approved by DOH; and

- Implements the CCC program at a level satisfactory to the District.

Relationship to Other Planning and Operations Program Requirements

The District will consider the requirements and consequences of the CCC program on the utility's planning and operations requirements. Such considerations include, but are not limited to, ensuring that:

- Adequate communication exists and is promoted between CCC program personnel and other water utility staff;
- Adequate training be provided to all staff to recognize potential cross-connection control problems;
- Cross-connection issues be considered in water quality investigations;
- The design of the water distribution system makes adequate provisions for expected head losses incurred through the installation of or experienced by backflow assemblies;
- 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;
- Operations under normal and abnormal conditions do not result in excessive pressure losses; and
- Adequate financial and administrative resources are available to carry out the CCC program.

Exhibit A-1 Water Use Questionnaire for Exiting Residential Customers

Water Use Questionnaire - For Existing Residential Customers

(1) NBWD Account Number: _____-_____-_____-_____-_____.

(you will find your NBWD account number on your water bill)

Please provide your Pacific County Tax Parcel Number(s):(attach list if needed)

_____-_____-_____-_____-_____-_____-_____-_____-_____-_____-_____.

_____-_____-_____-_____-_____-_____-_____-_____-_____-_____-_____.

(you will find your tax parcel number on your Pacific County property tax statement)

(2) Is your Property an Undeveloped lot? Yes ☐ No ☐

(If you checked yes skip section 3 through 5 below)

(3) Please tell us how many of the following you have on your property:

Residences ☐ RV Sites ☐ Apartments ☐ Barns ☐

Enter the nunber of each you have on your property or zero if you do not have any. Please **do not leave any box blank**.

(4) Do you have a home based business? Yes ☐ No ☐

If you checked yes please tell us about your business. Provide a brief descripion of the business. You may use a separate sheet.

_____

_____

_____

(5) Please check yes if you have any of the special plumbing or activates listed below or No if you do not. Please do not leave any of the boxes blank.

Yes	No	Special Plumbing or Activity Present on Your Property
		Underground lawn sprinkler or irrigation system (automatic or manual)
		Drip irrigation system (automatic or manual)
		Green house
		Water well or irrigation well
		Utility sink (with hose bib threaded faucet)
		Boiler or hydronic heating system
		Ornamental outdoor fountain
		Fire suppression sprinkler system (residential NFPA 13D)
		Livestock or horses (farm or hobby farm chickens, rabbits, etc.)
		Swimming pool or hot tub

Continued on Back

Yes	No	Special Plumbing or Activity Present on Your Property
		Solar thermal collector (solar panels)
		Darkroom (photography
		Home dialysis machine
		Unidentified water pipes (old pipes that you do not know where they go)
		Water softener or water treatment equipment that automatically backwashes to a drain.
		Do you currently have a testable backflow preventer installed on your property?

(6) Please provide your current mailing address:	(7) Please provide the address of NBWD property:

(8) Please provide your:	(9) Please provide your:
Phone#:	Emergency Phone#:
Cell#:	Email Address:

(10) Comments (Optional)

(11) I certify that I am the owner of the real property identified by the Pacific County tax parcel number(s) listed in section 1 or the owners authorized agent and that the above information is true, correct, and complete to the best of my knowledge and belief.

Signature

Date

Print Name of Signer

Check Box if Agent ☐

Phone Number of signer (if not listed above)

Exhibit A-2 Water Use Questionnaire for New Residential Customers

Water Use Questionnaire - For New Construction Residential Customers

(1) NBWD Account Number: _____-_____-_____-_____-_____.

(LEAVE BLANK NBWD will issue you an account number when your application is approved)

Please provide your Pacific County Tax Parcel Number(s):(attach list if needed)

_____-_____-_____-_____-_____-_____-_____-_____-_____-_____-_____.

_____-_____-_____-_____-_____-_____-_____-_____-_____-_____-_____.

(you will find your tax parcel number on your Pacific County property tax statement)

(2) Please tell us how many of the following you plan to have on your property:

Residences ☐ RV Sites ☐ Apartments ☐ Barns ☐

Enter the nunber of each you have on your property or zero if you do not plant to have any. Please **do not leave any box blank**.

(3) Will you have a home based business? Yes ☐ No ☐

If you checked yes please tell us about your business. Provide a brief descripion of the business. You may use a separate sheet.

_____

_____

_____

(4) Please check yes if you have any of the special plumbing or activates listed below or No if you do not. Please do not leave any of the boxes blank.

Yes	No	Special Plumbing or Activity Present on Your Property
		Underground lawn sprinkler or irrigation system (automatic or manual)
		Drip irrigation system (automatic or manual)
		Green house
		Water well or irrigation well
		Utility sink (with hose bib threaded faucet)
		Boiler or hydronic heating system
		Ornamental outdoor fountain
		Fire suppression sprinkler system (residential NFPA 13D)
		Livestock or horses (farm or hobby farm chickens, rabbits, etc.)
		Swimming pool or hot tub
		Solar thermal collector (solar panels)
		Darkroom (photography

Continued On Back

Yes	No	**Special Plumbing or Activity Present on Your Property**
		Home dialysis machine
		Unidentified water pipes (old pipes that you do not know where they go)
		Water softener or water treatment equipment that automatically backwashes to a drain.
		Do you currently have a testable backflow preventer installed on your property?

(5) Please provide your current mailing address:	(6) Please provide the address of NBWD property:

(7) Please provide your:	(8) Please provide your:
Phone#:	Emergency Phone#:
Cell#:	Email Address:

(9) Comments (Optional)

(10) I certify that I am the owner of the real property identified by the Pacific County tax parcel number(s) listed in section 1 or the owners authorized agent and that the above information is true, correct, and complete to the best of my knowledge and belief.

Signature Date

Print Name of Signer Check Box if Agent ☐

Phone Number of signer (if not listed above)

Exhibit B Table 9

WAC 246.290.490

Table 9

Agricultural (farms and dairies)	Laboratories
Beverage bottling plants	Metal plating industries
Car washes	Mortuaries
Chemical plants	Petroleum processing or storage plants
Commercial laundries and dry cleaners.	Piers and docks
Premises where both reclaimed and potable water are provided	Radioactive material processing plants or nuclear reactors*
Film processing plants	Survey access denied or restricted
Food processing plants	Wastewater lift stations and pumping stations
Hospitals, medical centers, nursing homes, veterinary, medical and dental clinics, and blood plasma centers	Wastewater treatment plants*
Premises with separate irrigation systems using the purveyor's water supply and with chemical addition+	Premises with an unapproved auxiliary water supply interconnected with the potable water supply

+ For example, parks, playgrounds, golf courses, cemeteries, estates, etc.

* RPBA's for connections service these premises are acceptable only when used in combination with an in-plant approved air-gap, otherwise the purveyor shall require an approved air gap at the service connection.

Exhibit C Application for New Water Service

Application for New Water Service

Applicants Name: _____

Co-Applicants Name: _____

Billing Address: _____

City: _____ State._____ Zip: _____

Service Address: _____ Ocean Park, WA 98640

Legal description of property to receive water service (may attach): _____

_____

_____

_____

_____

Pacific County Parcel#: ____-____-____-____-____-____-____-____-____-____-____-____.
(one number for each line total 11 numbers)

Primary Phone 1: _____

Alternate Phone 2: _____

Emergency Phone: _____
(How would you like the District to contact you in the unlikely event there is a property damaging leak affecting your premises?)

Email Address: _____

Type of Service:

☐ Residential Single

☐ Residential Multi-Family – Number of Units: _____

☐ Commercial – _____ Gallons per Day (estimated)

☐ Industrial - _____ Gallons per Day (estimated)

Will you be installing fire sprinklers? Yes ☐ No ☐
(If yes, you will need to provide a CCS risk assessment and install an approved backflow prevention assembly prior to connection.)

Continued on Back

Based on the information provided above North Beach Water District provided the following estimate for water service:

General Facilities Charge (Sec. 1.01.350) $ _____

Local Facilities Charge (Sec. 1.01.270) $ _____

Meter Installation Charge (Sec. 1.01.190) $ _____

Other: _____ $ _____

This estimate is valid for thirty (30) days after the date signed by NBWD representative.

By: _____ Date _____

Print Name: _____

The undersigned applicant(s) hereby applies for a water service connection to provide water service, as described in this application to the above described real property. The applicant(s) represents that they are the owner(s) of the above described real property and as a condition of North Beach Water District providing and continuing to provide water service, the applicant, by signing this application, agrees to comply with all the conditions of service, and other rules and regulations found in Resolution 12-2008 “Rules and Regulations”, the latest revision thereof. Furthermore, the Applicant(s) acknowledge they have received a copy of the current rules and regulations and have reviewed the conditions of service and along with all of the other rules and regulations found therein.

Applicant's Signature _____ Date _____

Co-Applicant's Signature _____ Date _____

Exhibit D CCC Site Survey Form

Cross Connection Site Survey Form

This form is intended to identify any actual or potential physical connections between a public water system and any source of non-potable liquid, solid, or gas that could contaminate the potable water supply by backflow. Washington State requires all community water systems to implement a cross connection control program in harmony with **WAC 246.290.490**. The purpose of the District's cross-connection control program is to protect our customers and the public water system from contamination via cross-connections. Information collected during the investigation is confidential and will not be voluntarily shared with any other persons or entities. Your cooperation with this investigation is required. Failure to cooperate with this investigation may result in the discontinuance of your water service.

Property Owner:
Name:
Address:
Account #:
Type of Service: ☐Domestic ☐ Industrial ☐ Recreational ☐Commercial ☐ Other _____ _
Owner or Representative Attending Investigation:
Name:
District CCS Performing Investigation:
Name: CCS#
Others Attending Investigation:
Name:
Name:
Name:
Reason for Investigation:
Is the premises being rented or leased? ☐ Yes ☐ No
Does the premises have an auxiliary water source? (well of surface water) ☐ Yes ☐ No
If Yes, Is the auxiliary water source connected to the drinking water pipe? ☐ Yes ☐ No

Does the premises have a booster pumps or water storage systems? ☐ Yes ☐ No
Does the premises have a heat exchanger or solar heating system? ☐ Yes ☐ No
Does the premises have an automatic yard or garden watering system? ☐ Yes ☐ No
Does the premises have a dark room or X-ray equipment? ☐ Yes ☐ No
Does the premises have a chemical injector system? ☐ Yes ☐ No
Does the premises have any pools, ponds or hot tubs? ☐ Yes ☐ No
Does the premises have a water softener of filtration equipment? ☐ Yes ☐ No
Does the premises have a fire sprinkler system? ☐ Yes ☐ No
Does the premises have a commercial kitchen or laundry ☐ Yes ☐ No
Are all areas available for inspection? ☐ Yes ☐ No
Did the District investigator observe any actual or potential cross connections during the investigation: ☐ Yes ☐ No
List actual of potential cross connections:
Are there any backflow prevention assemblies installed on premises? ☐ Yes ☐ No
Have the assemblies been installed in accordance with State Rules? ☐ Yes ☐ No
Are copies of annual tests available? ☐ Yes ☐ No
Recommendations or Remarks:
Signature of Investigator: _____ Date: _____
Signature of Property Owner: _____ Date: _____

Exhibit E – Backflow Assembly Tester Pre-Approved List

Backflow Assembly Tester Pre-Approved List

The following table lists Backflow Assembly Testers (BATs) that are pre-approved to test backflow assemblies in our water system's service area.

Note: listing does not constitute an endorsement of these BATs by our system or a certification of the quality of services they provide.

To appear on our pre-approved BAT list, the tester must:

- Show proof of current BAT certification from DOH;
- Submit documentation that his/her assembly test equipment has been verified for accuracy within the last 12 months and calibrated if needed; and

As an alternative to the above, pre-approved testers must appear on the approved BAT list of another nearby water system that has a testing QA/QC program acceptable to the District.

WAC 246-290-490 requires a DOH-certified BAT to test all assemblies (RPBA, RPDA, DCVA, etc.) that protect the distribution system. Assemblies that protect the public water system must be tested in accordance with DOH-approved field test procedures:

- Upon installation, and annually thereafter;
- After repair, reinstallation, or relocation; and
- After a backflow incident.

Note: the DOH BAT certification is a special certification separate from other waterworks operator certification categories, plumbing licenses, contractor registration, etc. Other licenses, certifications and/or registrations may be required to install backflow prevention assemblies and/or perform maintenance work on assemblies within buildings. **However, only a currently DOH-certified BAT may test the assemblies that protect the public water system from contamination.**

Name of Tester	Phone Number	BAT Certificate Number

Exhibit F – Backflow Assembly Test Inspection Report

Backflow Assembly Test Report

☐ Exiting ☐ Replaced
☐ New ☐ Removed

NAME OF PREMISES: _____ ☐Commercial ☐Residential

MAILING ADDRESS: _____

CITY: _____ ZIP: _____

CONTACT PERSON: _____

PHONE: _____

ADDRESS OF ASSEMBLY: _____

	Double Check Valve	Reduced Pressure. Assembly	PVBA	SVBA
Initial Test Results PASS ☐ FAILED ☐	Check Valve #1 Leaked ☐ Tight ☐ _____ PSI Check Valve #2 Leaked ☐ Tight ☐ _____ PSI	#1 Check Pressure Drop _____ (A) Relief Valve Opened _____ (B) Buffer A-B= _____ (Min 3 PSI	Pressure Drop _____ PSID	Pressure Drop: _____ PSID
Comments/ Repairs/ Parts:				
Final Test Results PASS ☐ FAILED ☐	Check Valve #1 Leaked ☐ Tight ☐ _____ PSI Check Valve #2 Leaked ☐ Tight ☐ _____ PSI	#1 Check Pressure Drop _____ (A) Relief Valve Opened _____ (B) Buffer A-B= _____ (Min 3 PSI	Opened At: _____ PSID #1 Check _____ PSID	Opened At: _____ PSID #1 Check Valve: _____ PSID

☐NEW INSTALLATION ☐EXISTING ☐REPLACEMENT

SIZE: ___ ___.___ ___. MAKE: _____ MODEL: _____

SERIAL NUMBER: _____ ASSEMBLY LOCATION: _____

In completing and submitting this test report, the tester certifies that the assembly has been tested and maintained in accordance with all applicable rules and regulations or the water system and Washington State.

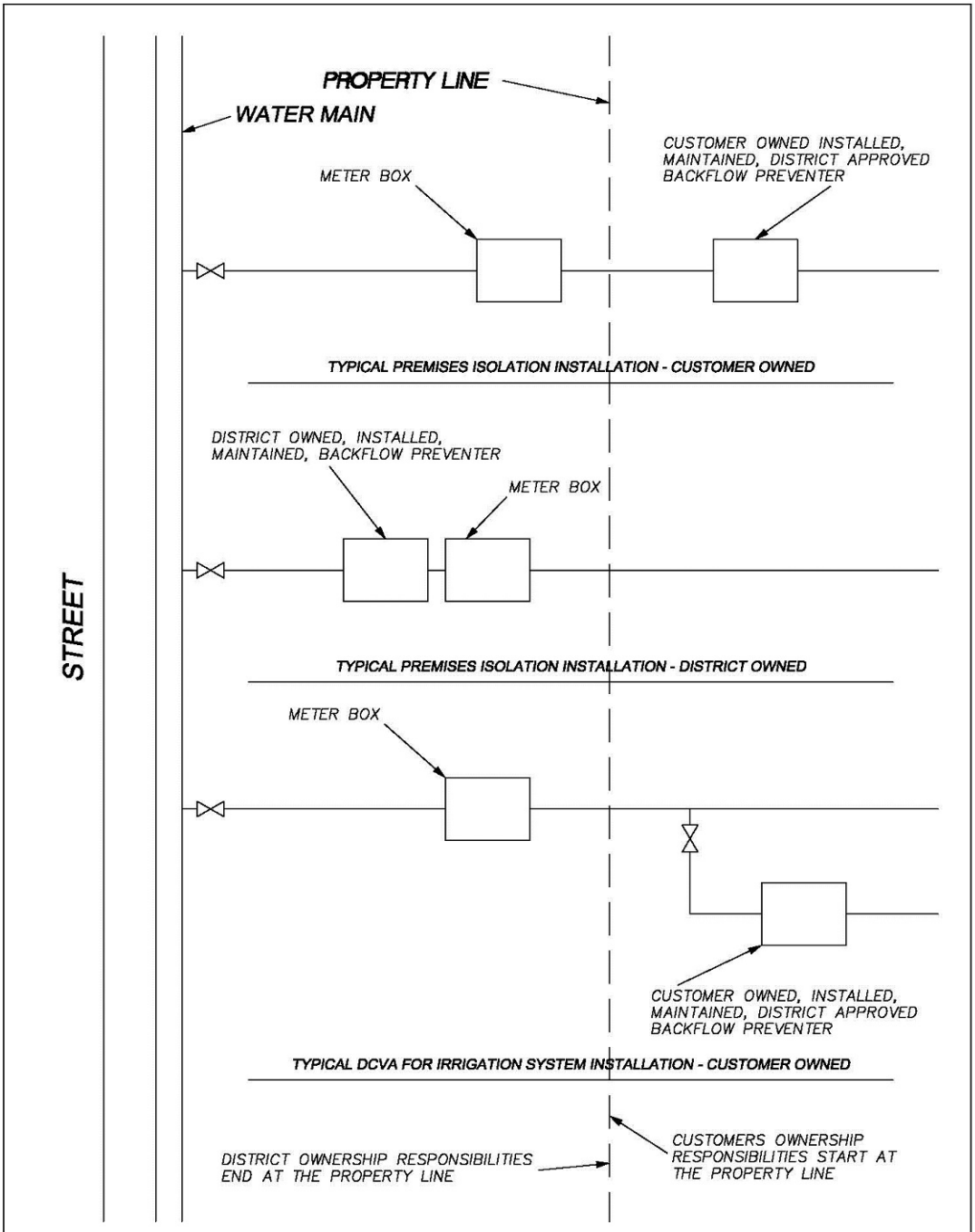
Gauge Calibration Date ____/____/____ Detector Meter Reading _____

Tester Signature _____ Certification Number _____

Tester Name Printed _____ Gauge Number _____

Tester Address _____ Phone Number _____

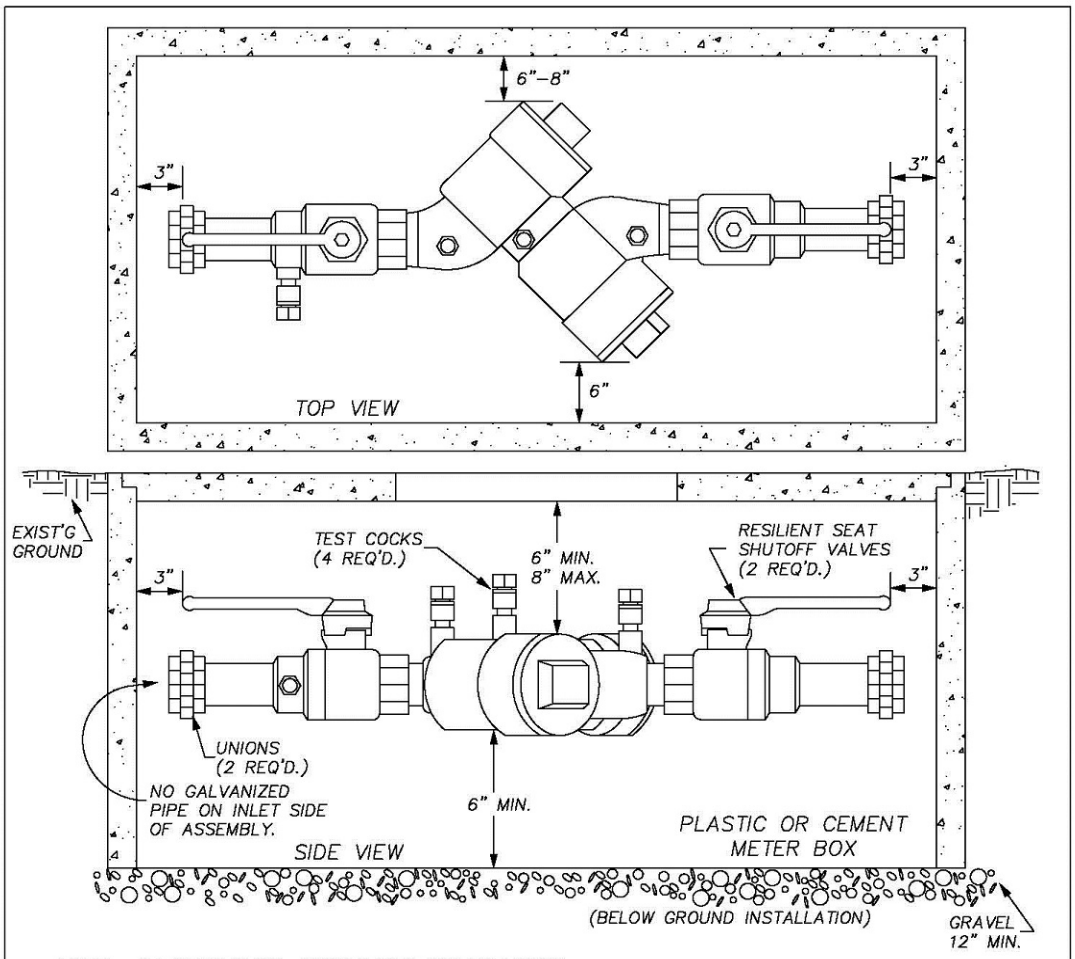
Exhibit G-1 – Backflow Assembly Typical Installation Detail



APPROVED BY	REVISED DATE	NORTH BEACH WATER DISTRICT	EXHIBIT NO.
GENERAL MANAGER	1/10/2012	INSTALLATION DETAIL TYPICAL INSTALLATION	I–a

I–a.DWG

Exhibit G-2 –Installation Detail - DCVA



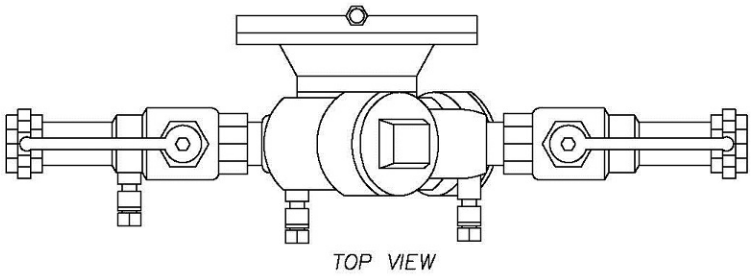
NOTE: ALL ITEMS SHALL COMPLY WITH THE FOLLOWING.

- APPROVED DOUBLE CHECK VALVE ASSEMBLY SHALL LAY HORIZONTAL WITH GROUND.
- DESIGNED FOR BACK SIPHONAGE AND BACK PRESSURE.
- THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION OF BACK FLOW PREVENTER
- NO GALVANIZED PIPE BEFORE ASSEMBLY
- THE DCVA MAY BE INSTALLED ABOVE OR BELOW THE GROUND PROVIDED ALL CLEARANCES ARE MET.
- DO NOT INSTALL IN AN AREA SUBJECT TO FLOODING OR HIGH GROUND WATER.
- VALVE SHALL BE PROTECTED FROM FREEZING CONDITIONS, AND PROVIDE ELECTRICAL CONNECTION.
- THE BACK FLOW ASSEMBLY SHALL BE A MODEL CURRENTLY APPROVED BY THE WASHINGTON STATE DEPARTMENT OF HEALTH
- INSTALLATIONS LARGER THAN 2 INCH SHALL BE APPROVED ON DESIGN SUBMITAL.

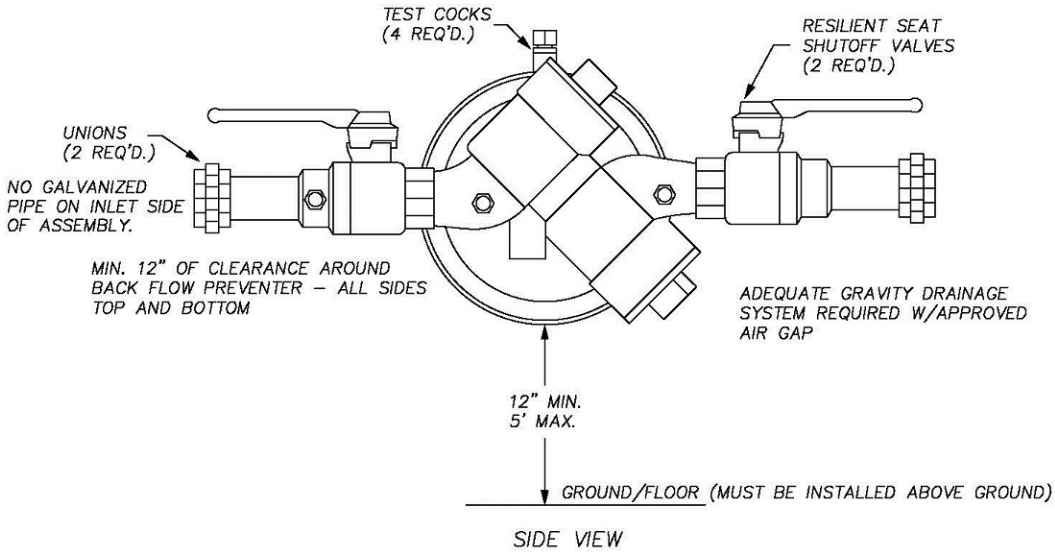
APPROVED BY	REVISED DATE	NORTH BEACH WATER DISTRICT	EXHIBIT NO.
DISTRICT MANAGER	1/9/2012	DOUBLE CHECK VALVE ASSEMBLY 2" & SMALLER	I–b

I–b.DWG

Exhibit G-3 –Installation Detail - RPBA



TOP VIEW



SIDE VIEW

NOTE: ALL ITEMS SHALL COMPLY WITH THE FOLLOWING.

- APPROVED REDUCED PRESSURE BACK FLOW ASSEMBLY SHALL LAY HORIZONTAL ONLY.
- DESIGNED FOR BACK SIPHONAGE AND BACK PRESSURE.
- THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION OF BACK FLOW PREVENTER.
- DO NOT INSTALL IN AN AREA SUBJECT TO FLOODING OR HIGH GROUND WATER.
- NO GALVANIZED PIPE BEFORE ASSEMBLY
- VALVE SHALL BE PROTECTED FROM FREEZING CONDITIONS, AND PROVIDE ELECTRICAL CONNECTION.
- THE BACK FLOW ASSEMBLY SHALL BE A CURRENT WASHINGTON STATE DEPARTMENT OF HEALTH APPROVED MODEL.
- INSTALLATIONS LARGER THAN 2 INCH AND BELOW GRADE WILL BE APPROVED ON DESIGN SUBMITTAL.

(ABOVE GROUND INSTALLATION)

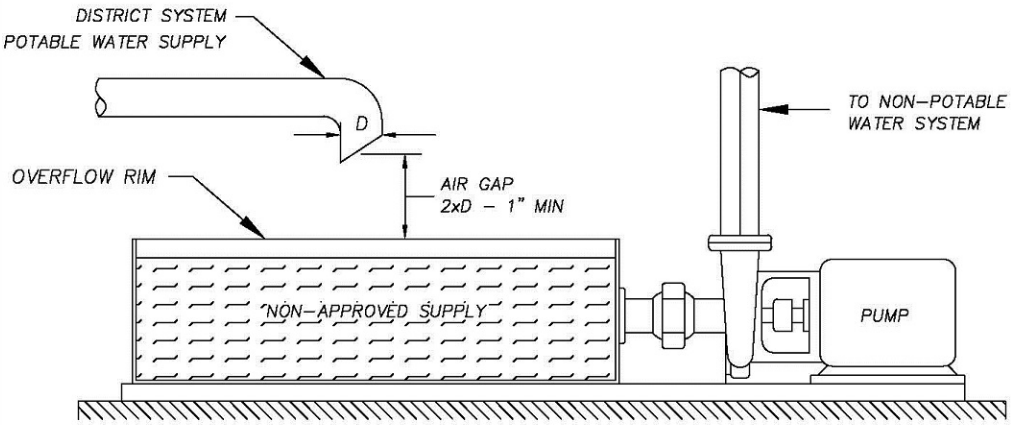
APPROVED BY	REVISED DATE	NORTH BEACH WATER DISTRICT	EXHIBIT NO.
GENERAL MANAGER	1/10/2012	REDUCED PRESSURE BACK FLOW ASSEMBLY– 2" & SMALLER	I–c

I–c.DWG

Exhibit G-4 –Installation Detail – Air Gap

APPROVED AIR GAP SEPARATION

AN APPROVED AIR GAP IS A PHYSICAL SEPARATION BETWEEN THE FREE FLOWING DISCHARGE END OF A POTABLE WATER SUPPLY PIPELINE AND THE OVERFLOW RIM OF AN OPEN OR NON–PRESSURE RECEIVING VESSEL. THESE VERTICAL, PHYSICAL SEPARATIONS MUST BE AT LEAST TWICE THE DIAMETER OF THE INLET PIPE BUT NEVER LESS THAN ONE INCH. IF SPLASHING IS A PROBLEM, TUBULAR SCREENS MAY BE ATTACHED OR THE SUPPLY LINE OUTLET MAY BE CUT AT A 45 DEGREE ANGLE. IF SUPPLY LINE IS CUT AT A 45 DEGREE ANGLE THE AIR GAP DISTANCE IS MEASURED FROM THE CENTER OF THE ANGLE. HOSES ARE NOT ALLOWED. BYPASSES ARE NOT ALLOWED. THE INSPECTION OF AIR GAPS SHALL BE INCLUDED IN THE YEARLY TESTING PROGRAM FOR BACKFLOW DEVICES.



APPROVED BY	REVISED DATE	NORTH BEACH WATER DISTRICT	EXHIBIT NO.
DISTRICT MANAGER	1/9/2012	AIR GAP SEPARATION	I–d

I–d.DWG

Exhibit G-5 –Installation Detail – PVBA/SVBA

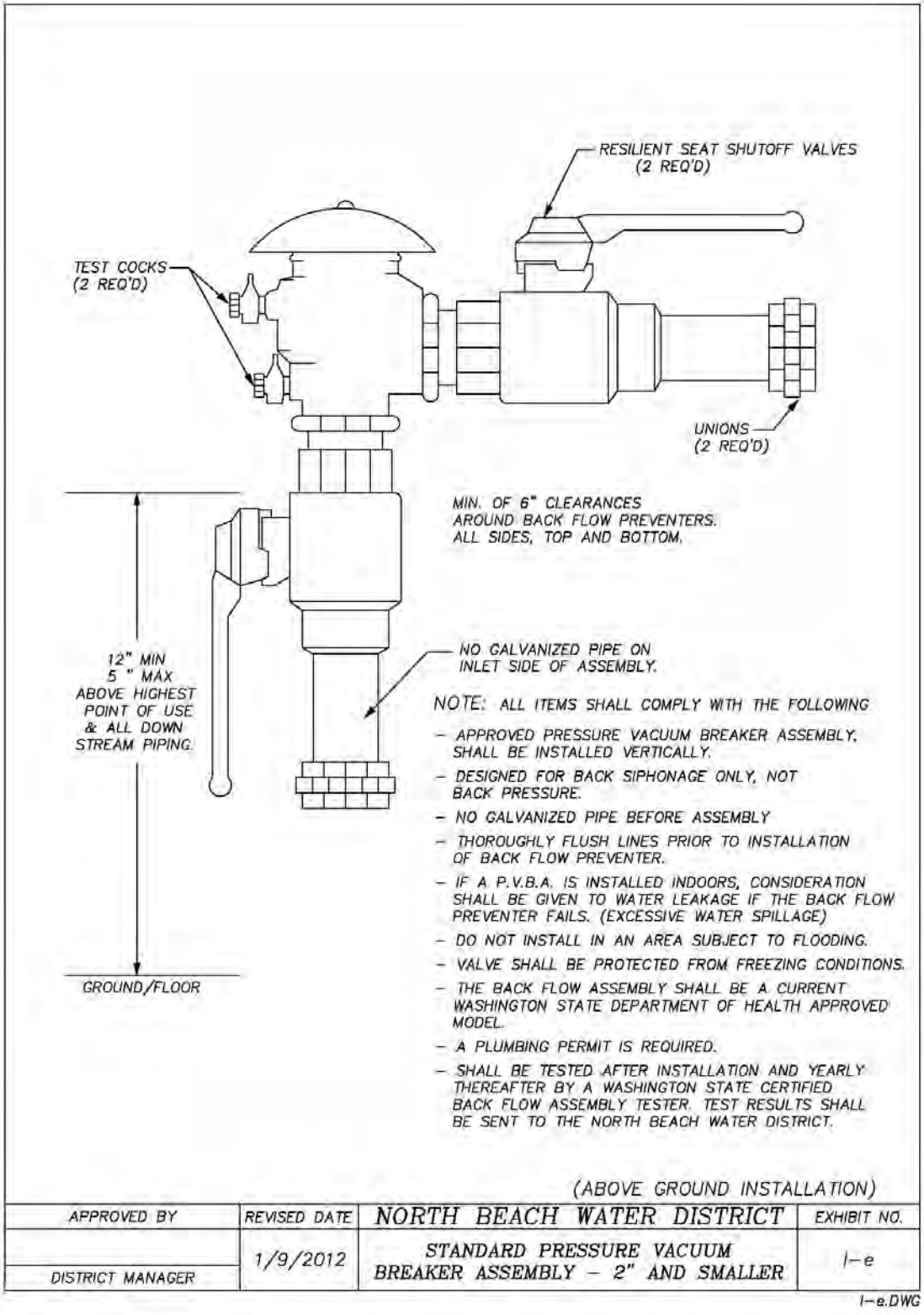


Exhibit H –Backflow Incident Response Plan

North Beach Water District
Backflow Incident Response Plan

General

This Backflow Incident Response Plan should be considered a supplement to the North Beach Water District’s Emergency Plan.

The Districts responsible operator in charge should immediately begin a backflow incident investigation whenever the initial evaluation of a water quality complaint indicates that:

1. A backflow incident has occurred (i.e., drinking water supply has been contaminated) or may have occurred; or
2. The complaint can’t be explained as a "normal" aesthetic problem.

Also, whenever a water main break (or power outage for pumped systems) causes a widespread loss of water pressure in the system (creating backsiphonage conditions), purveyors should initiate a check of distribution system water quality as a precursor to the need for a backflow incident investigation.

WAC 246-290-490 requires purveyors to notify DOH, the Local Administrative Authority and local health jurisdiction as soon as possible, but no later than the end of the next business day when a backflow incident contaminates the potable water supply (in the distribution system and/or in the customer's plumbing system). Purveyors should include a list of emergency contact telephone numbers at the beginning of the water system’s O & M Manual, so that the information is readily available when an incident occurs.

The backflow incident investigation will be a team effort. The investigation will be made by or initially led by the General Manager and the DOH-certified Cross-Connection Control Specialist employed by the District. The investigation team may include DOH ODW (regional) staff and Pacific County Community Development personnel.

The District will rely on the Backflow Incident Investigation Procedures manual, published by the Pacific Northwest Section, American Water Works Association (PNWS-AWWA) for guidance on how to respond to a backflow incident.

Short List of Tasks

The District will use the following short list of tasks as initial guidance for dealing with backflow incidents. The District's investigation team will consult the most recently published edition of the PNWS-AWWA Backflow Incident Investigation Procedures Manual referenced above for greater detail as soon as possible after learning of a possible or confirmed backflow incident. Note: the District is referred to as the Purveyor in the short task list.

1. Customer Notification

    a. As soon as possible, the Purveyor will notify customers not to consume or use water.

    b. The Purveyor will start the notification with the customers nearest in location to the assumed source of contamination (usually the customer(s) making the water quality complaint).

    c. The Purveyor will inform the customer about the reason for the backflow incident investigation and the Purveyor's efforts to restore water quality as soon as possible. The Purveyor will let the customer know that customers will be informed when they may use water, the need to boil water used for consumption until a satisfactory bacteriological test result is obtained from the lab, etc.

    d. Where a customer cannot be contacted immediately, the Purveyor will place a written notice on the front door handle, and a follow-up visit will be made to confirm that the customer received notice about the possible contamination of the water supply.

    e. When dealing with a backflow incident, the Purveyor will let customers know that it could take several days to identify the source and type of contaminant(s) and to clean and disinfect the distribution system.

2. Identification of Source of Contamination

    a. The Purveyor will give consideration to the distribution system as a potential source of the contaminant (e.g., air valve inlet below ground).

    b. The Purveyor will not start flushing the distribution system until the source of contamination is identified (flushing may aggravate the backflow situation, and will likely remove the

contaminant before a water sample can be collected to fully identify the contaminant).

c. The Purveyor will conduct a house-to-house survey to search for the source of contamination and the extent that the contaminant has spread through the distribution system. The Purveyor will check water meters that show a return of water (meter running backward) to the distribution system.

d. When the cross connection responsible for the system contamination is located, the Purveyor should discontinue water service to that customer, until the customer completes the corrective action ordered by the Purveyor.

3. Isolation of Contaminated Portion of System

a. The Purveyor will isolate the portions of the system that are suspected of being contaminated by closing isolating valves; leave one valve open to ensure that positive water pressure is maintained throughout the isolated system.

b. The Purveyor will be sure to notify all affected customers in the isolated area first and then notify other customers served by the system.

4. Public Health Impacts

a. The Purveyor will seek immediate input from and work with state and local health agencies to accurately communicate and properly mitigate potential health effects resulting from the backflow incident.

b. If appropriate, the Purveyor will refer customers that may have consumed the contaminant or had their household (or commercial) plumbing systems contaminated to public health personnel and Local Administrative Authorities (plumbing inspectors).

5. Cleaning/Disinfecting the Distribution System

a. The Purveyor will develop and implement a program for cleaning the contaminated distribution system consistent with the contaminant(s) identified.

b. Where both chemical and bacteriological contamination has occurred, the Purveyor will disinfect the system after the removal of the chemical contaminant.

c. Where any bacteriological contamination is suspected, the Purveyor will provide field disinfection.

Additional Information on Cleaning/Disinfecting the Distribution System

Most chemical or physical contaminants can be flushed from the water distribution system or customer's plumbing system with adequate flushing velocity. However, this may not be the case in systems where scale and corrosion deposits (e.g., tuberculation on old cast iron mains) provide a restriction to obtaining adequate flushing velocity, or where chemical deposits or bacteriological slimes (biofilm) are present (on which the chemical contaminant may adhere).

To remove a chemical or physical contaminant from the distribution system, purveyors may need to:

1. Physically clean the affected area using foam swabs (pigs); and/or
2. Alter the form of the chemical contaminant (e.g., through oxidation using chlorination or addition of detergents).

When adding any chemical (including chlorine) to remove a contaminant from the distribution system, it is essential that the District's Operator's fully understand the chemistry of the contaminant. **Adding the wrong chemical could make the contaminant more toxic to customers and/or more difficult to remove from the distribution system.**

To disinfect water mains using the "slug" or "continuous flow" method, a field unit should be used for chlorine injection, such as a chemical feed - metering or proportioning pump for sodium hypochlorite. The District will contact the DOH regional ODW to discuss proposed approaches to contaminant removal and disinfection prior to taking corrective action.

Exhibit I –Backflow Incident Report

Backflow Incident Report Form

Report Date:		
Reported By:	Title:	
Date of Incident:	Time of Incident	
Location of Incident (General):		
Backflow Originated From (Name of Premises):		
Street Address (Originating Premises):		
Contact Person (Originating Premises):	Phone#:	
Type of Business (Originating Premises):		
Describe Contaminates (Attach Chemical Analysis or MSDS Sheets):		
First:		
Second:		
Third:		
Was Contaminants Contained within Customers Premises? Yes: ☐ No ☐		
Effect of Contamination:	Illness Reported:	Physical Irritations Reported:
Fatalities:	Number of People Affected by the Incident:	
Cross-Connection Source of Contaminant (boiler, chemical pump, irrigation system, etc.):		
Cause of Backflow (main break, fire flow, etc.):		
Corrective Action Taken to Restore Water Quality (main flushing, disinfection, etc.):		

Continued on Back

Corrective Action Ordered by DOH (main flushing, disinfection, etc.):	
Previous Cross Connection Survey of Premises:	Date:
By:	CCS Cert. Number:
Types of Backflow Preventer Isolating Premises:	
RPBA:☐ RPDA:☐ DCVA:☐ DCDA:☐ PVBA:☐ SVBA:☐ AVB:☐ Air Gap:☐ None:☐	
Other:☐ Describe:	
Date Backflow Preventer was Last Tested: (most recent):	
Notification to the Washington State Department of Health:	
Date:	Time:
Name of DOH Representative Notified:	
Method of Notification:	
Name of Person who Notified the DOH Representative:	
Name of the Person Completing this Report:	
Title of the Person Completing this Report:	
Signature of the Person Completing this report:	_
Date:	_____

Notes/Sketches:

Attach sheets with additional information, sketches, and/or media information.

Exhibit J –Backflow Preventer Agreement

Backflow Preventer Assistance Agreement

This agreement between North Beach Water District (District), a special purpose district, and _____ a real property owner (Owner)

WHEREAS, the Owner owns real property legally described on Exhibit "A" attached hereto and incorporated herein by this reference (Property), and

WHEREAS, the District supplies potable water to the Property through its water system's distribution system, and

WHEREAS, the an actual or potential cross connection exists on the Property that requires the Property to be isolated from the distribution system by a Washington State Department of Health approved backflow preventer, and

WHEREAS, the District, as a service to its ratepayers and according to an established fee schedule, installs; maintains; tests; repairs; and replaces as needed, District owned backflow preventers in accordance with the District's rules and regulations and all applicable federal, state, and local laws, codes, and ordinances; and

WHEREAS, the Owner desires to have the District install; maintain; test; repair; and replace as needed, a District owned backflow preventer that is approved by the Washington State Department of Health and installed in accordance with District rules and regulations and applicable laws, codes, and ordinances;

NOW THEREFORE, in consideration of the terms and conditions herein stated, the District and the Owner agree as follows:

1. District agrees to install a _____ -inch backflow preventer along with all appurtenances and to have the backflow preventer tested by a Washington State Department of Health certified Backflow Assembly Tester within 30 days of the execution of this agreement.
2. The District agrees to have the backflow preventer tested annually by a Washington State Department of Health certified Backflow Assembly Tester and report the results of the test to the Owner within 30 days of the completion of the test.
3. In the event the backflow preventer fails the test, the District agrees it will, at its discretion, repair or replace the backflow preventer and retest the backflow preventer within 30 days of the failed test and repeat this procedure until the backflow preventer passes the test.

4. The Owner agrees to pay the BPAP service fee of $_____ per month to the District for as long as the Owner owns the Property and the backflow preventer is providing premises isolation for the Property.

5. The Owner agrees that the current BPAP service fee is established in a rate schedule approved by the District's Board of Commissioners (Board) and that the Board may amend the rate schedule at any time without notice.

6. The Owner agrees to release, waive, discharge and hold harmless the District, its officers, commissioners, agents, servants, representatives and employees from any and all liability, claims, demands, actions, and causes of action whatsoever arising out of or related to any loss, damage, or injury, including death, that may be sustained by Owner or any of the property owned by Owner as a result of Owner's participation in the backflow prevention program and the installation of a backflow prevention device. Owner further understands that by entering into this Agreement in no way implies liability by the District for any injury or property damage sustained by Owner as a result of any prior or future sanitary sewer backup.

7. This agreement shall be binding upon the undersigned and their respective heirs, executors, administrators, successors, transferees, assigns, agents, and attorneys.

8. Owner and District may terminate this agreement with 30 days' written notice. Upon termination of this Agreement the District will remove the backflow preventer and all appurtenances isolating the Property from the water system. If the actual or potential cross connection still exists on the Property the Owner will isolate the Property by installing, maintaining, and testing a Washington State Department of Health approved backflow preventer in accordance with North Beach Water District rules and regulations.

9. Upon execution, this Agreement shall be returned to North Beach Water District and the District shall cause the executed original of this agreement to be recorded with the Pacific County Auditor against the real property described in Exhibit "A" referred to above.

DATED this _____ day of _____, 20_____.

North Beach Water District:

By: _____
William Neal, General Manager

Owner:

By: _____
Name:

By: _____
Name:

DISTRICT OWNED BACKFLOW ASSEMBLIES

SERVICE LOC.	CUSTOMER NAME	ACCT #	SIZE	MAKE	MODEL	SERIAL #	ADDRESS
*	North Beach Filter Plant	*	3/4"	Wilkins	375XL	B184599	2212 272nd St, OP
5	Mullinex	5	1"	Febco	850	HB23695	20610 Crane Pl, OP
19	Wiegardt Brothers INC	19	2"	Wilkins	975XL2	4920719 XLU	3213 273rd ST, OP
22	Taylor Shellfish	682	2"	Zurn Wilkins	350XL	B455569	3602 273rd St, OP
146	Byrd	146	3/4"	Wilkins	350XL	A893875	1215 270th ST, OP
159	Fitzgerald	159	3/4"	Wilkins	850TXL	A721197	26701 N PL, OP
348	Long	348	3/4"	Wilkins	850XL	A622678	19414 U Pl, OP
363	Pacific Shellfish	363	1.5"	Wilkins Zurn	975XL2	4933775	3602 273rd St, OP
471	Port of Peninsula	471	1"	Watts	LF009M2QT	100350	3311 275th St, OP
801	Lutz	801	3/4"	Wilkins	850XL	A568998	1304 268th Pl, OP
901	Great NW Credit Union	901	3/4"	Wilkins	350XL	A757777	1409 251st Pl, OP
917	Carter	3967	3/4"	Wilkins	350XL	A792478	1307 264th Pl, OP
1103	Anderson	1103	3/4"	Wilkins	350XL	A622281	19403 K Pl, OP
1110	OP Community Church	11110	3/4"	Wilkins	350XL	1828050	26709 Vernon Ave, OP
1249	Morton	1249	3/4"	Wilkins	350XL	A622279	1712 273rd Pl, OP
1296	Daniels	1348	3/4"	Wilkins	850TXL	A731799	20711 Birch Pl, OP
1372	Petterson	2636	3/4"	Wilkins	350XL	A622280	19418 U Pl, OP
1381	Finegan	2359	3/4"	Wilkins	850XL	A622974	19407 K Pl, OP
1455	Pen. Baptist Church	1455	3/4"	Wilkins	350XL	A522969	23802 Pacific Way, OP
1529	Mack	1529	3/4"	Wilkins	850TXL	A622965	24907 J Pl, OP
1607	Reagor	2334	3/4"	Wilkins	850TXL	A731777	27820 Sandridge Rd, OP
1618	Allison	1618	3/4"	Wilkins	350XL	A565332	19402 Q St, OP
1710	St. Clair	1227	3/4"	Wilkins	850TXL	A731805	2980 272nd ST, OP
1741	Friedland	3857	3/4"	Wilkins	850TXL	A927801	27893 Y Ln, OP
1765	Wemmer	1765	3/4"	Wilkins	850XL	A565324	26309 Ridge Ave, OP
2012	Hansen	2012	3/4"	Zurn	350XL	A766444	1211 249th Pl, OP
2039	Carey	2350	3/4"	Wilkins	850	A766288	19408 K Pl, OP
2070	Bohan	2070	3/4"	Wilkins	850TXL	A743203	2703 212th PL, OP
2194	Regency- Golden Sands	2194	3/4"	Watts	009RD	12232	21608 O Ln, OP
2827	Hyde	2966	3/4"	Wilkins	850TXL	A731771	1109 194th St, OP

2905	Sturgeon	2856	3/4"	Wilkins	350XL	A792469	1302 242nd Pl, OP
2939	SS & J LLC	2939	3/4"	Wilkins	350 XL	A927797	21313 Paacific Way, OP
3178	Fielding	3178	3/4"	Wilkins	350	A622278	1311 256th Pl, OP
3192	Germaine	674	3/4"	Wilkins	TXL850	A622234	1505 266th Pl, OP
3305	Hernon	3272	3/4"	Wilkins	350XL	a926762	27009 K Pl, OP
3359	Stevens	3359	3/4"	Wilkins	850XL	A597327	27840 Y Pl, OP
3370	Benfiet	3107	3/4"	Wilkins	850XL	A792477	24910 J Pl, OP
3412	Loftin	3412	3/4"	Wilkins	350	A591649	23800 J Pl, OP
3970	Ma	652	3/4"	Wilkins	350XL	A785457	26905 K Pl, OP
4087	Seaman	4087	3/4"	Wilkins	850TXL	A749957	1208 199th Pl, OP
4153	Westfall	1640	3/4"	Wilkins	850	A766322	20711 Pacific Way, OP
4376	Mohondro	950	3/4"	Febco	850	HA00101	1300 234th Pl, OP
4418	Kiss Of Mist	4418	3/4"	Wilkins	350TXL	A766315	25311 Vernon Ave, OP

Total Devices
42

3RD PARTY TESTED BACKFLOW ASSEMBLIES

SERVICE LOC.	CUSTOMER NAME	ACCT #	SIZE	MAKE	MODEL	SERIAL #	ADDRESS
1	OB School	1	6"	Watts	757	KB-1931	25701 Vernon Ave, OP
1	OB School	1	3/4"	Watts	007M3	202496	25701 Vernon Ave, OP
1	OB School	1	1"	Wilkins	975XL	W233260	25701 Vernon Ave, OP
993	Free By The Sea	993	3/4"	Watts	009QT	433050	25517 Park Ave, OP
994	Free By The Sea	994	8"	Hersey	#1	6024934/6024935	25517 Park Ave, OP
994	Free By The Sea	994	3/4"	Febco	805	15626	25517 Park Ave, OP
3463	Dollar General	3882	6"	Ames	Colt 200	HD-3201	25312 Vernon Ave, OP

Total Devices
7

NON-DISTRICT OWNED BACKFLOW ASSEMBLIES

SERVICE LOC.	CUSTOMER NAME	ACCT #	SIZE	MAKE	MODEL	SERIAL #	ADDRESS
40	Raftis	3225	1"	Watts	007M1-QT	504483	26910 Sandridge Rd, OP
86	Killien	86	1"	Febco	HE850	47288	26301 n Pl, OP
89	Millard	89	1"	Wilkins	950XL	1428537	28210 Sandridge Rd, OP
95	FPD #1	95	2"	Watts	007MITQ	38370	26109 Ridge Ave, OP
631	Doc's Tavern	631	3/4"	Wilkins	950XL	W234074	1414 Bay Ave, OP
685	Covey	685	1"	Febco	850U	11138	19410 K Pl, OP
806	Miller	2658	1"	Wilkins	350XL	A059699	1411 263rd Pl, OP
860	OP Pharmacy	860	1.5"	Watts	LF009M2QT	33219	1501 Bay Ave, OP
1277	Bish	1277	1"	Zurn	950XL	1909959	26205 Sandridge Rd, OP
1313	TR Library	1313	1"	Febco	850	HD84351	1308 256th Pl, OP
1557	Blank	1557	3/4"	Watts	LF007M3QT	81186	27705 K Pl, OP
1900	Woodmansee	2105	1"	Febco	850	HEO9628	1810 229th Pl, OP
2116	Family HC	2116	1 1/2"	Watts	009M2	32829	21610 Pacific Way, OP
2145	Waldock	2145	1"	Febco	805Y	A1481	1222 194th St, LB
2156	Veitenheimer	2156	3/4"	Watts	007M#QT	3534473	20709 Birch Pl, OP
2217	Engel	3143	1"	Watts	007M1QT	413512	1301 242nd Pl, OP
2226	Golightly	968	1"	Watts	007MI-QT	502802	1120 242nd Pl, OP
2597	Jones	2597	3/4"	Wilkins	950 KLT	1828050	1514 198th St, LB
2607	Gleb	2607	3/4"	Watts	LF007NBQT	109568	1037 258th Pl, OP
3122	Mcanulty	3122	1"	Watts	1F007M1OT	65601	1023 242nd Place, OP
3153	Holtermann	3153	1"	Watts	LF007MIQT	42203	1105 195th St, LB
3262	Hibner	3004	3/4"	Watts	007M3	A12940	20521 Crane Pl, OP
3355	Boehm	3355	3/4"	Wilkins	XL950	WO49154	1206 197th Pl, LB
3401	Crane	1627	1"	Wilkins	XLCh 3350	A174427	26215 Sandridge Rd, OP
3964	Cobb	3964	1"	Febco	850	A60024	24799 K Pl, OP
4082	Fry	1914	3/4"	Wilkins	350XLT	1877698	1301 198th Pl, LB
4222	Price	1234	1"	Watts	LF007MIQT	30031	22225 Pacific Way, OP
4389	Black	1692	1"	Watts	007M1QT	538095	1507 229th Pl, OP

Total Devices
28

APPENDIX N

CIP COST ESTIMATE

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT SO-1
South Wiegardt Wellfield Treatment Pilot Study

NO.	ITEM	AMOUNT
1	Treatment Pilot Study	$49,500
	TOTAL ESTIMATED PROJECT COST (ROUNDED).....	**$ 49,500**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT SO-2
South Wiegardt Wellfield Treatment System Improvements

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 21,000	$ 21,000
2	Remove Existing Filter Media	LUMP SUM	$ 10,000	$ 10,000
3	Filter Media	605 CF	$ 300	$ 181,500
4	Flow Meter	1 EA	$ 15,000	$ 15,000
5	Disinfection and Testing	LUMP SUM	$ 5,000	$ 5,000

Subtotal:	$ 232,500
Sales Tax (8.1%):	$ 18,833
Subtotal:	$ 251,333
Contingency (20%):	$ 50,267
TOTAL ESTIMATED CONSTRUCTION COST:	$ 301,599
Engineering and Administrative Costs (15%):	$ 45,240
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 347,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT SO-3
Backwash Basin SWWF

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 7,000	$ 6,000
2	Backwash Basin and Associated Piping	LUMP SUM	$ 62,000	$ 62,000

Subtotal:	$ 68,000
Sales Tax (8.1%):	$ 5,508
Subtotal:	$ 73,508
Contingency (20%):	$ 14,702
TOTAL ESTIMATED CONSTRUCTION COST:	$ 88,210
Engineering and Administrative Costs (30%):	$ 26,463
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 115,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT SO-4
North Wellfield Treatment System Improvements

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 40,000	$ 40,000
2	Removal of Existing Filters and Associated Piping	LUMP SUM	$ 25,000	$ 25,000
3	Treatment Equipment	LUMP SUM	$ 175,000	$ 175,000
4	Piping, Valves, and Appurtenances	LUMP SUM	$ 100,000	$ 100,000
5	Electrical, Telemetry, and Instrumentation	LUMP SUM	$ 50,000	$ 50,000
6	Sodium Hypochlorite Feed System	LUMP SUM	$ 50,000	$ 50,000

Subtotal:	$ 440,000
Sales Tax (8.1%):	$ 35,640
Subtotal:	$ 475,640
Contingency (20%):	$ 95,128
TOTAL ESTIMATED CONSTRUCTION COST:	$ 570,768
Engineering and Administrative Costs (30%):	$ 171,230
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 742,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT P-1
Replace and Improve North Wellfield Booster Pumps

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 25,000	$ 25,000
2	Remove Existing Pumps	LUMP SUM	$ 10,000	$ 10,000
3	Booster Pump	2 EA	$ 15,000	$ 30,000
4	Piping, Valves, and Appurtenances	LUMP SUM	$ 60,000	$ 60,000
5	Electrical and Telemetry	LUMP SUM	$ 150,000	$ 150,000

Subtotal:	$ 275,000
Sales Tax (8.1%):	$ 22,275
Subtotal:	$ 297,275
Contingency (20%):	$ 59,455
TOTAL ESTIMATED CONSTRUCTION COST:	$ 356,730
Engineering and Administrative Costs (15%):	$ 53,510
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 411,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT P-2
Replace and Improve South Wiegardt Wellfield Booster Pumps

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 25,000	$ 25,000
2	Remove Existing Pumps	LUMP SUM	$ 10,000	$ 10,000
3	Booster Pump	2 EA	$ 15,000	$ 30,000
4	Piping, Valves, and Appurtenances	LUMP SUM	$ 60,000	$ 60,000
5	Electrical and Telemetry	LUMP SUM	$ 150,000	$ 150,000

Subtotal:	$ 275,000
Sales Tax (8.1%):	$ 22,275
Subtotal:	$ 297,275
Contingency (20%):	$ 59,455
TOTAL ESTIMATED CONSTRUCTION COST:	$ 356,730
Engineering and Administrative Costs (15%):	$ 53,510
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 411,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT ST-1
New Reservoir at the South Wiegardt Wellfield

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 89,000	$ 89,000
2	Concrete Reservoir, 30ft Diameter x 40ft Height	LUMP SUM	$ 650,000	$ 650,000
3	Foundation Materials	LUMP SUM	$ 18,000	$ 18,000
4	Water Distribution	LUMP SUM	$ 120,000	$ 120,000
5	Surface Restoration	LUMP SUM	$ 1,500	$ 1,500
6	Electrical and Controls	LUMP SUM	$ 100,000	$ 100,000
	Subtotal:			$ 978,500
	Sales Tax (8.1%):			$ 79,259
	Subtotal:			$ 1,057,759
	Contingency (20%):			$ 211,552
	TOTAL ESTIMATED CONSTRUCTION COST:			$ 1,269,310
	Engineering and Administrative Costs (30%):			$ 380,793
	TOTAL ESTIMATED PROJECT COST (ROUNDED)			**$ 1,651,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT D-1
Replace the "Hog's Back" – Birch Place from 240th Place to 252nd Street

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 52,000	$ 52,000
2	8-inch C900 Water Pipe, Including Fittings	3,300 LF	$ 90	$ 297,000
3	Locate Existing Utilities	LUMP SUM	$ 14,000	$ 14,000
4	Erosion Control	LUMP SUM	$ 14,000	$ 14,000
5	Additional Pipe Fittings	500 LB	$ 4	$ 2,000
6	Trench Safety Systems	LUMP SUM	$ 16,500	$ 16,500
7	8-inch Gate Valves	8 EA	$ 2,500	$ 20,000
8	Fire Hydrants	4 EA	$ 7,000	$ 28,000
9	Sawcutting	1 LS	$ 3,000	$ 3,000
10	Connections to Existing	10 EA	$ 5,000	$ 50,000
11	Crushed Surfacing Top Course	550 TN	$ 50	$ 27,500
12	HMA Pavement	110 TN	$ 200	$ 22,000
13	Traffic Control	180 HRS	$ 150	$ 27,000

Subtotal:	$ 573,000
Sales Tax (8.1%):	$ 46,413
Subtotal:	$ 619,413
Contingency (20%):	$ 123,883
TOTAL ESTIMATED CONSTRUCTION COST:	$ 743,296
Engineering and Administrative Costs (30%):	$ 222,989
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 967,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT D-2
Park Avenue from 249th Street to Bay Avenue

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 56,000	$ 56,000
2	8-inch C900 Water Pipe, Including Fittings	3,200 LF	$ 90	$ 288,000
3	Locate Existing Utilities	LUMP SUM	$ 15,000	$ 15,000
4	Erosion Control	LUMP SUM	$ 15,000	$ 15,000
5	Additional Pipe Fittings	500 LB	$ 4	$ 2,000
6	Trench Safety Systems	LUMP SUM	$ 16,000	$ 16,000
7	8-inch Gate Valves	15 EA	$ 2,500	$ 37,500
8	Fire Hydrants	4 EA	$ 7,000	$ 28,000
9	Sawcutting	LUMP SUM	$ 2,900	$ 2,900
10	Connections to Existing	17 EA	$ 5,000	$ 85,000
11	Crushed Surfacing Top Course	530 TN	$ 50	$ 26,500
12	HMA Pavement	100 TN	$ 200	$ 20,000
13	Traffic Control	180 HRS	$ 150	$ 27,000

Subtotal:	$ 618,900
Sales Tax (8.1%):	$ 50,131
Subtotal:	$ 669,031
Contingency (20%):	$ 133,806
TOTAL ESTIMATED CONSTRUCTION COST:	$ 802,837
Engineering and Administrative Costs (30%):	$ 240,851
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 1,044,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT D-3
Park Avenue from Bay Avenue to 270th Place

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 46,000	$ 46,000
2	8-inch C900 Water Pipe, Including Fittings	2,400 LF	$ 90	$ 216,000
3	Locate Existing Utilities	LUMP SUM	$ 13,000	$ 13,000
4	Erosion Control	LUMP SUM	$ 13,000	$ 13,000
5	Additional Pipe Fittings	400 LB	$ 4	$ 1,600
6	Trench Safety Systems	LUMP SUM	$ 12,000	$ 12,000
7	8-inch Gate Valves	16 EA	$ 2,500	$ 40,000
8	Fire Hydrants	3 EA	$ 7,000	$ 21,000
9	Sawcutting	LUMP SUM	$ 2,200	$ 2,200
10	Connections to Existing	18 EA	$ 5,000	$ 90,000
11	Crushed Surfacing Top Course	400 TN	$ 50	$ 20,000
12	HMA Pavement	80 TN	$ 200	$ 16,000
13	Traffic Control	130 HRS	$ 150	$ 19,500

Subtotal:	$ 510,300
Sales Tax (8.1%):	$ 41,334
Subtotal:	$ 551,634
Contingency (20%):	$ 110,327
TOTAL ESTIMATED CONSTRUCTION COST:	$ 661,961
Engineering and Administrative Costs (30%):	$ 198,588
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 861,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT D-4
U Street North Extension

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 27,000	$ 27,000
2	8-inch C900 Water Pipe, Including Fittings	2,200 LF	$ 90	$ 198,000
3	Locate Existing Utilities	LUMP SUM	$ 7,000	$ 7,000
4	Erosion Control	LUMP SUM	$ 7,000	$ 7,000
5	Additional Pipe Fittings	350 LB	$ 4	$ 1,400
6	Trench Safety Systems	LUMP SUM	$ 11,000	$ 11,000
7	8-inch Gate Valves	1 EA	$ 2,500	$ 2,500
8	Fire Hydrants	2 EA	$ 7,000	$ 14,000
9	Connections to Existing	1 EA	$ 5,000	$ 5,000
10	Crushed Surfacing Top Course	250 TN	$ 50	$ 12,500
11	Traffic Control	120 HRS	$ 100	$ 12,000

Subtotal:	$ 297,400
Sales Tax (8.1%):	$ 24,089
Subtotal:	$ 321,489
Contingency (20%):	$ 64,298
TOTAL ESTIMATED CONSTRUCTION COST:	$ 385,787
Engineering and Administrative Costs (30%):	$ 115,736
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 502,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT D-5
Replace 8-inch water main along State Route 103

NO.	ITEM	QUANTITY		UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM		$ 431,000	$ 431,000
2	8-inch C900 Water Pipe, Including Fittings	25,000	LF	$ 90	$ 2,250,000
3	Locate Existing Utilities	LUMP SUM		$ 118,000	$ 118,000
4	Erosion Control	LUMP SUM		$ 118,000	$ 118,000
5	Additional Pipe Fittings	3750	LB	$ 4	$ 15,000
6	Trench Safety Systems	LUMP SUM		$ 125,000	$ 125,000
7	8-inch Gate Valves	101	EA	$ 2,500	$ 252,500
8	Fire Hydrants	28	EA	$ 7,000	$ 196,000
9	Sawcutting	LUMP SUM		$ 22,500	$ 22,500
10	Connections to Existing	103	EA	$ 5,000	$ 515,000
11	Crushed Surfacing Top Course	4130	TN	$ 50	$ 206,500
12	HMA Pavement	770	TN	$ 200	$ 154,000
13	Traffic Control	1340	HRS	$ 250	$ 335,000

Subtotal:	$ 4,738,500
Sales Tax (8.1%):	$ 383,819
Subtotal:	$ 5,122,319
Contingency (20%):	$ 1,024,464
TOTAL ESTIMATED CONSTRUCTION COST:	$ 6,146,782
Engineering and Administrative Costs (30%):	$ 1,844,035
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 7,991,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT D-6
201st Lane from T Street to Birch Lane

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 49,000	$ 49,000
2	Clearing and Grubbing	LUMP SUM	$ 6,000	$ 6,000
3	Locate Existing Utilities	LUMP SUM	$ 5,000	$ 5,000
4	Erosion Control	LUMP SUM	$ 11,000	$ 11,000
5	8-inch C900 Water Pipe, Including Fittings	2,230 LF	$ 90	$ 200,700
6	Additional Pipe Fittings	350 LB	$ 4	$ 1,400
7	8-inch Gate Valves	2 EA	$ 2,500	$ 5,000
8	Fire Hydrants	2 EA	$ 7,000	$ 14,000
9	Trench Safety Systems	LUMP SUM	$ 7,650	$ 7,650
10	Directional Drilling	700 LF	$ 300	$ 210,000
11	Connections to Existing	2 EA	$ 5,000	$ 10,000
12	Crushed Surfacing Top Course	170 TN	$ 50	$ 8,500
13	Site Restoration	LUMP SUM	$ 11,000	$ 11,000

Subtotal:	$ 539,250
Sales Tax (8.1%):	$ 43,679
Subtotal:	$ 582,929
Contingency (20%):	$ 116,586
TOTAL ESTIMATED CONSTRUCTION COST:	$ 699,515
Permitting and Land Acquisition Costs (15%):	$ 104,927
Engineering and Administrative Costs (30%):	$ 209,855
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 1,015,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT D-7
North Sandridge Road and 281st Street

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 34,000	$ 34,000
2	8-inch C900 Water Pipe, Including Fittings	2,350 LF	$ 90	$ 211,500
3	Locate Existing Utilities	LUMP SUM	$ 9,000	$ 9,000
4	Erosion Control	LUMP SUM	$ 9,000	$ 9,000
5	Additional Pipe Fittings	400 LB	$ 4	$ 1,600
6	Trench Safety Systems	LUMP SUM	$ 11,750	$ 11,750
7	8-inch Gate Valves	1 EA	$ 2,500	$ 2,500
8	Fire Hydrants	3 EA	$ 7,000	$ 21,000
9	Sawcutting	LUMP SUM	$ 2,200	$ 2,200
10	Connections to Existing	3 EA	$ 5,000	$ 15,000
11	Crushed Surfacing Top Course	390 TN	$ 50	$ 19,500
12	HMA Pavement	80 TN	$ 200	$ 16,000
13	Traffic Control	130 HRS	$ 150	$ 19,500

Subtotal:	$ 372,550
Sales Tax (8.1%):	$ 30,177
Subtotal:	$ 402,727
Contingency (20%):	$ 80,545
TOTAL ESTIMATED CONSTRUCTION COST:	$ 483,272
Engineering and Administrative Costs (30%):	$ 144,982
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 629,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT D-8
O Lane Fire Flow Improvements

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 5,000	$ 5,000
2	Clearing and Grubbing	LUMP SUM	$ 1,500	$ 1,500
3	Locate Existing Utilities	LUMP SUM	$ 1,000	$ 1,000
4	Erosion Control	LUMP SUM	$ 1,000	$ 1,000
5	6-inch C900 Water Pipe, Including Fittings	300 LF	$ 75	$ 22,500
6	Additional Pipe Fittings	50 LB	$ 4	$ 200
7	6-inch Gate Valves	1 EA	$ 2,500	$ 2,500
8	Trench Safety Systems	LUMP SUM	$ 1,500	$ 1,500
9	Connections to Existing	2 EA	$ 5,000	$ 10,000
10	Crushed Surfacing Top Course	50 TN	$ 50	$ 2,500
11	Site Restoration	LUMP SUM	$ 1,000	$ 1,000
12	Traffic Control	24 HRS	$ 250	$ 6,000

Subtotal:	$ 54,700
Sales Tax (8.1%):	$ 4,431
Subtotal:	$ 59,131
Contingency (20%):	$ 11,826
TOTAL ESTIMATED CONSTRUCTION COST:	$ 70,957
Permitting and Land Acquisition Costs (10%):	$ 7,096
Engineering and Administrative Costs (30%):	$ 21,287
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 100,000**

NORTH BEACH WATER DISTRICT
CAPITAL IMPROVEMENT PROJECTS
PRELIMINARY COST ESTIMATE - PROJECT D-10
State Route 103 Extension

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 90,000	$ 90,000
2	8-inch C900 Water Pipe, Including Fittings	6,200 LF	$ 90	$ 558,000
3	Locate Existing Utilities	LUMP SUM	$ 25,000	$ 25,000
4	Erosion Control	LUMP SUM	$ 25,000	$ 25,000
5	Additional Pipe Fittings	950 LB	$ 4	$ 3,800
6	Trench Safety Systems	LUMP SUM	$ 31,000	$ 31,000
7	8-inch Gate Valves	5 EA	$ 2,500	$ 12,500
9	Fire Hydrants	7 EA	$ 7,000	$ 49,000
10	Sawcutting	LUMP SUM	$ 5,580	$ 5,580
12	Connections to Existing	1 EA	$ 5,000	$ 5,000
13	Crushed Surfacing Top Course	1030 TN	$ 50	$ 51,500
14	HMA Pavement	190 TN	$ 200	$ 38,000
15	Traffic Control	340 HRS	$ 300	$ 102,000

Subtotal:	$ 996,380
Sales Tax (8.1%):	$ 80,707
Subtotal:	$ 1,077,087
Contingency (20%):	$ 215,417
TOTAL ESTIMATED CONSTRUCTION COST:	$ 1,292,504
Permitting and Land Acquisition:	$ 60,000
Engineering and Administrative Costs (30%):	$ 387,751
TOTAL ESTIMATED PROJECT COST (ROUNDED)	**$ 1,681,000**

APPENDIX O

SEPA CHECKLIST

SEPA[1] Environmental Checklist

Purpose of checklist

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization, or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. **You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown.** You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

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 or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for lead agencies

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B, plus the Supplemental Sheet for Nonproject Actions (Part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in "Part B: Environmental Elements" that do not contribute meaningfully to the analysis of the proposal.

[1] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/Checklist-guidance

A. Background

Find help answering background questions[2]

1. **Name of proposed project, if applicable:**

   Water System Plan Update

2. **Name of applicant:**

   North Beach Water District

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

   Rick Gray, General Manager

   North Beach Water District

   PO Box 618

   Ocean Park, Washington 98640

   (360) 665-4144

4. **Date checklist prepared:**

   April 2024

5. **Agency requesting checklist:**

   Washington State Department of Health

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

   Approval of Draft Plan: May 2024

   Adoption of Final Plan: September 2024

   Planning Horizon: 10 Years

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

   This plan establishes recommended capital improvements for North Beach Water District water system, which may be implemented as individual projects at the District's discretion.

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

   Critical Areas Report prepared by Wetland Resources, Inc.
   Geotechnical Report prepared by PanGEO, Inc.

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

[2] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-A-Background

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

Washington State DOH: Water System Plan approval
Washington State Department of Ecology: Water Rights Concurrence
Pacific County: Water System Plan Consistency Statement

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.)**

The Water System Plan is a planning document for the North Beach Water District water system, which has been prepared in accordance with the requirements of WAC 246-290. The plan addresses the ability of the water system to provide potable water supply within the District's service area, The plan identifies recommended water system capital improvement projects according to a prioritization schedule. These identified projects are anticipated to be necessary to provide adequate water service for anticipated growth and development over a 20-year planning horizon. As required, each individual water system capital improvement project will be subject to environmental evaluation and assessment as the projects are implemented in their various stages.

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

The Water System Plan has been developed to address the anticipated potable water service needs for the District's water service area.

B. Environmental Elements

1. Earth

Find help answering earth questions[3]

a. **General description of the site:**

The water service area is located on the Long Beach Peninsula in southwest Washington. Elevations range from approximately sea level adjacent to the Pacific Ocean on the west and Willapa Bay on the East, to a high of approximately 60 feet. The underlaying soils are primarily basalt-derived fine sand, gravel, and clay overlain with dune sand.

[3] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-earth

Circle or highlight one: Flat, rolling, hilly, steep slopes, mountainous, other:

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

Slopes of any magnitude are very localized near the dune on the west side of the peninsula and are rarely greater than 30 degrees.

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 agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.**

The soils are composed of deeply weathered and eroded basalt-derived fine sand, gravel, and clay. The upper soil strata is predominately dune sand with clay lenses to depths of 80 to 180 feet before silt, blue and gray clay, and gravel deposits are reached that extend to basalt layers near 700 feet.

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

No.

e. **Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.**

No grading or filling is expressly proposed by the Water System Plan. Grading and or filling associated with individual recommended capital improvement projects may be required during the construction and implementation of individual projects. Such impacts will be evaluated on a project specific basis.

f. **Could erosion occur because of clearing, construction, or use? If so, generally describe.**

Construction associated with recommended water system capital improvement projects will include protective measures for erosion control where necessary. Appropirate best management practices, erosion control, and mitigative measures will be determined on a project specific basis prior to the actual time of construction.

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

To be determined on a project specific basis prior to the actual time of construction for recommended water system capital improvement projects.

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

No earth impacts are anticipated as a result of Water System Plan adoption. Project specific impacts will be evaluated on a project specific basis.

2. Air

Find help answering air questions[4]

a. **What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.**

Recommended water system capital improvement construction projects should not result in impacts to air quality with the possible exception of dust and vehicle emissions from construction equipment. Specific impacts will be evaluated on a project specific basis.

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

None.

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

No air impacts are anticipated as a result of Water System Plan adoption. Project specific impacts will be evaluated on a project specific basis.

3. Water

Find help answering water questions[5]

a. **Surface:**

Find help answering surface water questions[6]

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.**

   Yes, there are several small lakes in the District's water service area, including Loomis Lake, Lake Rushton, and other small un-named lakes and ponds, wetland areas, and man-made ditches. The Pacific Ocean is immediately to the west of the District and Willapa Bay to the east of the water service area.

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.**

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[4] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-Air

[5] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water

[6] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water/Environmental-elements-Surface-water

The proximity of recommended improvements to surface water will be more specifically evaluated on a project specific basis.

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.**

   None anticipated.

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

   No.

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

   No.

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:

Find help answering ground water questions[7]

1. **Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give a general description, purpose, and approximate quantities if known.**

   The District's water system uses groundwater supplies exclusively. Groundwater is currently and will continue to be withdrawn from ten existing active groundwater wells under existing water rights. Wells are located in a wellfield on 272nd Street between U Street and Sandridge Road and a wellfield on 255th Lane east of U Street. No new water rights are anticipated to be necessary within the planning horizon.

2. **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (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.**

   The water treatment discharges filter backwash water to shallow infiltration ponds. The backwash water contains insoluble particles of iron and manganese oxides, which are naturally occurring in the local groundwater and removed from the water by a filtration process. These particles are retained in the sandy soil of the percolation basisn and clean water percolates to the water table. The backwash

[7] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-3-Water/Environmental-elements-Groundwater

water is periodically monitored to ensure its quality. Accumulated iron and manganese oxide particles are periodically removed from the backwash basins. The materials are inorganic, odorless, and are generally suitable for land spreading as a soil amendment.

The District's water system served a total of 3,602 Equivalent Residential Units (ERUs) as of the end of 2022. The Water System Plan projects a total of 3,669 ERUs by the end of 2044. All connections are on septic tank/drainfield wastewater disposal systems.

c. **Water Runoff (including stormwater):**

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

   Not applicable. Project specific impacts will be evaluated on a project specific basis.

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

   No.

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

   No.

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

None.

4. Plants

Find help answering plants questions

a. **Check the types of vegetation found on the site:**

☒ **deciduous tree: alder, maple, aspen, other**

☒ **evergreen tree: fir, cedar, pine, other**

☒ **shrubs**

☒ **grass**

☐ **pasture**

☒ **crop or grain**

☒ **orchards, vineyards, or other permanent crops.**

☒ **wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other**

☒ **water plants: water lily, eelgrass, milfoil, other**

☐ **other types of vegetation**

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

None. Project specific impacts will be evaluated on a project specific basis.

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

To be determined on a project specific basis.

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

To be determined on a project specific basis.

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

To be determined on a project specific basis.

5. Animals

Find help answering animal questions[8]

a. **List any birds and other animals that have been observed on or near the site or are known to be on or near the site.**

Examples include:

- **Birds: hawk, heron, eagle, songbirds, other:**
- **Mammals: deer, bear, elk, beaver, other:**
- **Fish: bass, salmon, trout, shellfish, other:**

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

None known.

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

The Washington coast is a part of the Pacific Flyway.

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

None required.

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

None known.

[8] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-5-Animals

6. Energy and natural resources

Find help answering energy and natural resource questions[9]

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.**

   All water treatment, pumping and operations equipment, building lighting and heating is accomplished with electical energy. Electrical power is provided by Pacific County PUD #2.

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.**

   The District's water system plan addresses Water Use Efficiency, including Water Use Efficiency Goals and Measures adopted by the District's Board of Commissioners. Since all the District's water system water is pumped using electrical energy, all water conservation is directly related to energy conservation.

7. Environmental health

Health Find help with answering environmental health questions[10]

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

   This will need to be evaluated on a case by case basis for individual projects as they are implemented.

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

      None known.

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

      None known.

[9] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-6-Energy-natural-resou
[10] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-7-Environmental-health

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

   None known.

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

   None anticipated.

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

   None required.

b. Noise

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

   None anticipated.

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

   Project specific impacts will be evaluated on a project specific basis.

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

   None planned.

8. Land and shoreline use

Find help answering land and shoreline use questions[11]

a. **What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.**

   A variety of land uses exist in the District's water service area. Land uses are identified in Figure 1-15 of the Water System Plan. The predominant land use is identified as General Rural. Other land uses in or adjacent to the area are Community Crossroad, Public Preserve, Rural Agricultural, Rural Village, and Shoreline Development. The majority of the service area has been subdivided for residential development.

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

   No agricultural or forest land of long-term commercial significant will be converted to other uses as a result of this proposal.

[11] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-8-Land-shoreline-use

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

   No.

c. **Describe any structures on the site.**

   There are approximately 2,758 residential structures and 101 commercial structures in the District's water service area.

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

   No.

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

   Zoning within the District's water service area includes Agricultural, Community Commercial, Conservation, General Residential, Industrial, Mixed Use, Resort, Restricted Residential, and Rural Residential.

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

   Pacific County Comprehensive Plan designations within the District's water service include General Rural, Rural Agricultural, Shoreline Development, Public Preserve, Rural Village, and Community Crossroad.

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

   Not applicable.

h. **Has any part of the site been classified as a critical area by the city or county? If so, specify.**

   No.

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

   The residential population within the water service are is unknown, though it is likely near the number of residential service connections, which was 2,758 in 2022. The population is projected to increase at an annual rate of 0.71 percent, which corresponds with 3,222 residential connections in 2044. The peninsula also supports a seasonal tourism trade estimated to bring 2,200-10,000 visitors per month, peaking in the late summer.

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

   None.

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

   Not applicable.

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

The District must obtain a concurrency statement from the Pacific County Planning Department, specifically stating that the water system plan is consistent with the county land use plans.

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

None.

9. Housing

Find help answering housing questions[12]

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

The proposal will not provide and housing. The Water System Plan does, however, provide planning for the water supply needs for all housing within the District's water service area.

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

None.

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

Not applicable.

10. Aesthetics

Find help answering aesthetics questions[13]

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

Capital improvement projects recommended as a part of this plan include a new concrete reservoir at the south treatment building. The reservoir would potentially be identical to the existing reservoir which is 40 feet tall.

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

None.

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

None.

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[12] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-9-Housing

[13] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-10-Aesthetics

11. Light and glare

Find help answering light and glare questions[14]

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

None.

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

No.

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

None.

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

None.

12. Recreation

Find help answering recreation questions

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

Beach, ocean, wildlife refuge, golf course, lakes, camping, fishing picnic grounds, play fields.

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

No.

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

None

13. Historic and cultural preservation

Find help answering historic and cultural preservation questions[15]

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

No.

b. **Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material**

[14] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-11-Light-glare

[15] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-13-Historic-cultural-p

evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

This will be evaluated on a project specific basis.

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

Assessments will be completed on a project specific basis.

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

This will be evaluated on a project specific basis.

14. Transportation

Find help with answering transportation questions[16]

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

The District's water service area is served by a number of County Roads as shown in the Water System Plan Figure 1-14.

b. **Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?**

The Pacific Transit System stops at "Jack's County Store" at the corner of Vernon and Bay Avenues.

c. **Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).**

No.

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

No.

e. **How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?**

[16] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-14-Transportation

None.

f. **Will the proposal interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.**

No.

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

None.

15. Public services

Find help answering public service questions[17]

a. **Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.**

No.

b. **Proposed measures to reduce or control direct impacts on public services, if any.**

None

16. Utilities

Find help answering utilities questions[18]

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.**

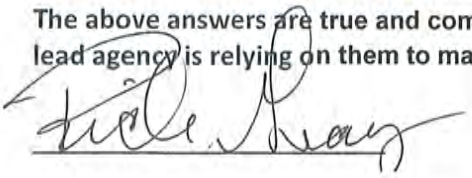
Electrical power is provided by Pacific County PUD #2. Water is provided by the District. Septic systems are the responsibility of individual property owners.

[17] https://ecology.wa.gov/regulations-permits/sepalenvironmental-review/sepa-guidance/sepa-checklist-guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-15-publie-services [18] https://ecology.wa.gov/regulations-permits/sepa/environmental-review/sepa-guidance/sepa-checklist- guidance/sepa-checklist-section-b-environmental-elements/environmental-elements-16-utilities

C.Signature

Find help about who should sign[19]

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.



Type name of signee: Rick Gray 

Position and agency/organization: General Manager, North Beach Water District

Date submitted: 11/24/2024

[19] https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-C-Signature

D. Supplemental sheet for nonproject actions Find help for the nonproject actions worksheet

IT IS NOT REQUIRED to use this section for project actions.

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

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?**

The proposal and the capital projects recommended in the Water System Plan will not increase discharges to water or emissions to air or release, produce or store hazardous substances or produced noise to any degree more than what is currently associated with the water system, Chemicals considered hazardous are utilized in the treatment of water; however, storage is regulated by state law, which is strictly adhered to. Noise is generated by pumps; however, these are enclosed in buildings that have been designed to dampen sound.
Proposed measures to avoid or reduce such increases are:

To be evaluated on a projected specific basis.

2. **How would the proposal be likely to affect plants, animals, fish, or marine life?**

No impacts are anticipated as a result of the proposal. Separate environmental reviews will determine if significant adverse environmental impacts will occur as a result of individual water system improvement projects.
Proposed measures to protect or conserve plants, animals, fish, or marine life are:

To be determined on a project specific basis.

3. **How would the proposal be likely to deplete energy or natural resources?**

Adoption of the water system plan is not likely to affect energy or natural resources.

Individual capital projects may require energy (such as pump operation); however, all energy consumptive devices installed as the result of water system capital improvements will be energy efficient. The Water District has a total of two wellfields and fourteen water wells, of which nine are currently active with a total installed pumping capacity of 1,016 gpm.
Proposed measures to protect or conserve energy and natural resources are:

To be determined on a project specific basis.

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?**

To be determined on a project specific basis. Specific water system improvements will be consistent with Pacific County Land Use Plans and Sensitive Areas Ordinances.
Proposed measures to protect such resources or to avoid or reduce impacts are:

To be determined on a project specific basis.

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?**

The Water System Plan and those recommended capital improvement projects will not encourage land or shoreline uses incompatible with existing plans.
Proposed measures to avoid or reduce shoreline and land use impacts are:

To be determined on a project specific basis.

6. **How would the proposal be likely to increase demands on transportation or public services and utilities?**

The capital improvement projects proposed in this Water System Plan update will be designed to serve projected population growth. No increased demand on transportation or public services and utilities is anticipated as a result of adoption of this plan.
Proposed measures to reduce or respond to such demand(s) are:

Not applicable.

7. **Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.**

None anticipated.

February 19, 2025

Lead Agency: North Beach Water District

- **Description of proposal**- The Water System Plan (Plan) is being prepared to meet the requirement of WAC 246-290-100 (Planning Requirements) and as further detailed in the Washington State Department of Health (DOH) Water Systems Planning Handbook. The Plan will also address the needs and concerns of the North Beach Water District (NBWD) Board of Commissioners (Board) and Management. Additionally, WAC 246-290-100 (4) (k) (i) requires the Plan document State Environmental Protection Act (SEPA) compliance. Plan may be viewed at the following website www.northbeachwater.com
- **Water System Description** including ownership and management, system background, policies and procedures, water rights, inventory of existing facilities, planning documents, existing services characteristics, District's service area, customer compliant management.
- **Basic Planning Data** includes historic water use data, water use forecasts, historic water source production and source production forecasts, to ensure current and future water system capabilities will be met.
- **Water System Analysis** including water quality analysis, System description and analysis, water rights analysis, summary of deficiencies, selection and justification of proposed improvements.
- **Water Use Efficiency** including an evaluation of past water conservation efforts and describe NBWD's future water conservation goals and measures.
- **Wellhead Protection Program** including a review of DOH Susceptibility Assessments of District water wells and delineations of the Districts Wellhead Protection Area.
- **Operation and Maintenance Program** including an evaluation of the District's operation and maintenance program and their ability to assure satisfactory management of the water system operations in accordance with WAC 246-290;
- **Distribution Facilities Design and Construction Standards** including documentation of the District's design and construction standards establishing the District's ability to obtain DOH approval to utilize the alternative review process for construction of new and replaced water distribution facilities.

PO Box 618 – 2212 272nd Street
Ocean Park, WA 98640
360.665.4144
www.rgray@northbeachwater.com

- **Capital Improvement Program** including descriptions and cost estimates for capital improvement projects to address deficiencies identified in previous chapters;
- **Financial Plan** including historical and current data related to the financial health of the District demonstrating the District's ability to meet all of their current and future financial responsibilities. Furthermore, a review of the District's current and future rate structure related to adequacy, promotion of conservation and affordability will be performed.

- **Location of proposal,**
  The North Beach Water District is located in Pacific County, at 2212 272nd Street in Ocean Park, WA.

- **Proponent/Applicant:**
  North Beach Water District
  Rick Gray, General Manager
  2122 272nd Street
  PO Box 618
  Ocean Park, WA 98640
  360-665-4144

- **Lead Agency:**
  North Beach Water District
  NBWD has determined that this proposal will not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030. We have reviewed the attached Environmental Checklist. This information is available at www.northbeachwater.com

- This determination is based on the following findings and conclusions of a completed environmental check list and other information on file with North Beach Water District.

- This DNS is issued under WAC 197-11-340(2) and the comment period will end on March 6, 2025.

Rick Gray
General Manager, North Beach Water District.
Date Submitted 11/24/2024

APPENDIX P

WATER SHORTAGE RESPONSE PLAN

WATER SHORTAGE RESPONSE PLAN

WAC 246-290-100 (4) (f) (iii) requires that Water System Plans include a water shortage response plan "as a component of the reliability and emergency response requirements under WAC 246-290-420." WAC 246-290-420 sets standards for water system operating pressure and reliability, and how to establish appropriate "levels of service," but contains no specific requirements or guidance for a Water Shortage Response Plan. DOH has published a document titled "Guidance Document, Water Shortage Response Plans for Small Public Drinking Water Systems," (DOH Publication No. 331-301) dated July 2011, which is a workbook format designed for small water systems to use in conjunction with the DOH Publication "Emergency Response Planning Guide for Public Drinking Water Systems (DOH Publication No. 331-211). The publication "Guidance Document, Water Shortage Response Plans for Small Public Drinking Water Systems" (hereinafter Water Shortage Response Plan Guidance) lists seven major headings for a water shortage response plan:

1. Events that Cause Water Shortages
2. Evaluate Supply and Demand
3. Defining Stages and Criteria of a Water Shortage
4. Alternate Water Sources
5. Effective Communication
6. Demand Reduction Alternatives
7. Water Shortage Response Actions

Events that Cause Water Shortages

Events that may cause water shortages are any of the events discussed in the Water System Plan Chapter 6 – Operation & Maintenance Program, including water line breaks, power outage, flooding, drought, fire, earthquake, snowstorm, contamination, vandalism, terrorism, and bioterrorism. Also, failure of various items of water treatment, pumping, control and alarm equipment, as well as loss of operations personnel can lead to water supply shortages.

Evaluate Supply and Demand

Water supply and demand have been evaluated in Chapters 2 and 3 of the Water System Plan. Projects to address source deficiencies are discussed in Chapter 8 of the Plan.

Defining Stages and Criteria of a Water Shortage

The severity of water shortages varies widely depending on the type of event. Defining stages of severity can significantly aid in determining appropriate response actions. For example, anticipating events that may affect your system, and estimating how severe the effects would be, makes it easier to respond and communicate with others. It also helps water system personnel

keep their response balanced and effective. Following are the stages of severity for the North Beach Water District water system:

Stage I – Advisory Actions:

The water system manager knows there is potential for a water shortage based on a planned well shutdown, service of a storage reservoir, or water transmission main repair. It is not certain that there will be a water shortage, but an advisory may be issued as a precaution to prevent a shortage, or as a prudent response to drought conditions.

A water conservation advisory is issued in local papers, local radio and posted on the District headquarters and website and the Post Office requesting that residents conserve water to avoid a potential water shortage.

Stage II – Voluntary Actions:

The water system anticipates conditions likely will result in significant drawdown of storage reserves if demand is not reduced. This may occur if any of the situations described in Stage 1 turn out to take longer to resolve than anticipated, if unanticipated conditions cause loss of well source(s), if a reservoir is taken out of service for an extended period, if a major water main break depletes storage reserves, or any other circumstances where the water system management is concerned about maintaining a sufficient reserve in storage to get through any unanticipated additional system problem.

A notice is posted in local papers, local radio and posted on the District headquarters and website and the Post Office, requesting that customers take voluntary conservation measures, including odd/even yard watering days and postponing non-essential water uses such as car washing until full water source capacity can be restored. Provision of supplementary water through trucking is coordinated with Long Beach Water Department.

Stage III – Mandatory Actions:

The water system experiences significant supply reduction, a reservoir out of service for an extended period, or a significant water main break resulting in significant depletion of standby reserve storage.

A notice is posted in local papers, local radio and on the District headquarters and website and the Post Office, instating mandatory water use restrictions. Odd/even watering days, a ban on washing walkways, a ban on car washing except at systems that recycle wash water, and negotiated restrictions on water use by non-residential customers will be enforced through citations and civil penalties. water through trucking is coordinated with Long Beach Water Department.

Stage IV – Emergency Actions:

A combination of water source loss, and/or water main breaks, and/or system demand has reduced standby storage to near zero and it is apparent that the system will run out of water if additional source is not found.

All non-essential water uses are banned and enforced by citation and civil penalties. County emergency services (CRESA) is contacted and arrangements are made for trucking water from a nearby approved potable water source. If the cause for the shortage is not distribution system leakage, then trucked water can be pumped directly into one of the District's reservoirs. If the problem is unresolved distribution system leakage, then water trucks may need to be stationed at strategic locations so that residents can fill containers with water for essential water uses.

Alternative Water Sources

North Beach Water Department has ten permanent groundwater sources, nine are active and one is an emergency source. Six active wells and one emergency well exist at the North Wellfield and three active wells exist at the South Wiegardt Wellfield. Each of these facilities has the provision to connect to standby generation facilities and each well source is disinfected with sodium hypochlorite.

In the event that the District loses enough of their well source capacity such that reservoir reserve capacity continues to decline, the District will arrange for water to be trucked from a nearby water system.

Emergency Water Supplies

The Washington State Emergency Management Division encourages citizens to prepare '2 Weeks Ready' kits with a 2 week supply of food and water in the event of an emergency. The District will endeavor to supply potable water to support emergency operations within its capabilities.

Transport of Potable Water during Emergencies

If the District obtains potable water by transporting from another source, DOH has issued guidelines for water system utilities that deliver potable water to the public during emergencies. This guidance is found at the following website and is summarized below:

https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs//331-063.pdf

General

- DOH recommends that someone with water treatment expertise be responsible for the operation and management of trucked potable water.

- The District should contact the regional office of the DOH Division of Drinking Water or the local health department to discuss current requirements and approve the proposed operation. [see WAC 246-290-415(2)(d) and 246-290-451(4)]. Southwest Regional Office (Olympia) – (360) 236-3030.

Truck Container

- The truck container must be contaminant-free and capable of being maintained so that water contamination is prevented.

- If a truck container has been previously used only for potable water and has been protected from possible contamination, it may be used without disinfection and testing for bacteria.

- Truck containers that cannot pass the initial testing criteria after disinfection (i.e., absence of coliforms) shall not be used.

- Trucks previously used for substances other than potable water will be evaluated on an individual basis. Consult with DOH before using trucks that may have previously carried toxic or other non-potable liquids.

- All truck containers must be filled or emptied through an air gap or approved double-check valve assembly, in accordance with WAC 246-290-490.

Initial Truck Disinfection

- The tank and all hoses, pumps, and other equipment used in handling water should be disinfected by filling with water containing at least 50-60 parts per million (ppm) of chlorine and then held in the tank for at least 24 hours.

- One gallon of liquid bleach is required in every 1,000 gallons of water to produce 50-60 ppm. Bleach should be 5.25-6 percent hypochlorite with no additives. Bleach should be added in proportion to the water as the tank is being filled, e.g. add approximately one-half gallon of bleach with each 500 gallons of water.

- The chlorine solution must be flushed from the tank after 24 hours.

- Once the tank is emptied, refill it with the water to be transported, and test for coliform bacteria. If coliforms are present, repeat the process. If the tank cannot be disinfected to eliminate coliforms, it must not be used.

- Water to be transported by tank trucks should contain a free chlorine residual of about one part per million (1 ppm or 1 mg/L) at the beginning of the haul.

Source of Water

- The source for emergency trucked water must come from an approved public water supply, unless otherwise approved by DOH.

- Every precaution should be taken to ensure that the water remains potable once it is collected and transported.

Receiving Tank

- The water system's receiving tanks must be inspected to assure that water quality issues will not occur during filling and later distribution to consumers.

- Receiving tanks must be cleaned and disinfected using the same procedures identified for the truck containers (see "Initial Truck Disinfection" guidelines).

- The receiving tanks must be kept secure and protected from contamination throughout the emergency response.

- The customer's receiving tank must be filled through an air gap or an approved double-check valve assembly in accordance with WAC 246-290-490.

Documentation and Record-Keeping

- The receiving water system is responsible for documenting and keeping proper records of the emergency trucked water operation.

- Records should be retained for at least six months for review upon request by health agencies, haulers, or the supplying water system.

Neighboring Water Systems:

The Long Beach Water Department water system is the only neighboring water system large enough to provide emergency water supply for North Beach Water District.