WATER SYSTEM PLAN
FOR
BURTON WATER COOPERATIVE
WSID #09800 L

PROJECT NUMBER

221003

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Prepared for:

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Water System Plan
Burton Water Cooperative
WSID: 09800 L

EXECUTIVE SUMMARY:

The Burton Water Cooperative Water System Plan provides a long-term planning strategy for the water system over the 10-year and 20-year planning periods. The plan was prepared to update the Burton Water Company's previously approved plan from 2001 and to incorporate water system ownership change. The objectives of this plan are to evaluate the performance and adequacy of the water system, to identify infrastructure improvements for the next 20 years, and to identify issues that may affect the operation of the water system. The plan was prepared in accordance with the Washington Administrative Code (WAC) 246-290-100.

Table 1 Water System Information

Sources	S06 Wellfield	S01 Well Points 7-11, 13 S02 East Well S03 North Well S04 South Well, Steel Well, Well Points 1-6, 14, 16 S05 Well Points 12, 15, 17	S11 Wellfield	S07 Well S07-1 AKN518 S08 Well S07-2 BLN274 S09 Well S07-3 BLN275 S10 Well S07-4 BKB276	
Treatment	No treatment for contaminants, chlorination disinfection only				
Storage	North Rectangle Semi-Buried Concrete Reservoir, ~1985, 35,000 gallons South Rectangle Semi-Buried Concrete Reservoir, ~1985, 35,000 gallons Lower Standpipe Concrete Reservoir, 1996, 100,000 gallons Upper Standpipe Concrete Reservoir, 2008, 158,000 gallons				
Pressurization	Source water is pumped/siphoned into the north and south rectangle reservoirs, and is gravity fed from there to the lower reservoir and to the distribution system. The main distribution zone is pressurized by gravity and a booster pump located at the corner of 238th St and 107th Ave SW pressurizes a smaller upper pressure zone for higher elevation connections along 107th Ave SW.				
Distribution	~3,400 feet of 6-inch steel ~4,300 feet of 6-inch asbestos cement ~25,500 feet of PVC, various sizes (1-inch thru 8-inch) ~3,200 feet of galvanized steel, 1-inch, 1.5-inch, and 2-inch ~800 feet of high-density polyethylene (HDPE) Total: ~37,200 ft of distribution pipe				
Water Rights	S-*02376CWRIS, Qi = 0.1 cf/s, Qa = 72.4 ac-ft/yr based on Qi (annual diversion not listed) G1-043145CL, Qi = 200 gpm, Qa = 80 ac-ft/yr				
ADD	183 gpd/ERU				
Current PHD	396 gpm				
MDD	624 gpd/ERU				
Management	Burton Water Cooperative				

TABLE OF CONTENTS

1 System Description 1
1.1 Ownership and Management 1
1.2 History and Background 2
1.3 Related Plans 3
1.4 Existing Service Area Characteristics 3
1.5 Retail Service Area 7
1.6 Service Area Agreements 7
1.7 Service Area Policies 7
1.8 Conditions of Service 9
1.9 Complaints 10
2 Basic Planning Data 11
2.1 Demand Analysis 11
2.2 10 & 20 year projections 18
2.3 Interties 22
3 System Analysis 23
3.1 System Design Standards 23
3.2 System Inventory 23
3.3 Limiting Factors 26
3.4 Distribution System Analysis 32
4 Resource Analysis & Water Use Efficiency (WUE) 34
4.1 Metering Program 34
4.2 Water Use Efficiency Program 35
4.3 Source of Supply Analysis 37
4.4 Water Supply Reliability 38
5 Source Water Protection 39
5.1 Wellhead Protection 39
5.2 Water Quality Analysis 40
6 Operations and Maintenance 42
6.1 Water System Management and Personnel 42
6.2 Operator Certification 42
6.3 Routine Operations and Maintenance 42
6.4 Water Quality Sampling Procedures & Program 43
6.5 Coliform Monitoring Plan and Map 43
6.6 Emergency Response Program 43
6.7 Cross Connection Control 45
6.8 Consumer Confidence Reports (CCR) 45
6.9 Record Keeping 45
7 Distribution Design and Construction Standards 47
7.1 Design and Constructions 47
8 Improvement Program 48
8.1 Recent Improvements 48

8.2 Sanitary Survey Items 48
8.3 Capital Needs Assessment 48
8.4 Prioritizing Improvements 53
8.5 20-year Improvement Schedule 55
8.6 Distribution Replacement Projects Requesting Design Report Exemption....55
9 Financial Program 58
9.1 Income 58
9.2 Expenses 59
9.3 Debt Repayment 59
9.4 Reserves 59
9.5 Affordability 60
9.6 Current and Projected Rates 60
10 Miscellaneous Documents 61

LIST OF FIGURES

Figure 1-1 Zoning Map 5
Figure 1-2 Service Area Map 6
Figure 8-1: Proposed Distribution Water Main Upgrades 57

LIST OF TABLES

Table 2-1 Summary of Usage Types and ERU 12
Table 2-2 Estimated Population 2023 13
Table 2-3 Historical Monthly Source Production (cubic feet) 13
Table 2-4 Historical July-August Weekly Source Production 14
Table 2-5 System MDD from Weekly Source Meter Data 14
Table 2-6 Historical Annual Service Meter Consumption by Category (gallons) 15
Table 2-7 Historical Distribution System Leakage 15
Table 2-8 Distribution System Leakage - ERU and Flow Rate 16
Table 2-9 Full-Time Single-Family Residential Consumption - ADD 16
Table 2-10 Full-Time Single-Family Residential Consumption - MDD 17
Table 2-11 ERU_{MDD} to MDD_{system} Comparison 17
Table 2-12 Peak Hourly Demand 17
Table 2-13 Service Area Lots by County Land Use Description 19
Table 2-14 Service Area Lots by County Zoning 19
Table 2-15 20-Year Population Forecast 20
Table 2-16 20-Year Projected PHD Demand 21
Table 2-17 Projected Water Demand – System 21
Table 3-1 Existing Water Sources 23
Table 3-2 Water Rights 24
Table 3-3 Storage Reservoirs 24
Table 3-4 Current Distribution Pipe Inventory 25
Table 3-5 Service Area Capacity 26
Table 3-6 Operational Storage Volume (gallons) 27
Table 3-7 Equalization Storage Volume 27
Table 3-8 Standby Storage Volume 28
Table 3-9 Fire Suppression Storage Volume (gallons) 28
Table 3-10 Dead Storage Volume (gallons) 29
Table 3-11 Total Storage Volume – Current Conditions (gallons) 29
Table 3-12 Total Storage Volume – Full Build-out Conditions (gallons) 29
Table 3-13 System Capacity Summary 32
Table 4-1 Summary of WUE Program Requirements 34
Table 4-2 Estimated WUE Savings 35
Table 4-3 Bi-Monthly Water Usage Rates 37
Table 6-1 O&M Schedule 42
Table 6-2 Lead and Copper Sampling Sites 43
Table 6-3 Water System Contacts 44
Table 6-4 System Records 45
Table 8-1 2022 Sanitary Survey Improvements 48
Table 8-2 Improvement Summary 53
Table 8-3 20-Year Improvement Schedule 55
Table 8-4 Distribution Replacement Projects for Design Report Exemption 55
Table 9-1 Water Rate Income 58
Table 9-2 Member Connection Charge Income 59

Burton Water Cooperative Water System

Water System Plan

Acronyms

ADD	Average Daily Demand
AC	Asbestos Cement
C	Coefficient of Friction
CCR	Consumer Confidence Report
DSL	Distribution System Leakage
ERU	Equivalent Residential Unit
GWI	Groundwater Under the Influence of Surface Water
MCL	Maximum Contaminant Level
MDD	Maximum Daily Demand
MPA	Microscopic Particulate Analysis
NTNC	Non-Transient Non-Community
PHD	Peak Hourly Demand
ppb	Parts per Billion
ppm	Parts per Million
RSA	Retail Service Area
SMA	Satellite Management Agency
SWL	Static Water Level
UTC	Utilities and Transportation Commission
WDM	Water Distribution Manager
WFI	Water Facilities Inventory (form)
WSDOH	Washington State Department of Health
WSDM	Water System Design Manual DOH Pub 331-123
WSP	Water System Plan
WUE	Water Use Efficiency

1 System Description

1.1 Ownership and Management

The Burton Water Cooperative Water System (formerly owned by the Burton Water Company) is located on Vashon Island in rural King County, Washington. The system is owned and operated by Burton Water Cooperative which is a Washington mutual benefit nonprofit whose members are customers of the system. A Board of Directors directly elected by the members oversees the water system and there is an onsite operator who oversees daily operations. Pertinent information about the water system is summarized below:

Water System Name:	Burton Water Cooperative Water System
System Type:	Group A Community
WSDOH ID Number:	09800 L
Location:	King County, Washington
Sources:	(1) wellfield having 17 well points and 3 wells (S06) (1) wellfield having 4 wells (S11)
Approved Service Connections:	415
Population Served:	1,060
Type of Ownership:	Association
Name of Owner:	Burton Water Cooperative
Owner Contact:	William Shadbolt, Board President
Owner Address:	PO Box 1938 Vashon, WA 98070
Owner Phone:	206-463-0005 (Office Phone)
Certified Operator:	Nick Simmons, WDM-1
Operator Phone:	206-778-9638

The system currently serves 300 full-time residential connections, 87 part-time residential connections, 24 vacant connections, 5 recreational connections, and 6 commercial connections for a total of 422 connections. The total number of existing connections (422) was determined based on review of Burton Water Company's accounts in preparation of this WSP. A change in accounting for multifamily dwellings may explain the over-connection condition above the 415 currently approved connections. All multifamily dwellings served by one meter and vacant connections may not have been counted as individual connections in the past. This WSP considers each vacant connection and each multifamily dwelling unit to be one connection. This WSP demonstrates that the system has sufficient capacity to serve the 422 existing connections.

The Cooperative does not plan to expand the service area and is not seeking to increase the number of approved connections beyond the number of existing connections at this time. The Cooperative's goal is to provide safe and reliable drinking water to as many properties within the existing service area boundary as the system can reliably sustain. Although it appears there will be capacity for the system to support additional connections after proposed infrastructure upgrades are completed, it is recommended that a future capacity analysis be performed after three to five years of Cooperative ownership using updated meter and operational records. The Cooperative's elected Board of Directors should evaluate if increasing

the number of approved connections is allowable at that time. The Cooperative does not intend to remove any property within the current service area or otherwise reduce the service area boundary as part of this Plan. The Board of Directors will evaluate whether a service area boundary revision is necessary concurrent with the future capacity analysis.

1.2 History and Background

The community of Burton straddles the Vashon Highway in the vicinity of the isthmus between Inner and Outer Quartermaster Harbors in Puget Sound, with development on Burton Hill to the west of the Highway, on the isthmus and peninsula east of the Highway, and along the shorelines. The system was developed in the late 19th and early 20th centuries after Vashon College was founded. The area is predominantly residential with a small commercial area in the center and main intersection. Housing stock is mixed with houses of varying ages, seasonal cabins, and manufactured housing.

In the first part of the 19th century several springs on a hill one mile west of Burton were used as a water supply for Vashon College. Spring water was transported to the college by a system of flumes and wooden pipes. In later years the system expanded to supply the growing community of Burton. During the 1930s, a 4-inch diameter wood-stave water main was installed between the springs and town. During the 1950s the wood-stave mains were replaced with wrapped steel pipe. Two concrete tile wells were installed in 1959. Additional wells and wellpoints have been added since then. Current sources include a wellfield consisting of seventeen vacuum well point sources throughout the spring area and seven groundwater wells having a total combined capacity of 251 gpm. Three of the wells were installed in 2020 as part of a long-term plan to replace the vacuum wellpoint system with modern wells.

A 100,000-gallon redwood storage tank was installed in 1980 and was later demolished. Current storage includes two partially buried 35,000-gallon rectangle concrete reservoirs constructed in the 1980s, a 100,000-gallon concrete standpipe reservoir constructed in 1996, and a 158,000-gallon concrete standpipe reservoir constructed in 2008. The distribution system is currently fed by gravity from the rectangle reservoirs with the standpipe reservoirs providing supplemental storage.

The system operates under two water rights which authorize withdrawal/diversion for uninterrupted municipal use. The maximum annual quantity of diversion/withdrawal authorized by water rights is 152.4 ac-ft/yr, which equates to an annually averaged daily quantity of approximately 136,000 gallons per day (gpd). The water rights are as follows:

- Surface water certificate S1-*02376CWRIS (SWC-405), with a priority date of August 1, 1928, authorizes instantaneous diversions up to 0.1 cubic feet per second (cfs; or about 45 gpm) from Unnamed springs (i.e., what is now called the Burton Springs). An annual diversion quantity is not specified for this water right; however, a continuous diversion of 0.1 cfs would equate to approximately 72.4 ac-ft/yr, which would be considered the absolute maximum annual diversion allowed under this certificate.
- Groundwater claim G1-043145CL, with a claimed date of first use of May 1930, authorizes instantaneous withdrawals up to 200 gpm and an annual quantity of 80 ac-ft/yr.

The Burton Water Cooperative is a community organization which was formed in 2022 and purchased the water system assets in 2024 from the previous investor-owner, Burton Water Company. Burton Water Cooperative is a non-profit community corporation organized and incorporated under the laws of the State of Washington.

1.3 Related Plans

Burton Water Cooperative is within the area subject to provisions of the King County Comprehensive Plan, 1990 Vashon Coordinated Water System Plan regional supplement, and the 2005 Vashon-Maury Island Watershed Plan. These plans were reviewed in preparation of the Burton Water Cooperative WSP and there were no inconsistencies identified. The King County Comprehensive Plan for Vashon concentrates new development in the Vashon Town Center several miles north of Burton. The water system service area is outside of the King County urban growth area and Vashon Town Center.

This plan is consistent with Countywide Planning Policies: G-4, EN-1, EN-19, DP-13, DP-21, PF-1, PF-2 , PF-4, PF-5, PF-6, PF-7, PF-8, PF-9, and PF-10 and the King County Comprehensive Plan Policies: F-107, F-201, F-209, F-210, F-211, F-212, F-221, F-221A, F-223, F-231, F-232, F-246, F-249, F-251, F-252, F-253, F-254.

In accordance with Municipal Water Law, Burton Water Cooperative will obtain a signed consistency statement from King County Utility Technical Review Committee (UTRC) to document that this WSP is consistent with local area planning. A copy of the consistency statement will be included in Chapter 10-13.

This WSP has also been made available to the adjacent Group A purveyors, including King County Water District 19 (ID 38900), Maury Mutual (ID 52100), and Dockton Water Association (ID 19550). Any comments from the neighboring interested parties will be included in Chapter 10-12 of the WSP.

1.4 Existing Service Area Characteristics

The Burton water system is located on Vashon Island in rural unincorporated King County, Washington. The service area is in Sections 17, 18, 19, and 20, of Township 22N, Range 3E, W.M. and the E ½ of the SE ¼ of Section 13 and the NE ¼ of the NE ¼ of Section 24 of Township 22N, Range 2E, W.M. The service area is outside of the King County urban growth area and Vashon Town Center. Land use is primarily rural residential and zoned RA-2.5, RA-5 and RA-10 (rural with minimum 2.5 acre, 5 acre or 10 acre building lot sizes), with some parcels zoned as NB (neighborhood business) as shown in Figure 1-1.

The service area is shown in Figure 1-2 and a larger map is included in Chapter 10-2. The service area boundary was updated in preparation of this WSP to include the wellfield and upper reservoir parcel owned by the Burton Water Cooperative and twelve residential parcels which have existing connections on 115th Ave SW, SW 232nd St, and SW 236th St, but were not clearly depicted as within the service area in

previous planning documents. Specifically, the service area boundary was redrawn to include the following addresses which have existing service connections to the system:

23301 115th Ave SW	11515 SW 232nd St
23523 115th Ave SW	23707 115th Ave SW
23803 115th Ave SW	24009 115th Ave SW
24131 115th Ave SW	23523 115th Ave SW
11505 SW 236th St	11607 SW 236th St
11618 SW 236th St	11530 SW 236th St

There are approximately 86 vacant residential lots and 3 vacant commercial lots within the service area. Not all vacant lots are developable. Vacant lots are discussed further in Section 2.2.

There is no intention for Burton Water Cooperative to expand beyond the current service area. Therefore, the future service area is the same as the existing service area and a future service area boundary is not applicable.

Figure 1-1 Zoning Map

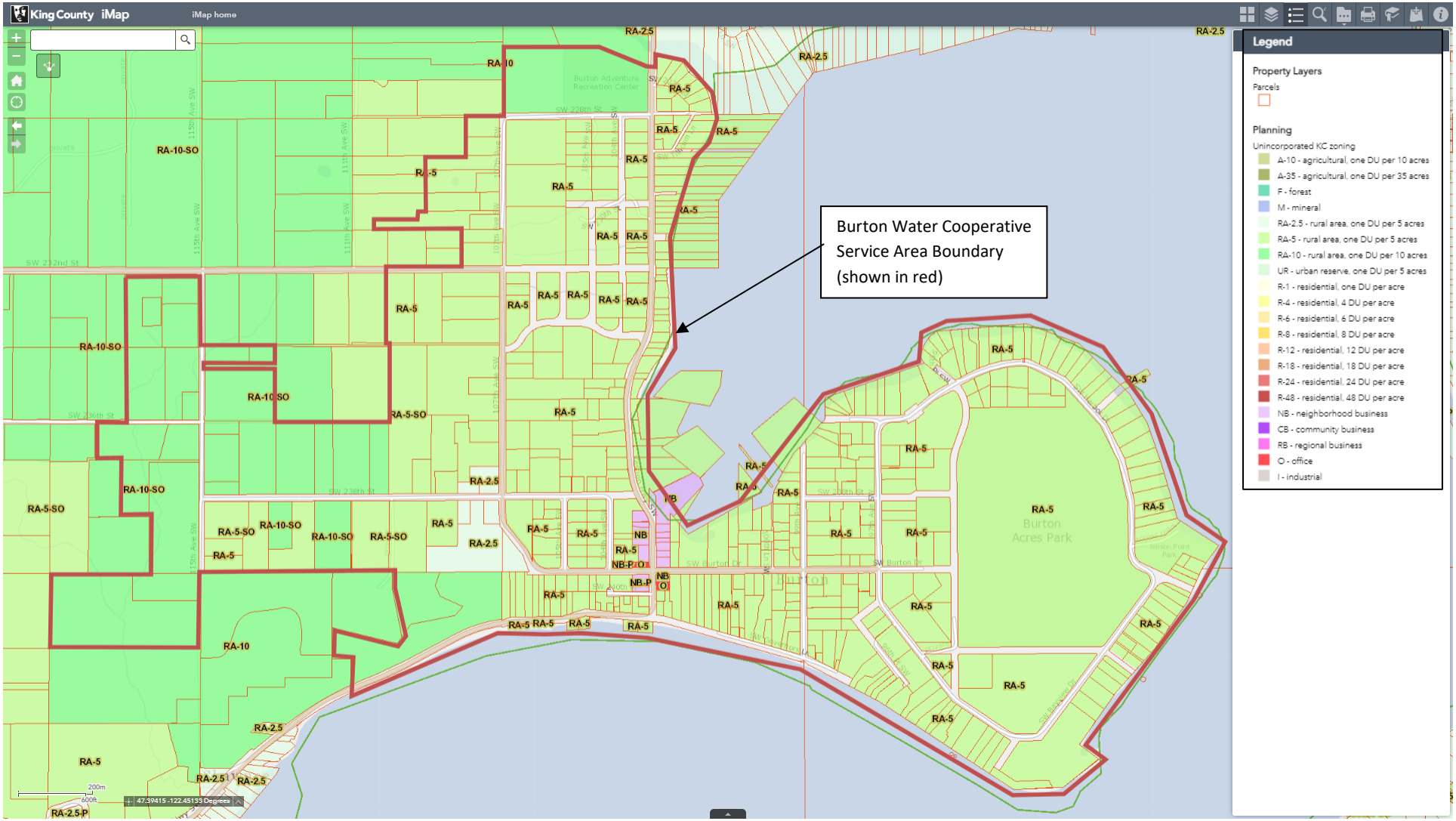
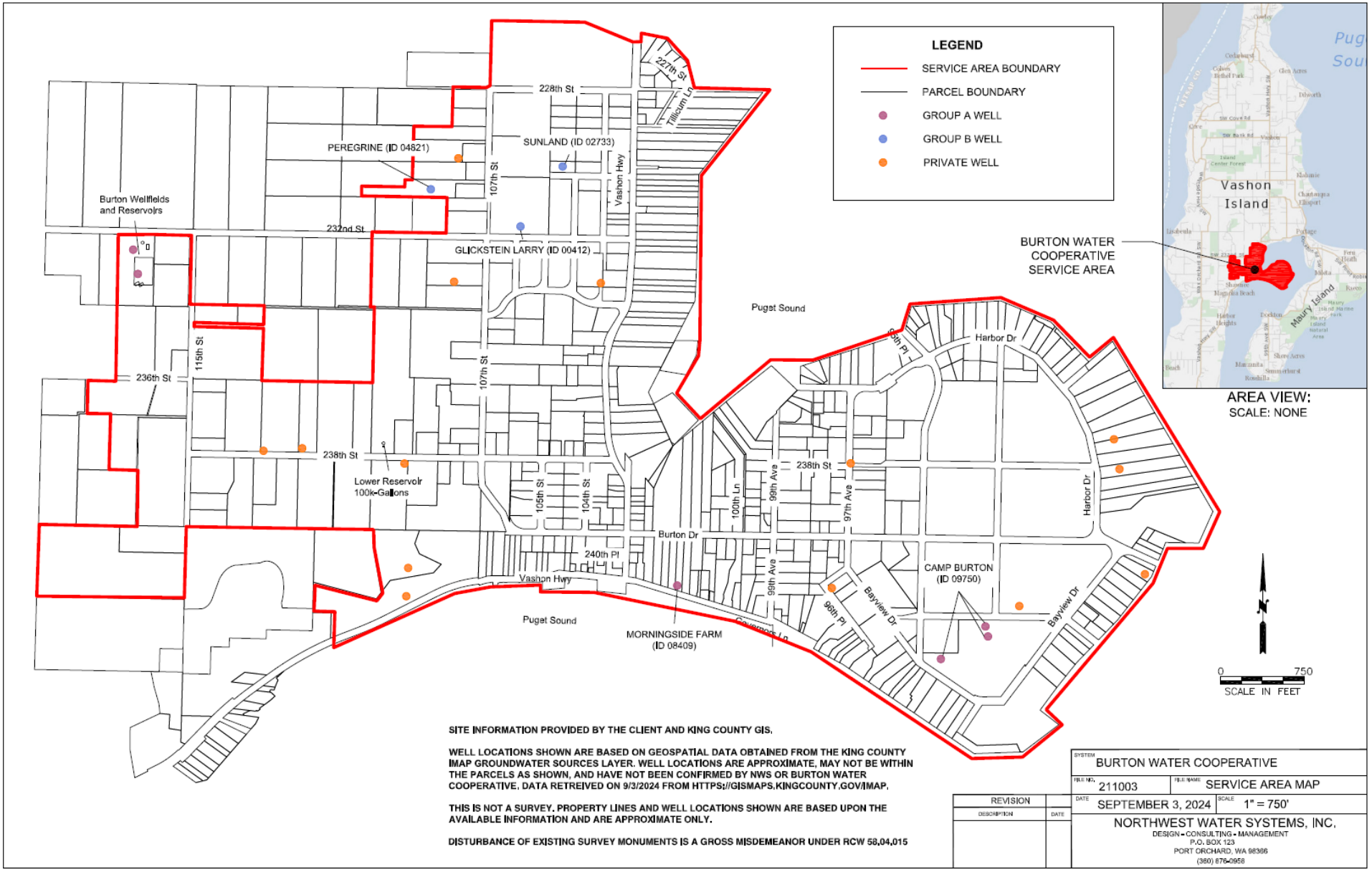


Image from King County GIS iMap database (URL: https://gismaps.kingcounty.gov/iMap/), retrieved on March 3, 2024.

Figure 1-2 Service Area Map



1.5 Retail Service Area

The retail service area matches the current service area shown in Figure 1-1-2 Service Area Map above.

1.6 Service Area Agreements

There are no competing utilities within the bounds of the existing service area. There are no other Group A community water systems within the Burton Water Cooperative Water System service area. There is one Group A transient non-community (TNC) system and three existing Group B water systems within the Burton Water Cooperative service area, including: Camp Burton Conference Center (ID 09750), Sunland (ID 02733), Glickstein Larry (ID 00412), and Hansen,A (ID 30885). Burton Water Cooperative will not require these existing water systems to consolidate with itself.

1.7 Service Area Policies

The Burton Water Cooperative governing documents detail service requirements for the Burton Water Cooperative Water System. These documents are attached in Chapter 10-12. Burton Water Cooperative observes the following general policies.

1.7.1 Annexation

There are no plans to annex or be annexed at this time.

1.7.2 Direct Connection and Satellite/Remote Systems

Future direct connections to Burton Water Cooperative will solely occur because of development within the service area. Burton Water Cooperative does not operate or have responsibilities associated with any satellite water systems.

1.7.3 Design and Performance Standards

All design and performance standards shall be completed under the direction of the Burton Water Cooperative. Standards and details for future repair, replacement, and new service connection details are included in Chapter 10-15 which meet the standards of WSDOH.

1.7.4 Outside Customers and Improvement Districts

The Burton Water Cooperative does not serve any parcels located outside the service area boundary.

1.7.5 Urban Growth Area

The system is not located within an urban growth area.

1.7.6 Late-Comer Agreements

Late-comer agreements are not necessary. All property owners who have a water service connection are required to be members of Burton Water Cooperative per the bylaws (see Chapter 10-12). The members of the Burton Water Cooperative are charged a one-time connection fee. This connection fee is applicable for owners which had existing connection(s) at the time Burton Water Cooperative purchased the water system assets from Burton Water Company and for owners requesting new water connections, when/if available. The connection fee is further discussed in Section 9.1.

1.7.7 Cross-Connection Control Program (CCCP)

The Burton Water Cooperative is reviewing a draft CCCP with the goal of adopting the CCCP in 2025. The draft CCCP documents are attached in Chapter 10-11. The final CCCP documents will be attached in Chapter 10-11 once they have been adopted.

1.7.8 Extension

The Burton Water Cooperative intends to extend a 6-inch water main from the intersection of 107th Ave SW and SW 232nd St north along 107th Ave SW and east along SW 228th St to the intersection of Vashon Hwy and SW 228th St. This extension is within the existing retail service area and has the intended purpose of creating a 6-inch water main loop to facilitate fire flow improvements along Vashon Hwy. There are no other water main extensions planned.

1.7.9 Individual Wells

The Burton Water Cooperative has a duty to serve all customers in the approved service area wherever they can, provided the four threshold factors in Section 1.8 are met. The 2005 Vashon-Maury Island Watershed Plan states that permit-exempt wells are not to be developed within the island's public water system service areas unless service cannot be provided on a timely, reasonable basis. If a new development is within one mile of the Burton Water Cooperative service area, the water system should be contacted and requested to provide service using the King County Certificate of Water Availability (CWA) form. If Burton Water Cooperative cannot provide service in a timely, reasonable manner (see Section 1.8), then a denial of water service will be issued using the CWA form with a brief explanation of the reason that service cannot be provided (see Section 1.7.10). The approximate or assumed locations of existing wells within the Burton Water service area are shown on the service area map in Figure 1-2. The Cooperative does not have any agreements with properties served by private wells within the service area and does not intend to require these properties to connect to the water system if service becomes available.

1.7.10 Duty to Serve

Burton Water Cooperative has a duty to serve all new connections located within their service area provided four threshold factors are met (see Section 1.8). In practice, the water system Board and Operator determines whether the system can provide service to additional connections. Requests for service will be submitted to the Board using the CWA form. A copy of this form is available in Chapter 10-18.

Burton Water Cooperative will evaluate requests for service to test whether conditions are suitable for serving new connections. The procedure for determining whether a new connection may be served is as follows:

1. Check the Water Facilities Inventory (WFI) form available on the WSDOH Sentry database to determine the total number of approved service connections. Confirm that the sum of connected services and previously released water availability letters is less than the approved connection total. This approved limit is established by the State Department of Health from an engineering

analysis called a "capacity analysis" and is sufficient to establish that conditions 1 and 3 listed in Section 1.8 are met.

2. The Cooperative shall verify the service request is consistent with adopted local plans and development regulations. If the request for service is consistent with the plans and development regulations, the local government consistency review as part of this WSP is met.
3. The Cooperative shall verify the new service request has been made in a location that may be served from existing water lines. Line extensions require additional engineering and analysis prior to approval, see Section 1.8.

If the request cannot be permitted because these criteria cannot be met, the system shall issue a denial of water service and a brief explanation of the reason that service cannot be provided. The customer and water system may negotiate a future facilities upgrade through a developer extension agreement; however, this may require significant engineering and construction and would not be done as part of the Duty to Serve. See Section 1.8 for additional details regarding the four threshold factors.

1.8 Conditions of Service

Burton Water Cooperative has a duty to serve all new connections located within its Retail Service Area, so long as the following four threshold factors are met, as described in Washington Administrative Code (WAC) 246-290-106:

1. *Burton Water Cooperative has sufficient capacity to provide water in a safe and reliable manner.*
   Burton Water Cooperative currently has a green operating permit and is approved for 415 connections.
2. *The service request is consistent with state and local regulations and plans.*
   The provision of service within the service area is consistent with King County with completion of the Local Government Consistency Review.
3. *Burton Water Cooperative has sufficient water rights to provide service.*
   Burton Water Cooperative has one surface water right certificate and one groundwater right claim which authorize withdrawal from Wellfields S06 and S11.

Certificate Number	Instantaneous Withdrawal (Qi)	Annual Withdrawal (Qa)
S1-*02376CWRIS	0.1 cu ft/s (45 gpm)	72.4 ac-ft/yr
G1-043145CL	200 gpm	80 ac-ft/yr
Total	245 gpm	152.4 ac-ft/yr

4. *Burton Water Cooperative can provide service in a timely and reasonable manner.*
   Any applicant requesting water service from Burton Water Cooperative is required to abide by the terms defined in the Burton Water Cooperative bylaws and rules and regulations (governing documents), which are attached in Chapter 10-12.

For planning purposes, “timely service” is defined as receiving water service within 120 calendar days plus construction time. If the extent of water service requested requires construction of major facilities such as the replacement or installation of new storage tanks, wells, booster pumps or distribution mains, the time associated with engineering, regulatory review and approval, and construction may be added to the 120 days.

The provision of new water service is “reasonable” if:

- The conditions of service are consistent with local land use plans and development regulations.
- The conditions of service and associated costs are consistent with those documented in this WSP, and
- The conditions of service and associated costs are consistent with the water system’s standard practice experienced by other applicants requesting similar water service.

If approved water connections are available and there is sufficient system capacity to serve new connections, the system will normally provide water service to property lying within the service area. This water service will be consistent with the requirements of the County’s Coordinated Water System Plan. If the system does not have a sufficient number of approved connections or capacity to provide new connections then the Board will establish a method of allocating water system capacity for applicants in accordance with Burton Water Cooperative’s Rules and Regulations. Methods such as a waitlist, lottery, or other processes may be adopted.

A party that wishes to appeal a water availability decision with respect to timely and reasonable water service shall first present all pertinent facts and arguments to the Board in writing before proceeding with a formal legal appeal to the King County Utilities Technical Review Committee (UTRC). If the party is still not satisfied after appealing to the Board, a timely and reasonable water service appeal may be submitted to the UTRC. The current UTRC appeal form and guidance documents can be requested from the UTRC or located on the King County website.

1.9 Complaints

Complaints are received by the Operator of Burton Water Cooperative by phone, email, or in person. The complaints are resolved over the phone or directed to the Board of Directors for further steps. If not resolved, customers may ask the Board of Directors to review the complaint.

2 Basic Planning Data

2.1 Demand Analysis

2.1.1 Types of Usage

The system primarily serves residential connections and a smaller number of non-residential connections. Non-residential connections include a yacht club, marina, church, home goods and grocery stores, auto repair shop, fire station, and two parks. The usage types for the system are defined as residential, recreational, commercial, operational, and distribution system leakage (DSL).

A summary of use categories and equivalent residential units (ERU) for the 2019 to 2023 period is shown in Table 2-1 . Residential connections are further divided into single-family full time, single-family part time, multifamily, and vacant connections based on service meter data.

Single-family residential connections are considered full-time if the service meter records show an annual average consumption of more than 40 gpd and no more than one billing period (two months) with average consumption of less than 10 gpd. Each full-time residence is considered one equivalent residential unit (ERU). Single family residential maximum day demand (ERU_{MDD}) is used as the basis for calculating the ERU value of other connection types. Single-family residential connections having an annual average consumption of 40 gpd or less or at least two billing periods (four months) with average consumption less than 10 gpd are considered part-time connections. Half of the part-time connections are assumed to have full-time occupancy in summer months representing one ERU each in the occupied months, and half of the part-time connections are assumed to be occupied primarily on weekends year-round representing 1/4 ERU each year-round. Residential connections which have six billing cycles (12 months) of average consumption less than 10 gpd are considered vacant connections.

Multifamily connections are buildings having multiple dwelling units (e.g., apartments) or single service meters serving multiple residences (e.g., ADUs). There are 8 multifamily connections comprising of 22 total dwelling units. Multifamily connection ERUs are based on the ratio of multifamily MDD to full-time single-family residential ERU_{MDD} for each respective year. Each multifamily dwelling (i.e. residential unit) is approximately 0.5 ERU based on this ratio.

ERU for the five recreational connections and six commercial connections is based on the ratio of recreational or commercial MDD to full-time single-family residential ERU_{MDD} for each respective year.

Operational usage for turning over reservoirs, flushing, and fire department tender fills has historically not been metered. From September to June the water system operator continuously drains the lower 100,000-gallon reservoir at approximately 12 gpm. Similarly, every two weeks the operator drains approximately 40,000 gallons from the upper 150,000-gallon reservoir. This is done to stimulate turnover in the tanks and preclude stagnation during lower demand months. Annual unmetered and operational usage is estimated to be 6,350,000 gallons.

Distribution System Leakage (DSL) ERU is estimated by dividing the average DSL (gpd) by full-time single-family residential ERU_{MDD} for each respective year and is further discussed in paragraph 2.1.3.3.

Table 2-1 Summary of Usage Types and ERU

Use Category		2019		2020		2021		2022		2023	
		Connections	**ERU**	**Connections**	**ERU**	**Connections**	**ERU**	**Connections**	**ERU**	**Connections**	**ERU**
Full-Time Single-Family Residences		290	290	303	303	304	304	296	296	278	278
Part-Time Single-Family Residences	Weekends Year Round	9	30	7	30	8	33	8	43	11	11
	Full-Time Summer	35	30	30	30	30	33	33	44	44	44
Multi-Family Residences		22	8	22	10	22	11	22	12	22	11
Vacant Residences		27	0	25	0	24	0	27	0	24	0
Recreational		5	6	5	12	5	6	5	7	5	8
Commercial		6	5	6	2	6	3	6	4	6	1
Operational		n/a	7	n/a	6	n/a	6	n/a	6	n/a	7
Distribution Leakage		n/a	7	n/a	8	n/a	9	n/a	19	n/a	24
Total		**419**	**367**	**420**	**377**	**421**	**377**	**422**	**386**	**422**	**383**

2.1.2 **Population**

Residents of Burton are the primary population served by the water system. It is assumed that 2.5 people per connection occupy single-family residential connections and 2.5 people per dwelling unit occupy multifamily dwellings. Commercial and recreational connections primarily serve residents of Burton but are also likely to serve some non-residents. This plan assumes a population of 10 people per non-residential connection. Total population is estimated to be 1,078 people.

Table 2-2 Estimated Population 2023

Usage Type	Units	Estimated People Per Unit	Population
Full-Time Single-Family Residences	278	2.5	695
Part-Time Single-Family Residences	87	2.5	217.5
Multi-Family Residences	22	2.5	55
Commercial	6	10	60
Recreational	5	10	50
		Total Population	**1,078**

2.1.3 **Meter Data**

Burton Water Cooperative source meter data is recorded weekly and customer service meters are recorded bi-monthly. Total volumes based on source meter and service meter records for calendar year 2023 are included in Chapter 10-3.

2.1.3.1 Source Meter Record Analysis

A summary of monthly source production for the five-year period of 2019 – 2023 is provided below. Maximum monthly demand for the system occurred in July 2021, with an average of 654,100 cubic feet produced.

Table 2-3 Historical Monthly Source Production (cubic feet)

Month	2019	2020	2021	2022	2023
January	162,400	179,900	236,400	334,500	286,000
February	186,700	177,200	223,400	256,000	281,000
March	150,300	190,900	246,700	316,100	332,100
April	173,900	250,600	286,600	269,500	289,300
May	337,400	290,600	401,100	295,900	388,500
June	424,000	340,800	532,300	344,100	508,800
July	485,800	524,400	**654,100**	539,400	564,300
August	481,300	565,400	649,000	528,000	538,400
September	359,500	488,800	389,800	407,300	379,500
October	192,000	240,600	293,300	344,100	292,600
November	168,800	226,900	275,100	279,900	306,400
December	190,900	268,300	284,100	356,400	330,600
Annual Total (cuft)	3,313,000	3,744,400	4,471,900	4,271,200	4,497,500
Annual Total (gal)	24,781,240	28,008,112	33,449,812	31,948,576	33,641,300

July and August are the months with the highest source production. A summary of weekly source meter data for these months is shown below. The maximum weekly average daily demand (MWADD) occurred over Fourth of July weekend in 2021, with an average of 168,300 gpd produced.

Table 2-4 Historical July-August Weekly Source Production
(all units in cubic feet except the MWADD, which is gpd)

Date Range	2019	2020	2021	2022	2023
6/30 - 7/6	83,700	86,600	**135,000**	95,400	111,300
7/6 - 7/11	78,900	70,500	98,100	76,100	91,900
7/11 - 7/16	72,000	84,600	98,400	87,200	95,500
7/16 - 7/21	71,900	91,600	102,000	86,500	92,900
7/21 - 7/26	88,200	88,600	110,400	94,600	83,100
7/26 - 7/31	91,100	102,500	110,200	99,600	89,600
7/31 - 8/6	94,000	121,000	126,600	106,100	102,700
8/6 - 8/11	94,600	89,900	105,900	88,900	86,700
8/11 - 8/16	76,600	93,400	123,300	86,800	93,200
8/16 - 8/21	79,800	94,500	101,200	84,500	96,100
8/21 - 8/26	63,200	65,800	96,900	82,800	82,000
8/26 - 8/31	73,100	100,800	95,100	78,900	77,700
MWADD (gpd)	141,522	150,847	168,300	132,271	138,754

The MDD_{system} is calculated by multiplying the MWADD by a peaking factor of 1.35. The WSDM recommends using a peaking factor between 1.35 and 1.65 for MDD_{system} to maximum monthly average daily demand (MMADD) ratio for systems near the 1,000-person population threshold. The 1.35 peaking factor is appropriate because the population is greater than 1,000 and the increased frequency of source meter readings results in reduced peaking as compared to monthly readings. An additional factor of safety is not needed for MDD_{system} because the system is existing and has a breadth of weekly meter records. Production in the period of June 30, 2021 to July 6, 2021 is higher than other periods, so it is clearly representative of a maximum case. The table below is based on source meter weekly readings which includes consumption from all connections and DSL. Using MWADD from June 30, 2021 to July 6, 2021, the **MDD_{system} is 227,205 gpd**.

Table 2-5 System MDD from Weekly Source Meter Data

Year	System MWADD (gpd)	Date Range	MDD_{system} (gpd)
2019	141,522	8/6 - 8/11	191,054
2020	150,847	7/31 - 8/6	203,643
2021	168,300	6/30 - 7/6	**227,205**
2022	132,271	7/31 - 8/6	178,566
2023	138,754	7/31 - 8/6	187,318

2.1.3.2 Service Meter Record Analysis

A summary of annual consumption based on service meter readings for the five-year period of 2019 – 2023 is provided below. Each year, the full time, part time, multifamily, recreational, and commercial totals are summed.

Table 2-6 Historical Annual Service Meter Consumption by Category (gallons)

Year	Full-Time Single-Family	Part-Time Single-Family	Multifamily	Recreational	Commercial	Annual Total
2019	18,558,254	1,739,474	580,074	396,515	189,992	21,464,309
2020	20,096,815	1,510,661	749,496	571,472	108,385	23,036,829
2021	21,964,870	1,247,066	929,016	470,417	199,791	24,811,160
2022	18,778,615	1,297,182	813,450	442,068	201,212	21,532,526
2023	19,141,619	1,976,298	848,157	531,200	92,902	22,590,176
Average	19,708,035	1,554,136	784,039	482,334	158,456	22,687,000

2.1.3.3 Distribution System Leakage (DSL)

The difference between the source production and consumption is attributed to DSL. Unmetered consumption and annual operational usage is estimated to be 6,350,000 gallons. A summary of annual DSL volume and percent of overall production for the five-year period of 2019 – 2023 is provided below. Estimated unmetered operational usage for 2022 and 2023 was provided by the system operator based on direct observation and knowledge of typical system patterns. As there is uncertainty in the unmetered operational consumption data the Cooperative intends to prioritize collection of operational water use data to refine future DSL estimates. Current DSL appears to be greater than 10% of total production and a water loss control action plan (WLCAP) is required.

Table 2-7 Historical Distribution System Leakage

Year	Annual Production (gpy)	Annual Consumption (gpy)	Estimated Operational Usage (gpy)	DSL (gpy)	DSL (%)	Notes
2019	22,689,234	21,258,085	not reported	1,431,149	6.3%	2019-2021 Data from DOH Water Use Efficiency Forms submitted by previous owner
2020	28,021,576	26,191,186		1,830,390	6.5%	
2021	29,080,744	27,108,228		1,972,516	6.8%	
2022	31,948,576	21,532,526	6,350,000	4,066,050	12.7%	2022-2023 Data from meter records and estimates provided by previous owner
2023	33,641,300	22,590,176	6,350,000	4,701,124	14.0%	
3-year Average	31,556,873	23,743,643	6,350,000	3,579,897	11.2%	

DSL ERU is estimated by dividing the average daily DSL (gpd) by full-time single-family residential maximum daily demand (ERU_{MDD}) for each respective year. ERU_{MDD} analysis is discussed in paragraph

2.1.4.2 below. DSL leakage is assumed to be a constant rate and an average flow rate can be estimated by converting annual DSL volume (gpy) to gpm. A summary of DSL ERU and estimated DSL flow rates for the five-year period of 2019 – 2023 is provided below.

Table 2-8 Distribution System Leakage - ERU and Flow Rate

Year	Annual DSL (gpy)	Daily DSL (gpd)	ERU_{MDD} (gpd/ERU)	DSL ERU (Daily DSL/MDD)	DSL Flow Rate (gpm)
2019	1,431,149	3,921	542	7	3
2020	1,830,390	5,015	624	8	3
2021	1,972,516	5,404	599	9	4
2022	4,066,050	11,140	574	19	8
2023	4,701,124	12,880	544	24	9
Average	2,800,246	7,672	577	13	5

2.1.4 System Parameters: ADD, MDD, and PHD

Average day demand (ERU_{ADD}) and maximum day demand (ERU_{MDD}) are gallons per day per ERU for a typical full-time single-family residence. Historical service meter records from 2019 - 2023 provided by Burton Water Company were used for estimating ERU_{ADD} and ERU_{MDD}.

2.1.4.1 Average Daily Demand (ADD)

ERU_{ADD} was calculated by dividing total yearly consumption for full-time single-family residences by the number of ERU and dividing by 365 days. A summary of ERU_{ADD} for the five-year period from 2019 to 2023 is shown below. The average value of **ERU_{ADD} of 183 gpd/ERU** will be used in this plan.

Table 2-9 Full-Time Single-Family Residential Consumption - ADD

Year	Consumption (gal)	Full-Time Single-Family Residences (ERU)	ERU_{ADD} (gpd/ERU)
2019	18,558,254	290	175
2020	20,096,815	303	182
2021	21,964,870	304	198
2022	18,778,615	296	174
2023	19,141,619	278	189
Average	**19,708,035**	**294**	**183**

2.1.4.2 Maximum Daily Demand (MDD)

From the service meter records, the MMADD for full-time single-family residential consumption occurred in August-September bimonthly billing period and was 104,201 gpd. The ERU_{MDD} is calculated by multiplying MMADD by a peaking factor of 1.65 and a safety factor of 1.1. The peaking factor used here is within the range recommended in the WSDM and different from that used for the $MMADD_{system}$ to account for full-time single-family use specifically. A summary of ERU_{MDD} for the five-year period from 2019 to 2023 is shown below. In this WSP, the high end of calculated **ERU_{MDD} values, 624 gpd/ERU,** will be used, which is conservative.

Table 2-10 Full-Time Single-Family Residential Consumption - MDD

Year	Full-Time Single-Family MMADD (gpd)	Full-Time Single-Family Residences (ERU)	ERU_{MDD} (gpd/ERU)
2019	86,635	290	542
2020	104,201	303	**624**
2021	100,360	304	599
2022	93,601	296	574
2023	83,304	278	544

The validity of using 624 gpd/ERU as ERU_{MDD} is verified by multiplying it by the number of ERU, then comparing the resulting calculated MDD to MDD_{system}. A summary of calculated MDD using ERU from each calendar year compared to MDD_{system} is shown below. ERUs include all usage types except operational usage because operational usage does not occur during summer MDD months. For each year, the calculated MDD is greater than the MDD_{system}. Therefore, an ERU_{MDD} of 624 gpd/ERU is appropriate.

Table 2-11 ERU_{MDD} to MDD_{system} Comparison

Year	ERU	ERUMDD (gpd/ERU)	Calculated MDD (gpd)	MDDsystem (gpd)
2019	360	624	224,715	191,054
2020	371	624	231,529	203,643
2021	371	624	231,359	227,205
2022	380	624	236,889	178,566
2023	377	624	235,103	187,318

2.1.4.3 Peak Hourly Demand (PHD)

The ERU_{MDD} is used to calculate PHD for existing connections using Equation 3-1 in the WSDM shown below. To model the most realistic scenario for peak demand it is assumed full-time and part-time and single-family residential connections are occupied and equal to 1 ERU. Multifamily, recreational, and commercial connections are also assumed present with the ERU values in Table 2-1. DSL leakage is assumed to be a constant rate and is accounted for by converting annual DSL volume (gpy) to gpm flow rate. Operational use for reservoir turnover and flushing occurs during non-peak time and is neglected for PHD analysis. The highest system-wide PHD was 396 gpm in 2020. Therefore, this plan uses a **PHD of 396 gpm** for existing connections. A forecast for PHD in 10 and 20 years is provided in Section 2.2.

$$WSDM\ Equation\ 3-1: \quad PHD = \frac{MDD}{1440}\big((1.8 * N) + 125\big) + 18$$

Table 2-12 Peak Hourly Demand

Year	ERU_{MDD} (gpd/ERU)	N (ERU)	PHD w/o DSL (gpm)	DSL (gpm)	PHD w/DSL (gpm)
2019	542	406	340	3	343
2020	624	410	**392**	3	**396**
2021	599	408	376	4	379
2022	574	412	363	8	371
2023	544	409	343	9	352

2.1.5 Pressure Zones

There are two pressure zones in the distribution system. The storage reservoirs provide gravity pressure throughout the system while a single booster pump located at the corner of SW 238th St. and 107th Ave SW provides increased pressure on 107th Ave SW and the east end of SW 232nd St.

There is a pressure deficiency along 115th Ave SW and SW 238th St where most connections do not have 30 psi at the property line. The property owners at these connections have installed private booster pumps. A future improvement is proposed which will install a booster station at the wellfield property and pressure reducing stations on SW 228th St and SW 238th St to create an upper pressure zone and a lower pressure zone. Further discussion regarding this project can be found in Chapter 8.

2.1.6 Other Systems

There are currently no interties to nearby systems. The possibility of a future intertie with King County Water District 19 (ID 38900) is discussed in Section 2.3.

2.2 10 & 20 year projections

2.2.1 Land Use

The Burton community is primarily residential, single-family homes and undeveloped sites which may be developed in the future. Metadata from King County GIS retrieved in October 2023 shows that the Burton Water Cooperative service area has 501 total lots. Growth is anticipated to come from development of vacant parcels and addition of accessory dwelling units (ADUs) on existing parcels. Title 21A of King County Code allows detached ADUs for lots in rural areas which meet the minimum lot area for the applicable zoning. Residential connections (including those for detached ADUs) are considered to constitute one Equivalent Residential Unit (ERU). However, new development requires evidence of water availability. The water system has 422 active connections. Population growth is projected to be low in the next 10-20 years as it has been over the past 23 years (since the previous water system plan).

The following table lists the number of lots by land use description from King County. There are 86 vacant single-family lots and 3 vacant commercial lots. However, it is estimated that at least 26 of the vacant residential lots are considered undevelopable (e.g. the parcel is entirely on the shoreline or has other features which make it infeasible for building). The vacant commercial lots are located on the northeast corner of the Vashon Hwy and SW Burton Dr intersection in the center of town and are currently used as parking areas. Approximately 60 of the vacant lots and the three commercial lots may see further development in the future. All of the vacant single-family lots are sized smaller than their respective zoning classification, with the majority being less than 1 acre. Approximately 80 percent of single-family lots (including vacant lots) are zoned to allow one primary dwelling per 5 acres (i.e. RA-5). All but two of the single-family lots are less than 5 acres, with the remaining two being less than 10 acres. Therefore, service connection requests resulting from future subdivision of vacant or developed single-family lots is unlikely.

Table 2-13 Service Area Lots by County Land Use Description

Land Use Category	Number of Lots
Single Family (Res Use/Zone)	385
Vacant (Single-family)	86
Single Family (C/I Zone)	4
Marina	3
Vacant (Commercial)	3
Mobile Home	3
Church	2
Retail Store	2
Duplex	2
Park	2
Bed & Breakfast	1
Apartment	2
Service Building	1
Club	1
Resort/Lodge/Retreat	1
Governmental Service	1
Parking (Assoc)	1
Office Building	1
Total	**501**

2.2.2 Zoning

The King County Comprehensive Plan for Vashon targets new development in the Vashon Town Center several miles north of Burton. The water system service area is outside of the King County urban growth area and Vashon Town Center and is primarily zoned RA-5 and RA-10 (rural with minimum 5 acre or 10 acre building lot sizes), with some parcels in the center of Burton zoned as NB (neighborhood business). Zoning of the service area is substantially unchanged since 1996 and is not anticipated to change in the next 20 years. The following table lists the number of lots within the service area, by zoning classification from King County.

Table 2-14 Service Area Lots by County Zoning

King County Zoning	Number of Lots
RA5	447
RA10	29
NB	16
RA2.5	7
Open Space	2
Total	**501**

2.2.3 Population, Service Connections, and ERU's

The 2001 Burton Water Company WSP provides the following historical context regarding growth:

> "During years prior to 1970 the system averaged two new service connections per year. In the 1970's this increased to four per year. From 1980 to 1984 there were three new customers per year. From 1984 to 1989 there were five per year. In 1989 there was a surge of 20 requests that would have overtaxed our supply. To

avoid shortages, we decided to refuse requests until we could increase our supply. In 1990, there were 30 more requests for service from those who had been told in earlier years that water was available. In May 1994, when DOH authorized the addition of 30 new services, there were 47 property owners on a waiting list for water. We connected 30 of these in 1994-1995…"

In the 22-year period from 2001 to 2023, the system went from having approximately 400 service connections to 422 connections, which is an average growth of one connection per year. Addition of future connections could be estimated according to the 2016 King County Comprehensive Plan and projected total resident population for the Growth Management Act from 2010-2040 in the King County area. Per the Growth Management Act medium growth estimate, countywide average population growth over the next 20 years is projected at 20.5%. However, this countywide average is not reflective of the Burton area or the history of the water system. In accordance with the Growth Management Act, the 2016 King County Comprehensive Plan directs the majority of growth into existing urban centers and urban growth areas. This goal is facilitated by the stated policy of rezoning for lower density in rural areas, imposition of environmental protections, and transfer of development rights incentives to limit growth in rural areas such as Burton.

Based on the average growth in the previous 22-year period being one connection per year, demand for new residential connections in the next 20 years is estimated to be one per year assuming no other limiting factors apply (e.g. water system capacity or parcel-specific development restrictions). Estimated housing and population projections are shown in the table below. Recreational and commercial populations are predicted to remain consistent with the current population.

Table 2-15 20-Year Population Forecast

Year	Housing Estimate[1]	Home increase per year	% increase per year	Residential Population Forecast	Recreational & Commercial Population	Total Forecasted Population
2025	411	1	0.2%	1028	110	1138
2030	416	1	0.2%	1040	110	1150
2035	421	1	0.2%	1053	110	1163
2040	426	1	0.2%	1065	110	1175
2045	431	1	0.2%	1078	110	1188

2.2.4 Future Water Demand

Predictions for 10-year, 20-year, and build-out demand are estimated below.

2.2.4.1 PHD Demand

Table 2-16 shows estimated PHD for the next 10 years and for the 20-year projection. PHD was calculated using WSDM Equation 3-1 shown in paragraph 2.1.4.3 with MDD of 624 gpd/ERU. Future total ERUs are

[1] Housing estimate includes single family, multifamily, and vacant residences.

assumed to generally follow the growth forecast in Table 2-15 above. As a conservative measure it is assumed there are no vacant connections and that all residential connections (e.g., full-time, part-time, multifamily) represent 1 ERU. Recreational and commercial connections are predicted to represent 14 ERU which is the highest combined ERU observed for these categories in the 2019-2023 period. There are no new recreational or commercial connections predicted in the next 20 years. DSL is expected to decrease after completion of water main upgrades and water use efficiency measures under the new owners. DSL of 7 gpm (10,000 gpd), approximately 10% of projected annual production, is included. The projected PHD in 20 years 426 gpm.

Table 2-16 20-Year Projected PHD Demand

Year	Total ERU	PHD (gpm)
2025	424	410
2026	425	411
2027	426	412
2028	427	413
2029	428	413
2030	429	414
2031	430	415
2032	431	416
2033	432	417
2034	433	417
2035	434	418
2045	444	426

2.2.4.2 Total Projected System Demand

Actual future build-out is dependent on the rate of development in the area and the capacity of the water system. The following table shows projected demands if 1 ERU is added per year for the next 20 years. At full build-out the service area is estimated to be 536 ERU, including all demand categories except DSL. Assumptions for service area buildout are discussed in paragraph 3.3.1. A water main distribution project is planned in 2025 which will replace a large portion of the aged asbestos cement water main and should result in reduced DSL, however an average DSL of 10 percent is assumed for a conservative measure. Upon completion of the proposed distribution replacement project, the water system will have sufficient capacity to meet projected demands in the 6-year, 10-year, and 20-year planning periods. Refer to Section 3.3 for a limiting factors analysis which discusses the capacity of specific system components.

Table 2-17 Projected Water Demand – System

Year	ERU	PHD (gpm)	MDD (gpd)	ADD (gpd)	10% DSL (gpd)	Annual Demand (gpy)	Annual Demand (ac-ft/yr)
2025	424	410	264,953	77,889	8,568	31,556,582	96.8
2031	430	415	268,698	78,990	8,689	32,002,627	98.2
2035	434	418	271,195	79,724	8,770	32,299,991	99.1
2045	444	426	277,436	81,558	8,971	33,043,400	101.4
Buildout	536	497	334,623	98,370	10,821	39,854,447	122.3

2.3 Interties

The nearest Group A community water system is King County Water District 19 (ID 38900) which currently has 1,700 active connections and has an unspecified number of approved connections per their latest WFI. There is no existing intertie between Water District 19 and the Burton Water System. The possibility of intertie was explored during previous discussions between Burton Water Company and Water District 19. The Burton and Water District 19 service areas are separated by the 370-foot-long Judd Creek Bridge on Vashon Highway. An intertie would require installing an insulated pipeline on the bridge and additional pumping infrastructure which was determined to be cost prohibitive.

3 System Analysis

3.1 System Design Standards

All design and future construction shall be completed in accordance with the Washington State Department of Health Water System Design Manual (WSDM). The following is a brief summary of relevant standards set forth in the WSDM:

ADD/MDD	Section	3.3, 3.4
PHD	Equation	3-1
Distribution System	Chapter	6
Hydraulic Analysis	Section	6.1
Storage Requirements	Chapter	7

3.2 System Inventory

3.2.1 Sources

Burton Water Cooperative is currently supplied by two wellfields, S06 and S11, which are comprised of 8 wells and 17 well points which have some artesian flow augmented by pumps. Water from the sources supplies the North and South concrete reservoirs directly. Source water is pumped/siphoned into the north and south rectangle reservoirs, and is gravity fed from there to the lower reservoir and to the distribution system. Details for existing sources are provided in the table below.

Table 3-1 Existing Water Sources

Wellfield	Source Number	Name & Identifier	Year	Size	Depth to Open Interval (ft)	Capacity (gpm)	Water Right Capacity (Qi, Qa)
S06	S01	WELL POINTS 7-11, 13		1.5”	18	30	245 gpm, 152.4 ac-ft/yr
	S02	EAST WELL (EMERGENCY)		10”	18	0	
	S03	NORTH WELL		38”	18	40	
	S04	SOUTH WELL, STEEL WELL, WELL POINTS 1-6, 14, 16		38”, 8”, 1.5”	18	45	
	S05	WELLPOINTS 12, 15, 17		1.5”	18	51	
S11	S07	WELL S07-1 AKN518	2005	5”	27	15	
	S08	WELL S07-2 BLN274	2020	5”	37	25	
	S09	WELL S07-3 BLN275	2020	5”	35	20	
	S10	WELL S07-4 BLN276	2020	5”	35	25	

3.2.2 Water Rights and Capacity

The water rights are outlined in the table below.

Table 3-2 Water Rights

Water Right	Type	Priority Date	Instantaneous	Annual
S1-*02376CWRIS (SWC-405)	Certificate	August 1, 1928	0.1 cfs (45 gpm)	72.4 ac-ft/yr[1]
G1-043145CL	Claim	May 1930	200 gpm	80 ac-ft/yr
		Total	**245 gpm**	**152.4 ac-ft/yr**
[1]An annual diversion quantity is not specified for this water right; however, a continuous diversion of 0.1 cfs would equate to approximately 72.4 ac-ft/yr, which would be considered the maximum annual diversion allowed under this certificate.				

3.2.3 Treatment

The system uses chlorination for disinfection due to the shallow sources. There is no other treatment installed or required because all primary and secondary contaminants are below their respective maximum contaminant levels (MCLs).

3.2.4 Storage

Burton Water Cooperative has four reservoirs. The North, South, and Upper Tanks are located on the same property as the wellfields off SW 232nd St (i.e., the Burton Water Cooperative property). The Lower Tank is located at a lower elevation off SW 238th St (on a third-party property, with an easement for the tank). The north and south 35,000-gallon rectangular concrete tanks are operated in parallel and receive source water from the wellfields. The north and south tanks are plumbed in parallel and are primarily used as equalizing storage to supply water directly to distribution. The 158,000-gallon upper tank, primarily used as standby storage, is supplied by the S07 wells or by transferring water from the North and South tanks. The 100,000-gallon lower tank is filled from the distribution water main on SW 238th St using an altitude control valve at a rate of 43 gpm. The primary function of the lower tank is to provide fire flow storage and additional standby storage to the lower elevation, higher-density waterfront area homes and businesses. Allocation of storage volume based on categorical use between respective tanks is discussed in section 3.3.4.

Table 3-3 Storage Reservoirs

Reservoir Name	Type	Year	Size	Volume (gal)
North Tank	Semi-Buried Concrete Reservoir	1985	20 feet wide, 40 feet long, 6 feet deep	35,000
South Tank	Semi-Buried Concrete Reservoir	1985	20 feet wide, 40 feet long, 6 feet deep	35,000
Upper Tank	Concrete Standpipe Reservoir	2008	26 feet diameter, 40 feet tall	158,000
Lower Tank	Concrete Standpipe Reservoir	1996	30 feet diameter, 20 feet tall	100,000
			Total Volume	**328,000**

3.2.5 Distribution System and Pressure Zones

The water main size near the wellfield is 8-inch PVC and reduces to 6-inch steel and then 6-inch asbestos cement pipe for transporting water from the storage/wellfield area to the rest of the system. Distribution pipe in the rest of the system consists of various sizes of PVC, 2-inch galvanized iron pipe and 1-1/2-inch polyethylene. An inventory of distribution pipe sizes, material, and approximate lengths is shown in Table 3-4 and a map is provided in Chapter 10-2.

Burton Water Cooperative is planning to replace aged asbestos cement, galvanized iron, and steel pipe in the next 20 years. Chapter 8 includes further discussion of planned distribution pipe replacement projects.

Table 3-4 Current Distribution Pipe Inventory

Material	Length of Pipe (ft) by Nominal Size					
	1"	1½"	2"	6"	8"	Total (ft)
Asbestos Cement				4,300		4,300
Galvanized Iron	1,100	600	1,500			3,200
Polyethylene		800				800
PVC	1,200	2,400	10,800	10,900	200	25,500
Steel				3,400		3,400
Total (ft)	2,300	3,800	12,300	18,600	200	37,200

Most of distribution is pressurized by gravity from the North/South Reservoirs; however, a booster pump located at the northwest corner of the SW 238th St and 107th Ave SW intersection pressurizes a smaller upper pressure zone for higher elevation connections along 107th Ave SW and the east end of SW 232nd St. The 1-hp booster pump runs continuously and raises pressure in this zone to approximately 80 psi. A future improvement is proposed which will install a booster station at the wellfield property and pressure reducing stations on SW 228th St and SW 238th St to create a larger upper elevation (i.e., up on the hill) pressure zone and a lower elevation (i.e., in the lowland areas) pressure zone. The booster pump at 238th St and 107th Ave SW will not be required when the well field booster station project is completed. However, upper elevation connections on the east end of SW 232nd St are vulnerable to lower pressure during fire flow conditions and a small booster pump may be needed for the four connections served by the 2-inch PVC near the intersection of SW 232nd St and 107th Ave SW. Further discussion regarding this project can be found in Chapter 8.

Although fire flow was not originally required when the water system was constructed, Burton Water Cooperative has adopted a fire flow goal of 1,000 gpm for 60 minutes. Specific fire suppression requirements for future building site development are determined by the local fire authority based on King County Code Title 17 and Appendix B of the 2018 International Fire Code. The adopted goal is consistent with King County Code Title 17 and Appendix B of the 2018 International Fire Code for single-family residential homes less than 3,600 sqft, which represents most of the service area. Most upper elevation lots west of 107th Ave SW are greater than 35,000 sqft (0.8 acre) and do not require fire suppression under the exemptions listed in 2023 King County Code Title 17.08.030. The intended purpose of future distribution replacement projects is to provide an infrastructure capable of sufficient hydrant

flow to permit building site development and maintain fire insurance ratings as low as possible in as much of the service area as practicable. To achieve this goal, new or replaced water mains located in portions of the service area which require fire suppression pursuant to future building site development will have hydrants spaced within 400 feet of commercial property lines and 600 feet of residential property lines. A letter of support from Vashon Island Fire and Rescue Fire Chief concerning the planned capital improvements to improve fire flow capability is included in Chapter 10-18.

3.3 Limiting Factors

3.3.1 Service Area

A service area map and zoning map are included in Section 1.4. There are 501 lots within the service area based on King County GIS metadata retrieved in October 2023. The number of lots zoned for residential use is 483, with 86 of these lots listed as "vacant". Approximately 60 of the vacant residential lots and three commercial lots may be developed in the future. There are 26 vacant lots assumed to be unbuildable (e.g. the parcel is entirely on the shoreline/tidelands or has other features which make it infeasible for building). The number of ERUs at full buildout assumes 457 residential lots have one full-time single-family home and 10 percent of these lots will have an ADU, for a total of 503 full-time single-family residential ERUs. There are currently 22 multifamily residential units assumed to equal 11 ERU. Additional ERUs are assumed to include 12 recreational ERUs, 5 commercial ERUs, 7 operational ERUs, and 16 DSL ERUs. Thus, the service area has a capacity for an estimated total of 552 ERUs at full buildout. This number should not be used as the number of approvable connections but will be used in the limiting factors analysis.

Table 3-5 Service Area Capacity

Usage Type	ERU
Single-Family Residences (incl. ADUs)	503
Multi-Family Residences	11
Recreational	12
Commercial	4
Operational	16
DSL	7
Total	552

3.3.2 Water Rights

The ERU from instantaneous and annual withdrawal limits are calculated from Equations 4-4a and 4-4b from the WSDM using ERU_{MDD} of 624 gpd/ERU.

$$N_{wr,instant} = \frac{245\ gal/min * 1{,}440 min/day}{624\ gpd/ERU} = 565\ ERU$$

The ERU_{ADD} of 183 gpd/ERU (0.21 acft/yr/ERU) is used to calculate ERU limitations for the annual withdrawal limit.

$$N_{wr,annual} = \frac{152.4\ acft/yr}{\frac{0.21\ acft/yr}{ERU}} = 726\ ERU$$

3.3.3 Source Capacity

Total source capacity for all wellfield sources is 251 gpm. The individual sources making up Wellfield S06 are shallow wellpoints or wells with artesian or siphon flow and have a combined capacity of 166 gpm. The four wells making up Wellfield S11 have a combined capacity of 85 gpm and require pumping withdrawal.

The source capacity, based on ERU_{MDD} of 624 gpd/ERU, is calculated using Equation 4-3 of the WSDM based on 24 hours of flow per day for Wellfield S06 and 20 hours of pumping per day for Wellfield S11. Total combined source capacity is 546 ERU.

$$N_{S06} = \frac{166\ gpm * 24\ \frac{hr}{day} * 60\ \frac{min}{hr}}{624\ gpd/ERU} = 383\ ERU$$

$$N_{S11} = \frac{85\ gpm * 20\ \frac{hr}{day} * 60\ \frac{min}{hr}}{624\ gpd/ERU} = 163\ ERU$$

$$N_{total\ sources} = N_{S06} + N_{S11} = 546\ ERU$$

3.3.4 Storage

Reservoir storage increases reliability and capacity by providing water to meet peak demands and fire flow. The WSDOH Design Manual (WSDM) lists the storage requirements in Chapter 7. The total storage capacity of the system is 328,000 gallons between the North, South, Upper, and Lower Tanks.

Operational storage (OS) is calculated from the height of the source supply cut-in and cut-out levels in the reservoirs. All reservoirs are assumed to have 6 inches of OS. The corresponding cumulative operational storage volume for all reservoirs is 11,000 gallons as shown below.

Table 3-6 Operational Storage Volume (gallons)

Upper Tank	Lower Tank	North Tank	South Tank	Total OS (gal)
2,000	3,000	3,000	3,000	11,000

Equalization storage (ES) is the volume needed to satisfy peak demands that exceed source capacity. ES is calculated using WSDM equation 7-1 below and is directly affected by system PHD and source capacity. For the purposes of this calculation, total source capacity of 245 gpm is used under the water right instantaneous withdrawal limit. ES volume for current PHD conditions (i.e., with the 158,000-gallon upper tank not directly plumbed into the distribution system) and buildout PHD conditions (i.e., with the 158,00-gallon upper tank plumbing reconfigured to be tied directly into the main distribution system) is shown below. ES volume is assumed to be divided equally between the rectangular North and South Tanks.

$$WSDM\ Equation\ 7-1: ES = 150 * (PHD - Q)$$

Table 3-7 Equalization Storage Volume

System Condition	PHD (gpm)	Q_s (gpm)	ES (gal)
Current	395	245	22,502
Buildout	497	245	37,781

Standby storage (SB) is used for system reliability during abnormal operating conditions such as a power outage. A standard baseline for recommended SB volume is equal to MDD and is adjusted based on consideration of system resiliency and redundancy. The most likely scenario for use of SB volume is an electric power outage which nearly always occurs during non-peak demand seasons (i.e., winter). In the 2001 Water System Plan the Burton Water Company reported in 44 years never having experienced a power interruption which resulted in the use of all stored water, even during a three-day outage. Artesian flow in combination with approximately one-half the lower tank volume (50,000 gallons) sustained the system for three days without power. The system has twenty-three well and wellpoint sources, many of which supply artesian flow and normally operate without a power source. Additionally, the system has a backup generator for powering chlorination feed pumps and gasoline-powered jet pump to provide 30 gpm supplemental flow from the South Well. The combined source flow capacity during an emergency from all artesian sources is 166 gpm. Based on the source redundancy and ability to operate the system for a long period during a power outage, a reduction in SB volume is justified. The recommended standby storage is 200 gallons per ERU. The 158,000-gallon upper tank primarily serves as standby volume in the current system configuration.

$$WSDM\ Equation\ 7-2:\ SB = N * SB_i * T_i$$

Table 3-8 Standby Storage Volume

System Condition	N (ERU)	SB_i (gal/ERU)	T_i (days)	SB (gal)
Current	383	200	1	76,655
Buildout	536	200	1	107,221

Although Fire Suppression Storage (FSS) was not originally required when the water system was constructed, Burton Water Cooperative has adopted a fire flow goal of 1,000 gpm for 60 minutes. This goal is consistent with Appendix B of the 2018 International Fire Code for single-family residential homes less than 3,600 sqft. Therefore, a total of 60,000 gallons of fire suppression storage is included. Nesting of FSS with SS may be allowed, if approved by the King County Fire Marshal. However, the Fire Marshal was not contacted due to having sufficient available storage volume to designate FSS as a separate unnested volume. The 100,000-gallon lower tank provides FSS to the lower elevation higher-density zoned areas. Most upper elevation lots west of 107th Ave SW are greater than 35,000 sqft (0.8 acre) and are exempt from fire flow requirements under 2023 King County Code Title 17.08.030. Because gravity flow during a fire is currently supplied from the North, South and Lower Tank, the FSS volume is assumed to be shared between the three tanks. The North and South Tanks have 14,707 gallons FSS available, for 29,414 gallons combined. The remaining 30,586 gallons FSS is assigned to the Lower Tank.

$$FSS = 1{,}000\ gpm * 60 = 60{,}000\ gallons$$

Table 3-9 Fire Suppression Storage Volume (gallons)

Upper Tank	Lower Tank	North Tank	South Tank	Total FSS
0	30,586	14,707	14,707	60,000

Dead Storage (DS) is the unusable volume in the tank and is dependent on the plumbing of the tank. It is assumed there is 0.5 ft between the base and the outlet pipe and 0.5 ft between the overflow/operational storage upper level and top of the tank. Therefore, 1 ft of dead storage rounded up to the nearest 1,000

gallons for each reservoir is assumed as a conservative measure. Cumulative dead storage is estimated to be approximately 22,000 gallons.

Table 3-10 Dead Storage Volume (gallons)

Upper Tank	Lower Tank	North Tank	South Tank	Total DS
4,000	6,000	6,000	6,000	22,000

The total required storage can be calculated for the entire system by summing OS, ES, SS, FSS, and DS as shown in the below table.

Table 3-11 Total Storage Volume – Current Conditions (gallons)

	Upper Tank	North Tank	South Tank	Lower Tank	Total System
Tank Volume	158,000	35,000	35,000	100,000	328,000
OS	2,000	3,000	3,000	3,000	11,000
ES		11,293	11,293		22,586
SB	76,655				76,655
FSS		14,707	14,707	30,586	60,000
DS	4,000	6,000	6,000	6,000	22,000
Total Required	82,655	35,000	35,000	39,586	**192,241**
Excess Available as SB	75,345	0	0	60,414	135,759

The full build-out of the system requires improvements to connect the 158,000-gallon upper tank with a booster pump station and higher capacity transmission line. In this future condition, the ES and FSS volumes will be reassigned to the Upper Tank leaving the North, South, and Lower Tanks to be used primarily for SB volume. Under the full buildout conditions scenario, ES and SB are increased to serve 536 ERU at build-out of the service area as shown in Table 3-7 and Table 3-8 above. A summary of storage volumes per tank at build-out of the service area is provided below.

Table 3-12 Total Storage Volume – Full Build-out Conditions (gallons)

	Upper Tank	North Tank	South Tank	Lower Tank	Total System
Tank Volume	158,000	35,000	35,000	100,000	328,000
OS	2,000	3,000	3,000	3,000	11,000
ES	37,869				37,869
SB		8,110	8,110	91,000	107,221
FSS	60,000				60,000
DS	4,000	6,000	6,000	6,000	22,000
Total Required	103,869	17,110	17,110	100,000	**238,090**
Excess Available as ES/SB	54,131	17,890	17,890	0	89,910

The total storage capacity of the system is 328,000 gallons. At build-out there is 89,910 gallons of unallocated excess storage available to be used as ES and SB. There are 93,000 gallons allocated to OS, FSS, and DS. The total available reservoir volume for equalizing and standby storage is 235,000 gallons as shown below.

$$ES + SS = 328{,}000 - 93{,}000 = 235{,}000\ gallons$$

The maximum ERU capacity based on system storage volume can be calculated using Equations 4-5 and 4-7 of the WSDM, as shown below. Qs is the source capacity of 245 gpm, F is 125, and C is 1.8. Standby volume per ERU is 200 gpd and it is assumed the number of days for standby storage to be used is 1 day.

$$WSDM\ Equation\ 4-5: \quad ES = \left(\frac{ERU_{MDD}}{1440}\right)[(C * N + F) + 18 - Q_S](150)$$

$$WSDM\ Equation\ 4-7: \quad SB = 1\ day * 200\frac{gpd}{ERU} * N$$

Combining the above equations and rearranging to solve for N, the capacity of the storage tanks combined is calculated to be 773 ERU as shown below.

$$N = \frac{(ES + SS) * \left(\frac{1440}{150 * ERU_{MDD}}\right) - 18 - F + Q_S}{\left(\frac{1440 * 200 * 1}{150 * ERU_{MDD}}\right) + C}$$

$$N = \frac{235{,}000\ gal * \left(\frac{1440\frac{min}{day}}{150\ min * 624\frac{gpd}{ERU}}\right) - 18 - 225 + 245}{\left(\frac{1440\frac{min}{day} * 200\frac{gpd}{ERU} * 1\ day}{150\ min * 624\frac{gpd}{ERU}}\right) + 1.6} = 773\ ERU$$

The ES and OS volumes are calculated below using WSDM Equations 4-5 and 4-7 above. It is assumed that all of ES volume will be provided by the 158,000-gallon upper tank while the SB volume will be split between the four tanks in the future system configuration at full build-out.

$$SB_{773\ ERU} = 1\ day * 200\frac{gpd}{ERU} * 773\ ERU = 154{,}676\ gallons$$

$$ES_{773\ ERU} = \left(\frac{624}{1440}\right)[(1.6 * 773 + 225) + 18 - 245](150) = 80{,}324\ gallons$$

Approximately 143,000 gallons of the required 154,676 gallons SB can be supplied by the two 35,000-gallon rectangular North and South Tanks and the 100,000-gallon Lower Tank. The 158,000-gallon Upper Tank is sufficient to provide the 80,324 gallons of ES in addition to 60,000 gallons of FSS and 6,000 gallons combined OS and DSS with approximately 11,000 gallons available as SB. If future correspondence is received from the Fire Marshal in favor of nesting FSS with SB, the 60,000 gallons FSS in the upper tank could also be allocated to SB, for a total potential SB volume of 214,000 gallons.

3.3.5 **Booster Capacity for Upper Pressure Zone**

The system currently has one booster pump which serves 28 residential connections on 107th Ave SW and the east end of SW 232nd St. The pump is in a small pump house at the intersection of 107th Ave SW and SW 238th St and runs continuously. The pump is a 1-hp StaRite model JHE-63HL and can supply up to 42 gpm at 30 psi. A rearranged version of WSDM Equation 3-1 is used to calculate the 107th Ave SW pressure zone capacity by setting the PHD equal to the booster pump capacity and rearranging to solve for N. The capacity of the booster system can be calculated as shown below, where C = 3 and F=0. The booster pump can supply up to 18 ERU and is insufficient. This pressure zone on 107th Ave SW and the east end of SW 232nd St. consists of 34 lots and requires additional pumping capacity.

$$N = \frac{(Q_{booster} - 18)\frac{1440}{MDD} - F}{C}$$

$$N = \frac{(42\ gpm - 18)\frac{1440}{624\frac{gpd}{ERU}} - 0}{3} = 18\ ERU$$

A future booster station improvement project to improve pressure for all upper elevation connections, including the 107th Ave SW pressure zone, is discussed in Chapter 8. This project would install booster pumps at the wellfield site and pressure reducing stations on SW 238th St and SW 228th St to create new upper and lower elevation pressure zones. The booster pump at the intersection of 107th Ave SW and SW 238th St will no longer be required when this improvement is accomplished.

3.3.6 Distribution Capacity

The limiting condition of the existing gravity pressurized distribution system from the North and South Tanks and the Lower Tank is modeled via hydraulic analysis using the EPANET software by iteratively increasing system flow (via increasing demand at each node using a global multiplying factor) until pressure drops below 30 psi and/or velocity exceeds 8 ft/s. With North and South Tank head of 253.0 feet and Lower Tank head of 244.4 feet corresponding to tank levels with operational and equalization storage depleted at PHD flow rate of 396 gpm, the lowest pressure (not including upper elevation connections with private booster pumps) is 30 psi on the east end of SW 232nd St and at one slightly elevated area on Bayview Dr. The maximum pipe velocity is 4 ft/s in the 6-inch water main on SW 238th St. Using a rearranged version of WSDM Equation 3-1, the maximum distribution capacity was calculated to be 415 ERU for PHD of 396 gpm with C = 1.8 and F = 125. A complete description of the hydraulic analysis can be found in Chapter 10-17.

$$N = \frac{(PHD - 18)\frac{1440}{MDD} - F}{C}$$

$$N = \frac{(396\ gpm - 18)\frac{1440}{624\frac{gpd}{ERU}} - 125}{1.8} = 415\ ERU$$

A distribution replacement project is being planned for the purpose of replacing the aged 6-inch steel and asbestos cement pipe. This project proposes to install an 8-inch main line from the wellfield to 97th Ave on the peninsula as well as establish 6-inch loops on the peninsula and from 107th Ave SW to Vashon Hwy. Specific pipe sections to be replaced are discussed in Chapter 8. Distribution capacity is expected to increase after completion of the proposed upgrades. The hydraulic analysis model shows that after the distribution replacement, with an 8-inch water main and 6-inch loops the system can sustain a PHD of 452 gpm before pressure drops below 30 psi on the east end of SW 232nd St. The maximum distribution capacity was calculated to be 487 ERU for PHD of 452 gpm.

$$N = \frac{(452\ gpm - 18)\frac{1440}{624\frac{gpd}{ERU}} - 125}{1.8} = 487\ ERU$$

3.3.7 **Summary**

The current system's limits are shown below.

Table 3-13 System Capacity Summary

Limitation	ERU
Service Area	552
Water Rights, Instantaneous withdrawal	565
Water Rights, Annual withdrawal	726
Total Wellfield Source Capacity	546
Reservoir Storage	773
Booster Capacity for Upper Pressure Zone	**18**
Existing Distribution System	**415**
Future Distribution System	487

The current overall system-wide most limiting factor is distribution capacity. The distribution capacity is sufficient to supply all current and all approved connections. Once the proposed 8-inch main and 6-inch loops are installed, the distribution capacity will increase to 487 ERU. Another future project is proposed to improve pressure for all upper elevation connections by installing booster pumps at the wellfield site and pressure reducing stations to create new upper and lower elevation pressure zones. The booster pump at the intersection of 107th Ave SW and SW 238th St would be removed when this project is completed and the corresponding limiting factor of 18 ERU for this pressure zone will no longer apply.

3.4 Distribution System Analysis

A hydraulic analysis was modeled using EPANET2 and is enclosed in Chapter 10-17. The following system configurations and hydraulic scenarios were modeled:

- Existing Gravity-Pressurized System with 6-inch Main Line, Non-Looped
    - Static High-Pressure Condition
    - PHD Condition
- Future System with Gravity-Pressurized 8-inch Main Line and 6-inch Looped Distribution
    - Limiting Condition
    - Hydrant Flow

The existing static high-pressure condition shows the highest potential pressures in the gravity fed system. This high-pressure condition is a worst-case scenario which is driven by the elevation of the storage reservoirs and is unaffected by the distribution pipe size because it assumes zero flow. Therefore, additional static high-pressure modeling of the future system with proposed distribution pipe upgrades is not necessary.

The existing PHD condition model validates that the existing distribution system meets pressure requirements for all existing active connections. The future limiting condition model depicts a maximum future PHD the distribution system can support after the 8-inch water main and 6-inch loop distribution upgrades are complete. The future distribution system can support a greater PHD than the existing system

while providing 30 psi residual pressure to all connections. Therefore, it is unnecessary to model the future distribution system at current PHD flow.

The 2001 Water System Plan indicates that previous flow tests showed the existing system was capable of hydrant flows of 600 – 750 gpm at the Yacht Club and at the intersection of Vashon Hwy and Burton Dr, but that other portions of the system are known to not support such fire flows due to undersized water main pipe. Modeling of hydrant flow conditions for the existing system without the proposed 8-inch water main and 6-inch loops is unnecessary as the existing system is known to be inadequate for fire flow. Hydrant flows for the future system with the proposed distribution upgrades is accomplished to demonstrate the proposed upgrades will improve fire flow capacity.

Limitations of the distribution system are flow velocity of 8 ft/s during normal operation or 10 ft/s during fire flow, or the point where the pressure drops below 30 psi during normal operation or 20 psi during fire flow. Residual water pressure for existing connections must not be less than 20 psi under PHD flow conditions.

The existing distribution system has the capacity to supply domestic demands up to the current PHD of 396 gpm. The model shows a minimum system pressure of 29 psi on SW 232nd St and on Bayview Dr, which is above the 20-psi minimum requirement for existing connections, but slightly below the 30-psi minimum requirement for new connections. The static condition model shows that there are lower elevation connections above 80 psi and as high as 100 psi. A private pressure reducing valve (PRV) is recommended for any homes which have greater than 80 psi.

A future distribution pipe replacement project is planned to increase capacity to meet the adopted fire flow goal of 1,000 gpm. The proposed distribution upgrades include an 8-inch main from 115 St to 97th Ave (to replace the existing 6-inch steel and asbestos cement pipes), a 6-inch looped main on 97th Ave to Bayview Dr to Harbor Dr (upgrading the current mixed-size pipe loop around the peninsula), and a 6-inch looped main from 107th Ave SW to 228th St to Vashon Hwy. An illustrative depiction of the proposed upgrades is included in Section 8.6. The limiting condition PHD flow increases to 452 gpm after the proposed 8-inch main and 6-inch looped system is completed. Ten existing hydrants will meet the 1,000-gpm adopted fire flow goal without residual system pressures decreasing below 20 psi or flow velocities greater than 10 fps. Five existing hydrants will support flow rates of at least 700 gpm and two will flow less than 100 gpm. Additional pumping capacity is needed to increase pressure and flow around the 6-inch loops to meet the fire flow goal more fully in most of the service area. Refer to Chapter 10-17 for a complete description of the hydraulic analysis model and results.

4 Resource Analysis & Water Use Efficiency (WUE)

In 2003, the Washington State Legislature passed Engrossed Second Substitute House Bill 1338, known as the Municipal Water Law, to address increasing demand on the state's water resources. The law established that all municipal water suppliers must use water more efficiently in exchange for water right certainty and flexibility to help them meet future demand. The Legislature directed the Department of Health to oversee and enforce a WUE program to help support the collective goal of ensuring a safe and reliable drinking water supply. The WUE program seeks to support this goal in the following ways:

- Contribute to long-term water supply reliability and public health protection,
- Promote good stewardship of the state's water resources, and
- Ensure efficient operation and management of water systems.

This program became effective on January 22, 2007, and established certain responsibilities that municipal water suppliers must fulfill. Fundamental elements include the following:

- Water use efficiency program,
- Distribution leakage standard,
- Goal-setting and performance reporting, and
- Metering requirements

The requirements and deadlines are listed below and in order of due date for Group A municipal water suppliers.

Table 4-1 Summary of WUE Program Requirements

Requirement	**Deadline for MWS with < 1,000 connections**
Include WUE program in planning documents	Current
Submit first annual WUE report	Completed
Submit service meter installation schedule	Completed
Set your own WUE goals	Annually
Meet distribution leakage standard (based on 3-year rolling average)	Ongoing
Complete installation of all service meters	Completed

The applicable WUE program requirements and guidelines are contained in *Water Use Efficiency Guidebook*, Third Edition, January 2017 (DOH 331-375).

4.1 Metering Program

4.1.1 Source Meters

The existing sources are metered. The source meters are read weekly.

4.1.2 Service Meters

Service Meters are installed at every service connection. The service meters are read bi-monthly. Future (i.e. new) connections are required to install a service meter at the time of connection.

4.2 Water Use Efficiency Program

4.2.1 Current Program

The Cooperative plans to hold a public forum in 2025 to adopt a WUE goal and measure. The WUE goal will be added to the WSP once adopted.

The following WUE goal is recommended for public discussion:

> *"Reduce 3-year average DSL leakage below 10% by 2026 and maintain a decreasing distribution system leakage (DSL) trend as a result of distribution system improvements and accurate tracking of operational usage."*

4.2.2 Past WUE Goals

The previous system owner, Burton Water Company, established the below conservation goal in 2011:

> *"Reduce May-October usage by 55,000 cubic feet, or 3%. This equates to 10% of the summer usage by the highest customers during 2009-2010. In the bi-monthly period of July-Aug, which typically sees the highest use of the year, it would reduce total consumption from approximately 846,000 c.f. to 812,000 c.f. On a full-year basis, the goal represents approximately a 2% reduction in consumption.*"

4.2.3 Water Demand Forecast and Goals

State regulation (WAC 246-290-830) requires the governing body of a municipal water system to develop the WUE goals through a public process. In 2024, a new goal was implemented.

4.2.4 Water Loss Control Action Plan

A water loss control action plan is attached in Chapter 10-7.

4.2.5 Estimated Savings

The forecasted number of ERUs are used to estimate future system ADD and MDD based on predicted DSL rates with and without WUE. As shown below, reduction in DSL correlates to lower system demand.

Table 4-2 Estimated WUE Savings

Year	ERU	DSL (without WUE)	DSL (with WUE)		ADD_{SYSTEM} (gpd)		MDD_{SYSTEM} (gpd)	
			Annual %	3-yr Running Average	Without WUE	With WUE	Without WUE	With WUE
2025	424	11.0%	10.0%	11.1%	86,456	85,678	294,098	291,448
2026	425	12.0%	9.0%	9.2%	87,441	85,099	297,446	289,479
2027	426	13.0%	8.0%	9.7%	88,429	84,516	300,807	287,497
2028	427	14.0%	7.0%	9.0%	89,421	83,930	304,181	285,503
2029	428	15.0%	7.0%	8.0%	90,416	84,126	307,567	286,171
2030	429	16.0%	6.5%	7.3%	91,415	83,928	310,966	285,499
2031	430	17.0%	6.5%	6.8%	92,418	84,124	314,377	286,163
2032	431	18.0%	6.0%	6.7%	93,424	83,923	317,800	285,481
2033	432	19.0%	6.0%	6.3%	94,434	84,118	321,236	286,143
2034	433	20.0%	5.5%	6.2%	95,448	83,915	324,684	285,452
2035	434	21.0%	5.5%	5.8%	96,465	84,108	328,145	286,110
2045	444	22.0%	5.0%	5.7%	99,501	85,636	338,472	291,308

4.2.6 Measures

As part of a water system plan, WSDOH regulations also require the implementation of five WUE measures. The measures are discussed in the following sections.

4.2.6.1 Public Education

Burton Water Cooperative has annual meetings open to all members. Community members not in attendance are able to view meeting minutes on the website (www.burtonwater.org). In addition, Burton Water Cooperative's annual Consumer Confidence Report (CCR) will include water conservation tips.

4.2.6.2 Conservation tips on Website

State and local health departments provide water conservation suggestions and tips. The Burton Water Cooperative website will be updated to provide links to information regarding both indoor and outdoor water conservation tips.

4.2.6.3 Conservation Rate Structure

Users are billed based on a tiered water usage structure. New rates were set in November 2024 when ownership of the system was transferred to Burton Water Cooperative. Water rates are shown below in Table 4-3.

4.2.6.4 Meter Calibration

Burton Water Cooperative performs meter calibration on an as needed basis if usage trends indicate a meter has become erroneous. Inaccurate meters will be replaced. Prior to the change in ownership, Burton Water Company reported that service meters on the system are in good condition.

4.2.6.5 Metering Operational Usage

The previous owner, Burton Water Company, did not meter operational usage for turnover of the reservoirs during low demand periods. Lack of meter records for operational usage leads to rough estimates and assumptions to account for total operational volume consumed. Installation of meters on reservoir drains which are regularly used to stimulate tank turnover and metering of flushing would allow more accurate reporting of operational usage which will result in an increased accuracy of DSL calculations.

4.2.7 Consumer Education Program

Burton Water Cooperative is required to provide general education to its customers on the importance of using water efficiently on an annual basis. Links to publications regarding outdoor and indoor water conservation will be provided on the cooperative website. Conservation information is included in the annual CCR provided to all Burton Water Cooperative customers. This report will be made available online as well. Monthly board meetings also include discussion of the water system.

4.2.8 Annual Reports

Burton Water Cooperative will collect meter data and report total production, in gallons, from all sources for the year and total operational consumption, in gallons, from all customers and from tank flushing for the year to DOH in their annual WUE report.

4.2.9 Water Rates

The water system has implemented a tiered rate structure. The current water usage rates are below. Meters are read bi-monthly and customers are billed bi-monthly.

Table 4-3 Bi-Monthly Water Usage Rates

Tier	Usage (cubic-feet)	Rate/100 cubic-feet
Base Rate		$59.00 for ¾" connections; $98.53 for 1" connections
1	0 to 100 cuft	$0.0305
2	101 to 1,800 cuft	$0.0305
3	1,801 to 3,400 cuft	$0.0600
4	3,401 to 5,000 cuft	$0.0900
5	5,001 + cuft	$0.1200

4.2.10 **Water Savings**

Water production and usage must be evaluated annually to determine the effectiveness of the program. Prior to the change in ownership, Burton Water Company's 3-year historical average DSL is 11%[2] which is slightly above the goal threshold. Although the amount of water lost through leaks cannot be listed as operational usage, a record of known and/or repaired leaks should be kept for purposes of tracking historical usage data. Burton Water Cooperative will evaluate and report water savings under their new management after the first year of ownership.

4.3 Source of Supply Analysis

4.3.1 **Conservation**

The water system conservation program can be achieved through public education, system measures, and conservation pricing. The water system shall determine the goals, evaluation of measures, and conservation activities according to the water usage.

4.3.1.1 Public Education

Public education is accomplished through links to DOH publications about conservation for both indoor and outdoor usage on the Burton Water Cooperative website.

4.3.1.2 System Measures

All sources and services are metered and recorded on a regular basis as described above.

4.3.2 **Long-Term Trends and Climate Change Impact**

The Cooperative will monitor seasonal rainfall and source static water levels to help determine if climate changes are potentially affecting the source aquifer. The Operator reports that seasonal static water levels are consistent which indicates a low risk of climate change reducing the source capacity in the immediate future. From the records, the water system can track trends and evaluate long-term evidence of aquifer stability. The Cooperative will continue to monitor rainfall and source water levels and production data so that future trends can be identified. If trends are observed to indicate diminishing source capacity then the Cooperative will evaluate mitigation strategies to reduce system demand which focus on promoting water conservation (e.g. water rate adjustment, leak detection, etc.).

[2] See Table 2-7 Historical Distribution System Leakage

4.3.3 Water Right Changes

An amendment to water right claim G1-043145CL to correct a ministerial error in the point of withdrawal was authorized by the Department of Ecology on October 30, 2020. The water right claim was changed to clarify the point of withdrawal is for a wellfield, which allows for multiple shallow wells and permits drilling of additional wells in the S11 wellfield without requiring a water right change application. A copy of Department of Ecology Order No. 19416 is included in Chapter 10-7.

The S06 wellpoints, which intercept Burton Spring flows, are operated under water right S1-*02376CWRIS. The long-term intention is to replace the wellpoints with drilled wells to provide more reliable and efficient sources with lower risk of contamination. Replacing the wellpoints with drilled wells will necessitate a water right change application to modify the point of diversion of water right S1-*02376CWRIS to include the S11 wellfield.

4.3.4 Reclaim/Reuse

Parcels connected to the water system have onsite septic systems, so use of reclaimed water is not available at this time.

4.3.5 Treatment

The system uses chlorination for disinfection due to the shallow sources. There is no other treatment installed or required because all primary and secondary contaminants are below their respective MCLs.

4.4 Water Supply Reliability

4.4.1 Water Shortage Planning

The water shortage planning is described in the emergency response plan attached in Chapter 10-5.

4.4.2 Interties

The nearest system to Burton Water Cooperative is King County Water District 19 (ID 38900). The possibility of intertie was explored during previous discussions between Burton Water Company and Water District 19. The Burton and Water District 19 service areas are separated by the 370-foot-long Judd Creek Bridge on Vashon Highway. An intertie would require installing an insulated pipeline on the bridge and additional pumping infrastructure which was determined to be cost prohibitive.

4.4.3 Other Nearby Sources of Water

Approximately 3/4-mile north of the Burton Water Cooperative wellfields is a high producing deep well which was drilled in 1980 for domestic supply and irrigation of the Misty Isle Farms estate properties. This well is approximately 600 feet deep and is reported to produce 250 gpm or more. Given the depth of the well, it should be less vulnerable to contamination than the shallower Burton wellfields. The possibility for this well to serve as an emergency supply for the Burton Community in the event of a public health crisis should be considered by the Burton Water Cooperative board and the owner of the well.

5 Source Water Protection

5.1 Wellhead Protection

The wellhead protection plan was approved as part of the 2001 Burton Water Company WSP. The following susceptibility assessment, protection area, and contaminant source inventory will provide the necessary documentation to make educated management and land use decisions to reduce the potential for aquifer contamination.

5.1.1 Susceptibility Assessment

The Ground Water Contamination Susceptibility Assessment for wellfield S06 was performed by Burton Water Company in 1994. Additional assessments were performed in 2009 and 2018 for well S07 and wellfield S11 by Landau Associates. These assessments are included in Chapter 10-9.

5.1.2 Wellhead Protection Area

A map showing the 6-month, 1-year, 5-year, and 10-year ground water time of travel radii is included in Chapter 10-9. The well protection radii were calculated using the calculated fixed radius formula found in the susceptibility assessment as provided by the WSDOH.

5.1.3 Contaminant Source Inventory

The following are known potential contaminants located within the time of travel radii for wellfields S06 and S11.

- There are onsite septic systems located within the 5-year time of travel radius for wellfields S06 and S11.
- Possible pesticide and/or herbicide application, as well as possible agricultural nutrient/fertilizer application, within the 5-year time of travel radius for wellfields S06 and S11
- SW 232nd St and 115th Ave SW public roads are located within the 6-month time of travel radius.

5.1.4 Notification of Findings

The following public agencies were provided with a notification letter and a copy of the wellhead protection plan (see Chapter 10-9 for a copy of the notification letters):

King County Fire District 13	Washington State Department of Health Northwest Regional Office of Drinking Water
King County Department of Community and Human Services	King County Department of Transportation
Washington State Dept. of Agriculture	King County Environmental Health

5.1.5 Contingency Planning

The system has a total of 306,000 gallons of storage (not including dead storage) and is able to supply 4 days of water usage for 415 ERU based on the ERU_{ADD} of 183 gpd/ERU. This storage increases the reliability of the system. In the case of reduced source production during periods of higher water demand in summer months, the system could place reader boards at main intersections or send email notifications to reduce the demand by restricting outdoor irrigation.

In the event of contamination, the source of contamination will be identified, and the source will be taken offline while corrective action is taken. In the event the aquifer is contaminated, and groundwater becomes inaccessible to the community, trucking in water from an adjacent purveyor could be implemented and used on a short-term basis while emergency responders act. In the event of serious contamination, the Emergency Response Program lists nearby drinking water providers.

5.2 Water Quality Analysis

5.2.1 Asbestos

The distribution system has some portions of AC pipe. One sample taken from the distribution system on 9/20/1995 returned an asbestos result of 0.1790 million fibers per liter (MFL) which is below the MCL of 7.0000 MFL. The system has been granted a monitoring waiver for asbestos according to the Water Quality Monitoring Schedule (WQMS).

5.2.2 Bacteriological Testing

The system collects one bacteria sample each month from representative points in the distribution system. There have been seven coliform failures since 2000 with no exceedances in the past twelve years. An updated coliform monitoring plan is attached in Chapter 10-10.

5.2.3 Disinfection Byproducts

Sampling for total trihalomethane (THM) and halo-acetic acid (HAA5) disinfection byproducts is required every year. The last sample was collected in October 2023 and there were no exceedances. The next samples were due in October 2024 and lab results are yet to be reported.

5.2.4 Inorganic Chemicals (IOC)

The most recent full IOC samples were taken from S06 and S11 wellfields in August 2019. The results are attached in Chapter 10-8. Several analytes were detected but are at levels below their respective MCL. The next S06 sample is due in August 2028 and the next S07 sample is due in April 2028.

5.2.5 Lead and Copper

Sampling of the distribution system for lead and copper began in 1996 has continued regularly. The system last sampled for lead and copper in 2021 and out of the ten required samples taken there were no exceedances. The next round of lead and copper sampling is due in July 2027.

5.2.6 Nitrates

One nitrate sample is required every year from wellfields S06 and S11. The last samples taken in 2022 resulted in nitrate levels of 1.19 mg/L and 1.31 mg/L for S06 and S11, respectively, which are below the

MCL of 10 mg/L. There has historically been somewhat elevated, though not above the MCL, concentrations of nitrate observed in the wellfield sources, thought to have been related to agricultural production (and associated nutrient/fertilizer application) on the property immediately north (and upgradient) of the wellfield property. Nitrate concentrations have been decreasing since the mid-2000s.

5.2.7 Volatile Organic Contaminants (VOCs)

VOC samples are required every 3 years for wellfield S11 and the system has a waiver for wellfield S06. The last S06 sample was taken in April 2021 and there were no exceedances. The last S11 sample was taken in June 2022 and there were no exceedances. The next S11 VOC sample is due in June 2025.

5.2.8 Synthetic Organic Contaminants (SOCs)

One herbicide sample is required every 9 years for wellfield S06. The last sample was taken in April 2018 and therewere no exceedances. One herbicide sample and one pesticide sample are required every 3 years for wellfield S11. The last samples were taken in June 2022 and there were no exceedances. The system is not required to sample for soil fumigants.

5.2.9 Per-and Polyfluoroalkyl Substances (PFAS)

PFAS samples are required every 3 years from wellfields S06 and S11. The last samples were taken in March 2022 and there were no exceedances.

5.2.10 Gross Alpha and Radium

One Gross Alpha and one Radium sample is required every 6 years from wellfields S06 and S11. The last sample from S06 was taken in April 2021 and there were no exceedances. The last sample from S11 was taken in May 2023 and there were no exceedances. The next samples are due in April 2027 and May 2029 for S06 and S11, respectively.

6 Operations and Maintenance

6.1 Water System Management and Personnel

The water system is owned and managed by the Burton Water Cooperative. A board of directors oversees decisions related to long term solutions, budgeting, and planning for the water system. The board of directors consists of five board members who are elected by the community members. Initial Board member terms shall be staggered with one director elected for a term of one (1) year; two directors for a term of two (2) years; and two directors for a term of three (3) years. Assignment of directors to an initial term of either one (1), two (2) or three (3) years shall be by lottery. Following the initial terms, Board director terms will be a consistent 3 years. The board oversees decisions related to long term solutions, budgeting, and planning for the water system. The Operator oversees day-to-day operations and works directly with the board of directors. There are existing governing documents for the Association that include aspects of the water system. Chapter 10 includes the By-laws and Articles of Incorporation, and Rules and Regulations.

6.2 Operator Certification

The water system operator is required to have a WDM-1 certification per WAC 246-292-050. The system operator is Nicholas Simmons, WDM-1, certification number 015474.

6.3 Routine Operations and Maintenance

The regular maintenance program is shown in Table 6-1, showing the task and frequency.

Table 6-1 O&M Schedule

Task	Scheduled Frequency
Read Source Meters	Weekly
Record Static Water Level	Monthly
Inspect locks and gates	Weekly
Chlorine solution refill	Weekly
Check chlorine free residual	Daily
Collect routine coliform samples	Monthly
Inspect outside of reservoirs	Monthly
Clean / Sweep Pumphouse	Monthly, as needed
Check pH in distribution	Quarterly
Read Service Meters	Bi-monthly
Billing	Bi-monthly
Water use Calculations	Quarterly, or as-needed
Flushing	Semi-annually
Air Release Valve Inspection	Annually
Exercising Valves	Annually
Budget Evaluation	Annually
Send Consumer Confidence Report	Annually
Prepare WUE report	Annually
Cross-Connection Control	Annual assembly testing, surveys performed on 5-year cycle
Clean Reservoirs	Every 5 years

6.4 Water Quality Sampling Procedures & Program

System operator will take system samples. Two coliform samples are taken each month, except in the event of a failure, when the coliform monitoring plan is used to determine the location and number of repeat samples to be taken. The system is sampled in accordance with its Water Quality Monitoring Schedule (WQMS). Updated WQMS are sent out by DOH annually. The latest WQMS is attached in Chapter 10-8. Sampling procedures for the required samples can be obtained from the WSDOH.

6.4.1 Lead and Copper Sampling

Lead and Copper sampling procedures are enclosed in Chapter 10-8. Lead and copper sampling sites are selected based on the year the homes were built. In addition, if a home is vacant during sampling, an alternative site would be selected. Current sampling sites for lead and copper testing are listed below in Table 6-2.

Table 6-2 Lead and Copper Sampling Sites

LCR Site	Address
1	8900 SW Harbor Dr
2	23021 107th Ave SW
3	10504 SW 238th St
4	10907 SW 232nd St
5	24007 99th Ave SW
6	24010 99th Ave SW
7	23414 Vashon Hwy SW
8	10500 SW 228th St
9	9733 SW Harbor Dr
10	23726 97th Ave SW

6.5 Coliform Monitoring Plan and Map

The primary sites for coliform monitoring are two routine sample stations located at representative points of the distribution system, with repeat sampling occurring from homes located within 5 services of the point of failure. The coliform monitoring plan can be found in Chapter 10-10. The system takes two routine samples per month. If there are any failures, three repeat distribution samples and source samples are taken per this plan; see the Coliform Monitoring Plan for details.

6.6 Emergency Response Program

All primary emergency response is handled by the operator. The operator will evaluate any trouble reported and either respond in person or contact an outside support provider if the scope of work exceeds their capacity. The contact list for the system shown in Table 6-3 provides a quick reference; more complete listings are available in Chapter 10-5.

Table 6-3 Water System Contacts

Emergency contact	Phone number(s)	Emergency contact	Phone number(s)
24 Hour Fire/Police/Medical Emergency Services	911	Fire Department / Ambulance Service	911
Local Law Enforcement (King County Sheriff)	206-477-6655 Day 911 Night	Operator	206-778-9638
County Environmental Health (King County Office)	206-263-9566	DOH Regional Engineer	253-395-6770
Department of Ecology Spill Response NW Regional Office	1-800-258-5990 1-800-424-8802	DOH Emergency After Hours # …….. Business Hours #.....	 1-877-481-4901 253-395-6750
Engineering consultant Northwest Water Systems	360-876-0958	Pump service: Nicholson Drilling	360-876-4421
Electric Utility: Puget Sound Energy	888-225-5773	Electrician: Nicholson Drilling	360-876-4421
Water Testing Laboratory: Edge Analytical	800-755-9295	Neighboring Water System: King County Water District 19 (ID 38900)	206-463-9007
News Media Contact: Burton Water Cooperative	Coop President or designated PIO	DOH Coliform Monitoring and Water Quality:	253-395-6775

6.6.1 Vulnerability Assessment

A system vulnerability assessment is on file at the Burton Water Cooperative office and available for review by authorized parties. Additional assessment information is included below.

Earthquake – No practical degree of protection against catastrophic earthquakes can be supplied; therefore, preparation for assessing and reacting to earthquakes is necessary. In the event of an earthquake, the system shall be carefully inspected, and an inventory of all damages shall be made. Additional water quality testing will be performed in consultation with the WSDOH. Possible damage from an earthquake could include distribution and transmission line breaks and structural damage to reservoirs and pump houses.

Fire - In the event of a fire in a pumphouse, 911 shall be notified. Once the emergency responders have deemed the area safe to enter, the site is to be disabled during inspection. If it is found to be safe after inspection, the wells and control system may be re-enabled. If minor repairs are necessary or portable emergency power is needed, a repair provider will be contacted for a service call.

Flood – It is unlikely flood damage from heavy snow melt or heavy rains would cause flooding. However, if flooding occurred the reservoirs are higher than the flood level and would be safe from flooding.

Power Outages – Power outages will almost certainly be the most common emergency condition facing the system. The system has a portable backup generator to power the disinfection system and small pumps. Installation of a standby generator and automatic transfer switch are recommended future improvements.

Vandalism/Terrorism - Small water systems are potential targets of vandalism and terrorism. Fortunately, most small water systems also attract little attention. Reservoir access hatches are locked. The wellfields have a partial perimeter fence and there is system piping and components which are vulnerable to theft or vandalism. The previous owner, Burton Water Company, has not reported experiencing any such activity. Any evidence of vandalism shall be investigated, and water quality samples shall be taken if there appears to be any evidence of tampering with the reservoir, pumphouse, or other point at which contaminants could enter the system.

Volcanic Activity - Because of the system's location, vulnerability to volcanic activity is low. The most likely impact of volcanic activity would be ash fallout from a regional event. Volcanic ash is therefore unlikely to present any problem for the system.

6.7 Cross Connection Control

Burton Water Cooperative is working to review and adopt a cross-connection program with the goal of having it established in 2025. The draft cross-connection documents are included in Chapter 10-11.

6.8 Consumer Confidence Reports (CCR)

A copy of the most recent CCR is included in Chapter 10-12. Future CCRs will be posted on the website (www.burtonwater.org).

6.9 Record Keeping

The system generates a number of different types of records that must be kept. The water system maintains these records. The records and the periods over which records are maintained are shown in Table 6-4.

Table 6-4 System Records

Type of Record	Time Kept	Reporting
Utility Billing Records	3 years	N/A
Receipts	3 years	N/A
Power Bills	3 years	N/A
Check Registers	3 years	N/A
Taxes and Financial Reports	7 years	N/A
System Planning Documents	Until Irrelevant	Upon Request
Engineering Drawings	Indefinitely	Upon Request
WFI	Current	Annually
Contracts	As Necessary	N/A
Work Orders	3 years	N/A
Operating Permit	Current	N/A
Correspondence with Customers	Indefinitely	Upon Request
Correspondence with Government	Indefinitely	Upon Request
Site Visit Reports	1 year	Upon Request

Type of Record	Time Kept	Reporting
Bacteriological Tests	Indefinitely	Monthly
Nitrate Tests	Indefinitely	Annually
IOC	Indefinitely	Upon Testing
VOC	Indefinitely	Upon Testing
SOC	Indefinitely	Upon Testing
Radionuclide	Indefinitely	Upon Testing
PFAS	Indefinitely	Upon Testing
Lead and Copper	Indefinitely	Upon Testing
Other Water Quality	Indefinitely	Upon Testing
CCC Documents	Indefinitely	Upon Request
Water Well Reports	Indefinitely	Upon Request
Source Meter Readings	Indefinitely	Upon Request
Consumer Confidence Reports	Indefinitely	Annually
Meeting Minutes	10 Years	Upon Request

7 Distribution Design and Construction Standards

7.1 Design and Constructions

All construction of new or replacement facilities shall be subject to the following specifications:

- The current Standard Specifications of the Washington State Department of Transportation
- American Water Works Association (AWWA) standards
- Applicable standards adopted under Washington Administrative Code
- Standards and details adopted by Burton Water Cooperative.

By submittal of this water system plan, the system may initiate distribution system replacements and upgrades without submission of a design report in accordance with WAC 246-290-125. The projects that request exemption are discussed in Section 8.0.

Under WAC 246-290-125, the system will complete the following.

- Maintain a current department approved WSP that includes standard construction specifications for distribution mains.
- Maintain a completion of construction form in accordance with WAC 246-290-120(5) and make this available upon request for review by the department.

All distribution replacements, upgrades, and modifications shall comply with the system's construction standards and details in effect at the time of work. The system's engineer and this WSP should be consulted prior to any estimate, design, or construction. The system's engineer shall approve all extensions or replacements funded by the system.

The system will require plans and specifications for any new project, except those projects exempted from project submittal under WAC 246-290-120 (1), to be prepared in writing under the supervision of a registered professional engineer and approved by WSDOH prior to construction. The typical standards and details for service meter, gate valves, and trench details are attached. Future reports prepared and stamped by a licensed professional engineer may modify these standards. All projects shall be reviewed and certified by the design engineer.

A map of the distribution pipe sizes and types is attached in Chapter 10-2. The system can replace mains that were previously approved up to one size larger without project approval from WSDOH.

8 Improvement Program

8.1 Recent Improvements

Under the ownership of Burton Water Company several improvements were made to the system between 2001 and 2023. The 158,000-gallon concrete upper reservoir was constructed. The South Tank was repaired and reroofed. Four new wells (S07-1, S07-2, S07-3, and S07-4) were installed which are intended for future replacement of the current vacuum wellpoint system to provide a more reliable and efficient water supply with lower risk of contamination. Additional improvements are needed to fully integrate the upper reservoir and the new wells. The new ownership, Burton Water Cooperative, intends to continue improvements to the water system.

8.2 Sanitary Survey Items

Table 8-1 2022 Sanitary Survey Improvements

Item	Type	Status	Date Completed
1. Update your Water System Plan and make sure that you have revised your Coliform Monitoring Plan to include the requirements of the Revised Total Coliform Rule and the Groundwater Rule.	Observation	In Process	
2. Implement your Cross-Connection Control Program.	Observation	In Process	
3. Replace the screen on the 100,000-gallon tank drain line.	Observation	Complete	
There were no significant deficiencies identified in the 2022 Sanitary Survey and there are no unaddressed significant deficiencies from the 2017 Sanitary Survey.			

8.3 Capital Needs Assessment

Northwest Water Systems performed an assessment of the water system for Burton Water Cooperative in 2022, prior to the sale of the water system. The assessment documented future capital needs in recommended categories including: 1-year, 2-year, 5-year, 20-year, and optional improvements. The following is a summary of recommended improvement projects.

Chlorination System Upgrades (Project 1-1)

Engineering and WSDOH approval of the existing chlorination system is needed. A draft engineering report was completed under the ownership of Burton Water Company, but has not been submitted to WSDOH for review. The chlorination report outlines multiple upgrades to the water system including: building a pumphouse extension off the end of the North Tank, moving chlorination equipment into this structure, bringing the source water manifold into this structure with isolation valves, and upgrading plumbing and controls to increase contact time in the North and South Tanks.

Waterproof Labeling (Project 1-2)

There are already labels on the altitude valve used for filling the lower 100,000-gallon tank; however, these labels are paper tags wired to various components. While these labels are extremely clear and helpful, pump houses are wet environments. Therefore, replacing these tags with waterproof metal tags would be an important improvement to long-term retention of this information. Metal plant ID tags are easy to write upon, are inexpensive, and are waterproof. Other water system components should be labeled as well. These components include: well/well point ID's, source transmission line ID's, source valve identification numbers, etc.

Electrical and Operating Plan (Project 1-3)

There are multiple schematics for electrical, control, and operating instructions; however, most of these have been amended with notes, have few explanations, or otherwise require intimate knowledge of the water system to interpret. There are multiple drawings and notes on the water system completed at different times. A set of diagrams, drawings, and operating instructions which represent the current status and practices of the water system would provide a record of how the water system operates and is maintained. In this way multiple people can assist with the water system and troubleshooting can be successfully completed when the primary operator is on vacation, sick, or otherwise unavailable.

Update Source Plumbing (Project 2-1)

There are repair couplings, splices, corroded components, and possible abandoned pipes in various places around the source well fields and tanks. In general, the source site would benefit from an overall "clean-up" of pipes, valves, manifolds, etc to improve layout clarity, reduce maintenance, and improve troubleshooting. It is very easy for multiple individual repairs to be made over time, which eventually become less than ideal for the system as a whole. Upgrading the source water collection system will improve the sanitary integrity of the water, reduce repairs, and improve the operability of the site.

In addition, the system currently relies upon manual operation to operate tanks, pumps, and valves. Providing automation for some of these features would improve the reliability of the water system as well as make the system easier to run when the regular system operator is sick or on vacation.

Build or Re-Build Source Pump Enclosures (Project 2-2)

Most of the source pumps are located under tarps, on the ground, and/or in structures that have some degree of rot. All pumps should be located within an enclosure with a concrete floor and an insulated, vented, and locking structure. These do not need to all be "pumphouses"; however, re-locating some pumps to a proper "pumphouse" may be appropriate. At a minimum, a well-constructed "doghouse" to protect the pump from the elements is necessary. Properly housing the pumps should increase the life of the pump as well as make maintenance of the pumps easier, more sanitary, and more pleasant.

Re-Build 107th Ave Pump Station (Project 2-3)

The 107th Ave SW Pump Station consists of a small booster pump that runs continuously and is located in a partial pit structure that has reached the end of its useful life. The booster station needs to be re-built. One potential approach to re-building the pump station is to install approximately 4 ft of six-inch pipe vertically with the water main inlet at the bottom, and a VFD submersible with a pitless adapter installed as the booster. A blind flange cap on the top of the pipe would provide a point of access for maintenance. This would eliminate the need to maintain another structure, protect against freezing, and should provide an affordable and reliable booster station. Alternatively, a like-for-like station could be re-built. If the Cooperative chooses to complete a booster and PRV project to provide 30 psi to all homes (Project 5-3) then this pump station project is not needed.

Investigate Reason for Short Pump Lives (Project 2-4)

A typical booster pump should last 20-30 years. Most booster pumps appear to be relatively new, and an interview with the current operator indicates that it is not uncommon for a pump to fail after five years or less. Approximately twelve pumps have been repaired or purchased in the last ten years. An investigation into the cause of short pump lives would be very prudent in order to increase pump life and reduce maintenance costs. Booster pump enclosures (Project 2-2) should improve pump life for some pumps; however, operating environment alone does not appear to be an adequate explanation for the reduced pump life common throughout the system.

Resolve Short Pump Lives (Project 2-5)

Once the causes of premature pump failure have been determined, solutions to improve pump life can be implemented. Causes of pump failure are generally limited and the solutions tend to be relatively simple for small pumps such as those serving this water system.

Electrical Updates (Project 2-6)

Some electrical component installations may not be in accordance with current standards, are inconveniently placed, or would otherwise improve the safety and maintainability of the water system if upgraded.

Replace Remaining Galvanized Pipe (Project 5-1)

The existing galvanized steel pipe experiences an average of about three leaks per year and the rate of new leaks on the galvanized pipe appears to be increasing. To improve fire flow on the peninsula loop, the existing, mostly 2-inch galvanized pipe needs to be replaced with 8-inch and 6-inch pipe. Shorter sections of dead-ends may be replaced with smaller diameter pipe. It is estimated approximately 3,200 feet of galvanized pipe to be replaced. Portions of the galvanized steel pipe are recommended to be replaced in conjunction with Project 20-1.

Steel Water Main Replacement (Project 5-2)

A 6-inch steel line runs along the length of 115th and along 238th from the corner of the two roads, approximately half the distance to the lower 100,000-gallon tank. An 8-inch PVC replacement main was previously installed along 115th, but the switch-over was never made to incorporate it into the water system as a replacement for the steel line. Additionally, approximately 1,000 feet of 8-inch PVC main need to be installed to replace the remaining 6-inch steel line along 238th. Service connections off 115th need to be switched over to the 8-inch PVC line. There are several service connections which need to be transferred to an existing 6-inch PVC water main on SW Bayview Dr, and the steel water main in that location can be abandoned. This project is recommended to be accomplished in conjunction with Project 20-1.

Booster and PRV to Supply 30 psi (Project 5-3)

Homes along 115th and most homes on 238th from 115th to 107th do not have 30 psi at the property line. Most of these connections have installed private booster pumps. Water systems are required to provide 30 psi minimum to the property line during peak demand. Completion of this project negates the need for a booster station on 107th (Project 2-3). This project requires a booster station at the upper source field tank farm and PRV stations on SW 238th St and SW 228th St. A 4-inch or larger transmission line from the lower 100,000-gallon tank to bypass the PRV station and supply the lower elevation pressure zone is also needed. This transmission line could be installed in a shared trench with the new 8-inch PVC installed under Project 5-2. The project report for the booster station should include a capacity analysis based on 3 to 5 years of usage and production data to evaluate whether the water system will be able to

serve additional connections. This booster station and capacity analysis project should be accomplished after the distribution system replacement under Project 20-1 is completed.

North Reservoir Roof Replacement (Project 5-4)
The Cooperative plans to replace the North Tank roof and accomplish any repairs needed for this tank. This project should be performed in conjunction with the chlorination system upgrades (Project 1-1).

New Planning Document (Project 5-5)
The previous Water System Plan for the Burton Water Company is over 20 years old. This new planning document is needed to comply with WSDOH planning requirements. It provides the Cooperative with the information necessary to make the capital, operational, managerial, and financial decisions needed to successfully operate the water system.

Water Rights Processing (Project 5-6)
A water right change needs to be submitted to add the S07 wells as a point of diversion.

Expansion of the water system is limited by water rights. A water right and supply capacity evaluation for Burton Water Company was performed by Landau Associates, Inc in 2020. The evaluation concluded that additional water rights are needed for system expansion, but it is unlikely that the Department of Ecology would issue additional water right permits for the system. A 1992 BWC application for new groundwater right was denied by Ecology in 2017 due to a finding that additional pumping would likely have a hydraulic impact on Fisher Creek, which is closed to further consumptive appropriation under Washington Administrative Code 173-515-040[3]. Another option which the Cooperative may explore is purchasing an existing water right from another owner.

Distribution Improvements to Replace AC Water Mains and Improve Fire Flow (Project 20-1)
The Cooperative plans to perform distribution upgrades to establish a water main infrastructure capable of improved fire flow for most customers. The following sections of pipe are planned for replacement or installation as part of a USDA-funded project:

(1) Replace aged 6-inch AC and galvanized steel pipe with 8-inch PVC on SW 238th St, 104th Ave SW, and SW Burton Dr
(2) Connect previously installed not-in-service 8-inch PVC on 115th Ave SW (Project 5-2)
(3) Replace existing 1-1/2-inch and 2-inch pipe with 6-inch PVC on 107th Ave SW
(4) Install new 6-inch PVC on SW 228th St between 107th Ave SW and Vashon Hwy
(5) Install new 8-inch PVC on Vashon Hwy north of SW 228th St
(6) Install new 6-inch PVC on Vashon Hwy north of SW Burton Dr
(7) Replace existing 1-1/2-inch and 2-inch pipe with 6-inch PVC on 97th Ave SW, SW Bayview Dr, and SW Harbor Dr (Project 5-1)
(8) Install new vaults for future pressure reducing stations on SW 228th St and SW 238th St
(9) Install 4" PVC from lower reservoir to downstream of pressure reducing station on SW 238th St

158,000-Gallon Reservoir Transmission Line (Project 20-2)
The current outlet of the upper 158,000-gallon tank is a single 1-1/4-inch HDPE line running to the North & South Tanks. This line can sustain a flow of no more than 50 gpm, making the 150,000-gallon tank unavailable for fire flow, or to sustain service during a major leak. It is recommended an 8-inch HDPE transmission line be installed from the upper tank to serve the distribution system.

Update Tank and Source Controls (Project 20-3)
With replacement of the transmission line, it is likely a control system update at the tank/source site is also appropriate.

Update Planning Document (Project 20-4)
WSDOH recommends planning documents be updated every 10 years.

Boardwalk/Trail Maintenance (Project 20-5)
It is likely that some boardwalk and/or trail replacements, additions, or improvements will be prudent over the next 20 years. The shallow wells and springs that serve as the water system's source are located in an area with a high water table that often results in soft or "swampy" ground conditions.

Standardize Booster Pumps (Project Opt-1)
The current pumps throughout the water system seem to be a mix of different brands and types of centrifugal pumps. It is likely possible to standardize these pumps with one or two makes/models of pumps.

Back-up Power Upgrade (Project Opt-2)
Much of the water system currently operates on gravity. The water system has historically used portable stand-by generators; however, automated back-up power generation for key components would improve reliability for portions of the water system, and continuously maintain chlorination. Manual generators require greater maintenance, need to be wheeled into place, have their fuel monitored and "topped off" on a very regular basis when in operation, and require the storage and use of gasoline near the points of withdrawal from a shallow aquifer. An auto-start propane or diesel generator is recommended.

Upgrade Undersized PVC Lines (Project Opt-3)
Improving fire flow protection throughout the community requires increasing the small PVC mains with 6-inch and 8-inch mains. The small existing PVC lines are anticipated to have a useful life well beyond the 20-year horizon but are not sized for supporting fire flow. This project covers replacement of dead-end branches of the system which are not part of the distribution improvements in Project 20-1.

Security Fencing and Locks (Project Opt-4)
A range of opinions abound regarding the need for and usefulness of security fencing and locks. While some believe such items can invite interest and subsequent vandalism, others believe it can prevent unwanted intruders. At a minimum, reservoirs and pump structures should be locked. The need for additional security and perimeter fencing is based upon the location of the infrastructure and the values of the community.

GIS Record Collection System (Project Opt-5)
A GIS model of the water system will aid in the ability to identify and locate valves, meter boxes, and waterlines. It allows a water system to track information about the condition, age, and operation of each component, including leak repairs. This provides a centralized location for information about the capital infrastructure to be recorded and maintained. In doing this, the frequency and type of leak/repair in various areas and types of pipe can be logged and trends identified. This allows projects to be performed based on record data rather than based on memory or speculative approximations.

Drill Deep Well for Water Right Transfer (Project Opt-6)

A very brief review of area well logs indicates that there is likely a water bearing formation near 200 feet in depth that likely yields 5-10 gpm, which is inadequate to significantly increase the number of connections. Nevertheless, localized variations in hydrogeology are not unheard of and it is possible a larger producing well could be developed. Drilling a deeper well, installing a pump, and testing the well would be necessary before an engineering report could be prepared and the source approved by the WSDOH and water rights obtained from the WSDOE.

8.4 Prioritizing Improvements

The Cooperative reviewed the recommended projects from the capital needs assessment and assigned a priority for improvements based on additional input from Burton Water Company and the system operator. The improvements are listed in the table below and are included in the financial model established by the Cooperative.

Table 8-2 Improvement Summary

Project Number	Description	Priority	Anticipated Completion	Estimated Cost	Progress
1-1	Chlorination upgrades and replumbing of North and South Tanks to series (relates to project 5-4)	High	2025	$50,000	A project report is prepared, but has not been submitted to WSDOH.
1-2	Waterproof labeling	Low	Unscheduled	$200	
1-3	Electrical and operational manual	Low	2025	$4,000	
2-1	Update source plumbing and controls	Moderate	2025	$10,000	
2-2	Build (re-build) pump enclosures	Moderate	2025	$15,000	
2-3	Re-build 107th Ave pump station	High	Substituted for project 5-3		
2-4	Investigate short pump life reason(s)	Moderate	2025	$3,000	
2-5	Resolve short pump lives	Moderate	2025	$5,000	
2-6	Update electrical as needed to meet code and improve safety and maintainability	High	2025	$3,000	
5-1	Replace galvanized pipe (~3,200 feet)	Low	2041	$450,000	
5-2	Replace steel water main on 115th, 238th	High	Included with project 20-1		
5-3	Booster station and PRV to supply 30 psi to all connections, including capacity analysis	Low	2030	$70,000	

Project Number	Description	Priority	Anticipated Completion	Estimated Cost	Progress
5-4	North Tank roof replacement and repairs, relates to project 1-1	High	2025	$50,000	
5-5	New planning document (Water System Plan)	Moderate	2025	$40,000	WSP is submitted to DOH.
5-6	Water rights processing	Low	2040	$30,000	
20-1	Replace 6" AC water main and with 8" PVC, install 6" looped distribution	High	2025	$2,100,000	USDA funding is approved.
20-2	Install 8-inch transmission line from upper tank	Moderate	2030	$30,000	
20-3	Update source and tank controls	Moderate	2030	$5,000	
20-4	Update planning document	Low	2033	$7,000	
20-5	Boardwalk/trail/path improvement	Moderate	2034	$8,000	
Opt-1	Standardize booster pumps	Low	Not required. Burton Water Company reports only two types of similar pump are used.		
Opt-2	Backup Power (emergency generator)	Low	Unscheduled	$15,000	
Opt-3	Upgrade small PVC for improved fire flow	Low	2042	$1,000,000	
Opt-4	Security fence and locks	Low	A simple fence is installed and upgrading security may be unnecessary.		
Opt-5	GIS record collection and mapping system	High	2024	$10,000	GIS mapping of existing system is started as a cooperative internal project
Opt-6	Drill deep well	Moderate	2042	$200,000	

Notes:

1. Cost estimates do not include taxes, permit fees, or contingency, and are present value in 2023 dollars.
2. Large distribution replacement projects are expected to be funded through USDA or state revolving fund low interest loans, if approved. Other improvement projects are planned to be funded through capital reserves.

8.5 20-year Improvement Schedule

Table 8-3 lists the planned system improvements for the 20-year planning window.

Table 8-3 20-Year Improvement Schedule

Year	Project Number, Description
2025	1-1 Chlorination system upgrades 1-3 Electrical & operation manual 2-1 Update source plumbing and controls 2-2 Build (re-build) pump enclosures 2-4 Investigate short pump lives 2-5 Resolve short pump lives 2-6 Update electrical 5-4 North Tank roof replacement 5-5 New Planning Document 20-1 USDA distribution improvement Opt-5 GIS record and mapping system
2025-2026	20-1 USDA distribution improvement
2030	5-3 Booster Station & PRV for 30 psi with Capacity Analysis 20-2 8-inch transmission line from upper tank 20-3 Update source and tank controls Opt-3 Replace small PVC for improved fire flow
2033	20-4 Update planning document
2034	Opt-3 Replace small PVC for improved fire flow 20-5 Boardwalk/trail/path improvements
2039	Opt-3 Replace small PVC for improved fire flow
2040	5-6 Water rights processing
2041	5-1 Replace remaining galvanized pipe Opt-3 Replace small PVC for improved fire flow Opt-6 Drill new well

8.6 Distribution Replacement Projects Requesting Design Report Exemption

By submittal of this water system plan, the Burton Water Cooperative requests WSDOH approval to initiate distribution system replacements and upgrades for the below projects without submission of a design report in accordance with WAC 246-290-125. The projects that request exemption are listed below and an illustrative depiction of the proposed piping replacements is on the following page.

Table 8-4 Distribution Replacement Projects for Design Report Exemption

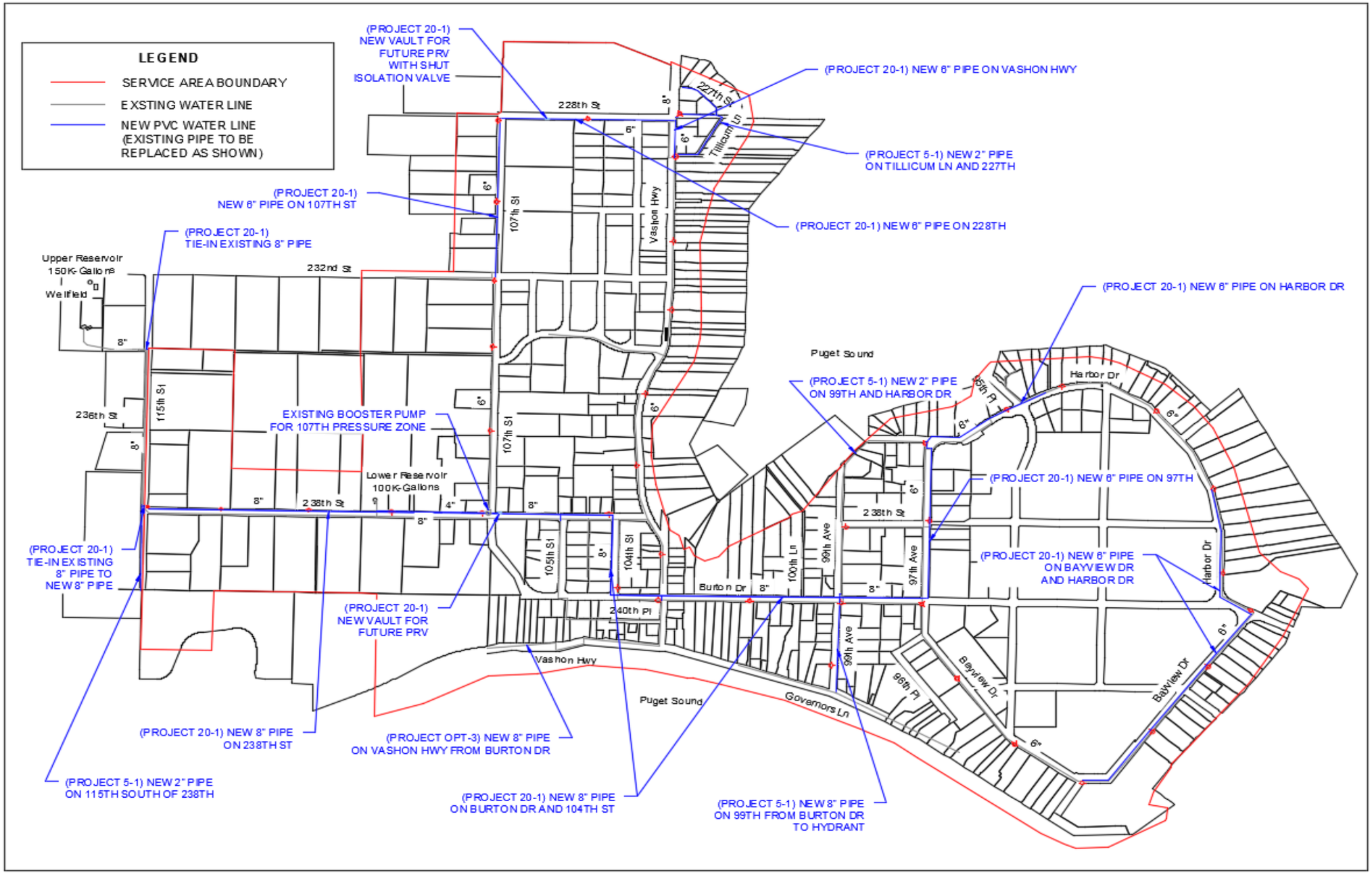
Project Number	Description	Anticipated Completion
5-1	Replace remaining galvanized pipe (~3,200 feet)	2041
20-1	Replace AC water main with 8-inch PVC, and install 6-inch looped distribution: (1) Replace 6-inch AC and galvanized steel pipe with 8-inch PVC on SW 238th St, 104th Ave SW, and SW Burton Dr	2025

Project Number	Description	Anticipated Completion
	(2) Connect previously installed not-in-service 8-inch PVC on 115th Ave SW (Project 5-2) (3) Replace existing 1-1/2-inch and 2-inch pipe with 6-inch PVC on 107th Ave SW (4) Install new 6-inch PVC on SW 228th St between 107th Ave SW and Vashon Hwy (5) Install new 8-inch PVC on Vashon Hwy north of SW 228th St (6) Install new 6-inch PVC on Vashon Hwy north of SW Burton Dr (7) Replace existing 1-1/2-inch and 2-inch pipe with 6-inch PVC on 97th Ave SW, SW Bayview Dr, and SW Harbor Dr (Project 5-1) (8) Install 4" PVC from lower reservoir to downstream of future PRV station on SW 238th St (PRV station will require separate design report submitted to WSDOH).	
Opt-3	Upgrade small PVC for improved fire flow of dead-end branches	2042

Under WAC 246-290-125, the system will complete the following.

- Maintain a current department approved WSP that includes standard construction specifications for distribution mains.
- Maintain a completion of construction form in accordance with WAC 246-290-120(5) and make this available upon request for review by the department.

Figure 8-1: Proposed Distribution Water Main Upgrades



9 Financial Program

The financial analysis has been prepared under the assumption of a 3.1% ongoing annual inflation. Profit and loss budget sheets from the previous water system owner, Burton Water Company, are attached in Chapter 10-14. A 10-year budget with projected income and expenses has been prepared by the Burton Water Cooperative's finance committee and is attached in Chapter 10-14.

9.1 Income

The water system obtains revenue from bi-monthly water service fees and one-time member connection charges. The Cooperative has estimated annual revenue by building a revenue projection model based on detailed individual connection level bi-monthly water usage data from 2017, the most recent year for which such detailed data is available (developed by BWC as part of the last rate increase proposed to the Washington Utilities Transportation Commission). Under this model, bi-monthly usage rates were grouped into 200-cubic foot increment histograms, and then those bi-monthly histograms were used with varying usage rate tiers to develop projected revenue under various base and usage rate assumptions. The overall usage of water in 2017 was relatively low compared to preceding and more recent years; therefore, the Cooperative's projected revenue likely provides a conservative estimate of actual future revenue during more typical years. Customers are billed bi-monthly for water usage. The following table lists the water rates and projected annual income:

Table 9-1 Water Rate Income

Bi-monthly Capital Improvement Charge		$70.00
Projected Capital Improvement Charge annual income		$173,040
3/4" service bi-monthly base rate		$59.00
1" service bi-monthly base rate		$98.53
Projected base rate annual income		$153,438
Tier 1	0 to 100 cuft	$0.0305
Tier 2	101 to 1,800 cuft	$0.0305
Tier 3	1,801 to 3,400 cuft	$0.0600
Tier 4	3,401 to 5,000 cuft	$0.0900
Tier 5	5,001 + cuft	$0.1200
Projected tiered rate income based on 2017 consumption		$121,458
Total projected annual revenue		**$447,935**

One-time member connection charges of $2,500 per connection (for connections that are currently connected to the system, as of system ownership transfer) are expected to generate $1,126,000 in the first ten years of Cooperative ownership. The revenue from connection charges will be used for establishing an operating reserve, USDA debt service reserve, and funding capital improvements. It is assumed that 200 members will pay the lump sum during the startup period, 192 members will be on a deferred payment plan, and 20 members will be on a hardship payment plan. The following table lists the projected connection charge revenue:

Table 9-2 Member Connection Charge Income

Year	Lump Sum	Deferred Plan	Hardship Plan	Total
	200 members	192 members	20 members	412 members
Startup Period	$500,000	$96,000	0	$596,000
2024	0	$96,000	$5,000	$101,000
2025	0	$96,000	$5,000	$101,000
2026	0	$96,000	$5,000	$101,000
2027	0	$96,000	$5,000	$101,000
2028	0	$96,000	$5,000	$101,000
2029	0	0	$5,000	$5,000
2030	0	0	$5,000	$5,000
2031	0	0	$5,000	$5,000
2032	0	0	$5,000	$5,000
2033	0	0	$5,000	$5,000
Total	**$500,000**	**$576,000**	**$50,000**	**$1,126,000**

If WSDOH approves additional connections for the system, based on planned system improvements, additional revenue may be realized from additional one-time connection fees. These future connection fees, for connections not already authorized, may be equivalent or greater than the existing connection fees at the time of system ownership transfer.

9.2 Expenses

Annual Operations and Maintenance (O&M) cost includes but is not limited to payroll salaries, repair costs, insurance, legal and professional fees, and testing and supplies. Operating expenses anticipated by the water system in the next 10 years are shown in Chapter 10-14. Expenses are assumed to increase at 3.1% per year with inflation.

9.3 Debt Repayment

Based on a total USDA loan amount of $4.45 million for purchase of the water system and distribution improvement projects, payments for a 40-year term at an interest rate of 3.5% annual APY are estimated at $214,700 per year.

9.4 Reserves

Income from connection charges will be used to establish initial operating reserves, capital improvement reserves, USDA short lived asset reserve, and USDA debt service reserves. The allocated operating reserve amount is $100,000 which is approximately 40% of annual operating expenses and sufficient to cover unexpected operating cost increases or unanticipated repairs. Capital replacement reserves for self-funded projects will initially be funded over the first 10 years using initial connection charges and will also accumulate any operating revenue in excess of expenses. A debt service reserve equal to one year of USDA loan payback ($214,700) is also required. A 20-year capital replacement and reserve budget is shown in Chapter 10-14.

9.5 Affordability

Projected total annual revenue from water service charges is $447,935 for the first year of operation. The projected average annual cost of water service is $1,087per active connection which is 1% of median household income and still within the affordability threshold. According to the King County Employment Security Department, King County had a 2021 median household income of $110,586. An average annual water rate of $1,108 per connection equates to 1% of median household income. Based on the 2021 median household income of $110,586 reported by King County Employment Security Department, the 1.5% affordability guideline estimated by DOH is equal to $1,659/year. The financial obligation for Burton Water Cooperative members is below the affordability threshold.

The projected average residential cost for water service would be $181 per bi-monthly billing cycle, which is comparable to the nearby Dockton, Heights, and Maury Mutual water systems on Vashon Island. A rate comparison tabulation for nearby public water systems on Vashon Island is included in Chapter 10-14.

9.6 Current and Projected Rates

Burton Water Cooperative board directors will review water rates annually and adopt resolutions for rate adjustments as needed. Rate changes were last adopted in 2024 when the water system ownership was transferred to Burton Water Cooperative. Current rates are shown in Table 9-1. The board of directors will review annual rates of inflation based on the consumer price index and adjust water rates accordingly.

10 Miscellaneous Documents

Supporting Documents Include:

Chapter 10-1	WFI/Operating Permit/Sanitary Survey
Chapter 10-2	Service Area and Site Plan Maps
Chapter 10-3	Meter Data
Chapter 10-4	Zoning Map
Chapter 10-5	Emergency Response Plan
Chapter 10-6	Well Logs and Pumps
Chapter 10-7	Water Rights/WUE
Chapter 10-8	Water Quality
Chapter 10-9	Wellhead Protection
Chapter 10-10	Coliform Monitoring Plan
Chapter 10-11	Cross Connection Control Policy
Chapter 10-12	Cooperative Documents, Bylaws, Articles of Incorporation, Rules and Regulations, Agreements
Chapter 10-13	Local Government Consistency Checklist
Chapter 10-14	Budget and Improvement Schedule
Chapter 10-15	Construction Standards
Chapter 10-16	Tank Inspection Reports
Chapter 10-17	Hydraulic Analysis
Chapter 10-18	Correspondence

Chapter 10-1: WFI, Operating Permit, Sanitary Survey

WATER FACILITIES INVENTORY (WFI) FORM

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

ONE FORM PER SYSTEM

Quarter: 2
Updated: 10/31/2024
Printed: 6/18/2025
WFI Printed For: On-Demand
Submission Reason: Owner 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
09800 L	BURTON WATER COOPERATIVE	KING	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS	7. OWNER NAME & MAILING ADDRESS
BEN LEE [BOARD PRESIDENT] PO BOX 1938 VASHON, WA 98070	BURTON WATER COOPERATIVE BEN LEE PO BOX 1938 VASHON, WA 98070
STREET ADDRESS IF DIFFERENT FROM ABOVE	**STREET ADDRESS IF DIFFERENT FROM ABOVE**
ATTN ADDRESS 11611 SW 232ND ST CITY VASHON STATE WA ZIP 98070	ATTN ADDRESS 11611 SW 232ND ST CITY VASHON STATE WA ZIP 98070

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone: (206) 463-0005		Owner Daytime Phone: (206) 463-0005	
Primary Contact Mobile/Cell Phone: (253) 203-8734		Owner Mobile/Cell Phone: (253) 203-8734	
Primary Contact Evening Phone: (xxx)-xxx-xxxx		Owner Evening Phone: (xxx)-xxx-xxxx	
Fax:	E-mail: ixxo@burtonwater.org	Fax:	E-mail: ixxo@burtonwater.org

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

13. WATER SYSTEM OWNERSHIP (mark only one)

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

14. STORAGE CAPACITY (gallons)

320,000

- 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
09800 L	BURTON WATER COOPERATIVE	KING	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	WELL PTS.#7-11,#13				X							X			Y		X					18	30	NE SE	13	22N	02E
S02	EAST WELL				X									X	Y		X					18	0	NE SE	13	22N	02E
S03	NORTH WELL				X							X					X					18	40	NE SE	13	22N	02E
S04	S.WELL,STEEL W,WP1-6,14,16				X							X			Y		X					18	45	NE SE	13	22N	02E
S05	WELLPOINTS 12,15,17				X							X			Y		X					18	51	NE SE	13	22N	02E
S06	ALL WELL POINTS & WELLS			X								X			Y		X					18	185	NW SW	18	22N	03E
S07	Well S07-1 (PW 06-1) AKN518				X							X			Y		X					27	15	SE NE	13	22N	02E
S08	Well S07-2 BLN274				X							X			N		X					37	25	SE NE	13	22N	02E
S09	Well S07-3 BLN275				X							X			N		X					35	20	SE NE	13	22N	02
S10	Well S07-4 BKB276				X							X			N		X					35	25	SE NE	13	22N	02E
S11	Wellfield S07 Wells			X								X			N		X					27	85	NE SE	13	22N	02E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
09800 L	BURTON WATER COOPERATIVE	KING	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?)		411	415
A. Full Time Single Family Residences (Occupied 180 days or more per year)	286		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	111		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	4		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	14		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	5	5	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	6	6	0
28. TOTAL SERVICE CONNECTIONS		422	415

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 750

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?	16	16	18	22	19	116	197	203	93	19	16	27
B. How many days per month are they present?	4	4	6	8	8	14	31	31	12	6	4	11

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?	78	78	78	78	78	157	157	157	78	78	78	78
B. How many days per month is water accessible to the public?	31	28	31	30	31	30	31	31	30	31	30	31

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?	6	6	6	6	6	6	6	6	6	6	6	6
B. How many days per month are they present?	21	21	21	21	21	21	21	21	21	21	21	21

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	1	1	1	1	1	1	1	1	1	1	1	1

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:** _____

Office of Drinking Water
Sanitary Survey Form (Checklist)

System Name:	**Burton**			Survey Date:	**September 16, 2022**
PWS ID#:	**09800**	County:	**King**	System Type:	**Group A, Community**
Persons Attending Inspection:	**Nick Simmons**				
Inspector's Name:	**Bob James**				

PART A: SUMMARY OF SIGNIFICANT DEFICIENCIES AND SIGNIFICANT FINDINGS

The following is a completed sanitary survey checklist and summary of inspection findings. This completed sanitary survey checklist is the basis for the cover letter you receive from the WA Dept. of Health (DOH). The cover letter documents any significant deficiencies or significant findings that must be corrected. The cover letter may also summarize observations concerning compliance with certain rules, and offer recommendations you can use to make improvements to the operation and management of your water system. Contact your DOH regional office with any questions you have about this survey.

Bolded and highlighted checklist items represent significant deficiencies that, if left uncorrected, create a significant public health risk. Highlighted checklist items represent significant findings that, if left uncorrected, create a significant risk to the physical safety, security, or reliability of the public drinking water supply. You will be required to take some sort of corrective action for each checklist answer that is **bolded and highlighted**, or highlighted.

Significant Deficiencies identified during this sanitary survey:
None

Significant Deficiencies identified in the previous sanitary survey that remain unaddressed:
None

Observations and recommendations identified during this survey
Update your Water System Plan and make sure that you have revised your Coliform Monitoring Plan to include the requirements of the Revised Total Coliform Rule and the Groundwater Rule.
Implement your Cross-Connection Control Program.
Replace the screen on the 100,000 gallon tank drain line.

PART B: GENERAL WATER SYSTEM DESCRIPTION

Provide a general description of the water system including changes, updates, connections, source(s), storage, number of pressure zones, treatment, and control system(s) and alarm(s). Make corrections and updates to the purveyor's water facilities inventory form (WFI).

The water system serves 390 residential and 10 non-residential connections in and around the community of Burton on Vashon Island. A series of well points and a well field located at the western boundary of the service area provide water to two storage tanks where the water is disinfected to at least 6 mg-min/L with chlorine and distributed by gravity to consumers. Two additional tanks are used for equalizing and standby storage. There is one booster pump station that serves approximately 20

customers. The system has an approved design to serve 415 residential connections (or equivalents) and has a green operating permit.

PART C: OPERATIONS and MANAGEMENT		
1. Was the system operator, who is most knowledgeable about the system's day-to-day operations, present for the survey?		☒Yes ☐No ☐NA
2. Were water system records available for your review?		☒Yes ☐No ☐Partial
3. Has the purveyor developed and implemented either a Small Water System Management Program or a Water System Plan?		☒Yes ☐No **2001**
3a. If no, are the following planning documents complete and up to date:		
	Service Area and Facility Map	☒Yes ☐No ☐Partial
	Cross-Connection Control Program	☐Yes ☐No ☒Partial
	Source Water Protection Program	☒Yes ☐No ☐Partial
	Emergency Response Plan	☒Yes ☐No ☐Partial
	Operation and Maintenance Program	☒Yes ☐No ☐Partial
	Coliform Monitoring Plan	☐Yes ☐No ☒Partial
	Component Inventory and Assessment	☒Yes ☐No ☐Partial
	Asset Replacement and Other System Improvements	☒Yes ☐No ☐Partial
	Budget	☒Yes ☐No ☐Partial
4. Does the purveyor plan to make capital improvements in the next 1-3 years? If yes, describe below		☒Yes ☐No
5. Is there a backup operator available if the regular one is not available? If yes, provide contact info below		☒Yes ☐No
6. Were the water system's current and future water quality monitoring requirements reviewed?		☒Yes ☐No
7. Was water quality sample results and trends reviewed with the purveyor?		☒Yes ☐No
8. Does the system have emergency power?		☒Yes ☐No
9. Does the system experience frequent power outages (>2 per year)? If yes, explain below		☐Yes ☒No
10. Does the system experience frequent water outages (>2 per year)? If yes, explain below		☐Yes ☒No
11. Does there appear to be adequate reliability provided for this system? If no, explain below		☒Yes ☐No

Describe the general level of planning and management documents developed by this water system and any recommendations for additional development, including updates, system management practices and processes, water rates, etc.

The Company intends to upgrade the North Tank and operate the tank in series with the South Tank to improve the disinfection contact time before the water enters the distribution system.

PART D: SOURCES			
12. Did you observe a source connected to the water system that is NOT listed on the WFI and in active use?			☐Yes ☒No
12a. If so, has the source received written DOH approval? (confirm with DOH post-survey)			☐Yes ☐**No** ☒NA
13. DOH Source Number:	**S06**	**S11**	SO #
14. Source Name from the WFI: (For example, North Well; Well #2; ABC334.)	**All Well Points & Wells**	**Wellfield S07 Wells**	

15. Dept of Ecology Well Tag Number: (Use Well tag ID#, None or Not readable)				**Several**	**Several**	
Source Use	Permanent	Seasonal	Emergency	**P**	**P**	
17. **If this is an emergency source, should it be disconnected?**				☐**Yes** ☐No ☒NA	☐**Yes** ☐No ☒NA	☐**Yes** ☐No ☐NA
18. *Is the source a potential GWI source?*				☐*Yes* ☒*No*	☐*Yes* ☒*No*	☐*Yes* ☐*No*
19. Is the Sanitary Control Area (SCA) free of unmitigated potential sources of contamination?				☒Yes ☐**No**	☒Yes ☐**No**	☐Yes ☐**No**
20. Is the wellhead located in a pit or vault?				☐Yes ☒No	☐Yes ☒No	☐Yes ☐No
21. Is the wellhead at risk of submergence?				☐**Yes** ☒No	☐**Yes** ☒No	☐**Yes** ☐No
22. Is the well cap sealed, watertight, and free of unprotected openings?				☒Yes ☐**No**	☒Yes ☐**No**	☐Yes ☐**No**
23. Is the well casing free of any unprotected openings?				☒Yes ☐**No**	☒Yes ☐**No**	☐Yes ☐**No**
24. Is there a vent on the well?				☐Yes ☐No ☒NA	Yes on well 7-1	☐Yes ☐No
24a. If yes, is the vent protected? (24 non-corrodible mesh screen or slots)				☐Yes ☐**No**	☒Yes ☐**No**	☐Yes ☐**No**
25. Are conduits and junction boxes sealed to prevent contaminant entry?				☐Yes ☐**No** ☒NA	☒Yes ☐**No**	☐Yes ☐**No**
26. Is the well unreasonably at risk to physical damage?				☐Yes ☒No	☐Yes ☒No	☐Yes ☐No
27. Is there a raw water source sample tap?				☒Yes ☐No	☒Yes ☐No	☐Yes ☐No
28. Is the source metered?				☒Yes ☐No	☒Yes ☐No	☐Yes ☐No
28a. If yes, is the source meter read at least monthly?				☒Yes ☐No	☒Yes ☐No	☐Yes ☐No
28b. If yes, are the water production records maintained?				☒Yes ☐No	☒Yes ☐No	☐Yes ☐No
29. Is the wellhouse properly constructed and maintained? If no, explain below				☐Yes ☐No ☒NA	☐Yes ☐No ☒NA	☐Yes ☐No
30. Is there any evidence of infestation by rodents or other pests?				☐Yes ☐No ☒NA	☐Yes ☐No ☒NA	☐Yes ☐No
31. Is the wellhouse and well adequately protected from unauthorized access and tampering?				☐Yes ☐No ☒NA	☐Yes ☐No ☒NA	☐Yes ☐No
32**. Is there a pump control valve or vacuum relief valve without an air gap on the valve discharge pipe?**				☐**Yes** ☐No ☒NA	☐**Yes** ☐No ☒NA	☐**Yes** ☐No ☐NA
33. Are the source pump and pump controls operational and adequate to prevent chronic water outages or premature pump failure? If no explain below				☒Yes ☐**No**	☒Yes ☐**No**	☐Yes ☐**No**

Describe and evaluate the source facilities including maintenance, operations, sanitary and security observations and any major change made to the source such as pump replacement, deepening or reconstruction:

North Well

S07 Well Field

Well S07-1

Well S07-2

Well S07-3

Well S07-4

PART E: DISINFECTION

41. *Does the operator batch chlorinate the source, the distribution system, or the reservoir just before collecting routine or repeat coliform samples? If yes, provide details below.*	☐*Yes* ☒*No*
42. Did you observe disinfection treatment connected to the water system in active use that is NOT listed on the WFI? If yes, explain below	☐Yes ☒No
46. Is there continuous chlorination? If no, skip to Part F	☒Yes ☐No
47. **Is there a water supply line plumbed directly into a chlorine solution tank without a reduced pressure backflow assembly on the supply line?**	☐**Yes** ☒No
48. Is there a post-treatment sample tap?	☒Yes ☐No
49. Does the chlorine compound meet NSF/ANSI Standard 60? - household bleach is exempted	☒Yes ☐**No** ☐unk
50. Is a backup chemical feed pump or spare parts for the operating chemical feed pump available onsite?	☒Yes ☐No
51. According to the operator, is there a DOH requirement for Chlorine Contact Time?	☒Yes ☐No

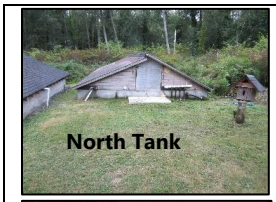
Describe the chlorination facilities including purpose for chlorination, concerns with maintenance or operations, purveyor's record keeping of monthly reports, and sanitary and security observations:

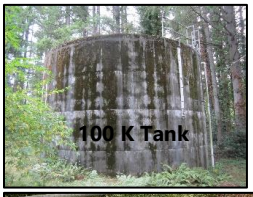
PART F: BOOSTER PUMPING FACILITIES and CONTROLS

59. Are there any booster pumps in use?	☒Yes ☐No
60. Are the booster pumps in good working condition? If no, explain below	☒Yes ☐No
61. Are pump and pump controls operational and adequate to prevent chronic water outages or premature pump failure? If no explain below	☒Yes ☐**No**
62. If there is a booster pump house/pump station, is it secure against unauthorized entry? If no, explain below	☒Yes ☐**No** ☐NA
63. Is the booster pump house/pump station properly constructed and maintained? If no, explain below	☒Yes ☐No

Describe and evaluate the pump facilities and controls including maintenance, operations, sanitary and security observations:

PART G: FINISHED WATER STORAGE				
69. Are there finished water storage tanks in use?				☒Yes ☐No
70. If unable to physically inspect the storage tank hatch, vent, roof, or overflow outlet, select the method you discussed with the purveyor to document their condition:				
a ☒ Reviewed and discussed maintenance records and recent photos				
b ☐ Photos will be taken and mailed by purveyor; additional follow-up required by DOH				
c ☐ Purveyor unable or unwilling to document; additional follow-up required by DOH				
Insert Tank Names	North Tank 35K	South Tank 35K	1995 100K Tank	2008 150K Tank
71. Is the storage tank protected from unauthorized entry or vandalism? If no, explain below	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
72. Is the reservoir roof free of any unprotected openings? If no, explain below	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk
73. Is the access hatch constructed and sealed to prevent the entry of contaminants? If no, explain below	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk
74. If able to open hatch, is the stored water free of visible contaminants? If no, explain below	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
75. Is there a dedicated air vent on the storage tank?	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
75a. If yes, is the air vent constructed to prevent the entry of contaminants? If no, explain below	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk
76. Is the overflow line constructed to prevent contaminants from entering the tank? If no, explain below	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk	☒Yes ☐**No** ☐unk
77. Does the overflow line discharge near ground level?	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
78. Is the overflow line discharge area protected from potential erosion?	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
79. Does the overflow line discharge into a storm drain or surface water?	☐Yes ☒No ☐unk	☐Yes ☒No ☐unk	☐Yes ☒No ☐unk	☐Yes ☒No ☐unk
80. Does the overflow line discharge directly into a sanitary sewer without an air gap?	☐**Yes** ☒No ☐unk	☐**Yes** ☒No ☐unk	☐**Yes** ☒No ☐unk	☐**Yes** ☒No ☐unk
81. Can the reservoir be isolated from the rest of the water system and be drained through a dedicated drain line?	☐Yes ☒No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
82. When was the tank inspected last? Explain below if necessary	**2021**	**2021**	**2021**	**2021**
83. What is the tank cleaning frequency? Explain below if necessary	As necessary	As necessary	As necessary	As necessary
84. Does the tank size, operation, and internal piping configuration appear to provide adequate water turnover (i.e. separate inlet/outlet, baffling or mixing to reduce stagnant water)? If no, explain below	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk	☒Yes ☐No ☐unk
85. Does the tank show signs of excessive leakage, significant structural cracking, or an advanced concrete spalling?	☐Yes ☒No	☐Yes ☒No	☐Yes ☒No	☐Yes ☒No
Describe and evaluate the finished water storage facilities including volume, operational drawdown, configuration of the inlet/outlet piping, any concerns about operations and maintenance, and sanitary and security observations:				



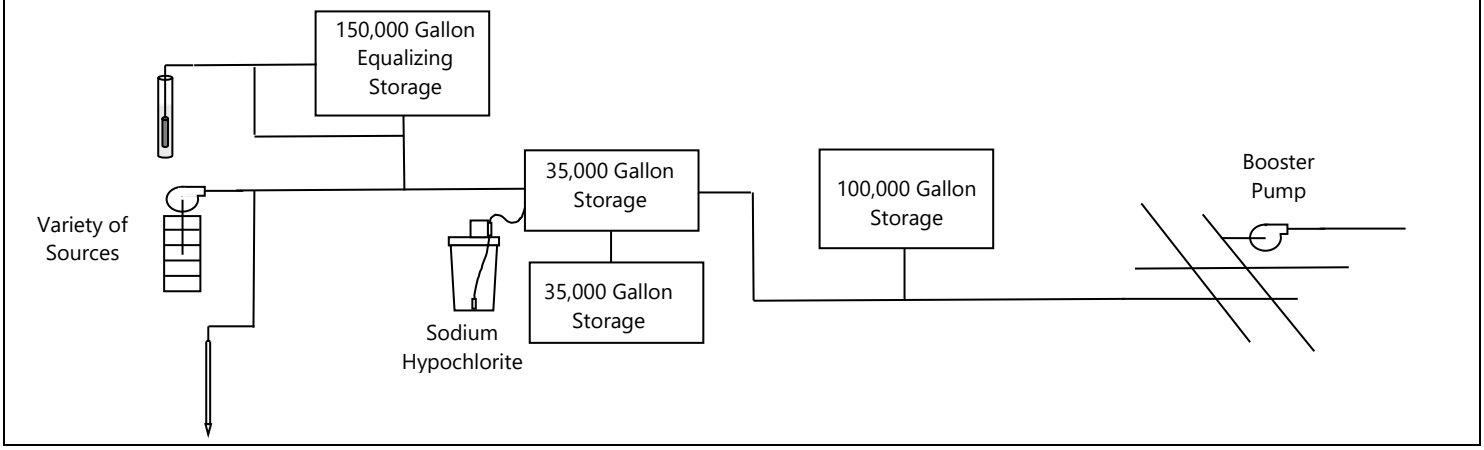


PART H: DISTRIBUTION SYSTEM	
86. Is a complete, up to date and accurate map of the distribution system maintained?	☒Yes ☐No
87. *Does the system provide adequate pressure throughout the distribution system? If no, explain below.*	☒Yes ☐No
88. Are proper procedures followed for disinfection of new construction or repairs?	☒Yes ☐No
89. *Are there any air relief or vacuum relief valves subject to submersion?*	☐Yes ☒No ☐NA
90. Does the purveyor seasonally or annually flush the distribution system? If yes, describe below	☐Yes ☒No
91. Does the purveyor exercise its distribution system valves? If yes, describe below	☒Yes ☐No ☐unk
Describe and evaluate the distribution system including maintenance, operational, sanitary and security observations: **Distribution System Leakage – 6.5%**	

PART I: CROSS CONNECTION CONTROL (CCC)	
92. Does the water system serve a single connection? If yes, refer the purveyor to the Uniform Plumbing Code.	☐Yes ☒No
93. Is the water system known to serve one or more high health hazard premises, such as those listed in Table 9 in WAC 246-290-490? If yes, describe the premise(s) below.	☐Yes ☒No
94. Has the purveyor established the legal authority to implement a CCC program (i.e., formally adopted an ordinance, resolution, by-laws, or other document defining the purveyor's CCC program requirements, and empowering the purveyor to enforce them)?	☒Yes ☐No
95. Has the purveyor designated a CCC Specialist (CCS) to be in responsible charge of the CCC program?	☐Yes ☒No
95a. If yes, has the CCS conducted a hazard evaluation to identify high health hazard premises?	☐Yes ☒No
95b. If yes, has the purveyor completed installation of a backflow prevention assembly on the service line to each identified high health hazard premise?	☒Yes ☐No ☐NA
96. Has each testable backflow prevention assembly installed for premises isolation been tested by a DOH certified backflow assembly tester (BAT) within the past 12 months?	☐Yes ☒No ☐NA
97. Did you observe the end of a hose connected to the potable water system submerged in a pool, hot tub, watering trough, or other non-potable body of water observed during the survey?	☐**Yes** ☒No
98. <u>This question only applies to a facility operating a sewage dump station</u>: Is there a sewage dump station without a reduced pressure backflow assembly on the water supply at the dump station?	☐**Yes** ☐No ☒NA
Additional cross connection control program comments: **It's time to implement the Cross-Connection Control Program.**	

PART J: OPERATOR	
99. Is the operator of the water system certified?	☒Yes ☐No
100. Describe the operator's certification level (if certified), duration of employment with this water system, relationship with the system (e.g., contract operator, SMA, direct hire employee, volunteer, temporary, or owner), and duties and responsibilities. **Nick Simmons is a direct hire employee.**	
101. Does the operator conduct self-inspections of the water system? If yes, describe frequency and scope of these self-inspections below.	☒Yes ☐No
102. *Is the operator performing measurements and calibration of water treatment monitoring equipment consistent with manufacturer recommendations? If no, describe below.*	☒Yes ☐No ☐NA
103. *Is the operator using proper inputs to treatment plant operations reports, such as correct volume, peak flow rate, time, and making the proper calculations? If no, describe below.*	☒Yes ☐No ☐NA
104. *Does the operator take compliance water quality samples at the proper location? If no, describe below.*	☒Yes ☐No ☐NA
Additional operator comments: **Nick Simmons is certified as a WDM1.**	

PART K: WATER SYSTEM FACILITIES FIELD SCHEMATIC



Sanitary Survey Report – 11/6/2017

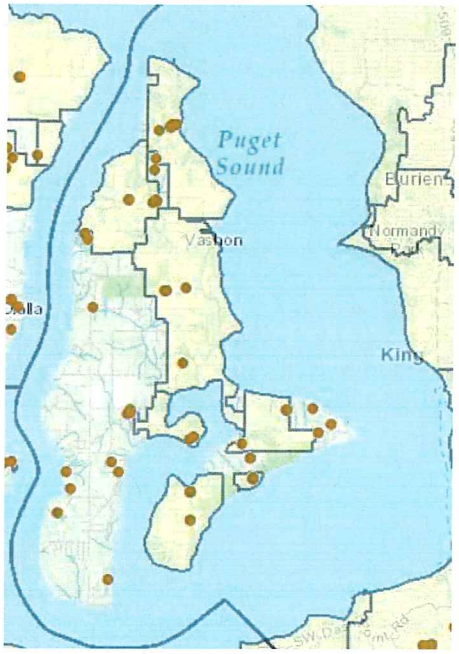
Burton Water System (#09800) King County

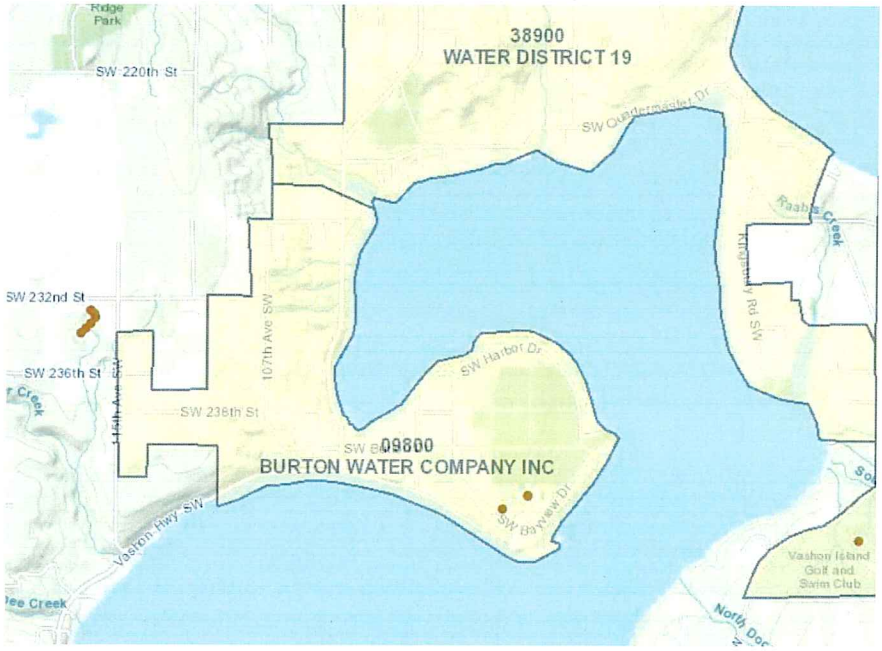
Bolded text indicates areas warranting further investigation or attention.

Purpose: Routine sanitary survey. Previous survey 11/20/2012. See 2012 survey notes for detailed outline of the system.

Attending: Jim Garrison & Evan Simmons (owners), Mark Graham (cross connection control specialist), Derek Pell (DOH.

Location: Vashon Island, Town of Burton. Burton Water Company service area is just south of Water District 19. Office / well site address: 11611 SW 232nd St, Burton, WA.





Water System Overview:

The water system serves 390 residential and 10 non-residential connections in and around the town of Burton. A spring / shallow well supply captured at the western boundary of the service area (highest elevation) flow by gravity (pump assisted during periods of high demand), to two partially buried concrete tanks where it is chlorinated (CT6 required) and distributed by gravity to consumers. Two additional tanks are used for equalizing and fire flow storage. About 20 customers operate their own individual booster pumps.

The Burton Water Company is privately owned and operated by members of the Burton community. The Company is regulated by the Utilities and Transportation Commission. A planning document was approved in 2001; but the company appears to be limited by water rights and is non-expanding. The system has an approved design to serve 415 residential connections (or equivalents) and has a green operating permit.

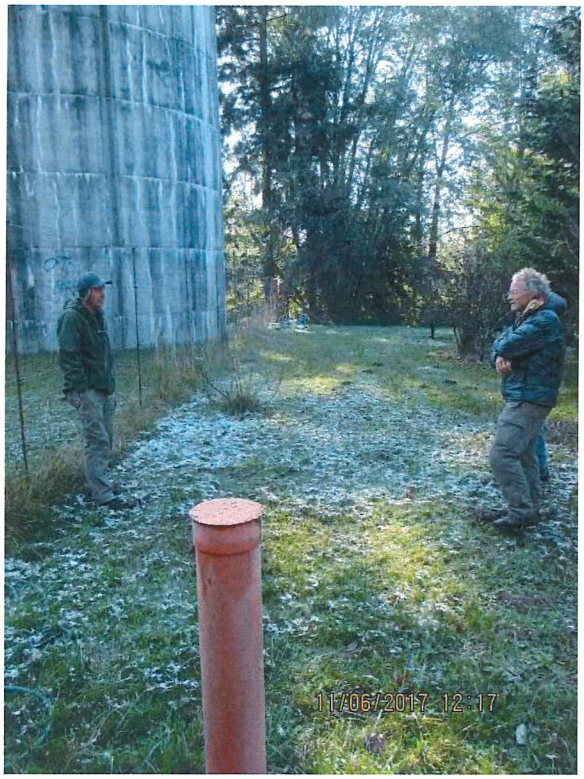
Current Operation:

The water system appears to be meeting the historical needs of consumers. Consumers highly value the clear spring quality and gravity powered system. Water quality meets current standards. **Sources are vulnerable to surface water contamination. Disinfection appears to achieve CT6 when free chlorine residual of 0.6mg/L is maintained at the entry point to distribution.**

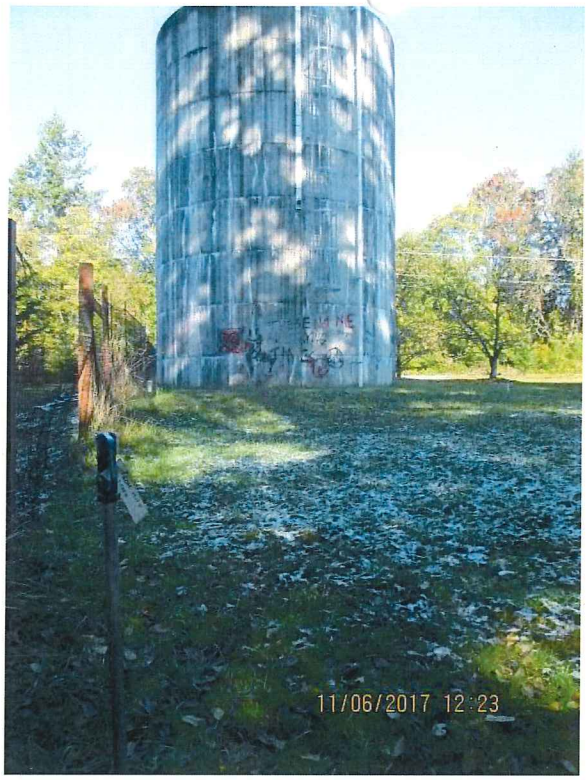
Significant changes since 2012 sanitary survey:

- New roof on South Tank.

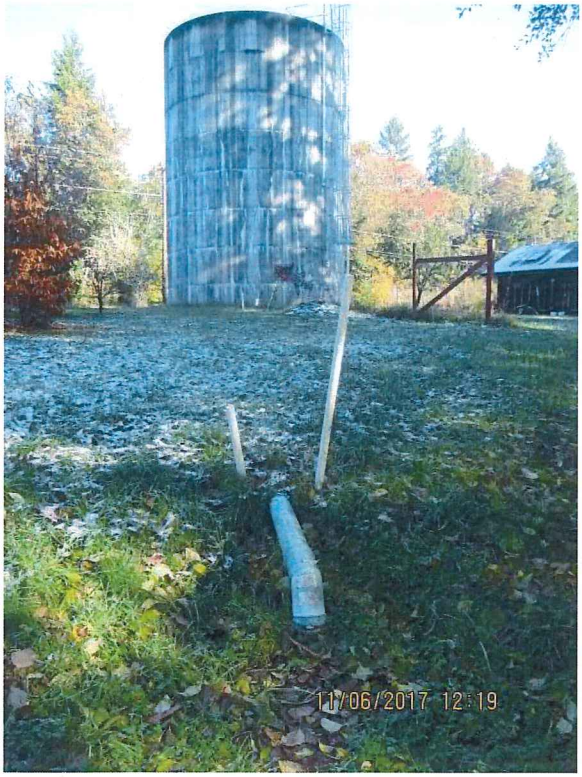
Future drilled well field site. Currently home to S07 Drilled Well (AKN518) and a monitoring well shown in photos below. This site is at the top (highest elevation) of the Burton service area along SW 232nd St. **Plans to drill multiple wells on this site to replace the dug wells and driven well points currently identified as S01-S05 – HIGH PRIORITY SUPPORT BY DOH TO DO THIS.**

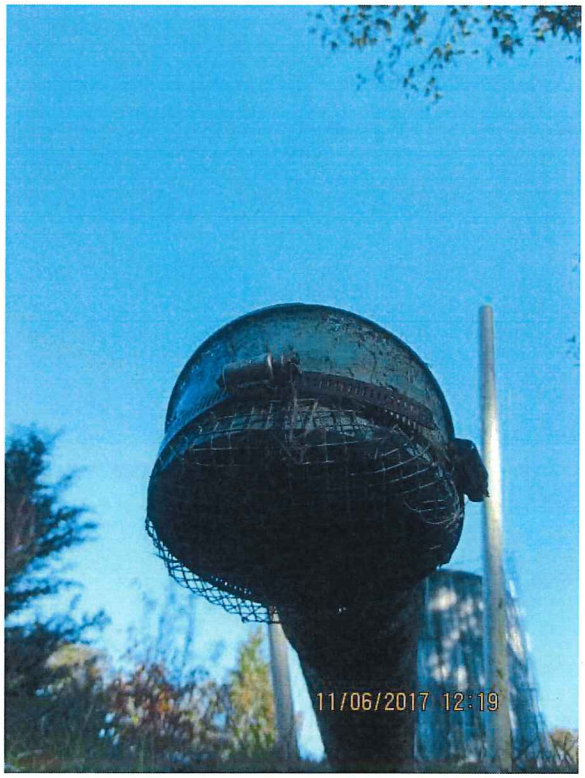


Monitoring well located in the NE corner of the future well field site. S07 drilled well (AKN518) located about 100-ft south of monitoring well in SE corner of the future well field site along the fence line. Monitoring well was used previously to track nitrate contamination from up-gradient (north across SW 232nd St.) – reported that results from monitoring well show no further increase of nitrates.

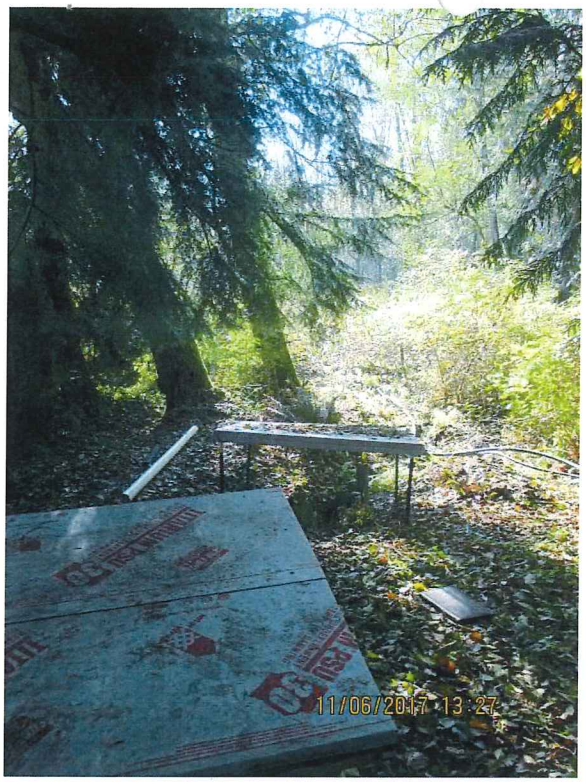


Drilled well S07 (AKN518), well of well field S06, 38-ft deep, 25gpm, pumps to either adjacent storage tank or artesian flow to 35,000-gallon North Tank. When pumping to storage, **chlorine is added by hand through the tank access hatch**. When artesian flow to lower tanks, chlorine is added near the inlet of the North Tank. 150,000-gallon storage tank (2008) is primarily used to meet peak summer demands as multi-day equalizing storage. **Cover the wellhead with a lockable, maintainable protective structure (think Rubbermaid outdoor shed type covering).**



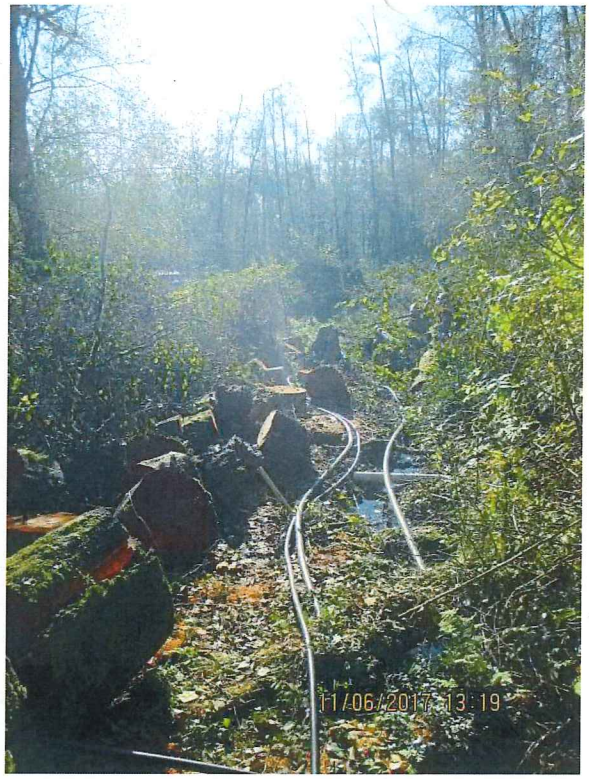


150,000-gallon multi-day equalizing storage tank. Overflow plumbed to drain line; screened. **Consider installing an air gap on the overflow pipe in an observable / maintainable location, also consider installing a tide-flex type valve on the outlet.**

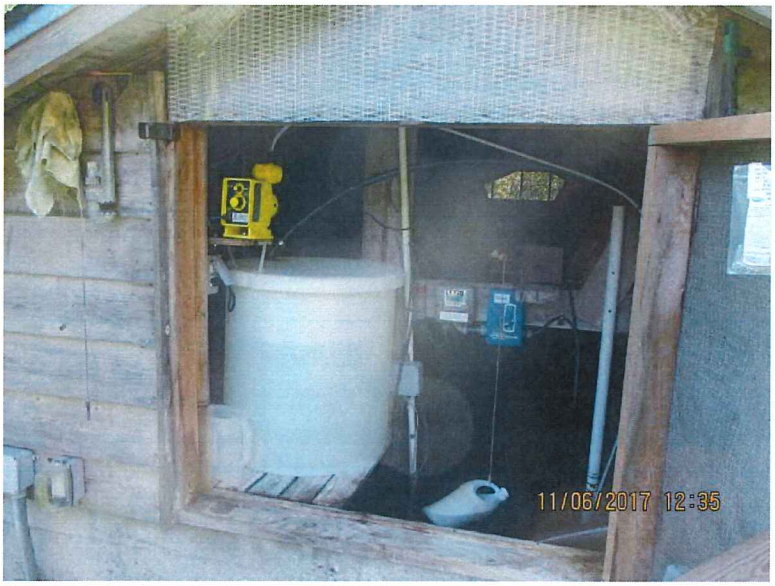


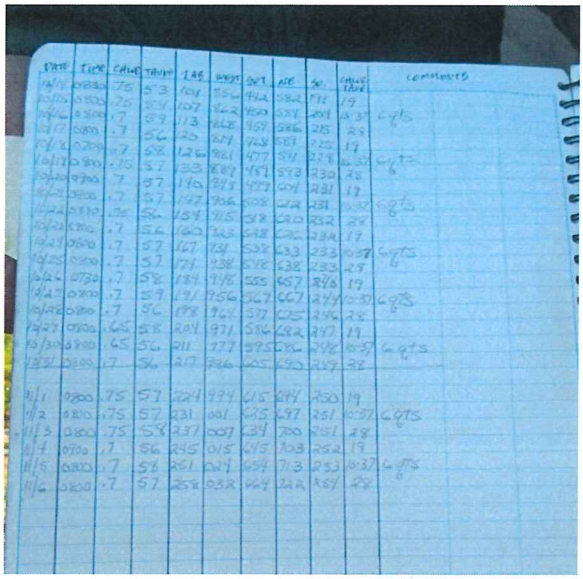
S03 North well. Dug well with wooden frame cover. Artesian flow to 35,000-gall North Tank; above ground pump used to increase flow during periods of high demand. Chlorinated at entry to North Tank. **Dug wells are more vulnerable to surface contamination than drilled wells – encourage replacement of the dug well as soon as feasible. Maintaining a minimum CT6 disinfection barrier is critical.**

Example of driven well point. Several of the driven well points are located in saturated, swampy ground. All convey water to the North Tank under siphon or above ground pump; chlorine at entry to North Tank. **Well points in saturated ground under suction are highly vulnerable to surface water contamination – these sources need to be replaced with drilled wells as soon as possible. Maintaining a minimum CT6 disinfection barrier is critical.**



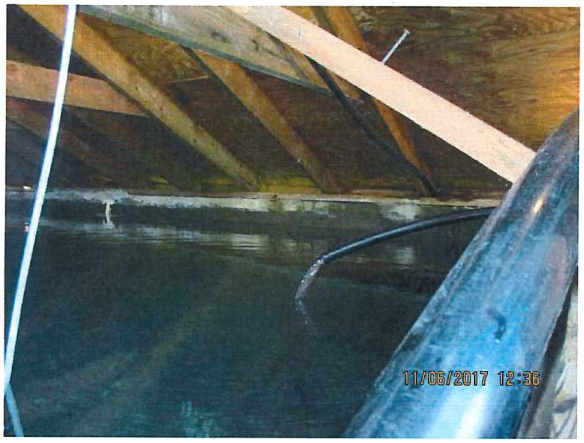
Example of driven well point with surface seal at a dry location. All well points convey water to the North Tank under siphon or above ground pump; chlorine at entry to North Tank. Piping from well points travel above ground (subject to freezing and physical damage) and are often submerged in surface water or saturated ground (subject to contamination while under siphon**). Well points are more vulnerable to surface contamination than drilled wells – encourage replacement of the dug well as soon as feasible. Maintaining a minimum CT6 disinfection barrier is critical.**

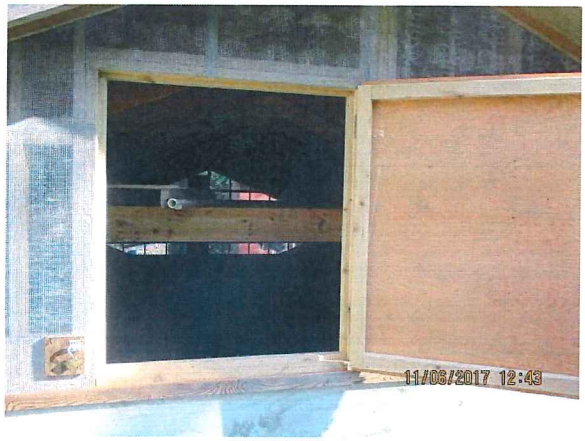




Disinfection / 35,000-gallon North Tank. Partially buried concrete tank with wood frame roof structure. Water from most sources is metered prior to entry to tanks (multiple points of entry, but not all enter the North Tank). Feed pump injects chlorine into tank at a constant rate (dose is manually increased by increasing the concentration of the feed solution). Chlorine residual is measured daily at entry point to distribution; dose is increased / decreased based on the daily measurement. A constant run pump circulates chlorinated water through the North and South Tanks. Daily records kept on-site include: chlorine residual, tank depth, meter readings, and chlorine usage. **Chlorination is not mechanically flow proportional (operator reviews and adjusts dose daily). No flow meter at entry to distribution to determine peak hourly flow. See CT calculation at end of this report.**

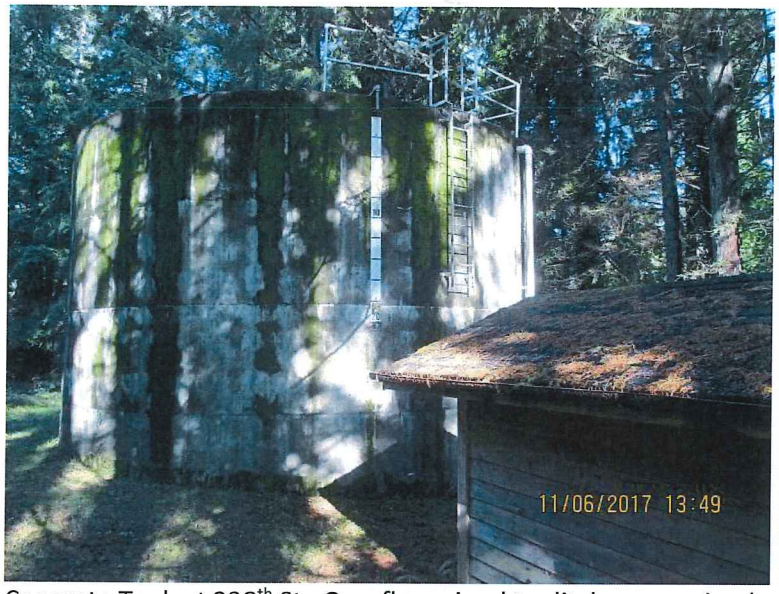
Sample tap downstream of North and South Tanks. Constant flowing tap where chlorine residual (at entry point of distribution system) is measured and recorded daily.



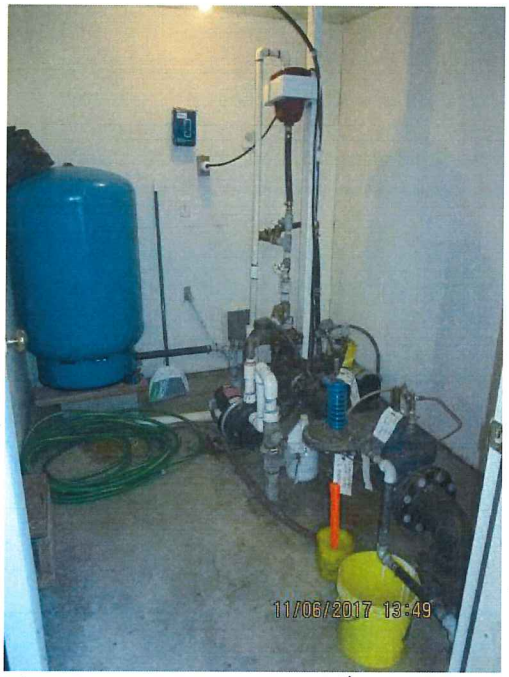


Inside North Tank. Showing one of the source inlet pipes. Access door to South Tank. South Tank roof recently replaced (best timber constructed tank roof I've seen!), well vented and screened. Water inside tank appeared clean and clear. **Vertical screening is vulnerable to wind-blown particulate debris (pollen, rainwater) – consider installing curtain shields in front of exposed vents and closed cell foam tape on access door.**

(L) North Tank screened vent and overflow. (R) South Tank new roof – all screened surfaces are flat for effective screening. Three layers of screen installed.



Concrete Tank at 238th St. Overflow piped to ditch, screen in place. **Please send photos showing access hatch seal and screened vent.**



Altitude valve to control 238th St tank level. Engineering design error – tank not built at same elevation as North and South Tank (tank too short). Booster pumps adjacent to altitude valve below to individual residents.

Water Quality:

- **Bacteriological – no coliform detections since last survey. Need to update Coliform Monitoring Plan to include the Groundwater Rule and the Revised Total Coliform Rule.**
- Disinfection Monthly Report – reports are consistently submitted. Reported residuals typically range from 0.5mg/L to 0.7mg/L.
- **Disinfection Monitoring. See my CT calculations are attached – please verify assumption or work with your engineer on updating the calculation. Need to maintain a minimum of 0.63mg/L at the entry point to distribution. Use digital colorimeter instead of color wheel colorimeter to demonstrate appropriate accuracy and precision.**
- Nitrate – 2/2008 3.7mg/L (MCL=10mg/L). Apparent decreasing trend, 2/20016 to 2.7mg/L.
- Refer to annual Water Quality Monitoring Summary for monitoring requirements. No water quality exceedances since last sanitary survey.

Water System Planning – Technical / Managerial / Financial Capacity:

- **Water system plan approved 7/18/2001. Currently non-expanding system, but advantages to updating planning include:**
  - **Updating service area policies to support consumer use agreements.**
  - **Updating historical demand and demand forecast. Show impact of unauthorized ADU construction.**
  - **Updating capacity analysis.**
  - **Updating capital improvement program. See need noted above.**
  - **Developing an asset management program.**
  - **Become eligible for SRF loan to financing infrastructure replacement.**
  - **Document need for improvements relative to UTC rate case.**
- **Security – access to sources of supply, storage tanks, and utility buildings is open. Evaluate the risk and install security measures to improve control of the sites. Measures may include secure fencing, motion sensors and alarms, or cameras.**
- Consumer Confidence Report – yes.
- **Cross Connection Control Program – did not address in this sanitary survey. Mark is CCS.**
- Source Water Protection – Susceptibility Assessment complete. Static water levels tracked to affirm well reliability.
- **Emergency Response Plan – largely gravity operated system. Water is available to all consumers even in prolonged power outage. If disinfection does not have auxiliary power supply during power outage, disinfection to CT6 is not possible and a Boil Water Advisory should be communicated to all consumers.**
- **Operations & Maintenance – did not address in this sanitary survey.**
- Water Use Efficiency – 100% metered. 4.9% 3-year annual average distribution system leakage.
- Financial / Rates – UTC regulated with approved tariff.

D.Pell CT Analysis

Assumptions:

- Sources flow to North Tank. Chlorine is injected to the free surface at the inlet of the tank; feed pump rate is fixed, but adjusted by operator based on daily flow observation and residual checking during high-use periods.
- S07 well pumps to adjacent 150K storage tank and is batch chlorinated in the tank. Water from the 150K tank is piped to the South Tank. A recirculating pump moves water from South Tank to North Tank to improve mixing.
- The available volume of North Tank is 35,000 gallons; same for the South Tank. Tanks have same overflow elevation.
- North and South Tanks operate in "series/parallel". Because water is able to go directly from the North Tank directly into distribution, CT calculations are based on parallel tank operation.
- **If during peak demand periods, the water level in the tanks drops below the full volume, the minimum residual calculated below would need to be increased.**
- Baffling efficiency in either tank is 10%
- Outflow of contact tank is unmetered. Calculated maximum outflow from tanks is 372gpm. Derived from 2001 WSP data indicating MDD=602gal/day/ERU. Using our Water System Design Manual Eqn 5-1: PHD=372gpm.

Contact Time (T):
North and South tanks do not operate in series, the South Tank is not included in this CT calculation. Q=V/T or T=V/Q.
V is the available volume for contact between chlorine and water in gallons.
Q is the maximum flow out of the contact chamber in gallons per minute.
V= (35,000 gallons) x (0.10 efficiency) = 3,500 gallons
Q=372gallons/min
T= (3,500 gallons) / (372gpm) = 9.4 minutes

CT >= 6 Required for 4-log virus inactivation:
Calculate the minimum chlorine residual prior to 1st customer (C).
CT=6
C=6/T = 6 / (9.4 minutes)= **0.63mg/L is the minimum chlorine residual with full tank**

GROUNDWATER DISINFECTION CT SUMMARY

System Name : Burton **ID#: 09800** **County:** King

Treatment Plant Name/ID: 001 **CT Study Approved (m/d/yy):** **Submittal # (if known):**

Maximum flowrate: Peak Hour Demand = 372gpm. Calculated from 2001 WSP p.21 MDD=602gpd/connect and WSDM Eqn 5-1.
Other conditions:
1. **Maximum Day Demand**
2. **Minimum chlorine residual – 0.63ppm**
3. **see assumptions in 11/6/2017 sanitary survey notes**

Seq No.	Facility Description (include dimensions)	Disinfectant	T_{10} method Empirical or Tracer Study	Baffling Efficiency 1.0 = plug flow	Facility Volume (gal)	Effective Volume (gal)	How PHF determined	Daily Calculation Method for "t"
1	North Reservoir – 35,000 useful gallons	chlorine	E	0.1	24,000	2,400	372	9.4
2								
3								
4								
5								
6								
7								

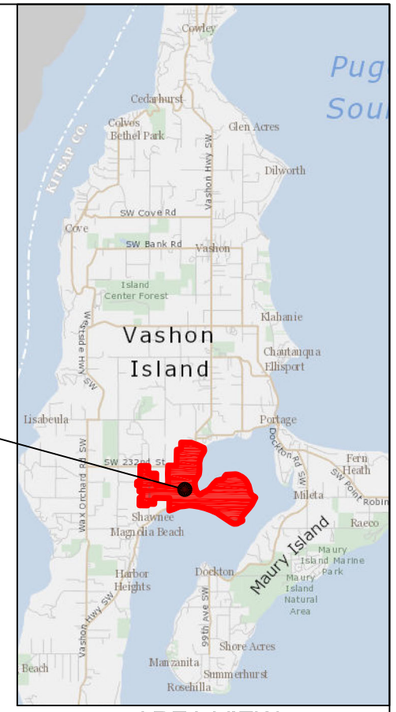
Completed by: Derek Pell
Date: 11/8/2017

Chapter 10-2: Service Area and Site Plan Maps

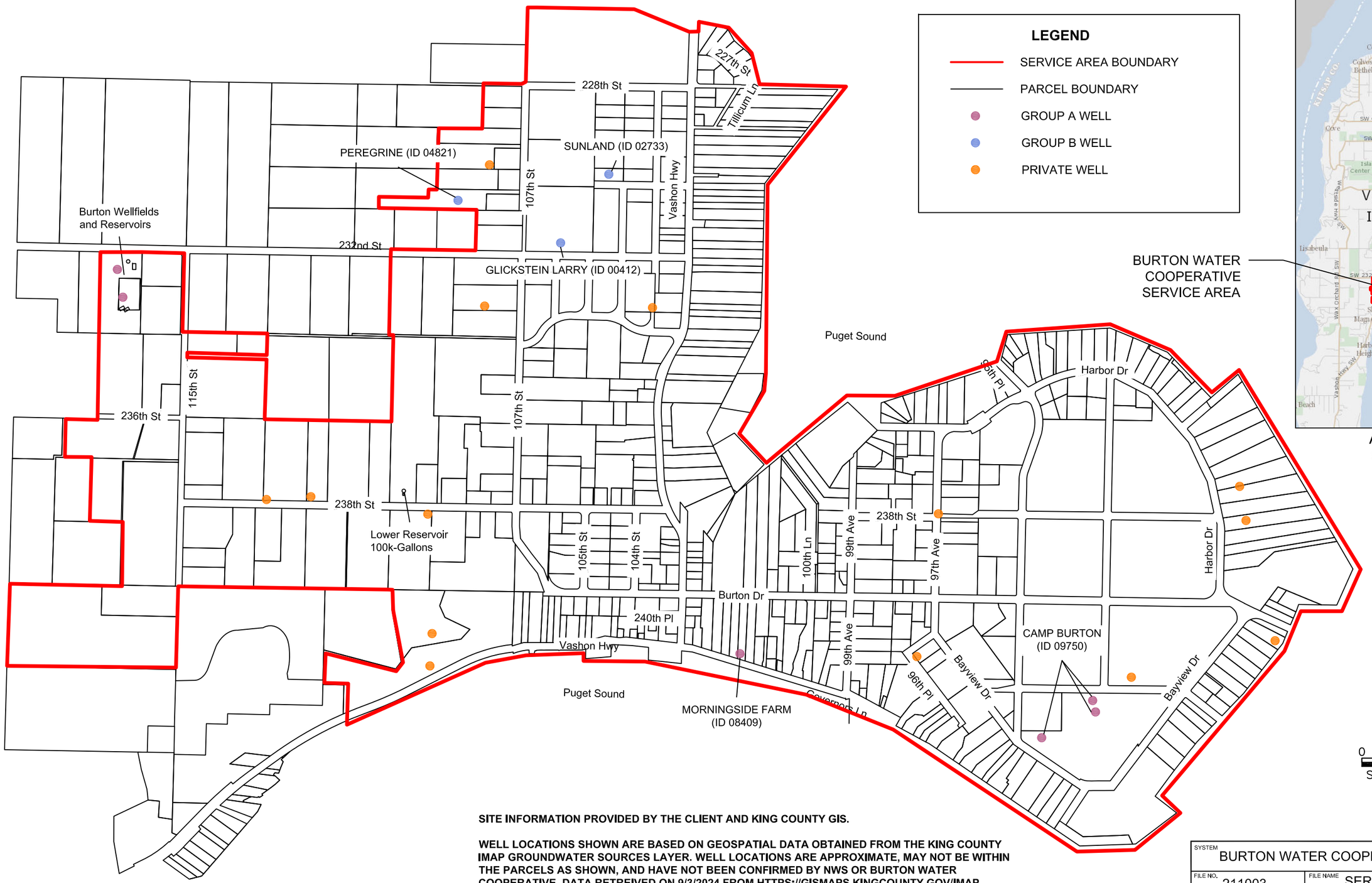
LEGEND

- SERVICE AREA BOUNDARY
- PARCEL BOUNDARY
- GROUP A WELL
- GROUP B WELL
- PRIVATE WELL

BURTON WATER COOPERATIVE SERVICE AREA



AREA VIEW:
SCALE: NONE



0 750
SCALE IN FEET

SITE INFORMATION PROVIDED BY THE CLIENT AND KING COUNTY GIS.

WELL LOCATIONS SHOWN ARE BASED ON GEOSPATIAL DATA OBTAINED FROM THE KING COUNTY IMAP GROUNDWATER SOURCES LAYER. WELL LOCATIONS ARE APPROXIMATE, MAY NOT BE WITHIN THE PARCELS AS SHOWN, AND HAVE NOT BEEN CONFIRMED BY NWS OR BURTON WATER COOPERATIVE. DATA RETREIVED ON 9/3/2024 FROM HTTPS://GISMAPS.KINGCOUNTY.GOV/IMAP.

THIS IS NOT A SURVEY. PROPERTY LINES AND WELL LOCATIONS SHOWN ARE BASED UPON THE AVAILABLE INFORMATION AND ARE APPROXIMATE ONLY.

DISTURBANCE OF EXISTING SURVEY MONUMENTS IS A GROSS MISDEMEANOR UNDER RCW 58.04.015

REVISION	
DESCRIPTION	DATE

SYSTEM: BURTON WATER COOPERATIVE

FILE NO.: 211003 | FILE NAME: SERVICE AREA MAP

DATE: SEPTEMBER 3, 2024 | SCALE: 1" = 750'

NORTHWEST WATER SYSTEMS, INC.
DESIGN - CONSULTING - MANAGEMENT
P.O. BOX 123
PORT ORCHARD, WA 98366
(360) 876-0958

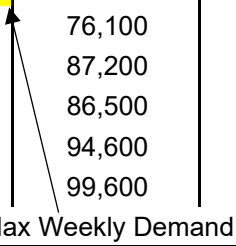
EXISTING DISTRIBUTION SYSTEM BASED ON AVAILABLE RECORDS FROM BURTON WATER COMPANY

TANK_1
Pipe 14: 8" PVC 2300 ft
WELL_FIELD
Pipe 11: 2" PVC 1200 ft
Pipe 12: ? ? 357.3 ft
Pipe 2: 8" Steel 2170 ft (1959)
Pipe 19: 1" PVC 944 ft (2008)
Pipe 1: 6" GI 3950 ft (1972)
TANK_4
PUMP_1
Pipe 3: 6" AC 1312.5 ft (1971)
Pipe 52: 4" PVC 930.9 ft (1981)
Pipe 5: 2" PVC 741.8 ft (1964)
Pipe 35: 1½" GWP 133 ft
Pipe 36: 2" PVC 3000 ft (2007)
Pipe 27: ? ? 464.8 ft
Pipe 29: ? ? 738 ft
Pipe 28: 1½" GI 1274.4 ft
Hydrant#2 North of QMYC
Hydrant North of QMYC
Pipe 30: 2" PVC 829 ft
Pipe 31: ? ? 459.8 ft
Hydrant at QMYC
Hydrant along 107th N of 238th
Pipe 6: 6" PVC 1042 ft (2001)
Pipe 7: 2" PVC 1760.3 ft (2008)
Hydrant at Snug Harbor
Pipe 51: 6" PVC 1001 ft (2001)
Pipe 54: 6" PVC 249.4 ft (1957)
Pipe 34: 6" PVC 1034.4 ft
Hydrant at Edson House
Hydrant at 99th and Amea Rd
Pipe 18: 2" PVC 1272.2 ft
Pipe 17: 2" PVC 633.1 ft (2005)
Hydrant at 99th and SW Burton Dr
Hydrant at Intersection of 238th and 104th
Hydrant at NW corner of Burton Fire Station
Hydrant at Burton Inn
Pipe 8: 6" AC 3037.6 ft (1972)
Pipe 13: 2" PVC 1599.1 ft
Pipe 47: 1" PVC 264 ft
Pipe 16: 1" PVC 225.8 ft
Pipe 50: 1" PE 249.9 ft (2015)
Pipe 45: 1½" PVC 1017.8 ft
Pipe 44: 1½" PVC 1014.4 ft
Pipe 46: 1½" PVC 1014.4 ft
Pipe 43: 2" PVC 1003.8 ft
Pipe 39: 2" GI 419.8 ft
Pipe 38: 2" PVC 1106.8 ft
Pipe 42: 2" PVC 1014.4 ft
Pipe 40: 2" PVC 249.1 ft
Pipe 41: 2" PVC 1014.4 ft
Pipe 37: ? ? 1014.4 ft
Pipe 26: 6" PVC 1007.4 ft
Hydrant at 9133
Hydrant at 9028 East corner of 9002
Hydrant between 9028 and 9016
Pipe 21: 2" PVC 1014.4 ft
Pipe 22: 2" PVC 1014.4 ft
Pipe 23: 1½" PVC 1014.4 ft
Pipe 24: 1½" PE 1014.4 ft
Pipe 33: 2" PVC 447.8 ft
Pipe 34: 1" PVC 1014.4 ft
Hydrant at Camp Burton

Chapter 10-3: Meter Data

Burton Water Company Weekly Source Meter Production (cuft)

Date	2019	2020	2021	2022	2023
1/6	24,400	37,000	45,000	93,800	51,800
1/11	22,300	32,500	37,700	48,700	40,500
1/16	29,000	25,400	36,900	50,100	44,400
1/21	28,800	30,800	39,700	51,600	50,000
1/26	28,300	26,400	30,200	45,200	50,500
1/31	29,600	27,800	46,900	45,100	48,800
2/6	33,500	29,100	42,200	52,400	60,100
2/11	61,300	33,500	39,600	52,400	49,900
2/16	28,300	30,900	40,300	44,500	50,700
2/21	24,000	32,400	39,200	45,300	49,600
2/26	24,600	30,600	38,900	45,100	51,100
2/28	15,000	20,700	23,200	51,200	19,600
3/6	22,800	29,700	38,800	57,800	64,700
3/11	25,300	30,200	38,500	53,300	52,200
3/16	24,500	30,900	40,100	52,400	54,400
3/21	26,700	33,900	42,600	53,200	56,400
3/26	27,300	28,400	43,600	54,700	53,700
3/31	23,700	37,800	43,100	44,700	50,700
4/6	28,900	26,300	47,300	52,900	54,400
4/11	27,100	55,100	41,000	45,100	47,600
4/16	29,900	55,200	45,800	44,200	49,100
4/21	27,300	48,400	56,600	44,400	46,700
4/26	29,100	35,100	46,900	46,100	48,900
4/30	31,600	30,500	49,000	36,800	42,600
5/6	43,500	31,100	65,200	53,900	64,100
5/11	72,100	63,400	56,100	47,000	50,300
5/16	61,200	43,800	65,700	47,700	64,800
5/21	44,200	42,600	72,000	47,000	62,800
5/26	56,000	51,300	68,500	51,100	66,200
5/31	60,400	58,400	73,600	49,200	80,300
6/6	69,800	61,300	106,800	65,900	106,300
6/11	67,700	49,500	70,600	50,000	95,400
6/16	81,600	42,200	58,900	49,600	96,700
6/21	69,400	57,400	96,300	52,900	72,300
6/26	70,800	78,000	104,800	62,900	69,900
6/30	64,700	52,400	94,900	62,800	68,200
7/6	83,700	86,600	135,000	95,400	111,300
7/11	78,900	70,500	98,100	76,100	91,900
7/16	72,000	84,600	98,400	87,200	95,500
7/21	71,900	91,600	102,000	86,500	92,900
7/26	88,200	88,600	110,400	94,600	83,100
7/31	91,100	102,500	110,200	99,600	89,600



Burton Water Company Weekly Source Meter Production (cuft)

Date	2019	2020	2021	2022	2023
8/6	94,000	121,000	126,600	106,100	102,700
8/11	94,600	89,900	105,900	88,900	86,700
8/16	76,600	93,400	123,300	86,800	93,200
8/21	79,800	94,500	101,200	84,500	96,100
8/26	63,200	65,800	96,900	82,800	82,000
8/31	73,100	100,800	95,100	78,900	77,700
9/6	70,600	99,700	78,400	89,300	89,100
9/11	77,800	91,500	88,400	76,400	31,000
9/16	54,600	71,600	66,300	72,300	99,700
9/21	57,100	54,800	57,900	64,700	66,600
9/26	54,800	145,700	56,600	64,000	54,100
9/30	44,600	25,500	42,200	40,600	39,000
10/6	37,300	50,700	58,700	75,000	58,800
10/11	34,600	40,900	44,600	64,200	51,700
10/16	37,800	35,500	48,300	61,000	50,400
10/21	25,300	40,200	48,800	54,200	51,700
10/26	25,600	36,900	47,600	46,600	38,100
10/31	31,400	36,400	45,300	43,100	41,900
11/6	23,200	39,800	52,100	46,700	57,600
11/11	24,200	34,600	49,500	43,100	49,800
11/16	32,400	34,600	44,900	51,800	49,800
11/21	27,900	33,500	45,300	37,000	49,600
11/26	30,400	42,700	46,100	56,800	55,500
11/30	30,700	41,700	37,200	44,500	44,100
12/6	31,900	53,000	55,100	60,600	66,600
12/11	29,900	45,200	45,500	50,900	50,900
12/16	30,600	46,100	46,100	51,600	49,900
12/21	30,500	44,100	48,400	50,900	50,700
12/26	32,600	39,600	44,900	83,100	54,000
12/31	35,400	40,300	44,100	59,300	58,500

Burton Water Company Bi-Monthly Service Meter Consumption (cuft)

Period	2019	2020	2021	2022	2023
December - January	286,970	288,020	312,870	331,350	338,580
February - March	300,530	261,870	301,960	275,900	271,870
April - May	418,400	425,780	510,080	296,630	355,720
June - July	836,300	719,470	904,510	601,950	868,247
August - September	746,130	1,010,750	941,360	889,170	829,080
October - November	267,710	364,490	334,920	474,400	349,494

Chapter 10-4: Zoning Map

Burton Water Cooperative Service Area Zoning

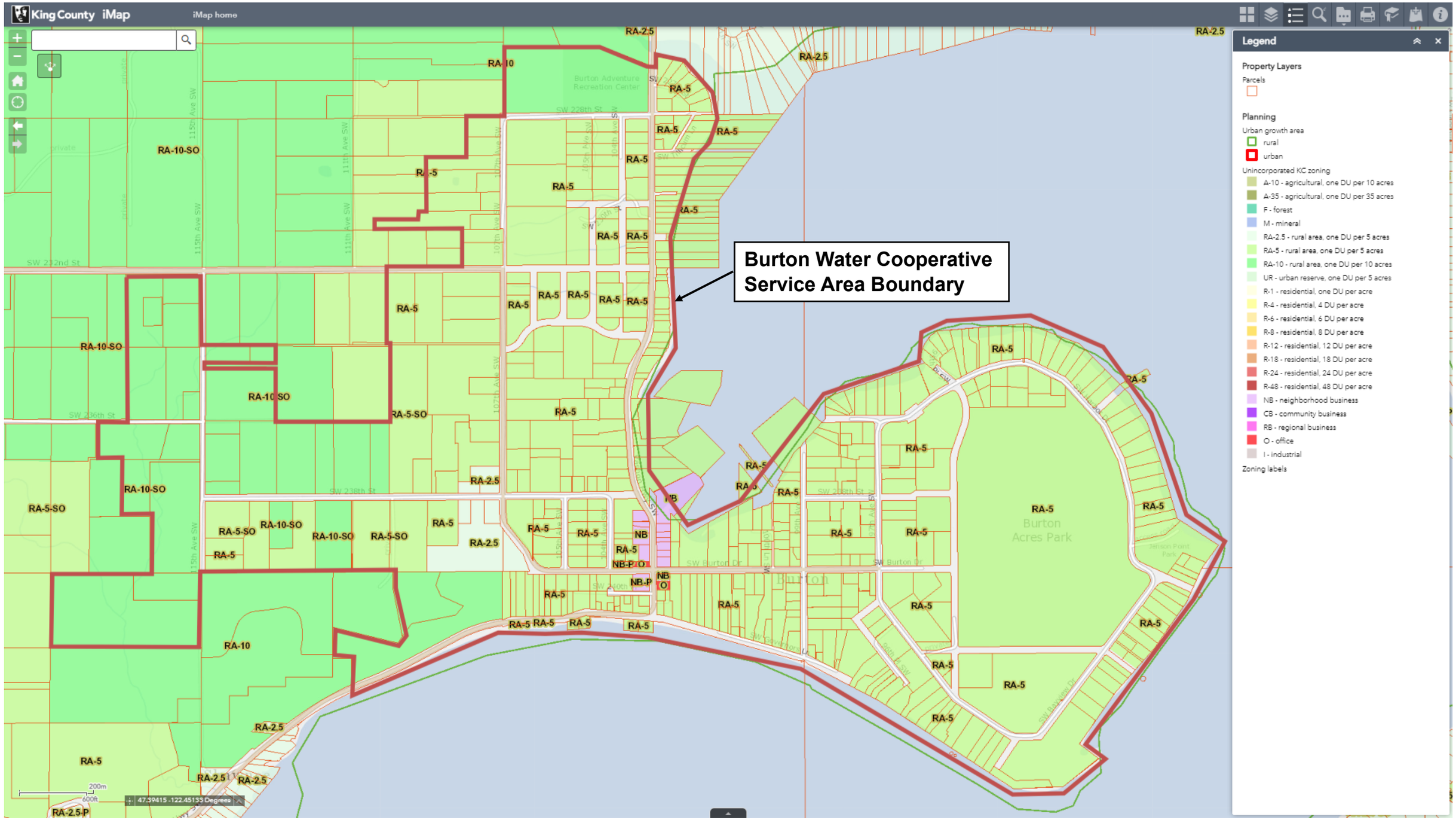


Image from King County GIS iMap database (URL: https://gismaps.kingcounty.gov/iMap/), retrieved on March 1, 2024.

Chapter 10-5: Emergency Response Plan

Emergency Response Planning Template for Public Drinking Water Systems

Burton Water Cooperative Emergency Response Plan (Draft)

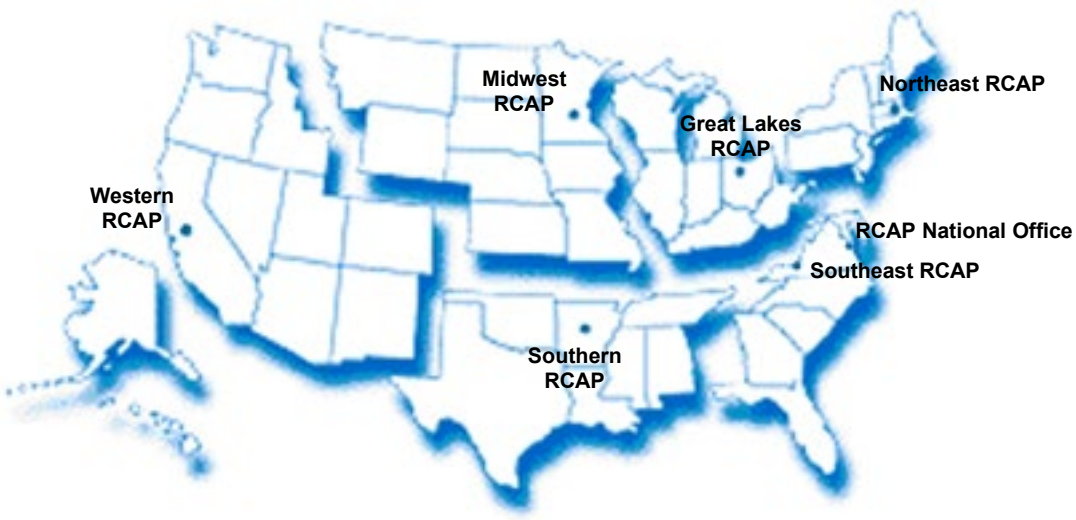
Produced for the Rural Community Assistance Partnership (RCAP) National Network

by Rural Community Assistance Corporation, Western RCAP

Emergency Response Planning Template for Public Drinking Water Systems

RCAP Regional Offices:

If you need technical assistance to complete your Emergency Response Plan, please contact one of our regional offices listed below.



Regional Offices	Contact Number	Web Address
RCAP National Office	888/321-7227	www.rcap.org
Western RCAP	916/447-2854	www.rcac.org
Southeast RCAP	866/928-3731	www.southeastrcap.org
Great Lakes RCAP	800/775-9767	www.glrcap.org
Southern RCAP	479/443-2700	www.crg.org
Northeast RCAP	800/488-1969	www.rcapsolutions.org
Midwest RCAP	952/758-4334	www.map-inc.org

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For additional copies of this publication, call 888/321-7227or visit RCAP's web site at *www.rcap.org.*

This publication is being distributed under the auspices of Rural Community Assistance Partnership.

Contents

Planning Template	**2**
How to use the template	**2**
The requirement for an emergency response plan	**2**
Section 1.	**3**
System Information	**3**
Section 2. Chain of Command – Lines of Authority	**4**
Section 3. Events that Cause Emergencies	**5**
Section 4. Emergency Notification	**7**
Section 5. Effective Communication	**12**
Section 6. Response Actions for Specific Events	**13**
Section 7. Alternative Water Sources	**19**
Section 8. Returning to Normal Operation	**21**
Section 9. Plan Approval	**22**
Section 10. Certificate of Completion	**23**

Planning Template

Introduction

Preparing an emergency response plan is an essential part of managing a drinking water system. Rural Community Assistance Partnership, Inc has developed this template for public water systems serving 3,300 population or fewer to help them develop such plans.

How to use the template

Developing an emergency response plan can take a lot of time and effort. The purpose of this document is to make the job easier and help create a plan that works for your water system. The document is intended for use by any water system and may be modified to fit the specific needs of each system. This document can be used as a starting point based on what is relevant for the type, size, and complexity of the system.

The template is just a guide; you may modify it in any way that works for your system – add sections, take them out, or rearrange them if you wish. You may also use a completely different format for your plan if you find one that works better for your system.

Since this document may contain sensitive information, **do not** submit it to USDA/RD and make sure to keep it stored in a safe and secure location. It is recommended you have one copy stored on-site and one off-site to ensure the document is available in the event you are unable to access your offices or facilities. The document is available electronically on the web at: http://www.rcap.org

The requirement for an emergency response plan

The United States Department of Agriculture, Rural Development (USDA/RD) is requiring that all systems that receive USDA/RD funding must complete a Security Vulnerability Assessment (SVA) and Emergency Response Plan (ERP). In addition to the USDA/RD requirements, the preparation of a SVA and ERP will help improve the management of the water system and will increase the system's ability to respond to emergencies.

This guidance document can be used to help meet the requirement for developing an emergency response program for a water system serving 3,300 population or fewer. Other methods or formats can also be used to meet the emergency response program requirement.

Section 1. System Information

Keep this basic information easily accessible to authorized staff for emergency responders, repair people, and the news media.

System information

System Identification Number	09800 L
System Name and Address	Burton Water Cooperative 20211 Vashon Hwy SW, #229 Vashon, WA 98070

Directions to the System	From Vashon Island North End Ferry Terminal, head south on Vashon Highway 8 miles. Turn right on to SW 228th St and continue 0.2 miles. Turn left on to 107th Ave SW and follow 0.3 miles. Turn right on to SW 232nd St. Follow SW 232nd St 0.6 miles and arrive at the reservoir and wellfield site on the south side of 232nd St.	
Basic Description and Location of System Facilities	Burton is supplied by two wellfields. Storage is provided by two 35,000 gallon semi-buried concrete reservoirs, one 100,000 gallon concrete reservoir and one 158,000 gallon concrete reservoir. Most of the distribution system is pressurized by gravity and consists of various pipe sizes and materials for delivering water from the storage reservoirs to the rest of the system. There is one upper pressure zone on 107th Ave SW which is pressurized by a small booster pump at the intersection of 107th Ave SW and SW 238th St.	
Location/Town	Burton, Vashon Island, WA	
Population Served and Service Connections from Division of Drinking Water Records	1060 people	415 approved connections
System Owner	Burton Water Cooperative Board President:: William Shadbolt	
Name, Title, and Phone Number of Person Responsible for Maintaining and Implementing the Emergency Plan	Nick Simmons, System Operator	Cell: 206.778.9638 Land Line in office: 206.463.0005

Section 2.
Chain of Command – Lines of Authority

The first response step in any emergency is to inform the person at the top of this list, who is responsible for managing the emergency and making key decisions.

Chain of command – lines of authority

Name and Title	Responsibilities During an Emergency	Contact Numbers
Nick Simmons, System operator	Identify emergency situation. Contact entities needed to address situation. Notify Board Chair of situation. Notify affected customers	Cell:206.778.9638 Land Line in Office: 206.463.0005
William Shadbolt Coop Board President	Communicate with members and media if necessary.	425.241.0144

Section 3.
Events that Cause Emergencies

The events listed below may cause water system emergencies. They are arranged from highest to lowest probable risk.

Events that cause emergencies

Type of Event	Probability or Risk (High-Med-Low)	Comments
Loss of Water	Medium	Contact customers
Break in lines	Medium	Contact customers if water is going to be shut off.
Loss of power	Low	Contact PSE immediately. Set up generators.
Storm Damage	Medium	Arrange for emergency generators. Clear power lines, Clear Streets for emergency services.
Earthquake	Medium	Earthquake is possible.
Water Contamination	Low	Sources are regularly monitored for contaminants.
Inadequate planning to meet demand	Low	Conservative planning is the BWC practice
Shallow wells	Low	Well does not have trouble meeting demand.
Inadequate Pumping equipment	Low	Pumps are adequate for demand.
Seawater Intrusion	Low	Sources are not at risk for seawater intrusion.
Water waste	Medium	Regular monitoring.

Section 4.
Emergency Notification

Notification call-up lists - Use these lists to notify first responders of an emergency.

Priority Customers				
Organization or Department	**Name & Position**	**Telephone**	**Night or Cell Phone**	**Email**
Hospitals or Clinic(s)	n/a			
Public or Private Schools	n/a			
Wastewater Treatment Plant	n/a			
Adult Care Facility	n/a			

State, Federal or Tribal Notification List				
Organization or Department	**Name & Position**	**Telephone**	**Night or Cell Phone**	**Email**
State or Tribal Police	King County Sheriff	206.477.6655	911	www.kingcounty.gov/sheriff/Communities/Precinct4.aspx
Regulatory Agency State/Federal/Tribal	King County Health Department WDOH After-Hours WDOH Work Hours	206.477.8050 877.481.4901 253.395.6750		
Authorized Testing Laboratory	Edge Analytical Laboratories	800.755.9295		https://edgeanalytical.com

Service / Repair Notifications

Organization or Department	Name & Position	Telephone	Night or Cell Phone	Email
Electric Utility Co.	PSE	888-225-5773		
Electrician	Artisan Electric	206.557.4215		artisanelectricinc.com
Gas/Propane Supplier	n/a			
Water Testing Lab.	Edge Analytical Laboratories	800.755.9295		
Sewer Utility Co.	n/a			
Telephone Co.	Comcast	800-934-6489		
Plumber	system operator			
Pump Supplier	Seattle Pump and Equipment Co.	206.283.5252		
"Call Before You Dig"	WA State Notification Ctr.	811		
Rental Equipment Supplier	Ace Hardware Island Lumber	206.463.3852 206.463.5000		
Chlorine Supplier	Island Water Management	206.715.3805		
Well Drilling Co.	Nicholson Driling	360-876-4421		
Pipe Supplier	Core and Main	253.840.8555		

Media Notification List				
Organization or Department	**Name & Position**	**Telephone**	**Night or Cell Phone**	**Email**
Newspaper - Local	Vashon Beachcomber	206.463.9195		
Newspaper – Regional/State/Tribal	n/a			
Radio	Voice of Vashon KVSH 101.9 FM	206.463.0301		
Radio				
TV Station	none			

Notification procedures

Notify water system customers of potential water shortage

Who is Responsible:	Nick Simmons, Water System Operator
Procedures:	Call or email affected customers. Place A-Board signs at 4 way stop (Burton Drive and Vashon Hwy SW).

Alert local law enforcement, state, federal, or tribal drinking water officials, and local health agencies

Who is Responsible:	Nick Simmons, Water System Operator
Procedures:	Call or email entities

Contact service and repair contractors

Who is Responsible:	Nick Simmons, Water System Operator
Procedures:	call and arrange for repairs

Contact neighboring water systems, if necessary

Who is Responsible:	Nick Simmons, Water System Operator
Procedures:	call

Procedures for issuing a health advisory

Who is Responsible:	System Operator
Procedures:	Notify Board Chair, KC and WA DoH, notify customers, put A-Board signs out.

Other procedures as necessary

Who is Responsible:	Nick Simmons
Procedures:	Notify relevant entities

Section 5.
Effective Communication

Communication with customers, the news media, and the general public is a critical part of emergency response.

Designated public spokesperson

Designate a spokesperson (and alternate) and contact your local primacy agency for delivering messages to the news media and the public.

Designate a spokesperson and alternates

Spokesperson	Alternate
Burton Water Coop Board President	Burton Water Coop Vice President

Health advisories

During events when water quality and human health are in question, it may be necessary to issue a health advisory that gives advice or recommendations to water system customers on how to protect their health when drinking water is considered unsafe. These advisories are issued when the health risks to the consumers are sufficient, in the estimation of the water system, state or tribal, or local health officials, to warrant such advice.

Health advisories usually take the form of a drinking water warning or boil water advisory. Communication during these times is critical. Health advisories should always be well thought out and provide very clear messages.

The U.S. Environmental Protection Agency has put together a number of tools, including fact sheets, brochures, forms, and templates to help prepare for a health advisory. These are on the web at: http://www.epa.gov/safewater/pn.html

Section 6.
Response Actions for Specific Events

In any event, there are a series of general steps to take:

1. Analyze the type and severity of the emergency;
2. Take immediate actions to save lives;
3. Take action to reduce injuries and system damage;
4. Make repairs based on priority demand, and
5. Return the system to normal operation.

The following tables identify the assessment, set forth immediate response actions, define what notifications need to be made, and describe important follow-up actions.

A. Power outage

Assessment	short term
Immediate Actions	Start onsite portable generator for wellfield operation and chlorination
Notifications	Notify affected customers if necessary
Follow-up Actions	Restore to normal operations
Assessment	extended power outage
Immediate Actions	Notify PSE, start onsite portable generator for wellfield operation and chlorination.
Notifications	Notify affected customers if necessary
Follow-up Actions	Restore to normal operations.

B. Distribution line break

Assessment	Requires repair
Immediate Actions	Call for emergency locater. Excavate and repair leak
Notifications	Notify affected customers, Board Chair and inform of progress
Follow-up Actions	Restore to normal operations

C. Chlorine treatment equipment failure

Assessment	Test water in distribution
Immediate Actions	Replace equipment
Notifications	customers if chlorine level below required for safety
Follow-up Actions	

D. Treatment equipment

Assessment	n/a
Immediate Actions	n/a - no treatment
Notifications	
Follow-up Actions	

E. Source pump failure

Assessment	Requires repair
Immediate Actions	Determine cause of failure. Call for repair
Notifications	If possible water shortage, notify customers and DOH as needed
Follow-up Actions	Restore to normal operations

F. Microbial (coliform, *E. coli*) contamination

Assessment	Variable
Immediate Actions	Contact DOH and follow their plan
Notifications	Follow coliform monitoring plan, notify DOH, Board members and customers
Follow-up Actions	Flush and sample as needed, per DOH requirements

G. Chemical contamination

Assessment	Variable
Immediate Actions	Contact DOH and follow their plan. Possible hazmat may need to be called in. If safe, set up a containment zone.
Notifications	DOH, Board members, customers and possible hazmat
Follow-up Actions	Flush and sample as needed, ensure safety

H. Vandalism or terrorist attack

Assessment	Variable
Immediate Actions	Determine extent of damage and if there is any public health risk
Notifications	Board members. If public health risk, notify DOH and affected customers
Follow-up Actions	Flush and sample as needed, ensure safety.

I. Reduction or loss of water in the well

Assessment	Variable
Immediate Actions	Determine what causes the reduced of loss of water.. If there is a public health risk, notify WA and KC DOH, Board Chair and affected customers.
Notifications	Board members. If public health risk, notify DOH and affected customers.
Follow-up Actions	Flush and sample as needed. Ensure safety.

J. Drought

Assessment	Normal year rainfall is far less than normal or aquifer levels are dropping below seasonal norm.
Immediate Actions	Assess if water restriction will need to be instituted.
Notifications	DOH, Board members, customers
Follow-up Actions	Continue to monitor rainfall and aquifer levels until they have returned to normal seasonal levels.

K.Flood

Assessment	unlikely to occur
Immediate Actions	
Notifications	
Follow-up Actions	

L. Earthquake

Assessment	minor seismic activity
Immediate Actions	Assess any damage to wells or tanks. Repair leaks as they arise, monitor leakage.
Notifications	Notify Board members. If public health risk, notify DOH and affected customers.
Follow-up Actions	Flush and sample as needed. Leak detection may need to assess remaining leaks.
Assessment	major seismic activity
Immediate Actions	Assess any damage to wells or tanks. Depending on severity of damage, sections may need to be isolated.
Notifications	Notify Board Chair. If public health risk, notify DoH and affected customers.
Follow-up Actions	Flush and sample as needed. Leak detection - may need to assess remaining leaks.

M. Hazardous materials spill in vicinity of sources or system lines

Assessment	Identify contamination
Immediate Actions	Contact DOH and follow their plan. Possible hazmat may need to be called in. If safe, set up a containment zone.
Notifications	DOH, Board members, customers and possible hazmat.
Follow-up Actions	Flush and sample as needed.

N. Electronic equipment failure

Assessment	Requires repair.
Immediate Actions	Try to determine the cause of failure. If no cause can be found, call for repair.
Notifications	If severe, contact Board Chair. If possible water shortage, notify customers and DOH as needed.
Follow-up Actions	Flush and sample as needed.

O. Cyber attack

Assessment	No vulnerable online systems. Only information on the office computer is the billing system with multiple backups. There is no SCADA system, all controls are manual.
Immediate Actions	
Notifications	
Follow-up Actions	

P. Other

Assessment	
Immediate Actions	
Notifications	
Follow-up Actions	

Section 7.
Alternative Water Sources

Intertie to adjacent water supply system

Water Systems Within One-Quarter Mile of our System	Feasibility of Connecting
Water District 19	Determined to be too expensive
Camp Burton	May be possible to negotiate with Camp Burton to allow Coop members to fill drinking water containers from the Camp Burton well.

Alternate source(s) of water

Alternative Sources	Names	Phone	Availability	Is the Water Safe for Drinking?
Bottled water Suppliers for potable water use	Harbor Mercantile Vashon Thriftway Vashon IGA	206.463.2500 206.463.2100 206.463.9725	9-6:30 PM 8 - 9 PM 8 - 10 PM	bottled only bottled only bottled only
Tanker trucks in the area available to deliver bulk water for non potable use	Kevin Bergin Construction (may have pumper truck)	206.463.6232	7:30 AM - 5 PM	possible option

Section 8.
Returning to Normal Operation

Returning to normal operations

Action	Description and Actions
Ensure equipment is operational.	Physically inspect rotating equipment, water leaks.
Check incoming voltage	Use multimeter and check incoming voltage.
Check system pressures	Inspect pressure switch and ensure the on and off pressures correlate with the gauge.
Perform water samples	Draw water samples and deliver to testing lab
Coordinate with WSDOH	Operator coordinates with WSDoH
Restore system to normal	Inform Board and customers of full operational capacity.

Section 9.
Plan Approval

Plan approval

This plan is officially in effect when reviewed, approved, and signed by the following people:

Name/Title	Signature	Date
William Shadbolt, Board Chair		
Nick Simmons, System Operator		

Section 10.
Certificate of Completion

I certify to the United States Department of Agriculture, Rural Development (USDA/RD) that this community water system has completed an Emergency Response Plan (ERP) that incorporates the results of the Security Vulnerability Assessment (SVA) completed for the system.

I certify that this document was prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information (Safe Drinking Water Act (42U.S.C. 300f et seq.).

Mail the completed certificate only (do not send your SVA or ERP) to the appropriate USDA Rural Development office.

Public Water System ID Number: 09800 L

System Name: Burton Water Cooperative

Address: 20211 Vashon Hwy SW, #229

Print Name of Person Authorized to Sign this Certification on behalf of the System:

William Shadbolt **Title:** Board Chair

Signature:

Phone: 425.241.0144 **Fax:** **Email:** wmshad@gmail.com

Received Technical Assistance from the following:

☐ Rural Community Assistance Partnership, (CRG, Great Lakes RCAP/WSOS, MAP, RCAC, RCAP Solutions, Southeast RCAP)

☐ Rural Water Association

Completing the following:

□ Security Vulnerability Assessment

□ Emergency Response Plan

Disclaimer

This document contains information on how to plan for protection of the assets of your water system. The work necessarily addresses problems in a general nature. You should review local, state, tribal (if applicable), and federal laws and regulations to see how they apply to your specific situation.

Knowledgeable professionals prepared this document using current information. The authors make no representation, expressed or implied, that this information is suitable for any specific situation. The authors have no obligation to update this work or to make notification of any changes in statutes, regulations, information, or programs described in this document. Publication of this document does not replace the duty of water systems to warn and properly train their employees and others concerning health and safety risks and necessary precautions at their water systems.

Rural Community Assistance Partnership, Inc. assumes no liability resulting from the use or reliance upon any information, guidance, suggestions, conclusions, or opinions contained in this document.

Rural Community Assistance Partnership, Inc.
1522 K Street, N.W., Suite 400
Washington, D.C. 20005
888/321-7227

Chapter 10-6: Well Logs and Pumps

SOUTH WELL

CONCRETE TILE WELL INSTALLED APRIL 1959

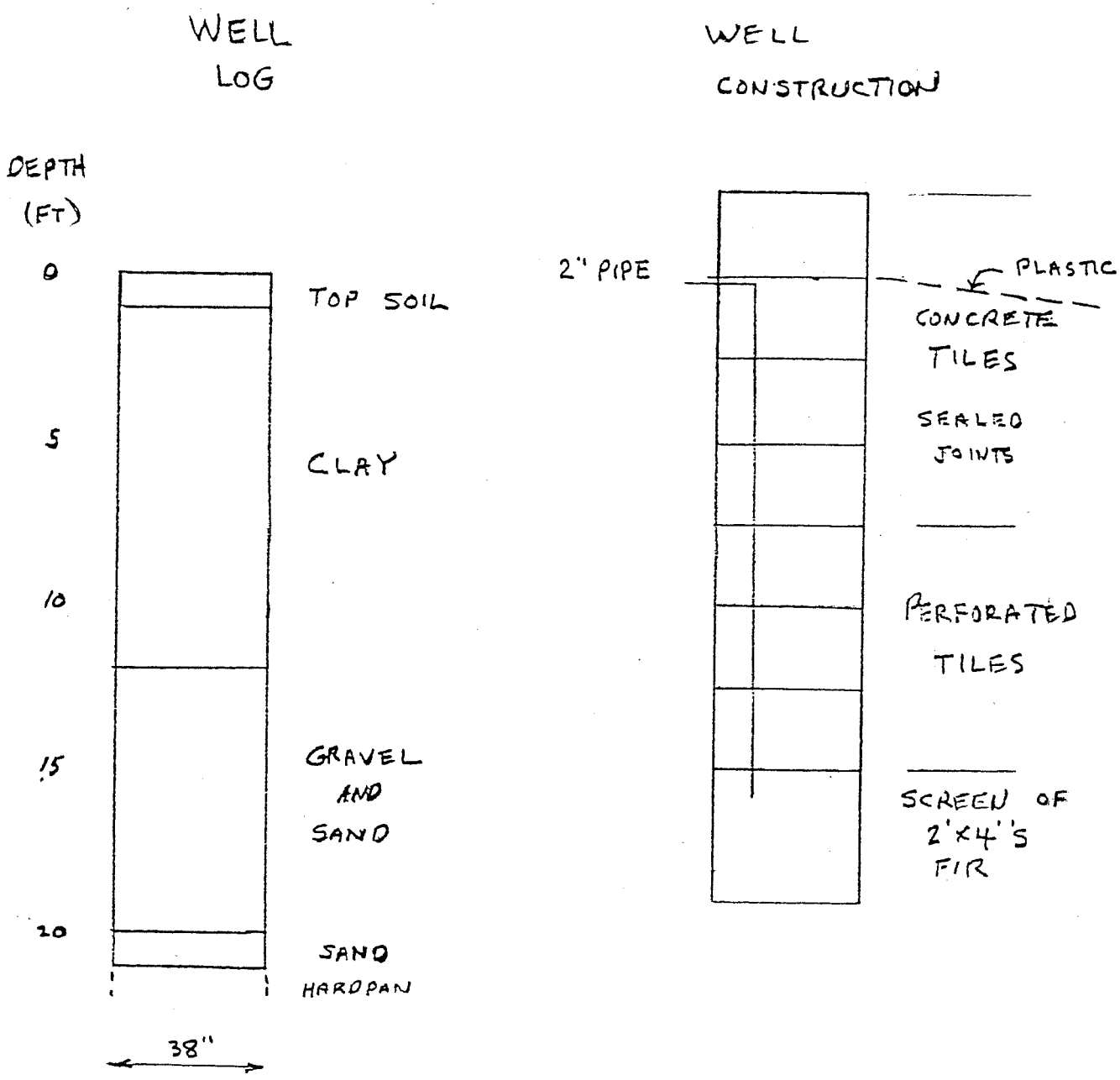


Figure 5. Well log and construction diagram

NORTH WELL

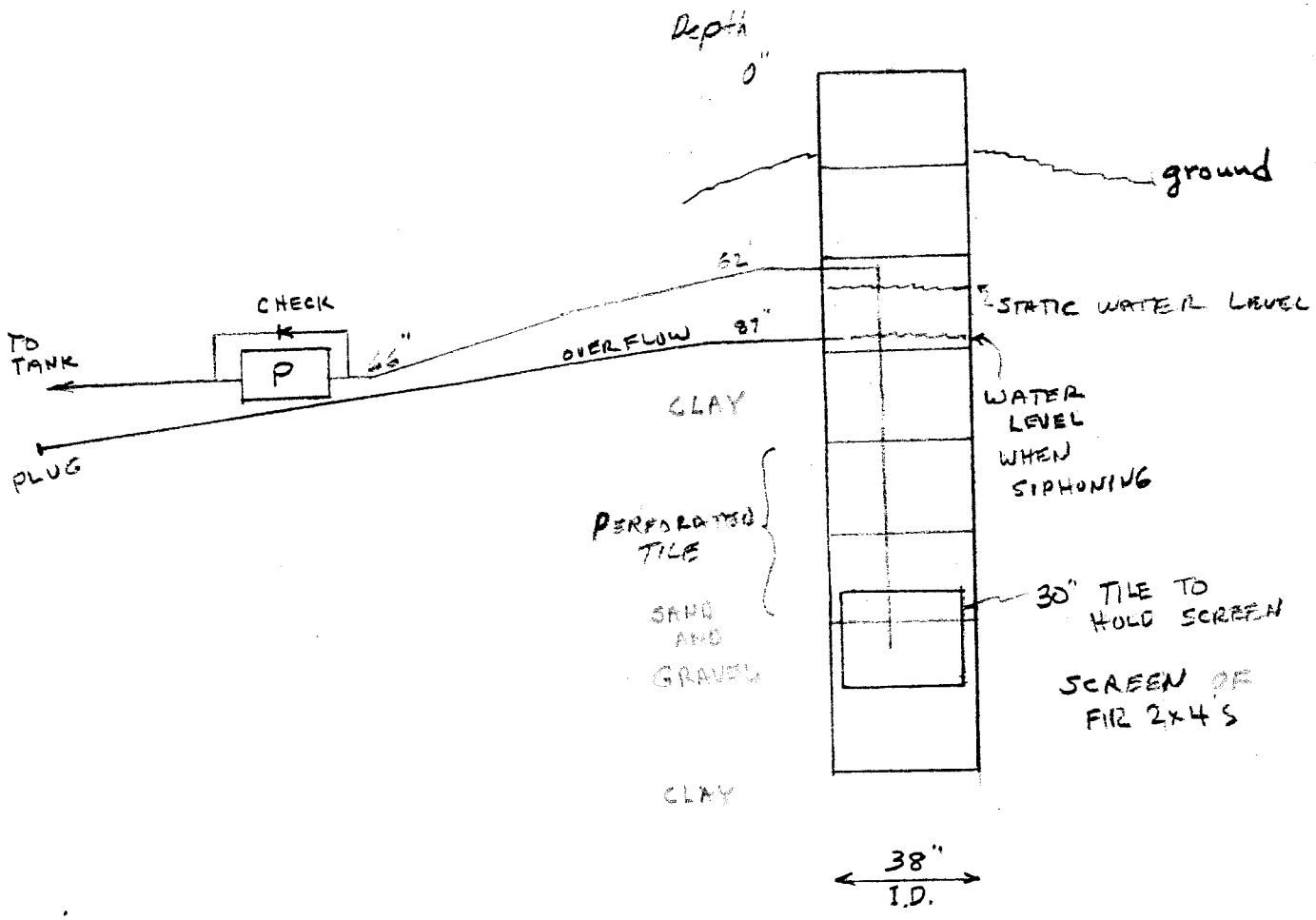


Figure 6. Diagram of north well

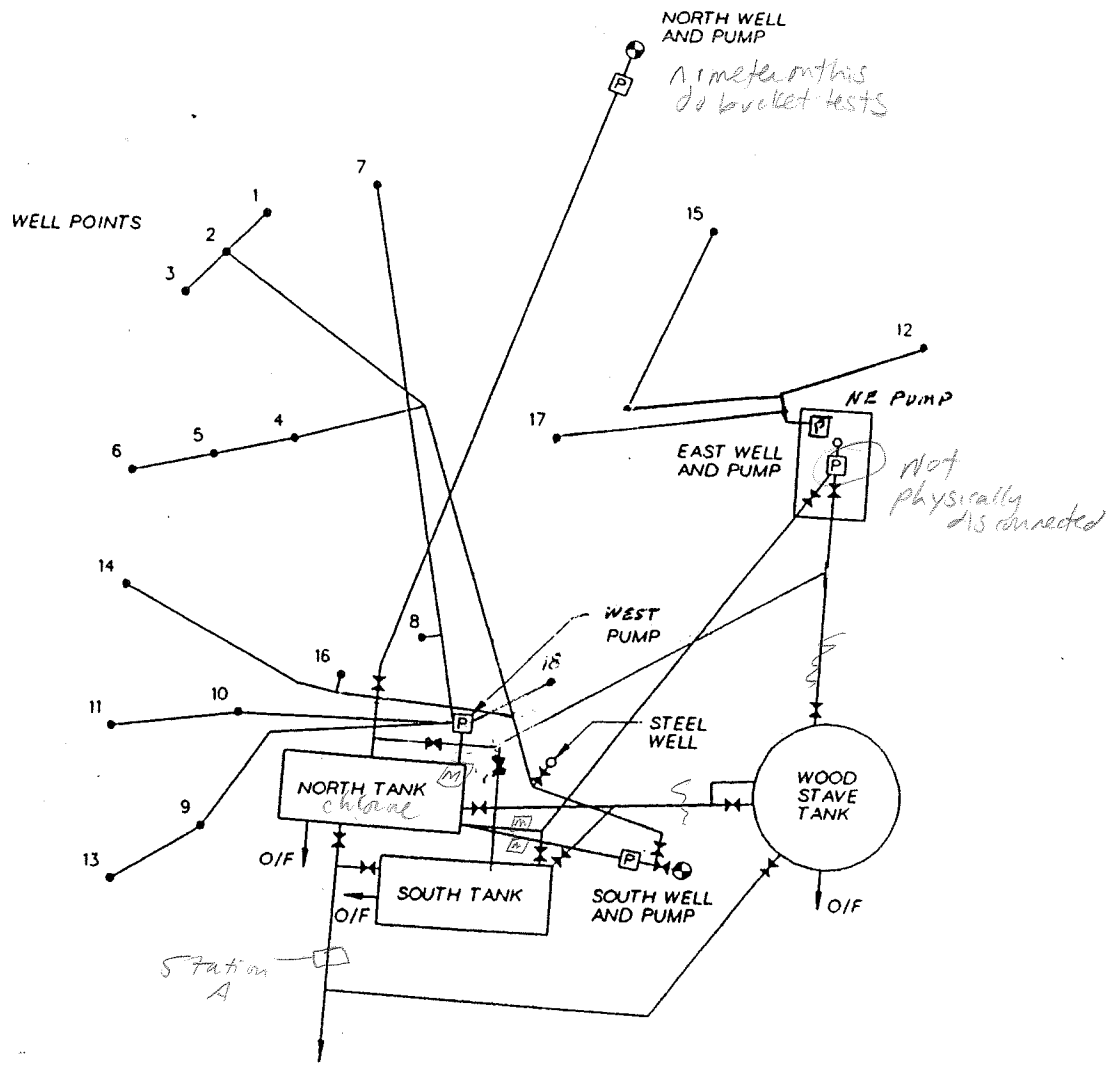


Figure 7. Existing source arrangement

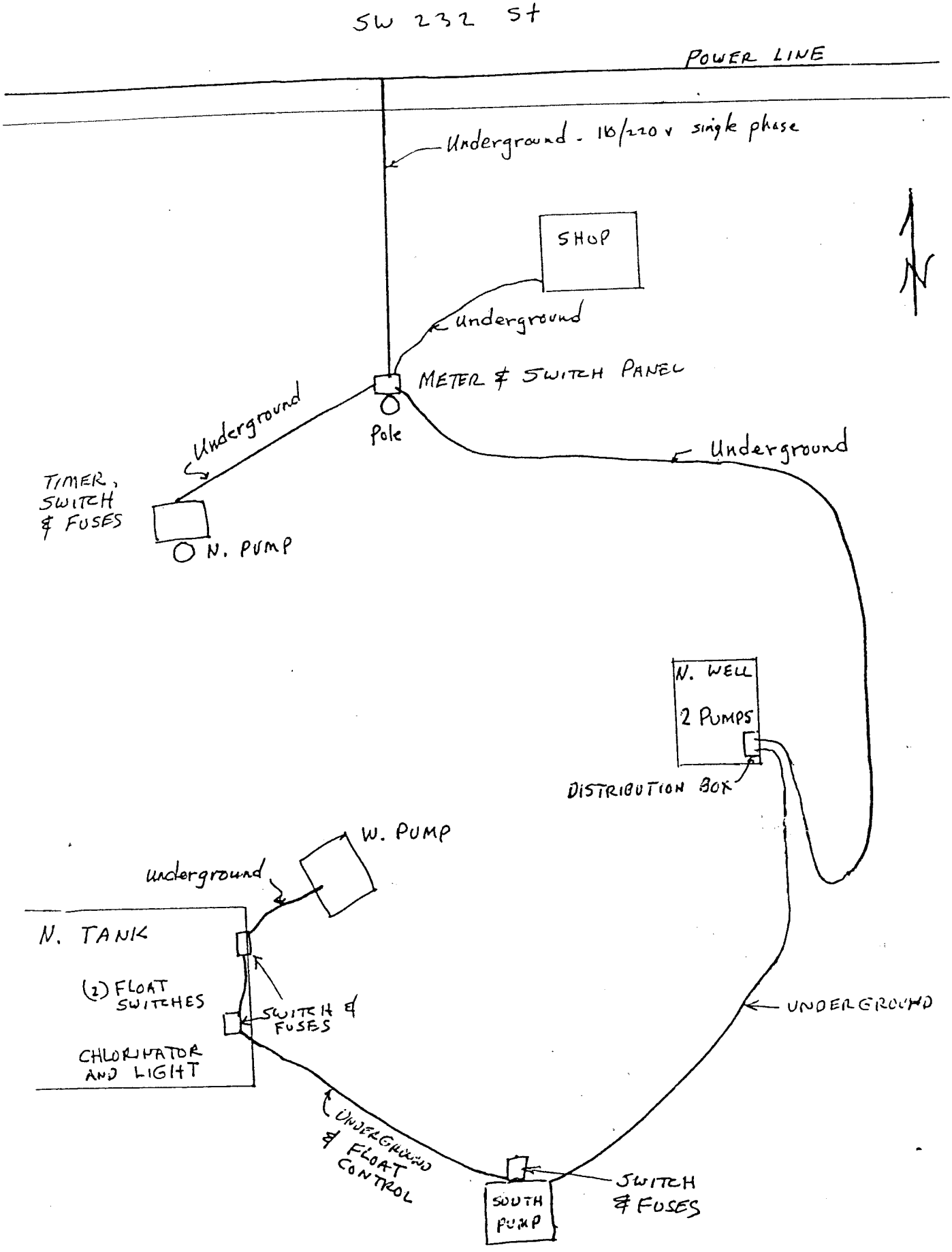


Figure 7A. Electrical distribution system

22-2E13H

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission *("x" in circle)* 183662

- [x] Construction
- [ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal [ ] DeWater [ ] Irrigation [ ] Test Well [x] Other Public

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 5 inches, drilled 38 ft. Depth of completed well 38 ft.

CONSTRUCTION DETAILS

Casing Installed: [x] Welded 5" Diam. from +2 ft. to 38 ft. [ ] Liner installed 8" Diam. from +1 ft. to 21.4 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 N/A

Manufacturer's Name Johnson Screens

Type V-slot, continuous wound. Model No. _____

Diam. 5 Slot size 0.030 from 27.2 ft. to 37.7 ft.

Diam. ___ Slot size ___ from ___ ft. to ___ ft.

Gravel/Filter packed: [x] Yes [ ] No [ ] Size of gravel/sand 8/12

Materials placed from 8 ft. to 38 ft.

Surface Seal: [x] Yes [ ] No To what depth? 18 ft.

Material used in seal Bentonite Grout

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 ___ ft.

Static level 10.7 ft. below top of well Date 10/14/05

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? TP&D

Yield: 12.5 gal./min. with 5 ft. drawdown after 1 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

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 ___ Was a chemical analysis made? [ ] Yes [x] No

CURRENT

Notice of Intent No. WE04343

Unique Ecology Well ID Tag No. AKN 518

Water Right Permit No. _____

Property Owner Name Burton Water Company, Inc.

Well Street Address 1611 SW 232nd Street

City Vashon Island County King

Location SE 1/4-1/4 NE 1/4 Sec 13 Twn 22 R 2 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. 1322029016

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
Silt; sandy, brown.	0	19
Sand; medium, well graded, brown.	19	36
Sand; medium, well graded, brown, silty.	36	38
05-1380-08		

Start Date 10/10/05 Completed Date 10/14/05

RECEIVED
NOV 0 3 2005
DEPT OF ECOLOGY

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 [x] Engineer [ ] Trainee Name (Print) James Vignali

Driller/Engineer/Trainee Signature James Vignali

Driller or trainee License No. 0987

If TRAINEE,
Driller's Licensed No. _____
Driller's Signature _____

Drilling Company Tacoma Pump & Drilling Co., Inc.

Address 30316 Mountain Highway

City, State, Zip Graham, WA 98338

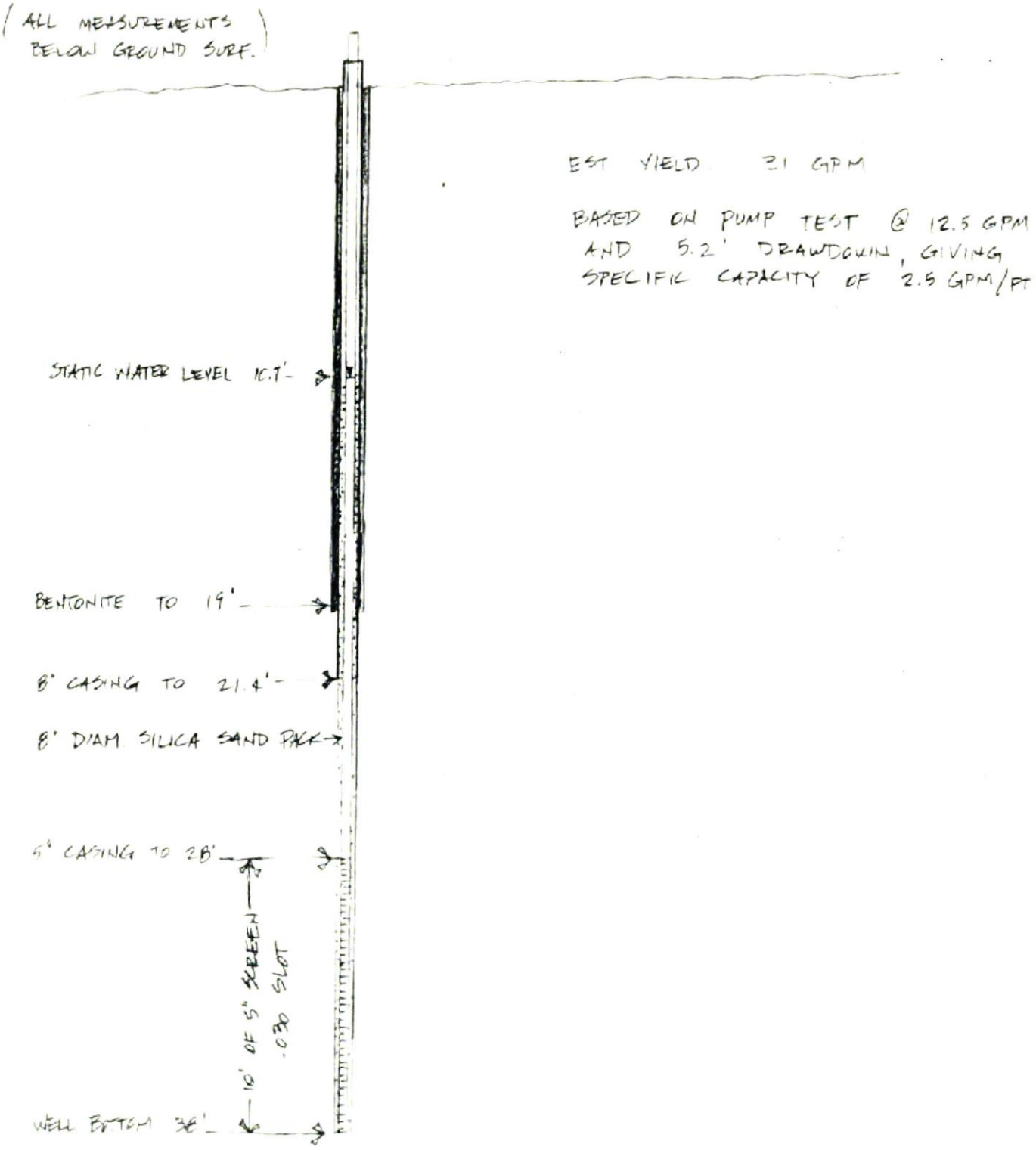
Contractor's Registration No. TACOMPD203PF Date 10/24/05

Ecology is an Equal Opportunity Employer.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

BURTON WATER CO. WELL

COMPLETED 10/14/05 BY TACOMA PUMP & DRILLING



SCALE. 1" = 5'

12544D

HOLT DRILLING, INC.

22-2E 13F

Resource Protection Well Report

Project Name Burton Water Co.

Well Identification # MW-B

Drilling Method 4" HSA

Driller Pat Tervues

License # 1793

Date 12-6-02

County King, SE ¼ NW ¼

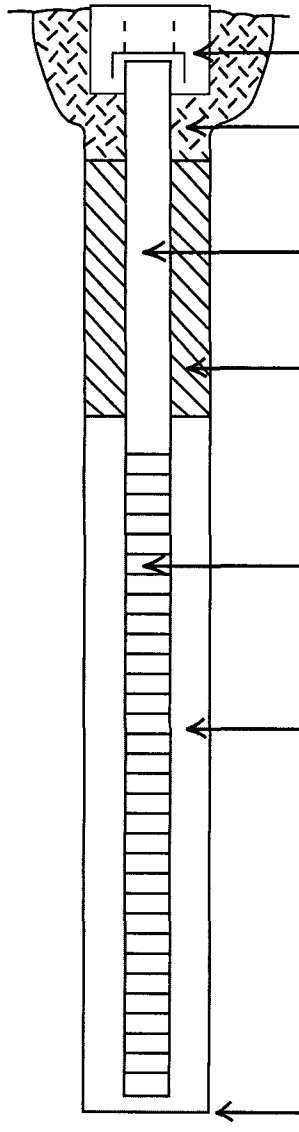
Section 13 T. 22N R. 2E

Street Address SW 232nd St - Vashon Island

Start Card R61503

Consulting Firm C D M,

AS-BUILT	WELL DATA	FORMATION DESCRIPTION



MONUMENT TYPE: 6" Stick up

CONCRETE SURFACE SEAL 2' ft.

PVC BLANK 2" "x 26.5

BACKFILL 18' ft.

TYPE. Bentonite Chip + Quik Grout

PVC SCREEN 2" "x 4'

SLOT SIZE .020

TYPE: PVC

GRAVEL PACK 8' ft.

MATERIAL. 10/20 Colo. Sand

WELL DEPTH 28' "

0 - ft.

- ft. Sand

- ft.

- ft.

- ft.

REMARKS

RECEIVED

JAN 08 2003

DEPT OF ECOLOGY

Signature

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WATER WELL REPORT

DEPARTMENT OF ECOLOGY
State of Washington

Type of Work:
☑ Construction
☐ Decommission ⟹ Original installation NOI No. _____

Proposed Use: ☐ Domestic ☐ Industrial ☑ Municipal
☐ Dewatering ☐ Irrigation ☐ Test Well ☐ Other _____

Construction Type: ☑ New well ☐ Alteration ☐ Deepening ☐ Other _____
Method: ☐ Driven ☐ Jetted ☐ Cable Tool ☐ Dug ☑ Air- ☐ Mud-Rotary

Dimensions: Diameter of boring 10 in., to 49 ft.
Depth of completed well 47 ft.

Construction Details:

Casing	Liner	Diameter	From	To	Wall Thickness	Steel	PVC	Welded	Thread
☑	☐	5 in.	0	37	1/4 in.	☑	☐	☑	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐

Perforations: ☐ Yes ☑ No Type of perforator used _____
No. of perforations _____ Size of perforations _____ in. by _____ in.
Perforated from _____ ft. to _____ ft. below ground surface

Screens: ☑ Yes ☐ No ☐ K-Packer ⟹ Depth _____ ft.
Manufacturer's Name Johnson
Type Stainless Model No. _____
Diameter 5 in. Slot size 30 in. from 37 ft. to 47 ft.
Diameter _____ in. Slot size _____ in. from _____ ft. to _____ ft.

Sand/Filter pack: ☑ Yes ☐ No Size of pack material 10/20 in.
Materials placed from 30 ft. to 47 ft.

Surface Seal: ☑ Yes ☐ No To what depth? 30 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 _____

Pump: Manufacturer's Name _____ Type: _____
H.P. _____ Pump intake depth: _____ ft. Designed flow rate: _____ gpm

Water Levels: Land-surface elevation above mean sea level _____ ft.
Stick-up of top of well casing 2 ft. above ground surface
Static water level 12 ft. below top of well casing Date 01/21/2020
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

Well Tests:
Was a pumping test performed? ☐ No ☐ Yes ⟹ by whom? _____
Yield 21 gpm with 3 ft. drawdown after 5 hrs.
Yield _____ gpm with _____ ft. drawdown after _____ hrs.
Yield _____ gpm with _____ ft. drawdown after _____ hrs.

Recovery data (time = zero when pump is turned off – water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
12	15				
12:01	12				

Date of pumping test 02/03/2020

Bailer test _____ gpm with _____ ft. drawdown after _____ hrs.
Air test 40 gpm with stem set at 37 ft. for 1 hrs. Date 01/21/2020
Artesian flow _____ gpm
Temperature of water _____ ° F Was a chemical analysis made? ☐ Yes ☐ No

Notice of Intent No. WE 32808
Unique Ecology Well ID Tag No. BLN 274
Site Well Name (if more than one well): SO7-2
Water Right Permit/Certificate No. _____
Property Owner Name Burton Water System
Well Street Address 11611 SW 232nd Street
City Vashon County King - 17
Tax Parcel No. 1322029016
Was a variance approved for this well? ☐ Yes ☑ No
If yes, what was the variance for? _____

Location (see instructions on page 2): ☐ WWM or ☑ EWM
NE ¼-¼ of the SE ¼; Section 13 Township 22 Range 2
Latitude (Example: 47.12345) 47.396060
Longitude (Example: -120.12345) -122.483721

Driller's Log/Construction or Decommission Procedure
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each layer penetrated, with at least one entry for each change of information. Use additional sheets if necessary.

Material	From	To
Brown silty sand	0	18
Brown sand	18	37
Brown sand some gravel some silt heaving	37	47
Brown sand with silt and wood	47	49
Job#18-1850-07		

RECEIVED
DEPT OF ECOLOGY
FEB 13 2020
WATER RESOURCES PROGRA
NORTHWEST REGIONAL OFFICE

Start Date 01/14/2020 Completed Date 01/21/2020

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 ☐ Trainee ☐ PE – Print Name Gray Rich
Signature _____
License No. 2980
IF TRAINEE: Sponsor's License No.
Sponsor's Signature

Drilling Company Tacoma Pump & Drilling
Address 30316 Mountain Highway
City, State, Zip Graham, WA, 98338
Contractor's Registration No. TACOMPD203PF Date 02/04/2020

WATER WELL REPORT

DEPARTMENT OF ECOLOGY
State of Washington

Type of Work:
☑ Construction
☐ Decommission ⟹ Original installation NOI No. _____

Proposed Use: ☐ Domestic ☐ Industrial ☑ Municipal
☐ Dewatering ☐ Irrigation ☐ Test Well ☐ Other _____

Construction Type: ☑ New well ☐ Alteration ☐ Deepening ☐ Other _____
Method: ☐ Driven ☐ Jetted ☐ Cable Tool ☐ Dug ☑ Air- ☐ Mud-Rotary

Dimensions: Diameter of boring 10 in., to 47 ft.
Depth of completed well 45 ft.

Construction Details:

Casing	Liner	Diameter	From	To	Wall Thickness	Steel	PVC	Welded	Thread
☑	☐	5 in.	0	35	1/4 in.	☑	☐	☑	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐

Perforations: ☐ Yes ☑ No Type of perforator used _____
No. of perforations _____ Size of perforations _____ in. by _____ in.
Perforated from _____ ft. to _____ ft. below ground surface

Screens: ☑ Yes ☐ No ☐ K-Packer ⟹ Depth _____ ft.
Manufacturer's Name Johnson
Type Stainless Model No. _____
Diameter 5 in. Slot size 30 in. from 35 ft. to 45 ft.
Diameter _____ in. Slot size _____ in. from _____ ft. to _____ ft.

Sand/Filter pack: ☑ Yes ☐ No Size of pack material 10/20 in.
Materials placed from 25 ft. to 45 ft.

Surface Seal: ☑ Yes ☐ No To what depth? 25 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 _____

Pump: Manufacturer's Name _____ Type: _____
H.P. _____ Pump intake depth: _____ ft. Designed flow rate: _____ gpm

Water Levels: Land-surface elevation above mean sea level _____ ft.
Stick-up of top of well casing 2 ft. above ground surface
Static water level 12 ft. below top of well casing Date 01/27/2020
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

Well Tests:
Was a pumping test performed? ☐ No ☑ Yes ⟹ by whom? _____
Yield 21 gpm with 30 ft. drawdown after 5 hrs.
Yield _____ gpm with ____ ft. drawdown after _____ hrs.
Yield _____ gpm with ____ ft. drawdown after _____ hrs.
Recovery data (time = zero when pump is turned off – water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
12	30	12:30	12		
12:15	17				
12:20	15				

Date of pumping test 02/03/2020
Bailer test _____ gpm with ____ ft. drawdown after ____ hrs.
Air test 20 gpm with stem set at 35 ft. for 1 hrs. Date 01/26/2020
Artesian flow _____ gpm
Temperature of water _____ °F Was a chemical analysis made? ☐ Yes ☐ No

Notice of Intent No. WE 32797
Unique Ecology Well ID Tag No. BLN 275
Site Well Name (if more than one well): SO7-3
Water Right Permit/Certificate No. _____
Property Owner Name Burton Water System
Well Street Address 11611 SW 232nd Street
City Vashon County King - 17
Tax Parcel No. 1322029016
Was a variance approved for this well? ☐ Yes ☑ No
If yes, what was the variance for? _____

Location (see instructions on page 2): ☐ WWM or ☑ EWM
NE ¼-¼ of the SE ¼; Section 13 Township 22 Range 2
Latitude (Example: 47.12345) 47.396060
Longitude (Example: -120.12345) -122.484290

Driller's Log/Construction or Decommission Procedure
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each layer penetrated, with at least one entry for each change of information. Use additional sheets if necessary.

Material	From	To
Brown silty sand	0	18
Brown sand	18	35
Brown sand some gravel some silt heaving	35	45
Blue Clay	45	47
Job#18-1850-07		

RECEIVED
DEPT OF ECOLOGY
FEB 13 2020
WATER RESOURCES PROGRAM
NORTHWEST REGIONAL OFFICE

Start Date 01/21/2020 Completed Date 01/27/2020

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 ☐ Trainee ☐ PE – Print Name Gray Rich
Signature _____
License No. 2980
IF TRAINEE: Sponsor's License No.
Sponsor's Signature

Drilling Company Tacoma Pump & Drilling
Address 30316 Mountain Highway
City, State, Zip Graham, WA, 98338
Contractor's Registration No. TACOMPD203PF Date 02/04/2020

WATER WELL REPORT

DEPARTMENT OF ECOLOGY
State of Washington

Type of Work:
☑ Construction
☐ Decommission ⟹ Original installation NOI No. _____

Proposed Use: ☐ Domestic ☐ Industrial ☑ Municipal
☐ Dewatering ☐ Irrigation ☐ Test Well ☐ Other _____

Construction Type: ☑ New well ☐ Alteration ☐ Deepening ☐ Other _____
Method: ☐ Driven ☐ Jetted ☐ Cable Tool ☐ Dug ☑ Air- ☐ Mud-Rotary

Dimensions: Diameter of boring 10 in., to 47 ft.
Depth of completed well 45 ft.

Construction Details:

Casing	Liner	Diameter	From	To	Wall Thickness	Steel	PVC	Welded	Thread
☑	☐	5 in.	0	35	1/4 in.	☑	☐	☑	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐

Perforations: ☐ Yes ☑ No Type of perforator used _____
No. of perforations _____ Size of perforations _____ in. by _____ in.
Perforated from _____ ft. to _____ ft. below ground surface

Screens: ☑ Yes ☐ No ☐ K-Packer ⟹ Depth _____ ft.
Manufacturer's Name Johnson
Type Stainless Model No. _____
Diameter 5 in. Slot size 30 in. from 35 ft. to 45 ft.
Diameter _____ in. Slot size _____ in. from _____ ft. to _____ ft.

Sand/Filter pack: ☑ Yes ☐ No Size of pack material 10/20 in.
Materials placed from 25 ft. to 45 ft.

Surface Seal: ☑ Yes ☐ No To what depth? 25 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 _____

Pump: Manufacturer's Name _____ Type: _____
H.P. _____ Pump intake depth: _____ ft. Designed flow rate: _____ gpm

Water Levels: Land-surface elevation above mean sea level _____ ft.
Stick-up of top of well casing 2 ft. above ground surface
Static water level 12 ft. below top of well casing Date 01/31/2020
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

Well Tests:
Was a pumping test performed? ☐ No ☑ Yes ⟹ by whom? _____
Yield 21 gpm with 3 ft. drawdown after 5 hrs.
Yield _____ gpm with _____ ft. drawdown after _____ hrs.
Yield _____ gpm with _____ ft. drawdown after _____ hrs.
Recovery data (time = zero when pump is turned off – water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
12	15				
12:01	12				

Date of pumping test 02/03/2020
Bailer test _____ gpm with _____ ft. drawdown after _____ hrs.
Air test 40 gpm with stem set at 35 ft. for 1 hrs. Date 01/31/2020
Artesian flow _____ gpm
Temperature of water _____ ° F Was a chemical analysis made? ☐ Yes ☐ No

Notice of Intent No. WE 32798
Unique Ecology Well ID Tag No. BLN 276
Site Well Name (if more than one well): SO7-4
Water Right Permit/Certificate No. _____
Property Owner Name Burton Water System
Well Street Address 11611 SW 232nd Street
City Vashon County King - 17
Tax Parcel No. 1322029016
Was a variance approved for this well? ☐ Yes ☑ No
If yes, what was the variance for? _____

Location (see instructions on page 2): ☐ WWM or ☑ EWM
NE ¼-¼ of the SE ¼; Section 13 Township 22 Range 2
Latitude (Example: 47.12345) 47.396062
Longitude (Example: -120.12345) -122.483878

Driller's Log/Construction or Decommission Procedure
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each layer penetrated, with at least one entry for each change of information. Use additional sheets if necessary.

Material	From	To
Brown silty sand	0	18
Brown sand	18	35
Brown sand some gravel some silt heaving	35	47

SUBMERSIBLE WELL PUMP
33GS10 1-HP
(typical for all S07 wells)

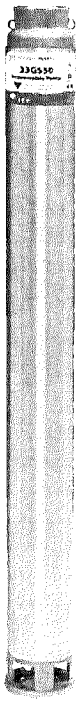
ITT

Residential Water Systems

Goulds Pumps

33GS, 40GS, 55GS, 60GS, 75GS, 80GS

60 Hz High Capacity
4" Submersible Pumps



GOULDS PUMPS

Goulds Pumps is a brand of ITT Residential and Commercial Water.

www.goulds.com

Engineered for life

FEATURES

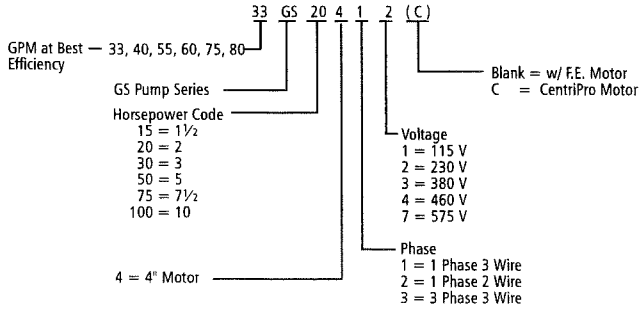
- **Powered for Continuous Operation:** All ratings are within the working limits of the motor as recommended by the motor manufacturer. Pump can be operated continuously without damage to the motor.
- **Field Serviceable:** Units have left hand threads and are field serviceable with common tools and readily available repair parts.
- **Sand Handling Design:** Our face clearance, floating impeller stack has proven itself for over 40 years as a superior sand handling, durable pump design.
- **FDA Compliant Non-Metallic Parts:** Impellers, diffusers and bearing spiders are constructed of glass filled engineered composites. They are corrosion resistant and non-toxic.
- **Discharge Head/Check Valve:** Cast 303 stainless steel for strength and durability. Two cast-in safety line loops for installer convenience. The built-in check valve is constructed of stainless steel and FDA compliant BUNA rubber for abrasion resistance and quiet operation.
- **Motor Adapter:** Cast 303 stainless steel for rigid, accurate alignment of pump and motor. Easy access to motor mounting nuts using standard open end wrench.
- **Stainless Steel Casing:** Polished stainless steel is strong and corrosion resistant.
- **Hex Shaft Design:** Six sided shafts for positive impeller drive.
- **Engineered Polymer Bearings:** The proprietary, engineered polymer bearing material is strong and resistant to abrasion and wear. The upper bearing is mounted in a durable engineered composite bearing spider for excellent abrasion resistance.

WATER END DATA

Series	Model	Required H.P.	Stages	Water End	
				Length (in)	Wt (lbs)
33GS	33GS10	1	6	14.2	8
	33GS15	1.5	8	16.6	9
	33GS20	2	10	19.1	10
	33GS30	3	14	24	13
	33GS50	5	22	35.2	19
	33GS75	7.5	34	50.6	27
	33GS100	10	44	62.8	33
40GS	40GS15	1.5	5	12.9	8
	40GS20	2	6	14.2	8
	40GS30	3	8	16.6	9
	40GS50	5	14	24.0	13
	40GS75	7.5	21	34.0	18
55GS	55GS15	1.5	5	17.1	10
	55GS20	2	7	21.2	12
	55GS30	3	9	25.3	15
	55GS50	5	15	39.1	22
	55GS75	7.5	22	54.1	32
	55GS100	10	29	98.4	39
60GS	60GS15	1.5	4	15.0	8
	60GS20	2	5	17.1	9
	60GS30	3	7	21.2	10
	60GS50	5	11	30.9	14
	60GS75	7.5	17	43.2	19
75GS	75GS30	3	7	24.1	14
	75GS50	5	11	34.8	19
	75GS75	7.5	16	48.2	27
	75GS100	10	21	63.8	35
80GS	80GS30	3	5	21.4	10
	80GS50	5	9	29.4	13
	80GS75	7.5	14	42.8	24

NOMENCLATURE

See price book for complete order numbers.



SPECIFICATIONS

Model	Flow Range GPM	Horse-power Range	Best Efficiency GPM	Discharge Connection	Minimum Well Size	Rotation①
33GS	10 – 50	1 – 10	33	2"	4"	CCW
40GS	20 – 65	1½ – 7½	40	2"	4"	CCW
55GS	20 – 80	1½ – 10	55	2"	4"	CCW
60GS	40 – 80	1½ – 7½	60	2"	4"	CCW
75GS	40 – 100	3 – 10	75	2"	4"	CCW
80GS	50 – 120	3 – 7½	80	2"	4"	CCW

① Rotation is counterclockwise when observed from pump discharge end.

"GS" SERIES MATERIALS OF CONSTRUCTION

Part Name	Material
Discharge Head	AISI 303 SS
Check Valve Poppet	AISI 304 SS
Check Valve Seal	BUNA, FDA compliant
Check Valve Seat	AISI 304 SS
Check Valve Retaining Ring	AISI 302 SS
Bearing Spider – Upper	Glass Filled Engineered Composite
Bearing	Proprietary Engineered Polymer
Klipring	AISI 301 SS
Diffuser	Lexan®
Impeller	Noryl®
Bowl	AISI 304 SS
Intermediate Sleeve*	AISI 304 SS, Powder Metal
Intermediate Shaft Coupling*	AISI 304 SS, Powder Metal
Intermediate Bearing Spider*	Glass Filled Engineered Composite
Intermediate Bearing Spider*	AISI 303 SS
Shim	AISI 304 SS
Screws – Cable Guard	AISI 304 SS
Motor Adapter	AISI 303 SS
Casing	AISI 304 SS
Shaft	
Coupling	AISI 304 SS, Powder Metal
Cable Guard	AISI 304 SS
Suction Screen	AISI 304 SS

*See repair parts for where used.

AGENCY LISTINGS

All factory assembled, complete pump/motor assemblies are UL778 and CSA listed. All pumps and motors comply with ANSI/NSF 61-1992. Motors are UL778 recognized.

Canadian Standards Association

Underwriters Laboratories

ANSI/NSF 61 - Drinking Water System Components 4P49

Goulds Pumps is ISO 9001 Registered.

Model 33GS

SELECTION CHART

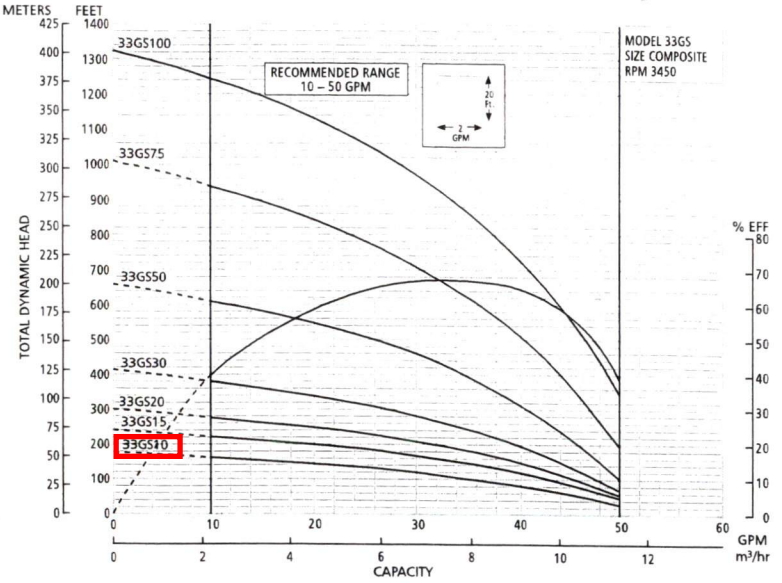
Horsepower Range 1 – 3, Recommended Range 10 – 50 GPM, 60 Hz, 3450 RPM

Pump Model	HP	PSI	Depth to Water in Feet/Ratings in GPM (Gallons per Minute)																									
			20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	520	560	600
33GS10	1	0		48	45	41	36	30	22	11																			
		20	44	39	34	28	19																						
		30	39	33	27	17																							
		40	32	25	15																								
		50	24	14																									
		60	12																										
Shut-off PSI			67	58	50	41	32	24	15	6																			
33GS15	1½	0		50	48	46	43	40	37	32	26	19																	
		20	48	45	43	39	35	31	24	17																			
		30	45	42	39	35	30	23	15																				
		40	42	38	34	29	22	14																					
		50	38	33	28	21	12																						
		60	33	27	20	11																							
Shut-off PSI			95	86	78	69	60	52	43	34	26	17																	
33GS20	2	0			49	48	46	44	41	38	35	32	28	22															
		20	49	47	45	43	40	38	34	31	26	21	14																
		30	47	45	42	40	37	34	30	25	20	13																	
		40	44	42	40	37	33	29	24	19	11																		
		50	42	39	36	33	29	24	18																				
		60	39	36	32	28	23	16																					
Shut-off PSI			121	112	103	95	86	77	69	60	51	43	34	26															
33GS30	3	0				49	48	46	45	43	41	40	38	35	33	31	28	24	20	15									
		20	50	49	47	46	44	43	41	39	37	35	32	30	27	23	19	13											
		30	49	47	46	44	42	41	39	37	34	32	29	26	22	18	12												
		40	47	45	44	42	40	38	36	34	32	29	25	22	17	11													
		50	45	44	42	40	38	36	34	31	28	25	21	16															
		60	43	42	40	38	36	33	31	28	24	20	15																
Shut-off PSI			170	161	152	144	135	126	118	109	100	92	83	74	66	57	48	40	31	23									

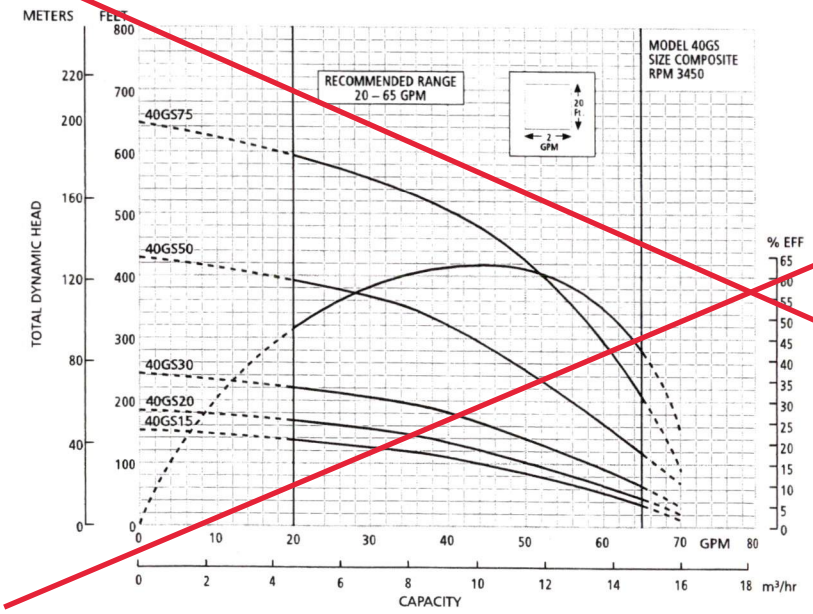
Horsepower Range 5-10, Recommended Range 10 – 50 GPM, 60 Hz, 3450 RPM

Pump Model	HP	PSI	Depth to Water in Feet/Ratings in GPM (Gallons per Minute)																										
			50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
33GS50	5	0		50	48	46	44	41	38	35	31	27	20	11															
		20	50	48	46	44	41	38	35	32	27	21	11																
		30	49	47	45	43	40	37	34	30	25	17																	
		40	48	46	44	41	39	36	32	27	21	12																	
		50	47	45	43	40	37	34	30	25	18																		
		60	46	44	42	39	36	32	28	22	13																		
Shut-off PSI			264	242	220	199	177	156	134	112	91	69	47	26															
33GS75	7½	0				50	48	47	46	44	42	40	38	36	33	31	27	23	19	14									
		20			50	49	47	46	44	42	41	38	36	34	31	28	24	19	14										
		30		50	49	48	46	45	43	42	40	37	35	32	29	26	22	17	12										
		40		50	49	47	46	44	43	41	39	36	34	31	28	24	20	15											
		50		49	48	47	45	43	42	40	38	35	33	30	26	22	17	12											
		60	50	49	47	46	44	43	41	39	37	34	31	28	24	20	15												
Shut-off PSI			415	393	371	350	328	306	285	263	241	220	198	176	155	133	111	90	68	47									
33GS100	10	0							49	48	46	45	43	42	41	40	39	38	36	34	31	28	25	22	18	13			
		20						50	48	46	45	43	42	41	40	39	38	36	34	31	29	25	22	18	14				
		30						49	47	45	44	43	42	41	40	38	37	35	33	30	27	24	20	16	12				
		40					50	48	46	45	44	43	42	40	39	38	36	34	32	29	26	22	18	14					
		50					49	47	45	44	43	42	41	40	39	37	35	33	30	27	24	20	16	12					
		60				50	48	46	45	44	43	42	41	39	38	36	34	32	29	26	22	19	14						
Shut-off PSI			551	529	508	486	464	443	421	399	378	356	334	313	291	269	248	226	205	183	161	140	118	96	75	53			

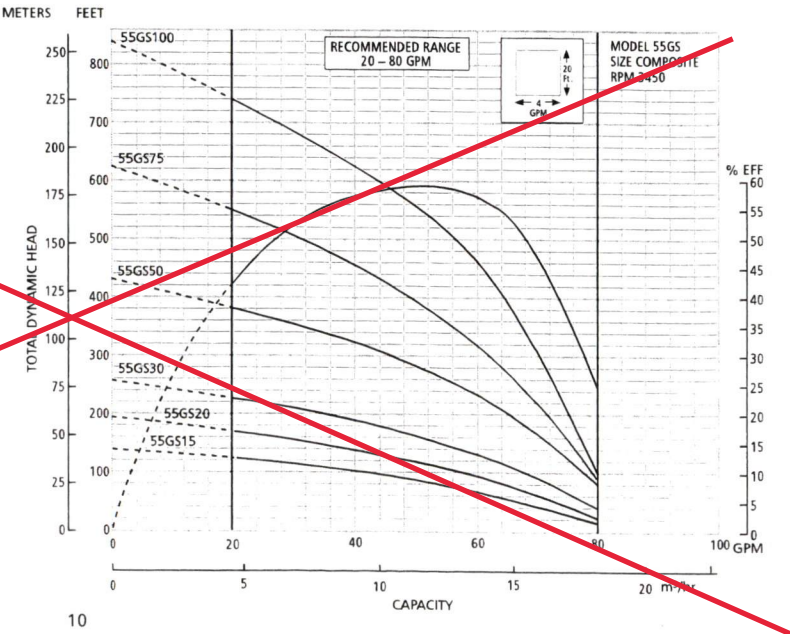
Model 33GS



Model 40GS



Model 55GS



STA-RITE® J/JB Series

General purpose centrifugal pumps

UL778/CSA108

The J/JB Series Pumps have a heavy-duty cast iron construction and are offered in high and medium head models, with Noryl® or silicon bronze impeller.

APPLICATIONS

Water systems and sprinkling...
for homes, farms and industry.

SPECIFICATIONS

Body and Seal Plate: Close-grained cast iron

Base: Steel 12 gauge

Impeller: J Series – Noryl

Impeller: JB Series – Silicon bronze

Shaft: 416 stainless steel

Mechanical Seal: Carbon/ceramic, Buna-N

FEATURES

1/3 through 2-1/2 HP: High head and medium head models, with heavy-duty motors, easy service design and four-position discharge.

Maximum Case Pressure:
JH & JBH – all HP max case 125PSI
JM & JBM – 1/3-1HP 75 PSI
JM & JBM – 1.5-2.5 HP 125 PSI

Drain Port: Provided for easy winterizing.

Medium Head Models: Deliver up to 110' of head with capacities to 140 GPM.

High Head Models: Deliver up to 140' of head with capacities to 90 GPM.

Easy Serviceability: All models include replaceable wear ring and feature back pull-out design.

J Series with Noryl Impellers:
Abrasion-resistant for normal applications with working temperatures to 140°F.

JB Series with Silicon Bronze:
JB pumps equipped with shaft seals rated for temperatures to 225°F.

ORDERING INFORMATION

HIGH HEAD

Catalog Number		HP	Pipe Tapping Sizes		Motor Voltage	Phase	Approx. Wt. Lbs.
Noryl® Impeller	Silicon Bronze Impeller		Suct.	Disch.			
JHB	JBHB	1/3	1-1/4"	1"	115/230	1	38
JHC	JBHC	1/2	1-1/4"	1"	115/230	1	39
JHC2	JBH2C		1-1/4"	1"	200	1	39
JHC3	JBHC3		1-1/4"	1"	208-230/460	3	39
JHD	JBHD	3/4	1-1/4"	1"	115/230	1	42
JH2D3	–		1-1/4"	1"	200	3	42
JHD3	JBHD3		1-1/4"	1"	208-230/460	3	42
JHE	JBHE	1	1-1/4"	1"	115/230	1	45
JH2E	JBH2E		1-1/4"	1"	200	1	45
JHE3	JBHE3		1-1/4"	1"	208-230/460	3	45
JHF	JBHF	1-1/2	1-1/4"	1"	115/230	1	49
JH2F	–		1-1/4"	1"	200	1	49
JH2F3	–		1-1/4"	1"	200	3	49
JHF3	JBHF3		1-1/4"	1"	208-230/460	3	49
JHG	JBHG	2	1-1/2"	1-1/4"	115/230	1	69
JHG3	–		1-1/2"	1-1/4"	200	3	69
JHG3	JBHG3		1-1/2"	1-1/4"	208-230/460	3	69
JHHG	JBHHG	2-1/2	2"	1-1/2"	115/230	1	74
JHHG3	JBHHG3		2"	1-1/2"	208-230/460	3	74

ORDERING INFORMATION

MEDIUM HEAD

Catalog Number		HP	Pipe Tapping Sizes		Motor Voltage	Phase	Approx. Wt. Lbs.
Noryl® Impeller	Silicon Bronze Impeller		Suct.	Disch.			
JMB	JBMB	1/3	1-1/4"	1"	115/230	1	38
JMC	JBMC	1/2	1-1/4"	1"	115/230	1	39
JMC3	JBMC3		1-1/4"	1"	208-230/460	3	39
JMD	JBMD	3/4	1-1/4"	1"	115/230	1	42
–	JBM2D		1-1/4"	1"	200	1	42
–	JBM2D3		1-1/4"	1"	200	3	42
JMD3	JBMD3		1-1/4"	1"	208-230/460	3	42
JME	JBME	1	1-1/2"	1-1/4"	115/230	1	43
JME	–		1-1/2"	1-1/4"	200	1	43
–	JBM2E3		1-1/2"	1-1/4"	200	3	43
JME3	JBME3		1-1/2"	1-1/4"	208-230/460	3	43
JMF	JBMF	1-1/2	1-1/2"	1-1/4"	115/230	1	54
JMF	–		1-1/2"	1-1/4"	200	1	54
–	JBM2F3		1-1/2"	1-1/4"	200	3	54
JMF3	JBMF3		1-1/2"	1-1/4"	208-230/460	3	54
JMG	JBMG	2	1-1/2"	1-1/4"	115/230	1	66
–	JBM2G3		1-1/2"	1-1/4"	200	3	66
JMG3	JBMG3		1-1/2"	1-1/4"	208-230/460	3	66
–	JBMMG	2-1/2	2"	1-1/2"	115/230	1	74
–	JBMMG3		2"	1-1/2"	208-230/460	3	74

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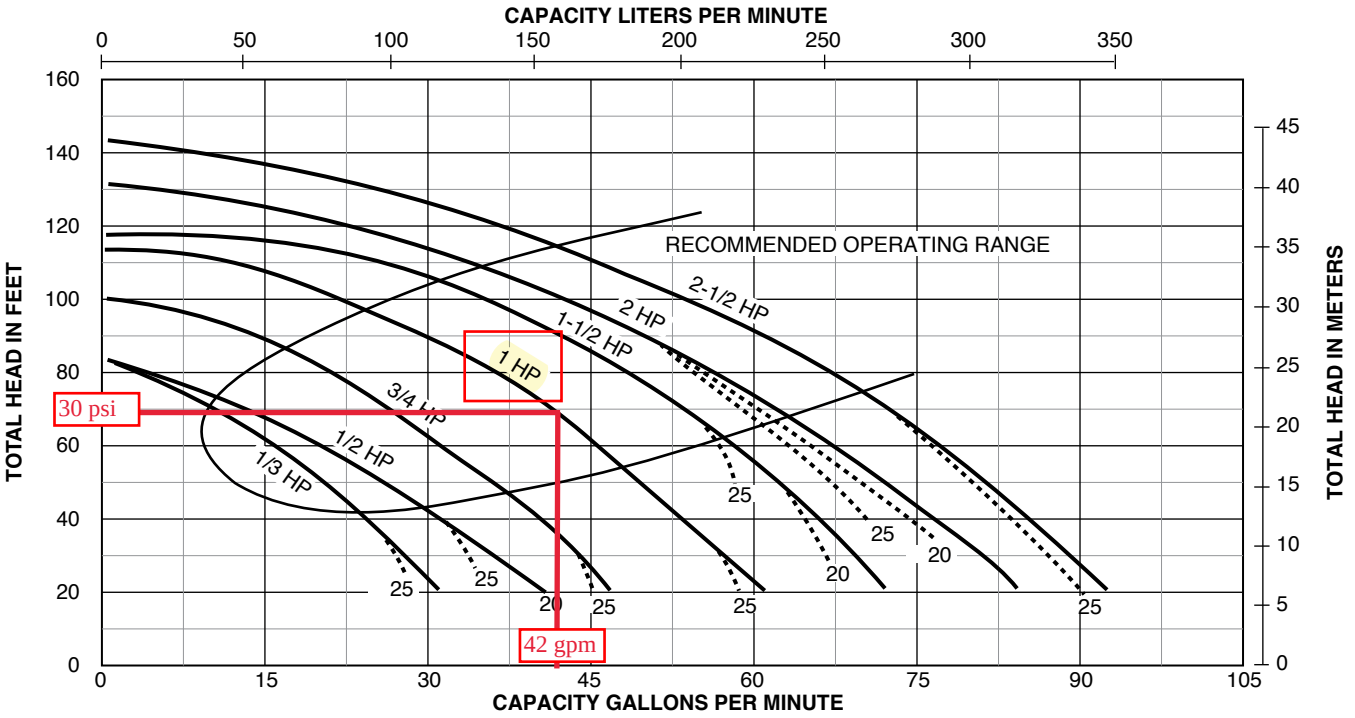
STA-RITE® J/JB Series

General purpose centrifugal pumps

PUMP PERFORMANCE: HIGH HEAD



NOTE: Dotted lines indicate performance reduction at high suction lift.

PUMP PERFORMANCE (Capacity in gallons per minute)

HIGH HEAD

HP	Discharge Pressure		Dynamic Suction Lift				
	PSI	Feet Head	5'	10'	15'	20'	25'
1/3	10	23.1	—	26	24	22	20
	20	46.2	20	18	15	11	10
	30	69.3	6	—	—	—	—
1/2	10	23.1	—	34	32	29	26
	20	46.2	25	21	18	15	11
	30	69.3	10	—	—	—	—
3/4	10	23.1	—	—	42	39	37
	20	46.2	35	32	30	28	26
	30	69.3	24	22	19	15	10
1	20	46.2	48	46	45	43	40
	30	69.3	38	35	31	28	25
	40	92.4	23	20	15	—	—

PUMP PERFORMANCE (Capacity in gallons per minute)

HIGH HEAD

HP	Discharge Pressure		Dynamic Suction Lift				
	PSI	Feet Head	5'	10'	15'	20'	25'
1-1/2	20	46.2	62	60	58	55	52
	30	69.3	50	48	44	40	37
	40	92.4	37	32	29	22	—
2	20	46.2	71	68	66	62	60
	30	69.3	60	57	52	59	45
	40	92.4	45	40	36	31	24
	50	115.5	22	15	—	—	—
2-1/2	20	46.2	81	79	76	74	71
	30	69.3	69	67	63	60	56
	40	92.4	56	51	47	44	38
	50	115.5	33	30	22	15	—

Tested and rated in accordance with Water Systems Council Standards.

NOTE: Pumps installed with a Pro-Source® tank require a 100 PSI relief valve. Pumps with a conventional tank require a 75 PSI relief valve. Relief valve must be capable of relieving entire flow of pump at relief pressure.

Chapter 10-7: Water Loss Action Plan, Water Rights, WUE

Water Loss Control Action Plan

Based on available meter records from the previous water system owner, Burton has an average Distribution System Leakage (DSL) of approximately 11% in the three-year span from 2021 to 2023 with an increasing trend. The goal of this action plan is to reduce documented average DSL to less than 10% in the next 10 years.

Control Methods

The Cooperative will use the following methods to reduce DSL:

1. Operational and maintenance use (e.g. flushing) will be metered and recorded.
2. Replacement of aged asbestos cement (AC) water main pipe will be accomplished.
3. Source meters and service meters will continue to be read on at least a bimonthly basis. The system will monitor significant discrepancies between consumed and produced water. Service meters are installed for all connections. New connections are required to be metered. All authorized use should be recorded so the system has a record of this usage.
4. Source meters will be checked for accuracy. Meters which are suspected of inaccurate readings shall be checked for calibration or replaced.

Schedule and Budget

The water system is in process of undertaking a USDA-funded distribution system replacement project which will replace all of the aged asbestos cement pipe. Continual monitoring of meters and operational consumption will be completed by the water system operator.

Water system customers are billed on usage. If users have a significantly high billing that is unexpected (such as during winter) they should check for leaks on their property after their service meter.

Projects

Metering of Operational Use
Target Date: 2025
Estimated Cost: $5,000
The system shall meter all operational use for turnover of tanks and flushing.

Distribution System Upgrades
Target Date: 2026
Estimated Cost: $2,100,000
Replace AC water main with 8-inch PVC, and install 6-inch looped distribution. Additional details for this project are included in WSP Table 8-4.

Concerns

There are no technical or economic concerns affecting the system's ability to implement the methods listed above. The 10-year budget reflects an adequate amount of reserve funding to perform the above projects. The Cooperative has established a budget which includes funding for payback of the USDA loan and a capital improvements reserve. Operating and capital reserves budget information is included in Section 10-14 of the WSP.

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 S1-*02376CWRIS	S06	0.1 CFS (45 GPM)		72.4 AF/Y[1]		45 gpm	0 gpm	23.8 AF/Y[2]	48.6 AF/Y	45 gpm	0 gpm	16.9 AF/Y	55.5 AF/Y	45 gpm	0 gpm	19.2 AF/Y	53.2 AF/Y
2 G1-043145CL	S06, S11	200 GPM		80 AF/Y		179 gpm	21 gpm	79.4 AF/Y[2]	0.6 AF/Y	200 gpm	0 gpm	80 AF/Y	0 AF/Y	200 gpm	0 gpm	80 AF/Y	0 AF/Y
3																	
4																	
	TOTALS =	245 gpm		152.4 AF/Y		224 gpm[3]	21 gpm	103.2 AF/Y	49.2 AF/Y	245 gpm	0 gpm	96.9 AF/Y	55.5 AF/Y	245 gpm	0 gpm	99.2 AF/Y	53.2 AF/Y
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. An annual diversion quantity is not specified for this water right; however, a continuous diversion of 0.1 cfs would equate to approximately 72.4 acre-feet per year (afy), which would be considered the maximum annual diversion allowed under this certificate.
2. Current production annual withdrawal is based on 2023 wellfield source meter records from Burton Water Company for the respective WFI source numbers.
3. Current production maximum instantaneous flow rate withdrawn is based on the memorandum titled Burton Water Cooperative Source Metering and dated June 2, 2025 from the water system operator to the board members.

S. F. No. 369—1923. Approved as to Form by Dept. of Efficiency. 8809.

CERTIFICATE RECORD NO. 1, PAGE NO. 405

STATE OF WASHINGTON, COUNTY OF King

CERTIFICATE OF WATER RIGHT

(For rights perfected under original, enlargement or secondary permits.)

(In accordance with the provisions of Chapter 117, Laws of Washington for 1917, and the regulations of the State Hydraulic Engineer thereunder.)

This is to certify, that P. M. Armbuster, *of* Burton, *State of* Washington, *has made proof to the satisfaction of the State Supervisor of Hydraulics of Washington, of a right to the use of the waters of* unnamed springs, *a tributary of* ..., *for the purposes of* municipal supply, *under* Appropriation *Permit No.* 1213, *of the State Supervisor of Hydraulics, and that said right to the use of said waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Hydraulics of Washington and entered of record in Volume* 1, *at Page* 405, *on the* 22nd *day of* May, *19*30; *that the right hereby confirmed dates from* August 1st, *19*28; *that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed* 0.1 *cubic feet per second.*

A description of the lands under such right, and to which the water hereby confirmed is appurtenant, or if for other purposes, the place where such water is put to beneficial use, is as follows:

PLACE OF USE			LEGAL SUBDIVISION	No. Acres Described in Permit	No. Acres Actually Irrigated
Section	Township	Range			
13	22 N.	2 E.W.M.	Town of Burton and adjacent		
			territory		

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 Section 39, Chapter 117, Session Laws 1917.

WITNESS the seal and signature of the State Supervisor of Hydraulics affixed this 22nd *day of* May, *19*30.

Chas. J. Barthel
State Supervisor of Hydraulics.

ENGINEERING DATA
O.K. J.K.C.

Permit No. 1213

Certificate of Water Right

Recorded in the office of State Supervisor of Hydraulics, Olympia, Washington, in Book No. 1 *of Water Right Certificates, on Page* 405 *, on the* 22nd *day of* May *,* *19* 30 *.*

STATE OF WASHINGTON,
County of King } *ss.*

I certify that the within was received and duly recorded by me in Volume ..... *of Book of Water Right Certificates, Page* ..... *on the* ..... *day of* ..... *, 19* .....

.....

JAY THOMAS, PUBLIC PRINTER

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
WATER RIGHT CLAIMS REGISTRATION

WATER RIGHT CLAIM

RECEIVED
DEPARTMENT OF ECOLOGY
SEP 21 730517 44
CASH ___ OTHER ___ NONE ✓

1. NAME GERALD R. GARRISON

ADDRESS RT 1 Box 196 B

VASHON, WASH. ZIP CODE 98070

2. SOURCE FROM WHICH THE RIGHT TO TAKE AND MAKE USE OF WATER IS CLAIMED: GROUND WATER (SURFACE OR GROUND WATER)

W.R.I.A. 15 (LEAVE BLANK)

A. IF GROUND WATER, THE SOURCE IS SHALLOW WELLS

B. IF SURFACE WATER, THE SOURCE IS ___

3. THE QUANTITIES OF WATER AND TIMES OF USE CLAIMED:

A. QUANTITY OF WATER CLAIMED 200 gpm (CUBIC FEET PER SECOND OR GALLONS PER MINUTE) PRESENTLY USED 150 gpm

B. ANNUAL QUANTITY CLAIMED 80 (ACRE FEET PER YEAR) PRESENTLY USED 60

C. IF FOR IRRIGATION, ACRES CLAIMED ___ PRESENTLY IRRIGATED ___

D. TIME(S) DURING EACH YEAR WHEN WATER IS USED: ALL YEAR

4. DATE OF FIRST PUTTING WATER TO USE: MONTH MAY YEAR 1930

5. LOCATION OF THE POINT(S) OF DIVERSION/WITHDRAWAL: 340 FEET SOUTH AND 460 FEET WEST FROM THE NE CORNER OF SECTION SE 1/4 SEC. 13

BEING WITHIN SE 1/4 OF SECTION 13 T. 22 N., R. 2 E. (E. or W.) W.M.

IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, LOT ___ BLOCK ___ OF ___
(GIVE NAME OF PLAT OR ADDITION)

6. LEGAL DESCRIPTION OF LANDS ON WHICH THE WATER IS USED: BEGINNING AT A POINT 240 FT SOUTH AND 360 FT WEST OF NE CORNER OF SE 1/4 SECTION 13, T22N, R2E, WM., THENCE SOUTH 230 FT, THENCE WEST 170 FT, THENCE NORTH 230 FT, AND EAST 170 FT TO BEGINNING.

COUNTY KING

7. PURPOSE(S) FOR WHICH WATER IS USED: COMMUNITY WATER SUPPLY (PUBLIC UTILITY) 260 HOMES SERVED BY BURTON WATER CO.

8. THE LEGAL DOCTRINE(S) UPON WHICH THE RIGHT OF CLAIM IS BASED: RIPARIAN

DO NOT USE THIS SPACE

THE FILING OF A STATEMENT OF CLAIM DOES NOT CONSTITUTE AN ADJUDICATION OF ANY CLAIM TO THE RIGHT TO USE OF WATERS AS BETWEEN THE WATER USE CLAIMANT AND THE STATE OR AS BETWEEN ONE OR MORE WATER USE CLAIMANTS AND ANOTHER OR OTHERS. THIS ACKNOWLEDGEMENT CONSTITUTES RECEIPT FOR THE FILING FEE.

DATE RETURNED ___ THIS HAS BEEN ASSIGNED WATER RIGHT CLAIM REGISTRY NO.

DEC 7 730431 45

I HEREBY SWEAR THAT THE ABOVE INFORMATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

X Gerald R. Garrison

DATE Sept 20, 1973

(IF CLAIM FILED BY DESIGNATED REPRESENTATIVE, PRINT OR TYPE FULL NAME AND MAILING ADDRESS OF AGENT BELOW)

☐ ADDITIONAL INFORMATION RELATING TO WATER QUALITY AND/OR WATER CONSERVATION IS AVAILABLE

DEPARTMENT OF ECOLOGY

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

October 30, 2020

Certified: 9489 0090 0027 6066 6263 72

James Garrison
Burton Water Company
PO Box 1938
Vashon, WA 98070

Re: Water Right Claim No. 043145

Dear Mr. Garrison:

This is in response to the August 25, 2020 request to amend Water Right Claim No. 043145, submitted by Ben Lee of Landau Associates on behalf of the Burton Water Company.

The Amended Claim request regarded both the point of withdrawal and place of use descriptions for this claim. We have determined that Burton Water Company's request to amend the point of withdrawal description meets the requirements of RCW 90.14.051(3), which authorizes claim amendments necessary to address ministerial errors. The enclosed order confirms authorization to change the *point of withdrawal*.

However, as explained in the enclosed order, the request to amend the *place of use* description does not meet this requirement, so that particular request has been denied. As a matter of law, however, so long as the claim is used for municipal water supply purposes (as defined by RCW 90.03.015(3)), the place of use for this claim will be the service area approved by the state Department of Health (RCW 90.03.386).

I am enclosing Order No. 19416, which further explains the above decision. If you wish to appeal the enclosed order, you may do so within thirty days of your receipt of the order. The appeal procedure is described in the order.

If you have any questions, please contact Jeff Marti at jeff.marti@ecy.wa.gov or 360-407-6627.

Sincerely,

Mary Verner

Mary Verner, Program Manager
Water Resources Program

cc: Ben Lee, Landau Associates

Enclosure

DEPARTMENT OF ECOLOGY

IN THE MATTER OF FILING IN THE	**) ORDER NO 19416**
WATER RIGHTS CLAIM REGISTRY AN	)
AMENDMENT BY BURTON WATER COMPANY	)
FOR WATER RIGHT CLAIM NO. 043145	)

The Department of Ecology is responsible for the Water Rights Claims Registry and amendments to the Water Rights Claims Registry, Chapter 90.14 RCW. RCW 90.14.065 states that any person or entity, or their successor, having a statement of claim on file with the Water Rights Claims Registry on April 20, 1987, may submit an amendment to the statement of claim if the submitted amendment is based on:

1. An error in estimation of the quantity of the applicant's water claim prescribed in RCW 90.14.051 if the applicant provides reasons for the failure to claim such a right in the original claim;

2. A change in circumstances not foreseeable at the time the original claim was filed, if such a change in circumstances relates only to the manner of transportation or diversion of the water and not to the use or quantity of such water; or

3. The amendment is ministerial in nature.

The Department of Ecology shall accept any such submission and file the same in the registry unless the Department by written determination concludes that the requirements of any of subsections (1), (2), or (3) of RCW 90.14.065 have not been satisfied.

Burton Water Company (BWC) submitted a request on August 25, 2020 to amend water right claim no. 043145. This claim is referenced as water right no. G1-043145CL in the Water Right Tracking System maintained by the Department of Ecology. The original claim was signed by Gerald Garrison on September 20, 1973 for the purpose of community water supply and received by the Department of Ecology on September 21, 1973.

BWC seeks to amend the point of withdrawal and the place of use descriptions for the original claim, but leave the other attributes of the claim – namely, the purpose and quantities -- unchanged.

Point of Withdrawal: BWC The original claim describes the groundwater source as consisting of "shallow wells" (plural) located at a specific point (singular). The point location is described as an enumerated distance and direction from the corner of a quarter section. BWC states that that particular description was meant to indicate the general vicinity of the original

wellfield, not the location of a single well. It is worth noting that while the claim forms enabled claimants to claim the use of multiple sources, the forms only included enough spaces for a single location description.

BWC requests that the claim be amended to reflect that the claimed withdrawal occurred at the overall location of the wellfield within the quarter section. The request includes documentation supporting the existence of multiple wells prior to 1949 (See Purchase and Sales Agreement and August 20, 2020 Declaration by James Garrison, BWC employee).

Additionally, the request states:

> According to BWC staff, there are four historical wells (old wells) on the BWC property, at least two of which would have likely been in place and used prior to 1945 and therefore were likely subject of the claimed multiple "shallow wells...The historical timing of the advent of portable drilling technologies in the 1940s indicates that the two hand-dug wells were likely constructed in the 1930s or earlier (August 25, 2020 Request Letter from Ben Lee, Landau Associates).

Response: Ministerial errors can consist of amending an item on the claim or clarifying information that conflicts or is contrary to the original claimant's intent.
In the original claim form, there is an inconsistency between the use of a singular point location to represent the location of multiple points. An amended claim will clarify the conflicting information.

The request to amend the point of withdrawal description from a single point to a wellfield area description located within SE ¼ of Section 13, T22N, R2EWM is **APPROVED.**

Place of Use BWC also requests that the Place of Use description on the claim be amended. According to BWC, "...the claimed place of use on the original claim form indicates a small area within the SE ¼ of Section 13. It is unknown what was intended with the claimed place of use location but it is obvious that the claimed location could not include the claimed 260 homes (at the time the claim was filed). The claimed place of use should be amended to 'the service area of Burton Water Co.'"

Response: Ministerial errors can consist of amending an item on the claim or clarifying information that conflicts or is contrary to the original claimant's intent

For this request, it is not clear that the place of use description is contrary to the intent of the original claim because the original intent itself is not clear. BWC states that, for the original claim, "It is unknown what was intended with the claimed place of use location...."

While BWC states, "...it is obvious that the claimed location could not include the claimed 260 homes (at the time the claim was filed) ...", the purpose of a claims registration period was to

register the use of water perfected before the establishment of the groundwater permitting system in 1945, not the use of water occurring at the time the claim was filed.

Because it is not clear that the place of use description is inconsistent with the intent the original claim, the request to amend the place of use description on Claim 043145 is **DENIED.**

SIGNED and DATED at Lacey, Washington, this 30 day of October, 2020.

Mary Verner for Jeff Marti
Jeff Marti, Policy Development and Operations Section

I hereby concur with this determination. This constitutes a final Order and Decision in this matter.

Mary Verner
Mary Verner, Program Manager,
Water Resources Program

PLEASE NOTE that the final determination of the validity, extent, and other details associated with a claim registered in accordance with Chapter 90.14 RCW ultimately lies with the Superior Court through the adjudication process provided for by RCW 90.03.110 through 90.03.240.

Your Right To Appeal

You have a right to appeal this Order to the Pollution Control Hearings Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of the Order.

File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.

- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

- You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel RD SW Ste 301 Tumwater, WA 98501	**Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

For additional information visit the Environmental Hearings Office Website: http://www.eho.wa.gov. To find laws and agency rules visit the Washington State Legislature Website: http://www1.leg.wa.gov/CodeReviser.

Chapter 10-8: Water Quality

Water Quality Monitoring Schedule

System: BURTON WATER COMPANY INC **PWS ID: 09800 L** **Region: NORTHWEST**
Contact: Evan A Simmons **Group: A - Comm** **County: KING**

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

	Oct 2023	Nov 2023	Dec 2023	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024
Coliform Monitoring Population	852	850	858	850	850	851	854	853	904	1047	1053	885
Number of Routine Samples Required	1	1	1	1	1	1	1	1	1	2	2	1

- 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	10	Jan 2022 - Dec 2024	standard - 3 year	07/29/2021	Jul 2024	
Asbestos	0	Jan 2020 - Dec 2028	waiver - 9 year	09/20/1995		
Total Trihalomethane (THM)	1	Jan 2023 - Dec 2023	reduced - 1 year	11/01/2022	***Oct 2023***	
Halo-Acetic Acids (HAA5)	1	Jan 2023 - Dec 2023	reduced - 1 year	11/01/2022	***Oct 2023***	

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 no more than 12 hours (e.g. overnight).
- If you are sampling from a faucet that has hot water, make sure cold water is the last water to run through the faucet before it sits overnight.
- If your sampling frequency is annual or every 3 years, collect samples between June 1 and September 30.

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.

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 *ALL WELL POINTS & WELLS* *Well Field* *Use - Permanent* *Susceptility - High*

Test Panel/Analyte	# Samples Required	Compliance Period	Frequency	Last Sample Date	Next Sample Due	
Nitrate	1	Jan 2023 - Dec 2023	standard - 1 year	03/29/2022	***Mar 2023***	***Past Due***
Complete Inorganic (IOC)	1	Jan 2020 - Dec 2028	waiver - 9 year	08/07/2019	Aug 2028	
Volatile Organics (VOC)	1	Jan 2020 - Dec 2025	waiver - 6 year	04/12/2021		
Herbicides	1	Jan 2023 - Dec 2031	waiver - 9 year	04/25/2018	Apr 2027	
Pesticides	0	Jan 2023 - Dec 2025	waiver - 3 year	04/29/2009		
PFAS	0	Jan 2023 - Dec 2025	standard - 3 year	03/29/2022		
Soil Fumigants	0	Jan 2023 - Dec 2025	waiver - 3 year			
Gross Alpha	1	Jan 2020 - Dec 2025	standard - 6 year	04/12/2021		
Radium 228	1	Jan 2020 - Dec 2025	standard - 6 year	04/12/2021		

Source S11 *Wellfield S07 Wells* *Well Field* *Use - Permanent* *Susceptility - High*

Test Panel/Analyte	# Samples Required	Compliance Period	Frequency	Last Sample Date	Next Sample Due	
Nitrate	1	Jan 2023 - Dec 2023	standard - 1 year	09/12/2022	***Sep 2023***	
Complete Inorganic (IOC)	1	Jan 2020 - Dec 2028	waiver - 9 year	08/20/2019	Oct 2024	
Volatile Organics (VOC)	1	Jan 2023 - Dec 2025	standard - 3 year	06/07/2022	Jun 2025	
Herbicides	1	Jan 2023 - Dec 2025	standard - 3 year	06/07/2022	Jun 2025	
Pesticides	1	Jan 2023 - Dec 2025	standard - 3 year	06/07/2022	Jun 2025	
PFAS	0	Jan 2023 - Dec 2025	standard - 3 year	03/29/2022		
Soil Fumigants	0	Jan 2023 - Dec 2025	waiver - 3 year			
Gross Alpha	1	Jan 2020 - Dec 2025	standard - 6 year	05/09/2023		
Radium 228	1	Jan 2020 - Dec 2025	standard - 6 year	05/09/2023		

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):	07/01/2023
Submit CCR certification form to ODW (Community systems only):	10/01/2023
Submit Water Use Efficiency report online to ODW and to customers (Community and other municipal water systems only):	07/01/2023
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

Special Notes

None

Northwest Regional Water Quality Monitoring Contacts

For questions regarding chemical monitoring:	Steve Hulsman: (253) 395-6777 or Steve.Hulsman@doh.wa.gov
For questions regarding DBPs:	Steve Hulsman: (253) 395-6777 or Steve.Hulsman@doh.wa.gov
For questions regarding coliform bacteria and microbial issues:	Ingrid Salmon: (253) 395-6754 or ingrid.salmon@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.

Washington State Department of Health

Division of Environmental Health
Office of Drinking Water

Help

View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	9/20/1995
Lab Number	119
Lab Name	Eurofins EPK Built Enviro. Testing
Sample Number	95063
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	ASB-ASBESTOS
Sample Location	24115 99TH AVE SW
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0115	ASBESTOS	EQ	0.1790	7.0000	0.2000	MFL

Records 1 - 1 of 1

Links to external resources are provided as a public service and do not imply endorsement by the Washington State Department of Health

Department of Health, Office of Drinking Water

Street Address:
243 Israel Road S.E. 2nd floor
Tumwater, WA 98501

Mail:
PO BOX 47822
Olympia, WA 98504-7822

Comments or questions regarding this Web site? Send email to Environmental Health Application Testing and Support

View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	10/24/2023
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	65723
Source	Dist
Analyte Group	DBP-DISINFECTION BY PRODUCTS
Test Panel	HAA5-HALO-ACETIC ACIDS
Sample Location	jensen pt
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0411	MONOCHLOROACETIC ACID	LT	2.0000		2.0000	ug/L
0412	DICHLOROACETIC ACID	LT	1.0000		1.0000	ug/L
0413	TRICHLOROACETIC ACID	LT	1.0000		1.0000	ug/L
0414	MONOBROMOACETIC ACID	LT	1.0000		1.0000	ug/L
0415	DIBROMOACETIC ACID	LT	1.0000		1.0000	ug/L
0417	BROMOCHLOROACETIC ACID	LT	1.0000		1.0000	ug/L
0416	HAA(5)	ND		60.4000		ug/L

Records 1 - 7 of 7

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	10/24/2023
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	65723
Source	Dist
Analyte Group	DBP-DISINFECTION BY PRODUCTS
Test Panel	THM-TOTAL TRIHALOMETHANE
Sample Location	jensen pt
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0027	CHLOROFORM	EQ	0.8000		0.5000	ug/L
0028	BROMODICHLOROMETHANE	EQ	0.7000		0.5000	ug/L
0029	DIBROMOCHLOROMETHANE	EQ	0.5000		0.5000	ug/L
0031	TOTAL TRIHALOMETHANE	EQ	2.0000	80.4000		ug/L
0030	BROMOFORM	LT	0.5000		0.5000	ug/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	7/29/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	56518
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	10xxxxxxxxxst
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0009	LEAD	LT	0.0010		0.0010	mg/L
0023	COPPER	LT	0.0200		0.0200	mg/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	7/22/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	56512
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	10xxxxxxxxxt
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0023	COPPER	EQ	0.5660		0.0200	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	7/25/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	56514
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	23xxxxxxxxsw
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0009	LEAD	EQ	0.0011		0.0010	mg/L
0023	COPPER	EQ	0.8860		0.0200	mg/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	7/24/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	56511
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	24xxxxxxxxxw
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0023	COPPER	EQ	0.0524		0.0200	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	7/28/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	56510
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	10xxxxxxxxxt
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0009	LEAD	EQ	0.0014		0.0010	mg/L
0023	COPPER	EQ	0.1170		0.0200	mg/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	7/23/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	56509
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	97xxxxxxxxxr
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0023	COPPER	EQ	0.0216		0.0200	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	7/19/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	56516
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	23xxxxxxxxxw
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0023	COPPER	EQ	0.0677		0.0200	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	7/18/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	56513
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	24xxxxxxxxxsw
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0009	LEAD	EQ	0.0010		0.0010	mg/L
0023	COPPER	EQ	0.0894		0.0200	mg/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	7/29/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	56517
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	89xxxxxxxxxdr
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0009	LEAD	EQ	0.0011		0.0010	mg/L
0023	COPPER	EQ	0.1060		0.0200	mg/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	7/20/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	56515
Source	Dist
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	LCR-LEAD COPPER
Sample Location	n/xxxxxxxxx/a
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0009	LEAD	EQ	0.0030		0.0010	mg/L
0023	COPPER	EQ	1.3700		0.0200	mg/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	4/25/2018
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	29357
Source	06
Analyte Group	SOC-SYNTHETIC ORGANIC CONTAMINANTS
Test Panel	HERB1-CHLOROPHENOXY HERBICIDES
Sample Location	sta A
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0037	2,4 - D	LT	0.1000	70.0000	0.1000	ug/L
0038	2,4,5 TP (SILVEX)	LT	0.2000	50.0000	0.2000	ug/L
0134	PENTACHLOROPHENOL	LT	0.0400	1.0000	0.0400	ug/L
0135	2,4 DB	LT	1.0000		1.0000	ug/L
0137	DALAPON	LT	1.0000	200.0000	1.0000	ug/L
0138	DICAMBA	LT	0.2000		0.2000	ug/L
0139	DINOSEB	LT	0.2000	7.0000	0.2000	ug/L
0140	PICLORAM	LT	0.1000	500.0000	0.1000	ug/L
0223	ACIFLUORFEN	LT	2.0000		2.0000	ug/L
0225	DCPA ACID METABOLITES	LT	0.1000		0.1000	ug/L
0226	3,5 DICHLORBENZOIC ACID	LT	0.5000		0.5000	ug/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	8/7/2019
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	57477
Source	06
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	IOC-COMPLETE INORGANIC ANALYSIS
Sample Location	sta A
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0005	BARIUM	EQ	0.0040	2.0000	0.1000	mg/L
0007	CHROMIUM	EQ	0.0010	0.1000	0.0070	mg/L
0014	SODIUM	EQ	6.4900		5.0000	mg/L
0015	HARDNESS	EQ	62.2000		10.0000	mg/L
0016	CONDUCTIVITY	EQ	155.0000	700.0000	70.0000	Umhos/cm
0017	TURBIDITY	EQ	0.1300		0.1000	NTU
0020	NITRATE-N	EQ	1.6300	10.0000	0.5000	mg/L
0021	CHLORIDE	EQ	4.8000	250.0000	20.0000	mg/L
0022	SULFATE	EQ	11.1000	250.0000	50.0000	mg/L
0023	COPPER	EQ	0.0050		0.0200	mg/L
0026	TDS-TOTAL DISSOLVED SOLIDS	EQ	106.0000	500.0000	100.0000	mg/L
0161	TOTAL NITRATE/NITRITE	EQ	1.6300		0.5000	mg/L
0004	ARSENIC	LT	0.0010	0.0104	0.0010	mg/L
0006	CADMIUM	LT	0.0010	0.0050	0.0010	mg/L
0008	IRON	LT	0.1000	0.3000	0.1000	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L
0010	MANGANESE	LT	0.0100	0.0500	0.0100	mg/L
0011	MERCURY	LT	0.0002	0.0020	0.0002	mg/L
0012	SELENIUM	LT	0.0020	0.0500	0.0020	mg/L
0013	SILVER	LT	0.1000	0.1000	0.1000	mg/L
0018	COLOR	LT	15.0000	15.0000	15.0000	CU
0019	FLUORIDE	LT	0.2000	4.0000	0.2000	mg/L
0024	ZINC	LT	0.2000	5.0000	0.2000	mg/L
0110	BERYLLIUM	LT	0.0003	0.0040	0.0003	mg/L
0111	NICKEL	LT	0.0050	0.1000	0.0050	mg/L

Records 1 - 25 of 29

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	8/7/2019
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	57477
Source	06
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	IOC-COMPLETE INORGANIC ANALYSIS
Sample Location	sta A
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0112	ANTIMONY	LT	0.0030	0.0060	0.0030	mg/L
0113	THALLIUM	LT	0.0010	0.0020	0.0010	mg/L
0114	NITRITE-N	LT	0.1000	1.0000	0.1000	mg/L
0116	CYANIDE	LT	0.0500	0.2000	0.0500	mg/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	3/29/2022
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	21113
Source	06
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	NIT-NITRATE SUITE
Sample Location	station a
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0020	NITRATE-N	EQ	1.1900	10.0000	0.5000	mg/L

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Collect Date	3/29/2022
Lab Number	094
Lab Name	Eurofins Eaton LLC - Pomona
Sample Number	10553
Source	06
Analyte Group	SOC-SYNTHETIC ORGANIC CONTAMINANTS
Test Panel	PFAS533-PER- & POLY-FLUOROALKYL SBSTNCS 533
Sample Location	station A
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0429	(PFBS) PFbutane sulfonic acid	LT	2.0000		2.0000	ng/L
0430	(PFHpA) PFheptanoic acid	LT	2.0000		2.0000	ng/L
0431	(PFHxS) PFhexane sulfonic acid	LT	2.0000		2.0000	ng/L
0432	(PFNA) PFnonanoic acid	LT	2.0000		2.0000	ng/L
0433	(PFOS) PFoctane sulfonic acid	LT	2.0000		2.0000	ng/L
0434	(PFOA) PFoctanoic acid	LT	2.0000		2.0000	ng/L
0435	(PFHxA) PFhexanoic acid	LT	2.0000		2.0000	ng/L
0436	(PFDA) PFdecanoic acid	LT	2.0000		2.0000	ng/L
0437	(PFUnA) PFundecanoic acid	LT	2.0000		2.0000	ng/L
0438	(PFDoA) PFdodecanoic acid	LT	2.0000		2.0000	ng/L
0445	(ADONA) 4,8-Dioxa-3H-perfluorononan	Less Than			2.0000	ng/L
0446	(9CI-PF3ONS) 9-Chlorohexadecafluor	LT	2.0000		2.0000	ng/L
0447	(HFPO-DA) Hexafluoropropylene oxide	LT	2.0000		2.0000	ng/L
0448	(11CI-PF3OUdS) 11-Chloroeicosafluor	LT	2.0000		2.0000	ng/L
0450	(4:2FTS) H-PFhexane sulfonic acid	LT	2.0000		2.0000	ng/L
0451	(6:2FTS) H-PFoctane sulfonic acid	LT	2.0000		2.0000	ng/L
0452	(8:2FTS) H-PFdecane sulfonic acid	LT	2.0000		2.0000	ng/L
0453	(NFDHA) NonaF-dioxaheptanoic acid	LT	2.0000		2.0000	ng/L
0454	(PFBA) PFbutanoic acid	LT	2.0000		2.0000	ng/L
0455	(PFHpS) PFheptanesulfonic acid	LT	2.0000		2.0000	ng/L
0456	(PFMBA) PF-4-methoxybutanoic acid	LT	2.0000		2.0000	ng/L
0457	(PFMPA) PF-3-methoxypropanoic acid	LT	2.0000		2.0000	ng/L
0458	(PFPeA) PFpentanoic acid	LT	2.0000		2.0000	ng/L
0459	(PFPeS) PFpentanesulfonic acid	LT	2.0000		2.0000	ng/L
0460	(PFEESA)PF(2-ethoxyethane)slfnc acd	LT	2.0000		2.0000	ng/L

Records 1 - 25 of 25

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	4/12/2021
Lab Number	156
Lab Name	Pace Analytical Srvs,LLC-Pittsburgh
Sample Number	09001
Source	06
Analyte Group	RAD-RADIONUCLIDES
Test Panel	RAD-RADIONUCLIDES
Sample Location	s06
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0165	GROSS ALPHA	LT	3.0000		3.0000	pCi/L
0166	RADIUM 228	LT	1.0000	5.0000	1.0000	pCi/L

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Collect Date	4/12/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	24233
Source	06
Analyte Group	VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel	VOC1-VOLATILE ORGANIC
Sample Location	s06
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0027	CHLOROFORM	LT	0.5000		0.5000	ug/L
0028	BROMODICHLOROMETHANE	LT	0.5000		0.5000	ug/L
0029	DIBROMOCHLOROMETHANE	LT	0.5000		0.5000	ug/L
0030	BROMOFORM	LT	0.5000		0.5000	ug/L
0045	VINYL CHLORIDE	LT	0.5000	2.0000	0.5000	ug/L
0046	1,1 DICHLOROETHYLENE	LT	0.5000	7.0000	0.5000	ug/L
0047	1,1,1 TRICHLOROETHANE	LT	0.5000	200.0000	0.5000	ug/L
0048	CARBON TETRACHLORIDE	LT	0.5000	5.0000	0.5000	ug/L
0049	BENZENE	LT	0.5000	5.0000	0.5000	ug/L
0050	1,2 DICHLOROETHANE	LT	0.5000	5.0000	0.5000	ug/L
0051	TRICHLOROETHYLENE	LT	0.5000	5.0000	0.5000	ug/L
0052	1,4 DICHLOROBENZENE	LT	0.5000	75.0000	0.5000	ug/L
0053	CHLOROMETHANE	LT	0.5000		0.5000	ug/L
0054	BROMOMETHANE	LT	0.5000		0.5000	ug/L
0055	CHLOROETHANE	LT	0.5000		0.5000	ug/L
0056	METHYLENE CHLORIDE(DICHLOROMETHANE)	LT	0.5000	5.0000	0.5000	ug/L
0057	TRANS- 1,2 DICHLOROETHYLENE	LT	0.5000	100.0000	0.5000	ug/L
0058	1,1 DICHLOROETHANE	LT	0.5000		0.5000	ug/L
0059	2,2 DICHLOROPROPANE	LT	0.5000		0.5000	ug/L
0060	CIS- 1,2 DICHLOROETHYLENE	LT	0.5000	70.0000	0.5000	ug/L
0062	1,1 DICHLOROPROPENE	LT	0.5000		0.5000	ug/L
0063	1,2 DICHLOROPROPANE	LT	0.5000	5.0000	0.5000	ug/L
0064	DIBROMOMETHANE	LT	0.5000		0.5000	ug/L
0065	CIS- 1,3 DICHLOROPROPENE	LT	0.5000		0.5000	ug/L
0066	TOLUENE	LT	0.5000	1000.0000	0.5000	ug/L

View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	4/12/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	24233
Source	06
Analyte Group	VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel	VOC1-VOLATILE ORGANIC
Sample Location	s06
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0067	1,1,2 TRICHLOROETHANE	LT	0.5000	5.0000	0.5000	ug/L
0068	TETRACHLOROETHYLENE	LT	0.5000	5.0000	0.5000	ug/L
0069	TRANS- 1,3 DICHLOROPROPENE	LT	0.5000		0.5000	ug/L
0070	1,3 DICHLOROPROPANE	LT	0.5000		0.5000	ug/L
0071	CHLOROBENZENE	LT	0.5000	100.0000	0.5000	ug/L
0072	1,1,1,2 TETRACHLOROETHANE	LT	0.5000		0.5000	ug/L
0073	ETHYLBENZENE	LT	0.5000	700.0000	0.5000	ug/L
0074	M/P XYLENES (MCL FOR TOTAL)	LT	0.5000		0.5000	ug/L
0075	O- XYLENE (MCL FOR TOTAL)	LT	0.5000		0.5000	ug/L
0076	STYRENE	LT	0.5000	100.0000	0.5000	ug/L
0078	BROMOBENZENE	LT	0.5000		0.5000	ug/L
0079	1,2,3 TRICHLOROPROPANE	LT	0.5000		0.5000	ug/L
0080	1,1,2,2 TETRACHLOROETHANE	LT	0.5000		0.5000	ug/L
0081	O- CHLOROTOLUENE	LT	0.5000		0.5000	ug/L
0082	P- CHLOROTOLUENE	LT	0.5000		0.5000	ug/L
0083	M- DICHLOROBENZENE	LT	0.5000		0.5000	ug/L
0084	1,2 DICHLOROBENZENE	LT	0.5000	600.0000	0.5000	ug/L
0085	TRICHLOROFLUOROMETHANE	LT	0.5000		0.5000	ug/L
0086	BROMOCHLOROMETHANE	LT	0.5000		0.5000	ug/L
0087	ISOPROPYLBENZENE	LT	0.5000		0.5000	ug/L
0088	N-PROPYLBENZENE	LT	0.5000		0.5000	ug/L
0089	1,3,5 TRIMETHYLBENZENE	LT	0.5000		0.5000	ug/L
0090	TERT- BUTYLBENZENE	LT	0.5000		0.5000	ug/L
0091	1,2,4 TRIMETHYLBENZENE	LT	0.5000		0.5000	ug/L
0092	SEC- BUTYLBENZENE	LT	0.5000		0.5000	ug/L

Records 26 - 50 of 61

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	4/12/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	24233
Source	06
Analyte Group	VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel	VOC1-VOLATILE ORGANIC
Sample Location	s06
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0093	P-ISOPROPYLTOLUENE	LT	0.5000		0.5000	ug/L
0094	N-BUTYLBENZENE	LT	0.5000		0.5000	ug/L
0095	1,2,4 TRICHLOROBENZENE	LT	0.5000	70.0000	0.5000	ug/L
0096	NAPHTHALENE	LT	0.5000		0.5000	ug/L
0097	HEXACHLOROBUTADIENE	LT	0.5000		0.5000	ug/L
0098	1,2,3 TRICHLOROBENZENE	LT	0.5000		0.5000	ug/L
0104	DICHLORODIFLUOROMETHANE	LT	0.5000		0.5000	ug/L
0160	TOTAL XYLENES	LT	0.5000	10000.0000	0.5000	ug/L
0427	EDB (screening)	LT	0.5000		0.5000	ug/L
0428	DBCP (screening)	LT	0.5000	80.5000	0.5000	mg/L
0031	TOTAL TRIHALOMETHANE	ND		80.4000		ug/L

Records 51 - 61 of 61

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	4/12/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	24233
Source	06
Analyte Group	VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel	VOC1-VOLATILE ORGANIC
Sample Location	s06
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0067	1,1,2 TRICHLOROETHANE	LT	0.5000	5.0000	0.5000	ug/L
0068	TETRACHLOROETHYLENE	LT	0.5000	5.0000	0.5000	ug/L
0069	TRANS- 1,3 DICHLOROPROPENE	LT	0.5000		0.5000	ug/L
0070	1,3 DICHLOROPROPANE	LT	0.5000		0.5000	ug/L
0071	CHLOROBENZENE	LT	0.5000	100.0000	0.5000	ug/L
0072	1,1,1,2 TETRACHLOROETHANE	LT	0.5000		0.5000	ug/L
0073	ETHYLBENZENE	LT	0.5000	700.0000	0.5000	ug/L
0074	M/P XYLENES (MCL FOR TOTAL)	LT	0.5000		0.5000	ug/L
0075	O- XYLENE (MCL FOR TOTAL)	LT	0.5000		0.5000	ug/L
0076	STYRENE	LT	0.5000	100.0000	0.5000	ug/L
0078	BROMOBENZENE	LT	0.5000		0.5000	ug/L
0079	1,2,3 TRICHLOROPROPANE	LT	0.5000		0.5000	ug/L
0080	1,1,2,2 TETRACHLOROETHANE	LT	0.5000		0.5000	ug/L
0081	O- CHLOROTOLUENE	LT	0.5000		0.5000	ug/L
0082	P- CHLOROTOLUENE	LT	0.5000		0.5000	ug/L
0083	M- DICHLOROBENZENE	LT	0.5000		0.5000	ug/L
0084	1,2 DICHLOROBENZENE	LT	0.5000	600.0000	0.5000	ug/L
0085	TRICHLOROFLUOROMETHANE	LT	0.5000		0.5000	ug/L
0086	BROMOCHLOROMETHANE	LT	0.5000		0.5000	ug/L
0087	ISOPROPYLBENZENE	LT	0.5000		0.5000	ug/L
0088	N-PROPYLBENZENE	LT	0.5000		0.5000	ug/L
0089	1,3,5 TRIMETHYLBENZENE	LT	0.5000		0.5000	ug/L
0090	TERT- BUTYLBENZENE	LT	0.5000		0.5000	ug/L
0091	1,2,4 TRIMETHYLBENZENE	LT	0.5000		0.5000	ug/L
0092	SEC- BUTYLBENZENE	LT	0.5000		0.5000	ug/L

Records 26 - 50 of 61

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	4/12/2021
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	24233
Source	06
Analyte Group	VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel	VOC1-VOLATILE ORGANIC
Sample Location	s06
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0093	P-ISOPROPYLTOLUENE	LT	0.5000		0.5000	ug/L
0094	N-BUTYLBENZENE	LT	0.5000		0.5000	ug/L
0095	1,2,4 TRICHLOROBENZENE	LT	0.5000	70.0000	0.5000	ug/L
0096	NAPHTHALENE	LT	0.5000		0.5000	ug/L
0097	HEXACHLOROBUTADIENE	LT	0.5000		0.5000	ug/L
0098	1,2,3 TRICHLOROBENZENE	LT	0.5000		0.5000	ug/L
0104	DICHLORODIFLUOROMETHANE	LT	0.5000		0.5000	ug/L
0160	TOTAL XYLENES	LT	0.5000	10000.0000	0.5000	ug/L
0427	EDB (screening)	LT	0.5000		0.5000	ug/L
0428	DBCP (screening)	LT	0.5000	80.5000	0.5000	mg/L
0031	TOTAL TRIHALOMETHANE	ND		80.4000		ug/L

Records 51 - 61 of 61

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	8/20/2019
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	61419
Source	07
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	IOC-COMPLETE INORGANIC ANALYSIS
Sample Location	hyd
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0005	BARIUM	EQ	0.0090	2.0000	0.1000	mg/L
0007	CHROMIUM	EQ	0.0020	0.1000	0.0070	mg/L
0014	SODIUM	EQ	7.2000		5.0000	mg/L
0015	HARDNESS	EQ	89.0000		10.0000	mg/L
0016	CONDUCTIVITY	EQ	221.0000	700.0000	70.0000	Umhos/cm
0020	NITRATE-N	EQ	1.7800	10.0000	0.5000	mg/L
0021	CHLORIDE	EQ	6.0000	250.0000	20.0000	mg/L
0022	SULFATE	EQ	10.9000	250.0000	50.0000	mg/L
0024	ZINC	EQ	0.0090	5.0000	0.2000	mg/L
0026	TDS-TOTAL DISSOLVED SOLIDS	EQ	153.0000	500.0000	100.0000	mg/L
0161	TOTAL NITRATE/NITRITE	EQ	1.7800		0.5000	mg/L
0004	ARSENIC	LT	0.0010	0.0104	0.0010	mg/L
0006	CADMIUM	LT	0.0010	0.0050	0.0010	mg/L
0008	IRON	LT	0.1000	0.3000	0.1000	mg/L
0009	LEAD	LT	0.0010		0.0010	mg/L
0010	MANGANESE	LT	0.0100	0.0500	0.0100	mg/L
0011	MERCURY	LT	0.0002	0.0020	0.0002	mg/L
0012	SELENIUM	LT	0.0020	0.0500	0.0020	mg/L
0013	SILVER	LT	0.1000	0.1000	0.1000	mg/L
0017	TURBIDITY	LT	0.1000		0.1000	NTU
0018	COLOR	LT	15.0000	15.0000	15.0000	CU
0019	FLUORIDE	LT	0.2000	4.0000	0.2000	mg/L
0023	COPPER	LT	0.0200		0.0200	mg/L
0110	BERYLLIUM	LT	0.0003	0.0040	0.0003	mg/L
0111	NICKEL	LT	0.0050	0.1000	0.0050	mg/L

Records 1 - 25 of 29

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	8/20/2019
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	61419
Source	07
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	IOC-COMPLETE INORGANIC ANALYSIS
Sample Location	hyd
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0112	ANTIMONY	LT	0.0030	0.0060	0.0030	mg/L
0113	THALLIUM	LT	0.0010	0.0020	0.0010	mg/L
0114	NITRITE-N	LT	0.1000	1.0000	0.1000	mg/L
0116	CYANIDE	LT	0.0500	0.2000	0.0500	mg/L

Records 26 - 29 of 29

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	6/7/2022
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	36953
Source	11
Analyte Group	SOC-SYNTHETIC ORGANIC CONTAMINANTS
Test Panel	HERB1-CHLOROPHENOXY HERBICIDES
Sample Location	n tank s11
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0037	2,4 - D	LT	0.1000	70.0000	0.1000	ug/L
0038	2,4,5 TP (SILVEX)	LT	0.2000	50.0000	0.2000	ug/L
0134	PENTACHLOROPHENOL	LT	0.0400	1.0000	0.0400	ug/L
0135	2,4 DB	LT	1.0000		1.0000	ug/L
0136	2,4,5 T	LT	0.4000		0.4000	ug/L
0137	DALAPON	LT	1.0000	200.0000	1.0000	ug/L
0138	DICAMBA	LT	0.2000		0.2000	ug/L
0139	DINOSEB	LT	0.2000	7.0000	0.2000	ug/L
0140	PICLORAM	LT	0.1000	500.0000	0.1000	ug/L
0220	BENTAZON	LT	0.5000		0.5000	ug/L
0221	DICHLORPROP	LT	0.5000		0.5000	ug/L
0223	ACIFLUORFEN	LT	2.0000		2.0000	ug/L
0225	DCPA ACID METABOLITES	LT	0.1000		0.1000	ug/L
0226	3,5 DICHLORBENZOIC ACID	LT	0.5000		0.5000	ug/L

Records 1 - 14 of 14

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	9/12/2022
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	59515
Source	11
Analyte Group	IOC-INORGANIC CONTAMINANTS
Test Panel	NIT-NITRATE SUITE
Sample Location	s11 n tank
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0020	NITRATE-N	EQ	1.3100	10.0000	0.5000	mg/L

Records 1 - 1 of 1

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	6/7/2022
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	36953
Source	11
Analyte Group	SOC-SYNTHETIC ORGANIC CONTAMINANTS
Test Panel	PEST1-GENERAL PESTICIDE SUITE
Sample Location	n tank s11
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0033	ENDRIN	LT	0.0100	2.0000	0.0100	ug/L
0034	LINDANE (BHC - GAMMA)	LT	0.0200	0.2000	0.0200	ug/L
0035	METHOXYCHLOR	LT	0.1000	40.0000	0.1000	ug/L
0036	TOXAPHENE	LT	1.0000	3.0000	1.0000	ug/L
0117	Alachlor	LT	0.2000	2.0000	0.2000	ug/L
0118	ALDRIN	LT	0.1000		0.1000	ug/L
0119	ATRAZINE	LT	0.1000	3.0000	0.1000	ug/L
0120	BENZO (A) PYRENE	LT	0.0200	0.2000	0.0200	ug/L
0121	BUTACHLOR	LT	0.1000		0.1000	ug/L
0122	CHLORDANE (TOTAL)	LT	0.2000	2.0000	0.2000	ug/L
0123	DIELDRIN	LT	0.1000		0.1000	ug/L
0124	DI (ETHYLHEXYL) ADIPATE	LT	0.6000	400.0000	0.6000	ug/L
0125	DI (ETHYLHEXYL) PHTHALATE	LT	0.6000	6.0000	0.6000	ug/L
0126	HEPTACHLOR	LT	0.0400	0.4000	0.0400	ug/L
0127	HEPTACHLOR EPOXIDE	LT	0.0200	0.2000	0.0200	ug/L
0128	HEXACHLOROBENZENE	LT	0.1000	1.0000	0.1000	ug/L
0129	HEXACHLOROCYCLO PENTADIENE	LT	0.1000	50.0000	0.1000	ug/L
0130	METOLACHLOR	LT	0.1000		0.1000	ug/L
0131	METRIBUZIN	LT	0.1000		0.1000	ug/L
0132	PROPACHLOR	LT	0.1000		0.1000	ug/L
0133	SIMAZINE	LT	0.0700	4.0000	0.0700	ug/L
0153	PCB (AS TOTAL AROCHLORS)	LT	0.5000	0.5000	0.5000	ug/L
0173	AROCHLOR 1221	LT	20.0000		20.0000	ug/L
0174	AROCHLOR 1232	LT	0.5000		0.5000	ug/L
0175	AROCHLOR 1242	LT	0.3000		0.3000	ug/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	6/7/2022
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	36953
Source	11
Analyte Group	SOC-SYNTHETIC ORGANIC CONTAMINANTS
Test Panel	PEST1-GENERAL PESTICIDE SUITE
Sample Location	n tank s11
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0176	AROCHLOR 1248	LT	0.1000		0.1000	ug/L
0177	AROCHLOR 1254	LT	0.1000		0.1000	ug/L
0178	AROCHLOR 1260	LT	0.2000		0.2000	ug/L
0179	BROMACIL	LT	0.1000		0.1000	ug/L
0180	AROCHLOR 1016	LT	0.0800		0.0800	ug/L
0190	TERBACIL	LT	0.1000		0.1000	ug/L
0208	EPTC	LT	0.1000		0.1000	ug/L
0218	MOLINATE	LT	0.1000		0.1000	ug/L
0232	4,4 DDD	LT	0.1000		0.1000	ug/L
0233	4,4 DDE	LT	0.1000		0.1000	ug/L
0234	4,4 DDT	LT	0.1000		0.1000	ug/L
0243	TRIFLURALIN	LT	0.1000		0.1000	ug/L
0244	ACENAPHTHYLENE	LT	0.2000		0.2000	ug/L
0246	ANTHRACENE	LT	0.2000		0.2000	ug/L
0247	BENZO (A) ANTHRACENE	LT	0.2000		0.2000	ug/L
0248	BENZO (B) FLUOROANTHENE	LT	0.2000		0.2000	ug/L
0250	BENZO (K) FLUORANTHENE	LT	0.2000		0.2000	ug/L
0251	CHRYSENE	LT	0.2000		0.2000	ug/L
0253	FLUORANTHENE	LT	0.2000		0.2000	ug/L
0254	FLUORENE	LT	0.2000		0.2000	ug/L
0256	PHENANTHRENE	LT	0.2000		0.2000	ug/L
0257	PYRENE	LT	0.2000		0.2000	ug/L
0258	BENZYL BUTYL PHTHALATE	LT	1.0000		1.0000	ug/L
0259	DI-N-BUTYL PHTHALATE	LT	1.0000		1.0000	ug/L
0260	DIETHYL PHTHALATE	LT	1.0000		1.0000	ug/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	6/7/2022
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	36953
Source	11
Analyte Group	SOC-SYNTHETIC ORGANIC CONTAMINANTS
Test Panel	PEST1-GENERAL PESTICIDE SUITE
Sample Location	n tank s11
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0176	AROCHLOR 1248	LT	0.1000		0.1000	ug/L
0177	AROCHLOR 1254	LT	0.1000		0.1000	ug/L
0178	AROCHLOR 1260	LT	0.2000		0.2000	ug/L
0179	BROMACIL	LT	0.1000		0.1000	ug/L
0180	AROCHLOR 1016	LT	0.0800		0.0800	ug/L
0190	TERBACIL	LT	0.1000		0.1000	ug/L
0208	EPTC	LT	0.1000		0.1000	ug/L
0218	MOLINATE	LT	0.1000		0.1000	ug/L
0232	4,4 DDD	LT	0.1000		0.1000	ug/L
0233	4,4 DDE	LT	0.1000		0.1000	ug/L
0234	4,4 DDT	LT	0.1000		0.1000	ug/L
0243	TRIFLURALIN	LT	0.1000		0.1000	ug/L
0244	ACENAPHTHYLENE	LT	0.2000		0.2000	ug/L
0246	ANTHRACENE	LT	0.2000		0.2000	ug/L
0247	BENZO (A) ANTHRACENE	LT	0.2000		0.2000	ug/L
0248	BENZO (B) FLUOROANTHENE	LT	0.2000		0.2000	ug/L
0250	BENZO (K) FLUORANTHENE	LT	0.2000		0.2000	ug/L
0251	CHRYSENE	LT	0.2000		0.2000	ug/L
0253	FLUORANTHENE	LT	0.2000		0.2000	ug/L
0254	FLUORENE	LT	0.2000		0.2000	ug/L
0256	PHENANTHRENE	LT	0.2000		0.2000	ug/L
0257	PYRENE	LT	0.2000		0.2000	ug/L
0258	BENZYL BUTYL PHTHALATE	LT	1.0000		1.0000	ug/L
0259	DI-N-BUTYL PHTHALATE	LT	1.0000		1.0000	ug/L
0260	DIETHYL PHTHALATE	LT	1.0000		1.0000	ug/L

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	3/29/2022
Lab Number	094
Lab Name	Eurofins Eaton LLC - Pomona
Sample Number	10553
Source	11
Analyte Group	SOC-SYNTHETIC ORGANIC CONTAMINANTS
Test Panel	PFAS533-PER- & POLY-FLUOROALKYL SBSTNCS 533
Sample Location	station A
Sample Type	Post-Treatment / Finished

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0429	(PFBS) PFbutane sulfonic acid	LT	2.0000		2.0000	ng/L
0430	(PFHpA) PFheptanoic acid	LT	2.0000		2.0000	ng/L
0431	(PFHxS) PFhexane sulfonic acid	LT	2.0000		2.0000	ng/L
0432	(PFNA) PFnonanoic acid	LT	2.0000		2.0000	ng/L
0433	(PFOS) PFoctane sulfonic acid	LT	2.0000		2.0000	ng/L
0434	(PFOA) PFoctanoic acid	LT	2.0000		2.0000	ng/L
0435	(PFHxA) PFhexanoic acid	LT	2.0000		2.0000	ng/L
0436	(PFDA) PFdecanoic acid	LT	2.0000		2.0000	ng/L
0437	(PFUnA) PFundecanoic acid	LT	2.0000		2.0000	ng/L
0438	(PFDoA) PFdodecanoic acid	LT	2.0000		2.0000	ng/L
0445	(ADONA) 4,8-Dioxa-3H-perfluorononan	LT	2.0000		2.0000	ng/L
0446	(9CI-PF3ONS) 9-Chlorohexadecafluor	LT	2.0000		2.0000	ng/L
0447	(HFPO-DA) Hexafluoropropylene oxide	LT	2.0000		2.0000	ng/L
0448	(11CI-PF3OUdS) 11-Chloroeicosafluor	LT	2.0000		2.0000	ng/L
0450	(4:2FTS) H-PFhexane sulfonic acid	LT	2.0000		2.0000	ng/L
0451	(6:2FTS) H-PFoctane sulfonic acid	LT	2.0000		2.0000	ng/L
0452	(8:2FTS) H-PFdecane sulfonic acid	LT	2.0000		2.0000	ng/L
0453	(NFDHA) NonaF-dioxaheptanoic acid	LT	2.0000		2.0000	ng/L
0454	(PFBA) PFbutanoic acid	LT	2.0000		2.0000	ng/L
0455	(PFHpS) PFheptanesulfonic acid	LT	2.0000		2.0000	ng/L
0456	(PFMBA) PF-4-methoxybutanoic acid	LT	2.0000		2.0000	ng/L
0457	(PFMPA) PF-3-methoxypropanoic acid	LT	2.0000		2.0000	ng/L
0458	(PFPeA) PFpentanoic acid	LT	2.0000		2.0000	ng/L
0459	(PFPeS) PFpentanesulfonic acid	LT	2.0000		2.0000	ng/L
0460	(PFEESA)PF(2-ethoxyethane)slfnc acd	LT	2.0000		2.0000	ng/L

Records 1 - 25 of 25

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Help

View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	5/9/2023
Lab Number	156
Lab Name	Pace Analytical Srvs,LLC-Pittsburgh
Sample Number	89183
Source	11
Analyte Group	RAD-RADIONUCLIDES
Test Panel	RAD-RADIONUCLIDES
Sample Location	n tank
Sample Type	Unknown

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0165	GROSS ALPHA	LT	3.0000		3.0000	pCi/L
0166	RADIUM 228	LT	1.0000	5.0000	1.0000	pCi/L

Records 1 - 2 of 2

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Office of Drinking Water

Help

View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	6/7/2022
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	36953
Source	11
Analyte Group	VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel	VOC1-VOLATILE ORGANIC
Sample Location	n tank s11
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0027	CHLOROFORM	LT	0.5000		0.5000	ug/L
0028	BROMODICHLOROMETHANE	LT	0.5000		0.5000	ug/L
0029	DIBROMOCHLOROMETHANE	LT	0.5000		0.5000	ug/L
0030	BROMOFORM	LT	0.5000		0.5000	ug/L
0045	VINYL CHLORIDE	LT	0.5000	2.0000	0.5000	ug/L
0046	1,1 DICHLOROETHYLENE	LT	0.5000	7.0000	0.5000	ug/L
0047	1,1,1 TRICHLOROETHANE	LT	0.5000	200.0000	0.5000	ug/L
0048	CARBON TETRACHLORIDE	LT	0.5000	5.0000	0.5000	ug/L
0049	BENZENE	LT	0.5000	5.0000	0.5000	ug/L
0050	1,2 DICHLOROETHANE	LT	0.5000	5.0000	0.5000	ug/L
0051	TRICHLOROETHYLENE	LT	0.5000	5.0000	0.5000	ug/L
0052	1,4 DICHLOROBENZENE	LT	0.5000	75.0000	0.5000	ug/L
0053	CHLOROMETHANE	LT	0.5000		0.5000	ug/L
0054	BROMOMETHANE	LT	0.5000		0.5000	ug/L
0055	CHLOROETHANE	LT	0.5000		0.5000	ug/L
0056	METHYLENE CHLORIDE(DICHLOROMETHANE)	LT	0.5000	5.0000	0.5000	ug/L
0057	TRANS- 1,2 DICHLOROETHYLENE	LT	0.5000	100.0000	0.5000	ug/L
0058	1,1 DICHLOROETHANE	LT	0.5000		0.5000	ug/L
0059	2,2 DICHLOROPROPANE	LT	0.5000		0.5000	ug/L
0060	CIS- 1,2 DICHLOROETHYLENE	LT	0.5000	70.0000	0.5000	ug/L
0062	1,1 DICHLOROPROPENE	LT	0.5000		0.5000	ug/L
0063	1,2 DICHLOROPROPANE	LT	0.5000	5.0000	0.5000	ug/L
0064	DIBROMOMETHANE	LT	0.5000		0.5000	ug/L
0065	CIS- 1,3 DICHLOROPROPENE	LT	0.5000		0.5000	ug/L
0066	TOLUENE	LT	0.5000	1000.0000	0.5000	ug/L

View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	6/7/2022
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	36953
Source	11
Analyte Group	VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel	VOC1-VOLATILE ORGANIC
Sample Location	n tank s11
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0067	1,1,2 TRICHLOROETHANE	LT	0.5000	5.0000	0.5000	ug/L
0068	TETRACHLOROETHYLENE	LT	0.5000	5.0000	0.5000	ug/L
0069	TRANS- 1,3 DICHLOROPROPENE	LT	0.5000		0.5000	ug/L
0070	1,3 DICHLOROPROPANE	LT	0.5000		0.5000	ug/L
0071	CHLOROBENZENE	LT	0.5000	100.0000	0.5000	ug/L
0072	1,1,1,2 TETRACHLOROETHANE	LT	0.5000		0.5000	ug/L
0073	ETHYLBENZENE	LT	0.5000	700.0000	0.5000	ug/L
0074	M/P XYLENES (MCL FOR TOTAL)	LT	0.5000		0.5000	ug/L
0075	O- XYLENE (MCL FOR TOTAL)	LT	0.5000		0.5000	ug/L
0076	STYRENE	LT	0.5000	100.0000	0.5000	ug/L
0078	BROMOBENZENE	LT	0.5000		0.5000	ug/L
0079	1,2,3 TRICHLOROPROPANE	LT	0.5000		0.5000	ug/L
0080	1,1,2,2 TETRACHLOROETHANE	LT	0.5000		0.5000	ug/L
0081	O- CHLOROTOLUENE	LT	0.5000		0.5000	ug/L
0082	P- CHLOROTOLUENE	LT	0.5000		0.5000	ug/L
0083	M- DICHLOROBENZENE	LT	0.5000		0.5000	ug/L
0084	1,2 DICHLOROBENZENE	LT	0.5000	600.0000	0.5000	ug/L
0085	TRICHLOROFLUOROMETHANE	LT	0.5000		0.5000	ug/L
0086	BROMOCHLOROMETHANE	LT	0.5000		0.5000	ug/L
0087	ISOPROPYLBENZENE	LT	0.5000		0.5000	ug/L
0088	N-PROPYLBENZENE	LT	0.5000		0.5000	ug/L
0089	1,3,5 TRIMETHYLBENZENE	LT	0.5000		0.5000	ug/L
0090	TERT- BUTYLBENZENE	LT	0.5000		0.5000	ug/L
0091	1,2,4 TRIMETHYLBENZENE	LT	0.5000		0.5000	ug/L
0092	SEC- BUTYLBENZENE	LT	0.5000		0.5000	ug/L

Records 26 - 50 of 61

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View Sample Detail - WSID 09800L - BURTON WATER COMPANY INC

Collect Date	6/7/2022
Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	36953
Source	11
Analyte Group	VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel	VOC1-VOLATILE ORGANIC
Sample Location	n tank s11
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
0093	P-ISOPROPYLTOLUENE	LT	0.5000		0.5000	ug/L
0094	N-BUTYLBENZENE	LT	0.5000		0.5000	ug/L
0095	1,2,4 TRICHLOROBENZENE	LT	0.5000	70.0000	0.5000	ug/L
0096	NAPHTHALENE	LT	0.5000		0.5000	ug/L
0097	HEXACHLOROBUTADIENE	LT	0.5000		0.5000	ug/L
0098	1,2,3 TRICHLOROBENZENE	LT	0.5000		0.5000	ug/L
0104	DICHLORODIFLUOROMETHANE	LT	0.5000		0.5000	ug/L
0160	TOTAL XYLENES	LT	0.5000	10000.0000	0.5000	ug/L
0427	EDB (screening)	LT	0.5000		0.5000	ug/L
0428	DBCP (screening)	LT	0.5000	80.5000	0.5000	mg/L
0031	TOTAL TRIHALOMETHANE	ND		80.4000		ug/L

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Sample Number	36953
Source	11
Analyte Group	VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel	VOC1-VOLATILE ORGANIC
Sample Location	n tank s11
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

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0067	1,1,2 TRICHLOROETHANE	LT	0.5000	5.0000	0.5000	ug/L
0068	TETRACHLOROETHYLENE	LT	0.5000	5.0000	0.5000	ug/L
0069	TRANS- 1,3 DICHLOROPROPENE	LT	0.5000		0.5000	ug/L
0070	1,3 DICHLOROPROPANE	LT	0.5000		0.5000	ug/L
0071	CHLOROBENZENE	LT	0.5000	100.0000	0.5000	ug/L
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0075	O- XYLENE (MCL FOR TOTAL)	LT	0.5000		0.5000	ug/L
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0082	P- CHLOROTOLUENE	LT	0.5000		0.5000	ug/L
0083	M- DICHLOROBENZENE	LT	0.5000		0.5000	ug/L
0084	1,2 DICHLOROBENZENE	LT	0.5000	600.0000	0.5000	ug/L
0085	TRICHLOROFLUOROMETHANE	LT	0.5000		0.5000	ug/L
0086	BROMOCHLOROMETHANE	LT	0.5000		0.5000	ug/L
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0088	N-PROPYLBENZENE	LT	0.5000		0.5000	ug/L
0089	1,3,5 TRIMETHYLBENZENE	LT	0.5000		0.5000	ug/L
0090	TERT- BUTYLBENZENE	LT	0.5000		0.5000	ug/L
0091	1,2,4 TRIMETHYLBENZENE	LT	0.5000		0.5000	ug/L
0092	SEC- BUTYLBENZENE	LT	0.5000		0.5000	ug/L

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Lab Number	046
Lab Name	Edge Analytical - Burlington
Sample Number	36953
Source	11
Analyte Group	VOC-VOLATILE ORGANIC CONTAMINANTS
Test Panel	VOC1-VOLATILE ORGANIC
Sample Location	n tank s11
Sample Type	Pre-Treatment / Raw

Result Range, A/P, Units: Mouse over for full description

Analyte DOH Num	Analyte Name	Result Range	Result Quantity	Maximum Contaminant Level	State Reporting Limit	Units
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0094	N-BUTYLBENZENE	LT	0.5000		0.5000	ug/L
0095	1,2,4 TRICHLOROBENZENE	LT	0.5000	70.0000	0.5000	ug/L
0096	NAPHTHALENE	LT	0.5000		0.5000	ug/L
0097	HEXACHLOROBUTADIENE	LT	0.5000		0.5000	ug/L
0098	1,2,3 TRICHLOROBENZENE	LT	0.5000		0.5000	ug/L
0104	DICHLORODIFLUOROMETHANE	LT	0.5000		0.5000	ug/L
0160	TOTAL XYLENES	LT	0.5000	10000.0000	0.5000	ug/L
0427	EDB (screening)	LT	0.5000		0.5000	ug/L
0428	DBCP (screening)	LT	0.5000	80.5000	0.5000	mg/L
0031	TOTAL TRIHALOMETHANE	ND		80.4000		ug/L

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Chapter 10-9: Wellhead Protection

93F

STATE OF WASHINGTON

DEPARTMENT OF HEALTH

1511 Third Ave., Suite 719 • Seattle, Washington 98101-1632

February 2, 1999

Mr. Gerald R. Garrison
Burton Water Company, Inc.
11507 105 Pl SW
Vashon WA 98070

Subject Burton Water Company, ID # 09800L
King County
Ground Water Under the Direct Influence of Surface Water Determination
Source S01 - Designation as Ground Water, Submittal # 98-1206

Dear Mr. Garrison:

The department has reviewed the twelve months of water quality monitoring data that you collected between November 1997 and November 1998. Based on the very minor variations noted in the well temperature and conductivity during this period, it does not appear that a hydraulic connection exists between surface water and your source of supply. The department has therefore concluded that your well source will continue to be designated as a ground water source.

The department may reevaluate this source in the future should either the conditions affecting the water quality of your source change or the regulatory approach to determining the influence of surface water upon ground water be modified.

Regulations establishing a schedule of fees for review of documents such as the GWI Water Quality Monitoring report have been adopted (WAC 246-290-990). An itemized invoice for $210.00 is enclosed for this review. Please remit your complete payment in the form of a check or money order within thirty days of the date of this letter to: **DOH, Revenue Section, P.O. Box 1099, Olympia, WA 98507-1099**.

If you have any questions regarding the content of this letter please call me in Seattle at (206)464-7671. Thank you for your efforts to document the water quality of this source.

Sincerely,

Carol Stuckey

for Robert E. James, P.E.
Regional Engineer
NW Drinking Water Operations

cc: Seattle-King County Department of Public Health
GWI file
Carol Stuckey, DOH

BURTON WATER COMPANY

WELL HEAD PROTECTION PLAN

August, 1998

To protect the quality of drinking water
for our customers on Vashon Island

Gerry and Jim Garrison
Burton Water Company

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NW DRINKING WATER

BURTON WATER COMPANY
11507 105 PLACE S.W.
VASHON ISLAND, WA. 98070
(206) 567-4688

WELL HEAD PROTECTION PLAN

August, 1998

To protect the quality of drinking water
for our customers on Vashon Island

Gerry and Jim Garrison
Burton Water Company

TABLE OF CONTENTS

I. Purpose and Content	page 1
II. Burton Water Company	page 1
Supply and Storage	
Pumps and Distribution	page 4
Disinfection	
History of Water Quality	
III. Wellhead Protection Area	page 6
IV. Inventory of Potential Sources of Contamination	page 9
Existing Data	
Telephone Survey	
Field Checks	
Inventory Findings	
V. Action Priorities	page14
Notification of Public Agencies	
VI. Management Strategies and Implementation	page 15
Nitrates	
Fuel or Chemical Spills	
Pesticides and Herbicides	
Bacteriological Contamination	
Fuel leakage	
VII. Contingency Planning	page 21
Maximum Water System Capacity	
Expansion or Replacement Options	
Mutual Assistance Agreements	
Sources of Emergency Water	
Treatment Options	
Costs	
VIII. Spill/Incident Response	page 24
Seven Step Spill Response	page 25

LIST OF FIGURES

Figure 1: Distribution System
Figure 2: Wellfield Schematic
Figure 3: Nitrate Contamination Trend
Figure 4: Illustration of Calculated Fixed Radius
Figure 5: Burton Water Company's Calculated Fixed Radius
Figure 6: Inventory Form Used in Survey
Figure 7: Inventory Findings
Figure 8: Contaminant Source/ Health Effects Matrix

APPENDICES

A. Water Quality Test Results 1990-97
B. 1994 Susceptibility Assessment
C. Survey Material
D. Notification Letters to Public Agencies

WELLHEAD PROTECTION PROGRAM
BURTON WATER COMPANY
VASHON ISLAND

I. PURPOSE AND CONTENT

The Federal Safe Drinking Water Act mandates that each state develop a wellhead protection program. The Act requires that all federally defined public water systems using ground water as their source implement a wellhead protection program. In July of 1994, the Washington Administrative Code addressing Group A public water systems (WAC 246-290) was modified to include mandatory wellhead protection measures for all Group A public water systems in the state using wells or springs as their source of supply. The state's authority to require wellhead protection planning is found in the Revised Code of Washington (RCW) Chapters 43.20.050, 70.119A.060, and 70.119A.080.

The intent of the wellhead protection program for Burton Water Company is to prevent contamination of ground water used for drinking water and to protect the health of people using Burton Water Company's ground water supplies.

This document defines a management Zone around the Burton Water Company wellfield within which activity will be monitored to prevent, detect and respond to potential sources of ground water contamination. This document also assesses and prioritizes potential risks to the water supply based on data, phone and field surveys. Further, Burton Water Company's contingency planning for unexpected spills and other high risk events that may contaminate its supply is summarized here. Contingency plans will be updated on a regular basis, at a minimum every two years.

II. BURTON WATER COMPANY

Supply and Storage

Burton Water Company's source of supply is a wellfield consisting of two dug wells (the north and south wells), two steel wells (the steel well and the east well), and 17 well points, all about 28 feet deep.
Storage is provided at the wellfield site at 11611 SW 232 Street (Figures 1 and 2)in two 35,000 gallon concrete reservoirs (north and south tanks) and one 100,000 gallon wood stave tank. An additional 100,000 gallons of storage in a concrete reservoir is located at the top of Burton Hill on 238th street.

FIGURE 1: DISTRIBUTION SYSTEM

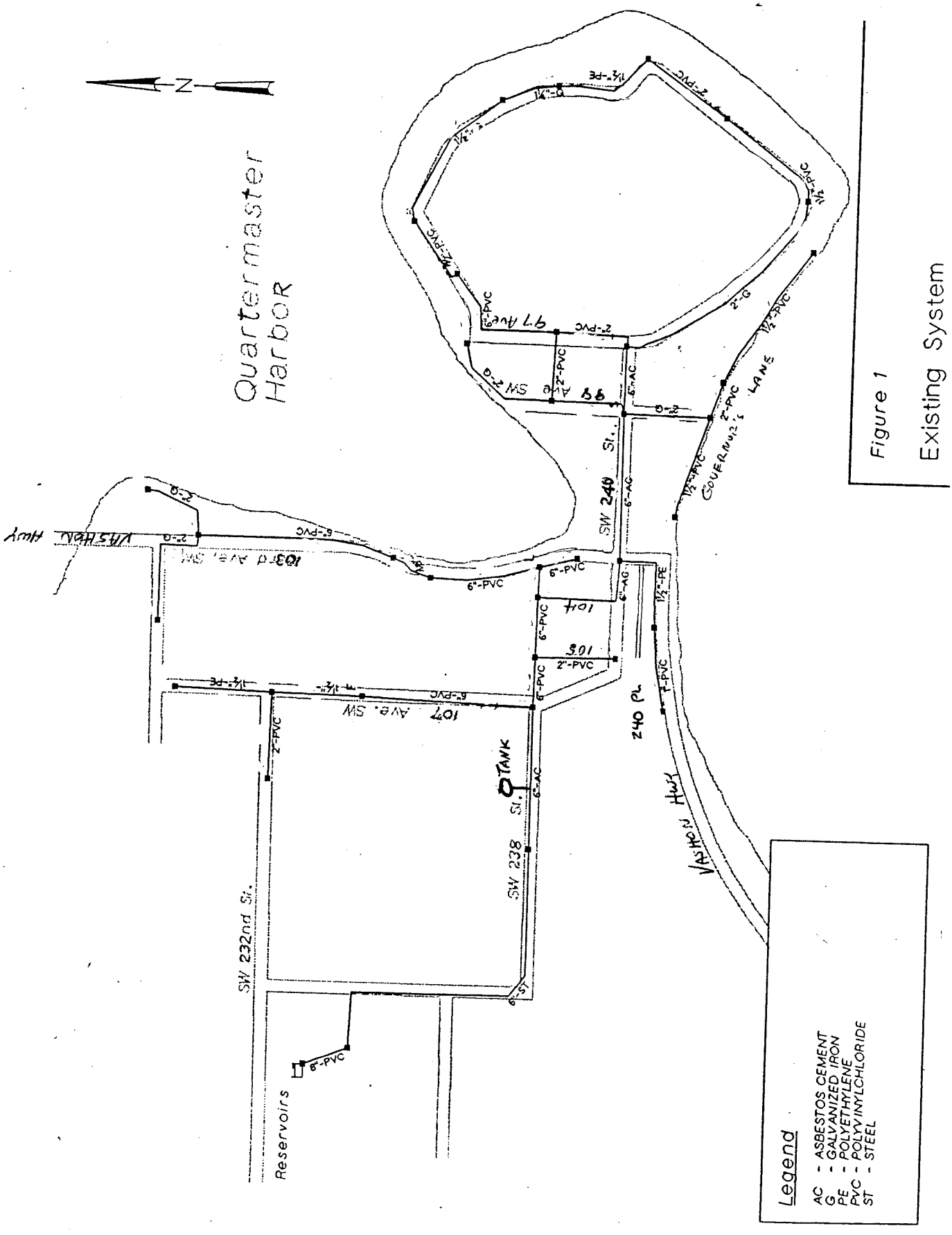
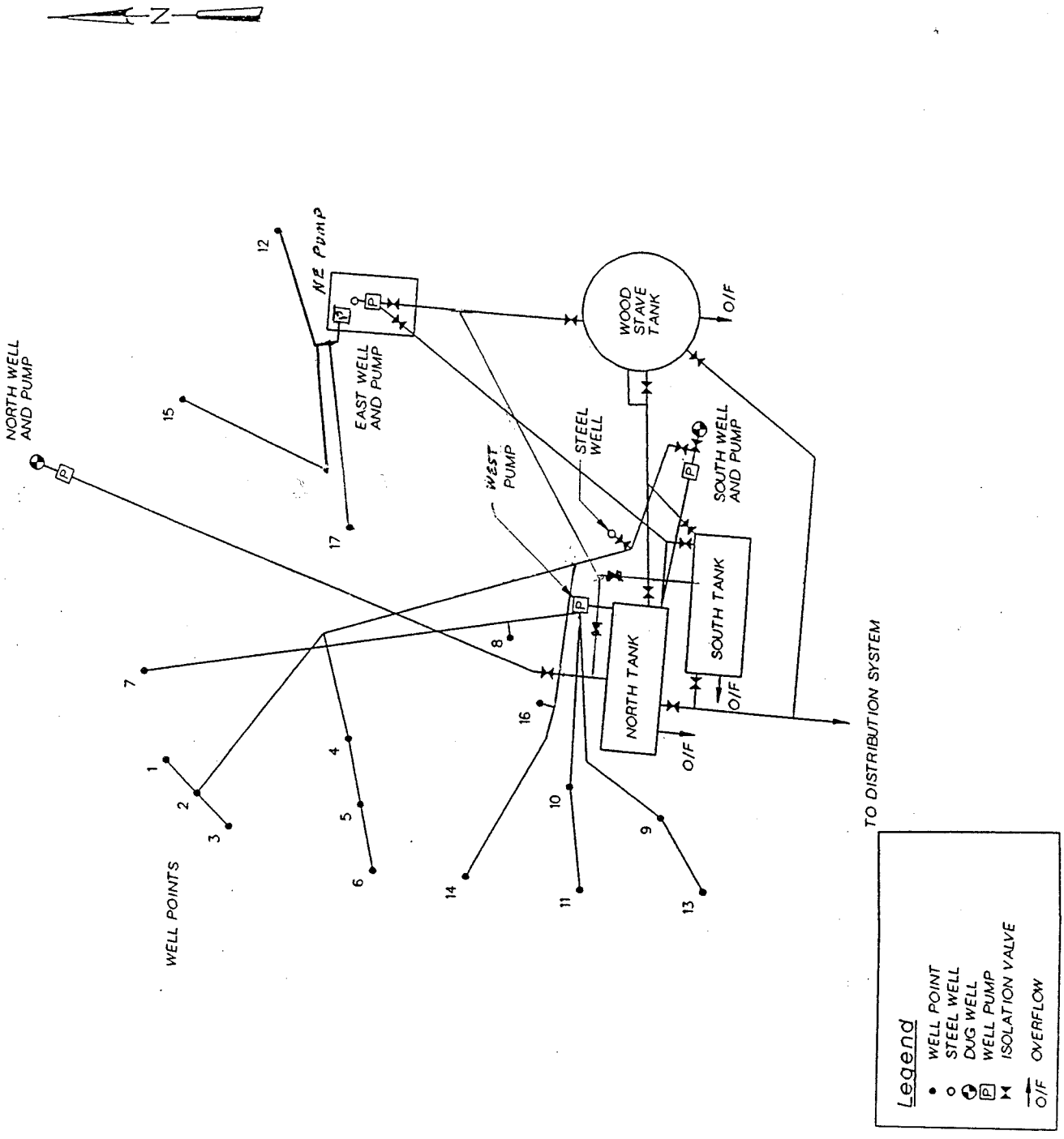


FIGURE 2: WELLFIELD SCHEMATIC



Pumps and Distribution

Under normal operating conditions, water is pumped from the wells to the north tank where it is disinfected. Water flows from the north tank to the south tank and to the distribution system. Water can be pumped from the east well either to the north tank or to the wood stave tank (then to the north tank for disinfection). The wellfield is surrounded by a padlocked fence and is considered a security zone, or sanitary control area. The access hatches to the reservoirs are also padlocked. Schematics of the existing system and wellfield are shown on Figures 1 and 2.

The large recharge area for the wellfield corresponds roughly with the geographic area between 111 Ave. and Old Mill Road and between 220 St. SW and 232 St. SW.

Disinfection

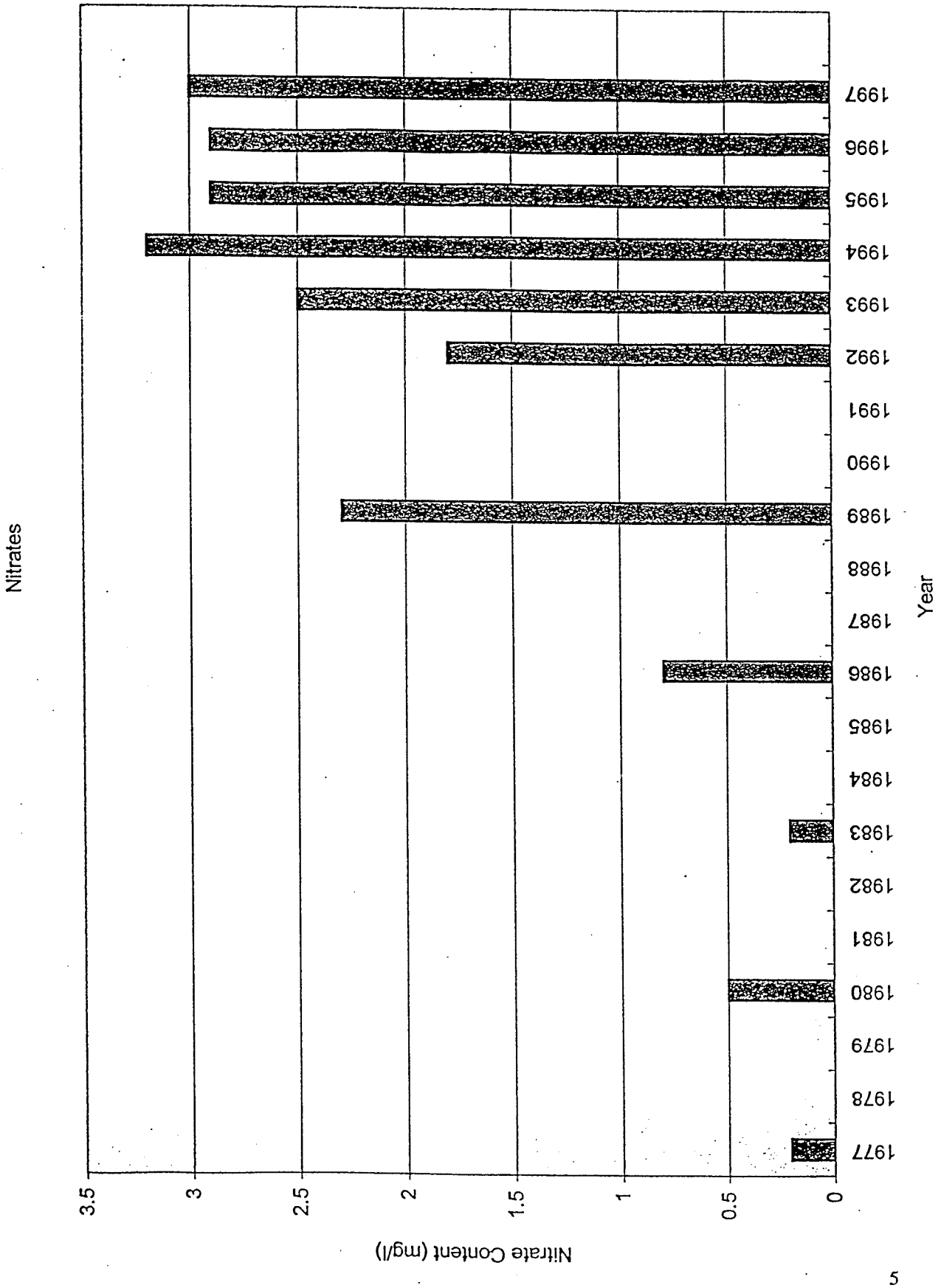
Burton Water Company's disinfection system consists of a Wallace and Tiernan metering pump that continuously pumps a chlorine solution from a 30 gallon batch tank into the north tank. Burton Water Company's operators manually fill the 30 gallon tank with one to two gallons of 5 to 12.5 percent bleached mixed water. The chlorine residual in the 8 inch PVC line from the reservoir to the distribution system is monitored with a Hach Model CN-66F chlorine residual analyzer. A chlorine residual is maintained and daily monitored at the far reaches of the distribution system.

History of Water Quality

Water quality samples are analyzed for bacteria twice a month at a qualified testing laboratory. Results are generally "satisfactory, coliforms absent". Testing for residual chlorine is performed daily and adjustments made to maintain a residual of 0.2 ppm at the remote stations. Inorganic chemical analysis is performed every three years. Volatile organics were tested in 1990, 1993, 1996 and 1997. These test results are included in **Appendix A.**

Of significant concern, this analysis indicates that the nitrate content appears to be increasing in the drinking water samples tested. The nitrate levels increased from 0.2 mg/l in 1983 to 3.1 mg/l in 1996, a 17-fold increase (Figure 3). While this amount of contamination remains below the maximum allowed (10.0 mg/l), the increasing trend is alarming, particularly in light of the relatively slow rate of groundwater movement. It is possible that existing additional contamination of the system has not yet reached the monitoring sites. A commitment to identify and limit the sources of potential nitrate contamination is fundamental to Burton Water Company's wellhead protection area management strategy. Control of nitrate contamination is critical to the health of Burton Water Company customers.

FIGURE 3: NITRATE CONTAMINATION TREND



III. WELLHEAD PROTECTION AREA

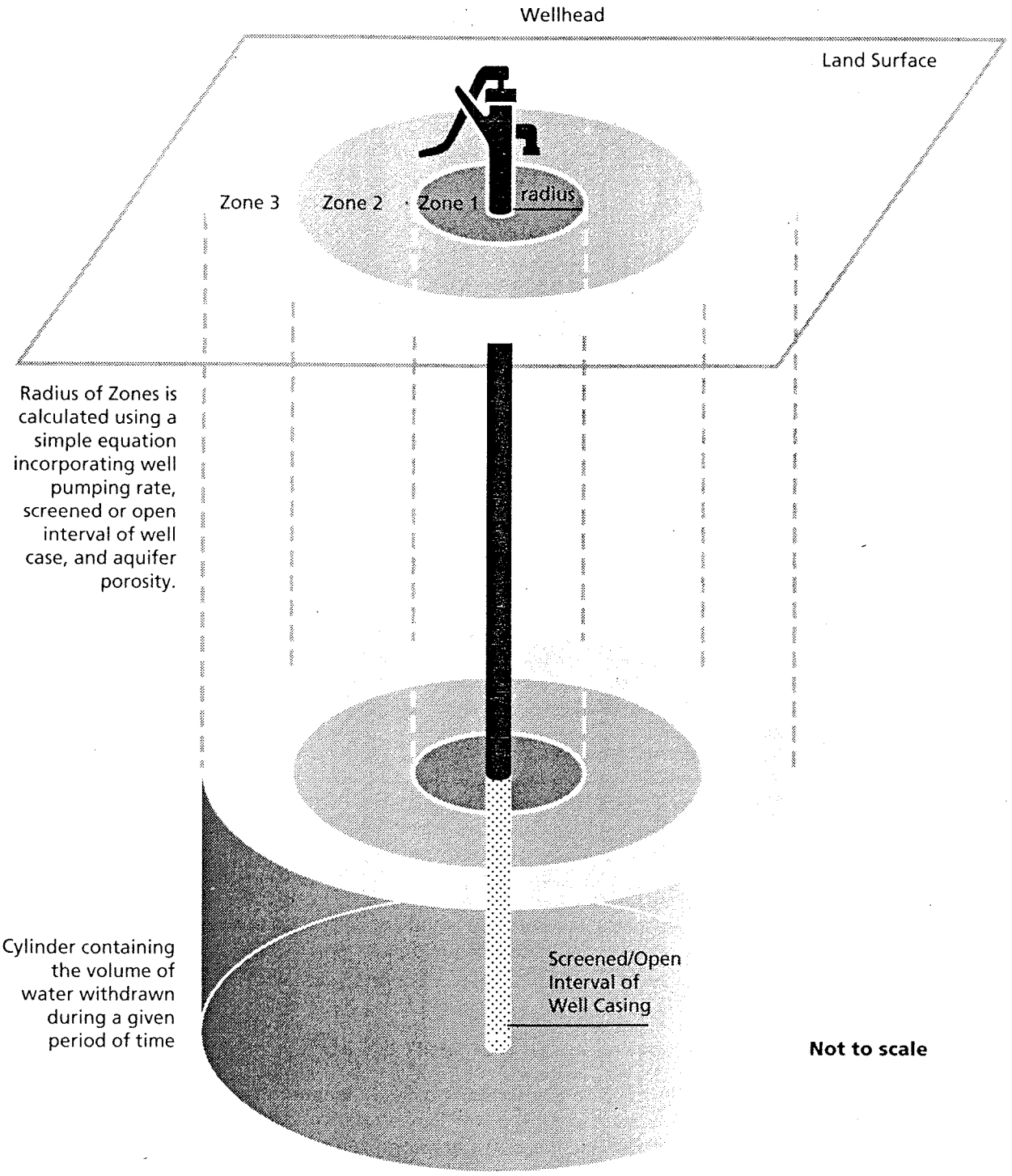
A Wellhead Protection area is a Zone delineated by time of travel calculations of ground water. Its purpose is to provide a focus for management and protection of the water supply from potential contaminant sources.

As a public water system with less than 1000 connections, Burton Water Company has used a calculated fixed radius delineation for the purposes of this program. This radius is calculated based upon the annual pumping rate, length of screened or open interval of the well casing, and estimate of aquifer porosity. Figure 4 on the following page visually explains the calculated fixed radius concept. Figure 5 shows Burton Water Company's Calculated Fixed Radius and concentric "Zones of contribution" around the wellheads. These Zones are drawn on a parcel map of the Burton area to highlight which parcels may influence the quality of surface water reaching the wellfield. These Zones correspond to the 1,5, and 10 year hypothetical time of travel of ground water through the aquifer to the pumping wells. The Zones are briefly described below:

- The sanitary control area is protectively controlled and managed by Burton Water Company as required by WAC 246-290-135 to prevent direct contamination. Fenced areas and locked facilities reduce the likelihood of contaminants reaching the wellheads or traveling down well casings. Water Company employees are trained and experienced in prevention of contamination from operations and storage practices, and in monitoring for water quality.

- Zones 1, 2, and 3 are the one, five and ten year hypothetical horizontal time of travel boundary. The Zones theoretically represent the surface area overlying the portion of the aquifer which contributes water to the wells within a one, five or ten year period. However, these Zones are mathematical models. They are not modified to reflect factors such as gradient or direction of flow, porosity, or impermeable sub-surface layers. As such, they present a valuable but not definitive tool to identify potential sources of contamination. When wellhead protection management strategies are carried out, these other factors must be taken into consideration.

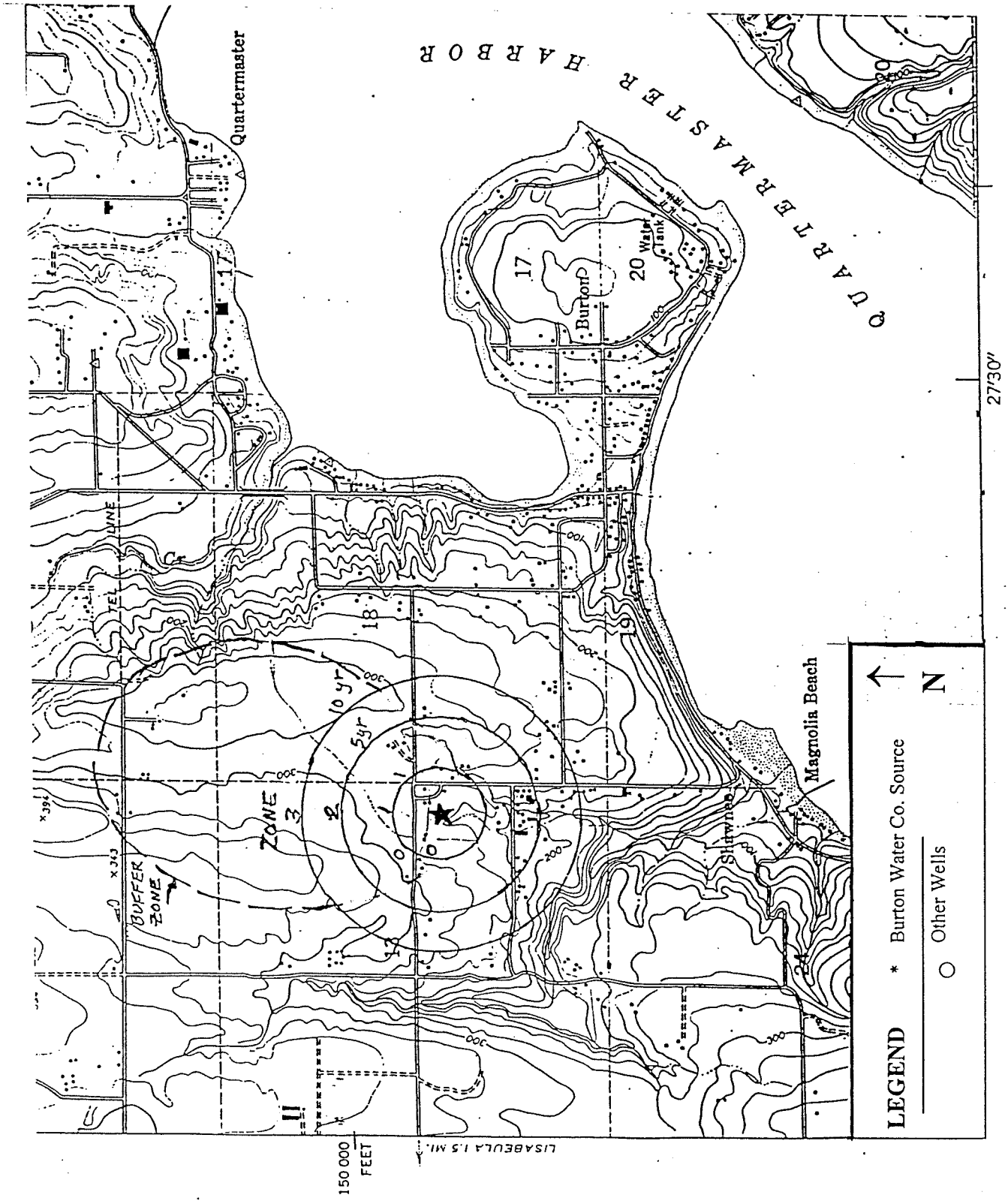
FIGURE 4: ILLUSTRATION OF CALCULATED FIXED RADIUS



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

Where:
Q = Pumping Rate of Well
n = Aquifer Porosity = 0.22
H = Open Interval or Length of Well Screen
t = Travel Time to Well (1, 5, 10 years)

FIGURE 5: BURTON WATER COMPANY'S CALCULATED FIXED RADIUS
Showing Zones of Contribution on a Topographic Base



The Burton Water Company's Zones of contribution, based on a fixed radius model, have been calculated to be as follows:

-Zone 1 reaches 620 feet from the wellfield, representing the hypothetical one year time of travel
-Zone 2 extends to 1,390 feet (five year time of travel)
-Zone 3 extends to 1,970 feet (ten year time of travel)

- **The Buffer Zone** is a less defined area extending upgradient of Zone 3, drawn by Burton Water Company to reflect known hydrogeologic factors. It extends in an elliptical shape northward due primarily to topography, but also reflecting current knowledge of soils and geologic characteristics of the area.

- Because of these characteristics, the Buffer Zone is the primary area used by Burton Water Company in its wellhead protection efforts. This Zone is the basis for: a) defining affected property owners and providing them with information, b) informing emergency response agencies, land use planners, and related organizations to encourage decisions which minimize future risks to the water supply, and c) preparing contingency plans for unexpected surface discharges. This Zone is the area in which institution of best management agricultural and animal husbandry practices is needed, and will be actively encouraged by the water company.

Because ground water near the well field does not behave as simply as the calculated fixed radius model predicts, characteristics of Burton Water Company's hydrogeologic setting will be assessed in the future through use of the State Department of Health's Susceptibility Assessment system. The calculated fixed radius method will be updated when appropriate and feasible to present a more refined picture of the wellhead protection area. (see **Appendix B** for the 1994 susceptibility assessment)

IV. INVENTORY OF POTENTIAL SOURCES OF CONTAMINATION

Burton Water Company has surveyed property owners in the wellhead protection area to identify past, present or proposed activities that may potentially threaten the Burton water supply. Because the wells are shallow and the water bearing strata is primarily sand and gravel, the inventory included potential sources of contamination within Zones 1,2 and 3 and within the Buffer Zone upgradient of Zone 3. As required, this inventory will be updated approximately every two years.

The inventory has three components:

A) Existing data review
B) Survey of residents
C) Field check

Existing Data Review

Aerial photographs, historical maps, tax assessor plats, and interviews were the primary data sources. As the wellhead protection area for Burton Water Company is rural, and apparently does not include former commercial or industrial sites or zoning, the potential contaminant sources identified are of a rural and/or agricultural nature.

Telephone Survey of Residents

A letter was sent to each property owner in the area **(Appendix C)** and follow up phone calls were made using a standard inventory form (Figure 6). If the telephone survey indicated the need for more thorough assessment, the potential contaminant source list in Figure 6 was used as a guide for discussion. The combination of letters and phone surveys resulted in an excellent response rate of 96% of property owners or renters. These personal interviews were the source of most of the findings.

There was an exception to the immediate responsiveness and open exchange of information with the property owners surveyed. Tom Stewart substantially controls a number of rural parcels within the wellhead protection area. This property was mentioned by a number of other respondents as a potential source of contamination due to apparent agricultural and animal husbandry activities.

Phone contact was made with John Shoeppel, an employee on site in October, 1997. On his recommendation, follow up contact was made with Dale Woodside, the Chief Executive Officer of Services Group of America, listed as owner of some of the parcels. A number of phone contacts and conversations with Mr. Woodside took place between October '97 and April '98. At Mr. Woodside's request, the property owner's consultant for hydrologic matters, Mr. Jim Carr was contacted a number of times between October '97 and April '98 by phone and personal meetings. Substantial records and data were shared, and Burton Water Company's wellhead area was visited by Mr. Carr. The consultant received a copy of the inventory form used with other property owners with a request that it be completed and returned for this plan.

As the inventory form was not returned by Mr. Carr, who was the consultant representing this property owner and was knowledgeable about the groundwater issues, an additional copy of this form was personally provided to Mr. Woodside, the Chief Executive Officer of the Corporation in February, 1998. Burton Water Company representatives explained this information was needed, to be compiled along with information from other properties surveyed and included in Appendix B of this document. In May, 1998 Mr. Woodside, returned the completed survey form. This information has been compiled with other inventory data into the matrix shown further in Figure 7. However, it has not yet been possible to do a field check of this property.

FIGURE 6: INVENTORY FORM USED IN SURVEY

A. Landowners's Name: _____
B. Address: _____
C. Phone Number: _____
D. City: _____ Zip Code: _____
E. County: _____
Description of Location: _____

_____

Nature of Properties

Residential _____ Commercial _____ Agricultural _____ Industrial ____

City Gov't Site _____ State Gov't _____ Rental _____ Other _____

Potential Sources of Contamination

Circle the potential sources listed below that you have identified at this site. In the space provided, indicate how many.

POTENTIAL SOURCE	QUANTITY	POTENTIAL SOURCE	QUANTITY
Abandoned Water Well	_____	Holding Pond/Lagoon	_____
Above Ground Storage Tank	_____		
Airport	_____	Injection Well	_____
Animal Feedlot – Pasture	_____		
Artificial Recharge/Ag-Back Pump	_____	Landfill	_____
Auto Salvage Yard	_____		
		Mine	_____
Cemetery	_____	Municipal Sewage Line	_____
Cesspool	_____		
Chemical Storage Facility	_____	Oil/Gas Well	_____
Drainage Well/Canal	_____	Quarry	_____
Dump	_____	Railroad	_____
		Septic Tank	_____
Fertilizer/Pesticide Application	_____	Service Station Disposal Well	_____
		Sewage Plant Sludge Disposal	_____
Golf Course	_____	Stream (Lake, River, Creek)	_____
Grain Storage Bin	_____	Underground Storage Tank	_____
		Water Well	_____
Highway	_____	Other	_____

Notes: _____

_____

The lack of field information from this property owner regarding potential sources of contamination is surprising because of the many phone conversations and personal meetings between representatives of the water company and the consultant and CEO. This is of particular concern because the property overlaps Zone 2, Zone 3, and the Buffer Zone for the wellhead protection area, established to help prevent contamination of drinking water. Because animal husbandry, a slaughter house, and agricultural activity is taking place on this property, it is a potential source of nitrate, herbicide and pesticide contamination.

Field Check

Burton Water Company managers and employees are frequently present in the well head protection area. Physical site visits are made to monitor distribution lines and repair leaks. In addition, a number of public roads transect in the wellhead protection area, allowing regular visual monitoring of the area. Burton Water Company managers physically surveyed the wellhead protection area where possible, noting potential risks and areas for follow-up.

After the telephone survey, a number of property owners permitted access for a field survey. These properties were visited to follow up reports of previously unknown abandoned wells, oil storage tanks, and other factors. Numerous requests for the opportunity to do a field survey of parcels to the north and upgradient of the well field received no response. A number of requests for a site visit were made in phone conversations, in three in-person discussions with Mr. Carr, the consultant for this property, and in two in-person conversations with Mr. Woodside, who was representing property owner Mr. Stewart. Despite this, representatives of the water company have not to date been invited on site, and no physical site review has taken place.

As this site, approximately 180 acres, has potentially significant impact on Burton Water supply's aquifer and on the drinking water of hundreds of people, requests for physical access will continue to be made, and efforts to engage the property owner into prevention activities, such as instituting best management practices for the agricultural, irrigation, and animal husbandry activities will continue.

It is important that this property be carefully surveyed along with other potential sources of the nitrate contamination, to seek ways to reduce the risk of continuing and growing contamination of public drinking water. (See Sections V and VI of this report for more information on management strategies and prevention activities). Burton Water Company will contact various public planning and regulatory agencies to obtain all existing public information about this site.

Inventory Findings

The focus of the inventory, due to the historically rural setting, is on agricultural practices, underground storage tanks, abandoned wells, any commercial activity that might risk fuel or chemical spills, and septic systems. Potential contamination sources have been prioritized by: a) time of travel, and b) high and medium risk activities throughout the wellhead protection area

Copies of the inventory letter and form can be found in **Appendix C.** Figure 7 below is a chart summarizing the results of the inventory by time of travel Zone. As the large size of rural parcels causes many to straddle Zone boundaries, the chart in Figure 7 uses the lowest Zone category that each parcel occupies.

Burton Water Company is in a rural area Zoned 2.5, 5, and 10 acres. Because of the large parcel size, and the overlap of parcels onto more than one Zone, the survey information below reflects all properties with-in Zones 1,2, and 3, the 10 year time of travel.

Twenty-eight residents spoke at length to water company researchers, sharing information about wells, home fertilizer use, abandoned tanks, and other wellhead protection factors. Twenty-seven categorized their property as residential. For these properties, septic tanks, underground storage tanks, and both abandoned and existing wells are the primary potential contaminant sources. One large property owner categorized the nature of the property as agricultural. This is the series of parcels upgradient of the Burton Water Company well field. The property owners and/or residents themselves reported the potential contamination sources. Fertilizer and pesticide application, septic tanks, and water wells appear to be the key factors.

FIGURE 7: INVENTORY FINDINGS

RESULTS OF INVENTORY FROM 28 RESPONDENTS
SOURCE AND QUANTITY WITHIN 10 YEAR TIME OF TRAVEL

Animal Feedlot	1
Above Ground Storage Tank	2
Auto Salvage/Abandoned Vehicles	2
Fertilizer/Pesticide - Agricultural	1
Fertilizer/Pesticide - Residential	3
Oil Tank – Abandoned	3
Oil Tank – Operational	4
Septic Tank	31
Water Well – Abandoned	7
Water Well – Operational	18

V. ACTION PRIORITIES

Following analysis of the inventory results, and projecting to best ability undefined risks on property where access has not been obtained, the following priorities for management have been established:

A. **NITRATE CONTAMINATION** from agricultural and animal husbandry practices in Zones 1-3 and further upgradient of the well field. This is the highest priority due to the potentially significant public health hazard. Also, the cost of replacing contaminated wells or treating contaminated water is huge relative to the costs of prevention.

B. **FUEL OR CHEMICAL SPILLS** from commercial traffic on a public road (232 Street between 107 Ave. and Old Mill Road) crossing sensitive wellfield areas in Zone 1. The risk of a critical and immediate public health crisis due to a spill, and the short warning time provided by such an unanticipated event, warrant preventive action by King County.

C. **PESTICIDE AND HERBICIDE CONTAMINATION** from activities of King County road crews along the public rights of way within the wellhead protection area, and land uses within Zones 1-3. Costs of prevention are small relative to the public health risk and costs of treatment or replacement of supply.

D. **BACTERIAL AND CHEMICAL CONTAMINATION** from potential septic system failure. The surveys showed that property owners exhibited a high level of personal responsibility to maintain septic systems. The surveys also showed general knowledge that disposing of paint thinner, pesticides, and other chemicals into a septic system can harm water supplies. Nevertheless, due to certain parcel's locations in Zones 2 and 3, and the high porosity of the soils in the wellhead protection area, parcel-specific information and attention is warranted.

E. **FUEL LEAKAGE** from underground tanks and abandoned vehicles in Zones 1-3 is a real concern given the shallow source of water supply, porosity of soils, and lack of financially feasible treatment alternatives should contamination occur.

Notification of Public Agencies

The following regulatory agencies and local governments have been notified of the location of potential and known sources of ground water contamination within the wellhead protection boundaries. Copies of the notification letters are included in **Appendix D.**

. King County Health Department (all five priority areas: nitrates, fuel, chemical, septic, abandoned equipment)

. King County Department of Transportation (roadside spray program and fuel spills)
. Fire District 13 (road spills, general protection Zone info)
. State Department of Health (all priority areas)
. State Department of Agriculture (agricultural practices and impact on drinking water)
. State Department of Ecology (water/irrigation uses upgradient of public water supply)
. King County Cooperative Extension Service (assistance to property owners in establishing best management practices)

The agencies noted above have been informed that Burton Water Company's supply is particularly susceptible to contamination from activities within the wellhead protection area due to soils, and hydro-geologic factors. The soils are very sandy and porous, the public water source is shallow, and there appears to be no confining geologic layer between the surface uses in this area and the water supply.

VI. MANAGEMENT STRATEGIES AND IMPLEMENTATION

Burton Water Company's Wellhead Protection Strategy has six components:

A. Disseminate the wellhead protection plan and the findings of Burton Water Company's inventory, being certain to include relevant regulatory agencies and individuals responsible for potential contaminant sources.

B. Provide information and outreach to neighbors and water system users about best management, recycling, and other water quality protection practices. Disseminate knowledge such as the Potential Contaminant Source List in Figure 8 to promote water quality protection.

C. Monitor application of land use regulations (zoning, inspections, enforcement, etc.) and water right conditions (withdrawals and place of use). Take an active, preventive approach on matters that can affect water quality with King County and State Agencies responsible for enforcement.

D. A Wellhead Protection Oversight Committee has been established to help insure follow up and provide expertise. The Committee includes a water system user, a neighbor residing in the wellhead protection area, a county employee, a fire district representative and a Burton Water Company Officer.

FIGURE 8: [1]CONTAMINANT/ HEALTH EFFECTS MATRIX

Phases I/II/V Maximum Contaminant Levels (MCLs)

Contaminants	MCLG (mg/l)	MCL (mg/l)	Potential Health Effects
Phase I			
1,1-Dichloroethylene	0.007	0.007	Liver/Kidney Effects
1,1,1-Trichloroethane	0.2	0.2	Nervous System Effects
1,2-Dichloroethane	zero	0.005	Cancer
Benzene	zero	0.005	Cancer
Carbon Tetrachloride	zero	0.005	Cancer
p-Dichlorobenzene	0.075	0.075	Cancer
Trichloroethylene	zero	0.005	Cancer
Vinyl Chloride	zero	0.002	Cancer
Phase II			
1,2,4 Trichlorobenzene	0.07	0.07	Liver/Kidney Damage
1,1,2-Trichloroethane	0.003	0.005	Liver/Kidney Damage
1,2-Dichloropropane	zero	0.005	Liver/Kidney Damage
2,3,7,8-TCDD (DIOXIN)	zero	0.00000003	Cancer
2,4-D*	0.07	0.07	Liver/Kidney Damage
2,4,5-TP	0.05	0.05	Liver/Kidney Damage
Acrylamide	zero	TT	Cancer
Alachlor	zero	0.002	Cancer
Aldicarb Sulfone**	0.001	0.002	Nervous System Effects
Aldicarb Sulfoxide**	0.001	0.004	Nervous System Effects
Aldicarb**	0.001	0.003	Nervous System Effects
Asbestos (fiber > 10um/l)	7 MFL	7MFL	Cancer/Lung Tumors
Atrazine	0.003	0.003	Heart/Mammary Glands/ Reproductive Effects
Barium*	2	2	Circulatory System Effects
Cadmium*	0.005	0.005	Kidney Effects
Carbofuran	0.04	0.04	Nervous/Reproductive system Damage
Chlorodane	zero	0.002	Cancer
Chlorbenzene	0.1	0.1	Nervous System & Liver
Chromium (total)*	0.1	0.1	Liver/Kidney/Circulatory Disorder
cis-1,2-Dichloroethlyne	0.007	0.07	Liver/Kidney/Nervous System Damage
DBCP	zero	0.0002	Cancer
EDB	zero	0.00005	Cancer
Epichlorohydrin	zero	TT	Cancer
Ethylbenzene	0.7	0.7	Liver/Kidney/Nervous Damage
Heptachlor Epoxide	zero	0.0002	Cancer
Heptachlor	zero	0.0004	Cancer
Lindane	0.0002	0.0002	Liver/Kidney/Nervous/Immune/Circulatory
Mercury (inorganic)*	0.002	0.002	Kidney/Central Nervous System Disorder
Methoxychlor	0.04	0.04	Liver/Kidney/Nervous/Reproductive

Appendices to Primary Appendix E
Susceptibility Assessment Form, Version 2.2

Source: Department of Ecology

FIGURE 8: [2]CONTAMINANT/ HEALTH EFFECTS MATRIX (Cont'd)

Nitrate	10	10	Methoglobinemia
Nitrite	1	1	Methoglobinemia
o-Dichlorobenzene	0.6	0.6	Liver/Kidney Blood Cell Damage
PCBs	zero	0.0005	Cancer
Pentachlorophenol	zero	0.001	Liver/Kidney Effects
Seleium	0.05	0.05	Selonoala
Styrene	0.1	0.1	Liver Effects, Nervous System Damage
Tetrachloroethylene	zero	0.005	Cancer
Toluene	1	1	Liver/Kidney/Nervous/Circulatory
Toxaphene	zero	0.0003	Cancer
trans-1,2-Dichloroethlyne	0.1	0.1	Liver/Kidney/Nervous/Circulatory
Xylenes (total)	10	10	Liver/Kidney/Nervous System Effects
Phase V			
Adipates	0.4	0.4	Liver/Testes Damage
Antimony	zero	0.006	Decrease Longevity, Altered Blood Levels
Beryllium	0.004	0.004	Bone/Lung Damage
Cyanide	0.2	0.2	Spleen/Brain/Liver Damage
Dalapon	0.2	0.2	Kidney/Liver Damage
Dichloromethane	zero	0.005	Cancer
Dinoseb	0.007	0.007	Thyroid/Reproductive Organ Damage
Diquat	0.1	0.1	Liver/Kidney/Gastrointestinal Tract Damage
Endothall	0.1	0.1	Liver/Kidney Gastrointestinal/Reproductive Damage
Endrin	0.002	0.002	Liver/Kidney/Heart Damage
Glyphosate	0.7	0.7	Liver/Kidney Damage
Hexachlorobezene	zero	0.001	Cancer
Hexachloro-cylopentadiene	0.05	0.05	Kidney/Stomach Damage
Nickel	0.1	0.1	Heart/Liver Damage
Oxamyl	0.2	0.2	Kidney/Liver
PAHs (Benzo(a)pyrene)	zero	0.0002	Cancer
Phthalates	zero	0.006	Cancer
Picloram	0.5	0.5	Kidney/Liver Damage
Simazine	0.004	0.004	Cancer
Thallium	0.0005	0.002	Kidney/Liver/Brain/Intestine Damage

Notes:
* Indicates original contaminants with interim standards which have or will be revised.
** Regulation currently not in effect.
TT= Treatment Technique
MFL= Millions of Fibers per Liter

Source: Department of Ecology

E. Hold accountable persons responsible for contaminant sources to manage their property and activities with consideration for public health and safety. Assist them where possible. Make clear the consequences to the health of residents using the water system, in particular children who are susceptible to blue baby syndrome due to nitrate contamination. Put them in contact with sources of technical assistance, and encourage adoption of Best Management Practices.

F Update the inventory of potential contaminant sources on a regular basis and inform the appropriate regulatory agencies. Review and update the management priorities for water quality protection on a regular basis to reflect new information or changed circumstances.

Hot Spots

The survey undertaken for the Wellhead Protection Plan has revealed two "hot spots":

. The county road SW 232 street - between the high point at 111 Ave. and Old Mill Road. (Properties east of 111 generally drain away from the well field).

. The combined parcels of 180 acres upgradient of the system's wells in Zones 2, 3 and the buffer area.

These two hot spots will receive priority attention in 1998.

Management activity by Zone

Within Zone 1, potential sources of microbial and chemical contamination are strictly monitored on Burton Water Company's property. Zone 1 is also the area for intensive management to avoid chemical contamination. Because a chemical spill within Zone 1 provides very little time for company response and remedial action, prevention is the chosen method to avoid chemical contamination of the water distribution system. It is Burton Water Company's wellhead protection policy to prevent any chemical storage or use in Zone 1 without specific precautions and maintenance.

Property owners in Zone 1 will be notified by letter of this policy and of Burton Water Company's request to be informed of any storage needs or problems. Futher, property owners will be asked to notify the water company if they plan any herbicide, pesticide or other chemical application, or discover any spills. Along with all system users, Zone 1 property owners will be asked to think about friends or other sources of emergency water outside the Burton service area in the event a spill requires substituting water from others

in an emergency. The focus here is on prevention and cooperation. A copy of this letter will be given to King County Fire District 13, and to the King County and State Health Departments.

The King County Department of Transportation will be asked to post SW 232 Street, between 107 Ave. and Old Mill Road, with signs alerting travelers that this area is located within a drinking water supply protection area, and noting emergency phone numbers to contact in the event of a spill. **This area is the first of two identified "hot spots" requiring priority attention.** A copy of this letter will be sent to relevant county and state agencies.

Zone 2, the five year horizontal time of travel boundary, is also actively managed for prevention of potential chemical contamination. Zone 2 provides more time for response, but the porosity of the aquifer serving the Burton system demands that management emphasize pollution prevention and risk reduction. Zone 2 property owners will receive a letter noting their location in the protection area, and encouraging them to apply best management agricultural practices, and to notify the water company of any found or historical sources of contamination.

Within Zone 3 (the ten year horizontal time of travel boundary), and the Buffer Zone (drawn by Burton Water Company to reflect known hydrogeologic factors) an inventory has been made of all properties, surveying for potential contaminant sources. The Buffer Zone is the wellhead protection boundary communicated to water company clients, neighbors, the fire district, community council, King County and state departments. The purpose of the communication is to press for high risk operations and facilities to be sited elsewhere, and to reduce the risk of spills and contaminant loading (see full listing of agencies notified in **Appendix D**). The Buffer Zone is the wellhead protection area defined for Burton Water users to help them understand the source of their drinking water and the significance of activities within the protection area.

Throughout Zone 3 and the Buffer Zone, the following priority areas and issues have been identified, and management strategies initiated:

A. Nitrates: Fertilizer use and animal husbandry practices are targets for public information on potential contamination of drinking water, the effects of nitrates on human health, and the urgent need for avoidance and/or for careful, controlled use.

The second "hot spot" identified for priority attention in 1998 is the 180 acres upgradient of the water systems' wells. A field survey on this property has not been possible to date. These land uses are one potential source of increasing levels of nitrates found in the water supply. If this risk is confirmed, prevention activities should begin as soon as possible.

Continued communication and efforts to engage the owners of this 180 acres near Burton Water Company's wellfield will be made, with the assistance and advice of Wellhead Protection Team members. As informal discussions between water system representatives and property owner representatives have not succeeded in initiating preparation of an active ground water protection plan, these efforts will be supplemented by more formal contact and communication as follows:

First, written communication to the property owner, with copies to the Department of Ecology, will seek cooperative action in developing a groundwater protection plan and best management practices for this property. If this approach is not successful, a public request for cooperation will be made in the local newspaper with reference to a potential public health hazard that must be addressed. If the public appeal fails, the Burton Water Company will request the Department of Ecology, Department of Health, and other regulatory agencies to take whatever actions are within their purview to control the use of water and land in this area to prevent nitrate contamination of the groundwater.

Other possible sources of nitrate contamination within the wellhead protection Zone 3 and the Buffer Zone will receive the same personal approach, scaled up in intensity as needed over time to get results. The issue of nitrate contamination is so significant that public agencies will be asked to assist when neighborly, voluntary cooperation can not be obtained.

B. Contamination from potential fuel or chemical spills: Efforts are underway to post public roads with signs regarding the hazard (described above under management strategies for Zone 1). The Vashon Fire District will be asked to be a partner in this effort. Maps and public information regarding the road's location in a very sensitive ground water Zone will be dispersed by the Water Company and its Wellhead Protection Team, particularly to local fuel delivery companies.

C. Pesticide and herbicide use throughout Zone 3 can best be discouraged through public information. The Water District plans to enlist Vashon High School students to help prepare information about the potential effects of such applications on the quality of nearby drinking water that can be given to property owners. An effort will also be made to enlist the local newspaper to cover this issue, as it relates to the health and safety of residents' drinking water for 405 households.

D. Bacteriological contamination from septic systems will be approached through one on one contact with those in the well head protection Zone. The telephone survey revealed that awareness of the need for septic system maintenance is high. This knowledge needs to be coupled with information about the water system and its susceptibility, as well as sources of information and assistance to property owners.

E. Fuel leakage from underground oil tanks or abandoned vehicles should be given priority attention by the health and enforcement divisions of King County. The Water Company will offer to support an "abatement day", assisting county personnel to locate and remove such equipment, once a commitment has been made by King County to do so.

VII. CONTINGENCY PLANNING

The Federal safe drinking water act requires contingency plans for "provision of alternate drinking water supplies for each pubic water system in the event of well or wellfield contamination".

Burton Water Company is aware of the susceptibility of its water supply due to soil, geologic, and hydrologic factors. Further, all of its wells draw upon the same supply, thus they are all hydrologically connected. If contamination occurs, none of the wells are likely to evade contamination.

The water supply can be quickly and seriously affected by unforseeable incidents such as illegal discharges, leaks, and accidental spills. The Burton Water Company has made contingency plans to insure that the water system can respond to such emergency situations and offer alternative sources of drinking water.

Contingency planning includes evaluation of the following factors, presented here with a brief summary of the status of the planning to date:

Maximum Water System Capacity

1. Available excess capacity for use during emergency

Total storage is 270,000 gallons. This amount of storage would not be contaminated if the water company has time to protect stored supplies from contamination in the event of a spill. However, this storage provides only three days of limited use.

2. Affect of wellfield contamination on each well or point

As stated above, it is likely all the well field would be affected at once. The conditions and characteristics of the supply source make it unlikely that portions of the system could be protected from a sudden, contaminating event.

Expansion, Replacement, and Emergency Use Options

1. Other sites on Burton Water Company property

The company owns nine acres on SW 238 St. Wells in this area have not been successful, and many residents have resorted to Burton Water Company service. Recently a well in the area was dug to 600 feet and found dry. It is not likely that this property, even with substantial investment, could be a source of future emergency supply. However, this option will be assessed, along with costs, with the assistance of the Wellhead Protection Team. Development of this option would have large potential investment and rate impacts.

2. Other sources of water nearby

The neighboring property owner to the north, Mr. Stewart, with about 180 acres (Zoned rural, five and ten acres) has a deep well of 600-700 feet, which is unlikely to be affected by the same contaminating event due to the depth of the source and its location upgradient of SW 232 Street. This well produces about 280 gpm. A storage tank of approximately 100,000 gallons is on the site.

In addition, this property contains a large pond. This is a potential source of emergency drinking water which could be pumped to the Burton Water Company tanks and distributed through the system. This possibility provides replacement water to customers but the water would need treatment (boiling) before use.

It is possible that a water sharing or emergency supply agreement could be negotiated with this property owner to permit temporary sharing of supply during a public health crisis. This option will be considered by the Wellhead Protection Oversight Committee.

Mutual Assistance Agreement with Water District 19

1. Discussions have been held regarding the potential of an intertie, and the costs of its development, for emergency supply in the event of contamination of Burton Water Company wells. The cost of a connecting line across Judd Creek Bridge, with winter protection, would be prohibitive. In this and other options, pumps may be required because of pressure differentials. A number of questions have been raised which would need to be resolved. These include: Who maintains the pump and lines? Who pays? Who benefits?

2. Possibly more cost effective would be a joint emergency agreement providing for mutual assistance during a contamination event. Should either water purveyor need short term, emergency water, a pre-arrangement to truck additional drinking water supply to the other may be possible. If Burton Water Company were the recipient, it might park the truck at it's operations center, and disperse drinking

water in containers rather than distribute the water through its mains, to prevent waste and encourage conservation.

Other Sources of Emergency Water

1. Bottled water from Thriftway and Beck's Grocers. These stores now offer bulk drinking water. Thriftway has a self-perpetuating supply with a filtration system on site. In the event of an emergency, Burton Water Company will call the grocers immediately to provide the greatest notice possible that additional demand should be expected.

2. Trucked in water from Water District 19, or possibly private sources on Vashon Island.

Treatment Options if no Emergency Sources of Supply are Available

1. Emergency treatments for bacteriological contamination are chlorine treatment, boiling water at the site of use, and filtration systems available from outdoor equipment suppliers. System users are generally aware of this, but as contingency planning progresses, additional information and outreach will be designed (newspaper notice, brochure) so that it is available for immediate use in the event of an emergency.

2. Treatment for nitrate contamination consists of constructing a sand filter (for about $250,000). In the meantime, containers of water must be purchased. It is not possible to address nitrate contamination on an emergency basis, other than to notify users immediately not to drink the water.

3. If fuel or chemical contamination occur, temporary trucked in or purchased bottled water will be required, due to time needed and costs to install treatment systems for this type of contamination.

Costs

The contingency sources of emergency supply are prohibitively expensive for a water system of this size. **Prevention**, to protect the existing supply, is the most cost effective approach for the water company and its customers. Burton Water Company is prepared to invest in prevention. However, it will need to rely on State and County agencies to enforce existing rules which protect surface and ground water.

Coordination with Local Emergency Planning Committee

Contact has been made with the Vashon Fire District and Dispatcher service. They have been provided with a map of the wellhead protection area and phone numbers for emergency notification. Discussions are underway to obtain District review and improvement of Burton Water Company's Spill Response Action Steps. The water company wants to insure close coordination and division of responsibility in the event of a spill or other contaminating incident.

VIII. SPILL/INCIDENT RESPONSE

Burton Water Company has notified the County Sheriff and Vashon Fire District, and the Department of Ecology's Spill Operations Section of the findings of the wellhead protection inventory. They have been provided a copy of Burton Water Company's Spill Response Action Steps, with a request to be informed whether changes in incident/spill response measures are needed from the point of view of these agencies. As the drinking water supply is vulnerable to surface spills and activities, we have asked these agencies to institute special procedures and priorities for this area.

Fire District 13 has been asked to ensure that adequate amounts of absorbents are on hand to respond to a fuel spill on a road. We have also discussed our concern that in the event of a fire, emergency activities may increase contaminated runoff. In the event of a fuel spill and fire, it may be better to allow a controlled burn than to end the fire with water that can seep into the supply, carrying contaminants. Discussions with the fire district continue, so that information is available to make these judgment calls and response to various contingencies can be agreed to in advance of an emergency

We have asked the State Department of Ecology's spill operations section, which is developing standard operating procedures for first responders in susceptible wellhead protection areas, to send Burton Water Company and Fire District 13 copies of this work as soon as it is publicly available. We will work with the District to update the Spill Response Action Steps at that time. Copies of the spill response outreach correspondence can be found in **Appendix D.**

Spill Response Action Steps: Procedures for emergency events

The spill response procedures on the next page have been provided to Fire District 19, King County Roads, and others. This document will be reviewed and updated every two years at a minimum, with participation from emergency service agencies.

BURTON WATER COMPANY
SEVEN-STEP SPILL RESPONSE

1. **CALL 911**
   - -State location and what is known about the spill
   - -Fire District, Sheriff, and Road Crews will be notified by dispatcher

2. **TURN OFF PUMPS**
   - -Stop pumping water until damage is assessed, remedies are in place

3. **CONTAIN THE SPILL**
   - -Apply absorbents or let burn
   - -Seal off area as needed

4. **ASSESS THE DAMAGE**
   - -Can water be used? Under what conditions?
   - -How much delay time before pumping can resume?

5. **INFORM RESIDENTS ON SYSTEM**
   - -Post and distribute notices defining problem, expected time to resolve, and sources of emergency drinking supply.

6. **SECURE EMERGENCY DRINKING SUPPLY**
   - -Call Water District 19 to arrange trucking if needed
   - -Call Thriftway/ Beck's Groceries to inform
   - -Request use of neighbor's pond if needed

7. **CONVENE WELLHEAD PROTECTION OVERSIGHT COMMITTEE**
   - . Is more public information needed? (Beachcomber; signs; flyers)
   - . Can water be used? Under what conditions?
   - . Should more conservation measures be applied?
   - . Are other short term sources of water needed?
   - . Does the water need additional treatment?
   - . Must a well be abandoned?
   - . Organize volunteer clean up, conservation, education as appropriate.

EMERGENCY PHONE NUMBERS

Burton Water Company	567-4260 / page 955-2556 or 567-4688
Fire District 13:	463-2405
King Co. Roads	463-9098 / 1-800-527-6237
King Co. Sheriff	463-3618 / 1-800-344-4080
Water District 19	463-9007
Beachcomber	463-9195
Thriftway	463-2100 / Beck's Market 463-9725

APPENDIX A

Water Quality Test Results 1990-97

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

REPORT ON SAMPLE: 9612564-01A
Client Sample ID: Sta A (50' S. of Tanks) SO6

Date Received : 12/18/96 Collection Date : 12/17/96
Test Code : TIC_V Test Method : 524.2

TENTATIVELY IDENTIFIED VOLATILE COMPOUNDS

Number of TICs found: 0 Conc Units: ug/L

CAS Number	Compound Name	RT	Est. Conc

REPORT ON SAMPLE: 9612564-02A
Client Sample ID: Trip Blank

Date Received : 12/18/96 Collection Date : 12/17/96
Test Code : TIC_V Test Method : 524.2

TENTATIVELY IDENTIFIED VOLATILE COMPOUNDS

Number of TICs found: 0 Conc Units: ug/L

CAS Number	Compound Name	RT	Est. Conc

Form LTL-TIC-V

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Laucks Testing Laboratories, Inc.

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

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSIS

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

LABORATORY NUMBER: 08134905

DATE RECEIVED: 2-6-96 10:20

1. DATE COLLECTED: 2-5-96 11:30 AM

2. SYSTEM NAME: BURTON WATER CO.

3. SYSTEM ID #: 09820L

4. CIRCLE GROUP: (A) B

5. COUNTY: KING

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

7. SAMPLE TAKEN: ☐ BEFORE TREATMENT ☑ AFTER TREATMENT

8. SOURCE NO.: 501 1996 S06

9. SOURCE NAME:

10. COLLECTED BY: GERALD GARRISON

TELEPHONE: (206) 557-4402

11. IF TAKEN AFTER TREATMENT, CHECK TREATMENT:
☐ FLUORIDATION
☑ CHLORINATION
☐ FILTRATION
☐ WATER SOFTENER, TYPE: _____
☐ OTHER: _____

12. IF TAKEN FROM DISTRIBUTION, INDICATE ADDRESS:

13. SEND REPORT AND INVOICE TO:

ADDRESS:
BURTON WATER CO.
19517 - 116th PL SW
VASHON WA
98070

TELEPHONE: (206) 567-4302

14. REMARKS:
NITRATE ONLY

LABORATORY REPORT

TESTS	MCL[1]	Less Than <	RESULTS	UNITS	Compliance YES	Compliance NO	Chemist Initials
Antimony Sb	0.006			mg/l			
Arsenic[P] As	0.05			mg/l			
Barium[P] Ba	2.0			mg/l			
Beryllium Be	0.004			mg/l			
Cadmium[P] Cd	0.005			mg/l			
Chromium[P] Cr	0.1			mg/l			
Copper Cu	1.0[2]			mg/l			
Iron Fe	0.3			mg/l			
Lead[P] Pb	0.05[2]			mg/l			
Manganese Mn	0.05			mg/l			
Mercury[P] Hg	0.002			mg/l			
Nickel Ni	0.1			mg/l			
Selenium[P] Se	0.05			mg/l			
Silver Ag	0.1			mg/l			
Sodium[P] Na	20.[3]			mg/l			
Thallium Tl	0.002			mg/l			
Zinc Zn	5.0			mg/l			
Hardness				mg/l as $CaCO_3$			
Conductivity	700			umhos/cm 25° C			
Turbidity[P]	1.0			NTU			
Color	15.0			Color Units			
Chloride Cl	250			mg/l			
Cyanide CN	0.2			mg/l			
Fluoride[P] F	2.0			mg/l			
Nitrate[P] as N	10.0		3.1	mg/l	✓		BL
Nitrite as N	1.0			mg/l			
Sulfate SO_4	250			mg/l			
TDS	500			mg/l			

LABORATORY COMMENTS:

DATE OF REPORT: 2/8/96

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

961253

Laucks Testing Laboratories, Inc.

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

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSIS

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

1. LABORATORY NUMBER: 96142278
   DATE RECEIVED: 12-19-96
   DATE COLLECTED: 12-17-96
2. SYSTEM NAME: BURTON WATER CO.
   SYSTEM ID #: 19800 L
3. CIRCLE GROUP: (A) B
5. COUNTY: KING
6. SOURCE TYPE: ☐ SURFACE ☑ WELL ☐ SPRING ☐ PURCHASE
7. SAMPLE TAKEN: ☐ BEFORE TREATMENT ☑ AFTER TREATMENT
8. SOURCE NO.: 506
9. SOURCE NAME:
10. COLLECTED BY: G. GARRISON
    TELEPHONE: (206) 567-4688
11. IF TAKEN AFTER TREATMENT, CHECK TREATMENT:
    ☐ FLUORIDATION
    ☑ CHLORINATION
    ☐ FILTRATION
    ☐ WATER SOFTENER, TYPE: _____
    ☐ OTHER: _____
12. IF TAKEN FROM DISTRIBUTION, INDICATE ADDRESS:
13. SEND REPORT AND INVOICE TO:
    ADDRESS:
    BURTON WATER CO.
    11507 - 105 PL SW
    VASHON, WA
    98070
    TELEPHONE: (206) 567-4688
14. REMARKS:
    NITRATE ONLY

LABORATORY REPORT

TESTS	MCL[1]	Less Than <	RESULTS	UNITS	Compliance YES	Compliance NO	Chemist Initials
Antimony Sb	0.006			mg/l			
Arsenic[P] As	0.05			mg/l			
Barium[P] Ba	2.0			mg/l			
Beryllium Be	0.004			mg/l			
Cadmium[P] Cd	0.005			mg/l			
Chromium[P] Cr	0.1			mg/l			
Copper Cu	1.0[2]			mg/l			
Iron Fe	0.3			mg/l			
Lead[P] Pb	0.05[2]			mg/l			
Manganese Mn	0.05			mg/l			
Mercury[P] Hg	0.002			mg/l			
Nickel Ni	0.1			mg/l			
Selenium[P] Se	0.05			mg/l			
Silver Ag	0.1			mg/l			
Sodium[P] Na	20.[3]			mg/l			
Thallium Tl	0.002			mg/l			
Zinc Zn	5.0			mg/l			
Hardness				mg/l as $CaCO_3$			
Conductivity	700			umhos/cm 25° C			
Turbidity[P]	1.0			NTU			
Color	15.0			Color Units			
Chloride Cl	250			mg/l			
Cyanide CN	0.2			mg/l			
Fluoride[P] F	2.0			mg/l			
Nitrate[P] as N	10.0		2.7	mg/l	✓		PJ
Nitrite as N	1.0			mg/l			
Sulfate SO_4	250			mg/l			
TDS	500			mg/l			

LABORATORY COMMENTS:

DATE OF REPORT: 12-24-96

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

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Chemistry, Microbiology, and Technical Services

INORGANICS CHEMICALS (IOCS) REPORT FOR SAMPLE 9711378-03

System ID No.: 09800L System Name: Burton Water Company
Lab Sample No.: 08149784 Date Collected: 11/12/97 DOH Source No: S01
Multiple Source Nos.: _____ Sample Type: A Purpose: C
Date Received : 11/13/97 Date Reported: 11/21/97 Supervisor: BL
Date Digested: _____ Date Analyzed: 11/13/97 Analyst: N/A
County: King Group: A
Sample Location: S01
Send Report To: Burton Water Company Bill To: Burton Water Company

DOH #	ANALYTES	RESULTS	UNITS	SRL	TRIGGER	MCL	METHOD/ANALYST
	* * * * * * * EPA REGULATED * * * * * * *						
4	Arsenic	NA					
5	Barium	NA					
6	Cadmium	NA					
7	Chromium	NA					
11	Mercury	NA					
12	Selenium	NA					
110	Beryllium	NA					
111	Nickel	NA					
112	Antimony	NA					
113	Thallium	NA					
116	Cyanide	NA					
19	Fluoride	NA					
114	Nitrite - N	NA					
20	Nitrate - N	3.0	MG/L	0.50	5.0	10	EPA 300.0/RLA
161	Total Nitrate / Nitrite	NA					
	* * EPA REGULATED (secondary) * *						
8	Iron	NA					
10	Manganese	NA					
13	Silver	NA					
21	Chloride	NA					
22	Sulfate	NA					
24	Zinc	NA					
	* * * * * * * STATE REGULATED * * * * * * *						
14	Sodium	NA					
15	Hardness	NA					
16	Conductivity	NA					
17	Turbidity	NA					
18	Color	NA					
26	Total Dissolved Solids (TDS)	NA					
	* * * * * * * STATE UNREGULATED * * * * * * *						
9	Lead	NA					
23	Copper	NA					
	* * * OTHER (optional) * * *						
171	Orthophosphate	NA					
172	Silica	NA					
402	Aluminum	NA					
403	Alkalinity	NA					
404	Magnesium	NA					
405	Calcium	NA					

NOTES:

SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).

Trigger Level: DOH Drinking water response level. Additional sampling required. Contact regional DOH office for additional information.

MCL (Maximum Contaminant Level): If the contaminant amount exceeds the MCL, contact your regional DOH office immediately.

NA (Not analyzed)
ND (Not detected)
* These are Federal Action Levels, not MCLs

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

Chemistry, Microbiology, and Technical Services

CLIENT: Burton Water Company
11507 - 105th Pl SW
Vashon, WA 98070

ATTN : Gerald Garrison

Work ID : 524.2 Analysis
Taken By : Client
Transported by: Hand Delivered
Type : System ID #09800L-A

Certificate of Analysis

Work Order# : 96-12-564
DATE RECEIVED : 12/18/96
DATE OF REPORT: 01/06/97
CLIENT JOB ID : Adv. Pmt. Of $245.00 n/chck #

SAMPLE IDENTIFICATION:

	Sample Description	Collection Date
01	Sta A (50' S. of Tanks)S06	12/17/96 11:00
02	Trip Blank	12/17/96

GENERAL COMMENTS ON VOLATILE ORGANICS TICs:

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

FLAGGING:

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

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Chemistry, Microbiology, and Technical Services

VOLATILE ORGANIC CHEMICAL REPORT

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

Send Report To: Burton Water Company
11507 - 105th Pl SW
Vashon, WA 98070

COUNTY	: King		
SYSTEM NAME	: Burton Water	LABORATORY NO.	: 08142394
SYSTEM ID NO.	: 09800L	DATA FILE	:
DATE COLLECTED	: 12/17/96	ANALYST	: JA
DATE ANALYZED	: 12/23/96	DATE OF REPORT	: 01/06/97
SOURCE NUMBER	: S06	SUPERVISOR'S INITIALS	: jbr
SOURCE TYPE	: Well-Field	LTL #	: 9612564-01A

Regulated Compounds

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

* Maximum Contaminant level

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

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Chemistry, Microbiology, and Technical Services

Results of Analysis by EPA Method 524.2 (continued)

LABORATORY NO. : 08142394
DATA FILE :

Regulated Compounds (continued)

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

Trihalomethanes (THM)

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

* Maximum Contaminant level

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

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Results of Analysis by EPA Method 524.2 (continued)

LABORATORY NO. : 08142394
DATA FILE :

Unregulated Compounds

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

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

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

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Lab/Cor, Inc.

7619 6th Avenue NW, Seattle, WA 98117
(206) 781-0155 (Office) (206) 789-8424 (Fax)

WATER SAMPLE INFORMATION (WSI) FOR INORGANIC CHEMICAL ANALYSES

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

LABORATORY NUMBER: 119- 95069

DATE RECEIVED: 9/11/95

1. DATE COLLECTED: 9-20-95

2. SYSTEM NAME: BURTON WATER CO.

3. SYSTEM ID#: 09800L

4. CIRCLE GROUP (A) B

5. COUNTY: KING

6. SOURCE TYPE:
[ ] SURFACE [X] WELL
[ ] SPRING [ ] PURCHASE

7. SAMPLE TAKEN:
[ ] BEFORE TREATMENT [X] AFTER TREATMENT

8. SOURCE NO.: 1996 506

9. SOURCE NAME:

10. COLLECTED BY: GERALD GARRISON
TELEPHONE: (206 567 4688

11. IF TAKEN AFTER TREATMENT, CHECK TREATMENT:
[ ] FLUORIDATION
[X] CHORINATION
[ ] FILTRATION
[ ] WATER SOFTENER, TYPE: _____
[ ] OTHER: _____

12. IF TAKEN FROM DISTRIBUTION, INDICATE ADDRESS:
24115 99 AVE SW

13. PARTY TO PAY FOR TESTING:

SIGNATURE: Gerald R Garrison

NAME: GERALD R. GARRISON

ADDRESS: 11507 - 105 PL SW
VASHON, WA
98070

TELEPHONE: (206) 567-4688

14. REMARKS: (water quality problems, address for extra copies, etc.)
ASBESTOS ONLY

LABORATORY REPORT
(DO NOT WRITE INSIDE THIS BOX)

TESTS	MCL[1]	LESS THAN	RESULTS	UNITS	COMPLIANCE YES	COMPLIANCE NO	CHEMIST INITIALS
Asbestos	7.0		0.179	MFL	✓		EW

LABORATORY COMMENTS:
Bottle Lot # 59471, 59472

CHARGE:	LABORATORY SUPERVISOR:	DATE OF REPORT:
$175	John Hanaisp	9/22/95

1 MCL - Maximum Contamination Level

961564

STATE OF WASHINGTON DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH PROGRAMS
DIVISION OF DRINKING WATER
MAIL STOP LD-11, OLYMPIA WA 98504-0095

WATER SAMPLE INFORMATION (WSI) FOR VOLATILE ORGANIC CHEMICAL ANALYSIS

IF YOU HAVE ANY QUESTIONS REGARDING COMPLETION OF THIS FORM, SAMPLING LOCATION or MONITORING REQUIREMENTS, REFER TO THE TELEPHONE NUMBERS ON THE BACK OF THIS FORM FOR ASSISTANCE.

UTILITY - Complete Items 1 through 14 (PLEASE PRINT)

1. [0][9][8][0][0][L] System ID Number

2. BURTON WATER Co. System Name

3. KING County

4. Source Type (circle one) SURFACE WELL (WELL-FIELD) PURCHASED SPRING DISTRIBUTION

5. DOH Source Number (enter the numbers exactly as shown on WFI item 17, such as S01, S02...S10, etc.) [S][0][6]

6. Utility's Name for this source WELL FIELD

7. Specific Location Where Sample Taken: (Which tap, address, sample site #, etc.) STA A (50 FT SOUTH OF TANKS)

8. Indicate treatment type: (check all that apply)
(a) ✓ Chlorination (d) ___ Aeration
(b) ___ Filtration (e) ___ All other _____ (specify)
(c) ___ Fluoridation

9. Date Collected 12/17/96 (M/D/Y)

10. Time Collected 11:00 (AM) PM

11. Collected By GERALD GARRISON 206 567 4688 (Name) (Phone)

12. COMPOSITE INFORMATION (OPTIONAL - APPLIES TO MULTIPLE SOURCE SYSTEMS ONLY): ONLY if you want the lab to composite this sample with other samples from your system sign and enclose the COMPOSITING WAIVER FORM. Enter the DOH source number(s) of the sample(s) to be composited with this sample. 1. ___ 2. ___ 3. ___ 4. ___

13. Charges to be paid by:

BURTON WATER CO. Name (print)
11507 - 105th PL. S.W. Street
VASHON, WA 98070 City Zip Code

14. Report results to:

BURTON WATER CO. Name (print) 206 - 567 - 4688 Telephone
11507 - 105th PL. S.W. Street
VASHON, WA 98070 City Zip Code

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

CLIENT: Burton Water Company
11507 - 105th Pl SW
Vashon, WA 98070

ATTN : Gerald Garrison

Work ID : Copper/Lead Analysis
Taken By : Client
Transported by: Hand Delivered
Type : System ID #09800L-A

Certificate of Analysis

Work Order# : 96-12-562
DATE RECEIVED : 12/18/96
DATE OF REPORT: 01/02/97

SAMPLE IDENTIFICATION:

	Sample Description	Collection Date		Sample Description	Collection Date
01	#3 10528 SW 238th St.	12/13/96 07:30	06	#13 10015 SW 239th Lane	12/13/96 05:30
02	#6 10220 SW 227th St.	12/14/96	07	#14 9514 S.W. Burton Drive	12/15/96
03	#7 10923 SW 238th St.	12/12/96 11:00	08	#15 9702 S.W. Harbor Drive	12/13/96 05:40
04	#10 22820 107th Ave. S.W.	12/13/96 16:15	09	#16 10408 S.W. 238th St.	12/13/96 05:00
05	#12 9423 SW Harbor Drive	12/13/96 07:00	10	#19 9205 S.W. Harbor Drive	12/13/96 06:45

FLAGGING:

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

Unless otherwise instructed all samples will be discarded on 02/16/97

Respectfully submitted,
Laucks Testing Laboratories, Inc.

J. M. Owens

This report is submitted for the exclusive use of the person, partnership, or corporation to whom it is addressed. Subsequent use of the name of this company or any member of its staff in connection with the advertising or sale of any product or process will be granted only on contract. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.

Printed on Recycled Paper

Laucks Testing Laboratories, Inc.

Since 1908

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

Chemistry, Microbiology, and Technical Services

CLIENT : Burton Water Company

Certificate of Analysis

Work Order # 96-12-562

TESTS PERFORMED AND RESULTS:

Analyte	Units	01	02	03	04
Copper (Method 200.8)	mg/L	0.27	1.0	0.046	0.13
Lead (Method 200.8)	mg/L	0.002	0.002	0.001	0.004

Analyte	Units	05	06	07	08
Copper (Method 200.8)	mg/L	0.73	0.27	0.57	0.88
Lead (Method 200.8)	mg/L	0.018	0.002	0.001 U	0.003

Analyte	Units	09	10
Copper (Method 200.8)	mg/L	0.65	0.72
Lead (Method 200.8)	mg/L	0.001 U	0.002

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WATER SUPPLIER COPY

APPENDIX B

1994 Susceptibility Assessment

Sent June 1994

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.1

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 : GERALD R. GARRISON

Water system name : BURTON WATER CO.

County: KING

Water system number: 098001 L Source number: SO 1

Well depth: 18 (ft.) (*From WFI form*)

Source name: _____

WA well identification tag number: ___ ___ ___-___ ___ ___ Leave unit on

✓ well not tagged

Number of connections: 368 Population served: 1100

Township: 22N Range: 02E

Section: 13 1/4 1/4 Section: NE / SE

Latitude/longitude (if available): _____/_____ Leave unit on

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

Wellfield consists of
East well; 12" steel; 1940
Center well; 8" steel; 1955
North and south wells; 38' concrete tile; 1959
(17) well points, 1½" galvan, 1967 – 1991

1) Date well originally constructed: ___ / ___ /___ month/day/year

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

_____ information unavailable

2) Well driller: Concrete - Dan Mukka of Seamar
~~Mukka~~ MCKINSTRY of Vashon
6 well points Massa Makai of Vash
11 " " Burlin Water Co.

___ well driller unknown

3) Type of well:

___Drilled: ___ rotary ___ bored ___ cable (percussion) ___ Dug

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

___ driven ___ jetted ___ other: _____

Additional comments: Concrete Tile wells, jetted
steel wells, bored
well points, driven

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. 32,640,000 /yr

5) Average pumping rate: 62 (gallons/min) for all wells combined

Source of information: SOURCE METERS

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):

coliforms

7) If source is chlorinated, is a chlorine residual maintained: ✓ YES ___ NO

Residual level: 0.3 - 0.4 *(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 ___ 50–100 ft ___ 100–200 ft ___ >200 ft

___ information unavailable ('< ' *means less than;* '> ' *means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft ___ 20–50 ft ___ 50–100 ft ___ > 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
2 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 all wells feed into a storage tank.

5) Wellhead elevation (height above mean sea level): 250 (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 top of the open interval? ___ YES ✓ NO

___ information unavailable

7) Sanitary setback:

✓ < 100 ft* ___ 100–120 ft ___ 120–200 ft ___ > 200 ft

* if less than 100 ft describe the site conditions:

On the east side an orchard and Dwellings are within 60 feet of one of the wells

8) Wellhead construction:

1 steel – pitless with welded steel cover
1 steel – in wellhouse with pump
2 concrete – covered with roof, sealed to concrete

✓ wellhead enclosed in a wellhouse

___ controlled access (describe): fenced area, locked gates

___ other uses for wellhouse (describe): None

___ no wellhead control

9) Surface seal:

___ 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 ✓ > 25 in/yr

Ann. Pump
1993 - 32,640,000 gal

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 32,640,000 (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

concrete walls 4 ft
steel walls 6 ft
well points 3 ft

Length of screened/open interval: _____(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: (¼ mile)

	6 month	1 year	5 year	unknown	
~~likely~~ pesticide application & herbicide	____	____	✓	____	
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	____	____	____	____	see map
residences commonly have septic tanks	____	____	✓	____	a
Wastewater treatment lagoons	____	____	____	____	
sites used for land application of waste	____	____	✓	____	b

Mark and identify on map any of the risks listed above which are located within the 6 month time of (440 ~~ft~~) 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:

STOCK GRAZING, IRRIGATION ____ ____ ✓ ____ c

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.)

NITRATE 7
77 .
80 .
83 .2
86 .8
89 2.
92 1
93 2
mg/l

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES	NO
Results greater than MCL	___	✓
< 2 mg/liter nitrate	✓	___
2–5 mg/liter nitrate	✓	___
> 5 mg/liter nitrate	___	✓
___ 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	___	✓
VOCs detected at least once	___	___
VOCs never detected	___	___
___ VOC sampling records unavailable		

CHLORODIBROMOM
(TH
1990 0.8 µg/l
1993 <0.5

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	___	___
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		

D. Other SOCs (Pesticides):	YES	NO
Other SOCs detected	___	✓
(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).	✓ *	
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

* DUE TO UNSCREENED OVERFLOW OF NORTH WELL Now repaired

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:

THE HIGHER GROUND IS TO THE NORTHWEST THUS THE TIME OF TRAVEL LINES MAY BE ELONGATED IN THAT DIRECTION

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.

APPENDIX C
Survey Material

BURTON WATER COMPANY
VASHON ISLAND

October 27, 1997

Dear

In order to protect the drinking water supply for more than 400 homes served by the Burton Water Company, we are developing a wellhead protection program as required by the State of Washington.

As part of this work, I have mapped the area overlying the short term recharge zone of our drinking water supply wells. This is called the wellhead protection area. Your property is included in or may overlap the Burton Water Company's wellhead protection area.

I am now conducting an inventory of potential sources of ground water contamination within the protection area, as required by the State. I will be mapping locations of potential contaminants, such as pesticide and fertilizer application areas, septic systems, underground storage tanks or landfills, and other potential problem areas. These areas of potential risk must be noted in our wellhead protection plan, along with methods to prevent future contamination and provide for emergency response should the risk of contamination increase.

I will be calling within the next thirty days to further explain the state requirements and our work, and obtain any information or maps you may be willing to share to assist us in developing the wellhead protection plan.

I realize and appreciate that you are already careful to protect the environment. I hope that by informing you of your location in the wellhead protedtion area, and talking with you about the hydrologic systems which underlie both your property and the Burton Water Supply, we can develop more precautions to ensure that uses on nearby land will not affect the drinking water of our 400 customers.

Thank you for your interest and help. If you would like to call to arrange a time to meet with me, please contact me at 567-4260.

Sincerely,

Jim Garrison
Burton Water Company
11507 105th place SW
Vashon, WA. 98070

FIGURE 6: INVENTORY FORM USED IN SURVEY

A. Landowners's Name: _____

B. Address: _____

C. Phone Number: _____

D. City: _____ Zip Code: _____

E. County: _____

Description of Location: _____

_____

Nature of Properties

Residential _____ Commercial _____ Agricultural _____ Industrial ____

City Gov't Site _____ State Gov't _____ Rental _____ Other _____

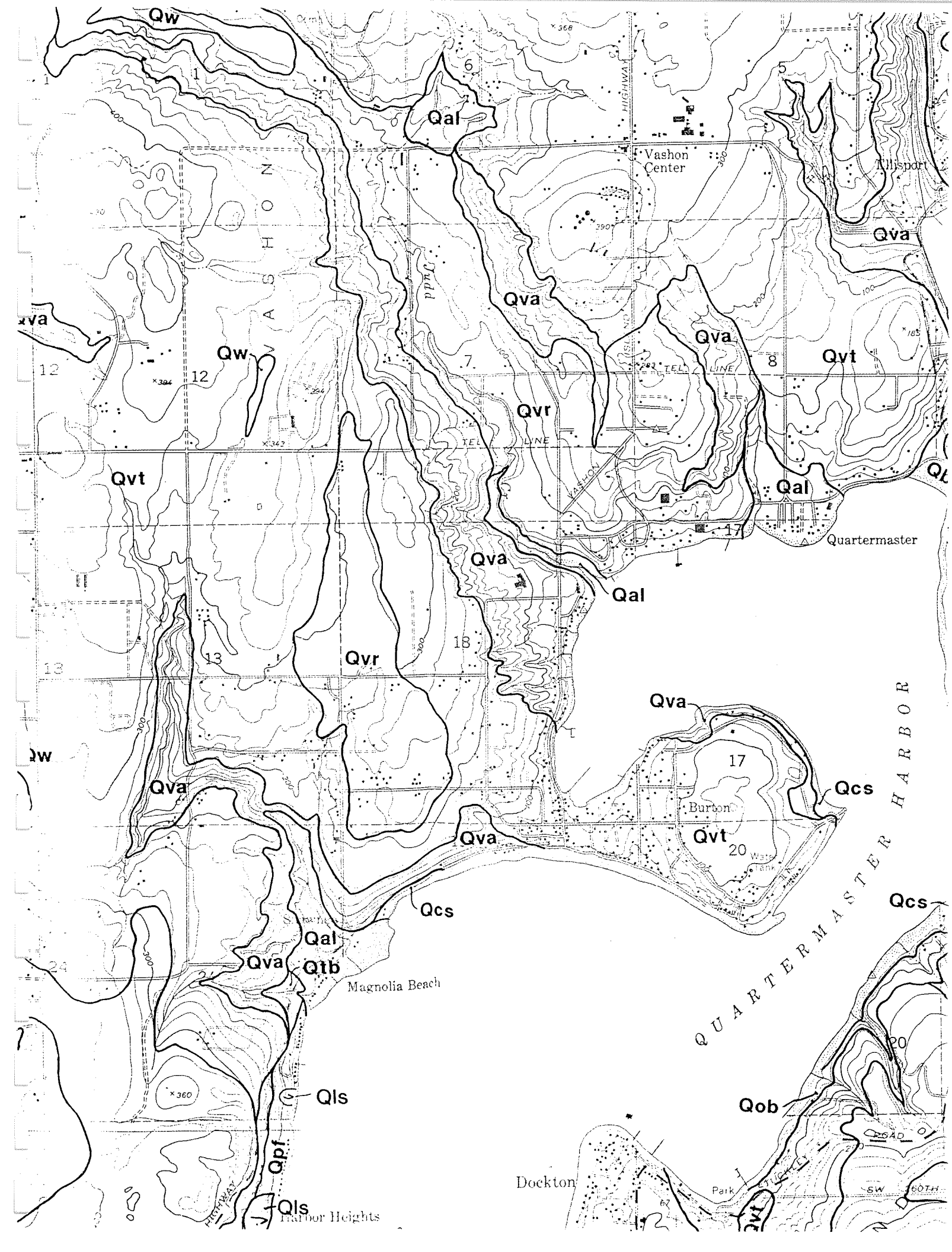
Potential Sources of Contamination

Circle the potential sources listed below that you have identified at this site. In the space provided, indicate how many.

POTENTIAL SOURCE	QUANTITY	POTENTIAL SOURCE	QUANTITY
Abandoned Water Well	_____	Holding Pond/Lagoon	_____
Above Ground Storage Tank	_____		
Airport	_____	Injection Well	_____
Animal Feedlot – Pasture	_____		
Artificial Recharge/Ag-Back Pump	_____	Landfill	_____
Auto Salvage Yard	_____		
		Mine	_____
Cemetery	_____	Municipal Sewage Line	_____
Cesspool	_____		
Chemical Storage Facility	_____	Oil/Gas Well	_____
Drainage Well/Canal	_____	Quarry	_____
Dump	_____	Railroad	_____
		Septic Tank	_____
Fertilizer/Pesticide Application	_____	Service Station Disposal Well	_____
		Sewage Plant Sludge Disposal	_____
Golf Course	_____	Stream (Lake, River, Creek)	_____
Grain Storage Bin	_____	Underground Storage Tank	_____
		Water Well	_____
Highway	_____	Other	_____

Notes: _____

_____


Qw
Qal
Vashon Center
Tiisport
Qva
Qvt
Qvr
Qal
Quartermaster
Qva
Qal
Qvr
Qva
Qcs
Burton
Qvt
Qva
Qcs
Qal
Qva
Qtb
Magnolia Beach
Qcs
QUARTERMASTER HARBOR
Qls
Qpf
Qls
Harbor Heights
Qob
Dockton
Park
SW 60TH
VASHON HIGHWAY
Judd
TEL LINE

Potential Contaminant Sources Listed Alphabetically

Above ground storage tanks
Hazardous and non-hazardous waste treatment
Hazardous and non-hazardous waste storage
Hazardous and non-hazardous material storage

Animal feedlots

Containers
Hazardous and non-hazardous waste storage
Hazardous and non-hazardous material storage

Deep injection wells
Wastewater disposal wells
Oil and gas activity disposal wells
Mineral extraction disposal wells

De-icing salts storage piles

Fertilizer applications

Graveyards

Ground water/surface water cross contamination

Irrigation practices (return flow)

Land application
Wastewater application (spray irrigation)
Wastewater by-product (sludge) application
Petroleum refining waste application
Hazardous and non-hazardous waste application

Landfills
Industrial hazardous and non-hazardous landfill
Municipal sanitary landfill

Material transfer operations
Hazardous and non-hazardous waste transfers
Hazardous and non-hazardous material transfers

Materials stockpiles
Hazardous and non-hazardous material

Mining and mine drainage

Natural leaching

Open dumps

Pesticide applications

Pipelines
Hazardous and non-hazardous waste storage
Hazardous and non-hazardous material storage

Radioactive disposal sites

Salt water intrusion

Septic tanks
Houses
Apartments
Small businesses

Shallow injection wells
Agricultural drainage wells
Automobile service station disposal wells
Industrial process water disposal wells

Storm water drainage wells

Surface impoundments
Hazardous and non-hazardous waste cesspools, ponds lagoons, and other impoundments

Transportation of materials
Hazardous and non-hazardous waste
Hazardous and non-hazardous material

Underground storage tanks
Hazardous and non-hazardous waste treatment
Hazardous and non-hazardous waste storage
Hazardous and non-hazardous material storage

Urban runoff

Waste piles
Hazardous and non-hazardous waste piles

Waste tailings
Heap leaching piles
Non-heap leaching piles

Source: United States Environmental Protection Agency. 1991.
Guide for Conducting Contaminant Source Inventories for Public Drinking Water Supplies.

Potential Contaminant Sources Listed by Type

CATEGORY I—Sources designed to discharge substances

Subsurface percolation (e.g., septic tanks and cesspools)
Injection Wells
  Hazardous waste
  Non-hazardous waste (e.g., brine disposal and drainage)
  Non-waste (e.g., enhanced recovery, artificial recharge solution mining, and in-situ mining)
Land application
  Waste water (e.g., spray irrigation)
  Wastewater by-products (e.g., sludge)
  Hazardous waste
  Non-hazardous waste

CATEGORY II—Sources designed to store, treat, and/or dispose of substances; discharge through unplanned release

Landfills
  Industrial hazardous waste
  Industrial non-hazardous waste
  Municipal sanitary
Open dumps, including illegal dumping (waste)
Residential (or local) disposal (waste)
Surface impoundments
  Hazardous waste
  Non hazardous waste
Waste tailings
Waste piles
  Hazardous waste
  Non hazardous waste
Materials stockpiles (non-waste)
Graveyards
Animal burial
Above ground storage tanks
  Hazardous waste
  Non-hazardous waste
  Non-waste
Underground storage tanks
  Hazardous waste
  Non-hazardous waste
  Non-waste
Containers
  Hazardous waste
  Non-hazardous waste
  Non-waste
Open burning sites
Detonation sites
Radioactive disposal sites

CATEGORY III—Sources designed to retain substances during transport or transmission

Pipelines
  Hazardous waste
  Non-hazardous waste
  Non-waste
Materials transport and transfer operations
  Hazardous waste
  Non-hazardous waste
  Non-waste

CATEGORY IV—Sources discharging substances as a consequence of other planned activities

Irrigation practices (e.g., return flow)
Pesticide applications
Fertilizer applications
Animal feeding operations
De-icing salts applications
Urban run-off
Percolation of atmospheric pollutants
Mining and mine drainage
  Surface mine-related
  Underground mine - related

CATEGORY V—Sources providing conduit or inducing discharge through altered flow patterns

Production wells
  Oil (and gas) wells
  Geothermal and heat recovery wells
  Water supply wells
Other wells (non-waste)
  Monitoring wells
  Exploration wells
Construction excavation
Improperly abandoned wells

CATEGORY VI—Naturally occurring sources whose discharge is created and/or exacerbated by human activity

Ground water- surface water interactions
Natural leaching
Saltwater intrusion/brackish water upconing (or intrusion of other poor-quality natural water)

Adapted from: United States Environmental Protection Agency. 1989.
Wellhead Protection Programs: Tools for Local Governments. EPA 440/6-89-002

APPENDIX D

Notification Letters to Public Agencies

BURTON WATER COMPANY
11507 105th PLACE
VASHON ISLAND, WA. 98070
(206) 567-4688

August 18, 1998

David Jennings
Manager, Wellhead Protection Program
State Department of Health
PO Box 47890
Olympia, Wa. 98504-7890

Dear David:

Enclosed please find Burton Water Company's Wellhead Protection Plan prepared pursuant to RCW 43.20.050, 70.119A.060 and 70.119A.080. Please note Page 14 which lists priorities for management:

A. Nitrate Contamination
B. Fuel and Chemical Spills
C. Pesticide and Herbicide Contamination
D. Bacterial and Chemical Contamination
E. Fuel Leakage

Figure 5 of the Plan shows the location of the Burton Water Company Wellfield, and the zones of contribution. The public water supply is particularly susceptible to contamination from activities within the wellhead protection area due to sandy and porous soils, shallow wells, and no confining geologic layer between the surface uses in this area and the water supply.

We have recently notified the State Department of Health, State Department of Agriculture, King County Departments of Transportation, Health, and Agricultural Extension, and King County Fire District 13, asking for their assistance and cooperation in our prevention program. In the event you are contacted by any of these agencies, we are counting on your firm support.

We would appreciate your forwarding to us copies of any rules and regulations that pertain to ground water contamination, reporting requirements, and enforcement provisions that we can provide to property owners in the wellhead protection area.

Please contact Jim Garrison at 567-4260 as needed to discuss the contents of this document, in particular how your agency can assist us in carrying out the management strategies to prevent wellfield contamination.

Sincerely,

Gerald R. Garrison

Gerald Garrison, President
Burton Water Company

BURTON WATER COMPANY
11507 105th PLACE
VASHON ISLAND, WA. 98070
(206) 567-4688

August 18, 1998

King County Fire District 13
Vashon, WA. 98070

Dear Commissioners:

The Burton Water Company on Vashon Island privides drinking water to about 400 residences. We have recently filed the enclosed Wellhead Protection Plan with the State Department of Ecology. This letter is to:

-Notify you of the location of potential sources of ground water contamination within the wellhead protection boundaries,

-Give you a copy of our letter to the roads department asking for a chemical and fuel spill plan and signage and ask you to send them a similar letter in support or our requests, and

-Share our emergency action plan with you.

We need your help in preventing contamination of the drinking water supply, and in the event of a wellfield contamination risk or event, we will want to work closely with you.

Enclosed is a copy of the Plan. Please note the action priorities on Page 14, which lists the priority areas for management:

A. Nitrate Contamination
B. Fuel or Chemical Spills
C. Pesticide and Herbicide Contamination
D. Bacterial and Chemical Contamination
E. Fuel Leakage

Figure 5 of the Plan shows the location of the Burton Water Company Wellfield, and the zones of contribution. The public water supply is particularly susceptible to contamination from activities within the wellhead protection area due to sandy and porous soils, shallow wells, and no confining geologic layer between the surface uses in this area and the water supply.

Please contact Jim Garrison at 567-4260 to discuss how the Fire District can help prevent water system contamination and respond in the event of a spill.

Thank You,
Gerald R. Garrison

Gerald Garrison, President
Burton Water Company

CC: David Jennings, Manager, Wellhead Protection Program, Deparment of Health

Burton Water Company, Inc.
11507 105th Place
Vashon Island, Wa. 98070
(206) 567-4688

August 18, 1998

Mr. Paul Toliver, Director
King County Department of Transportation
821 Second Avenue
Seattle, Wa. 98104

Dear Mr. Tolliver:

This letter is to notify you that the county road SW 232 St., between 111 Ave. S.W. and Old Mill Road S.W., is an area of high contamination risk to the Burton Water Company's public drinking water wellfield on Vashon Island.

Attached is a copy of our wellhead protection plan, which has been filed with the State Department of Ecology.

By this letter, we are requesting your help to protect this drinking water through the following actions:

1. Remove this stretch of road from your roadside spray program,
2. Establish a chemical and fuel spill plan for this roadway,
3. Place signs on the roadway noting it traverses a public drinking water source, and including a phone number to call in the event of a spill,
4. Prohibit fuel or chemical container vehicles from using this section of roadway.

We would appreciate your immediate attention to these requests, and look forward to discussing with you a spill response plan. The Water Company's Spill Response Action Steps are also enclosed for your information.

Sincerely,

Gerald R. Garrison

Gerald Garrison
President

Cc: David Jennings, Manager, Wellhead Protection Program, Department of Health
King County Fire District 13

BURTON WATER COMPANY
11507 105th PLACE
VASHON ISLAND, WA. 98070
(206) 567-4688

August 18, 1998

Mr. Bob James, District Engineer
State Department of Health
NW Drinking Water Section
1511 Third Avenue
Suite 719-M,
Seattle, Wa. 98108

Dear Mr. James:

The Burton Water Company on Vashon Island provides drinking water to about 400 residences. We have recently filed a Wellhead Protection Plan with the State Department of Ecology. This letter is to notify you of the location of potential sources of ground water contamination within the wellhead protection boundaries, and ask you to provide property owners within the wellhead protection area any available educational material about the topics listed in bold type below:

Enclosed is a copy of the Plan. Please note the action priorities on Page 14, which lists five priority areas for management: **Nitrate Contamination, Fuel and Chemical Spills, Pesticide and Herbicide Contamination, Bacterial and Chemical Contamination from Septic Systems, and Fuel Leakage from Abandoned Vehicles and Storage.**

Figure 5 of the Plan shows the location of the Burton Water Company Wellfield, and the zones of contribution. The public water supply is particularly susceptible to contamination from activities within the wellhead protection area due to sandy and porous soils, shallow wells, and no confining geologic layer between the surface uses in this area and the water supply.

We would appreciate copies of any **rules and regulations that pertain to ground water contamination, reporting requirements, and enforcement provisions** that we can provide to property owners in the wellhead protection area.

Please contact Jim Garrison at 567-4260 to discuss material available for distribution and the services the Health Department can provide to help prevent water system contamination.

Thank You,

Gerald R Garrison

Gerald Garrison, President
Burton Water Company

Cc: David Jennings, Manager, Wellhead Protection Program, State Department of Health

BURTON WATER COMPANY
11507 105th PLACE
VASHON ISLAND, WA. 98070
(206) 567-4688

August 18, 1998

Dr. Alonzo Plough, Director
King County Department of Health
First Interstate Center
999 Third Avenue
Seattle, Wa 98104

Dear Dr. Plough:

The Burton Water Company on Vashon Island serves about 400 residences. We have recently filed a Wellhead Protection Plan with the State Department of Ecology. This letter is to notify you of the location of potential sources of ground water contamination within the wellhead protection boundaries, and ask you to provide property owners within the wellhead protection area any available information about the five items below to assist in preventing contamination.

Enclosed is a copy of the Plan. Please note the action priorities on Page 14, which lists the priority areas for management:

A. Nitrate Contamination, from agricultural practices
B. Fuel or Chemical Spills, from a roadway through the protection zone
C. Pesticide and Herbicide Contamination, from agricultural and gardening practices
D. Bacterial and Chemical Contamination, from septic systems and animal husbandry
E. Fuel Leakage, from abandoned vehicles and storage

Figure 5 of the Plan shows the location of the Burton Water Company Wellfield, and the zones of contribution. The public water supply is particularly susceptible to contamination from activities within the wellhead protection area due to sandy and porous soils, shallow wells, and no apparent confining geologic layer between the surface uses in this area and the water supply.

Please contact Jim Garrison at 567-4260 to discuss educational material available and the services the Health Department can provide to help prevent water system contamination.

Thank You,

Gerald R Garrison

Gerald Garrison, President
Burton Water Company

Cc: David Jennings, Manager, Wellhead Protection Program, State Department of Health

BURTON WATER COMPANY
11507 105th PLACE
VASHON ISLAND, WA. 98070
(206) 567-4688

August 18, 1998

Mr. Chris VanGorkum, Acting Director
State Department of Health
PO Box 47890
Olympia, Wa. 98504-7890

Dear Mr. VanGorkum:

The Burton Water Company on Vashon Island provides drinking water to about 400 residences. We have recently filed a Wellhead Protection Plan with the State Department of Ecology. This letter is to notify you of the location of potential sources of ground water contamination within the wellhead protection boundaries, and ask you to provide property owners within the wellhead protection area any available educational material about the topics listed in bold type below:

Enclosed is a copy of the Plan. Please note the action priorities on Page 14, which lists five priority areas for management: **Nitrate Contamination, Fuel and Chemical Spills, Pesticide and Herbicide Contamination, Bacterial and Chemical Contamination from Septic Systems, and Fuel Leakage from Abandoned Vehicles and Storage.**

Figure 5 of the Plan shows the location of the Burton Water Company Wellfield, and the zones of contribution. The public water supply is particularly susceptible to contamination from activities within the wellhead protection area due to sandy and porous soils, shallow wells, and no confining geologic layer between the surface uses in this area and the water supply.

We would appreciate copies of any **rules and regulations that pertain to ground water contamination, reporting requirements, and enforcement provisions** that we can provide to property owners in the wellhead protection area.

Please contact Jim Garrison at 567-4260 to discuss material available for distribution and the services the Health Department can provide to help prevent water system contamination.

Thank You,

Gerald R Garrison

Gerald Garrison, President
Burton Water Company

Cc: David Jennings, Manager, Wellhead Protection Program, State Department of Health

BURTON WATER COMPANY
11507 105th PLACE
VASHON ISLAND, WA. 98070
(206) 567-4688

August 18, 1998

Jim Jesernig, Director
State Department of Agriculture
PO Box 42560
Olympia, Wa. 98504-7890

Dear Mr. Jesernig:

The Burton Water Company on Vashon Island provides drinking water for about 400 residences. We have recently filed a Wellhead Protection Plan with the State Department of Ecology. This letter is to notify you of the location of potential sources of ground water contamination from agricultural practices, and ask your assistance in preventing contamination. We request you provide key property owners within the wellhead protection area all available information on agricultural practices that can contaminate public drinking water, and information on best management practices for agriculture and animal husbandry.

Enclosed is a copy of the Plan. Please note the action priorities on Pages 14-20, which list the priority areas for management and the "hot spots" requiring immediate attention. One of these hot spots is approximately 180 acres upgradient of the water system's wellfield. This property's uses include agriculture, animal husbandry, and animal slaughter. The Burton Water Company's concerns include nitrate contamination (monitoring data show significant increases) and pesticide/herbicide contamination.

Figure 5 of the Plan shows the location of the Burton Water Company Wellfield. The property and practices noted above occur within the "zones of contribution" to the wellfield. The public water supply is particularly susceptible to contamination from activities within the wellhead protection area due to sandy and porous soils, shallow wells, and no confining geologic layer between the surface uses in this area and the water supply.

Please contact Jim Garrison at 567-4260 to discuss best management practices information, and the services and responsibilities of the Agriculture Department related to prevention of water system contamination.

As the agricultural property and practices upgradient of the public drinking water wellfield may have significant risk to the water supply and have been designated a hot spot for immediate action, we will appreciate your prompt response.

Sincerely,

Gerald R Garrison

Gerald Garrison, President
Burton Water Company

cc: David Jennings, Manager, Wellhead Protection Program, State Department of Health

BURTON WATER COMPANY
11507 105th PLACE
VASHON ISLAND, WA. 98070
(206) 567-4688

August 18, 1998

Chairperson, WSU/King County Cooperative Extension
Department of Community and Human Services
700 Fifth Ave. Suite 3700
Seattle, Wa. 98104-5037

Dear Chair of the Cooperative Extension:

The Burton Water Company on Vashon Island provides drinking water for about 400 residences. We have recently filed a Wellhead Protection Plan with the State Department of Ecology. This letter is to notify you of the location of potential sources of ground water contamination from agricultural practices, and ask your assistance in preventing contamination. **We request you provide key property owners within the wellhead protection area available information on agricultural practices that can contaminate public drinking water, and information on best management practices for agriculture and animal husbandry.** Lyle Fitch, extension agent, visited Burton Water Company in 1995 and may have an active file.

Enclosed is a copy of the Plan. Please note the action priorities on Pages 14-20, which list the priority areas for management and the "hot spots" requiring immediate attention. One of these hot spots is approximately 180 acres upgradient of the water system's wellfield. This property's uses include agriculture, animal husbandry, and animal slaughter. The Burton Water Company's concerns include nitrate contamination (monitoring data show significant increases) and pesticide/herbicide contamination.

Figure 5 of the Plan shows the location of the Burton Water Company Wellfield. The property and practices noted above occur within the "zones of contribution" to the wellfield. The public water supply is particularly susceptible to contamination from activities within the wellhead protection area due to sandy and porous soils, shallow wells, and no confining geologic layer between the surface uses in this area and the water supply.

Please contact Jim Garrison at 567-4260 to discuss best management practices information, and the services and responsibilities of the Agriculture Department related to prevention of water system contamination.

As the agricultural property and practices upgradient of the public drinking water wellfield may have significant risk to the water supply and have been designated a hot spot for immediate action, we will appreciate your prompt response.

Sincerely,

Gerald R. Garrison

Gerald Garrison, President
Burton Water Company

cc: David Jennings, Manager, Wellhead Protection Program, State Department of Health

project 08-1023 file(K)

NEW SOURCE INFORMATION

(■ DENOTES REQUIRED FIELDS)

■ SYSTEM NAME: Burton ■ PWS ID#: 09800

■ 1. SOURCE NUMBER: S_____ (assigned by Sentry)	■ 2. WELL TAG ID#: AKN 518
■ 3. SOURCE NAME:	Well PW 06-1
■ 4. SOURCE STATUS:	☐ Pre-Active ☑ Active ☐ Inactive ☐ Decommissioned
■ 5. SOURCE TYPE:	☐ Surface ☑ Well ☐ Well in Well Field ☐ Well Field ☐ Spring ☐ Spring Field ☐ Intertie
If Source Type is wellfield, list all wells in the wellfield:	* will be part of a future wellfield S_____ S_____ S_____ S_____ S_____
If source type is well of a wellfield, list the associated wellfield:	S_____
■ 6. SOURCE USE:	☑ Permanent ☐ Emergency ☐ Seasonal
■ 7. REPLACEMENT SOURCE?	☑ Yes but not ready to inactivate ☐ No If Yes, which source is being replaced: S not yet
Replaced source has been or will be:	☐ Decommissioned ☐ Inactivated ☐ Used as Emergency
■ 8. SOURCE DETAILS:	■ Approved Pump Capacity: 25 GPM ■ Max. Capacity: 25 GPM ■ Source Metered: ☑ Yes ☐ No
■ 9. SOURCE APPROVED:	☑ Yes ☐ No Approved by: ☐ DOH ☐ LHJ Date Approved: 6/11/09
■ 10. SOURCE LOCATION:	Parcel Number (if available:) 1322029016
■ Quarter/Quarter: SE NE	■ Section: 13 ■ Township: 22 ■ Range: 2 ■ WRIA:_____
■ 11. ACTIVE CONNECTIONS:	■ 12. Email WFI staff with a number of approved connections or provide a copy of an approval letter or provide details in a comment field (below)
■ 13. WELL DETAILS	■ Well Construction Completion Date: 10/14/05
■ Total Completed Well Depth: 38'	■ Static Water Depth: 10'
■ Depth to First Open Interval / Top of Screen: 27'	■ Date of Static Depth: 10/14/05
14. STORAGE CAPACITY: (DO NOT COUNT PRESSURE TANKS)	_____ Gallons
■ 15. TREATMENT: Complete New Treatment Plant form if necessary	Date activated:
■ Simple Disinfection	☑ Yes ☐ No If Yes, when?
■ Disinfection required by DOH	☐ Yes ☑ No If Yes, why?
■ CT6 provided	☑ Yes ☐ No
■ Treatment plant number this source is linked to:	# 1 ☐ New ☑ Existing
■ 16. DOES APPROVAL INVOLVE A MERGE?	☐ Yes ☑ No If Yes, list other PWS ID# & name:

COMMENTS:

Completed 7/2/09 DSS

S. M. Ilca 6/29/09

Engineer's signature and date

Version: 9/7/07

Source Treatment Page – New Source Information

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP/TYPE	5. Source #

27. SOURCE TREATMENT PROCESS (CHECK ALL THAT ARE USED TO MEET THE OBJECTIVES LISTED BELOW)	A. DISINFECTION	B. PARTICULATE (TURBIDITY) REMOVAL)	C. SOFTENING (HARDNESS REMOVAL)	D. RON & MANGANESE REMOVAL	E. ORGANICS & COLOR REMOVAL	F. TASTE / ODOR CONTROL & DECHLORINATION	G. DISINFECTION BY PRODUCTS CONTROL	H. INORGANICS REMOVAL	I. CORROSION CONTROL	J. DENTAL HEALTH
Chloramines										
Chlorination, Gaseous										
Chlorination, Hypochlorite										
Chlorine Dioxide										
Iodination										
Ozonation										
Ultraviolet Radiation										
Rapid Mix. In-line Blender										
Coagulation										
Flocculation										
Sedimentation										
Filtration, Cartridge										
Filtration, Diatomaceous Earth										
Filtration, Greensand/Catalytic Media										
Filtration, Pressure Sand										
Filtration, Rapid Sand										
Filtration, Slow Sand										
PH Adjustment										
Ion Exchange										
Lime-Soda Softening										
Aeration/Air Stripping										
Permanganate										
Activated Carbon, Granular										
Activated Carbon, Powdered										
Reverse Osmosis										
Distillation										
Electrodialysis										
Sequestration										
Corrosion Inhibitors-Phosp/Silica										
Fluoridation										
Reducing Agents-Sulfur Compaunds										
Sludge Treatment										
Other Processes/Objectives										
Filtration, Membrane (Micro/Ultra)										
Source Blending										

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
20435 72nd Ave. S. , Suite 200, K17-12• Kent, Washington 98032 -2358

June 11, 2009

JIM GARRISON
BURTON WATER COMPANY
11507 105th PL SW
VASHON, WA 98070

Subject: Burton Water Company ID#09800
King County
Replacement Well #1 (PW06-1)
Submittal #08-1023

Dear Mr. Garrison:

The project report and related source documents for the replacement groundwater well PW06-1, received in this office on October 20, 2008 and subsequent submittals received in May 2009 have been reviewed and, in accordance with the provisions of WAC 246-290, are hereby APPROVED. The approval issued herein is only valid as it relates to current standards outlined in WAC 246-290, effective July 1, 2008. Future revisions in the rules may be more stringent and require facility modifications or corrective action.

As required in WAC 246-290-120(5), within sixty days following the completion of and prior to the use of the above project or portions thereof, the enclosed construction completion report must be completed by a professional engineer and returned to this department.

The Susceptibility Assessment document has been forwarded to the Source Monitoring staff for review and rating. Future monitoring requirements for this source will be included in the next Water Quality Monitoring Report for your water system.

The Department of Ecology has not provided comments regarding this submittal to ensure the accuracy of the water rights information presented. DOH is making the approval based upon the system's assurances that adequate water rights are secured by the system to cover all existing and proposed water uses resulting from approval of the project.

Nothing in this approval shall be construed as satisfying other applicable federal, state, or local statutes, ordinances and regulations.

If you have any questions, please call me at (253) 395-6764.

Sincerely,

Sheri Miller, P.E.
Regional Engineer
N.W. Drinking Water Operations

Enclosure

cc: Public Health - Seattle & King County, Drinking Water Program
Eric Weber, Landau Associates

Construction Completion Report

In accordance with WAC 246-290-120 (5), a ***Construction Completion Report*** is required for all approved construction projects. Purveyors **must** submit a Construction Completion Report to the Office of Drinking Water (ODW) within sixty (60) days of completion and before use of any water system facility. This includes any source, water quality treatment, storage tanks, booster pump facilities, and distribution projects.

Please type or print legibly in ink:

BURTON WATER COMPANY INC
Name of Water System

JIM GARRISON
Name of Purveyor (Owner or System Contact)

10930 SW 238TH ST
Mailing Address

VASHON, WA 98070
City State Zip

DOH System ID No.: **09800**

DOH Project No.: **08-1023** (if applicable)

Date Construction Documents Approved by DOH **6/11/2009** (If applicable)

Project Name and Descriptive Title: WELL #1 - SOURCE APPROVAL

CHECK ONE: ☐ Entire Project Completed. ☐ Description of Portions Completed.

PROFESSIONAL ENGINEER'S ACKNOWLEDGMENT *(Complete items below–Attach additional sheets as needed)*

The undersigned professional engineer (PE), or their authorized agent, has inspected the above-described project which, as to layout, size and type of pipe, valves and materials, reservoir and other designed physical facilities, has been constructed and is substantially completed in accordance with construction documents reviewed by the purveyor's engineer or approved by the DOH. In the opinion of the undersigned engineer, the installation, physical testing procedures, water quality tests, and disinfection practices were carried out in accordance with state regulations and principles of standard engineering practice.

I have reviewed the disinfection procedures ☐, pressure test results ☐, and results of the bacteriological test(s) ☐ for this project and certify that they comply with the requirements of the construction standards/specifications approved by the DOH. (Check all boxes that apply that are consistent with the nature of the project.)

This project changes the physical capacity of the system to serve consumers. The system is now able to serve _ equivalent residential units (ERUs.) ☐ Not applicable

P.E.'s Seal

Date Signed

Name of Engineering Firm

Name of PE Acknowledging Construction

Mailing Address

City State Zip

Engineer's Signature

State/Federal Funding Type (if any) _____

Please return completed form to DOH regional office checked below.

☒ **NWRO Drinking Water**
Department of Health
20435 72nd Ave. S, Ste 200
Kent, WA 98032-2358
(253) 395-6750

☐ **SWRO Drinking Water**
Department of Health
PO Box 47823
Olympia, WA 98504-7823
(360) 236-3030

☐ **ERO Drinking Water**
Department of Health
16201 E. Indiana, Suite 1500
Spokane Valley, WA 99216
(509) 456-3115

For persons with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

The purveyor must attach a completed Water Facilities Inventory (WFI) form in accordance with WAC 246-290-120(6), if applicable. Contact the regional office in your area for WFI forms or additional Construction Completion Report forms.

LANDAU ASSOCIATES

June 24, 2009

Washington Department of Health
20435 72nd Avenue South, Suite 200, K-17-12
Kent, Washington 98032-2358

Attn: Ms. Sheri Miller

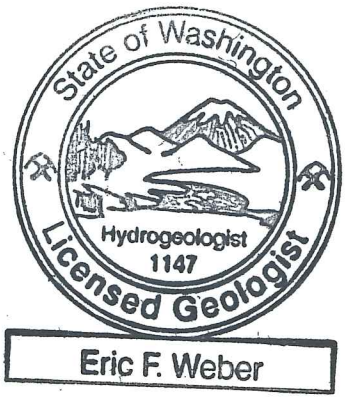
RE: BURTON WATER COMPANY ID#09800
KING COUNTY
REPLACEMENT WELL #1 (PW06-1)
SUBMITTAL #08-1023

Dear Ms. Miller:

On June 11, 2009, the Washington Department of Health (DOH) sent a letter to Burton Water Company approving the project report and source documents for the replacement groundwater well PW06-01. I have reviewed these documents and also inspected the wellhead and piping on June 23, 2009. Based on my inspection, the well source was installed according to these documents.

Furthermore, I discussed the well source approval with Jim Garrison at Burton Water. Mr. Garrison disinfected the well source and well piping with a chlorine solution. He also performed pressure testing of the new system and did not detect any leaks. Finally, a bacteriological test was collected at the sample tap for the new well on April 21, 2009. This sample was non-detect for coliform bacteria. Please let me know if you have any questions.

LANDAU ASSOCIATES, INC.



Eric F. Weber, L.G.
Principal
6/24/09 Y:\664\002.010\DOH Ltr_062409.doc
EFW/jas

CC: Mr. Jim Garrison, Burton Water Company

RECEIVED
JUN 26 2009
DEPARTMENT OF HEALTH
NW DRINKING WATER

Jackie Slakey

From: Eric Weber
Sent: Wednesday, June 24, 2009 1:54 PM
To: Jackie Slakey
Subject: sheri.miller@doh.wa.gov

Eric Weber ♦ Principal Hydrogeologist
Landau Associates, Inc.
950 Pacific Ave., Suite 515, Tacoma, WA 98402
253.926.2493 ♦ fax 253.926.2531 ♦ cell 206 940-2406
eweber@landauinc.com ♦ www.landauinc.com

Email is a sustainable communications tool – please consider this before printing.

Notice: This communication may contain privileged or other confidential information. If you have received it in error, please advise the sender by reply email and immediately delete the message and any attachments without copying or disclosing the contents. Thank you.

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

Susceptibility Rating = High (Shallow!)

SOC Vulnerability = Moderate (SOC vuln code = 2011)

SGH 5/4/10

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: James Garrison

Water system name: Burton Water Company

County: King

Water system ID number: 09800 Source number: S07

Well depth: 38 feet

Source name: PW 06-1 Replacement Well 1

WA well identification tag number: A K N - 5 1 8

☐ Well not tagged

Number of connections: 409 Population served: 1132

Township: 22 N Range: 02 E.

Section: 13 ¼ ¼ Section: NE/SE

Latitude/longitude (if available): 47° 23' 44.9" N / 122° 28' 58.2" W

How was latitude/longitude determined?

_____Global positioning device_____survey_____topographical map
_X_other: google earth aerial 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: 10/24/05 month/day/year

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

☐ Information unavailable

2) Well driller: Tacoma Pump and Drilling Co., Inc.

☐ Well driller unknown

3) Type of well: ___ 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: 22.5 (gallons/min)

Source of information Aquifer testing

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):

7) If source is chlorinated, is a chlorine residual maintained: ☑ Yes ☐ No

Residual level: about 0.2 mg/L (At the point closest to the source.)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

☐ <20 ft ☑ 20-50ft ☐ 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): 250 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.)

_____ 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:

A shed located about 60 ft from the well will contain a limited amount of chlorine for system disinfection which is not expected to reach the aquifer.

8) Wellhead construction:

☐ wellhead enclosed in a wellhouse

☐ controlled access (describe): _____

☐ 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: 11,826,000 (gallons)

How was this determined?

☐ meter

☑ estimated: ☐ pumping rate (22.5 gpm)

☐ pump capacity (_____)

☐ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement: - Figure 1
(see Instruction Packet)

6-month ground water travel time: 440 feet

1-year ground water travel time: 620 feet

5-year ground water travel time: 1,390 feet

10-year ground water travel time: 1,970 feet

Information available on length of screened/open interval?

☑ Yes ☐ No

Length of screened/open interval: 27.2 - 37.7 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: _____

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				✓
• 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:

stock grazing Irrigation — — ✓ —

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	____
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	✓
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	✓
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)	✓
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:**

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records)? NO

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:

The well derives water from an unconfined aquifer that outcrops to the south of the site. (Refer to figure 2). The majority of the derived water comes from the recessional deposit (QvR on map) which extends to the North and East. Note that the boundaries are approximate.

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… ← check

	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… ← check

	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.

The zone of contribution likely extends to the north within the glacial recessional deposits. This area can be seen on the attached figure 2. Additional source water likely flows from upgradient till deposits and discharges to the shallow aquifer.

FORM COMPLETED BY:

Anthony Fariniacci — 5/19/09

Print Name — Date

Signature

Data Source: Google Earth Image; King County 2006

Y:\Projects\664004\010\Fig\FixedRadius_Edit.mxd 5/6/2009

LANDAU ASSOCIATES

Well Source Approval Burton Water Company Vashon, Washington	**Calculated Fixed Radius for Water System**	Figure **1**

Legend

- Well (Location determined with handheld GPS)
- Steel Well (Estimated location)
- Well Point (Estimated location)
- King County Water Course
- WaterTank

Qvr = Recessional-outwash deposits—(Orange Area) Stratified sand and gravel, moderately to well-sorted, with less common silty sand and rare silty clay. Mantles upland till surface; accumulated predominantly as outwash plains and valley trains.

0 1,100 2,200

Scale in Feet

Data Source: Google Earth Image; King County 2006

Y:\Projects\664004\01\Hydrologic Boundaries.mxd 5/6/2009

LANDAU ASSOCIATES

Well Source Approval
Burton Water Company
Vashon, Washington

Hydrologic Boundaries

Figure 2

Miller, Sheri K (DOH)

From: Anthony Farinacci [afarinacci@landauinc.com]
Sent: Tuesday, May 19, 2009 12:19 PM
To: Miller, Sheri K (DOH)
Cc: Eric Weber
Subject: Burton Water Company Susceptiblity Form and Water Quality
Attachments: RPT 090518 1342 INORGANICS + 524 2 Final_new.pdf; Burtonwater_SOC_results.pdf; BURW090401-COC.pdf; Susceptibility Assessment Form complete.pdf

Sheri,

We are sending you the attached information on behalf of Burton Water Company in regards to the new groundwater replacement well source approval. Attached to this email you will find the water quality results for the new Burton Water Co. groundwater replacement well and the susceptibility assessment form. Specifically, the SOC, IOC and VOC results are included as an attachment. According to your letter addressed to Mr. Garrison with Burton Water Company dated January 14, 2009, Burton Water Company was required to submit SOC, IOC, VOC, pH, coliform and radio nuclide sample results from the new replacement well. All sampling has now been completed and the results have been sent to you (with the exception of the radio nuclide results). Please let me know if you have any questions.

Anthony Farinacci ♦ Senior Staff Hydrogeologist
Landau Associates, Inc.
130 2nd Ave. S, Edmonds, WA 98020
425.778.0907 ♦ fax 425.778.6409 ♦ cell 206.276.1250
afarinacci@landauinc.com ♦ www.landauinc.com

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Seattle, WA 98108
Phone: (206)767-5060
Fax: (206)767-5063

Certificate of Analysis

Client: Burton Water Company
P.O. Box 2117
Vashon, WA 98070

ATTN: Evan Simmons

Work ID:

Taken By: **CLIENT**

Transported By: **CLIENT**

SDG Number: **BURW090401**

Date Received: **04/21/2009**

Date Reported: **05/18/2009**

Sample Identification:

Lab Sample ID	Sample Description	Collection Date/Time		Type
BURW090401-001	Sample Tap at New Well (A	04/21/2009	07:00	Water
BURW090401-002	Trip Blank	04/21/2009	07:00	Water

Unless otherwise instructed all samples with the exception of samples which are consumed during the analysis, such as microbiological samples, will be disposed of on or after 6/19/09

Respectfully submitted,

Pace Analytical Services, Inc.

Natalie Taylor

For
Shannon Schelinder

Date Printed: 5/18/2009 1:42:08PM

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PACE ANALYTICAL SERVICES, INC.
IOC TEST PANEL
Source/Point of Entry - Report of Analysis

Date Collected: 04/21/2009
System Group Type: A
Water System ID Number: 09800L
System Name: BURTON WATER CO.
Lab Sample Number: 08134680
County: KING
Sample Location: SAMPLE TAP AT NEW WELL
Source Number(s): AKN518
Sample Purpose: RC
Date Received: 04/21/2009
Date Analyzed: 05/05/2009
Date Reported:
Comments: Lab sample ID = BURW090401-001
Sample Composition: S
Sample Type: R
Sample Collected By: Client
Phone Number:
Send Report To: BURTON WATER CO.
Bill To: BURTON WATER CO.

EPA/STATE REGULATED

DOH #	ANALYTE	RESULTS	UNITS	SRL	TRIGGER	MCL	MCL EXCEEDED	METHOD
4	Arsenic	ND	mg/L	0.003	0.01	0.01		200.8
5	Barium	ND	mg/L	0.4	2	2		200.7
6	Cadmium	ND	mg/L	0.002	0.005	0.005		200.8
7	Chromium	ND	mg/L	0.02	0.1	0.1		200.8
8	Iron	ND	mg/L	0.1	0.3	0.3		200.7
10	Manganese	ND	mg/L	0.01	0.05	0.05		200.8
11	Mercury	ND	mg/L	0.0004	0.002	0.002		245.1
12	Selenium	ND	mg/L	0.01	0.05	0.05		200.8
13	Silver	ND	mg/L	0.1	0.05	0.1		200.8
14	Sodium	6.9	mg/L	5				200.7
15	Hardness	68	mg/L	10				SM2340B
16	Conductivity	190	umhos/cm	70	700	700		120.1
17	Turbidity	0.3	NTU	0.1	1	1		180.1
18	Color	ND	color units	15	15	15		SM2120B
19	Fluoride	ND	mg/L	0.5	2	4		300.0
20	Nitrate - N	2.7	mg/L	2	5	10		300.0
21	Chloride	ND	mg/L	20	250	250		300.0
22	Sulfate	ND	mg/L	50	250	250		300.0
24	Zinc	ND	mg/L	0.2	5	5		200.7

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PACE ANALYTICAL SERVICES, INC.
IOC TEST PANEL
Source/Point of Entry - Report of Analysis

Water System ID Number: 09800L
System Name: BURTON WATER CO.
Lab Sample Number: 08134680
Comments: Lab sample ID = BURW090401-001
Sample Location: SAMPLE TAP AT NEW WELL

EPA/STATE REGULATED

DOH #	ANALYTE	RESULTS	UNITS	SRL	TRIGGER	MCL	MCL EXCEEDED	METHOD
26	Total Dissolved Solids (TDS)	120	mg/L					160.1
110	Beryllium	ND	mg/L	0.0008	0.004	0.004		200.8
111	Nickel	ND	mg/L	0.1	0.1	0.1		200.8
112	Antimony	ND	mg/L	0.006	0.006	0.006		200.8
113	Thallium	ND	mg/L	0.002	0.002	0.002		200.8
114	Nitrite - N	ND	mg/L	0.2	0.5	1		300.0
116	Cyanide	ND	mg/L	0.1	0.2	0.2		335.4

EPA/STATE UNREGULATED

DOH #	ANALYTE	RESULTS	UNITS	SRL	TRIGGER	MCL	MCL EXCEEDED	METHOD
9	Lead	ND	mg/L	0.001		0.015		200.8
23	Copper	ND	mg/L	0.02		1.3		200.8

NOTES

SRL (State Reporting Level): The minimum reporting level established by the Washington State Department of Health (DOH)

Trigger Level: DOH Drinking Water response level. Systems with compounds detected at concentrations in excess of this level may be required to take additional samples or monitor more frequently. Please contact your DOH drinking water regional office for further information.

MCL (maximum contaminant level): If the contaminant amount exceeds the MCL, please contact your regional DOH office to determine follow-up actions.

ND (Not Detected): In the results column, indicates this compound was analyzed and not detected at a level greater than or equal to the SRL

< (0.00X) : The compound was not detected in the sample at or above the concentration indicated (usually the lab MRL).

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PACE ANALYTICAL SERVICES, INC.
TTHM TEST PANEL
Source/Point of Entry - Report of Analysis

Date Collected: 04/21/2009
System Group Type: A
Water System ID Number: 09800L
System Name: BURTON WATER CO.
Lab Sample Number: 08134680
County: KING
Sample Location: SAMPLE TAP AT NEW WELL
Source Number(s): AKN518
Sample Purpose: RC
Date Received: 04/21/2009
Date Analyzed: 04/23/2009
Date Reported:
Comments: Lab sample ID = BURW090401-001
Sample Composition: S
Sample Type: R
Sample Collected By: Client
Phone Number:
Send Report To: BURTON WATER CO.
Bill To: BURTON WATER CO.

EPA/STATE UNREGULATED

DOH #	ANALYTE	RESULTS	UNITS	SRL	TRIGGER	MCL	MCL EXCEEDED	METHOD
27	Chloroform	ND	ug/L	0.5	0.5			524.2
28	Dichlorobromomethane	ND	ug/L	0.5	0.5			524.2
29	Chlorodibromomethane	ND	ug/L	1.5	0.5			524.2
30	Bromoform	ND	ug/L	0.6	0.5			524.2

NOTES

SRL (State Reporting Level): The minimum reporting level established by the Washington State Department of Health (DOH)

Trigger Level: DOH Drinking Water response level. Systems with compounds detected at concentrations in excess of this level may be required to take additional samples or monitor more frequently. Please contact your DOH drinking water regional office for further information.

MCL (maximum contaminant level): If the contaminant amount exceeds the MCL, please contact your regional DOH office to determine follow-up actions.

ND (Not Detected): In the results column, indicates this compound was analyzed and not detected at a level greater than or equal to the SRL

< (0.00X) : The compound was not detected in the sample at or above the concentration indicated (usually the lab MRL).

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PACE ANALYTICAL SERVICES, INC.
VOC1 TEST PANEL
Source/Point of Entry - Report of Analysis

Date Collected: 04/21/2009
Water System ID Number: 09800L
Lab Sample Number: 08134680
Sample Location: SAMPLE TAP AT NEW WELL
Sample Purpose: RC

System Group Type: A
System Name: BURTON WATER CO.
County: KING
Source Number(s): AKN518
Date Received: 04/21/2009
Date Analyzed: 04/23/2009
Date Reported:
Comments: Lab sample ID = BURW090401-001

Sample Composition: S
Sample Type: R
Sample Collected By: Client
Phone Number:

Send Report To: BURTON WATER CO.
Bill To: BURTON WATER CO.

EPA/STATE REGULATED

DOH #	ANALYTE	RESULTS	UNITS	SRL	TRIGGER	MCL	MCL EXCEEDED	METHOD
45	Vinyl chloride	ND	ug/L	0.5	0.5	2		524.2
46	1,1-Dichloroethylene	ND	ug/L	0.5	0.5	7		524.2
47	1,1,1-Trichloroethane	ND	ug/L	0.5	0.5	200		524.2
48	Carbon Tetrachloride	ND	ug/L	0.5	0.5	5		524.2
49	Benzene	ND	ug/L	0.5	0.5	5		524.2
51	Trichloroethylene	ND	ug/L	0.5	0.5	5		524.2
52	1,4-Dichlorobenzene	ND	ug/L	0.5	0.5	75		524.2
56	Dichloromethane	ND	ug/L	0.5	0.5	5		524.2
57	trans-1,2-Dichloroethylene	ND	ug/L	0.5	0.5	100		524.2
60	cis-1,2-Dichloroethylene	ND	ug/L	0.5	0.5	70		524.2
63	1,2-Dichloropropane	ND	ug/L	0.5	0.5	5		524.2
66	Toluene	ND	ug/L	0.5	0.5	1000		524.2
67	1,1,2-Trichloroethane	ND	ug/L	0.5	0.5	5		524.2
68	Tetrachloroethylene	ND	ug/L	0.5	0.5	5		524.2
71	Chlorobenzene	ND	ug/L	0.5	0.5	100		524.2
73	Ethylbenzene	ND	ug/L	0.5	0.5	700		524.2
74	m/p-Xylenes (MCL For Total)	ND	ug/L	0.5	0.5	10000		524.2
75	o-Xylene (MCL For Total)	ND	ug/L	0.5	0.5	10000		524.2
76	Styrene	ND	ug/L	0.5	0.5	100		524.2

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PACE ANALYTICAL SERVICES, INC.
VOC1 TEST PANEL
Source/Point of Entry - Report of Analysis

Water System ID Number: 09800L
System Name: BURTON WATER CO.
Lab Sample Number: 08134680
Comments: Lab sample ID = BURW090401-001
Sample Location: SAMPLE TAP AT NEW WELL

EPA/STATE REGULATED

DOH #	ANALYTE	RESULTS	UNITS	SRL	TRIGGER	MCL	MCL EXCEEDED	METHOD
84	1,2-Dichlorobenzene	ND	ug/L	0.5	0.5	600		524.2
95	1,2,4-Trichlorobenzene	ND	ug/L	0.5	0.5	70		524.2
160	Total Xylenes	ND	ug/L	0.5	0.5	10000		524.2

EPA/STATE UNREGULATED

DOH #	ANALYTE	RESULTS	UNITS	SRL	TRIGGER	MCL	MCL EXCEEDED	METHOD
50	1,2-Dichloroethane	ND	ug/L	0.5	0.5	5		524.2
53	Chloromethane	ND	ug/L	0.5	0.5	1.3		524.2
54	Bromomethane	ND	ug/L	0.5	0.5			524.2
58	1,1-Dichloroethane	ND	ug/L	0.5	0.5			524.2
72	1,1,1,2-Tetrachloroethane	ND	ug/L	0.5	0.5			524.2
78	Bromobenzene	ND	ug/L	0.5	0.5			524.2
79	1,2,3-Trichloropropane	ND	ug/L	0.5	0.5	21		524.2
81	o-Chlorotoluene	ND	ug/L	0.5	0.5			524.2
85	Fluorotrichloromethane	ND	ug/L	0.5	0.5	1300		524.2
86	Bromochloromethane	ND	ug/L	0.5	0.5			524.2
89	1,3,5-Trimethylbenzene	ND	ug/L	0.5	0.5			524.2
91	1,2,4-Trimethylbenzene	ND	ug/L	0.5	0.5			524.2
92	sec-Butylbenzene	ND	ug/L	0.5	0.5			524.2
93	p-Isopropyltoluene	ND	ug/L	0.5	0.5			524.2
94	n-Butylbenzene	ND	ug/L	0.5	0.5			524.2
96	Naphthalene	ND	ug/L	0.5	0.5			524.2
102	EDB (Scan Confirm By 504.1)	ND	ug/L	0.5	0.5	0.05		524.2
103	DBCP (Scan Confirm By 504.1)	ND	ug/L	0.5	0.5	0.2		524.2
104	Dichlorodifluoromethane	ND	ug/L	0.5	0.5	530		524.2

NOTES

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PACE ANALYTICAL SERVICES, INC.
VOC1 TEST PANEL
Source/Point of Entry - Report of Analysis

Water System ID Number: 09800L

System Name: BURTON WATER CO.

Lab Sample Number: 08134680

Comments: Lab sample ID = BURW090401-001

Sample Location: SAMPLE TAP AT NEW WELL

SRL (State Reporting Level): The minimum reporting level established by the Washington State Department of Health (DOH)

Trigger Level: DOH Drinking Water response level. Systems with compounds detected at concentrations in excess of this level may be required to take additional samples or monitor more frequently. Please contact your DOH drinking water regional office for further information.

MCL (maximum contaminant level): If the contaminant amount exceeds the MCL, please contact your regional DOH office to determine follow-up actions.

ND (Not Detected): In the results column, indicates this compound was analyzed and not detected at a level greater than or equal to the SRL

< (0.00X) : The compound was not detected in the sample at or above the concentration indicated (usually the lab MRL).

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Trip Blank Final Results for SDG: BURW090401

Sample Number: Trip Blank

Method	Analyte	Final result	Units of result
524.2	Dichlorodifluoromethane	0.50 U	ug/L
	Chloromethane	0.50 U	
	Vinyl chloride	0.50 U	
	Bromomethane	0.50 U	
	Fluorotrichloromethane	0.50 U	
	1,1-Dichloroethylene	0.50 U	
	Dichloromethane	0.50 U	
	trans-1,2-Dichloroethylene	0.50 U	
	1,1-Dichloroethane	0.50 U	
	cis-1,2-Dichloroethylene	0.50 U	
	Bromochloromethane	0.50 U	
	Chloroform	1.0 U	
	1,1,1-Trichloroethane	0.50 U	
	Carbon Tetrachloride	0.50 U	
	Benzene	0.50 U	
	1,2-Dichloroethane	0.50 U	
	Trichloroethylene	0.50 U	
	1,2-Dichloropropane	0.50 U	
	Dichlorobromomethane	0.50 U	
	Toluene	0.50 U	
	1,1,2-Trichloroethane	0.50 U	
	Tetrachloroethylene	0.50 U	
	Chlorodibromomethane	1.0 U	
	EDB (Scan Confirm By 504.1)	1.0 U	
	Chlorobenzene	0.50 U	
	Ethylbenzene	0.50 U	
	1,1,1,2-Tetrachloroethane	0.50 U	
	m/p-Xylenes (MCL For Total)	0.50 U	
	o-Xylene (MCL For Total)	0.50 U	
	Styrene	0.50 U	
	Bromoform	1.0 U	
	Bromobenzene	0.50 U	
	1,2,3-Trichloropropane	0.50 U	
	o-Chlorotoluene	0.50 U	

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Trip Blank Final Results for SDG: BURW090401

Sample Number: Trip Blank

Method	Analyte	Final result	Units of result
524.2	1,3,5-Trimethylbenzene	0.50 U	ug/L
	1,2,4-Trimethylbenzene	0.50 U	
	sec-Butylbenzene	0.50 U	
	p-Isopropyltoluene	0.50 U	
	1,4-Dichlorobenzene	0.50 U	
	n-Butylbenzene	1.0 U	
	1,2-Dichlorobenzene	0.50 U	
	DBCP (Scan Confirm By 504.1)	0.50 U	
	1,2,4-Trichlorobenzene	0.50 U	
	Naphthalene	0.50 U	
	Total Xylenes	0.50 U	

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Pace Analytical Services, Inc.

Blank Report

Test:	524.2 Drinking Water VOCs Washington DOH Routine List	SDG ID:	BURW090401
		Preparation Date:	4/23/2009
Lab Sample ID:	B042309MVOWY1	Run Sequence ID:	R036381
		Analysis Date:	04/23/2009 10:36
		Units:	ug/L
		Matrix:	Water

Analyte	Reported	Flag	Limit
Dichlorodifluoromethane	0.50	U	0.5
Chloromethane	0.50	U	0.5
Vinyl chloride	0.50	U	0.5
Bromomethane	0.50	U	0.5
Fluorotrichloromethane	0.50	U	0.5
1,1-Dichloroethylene	0.50	U	0.5
Dichloromethane	0.50	U	0.5
trans-1,2-Dichloroethylene	0.50	U	0.5
1,1-Dichloroethane	0.50	U	0.5
cis-1,2-Dichloroethylene	0.50	U	0.5
Bromochloromethane	0.50	U	0.5
Chloroform	1.0	U	0.5
1,1,1-Trichloroethane	0.50	U	0.5
Carbon Tetrachloride	0.50	U	0.5
Benzene	0.50	U	0.5
1,2-Dichloroethane	0.50	U	0.5
Trichloroethylene	0.50	U	0.5
1,2-Dichloropropane	0.50	U	0.5
Dichlorobromomethane	0.50	U	0.5
Toluene	0.50	U	0.5
1,1,2-Trichloroethane	0.50	U	0.5
Tetrachloroethylene	0.50	U	0.5
Chlorodibromomethane	1.0	U	0.5
EDB (Scan Confirm By 504.1)	1.0	U	0.5
Chlorobenzene	0.50	U	0.5
Ethylbenzene	0.50	U	0.5
1,1,1,2-Tetrachloroethane	0.50	U	0.5
m/p-Xylenes (MCL For Total)	0.50	U	0.5
o-Xylene (MCL For Total)	0.50	U	0.5
Styrene	0.50	U	0.5
Bromoform	1.0	U	0.5
Bromobenzene	0.50	U	0.5
1,2,3-Trichloropropane	0.50	U	0.5
o-Chlorotoluene	0.50	U	0.5

U = The analyte of interest was not detected, to the limit of detection indicated

* Measured blank concentration exceeded the established control limit

FORM LTL-RSR-9.0(LTR)

Date Printed: 5/18/2009 13:42

Pace Analytical Services, Inc.
940 South Harney
Seattle, WA 98108
Phone: (206)767-5060
Fax: (206)767-5063

Pace Analytical Services, Inc.

Blank Report

Test:	524.2 Drinking Water VOCs Washington DOH Routine List	SDG ID:	BURW090401
		Preparation Date:	4/23/2009
Lab Sample ID:	B042309MVOWY1	Run Sequence ID:	R036381
		Analysis Date:	04/23/2009 10:36
		Units:	ug/L
		Matrix:	Water

Analyte	Reported	Flag	Limit
1,3,5-Trimethylbenzene	0.50	U	0.5
1,2,4-Trimethylbenzene	0.50	U	0.5
sec-Butylbenzene	0.50	U	0.5
p-Isopropyltoluene	0.50	U	0.5
1,4-Dichlorobenzene	0.50	U	0.5
n-Butylbenzene	1.0	U	0.5
1,2-Dichlorobenzene	0.50	U	0.5
DBCP (Scan Confirm By 504.1)	0.50	U	0.5
1,2,4-Trichlorobenzene	0.50	U	0.5
Naphthalene	0.50	U	0.5
Total Xylenes	0.50	U	0.5

Associated Samples	
Lab Sample ID	**Client Sample ID**
BURW090401-001	Sample Tap at New Well (AKN518)
BURW090401-002	Trip Blank

U = The analyte of interest was not detected, to the limit of detection indicated

* Measured blank concentration exceeded the established control limit

EDGE ANALYTICAL LABORATORIES

Burlington WA (Corporate Office) | 1620 S Walnut St - 98233
800.755.9295 • 360.757.1400 • 360.757.1402fax
Bellingham WA (Microbiology) | 805 Orchard Dr Suite 4 - 98225
360.671.0688 • 360.671.1577fax

ACCREDITED IN ACCORDANCE WITH nelac Florida Dept of Health Lab E871040

SYNTHETIC ORGANIC COMPOUNDS (SOC) REPORT

Client Name: Burton Water Company
10930 SW 238th Street
Vashon, WA 98070

System Name: BURTON WATER CO
System ID Number: 09800L
DOH Source Number:
Multiple Sources:
Sample Type: B - Before treatment
Sample Purpose: C - Compliance
Sample Location: New Well - Wel Head
County: King
Sampled By: J.G.
Sampler Phone: 206-626-1277

Reference Number: 09-06104
Project: Burton Water Co.

Field ID: Burton Water Co.
Lab Number: 046-12504
Date Collected: 4/29/09 12:30
Date Extracted: 525_090511
Date Analyzed: 05/11/09
Report Date: 5/13/09
Analyst: CO
Peer Review:

EPA Method 525.2 For State Drinking Water Compliance

DOH#	COMPOUNDS	RESULTS	UNITS	SRL	Trigger	MCL	COMMENT
	EPA Regulated						
33	ENDRIN	ND	ug/L	0.02	0.02	2	
34	LINDANE (BHC - GAMMA)	ND	ug/L	0.04	0.04	0.2	
35	METHOXYCHLOR	ND	ug/L	0.2	0.2	40	
117	ALACHLOR	ND	ug/L	0.4	0.4	2	
119	ATRAZINE	ND	ug/L	0.2	0.2	3	
120	BENZO(A)PYRENE	ND	ug/L	0.04	0.04	0.2	
122	CHLORDANE, TECHNICAL	ND	ug/L	0.4	0.4	2	
124	DI(ETHYLHEXYL)-ADIPATE	ND	ug/L	1.3	1.3	400	
125	DI(ETHYLHEXYL)-PHTHALATE	ND	ug/L	1.3	1.3	6	
126	HEPTACHLOR	ND	ug/L	0.08	0.08	0.4	
127	HEPTACHLOR EPOXIDE	ND	ug/L	0.04	0.04	0.2	
128	HEXACHLOROBENZENE	ND	ug/L	0.2	0.2	1	
129	HEXACHLOROCYCLO-PENTADIENE	ND	ug/L	0.2	0.2	50	
133	SIMAZINE	ND	ug/L	0.15	0.15	4	
134	PENTACHLOROPHENOL	ND	ug/L	0.4	0.08	1	screening only / compliance by 515.1
	EPA Unregulated						
118	ALDRIN	ND	ug/L	0.2	0.2		
121	BUTACHLOR	ND	ug/L	0.4	0.4		
123	DIELDRIN	ND	ug/L	0.2	0.2		
130	METOLACHLOR	ND	ug/L	1.0	1.0		
131	METRIBUZIN	ND	ug/L	0.2	0.2		
132	PROPACHLOR	ND	ug/L	0.2	0.2		
	State Unregulated - Other						
179	BROMACIL	ND	ug/L	0.2	0.2		
254	FLUORENE	ND	ug/L	0.2	0.2		

NOTES:
If a compound is detected > or = to the State Reporting Level, SRL, specified increased monitoring frequencies may occur per DOH.
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the State Reporting Limit (SRL).
An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

These test results meet all the requirements of NELAC, unless otherwise stated in writing, and relate only to these samples.
If you have any questions concerning this report contact Lawrence Henderson at the above phone number.

FORM: SOC

EDGE ANALYTICAL LABORATORIES

Burlington WA | 1620 S Walnut St - 98233
Corporate Office | 800.755.9295 • 360.757.1400 • 360.757.1402fax
Bellingham WA | 805 Orchard Dr Suite 4 - 98225
Microbiology | 360.671.0688 • 360.671.1577fax

ACCREDITED IN ACCORDANCE WITH nelac Florida Dept of Health Lab E871040

SYNTHETIC ORGANIC COMPOUNDS (SOC) REPORT

Client Name: Burton Water Company
10930 SW 238th Street
Vashon, WA 98070

Reference Number: 09-06104
Project: Burton Water Co.

System Name: BURTON WATER CO
System ID Number: 09800L
DOH Source Number:
Multiple Sources:
Sample Type: B - Before treatment
Sample Purpose: C - Compliance
Sample Location: New Well - Wel Head
County: King
Sampled By: J.G.
Sampler Phone: 206-626-1277

Field ID: Burton Water Co.
Lab Number: 046-12504
Date Collected: 4/29/09 12:30
Date Extracted: 508_090511
Date Analyzed: 05/11/09
Report Date: 5/15/09
Analyst: GEB
Peer Review:

EPA Method 508.1 For State Drinking Water Compliance

DOH#	COMPOUNDS	RESULTS	UNITS	SRL	Trigger	MCL	COMMENT
	PCBs/Toxaphene						
153	PCBS (Total Aroclors)	**ND**	ug/L	0.2	0.2	0.5	
173	AROCLOR 1221	**ND**	ug/L	20	20		
174	AROCLOR 1232	**ND**	ug/L	0.5	0.5		
175	AROCLOR 1242	**ND**	ug/L	0.5	0.3		
176	AROCLOR 1248	**ND**	ug/L	0.1	0.1		
177	AROCLOR 1254	**ND**	ug/L	0.1	0.1		
178	AROCLOR 1260	**ND**	ug/L	0.2	0.2		
180	AROCLOR 1016	**ND**	ug/L	0.1	0.1		
36	TOXAPHENE	**ND**	ug/L	2	2	3	

NOTES:
If a compound is detected > or = to the State Reporting Level, SRL, specified increased monitoring frequencies may occur per DOH.
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA. Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the State Reporting Limit (SRL).
An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

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If you have any questions concerning this report contact Lawrence Henderson at the above phone number.

FORM: SOC

EDGE ANALYTICAL LABORATORIES

Burlington WA (Corporate Office) | 1620 S Walnut St - 98233 | 800.755.9295 • 360.757.1400 • 360.757.1402fax
Bellingham WA (Microbiology) | 805 Orchard Dr Suite 4 - 98225 | 360.671.0688 • 360.671.1577fax

ACCREDITED IN ACCORDANCE WITH nelac Florida Dept of Health Lab E871040

HERBICIDES IN DRINKING WATER

Client Name: Burton Water Company
10930 SW 238th Street
Vashon, WA 98070

System Name: BURTON WATER CO
System ID Number: 09800L
DOH Source Number:
Multiple Sources:
Sample Type: B - Before treatment
Sample Purpose: C - Compliance
Sample Location: New Well - Wel Head
County: King
Sampled By: J.G.
Sampler Phone: 206-626-1277

Reference Number: 09-06104
Project: Burton Water Co.

Field ID: Burton Water Co.
Lab Number: 046-12504
Date Collected: 4/29/09 12:30
Date Extracted: 515.4_090511
Date Analyzed: 05/13/09
Report Date: 5/14/09
Analyst: CO
Peer Review:

EPA Method 515.4 For State Drinking Water Compliance

DOH#	COMPOUNDS	RESULTS	UNITS	SRL	Trigger	MCL	COMMENT
	EPA Regulated						
37	*2,4 - D	ND	ug/L	0.5	0.2	70	
38	*2,4,5 - TP (SILVEX)	ND	ug/L	1.0	0.4	50	
134	*PENTACHLOROPHENOL	ND	ug/L	0.2	0.08	1	
137	*DALAPON	ND	ug/L	5	2	200	
139	*DINOSEB	ND	ug/L	1.0	0.4	7	
140	*PICLORAM	ND	ug/L	0.5	0.2	500	
	Other						
138	*DICAMBA	ND	ug/L	0.2	0.2		
225	*DCPA (ACID METABOLITES)	ND	ug/L	0.1	0.1		
135	*2,4 DB	ND	ug/L	1.0	1.0		
136	*2,4,5 T	ND	ug/L	0.4	0.4		
220	*BENTAZON	ND	ug/L	0.5	0.5		
221	*DICHLORPROP	ND	ug/L	0.5	0.5		
223	*ACIFLUORFEN	ND	ug/L	2.0	2.0		
224	*CHLORAMBEN	ND	ug/L	0.2	0.2		qualitiative analysis
226	*3,5 - DICHLOROBENZOIC ACID	ND	ug/L	0.5	0.5		

NOTES:
If a compound is detected > or = to the State Reporting Level, SRL, specified increased monitoring frequencies may occur per DOH.
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the State Reporting Limit (SRL).
An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

These test results meet all the requirements of NELAC, unless otherwise stated in writing, and relate only to these samples.
If you have any questions concerning this report contact Lawrence Henderson at the above phone number.

FORM: SOC

EDGE ANALYTICAL LABORATORIES

Burlington WA (Corporate Office) | 1620 S Walnut St - 98233 | 800.755.9295 • 360.757.1400 • 360.757.1402fax
Bellingham WA (Microbiology) | 805 Orchard Dr Suite 4 - 98225 | 360.671.0688 • 360.671.1577fax

ACCREDITED IN ACCORDANCE WITH nelac Florida Dept of Health Lab E871040

CARBAMATES IN DRINKING WATER

Client Name: Burton Water Company
10930 SW 238th Street
Vashon, WA 98070

System Name: BURTON WATER CO
System ID Number: 09800L
DOH Source Number:
Multiple Sources:
Sample Type: B - Before treatment
Sample Purpose: C - Compliance
Sample Location: New Well - Wel Head
County: King
Sampled By: J.G.
Sampler Phone: 206-626-1277

Reference Number: 09-06104
Project: Burton Water Co.

Field ID: Burton Water Co.
Lab Number: 046-12504
Date Collected: 4/29/09 12:30
Date Extracted: 531_090505
Date Analyzed: 05/05/09
Report Date: 5/11/09
Analyst: CO
Peer Review:

EPA Method 531.2 For State Drinking Water Compliance

DOH#	COMPOUNDS	RESULTS	UNITS	SRL	Trigger	MCL	COMMENT
	EPA Regulated						
148	OXYMAL	**ND**	ug/L	4.0	4.0	200	
146	CARBOFURAN	**ND**	ug/L	1.8	1.8	40	
	EPA Unregulated						
144	ALDICARB SULFOXIDE	**ND**	ug/L	1.0	1.0		
143	ALDICARB SULFONE	**ND**	ug/L	1.6	1.6		
147	METHOMYL	**ND**	ug/L	1.0	1.0		
141	3-HYDROXYCARBOFURAN	**ND**	ug/L	2.0	2.0		
142	ALDICARB	**ND**	ug/L	1.0	1.0		
145	CARBARYL	**ND**	ug/L	2.0	2.0		
	State Unregulated - Other						
326	PROPOXUR (BAYGON)	**ND**	ug/L	1.0			
327	METHIOCARB	**ND**	ug/L	4.0			

NOTES:
If a compound is detected > or = to the State Reporting Level, SRL, specified increased monitoring frequencies may occur per DOH.
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the State Reporting Limit (SRL).
An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

These test results meet all the requirements of NELAC, unless otherwise stated in writing, and relate only to these samples.
If you have any questions concerning this report contact Lawrence Henderson at the above phone number.

FORM: SOC

EDGE ANALYTICAL LABORATORIES

QUALITY CONTROL REPORT
SURROGATE REPORT

Reference Number: 09-06104
Report Date: 05/15/09

Lab No	Analyte	Result	Qualifier	Units	Method	Limit
508_090511						
12504	TETRACHLORO-M-XYLENE (SURR)	95		%	508.1	Acceptance Limits 70%-130%
515.4_090511						
12504	2,4 - DCAA (SURR)	93		%	515.4	Acceptance Range is 70 - 130%
525_090511						
12504	1,3-DIMETHYL-2-NITROBENZENE (Surr)	94		%	525.2	Acceptance Range is 70% to 130%
	PYRENE-D10 (Surr)	104		%		Acceptance Range is 70% to 130%
	PERYLENE-D12 (Surr)	103		%		Acceptance Range is 70% to 130%
	TRIPHENYLPHOSPHATE (Surr)	105		%		Acceptance Range is 70% to 130%
531_090505						
12504	BDMC (SURR)	104		%	531.2	

*Notation:

A surrogate is a pure compound added to a sample in the laboratory just before processing so that the overall efficiency of a method can be determined.

The Acceptance Limits (or Control Limits) approximate a 99% confidence interval around the mean recovery.

LS#: 11357
SDG BURW090401

Pace Analytical Services
940 S. Harney St. Seattle, WA 98108 (206)767-5060

Drinking water sample information (WSI) for inorganic chemical analysis
(for proper credit, please fill out all the boxes below, instructions on back page)

1. System Name:	2. System ID #:	3. Source #:	4. Class: (Please Circle)	5. County
BURTON WATER CO.	09800L	AKN 518	(A) B	KING

6. Sample Taken:
☒ Before treatment
☐ After treatment
☐ Unknown

(If nitrate analysis is required, the sample must be taken before chlorination).

7. System name for this source: AKN 518

8. What is the purpose of this sample? (Check one of the following)
☒ Compliance ☐ Investigation ☐ Other purpose (cannot use for compliance monitoring)

Do you want your report to go to the Department of Health for compliance purposes?
Please check: ☒ YES ☐ NO

☒ Check here if this sample is being submitted for approval of a new source.

9. Date collected:	10. Time of collection:	11. Collected by:
4/21/09	7:00 (AM) / PM	Jim GARRISON Telephone: (206) 626 1277

12. Specific location where sample was taken:
SAMPLE TAP AT NEW WELL (AKN 518)

13. Send results to: (Please print or type.)
BURTON WATER CO.
Name
10930 SW 238 ST.
Street address
VASHON, WA - 98070
City, state, zip
Telephone: (206) 626 1277

14. Party to pay for testing: (Please print or type.)
SAME AS #13
Name
Street address
City, state, zip
Telephone: (____) _____

15. Test request
Group tests
☒ Complete Inorganics at $440.00 (28 tests listed below)
☐ Partial list (please check the tests you want from the list below)

If individual tests are desired, use the list below

☐ Barium $24	☐ Manganese$24	☐ Turbidity $12	☐ Nickel $24
☐ Cadmium $24	☐ Silver $24	☐ Color $12	☐ Chloride $18
☐ Chromium $24	☐ Sodium $24	☐ Fluoride $18	☐ Sulfate $18
☐ Iron $24	☐ Hardness $18	☐ Nitrate $18	☐ Total Dissolved Solids $18 TDS is performed only if conductivity fails.
☐ Lead $24	☐ Conductivity $18	☐ Nitrite $18	☐ Copper $24
☐ Zinc$24		☐ Nitrate+Nitrite (no additional charge if analyzed individually)	
☐ Antimony $24	☐ Beryllium $24	☐ Mercury $30	☐ Arsenic $24
☐ Cyanide $54	☐ Selenium $24	☐ Thallium$24	

The laboratory may not be responsible for missed holding time for samples received with less than 50% of the analytical holding time remaining. Please contact the laboratory for further assistance.
Please note that our minimum charge is $50.00 and standard turnaround time is 10 working days. Please include your payment with sample submittal.

16. Remarks: (water quality problems, address for extra copies, etc.)

FOR LABORATORY USE ONLY

LAB NUMBER:	DATE RECEIVED:	LABORATORY COMMENTS
	4/21/09 8:36am CP	

Pace Analytical Services

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

Drinking water sample information (WSI) for organic chemical analysis

(for proper credit, please fill out all the boxes below, instructions on back page)

1. System Name:	2. System ID #:	3. Source #:	4. Class: (Please Circle)	5. County
BURTON WATER CO.	09800L	AKN 518	(A) B	KING

6. Sample Taken:
☒ Before treatment
☐ After treatment
☐ Unknown

7. System name for this source: AKN 518

8. What is the purpose of this sample? (Check one of the following)
☒ Compliance ☐ Investigation ☐ Other purpose (cannot use for compliance monitoring)

Do you want your report to go to the Department of Health for compliance purposes?
Please check: ☒ YES ☐ NO

☒ Check here if this sample is being submitted for approval of a new source.

9. Date collected:	10. Time of collection:	11. Collected by:
4/21/09	7:00 (AM) / PM	Jim GARRSON Telephone: (206) 626 1277

12. Specific location where sample was taken:
SAMPLE TAP AT NEW WELL (AKN 518)

13. Composite information (optional-**applies to VOCs only**): use only if you want the lab to composite this sample with other samples from your system for VOC testing. Enter the source numbers of the samples to be composited with this samples:

1._____ 2._____ 3._____ 4._____

14. Send results to: (Please print or type.)	15. Party to pay for testing: (Please print or type.)
BURTON WATER CO. Name 10930 SW 238 ST. Street address VASHON, WA 98070 City, state, zip Telephone: (206) 626 1277	BURTON WATER CO Name SAME AS #14 Street address _____ City, state, zip Telephone: (_____) _____

16. Test request
Volatile organics(VOCs)-includes THMs
☒ 524.2 VOCs at $245.00 ☐ Trihalomethanes (THMs) only at $120.00 ☐ 5 Haloacetic Acid (HAA5) at $160.00 (subcontracted to Edge Analytical)

Please note that our minimum charge is $50.00 and standard turnaround time is 10 working days. Please include your payment with sample submittal.

17. Remarks: (water quality problems, address for extra copies, etc.)

FOR LABORATORY USE ONLY

LAB NUMBER:	DATE RECEIVED:	LABORATORY COMMENTS
_____	4 21 09 8:36am CTP	

Miller, Sheri K (DOH)

From: Anthony Farinacci [afarinacci@landauinc.com]
Sent: Wednesday, June 10, 2009 1:16 PM
To: Miller, Sheri K (DOH)
Subject: Burton Water Co. water system 09800

Attachments: 09-06104_Surrogate Report.pdf; 09-06104_DW IOC Repor.pdf

09-06104_Surrogate Report.pdf ...

09-06104_DW IOC Repor.pdf (177...

Sheri,

Here are the remaining lab results to be provided to the Department of Health for Burton Water Co. replacement well #1 well source approval.
They include the Radium 228, Alpha and Beta lab testing results. Please let me know if you have any questions.

Also, Jim Garrison with Burton Water is wondering how the review is going.

Thanks,

Anthony Farinacci

EDGE ANALYTICAL LABORATORIES

QUALITY CONTROL REPORT
SURROGATE REPORT

Reference Number: 09-06104
Report Date: 05/15/09

Lab No	Analyte	Result	Qualifier	Units	Method	Limit
508_090511						
12504	TETRACHLORO-M-XYLENE (SURR)	95		%	508.1	Acceptance Limits 70%-130%
515.4_090511						
12504	2,4 - DCAA (SURR)	93		%	515.4	Acceptance Range is 70 - 130%
525_090511						
12504	1,3-DIMETHYL-2-NITROBENZENE (Surr)	94		%	525.2	Acceptance Range is 70% to 130%
	PYRENE-D10 (Surr)	104		%		Acceptance Range is 70% to 130%
	PERYLENE-D12 (Surr)	103		%		Acceptance Range is 70% to 130%
	TRIPHENYLPHOSPHATE (Surr)	105		%		Acceptance Range is 70% to 130%
531_090505						
12504	BDMC (SURR)	104		%	531.2	

*Notation:

A surrogate is a pure compound added to a sample in the laboratory just before processing so that the overall efficiency of a method can be determined.

The Acceptance Limits (or Control Limits) approximate a 99% confidence interval around the mean recovery.

ANALYTICAL LABORATORIES

Burlington WA (Corporate Office) | 1620 S Walnut St - 98233
800.755.9295 • 360.757.1400 • 360.757.1402fax
Bellingham WA (Microbiology) | 805 Orchard Dr Suite 4 - 98225
360.671.0688 • 360.671.1577fax

ACCREDITED IN ACCORDANCE WITH nelac Florida Dept of Health Lab E871040

INORGANIC COMPOUNDS (IOC) REPORT

Client Name: Burton Water Company
10930 SW 238th Street
Vashon, WA 98070

Reference Number: 09-06104
Project: Burton Water Co.

System Name: BURTON WATER CO
System ID Number: 09800L
DOH Source Number:
Multiple Sources:
Sample Type: B - Before treatment
Sample Purpose: C - Compliance
Sample Location: New Well - Wel Head
County: King

Sample Number: Burton Water Co.
Lab Number: 156-12504
Collect Date: 4/29/09 12:30
Date Received: 4/30/09
Report Date: 6/8/09
Sampled By: J.G.
Sampler Phone: 206-626-1277
Peer Review:

DOH#	ANALYTES	RESULTS	UNITS	SRL	Trigger	MCL	Analyst	METHOD	Analyzed	COMMENT
	GROSS ALPHA	**ND**	pCi/L	3		15	jv	900.0	05/26/09 23:59	Analyzed by UL
	GROSS BETA	**11.9**	pCi/L	4		50	jv	900.0	05/26/09 23:59	Analyzed by UL
	*RADIUM 228	**ND**	pCi/L	1			jv	904.0	06/03/09	Analyzed by UL

NOTES:

SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the Specified Reporting Limit (SRL).
An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

These test results meet all the requirements of NELAC, unless otherwise stated in writing, and relate only to these samples.
If you have any questions concerning this report contact Lawrence Henderson at the above phone number.

FORM: IOC_ST

RECEIVED
MAY 20 2009
DEPARTMENT OF HEALTH
NW DRINKING WATER

JIM GARRISON
BURTON WATER CO.
10930 SW 238 ST.
VASHON, WA. 98070

MAY 18, 2009

SHERI MILLER
DIST. ENGINEER
DEPT. OF HEALTH
20435 72ND AVE. S, SUITE 200, K17-12
KENT, WA. 98032-2358

DEAR MS. MILLER:

PLEASE FIND ENCLOSED THE COFIFORM BACTERIA ANALYSIS FOR OUR NEW WELL. AS YOU CAN SEE THE RESULTS WERE SATISFACTORY. ANTHONY SHOULD BE SENDING YOU THE S.O.C. V.O.C. AND I.O.C. RESULTS AS WELL. THANK YOU.

James K. Garrison

Pace Analytical Laboratories, Inc.
940 S. Harney Seattle, WA 98108
(206) 767-5060

Pace Analytical® www.pacelabs.com

COLIFORM BACTERIA ANALYSIS

Date Sample Collected	Time Sample Collected	County
4 / 23 / 09 (Month Day Year)	☐ AM ☐ PM 7 : 00	KING

Type of Water System (check only one box)
- ☒ Group A Public
- ☐ Group B Public
- ☐ Private Household
- ☐ Other

Group A and Group B Systems–Provide from Water Facilities Inventory (WFI):

ID#: 0 9 8 0 0 L

System Name: BURTON WATER CO.

Contact Person: JIM GARRISON

Day Phone: (206) 6261277 | Cell Phone: ( )

Eve. Phone: (206) 463 0075 | FAX: ( )

Send results to: (Print full name, address and zip code)

BURTON WATER CO.
10930 SW 238 ST
VASHON, WA 98070

SAMPLE INFORMATION

Sample collected by (name): JIM GARRISON

Specific location where sample collected (address or sample site, and type of faucet): NEW WELL - SAMPLE TAP

Special instructions or comments:

Type of Sample (must check only **one** box of #1 through #4 listed below)

1. ☐ **Routine Distribution Sample**
Provide information below.
Chlorinated: Yes____ No____
Chlorine Residual: Total____ Free____

2. ☐ **Repeat Sample (follow-up to an unsatisfactory sample)**
Provide information below.
Unsatisfactory routine lab number:
___ ___ ___ ___ ___ ___ ___ ___
Unsatisfactory routine collect date:
Chlorinated: Yes____ No____
Chlorine Residual: Total____ Free____

3. ☐ **Raw Water Source Sample**
Required for Surface Water, GWI, and some Spring Sources
S
Public Systems must provide Source Number from (WFI)

4. ☒ **Sample Collected for Information Only**
Construction X Repairs____ Private Residence____ Other____

LAB USE ONLY **DRINKING WATER RESULTS** LAB USE ONLY

☐ **Unsatisfactory**
Total Coliform Present **and**
☐ E.coli present ☐ E.coli absent
☐ Fecal coliform present ☐ Fecal coliform absent

☒ **Satisfactory** X

☐ **Replacement Sample Required**

Sample not tested because:
☐ Sample too old (>30 hours)
☐ Improper Container
☐ _____

Test unsuitable because:
☐ TNTC
☐ Turbid culture
☐ _____

Bacterial Density Results: Plate Count _____ /ml. E.coli _____ /100ml.
Total Coliform _____ /100ml. Fecal Coliform _____ /100ml.

Method Code: MICR- ___ ___ ___ ___ ___ ___	Date and Time Received: 4/23/09 0850 PB
Date Analyzed:	Date Reported: 4/25
___ ___ Sample Number (DOH number plus five digits)	Lab Use Only:

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Analytical
www.pacelabs.com

(206) 767-5060

COLIFORM BACTERIA ANALYSIS

Date Sample Collected	Time Sample Collected	County
9 / 24 / 09	☐ AM ☐ PM	KING
Month Day Year	___ : ___	

Type of Water System (check only one box)

☐ Group A Public ☐ Private Household

☐ Group B Public ☐ Other

Group A and Group B Systems–Provide from Water Facilities Inventory (WFI):

ID# ___ ___ ___ ___ ___ ___

System Name:

Contact Person:

Day Phone: ( ) | Cell Phone: ( )

Eve. Phone: ( ) | FAX: ( )

Send results to: (Print full name, address and zip code)

SAMPLE INFORMATION

Sample collected by (name):

Specific location where sample collected (address or sample site, and type of faucet):

Special instructions or comments:

Type of Sample (must check only one box of #1 through #4 listed below)

1. ☐ Routine Distribution Sample
Provide information below.
Chlorinated: Yes___ No___
Chlorine Residual: Total___ Free___

2. ☐ Repeat Sample (follow-up to an unsatisfactory sample)
Provide information below.
Unsatisfactory routine lab number:
___ ___ ___ ___ ___ ___ ___
Unsatisfactory routine collect date:
Chlorinated: Yes___ No___
Chlorine Residual: Total___ Free___

3. ☐ Raw Water Source Sample
Required for Surface Water, GWI, and some Spring Sources
S
Public Systems must provide Source Number from (WFI)

4. ☐ Sample Collected for Information Only
Construction___ Repairs___ Private Residence___ Other___

LAB USE ONLY — DRINKING WATER RESULTS — LAB USE ONLY

☐ Unsatisfactory
Total Coliform Present and
☐ E.coli present ☐ E.coli absent
☐ Fecal coliform present ☐ Fecal coliform absent

☐ Satisfactory

☐ Replacement Sample Required

Sample not tested because:
☐ Sample too old (>30 hours)
☐ Improper Container
☐ ___

Test unsuitable because:
☐ TNTC
☐ Turbid culture
☐ ___

Bacterial Density Results: Plate Count ___ /ml. E.coli ___ /100ml.
Total Coliform ___ /100ml. Fecal Coliform ___ /100ml.

Method Code:
MICR- ___ ___ ___ ___ ___ ___ ___

Date and Time Received:

Date Analyzed:

Date Reported:

Lab Use Only:

___ ___
Sample Number (DOH number plus five digits)

WATER SUPPLIER COPY

May 4, 2009

Department of Health
20435 72nd Avenue South, Suite 200, K17-12
Kent, Washington 98032-2358

Attn: Sheri Miller

RE: RESPONSE TO DEPARTMENT OF HEALTH COMMENTS REGARDING BURTON WATER COMPANY ID#09800 WELL SOURCE APPROVAL REPORT SUBMITTAL #08-1023

Dear Ms. Miller:

Thank you for your review of Burton Water Company's (BWC's) well source approval report dated October 16, 2008 for replacement Source Well 1 (or PW06-1 as identified in the report). BWC and their consultant Landau Associates have reviewed your comments in your letter of January 14, 2009 and offer the following responses.

Water Quality

1. Sample for the IOC, VOC, SOC and coliforms have been sent to the testing laboratories. The results will be sent to the Washington Department of Health (DOH) when available. Radionuclide testing requires the samples to be sent to a lab in Pittsburg, Pennsylvania and these results may be reported after results for the other testing parameters.
2. To verify that the new source pH is similar to the existing sources, for the Lead and Copper rule, water quality samples were tested for pH at PW06-1 and the existing North Well by Pace Analytical. The pH from the existing North Well was 6.6 and PW06-1 was 6.7. The final results are included as Attachment 1.

Design and Construction

3. Plan view and construction details for the main that will connect the well to the lower tanks are shown on the attached drawing and specification sheets as Attachment 2. The details include the type, size of pipe, type of valves and connection details. Additional ball valve and tubing documentation is included as Attachments 3 and 4.
4. Design details and related appurtenances are shown on Attachment 2 and illustrate how the 1.5-inch PE pipe from the well is connected to the 4-inch PVC pipe that directs water to the new water tank. For clarification, the 4-inch PVC pipe was installed during the construction of the 150,000 gallon new concrete water tank.

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DEPARTMENT OF HEALTH
NW DRINKING WATER

5. The well cap is a simple steel plate bolted to the well casing. Enclosed with the drawings (Attachment 2) is a picture of the well cap and construction details showing the vent and source meter. The source meter is located at the north in-ground tank before the discharge point into the north tank. The source meter is a 1-inch Invensys Meter #65857297.
6. The well head is plumbed in such a way that a sample from the discharge water of PW06-1 can be collected without admitting well water to the distribution system. This is also shown in the Attachment 2 drawings.
7. The pump installed in the well is a Goulds pump model 33GS10. This pump was selected based on the pump performance curves provided as Attachment 5. The pump is operating with a total dynamic head of about 80 ft when the tank is approaching full capacity and is discharging 25 gpm. The piping is constructed to allow a flow of 25 gpm from the well. The location that the pump operates on the performance curves is shown on the attachment. The design details of pump installation (depth, pipe size, and material, check valve, etc.) are presented as Attachment 6. Specifically, there is an inline check valve 8 ft above the pump and an additional check valve built into the pump.
8. At this time there is no need for telemetry or alarms.
9. This well is designed to replace some of the existing well points which are suction wells that present a greater risk for contamination. It is BWC's goal, at the urging of DOH, to replace all well points with drilled wells. BWC desires to complete these replacement sources as cost effectively as possible. The replacement wells will add no new capacity nor will they operate differently than the existing well points. BWC does not feel the services of an engineer are necessary for this change.

Using D.R. Strong's design see PID# 07-0513

Treatment

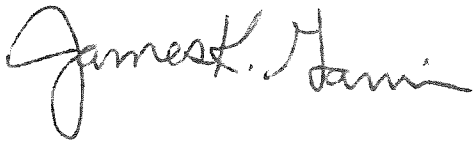
10. The new well will operate just as all the current sources operate by discharging into the north tank. Because no changes in existing storage will occur, the treatment procedures will remain the same.
11. As discussed above, there will be no new increased storage when PW06-1 is put into use. Subsequently, the chlorine treatment of the system will remain the same.

Other Documentation

12. A susceptibility assessment form will be submitted to the Department of Health when the results of the water quality testing are received.

Thank you for the opportunity to answer your concerns. Please let us know if there are any more questions to clarify. If a visual inspection of the system would be helpful, we would welcome the opportunity to demonstrate how PW06-1 is planned to operate.

Sincerely,



James K. Garrison
Burton Water Company
10930 SW 238th Street
Vashon, Washington 98070

Attachments:
1 - Water pH Lab Results
2 - Water System Design Drawings
3 - Ball Valve Documentation
4 - Tubing Documentation
5 - Goulds Pump Curves
6 - Pump Installation Diagram

Attachment 1

Pace Analytical®
www.pacelabs.com

Final Results for SDG BURW090301

Sample Number: New well

Lab Sample ID: BURW090301-001 **Collected On:** 03/12/2009 11:30

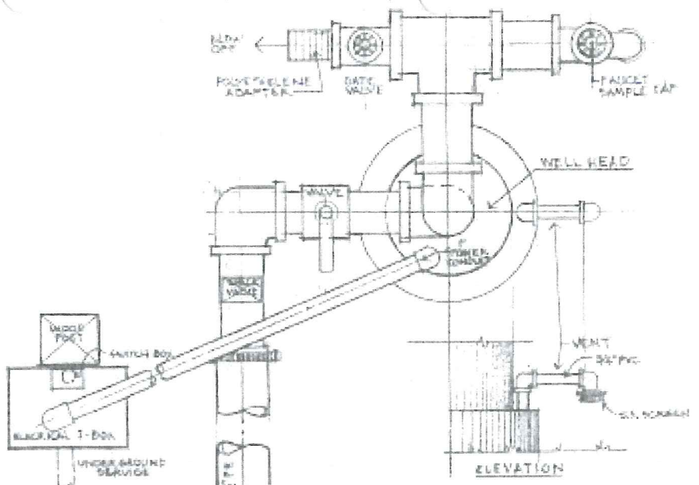
Method	Analyte	Final result	Units of result
E150.1	pH	6.7	pH Units

Sample Number: North well

Lab Sample ID: BURW090301-002 **Collected On:** 03/12/2009 11:35

Method	Analyte	Final result	Units of result
E150.1	pH	6.6	pH Units

Attachment 2

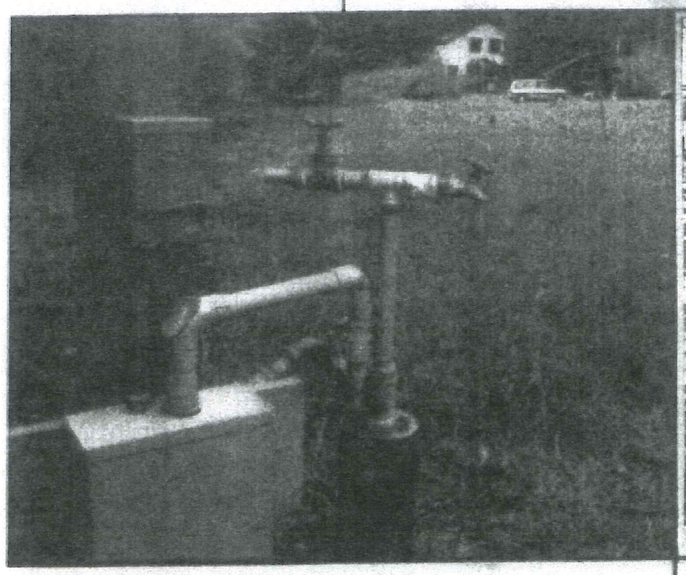


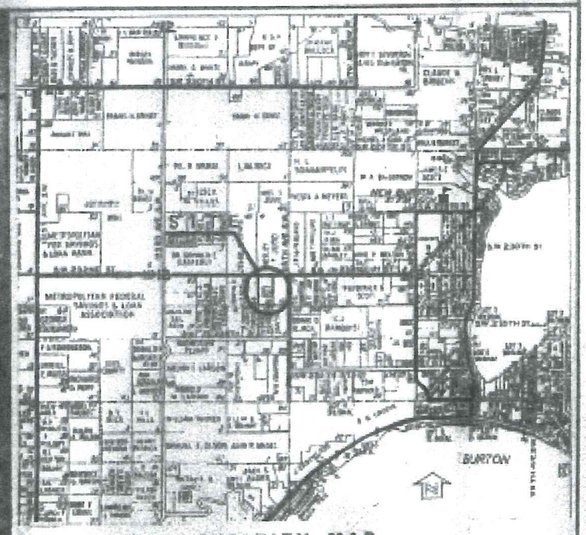
WELL HEAD PLAN VIEW

DISTRIBUTION PIPING

DEPT. OF ECOLOGY
UNIQUE WELL AKN518

Diagrammatic Drawing





VICINITY MAP

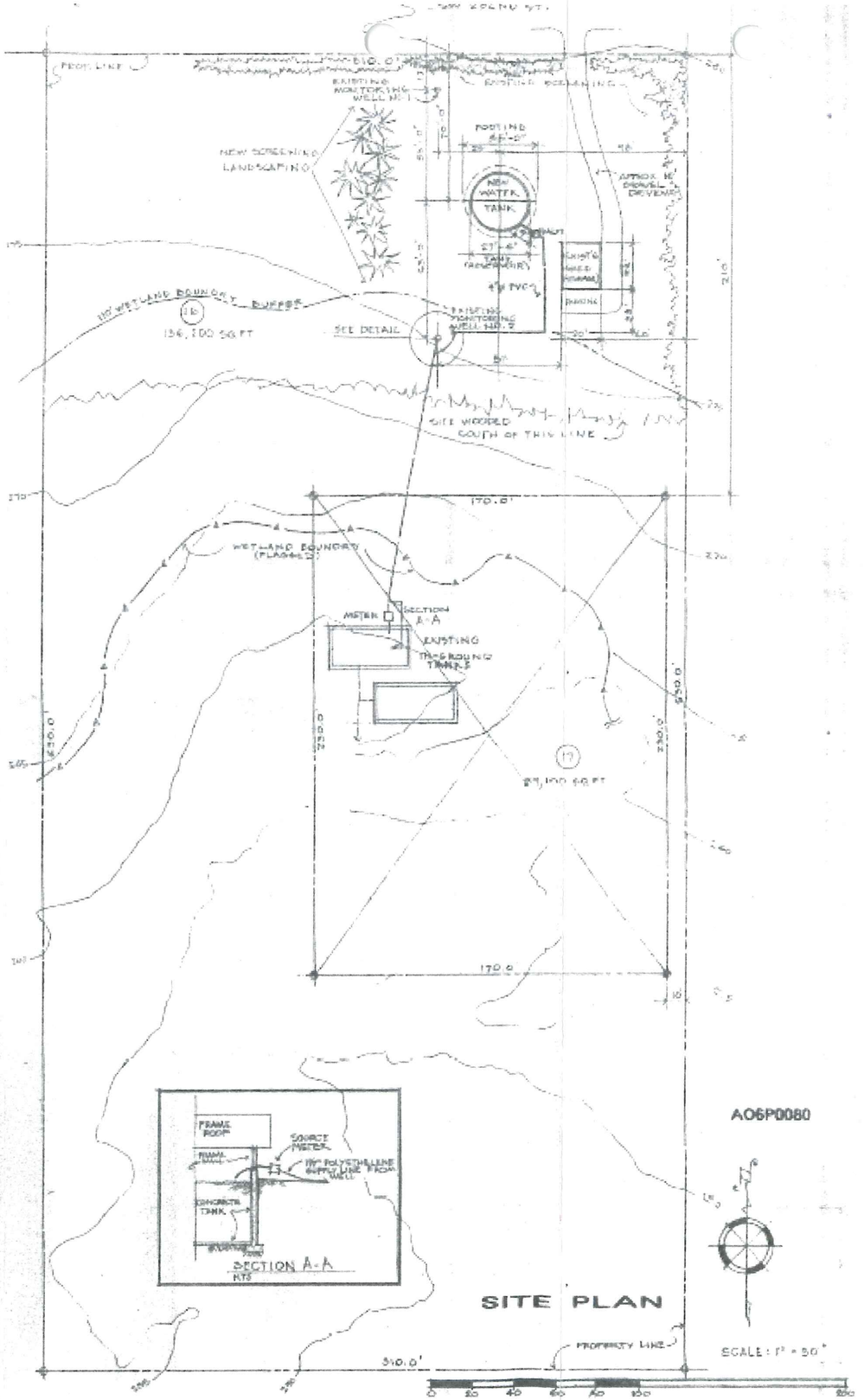
PROPERTY ZONING

LEGAL DESCRIPTION

PROPERTY TAX ACCOUNT NUMBER

OWNER

APPLICANT/CONTACT



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KEN GARRISON, Architect/Associates
1110 North 175 th Street, Suite 215
Shoreline, WA. 98133

26 FOOT DIAMETER WATER RESERVOIR
FOR BURTON WATER COMPANY
11611 SW 232 ST.
VASHON, WASHINGTON

DATE 04/15/09
SCALE
DRAWN
JOB
SHEET

FORGED BRASS BALL VALVE

MAINTENANCE FREE DOUBLE O-RING STEM SEALS

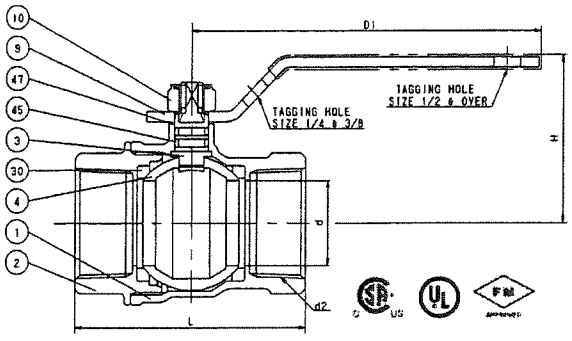
Two Piece Body • Full Port • Chrome Plated Ball

Blowout Proof Stem (Ni Plated) • PTFE Seats

CSA (US/C) • UL • FM**

Conforms to MSS SP-110

CODE # 58
FIPS x FIPS



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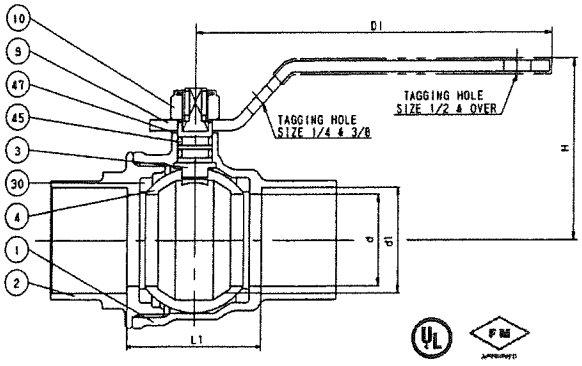


STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
DESIGN	MSS SP-110

PRESSURE/TEMPERATURE
150 PSI SATURATED STEAM TO 366°F
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

**SEE VALVE INSTALLATION INSTRUCTIONS/PRESSURE TEMPERATURE LIMITATIONS FOR COPPER TUBE AND SOLDER JOINT VALVES - Page P-29 & 30.*

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) BRASS ROD (B16)
4	BALL	(2) FORGED BRASS (B283, C37700) STRAIGHT OR HOLLOW BALL
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
30	BALL SEATS	PTFE
45	O-RINGS	FPM
47	THRUST WASHER	PBT

NOTES: (1) Ni PLATING
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
1/4	.39	1.46	2.76	-	1.11	-		29	120
3/8	.39	1.46	2.76	1.65	1.04	.506	.502	29	120
1/2	.59	1.57	3.15	2.08	1.13	.631	.627	29	96
3/4	.79	1.69	3.15	2.36	1.37	.881	.877	45	60
1	.98	1.97	4.33	2.83	1.64	1.132	1.128	60	36
1 1/4	1.26	2.16	4.33	3.31	1.99	1.382	1.378	68	24
1 1/2	1.57	2.52	5.90	3.62	2.35	1.633	1.628	50	16
2	1.97	2.83	5.90	4.33	2.85	2.133	2.128	71	16

OPTIONS :
OVAL HANDLE
EXTENDED STEM
MEMORY STOP

CERTIFICATIONS:
**CSA (US/C):
ASME B16.33 – 125G
AGA 3-88 – 2/5G
CGA 9.1 M97/ANSI 21.15-1997 – .5G
CGA 3.16-M88 – 125G
CGA CR 91-002 - 2G
CGA 9.2 M-88 – .5G
UL-258 – 175 WWP (Fire Protection Trim Valves)
FM-1140 – 175 WWP (Fire Protection Systems)

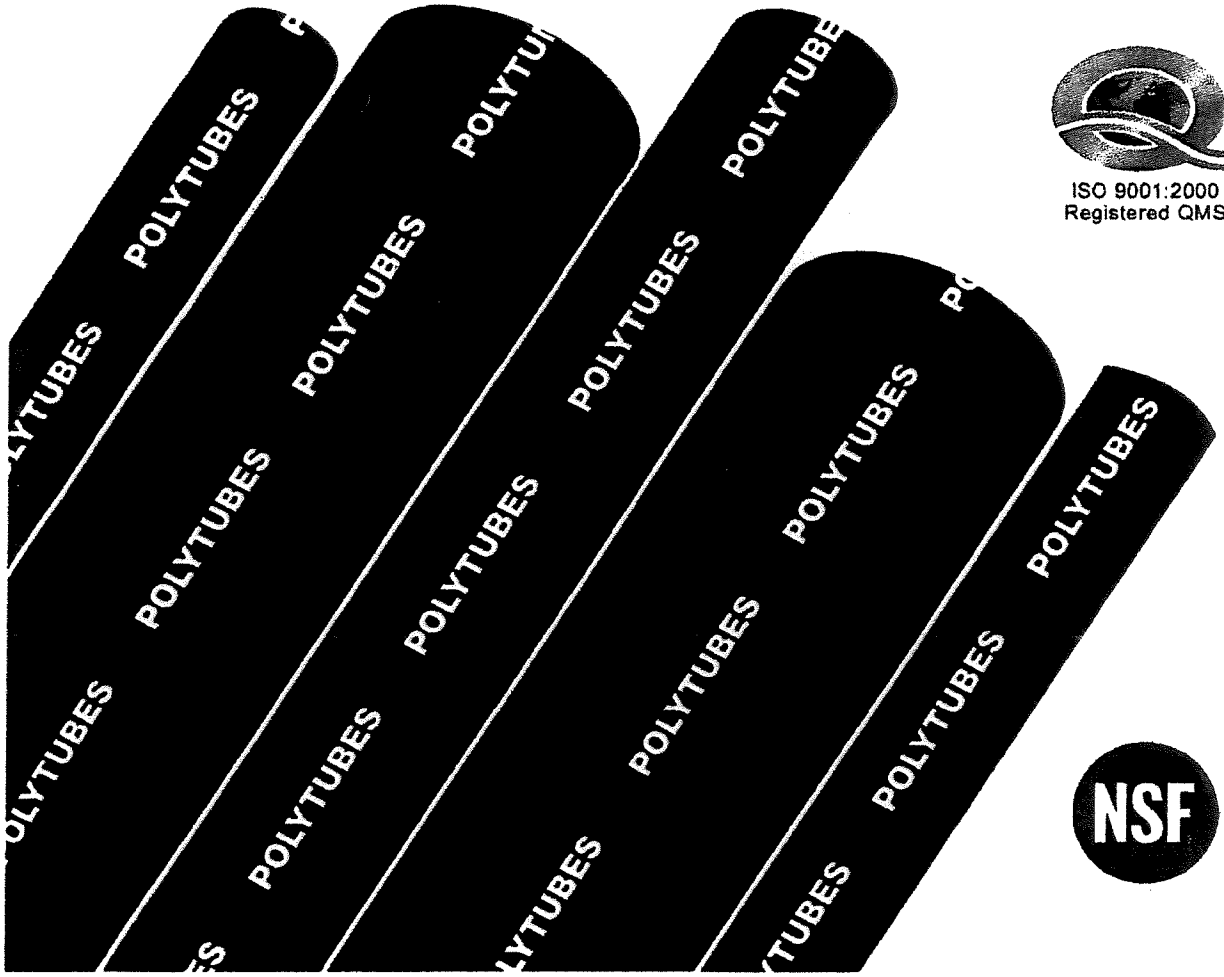
Polytubes®

ISO 9001: 2000
CERTIFIED

POLYETHYLENE
PE 4710

ENGINEERED FOR
Potable Water
PIPING SYSTEMS

PLASTIC MANUFACTURES "SINCE 1953"



ISO 9001:2000
Registered QMS

NSF

AWWA STANDARD

ASTM

PE 4710 Pipe Products

General Information

POLYTUBES extrudes and fabricates its polyethylene pipe from a Bi-Modal High Molecular Weight (HMW) High Density Polyethylene (H.D.P.E.) hexene copolymer resin manufactured by **DOW Plastics**. This material provides an excellent combination of toughness, durability and environmental stress crack resistance for pressure and non pressure pipe applications. The piping carries NSF approval for potable water applications.

This product when used in pressure pipe applications exhibits exceptional LTHS (Long Term Hydrostatic Strength) with outstanding resistance to Slow Crack Growth (SCG) and Rapid Crack Propagation (RCP). ***POLYTUBES*** polyethylene piping systems offers some unique characteristics such as low cost installation, rough handling in extremely cold weather, excellent chemical resistance, will not corrode and long service life with minimal maintenance requirements.

POLYTUBES piping is listed with NSF (National Sanitation Foundation) as complying with NSF/ANSI STANDARD 14, 61 and Plastic Pipe Institute (PPI) as a PE-4710 resin with a hydrostatic design basis (HDB) of 1600 psi for water at 73°F (23°C) and 1000 psi HDB at 140°F (60°C). Thus, Dow's bi-modal polyethylene material is designated as a PE-4710, after applying the 0.63 design safety factor; the design working stress for 73°F (23°C) is 1000 psi with a cell classification of PE445574C as per ASTM D3350.

Identification of ***POLYTUBES*** polyethylene pipe by cell classification is as follows:

Properties	***CELL CLASS***
Density	4
Melt Index	4
Flexural Modulus	5
Tensile Strength, yield	5
Slow Crack Growth (PENT Test)	7
Hydrostatic Design Basis	4
Colour/UV Stabilizer	C

POLYTUBES

PE 4710 Pipe Products

Pipe Properties: (Typical)

	Units	*Typical Values*	*ASTM Test Method*
Pipe Ring Tensile Strength @ Yield	psi	3400	D2290
Pipe Density	g/cm^3	0.959	D792
Carbon Black Content	%	2.1	D1603
Hydrostatic Design Basis @ 73 °F (23°C)	psi	1600	D2837
Hydrostatic Design Stress @ 73°F (23°C)	psi	1000	
Hydrostatic Design Basis @ 140°F (60°C)	psi	1000	D2837
Coefficient, of Linear Thermal Expansion	in./in./°F	0.8×10^{-4}	D696

Resin Properties: (Typical)

Melt Index (190/2.16)	dg/min	0.08	D1238
Density	g/cm^3	0.949	D792
Tensile Strength at Yield	psi	3600	D638
Elongation (@Break)	%	740	D638
Thermal Stability	°F	>428	D3350
	°C	>220	
Notched Izod Impact @ 23°C	Ft-lb/in	9.1	D256
	J/m	488	(method A)
Flexural Modulus (@2% Strain)	psi	150,000	D790 (method 1, procedure B)
Slow Crack Growth PENT	Hours	>4,000	D1473

With the main dimensions conforming to the requirements of the following **Standards:**

* ASTM D-3035
* ASTM D-2239
* ASTM D 2737
* AWWA C901

POLYTUBES

PE 4710 Pipe Products

POLYTUBES PIPE DIMENSIONS 1000 P.S.I. HDS;

POLYTUBES offers a comprehensive range of H.D.P.E. pipes based on outside and inside controlled diameters. The design pressure for ***POLYTUBES*** pipe is determined in accordance to the Standard ISO equation shown:

ISO Equation:

$$PC = \frac{2S}{SDR - 1} = \frac{2S}{SIDR + 1}$$

Where:

PC = design pressure, **psi**

S = *hydrostatic design stress (HDS) at* 80°F (27°C), =1000 psi
HDS = 1600 psi (HDB) x 0.63 (as published in PPI TR-4)

R = standard internal pipe dimension ratio. $\left(\frac{OD}{t}\right)$ for IPS, PE Pipe

R = standard internal pipe dimension ratio. $\left(\frac{OD}{t}\right)$ for CTS, PE Pipe

R = standard internal pipe dimension ratio. $\left(\frac{D_i}{t}\right)$ for SIDR, PE Pipe

Note: The Environmental or temperature factor is an additional de-rating factor to compensate for temperatures higher than 80°F (27°C). Consult your ***POLYTUBES*** representative for higher temperature re-rating factor.

POLYTUBES

PE 4710 Pipe Products

POLYTUBES POTABLE WATER PIPING

I.P.S. SIZED PRESSURE PIPE (ASTM D3035)

NOMINAL SIZE (in)	MINIMUM WALL (in)	AVERAGE I.D. INCHES (in)	APPROXIMATE WEIGHT (lbs/100')	LENGTHS (ft)	PRODUCT CODE
IPS 9 - PR - Working Pressure 250 PSI@ 73.4 F° / 23°C					
¾"	0.117	0.800	15	100/300/500	HDGF-090-007
1"	0.146	1.000	24	100/300/500	HDGF-090-010
1 ¼"	0.184	1.270	37	100/300	HDGF-090-012
1 ½"	0.211	1.450	49	100/300	HDGF-090-015
2"	0.264	1.810	76	100/300	HDGF-090-020
IPS 11 - PR - Working Pressure 200@ 73.4 F° / 23°C					
¾"	0.095	0.839	13	100/300/500	HDGF-110-007
1"	0.120	1.056	20	100/300/500	HDGF-110-010
1 ¼"	0.151	1.338	32	100/300	HDGF-110-012
1 ½"	0.173	1.534	41	100/300	HDGF-110-015
2"	0.216	1.917	64	100/300	HDGF-110-020

C.T.S. SIZED PRESSURE PIPE (ASTM D 2737)

NOMINAL SIZE (in)	AVERAGE OUTSIDE DIMETER (in)	MINIMUM WALL (in)	APPROXIMATE WEIGHT (lbs/100')	LENGTHS (ft)	PRODUCT CODE
SDR 9 - PR - Working Pressure 250 PSI @ 73.4 F° / 23°C					
¾"	0.875	0.097	10	100/300/500/1000*	NCTS-090-007
1"	0.125	0.125	17	100/300/500/1000*	NCTS-090-010
1-1/4"	1.375	0.153	25	100/300/500/1000*	NCTS-090-012
1-1/2"	1.625	0.181	36	100/300/500/1000*	NCTS-090-015
2"	2.125	0.236	61	100/300/500/1000*	NCTS-090-020

*** Reels only (special order)**

POLYTUBES

PE 4710 Pipe Products

S.I.DR. SIZED PRESSURE PIPE (ASTM D 2239)

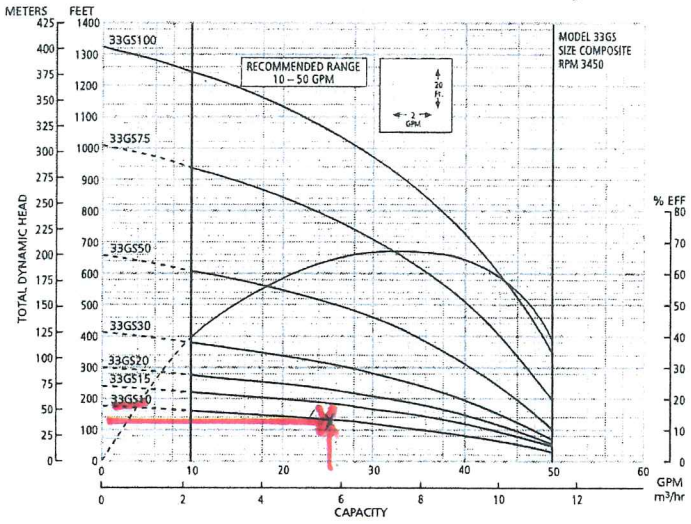
NOMINAL SIZE (in)	MINIMUM WALL (in)	AVERAGE I.D. INCHES (in)	APPROXIMATE WEIGHT (lbs/100')	LENGTHS (ft)	PRODUCT CODE
SIDR 9 - PR - Working Pressure 200 PSI@ 73.4 F° / 23°C					
½"	0.069	0.622	7	100/400/1000*	NIDR-090-005
¾"	0.092	0.824	12	100/300/1000*	NIDR-090-007
1"	0.117	1.049	19	100/300/1000*	NIDR-090-010
1 ¼"	0.153	1.380	32	100/300/1000*	NIDR-090-012
1 ½"	0.179	1.610	44	100/250/ 1000*	NIDR-090-015
2"	0.230	2.067	73	100/200/1000*	NIDR-090-020
SIDR 7 - PR - Working Pressure 250@ 73.4 F° / 23°C					
½"	0.089	0.622	9	100/400/1000*	NIDR-070-005
¾"	0.118	0.824	15	100/300/400/1000*	NIDR-070-007
1"	0.150	1.049	25	100/300/1000*	NIDR-070-010
1 ¼"	0.197	1.380	42	100/300/1000*	NIDR-070-012
1 ½"	0.230	1.610	58	100/250/300/500/1000*	NIDR-070-015
2"	0.295	2.067	96	100/200/300/500/1000*	NIDR-070-020

*** Reels only (special order)**

Attachment 5

Model 33GS

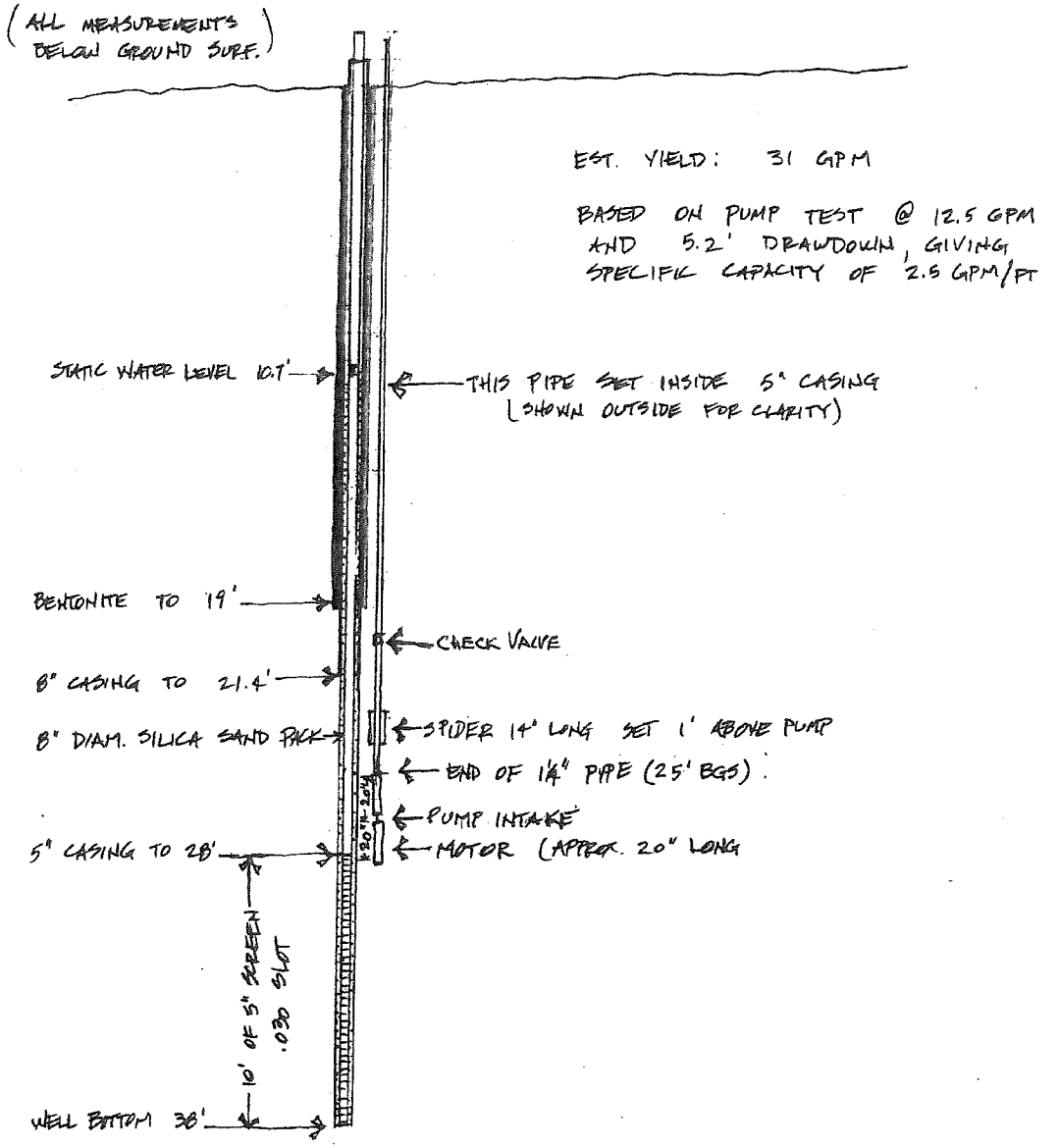
GOULDS PUMPS
Residential Water Systems



Attachment 6

BURTON WATER CO. WELL

COMPLETED 10/14/05 BY TACOMA PUMP & DRILLING



SCALE: 1" = 5'

EAA

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
20435 72nd Ave. S. , Suite 200, K17-12• Kent, Washington 98032 -2358

January 14, 2009

JIM GARRISON
BURTON WATER COMPANY
11507 105th PL SW
VASHON WA 98070

Subject: Burton Water Company, ID#09800
King County
~~East Well – Engineering Report~~ Replacement Well #1
Submittal #08-1023

Dear Mr. Garrison:

Thank you for submitting the design report for your replacement source, Well 1, received by the Department of Health (DOH) Office of Drinking Water on October 20, 2008. I apologize for the delay in sending you a response. I have reviewed the document and offer the following comments which need to be addressed prior to receiving approval.

Water Quality

1. An initial round of water quality analyses is required for each new source. Please provide coliform, IOC, VOC, SOC and radionuclide sample results. Depending on the locations and depths of the future proposed wells, the SOC and radionuclide sample requirements may be waived.
2. For the Lead and Copper Rule, please verify that the new source pH is similar to the existing sources.

Design and Construction

3. Please provide a plan view and construction details for the proposed or existing 1.5-inch main that will connect the well to the lower tanks. Construction details to include type and size of pipe, type of valves and connection details.
4. The plan view detail shows a 4-inch PVC connecting the well to the new tank, but the profile view shows only the 1.5-inch. Please clarify that the 4-inch was or will be installed, and if yes, then provide design details for the connection and related appurtenances.
5. Please provide details on type of well cap and screened vent, and location and type of source meter.

6. Is there a way to blow-off the well if needed?
7. Please provide the hydraulic calculations or explanation that led to the pump size determination? Where on the pump curve does the pump operate? Please provide the design details for how the pump was installed (depth, pipe size and material, check valve, etc.).
8. Will any alarms and/or telemetry be installed for this well?
9. I did not see a professional engineer's seal and/or signature. Please clarify.

re: D.R. Strong design

Treatment

10. Please explain in more detail how the well will operate with existing storage, new storage and treatment.
11. Please provide treatment details. If this new source is treated with existing disinfection equipment; please explain how contact time will be met with the interim increased capacity.

no change in capacity

Other Documentation

12. Complete and submit a DOH Susceptibility Assessment. Even though the information is included in the report, we require an assessment form be filled out for each source.
13. Source documents were forwarded to the Department of Ecology to review and comment. If Ecology has comments, you will need to address them prior to receiving DOH approval.

Regulations establishing a schedule of fees for review of planning, engineering, and construction documents have been adopted (WAC 246-290-990). An invoice for $525.00 is enclosed. This fee covers the review of the original submittal and one resubmittal. Please remit your complete payment in the form of a check or money order within thirty days of the date of this letter to: WDOH, Revenue Section, P.O. Box 1099, Olympia, WA 98507-1099.

If you have any questions or comments, please contact me at (253) 395-6764.

Sincerely,

Sheri Miller, P.E.
Regional Engineer
N.W. Drinking Water Operations

cc: Public Health - Seattle & King County, Drinking Water Program
Eric Weber, Landau Associates

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

Office of Drinking Water
INVOICE
Engineering, Planning, and Sanitary Survey Review Form

TO: JIM GARRISON
BURTON WATER COMPANY INC
10930 SW 238TH ST
VASHON WA 98070

Invoice Number	203604
Invoice Date	January 15, 2009
Billing Period	30 days NW

DATE	DESCRIPTION	QUANTITY	COST	AMOUNT
1/15/09	REVIEW AND/OR APPROVAL OF PROJECT REPORT BURTON WATER COMPANY INC KING COUNTY WELL #1 - SOURCE APPROVAL SUBMITTAL #: 08-1023	1	1	$525.00
	Payment due within 30 days. Interest shall accrue at 1% per month after 30 days.			

Make Checks Payable to Department of Health
Return Lower Portion to:
Department of Health
PO Box 1099
Olympia, WA 98507-1099

Office of Drinking Water
Engineering, Planning, and Sanitary Survey Review Form

NAME	Burton Water Company Inc
INVOICE NUMBER	203604
INVOICE DATE	January 15, 2009 #08-1023
AMOUNT	$525.00 NW

DOH Form #331-332

Return to:
Department of Health
Revenue Section
PO Box 1099
Olympia, WA 98507-1099

For persons with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

Revenue Code: 057240100

2 044129 00878

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
20435 72nd Ave. S. , Suite 200, K17-12• Kent, Washington 98032 -2358

January 14, 2009

PAUL FABINIAK
DEPARTMENT OF ECOLOGY
NORTHWEST REGIONAL OFFICE
3190 – 160th AVENUE SE
BELLEVUE WA 98008-5452

RE: Burton Water Company ID#09800
King County
Replacement Well #1
Submittal #08-1023

Dear Paul:

Please review and comment on the water rights discussed in the attached documents pertaining to a replacement source for the Burton Water Company on Vashon Island.

Please provide comments either via email or mail by February 13:

NW Drinking Water Operations
Attn: Sheri Miller
20435 72nd Ave. S, Suite 200
Kent, WA 98032-2358

If you have any questions or need more information, please contact me at (253) 395-6764. Thank you.

Sincerely,

Sheri Miller
Regional Engineer

Enclosure

Miller, Sheri K (DOH)

From: Miller, Sheri K (DOH)
Sent: Wednesday, June 18, 2008 2:06 PM
To: 'Theresa Turpin'
Subject: Planning Requirements for Burton's new wells

Teresa,
We would be able to approach these wells as a direct source replacement which somewhat negates the water system planning requirement (as the system is not looking to expand). There will be some planning to be done but related to the new source(s) only - such as capacity needs, wellhead protection and O&M. All submitted with the source approval package which does not require King County's local government consistency.

Call me if you want to talk in more detail. -Sheri

Sheri Miller, P.E.
Regional Engineer, NW Operations, Office of Drinking Water
Division of Environmental Health, Washington State Department of Health
20435 - 72nd Ave South, Suite 200, Kent, WA 98032
phone: 253-395-6764 fax: 253-395-6760 email: sheri.miller@doh.wa.gov
http://www.doh.wa.gov/ehp/dw/

Public Health - Always Working for a Safer and Healthier Washington

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
20435 72nd Ave. S. , Suite 200, K17-12• Kent, Washington 98032 -2358

October 22, 2008

EVAN SIMMONS
BURTON WATER COMPANY INC
PO BOX 2117
VASHON WA 98070

SUBJECT: BURTON WATER COMPANY INC ID#09800
KING COUNTY
WELL #1 - SOURCE APPROVAL
SUBMITTAL #08-1023

Dear EVAN SIMMONS:

On October 20, 2008, our office received the referenced documents submitted for approval per WAC 246-290. This submittal has been assigned the unique identification number shown on the last line of the subject heading. Please use this number on all future correspondence or additional submittals pertaining to this project. Also, please allow about six weeks from the date of receipt for a response before calling to check on the status. Consideration may be given for expedited review of projects solving an existing public health problem. If you wish to request expedited review, please provide written justification supporting your request.

Upon completion of the review, you will receive either the approval letter or a comment letter identifying items which need to be satisfactorily addressed to gain department approval. The letter will be accompanied by the invoice requesting payment of the fee for the review. The fee covers one more submittal on this project. Please note that the payment of the review fee does not guarantee approval of the submittal. If additional review letters and submittals are required, another invoice for additional fees charged will be sent with the final approval letter.

Please note: Departmental approval of your construction documents is required before you commence any water system construction. Failure to obtain the required approvals may subject you to enforcement action which may include civil penalties as authorized by Chapter 70.119A RCW. The Department is under no obligation to accept or approve any component installed or constructed prior to approval and you may be required to expose system components for DOH inspection and rebuild/replace if necessary to meet Department requirements.

Please call me at (253) 395-6752 if you have any questions on this letter.

Sincerely,

Kathie Robinson
Northwest Drinking Water Operations

cc: ERIC WEBER, LANDAU ASSOCIATIONS INC

TRANSMITTAL

LANDAU ASSOCIATES
ENVIRONMENTAL | GEOTECHNICAL | NATURAL RESOURCES

To: Burton Water Company Date: October 16, 2008

Attn: Jim Garrison Project No.:

RE: Well Source Approval

Copies	Description
2	Report - Well Source Approval, Burton Water Company, Vashon, WA - 10/16/08

Mr. Garrison,

Enclosed you will find two copies of the above mentioned report for your information and distribution.

LANDAU ASSOCIATES, INC.

Erin Gillis

Erin N. Gillis
Receptionist / Staff Support

ENG/

Cc: Sheri Miller – NWRO Department of Health/2 report copies, one Project Approval Application

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OCT 20 2008
DEPARTMENT OF HEALTH
NW DRINKING WATER

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

Washington State Department Of Health
Project Approval Application Form

Please fill in all project description information and check all boxes that apply below.

Burton Water Company Well Source Approval			King County		
(project name)			(county)		DOH Project #
Burton Water Company Public Water Supply			Eric Weber, Principal Hydrogeologist		
(water system name)			(design engineer)		
Gerald and James Garrison and Evan Simmons			Landau Associates, Inc.		
(system owner)			(engineering firm)		
11507 105th Pl SW			950 Pacific Avenue, Suite 515		
(street)			(street)		
Vashon	WA	98070	Tacoma	WA	98402
(city)	(state)	(zip code)	(city)	(st)	(zip code)
(206) 567-4688			(253) 926-2493		
(phone number)			(phone number)		

Laura Jean Wilcox (Landau Associates, Inc)	(425) 778-0907	(207) 210-7354
(project contact if different than above)	(daytime phone number)	(evening phone number)

SYSTEM CLASS: ☒ Group A Community ☐ Group A NTNC ☐ Group A TNC ☐ Group B

 # SERVICE CONNECTIONS *(for Group A systems only - # services after project completion):*
☐ less than 100 ☒ 100 – 500 ☐ 501 – 999 ☐ 1,000 - 9,999 ☐ 10,000 or more

PROJECT DESCRIPTION: Direct source replacement of existing well point supply with production well(s) for public drinking water source supply.

AREA SERVED *(for distribution projects only-name of subdivision, site address, parcel numbers, etc.)*: Wells and well points are located on the northeast corner of 232nd Street SW Vashon, Washington. They supply the community surrounding this address.

TYPE OF PROJECT *(check all that apply)*:

☐ Water system plan:
- ☐ non-complete new or updated plan
- ☐ non-minor alteration

☐ Satellite management (SMA)
- ☐ ownership plan
- ☐ amendment
- ☐ operation plan

☐ DWSRF Loan
Application #_____
Loan #_____

☐ New Group B design report (Group B Workbook)

☒ Project report: (Is water system plan required: ☐ Y ☒ N If required, is it current and approved: ☐ Y ☐ N)
(Is project identified as part of capital improvement plan: ☐ Y ☒ N)

- ☐ filtration or other complex treatment
- ☐ chemical addition only (ion exchange, hypochlorination, corrosion control or fluoridation)
- ☐ complete new water system
- ☐ major system modification

☐ Special reports or plans:
- ☐ corrosion control report
- ☐ corrosion control study
- ☐ plan to cover uncovered reservoir

☐ Predesign study
- ☐ uncovered reservoir plan of operation
- ☐ tracer study plan
- ☐ surface water or GWI treatment facility operation plan

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- ☐ filtration pilot study

☒ Existing system approval
- ☐ non-expanding; not detailed evaluation
- ☒ non-expanding, detailed evaluation
- ☐ expanding, not detailed evaluation
- ☐ expanding, detailed evaluation

☒ Construction documents:
- ☐ filtration or other complex treatment
- ☐ chemical addition only
- ☐ complete new water system
- ☒ new source only
- ☒ system modification
- ☒ system modification; design standards used; PE prepared

☐ Waivers:
- ☐ inorganic chemical (initial)
- ☐ organic chemical (initial)
- ☐ use
- ☐ area wide renewal
- ☐ inorganic chemical (renewal)
- ☐ organic chemical (renewal)
- ☐ use (renewal)
- ☐ coliform (w/departmental inspection)
- ☐ coliform (w/ third-party inspection)

☒ Other
- ☒ well-site evaluation and approval
- ☐ regulatory monitoring plan
- ☐ unfiltered system annual report
- ☐ water system compliance report (loan letter)
- ☐ water right self-assessment (if applicable)

Other projects (describe): This is a request to obtain approval for wells as a public drinking water source. Wells installed/to be installed are nearby and upgradient and in the same aquifer as existing approved well points. The well points are being replaced with wells to provide a more reliable water supply for Burton Water Company clients. The wells will have a lower risk of contamination from surface sources and are more efficient than a vacuum well point network.

Please return completed form to DOH regional office checked below.

☒ **NWRO Drinking Water**	☐ **SWRO Drinking Water**	☐ **ERO Drinking Water**
Department of Health	**Department of Health**	**Department of Health**
20435 72nd Ave. S, Ste 200	**PO Box 47823**	**1500 W. Fourth Ave, Suite 305**
Kent, WA 98032-2358	**Olympia, WA 98504-7823**	**Spokane, WA 99204**
(253) 395-6760	**(360) 664-0768**	**(509) 456-2997**

For Department use only below this line:

Log-in # _____; Initial fee _____; Invoice mailed _____;

Invoice # _____; Fee received _____; # review letters _____

Approval Date: _____ Date construction report received: _____ # approved connections _____

Area served: _____

_____

Provisions: _____

_____

Report
Well Source Approval
Burton Water Company
Vashon, Washington

October 16, 2008

Prepared for

Burton Water Company

RECEIVED
08-1023
OCT 20 2008
DEPARTMENT OF HEALTH
NW DRINKING WATER

LANDAU ASSOCIATES
950 Pacific Avenue, Suite 515
Tacoma, WA 98402
(253) 926-2493

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1-1
2.0	HYDROGEOLOGY	2-1
2.1	HYDROGEOLOGIC SETTING	2-1
3.0	WELL AND WELL FIELD CHARACTERISTICS	3-1
3.1	WELL SPECIFICATIONS	3-1
3.2	AQUIFER TESTING	3-1
3.3	WATER QUALITY	3-2
3.4	WATER RIGHT	3-2
3.5	WELL FIELD DESIGN	3-3
4.0	WELLHEAD PROTECTION	4-1
4.1	WELLHEAD PROTECTION AREA	4-1
4.2	POTENTIAL CONTAMINANT SOURCE INVENTORY	4-1
5.0	OPERATIONS AND MAINTENANCE	5-1
6.0	REFERENCES	6-1

LIST OF FIGURES

Figure	Title
1	Vicinity Map
2	Existing Well and Tank Configuration
3	Proposed Future Well and Tank Configuration
4	Regional Surface Geology
5	Conceptual North-South Cross Section of BWC area Geology
6	PW06-1 Well Efficiency from Step-Rate Test Data
7	Water Level Change at MW-B During Constant-Rate Pumping Test

LIST OF TABLES

Table	Title
1	Proposed Replacement Well Network

LIST OF APPENDICES

Appendix	Title
A	PW06-1 Site Inspection Recommendation
B	PW06-1 Well Completion Logs and Forms
C	PW06-1 Well Head Plan and Tank Construction Details
D	Water Rights G1-043145CL and S1-02376C
E	Goulds Pumps System Head Curves and Pump Curve

1.0 INTRODUCTION

The Burton Water Company (BWC) provides domestic water supply to approximately 415 residential units on Vashon Island, Washington in King County. To upgrade their supply, BWC installed a water supply well, PW06-1, on October 14, 2005. This well was located on the northeast corner of their property at 232nd Street SW Vashon, Washington (Figures 1 and 2). This well is the first of several to be installed for the purpose of replacing the current vacuum well point system with a network of extraction wells. The old system is being replaced to provide a more reliable water supply to BWC customers. Extraction wells have a lower risk of contamination from surface sources and are more efficient than a vacuum well point network.

This report complies with Washington State Department of Health (DOH) requirements and provisions in WAC 246-290 (Group A Water Supplies) for direct source replacement. Direct source replacement does not require review or permit from King County. Replacement wells are located within the same Township and Range quadrant and target the same aquifer as well points, hence no additional water right change is necessary from the Department of Ecology (Ecology) according to RCW 90.44.100(3) (RCW 2003). A "Notice of Compliance" form will be filed with DOE to clarify the transference of the groundwater right.

This report includes well and associated infrastructure construction, development, and testing documentation. Appendix F of the *Water System Design Manual* (DOH 2001) requires the following to be included in the project report:

- Project vicinity map.
- Information establishing the need for the project including an evaluation of the source supply alternatives
- Detailed site map including: topography, distances to the well from existing property boundaries, buildings, potential contaminant sources, ditches, drainage patterns and any other natural or man-made features affecting the quality or quantity of water
- A Hydrogeologic Assessment of the source including the DOH Susceptibility Assessment form or equivalent information; a wellhead protection area delineation and inventory of potential contamination sources.
- Water rights documentation.
- A copy of the well-site inspection made by DOH or local health jurisdiction representative showing that the location is satisfactory.
- Dimensions, location and legal documentation of the Sanitary Control Area as defined under WAC 246-290-135

- A copy of the water well report including the unique well tag identification number, depth to open interval or top of screened interval, overall depth of the well from the top of the casing, vertical elevation, and location.

- Results of the pumping test including concurrent pumping and evaluation of seawater intrusion. The following pumping system specifications covered should be included: pump horsepower, gallons per minute, hydraulic head, system head curves, and pump curve. Calculations establishing the physical capacity of the source in service connections and equivalent residential units should be provided.

- Results of water quality analyses which demonstrate compliance with minimum coliform bacteria, inorganic chemical, radionuclide and volatile organic chemical water quality standards established in WAC 246-290.

- Pump data and specifications for the pumps including sizes and nomenclature.

- Source facility specifications including standard drawings for the pump house, source meter, valving, sample location tap, access port, screened vent, surface seal, site drainage, location, size, type, and class of pipe as documented in WAC 246-290-120 (4).

Upon authorization of PW06-1, BWC anticipates installation of a minimum of five more wells to fully replace the existing vacuum system and provide peak supply of approximately 200 gpm. Proposed well configuration, locations are shown on Figure 3; estimated pumping rates are presented on Table 1.

2.0 HYDROGEOLOGY

2.1 HYDROGEOLOGIC SETTING

Detailed interpretations of the site and surrounding area geology can be found in supporting documents (Ecology 2002; BWC 1998; CDM 2006). In general, soils in the vicinity of the well are glacial in origin and were deposited during advancing and retreating phases of the most recent Vashon age Puget Sound glaciation. Surface deposits are Vashon recessional outwash (Qvr) which is composed of gravel and sand with varying amounts of finer material. The Qvr deposit has moderate to high permeability. This deposit overlies lower permeability Vashon till (Qvt), composed of poorly sorted clay to gravel-sized particles that were compacted at the base of the ice sheet. Surface expressions of the Qvr have been mapped approximately 2,000 ft in the east-west direction and 6,000 ft north to south. Underlying the Qvt is Vashon advance outwash (Qva) and transitional beds (Qtb). A 2006 USGS interpretation of surface geology is shown in Figure 4 (Booth and Troost 2006).

BWC wells target the Qvr unit which is perched above the lower permeability Qvt. Groundwater flow is from the north to south and recharge is primarily from rainfall and irrigation. Approximate thicknesses of Qvr deposits in the vicinity of PW06-1 from west to east range between 0 to 55 ft. Depth to water at MW-B and North Well are approximately 15 and 10 ft below ground surface (BGS), respectively. Approximately 200 ft south of PW06-1, the water table intersects the ground surface resulting in spring discharge and artesian conditions at the current well point vacuum system. Further definition of BWC capture zones is presented in Section 4.1. A conceptual cross-section of the well site and BWC springs is shown on Figure 5.

3.0 WELL AND WELL FIELD CHARACTERISTICS

3.1 WELL SPECIFICATIONS

A well site inspection was conducted by a King County Health and Environmental Investigator on October 27, 2004. The proposed site was modified to accommodate recommendations made by the site inspector including increasing the distance from a public road to 100 ft. This change is documented in a letter dated December 27, 2004 sent to Derek Pell (DOH) by David Koperski (King County) (Appendix A).

Drilling of the PW06-1 borehole was conducted between October 10 and 14, 2005 by Tacoma Pump and Drilling. Brown sandy silt was encountered from 0 to 19 ft bgs and well graded brown medium sand from 19 to 36 ft bgs. Between 36 and 38 ft bgs, the presence of silt increased. PW06-1 was completed with 8-inch blank casing to 21.4 ft, then telescoped to 5-inch blank casing and 0.030 slot screen to a total depth of 37.7 ft BGS on October 14, 2005. The screened interval was placed in the Qvr unit from 27.2 to 37.7 ft BGS. The annulus space was filled with silica sand to 19 ft BGS and sealed to the surface with bentonite pellets. Upon well completion, water was encountered at 10.7 ft BGS. The total aquifer saturated thickness was about 28 ft. The DOE identification tag is AKN-518. Well completion forms and logs are presented in Appendix B. A well head diagram is presented in Appendix C.

A minimum of five more wells are planned to be installed in similar fashion with the goal to fully replace the well point system to the south. Wells will be located adjacent and to the north of PW06-1 and screened within the Qvr unit. Proposed well locations and pump rates are shown on Figure 3 and Table 1.

3.2 AQUIFER TESTING

Aquifer testing was conducted at PW06-1 following well completion. The step-rate test indicates a specific capacity of approximately 2.5 gpm/ft. Specific capacity was relatively constant with pumping rate indicating minimal additional well losses efficiency over the range of pumping rates. In a typical step-rate test, data points would plot as a curve with an increased rate of drawdown with increased pumping. At PW06-1, points lie on a line and thus the limiting factor for pumping rate is likely available saturated head (in this case, 18 ft from static water level to the top of screened casing). Step-rate data are presented in Figure 6.

Following the step-rate test, a 2-day constant-rate test was conducted at a rate of approximately 17.4 gpm to determine aquifer properties and localized pumping influence. The 2-day test hydrograph collected at MW-B shows evidence of additional influences (indicated by red arrows) contributing to changes in water level (Figure 7). This indicates that nearby operation of the existing well point vacuum

system and other private wells influence drawdown at the pumping well. However, the relative scale of this effect is small with maximum drawdown at MW-B less than 0.5 ft. Data collected at North Well and PW06-1 show similar responses. Maximum drawdown observed at PW06-1 during step-rate testing at 17 gpm was approximately 5 ft. Assuming an unconfined aquifer storativity (S) of 0.075, well radius (r) of 5 inches, and pumping rate (Q) of 17 gpm at 50 minutes, aquifer transmissivity (T) was calculated to be 406 ft^2/day (Driscoll, Appendix 16.D, 1986). Assuming a saturated aquifer thickness (b) of 25 ft, hydraulic conductivity (K) was calculated at 16 ft/day, a value characteristic of clean and silty sand (Freeze and Cherry 1979).

3.3 WATER QUALITY

Nitrate concentrations have increased at BWC well-points from non-detect in 1983 to greater than 5 mg/L in recent samples. The elevated nitrate concentrations are attributed to upgradient land clearing and agricultural activities. The drinking-water criterion for nitrate is 10 mg/L (WAC 173-200-040). This criterion has not been exceeded in any samples. Further discussion of nitrate levels in BWC water can be found in characterization reports associated with an upgradient farming property (CDM 2006).

PW06-1, existing well points, and future wells are all anticipated to be completed in the same aquifer unit and are in close proximity to one another. A full water quality sampling suite required for new source supply identified in WAC 246 290 310 was not collected from well PW06-1 because existing sampling being conducted at downgradient well points is considered representative. Results of this sampling are available from DOH records.

3.4 WATER RIGHT

BWC water is obtained under the authorization of two water rights; G1-043145CL and S1-02376C (Appendix D). G1-043145CL is a groundwater claim dating to 1930 (for 200 gpm) and S1-02376C is a surface (spring) water right from 1928 under Surface Water Certificate 405 (for 45 gpm). Because the new well system will be replacing an existing well point network within the NE 1/4 of SE 1/4 of Section 13, T22N, R2E quarter, no changes or additions to the groundwater claim G1-043145CL are anticipated (RCW 90.44.100(3)). S1-02376C will not be applicable to the new drilled wells as surface water rights may only take water by gravity through a spring fed collection system (including well points of less than 20 ft in length).

A water right application, G1-26795, was submitted to the Department of Ecology (DOE) in 1992 for an additional four wells. This additional allocation was intended for upgrades and expansion to the existing supply and has not been granted to date.

3.5 WELL FIELD DESIGN

Current BWC well field configuration consists of three wells and 17 well points (Figure 2). The three wells are North Well, South Well, and PW06-1 (Figure 2). Wells range in total depth from 18 to 38 ft BGS and records of depth to water are between 0 and 15 ft bgs. Water is stored in two 35,000 gallon concrete reservoirs (north and south tanks), one-100,000 gallon wood stave tank, and a new 150,000 gallon concrete tank. A construction report for the 150,000 gallon concrete tank will be presented separately. Construction details are presented in Appendix C. An additional 100,000 gallon concrete reservoir is located on the top of Burton Hill along 238th Street (BWC 1998).

BWC water is disinfected with a Wallace and Tiernan metering pump that distributes a chlorine solution into the tanks. The 5 to 12.5 percent mixed water chlorine solution is fed from a 30-gallon batch tank that is manually filled.

Ultimately, BWC would like to replace all 17 well points and the associated vacuum extraction system with cased wells equipped with dedicated extraction pumps. The new wells will be installed in the north-northeast corner of the property in a staggered fashion to minimize pumping interference. All wells will be screened within the same geologic unit as the existing well points, the Qvr aquifer, and will be located to maximize the available thickness of those higher permeability deposits. Future well installation locations and target depths are presented on Figure 3.

4.0 WELLHEAD PROTECTION

4.1 WELLHEAD PROTECTION AREA

BWC has determined the wellhead protection area by using a fixed radius delineation. Methods and calculations are included in the BWC Well Head Protection Plan, August 1998. The delineation is divided into three zones which represent one, five, and ten-year hypothetical horizontal travel times and extend 620, 1,390, 1,970 ft from the extraction point, respectively. In addition, a "Buffer Zone" was established upgradient of Zone 3 and is meant to reflect known hydrogeologic factors such as topography, flow gradient and knowledge of soil and geologic characteristics. This zone defines the primary area used by BWC for its wellhead protection efforts. The existing wellhead protection plan would also apply to new well PW06-1 and the proposed additional wellfield wells because of their proximity to the existing source.

In addition to the fixed radius delineation used for the BWC Well Head Protection Plan, all existing and proposed well locations satisfy the 100-ft radius Sanitary Control Area (SCA) requirements set forth in WAC 246-290-135(2). A shed located approximately 60 ft from the well will contain a limited amount of chlorine for system disinfection which is not expected to reach the aquifer. The location of the new well and proposed wells are shown on Figure 3.

4.2 POTENTIAL CONTAMINANT SOURCE INVENTORY

An inventory of potential sources of contamination within all zones including the buffer zone is updated every two years. This is done through letters and follow-up phone calls with property owners in the area. If granted permission, BWC staff conduct a field visit of the property to confirm information gathered during phone calls. If conditions or activities are identified that potentially threaten the Burton water supply, then appropriate actions are taken.

The initial BWC inventory of potential contaminant sources was conducted in August 1998 and documented in (BWC 1998). It identified the following potential sources of contamination within all three wellhead protection zones. Where a parcel straddled more than one zone, the lowest Zone category was assigned.

Animal Feedlot	1
Above Ground Storage Tank	2
Auto Salvage/Abandoned Vehicles	2
Fertilizer/Pesticide – Agricultural	1
Fertilizer/Pesticide – Residential	3
Oil Tank – Abandoned	3

Oil Tank – Operational	4
Septic Tank	31
Water Well – Abandoned	7
Water Well – Operational	18

Each potential contaminant source is assigned a management priority according to which zone that source is located and the type of contaminant. Sources located in zones that have longer travel times to the BWC wellfield or lower public health threat level may have more lenient management standards.

5.0 OPERATIONS AND MAINTENANCE

PW06-1 was equipped with a Goulds 33GS10-422 4-inch submersible pump. The pump is made of AISI 304 stainless steel and powered by 230V phase 2-wire. At maximum efficiency, this pump is expected to produce 33 gpm. The estimated sustainable flow rate from well PW06-1 is estimated at 22.5 gpm based on a specific capacity and the presence of 9 ft of available head (i.e., approximately 1/3 of the aquifer saturated thickness). This rate may decline slightly as additional wells are constructed and the source of supply is switched from well points to wells. Goulds Pumps system head curves and pump curve are included in Appendix E.

Standard rural use patterns designated by DOH guidelines for maximum daily demand (MDD) have shown water consumption of between 600-675 gallons per equivalent residential unit (ERU). BWC currently supplies 415 ERU's thus demanding between 249,000 gallons per day (173 gpm) and 280,000 gallons per day (194 gpm) from the water supply (DOH 1998).

To achieve a maximum desired production rate of 200 gpm, a minimum of five additional wells will be installed. The number of wells assumes that well specific capacity and aquifer thickness will be on average slightly higher than observed at PW06-1. This estimate is based on the overall productivity of the well point system and observations of soil texture at monitoring wells. These new wells will be constructed in the same manner as PW06-1 and instrumented with similar pump and infrastructure. The system is designed to have the capacity to produce 200 gpm with one well out of operation (for maintenance purposes). All proposed locations satisfy the 100-ft radius SCA requirement specified in WAC 246-290-135(2). Well names and estimated production rates are shown on Table 1.

LANDAU ASSOCIATES, INC.

Eric F. Weber, L.G.
Principal

EFW/jas

Not really
Ohm

6.0 REFERENCES

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Garrison, G. and J. Garrison. 1998. *Burton Water Company Well Head Protection Plan.* August.

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Washington Administrative Code. 2008. *WAC 246-290-135: Group A Public Water Supplies.* May.

Wood, D. 2002. *Report of Examination for Protested Change to Surface Water Certificate.* Department of Ecology.

Woodward, D. G., F. A. Packard, N.P. Dion, and S.S. Sumioka, 1995. *Occurrence and Quality of Ground Water in Southwestern King County, Washington.* U.S. Geological Survey Water-Resources Investigations Report 92-4098, 69 pp. + plates.

N

0 0.5 1

Miles

Data Source: ESRI 2006; King County 2006

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LANDAU ASSOCIATES

Well Source Approval Burton Water Company Vashon, Washington	**Vicinity Map**	Figure **1**

Data Source: Google Earth Image; King County 2006

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LANDAU ASSOCIATES

Well Source Approval
Burton Water Company
Vashon, Washington

Existing Well and Tank Configuration

Figure 2

Data Source: Google Earth Image; King County 2006

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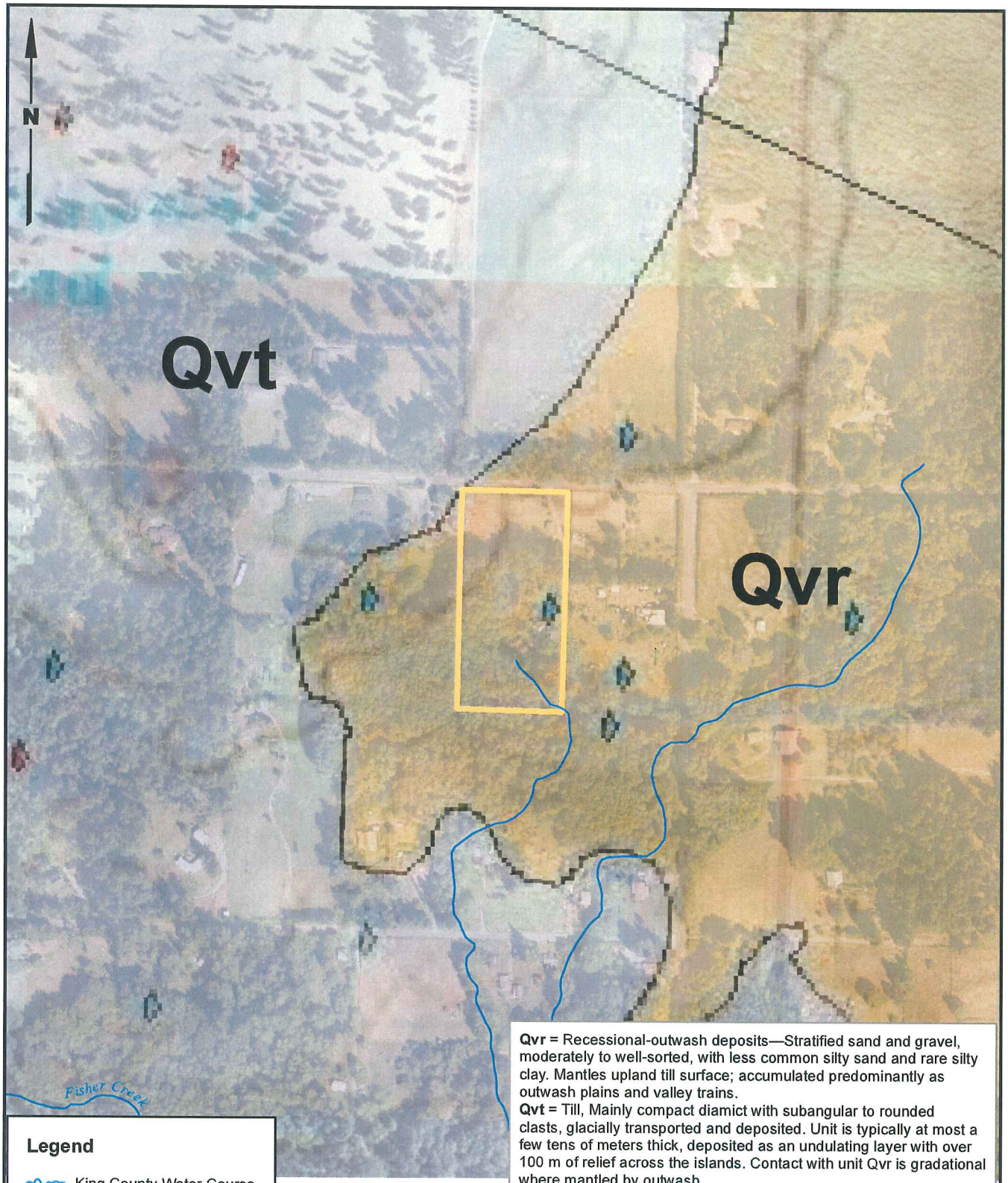
LANDAU ASSOCIATES

Well Source Approval
Burton Water Company
Vashon, Washington

Proposed Future Well Configuration

Figure 3



Qvr = Recessional-outwash deposits—Stratified sand and gravel, moderately to well-sorted, with less common silty sand and rare silty clay. Mantles upland till surface; accumulated predominantly as outwash plains and valley trains.
Qvt = Till, Mainly compact diamict with subangular to rounded clasts, glacially transported and deposited. Unit is typically at most a few tens of meters thick, deposited as an undulating layer with over 100 m of relief across the islands. Contact with unit Qvr is gradational where mantled by outwash

Legend

- King County Water Course
- Burton Water Co. Parcel

0 400 800

Scale in Feet

Data Source: Google Earth Image; King County 2006

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LANDAU ASSOCIATES

Well Source Approval Burton Water Company Vashon, Washington	**Regional Surface Geology**	Figure 4

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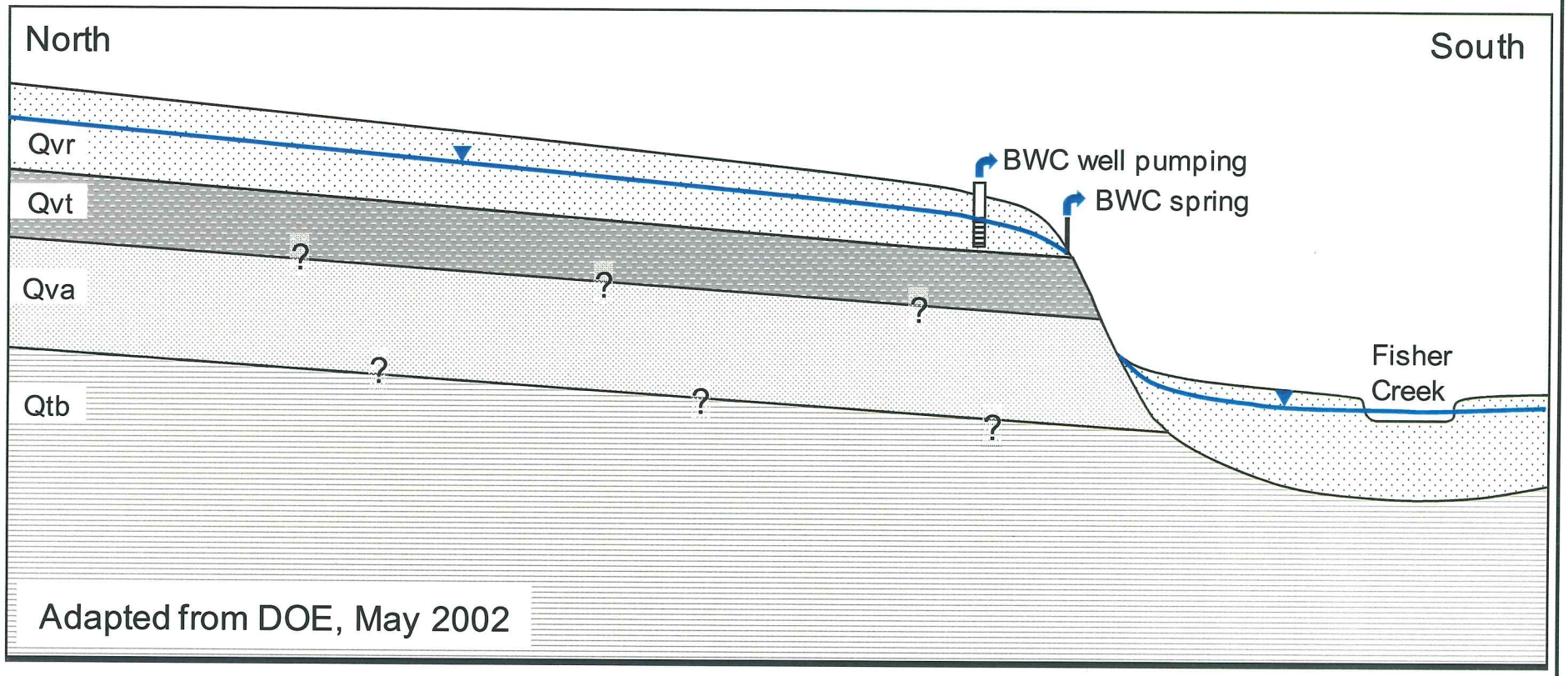
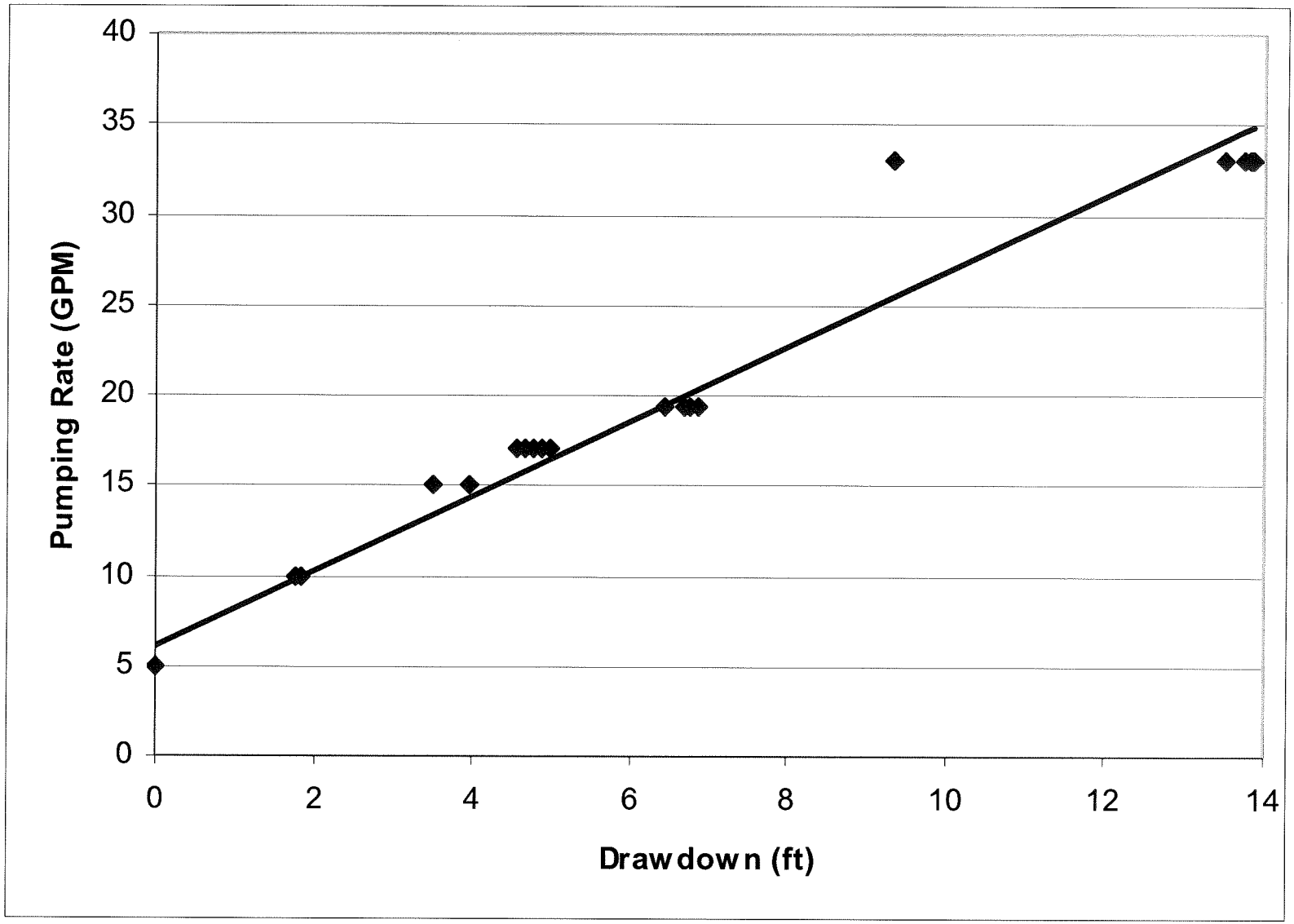


LANDAU ASSOCIATES

Well Source Approval Burton Water Company Vashon, Washington	**Conceptual North-South Cross Section of BWC Area Geology**	Figure 5



LANDAU ASSOCIATES

Well Source Approval Burton Water Company Vashon, Washington	**PW06-1 Well Efficiency from Step-Rate Test Data**	Figure 6

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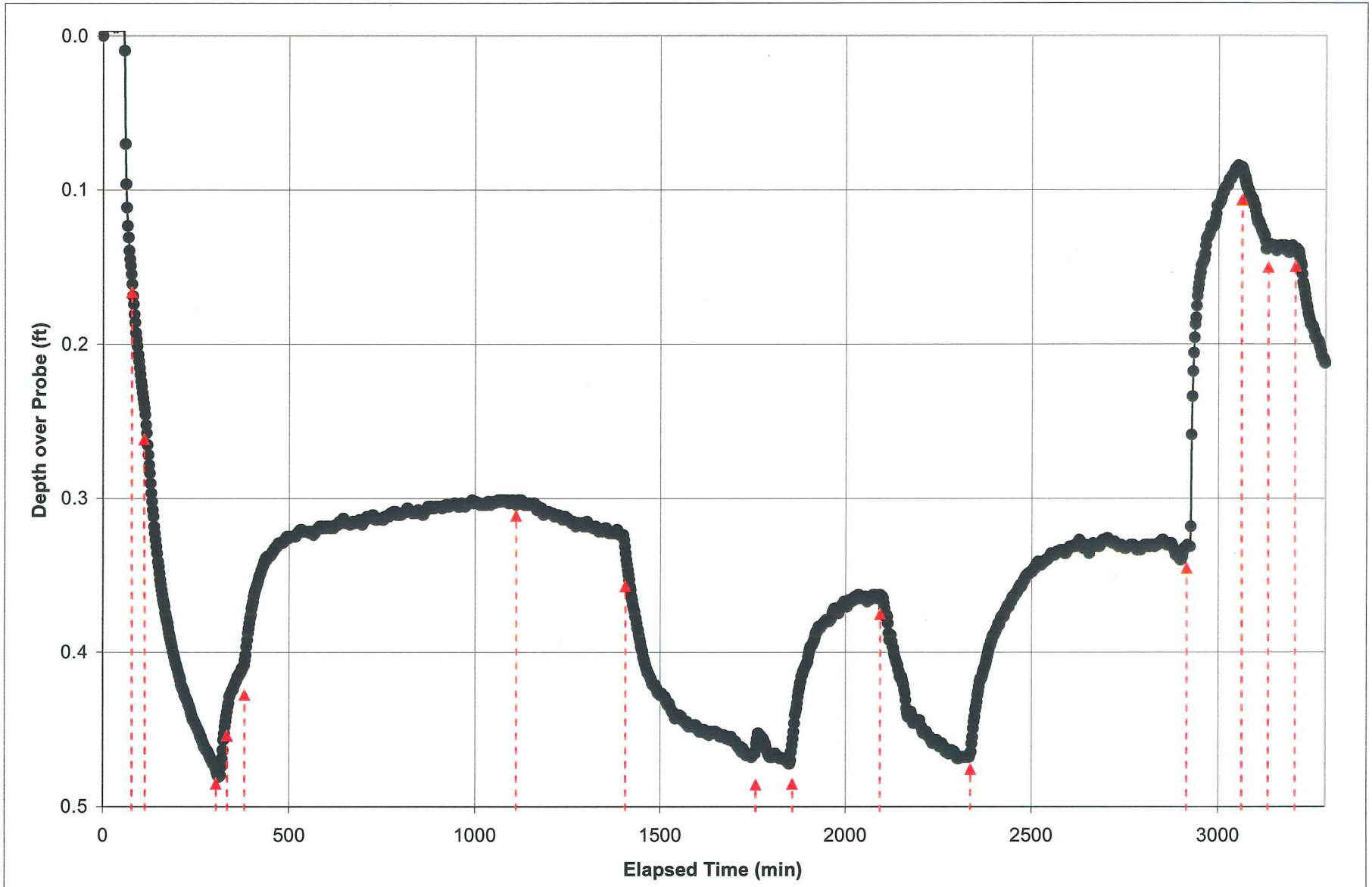


Note: Red arrows highlight fluctuations in water level resulting from additional aquifer influences.

LANDAU ASSOCIATES

Well Source Approval Burton Water Company Vashon, Washington	**Water Level Change at MW-B during Constant-Rate Pumping Test**	Figure 7

TABLE 1

PROPOSED REPLACEMENT WELL NETWORK

Existing/Proposed Well Name	Existing/Proposed Screened Interval (feet below ground surface)	Observed/Proposed Pumping Rate (gpm)
North Well	?	20
South Well	?	20
PW06-1	27.2 – 37.7	22.5
PW-2	~25 – 35	20-40
PW-3	~25 – 35	20-40
PW-4	~25 – 35	20-40
PW-5	~25 – 35	20-40
PW-6	~25 – 35	20-40
Range Total Estimated Flow (all wells operating)		**160-260**

APPENDIX A

PW06-1 Site Inspection Recommendation

Public Health
Seattle & King County

HEALTHY PEOPLE. HEALTHY COMMUNITIES.

Alonzo L. Plough, Ph.D., MPH, *Director and Health Officer*

December 27, 2004

Derek Pell 2533956763
Department of Health
NW Drinking Water Operations
20435 72nd Ave. South Suite 200
Kent, WA 98032-2358

RE: Burton Water Company, Inc. New Well Site Proposal-Revised
Address: 11611 SW 232nd St.
Proposed site: 100 feet from the north property line and 140 feet from the east property line.

Dear Mr. Pell:

I am enclosing the report on the well site application for the Burton Water Company on Vashon Island for your review and approval/disapproval.

The well site inspection was conducted on October 27, 2004. The following site observations were noted:

- The revised, proposed well site is 100 feet from a public road (SW 232nd St.). There is no public sewer in this area; all properties are served by on-site sewage systems.
- There appears to be a well field at least 100 feet down-gradient of the proposed well site.

If you have any questions regarding this report, please call me at (206) 296-9735, or leave a message on my voice mail.

Sincerely,

David Koperski

David Koperski, R.S.
Health and Environmental Investigator II
Community Environmental Health

cc: Evan Simmons

Eastgate Environmental Health
14350 SE Eastgate Way • Bellevue, WA 98007
T (206) 296-4932 F (206) 296-4919 • www.metrokc.gov/health
Printed on Recycled Paper.

City of Seattle
Gregory J. Nickels, *Mayor*

King County
Ron Sims, *Executive*

APPENDIX B

PW06-1 Well Completion Logs and Forms

22-2E13H

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission ("x" in circle) 183662

- [x] Construction
- [ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☑ Other Public

TYPE OF WORK: Owner's number of well (if more than one) _____
☑ New well ☐ Reconditioned *Method:* ☐ Dug ☐ Bored ☐ Driven ☐ Deepened ☑ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 5 inches, drilled 38 ft.
Depth of completed well 38 ft.

CONSTRUCTION DETAILS
Casing Installed: ☑ Welded 5 " Diam. from +2 ft. to 38 ft.
☐ Liner installed 8 " Diam. from +1 ft. to 21.4 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 N/A
Manufacturer's Name Johnson Screens
Type V-slot, continuous wound. Model No. _____
Diam. 5 Slot size 0.030 from 27.2 ft. to 37.7 ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: ☑ Yes ☐ No ☐ Size of gravel/sand 8/12
Materials placed from 8 ft. to 38 ft.

Surface Seal: ☑ Yes ☐ No To what depth? 18 ft.
Material used in seal Bentonite Grout
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 10.7 ft. below top of well Date 10/14/05
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? TP&D
Yield: 12.5 gal./min. with 5 ft. drawdown after 1 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

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 _____ Was a chemical analysis made? ☐ Yes ☑ No

CURRENT
Notice of Intent No. WE04343
Unique Ecology Well ID Tag No. AKN 518
Water Right Permit No. _____
Property Owner Name Burton Water Company, Inc.
Well Street Address 1611 SW 232nd Street
City Vashon Island County King
Location SE 1/4-1/4 NE 1/4 Sec 13 Twn 22 R 2 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. 1322029016

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
Silt; sandy, brown.	0	19
Sand; medium, well graded, brown.	19	36
Sand; medium, well graded, brown, silty.	36	38
05-1380-08		

RECEIVED
NOV 0 3 2005
DEPT OF ECOLOGY

Start Date 10/10/05 Completed Date 10/14/05

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) James Vignali
Driller/Engineer/Trainee Signature James Vignali
Driller or trainee License No. 0987

IF TRAINEE,
Driller's Licensed No. _____
Driller's Signature _____

Drilling Company Tacoma Pump & Drilling Co., Inc.
Address 30316 Mountain Highway
City, State, Zip Graham, WA 98338
Contractor's Registration No. TACOMPD203PF Date 10/24/05

Ecology is an Equal Opportunity Employer.

The Department of Ecology does NOT warranty the data and/or the information on this Well report.

APPENDIX C

PW06-1 Well Head Plan and Tank Construction Details

APPENDIX D

Water Rights G1-043145CL and S1-02376C

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
WATER RIGHTS PROCESSING SECTION

WATER RIGHT CLAIM

SEP 2 3 55 17 '74

OTHER / MORE

1 NAME GERALD R GARRISON

ADDRESS RT 1 BOX 1310

VASHON WASH 98070

2 SOURCE FROM WHICH THE RIGHT TO TAKE AND MAKE USE OF WATER IS CLAIMED GROUND WATER
(GIVE NAME OF STREAM OR LAKE OR SPRING OR GROUND WATER)

WRIA 15
(GIVE NUMBER)

A IF GROUND WATER THE SOURCE IS SHALLOW WELLS

B IF SURFACE WATER THE SOURCE IS

3 THE QUANTITIES OF WATER AND TIMES OF USE CLAIMED

A QUANTITY OF WATER CLAIMED 200 gpm (GALLONS PER SECOND OR GALLONS PER MINUTE) PRESENTLY USED 150 gpm

B ANNUAL QUANTITY CLAIMED 80 (ACRE FEET PER YEAR) PRESENTLY USED 60

C IF FOR IRRIGATION ACRES CLAIMED PRESENTLY IRRIGATED

D TIME(S) DURING EACH YEAR WHEN WATER IS USED ALL YEAR

4 DATE OF FIRST PUTTING WATER TO USE MONTH MAY YEAR 1930

5 LOCATION OF THE POINT(S) OF DIVERSION WITHDRAWAL 340 FEET SOUTH AND 460
FEET WEST FROM THE NE CORNER OF SECTION SE 1/4 SEC 13
BEING WITHIN SE 1/4 OF SECTION 13 T 22 N R 2 E (E.W.) W.M.

IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY LOT BLOCK OF
(GIVE NAME OF PLAT IN ADDITION)

6 LEGAL DESCRIPTION OF LANDS ON WHICH THE WATER IS USED BEGINNING AT A POINT
240 FT SOUTH AND 360 FT WEST OF NE CORNER OF SE 1/4
SECTION 13, T22N, R2E, W.M., THENCE SOUTH 230 FT,
THENCE WEST 170 FT, THENCE NORTH 230 FT, AND
EAST 170 FT TO BEGINNING.
COUNTY KING

7 PURPOSE(S) FOR WHICH WATER IS USED COMMON & WATER SUPPLY (PUBLIC UTILITY)
260 HOMES SERVED BY BURTON WATER CO.

8 THE LEGAL DOCTRINE(S) UPON WHICH THE RIGHT OR CLAIM IS BASED RIPARIAN

DO NOT USE THIS SPACE

THE FILING OF A STATEMENT OF CLAIM DOES NOT CONSTITUTE AN ADJUDICATION OF ANY CLAIM TO THE RIGHT TO USE OF WATERS AS BETWEEN THE WATER USE CLAIMANT AND THE STATE OR AS BETWEEN ONE OR MORE WATER USE CLAIMANTS AND ANOTHER OR OTHERS. THIS ACKNOWLEDGEMENT CONSTITUTES RECEIPT FOR THE FILING FEE.

DATE RETURNED THIS HAS BEEN ASSIGNED WATER RIGHT CLAIM REGISTRY NO.

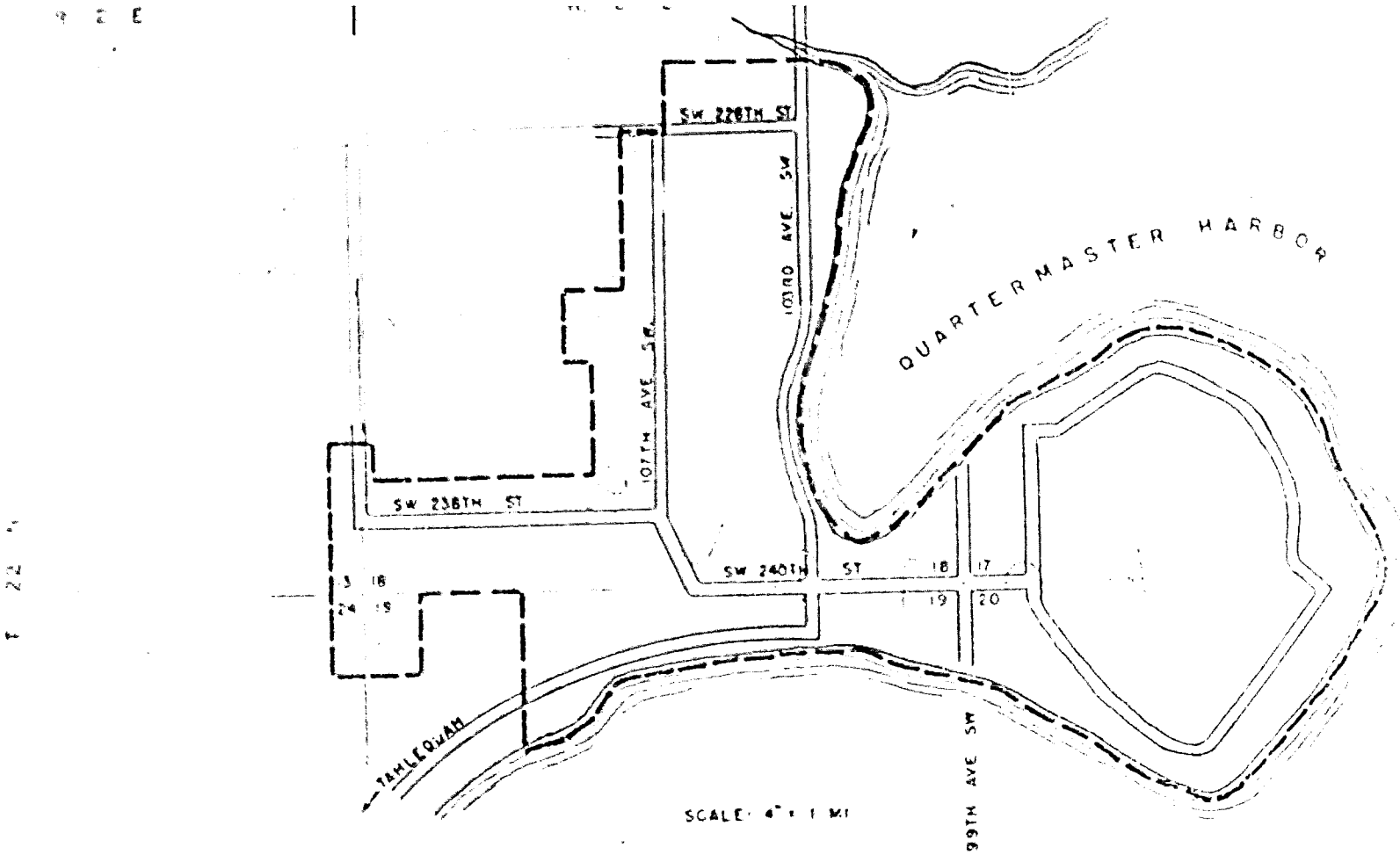
Dec 7 7304 3145

(I SWEAR (OR AFFIRM) THAT THE STATEMENTS IN THIS APPLICATION ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

X Gerald R Garrison

DATE Sept 20 1973

(IF SIGNED BY MARK, TWO WITNESSES MUST SIGN HERE AND PRINT OR TYPE NAMES AND ADDRESSES BELOW)



SERVICE AREA
OF
BURTON WATER COMPANY

BURTON, WASHINGTON

WASHINGTON
UTILITIES AND TRANSPORTATION
COMMISSION

JAN. 24, 1966 BY TW

S. P. No. 169—1921. Approved as to Form by Dept. of Efficiency. 4503.

CERTIFICATE RECORD NO. 3, PAGE NO. 405

STATE OF WASHINGTON, COUNTY OF King

CERTIFICATE OF WATER RIGHT

(For rights confirmed under original, enlargement or secondary permits.)

(In accordance with the provisions of Chapter 117, Laws of Washington for 1917, and the regulations of the State Hydraulic Engineer thereunder.)

This is to certify, that [redacted], *of* Burton, *State of* Washington, *has made proof to the satisfaction of the State Supervisor of Hydraulics of Washington, of a right to the use of the waters of* [redacted] *springs, a tributary of* [redacted], *for the purposes of* municipal supply, *under* Appropriation *Permit No.* 3213, *of the State Supervisor of Hydraulics, and that said right to the use of said waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Hydraulics of Washington and entered of record in Volume* 3, *at Page* 405, *on the* 22nd *day of* May, 19 30; *that the right hereby confirmed dates from* August 1st, 19 29; *that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed* 0.1 *cubic feet per second.*

A description of the lands under such right, and to which the water hereby confirmed is appurtenant, or if for other purposes, the place where such water is put to beneficial use, is as follows:

PLACE OF USE			LEGAL SUBDIVISION	No. Acres Described in Permit	No. Acres Actually Irrigated
Section	Township	Range			
[redacted]	[redacted]	[redacted]	Town of Burton and adjacent		
			[redacted]		

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 Section 39, Chapter 117, Session Laws 1917.

WITNESS the seal and signature of the State Supervisor of Hydraulics affixed this 22nd *day of* May, 19 30

Chas. J. Bothell
State Supervisor of Hydraulics

ENGINEERING DATA

O.K.

APPENDIX E

Goulds Pumps System Head Curves and Pump Curve

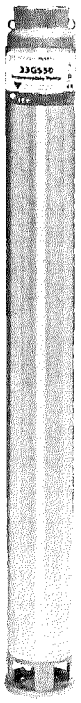
ITT

Residential Water Systems

Goulds Pumps

33GS, 40GS, 55GS, 60GS, 75GS, 80GS

60 Hz High Capacity
4" Submersible Pumps



GOULDS PUMPS

Goulds Pumps is a brand of ITT Residential and Commercial Water.

www.goulds.com

Engineered for life

FEATURES

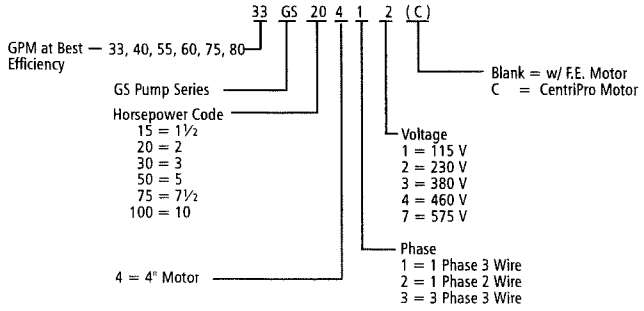
- **Powered for Continuous Operation:** All ratings are within the working limits of the motor as recommended by the motor manufacturer. Pump can be operated continuously without damage to the motor.
- **Field Serviceable:** Units have left hand threads and are field serviceable with common tools and readily available repair parts.
- **Sand Handling Design:** Our face clearance, floating impeller stack has proven itself for over 40 years as a superior sand handling, durable pump design.
- **FDA Compliant Non-Metallic Parts:** Impellers, diffusers and bearing spiders are constructed of glass filled engineered composites. They are corrosion resistant and non-toxic.
- **Discharge Head/Check Valve:** Cast 303 stainless steel for strength and durability. Two cast-in safety line loops for installer convenience. The built-in check valve is constructed of stainless steel and FDA compliant BUNA rubber for abrasion resistance and quiet operation.
- **Motor Adapter:** Cast 303 stainless steel for rigid, accurate alignment of pump and motor. Easy access to motor mounting nuts using standard open end wrench.
- **Stainless Steel Casing:** Polished stainless steel is strong and corrosion resistant.
- **Hex Shaft Design:** Six sided shafts for positive impeller drive.
- **Engineered Polymer Bearings:** The proprietary, engineered polymer bearing material is strong and resistant to abrasion and wear. The upper bearing is mounted in a durable engineered composite bearing spider for excellent abrasion resistance.

WATER END DATA

Series	Model	Required H.P.	Stages	Water End	
				Length (in)	Wt (lbs)
33GS	33GS10	1	6	14.2	8
	33GS15	1.5	8	16.6	9
	33GS20	2	10	19.1	10
	33GS30	3	14	24	13
	33GS50	5	22	35.2	19
	33GS75	7.5	34	50.6	27
	33GS100	10	44	62.8	33
40GS	40GS15	1.5	5	12.9	8
	40GS20	2	6	14.2	8
	40GS30	3	8	16.6	9
	40GS50	5	14	24.0	13
	40GS75	7.5	21	34.0	18
55GS	55GS15	1.5	5	17.1	10
	55GS20	2	7	21.2	12
	55GS30	3	9	25.3	15
	55GS50	5	15	39.1	22
	55GS75	7.5	22	54.1	32
	55GS100	10	29	98.4	39
60GS	60GS15	1.5	4	15.0	8
	60GS20	2	5	17.1	9
	60GS30	3	7	21.2	10
	60GS50	5	11	30.9	14
	60GS75	7.5	17	43.2	19
75GS	75GS30	3	7	24.1	14
	75GS50	5	11	34.8	19
	75GS75	7.5	16	48.2	27
	75GS100	10	21	63.8	35
80GS	80GS30	3	5	21.4	10
	80GS50	5	9	29.4	13
	80GS75	7.5	14	42.8	24

NOMENCLATURE

See price book for complete order numbers.



SPECIFICATIONS

Model	Flow Range GPM	Horse-power Range	Best Efficiency GPM	Discharge Connection	Minimum Well Size	Rotation①
33GS	10 – 50	1 – 10	33	2"	4"	CCW
40GS	20 – 65	1½ – 7½	40	2"	4"	CCW
55GS	20 – 80	1½ – 10	55	2"	4"	CCW
60GS	40 – 80	1½ – 7½	60	2"	4"	CCW
75GS	40 – 100	3 – 10	75	2"	4"	CCW
80GS	50 – 120	3 – 7½	80	2"	4"	CCW

① Rotation is counterclockwise when observed from pump discharge end.

"GS" SERIES MATERIALS OF CONSTRUCTION

Part Name	Material
Discharge Head	AISI 303 SS
Check Valve Poppet	AISI 304 SS
Check Valve Seal	BUNA, FDA compliant
Check Valve Seat	AISI 304 SS
Check Valve Retaining Ring	AISI 302 SS
Bearing Spider – Upper	Glass Filled Engineered Composite
Bearing	Proprietary Engineered Polymer
Klipring	AISI 301 SS
Diffuser	Lexan®
Impeller	Noryl®
Bowl	AISI 304 SS
Intermediate Sleeve*	AISI 304 SS, Powder Metal
Intermediate Shaft Coupling*	AISI 304 SS, Powder Metal
Intermediate Bearing Spider*	Glass Filled Engineered Composite
Intermediate Bearing Spider*	AISI 303 SS
Shim	AISI 304 SS
Screws – Cable Guard	AISI 304 SS
Motor Adapter	AISI 303 SS
Casing	AISI 304 SS
Shaft	
Coupling	AISI 304 SS, Powder Metal
Cable Guard	AISI 304 SS
Suction Screen	AISI 304 SS

*See repair parts for where used.

AGENCY LISTINGS

All factory assembled, complete pump/motor assemblies are UL778 and CSA listed. All pumps and motors comply with ANSI/NSF 61-1992. Motors are UL778 recognized.

Canadian Standards Association

Underwriters Laboratories

ANSI/NSF 61 - Drinking Water System Components 4P49

Goulds Pumps is ISO 9001 Registered.

Model 33GS

SELECTION CHART

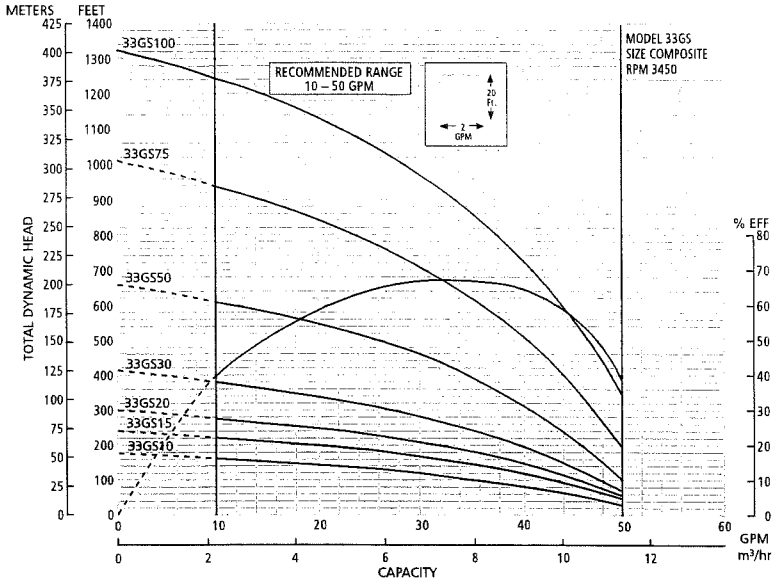
Horsepower Range 1 – 3, Recommended Range 10 – 50 GPM, 60 Hz, 3450 RPM

Pump Model	HP	PSI	Depth to Water in Feet/Ratings in GPM (Gallons per Minute)																										
			20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	520	560	600
33GS10	1	0		48	45	41	36	30	22	11																			
		20	44	39	34	28	19																						
		30	39	33	27	17																							
		40	32	25	15																								
		50	24	14																									
		60	12																										
Shut-off PSI			67	58	50	41	32	24	15	6																			
33GS15	1½	0		50	48	46	43	40	37	32	26	19																	
		20	48	45	43	39	35	31	24	17																			
		30	45	42	39	35	30	23	15																				
		40	42	38	34	29	22	14																					
		50	38	33	28	21	12																						
		60	33	27	20	11																							
Shut-off PSI			95	86	78	69	60	52	43	34	26	17																	
33GS20	2	0			49	48	46	44	41	38	35	32	28	22															
		20	49	47	45	43	40	38	34	31	26	21	14																
		30	47	45	42	40	37	34	30	25	20	13																	
		40	44	42	40	37	33	29	24	19	11																		
		50	42	39	36	33	29	24	18																				
		60	39	36	32	28	23	16																					
Shut-off PSI			121	112	103	95	86	77	69	60	51	43	34	26															
33GS30	3	0				49	48	46	45	43	41	40	38	35	33	31	28	24	20	15									
		20	50	49	47	46	44	43	41	39	37	35	32	30	27	23	19	13											
		30	49	47	46	44	42	41	39	37	34	32	29	26	22	18	12												
		40	47	45	44	42	40	38	36	34	32	29	25	22	17	11													
		50	45	44	42	40	38	36	34	31	28	25	21	16															
		60	43	42	40	38	36	33	31	28	24	20	15																
Shut-off PSI			170	161	152	144	135	126	118	109	100	92	83	74	66	57	48	40	31	23									

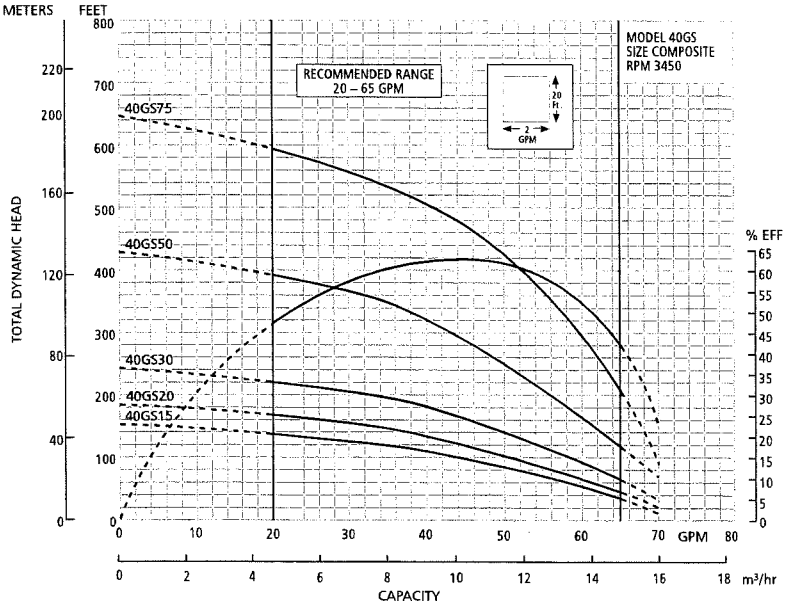
Horsepower Range 5-10, Recommended Range 10 – 50 GPM, 60 Hz, 3450 RPM

Pump Model	HP	PSI	Depth to Water in Feet/Ratings in GPM (Gallons per Minute)																										
			50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
33GS50	5	0		50	48	46	44	41	38	35	31	27	20	11															
		20	50	48	46	44	41	38	35	32	27	21	11																
		30	49	47	45	43	40	37	34	30	25	17																	
		40	48	46	44	41	39	36	32	27	21	12																	
		50	47	45	43	40	37	34	30	25	18																		
		60	46	44	42	39	36	32	28	22	13																		
Shut-off PSI			264	242	220	199	177	156	134	112	91	69	47	26															
33GS75	7½	0				50	48	47	46	44	42	40	38	36	33	31	27	23	19	14									
		20			50	49	47	46	44	42	41	38	36	34	31	28	24	19	14										
		30		50	49	48	46	45	43	42	40	37	35	32	29	26	22	17	12										
		40		50	49	47	46	44	43	41	39	36	34	31	28	24	20	15											
		50		49	48	47	45	43	42	40	38	35	33	30	26	22	17	12											
		60	50	49	47	46	44	43	41	39	37	34	31	28	24	20	15												
Shut-off PSI			415	393	371	350	328	306	285	263	241	220	198	176	155	133	111	90	68	47									
33GS100	10	0							49	48	46	45	43	42	41	40	39	38	36	34	31	28	25	22	18	13			
		20						50	48	46	45	43	42	41	40	39	38	36	34	31	29	25	22	18	14				
		30						49	47	45	44	43	42	41	40	38	37	35	33	30	27	24	20	16	12				
		40					50	48	46	45	44	43	42	40	39	38	36	34	32	29	26	22	18	14					
		50					49	47	45	44	43	42	41	40	39	37	35	33	30	27	24	20	16	12					
		60				50	48	46	45	44	43	42	41	39	38	36	34	32	29	26	22	19	14						
Shut-off PSI			551	529	508	486	464	443	421	399	378	356	334	313	291	269	248	226	205	183	161	140	118	96	75	53			

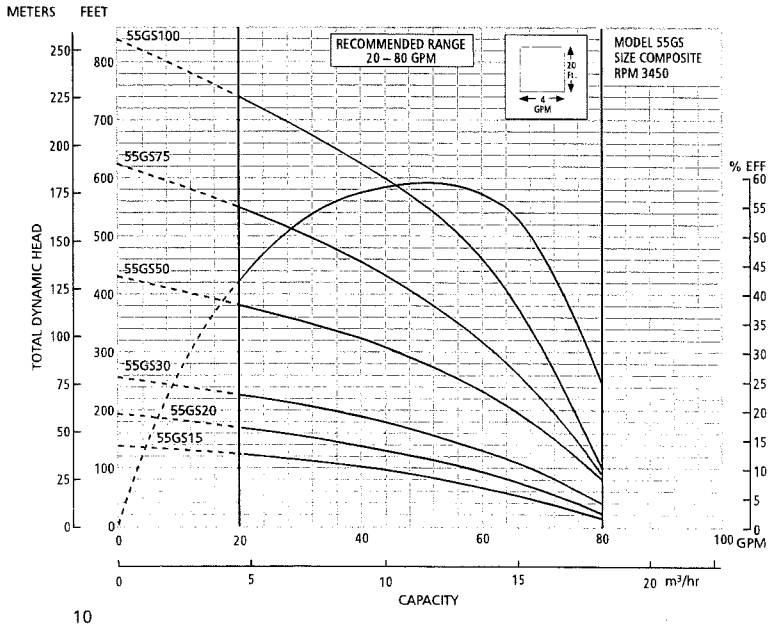
Model 33GS

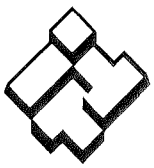


Model 40GS



Model 55GS





ITT

Residential Water Systems

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B33-80GS July, 2006

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State of Washington
DEPARTMENT OF HEALTH
NORTHWEST DRINKING WATER REGIONAL OPERATIONS
20425 72nd Avenue South, Suite 310 • Kent Washington 98032-2388

January 27, 2022

EVAN SIMMONS
BURTON WATEFR COMPANY INC
PO BOX 1938
VASHON WA 98070

Subject: Burton Water Company Inc; ID#09800
King County
Source Approval New Wellfield
Submittal #20-0707

Dear Mr. Simmons:

The final source approval for the above project received in this office on November 16, 2021 has been reviewed and in accordance with the provisions of WAC 246-290 is **APPROVED**. The approval issued herein is based on conformance with current standards outlined in WAC 246-290, last updated November 17, 2021. Future changes in the rules may be more stringent and require facility modification or corrective action.

The new wellfield (S11) will eventually replace the existing wellfield (S06). The new wellfield currently consists of four sources: S07, aka Well S07-1; S08, aka Well S07-2; S09, aka Well S07-3; and S10, aka S07-4. S11 is approved for 85 gpm. The depth to the first open interval is 37 ft. The new wellfield is treated by existing WTP 09800001 which includes disinfection and is required to provide CT 6.

This project has been reviewed as a Group A water system project submittal in accordance with WAC 246-290.

As required in WAC 246-290-120 (5)–within sixty days following the completion of and prior to use of the above project or portions thereof, the enclosed construction report (CCR) must be completed by a professional engineer and returned to this Department. When the certification of completion has been acknowledged by this office, this water system will remain approved to serve 415 connections with physical capacity and water right limitations considered.

The department's approval of your new Wellfield does not confer or guarantee any right to a specific quantity of water. The approved number of service connections is based on your representation of available water quantity. If the Washington Department of Ecology, a local planning agency, or other authority responsible for determining water rights and water system adequacy determines that you have use of less water than you represented, the number of approved connections may be reduced commensurate with the actual amount of water and your legal right to use it.
Susceptibility Assessment documents have been forwarded to the Source Monitoring staff for review and rating. Future monitoring requirements for this source will be included in the next Water Quality Monitoring Report for your water system.

Per WAC 246-290-120 (6), a Water Facility Inventory (WFI) report form is enclosed. The WFI has been updated to include each of the three new wells of the new upper wellfield and the new wellfield designation itself, source S11. You will note on future Water Quality Monitoring Schedules that the monitoring requirements for the new wells as a wellfield will be assigned to the new wellfield source number S11 and no longer to source S07. Samples for monitoring requirements for finished water that are required at entry point to distribution (such as nitrate, periodic complete inorganic chemistry, VOCs, SOCs and radionuclides) must be collected from the finished water sample faucet that is after the North and South tanks and essentially represents the entry point to distribution.

If a raw water sample must be collected from the new wellfield (such as a source triggered monitoring sample to follow up on a detection of coliform in the distribution system), that sample must be collected from the sample tap on the manifold into which a pipe from each of the new wells feeds just prior to entry to the North tank while the appropriate wells are running. Please update the coliform monitoring plan (CMP) for your water system to reflect the addition of this raw water sampling location for the new wellfield as it relates to 'triggered source monitoring' per EPA's Groundwater Rule. If you have questions regarding your CMP, please contact our coliform program manager, Brandon Katz at brandon.katz@doh.wa.gov.

WAC 246-290-120 (8) provides that this approval is in effect for two years, unless the Department determines a need to withdraw the approval. An extension of the approval may be obtained by submitting a status report and a written schedule for completion. Extensions may be subject to additional terms and conditions imposed by the Department.

Regulations establishing a schedule of fees for review of planning, engineering, and construction documents have been adopted (WAC 246-290-990). An itemized invoice for $1,243.00 is enclosed. Please remit complete payment in the form of a check or money order within thirty days of the date of this letter in the enclosed envelope or mail payment to: **WSDOH, Revenue Section, PO Box 1099, Olympia WA 99507-1099**.

Sincerely,

John Ryding

John Ryding, PE
WSDOH Regional Engineer

enclosure WFI, Invoice, CCR

cc: Seattle/King Public Health
Ben Lee, P.E., Landau Associates
Brietta Carter, P.E., WSDOH
Steve Hulsman, WSDOH
Krista Chavez, WSDOH

Well Source Approval Report
Burton Water Company Well Field
Vashon, Washington

February 12, 2021

Prepared for

Burton Water Company
PO Box 2117
Vashon, Washington

LANDAU ASSOCIATES

2107 South C Street
Tacoma, WA 98402
(253) 926-2493

Well Source Approval Report
Burton Water Company Well Field
Vashon, Washington

This document was prepared by, or under the direct supervision of, the technical professionals noted below.

Document prepared by: _____ Benjamin Lee, PE
Project Manager

Document reviewed by: _____ Eric Weber, LHG
Quality Reviewer

Date:	February 12, 2021
Project No.:	0664005.010
File path:	Y:\664\005.010\R\Source Approval - 2020\LAI_BWC_Wellfield Source Approval Report_Final_rev1_2-12-2021.docx
Project Coordinator:	KJG

LANDAU ASSOCIATES

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TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1-1
2.0	HYDROGEOLOGIC SETTING	2-1
3.0	WELL AND WELL FIELD CHARACTERISTICS	3-1
3.1	Well Specifications	3-1
3.2	Aquifer Testing	3-2
3.3	Water Quality	3-4
3.4	Water Rights	3-4
3.5	Well Field Design	3-5
4.0	WELLHEAD PROTECTION	4-1
4.1	Wellhead Protection Area	4-1
5.0	OPERATIONS AND MAINTENANCE	5-1
6.0	RECOMMENDATIONS	6-1
7.0	REFERENCES	7-1

FIGURES

Figure	Title
1	Vicinity Map
2	Existing Well and Tank Configuration
3	Regional Surface Geology
4	Conceptual North-South Cross Section of BWC Vicinity Geology
5	72-Hour Constant Rate Test Distance-Drawdown
6	Water Quality Assessment – Total Dissolved Solids
7	Piping Diagram

TABLES

Table	Title
1	Results of 72-hour Constant Rate Pumping Test
2	Estimated Cumulative Well Field Drawdown from Pumping

APPENDICES

Appendix	Title
A	Well Logs
B	Water Quality Results
C	BWC Water Rights

LIST OF ABBREVIATIONS AND ACRONYMS

bgs ..... below ground surface
BWC ..... Burton Water Company
ft ..... foot/feet
Ecology ..... Washington State Department of Ecology
gpm ..... gallons per minute
ID ..... identification
IOC ..... inorganic compounds
LAI ..... Landau Associates, Inc.
mg/L ..... milligrams per liter
Qva ..... Vashon advance outwash
Qtb ..... transitional beds
Qvr ..... Vashon recessional outwash
Qvt ..... Vashon till
RCW ..... Revised Code of Washington
SCA ..... Sanitary Control Area
SOC ..... synthetic organic compounds
TDS ..... total dissolved solids
TP&D ..... Tacoma Pump and Drilling
USGS ..... U.S. Geological Survey
VOC ..... volatile organic compounds
WAC ..... Washington Administrative Code
WDOH ..... Washington (State) Department of Health

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1.0 INTRODUCTION

This Well Field Source Approval Report, prepared by Landau Associates, Inc. (LAI), describes the pumping and water quality testing performed in support of acquiring source approval from the Washington State Department of Health (WDOH) for the Burton Water Company's (BWC's) groundwater supply source, including three new supply wells. BWC provides domestic water supply to approximately 415 residential units on Vashon Island, Washington in King County. As part of BWC's continuing efforts to upgrade their supply source infrastructure, it installed three new water supply wells, identified as S07-2, S07-3, and S07-4 (new wells), in January, 2020. The new wells are located on the north end of the BWC property at 232nd Street SW, Vashon, Washington, and are situated to allow for a 100-foot (ft) setback from the property boundaries (Figures 1 and 2) for groundwater source water protection purposes (Washington Administrative Code [WAC] 246-290-135). WDOH provided approval of the new well locations in an email dated December 18, 2019. The new wells were installed as part of BWC's efforts to replace the current vacuum wellpoint system with a network of supply wells (i.e., a well field). Several older wells, including North Well, South Well, and Steel Well are currently considered, along with the vacuum wellpoint system, as Source S06. A separate previous well (S07-1) within the well field was approved by WDOH in 2009 following BWC's well source approval report for that well (LAI 2008). The old wellpoint system is being replaced to provide a more reliable water supply to BWC customers. Additionally, wells have a lower risk of contamination from surface sources and are more efficient than a vacuum wellpoint network.

The new wells are being installed according to WDOH requirements and provisions for Group A Water Systems in Chapter 246-290 WAC for direct source replacement. Direct source replacement does not require review or permit from King County. The new wells are located within the same point of withdrawal legal description and target the same aquifer as the existing wells and wellpoints as described in BWC's groundwater claim G1-043145CL, as amended by Washington State Department of Ecology (Ecology) Order No. 19416. Therefore, the new wells are authorized under BWC's existing claim.

This report summarizes the well construction and testing – including aquifer testing and water quality testing – that has been completed to satisfy WDOH requirements for well source approval of the new wells, in accordance with WAC 246-290-130(3). It is BWC's intent to designate as many of its groundwater withdrawal points as possible – including the wellpoint vacuum system, previously existing wells, and the three new wells – as a single well field, as defined in WAC 246-290-010. Based on the hydrogeologic setting of the BWC aquifer, the construction of the withdrawal points, and the results of water quality analyses, this single source well field designation is warranted. LAI understands, however, that WDOH intends to consider S06 as a separate source from the proposed well field status until such time as the wellpoint system is discontinued.

2.0 HYDROGEOLOGIC SETTING

The hydrogeologic setting of the BWC property is well understood. Detailed interpretations of the site and surrounding area geology can be found in supporting documents (Ecology 2002; Burton Water Company 1998; CDM 2006; LAI 2008). In general, soil in the vicinity of the well field are glacial in origin and were deposited during advancing and retreating phases of the most recent Vashon age Puget Sound glaciation. Surface deposits are Vashon recessional outwash (Qvr) which is composed of gravel and sand with varying amounts of finer material. The Qvr deposit has moderate to high permeability. Surface expressions of the Qvr have been mapped approximately 2,000 feet (ft) in the east-west direction and 6,000 ft north to south in the vicinity of the BWC property. This deposit overlies lower permeability Vashon till (Qvt), composed of poorly sorted clay to gravel-sized particles that were compacted at the base of the ice sheet. Underlying the Qvt is Vashon advance outwash (Qva) and transitional beds (Qtb). A 2006 U.S Geological Survey (USGS) interpretation of surface geology is shown on Figure 3 (Booth, Troost, and Wisher 2006).

BWC wells target saturated portions of the Qvr deposit aquifer. The areal extent of this aquifer is easily defined from surface geologic mapping (Booth and Troost 2006; Figure 3). The vertical extent of this aquifer is also easily defined as the contact with the very dense underlying glacial till. Recharge to the aquifer is from rainfall infiltration. Discharge is at the Burton springs (where the current well point system and dug wells are located) and associated streams. The approximate thickness of Qvr deposits in the vicinity of the BWC property varies from west to east between 0 and 55 ft. Depth to water at the location of the wellfield is approximately 10 to 13 ft below ground surface (bgs), as measured in monitoring well MW-B and the well field wells in January, 2020. Approximately 200 ft south of well S07-1, the water table intersects the ground surface resulting in spring discharge and artesian conditions at the current wellpoint vacuum system. A conceptual cross-section of the BWC well field site and BWC springs is shown on Figure 4, which is an adaptation of a figure prepared by Ecology as part of a report of examination for a separate nearby water right application (surface water certificate S1-23432C).

3.0 WELL AND WELL FIELD CHARACTERISTICS

The new wells are intended to be part of the larger BWC groundwater withdrawal system. Installation of the new wells is a continuation of BWC's efforts to replace the wellpoint system drawing from the BWC aquifer. This section includes a description of the construction and testing of the new wells, and also puts the new wells in context of the BWC water right authorizations and overall well field design plans.

3.1 Well Specifications

The new wells were drilled and installed by Tacoma Pump and Drilling (TP&D) using an air rotary drill rig in January 2020, in accordance with Ecology's well construction standards (Chapter 173-160 WAC). Each new well was constructed with nominal 5-inch diameter steel casing and a 10-ft length of nominal 5-inch diameter stainless steel (type 304) continuous wire wrap 0.030-inch slotted screen made by Alloy Machine Works, Inc. The new wells were installed using 10-inch diameter temporary casing, which was pulled back during installation of an artificial sand pack and surface seal. The artificial sand pack of each well consists of 10/20 Colorado silica sand. A surface seal, consisting of hydrated 3/8-inch bentonite chips or bentonite slurry, was installed to a depth of at least 18 ft bgs in each well. The new wells were developed with a combination of surging with a surge block and pumping with TP&D's test pump. Other relevant construction details for each new well are summarized below.

- S07-2 (well tag ID BLN-274):
  - Borehole depth: 49 ft bgs
  - Total well depth: 47 ft bgs
  - Screen interval: 37 to 47 ft bgs
- S07-3 (well tag ID BLN-275):
  - Borehole depth: 47 ft bgs
  - Total well depth: 45 ft bgs
  - Screen interval: 35 to 45 ft bgs
- S07-4 (well tag ID BLN-276):
  - Borehole depth: 47 ft bgs
  - Total well depth: 45 ft bgs
  - Screen interval: 35 to 45 ft bgs.

The depths of the new wells are somewhat greater than that of previously existing well S07-1, which was installed in 2008 to a total depth of 38 ft bgs (screened interval between 28 and 38 ft bgs). The TP&D driller indicated encountering slightly more fines (e.g., silt) in the last two feet of the boreholes for S07-2 and S07-4 and a more pronounced clay-like material at the bottom of the borehole for S07-3. These finer materials at depth – in particular, the clay-like material indicated in S07-3 – may

indicate the depth at which the Qvr begins to transition to the underlying Qvt. The pronounced clay-like material in S07-3 may indicate a thinning of the BWC aquifer toward the west from the well field. The TP&D well logs for the new wells, along with well logs for previously existing S07-1 and monitoring well MW-B, are included in Appendix A.

3.2 Aquifer Testing

Initial pumping tests conducted by TP&D, with a test pump in each new well pumping for 5 hours, indicated that new wells S07-2 and S07-4 are each capable of producing 21 gallons per minute (gpm) with approximately 3 ft of drawdown (for a specific capacity for those wells of 7.0 gpm/ft), and that new well S07-3 is capable of producing 21 gpm with 18 ft of drawdown (for a specific capacity for that well of 1.2 gpm/ft). The specific capacity of S07-2 and S07-4 (7.0 gpm/ft) is higher than the initial specific capacity of previously existing S07-1, which was documented to be approximately 2.5 gpm/ft. The specific capacity of S07-3 (1.2 gpm/ft) is somewhat lower than that of the other wells, indicating lower permeability material or a possible negative boundary effect in the BWC aquifer west of the BWC well field (the clay-like material noted in the S07-3 well log from 45 to 47 ft bgs may indicate a local thinning of saturated thickness of the BWC aquifer in this area). The short-term testing performed by TP&D was considered adequate to serve the purpose of step-rate tests in each new well, since it allowed BWC to determine withdrawal rates from each new well without experiencing excessive drawdown.

In addition, a 72-hour constant rate pumping test was completed between March 26 and March 29, 2020, by pumping S07-1 at a constant rate of 23 gpm and monitoring water levels in all three new wells (for the purposes of this 72-hour test, the new wells are referred to in this discussion as observation wells). Water levels were collected by occasional hand measurements with a Solinst® electronic water level indicator. The observed drawdown in each well at the end of the 72-hour pumping period is summarized in Table 1.

Table 1. Results of 72-hour Constant Rate Pumping Test

	Well Identification			
	S07-1	**S07-2**	**S07-3**	**S07-4**
Distance from Pumped Well (ft)	--	40	115	50
Static Water Level (ft bgs)	11.2	12.6	9.7	10.7
Pumped Water Level after 72 Hours (ft bgs)	27.8	13.9	9.7	11.9
Drawdown (ft)	16.6	1.3	0.0	1.2

Abbreviations:
bgs = below ground surface
ft = foot/feet

Water levels in all wells recovered to within 0.2 ft of residual drawdown within 3.5 hours of the end of the pumping period and were fully recovered 24 hours later (likely less than 24 hours). The majority of drawdown during the 72-hour test was in the pumped well itself (note that the pumped well, S07-1, experiences significantly greater drawdown, even with short duration pumping, than the new wells,

according to initial testing), with only minor drawdown observed in the observation wells. The relatively large drawdown in previously existing S07-1 is likely due to well inefficiencies and not a reflection of hydraulic characteristics of surrounding aquifer material. Based on a log-linear plot of observed drawdown versus distance, and an extrapolation of the logarithmic regression of observed drawdown in the observation wells, the theoretical drawdown in the aquifer material just outside of the pumped well (i.e., at about 0.5 ft from the center of S07-1) is approximately 7.0 ft. The distance-drawdown plot from the 72-hour pumping test is shown on Figure 5.

Based on an application of the Neuman (1975) equation for drawdown in unconfined aquifers, using the Aqtesolv aquifer testing analysis software, the hydraulic parameters of the Qvr soil beneath the BWC wellfield can be characterized as exhibiting moderate permeability with low storage. Drawdown curve matching using Aqtesolv produces estimates of transmissivity of approximately 2,200 ft^2/day (assuming an initial saturated thickness of 35 ft, the hydraulic conductivity is estimated to be approximately 65 ft/day) and specific yield of approximately 0.1 ft/ft.

Estimated cumulative drawdown in each well under an example scenario of well field pumping operations, based on calculations using Neuman (1975) and hydraulic parameters noted above, is summarized in Table 2. For the purposes of this cumulative drawdown estimate, it was assumed that S07-2 and S07-4 (high specific capacity) are each pumped at 25 gpm while S07-1 and S07-3 (low specific capacity) are pumped at 15 and 20 gpm, respectively. At these pumping rates, total estimated drawdown in all wells is maintained such that water levels do not fall into the well screen interval, assuming static water level is approximately 12 ft bgs. Actual pumping operations may vary from this estimate to maintain water levels above each well screen (and will depend on pump placement). BWC will manage pump depth settings and discharge rates from each individual well to avoid drawing the water level down into the screen interval under pumping conditions, which over time could lead to well fouling and performance issues.

Table 2. Estimated Cumulative Well Field Drawdown from Pumping

Pumped Well	Estimated Drawdown in Each Well (ft)			
	S07-1 (SC=1.4 gpm/ft)	S07-2 (SC=7.0 gpm/ft)	S07-3 (SC=1.2 gpm/ft)	S07-4 (SC = 7.0 gpm/ft)
S07-1 (15 gpm)	10.7	1.1	0.0	0.8
S07-2 (25 gpm)	1.9	3.6	0.3	1.9
S07-3 (20 gpm)	0.4	0.4	16.7	0.7
S07-4 (25 gpm)	1.9	1.9	0.7	3.6
Total:	**14.9**	**7.0**	**17.7**	**7.0**

Abbreviations:
gpm = gallons per minute

3.3 Water Quality

The BWC aquifer is a distinct geologic deposit consisting of Qvr sand deposits that overlie very dense Qvt glacial till deposits. This deposit is thin and easily defined laterally as a surficial geologic deposit. The hydrology of the aquifer is also well-defined as groundwater flow paths converge at the Burton springs and discharge through the well point system or form the streams that discharge out of the swamp area where the springs are located. Total dissolved solids analyses were completed for samples collected in May 2020 from the new wells, S07-1, and S06 (at the collection point from the wellpoints and other wells upstream of chlorine treatment addition). The 2020 total dissolved solids (TDS) samples all fall within a narrow range of 94 to 121 mg/L. These results are within the historically documented TDS concentrations in samples collected from S06 and S07-1.[1] Historical and 2020 TDS results from BWC sources are presented on Figure 6. In addition, the TDS results from the 2020 sampling of all BWC sources are in agreement with the expected median (93 mg/L) and range (65 to 151 mg/L) of TDS concentrations generally from Qvr groundwater in southwest King County (Woodward et al. 1995).

Complete inorganic compound (IOC) analyses were performed on samples collected in January 2021 from each of the new wells. Those results indicate that IOC constituent concentrations are similar, within expected natural variability, in all three new wells. Additionally, other recent groundwater quality monitoring for a more extensive list of parameters required for source approval (WAC 246-290-130) has been performed on samples collected from S07-1. A full suite of IOCs, physical characteristics (i.e., color, pH, turbidity, and electrical conductivity), and volatile organic compounds (VOCs) were analyzed from August 2019 samples; select synthetic organic compounds (SOCs; herbicides) were analyzed from April 2018 samples; and radionuclides were analyzed from October 2017 samples. All S07-1 analytical results were below criteria established for source approval under WAC 246-290-310. Water quality sampling results from S06, S07-1, and the new wells are included in Appendix B. Within the context of expected variability in groundwater quality, all current BWC sources appear to be withdrawing groundwater from the same source, the BWC aquifer. Routine bacteriological sampling from the BWC distribution system consistently results in 'absent' results for both total coliform and *E. coli*.

3.4 Water Rights

BWC water is obtained under the authorization of two water rights; G1-043145CL and S1-02376C (Appendix C). G1-043145CL is a groundwater claim dating to 1930 (for 200 gpm) and S1-02376C is a surface (spring) water right from 1928 under Surface Water Certificate 405 (for 45 gpm). Because the new wells were installed within the point of withdrawal legal description of, and will be added to, the well field claimed in G1-043145CL, no changes or additions to the groundwater claim G1-043145CL are anticipated (Ecology Order No. 19416). S1-02376C will not be applicable to the new wells (without

[1] Historical S06 TDS results are from samples collected downstream of chlorine treatment addition. The addition of chlorine to the water could be expected to cause a slight, though likely not significant, increase in TDS concentrations.

a change) as surface water rights may only take water from a spring through a gravity-driven collection system (including well points of less than 20 ft in length).

A water right application, G1-26795, was submitted to Ecology in 1992 for an additional four wells. This additional allocation was intended for upgrades and expansion to the existing supply and has not been granted to date.

3.5 Well Field Design

The current BWC well field configuration consists of six wells and 17 well points (Figure 2). The six wells include previously existing North Well, South Well, S07-1 plus the new wells S07-2, S07-3, and S07-4 (Figure 2). Wells range in total depth from 18 to 48 ft bgs and historical records of depth to water are between 0 and 15 ft bgs. Water is stored in two 35,000-gallon concrete reservoirs (North and South Tanks on Figure 2) and a 150,000-gallon concrete tank (Water Tank on Figure 2). An additional 100,000-gallon concrete reservoir is located on the top of Burton Hill along 238th Street (BWC 1998). All S-07 wells include an individual valved sampling port at the respective wellheads, then are plumbed together prior to storage/treatment. An additional collective sampling port is installed downstream of where the S07 lines are plumbed together and prior to storage/treatment. A piping diagram of the BWC sources is included on Figure 7.

BWC water is disinfected with a Wallace and Tiernan® metering pump that distributes a chlorine solution into the North Tank, which is hydraulically connected to the South Tank. The 5 to 12.5 percent mixed water chlorine solution is fed from a 30-gallon batch tank that is manually filled. BWC has contracted with Northwest Water Systems, Inc. to develop a CT6 plan to optimize chlorine treatment for the system.

Ultimately, BWC would like to replace all 17 well points and the associated vacuum extraction system with cased wells equipped with dedicated extraction pumps. Future wells will likely be installed in the north-northeast corner of the property in a staggered fashion to minimize pumping interference. All wells will be screened within the same geologic unit as the existing well points, the Qvr aquifer, and will be located to maximize the available thickness of those higher permeability deposits.

4.0 WELLHEAD PROTECTION

4.1 Wellhead Protection Area

BWC has previously determined its wellhead protection area by using a fixed radius delineation. Methods and calculations are included in the BWC Well Head Protection Plan, August 1998. The delineation is divided into three zones which represent one, five, and ten-year hypothetical horizontal travel times and extend 620 (Zone 1), 1,390 (Zone 2), and 1,970 (Zone 3) ft from the assumed point of withdrawal, respectively. In addition, a "Buffer Zone" was established upgradient of Zone 3 and is meant to reflect known hydrogeologic factors such as topography, flow gradient and knowledge of soil and geologic characteristics. This zone defines the primary area used by BWC for its wellhead protection efforts. The existing wellhead protection plan would also apply to the new wells and the proposed additional future well field wells because of their proximity to the existing source.

In addition to the fixed radius delineation used for the BWC Well Head Protection Plan, all existing and proposed well locations satisfy the 100-ft radius Sanitary Control Area (SCA) requirements set forth in WAC 246-290-135(2). A shed located approximately 40 ft from S07-2 will contain a limited amount of chlorine for system disinfection which is not expected to reach the aquifer. The location of the shed relative to the well field is shown on Figure 2.

5.0 OPERATIONS AND MAINTENANCE

Based on the observed drawdown in the new wells during the 72-hour test and the estimated hydraulic parameters, it is likely that the BWC wellfield will be able to sustain prolonged pumping of 15 to 30 gpm from each well, though pumping from the previously existing S07-1 and new well S07-3 may need to be at a lower rate due to lower specific capacities of those wells.

Based on observed static water levels, well construction constraints, initial short-term pumping results in each new well, and the results of the 72-hour constant rate test on S07-1, a Goulds 33GS10 (1 horsepower) submersible pump was selected and installed just above the screen in each new well. This pump will be suitable for pumping between 15 and 30 gpm under the expected hydraulic conditions (pumping water levels 20 to 30 ft bgs) to fill the BWC water tank located nearby the well field.

6.0 RECOMMENDATIONS

This section includes recommendations for BWC monitoring and operations of the BWC source of supply.

- Based on a thorough understanding of the hydrogeologic setting of the BWC aquifer as well as recent and historical water quality sampling results, all groundwater withdrawal points withdraw water from the BWC aquifer, which is made up of Qvr material. Because all withdrawal points are withdrawing from the same source, LAI recommends that WDOH directs BWC to consolidate source water quality sampling and analysis to a single point. A representative single sampling location may be new well S07-4, which is located up-gradient and centrally in the well field.
- To assess the performance and to ensure proper operations of each well (avoid excessive water level drawdown), LAI recommends BWC record regular pump discharge rates and depth-to-water measurements in each well under both pumping and non-pumping conditions. Water level data can be used to track likely future declines in well specific capacity for maintenance planning purposes and can be used to track well field performance (i.e., overall drawdown from multiple wells pumping at once).
- It appears that previously existing well S07-1 has experienced a decline in specific capacity over time, since its installation in 2008. LAI recommends that BWC implement a maintenance program to identify a threshold of specific capacity decline that may warrant well maintenance (i.e., rehabilitation), or possibly perform well maintenance activities now.

7.0 REFERENCES

Booth, D.B., and Troost K.G. 2006. In review. Geologic map of the Vashon 7. 5-minute quadrangle, Washington, U. S. Geological Survey, Miscellaneous Field Investigation, scale 1:24,000.

BWC. 1998. Garrison, G. and J. Garrison. *Burton Water Company Well Head Protection Plan.* August.

CDM. 2006. *Biannual Nitrate Monitoring Summary Report*.

Ecology. 2002. *Report of Examination for Protested Change to Surface Water Certificate*. Prepared by D. Wood, Washington State Department of Ecology.

LAI. 2008. Report: *Well Source Approval*, Burton Water Company, Vashon, Washington. Prepared by Eric Weber, LG, Principal, Landau Associates, Inc. for Burton Water Company. October 16.

Neuman. 1975. Neuman, Shlomo P. *Analysis of Pumping Test Data from Anisotropic Unconfined Aquifers Considering Delaying Gravity Response*. Water Resources Research. Volume 11, Issue 2. April.

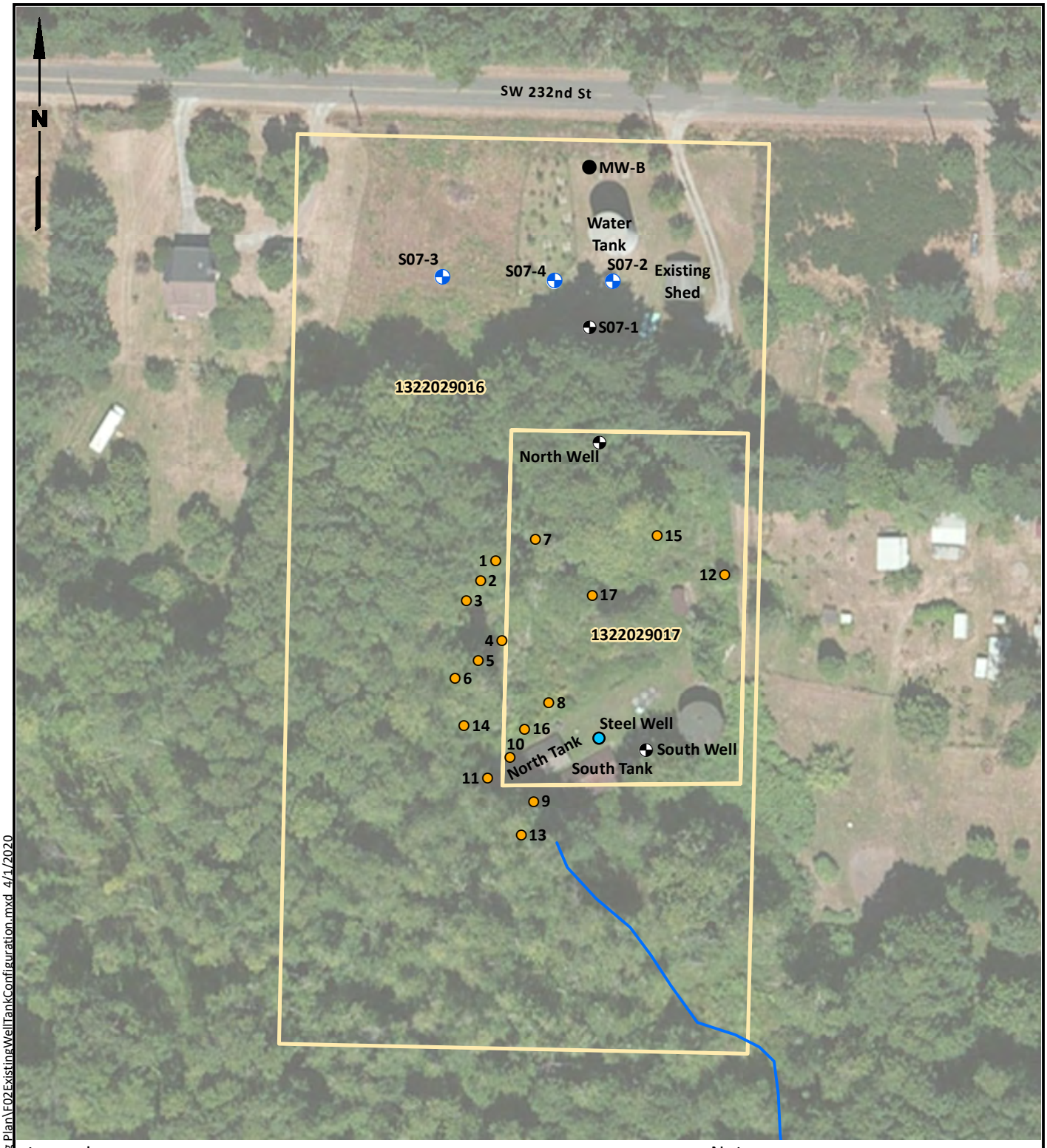
Woodward, D.G., F.A. Packard, N.P. Dion, and S.S. Sumioka. 1995. *Occurence and Quality of Ground Water in Southwestern King County, Washington*. US Department of the Interior and US Geologic Society.

Data Source: Esri 2012

G:\Projects\664\005\010\011\Testing Plan\F01VicMap.mxd 4/1/2020

LANDAU ASSOCIATES

Testing Plan Burton Water Company Vashon, Washington	**Vicinity Map**	Figure 1



Legend

- Monitoring Well
- New Well
- Steel Well
- Well
- Well Point
- Tax Parcels
- Water Course

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 100 200

Scale in Feet

Data Sources: King County GIS; Esri World Imagery.

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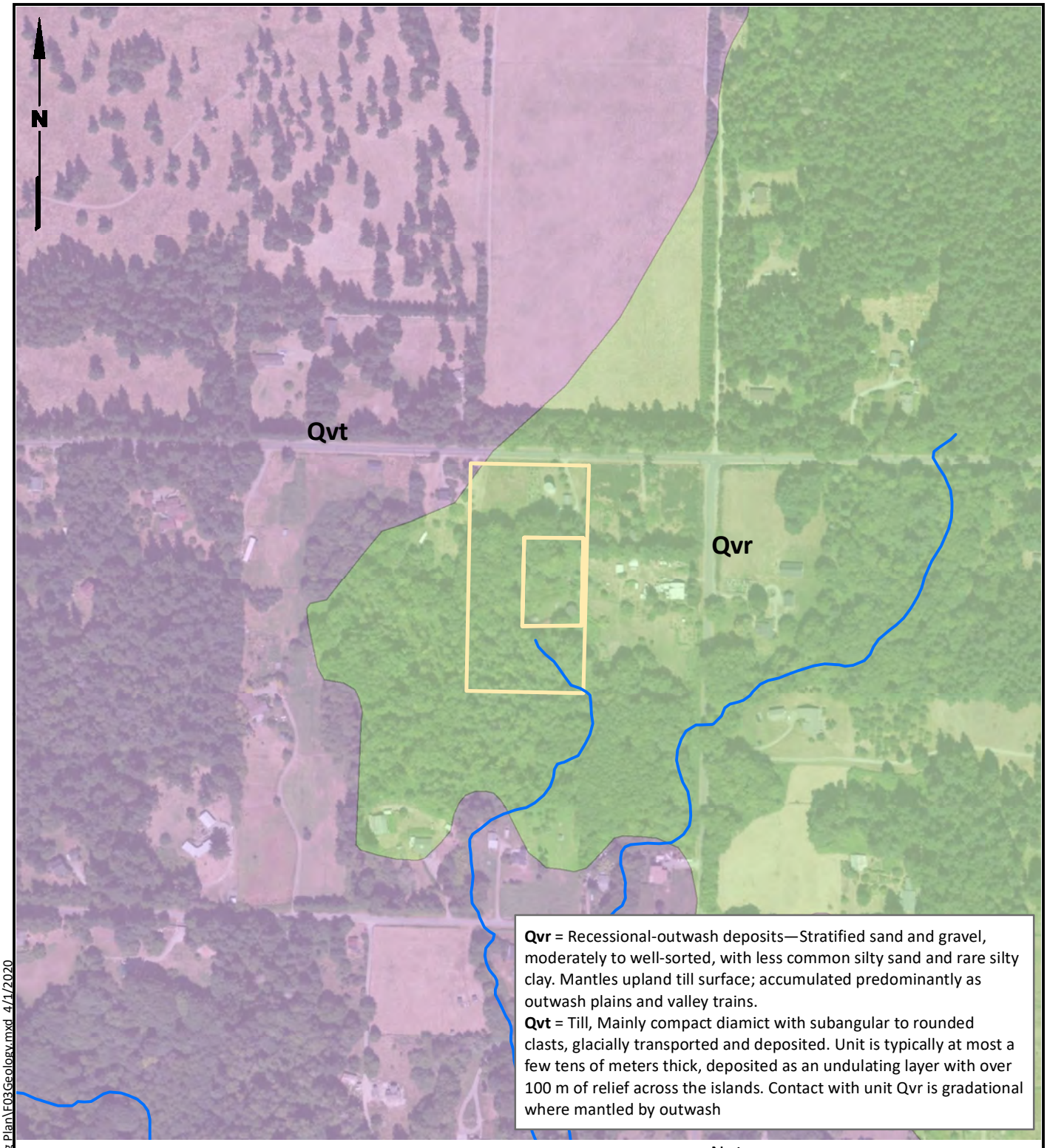
LANDAU ASSOCIATES

Testing Plan Burton Water Company Vashon, Washington	**Existing Well and Tank Configuration**	Figure 2



Qvr = Recessional-outwash deposits—Stratified sand and gravel, moderately to well-sorted, with less common silty sand and rare silty clay. Mantles upland till surface; accumulated predominantly as outwash plains and valley trains.
Qvt = Till, Mainly compact diamict with subangular to rounded clasts, glacially transported and deposited. Unit is typically at most a few tens of meters thick, deposited as an undulating layer with over 100 m of relief across the islands. Contact with unit Qvr is gradational where mantled by outwash

Legend

- Qvr
- Qvt
- Tax Parcels
- Water Course

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 400 800

Scale in Feet

Data Sources: King County GIS; Esri World Imagery.

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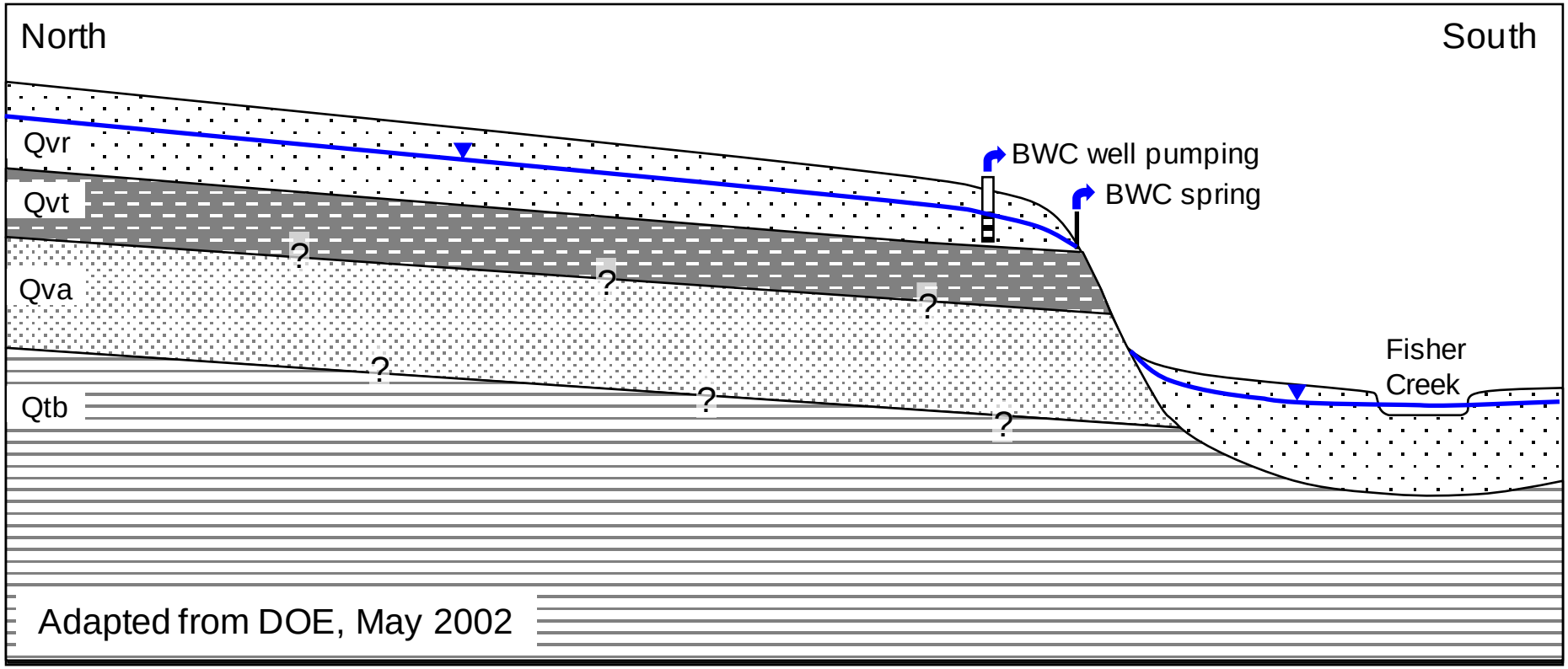
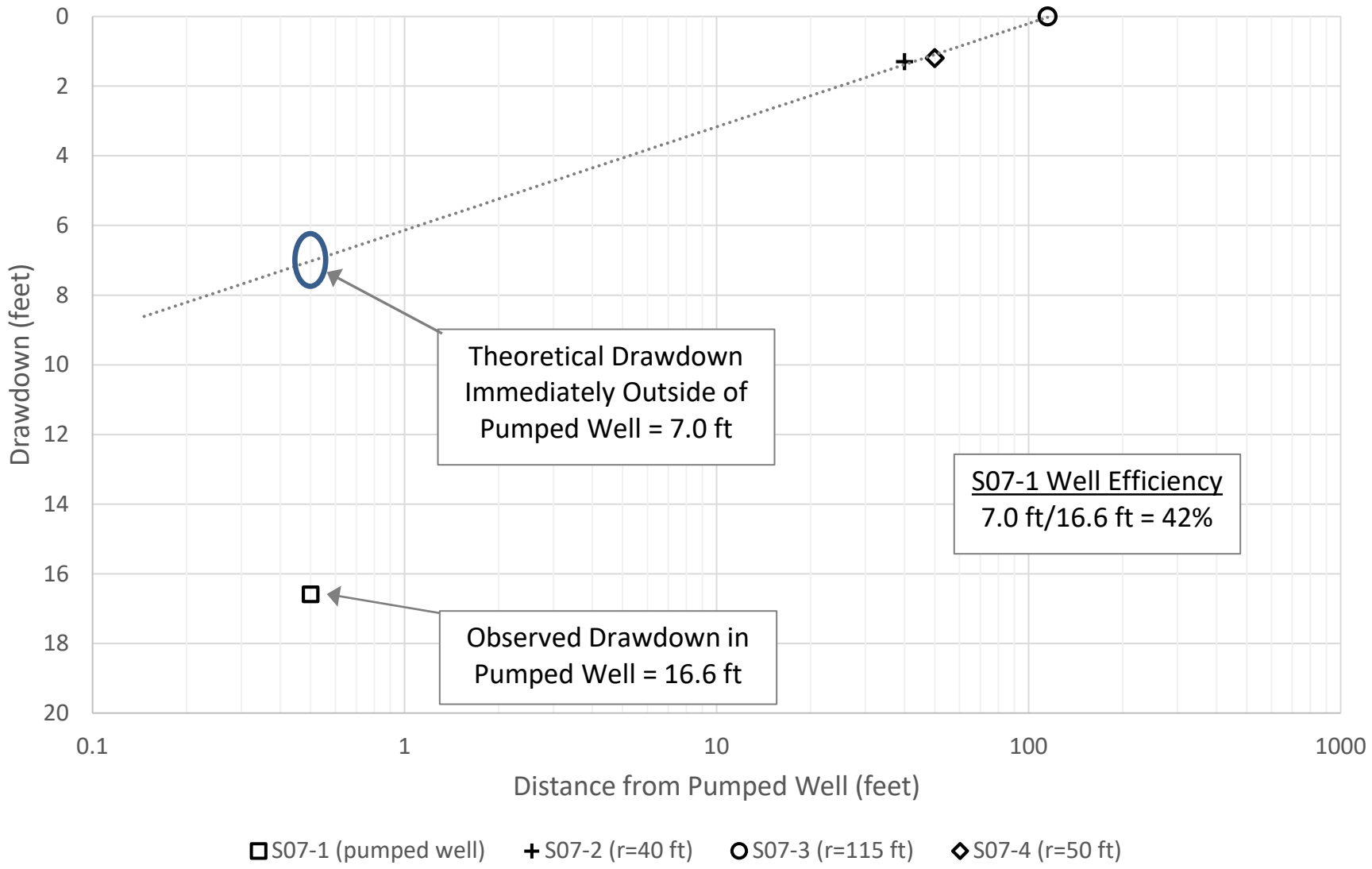
LANDAU ASSOCIATES

Testing Plan Burton Water Company Vashon, Washington	**Regional Surface Geology**	Figure 3



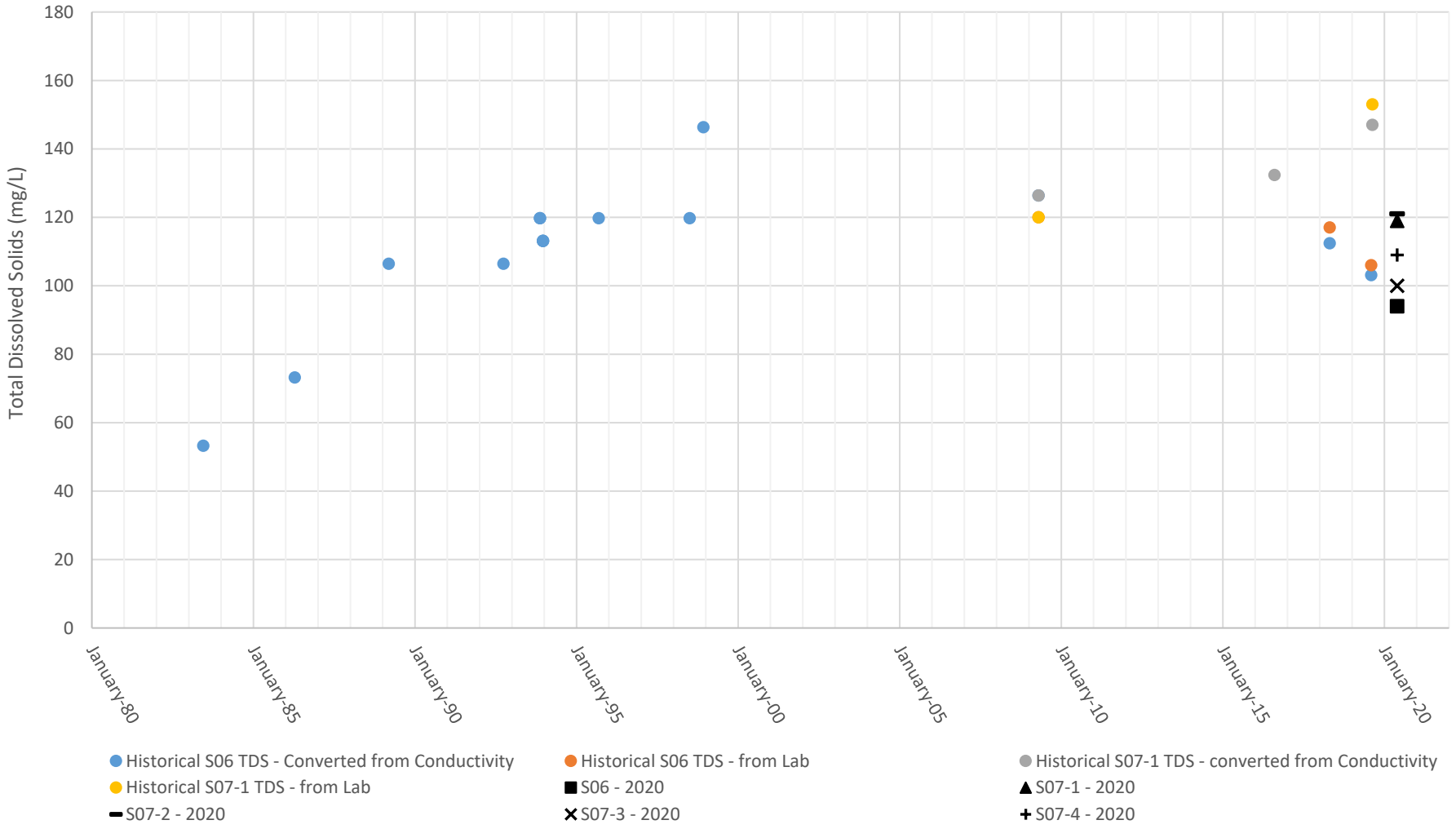
LANDAU ASSOCIATES

Testing Plan Burton Water Company Vashon, Washington	**Conceptual North-South Cross Section of BWC Vicinity Geology**	Figure 4



Note: S07-1 (pumped well) is a previously existing well in the BWC wellfield, and was installed in 2008. Initial short-duration pumping of the new wells, including drawdowns between 5 and 6 ft with pumping at 20 to 25 gpm, indicates that the new wells are significantly more efficient than S07-1.

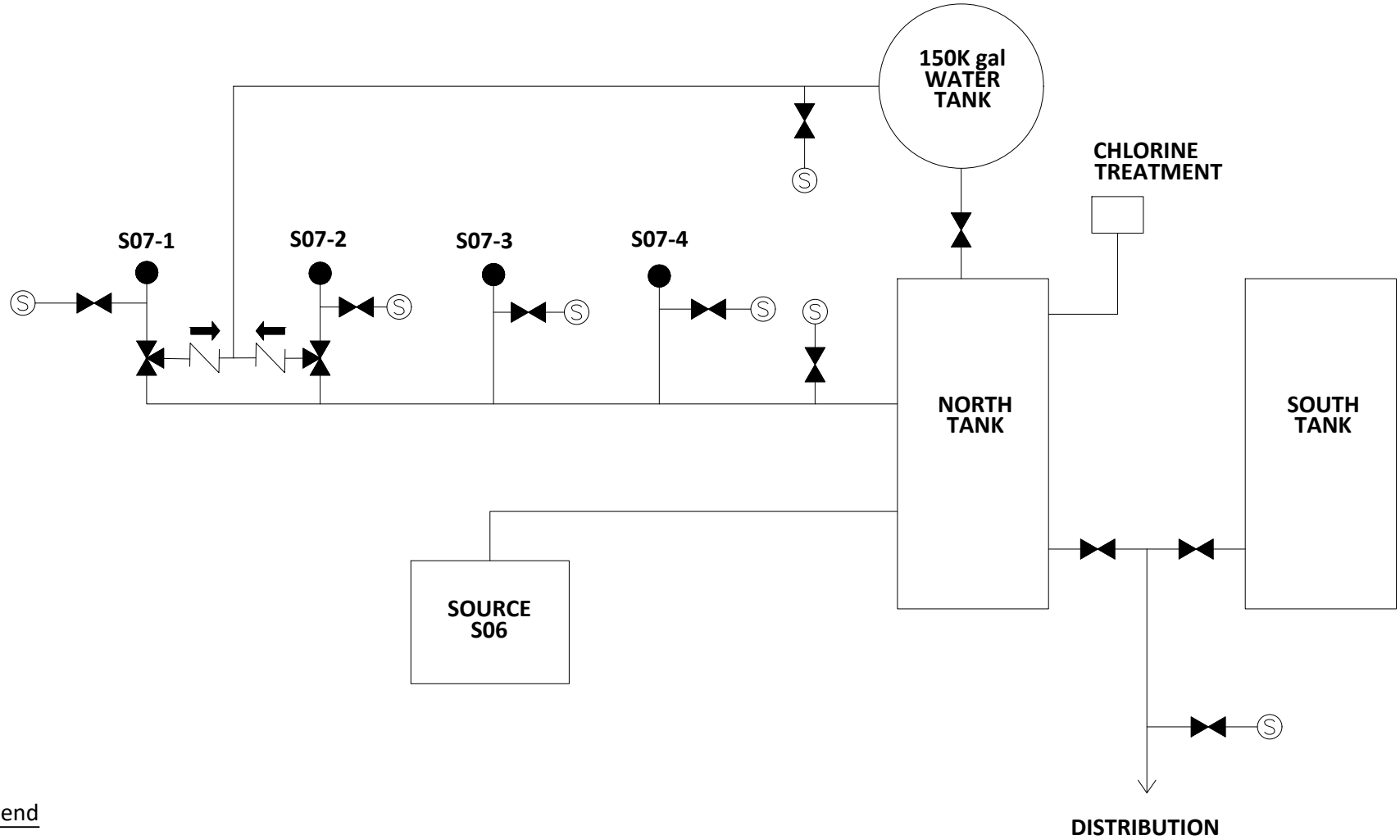
LANDAU ASSOCIATES	Testing Plan Burton Water Company Vashon, Washington	**72-Hour Constant Rate Test Distance-Drawdown**	Figure 5



Notes: 2020 TDS results are from samples collected May 26, 2020. The 2020 sample from S06 (combined wellpoints, North Well, and South Well) was collected upstream of chlorine treatment addition. Historical TDS results were downloaded from the WDOH Sentry database. Historical S06 results are from samples collected downstream of chlorine treatment.

LANDAU ASSOCIATES

Testing Plan Burton Water Company Vashon, Washington	**Water Quality Assessment** **Total Dissolved Solids**	Figure 6



Legend

- Well
- Piping
- Sample Port
- Gate Valve
- Three-Way Valve
- Check Valve

Note

1. Source S06 includes North Well, South Well, Steel Well, and Vacuum Well Points.

LANDAU ASSOCIATES

Burton Water Company Burton, Washington	**Piping Diagram**	Figure 7

APPENDIX A

Well Logs

S07-1

22-2E13H

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission ("x" in circle) 183662

- [x] Construction
- [ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal [ ] DeWater [ ] Irrigation [ ] Test Well [x] Other Public

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 5 inches, drilled 38 ft. Depth of completed well 38 ft.

CONSTRUCTION DETAILS

Casing Installed: [x] Welded 5 " Diam. from +2 ft. to 38 ft. [ ] Liner installed 8 " Diam. from +1 ft. to 21.4 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 N/A

Manufacturer's Name Johnson Screens

Type V-slot, continuous wound. Model No. _____

Diam. 5 Slot size 0.030 from 27.2 ft. to 37.7 ft.

Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: [x] Yes [ ] No [ ] Size of gravel/sand 8/12

Materials placed from 8 ft. to 38 ft.

Surface Seal: [x] Yes [ ] No To what depth? 18 ft.

Material used in seal Bentonite Grout

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 _____ ft.

Static level 10.7 ft. below top of well Date 10/14/05

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? TP&D

Yield: 12.5 gal./min. with 5 ft. drawdown after 1 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

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 _____ Was a chemical analysis made? [ ] Yes [x] No

CURRENT

Notice of Intent No. WE04343

Unique Ecology Well ID Tag No. AKN 518

Water Right Permit No. _____

Property Owner Name Burton Water Company, Inc.

Well Street Address 1611 SW 232nd Street

City Vashon Island County King

Location SE 1/4-1/4 NE 1/4 Sec 13 Twn 22 R 2 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. 1322029016

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
Silt; sandy, brown.	0	19
Sand; medium, well graded, brown.	19	36
Sand; medium, well graded, brown, silty.	36	38
05-1380-08		

Start Date 10/10/05 Completed Date 10/14/05

RECEIVED
NOV 0 3 2005
DEPT OF ECOLOGY

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) James Vignali

Driller/Engineer/Trainee Signature James Vignali

Driller or trainee License No. 0987

Drilling Company Tacoma Pump & Drilling Co., Inc.

Address 30316 Mountain Highway

City, State, Zip Graham, WA 98338

Contractor's Registration No. TACOMPD203PF Date 10/24/05

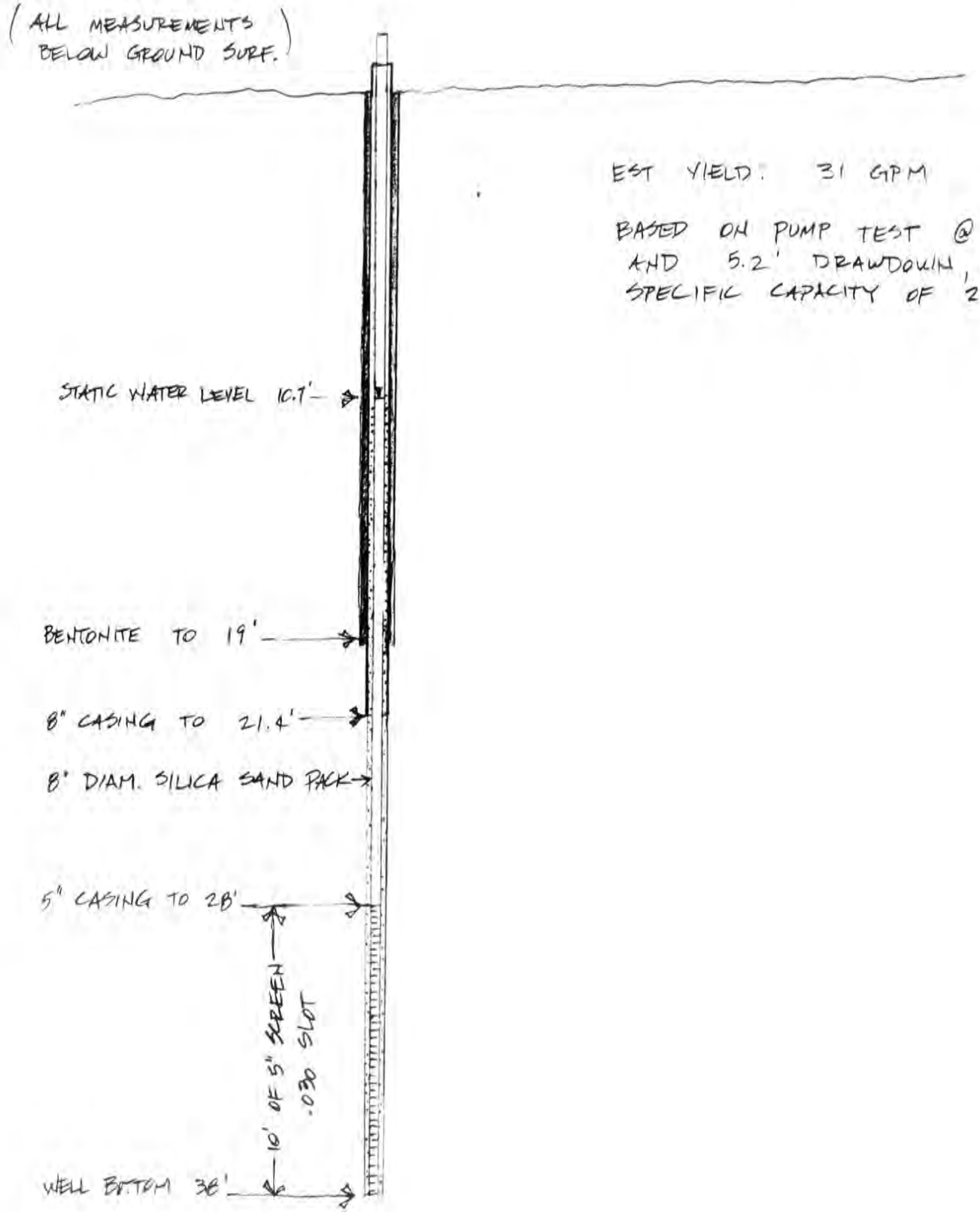
IF TRAINEE, Driller's Licensed No. _____ Driller's Signature _____

Ecology is an Equal Opportunity Employer

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

BURTON WATER CO. WELL

COMPLETED 10/14/05 BY TACOMA PUMP & DRILLING



EST YIELD: 31 GPM

BASED ON PUMP TEST @ 12.5 GPM AND 5.2' DRAWDOWN, GIVING SPECIFIC CAPACITY OF 2.5 GPM/FT

SCALE: 1" = 5'

Monitoring Well MW-B

HOLT DRILLING, INC.

12540

22-2E 13F

Resource Protection Well Report

Project Name Burton Water Co.

Well Identification # MW-B

Drilling Method 4" HSA

Driller Pat Tervues

License # 1793

Date 12-6-02

County King SE ¼ NW ¼

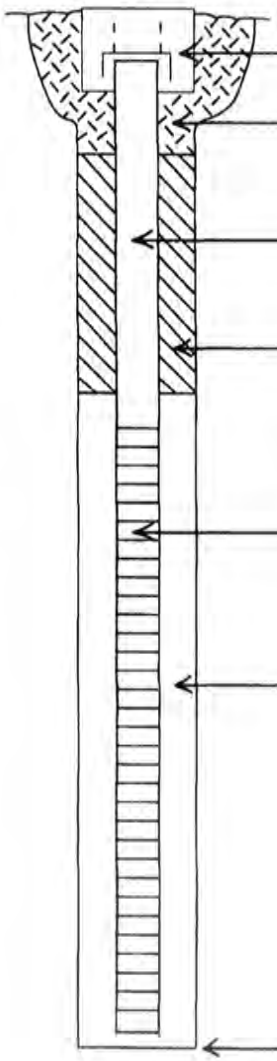
Section 13 T. 22N R. 2E

Street Address SW 232nd St - Vashon Island

Start Card R61503

Consulting Firm C.D.M.

AS-BUILT



WELL DATA

MONUMENT TYPE: 6" Stick up

CONCRETE SURFACE SEAL 2' ft.

PVC BLANK 2" x 26.5

BACKFILL 18' ft.

TYPE Bentonite Chip + Quik Grout

PVC SCREEN 2" x 4'

SLOT SIZE .020

TYPE: PVC

GRAVEL PACK 8' ft.

MATERIAL 10/20 Colo. Sand

WELL DEPTH 28'

FORMATION DESCRIPTION

0 - ft.

- ft. Sand

- ft.

- ft.

- ft.

REMARKS

RECEIVED

JAN 08 2003

DEPT OF ECOLOGY

Signature

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

S07-2

WATER WELL REPORT

DEPARTMENT OF ECOLOGY State of Washington

Type of Work:
☒ Construction
☐ Decommission ⇒ Original installation NOI No. _____

Proposed Use: ☐ Domestic ☐ Industrial ☒ Municipal ☐ Dewatering ☐ Irrigation ☐ Test Well ☐ Other _____

Construction Type: ☒ New well ☐ Alteration ☐ Deepening ☐ Other _____

Method: ☐ Driven ☐ Jetted ☐ Cable Tool ☐ Dug ☒ Air- ☐ Mud-Rotary

Dimensions: Diameter of boring 10 in., to 49 ft.
Depth of completed well 47 ft.

Construction Details:

Casing	Liner	Diameter	From	To	Wall Thickness	Steel	PVC	Welded	Thread
☒	☐	5 in.	0	37	1/4 in.	☒	☐	☒	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐

Perforations: ☐ Yes ☒ No Type of perforator used _____
No. of perforations ____ Size of perforations ____ in. by ____ in.
Perforated from ____ ft. to ____ ft. below ground surface

Screens: ☒ Yes ☐ No ☐ K-Packer ⇒ Depth ____ ft.
Manufacturer's Name Johnson
Type Stainless Model No. _____
Diameter 5 in. Slot size 30 in. from 37 ft. to 47 ft.
Diameter ____ in. Slot size ____ in. from ____ ft. to ____ ft.

Sand/Filter pack: ☒ Yes ☐ No Size of pack material 10/20 in.
Materials placed from 30 ft. to 47 ft.

Surface Seal: ☒ Yes ☐ No To what depth? 30 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 _____

Pump: Manufacturer's Name _____ Type: _____
H.P. ____ Pump intake depth: ____ ft. Designed flow rate: ____ gpm

Water Levels: Land-surface elevation above mean sea level ____ ft.
Stick-up of top of well casing 2 ft. above ground surface
Static water level 12 ft. below top of well casing Date 01/21/2020
Artesian pressure ____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

Well Tests:
Was a pumping test performed? ☐ No ☐ Yes ⇒ by whom? _____
Yield 21 gpm with 3 ft. drawdown after 5 hrs.
Yield ____ gpm with ____ ft. drawdown after ____ hrs.
Yield ____ gpm with ____ ft. drawdown after ____ hrs.
Recovery data (time = zero when pump is turned off – water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
12	15				
12:01	12				

Date of pumping test 02/03/2020
Bailer test ____ gpm with ____ ft. drawdown after ____ hrs.
Air test 40 gpm with stem set at 37 ft. for 1 hrs. Date 01/21/2020
Artesian flow ____ gpm
Temperature of water ____ °F Was a chemical analysis made? ☐ Yes ☐ No

Notice of Intent No. WE 32808
Unique Ecology Well ID Tag No. BLN 274
Site Well Name (if more than one well): SO7-2
Water Right Permit/Certificate No. _____
Property Owner Name Burton Water System
Well Street Address 11611 SW 232nd Street
City Vashon County King - 17
Tax Parcel No. 1322029018
Was a variance approved for this well? ☐ Yes ☒ No
If yes, what was the variance for? _____

Location (see instructions on page 2): ☐ WWM or ☒ EWM
NE ¼-¼ of the SE ¼; Section 13 Township 22 Range 2
Latitude (Example: 47.12345) 47.396080
Longitude (Example: -120.12345) -122.483721

Driller's Log/Construction or Decommission Procedure
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each layer penetrated, with at least one entry for each change of information. Use additional sheets if necessary.

Material	From	To
Brown silty sand	0	18
Brown sand	18	37
Brown sand some gravel some silt heaving	37	47
Brown sand with silt and wood	47	49
Job#18-1850-07		

Start Date 01/14/2020 Completed Date 01/21/2020

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 ☐ Trainee ☐ PE – Print Name Gray Rich
Signature _____
License No. 2980
IF TRAINEE: Sponsor's License No. _____
Sponsor's Signature _____

Drilling Company Tacoma Pump & Drilling
Address 30316 Mountain Highway
City, State, Zip Graham, WA, 98338
Contractor's Registration No. TACOMPD203PF Date 02/04/2020

ECY 050-1-20 (Rev 08/19) *If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.*

S07-3

WATER WELL REPORT

DEPARTMENT OF ECOLOGY
State of Washington

Type of Work:
☒ Construction
☐ Decommission ⟹ Original installation NOI No. _____

Proposed Use: ☐ Domestic ☐ Industrial ☒ Municipal ☐ Dewatering ☐ Irrigation ☐ Test Well ☐ Other _____

Construction Type: ☒ New well ☐ Alteration ☐ Deepening ☐ Other _____
Method: ☐ Driven ☐ Jetted ☐ Cable Tool ☐ Dug ☒ Air- ☐ Mud-Rotary

Dimensions: Diameter of boring 10 in., to 47 ft.
Depth of completed well 45 ft.

Construction Details:

Casing	Liner	Diameter	From	To	Wall Thickness	Steel	PVC	Welded	Thread
☒	☐	5 in.	0	35	1/4 in.	☒	☐	☒	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐

Perforations: ☐ Yes ☒ No Type of perforator used _____
No. of perforations ____ Size of perforations ____ in. by ____ in.
Perforated from ____ ft. to ____ ft. below ground surface

Screens: ☒ Yes ☐ No ☐ K-Packer ⟹ Depth ____ ft.
Manufacturer's Name Johnson
Type Stainless Model No. _____
Diameter 5 in. Slot size 30 in. from 35 ft. to 45 ft.
Diameter ____ in. Slot size ____ in. from ____ ft. to ____ ft.

Sand/Filter pack: ☒ Yes ☐ No Size of pack material 10/20 in.
Materials placed from 25 ft. to 45 ft.

Surface Seal: ☒ Yes ☐ No To what depth? 25 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 _____

Pump: Manufacturer's Name _____ Type: _____
H.P. ____ Pump intake depth: ____ ft. Designed flow rate: ____ gpm

Water Levels: Land-surface elevation above mean sea level ____ ft.
Stick-up of top of well casing 2 ft. above ground surface
Static water level 12 ft. below top of well casing Date 01/27/2020
Artesian pressure ____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

Well Tests:
Was a pumping test performed? ☐ No ☒ Yes ⟹ by whom? _____
Yield 21 gpm with 30 ft. drawdown after 5 hrs.
Yield ____ gpm with ____ ft. drawdown after ____ hrs.
Yield ____ gpm with ____ ft. drawdown after ____ hrs.
Recovery data (time = zero when pump is turned off – water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
12	30	12:30	12		
12:15	17				
12:20	15				

Date of pumping test 02/03/2020
Bailer test ____ gpm with ____ ft. drawdown after ____ hrs.
Air test 20 gpm with stem set at 35 ft. for 1 hrs. Date 01/28/2020
Artesian flow ____ gpm
Temperature of water ____ ° F Was a chemical analysis made? ☐ Yes ☐ No

Notice of Intent No. WE 32797
Unique Ecology Well ID Tag No. BLN 275
Site Well Name (if more than one well): SO7-3
Water Right Permit/Certificate No. _____
Property Owner Name Burton Water System
Well Street Address 11611 SW 232nd Street
City Vashon County King - 17
Tax Parcel No. 1322029016
Was a variance approved for this well? ☐ Yes ☒ No
If yes, what was the variance for? _____

Location (see instructions on page 2): ☐ WWM or ☒ EWM
NE ¼-¼ of the SE ¼; Section 13 Township 22 Range 2
Latitude (Example: 47.12345) 47.396060
Longitude (Example: -120.12345) -122.484290

Driller's Log/Construction or Decommission Procedure
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each layer penetrated, with at least one entry for each change of information. Use additional sheets if necessary.

Material	From	To
Brown silty sand	0	18
Brown sand	18	35
Brown sand some gravel some silt heaving	35	45
Blue Clay	45	47
Job#18-1850-07		

Start Date 01/21/2020 Completed Date 01/27/2020

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 ☐ Trainee ☐ PE – Print Name Gray Rich
Signature _____
License No. 2980
IF TRAINEE: Sponsor's License No.
Sponsor's Signature

Drilling Company Tacoma Pump & Drilling
Address 30316 Mountain Highway
City, State, Zip Graham, WA, 98338
Contractor's Registration No. TACOMPD203PF Date 02/04/2020

S07-4

WATER WELL REPORT

DEPARTMENT OF ECOLOGY
State of Washington

Type of Work:
☒ Construction
☐ Decommission ⟹ Original installation NOI No. _____

Proposed Use: ☐ Domestic ☐ Industrial ☒ Municipal
☐ Dewatering ☐ Irrigation ☐ Test Well ☐ Other _____

Construction Type: ☒ New well ☐ Alteration ☐ Deepening ☐ Other _____
Method: ☐ Driven ☐ Jetted ☐ Cable Tool ☐ Dug ☒ Air- ☐ Mud-Rotary

Dimensions: Diameter of boring 10 in., to 47 ft.
Depth of completed well 45 ft.

Construction Details:

Casing	Liner	Diameter	From	To	Wall Thickness	Steel	PVC	Welded	Thread
☒	☐	5 in.	0	35	1/4 in.	☒	☐	☒	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐

Perforations: ☐ Yes ☒ No Type of perforator used _____
No. of perforations ____ Size of perforations ____ in. by ____ in.
Perforated from ____ ft. to ____ ft. below ground surface

Screens: ☒ Yes ☐ No ☐ K-Packer ⟹ Depth ____ ft.
Manufacturer's Name Johnson
Type Stainless Model No. _____
Diameter 5 in. Slot size 30 in. from 35 ft. to 45 ft.
Diameter ____ in. Slot size ____ in. from ____ ft. to ____ ft.

Sand/Filter pack: ☒ Yes ☐ No Size of pack material 10/20 in.
Materials placed from 25 ft. to 45 ft.

Surface Seal: ☒ Yes ☐ No To what depth? 25 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 _____

Pump: Manufacturer's Name _____ Type: _____
H.P. ____ Pump intake depth: ____ ft. Designed flow rate: ____ gpm

Water Levels: Land-surface elevation above mean sea level ____ ft.
Stick-up of top of well casing 2 ft. above ground surface
Static water level 12 ft. below top of well casing Date 01/31/2020
Artesian pressure ____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

Well Tests:
Was a pumping test performed? ☐ No ☒ Yes ⟹ by whom? _____
Yield 21 gpm with 3 ft. drawdown after 5 hrs.
Yield ____ gpm with ____ ft. drawdown after ____ hrs.
Yield ____ gpm with ____ ft. drawdown after ____ hrs.
Recovery data (time = zero when pump is turned off – water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
12	15				
12:01	12				

Date of pumping test 02/03/2020
Bailer test ____ gpm with ____ ft. drawdown after ____ hrs.
Air test 40 gpm with stem set at 35 ft. for 1 hrs. Date 01/31/2020
Artesian flow ____ gpm
Temperature of water ____ °F Was a chemical analysis made? ☐ Yes ☐ No

Notice of Intent No. WE 32798
Unique Ecology Well ID Tag No. BLN 276
Site Well Name (if more than one well): SO7-4
Water Right Permit/Certificate No. _____
Property Owner Name Burton Water System
Well Street Address 11611 SW 232nd Street
City Vashon County King - 17
Tax Parcel No. 1322029016
Was a variance approved for this well? ☐ Yes ☒ No
If yes, what was the variance for? _____

Location (see instructions on page 2): ☐ WWM or ☒ EWM
NE ¼-¼ of the SE ¼; Section 13 Township 22 Range 2
Latitude (Example: 47.12345) 47.396062
Longitude (Example: -120.12345) -122.483878

Driller's Log/Construction or Decommission Procedure
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each layer penetrated, with at least one entry for each change of information. Use additional sheets if necessary.

Material	From	To
Brown silty sand	0	18
Brown sand	18	35
Brown sand some gravel some silt heaving	35	47

APPENDIX B

Water Quality Results

EDGE ANALYTICAL

Burlington, WA *Corporate Laboratory (a)*
1620 S Walnut St - Burlington, WA 98233 - **800.755.9295** • 360.757.1400

Bellingham, WA *Microbiology (b)*
805 Orchard Dr Ste 4 - Bellingham, WA 98225 - 360.715.1212

Portland, OR *Microbiology/Chemistry (c)*
9150 SW Pioneer Ct Ste W - Wilsonville, OR 97070 - 503.682.7802

Corvallis, OR *Microbiology/Chemistry (d)*
1100 NE Circle Blvd, Ste 130 - Corvallis, OR 97330 - 541.753.4946

Bend, OR *Microbiology (e)*
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

INORGANIC COMPOUNDS (IOC) REPORT

Client Name: Burton Water Company
PO Box 1938
Vashon, WA 98070

Reference Number: 20-16833
Project: TDS

Date Collected: 5/26/20 15:13
System ID Number:
Lab Number: **C567-32218**
Sample Location: S07-1
Sample Purpose: Investigative or Other
Sample Composition:
Approved by: bsp
Authorized by:

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Field ID:
System Group Type:
System Name:
County:
Source Number:
Multiple Sources:
Date Received: 5/27/20
Report Date: 6/1/20
Sample Type:
Sampled By: Nick Simmons
Sampler Phone:

DOH#	ANALYTES	**RESULTS**	UNITS	SRL	Trigger	MCL	Analyst	METHOD	Lab	Analyzed	COMMENT
	EPA Regulated (Secondary)										
26	TOTAL DISSOLVED SOLIDS (TDS)	**119**	mg/L	10			ajw	SM2540 C	a	05/29/20	

NOTES:

SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the Specified Reporting Limit (SRL).

If you have any questions concerning this report contact Lawrence J Henderson, PhD, Director of Laboratories, Vice President, at the toll-free phone number above.

FORM: IOC_ST

EDGE ANALYTICAL

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Bend, OR *Microbiology (e)*
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

INORGANIC COMPOUNDS (IOC) REPORT

Client Name: Burton Water Company
PO Box 1938
Vashon, WA 98070

Reference Number: 20-16833
Project: TDS

Date Collected: 5/26/20 15:10
System ID Number:
Lab Number: **C567-32219**
Sample Location: S07-2
Sample Purpose: Investigative or Other
Sample Composition:
Approved by: bsp
Authorized by:

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Field ID:
System Group Type:
System Name:
County:
Source Number:
Multiple Sources:
Date Received: 5/27/20
Report Date: 6/1/20
Sample Type:
Sampled By: Nick Simmons
Sampler Phone:

DOH#	ANALYTES	**RESULTS**	UNITS	SRL	Trigger	MCL	Analyst	METHOD	Lab	Analyzed	COMMENT
	EPA Regulated (Secondary)										
26	TOTAL DISSOLVED SOLIDS (TDS)	**121**	mg/L	10			ajw	SM2540 C	a	05/29/20	

NOTES:

SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the Specified Reporting Limit (SRL).

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FORM: IOC_ST

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Bend, OR *Microbiology (e)*
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

INORGANIC COMPOUNDS (IOC) REPORT

Client Name: Burton Water Company
PO Box 1938
Vashon, WA 98070

Reference Number: 20-16833
Project: TDS

Date Collected: 5/26/20 15:20
System ID Number:
Lab Number: **C567-32220**
Sample Location: S07-3
Sample Purpose: Investigative or Other
Sample Composition:
Approved by: bsp
Authorized by:

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Field ID:
System Group Type:
System Name:
County:
Source Number:
Multiple Sources:
Date Received: 5/27/20
Report Date: 6/1/20
Sample Type:
Sampled By: Nick Simmons
Sampler Phone:

DOH#	ANALYTES	**RESULTS**	UNITS	SRL	Trigger	MCL	Analyst	METHOD	Lab	Analyzed	COMMENT
	EPA Regulated (Secondary)										
26	TOTAL DISSOLVED SOLIDS (TDS)	**100**	mg/L	10			ajw	SM2540 C	a	05/29/20	

NOTES:

SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the Specified Reporting Limit (SRL).

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FORM: IOC_ST

EDGE ANALYTICAL

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Bend, OR *Microbiology (e)*
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

INORGANIC COMPOUNDS (IOC) REPORT

Client Name: Burton Water Company
PO Box 1938
Vashon, WA 98070

Reference Number: 20-16833
Project: TDS

Date Collected: 5/26/20 15:16
System ID Number:
Lab Number: **C567-32221**
Sample Location: S07-4
Sample Purpose: Investigative or Other
Sample Composition:
Approved by: bsp
Authorized by:

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Field ID:
System Group Type:
System Name:
County:
Source Number:
Multiple Sources:
Date Received: 5/27/20
Report Date: 6/1/20
Sample Type:
Sampled By: Nick Simmons
Sampler Phone:

DOH#	ANALYTES	**RESULTS**	UNITS	SRL	Trigger	MCL	Analyst	METHOD	Lab	Analyzed	COMMENT
	EPA Regulated (Secondary)										
26	TOTAL DISSOLVED SOLIDS (TDS)	**109**	mg/L	10			ajw	SM2540 C	a	05/29/20	

NOTES:

SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the Specified Reporting Limit (SRL).

If you have any questions concerning this report contact Lawrence J Henderson, PhD, Director of Laboratories, Vice President, at the toll-free phone number above.

FORM: IOC_ST

EDGE ANALYTICAL

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Bend, OR *Microbiology (e)*
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

INORGANIC COMPOUNDS (IOC) REPORT

Client Name: Burton Water Company
PO Box 1938
Vashon, WA 98070

Reference Number: 20-16833
Project: TDS

Date Collected: 5/26/20 15:29
System ID Number:
Lab Number: **C567-32222**
Sample Location: S06
Sample Purpose: Investigative or Other
Sample Composition:
Approved by: bsp
Authorized by:

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Field ID:
System Group Type:
System Name:
County:
Source Number:
Multiple Sources:
Date Received: 5/27/20
Report Date: 6/1/20
Sample Type:
Sampled By: Nick Simmons
Sampler Phone:

DOH#	ANALYTES	**RESULTS**	UNITS	SRL	Trigger	MCL	Analyst	METHOD	Lab	Analyzed	COMMENT
	EPA Regulated (Secondary)										
26	TOTAL DISSOLVED SOLIDS (TDS)	**94**	mg/L	10			ajw	SM2540 C	a	05/29/20	

NOTES:

SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the Specified Reporting Limit (SRL).

If you have any questions concerning this report contact Lawrence J Henderson, PhD, Director of Laboratories, Vice President, at the toll-free phone number above.

FORM: IOC_ST

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20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

NELAP ACCREDITED TNI LABORATORY
OR NELAP 4072

INORGANIC COMPOUNDS (IOC) REPORT

Client Name: Burton Water Company
11511 98th Ave SW
Vashon, WA 98070

Reference Number: 21-02984
Project: IOC TOT

Date Collected: 1/26/21 15:15
System ID Number:
Lab Number: **046-05687**
Sample Location: S07 -2
Sample Purpose: Investigative or Other
Sample Composition:
Approved by: bj,bsp
Authorized by:

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Field ID:
System Group Type:
System Name:
County:
Source Number:
Multiple Sources:
Date Received: 1/27/21
Report Date: 2/8/21
Sample Type:
Sampled By:
Sampler Phone:

DOH#	ANALYTES	RESULTS	UNITS	SRL	Trigger	MCL	Analyst	METHOD	Lab	Analyzed	COMMENT
	EPA Regulated										
4	ARSENIC	**0.0018**	mg/L	0.001	0.010	0.010	bsp	200.8	a	02/01/21	
5	BARIUM	**0.0039**	mg/L	0.001	2	2	bsp	200.8	a	02/01/21	
6	CADMIUM	**ND**	mg/L	0.001	0.005	0.005	bsp	200.8	a	02/01/21	
7	CHROMIUM	**0.0019**	mg/L	0.001	0.1	0.1	bsp	200.8	a	02/01/21	
11	MERCURY	**ND**	mg/L	0.0002		0.002	bsp	200.8	a	02/05/21	
12	SELENIUM	**ND**	mg/L	0.002	0.05	0.05	bsp	200.8	a	02/01/21	
110	BERYLLIUM	**ND**	mg/L	0.0003	0.004	0.004	bsp	200.8	a	02/01/21	
111	NICKEL	**0.0011**	mg/L	0.001	0.1		bsp	200.8	a	02/01/21	
112	ANTIMONY	**ND**	mg/L	0.001	0.006	0.006	bsp	200.8	a	02/01/21	
113	THALLIUM	**ND**	mg/L	0.0001	0.002	0.002	bsp	200.8	a	02/01/21	
116	CYANIDE, AVAILABLE	**ND**	mg/L	0.005	0.2	0.2	bsp	OIA-1677-DW	a	01/29/21	
19	FLUORIDE	**ND**	mg/L	0.1	2	4	bsp	300.0	a	01/27/21	
114	NITRITE-N	**ND**	mg/L	0.1	0.5	1	bsp	300.0	a	01/27/21 18:31	
20	NITRATE-N	**1.60**	mg/L	0.1	5	10	bsp	300.0	a	01/27/21 18:31	
161	TOTAL NITRATE+NITRITE as N	**1.60**	mg/L	0.50	5	10	bsp	300.0	a	01/27/21 18:31	
	EPA Regulated (Secondary)										
8	IRON	**0.061**	mg/L	0.100	0.3	0.3	bj	200.7	a	01/29/21	
10	MANGANESE	**0.0025**	mg/L	0.001	0.05	0.05	bsp	200.8	a	02/01/21	
13	SILVER	**ND**	mg/L	0.001	0.05	0.05	bsp	200.8	a	02/01/21	
21	CHLORIDE	**6.2**	mg/L	0.1	250	250	bsp	300.0	a	01/27/21	
22	SULFATE	**7.9**	mg/L	0.2	250	250	bsp	300.0	a	01/27/21	
24	ZINC	**0.0096**	mg/L	0.005		5.00	bsp	200.8	a	02/01/21	
14	SODIUM	**6.5**	mg/L	5.0			bj	200.7	a	01/29/21	
15	HARDNESS as Calcium Carbonate	**71.4**	mg/L	10			bj	200.7	a	01/29/21	
16	ELECTRICAL CONDUCTIVITY	**172**	uS/cm	10	700	700	ase	SM2510 B	a	01/28/21	
17	TURBIDITY	**1.2**	NTU	0.10		1	ase	180.1	a	01/27/21 17:37	
18	COLOR	**ND**	Color Units	5	15	15	ase	SM2120 B	a	01/27/21 17:21	pH:6
26	TOTAL DISSOLVED SOLIDS (TDS)	**113**	mg/L	10	500	500	hry	SM2540 C	a	02/03/21	
	State Unregulated										
9	LEAD	**ND**	mg/L	0.001		0.015	bsp	200.8	a	02/01/21	
23	COPPER	**0.0330**	mg/L	0.005		1.3	bsp	200.8	a	02/01/21	

NOTES:

SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the Specified Reporting Limit (SRL).
An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

These test results meet all the requirements of NELAC, unless otherwise stated in writing, and relate only to these samples.
If you have any questions concerning this report contact Lawrence J Henderson, PhD, Director of Laboratories, Vice President, at the toll-free phone number above.

FORM: IOC_ST

EDGE ANALYTICAL

Burlington, WA *Corporate Laboratory (a)*
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Portland, OR *Microbiology/Chemistry (c)*
9150 SW Pioneer Ct Ste W - Wilsonville, OR 97070 - 503.682.7802

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Bend, OR *Microbiology (e)*
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

NELAP ACCREDITED TNI LABORATORY
OR NELAP 4072

INORGANIC COMPOUNDS (IOC) REPORT

Client Name: Burton Water Company
11511 98th Ave SW
Vashon, WA 98070

Reference Number: 21-02984
Project: IOC TOT

Date Collected: 1/26/21 15:30
System ID Number:
Lab Number: **046-05688**
Sample Location: S07 -3
Sample Purpose: Investigative or Other
Sample Composition:
Approved by: bj,bsp
Authorized by:

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Field ID:
System Group Type:
System Name:
County:
Source Number:
Multiple Sources:
Date Received: 1/27/21
Report Date: 2/8/21
Sample Type:
Sampled By:
Sampler Phone:

DOH#	ANALYTES	RESULTS	UNITS	SRL	Trigger	MCL	Analyst	METHOD	Lab	Analyzed	COMMENT
	EPA Regulated										
4	ARSENIC	**0.0010**	mg/L	0.001	0.010	0.010	bsp	200.8	a	02/01/21	
5	BARIUM	**0.0034**	mg/L	0.001	2	2	bsp	200.8	a	02/01/21	
6	CADMIUM	**ND**	mg/L	0.001	0.005	0.005	bsp	200.8	a	02/01/21	
7	CHROMIUM	**0.0016**	mg/L	0.001	0.1	0.1	bsp	200.8	a	02/01/21	
11	MERCURY	**ND**	mg/L	0.0002		0.002	bsp	200.8	a	02/05/21	
12	SELENIUM	**ND**	mg/L	0.002	0.05	0.05	bsp	200.8	a	02/01/21	
110	BERYLLIUM	**ND**	mg/L	0.0003	0.004	0.004	bsp	200.8	a	02/01/21	
111	NICKEL	**ND**	mg/L	0.001	0.1		bsp	200.8	a	02/01/21	
112	ANTIMONY	**ND**	mg/L	0.001	0.006	0.006	bsp	200.8	a	02/01/21	
113	THALLIUM	**ND**	mg/L	0.0001	0.002	0.002	bsp	200.8	a	02/01/21	
116	CYANIDE, AVAILABLE	**ND**	mg/L	0.005	0.2	0.2	bsp	OIA-1677-DW	a	01/29/21	
19	FLUORIDE	**ND**	mg/L	0.1	2	4	bsp	300.0	a	01/27/21	
114	NITRITE-N	**ND**	mg/L	0.1	0.5	1	bsp	300.0	a	01/27/21 18:53	
20	NITRATE-N	**1.27**	mg/L	0.1	5	10	bsp	300.0	a	01/27/21 18:53	
161	TOTAL NITRATE+NITRITE as N	**1.27**	mg/L	0.50	5	10	bsp	300.0	a	01/27/21 18:53	
	EPA Regulated (Secondary)										
8	IRON	**0.10**	mg/L	0.100	0.3	0.3	bj	200.7	a	01/29/21	
10	MANGANESE	**0.0012**	mg/L	0.001	0.05	0.05	bsp	200.8	a	02/01/21	
13	SILVER	**ND**	mg/L	0.001	0.05	0.05	bsp	200.8	a	02/01/21	
21	CHLORIDE	**3.9**	mg/L	0.1	250	250	bsp	300.0	a	01/27/21	
22	SULFATE	**7.9**	mg/L	0.2	250	250	bsp	300.0	a	01/27/21	
24	ZINC	**ND**	mg/L	0.005		5.00	bsp	200.8	a	02/01/21	
14	SODIUM	**5.8**	mg/L	5.0			bj	200.7	a	01/29/21	
15	HARDNESS as Calcium Carbonate	**57.0**	mg/L	10			bj	200.7	a	01/29/21	
16	ELECTRICAL CONDUCTIVITY	**139**	uS/cm	10	700	700	ase	SM2510 B	a	01/28/21	
17	TURBIDITY	**2.3**	NTU	0.10		1	ase	180.1	a	01/27/21 17:39	
18	COLOR	**ND**	Color Units	5	15	15	ase	SM2120 B	a	01/27/21 17:22	pH:6
26	TOTAL DISSOLVED SOLIDS (TDS)	**100**	mg/L	10	500	500	hry	SM2540 C	a	02/03/21	
	State Unregulated										
9	LEAD	**ND**	mg/L	0.001		0.015	bsp	200.8	a	02/01/21	
23	COPPER	**ND**	mg/L	0.005		1.3	bsp	200.8	a	02/01/21	

NOTES:

SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the Specified Reporting Limit (SRL).
An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

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If you have any questions concerning this report contact Lawrence J Henderson, PhD, Director of Laboratories, Vice President, at the toll-free phone number above.

FORM: IOC_ST

EDGE ANALYTICAL

Burlington, WA *Corporate Laboratory (a)*
1620 S Walnut St - Burlington, WA 98233 - **800.755.9295** • 360.757.1400

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Corvallis, OR *Microbiology/Chemistry (d)*
1100 NE Circle Blvd, Ste 130 - Corvallis, OR 97330 - 541.753.4946

Bend, OR *Microbiology (e)*
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

NELAP ACCREDITED TNI LABORATORY
OR NELAP 4072

INORGANIC COMPOUNDS (IOC) REPORT

Client Name: Burton Water Company
11511 98th Ave SW
Vashon, WA 98070

Reference Number: 21-02984
Project: IOC TOT

Date Collected: 1/26/21 15:45
System ID Number:
Lab Number: **046-05689**
Sample Location: S07 -4
Sample Purpose: Investigative or Other
Sample Composition:
Approved by: bj,bsp
Authorized by:

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Field ID:
System Group Type:
System Name:
County:
Source Number:
Multiple Sources:
Date Received: 1/27/21
Report Date: 2/8/21
Sample Type:
Sampled By:
Sampler Phone:

DOH#	ANALYTES	RESULTS	UNITS	SRL	Trigger	MCL	Analyst	METHOD	Lab	Analyzed	COMMENT
	EPA Regulated										
4	ARSENIC	**0.0011**	mg/L	0.001	0.010	0.010	bsp	200.8	a	02/01/21	
5	BARIUM	**0.0044**	mg/L	0.001	2	2	bsp	200.8	a	02/01/21	
6	CADMIUM	**ND**	mg/L	0.001	0.005	0.005	bsp	200.8	a	02/01/21	
7	CHROMIUM	**0.0018**	mg/L	0.001	0.1	0.1	bsp	200.8	a	02/01/21	
11	MERCURY	**ND**	mg/L	0.0002		0.002	bsp	200.8	a	02/05/21	
12	SELENIUM	**ND**	mg/L	0.002	0.05	0.05	bsp	200.8	a	02/01/21	
110	BERYLLIUM	**ND**	mg/L	0.0003	0.004	0.004	bsp	200.8	a	02/01/21	
111	NICKEL	**0.0011**	mg/L	0.001	0.1		bsp	200.8	a	02/01/21	
112	ANTIMONY	**ND**	mg/L	0.001	0.006	0.006	bsp	200.8	a	02/01/21	
113	THALLIUM	**ND**	mg/L	0.0001	0.002	0.002	bsp	200.8	a	02/01/21	
116	CYANIDE, AVAILABLE	**ND**	mg/L	0.005	0.2	0.2	bsp	OIA-1677-DW	a	01/29/21	
19	FLUORIDE	**ND**	mg/L	0.1	2	4	bsp	300.0	a	01/27/21	
114	NITRITE-N	**ND**	mg/L	0.1	0.5	1	bsp	300.0	a	01/27/21 17:25	
20	NITRATE-N	**1.32**	mg/L	0.1	5	10	bsp	300.0	a	01/27/21 17:25	
161	TOTAL NITRATE+NITRITE as N	**1.32**	mg/L	0.50	5	10	bsp	300.0	a	01/27/21 17:25	
	EPA Regulated (Secondary)										
8	IRON	**ND**	mg/L	0.100	0.3	0.3	bj	200.7	a	01/29/21	
10	MANGANESE	**0.0056**	mg/L	0.001	0.05	0.05	bsp	200.8	a	02/01/21	
13	SILVER	**ND**	mg/L	0.001	0.05	0.05	bsp	200.8	a	02/01/21	
21	CHLORIDE	**5.0**	mg/L	0.1	250	250	bsp	300.0	a	01/27/21	
22	SULFATE	**9.1**	mg/L	0.2	250	250	bsp	300.0	a	01/27/21	
24	ZINC	**ND**	mg/L	0.005		5.00	bsp	200.8	a	02/01/21	
14	SODIUM	**6.4**	mg/L	5.0			bj	200.7	a	01/29/21	
15	HARDNESS as Calcium Carbonate	**69.2**	mg/L	10			bj	200.7	a	01/29/21	
16	ELECTRICAL CONDUCTIVITY	**165**	uS/cm	10	700	700	ase	SM2510 B	a	01/28/21	
17	TURBIDITY	**0.77**	NTU	0.10		1	ase	180.1	a	01/27/21 17:42	
18	COLOR	**ND**	Color Units	5	15	15	ase	SM2120 B	a	01/27/21 17:23	pH:6
26	TOTAL DISSOLVED SOLIDS (TDS)	**112**	mg/L	10	500	500	hry	SM2540 C	a	02/03/21	
	State Unregulated										
9	LEAD	**ND**	mg/L	0.001		0.015	bsp	200.8	a	02/01/21	
23	COPPER	**ND**	mg/L	0.005		1.3	bsp	200.8	a	02/01/21	

NOTES:

SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the Specified Reporting Limit (SRL).
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FORM: IOC_ST

EDGE ANALYTICAL

Burlington, WA *Corporate Laboratory (a)*
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9150 SW Pioneer Ct Ste W - Wilsonville, OR 97070 - 503.682.7602

Corvallis, OR *Microbiology/Chemistry (d)*
1130 NE Circle Blvd, Ste 130 - Corvallis, OR 97330 - 541.758.4849

Bend, OR *Microbiology (e)*
20332 Empire Blvd Ste A - Bend, OR 97701 - 541.639.8425

NELAP ACCREDITED ENI LABORATORY
OR NELAP 4072

INORGANIC COMPOUNDS (IOC) REPORT

Client Name: Burton Water Company
10930 SW 238th Street
Vashon, WA 98070

Reference Number: 19-31615
Project: IOC, VOC

Date Collected: 8/20/19 15:00
System ID Number: **09800L**
Lab Number: **046-61419**
Sample Location: Hydrant
Sample Purpose: C - Compliance
Sample Composition: Single Source
Approved by: bj,bsp,hkl
Authorized by:

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Field ID:
System Group Type: A
System Name: BURTON WATER COMPANY INC
County: KING
Source Number: **07**
Multiple Sources:
Date Received: 8/21/19
Report Date: 9/17/19
Sample Type: A - After treatment
Sampled By: E. Simmons
Sampler Phone: 206-463-0075

DOH#	ANALYTES	RESULTS	UNITS	SRL	Trigger	MCL	Analyst	METHOD	Lab	Analyzed	COMMENT
	EPA Regulated										
4	ARSENIC	**ND**	mg/L	0.001	0.010	0.010	bj	200.8	a	08/27/19	
5	BARIUM	**0.009**	mg/L	0.001	2	2	bj	200.8	a	08/27/19	
6	CADMIUM	**ND**	mg/L	0.001	0.005	0.005	bj	200.8	a	08/27/19	
7	CHROMIUM	**0.002**	mg/L	0.001	0.1	0.1	bj	200.8	a	08/27/19	
11	MERCURY	**ND**	mg/L	0.0002	0.002	0.002	hkl	245.1	a	09/10/19	
12	SELENIUM	**ND**	mg/L	0.002	0.05	0.05	bj	200.8	a	08/27/19	
110	BERYLLIUM	**ND**	mg/L	0.0003	0.004	0.004	bj	200.8	a	08/27/19	
111	NICKEL	**ND**	mg/L	0.001	0.1		bj	200.8	a	08/27/19	
112	ANTIMONY	**ND**	mg/L	0.001	0.006	0.006	bj	200.8	a	08/27/19	
113	THALLIUM	**ND**	mg/L	0.0001	0.002	0.002	bj	200.8	a	08/27/19	
116	CYANIDE, AVAILABLE	**ND**	mg/L	0.010	0.2	0.2	bsp	OIA-1677-DW	a	08/29/19	
19	FLUORIDE	**ND**	mg/L	0.1	2	4	ajw	300.0	a	08/22/19	
114	NITRITE-N	**ND**	mg/L	0.1	0.5	1	ajw	300.0	a	08/22/19 08:49	
20	NITRATE-N	**1.78**	mg/L	0.1	5	10	ajw	300.0	a	08/22/19 08:49	
161	TOTAL NITRATE/NITRITE	**1.78**	mg/L	0.50	5	10	ajw	300.0	a	08/22/19 08:49	
	EPA Regulated (Secondary)										
8	IRON	**ND**	mg/L	0.100	0.3	0.3	bj	200.7	a	09/06/19	
10	MANGANESE	**ND**	mg/L	0.001	0.05	0.05	bj	200.8	a	08/27/19	
13	SILVER	**ND**	mg/L	0.001	0.05	0.05	bj	200.8	a	08/27/19	
21	CHLORIDE	**6.0**	mg/L	0.1	250	250	ajw	300.0	a	08/22/19	
22	SULFATE	**10.9**	mg/L	0.2	250	250	ajw	300.0	a	08/22/19	
24	ZINC	**0.009**	mg/L	0.005		5.00	bj	200.8	a	08/27/19	
14	SODIUM	**7.2**	mg/L	5.0			bj	200.7	a	09/06/19	
15	HARDNESS as Calcium Carbonate	**89.0**	mg/L	10			bj	200.7	a	09/06/19	
16	ELECTRICAL CONDUCTIVITY	**221**	uS/cm	10	700	700	lrs	SM2510 B	a	09/13/19	
17	TURBIDITY	**ND**	NTU	0.10		1	bsp	180.1	a	08/21/19 16:46	
18	COLOR	**ND**	Color Units	5	15	15	bsp	SM2120 B	a	08/22/19 08:55	pH:
26	TOTAL DISSOLVED SOLIDS (TDS)	**153**	mg/L	10	500	500	ajw	SM2540 C	a	08/26/19	
	State Unregulated										
9	LEAD	**ND**	mg/L	0.001		0.015	bj	200.8	a	08/27/19	
23	COPPER	**ND**	mg/L	0.005		1.3	bj	200.8	a	08/27/19	

NOTES:
SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/l for Lead and 1.3 mg/l for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the Specified Reporting Limit (SRL).
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FORM: IOC_ST

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Bend, OR *Microbiology (e)*
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

NELAP ACCREDITED TNI LABORATORY

VOLATILE ORGANIC COMPOUNDS (VOC) REPORT

Client Name: Burton Water Company
10930 SW 238th Street
Vashon, WA 98070

Reference Number: 19-31615
Project: IOC, VOC

Date Collected: 8/20/19 15:25
System ID Number: **09800L**
Lab Number: 046-61420
Sample Location: Hydrant
Sample Purpose: C - Compliance
Sample Composition: Single Source
Date Extracted: 524_190827
Approved By: hy
Authorized By:

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Field ID:
System Group Type: A
System Name: BURTON WATER COMPANY INC
County: KING
Source Number: 07
Multiple Sources:
Date Received: 8/21/2019 11:22:00AM
Date Analyzed: 08/27/19
Date: Reported: 9/17/19
Sample Type: A - After treatment
Sample Collected By: E. Simmons
Sampler Phone: 206-463-0075

EPA Method 524.2 For State Drinking Water Compliance

DOH#	COMPOUNDS	RESULTS	UNITS	SRL	Trigger	MCL	Lab		Analyst	COMMENT
	EPA/State Regulated									
160	TOTAL XYLENES	**ND**	ug/L	0.5	0.5	10000	a		GSL	
57	T - 1,2 - DICHLOROETHYLENE	**ND**	ug/L	0.5	0.5	100	a		GSL	
60	CIS - 1,2 - DICHLOROETHYLENE	**ND**	ug/L	0.5	0.5	70	a		GSL	
47	1,1,1 - TRICHLOROETHANE	**ND**	ug/L	0.5	0.5	200	a		GSL	
48	CARBON TETRACHLORIDE	**ND**	ug/L	0.5	0.5	5	a		GSL	
49	BENZENE	**ND**	ug/L	0.5	0.5	5	a		GSL	
50	1,2 - DICHLOROETHANE	**ND**	ug/L	0.5	0.5	5	a		GSL	
51	TRICHLOROETHYLENE	**ND**	ug/L	0.5	0.5	5	a		GSL	
63	1,2 - DICHLOROPROPANE	**ND**	ug/L	0.5	0.5	5	a		GSL	
66	TOLUENE	**ND**	ug/L	0.5	0.5	1000	a		GSL	
67	1,1,2 - TRICHLOROETHANE	**ND**	ug/L	0.5	0.5	5	a		GSL	
68	TETRACHLOROETHYLENE	**ND**	ug/L	0.5	0.5	5	a		GSL	
71	CHLOROBENZENE	**ND**	ug/L	0.5	0.5	100	a		GSL	
73	ETHYLBENZENE	**ND**	ug/L	0.5	0.5	700	a		GSL	
74	M/P - XYLENE	**ND**	ug/L	0.5	0.5		a		GSL	
45	VINYL CHLORIDE	**ND**	ug/L	0.5	0.5	2	a		GSL	
75	O - XYLENE	**ND**	ug/L	0.5	0.5		a		GSL	
76	STYRENE	**ND**	ug/L	0.5	0.5	100	a		GSL	
52	P - DICHLOROBENZENE	**ND**	ug/L	0.5	0.5	75	a		GSL	
84	O - DICHLOROBENZENE	**ND**	ug/L	0.5	0.5	600	a		GSL	
95	1,2,4, - TRICHLOROBENZENE	**ND**	ug/L	0.5	0.5	70	a		GSL	
46	1,1 - DICHLOROETHYLENE	**ND**	ug/L	0.5	0.5	7	a		GSL	
56	METHYLENE CHLORIDE	**ND**	ug/L	0.5	0.5	5	a		GSL	
102	*1,2 - DIBROMOETHANE (EDB)	**ND**	ug/L	0.5	0.02	0.05	a		GSL	Screening Only
103	*1,2-DIBROMO-3-CHLOROPROPANE	**ND**	ug/L	0.5	0.04	0.2	a		GSL	Screening Only

NOTES:
If a compound is detected > or = to the State Reporting Level, SRL, specified increased monitoring frequencies may occur per DOH.
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; a blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the State Reporting Limit (SRL).
An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

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FORM: cVOC.rpt

VOLATILE ORGANIC COMPOUNDS (VOC) REPORT

DOH#	COMPOUNDS	RESULTS	UNITS	SRL	Trigger	MCL	Lab		Analyst	COMMENT
	EPA/State Unregulated									
58	1,1 - DICHLOROETHANE	**ND**	ug/L	0.5	0.5		a		GSL	
59	2,2 - DICHLOROPROPANE	**ND**	ug/L	0.5	0.5		a		GSL	
86	BROMOCHLOROMETHANE	**ND**	ug/L	0.5	0.5		a		GSL	
62	1,1 - DICHLOROPROPENE	**ND**	ug/L	0.5	0.5		a		GSL	
104	DICHLORODIFLUOROMETHANE	**ND**	ug/L	0.5	0.5		a		GSL	
64	DIBROMOMETHANE	**ND**	ug/L	0.5	0.5		a		GSL	
65	CIS - 1,3 - DICHLOROPROPENE	**ND**	ug/L	0.5	0.5		a		GSL	
69	TRANS- 1,3 - DICHLOROPROPENE	**ND**	ug/L	0.5	0.5		a		GSL	
	1,3-DICHLOROPROPYLENE, TOTAL	**ND**	ug/L	0.5	0.5		a		GSL	
53	CHLOROMETHANE	**ND**	ug/L	0.5	0.5		a		GSL	
70	1,3 - DICHLOROPROPANE	**ND**	ug/L	0.5	0.5		a		GSL	
72	1,1,1,2 - TETRACHLOROETHANE	**ND**	ug/L	0.5	0.5		a		GSL	
87	ISOPROPYLBENZENE	**ND**	ug/L	0.5	0.5		a		GSL	
79	1,2,3 - TRICHLOROPROPANE	**ND**	ug/L	0.5	0.5		a		GSL	
78	BROMOBENZENE	**ND**	ug/L	0.5	0.5		a		GSL	
80	1,1,2,2 - TETRACHLOROETHANE	**ND**	ug/L	0.5	0.5		a		GSL	
81	O - CHLOROTOLUENE	**ND**	ug/L	0.5	0.5		a		GSL	
88	N - PROPYLBENZENE	**ND**	ug/L	0.5	0.5		a		GSL	
89	1,3,5 - TRIMETHYLBENZENE	**ND**	ug/L	0.5	0.5		a		GSL	
54	BROMOMETHANE	**ND**	ug/L	0.5	0.5		a		GSL	
82	P - CHLOROTOLUENE	**ND**	ug/L	0.5	0.5		a		GSL	
90	TERT - BUTYLBENZENE	**ND**	ug/L	0.5	0.5		a		GSL	
91	1,2,4 - TRIMETHYLBENZENE	**ND**	ug/L	0.5	0.5		a		GSL	
92	SEC - BUTYLBENZENE	**ND**	ug/L	0.5	0.5		a		GSL	
83	M - DICHLOROBENZENE	**ND**	ug/L	0.5	0.5		a		GSL	
93	P - ISOPROPYLTOLUENE	**ND**	ug/L	0.5	0.5		a		GSL	
94	N - BUTYLBENZENE	**ND**	ug/L	0.5	0.5		a		GSL	
55	CHLOROETHANE	**ND**	ug/L	0.5	0.5		a		GSL	
97	HEXACHLOROBUTADIENE	**ND**	ug/L	0.5	0.5		a		GSL	
96	NAPHTHALENE	**ND**	ug/L	0.5	0.5		a		GSL	
98	1,2,3 - TRICHLOROBENZENE	**ND**	ug/L	0.5	0.5		a		GSL	
85	TRICHLOROFLUOROMETHANE	**ND**	ug/L	0.5	0.5		a		GSL	
	EPA Regulated - Under Trihalomethanes Program									
31	TOTAL TRIHALOMETHANE	**15.9**	ug/L	0.5	60	80	a		GSL	
27	CHLOROFORM	**10.4**	ug/L	0.5			a		GSL	
28	BROMODICHLOROMETHANE	**4.1**	ug/L	0.5			a		GSL	
29	CHLORODIBROMOMETHANE	**1.4**	ug/L	0.5			a		GSL	
30	BROMOFORM	**ND**	ug/L	0.5			a		GSL	
	State Unregulated - Other									
0	METHYL TERT-BUTYL ETHER	**ND**	ug/L	1.0			a		GSL	

NOTES:
If a compound is detected > or = to the State Reporting Level, SRL, specified increased monitoring frequencies may occur per DOH.
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; a blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the State Reporting Limit (SRL).
An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

These test results meet all the requirements of NELAC, unless otherwise stated in writing, and relate only to these samples.

EDGE ANALYTICAL

Burlington, WA *Corporate Laboratory (a)*
1620 S Walnut St - Burlington, WA 98233 - **800.755.9295** • 360.757.1400

Bellingham, WA *Microbiology (b)*
805 Orchard Dr Ste 4 - Bellingham, WA 98225 - 360.715.1212

Portland, OR *Microbiology/Chemistry (c)*
9150 SW Pioneer Ct Ste W - Wilsonville, OR 97070 - 503.682.7802

Corvallis, OR *Microbiology/Chemistry (d)*
540 SW Third Street - Corvallis, OR 97333 - 541.753.4946

Bend, OR *Microbiology (e)*
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

HERBICIDES IN DRINKING WATER

Client Name: Burton Water Company
10930 SW 238th Street
Vashon, WA 98070

Date Collected: 4/24/18 15:35
System ID Number: **09800L**
Lab Number: 046-29595
Sample Location: S07 Tap
Sample Purpose: C - Compliance
Sample Composition: Single Source
Date Extracted: 515.4_180425
Approved By: nml
Authorized By:

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Reference Number: 18-14234
Project: S07 Tap

Field ID:
System Group Type: A
System Name: BURTON WATER CO.
County: KING
Source Number: 07
Multiple Sources:
Date Received: 4/25/2018 11:00:00A
Date Analyzed: 05/07/18
Date: Reported: 5/25/18
Sample Type: A - After treatment
Sample Collected By: E. Simmons
Sampler Phone:

EPA Method 515.4 For State Drinking Water Compliance

DOH#	COMPOUNDS	RESULTS	UNITS	SRL	Trigger	MCL	Lab		Analyst	COMMENT
	EPA Regulated									
37	2,4 - D	**ND**	ug/L	0.1	0.1	70	a		ELW	
38	2,4,5 - TP (SILVEX)	**ND**	ug/L	0.2	0.2	50	a		ELW	
134	PENTACHLOROPHENOL	**ND**	ug/L	0.04	0.04	1	a		ELW	
137	DALAPON	**ND**	ug/L	1	1	200	a		ELW	
139	DINOSEB	**ND**	ug/L	0.2	0.2	7	a		ELW	
140	PICLORAM	**ND**	ug/L	0.1	0.1	500	a		ELW	
	Other									
138	DICAMBA	**ND**	ug/L	0.2	0.2		a		ELW	
225	DCPA (ACID METABOLITES)	**ND**	ug/L	0.1	0.1		a		ELW	
135	2,4 DB	**ND**	ug/L	1.0	1.0		a		ELW	
223	ACIFLUORFEN	**ND**	ug/L	2.0	2.0		a		ELW	
226	3,5 - DICHLOROBENZOIC ACID	**ND**	ug/L	0.5	0.5		a		ELW	

NOTES:
If a compound is detected > or = to the State Reporting Level, SRL, specified increased monitoring frequencies may occur per DOH.
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; a blank MCL value indicates a level is not currently established.

Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the State Reporting Limit (SRL).
An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

These test results meet all the requirements of NELAC, unless otherwise stated in writing, and relate only to these samples.
If you have any questions concerning this report contact Lawrence J Henderson, PhD, Director of Laboratories, Vice President, at the toll-free phone number above.

FORM: cSOC.rpt

Burlington, WA	*Corporate Laboratory (a)*	1620 S Walnut St	Burlington, WA 98233	**800.755.9295** • 360.757.1400
Bellingham, WA	*Microbiology (b)*	805 Orchard Dr Ste 4	Bellingham, WA 98225	360.715.1212
Portland, OR	*Microbiology/Chemistry (c)*	9150 SW Pioneer Ct Ste W	Wilsonville, OR 97070	503.682.7802
Corvallis, OR	*Microbiology (d)*	540 SW Third Street	Corvallis, OR 97333	541.753.4946

FL NELAP E871040

INORGANIC COMPOUNDS (IOC) REPORT

Client Name: Burton Water Company
10930 SW 238th Street
Vashon, WA 98070

System Name: BURTON WATER CO
System ID Number: 09800L
DOH Source Number: 07
Multiple Sources:
Sample Type: B - Before treatment
Sample Purpose: C - Compliance
Sample Location: Sample Tap at Well Head S07
County: King

Reference Number: 17-28567
Project: Radium 228 and Gross Alpha/Bet

Sample Number:
Lab Number: 156-62124
Collect Date: 10/10/17 15:30
Date Received: 10/12/17
Report Date: 11/14/17
Sampled By: Jim Garrison
Sampler Phone:
Approved by: fm
Authorized by:

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

DOH#	ANALYTES	RESULTS	UNITS	SRL	Trigger	MCL	Analyst	METHOD	Lab	Analyzed	COMMENT
	Radiological										
	RADIUM 228	**ND**	pCi/L	1			val	904.0		10/31/17	Analyzed by Pace
	GROSS ALPHA	**ND**	pCi/L	3		15	neg	900.0		11/07/17	Analyzed by Pace
	GROSS BETA	**ND**	pCi/L	4		50	neg	900.0		11/07/17	Analyzed by Pace

NOTES:

SRL (State Reporting Level): indicates the minimum reporting level required by the Washington Department of Health (DOH).
MCL (Maximum Contaminant Level) maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
Trigger Level: DOH Drinking Water Response level. Systems with compounds detected in excess of this level are required to take additional samples. Contact your regional DOH office.
ND (Not Detected): indicates that the parameter was not detected above the Specified Reporting Limit (SRL).
An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through WSDOH or USEPA Region 10.

These test results meet all the requirements of NELAC, unless otherwise stated in writing, and relate only to these samples.
If you have any questions concerning this report contact Lawrence J Henderson, PhD, Director of Laboratories, Vice President, at the toll-free phone number above.

FORM: IOC_ST

APPENDIX C

BWC Water Rights

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
WATER RIGHT CLAIMS REGISTRATION

WATER RIGHT CLAIM

RECEIVED
DEPARTMENT OF ECOLOGY
SEP 21 730517 44
CASH ___ OTHER ___ NONE ✓

1. NAME GERALD R. GARRISON

ADDRESS RT 1 Box 196 B

VASHON, WASH. ZIP CODE 98070

2. SOURCE FROM WHICH THE RIGHT TO TAKE AND MAKE USE OF WATER IS CLAIMED: GROUND WATER (SURFACE OR GROUND WATER)

W.R.I.A. 15 (LEAVE BLANK)

A. IF GROUND WATER, THE SOURCE IS SHALLOW WELLS

B. IF SURFACE WATER, THE SOURCE IS ___

3. THE QUANTITIES OF WATER AND TIMES OF USE CLAIMED:

A. QUANTITY OF WATER CLAIMED 200 gpm (CUBIC FEET PER SECOND OR GALLONS PER MINUTE) PRESENTLY USED 150 gpm

B. ANNUAL QUANTITY CLAIMED 80 (ACRE FEET PER YEAR) PRESENTLY USED 60

C. IF FOR IRRIGATION, ACRES CLAIMED ___ PRESENTLY IRRIGATED ___

D. TIME(S) DURING EACH YEAR WHEN WATER IS USED: ALL YEAR

4. DATE OF FIRST PUTTING WATER TO USE: MONTH MAY YEAR 1930

5. LOCATION OF THE POINT(S) OF DIVERSION/WITHDRAWAL: 340 FEET SOUTH AND 460 FEET WEST FROM THE NE CORNER OF SECTION SE 1/4 SEC. 13

BEING WITHIN SE 1/4 OF SECTION 13 T. 22 N., R. 2 E. (E. or W.) W.M.

IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, LOT ___ BLOCK ___ OF ___
(GIVE NAME OF PLAT OR ADDITION)

6. LEGAL DESCRIPTION OF LANDS ON WHICH THE WATER IS USED: BEGINNING AT A POINT 240 FT SOUTH AND 360 FT WEST OF NE CORNER OF SE 1/4 SECTION 13, T22N, R2E, WM., THENCE SOUTH 230 FT, THENCE WEST 170 FT, THENCE NORTH 230 FT, AND EAST 170 FT TO BEGINNING.

COUNTY KING

7. PURPOSE(S) FOR WHICH WATER IS USED: COMMUNITY WATER SUPPLY (PUBLIC UTILITY) 260 HOMES SERVED BY BURTON WATER CO.

8. THE LEGAL DOCTRINE(S) UPON WHICH THE RIGHT OF CLAIM IS BASED: RIPARIAN

DO NOT USE THIS SPACE

THE FILING OF A STATEMENT OF CLAIM DOES NOT CONSTITUTE AN ADJUDICATION OF ANY CLAIM TO THE RIGHT TO USE OF WATERS AS BETWEEN THE WATER USE CLAIMANT AND THE STATE OR AS BETWEEN ONE OR MORE WATER USE CLAIMANTS AND ANOTHER OR OTHERS. THIS ACKNOWLEDGEMENT CONSTITUTES RECEIPT FOR THE FILING FEE.

DATE RETURNED ___ THIS HAS BEEN ASSIGNED WATER RIGHT CLAIM REGISTRY NO.

DEC 7 730431 45

I HEREBY SWEAR THAT THE ABOVE INFORMATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

X Gerald R. Garrison

DATE Sept 20, 1973

(IF CLAIM FILED BY DESIGNATED REPRESENTATIVE, PRINT OR TYPE FULL NAME AND MAILING ADDRESS OF AGENT BELOW)

☐ ADDITIONAL INFORMATION RELATING TO WATER QUALITY AND/OR WATER CONSERVATION IS AVAILABLE

DEPARTMENT OF ECOLOGY

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

October 30, 2020

Certified: 9489 0090 0027 6066 6263 72

James Garrison
Burton Water Company
PO Box 1938
Vashon, WA 98070

Re: Water Right Claim No. 043145

Dear Mr. Garrison:

This is in response to the August 25, 2020 request to amend Water Right Claim No. 043145, submitted by Ben Lee of Landau Associates on behalf of the Burton Water Company.

The Amended Claim request regarded both the point of withdrawal and place of use descriptions for this claim. We have determined that Burton Water Company's request to amend the point of withdrawal description meets the requirements of RCW 90.14.051(3), which authorizes claim amendments necessary to address ministerial errors. The enclosed order confirms authorization to change the *point of withdrawal*.

However, as explained in the enclosed order, the request to amend the *place of use* description does not meet this requirement, so that particular request has been denied. As a matter of law, however, so long as the claim is used for municipal water supply purposes (as defined by RCW 90.03.015(3)), the place of use for this claim will be the service area approved by the state Department of Health (RCW 90.03.386).

I am enclosing Order No. 19416, which further explains the above decision. If you wish to appeal the enclosed order, you may do so within thirty days of your receipt of the order. The appeal procedure is described in the order.

If you have any questions, please contact Jeff Marti at jeff.marti@ecy.wa.gov or 360-407-6627.

Sincerely,

Mary Verner

Mary Verner, Program Manager
Water Resources Program

cc: Ben Lee, Landau Associates

Enclosure

DEPARTMENT OF ECOLOGY

IN THE MATTER OF FILING IN THE	**) ORDER NO 19416**
WATER RIGHTS CLAIM REGISTRY AN	)
AMENDMENT BY BURTON WATER COMPANY	)
FOR WATER RIGHT CLAIM NO. 043145	)

The Department of Ecology is responsible for the Water Rights Claims Registry and amendments to the Water Rights Claims Registry, Chapter 90.14 RCW. RCW 90.14.065 states that any person or entity, or their successor, having a statement of claim on file with the Water Rights Claims Registry on April 20, 1987, may submit an amendment to the statement of claim if the submitted amendment is based on:

1. An error in estimation of the quantity of the applicant's water claim prescribed in RCW 90.14.051 if the applicant provides reasons for the failure to claim such a right in the original claim;

2. A change in circumstances not foreseeable at the time the original claim was filed, if such a change in circumstances relates only to the manner of transportation or diversion of the water and not to the use or quantity of such water; or

3. The amendment is ministerial in nature.

The Department of Ecology shall accept any such submission and file the same in the registry unless the Department by written determination concludes that the requirements of any of subsections (1), (2), or (3) of RCW 90.14.065 have not been satisfied.

Burton Water Company (BWC) submitted a request on August 25, 2020 to amend water right claim no. 043145. This claim is referenced as water right no. G1-043145CL in the Water Right Tracking System maintained by the Department of Ecology. The original claim was signed by Gerald Garrison on September 20, 1973 for the purpose of community water supply and received by the Department of Ecology on September 21, 1973.

BWC seeks to amend the point of withdrawal and the place of use descriptions for the original claim, but leave the other attributes of the claim – namely, the purpose and quantities -- unchanged.

Point of Withdrawal: BWC The original claim describes the groundwater source as consisting of "shallow wells" (plural) located at a specific point (singular). The point location is described as an enumerated distance and direction from the corner of a quarter section. BWC states that that particular description was meant to indicate the general vicinity of the original

wellfield, not the location of a single well. It is worth noting that while the claim forms enabled claimants to claim the use of multiple sources, the forms only included enough spaces for a single location description.

BWC requests that the claim be amended to reflect that the claimed withdrawal occurred at the overall location of the wellfield within the quarter section. The request includes documentation supporting the existence of multiple wells prior to 1949 (See Purchase and Sales Agreement and August 20, 2020 Declaration by James Garrison, BWC employee).

Additionally, the request states:

> According to BWC staff, there are four historical wells (old wells) on the BWC property, at least two of which would have likely been in place and used prior to 1945 and therefore were likely subject of the claimed multiple "shallow wells...The historical timing of the advent of portable drilling technologies in the 1940s indicates that the two hand-dug wells were likely constructed in the 1930s or earlier (August 25, 2020 Request Letter from Ben Lee, Landau Associates).

Response: Ministerial errors can consist of amending an item on the claim or clarifying information that conflicts or is contrary to the original claimant's intent.
In the original claim form, there is an inconsistency between the use of a singular point location to represent the location of multiple points. An amended claim will clarify the conflicting information.

The request to amend the point of withdrawal description from a single point to a wellfield area description located within SE ¼ of Section 13, T22N, R2EWM is **APPROVED.**

Place of Use BWC also requests that the Place of Use description on the claim be amended. According to BWC, "...the claimed place of use on the original claim form indicates a small area within the SE ¼ of Section 13. It is unknown what was intended with the claimed place of use location but it is obvious that the claimed location could not include the claimed 260 homes (at the time the claim was filed). The claimed place of use should be amended to 'the service area of Burton Water Co.'"

Response: Ministerial errors can consist of amending an item on the claim or clarifying information that conflicts or is contrary to the original claimant's intent

For this request, it is not clear that the place of use description is contrary to the intent of the original claim because the original intent itself is not clear. BWC states that, for the original claim, "It is unknown what was intended with the claimed place of use location...."

While BWC states, "...it is obvious that the claimed location could not include the claimed 260 homes (at the time the claim was filed) ...", the purpose of a claims registration period was to

register the use of water perfected before the establishment of the groundwater permitting system in 1945, not the use of water occurring at the time the claim was filed.

Because it is not clear that the place of use description is inconsistent with the intent the original claim, the request to amend the place of use description on Claim 043145 is **DENIED.**

SIGNED and DATED at Lacey, Washington, this 30 day of October, 2020.

Mary Verner for Jeff Marti
Jeff Marti, Policy Development and Operations Section

I hereby concur with this determination. This constitutes a final Order and Decision in this matter.

Mary Verner
Mary Verner, Program Manager,
Water Resources Program

PLEASE NOTE that the final determination of the validity, extent, and other details associated with a claim registered in accordance with Chapter 90.14 RCW ultimately lies with the Superior Court through the adjudication process provided for by RCW 90.03.110 through 90.03.240.

Your Right To Appeal

You have a right to appeal this Order to the Pollution Control Hearings Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of the Order.

File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.

- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

- You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel RD SW Ste 301 Tumwater, WA 98501	**Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

For additional information visit the Environmental Hearings Office Website: http://www.eho.wa.gov. To find laws and agency rules visit the Washington State Legislature Website: http://www1.leg.wa.gov/CodeReviser.

S. F. No. 369—1923. Approved as to Form by Dept. of Efficiency. 8809.

CERTIFICATE RECORD NO. 1, PAGE NO. 405

STATE OF WASHINGTON, COUNTY OF King

CERTIFICATE OF WATER RIGHT

(For rights perfected under original, enlargement or secondary permits.)

(In accordance with the provisions of Chapter 117, Laws of Washington for 1917, and the regulations of the State Hydraulic Engineer thereunder.)

This is to certify, that P. M. Armbuster, *of* Burton, *State of* Washington, *has made proof to the satisfaction of the State Supervisor of Hydraulics of Washington, of a right to the use of the waters of* unnamed springs, *a tributary of* ..., *for the purposes of* municipal supply, *under* Appropriation *Permit No.* 1213, *of the State Supervisor of Hydraulics, and that said right to the use of said waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Hydraulics of Washington and entered of record in Volume* 1, *at Page* 405, *on the* 22nd *day of* May, *19*30; *that the right hereby confirmed dates from* August 1st, *19*28; *that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed* 0.1 *cubic feet per second.*

A description of the lands under such right, and to which the water hereby confirmed is appurtenant, or if for other purposes, the place where such water is put to beneficial use, is as follows:

PLACE OF USE			LEGAL SUBDIVISION	No. Acres Described in Permit	No. Acres Actually Irrigated
Section	Township	Range			
13	22 N.	2 E.W.M.	Town of Burton and adjacent		
			territory		

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 Section 39, Chapter 117, Session Laws 1917.

WITNESS the seal and signature of the State Supervisor of Hydraulics affixed this 22nd *day of* May, *19*30.

Chas. J. Barthel
State Supervisor of Hydraulics.

ENGINEERING DATA
O.K. J.K.C.

Permit No. 1213

Certificate of Water Right

Recorded in the office of State Supervisor of Hydraulics, Olympia, Washington, in Book No. 1 *of Water Right Certificates, on Page* 405 *, on the* 22nd *day of* May *,* *19* 30 *.*

STATE OF WASHINGTON,
County of King } *ss.*

I certify that the within was received and duly recorded by me in Volume ..... *of Book of Water Right Certificates, Page* ..... *on the* ..... *day of* ..... *, 19* .....

.....

JAY THOMAS, PUBLIC PRINTER

Technical Memorandum

TO: John Ryding, PE, Washington Department of Health

FROM: Ben Lee, PE, CWRE

DATE: November 16, 2021

RE: **New Well Source Approval – Construction Drawings**
Burton Water Company
Vashon, Washington
Project No. 0664005.010

Introduction

Burton Water Company (BWC) is in the process of replacing its existing wellpoint source withdrawal system with a modern designed wellfield, including the installation of three new groundwater supply wells—S07-2, S07-3, and S07-4 (new wells). The location of the BWC source property is shown on Figure 1 (Vicinity Map). Landau Associates, Inc. (LAI) is assisting BWC with obtaining approval of the new wells from the Washington Department of Health (WDOH). Installation, testing, and recommended maintenance activities of the new wells were described in a well source approval report (LAI 2021). This technical memorandum, with attachment and figures, provides additional detail regarding the proposed connection of the new wells to the existing BWC infrastructure for monitoring, storage, treatment, and distribution.

New Wells Connection

The connection of the new wells to the BWC water system includes a combination of new infrastructure (e.g., new wells, pumps, piping, valves, flow meters) and existing infrastructure (e.g., existing wells, storage tanks, piping, treatment, distribution network). The existing and new infrastructure associated with BWC's new wells are described in this section and depicted on Figure 2 (Piping Plan Overview) and Figure 3 (Water System Design).

Existing Infrastructure

Existing infrastructure that is relevant to the new wells includes:

- Previously existing well S07-1
- 150,000-gallon storage reservoir, (150k gallon tank) and associated sampling port, located toward the north end of the BWC property
- North and South storage tanks, located toward the south end of the BWC property (which is downhill approximately 20 feet in elevation relative to the north end of the property); the flows from the North and South Tanks are combined into the BWC distribution system
- Chlorine treatment system (which is applied within the North Tank to provide adequate treatment for the combined North and South Tank flows)

- Piping from S07-1 to the 150k gallon tank (combination of 2-inch and 4-inch polyvinyl chloride [PVC] pipe), piping from S07-1 to the North Tank (1.25-inch polyethylene [PE] pipe), piping from the 150k gallon tank to the North Tank (which includes a portion of the same 2-inch and 4-inch PVC pipe from S07-1 to the 150k gallon tank plus additional 2-inch PVC pipe running down to the North Tank), and associated valves, fittings, and flow meters.

Treated water is distributed to the BWC service area from the North and South Tanks through existing distribution system piping. The existing infrastructure is not proposed for modification, except where necessary to tie in new infrastructure, as described below.

New Infrastructure

New infrastructure associated with the new wells has been installed by BWC and is awaiting WDOH approval to be connected to the existing system. The new infrastructure includes:

- New wells and associated submersible pumps (Goulds 33GS10), as described in the well source approval report (LAI 2021)
- 2-inch ductile iron discharge column pipe (within each well)
- Individual well source sampling ports with associated gate valves
- 1.25-inch PE piping and associated brass fittings, valves, and flow meters from each of the new wells to the North Tank
  - S07-2 includes additional 1.25-inch PE piping and valving (including ball valve and swing check valve) to connect to the existing 2-inch PVC pipe that runs from S07-1 to the 150k gallon tank
- 4-inch PE piping manifold near North Tank collecting combined flows directly from existing well S07-1 and the new wells with associated combined manifold sampling port.

BWC has installed the new infrastructure in accordance with previous practices and available materials. LAI has provided recommendations for piping installation, including trenching for new buried sections of pipe (Figure 3). LAI has also provided hydraulic calculations to ensure that the new well pumps are adequate for the intended purposes of filling the 150k gallon tank (new well S07-2 to be used in conjunction with existing well S07-1 for this purpose) and pumping groundwater from the new wells to the North Tank (Attachment 1). The new infrastructure appears adequate to provide reliable and safe flows from the new wells.

New Source Approval Request

On behalf of BWC, LAI requests approval from WDOH to connect the new wells to the existing BWC storage, treatment, and distribution system.

Please contact the undersigned with questions regarding this technical memorandum and associated attachment and figures.

LANDAU ASSOCIATES, INC.

Ben Lee, PE, CWRE
Associate

BDL/TDB/kjg
[Y:\664\005.010\R\CONSTRUCTION DRAWINGS\BWC NEW SOURCE APPROVAL - CONSTRUCTION DRAWINGS TM.DOCX]

References

LAI. 2021. Final: Well Source Approval Report; Burton Water Company Well Field; Vashon, Washington. Landau Associates, Inc. February 12.

Attachments

Figure 1. Vicinity Map
Figure 2. Piping Plan Overview
Figure 3. Water System Design

Attachment 1. Total Dynamic Head (TDH) Calculations

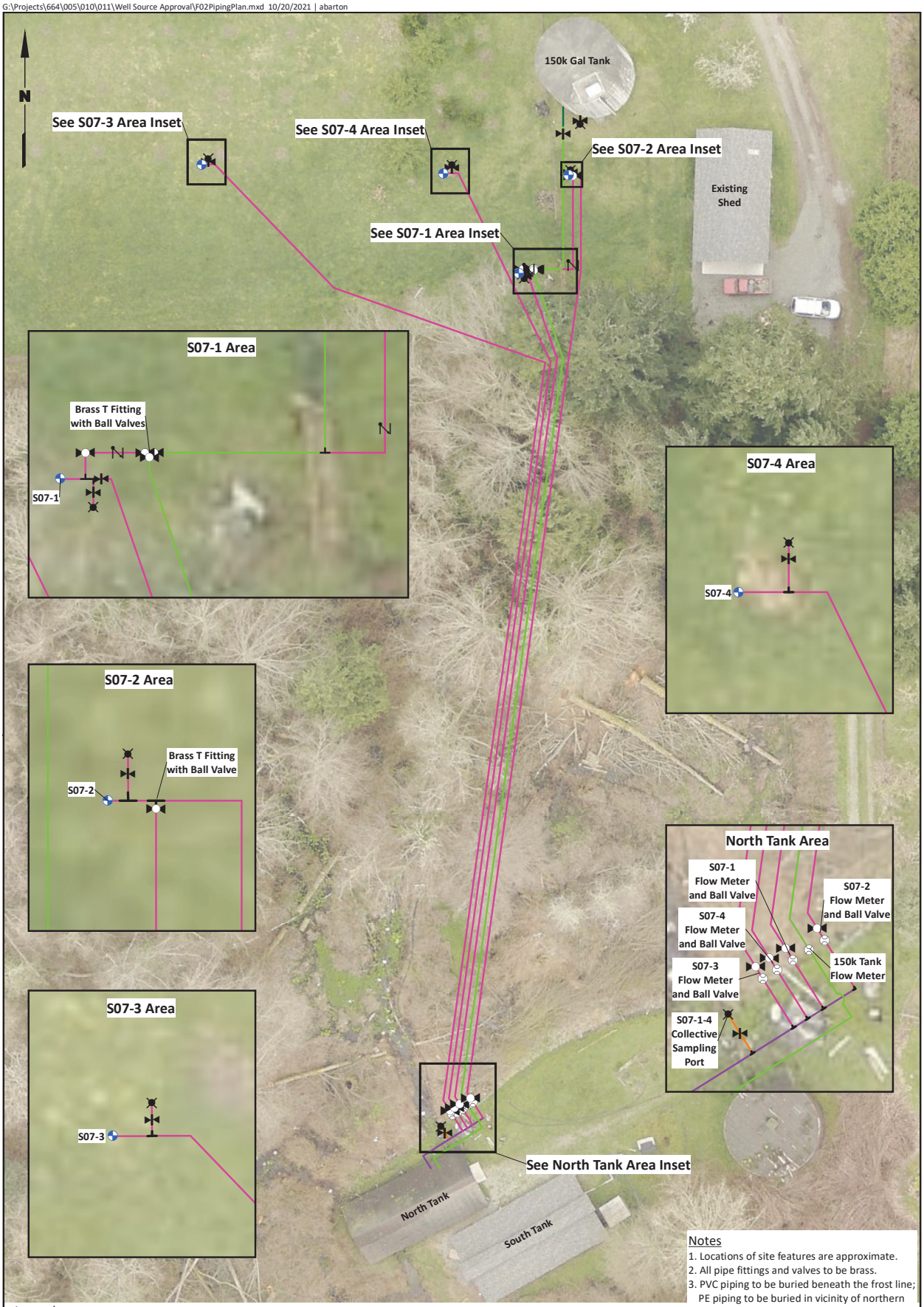
Data Source: Esri 2012

G:\Projects\664\005\010\011\Testing Plan\F01VicMap.mxd 4/1/2020

LANDAU ASSOCIATES

Testing Plan Burton Water Company Vashon, Washington	**Vicinity Map**	Figure 1

G:\Projects\664\005\010\011\Well Source Approval\F02PipingPlan.mxd 10/20/2021 | abarton



Legend

- New Well
- Brass T Fitting
- Ball Valve
- Check Valve
- Gate Valve
- Flow Meter
- Sampling Port
- Port Piping (PE or Similiar)
- 1.25" PE Piping
- 4" PE Piping
- 2" PVC Piping
- 4" PVC Piping

0 30 60

Scale in Feet

Data Source: King County GIS.

Notes

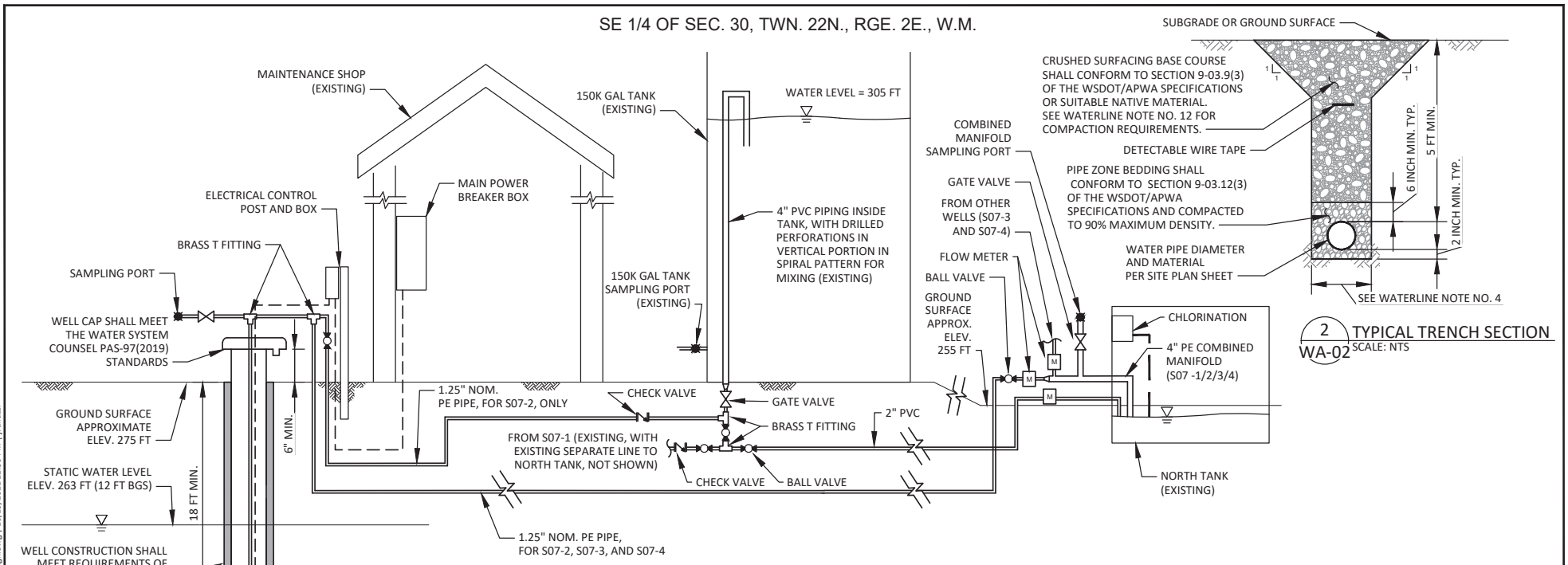
1. Locations of site features are approximate.
2. All pipe fittings and valves to be brass.
3. PVC piping to be buried beneath the frost line; PE piping to be buried in vicinity of northern wellfield to provide mechanical protection and to be on ground surface through the vegetated area to provide access.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

LANDAU ASSOCIATES

Well Source Approval
Burton Water Company
Burton, Washington

Piping Plan Overview

Figure 2



1 WA-02 WELL DETAIL
SCALE: NTS

2 WA-02 TYPICAL TRENCH SECTION
SCALE: NTS

WATERLINE NOTES:

1. TRENCH EXCAVATION SHALL COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS.
2. BEND FITTINGS SHALL BE LONG RADIUS FITTINGS WHEN POSSIBLE.
3. PIPES SHALL BE INSTALLED PER MANUFACTURE'S RECOMMENDATIONS AND INSTALLATION GUIDES. MAXIMUM BEND RADIUS, OFFSET & JOINT ANGLES SHALL BE COMPLIED WITH. FOLLOW MANUFACTURE'S REQUIREMENTS FOR INSTALLATION OF ALL CONNECTIONS.
4. MINIMUM TRENCH WIDTH SHALL BE OUTSIDE OF PIPE DIAMETER PLUS 12 INCHES. MAXIMUM TRENCH WIDTH SHALL BE 40 INCHES FOR 15 INCH DIAMETER PIPE AND SMALLER.
5. PIPE BURIAL SHALL BE 12 INCHES DEEPER THAN THE RECORDED FROST PENETRATION OR AS SPECIFIED ON THE PLANS, WHICHEVER IS GREATER.
6. THE TRENCH BOTTOM SHALL PROVIDE A UNIFORM, STABLE SUPPORT FOR THE PIPE. THE SOIL SURFACE AT THE BOTTOM OF THE TRENCH SHALL BE FREE OF ANY IRREGULARITIES THAT COULD CAUSE POINT LOADS ON THE PIPE. ENCOUNTERED CLAY, SILT, MUCH, AND WOODY DEBRIS SHALL BE REMOVED FROM THE TRENCH AND BACKFILLED WITH CLEAN SAND OR APPROVED FOUNDATION MATERIALS. EXCAVATION IN ROCK REQUIRES A MINIMUM DEPTH OF 8 INCHES OF SAND OR SPECIFIED BACKFILL MATERIAL BELOW THE PIPE.
7. BACKFILL BEDDING MATERIAL SHALL BE SAND OR AS SPECIFIED IN DETAILS.
8. A DETECTABLE WARNING (16 GAUGE SOLID COPPER TRACING WIRE) TAPE SHALL BE PLACED 1 FOOT ABOVE THE PIPE OR AS SPECIFIED IN THE TYPICAL SECTION DETAIL.
9. COMPACT TO AT LEAST 2.5 PIPE DIAMETERS ON BOTH SIDES OF THE PIPE. WHERE TRENCH WIDTHS ARE LESS THAN SIX PIPE DIAMETERS, COMPACT TO FULL TRENCH WIDTH.
10. TRENCH BACKFILL SHALL BE COMPACTED TO NINETY-FIVE PERCENT (95%) OF MODIFIED PROCTOR IN ROADWAY AREAS AND WITHIN RIGHT-OF-WAY AND TO NINETY PERCENT (90%) IN UNIMPROVED AREAS.
11. AVOID CONTACTING THE PIPE WITH COMPACTION EQUIPMENT. DO NOT USE COMPACTION EQUIPMENT DIRECTLY OVER THE PIPE UNTIL SUFFICIENT BACKFILL HAS BEEN PLACED TO PREVENT DAMAGING OR DISTURBING THE PIPE.
12. WHERE DEWATERING IS NECESSARY, WATER SHOULD BE REMOVED UNTIL THE PIPE HAS BEEN INSTALLED AND THE BACKFILL HAS BEEN PLACED TO A SUFFICIENT HEIGHT TO PREVENT FLOATATION OF THE PIPELINE.
13. THE NEW WATER MAIN SHALL BE FLUSHED WITH SUFFICIENT VOLUME AND VELOCITY TO REMOVE DIRT AND ANY OTHER FOREIGN MATERIALS.
14. NEW WATER MAINS/LINES SHALL BE HYDROSTATICALLY PRESSURE TESTED PER AWWA C901-17 FOR PE PIPE AND C605-13 FOR PVC PIPE. DO NOT AIR PRESSURE TEST PVC WATER PIPE. PRESSURE TEST SHALL NOT EXCEED MAXIMUM PRESSURE OF COMPONENTS. WATER MAINS/LINES SHALL BE DISINFECTED PER AWWA C651-05 PRIOR TO CONNECTING TO EXISTING WATER MAINS/LINES.
15. ALL CONDUITS AND JUNCTION BOXES SHALL BE SEALED TO PREVENT CONTAMINATION.
16. UNIFORM PLUMBING CODE REQUIRES THE INSTALLATION OF PRIVATELY OWNED AND OPERATED PRESSURE REDUCING VALVES WHERE THE OPERATING PRESSURE EXCEEDS 80 PSI.
17. ALL UNDERGROUND VALVES TO BE INSTALLED IN ACCESSIBLE HEAVY DUTY GARDEN IRRIGATION VALVE BOXES WITH REMOVABLE LID. INSTALLED PER MANUFACTURER'S INSTRUCTIONS.

LANDAU ASSOCIATES

Well Source Approval Burton Water Company Burton, Washington	**Water System Design**	Figure 3

Landau Associates | G:\Projects\66A\005\010\011\Well Source Approval\03 WaterSystemDesign.dwg | 10/19/2021 12:36 PM | jvalluzzi

ATTACHMENT 1

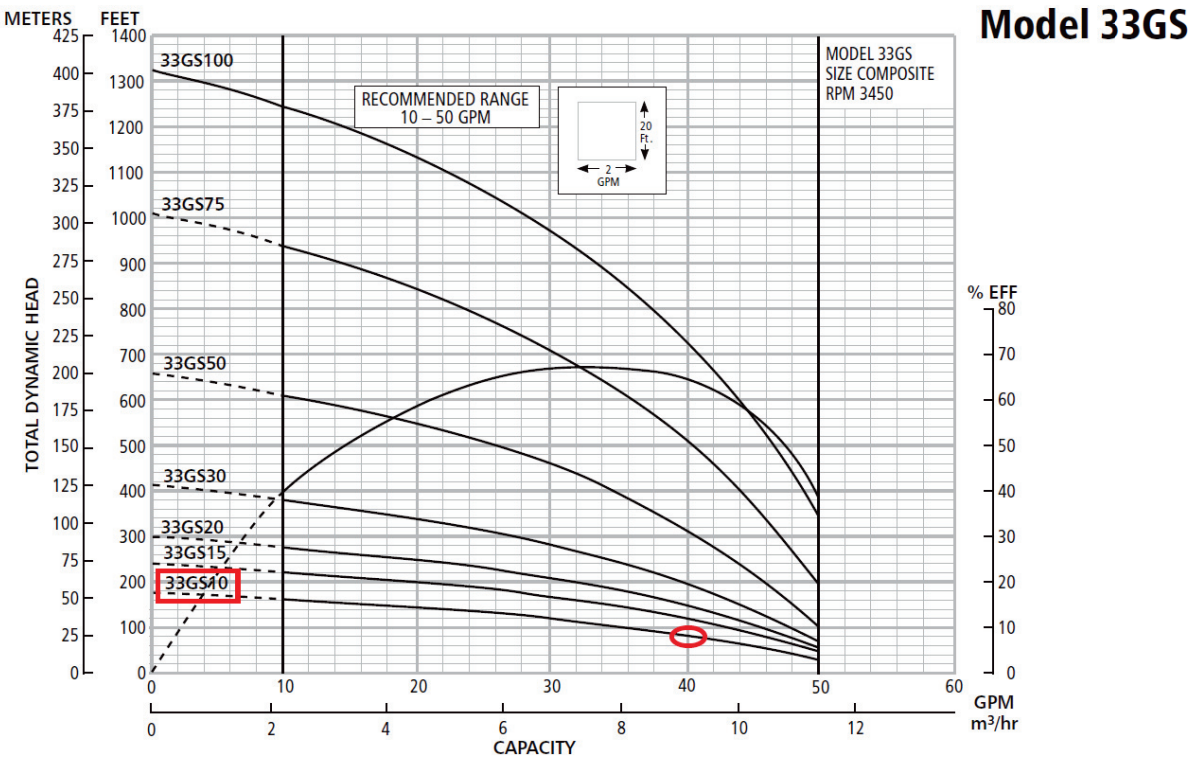
Total Dynamic Head (TDH) Calculations

Burton Water Company Total Dynamic Head (TDH) Calculations

S07-2 to 150k Gallon Tank

$TDH = h_{DTW} + h_{elevation} + h_{friction}$

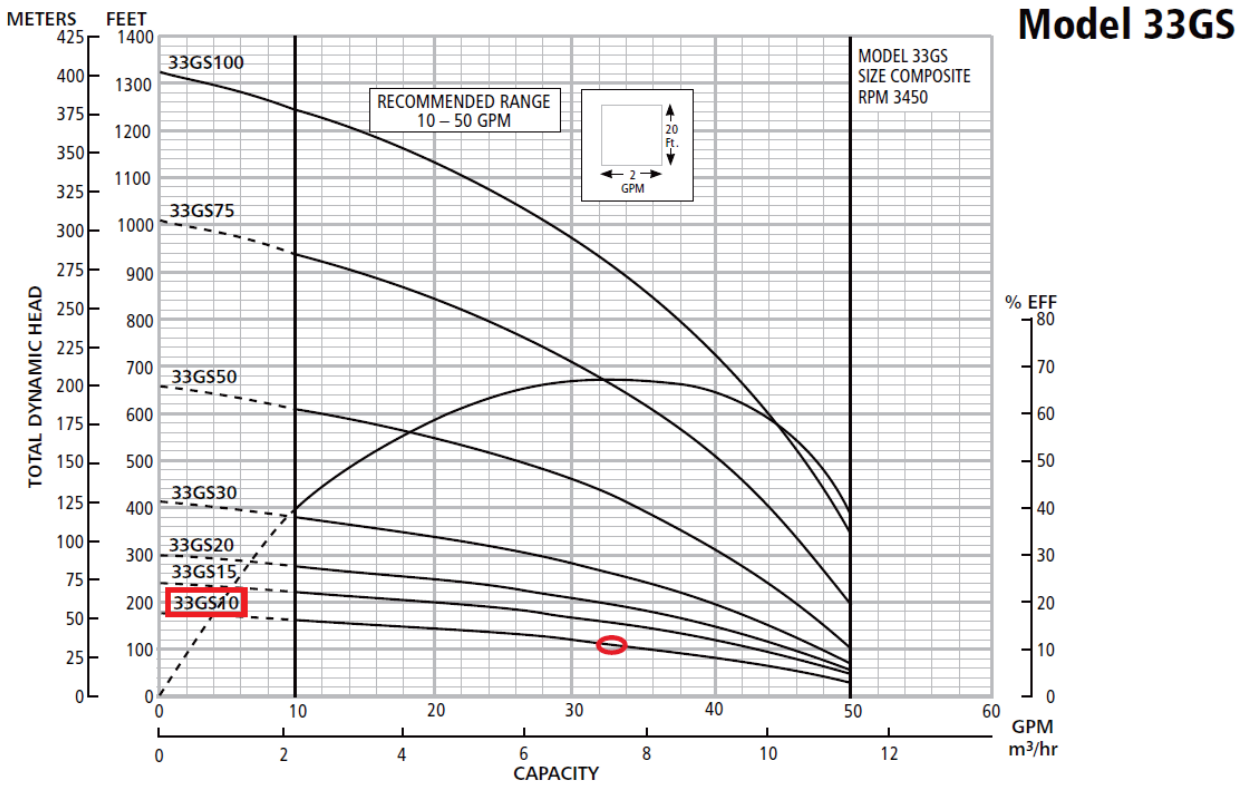
- TDH = 84 ft, assuming:
  - h_{DTW} = depth to water under pumped conditions
    - 20 ft, conservatively assumed
  - $h_{elevation}$ = additional elevation from ground surface to water level in 150k gallon tank
    - 30 ft
  - $h_{friction}$ = friction head (calculated with Hazen-Williams equation) within pipe between well and 150k gallon tank
    - 34 ft, assuming:
      - Pumping rate of 40 gallons per minute
      - 35 ft 2-inch ductile iron discharge column pipe ($h_{friction}$ = 1.6 ft)
      - 38 ft 1.25-inch polyethylene discharge pipe ($h_{friction}$ = 13.2 ft)
      - 1 ball valve ($h_{friction}$ = 13.9 ft)
      - 1 swing check valve ($h_{friction}$ = 3.1 ft)
      - 45 ft 2-inch PVC pipe ($h_{friction}$ = 1.6 ft)
      - 1 gate valve ($h_{friction}$ = 0.1 ft)
      - 40 ft 4-inch PVC pipe ($h_{friction}$ = 0.1 ft)



S07-2; S07-3; S07-4 to North Tank

$TDH = h_{DTW} + h_{elevation} + h_{friction}$

- TDH = 108 ft, assuming:
  - h_{DTW} = depth to water under pumped conditions
    - 20 ft, conservatively assumed
  - $h_{elevation}$ = drop in elevation from ground surface at well to North Tank
    - -20 ft
  - $h_{friction}$ = friction head (calculated with Hazen-Williams equation) within pipe between well and North Tank
    - 108 ft, assuming:
      - Pumping rate of 33 gallons per minute
      - 35 ft 2-inch ductile iron discharge column pipe ($h_{friction}$ = 1.2 ft)
      - 400 ft 1.25-inch polyethylene discharge pipe ($h_{friction}$ = 97.3 ft)
      - 1 ball valve ($h_{friction}$ = 9.5 ft)
      - 10 ft 4-inch PE pipe ($h_{friction}$ = 0.0 ft)



Chapter 10-10: Coliform Monitoring Plan

Coliform Monitoring Plan for: Burton Water Cooperative

A. System Information

Plan Date: November 2024

Water System Name	**County**	**System I.D. Number**
Burton Water Cooperative	King	09800L
Name of Plan Preparer	**Position**	**Daytime Phone**
Northwest Water Systems	Engineer	360-876-0958
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	Excerpt from WSP Table 3-1 below.	

Wellfield	Source Number	Name & Identifier	Year	Size	Depth to Open Interval (ft)	Capacity (gpm)
S06	S01	WELL POINTS 7-11, 13		1.5"	18	30
	S02	EAST WELL (EMERGENCY)		10"	18	0
	S03	NORTH WELL		38"	18	40
	S04	SOUTH WELL, STEEL WELL, WELL POINTS 1-6, 14, 16		38", 8", 1.5"	18	45
	S05	WELLPOINTS 12, 15, 17		1.5"	18	51
S11	S07	WELL S07-1 AKN518	2005	5"	27	15
	S08	WELL S07-2 BLN274	2020	5"	37	25
	S09	WELL S07-3 BLN275	2020	5"	35	20
	S10	WELL S07-4 BLN276	2020	5"	35	25

Storage: List and Describe	Excerpt from WSP Table 3-3 below.

Reservoir Name	Type	Year	Size	Volume (gal)
North Tank	Semi-Buried Concrete Reservoir	1985	20 feet wide, 40 feet long, 6 feet deep	35,000
South Tank	Semi-Buried Concrete Reservoir	1985	20 feet wide, 40 feet long, 6 feet deep	35,000
Upper Tank	Concrete Standpipe Reservoir	2008	26 feet diameter, 40 feet tall	158,000
Lower Tank	Concrete Standpipe Reservoir	1996	30 feet diameter, 20 feet tall	100,000
			Total Volume	**328,000**

Treatment: Source Number & Process	Chlorination – all sources
Pressure Zones: Number and name	Zone 1
Population by Pressure Zone	1,078

Number of Routine Samples Required Monthly by Regulation:	2
Number of Sample Sites Needed to Represent the Distribution System:	2
***Request DOH Approval of Triggered Source Monitoring Plan?**	**Yes** ☐ **No** ☒

B. Laboratory Information

Laboratory Name Edge Analytical Inc.	**Office Phone** 360-715-1212 **After Hours Phone - -**
Address 805 W Orchard Dr #4, Bellingham, WA 98225	**Cell Phone - -** **Email** _____
Hours of Operation Monday – Friday 8:30 AM -5:30 PM	

C. Wholesaling of Groundwater

	Yes	**No**
We are a consecutive system and purchase groundwater from another water system.	☐	☒
We sell groundwater to other public water systems.	☐	☒

D. Routine, Repeat, and Triggered Source Sample Locations*

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**	Groundwater Sources for **Triggered Sample Sites****
1. 10210 SW 227th St "Old School"	**1-1. 10212 SW 227th St**	**WF (S06, S11)**
	1-2. 10214 SW 227th St	
	1-3. 10206 SW 227th St	
2. 8900 SW Harbor Dr "Jensen Point Park"	**9-1. 8900 SW Harbor Dr**	**WF (S06, S11)**
	9-2. 8948 SW Harbor Dr	
	9-3. 8929 SW Harbor Dr	

**** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.**

E. Reduced Triggered Source Monitoring Justification (add sheets as needed):

None

F. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	1,2	**July**	1,2
February	1,2	**August**	1,2
March	1,2	**September**	1,2
April	1,2	**October**	1,2
May	1,2	**November**	1,2
June	1,2	**December**	1,2

G. Level 1 and Level 2 Assessment Contact Information

Name Nick Simmons	**Office Phone** 206-778-9638 **After Hours Phone** 206-778-9638
Address 11611 SW 232nd St, Vashon, WA 98070	**Email** technocrat.nick@gmail.com

H. *E. coli*-Present Sample Response

Distribution System *E. coli* Response Checklist				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We inform staff members about activities within the distribution system that could affect water quality.	☒	☐	☐	☐
We document all water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
We can easily access and review documentation on water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
Our Cross-Connection Control Program is up-to-date.	☐	☐	☐	☒
We test all cross-connection control devices annually as required, with easy access to the proper documentation.	☐	☐	☐	☒
We routinely inspect all treatment facilities for proper operation.	☒	☐	☐	☐
We identified one or more qualified individuals who are able to conduct a Level 2 assessment of our water system.	☒	☐	☐	☐
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 List**
We have discussed the issue of *E. coli*-present sample results with our policy makers.	☐	☐	☒	☐
If we find *E. coli* in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system customers.	☒	☐	☐	☐

(Cont.)

Distribution System *E. coli* Response Checklist				
Potential Public Notice Delivery Methods	**Yes**	**No**	**N/A**	**To Do List**
It is feasible to deliver a notice going door-to-door.	☒	☐	☐	☐
We have a list of all of our customers' addresses.	☒	☐	☐	☐
We have a list of customer telephone numbers or access to a Reverse 9-1-1 system.	☒	☐	☐	☐
We have a list of customer email addresses.	☒	☐	☐	☐
We encourage our customers to remain in contact with us using social media.	☐	☒	☐	☐
We have an active website we can quickly update to include important messages.	☒	☐	☐	☐
Our customers drive by a single location where we could post an advisory and expect everyone to see it.	☒	☐	☐	☐
We need a news release to supplement our public notification process.	☐	☒	☐	☐

Distribution System *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call DOH.
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. Investigation: Identify any sanitary defects that allowed coliform to enter the distribution system or a failure or imminent failure of an existing barrier.
4. Discussion: Evaluate what was identified during the assessment that might have allowed the contamination to occur and the corrective action needed to remedy the problem.
5. Corrective action: Record the steps taken to correct the sanitary defect that may have allowed the contamination to occur.
6. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-5.

E. coli-Present Triggered Source Sample Response Checklist

Background Information	Yes	No	N/A	To Do List
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☒	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☒	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	☐ ☐	☒ ☐	☐ ☒	☐ ☐
We routinely inspect our well site(s).	☒	☐	☐	☐
We have a good raw water sample tap installed at each source.	☒	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☒	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☒	☐	☐	☐
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☐	☐	☒	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☐	☐	☐	☒

E. coli-Present Triggered Source Sample Response Checklist

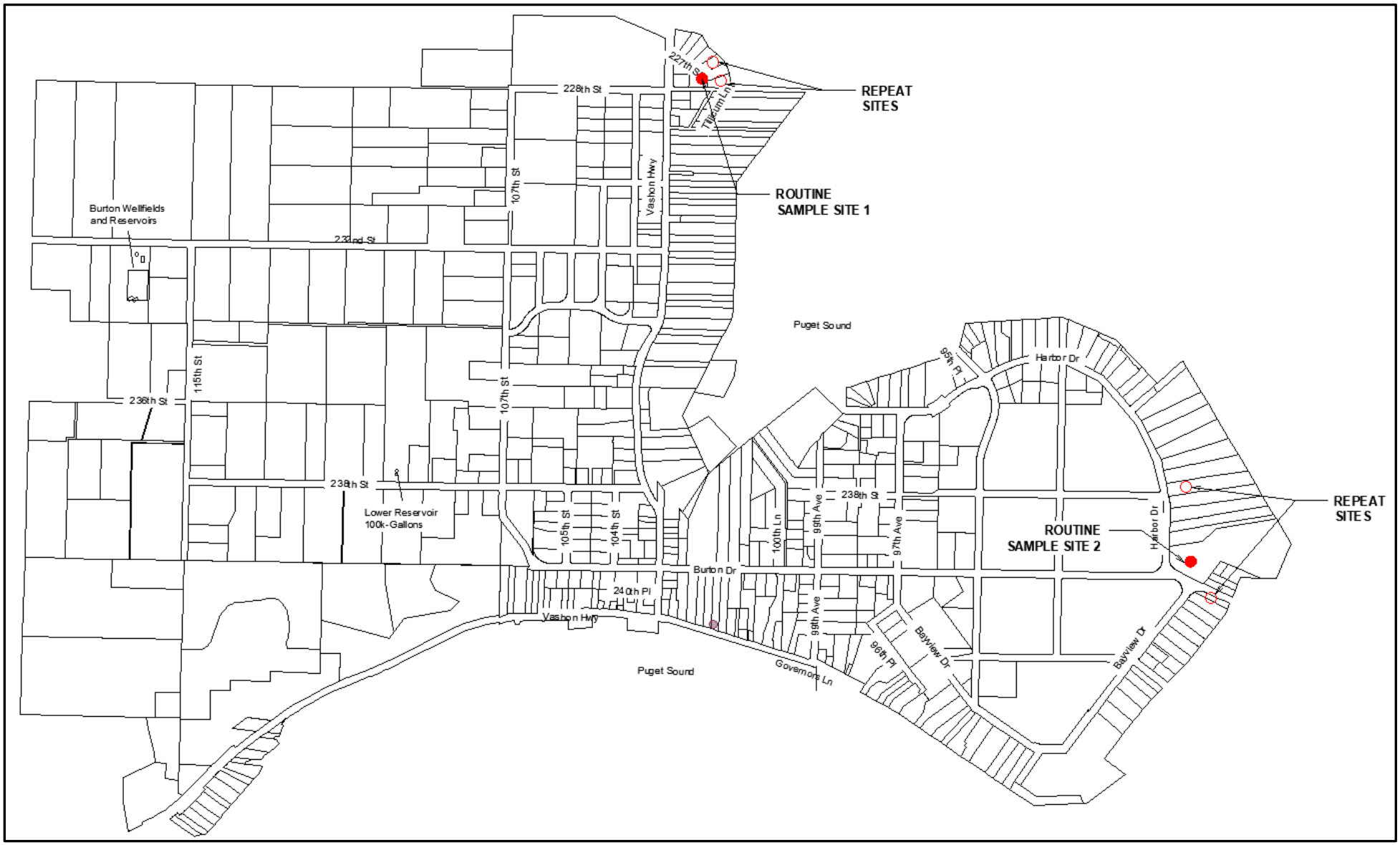
Alternate Sources	Yes	No	N/A	To Do List
We can stop using this source and still provide reliable water service to our customers.	☐	☒	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☒	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☒	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☐	☒	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? __0.7___ mg/L	☒	☐	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☒	☐	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☒	☐	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☒	☐	☐	☐

E. coli-Present Triggered Source Sample Response Plan

If we have *E. coli* in wellfield S06 or S11 water we will immediately:

1. Call DOH and board president.
2. Collect repeat samples per part D. Collect additional investigative samples as necessary.
3. Inspect major water system facilities, including treatment plants for proper operation.
4. Notify customers if repeats are E. coli positive.
5. Interview customers to determine whether anything unusual was happening in the water system
6. service area, especially since the previous month's sample(s).
7. Review new construction activities, water main breaks, and pressure outages that may have occurred during the previous month.
8. Review Cross-Connection Control Program Status.
9. Discuss whether a Health Advisory is warranted based on the findings of steps 3-6.
10. Flush affected portions of the distribution system.
11. Issue boil water alert if repeats are coliform or E. coli. present

I. System Map


REPEAT SITES
ROUTINE SAMPLE SITE 1
ROUTINE SAMPLE SITE 2
REPEAT SITES
Burton Wellfields and Reservoirs
Lower Reservoir 100k-Gallons
227th St
228th St
Tillicum Ln
107th St
Vashon Hwy
232nd St
115th St
236th St
238th St
105th St
104th St
100th Ln
99th Ave
97th Ave
Puget Sound
95th Pl
Harbor Dr
Burton Dr
240th Pl
96th Pl
Bayview Dr
Governors Ln

Chapter 10-11: Cross Connection Control Policy

June XX, 2024

King County
Environmental Health Services Division
Attn: Steven Nastruz, Plumbing Inspection Program
Chinook Building
401 5th Ave Ste 1100
Seattle, WA 98104

Re: Cross-Connection Control Program implementation for the
Burton Water Cooperative Water System, State ID: 09800 L

Dear Steven Nastruz,

Washington State drinking water regulations, WAC 246-290-490, and the Uniform Plumbing Code (as amended for Washington) require coordination between purveyors and the Authority Having Jurisdiction (*fka: Local Administrative Authority*) in all matters concerning cross-connection control.

Accordingly, we are providing your office with notification that the above referenced water system adopted a cross-connection control policy on Month DD, 20YY with a program effective date of Month DD, 20YY.

Please contact us with any questions.

Sincerely,

FirstName LastName

cc: Burton Water Cooperative

CROSS-CONNECTION CONTROL POLICY

Burton Water Cooperative Water System
ID#09800 L

Finding of Fact

Whereas it is the responsibility of a water purveyor to provide water to the customer at the meter that meets Washington state water quality standards;

Whereas it is the water purveyor's responsibility to prevent the contamination of the public water system from the source of supply (i.e., to the customer's connection to the service pipe or meter);

Whereas it is a requirement of the Washington State Department of Health (DOH) for the Purveyor to establish a cross-connection control program satisfactory to DOH;

Whereas cross-connections within the customer's plumbing system may pose a potential source for the contamination of the public water supply system;

Now be it resolved that **Burton Water Cooperative Water System**, hereinafter referred to as the Purveyor, establishes the following cross-connection control policy to protect this purveyor-owned water system from the risk of contamination. For public health and safety, this policy shall apply equally to all new and existing customers.

Definitions

Unless otherwise defined, all terms used in this policy resolution pertaining to cross-connection control shall have the same definitions as those contained in WAC 246-290-010 (Definitions, abbreviations, and acronyms) of the Group A Drinking Water Regulations.

Implementation of the Cross-Connection Control Policy

The Purveyor will implement a cross-connection control program that relies on premises isolation and in-premises protection as defined in WAC 246-290-010.

The Purveyor will ensure the written cross-connection control program is consistent with this policy and complies with the requirements contained in WAC 246-290-490 (Cross-connection control) of the Group A Drinking Water Regulations.

The Purveyor will ensure the most recent editions of the following publications are used as references and technical aids for cross-connection control program development and implementation:

1. *Cross-Connection Control Manual, Accepted Procedures and Practice*, published by the Pacific Northwest Section, American Water Works Association, or latest edition thereof.
2. *Manual of Cross-Connection Control*, published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California, or latest edition thereof.
3. *Cross-Connection Control Guidance Manual for Small Water Systems*, published by the DOH Office of Drinking Water.

The Purveyor will ensure coordination with the authority having jurisdiction (*a.k.a., Local Administrative Authority*) in all matters concerning cross-connection control. Documentation and description of the coordination, including delineation of responsibilities, shall be provided in the

written cross-connection control program.

The Purveyor will incorporate the written cross-connection control program into the Water System Plan required under WAC 246-290-100 or the Small Water System Management Program required under WAC 246-290-105.

The Purveyor retains the authority to make reasonable decisions related to cross-connections in cases and situations not provided for in this policy or the written program.

Prevention of Contamination

The Purveyor will ensure that periodic hazard surveys, conducted in the field and/or through a customer completed hazard survey questionnaire, of the customer's plumbing system(s) and water usage are managed and evaluated by the CCS.

Survey of a customer's premises is for the sole purpose of establishing the minimum requirements for the protection of the public water supply system.

The Purveyor, in conjunction with the CCS's assessment, will ensure that cross-connections between the public water system and a customer's water system or water usage are eliminated or controlled by the appropriate method of backflow protection as follows:

1. The Purveyor will comply with the premises isolation requirements specified in WAC 246-290-490 § (4)(b); and

2 May reduce premises isolation requirements and rely on in-premises protection for premises other than the type addressed in WAC 246-290-490 § (4)(b), only when the following conditions are met:

   (a) The in-premises backflow preventer provides a level of protection commensurate with the assessed degree of hazard;

   (b) Backflow preventers which provide the in-premises backflow protection meet the definition of approved backflow preventers as described in WAC 246-290-010;

   (c) The approved backflow preventers are installed, inspected, tested (if applicable), maintained, and repaired in accordance with WAC 246-290-490 § (6) & (7);

   (d) Records of the backflow preventers are maintained in accordance with WAC 246-290-490 § (3)(j) & (8); and

   (e) The Purveyor, and designated CCS, has reasonable access to the customer's premises to conduct periodic hazard (re)evaluations to determine whether the in-premises protection is adequate to protect the Purveyor's distribution system.

The Purveyor will take, or authorize the CCS to take, appropriate corrective action when:

1. A cross-connection exists that is not controlled commensurate to the degree of hazard assessed; or

2. A customer fails to comply with the Purveyor's requirements regarding the installation, inspection, testing, maintenance or repair of the approved backflow preventer.

The Purveyor's corrective action may include, but is not limited to:

1. Denying or discontinuing water service to a customer's premises until the cross-connection hazard is eliminated or controlled to the satisfaction of the Purveyor;

2. Requiring the customer to install an approved backflow preventer for premises isolation commensurate with the assessed degree of hazard; or
3. The Purveyor installing an approved backflow preventer for premises isolation commensurate with the assessed degree of hazard.

Except in the event of an emergency, the Purveyor or CCS shall notify the authority having jurisdiction prior to denying or discontinuing water service to a customer's premises.

The Purveyor prohibits the intentional return of used water to the Purveyor's distribution system. Used water includes, but is not limited to, water used for heating, cooling, or other purposes within the customer's water system.

The Purveyor's requirements contained within this cross-connection control policy and the written program do not constitute an approval of the customer's plumbing system, compliance of the customer's plumbing system with the Uniform Plumbing Code or an absolute assurance of the absence of cross-connections in the customer's plumbing system.

If any provision in this policy or in the written cross-connection control program is found to be less stringent than or inconsistent with the Group A Drinking Water Regulations (Chapter 246-290 WAC), or other Washington state statutes or rules, the more stringent state statue, rule or regulation shall apply.

_____ _____

Water System Purveyor Date

CROSS-CONNECTION CONTROL PROGRAM

Burton Water Cooperative Water System
ID#09800 L

A. Requirement for Program

Burton Water Cooperative (State ID#09800 L) hereinafter referred to as the "Purveyor", has the responsibility to protect the public water system from contamination due to cross-connections. A cross-connection may be defined 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 requirements are contained in Washington Administrative Code (WAC) 246-290-490 of the Group A Drinking Water Regulations. 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 assemblies;
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 Authority Having Jurisdiction (AHJ), 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 Small Water System Management Program (SWSMP).

B. 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 Purveyor's exposure to legal liability arising from the backflow of any contaminant originating from the customer's plumbing system and then supplied to other customers.

C. Summary of Program Decisions

The following table summarizes the major policy and program decisions adopted for the **Burton Water Cooperative water system**. The items in the table represent CCC Program areas that have

more than one acceptable approach or option.

CCC Program Decision Summary Table for the Burton Water Cooperative

Decision Item	Decision
1. Type of Program [General, WAC 246-290-490(2)(e)]	
a. Premises isolation only	
b. Premises isolation and in-premises protection (combination program)	**X**
2. Extent of Coordination with AHJ [WAC 246-290-490(2)(d)]	
a. Information exchange	**X**
b. Interaction	
c. Joint program	
3. Relationship with Customer [Element 1]	
a. Signed service agreement or contract	**X**
b. Ordinance/resolution; implied service agreement	
4. Enforcement of Corrective Action [Element 1]	
a. Rely upon shut-off of water service	**X**
b. Rely upon purveyor-installed premises isolation	**X**
5. Assessment and Re-assessment of Hazard [Element 2]	
a. By purveyor's staff or equivalent	**X**
b. By contracted cross-connection control specialist (CCS); report reviewed by CCS	
6. Location and Ownership of Premises Isolation Assembly [Element 3]	
a. On purveyor's service line	**X**
b. On customer's service line	**X**
7. CCS Option – Purveyor's Program Management [Element 4]	
a. Purveyor's staff member certified	
b. Inter-agency agreement or use other agency's CCS	
c. Contract with CCS	**X**
8. Testing of Assemblies [Element 5]	
a. By purveyor's staff or purveyor-employed backflow assembly tester (BAT)	
b. By customer-employed/contracted BAT	**X**
9. Cost Recovery [WAC 246-290-100(4)(h) and –105(4)(p)]	
a. Borne by all customers (general water rates)	**X**
b. Assessed to specific class (commercial meters)	
c. Each customer directly bears cost	**X**

D. Required Elements of Program

The **Washington State Department of Health (DOH)** drinking water regulations for Group A public water systems, WAC 246-290, require CCC programs to include certain minimum elements. The elements are listed in WAC 246-290-490(3). This section describes how the water system intends to comply with each of the required program elements. Elements are numbered the same as they appear in the WAC.

Element 1: *Adoption of a written legal instrument authorizing the establishment and implementation of a CCC program.*

Burton Water Cooperative has adopted a cross-connection control policy upon contracting Northwest Water Systems as their management company, which authorizes the Purveyor to implement a CCC program. The policy also authorizes the system to take corrective action when customers do not comply with the CCC program requirements. The primary method for protection of the distribution system will be the installation of a backflow assembly by the customer or Northwest Water Systems will contract with an L&I registered contractor, at the customer's expense.

Legal Instrument Status	***Schedule***
Preparation of proposed legal instrument	*June 2024*
Adoption of legal instrument	*June 2024*
Legal instrument becomes effective	*July 2024*

Element 2: *Development and implementation of procedures and schedules for evaluating new and existing service connections to assess 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 services***, the Purveyor will require that the customer either submit an on-site CCC Hazard Field Survey report completed by a customer employed, DOH-certified CCS; or allow access of the Purveyor employed/contracted DOH-certified CCS to complete an on-site CCC Hazard Field Survey of the possible hazard(s) posed by the proposed plumbing system(s). Cost of the survey to be borne by the customer.
2. For all ***existing services***, the Purveyor will require the customer to submit to the Purveyor, within 30 days of notification, either an on-site CCC Hazard Field Survey report completed by a customer employed, DOH-certified CCS; or submit a customer-completed and signed CCC Hazard Survey Questionnaire.
3. For all existing services, should the customer fail to supply the required information for a hazard assessment, the Purveyor may have the assessment made by a CCS employed by the Purveyor, 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 the following table. The schedule starts from the date the CCC program is established.

Initial Assessment Task	Schedule
Assessment of all new connections	Within 30 days of issue
Identification and assessment of high-hazard premises which are listed on Table 9 of Washington Administrative Code (WAC) 246-290-490	Within 6 months
Identification and assessment of hazardous premises supplemental to Table 9 of WAC 246-290-490	Within 9 months
Identification of residential connections with special plumbing facilities and/or water use on the premises	Within 12 months

Cross-Connection Hazard Survey Schedule for Subsequent Hazard Re-Assessments

For subsequent cross-connection hazard surveys, procedures for evaluating the backflow prevention requirements are:

1. For **Single Family/Duplex Residential & Non-residential Recreational** ***(private campsites/RV sites)*** **Connections**, the Purveyor will require the customer to submit to the Purveyor, within 30 days of purveyor notification, a completed "CCC Hazard Survey form". 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. The frequency of hazard re-assessments will be every 3 years.
2. For all **Other Non-residential Connections** ***(commercial, business, schools, daycares, churches, institutional, agricultural, medical, industrial, food service/processing, etc.)***, the Purveyor will require the customer to submit to the Purveyor, within 30 days of purveyor notification, an on-site CCC Hazard Field Survey conducted by a customer employed DOH-certified CCS. The frequency of the hazard re-assessments will be every 2 years.

With an accumulation of data and an aggressive customer education program the time interval for re-surveys may be lengthened or shortened as deemed necessary and acceptable to the Purveyor, CCS, and DOH.

The Purveyor will inform the customer that the Purveyor's survey of a customer's premises (whether by a representative of the Purveyor or through the evaluation of a questionnaire completed by the customer) is for the sole purpose of establishing the Purveyor's minimum requirements for the protection of the public water supply system, and that the required backflow protection will be commensurate with the Purveyor's assessment of the degree of hazard.

The Purveyor will also inform the customer or any regulatory agencies that the Purveyor'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 purveyor'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: *Development and implementation of procedures and schedules for elimination and/or control of cross-connections.*

Backflow Assembly Requirements

The following service policy shall apply to all new and existing customers:

1. The Purveyor will require that water service to all **non-residential customers** (except non-residential recreational connections) be isolated at the meter, or connection point, by a DOH-approved DCVA or RPBA, commensurate with assessed degree of hazard and acceptable to the Purveyor. All high-hazard connections of the type described in Table 13 of WAC 246-290-490 shall be isolated with an RPBA, RPDA, or Air Gap, commensurate with assessed degree of hazard in accordance with current regulation requirements.
2. The Purveyor will require all **residential and non-residential, commercial and recreational customers** with facilities of the type described in Table 13 of WAC 246-290-490 to be isolated with an RPBA, RPDA, or Air Gap, commensurate with assessed degree of hazard in accordance with current regulation requirements. All other residential customers with special plumbing or water use on the premises will be protected with a DCVA or RPBA, commensurate with assessed degree of hazard installed for either premise or fixture isolation. "Special plumbing" includes, but is not limited to, the following:
   a. A lawn irrigation system;
   b. A solar heating system;
   c. An auxiliary source of supply, e.g., a well or creek;
   d. Piping for livestock watering, hobby farming, etc.;
   e. Residential fire sprinkler system, other than flow through; and
   f. Property containing a small boat moorage.
3. For all customers that have a written service contract with the Purveyor, any required backflow preventer shall be:
   - Purchased and installed by the customer (at the customer's expense) downstream of the meter or connection point in accordance with the Purveyor's standards described hereinafter; and
   - Maintained, tested, and inspected in accordance with the Purveyor's standards described hereinafter.

   For new customers, the Purveyor will not turn on water (except for testing purposes) at the connection until the customer complies with the above requirements.

   The failure of the customer to comply with the Purveyor's installation and maintenance requirements shall constitute a breach of contract by the customer. The Purveyor may then proceed with corrective action provisions stipulated in the contract.

4. Customers without written contracts are considered to have an implied contract that requires the customer to bear all reasonable costs of service. The Purveyor will install the required DCVA or RPBA on the service, upstream of the meter or elsewhere within the utility held easement, and charge the customer for the cost of the initial installation and testing, and all future maintenance, testing, and repair, as set forth in the Purveyor's schedule of rates and charges. The failure of the customer to pay these costs shall

constitute a breach of contract by the customer, and the Purveyor will proceed with the established delinquency of payment procedures. As an alternative, the customer may sign a service contract and install the required backflow preventer downstream of the meter in accordance with the Purveyor's installation standards described hereinafter.

5. All backflow prevention assemblies relied upon by the Purveyor to protect the public water system shall meet the definition of "approved backflow prevention assembly" as contained in WAC 246-290-010. The Purveyor's CCS will obtain and maintain a current list of backflow prevention assemblies approved for installation in Washington State from the DOH Office of Drinking Water.

   All backflow assemblies will be installed:

   - In the orientation for which they are approved;
   - In a manner and location that facilitates their proper operation, maintenance, and testing or inspection;
   - In a manner that will protect them from weather-related conditions such as flooding and freezing; and
   - In 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.

   The Purveyor 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 Purveyor 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 Purveyor's distribution system.

   Except for easements containing the Purveyor's distribution system, the Purveyor will not undertake work on the customer's premises unless the customer has provided written request and signed authorization.

6. The following table shows the schedule that the Purveyor will follow for installation of backflow assemblies when they are required (based on the hazard evaluation).

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 30 days after notification
Existing connections with other than Table 9 of WAC 246-290-490 or high cross-connection hazards	Within 90 days after notification
Existing fire protection systems using chemicals or supplied by unapproved auxiliary water source	Within 30 days after notification
Existing fire protection systems not using chemicals and supplied by purveyor's water	Within 90 days after notification

Element 4: *Provision of qualified personnel, including at least one person certified as a CCS, to develop and implement the CCC program.*

1. **Program Administration:** The responsibility for administration of the CCC Program rests with the Purveyor. General policy direction and risk management decisions are established by **the Purveyor's DOH-certified CCS**.
2. The Purveyor will employ, or otherwise have on staff, at least one DOH-certified CCS to develop and implement the CCC program. As an alternative, or when no staff or employees are properly qualified, the Purveyor may retain a DOH-certified CCS on contract to provide the necessary expertise and services.
3. The following cross-connection related tasks will be performed by or under the direction of the Purveyor's certified CCS (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 assembly to be installed;
   - Inspections of backflow assemblies for proper application and installation;
   - Reviews of backflow assembly inspection and test reports;
   - Recommendations and/or the granting of exceptions to mandatory premises isolation;
   - Participation in or cooperation with other water utility staff in the investigation of backflow incidents and other water quality problems;
   - Completion of Backflow Incident Reports; and
   - Completion of CCC Activity and Program Summary Reports.

   The following table identifies the current CCS employed or retained on contract by the Purveyor to manage the Purveyor's CCC program and/or act as the CCC technical resource for the Purveyor:

Name of CCS	
Address	
City, State, Zip	
Telephone Number	
CCS Certification Number	

Name of CCS	
Address	
City, State, Zip	
Telephone Number	
CCS Certification Number	

Element 5: *Development and implementation of procedures to ensure that approved backflow prevention assemblies are inspected and/or tested (as applicable).*

1. Inspection and Testing of Backflow Assemblies

All backflow prevention assemblies that the Purveyor relies upon for protection of the water system will be subject to inspection and, if applicable, testing. Inspection and testing of backflow prevention assemblies will be as follows:

- The Purveyor's DOH-certified CCS will inspect backflow prevention assemblies for proper application (i.e., to ensure that backflow prevention assemblies installed are commensurate with the assessed degree of hazard).
- Either a DOH-certified CCS or backflow assembly tester (BAT) will perform inspections of backflow prevention assemblies for correct installation.
- A DOH-certified backflow assembly tester (BAT) will test all backflow prevention assemblies the Purveyor relies upon to protect the public water system.

2. Frequency of Inspection and Testing

Inspection and testing of backflow prevention assemblies will be conducted:

- At the time of installation;
- Annually after installation;
- After a backflow incident; and
- After repair, reinstallation, relocation, or re-plumbing.

The Purveyor may require a backflow prevention assembly 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.

3. Responsibility for Inspection and Testing

The Purveyor will be responsible for inspection and testing of all purveyor-owned backflow prevention assemblies.

The Purveyor will require the customer to be responsible for inspection and testing of backflow prevention assemblies owned by the customer. The customer shall employ, at customer expense, a DOH-certified BAT to conduct the inspections and tests within the time period specified in the testing notice sent by the Purveyor. The test report shall be completed and signed by the BAT and returned to the Purveyor's CCS, by the due date specified by the Purveyor. The customer may request an extension of the due date for returning a test report by submitting a written request to the Purveyor.

4. Approved Test Procedures

The Purveyor will require that all backflow prevention 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). Any proposal to use alternate test procedures must be approved by the Purveyor's CCS.

5. Notification of Inspection and/or Testing

The Purveyor will notify in writing all customers who own backflow prevention assemblies that are relied upon to protect the public water system to have their backflow prevention

assembly (ies) 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 by which the inspection/test report must be received by the Purveyor.

6. Enforcement

When a customer fails to send in the inspection/test report within 45 days after the notification date, and the Purveyor has not approved an extension to the due date, the Purveyor will take the following action:

- The Purveyor will send a second notice 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 the request will result in Enforcement &/or Corrective actions as provided by the CCC Policy and/or Service Agreements.
- The Purveyor will send copies of the second notice to the owner and occupants of the premises (if different).
- If the owner and/or occupants have not responded satisfactorily to the Purveyor within 15 days of the due date specified in the second notice, the Purveyor will implement the Enforcement &/or Corrective actions as provided by the CCC Policy and/or Service Agreements.

Element 6: *Development and implementation of a backflow prevention assembly testing quality assurance/quality control program.*

The Purveyor will maintain a list of local, DOH-certified BATs that are pre-approved by the Purveyor to perform the following activities:

- *Backflow assembly inspection for proper installation; and*
- *Backflow assembly testing.*

The list will be compiled of individual testers who have requested to work in the system's area, who have previously submitted properly completed test reports, or are listed on the DOH list of certified testers.

Quality Assurance

The Purveyor's CCS will review within 30 days of receipt the backflow assembly inspection/test report forms submitted by the customer.

The Purveyor's CCS will provide follow-up on test reports that are deficient in any way.

The Purveyor'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: *Development and implementation (when appropriate) of procedures for responding to backflow incidents.*

1. Backflow Incident Response Plan

The Purveyor's CCS will participate in developing a backflow incident response plan that will be part of the water system's emergency response program as required by WAC 246-290-415(2). The incident response plan will include, but will not be limited to:

- Notification of affected population;
- Notification and coordination with other agencies, such as DOH, the AHJ, and other local health jurisdictions;
- 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
- Apply corrective action to prevent future backflow occurrences.

2. Technical Resources

The Purveyor 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 the **Burton Water Cooperative water system**.

Element 8: *Development and implementation of a cross-connection control public education program.*

1. Customer Education

The Purveyor will distribute at regular intervals (at least annually), public education materials to system customers. For residential customers, such materials will describe the cross-connection hazards in homes and the recommended backflow prevention 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 Purveyor's staff will produce the public education materials or the Purveyor will obtain brochures from national backflow associations, such as PNWS-AWWA, Spokane Regional Cross-Connection Control Committee (SRC4), Western Washington Cross-Connection Prevention Professionals Group (The Group), USC FCCCHR, the American Backflow Prevention Association (ABPA), and/or Other water utilities.

The information distributed by the Purveyor 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 assemblies; and
- Thermal expansion in hot water systems when backflow assemblies are installed for premises isolation.

Element 9: *Development and maintenance of cross-connection control records.*

1. Types of Records and Data to be Maintained

The Purveyor 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 prevention assembly to protect the public water system.

- Backflow prevention assembly inventory and information including:
  - Air gap (AG) location, installation and inspection dates, inspection results and person conducting inspection;
  - Backflow prevention assembly location, assembly description (type, manufacturer, make, model, size, and serial number), installation, inspection and test dates, test results and data, and person performing test; and
  - Information on atmospheric vacuum breakers (AVB) used in limited situations for lawn irrigation system applications, including manufacturer, make, model, size, dates of installation and inspections, and person performing inspections.

The Purveyor will maintain records on all backflow prevention assemblies that protect the public water system from contamination. At a minimum, the Purveyor will maintain records on all premises isolation backflow prevention assemblies required to protect the public water system.

2. Reports to be Prepared and Submitted to DOH

The Purveyor or CCS will prepare the following reports required by WAC 246-290-490 including:

- 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 the AHJ; and
- Documentation when exceptions to mandatory premises isolation are granted.

At a minimum, the Purveyor's CCS will prepare and sign the Exceptions reports.

Element 10: *Additional cross-connection control requirements for reclaimed water.*

At this time the **Burton Water Cooperative** does not receive or distribute reclaimed water. In the event that reclaimed water use is proposed within the PWS's service area, the Purveyor 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.

E. Other Provisions

Coordination With the Authority Having Jurisdiction: Both WAC 246-290-490 and the Uniform Plumbing Code (as amended for Washington) require coordination between purveyors and the Authority Having Jurisdiction in all matters concerning cross-connection control.

a. Identification of the Authority Having Jurisdiction (AHJ) - the AHJ that enforces the plumbing code for the premises served by the Purveyor is **King County Health Department, Plumbing Inspection Program, Attn: Steven Nastruz, 401 Fifth Avenue, Suite 1100, Seattle, WA 98104, (206) 263-8493**.

b. Coordination with the Authority Having Jurisdiction - A letter indicating that this cross-

connection control program has been implemented has been provided on June XX, 2024.

c. Description of Coordination with the AHJ - The Purveyor coordinates with the AHJ as follows: **Coordination consists of information sharing only**. However, the Purveyor requests the opportunity to review any plumbing plans for new or existing connections to the water system when permits are applied for. The Purveyor further agrees to inform the AHJ whenever a backflow incident or a shut-off occurs.

d. Delineation of Responsibilities - The Purveyor and the AHJ are responsible for the following CCC activities in the **Burton Water Cooperative water system**. AHJ reviews new construction drawings; the Purveyor is responsible for all other Cross-Connection Control evaluations, tests, inspections, and record keeping.

e. Notification of the Authority Having Jurisdiction - The Purveyor will inform the AHJ when there is a:

- Change in plumbing that requires a plumbing permit;
- Change in the use of any part of the premises that alters the cross-connection hazard level; or
- Backflow incident.

F. Relationship to Other Planning and Operations Program Requirements

The Purveyor 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:

- And promoting adequate communication between CCC program personnel and other water utility staff;
- That adequate training is provided to all staff to recognize potential cross-connection control problems;
- That cross-connection issues be considered in water quality investigations;
- That the design of the water distribution system makes adequate provisions for expected head losses incurred through the installation of experienced by backflow assemblies;
- That 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;
- That operations under normal and abnormal conditions do not result in excessive pressure losses; and
- That adequate financial and administrative resources are available to carry out the CCC program.

_____ _____

Water System Purveyor Date

Backflow Incidence Response Plan
Burton Water Cooperative Water System
ID #09800 L

A. General

This Backflow Incident Response Plan should be considered a supplement to the water system's Emergency Plan.

Purveyors 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 back siphonage 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.

Purveyors can get more detailed guidance on how to respond to a backflow incident from the manual, *Backflow Incident Investigation Procedures*, published by the Pacific Northwest Section, American Water Works Association (PNWS-AWWA).

B. Short List of Tasks

Small water system purveyors can use the following short list of tasks as initial guidance for dealing with backflow incidents. Purveyors should 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 water system 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 consider 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. Note: a check of water meters may 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.
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.

C. 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 Purveyor 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.**

Purveyors should contact the appropriate DOH regional office to discuss proposed approaches to contaminant removal and disinfection prior to taking corrective action.

Water System Purveyor	Date

Chapter 10-12: Cooperative Documents, Bylaws, Articles of Incorporation, Rules and Regulations, Agreements

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Consumer Confidence Report for 2023

Purpose

The Safe Drinking Water Act of 1996 requires that all water systems provide their customers with an annual report on the quality of their drinking water. Its purpose is to assure customers that all federal and state requirements for water quality are met, and that their water is safe to drink.

Management

The Burton Water Company is owned and operated by James Garrison and Evan Simmons. Please contact Jim or Evan at the above numbers for questions or Nick for emergencies.

Source of Water

The Burton Water aquifer is 125 acres of fine sand bounded by a clay layer above and glacial till below. Our well field is located at 11611 SW 232nd. It consists of (2) 3.5 foot diameter concrete tile wells, (1) 12 inch diameter steel well, (17) 1 ½ inch pipe wells (well points), and (4) drilled and steel cased wells, all varying in depth between 18 and 40 feet.

Source water assessment

We routinely have our water tested at Edge Analytical in Bellingham for coliform bacteria. We submit two samples from various locations monthly. Coliform bacteria is an indicator of microorganisms (bacteria, viruses and other small organisms) that should not be present.

Contaminants (This section provided by the Washington State Department of Health)

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 Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791). The sources of drinking water (both tap water 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 naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity:
Microbial contaminants, such as viruses and bacteria, that 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, urban storm water runoff, and residential uses; organic industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems; and radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised people, such as people with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly people, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (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).

Definitions (This section provided by the Washington State Department of Health)

Maximum Contaminant Level or MCL: 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.
Maximum Contaminant Level Goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.
Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to

control microbial contaminants. (The MRDL set by DOH is 4.0 mg/L. The chlorine level in water we distribute to customers meets the DOH CT-6 standard, which results in a chlorine level at most customer taps of .4-.6 mg/L, roughly one tenth of the maximum allowed.)

Additional Information for Lead

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. Burton Water Company is responsible for providing high quality drinking water, but cannot control the variety of materials used in household 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 for lead in your water, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead. The copper and lead content of our water source is very low, in the last test lead was not detected and copper was 0.033 mg/L.

Water Quality Test Results

Lead and Copper: We are required to sample 10 homes for lead and copper every three years. The results of these tests have all met current Health Department standards. The next tests are scheduled for July 2024.

Bacteria: We sample monthly for coliform bacteria, an indicator for potential disease-causing bacteria in water. In and of itself it is generally not a cause of disease. All samples taken in 2023 were negative for coliform.

Other testing: We routinely sample for many other potential contaminants, as required by the Department of Health. The results of these tests have all been satisfactory and are available to our customers upon request or on our website burtonwater.com.

Nitrates: As most of you know, Misty Isle Farms owns the property directly north of our well field, and farming activities there, starting in the 90's, resulted in an increase in nitrate levels in our water. In recent years, the intensity of farming activity in our watershed has decreased. This appears to be a trend, and, as nitrates present due to plowing, fertilizing and manure are washed out of the system (and not replaced), we see a gradual lessening of this contaminant in our water. Burton Water Company monitors annually for nitrates and we are happy to say that our latest result (Apr 2024) was 1.04 mg/L, down from 2.0 mg/L in 2018. We are very encouraged by this result and feel this makes a strong case against farming in our watershed in order to protect water quality. The MCL for nitrates in drinking water is 10 mg/L.

Recycled Asphalt Product: During the summer of 2018, approximately two miles of gravel road in the Burton watershed were illegally resurfaced with asphalt millings removed from Vashon's main highway. We undertook legal action and were successful in having this potential contaminant removed from the watershed. Even though the material only sat for a short time, we have monitored for contaminants from this material for the last four years. We have seen no increase in harmful VOCs, IOCs, and PAHs, and ended our monitoring program this year.

More test data: Most of our tests are now available on our website at https://burtonwater.com/tests.html . Water quality tests are viewable as PDFs.

Privacy Policy

We will under no circumstances, release, give away or sell any information about our customers. Your contact information will only be used for Company purposes.

Please Note

As population rises in our region, there is growing pressure to provide housing on Vashon and we have received increasing numbers of calls regarding water availability for accessory dwelling units.
An accessory dwelling unit requires a separate water service.
Burton Water does not allow two dwelling units to be served with a single water connection. Burton Water Company's water right is fully allocated, and we cannot provide new services. Please help us avoid unnecessary enforcement actions by respecting this policy. If you have any questions please call Evan or Jim.

Billing

Please send payments to: PO Box 1938, Vashon, WA 98070. As always, you may still drop cash or check payments off at the Burton Store.
Online payment is available at https://burtonwater.com/payments.html - we accept credit and debit cards.
If you would like to receive your bill by email, please send your account number and preferred email contact to info@burtonwater.com If you have questions about your account number or your bill, please contact the office at (206)463-0005.

Potential Sale

The owners of Burton Water are currently in negotiation with the interim board of directors of the Burton Water Cooperative regarding sale of the company to the customers. Please direct inquiries to info@burtonwater.org or visit the co-op website at https://burtonwater.org (note the .ORG) for more info.

BURTON WATER COOPERATIVE

RESOLUTION

ADOPTED SEPTEMBER 4, 2024

The Board, pursuant to the Member decision ballot, hereby adopts the Bylaws approved by the Membership to become effective on the Effective Date as defined in Article II, Section 1 of the Bylaws (the date of transfer of ownership of the Burton water system assets from Burton Water Company, Inc. to the Cooperative).

ATTESTED.

Norm Seethoff, Secretary

BYLAWS

of

Burton Water Cooperative

ARTICLE I

General Purposes

The Burton Water Cooperative ("Cooperative") is organized for the purpose of acquiring the assets of Burton Water Company, Inc. and operating a community-owned water utility for its previous customers and potentially other property owners in the Burton community on Vashon Island, King County, WA. The purposes for which this Cooperative is formed and the powers which it may exercise are set forth in the Articles of Incorporation of the Cooperative and its Bylaws.

ARTICLE II

Membership

Section 1. Definitions

Board of Directors or **Board** means the initial board of directors of the Cooperative and subsequent boards constituted in accordance with these Bylaws or Ch. 24.06 RCW.

Director means a member of the Board of Directors.

Member shall mean any person or entity that has satisfied the Membership eligibility requirements set forth in Section 2 below and has been issued a Membership in the Cooperative.

Member in Good Standing shall mean a Member that (a) has not been determined by the Board to be in violation of the provisions of these Bylaws or the Rules and Regulations and policies of the Cooperative; or (b) is not more than ninety (90) days late in the payment of any monies due to the Cooperative.

Membership shall mean a membership in the Cooperative as defined in these Bylaws.

Connection shall mean any of the following: (a) a metered connection to a Parcel that receives water service from the Cooperative's water system, (b) a stub line from a Cooperative water main that has been installed and is adjacent to a Parcel that is eligible for meter installation and water service, and (c) a commitment (commonly known as a "Will-Serve Commitment"), recognized in writing by the Board as valid and applicable to the Cooperative, issued by the Burton Water Company, Inc. or the Cooperative to provide water service to a specifically identified Parcel.

Effective Date shall mean the date of transfer of ownership of the Burton water system assets

from Burton Water Company, Inc. to the Cooperative.

Parcel shall refer to one legally recognized parcel of land described in the real estate records maintained by King County that is located within the Water Service Area.

Water Service Area shall mean the area delineated in the Burton Water Company, Inc. water system plan for retail water service as approved by the Washington State Department of Health as may be adjusted from time to time by the Cooperative.

Section 2. Memberships and Connections: Eligibility, Requirements, and Rights

A. Eligibility

A legal person who is at least 18 years of age, including without limitation an individual, a partnership, association, corporation, trust, or other legal entity, including governmental entities and political subdivisions thereof, or any group including any combination of any of the foregoing, that is a recorded owner of a fee or undivided fee interest in a Parcel having a Connection, including a Will-Serve Commitment, to the Burton Water Company, Inc. water system as of the Effective Date shall automatically be eligible for Membership.

B. Membership Required

Each owner of a Parcel having a Connection must have a Membership in order to receive water service from the Cooperative. Each such owner must make an application for Membership on a form prescribed by the Cooperative. If an owner fails or refuses to do so, the receipt or availability of water service through a Connection shall nevertheless constitute acknowledgement and agreement by the owner to be a Member subject to the terms and provisions of the Cooperative's Articles of Incorporation, Bylaws, Rules and Regulations, and any amendments thereto.

C. Multiple Parcels or Owners

If an owner owns multiple Parcels or multiple Connections, only one Membership shall nevertheless be issued to the owner. Only one Membership may be issued to joint owners of a Parcel(s).

D. Limitations of a Single Connection

Each Connection shall only entitle one Parcel to receive water service from the Cooperative for one single family residence or equivalent unless the Board has expressly authorized otherwise in writing, whether by specific written permission or by rule. Only Members may have a Connection. Rights and limitations associated with each Connection shall be established by Board-adopted Rules and Regulations.

E. Eligibility for New Connections

Other owners of Parcels that are in the Cooperative's Water Service Area and otherwise eligible to become a Member in accordance with these Bylaws and the Cooperative's Rules and Regulations, may, if the Cooperative has sufficient water system capacity as determined by the Board, obtain a Connection and become a Member upon Board approval of such applications and agreements as the Board may require. The Board may adopt rules for allocating water system capacity to applicants for Connections including establishment of a waitlist, lottery or other rule or procedure.

F. Governing Documents

All Members, whether existing or new, are required to abide by the Cooperative's Articles of Incorporation, Bylaws and Rules and Regulations and pay fees and charges as may be imposed by the Board.

G. Fees Applied Per Connection

Regardless of the number of Connections a Member may have, fees, assessments, services and base rates may be applied to each Connection.

H. Approval of Membership and Nondiscrimination

The Cooperative shall issue a Membership to eligible persons or entities having a Connection and to subsequently approved applicants for Membership upon approval by the Board and payment of all applicable fees. Memberships shall not be denied because of the applicant's race, color, creed, sex, age, marital status, sexual orientation, disability, or national origin.

Section 3. Voting Rights Per Membership

Each Membership shall entitle its owner(s) to only one vote regardless of the number of owners or Parcels or Connections. The vote attributable to a membership having multiple owners shall be exercised by one such owner as the owners of the Membership shall designate. Multiple votes received with respect to one Membership shall be treated as one vote unless they conflict in which case all such votes shall be invalid.

Section 4. Transferability

A. Sale of Property

When a Member transfers ownership of a Parcel for which a Connection has issued to another party by sale or other disposition, the Connection shall transfer to the successor in interest if all eligibility requirements as established by the Board are met including payment of fees therefore, and all outstanding charges and assessments incurred by the transferring Member have been paid in full. If the transferee of a Connection is not a Member, the transferee must apply for and become a Member prior to receiving water service. If the transferor of a Connection owns no other Parcels that have Connections, then the transferor's Membership shall extinguish upon the transfer of ownership of a Parcel.

B. Transfer of Right to Receive Service to Another Parcel Owned by Same Member

A Member may transfer a Connection associated with a Parcel to another Parcel owned by the same Member subject to approval by the Board.

Section 5. Membership, Connection and Will-Serve Commitment Termination

A. Termination with Cause.

A Membership or Connection may be terminated for cause as reasonably determined by the Board for failure to remedy, after at least two (2) written warnings, a violation described below. The subject Member shall be issued not less than twenty (20) days written notice of a

hearing to be held before the Board at which time the Member may appear and present a defense. The causes for which a Membership or Connection may be terminated are:

1. Violations of Bylaws, Rules and Regulations; Unauthorized Use, Damage, or Neglect

   Failure to comply with the provisions of the Bylaws and/or Board adopted Rules and Regulations; or a Member that causes damage to the Cooperative's property by the Member's action or neglect.

2. Nonpayment

   Failure to pay any fees for Membership, services or assessments levied by the Cooperative, including amounts for betterments, maintenance, or charges related to damage inflicted on the Cooperative's property by action or neglect.

   Notwithstanding the Cooperative's termination rights, the Cooperative reserves the right to pursue all legal remedies to recover outstanding amounts due.

   Notwithstanding the foregoing, the Board may adopt rules to terminate Memberships and Connections that have not been put to use within a reasonable period of time.

B. Voluntary Termination

   Any Member may terminate their Membership or Connection voluntarily upon written notification to the Cooperative.

C. Effect of Termination

1. Termination of Rights and Privileges

   In the event of termination of a Membership or Connection, all rights and privileges thereof, including the right to receive or obtain water service to a Parcel, shall extinguish. Except as provided in this subsection, no refunds of charges previously paid to the Cooperative shall be due as a result of Membership or Connection termination.

   The Cooperative shall return to the Member the initial per Connection fee previously paid by that Member or a predecessor to the Cooperative for that Connection, without interest, less any amounts owing to the Cooperative, any costs the Cooperative incurred when establishing or removing water service infrastructure to the Parcel, and an administrative fee as determined by the Board. Water system capacity associated with terminated Connections shall revert to the Cooperative.

   To the extent required by law, termination of Membership will not result in forfeiture of a former member's rights and interest in the Cooperative's assets upon dissolution.

2. Reapplication after Termination

   If reapplication for Membership or a Connection is made with respect to a Parcel whose Connection was terminated, the applicant shall be treated the same as applicants for new Memberships and Connections except that in addition to meeting all other requirements for Membership, all previously unpaid fees, assessments, and other amounts attributable to the terminated Membership and Connection and any costs associated with reconnection must be paid.

Section 6. Right to Documents

Members have a right to inspect the following documents: the Cooperative's current Bylaws; Board-approved Rules and Regulations, names of Directors, officers, and employees; regular meeting dates of the Board and minutes; annual budget, rate schedule, annual financial statements and capital needs projections; and records of real estate owned by the Cooperative. The Cooperative shall use reasonable efforts to post such documents to a web page or make them available through other electronic means. The Board of Directors may adopt rules and charges governing requests for records that may be otherwise subject to RCW 24.06.160.

ARTICLE III

Membership Numbers and Certificates

Section 1. Non-Stock Memberships; Membership Number

The Cooperative shall not have capital stock, rather it shall have Memberships. A membership number shall be issued to each Membership consecutively in accordance with the order of issue.

Section 2. Membership Certificates

Membership Certificates may be issued in electronic or paper form. Each Membership Certificate shall include the membership number, the name(s) of the Member or joint owners, the King County parcel number(s) for the Connection(s) assigned to the Member and date of issue, and bear the following statement:

"This Membership Certificate is issued and accepted in accordance with and subject to the conditions and restrictions stipulated in the Articles of Incorporation, Bylaws, Rules and Regulations, Usage Rates, Charges and Fees, policies, and amendments to the same, of the Burton Water Cooperative. This Certificate is not transferable except in accordance with the Cooperative's Bylaws and Rules and Regulations."

ARTICLE IV

Meetings of Members

All meetings of the Members shall be held on Vashon Island in person, by electronic means including teleconference, or both.

Section 1. Annual Meeting

The annual meeting of the Members shall take place during the month of March except as the Board of Directors may reasonably adjust. The place, day, and time of the annual meeting shall be set by the Board of Directors.

Section 2. Special Meetings

Special meetings of the Members may be called at any time by the action of the Board or whenever a petition requesting such meetings is signed by at least ten (10) percent of the

Members and presented to the Secretary or to the Board. The purpose of every special meeting shall be stated in the notice thereof, and no business shall be transacted thereat except such as is specified in the notice.

Section 3. Notice of Meetings

Notice of meetings of Members, both the annual meeting and special meetings, shall be given in written form to each member of record not less than thirty (30) days prior to the annual meeting, and not less than ten (10) nor more than forty (40) days prior to any special meeting.

Notice shall be:

i. Sent by electronic means to the email address recorded on the books of the Cooperative; or

ii. Mailed by first-class mail to mailing address recorded on the books of the Cooperative; or

iii. Delivered in person to the service address.

Such notice shall state the nature, time, place and purpose of the meeting.

Section 4. Quorum and Voting

The presence at a meeting of not less than ten percent (10%) of the Members shall constitute a quorum. Once established, a quorum is maintained until adjournment. Presence may be established by physical or electronic meeting attendance, by votes submitted by mail or electronic delivery, and by members represented at a meeting by proxy, provided that no member may hold more than one proxy. The Board may impose reasonable limitations on the use of proxies.

Decisions by Members shall be determined by a simple majority vote of those present at any meeting where a quorum has been established, unless otherwise specified in these Bylaws or by law. For the election of Directors and any other vote requiring a percentage of the total membership to pass, physical or electronic ballots provided by the Cooperative in advance of a meeting shall be the sole method of voting.

Section 5. Election of Directors; Ballots

Directors shall be elected at the annual meeting of the Members.

The official ballot prepared by the Cooperative shall be made available to Members at least fourteen (14) days before the annual meeting, along with a brief candidate-submitted description of qualifications. The Board shall communicate the methods for returning ballots. In order to be counted, all ballots must be received by mail or delivered prior to or presented at the annual meeting. The ballot count shall be conducted or overseen by the Nominating Committee. The candidates receiving the most votes will be elected to the open positions. In the event of a tie vote, the successful Director candidate shall be determined by a coin toss. Results of the election shall be recorded in the minutes of the annual meeting. The Director(s) elected at that meeting shall take office at the conclusion of the annual meeting at which he or she is elected.

Section 6. Order of Business

The order of business at the annual membership meetings shall be:

A. Calling to order and proof of quorum
B. Proof of notice of meeting
C. Reading and action on any unapproved minutes
D. Reports
    1. President's Report
    2. Presentation of financial reports, including:
        a. Balance sheet
        b. Income statement
        c. Budget with actuals
        d. Reserve balances
        e. Current rate structure and any proposed changes
    3. Report on system condition, including but not limited to:
        a. Capital improvements completed, in process, and anticipated
        b. Water quality report
        c. Disclosure of any regulatory agency findings
    4. Other Committee Reports (if any)
E. Other business and Member comments
F. Election of Directors
G. Adjournment

ARTICLE V
Directors and Officers

Section 1. Number and Terms

The Board shall consist of five (5) Members in Good Standing. Employees of the Cooperative may not serve as a Director. Not more than one Member of a Jointly held Membership may be a Director at any one time.

The interim Board named in the Articles of Incorporation, or any interim Director subsequently elected to fill a vacancy, shall serve until the Members elect a new Director or Board. Notwithstanding any other provision hereof, after the Effective Date, a special meeting shall be called within sixty (60) days during which a new Board shall be elected. Each Member may vote for a maximum of five (5) candidates for the Board, with a single vote for any one candidate. The five candidates with the most votes will constitute the new Board. Director terms shall be

staggered with one Director elected for a term of one (1) year; two Directors for a term of two (2) years; and two Directors for a term of three (3) years. Assignment of Directors to an initial term of either one (1), two (2) or three (3) years shall be by lottery.

At each annual meeting thereafter, the Members shall elect for a term of three (3) years the number of Directors whose terms of office have expired. Each Director shall hold office for the term for which he or she is elected. Successive Directors shall then be elected to terms of three (3) years such that no more than two (2) Directors' terms shall expire in any given year.

Section 2. Nominating Committee and Ballots

Director candidates shall be selected by an unpaid Nominating Committee appointed by the President, consisting of at least one (1) Director not up for election and one (1) Member who is not a Director. The committee shall screen the Members for possible candidates, establish a list of one or more potential candidates therefrom, evaluate their qualifications for inclusion on the ballot, and confirm their willingness to serve if elected. In addition, a Member may nominate a candidate by contacting the Secretary in writing no later than 45 days prior to the annual meeting. If a person nominated withdraws or is not eligible, or the Nominating Committee is not able to find a candidate, then the Board position is deemed vacant, and the Board may fill it pursuant to the provisions below.

Section 3. Election of Officers

The Board shall meet within ten (10) days after the annual election of Directors and shall elect a President, Vice President, Secretary and Treasurer (collectively "Officers" or individually "Officer") from among themselves, each of whom shall hold office until the next annual meeting, and until the election and qualification of a successor, unless sooner removed by death, resignation, or for cause.

Section 4. Removal of Directors and Officers

Directors and Officers may be removed from office for missing three (3) meetings in a calendar year, or for cause that impedes the purposes of the Cooperative, including but not limited to: violation of the Cooperative's code of ethics as adopted by the Board of Directors, a criminal conviction, or failure to meet duty of care for cooperative directors set forth in RCW 24.06.153.

Officers and Directors may be removed from office in either of the following means:

A. Member Vote

   If proposed by a Member, the reasons for removal must be accompanied by a petition signed by ten (10) percent of Members in Good Standing. Consideration of such removal shall occur at the next regular or special meeting of the Members and shall be effective if approved by a majority of those voting and a minimum of 25% of the total membership.

B. Director Vote

   If proposed by a Director, such removal shall be voted on at the next regular or special meeting of the Board of Directors and shall be effective if approved by a majority of the total number of Directors.

A Director or Officer subject to a vote of removal shall be notified in writing no less than fifteen (15) days prior to a vote and if by Member vote, he or she may present a statement in writing in the meeting notice only if the statement is received within seven (7) days prior to the issuance of the meeting notice. The subject Director or Officer may present his or her defense at the meeting. If the removal of a Director is approved, such action shall also vacate any other office held by the removed Director.

Section 5. Vacancies

Board vacancies, whether by death, resignation, retirement, removal, disqualification or otherwise shall be filled by majority vote of the Board at the next regular Board meeting or at a special Board meeting called for this purpose. The term of a Director filled in such a manner shall be until the next annual Membership meeting, at which time an election will be held to fill the position for the remainder of the term, or a full term if the remaining term for that Director position has ended.

Section 6 Meetings

The Board shall establish and adjust as needed a regular schedule of meetings of the Board, announced to Members at the annual meeting or subsequently as soon as practical by electronic notice, after which no notice for regularly scheduled meetings is required. Special meetings of the Board of Directors may be called by the President or any two Officers provided at least three days' notice is provided to all Directors. Notice of meetings may be provided electronically to an email address specified by a director, by first class mail to an address specified by the director (with receipt to be effective five (5) days after mailing), by delivery to the director's home address or personal delivery. The three day notice requirement may be waived by presence at the meeting or by electronic notice.

Section 7. Quorum and Votes Required to Take Action

A majority of the Board shall constitute a quorum at any meeting of the Board. Once established at a meeting of the Board, a quorum is maintained until adjournment. The affirmative vote of a simple majority of the total number of Director positions set forth in Section 1 above shall constitute the act of the Board.

Section 8. Compensation

Directors shall receive no compensation for their services to the Cooperative.

Section 9. Committees

The Board may from time to time establish one or more committees. At the option of the chair of the committee or majority of its members, committee meetings may be conducted in private. Committees shall submit regular reports to the Board of Directors. No committee shall take any action that shall be binding on the Board or the Cooperative.

Section 10. Member Attendance at Board Meetings

Except for executive sessions, any Member in Good Standing may attend meetings of the Board , but may speak only upon invitation by the President, who may set limits on time of attendance and scope of comments.

The Board may convene executive sessions during any regular or special meeting to consider and discuss legal matters, claims, litigation, settlement and contract negotiations, personnel matters, specific member accounts and other confidential or sensitive topics. Reference to the purpose for the executive session shall be included in the minutes. All topics discussed in executive session shall be and remain confidential until such time as the Board authorizes its release.

ARTICLE VI

Duties and Authority of Directors

The Board, subject to restrictions of law, the Articles of Incorporation, and these Bylaws, shall exercise all powers of the Cooperative, and without prejudice to or limitation upon their general powers, it is hereby expressly provided that the Board shall have, and are hereby given full power and authority in respect to the matters as hereinafter set forth:

Section 1. Authority and Powers

A. Authorizing Connections

To authorize existing and new Connections within the Water Service Area and approved limits set by the Washington State Department of Health and establish conditions and charges therefore.

B. Approve Membership Agreements

To approve Membership and other agreements in accordance with these Bylaws and the Rules and Regulations and cause to be issued Membership certificates.

C. Agents and Employees

To select and appoint all agents or employees of the Cooperative, remove such agents or employees of the Cooperative, prescribe such duties and designate such powers as may not be inconsistent with these Bylaws, fix their compensation and pay for faithful services.

D. Borrowing

To borrow from any source, money, goods, or services and to make and issue notes and other negotiable or nonnegotiable instruments evidencing indebtedness of the Cooperative; to make and issue mortgages, deeds of trust, pledges of revenue, trust agreements, security agreements and financing statements and other instruments evidencing a security interest or other encumbrance in the assets of the Cooperative; and, to do every act and thing necessary to effectuate the same.

E. Acquisition and Sale of Capital Assets and Real Property

To sell or acquire capital assets and real property; provided that the Board will neither sell nor

transfer any water rights nor sell all or substantially all of the Cooperative's real estate or assets unless approved by vote of the Membership in accordance with RCW 24.06.240 or successor statute.

F. Rules, Regulations and Policies

To make rules, regulations, or policies that the Board deems beneficial to the safe and responsible operation of the water system that are not inconsistent with the Cooperative's Articles of Incorporation and the Bylaws. Without limiting the generality of the foregoing, the Board may adopt and impose water conservation measures as it may determine reasonable and appropriate.

G. Setting Usage Rates and Fees

To fix and alter charges to be paid for memberships, Connections, water service and related services, and to fix and alter the method of billing, time of payment, manner of collection, and penalties for late or nonpayment of the same. The Board may establish rates and classifications applicable to various types of Members and levels of service in order that all Members of whatever type share in operations, capital and debt service costs.

H. Enforcement

To enforce collection of the Cooperative's rates, charges and assessments and compliance with its Rules and Regulations and policies, which shall include the power to disconnect water service, in any manner that does not violate the laws of the State of Washington.

I. Banking and Investments

To select one or more banks to act as depositories of the funds of the Cooperative and to determine the manner of receiving, depositing, and disbursing the funds of the Cooperative. Directors shall by policy establish the form of checks and the person or persons by whom the same shall be signed and shall reserve the power to change such banks and the person or persons signing such checks and the form thereof at will. The Cooperative's surplus funds may be invested in savings accounts, certificates of deposit, notes, or bonds of any federally insured bank or credit union or the United States, other obligations of the United States or its agencies, any corporation wholly owned by the government of the United States; or United States dollar denominated bonds, notes, or other obligations that are issued or guaranteed by the United States or a United States agency.

J. Assessments

To propose, execute and collect assessments from the Members for the purpose of funding the costs of acquiring or constructing improvements to the Cooperative's water system and its related facilities or perform major maintenance.

K. Contracts

To enter into contracts on behalf of the Cooperative for any lawful purpose including contracts with members and new members, service providers, contractors, lenders and governmental agencies.

Section 2. Duties and Responsibilities

A. Physical Operation and Maintenance of Water System

To ensure that the water system operates in compliance with federal, state and local laws.

B. Billing and Collection of Payments

To ensure accurate and timely billing and collection for services, fees, and assessments.

C. Payment of Financial Obligations

To pay lawful expenses of operations and improvements including loans, taxes, wages, utilities, contracted work, and other financial obligations.

D. Budgeting, Forecasting and Emergency Reserve

To adopt an annual budget and plan for capital improvement expenditures and such reserves as it deems prudent.

E. Financial Review

To order, at least once each fiscal year, a review of the books and accounts of the Cooperative by a competent public auditor or accountant. The report prepared by such auditor or accountant shall be submitted to the Members at their annual meeting, together with a proposed budget for the ensuing year. Copies of such reviews and budgets shall be submitted to such parties as may be required by other agreements.

F. Maintaining Appropriate Insurance for the Cooperative

To procure appropriate insurance for the Cooperative consistent with industry standards and commercial availability.

G. Preparation and Keeping of Records Pertaining to the Business and Governance

To maintain and archive for reasonable periods appropriate records pertaining to the business and governance of the Cooperative.

ARTICLE VII

Duties of Officers

Section 1. Duties of the President

The President shall preside over all meetings of the Cooperative and the Board, call special meetings of the Board, perform all acts and duties usually performed by an executive and presiding Officer, and sign all papers of the Cooperative as may be authorized or directed to sign by the Board, provided the Board may authorize any person to sign any or all checks, contracts, and other instruments in writing on behalf of the Cooperative. The President shall perform such other duties as may be prescribed by these Bylaws and the Board.

Section 2. Duties of the Vice President

In the absence or disability of the President, the Vice President shall perform the duties of the President; provided, however, that in case of death, resignation, or disability of the President, the Board may declare the office vacant and elect a successor.

The Vice President shall ensure the Cooperative keeps an accurate certificate record, showing

the name of each Member of the Cooperative, the parcel(s) to which such Membership attaches, details about class of use, if applicable, and date of issuance, surrender, transfer, termination, cancellation, or forfeiture. The Vice President shall make a full report of all matters and business pertaining to Membership records at the annual Membership meeting or at such other time or times as the Board may require.

Section 3. Duties of the Secretary

The Secretary shall ensure that the Cooperative keeps a complete record of all proceedings of all meetings of the Board and Membership. The Secretary shall attest the President's signature on all papers pertaining to the Cooperative unless otherwise directed by the Board. The Secretary shall serve, mail, or deliver all notices required by law and by these Bylaws and shall make a full report of all matters and business pertaining to the office to the Members at the annual meeting or at such other time or times as the Board may require. The Secretary shall make all reports required by law and shall perform such other duties as may be required by the Cooperative or the Board.

Upon the election of a successor, the Secretary shall turn over to the successor all books and other property belonging to the Cooperative that the Secretary may possess.

Section 4. Duties of the Treasurer

The Treasurer shall be accountable for all funds belonging to the Cooperative and shall: oversee the payment of obligations incurred by the Cooperative; maintain bank accounts in depositories authorized by the Board of Directors; review monthly financial reports prepared by the Cooperative's bookkeeper; present financial reports at regular meetings of the Board and Membership; maintain records of payments made by members, which the Treasurer may choose to do by structuring and reviewing the work of employees or contractors charged with this duty.

The Treasurer shall implement accounting procedures that protect the assets of the Cooperative, including reviewing rules for when and how many Directors should sign checks, drafts, or other forms of payment. With the adoption of these Bylaws, budgeted payments of less than $10,000 may be signed by an employed or contracted operations manager and one Officer. Non-budgeted payments exceeding $1,000 and any payment over $10,000 must be co-signed by two Officers.

Upon the election of a successor, the Treasurer shall turn over to the successor all books, records and other property belonging to the Cooperative that the Treasurer may possess.

ARTICLE VIII

Benefits and Duties of Members

Section 1. Water Distribution

The Cooperative will use reasonable efforts to install, maintain, and operate a distribution pipeline or lines from the source of the water supply and service lines from the main distribution pipeline or lines to the property line of each Parcel having a Membership and Connection, at

which points, designated as delivery points, water meters shall be installed, owned, monitored and maintained by the Cooperative.

Section 2. Requirements for Connection and Maintenance

Each Member shall be required, at the Member's expense, to provide and install per King County Code, water supply pipes to connect a service line or lines from the Cooperative's water meter serving each Parcel having a Connection. The Member shall maintain, at the Member's expense, such service line or lines which shall be owned by the Member. Members shall not allow service within their Parcel to be extended to any other land or improvements except upon approval by the Board or authorized by rule. Each Member shall pay fees and charges as may be imposed by the Board of Directors before such Member will be entitled to receive water from the system.

Section 3. Damage to Cooperative Property

Members shall be held liable for any damage to a meter or other equipment, facilities or property of the Cooperative caused by the Member, its tenants, agents, employees, or contractors including damage to mains, service connections, valves, fire hydrants, or other property of the Cooperative.

Section 4. Provision and Metering of Water

Members shall be permitted to purchase from the Cooperative, pursuant to rules, rates, policies, and agreements as may be imposed by the Cooperative, water for domestic, commercial, agricultural, or other purposes subject to the capacity of the Cooperative's water system, the provisions of these Bylaws and Rules and Regulations adopted by the Board. Each Member may only utilize only such water as may be necessary to supply its reasonable needs on the Parcel having a Connection except upon approval by the Board or authorized by rule. The Cooperative may require that water delivered through separate service lines be metered separately.

Section 5. Water Shortage and Interruption of Service

In the event the Board determines total projected or existing water supply is insufficient to meet all of the needs of all Members, the Cooperative may prorate available water among the various Members on such basis as is deemed equitable by the Board. The Board may also prescribe a schedule of hours and/or other restrictions covering use of water by Members and require adherence thereto until such time as the supply of water from the system is sufficient to meet the needs of all Members.

Whenever necessary for the purpose of repairs or improvements to its system, the Cooperative shall have the right to temporarily suspend the delivery of water. The Cooperative shall provide reasonable notice to Members impacted by the service interruption if circumstances permit.

Members depending upon a continuous supply of water shall provide emergency water storage and any devices necessary for the protection of plumbing or fixtures against failure of the pressure or supply of water in the Cooperative's mains.

Section 6. Access

Each Member shall and is hereby deemed to grant the Cooperative and its agents and contractors access to its Parcel(s) served by the Cooperative for the purposes of reading water meters, repair, or replacement of any Cooperative owned property, and ensuring compliance with the other provisions of these Bylaws and the Cooperative's Rules and Regulations and policies. Failure to provide for or grant unobstructed access to Cooperative owned property, including reading the meter, may cause the Cooperative to discontinue Services until access may be obtained.

If a Member's parcel and any adjacent land owned by the Member contains a water distribution line operated by the Cooperative for which a recorded easement does not appear in King County real estate records, the Member shall grant the Cooperative a perpetual utility easement in, under and upon the parcel(s) for the operation, repair, maintenance and replacement of the water distribution line, meters, valves and appurtenances along with the right to utilize adjoining lands belonging to the Member for the purpose of ingress to and egress from the easement area.

ARTICLE IX
Distribution of Surplus Funds

Section 1. No Anticipation of Surplus

It is not anticipated that there will be any surplus funds or net income to the Cooperative at the end of the fiscal year after provisions are made for the payment of the expenses of operation and maintenance, debt service, and the funding of the various reserves for depreciation, capital improvements, debt service, emergency reserves, and other purposes, including those required by the terms of any borrowing transaction. Surplus funds may be used for such purposes as retiring indebtedness, expanding the organization's services, or reducing water rates for subsequent years.

Section 3. Member Interest upon Dissolution

Upon dissolution of the Cooperative, after paying off all debts and obligations, Members and former Members (to the extent practicable) will be entitled to receive their share of all the proceeds remaining in accordance with the provisions of IRC Sec. 501(c)(12). To the extent authorized by law, Member equity amounts attributable to fees paid to join the Cooperative and assessments for capital improvements shall be returned prior to other distributions.

ARTICLE X
Limitation of Liability and Indemnification

Section 1. Limitation of Liability of the Cooperative

The Cooperative shall not be liable to any Member or any other person or entity for any

interruption, shortage or insufficiency of water supply, lack of or excessive water pressure, or for termination of water service.

Section 2. Limitation of Liability of Directors

No past, present or future Director shall be personally liable to the Cooperative or its Members, for monetary damages for any conduct as a Director; provided that no Director shall be released from liability for the following: (i) acts or omissions that involve intentional misconduct by a Director; (ii) acts or omissions that involve a knowing violation of law by a Director; (iii) acts or omissions that involve a knowing violation of the Governing Documents; (iii) voting for or assenting to distributions made in violation of the Articles of Incorporation and Bylaws; (iv) any transaction from which the Director will personally receive a benefit in money, property, or services to which the Director is not legally entitled.

Section 3. Indemnification of Directors, Officers, Employees, and Agents

Should any person be sued or threatened with suit, either alone or with others, because he or she was or is a Director, officer, employee, or agent of the Cooperative, in any proceedings other than an action by the Cooperative, indemnity for his or her reasonable expenses incurred, including attorney fees, in the defense of the proceeding may be paid by the Cooperative by decision of the Board if the Board determines that the person acted in good faith and in a manner he or she reasonably believed to be in, or not opposed, to the best interests of the Cooperative. However, the Corporation shall indemnify a director, officer, employee, or agent of the Corporation if: i) they are wholly successful on the merits or otherwise in the defense of any proceeding to which the person was a party because of being a director, officer, or employee of the Corporation and (ii) the court finds the person's conduct warrants indemnity.

Section 4. Notice

Any indemnification of a Director in accordance with this Article shall be reported to the Members in a written report describing the proceeding and the nature and extent of such indemnification.

Section 5. Advances

Reasonable expenses incurred by a Director, Officer, employee or agent who is involved in any capacity in a proceeding by reason of the position held by such person or entity in the Cooperative, may be, but are not required to be, advanced by the Cooperative prior to the final disposition of such proceeding to the full extent allowed by applicable law, as presently in effect and as hereafter amended; provided, however, that the Cooperative shall not advance any such funds unless the Director, Officer, employee or agent promises in a writing delivered to the Cooperative to repay all amounts advanced by the Cooperative in the event that it is later determined that such employee or agent is not entitled to be so indemnified, and that such party deliver security for such obligation that is acceptable to the Cooperative.

Section 6. Insurance

The Cooperative shall use reasonable efforts to purchase and maintain insurance on behalf of

any person who is a Director, Officer, employee, or agent of the Cooperative against any liability incurred by such person because of such person's status, whether or not the Cooperative would have the power to indemnify such person against such liability under the provisions of this Article.

Section 7. Designation of Counsel

The Board shall have the right to designate the counsel who shall defend any person or entity who may be entitled to indemnification, to approve any settlement, and to approve in advance any expense.

Section 8. Consistency With Applicable Law; Survival of Benefits

The right to indemnification and limitation of liability conferred by this Article shall be interpreted to conform with and shall not create any right that is inconsistent with applicable law, as presently in effect and as hereafter amended. To the full extent allowed by applicable law (as presently in effect and as hereafter amended), the right to indemnification and limitation of liability conferred by this Article shall continue as to a person who has ceased to be a Director and shall inure to the benefit of the heirs, executors, and administrators of such a person.

Section 9. Non-exclusivity of Rights

The rights conferred in this Article shall not be exclusive of any other rights which any person may have or acquire under any applicable law (as presently in effect and as hereafter amended), the Articles of Incorporation, the Bylaws, a vote of the Board or the Members of the Cooperative, or otherwise.

ARTICLE XI

Robert's Rules of Order and Interpretation

Section 1. Robert's Rules of Order, Edition

The Board may adopt reasonable procedures for the governance of Board and Member meetings that are not inconsistent with the Articles of Incorporation, these Bylaws and Ch. 24.06 RCW. In the absence of a Board adopted procedure, Robert's Rules of Order: 12th Edition (and successor editions then in effect), may be used as a guide to govern all meetings of the Cooperative.

ARTICLE XII

Amendments

Section 1. Amendments to Bylaws

These Bylaws may be repealed or amended by Member vote conducted in accordance with these Bylaws at an annual meeting, or a special member meeting convened for this purpose, and approved by no less than twenty-five (25) percent of the total Membership except that, so

long as any indebtedness is held by or guaranteed by any lender, the Members shall not have the power to change the purposes of the Cooperative so as to decrease its rights and powers under the laws of the State, or to waive any requirement of bond or other provision for the safety and security of the property and funds of the Cooperative or its Members, or to amend the Bylaws as to effect a fundamental change in the policies of the Cooperative without the prior written approval of any lenders.

Section 2. Washington Law

These Bylaws are subject to the Washington RCW 24.06—Nonprofit Miscellaneous and Mutual Corporations Act—and shall be interpreted so as to conform with that law, as it is interpreted and amended from time to time.

ATTESTATION BY SECRETARY:

These Bylaws have been approved by vote of a majority of the entire Membership and by 2/3rd of those Members voting following a meeting for which a quorum was present held on June 12, 2024. The foregoing is a true and accurate record of said Bylaws and vote of approval, attested, this 24th day of June, 2024.

Secretary

EQUAL OPPORTUNITY AGREEMENT

This agreement, dated **08/31/2023** between **Burton Water Cooperative** (herein called "Recipient" whether one or more) and United States Department of Agriculture (USDA), pursuant to the rules and regulations of the Secretary of Labor (herein called the 'Secretary') issued under the authority of Executive Order 11246 as amended, witnesseth:

In consideration of financial assistance (whether by a loan, grant, loan guaranty, or other form of financial assistance) made or to be made by the USDA to Recipient, Recipient hereby agrees, if the cash cost of construction work performed by Recipient or a construction contract financed with such financial assistance exceeds $10,000 - unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965.

1. To incorporate or cause to be incorporated into any contract for construction work, or modification thereof, subject to the relevant rules, regulations, and orders of the Secretary or of any prior authority that remain in effect, which is paid for in whole or in part with the aid of such financial assistance, the following "Equal Opportunity Clause": During the performance of this contract, the contractor agrees as follows:

   a. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited, to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the USDA setting forth the provisions of this nondiscrimination clause.

   b. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

   c. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the USDA, advising the said labor union or workers' representative of the contractor's commitments under this agreement and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

   d. The contractor will comply with all provisions of Executive Order 11246 of September 24,1965, and of all rules, regulations and relevant orders of the Secretary of Labor.

   e. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, rules, regulations, and orders, or pursuant thereto, and will permit access to his books, records, and accounts by the USDA Civil Rights Office, and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

   f. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by Law.

   g. The contractor will include the provisions of paragraph 1 and paragraph (a) through (g) in every subcontract or purchase order, unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the USDA may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a

result of such direction by the USDA, the contractor may request the United States to enter into such litigation to protect the interest of the United States. According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collections is 0575-0018. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

2. To be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, that if the organization so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

3. To notify all prospective contractors to file the required 'Compliance Statement', Form RD 400-6, with their bids.

4. Form AD-425, Instructions to Contractors, will accompany the notice of award of the contract. Bid conditions for all nonexempt federal and federally assisted construction contracts require inclusion of the appropriate "Hometown" or "Imposed" plan affirmative action and equal employment opportunity requirements. All bidders must comply with the bid conditions contained in the invitation to be considered responsible bidders and hence eligible for the award.

5. To assist and cooperate actively with USDA and the Secretary in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and rules, regulations, and relevant orders of the Secretary, that will furnish USDA and the Secretary such information such as , but not limited to, Form AD-560, Certification of Nonsegregated Facilities, to submit the Monthly Employment Utilization Report, Form CC-257, as they may require for the supervision of such compliance, and that it will otherwise assist USDA in the discharge of USDA's primary responsibility for securing compliance.

6. To refrain from entering into any contract or contract modification subject to such Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and Federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by USDA or the Secretary of Labor pursuant to Part II, Subpart D, of the Executive Order.

7. That if the recipient fails or refuses to comply with these undertakings, the USDA may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the organization under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such organization; and refer the case to the Department of Justice for appropriate legal proceedings.

Signed by the Recipient on the date first written above.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collections is 0575-0018. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

☑ William Shadbolt has electronically signed on 08/31/2023 that everything in between is correct to the best of his/her knowledge.

This certification has been signed and attested using the eAuthentication system.

CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or Federal loan, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant or loan.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant or loan, the undersigned shall complete and submit Standard Form - LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including contracts, subcontracts, and subgrants under grants and loans) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

☑ William Shadbolt has electronically signed on 08/31/2023 that everything in between is correct to the best of his/her knowledge.

ASSURANCES - CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0042), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the Awarding Agency. Further, certain Federal assistance awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance, 8. Will comply with the Intergovernmental Personnel Act and the institutional, managerial and financial capability of 1970 (42 U.S.C. §§4728-4763) relating to prescribed (including funds sufficient to pay the non-Federal share standards for merit systems for programs of project costs) to ensure proper planning, funded under one of the 19 statutes or regulations specified management and completion of the project described in in Appendix A of OPM's Standards for a Merit System of this application. Personnel Administration (5 C.F.R. 900, Subpart F).
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, the right to examine all records, books, papers, or documents related to the assistance; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will not dispose of, modify the use of, or change the terms of the real property title, or other interest in the site and facilities without permission and instructions from the awarding agency. Will record the Federal awarding agency directives and will include a covenant in the title of real property acquired in whole or in part with Federal assistance funds to assure nondiscrimination during the useful life of the project.
4. Will comply with the requirements of the assistance awarding agency with regard to the drafting, review and approval of construction plans and specifications.
5. Will provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work conforms with the approved plans and specifications and will furnish progress reports and such other information as may be required by the assistance awarding agency or State.
6. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
7. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
8. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
9. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
10. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681 1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination

on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) underwhich application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application. Previous Edition Usable Authorized for Local Reproduction Standard Form 424D (Rev. 7-97) Prescribed by OMB Circular A-102

11. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal and federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

12. Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

13. Will comply, as applicable, with the provisions of the Davis- Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327333) regarding labor standards for federally-assisted construction subagreements.

14. Will comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is $10,000 or more.

15. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).

16. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

17. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq).

18. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-1 33, 'Audits of States, Local Governments, and Non-Profit Organizations.'

19. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

☑ William Shadbolt has electronically signed on 08/31/2023 that everything in between is correct to the best of his/her knowledge.

ASSURANCE AGREEMENT

(Under Title VI, Civil Rights Act of 1964)

Name of Recipient: **Address:**

The **Burton Water Cooperative** **20211 Vashon Hwy SW, #29, Vashon, WA 98070-6025**

As a condition of receipt of Federal financial assistance, you acknowledge and agree that you must comply (and require any subgrantees, subrecipients, contractors, successors, transferees, and assignees to comply) with applicable provisions of national laws and policies prohibiting discrimination, including but not limited to:

1. Title VI of the Civil Rights Act of 1964, as amended, which prohibits you from discriminating on the basis of race, color, or national origin (42 U.S.C. 2000d et seq.), and 7 CFR Part 15, 7 CFR 1901, Subpart E. As clarified by Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency (Rural Housing Service, Rural Business and Cooperative Service, and Rural Utilities Service) guidance, national origin discrimination includes discrimination on the basis of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs [in accordance with USDA RD LEP Guidance for RD Funded (Assisted) Programs]. Meaningful access may entail providing language assistance services, including oral and written translation, where necessary. You are encouraged to consider the need for language services for LEP persons served or encountered both in developing your budgets and in conducting your programs and activities. For assistance and information regarding your LEP obligations, go to http://www.lep.gov;
2. Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating on the basis of sex in education programs or activities (20 U.S.C. 1681 et seq.)[as implemented by 7 CFR Part 15, 7 CFR 1901, Subpart E];
3. The Age Discrimination Act of 1975, as amended, which prohibits you from discriminating on the basis of age (42 U.S.C. 6101 et seq.) [as implemented by 7 CFR Part 15, 7 CFR 1901, Subpart E];
4. Section 504 of the Rehabilitation Act of 1973, as amended, which prohibits you from discriminating on the basis of disability (29 U.S.C. 794) [as implemented by 7 CFR Part 15, 7 CFR Part 15b, 7 CFR 1901, Subpart E];
5. Title VIII of the Civil Rights Act, which prohibits you from discriminating in the sale, rental, financing, and advertising of dwellings, or in the provision of services in connection therewith, on the basis of race, color, national origin, religion, disability, familial status, and sex (42 U.S.C. 3601 et seq.), as implemented by the Department of Housing and Urban Development at 24 CFR part 100. The prohibition on disability discrimination includes the requirement that new multifamily housing with four or more dwelling units, i.e., the public and common use areas and individual apartment units (all units in buildings with elevators and ground-floor units in buildings without elevators) be designed and constructed with certain accessible features, see 24 CFR Part 100.201; and
6. Titles II and III of the Americans with Disabilities Act, which prohibit you from discriminating on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189), as implemented by Department of Justice regulations at 28 C.F.R. parts 35 and 36, and 7 CFR Part 15, 7 CFR Part 15b, 7 CFR 1901, Subpart E.

You also acknowledge and agree that you must comply (and require any subgrantees, subrecipients, contractors, successors, transferees, and assignees to comply) with applicable provisions governing USDA Rural Development (Rural Housing Service, Rural Business and Cooperative Service, and Rural Utilities Service) access to records, accounts, documents, information, facilities, and staff:

1. You must cooperate with any compliance review or complaint investigation conducted by USDA Rural Development (Rural Housing Service, Rural Business and Cooperative Service, and Rural Utilities Service).

2. You must give USDA Rural Development (Rural Housing Service, Rural Business and Cooperative Service, and Rural Utilities Service) access to and the right to examine and copy records, accounts, and other documents and sources of information related to the grant and permit access to facilities, personnel, and other individuals and information as may be necessary, as required by Title VI, Title IX, Age, and Section 504 implementing regulations and other applicable laws or program guidance.

3. You must keep such records and submit to the responsible Department official or designee timely, complete, and accurate compliance reports at such times, and in such form and containing such information, as the responsible Department official or his designee may determine to be necessary to ascertain whether you have complied or are complying with relevant obligations.

4. You must comply with all other reporting, data collection, and evaluation requirements, as prescribed by law or detailed in program guidance.

5. Make available to users, participants, beneficiaries and other interested persons such information regarding the provisions of this agreement and the regulations, and in such manner as the Rural Development or the U.S. Department of Agriculture finds necessary to inform such persons of the protection assured them against discrimination.

6. If, during the past three years, you (the recipient) have been accused of discrimination on the grounds of race, color, national origin (including limited English proficiency), sex, age, disability, religion, or familial status, you must provide a list of all such proceedings, pending or completed, including outcome and copies of settlement agreements.

7. In the event any court or administrative agency makes a finding of discrimination on grounds of race, color, national origin (including limited English proficiency), sex, age, disability, religion, or familial status against you, or you settle a case or matter alleging such discrimination, you must forward a copy of the complaint and findings to USDA Rural Development (Rural Housing Service, Rural Business and Cooperative Service, and Rural Utilities Service), Office of Civil Rights.

The United States has the right to seek judicial enforcement of these obligations.

You also acknowledge and agree that you must comply (and require any subgrantees, subrecipients, contractors, successors, transferees, and assignees to comply) with applicable provisions of program-specific nondiscrimination policy requirements found at CFR Part 15, 7 CFR Part 15 b, 12 CFR Part 202, 7 CFR 1901, Subpart E., DR4300-003, DR4330-0300, DR4330-005.

Period of Obligation. In the case of any service, financial aid, covered employment, equipment, property, or structure provided, leased, or improved with federal assistance extended to the Recipient by Rural Development (Rural Housing Service, Rural Business and Cooperative Service, and Rural Utilities Service), this assurance obligates the Recipient for the period during which federal assistance is extended. In the case of any transfer of such service, financial aid, equipment, property, or structure, this assurance obligates the transferee for the period during which federal assistance is extended. If any personal property is so provided, this assurance obligates the Recipient for the period during which it retains ownership or possession of the property. In all other cases, this assurance obligates the Recipient for the period during which the federal assistance is extended to the Recipient by Rural Development (Rural Housing Service, Rural Business and Cooperative Service, and Rural Utilities Service).

Employment Practices. Where a primary objective of the federal assistance is to provide employment or where the Recipient's employment practices affect the delivery of services in programs or activities resulting from federal assistance extended by Rural Development (Rural Housing Service, Rural Business and Cooperative Service, and Rural Utilities Service), the Recipient agrees not to discriminate on the grounds of race, color, national origin, sex, age, or disability, in its employment practices. Such employment practices may include, but are not limited to, recruitment, advertising, hiring, layoff or termination, promotion, demotion, transfer, rates of pay, training and participation in upward mobility programs; or other forms of compensation and use of facilities.

Data Collection. The Recipient agrees to compile and maintain information pertaining to programs or activities developed as a result of the Recipient's receipt of federal assistance from Rural Development (Rural Housing Service, Rural Business and Cooperative Service, and Rural Utilities Service). Such information shall include, but is not limited to the following: (1) the manner in which services are or will be provided and related data necessary for determining whether

any persons are or will be denied such services on the basis of prohibited discrimination; (2) the population eligible to be served by race, color, national origin, sex, age, and disability; (3) data regarding covered employment including use or planned use of bilingual public contact employees serving beneficiaries of the program where necessary to permit effective participation by beneficiaries unable to speak or understand English; (4) the location of existing or proposed facilities connected with the program and related information adequate for determining whether the location has or will have the effect of unnecessarily denying access to any person on the basis of prohibited discrimination; (5) the present or proposed membership by race, color, national origin, sex, age and disability in any planning or advisory body which is an integral part of the program; and (6) any additional written data determined by Rural Development (Rural Housing Service, Rural Business and Cooperative Service, and Rural Utilities Service) to be relevant to the obligation to assure compliance by recipients with laws cited in this assurance agreement.

Under penalty of perjury, the undersigned officials certify that they have read and understand their obligations as herein described, that the information submitted in conjunction with this Document is accurate and complete, and that the recipient is in compliance with the nondiscrimination requirements set out above.

Rights and remedies provided for under this agreement shall be cumulative.

In witness whereof, **Burton Water Cooperative** on this date has caused this agreement to be executed by its duly authorized officers and its seal affixed hereto, or, if a natural person, has hereunto executed this agreement.

☑ William Shadbolt has electronically signed on 08/31/2023 that everything in between is correct to the best of his/her knowledge.

This certification has been signed and attested using the eAuthentication system.

APPLICANT CERTIFICATION FEDERAL COLLECTION POLICIES FOR CONSUMER OR COMMERCIAL DEBTS

The Federal Government is authorized to check credit information about the applicant(s) including using the federal Credit Alert Interactive Voice Response System (CAIVRS) or its successors to check to see if the applicant(s) are delinquent or in default on a Federal debt.

The Federal Government is also authorized by law to take any or all of the following actions in the event your loan payments become delinquent or you default on your loan:

- Report your name and account information to a credit reporting agency, and the Credit Alert Interactive Voice Response System (CAIVRS).
- Assess interest and penalty charges for the period of time that payment is not made.
- Assess charges to cover additional administrative costs incurred by the government to service your account.
- Offset amounts to be paid to you from your Federal income tax refund.
- Offset amounts to be paid to you under other Federal Programs.
- Refer your account to a private collection agency to collect the amount due.
- Foreclose on any security you have given for the loan.
- Pursue legal action to collect through the courts.
- Report any written off debt to the Internal Revenue Service as taxable income.
- If you are a current or retired Federal employee, take action to offset your salary, or civil service retirement benefits.
- Debar or suspend you from doing business with the Federal Government either as a participant or principal throughout the executive branch of the Federal Government for the period of debarment or suspension.
- Refer any debt that is delinquent to the Treasury Offset Program (TOP) in accordance with the Debt Collection Improvement Act of 1996.
- Refer any eligible debt that is delinquent to the Treasury for cross servicing in accordance with the Debt Collection Improvement Act of 1996.
- Garnish your wages as allowed by the Debt Collection Improvement Act of 1996.

Any or all of these actions may be used to recover any debts owed when it is determined to be in the interest of the Government to do so.

CERTIFICATION: I/we have read and I/we understand the actions the Federal Government may take in the event that I/we fail to meet my/our scheduled payments in accordance with the terms and conditions of my/our agreement. I/we understand that the above list is not all inclusive and that the Federal Government may deem additional actions necessary to collect should I/we become delinquent.

☑ William Shadbolt has electronically signed on 08/31/2023 that everything in between is correct to the best of his/her knowledge.

Application Id: 4028851 | Borrower Name: Burton Water Cooperative |
TIN: 881302361

Tying Arrangements Certification:

Certification regarding prohibited tying arrangements: **Burton Water Cooperative**

Does Not

provide electric service. **Burton Water Cooperative** does not require users of the **water service** facility financed under this part to accept electric service as a condition of receiving assistance.

☑ William Shadbolt has electronically signed on 08/31/2023 that everything in between is correct to the best of his/her knowledge.

Application Id: 4028851 | Borrower Name: Burton Water Cooperative |
TIN: 881302361

WATER AND WASTE ELIGIBILITY CERTIFICATION

Certification for commercial credit and outstanding judgments

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. The organization is unable to finance the proposed project from its own resources or through commercial credit at reasonable rates and terms.
2. No outstanding judgement has been obtained and recorded by the United States of America in a Federal Court(other than in the United States Tax Court).

☑ William Shadbolt has electronically signed on 08/31/2023 that everything in between is correct to the best of his/her knowledge.

CERTIFICATION REGARDING THE IDENTIFICATION AND REPORTING RURAL DEVELOPMENT ASSISTANCE TO RURAL DEVELOPMENT EMPLOYEES, RELATIVES, ASSOCIATES AND TRANSACTION CONFLICT OF INTEREST

This certification is required by 2 CFR 400, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, and 7 CFR 1900, Subpart D, Processing and Servicing Rural Development Assistance to employees, Relatives, and Associates, and all guidance related thereto.

Rural Development (RD) prohibits any elected or appointed official, agent, or employee of a recipient from having any financial or personal interest in any transaction or activity funded. Recipients are required to identify, in writing, any known relationship or association with an RD employee in accordance with 7 CFR 1900, Subpart D. To ensure the highest standards of honesty, integrity, and impartiality by RD employees, the applicant must identify any RD assistance benefiting an RD employee in any of the following circumstances:

1. RD employee is the recipient.

2. RD employee's family member(s) or known close relative(s) are the recipient.

3. RD employee has an immediate working relationship with the recipient, the employee related to the recipient, or the employee who would normally conduct the activity.

4. RD employee has a business or close personal association with the recipient.

Following 2 CFR 400, all participating non-Federal entities must maintain written standards of conduct covering conflicts of interest. The standards of conduct must include disciplinary actions in the event of a violation by officers, employees, or agents of the non-Federal entity. Any non-Federal entity that has a parent, affiliate, or subsidiary organization that is not a state or local government or Indian Tribe is subject to the standards identified herein. Policies and any accompanying documents shall be furnished to RD upon request.

I hereby certify in this disclosure letter, in accordance with 2 CFR 400 and 7 CFR 1900, Subpart D, that a written, up-to-date conflict of interest policy is in place and any known relationships or close associates of an RD employee, real or potential conflicts, or conflicts in transactions, if any, are listed below or will be disclosed immediately upon discovery:

☑ William Shadbolt has electronically signed on 08/31/2023 that everything in between is correct to the best of his/her knowledge.

BURTON WATER COOPERATIVE

RULES & REGULATIONS

These Rules and Regulations ("Rules") were adopted by the Board of Directors ("Board") of the Burton Water Cooperative ("Cooperative") on November 7, 2023 and amended on April 7, 2024.

1. APPLICATION FOR SERVICE

Each prospective member requesting water service shall complete the Cooperative's required Membership/Water User Agreement and Connection Agreement and provide additional information applicable to the proposed service as may be requested by the Cooperative. Credit references may also be requested. Becoming a member of the Cooperative constitutes agreement and acceptance of the Cooperative's Bylaws, Rules and Regulations, policies, and usage rates, charges and fees.

2. MEMBERSHIP/FEES

Payment of water service and meter installation charges, Connection Charge, assessments, membership joining fees, line extension costs if applicable, and all other fees due as a condition of receiving water service shall be due and payable prior to installation and provision of new water service. A deposit may be required from new members as security for payment of water service charges. This deposit may also be required from existing members who fail to maintain a satisfactory payment record. Charges, fees, assessments, and deposit requirements will be applied to all Cooperative members in a consistent, nondiscriminatory manner.

3. CHANGE OF OWNERSHIP

When a transfer of ownership takes place for any parcel served by the Cooperative, notice of such change shall be provided to the Cooperative.

a. The outgoing member shall notify the Cooperative in writing or by email with the anticipated closing date for the sale or transfer of their parcel and name and contact information of the new owner. The Cooperative will provide a Connection Transfer Agreement to both parties and a Membership/Water User Agreement to the new owner.

b. Following submission of both agreements, the Cooperative will conduct a meter reading on or about the Transfer Date to determine the final amount due from the outgoing Member. The Cooperative shall provide a statement of any outstanding charges to the outgoing member.

c. All outstanding amounts due on the account, including any balance remaining for the Connection Charge, must be paid in advance of approval of the transfer by the Cooperative and prior to initiation of service to the incoming member.

d. After any outstanding amounts due on the account are paid and the Connection Transfer Agreement and new Membership/Water User Agreement are accepted by the Cooperative, water service will be provided to the new member. Provided that the Connection Charge was fully paid by previous owners, only a New Account Setup Fee will be charged to the new member for each Connection.

4. USAGE RATES, CHARGES AND FEES

The Cooperative's usage rates, charges and fees are described in a master schedule that may be amended by the Board from time to time. The rates may include amounts for employee and equipment use for services not normally rendered by the Cooperative. If the Cooperative incurs out-of-pocket costs incurred in providing such services, such costs may be charged as well along with a reasonable percentage for overhead and administration. Rates, charges and fees will be applied to all cooperative members in a consistent, nondiscriminatory manner. See Cooperative document titled Usage Rates, Charges and Fees.

5. MEMBER'S PIPING AND EQUIPMENT

Members shall be solely responsible for all piping and equipment located on their side of the water meter and shall be installed in accordance with applicable plumbing codes. The Cooperative reserves the right to refuse or discontinue service to a member where such equipment is in hazardous condition, is not in conformity with lawful codes and regulations, or when the continuation of service could jeopardize the Cooperative's water system. It shall be the member's responsibility to provide (a) suitable protective equipment such as relief valves, pressure reduction valves, turnoffs, check valves and whatever other items may be necessary to protect his plumbing and improvements, and (b) booster pumps to increase pressure if needed. Water service shall not be utilized by any member in such a manner as to cause disturbances or pressure fluctuations to other members of the Cooperative.

6. INTERRUPTION OF SERVICE

The Cooperative will use reasonable efforts to provide an adequate supply of water for normal household use. If the supply is interrupted for any cause, the Cooperative shall not be liable for personal injuries, loss or damage resulting therefrom, nor will such failure constitute breach of agreement for service. The Cooperative shall have the right to temporarily suspend service for the purpose of making repairs or improvements to the system. When practical, members affected will be notified in advance. Members shall notify the Cooperative of water main breaks and other unsafe water system conditions.

7. METERS

Meters will be installed by the Cooperative in locations determined by the Cooperative. The Cooperative will use reasonable efforts to read meters on a monthly or bi-monthly basis. If for any reason a reading cannot be obtained for any particular period, the billing may be based on an estimated water use and reconciled at the next available reading. The Cooperative's employees and agents shall be provided reasonable access to water meters for meter reading, maintenance, repairs and replacements. Should a meter or meter box be obstructed or inaccessible, the customer shall be notified of the problem in writing with a request that the customer clear any obstructions and make the meter or meter box accessible prior to the next scheduled meter reading. Failure to comply with the Cooperative's request will allow the Cooperative to discontinue service until the problem is corrected.

Only Cooperative employees and agents are authorized to turn on/turn off a meter. Unauthorized connection to or use of a water service is not allowed and may cause a fine in an amount determined by the Board to be assessed to the member. Members shall advise their plumbers and other contractors of these Rules. The Cooperative may discontinue service until the problem is corrected.

8. CROSS CONNECTIONS; SECONDARY WATER SOURCE

No member shall connect their service line, plumbing or any structure receiving Cooperative water with any other water source. The Cooperative may require members to install backflow prevention devices on their side of the water meter in accordance with a cross connection policy adopted by the Board.

9. USE OF WATER

The Cooperative's water may only be used (a) on a parcel of land having a county issued tax parcel number for which the Cooperative has authorized a water connection and installed a water meter, and (b) for irrigation and stock watering purposes on an adjacent parcel of property owned by the same person or firm that holds the membership if authorized by the Cooperative's manager or Board of Directors. All such use under (b) must utilize reasonable water conservation measures and is revocable by the Cooperative.

Unless specifically agreed upon by the Cooperative in writing, the member shall not resell any water received from the Cooperative.

10. DELINQUENCY; DISCONNECTION OF SERVICE

The Cooperative may refuse to connect or may disconnect service for violations of any of these Rules, for failure to pay charges for water or other service when due, for theft, for illegal diversion of water, or for failure to pay any indebtedness, or damages to Cooperative's property. Except when public health is at risk, the Cooperative shall provide a member with reasonable notice of a proposed disconnection of service.

a) member receives written notice of past due amount after 30 days, including any late fees then due.

b) After 60 days Member receives second (2nd) written notice of past due amount and late fee, and warning that service may be disconnected if payment is not received within 90 days of original due date.

c) At 90 days, written notice of hearing before the Board, no less than 20 days prior to hearing, will be sent to the Member. Board approval is required for actual shutoff of water due to nonpayment. After Board approval, water service will be shut off and the Member will be assessed a Disconnection Fee. The disconnection of service does not release the member from recurring or new fixed monthly charges or fees even though the meter has been shut off.

d) The Board at its sole discretion may make payment arrangements on a case-by-case basis.

e) After all amounts due the Cooperative have been fully paid or a payment arrangement has been approved by the Board, water service shall be reconnected by the Cooperative. The Member will be assessed a Reconnection Fee and costs to repair any damages to Cooperative's property.

In cases where a Member breaks, unlocks or turns on their water service without the permission of the Cooperative, an additional fine may be imposed by the Board.

In addition to all other remedies available to the Cooperative, in the event of non-payment of any amount due the Cooperative, the Cooperative may record with the King County Department of Records and Elections a lien on the Member's real property that receives or is designated to

receive water service from the Cooperative and shall include the right to recover a reasonable sum for attorney's fees, court costs and title insurance costs.

11. WATER MAIN EXTENSION POLICY

In order to receive water service, a member may be required to extend a Cooperative water main to the far end of the member's property at the sole cost of the member, pursuant to a developer extension agreement approved by the Board. Developer extension agreements shall contain terms and conditions to ensure the proper installation of mains pursuant to designs and specifications approved by the Cooperative's engineer and require conveyance of the main extension and easements to the Cooperative at no charge. No later than the time of final acceptance by the Cooperative of a member constructed main extension and subject to Board approval of a reimbursement agreement, the member may request reimbursement for an equitable portion of the cost of a main extension to apply if another member is permitted to connect to the main.

Notwithstanding the foregoing, the Cooperative may agree, on a case-by-case basis, to install main extensions in which case the benefited members, as determined by the Board, upon connection, shall pay all or an allocated portion of the actual cost thereof, including a factor for interest, or a charge based on a Board adopted rate in lieu of the actual cost. Costs incurred by the Cooperative in responding to and reviewing a request for main extension shall be paid by the requesting party.

As a condition to receiving or continuing to receive water service, members shall be required to grant the Cooperative a perpetual utility easement in, under and upon the member's parcel(s) for the operation, repair, maintenance and replacement of water mains, meters, valves and appurtenances that provide service to the member or other members along with the right to utilize adjoining lands belonging to the member for the purpose of ingress to and egress from the easement area.

12. FIRE HYDRANTS

The use of fire hydrants shall be made available for use by fire district personnel for the purpose of fire protection. Members shall not be charged for water taken from a fire hydrant that is used to fight a fire. A non-member may be charged for all the water used to fight a fire on their property. The Board may adopt a bulk rate for water passing through the fire hydrant. Except in the event of an emergency in which fire district personnel utilize a fire hydrant to fight a fire, the Cooperative's fire hydrants may not be used by any person or firm without the Cooperative's prior written consent. Persons or firms, whether or not members, shall be charged a fine in an amount adopted by the Board for any unauthorized use of water from Cooperative fire hydrants. Members providing information to the Cooperative regarding unauthorized use of hydrants may be offered a reward.

13. RIGHT OF APPEAL

Any Cooperative member may appeal a disputed decision or action of the Cooperative to the Board. A written appeal must be received in the Cooperative office for placement on the agenda of the next Board of Directors meeting at least ten (10) days prior to the meeting date.

14. WATER LEAK ADJUSTMENTS

A credit amounting to 50% of the overage based on average annual usage may be issued to a Member if a leak is repaired immediately upon notification to the Cooperative. No credit shall be given for leaks not repaired within the same billing period as notification. A credit will be given for one billing cycle only.

15. MEMBERSHIPS AND WATER CONNECTIONS APPURTENANT TO LAND

Memberships, water connections, and places on a waiting list shall be appurtenant to the parcel of land for which the membership or connection is issued or application is made and shall, upon application to and approval by the Cooperative, transfer to the transferee of the parcel that is vested with record title. Memberships, water connections, and places on a waiting list shall not otherwise be sold, transferred, or assigned and the Cooperative shall have no obligation to honor any attempt to sell, transfer or assign such rights.

16. WAITING LIST

If the Cooperative Board determines that it has sufficient water supply consistent with DOH requirements and prudent operation it may offer additional Connections. At that time, the Board will establish an outreach plan to current customers and unserved parcel owners in the service area. It will also establish an application process, method of allocation, and pricing.

17. CONNECTION CANCELLATION

If a membership or water connection to the Cooperative's water system has not been put to actual use (meaning a meter has been installed through which water service is being used) within six years, the Cooperative may commence proceedings to cancel such unused but issued membership or water connection and refund all connection charges paid, less the sum of 10% of such charges, which amount shall be retained by the Cooperative as a non-refundable administrative fee. The Cooperative shall issue a written notice thirty days prior to taking such action.

The member may request a hearing from the Board if it desires to contest the cancellation. After the hearing, the Board may cancel the membership and connection unless the member shows good cause as to why it did not install a service connection and meter within such a period and shows a credible plan to make such installation and commence water usage within a time to be determined by the Board, but not more than two years. If the member shows good cause and a credible plan, the Board may extend the date with respect to which the member shall install the service connection and meter and commence water usage for up to two additional years.

The Board's determination in such matters shall be final and binding upon the member. Upon cancellation, the number of equivalent residential units (ERUs) associated with that membership or connection shall automatically be deemed forfeited and waived and the former member shall have no rights to receive water from the Cooperative. The ERUs associated with that membership or connection may be allocated to a new membership or connection by the Cooperative.

18. AMENDMENTS TO RULES AND REGULATIONS

As provided by the Cooperative's Bylaws the Board may amend, revise or void these Rules and Regulations as needed. Any such changes made will be communicated to the Membership within 30 days.

19. FINANCIAL

a. The fiscal year for the Cooperative shall be January 1 to December 31.

b. In December of each fiscal year the Treasurer will arrange for a review of the Cooperative financial records and system. The review should be scheduled to be complete in time for distribution to the Membership at the Annual Meeting in March.

c. An annual budget shall be passed by the Board prior to the beginning of the fiscal year.

d. The Treasurer, or any other officer, may issue checks. Checks less than $1,000 require one authorized Board Member signature. For checks over $1,000 two (2) Board Member signatures are required.

e. If a service contract expense is authorized by the Board, either directly or through the adopted annual budget, any officer or the Operator may sign service agreements. Construction contracts above $1,000 shall be signed by an officer.

20. CONFLICT OF INTEREST AND CODE OF ETHICS

Conflict of Interest Policy adopted on June 23, 2022.

Code of Ethics Policy adopted November 7, 2023

21. RECORD REQUEST POLICY

Policy adopted on November 7, 2023

22. WHISTLEBLOWER POLICY

Policy adopted on November 7, 2023

23. CERTIFICATIONS MADE TO THE USDA (attached as Addendum 1)

As a condition of the loan from the USDA the Cooperative has made these additional commitments and certifications:

- Assurance Agreement (under Title VI, Civil Rights Act of 1964)
- Assurance-Construction Programs
- Certification For Contracts, Grants, Loans
- Applicant Certification Federal Collection, Policies For Consumer and Commercial Debts
- Certification Regarding The Identification and Reporting Rural Development Assistance To Rural Development Employees, Relations, Associates, and Transaction Conflict of Interest
- Drug Free Workplace Policy and Certification

Burton Water Cooperative

Joining Agreement

I (We), as listed below, hereby agree to purchase one Membership Interest to be a Member in the Burton Water Cooperative (the “Cooperative”), a cooperative corporation formed under RCW 24.06 of the State of Washington. As a Member I (We) are entitled to participate in Cooperative committees and activities and vote on Cooperative matters as provided in the Articles and Cooperative Feasibility Period Bylaws.

2. Payment

I (We) are paying the initial Joining Fee of $5.00 dollars to become a Member of the Cooperative as defined by the Cooperative’s By-Laws during the period of time in which the Cooperative is exploring the feasibility of acquiring the assets of the Burton Water Company. I (We) have received the Cooperative Feasibility Period Bylaws.

3. Term and Conditions

The term of this Membership is from the date of this document until the Cooperative, pursuant to a vote of its Members, decides whether or not to proceed with the purchase, financing arrangements, and plan for operations as well as adoption of revised Bylaws for the period of time during which the Cooperative would own and operate the water system. This Membership may be terminated by me (us) at any time by written notice to the Cooperative or by the Cooperative if I (We) cease to meet the membership eligibility requirements.

I (We) hereby acknowledge that this initial Joining Fee is not the full amount that shall be required for Membership if or when the corporation gains title to the water company assets following a vote of the Members. If the Members vote to proceed, I (We) will have the right to remain a Member under the terms of the revised Bylaws. If the Members vote not to proceed, the Membership will terminate upon the dissolution of the Cooperative.

3. Voting

The person(s) listed below are over the age of 18 and have an ownership interest in one or more parcels of real property currently served by the Burton Water Company and anticipated to be served by the Cooperative. I (We) acknowledge these are the only person(s) who are eligible to vote as a Member under the Cooperative Feasibility Period Bylaws.

Burton Water Cooperative Certificate of Membership

Members:

_____
Water Service Address or Addresses

_____
Mailing Address, if different from Service Address

_____ _____
Signature of Property Owner Date

_____
Printed Name

_____ _____
Email Address Phone Number

- -

_____ _____
Signature of Additional Property Owner Date

_____
Printed Name

_____ _____
Email Address Phone Number

Payment Form (check one):

___ $5 cash ___ $5 via PayPal link on website ___$5 check to Burton Water Cooperative

Reminder: Pay only one $5 membership fee even if you own multiple connections.

Please return this form as soon as possible by your preferred method:

- Mail to **20211 Vashon Hwy SW #29**, Vashon, WA 98070 or,
- Drop off at the Burton Store in the white collection box or,
- Scan and email to info@burtonwater.org or,
- Download and complete online via a link on www.burtonwater.org

Approved and Signed by its duly appointed Officer:

_____ _____
Signature Date

_____
Printed Name

Burton Water Cooperative
Joining Agreement Instructions & Q&A

INSTRUCTIONS:

a. Please sign the enclosed Joining Agreement, including the names, contact information, and signatures for owners of the legal parcel currently connected to the Burton Water Company system.
b. To review the bylaws referred to in the Agreement, please download a copy from https://www.burtonwater.org.
c. Return the signed agreement one of 3 ways: regular mail to 20211 Vashon Hwy SW #29, Vashon, WA 98070; drop off @ the collection box at the Burton Store; or scan/send to info@burtonwater.org
d. Submit a $5 fee by enclosing a check with the signed agreement (above) or online by using the PayPal link now available on the website. (www.burtonwater.org)

1) What is the purpose of signing this Agreement to become a member of the Burton Water Cooperative (BWC)?

Becoming a member during the feasibility period entitles you to participate in committees and other co-op activities, but most importantly it will give you a voice/vote in the final decision of whether or not the co-op moves forward and acquires the Burton Water Company. By growing the membership, the co-op can demonstrate community involvement in the project. Think of it as registering to vote in an election with the cooperative membership meeting as the election day. Every membership is important!

2) What is the significance of the $5 fee?

Paying a fee is a legal requirement for membership in a cooperative. The price is set low so as not to be a financial obstacle to anyone and to encourage as many eligible members to join as possible in advance of the vote to decide whether or not to acquire the Burton Water Company.

3) Does my signing of this agreement and payment of $5 indicate that I have already decided to support the acquisition of the Burton Water Company by the co-operative?

No, though by joining the co-op, you have the opportunity to cast your vote about the acquisition decision, whether you support the decision or not.

4) What if I have multiple properties in the service area?

Per the Feasibility Bylaws (also downloadable at burtonwater.org), as a cooperative, one membership equals one vote. Therefore, if you own more than one legal parcel with a connection, all of them are covered by one membership and one Joining Agreement.

5) Who signs this Joining Agreement?

The legal owner, if a single person, or owners, if there is more than one you want to be able to vote (ie, spouses, siblings, partners). Please note that while all persons listed are eligible to vote, only one of these persons may vote on any particular matter.

6) When will additional details be available about the costs associated with a permanent Membership Agreement if the decision is made to purchase the Burton Water Company?

Part of the money to purchase the Burton Water Company will need to come from current customers purchasing a Membership in the Burton Water Cooperative. The price will be determined by the capital requirements of the co-operative as part of an overall financing plan. The Board of Directors and its Committees are exploring the purchase and working out the details of the project. Before the final vote, members will have received the details of the sale, the projected operating budget, details on planned improvements and maintenance, and the final cost of a membership share. The Board of Directors will provide information to members as soon as it becomes available. To access the most recent information, please visit www.burtonwater.org

Office of the Secretary of State
Corporations & Charities Division

Physical/Overnight address
801 Capitol Way S
Olympia, WA 98501-1226
Tel: 360.725.0377

Mailing Address
PO Box 40234
Olympia, WA 98504-0234
www.sos.wa.gov/corps

This Box For Office Use Only

FILED
Secretary of State
State of Washington
Date Filed: 03/01/2022
Effective Date: 03/01/2022
UBI No: 604 884 110

□ **Filing Fee $30**

□ **To Expedite Filing Add $50**

ARTICLES OF INCORPORATION
Washington Nonprofit Corporation
Miscellaneous and Mutual
RCW 24.06

All fields required unless otherwise specified

(1) Do you already have a UBI Number? (Check one) □ Yes □ No If Yes, provide UBI # _____

If No, a new UBI# will be issued to you upon successful completion of the filing.

(2) ENTITY NAME: Burton Water Cooperative

For name requirements review the following RCW(s): RCW 23.95.305

Does the entity have a name reserved? (Check one) □ Yes □ No

If Yes, provide the Name Reservation Number and Name above. If No, provide only the name above.

Reservation Number: _____

(3) PURPOSE OF CORPORATION: ***Purpose for which the nonprofit is organized**

The purposes for which the Cooperative is organized is:

Operate a community water system. See attached for other provisions

Any other provisions: Attach if necessary

(4) PERIOD OF DURATION: Please check **ONE** of the following

■ This Corporation shall have a perpetual duration (default) □ This Corporation shall have a duration of _____ years.

□ This Corporation shall expire on _____

(5) EFFECTIVE DATE: Please check **ONE** of the following:

■ Date of filing □ Specify a date _____ cannot be more than 90 days following received date

Work Order #: 2022030100143184 - 1
Received Date: 03/01/2022
Amount Received: $80.00

(6) REGISTERED AGENT:

Is the Registered Agent a Commercial Registered Agent? ☐ Yes ■ No

If Yes, provide the name of the Commercial Registered Agent: _____

A Commercial Registered Agent is an entity or individual that is registered with the Office of the Secretary of State to receive legal documents on behalf of a corporation. A Commercial Registered Agent has the entities/individual's address on record with the office.

A Registered Agent consent is still required for a Commercial Registered Agent located below.

If No, please continue below

Please complete ONE type of Registered Agent below. Be sure to include the name below the checked box. Then continue to provide the required street address. Mailing address if needed.

☐ **Individual**	■ **Entity**	☐ **Office or Position**
	Northwest Cooperative Development	
First and last name of a Non-commercial Registered Agent. (Any person not registered as a Commercial Registered Agent.)	Name of a Non-commercial Registered Agent. (Any business not registered as a Commercial Registered Agent.)	List the Office or Position serves as agent. (Only if using the specific office or position as the registered agent, no matter who holds the position like: Secretary, Member or Treasurer.)

Phone: 360.570.8415 Email: sam@nwcdc.coop

Registered Agent Street Address (required)
(Must be a physical address No PO Box or PMB)

Country: **United States** **State**: **Washington**

Address : 407 4th Avenue East Suite 201

Zip: 98501 **City**: Olympia

Registered Agent Mailing Address (*optional*)
☐ **Check if mailing address is the same as street address**

Country: **United States** **State**: **Washington**

Address : P.O. Box 256

Zip: 98501 **City**: Olympia

CONSENT TO SERVE AS REGISTERED AGENT - REQUIRED FOR ALL TYPES

I hereby consent to serve as Registered Agent in the State of Washington for the named entity. I understand it will be my responsibility to accept service of process, notices, and demands on behalf of the entity; to forward mail to the entity; and to immediately notify the Office of the Secretary of State if I resign or change the Registered Office Address.

Signature of Registered Agent	FRED MEDICOTT	3/1/2022
	Printed Name/Title	Date

Work Order #: 2022030100143184 - 1
Received Date: 03/01/2022
Amount Received: $80.00

(7) INITIAL BOARD OF DIRECTORS: *Name and address of each initial director are required. Attach an additional sheet if necessary.

Name: Donald Furman **Address:** 9035 SW Bayview Drive
City Vashon **State** WA **Zip** 98070

Name: Benjamin Lee **Address:** 9733 SW Harbor Dr
City Vashon **State** WA **Zip** 98070

Name: Chuck Weinstock **Address:** 24010 99th Ave SW
City Vashon **State** WA **Zip** 98070

(8) DISTRIBUTION OF ASSETS:

In the event of voluntary dissolution, the net assets will be distributed as follows:

All liabilities and obligations of the corporation shall be paid, satisfied and discharged, or adequate provision made therefore

Assets held by the corporation upon condition requiring return, transfer or conveyance, which condition occurs by reason of the

dissolution, shall be returned, transferred, or conveyed in accordance with such requirements;

Remaining assets, if any, to the members prorated in accordance with their respective membership interests

(9) QUALIFICATIONS, RIGHTS & RESPONSIBILITIES OF MEMBERS: RCW 24.06.025(4)

Provide the manner of election, appointment, or admission to membership and termination of membership, if there is more than one class of members or if the members of any one class are not equal. The relative rights and responsibilities of each class or member: **Attached an additional sheet if necessary**.

See attached

(10) DISSENTION:

Do dissenting shareholders or members have limited return of less than the fair value? (check one): ■ Yes □ No

Work Order #: 2022030100143184 - 1
Received Date: 03/01/2022
Amount Received: $80.00

(11) CAPITAL STOCK:

Will the entity have capital stock? (check one): ☐ Yes ■ No **If No is selected continue to (12)**

If Yes aggregate number of Authorized Shares* _____

- Are there any provisions limiting or denying to shareholders the preemptive right to acquire additional shares of the corporation? (check one): ☐ Yes ☐ No
- Will there be more than 1 class of shares? (check one): ☐ Yes ☐ No
- If only 1 class, select the value, **then continue to (12)**. (check one): ☐ Par Value: _____ ☐ Without Par Value
- If shares are divided into multiple classes an attachment stating the number of shares of each class, the par value of the shares or that the shares are without par value and an outline of RCW 24.06.025(5)(b)(c), must be submitted either with this filing or through Articles of Amendment prior to the issuance of shares.

Please refer to RCW 24.06.025 and RCW 24.06.070

(12) DISTRIBUTION OF SURPLUS:

Will the entity distribute surplus funds to its members, stockholders, or other persons? (check one): ■ Yes ☐ No

If Yes, provide the provisions for determining the amount and time of distribution: _____

See attached

(13) RETURN ADDRESS FOR THIS FILING: ***(Optional)***

This address will be sent document(s) regarding this specific filing in addition to document(s) being sent to the Registered Agent's street/mailing address.

Attention to: _____ **Email:** _____

Address: _____

City _____ **State** _____ **Zip** _____

(14) INCORPORATOR INFORMATION:

Name, address, and signature required. Attach additional sheets if necessary.

I hereby certify, under penalty of law, that the above information is accurate and complies with the filing requirements of state law.

Name: Fred Medlicott

Address: P.O. Box 256

City Olympia **State** WA **Zip** 98501 **Country** USA

	Fred Medlicott	3.1.22 FM
Signature of Incorporator	**Printed Name/Title**	**Date**

Work Order #: 2022030100143184 - 1
Received Date: 03/01/2022
Amount Received: $80.00

3: Purposes

The Cooperative is organized for the purpose of operating a community water system for Burton property owners who want clean, sustainable and affordable water service on a co-operative basis.

Further, the Cooperative may purchase property from and sell property to members, or to members and other patrons, and perform labor for or render other services to members and other patrons as allowed for by the Cooperative bylaws.

In furtherance of the foregoing purposes, the Cooperative shall have and may exercise all of the rights, powers and privileges now or hereafter conferred upon a Cooperative organized under the laws of Washington. The Cooperative may do and perform, either for itself or its members, directly or indirectly, any and all things, and may exercise any and all powers, as may be necessary, convenient or conducive to accomplish any or all of the Cooperative's purposes. The Cooperative shall have such incidental owners, as may be necessary or convenient to accomplish any or all of its purposes.

9: Additional Initial Board of Directors

Lisa Fitzhugh	James Culbertson	William Shadbolt	Dawn Kerber
522 19th Ave.	23501 107th Ave SW	7683 SE 27th St, 125	24002 Vashon Hwy SW
Seattle	Vashon	Mercer Island	Vashon
WA, 98122	WA, 98070	WA, 98040	WA, 98070

9: Member Qualifications, Rights, Responsibilities

The voting rights of the members of the Cooperative shall be equal, and no member shall have more than one vote.

Any person 18 years old or older who meets any membership qualifications established in the bylaws shall be qualified to become a member upon paying the membership dues. The amount, method and time of payment of all dues shall be determined by the board of directors and may change periodically.

A membership in the Cooperative association may be held only by a person qualified to be a member of the Cooperative association and may not be transferred, except as may be provided for in the Bylaws.

In the event a member shall cease to be a member of the Cooperative association, the former member shall have no rights or privileges on account of

Work Order #: 2022030100143184 - 1
Received Date: 03/01/2022
Amount Received: $80.00

the membership or vote or voice in the management or affairs of the Cooperative association, other than the right to participate in accordance with law in case of dissolution.

Any other capital accounts in the Cooperative association of a member who is terminated or withdraws shall be handled in accordance with policies established by the Cooperative association in its bylaws or by its board of directors.

12: Distribution of Surplus

The Cooperative shall operate on a cooperative basis and in accordance with Subchapter T of the Internal Revenue Code. After any reductions for reserves, retained earnings, or other stated business purposes, the patronage net income ("Net Margins") of the Cooperative shall be allocated to the consumer members in proportion to their patronage. The Board shall adopt rules for the payment of patronage dividends to individual members. Such rules shall assure that payment of patronage dividends do not impair the financial condition of the Cooperative.

Work Order #: 2022030100143184 - 1
Received Date: 03/01/2022
Amount Received: $80.00

BUSINESS LICENSE

STATE OF WASHINGTON

Issue Date: Apr 08, 2022
Unified Business ID #: 604884110
Business ID #: 001
Location: 0001

Nonprofit Corporation

BURTON WATER COOPERATIVE
29
20211 VASHON HWY SW
VASHON WA 98070-6025

TAX REGISTRATION - ACTIVE

This document lists the registrations, endorsements, and licenses authorized for the business named above. By accepting this document, the licensee certifies the information on the application was complete, true, and accurate to the best of his or her knowledge, and that business will be conducted in compliance with all applicable Washington state, county, and city regulations.

Vicki Smith

Director, Department of Revenue

IRS Department of the Treasury
Internal Revenue Service

OGDEN UT 84201-0038

In reply refer to: 0152708111
Aug. 03, 2022 LTR 147C 0
88-1302361 000000 00
00003838
BODC: NOBOD

BURTON WATER COOPERATIVE
% DONALD FURMAN
20211 VASHON HWY SW 29
VASHON WA 98070

038374

Employer identification number: 88-1302361

Dear Taxpayer:

Thank you for your inquiry of July 25, 2022.

We can't reproduce the CP 575/576, Employer Identification Number (EIN) Assignment. However, this letter will serve as proof of EIN assignment verification.

Your employer identification number (EIN) is 88-1302361. Please keep this letter in your permanent records. Enter your name and EIN on all federal business tax returns and on related correspondence.

You can get any of the forms or publications mentioned in this letter by visiting our website at www.irs.gov/forms-pubs or by calling 800-TAX-FORM (800-829-3676).

If you have questions, you can call us at 800-829-0115.

If you prefer, you can write to us at the address at the top of the first page of this letter.

When you write, include a copy of this letter, and provide your telephone number and the hours we can reach you in the spaces below.

Telephone number ( )_____ Hours _____

Keep a copy of this letter for your records.

Thank you for your cooperation.

0152708111
Aug. 03, 2022 LTR 147C 0
88-1302361 000000 00
00003839

BURTON WATER COOPERATIVE
% DONALD FURMAN
20211 VASHON HWY SW 29
VASHON WA 98070

Sincerely yours,

Cathy M. Snider

Cathy M. Snider, Operations Mgr.
Accounts Management Op 3

Enclosures:
Copy of this letter

BURTON WATER COOPERATIVE

WHISTLEBLOWER POLICY

Adopted by the Board of the Burton Water Cooperative on November 7, 2023

The Burton Water Cooperative (the "***Cooperative***") is committed to maintaining a workplace where employees, volunteers, constituents, officers and directors are free to raise good-faith concerns regarding the Cooperative's practices and operations, specifically (1) reporting suspected violations of the law on the part of the Cooperative or its employees, volunteers, officers or directors, including but not limited to federal laws and regulations, and (2) providing truthful information in connection with an inquiry or investigation by a court, an agency, law enforcement, or other governmental body.

An employee, volunteer, constituent, officer or director who wishes to report a suspected violation of the law or the Cooperative policy may do so confidentially by contacting any director.

The Cooperative expressly prohibits any form of retaliation, including harassment, intimidation, adverse employment actions, or any other form of retaliation, against the person(s) who report suspected violations of the law or who cooperate in inquiries or investigations. Any person who engages in retaliation will be subject to discipline up to and including termination.

Any person who believes that they have been subjected to any form of retaliation as a result of reporting a suspected violation of the law or the Cooperative policy should immediately report the retaliation to any director.

Reports of suspected violations of law or policy and reports of retaliation will be investigated promptly and in a manner intended to protect confidentiality, consistent with a full and fair investigation. The Board will conduct, or designate other internal or external parties to conduct, the investigations.

The Board of Directors will cause to be retained - on a strictly confidential basis for a period of seven years - all records relating to any complaint and to the investigation and resolution thereof. All such records are confidential to the Cooperative and such records will be considered privileged and confidential.

Code of Ethics

Policy adopted by Board of Directors on November 7, 2023.

1. Conflict of Interest

It is the policy of the Burton Water Cooperative ("Cooperative") that the private conduct and financial dealings of its directors, officers and employees shall present no actual or apparent conflict of interest with the interests of the Cooperative.

2. Adoption

Public confidence in the Cooperative is essential and must be sustained by establishing and enforcing rules to assure the impartiality and honesty of directors, officers and employees in all transactions and decisions. There is hereby established a code of ethics for all Cooperative directors, officers and employees.

3. Activities Incompatible With Public Duties

No director, officer or employee may have an interest, financial or otherwise, direct or indirect, or engage in a business or transaction or professional activity, or incur an obligation of any nature, that is in conflict with the proper discharge of his or her official duties to the Cooperative. A conflict does not exist where a reasonable person would not believe that anything of value was received or derived by a director, officer or employee as a result of his or her employment by the Cooperative except as authorized herein.

4. Interests In Transactions

No director, officer or employee may be beneficially interested, directly or indirectly, in a contract, sale, lease, or purchase involving the Cooperative that may be made under his or her supervision and shall not accept any compensation, gratuity, or reward from any other person beneficially interested in a contract, sale, lease, or purchase involving the Cooperative.

5. Disclosure of Confidential Information

No director, officer or employee may make a disclosure of confidential information gained by reason of his or her position with the Cooperative, or otherwise use the information for his or her personal gain or benefit or the gain or benefit of another.

6. Special Privileges

Except as required to perform duties within the scope of his or her employment with the Cooperative, no director, officer or employee may use his or her position to secure special privileges or exemptions for him or herself, or others.

7. Compensation for Official Duties or Nonperformance

No director, officer or employee may, directly or indirectly, agree to receive or receive any compensation, reward, or gratuity for performing his or her duties on behalf of the Cooperative except as authorized herein or by law. The payment and receipt of Board authorized compensation by an employee, directors' fees as established by the Board and reimbursement of Board approved out of pocket costs incurred while acting on behalf of the Cooperative are permitted.

8. Gifts

No director, officer or employee may receive, accept, take, seek, or solicit, directly or indirectly, anything of economic value as a gift, gratuity, or favor except under circumstances where a reasonable person would not believe that the gift, compensation, or thing of value was given for the purpose of obtaining special consideration from the Cooperative or to influence Cooperative action. Receipts of unsolicited items having a value of less than $50.00 are presumed not to be for the purpose of obtaining special consideration or to influence.

9. Use of Persons, Money, or Property for Private Gain

No director, officer or employee may employ or use any Cooperative employee, money, or property under his or her official control or direction for his or her private benefit or gain.

10. Use of Public Resources for Political Campaigns

Cooperative directors, officers and employees may participate in political activities on their own time and outside of the workplace by working on campaigns for the election of any person to any office or for the promotion of or opposition to any ballot proposition, but shall not use or authorize the use of the facilities of the Cooperative for such purposes.

11. Active Participation

Directors and officers are expected to exercise the duties and responsibilities of their positions with integrity, collegiality, and care. This includes:

a. Attending all scheduled board meetings or notifying other board members in advance if unable to attend.

b. Completing assigned tasks in a timely manner.

c. Being prepared to discuss the issues and business on the agenda, and having read all background material relevant to the topics at hand.

d. Cooperating with and respecting the opinions of fellow Board members, and leaving personal prejudices out of all board discussions, as well as supporting actions of the Board, even when the Board member personally did not support the action taken.

e. Putting the interests of the organization above personal interests.

f. Representing the Burton Water Cooperative in a positive and supportive manner at all times and in all places.

g. Showing respect and courteous conduct in all board and committee meetings.

h. Refraining from intruding on administrative issues that are the responsibility of management, except to monitor the results and ensure that procedures are consistent with board policy.

12. Prohibition Against Discrimination and Sexual Harassment

The Burton Water Cooperative strives to maintain a workplace that is free from discrimination and harassment. While all forms of illegal discrimination and harassment are prohibited, it is the organization's policy to emphasize that sexual harassment is specifically prohibited. Any director, officer or employee who engages in discriminatory or harassing conduct towards another Member or employee of the Burton Water Cooperative is subject to removal from the Board or employment. Complaints alleging misconduct on the part of any director, officer or employee will be investigated promptly and as confidentially as possible by a task force of the Board appointed by the Board President. In the event the President is a party to the investigation, the Vice-President shall appoint the task force.

13. Compliance/Annual Disclosure

The Cooperative shall require each director, officer and employee to acknowledge receipt of these policies at the time of initial adoption and for new persons, at the time of engagement or election. Such persons shall disclose to the Cooperative the acquisition of any interest that could give rise to a violation of the Conflict of Interest policies. The Cooperative shall query its directors, officers and employees on an annual basis as to whether they have acquired any such interest.

Conflict of Interest and Compensation Policy of Burton Water Cooperative ("the Cooperative")

Adopted by the Board of Directors on June 23, 2022

I. Overview

1. Purpose

The purpose of this Conflict of Interest and Compensation Policy (the "policy") is to protect the Cooperative's interests when it is considering taking an action or entering into a transaction that might benefit the private interests of a **director, officer or key person**[1], result in the payment of excessive compensation to a director, officer or key person; or otherwise violate state and federal laws governing conflicts of interest applicable to nonprofit, charitable organizations.

2. Why is a policy necessary?

As a nonprofit the Cooperative is accountable to government agencies, its members, and members of the public for responsible and proper use of its resources. Directors, officers, and employees have a duty to act in the Cooperative's best interests and may not use their positions for their own financial or personal benefit.

Conflicts of interest must be taken very seriously since they can damage the Cooperative's reputation and expose both the Cooperative and affiliated individuals to legal liability if not handled appropriately. Even the appearance of a conflict of interest should be avoided, as it could undermine public support for the Cooperative.

3. To whom does the policy apply?

This policy applies to all directors, officers, and key persons ("you")[2].

II. Identifying Conflicts of Interest

1. What is a conflict of interest?

A potential conflict of interest arises when a director, officer or key person, or that person's relative[3] or business (a) stands to gain a financial benefit from an action the Cooperative takes or a transaction into which the Cooperative enters; or (b) has another interest that impairs, or could be seen to impair, the independence or objectivity of the director, officer or key person in discharging their duties to the Cooperative.

2. What are some examples of potential conflicts of interest?

---

[1] **Key person** means a person, other than a director or officer, whether or not an employee of the Cooperative, who:

a) has responsibilities, or exercises powers or influence over the Cooperative as a whole similar to the responsibilities, powers, or influence of directors and officers;
b) manages the Cooperative, or a segment of the Cooperative that represents a substantial portion of the activities, assets, income, or expenses of the Cooperative; or
c) alone or with others controls or determines a substantial portion of the Cooperative's capital expenditures or operating budget.

[2] **Relative** means a person's spouse or domestic partner, ancestors, brothers and sisters (whether whole or half-blood), children (whether natural or adopted), grandchildren, great-grandchildren, and spouses or domestic partners of brothers, sisters, children, grandchildren and great-grandchildren.

It is impossible to list all the possible circumstances that could present conflicts of interest. Potential conflicts of interest include situations in which a director, officer, or key person or that person's relative or business:

- has an ownership or investment interest in any third party that the Cooperative deals with or is considering dealing with;
- serves on the board of, participates in the management of, or is otherwise employed by or volunteers with any third party that the Cooperative deals with or is considering dealing with;
- receives or may receive compensation or other benefits in connection with a transaction into which the Cooperative enters;
- receives or may receive personal gifts or loans from third parties dealing with the Cooperative;
- serves on the board of directors of another nonprofit organization that is competing with the Cooperative for a grant or contract;
- has a close personal or business relationship with a participant in a transaction being considered by the Cooperative;
- would like to pursue a transaction being considered by the Cooperative for their personal benefit.

3. In situations where you are uncertain, err on the side of caution and disclose the potential conflict as set forth in Section III of this policy.

4. A potential conflict is not necessarily a conflict of interest. A person has a conflict of interest only if the board decides, pursuant to Section IV of this policy, that a conflict of interest exists.

III. Disclosing Potential Conflicts of Interest

1. You must disclose to the best of your knowledge all potential conflicts of interest as soon as you become aware of them and always before any actions involving the potential conflict are taken. Submit a signed, written statement disclosing all the material facts to the board.

2. You must file an annual disclosure statement in the form attached to this policy if you are a director.

3. If you are nominated to be a director, you must also file this statement prior to your initial election. Submit the form to the chair of the board or Nominating Committee.

IV. Determining Whether a Conflict of Interest Exists

1. After there has been disclosure of a potential conflict and after gathering any relevant information from the concerned director, officer or key person, the board shall determine whether there is a conflict of interest. The director, officer, or key person shall not be present for deliberation or vote on the matter and must not attempt to influence improperly the determination of whether a conflict of interest exists.

2. In determining whether a conflict of interest exists, the board shall consider whether the potential conflict of interest would cause a transaction entered into by the Cooperative to raise questions of bias, inappropriate use of the Cooperative's assets, or any other impropriety.

3. A conflict always exists in the case of a related party transaction **–** a transaction, agreement, or other arrangement in which a **related party**[4] has a financial interest and in which the Cooperative or any affiliate of the Cooperative is a participant.[5]

4. If the board determines that there is a conflict of interest, it shall refer the matter to the board of directors ("board").

V. Procedures for Addressing a Conflict of Interest

1. When a matter involving a conflict of interest comes before the board, the board may seek information from the director, officer, or key person with the conflict prior to beginning deliberation and reaching a decision on the matter. However, a conflicted person shall not be present during the discussion or vote on the matter and must not attempt to influence improperly the deliberation or vote.

2. **Additional Procedures for Addressing Related Party Transactions**
   a. The Cooperative may not enter into a related party transaction unless, after good faith disclosure of the material facts by the director, officer, or key person, the board or a committee authorized by the board determines that the transaction is fair, reasonable and in the Cooperative's best interest at the time of such determination.

   b. If the related party has a substantial financial interest, the board or authorized committee shall:

      i. prior to entering into the transaction, consider alternative transactions to the extent available;

      ii. approve the transaction by a vote of not less than a majority of the directors; and

      iii. contemporaneously document in writing the basis for its approval, including its consideration of any alternative transactions.

VI. Minutes and Documentation

---

[4] A **related party** is:
1. a director, officer or key person of the Corporation or any affiliate of the Corporation, or
2. a relative of any individual described in (1), or
3. an entity in which any individual described in (1) or (2) has an ownership or beneficial interest of 35% or more, or in the case of a partnership or professional Corporation, a direct or indirect ownership interest in excess of 5%.

[5] A transaction is not a related party transaction if:
1. the transaction, or the related party's financial interest in the transaction, is *de minimis*;
2. the transaction would not customarily be reviewed by the board or the boards of similar organizations in the ordinary course of business and is available to others on the same or similar terms;
3. the transaction constitutes a benefit provided to a related party solely as a member of a class of the beneficiaries that the Corporation intends to benefit as part of the accomplishment of its mission (and that benefit is available to all similarly situated members of the same class on the same terms).

The minutes of any board meeting at which a matter involving a conflict of interest or potential conflict of interest was discussed or voted upon shall include:

a. the name of the interested party and the nature of the interest;

b. the decision as to whether the interest presented a conflict of interest;

c. any alternatives to a proposed contract or transaction considered by the board; and

d. if the transaction was approved, the basis for the approval.

VII. Prohibited Acts

The Cooperative shall not make a loan to any director or officer.

VIII. Procedures for Determining Compensation

1. No person shall be present for or participate in board or committee discussion or vote pertaining to:

a. their own compensation;

b. the compensation of their relative;

c. the compensation of any person who is in a position to direct or control them in an employment relationship;

d. the compensation of any person who is in a position to directly affect their financial interests; or

e. any other compensation decision from which the person stands to benefit.

2. In the case of compensation of Key Persons, the following additional procedures apply:

a. The board or a committee authorized by the board shall approve compensation before it is paid.

b. The board or authorized committee shall base approval of compensation on appropriate data, such as compensation paid by comparable organizations for functionally similar positions, availability of similar services in the geographic area of the Cooperative, and compensation surveys compiled by independent firms.

c. The board or authorized committee shall contemporaneously document:

i. the terms of compensation and date of determination;

ii. the members of the board or committee who were present and those who voted for it;

iii. the comparability data relied on and how it was obtained;

iv if the compensation is higher or lower than the range of comparable data, the basis for the determination, and;

v. any actions with respect to consideration of the compensation by anyone on the board or committee who had a conflict of interest with respect to the matter.

Burton Water Cooperative
Conflict of Interest Disclosure Statement

By signing below, I affirm that:

1. I have received and read a copy of the Conflict of Interest and Compensation Policy;
2. I agree to comply with the Policy; and
3. I have no actual or potential conflicts as defined by the policy or if I have, I have previously disclosed them as required by the policy or am disclosing them below.

Disclose here, to the best of your knowledge:

1. any entity in which you participate (as a director, officer, employee, owner, or member) with which the Cooperative has a relationship;
2. any transaction in which the Cooperative is a participant as to which you might have a conflicting interest; and
3. any other situation which may pose a conflict of interest.

Name: _____

Position: _____

Signature: _____

Date: _____

OMB APPROVAL NO. 0991-0002

U.S. DEPARTMENT OF AGRICULTURE

CERTIFICATION REGARDING DRUG-FREE WORKPLACE REQUIREMENTS (GRANTS) ALTERNATIVE I - FOR GRANTEES OTHER THAN INDIVIDUALS

This certification is required by the regulations implementing Sections 5151-5160, of the Drug-Free Workplace Act of 1988 (Pub. L. 100-690, Title V, Subtitle D; 41 U.S.C. 701 et seq.), 7 CFR Part 3017, Subpart F, Section 3017.600, Purpose. The January 31, 1989, regulations were amended and published as Part II of the MAY 25, 1990, Federal Register (pages 21681-21691). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the grant.

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)

Alternative I

A. The grantee certifies that it will or will continue to provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing an ongoing drug-free awareness program to inform employees about --

(1) The dangers of drug abuse in the workplace;

(2) The grantee's policy of maintaining a drug-free workplace;

(3) Any available drug counseling, rehabilitation, and employee assistance programs; and

(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a):

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will --

(1) Abide by the terms of the statement; and

(2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;

(e) Notify the agency in writing, within 10 calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position, title, to every grant officer on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;

(1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or

(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e) and (f).

B. The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance (Street address, city, county, State, zip code)

11611 SW 232nd Street Vashon WA 98070

Check ☐ if there are workplaces on file that are not identified here.

Burton Water Cooperative	Burton Water Cooperative-System Acquisition and Improvement
Organization Name	Award Number or Project Name

Chuck Weinstock, Board Member-Burton Water Cooperative

Name and Title of Authorized Representative

Chuck Weinstock Board Treasurer — 02/21/2024

Signature — Date

Instructions for Certification

1. By signing and submitting this form, the grantee is providing the certification set out on pages 1 and 2.

2. The certification set out on pages 1 and 2 is a material representation of fact upon which reliance is placed when the agency awards the grant. If it is later determined that the grantee knowingly rendered a false certification, or otherwise violates the requirements of the Drug-Free Workplace Act, the agency, in addition to any other remedies available to the Federal Government, may take action authorized under the Drug-Free Workplace Act.

3. Workplaces under grants, for grantees other than individuals, need not be identified on the certification. If know, they may be identified in the grant application. If the grantee does not identify the workplaces at the time of application, or upon award, if there is no application, the grantee must keep the identity of the workplace(s) on file in its office and make the information available for Federal inspection. Failure to identify all known workplaces constitutes a violation of the grantee's drug-free workplace requirements.

4. Workplace identifications must include the actual address of buildings (or parts of buildings) or other sites where work under the grant takes place. Categorical descriptions may be used (e.g., all vehicles of a mass transit authority or State highway department while in operation, State employees in each local unemployment office, performers in concert halls or radio studios).

5. If the workplace identified to the agency changes during the performance of the grant, the grantee shall inform the agency of the change(s), if it previously identified the workplaces in question (see paragraph three).

6. Definitions of terms in the Nonprocurement Suspension and Debarment common rule and Drug-Free Workplace common rule apply to this certification. Grantees' attention is called, in particular, to the following definitions from these rules:

``Controlled substance'' means a controlled substance in Schedules I through V of the Controlled Substances Act (21 U.S.C. 812) and as further defined by regulation (21 CFR 1308.11 through 1308.15);

``Conviction'' means a finding of guilt (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the Federal or State criminal drug statutes;

``Criminal drug statute'' means a Federal or non-Federal criminal statute involving the manufacture, distribution, dispensing, use, or possession of any controlled substance;

``Employee'' means the employee of a grantee directly engaged in the performance of work under a grant, including: (i) all ``direct charge'' employees; (ii) all ``indirect charge'' employees unless their impact or involvement is insignificant to the performance of the grant; and, (iii) temporary personnel and consultants who are directly engaged in the performance of work under the grant and who are on the grantee's payroll. This definition does not include workers not on the payroll of the grantee (e.g., volunteers, even if sued to meet a matching requirement; consultants or independent contractors not on the grantee's payroll; or employees of subrecipients or subcontractors in covered workplaces).

BURTON WATER COOPERATIVE

POLICY AND PROCEDURES FOR MEMBER ACCESS TO RECORDS

ADOPTED November 7, 2023

1. **Books and records**. Pursuant to RCW 24.06.160, Burton Water Cooperative ("Cooperative") keeps books and records of account and minutes of the proceedings of its members and Board of Directors (Board). Upon proper request, certain Cooperative records ("Records") as provided herein may be inspected by any Cooperative member ("Member") or its agent or attorney for any proper purpose at reasonable times at the Cooperative's principal office on Vashon Island, Washington. Records may include documents that are in tangible or electronic form.

   The Cooperative is a privately owned, non-profit corporation and, therefore, Ch. 42.56 RCW, known as the Public Records Act, does not apply to the Cooperative.

2. **Request Form**. A Member's request for Records must be in writing, identify the Records requested, identify the purpose of the request, and state the Member's agreement that the Records will only be used for the specified purpose and will not otherwise be disclosed. The request must be on the Cooperative's Record request form (Exhibit No. 1).

3. **Records Generally Authorized for Inspection**. The following records are generally authorized for inspection by Members:

   1. The Cooperative's articles of incorporation, bylaws, schedule of rates and its adopted rules and policies.

   2. Any publications the Cooperative may have for general distribution to members or to the public.

   3. The Cooperative's year-end financial statements and formal audit reports, if any, rendered by independent auditors for the previous three fiscal years.

   4. The minutes of any Board meeting and Member Advisory Committee meeting for the previous seven years. Requests may not include notes from executive sessions.

   5. The Cooperative's adopted operations and capital improvements budgets for the previous three years.

   6. Current year monthly operating and financial reports submitted by management to the Board.

   8. The Cooperative's annual Form 990 for the three previous years.

4. **Other Records**. Requests for inspection of Cooperative records that are not listed in the section above but with respect to which RCW 24.06.160 may apply are subject to the determination process as set forth below.

5. **Membership list**. The Cooperative maintains a list of the names and addresses of each Member. In order to protect Member privacy, the list is not available for inspection or copying. A Member may request that the Cooperative mail, at the Member's expense, materials for the purpose of soliciting Member votes on any matter that may be properly voted on by Members at a Member meeting or soliciting Member signatures on a petition authorized by the Cooperative's bylaws. Such requests are for a proper purpose and shall be approved except for good and sufficient cause. The Board may determine what is a proper purpose and a proper use of the membership list.

6. **Review Process/Redaction**. For requests not governed by Sections 3 and 5 above, the Cooperative's President or other Board designee may make an initial determination concerning the propriety of a Member's request to inspect Records. The President or designee may redact portions of Records to ensure compliance with this policy. The President or designee shall use reasonable efforts to respond to a request for Records under this policy within 10 days of receipt of the request. The response may consist of an initial decision, a deferral of the decision with an estimated time frame for issuance of a decision, or an estimated time frame for when the Records will be available for inspection if the Request is approved. Cooperative response times may be reasonably extended to obtain Board or legal review; to locate, assemble, review, evaluate and redact Records; to prepare responses; and to make available all or parts of the Records requested for inspection.

7. **Denials**. A request for Records shall be denied if:

1. The Member fails or refuses to complete, sign and submit the attached Records request form.

2. If the request is for a purpose that is not reasonably related to the business of Cooperative or the membership interest of the Member that makes the request.

3. If the request is for a commercial or dishonest purpose or is harmful to the lawful interests of the Cooperative.

4. If the Records sought are of such a nature that if disclosed, such disclosure would:

a. violate a person's right to privacy, violate any agreement with third parties, adversely affect Cooperative in its negotiations with third parties, includes trade secrets, intellectual property, property acquisition plans, collective bargaining strategies or negotiations, or information about claims or litigation that would adversely impact the Cooperative.

b. violate the privilege of confidential communication between the Cooperative and its counsel.

5. Includes names or addresses of employees, employee personnel files and any other personal or private information about employees.

6. Includes names, addresses, contact information and account information of the Cooperative's Members, whether past or current.

7. Includes Records that would in the judgment of the Cooperative's management or the Board be unduly burdensome to produce.

If a member's request is denied in whole or part, the Member may appeal, in writing, to the Board. The Board shall make a final determination concerning the Member's request at its next regularly scheduled meeting as long as at least ten days' notice is provided. In the event that suit is filed in

court by the Cooperative or a member to challenge, defend or seek a ruling regarding a partial or full denial of a records request or a redactment, each party shall bear its own legal fees and costs.

8. **Copie**s. The President will determine whether a Record that is authorized for inspection may be copied. This determination shall also be appealable to the Board. When so permitted, copying fees shall apply. The Cooperative may adopt a standard copy charge for 8/12x11 inch documents. The charge for maps and other large documents and files may be based on the Cooperative's out of pocket cost of reproduction.

9. **Reimbursement of Cooperative Costs**. Members shall be required to reimburse the Cooperative for the fully allocated cost of employee time (i.e. including benefits and overhead) beyond 15 minutes required to retrieve, compile and copy, if applicable, the Records requested. The President may require an advance deposit to cover this cost.

EXHIBIT 1

MEMBER REQUEST FOR RECORDS

BURTON WATER COOPERATIVE

TO: Burton Water Cooperative
Vashon Island, WA

In accordance with the Policy and Procedures for Member Access to Records ("Records Policy") of Burton Water Cooperative ("Cooperative"), I hereby submit my request to inspect certain records believed to be maintained by the Cooperative. I hereby represent and certify that:

1. I am a member of the Cooperative. My full name, address, telephone number and member account number is as follows:

   Name: _____

   Address: _____

   City: _____ State: _____ Zip Code: _____

   Telephone: _____ Member Account Number: _____

2. Identify the records that are requested: _____

3. State why you want the records and for what purpose you will use it:

_____

_____

4. If you are represented by an attorney in this request, please state your attorney's name, business address and telephone number:

_____

(Name)

_____

(City) (State) (Zip Code)

_____

(Telephone Number)

5. I understand that by executing this request for records, I agree to:

   (a) Abide by the Records Policy to which this request form is Exhibit 1.

   (b) Not use such records for any purposes other than those specified herein, and

   (c) Not disclose, deliver or otherwise distribute such records to persons, organizations or other parties who are not members of the Cooperative or who are not my counsel.

6. I agree not to use the Cooperative's records for any purpose prohibited by the Records Policy or for any other purpose other than the purposes specified above. I understand that this agreement is a binding on me and that Cooperative may enforce its terms including the terms of the Records Policy through legal or equitable relief.

7. I agree to reimburse the Cooperative for copying charges and all employee time, beyond 15 minutes required to retrieve the requested records.

Dated this _____ day of _____, 20___.

Member's Signature: _____

Printed Name: _____

Chapter 10-13: Local Government Consistency Checklist

Guidance Document for King County's Review of Water System Plans (WSP)

KEY:

(S)= Shows information that must be addressed and will be substantively evaluated
(Sn)= Information that is required but not evaluated
(I)= Informational

Regional issues*: All utilities will be asked for this information.*
Local Issues*: Only utilities serving unincorporated areas will be asked for this information.*

Items are listed in the same general order as suggested by state Dept. of Health (DOH) WSP Checklist

Description of Water System

	Regional Issues	
✔	1	Include a description of existing capital facilities owned by the utility. **(S)**
✔	2	Is there a change to the utility's established service area as compared to that documented in the Coordinated Water System Plan (CWSP)? **(S)** If the utility seeks to change the place of use of a water right, will the utility use the state DOH process to approve the change in place of use, or will it seek County approval per RCW 90.03.386(2)? **(Sn)**
✔	3	Are future shared regional water supply sources (to be used within the twenty-year planning horizon) identified in the WSP also identified in the CWSP? **(Sn)**
	Local Issues	
✔	4	a. Provide a map of utility's current Retail Service area and Future Service area (if applicable). **(Sn)** b. If available, provide a GIS-compatible electronic file of service area boundary(s). **(I)**
✔	5	Does the WSP identify any areas within the utility's Retail Service or Future Service areas that the utility will not provide service due to (a) inability to provide timely and reasonable service; (b) lack of water rights; (c) lack of physical system capacity; or (d) inconsistency with local plans or service area policies? If so, identify such areas. **(Sn)** none
✔	6	Provide a copy of all of the utility's adopted service area policies, including but not limited to, any policies for extending direct service, developer extensions, and Satellite Management Agency (SMA), if applicable, within the utility's service area(s). Include adopted resolutions, policies or descriptions as to what is considered "timely and reasonable" service. To ensure orderly development in unincorporated areas, service area policies must be in place for the retail service area. For the future service area (if any), there should be at least a general description of how the utility plans to meet water service needs (e.g., factors to be considered or process to be used). **(Sn)**
✔	7	State whether or not proposed service will be consistent with the Countywide Planning Policies listed: G-4, EN-1, EN-19, DP-13, DP-21, PF-1, PF-2 , PF-4, PF-5, PF-6, PF-7, PF-8, PF-9, and PF-10 and the King County Comprehensive Plan Policies listed: F-107, F-201, F-209, F-210, F-211, F-212, F-221, F-221A, F-223, F-231, F-232, F-246, F-249, F-251, F-252, F-253, F-254. (S) See http://www.kingcounty.gov/property/permits/codes/growth/CompPlan.aspx for text of current policies.
✔	8	Is the proposed WSP consistent with the adopted watershed plan for the area in which the utility is located? **(S - Vashon Island utilities only, N/A - others)**
✔	9	Are the land-use and zoning designations used for unincorporated portions of the utility's service area consistent with the adopted King County Comprehensive Plan? **(S)**

Basic Planning Data

		Regional Issues
☑	10	Identify the six-year and twenty-year population and job (employment) growth projections for the retail service area used to forecast water demand and the basis for deriving these projections if they are not from the Puget Sound Regional Council. a. For service areas inside cities: For each city in which *a portion* is within the utility's service area, obtain a signed statement (letter or other written approval) from the city planning department providing or confirming an apportioned population and employment target for the city area **(Sn)**. If a city does not provide this information within a reasonable time, use Puget Sound Regional Council (PSRC) data **(Sn),** OR some other reasonable mechanism (describe) **(S).** For a city *entirely within the utility's service area*, use (or exceed) city adopted Growth Management Planning Council (GMPC) population and employment targets**. (Sn)** b. For unincorporated service areas: Obtain apportioned population and employment data from the King County demographer or his/her designee. **(Sn)** If County does not provide this information within a reasonable time, use PSRC data **(Sn)**, OR some other reasonable mechanism (describe) **(S).** • *Failure of a city or the County to timely respond to requests for data must be documented.* • *Utilities may plan for demand in excess of the six- and twenty-year projections and/or GMPC targets.* c. If the utility is provided a planning number by a city(s) and/or the County, and does not plan to meet or exceed that growth target, the WSP must explain the reason why. **(S)**
		Local Issues
☑	11	Provide information to confirm WSP consistency with local plans and regulations as they reasonably relate to water service. This may include land use and zoning within the service area, growth projections used in the demand forecast, and utility service extension policies or conditions of service for new connections. Include consistency statements by local jurisdictions or documentation for self-certification of consistency as described in WAC 246-290-108. **(S)**

System Analysis

		Regional Issues
☑	12	Provide information to confirm the utility has a supply of water in quantities necessary to meet projected demand for the six-year planning period and has supply or a plan for new supply(s) to meet projected demand for the twenty-year planning period. *(This may be satisfied by providing copy or summary of current supply contracts, water right self-assessment(s), quantities of water committed/available, and a discussion of any current disputes with these.* If the utility cannot meet projected demand in either the six- or twenty-year period, describe the CIP or other efforts planned to address supply needs. **(S)**
		Local Issues
☑	13	Provide information confirming that the utility has capacity to meet peak water demand in the six-year planning period. **(S)**
☑	14	Is the utility providing fire flow, and if so, in what portions of its service area and at what level(s)? Reference fire flow standards in KCC 17.04 and 17.08 **(S)**

Water Use Efficiency Program and Water Rights

		Regional Issues
☐	15	a. Is the utility meeting state requirements for water use efficiency? (S) b. Is the utility exceeding these state requirements? (If so, describe.) **(I)**
☑	16	Is the utility proposing any increase in use of water within its *existing* water rights from within or otherwise impacting habitat areas or flow-impaired water bodies identified in the Regional Salmon Recovery Plan? If so, describe location of increased withdrawal. **(Sn)** none • *A description of such areas can be found at***:** **https://pspwa.app.box.com/s/hg99a5cgdiavk0kss2volwevlazke42h**

☑	17	Is the utility proposing any *new source development* for which it does not have a water right that will occur in or otherwise impact habitat areas or flow-impaired water bodies identified in the Regional Salmon Recovery Plan? If so, please confirm whether the utility intends to follow the state statutory code procedures to secure such new water rights. If process is already initiated, please provide reference number. **(S)** none • *A description of such areas can be found at:* **https://pspwa.app.box.com/s/hg99a5cgdiavk0kss2volwevlazke42h**
☑	18	Complete checklist of informational questions regarding recycled water use opportunities within the utility service area. **(Sn)** not required for <1,000 connections • *See copy of checklist under Related Information on the main UTRC webpage:* • *http://www.kingcounty.gov/depts/dnrp/utilities-technical-review-committee.aspx*

Source Water Protection

		Regional Issues
☑	19	If the utility uses groundwater and monitors groundwater levels, describe whether there have been any increasing or decreasing trends in the levels over time. **(Sn)**
		Local Issues
☑	20	If the utility uses groundwater, include the Wellhead Protection Area(s) program and map. **(Sn)** • *King County can provide the utility with the information it has on record regarding the utility's wellhead protection fields/areas upon request.*

Improvement Program

		Local Issues
☑	21	Include a forecast of the utility's six and twenty-year capital facilities needs to address both existing deficiencies and additional capacity to meet growth needs, as well as the proposed locations and capacities of expanded or new capital facilities, together with a plan to fund such capital program (identifying potential sources of funding, and noting whether alternative financing strategies are being considered). **(S)**

Financial Program

	Regional Issues
22	For systems with > 1,000 connections, include a one-year operating budget or financial plan. For systems with <1,000 connections, include a six-year operating budget or financial plan. **(S)**

Miscellaneous

		Regional Issues
☐	23	Include completed SEPA Checklist and Determination. **(S)**
☑	24	a. Are any existing critical facilities (as defined by KCC 21A.06.260) owned by the utility located within a floodplain or otherwise susceptible to flooding? **(Sn)** none b. Are any new critical facilities to be constructed by the utility in next six years located within a floodplain or otherwise susceptible to flooding? **(Sn)** none • *Latest floodplain maps can be accessed at* http://www5.kingcounty.gov/iMAP/viewer.htm?mapset=wria • *Upon request, King County will work with utility to address utility concerns regarding publication of facility location information.*
		Local Issues
☐	25	Confirm whether the utility has a current franchise in place with King County, and whether there is a near-term need for right-of-way permits from King County. **(S)** • For reference, King County will provide information from its records as to franchise status—expiration, territory. • If franchise is not current, the utility must begin the franchise renewal process, which is a separate process from the WSP process, in order to gain conditional WSP approval.

Proposed Timelines

- Plans will be reviewed and comments issued from UTRC within ninety (90) days of receipt of plan.
- A recommended ordinance will be forwarded to DNRP Director's office within sixty (60) days of receipt of Utility response to comment letter and final plan.
- The Director will forward the recommended ordinance to the Executive within fourteen (14) days of receipt of plan.

Chapter 10-14: Budget

Burton Water Cooperative Operating Budget

Operating Budget

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
INCOME										
Operating Revenue										
Base charge	78,000	156,000	156,000	160,290	164,698	169,227	173,881	178,663	183,576	188,624
Usage rate	60,729	121,458	121,458	124,798	128,230	131,756	135,380	139,103	142,928	146,858
Capital Surcharge	75,396	150,792	150,792	150,792	150,792	150,792	150,792	150,792	150,792	150,792
Capital surcharge (adjustment)				24,720	24,720	24,720	49,440	49,440	49,440	74,160
Interest on Operating and Debt Reserves		4,777	9,555	9,555	9,555	9,555	9,555	9,555	9,555	9,555
KC ROW	12,360	24,720	24,720	24,720	24,720	24,720	24,720	24,720	24,720	24,720
TOTAL INCOME	226,485	457,747	462,525	494,875	502,715	510,770	543,767	552,272	561,010	594,709
EXPENSE										
Payroll Expense										
Total Wages	$ 55,300	114,029	117,563	121,208	124,965	128,839	132,833	136,951	141,197	145,574
Total Payroll Taxes	$ 5,530	11,403	11,756	12,121	12,497	12,884	13,283	13,695	14,120	14,557
Est Benefits	$ -	-	-	-	-	-	-	-	-	-
Total Payroll Expenses	$ 60,830	$ 125,431	$ 129,320	$ 133,329	$ 137,462	$ 141,723	$ 146,117	$ 150,646	$ 155,316	$ 160,131
Depreciation Expense	$ -	$ -	-	-	-	-	-	-	-	-
Maintenance Expense	$ 10,975	22,629	23,331	24,054	24,800	25,569	26,361	27,178	28,021	28,890
Administrative and General Expense										
KC ROW Franchise Fee	$ -	-	-	-	-	-	-	-	-	-
Accounting	$ 3,000	6,186	6,378	6,575	6,779	6,989	7,206	7,430	7,660	7,897
Monthly Bookkeeping	$ 7,200	14,846	15,307	15,781	16,270	16,775	17,295	17,831	18,384	18,954
Bank	$ 138	284	293	302	311	321	331	341	351	362
Dues And Fees	$ 329	678	699	721	743	766	790	814	840	866
Dump	$ 77	159	164	169	175	180	186	191	197	204
Insurance	$ 5,000	10,310	10,630	10,959	11,299	11,649	12,010	12,383	12,766	13,162
Legal	$ 1,000	2,062	2,126	2,192	2,260	2,330	2,402	2,477	2,553	2,632
Office	$ 854	1,761	1,816	1,872	1,930	1,990	2,052	2,115	2,181	2,249
Accounting/Billing/software licenses	$ 1,449	2,987	3,079	3,175	3,273	3,375	3,479	3,587	3,698	3,813
Postage	$ 1,161	2,394	2,468	2,545	2,623	2,705	2,789	2,875	2,964	3,056
Excise Taxes	$ 6,318	13,028	13,432	13,849	14,278	14,721	15,177	15,647	16,133	16,633
Property Taxes	$ 50	103	106	110	113	116	120	124	128	132
Professional Memberships/ Training	$ 250	516	531	548	565	582	601	619	638	658
Professional Fees	$ 77	159	164	169	175	180	186	191	197	204
Coop Membership Support	$ 1,500	3,093	3,189	3,288	3,390	3,495	3,603	3,715	3,830	3,949
Member Communications-Bulk email/postage	$ 1,380	2,846	2,934	3,025	3,118	3,215	3,315	3,418	3,524	3,633
Telephone/Internet	$ 1,176	2,425	2,500	2,577	2,657	2,740	2,824	2,912	3,002	3,095
Travel	$ 1,560	3,217	3,316	3,419	3,525	3,635	3,747	3,863	3,983	4,107
Total Administrative and General Expense	$ 32,519	$ 67,054	$ 69,133	$ 71,276	$ 73,485	$ 75,764	$ 78,112	$ 80,534	$ 83,030	$ 85,604
Operating Expense										
Power	$ 1,418	2,925	3,015	3,109	3,205	3,305	3,407	3,513	3,621	3,734
Treatment	$ 764	1,576	1,625	1,676	1,728	1,781	1,836	1,893	1,952	2,012
UULC	$ 44	91	94	96	99	103	106	109	112	116
Water Analysis	$ 1,301	2,682	2,765	2,850	2,939	3,030	3,124	3,221	3,321	3,423
Total Operating Expense	$ 3,527	$ 7,273	$ 7,499	$ 7,731	$ 7,971	$ 8,218	$ 8,473	$ 8,736	$ 9,006	$ 9,286
TOTAL EXPENSE	$ 107,851	$ 222,388	$ 229,282	$ 236,390	$ 243,718	$ 251,274	$ 259,063	$ 267,094	$ 275,374	$ 283,910
OPERATING INCOME	$ 118,634	$ 235,359	$ 233,242	$ 258,485	$ 258,996	$ 259,497	$ 284,704	$ 285,178	$ 285,637	$ 310,799
DEBT SERVICE										
USDA LOAN (Part 1)	$ 31,951	$ 63,902	$ 63,902	$ 63,902	$ 63,902	$ 63,902	$ 63,902	$ 63,902	$ 63,902	$ 63,902
USDA LOAN (Part 2)			$ 154,586	$ 154,586	$ 154,586	$ 154,586	$ 154,586	$ 154,586	$ 154,586	$ 154,586
TOTAL USDA LOAN	$ 31,951	$ 63,902	$ 218,488	$ 218,488	$ 218,488	$ 218,488	$ 218,488	$ 218,488	$ 218,488	$ 218,488
Year end cash from ops after debt service	$ 86,683	$ 171,457	$ 14,754	$ 39,997	$ 40,508	$ 41,009	$ 66,216	$ 66,690	$ 67,149	$ 92,311
TOTAL CASH AVAILABLE FOR CAPITAL RESERVE	$ 86,683	$ 258,140	$ 272,895	$ 312,891	$ 353,400	$ 394,408	$ 460,625	$ 527,315	$ 594,463	$ 686,774
DCR	3.71	3.68	1.07	1.18	1.19	1.19	1.30	1.31	1.31	1.42

Burton Water Cooperative Capital Improvement and Reserves Budget

Coverage Analysis

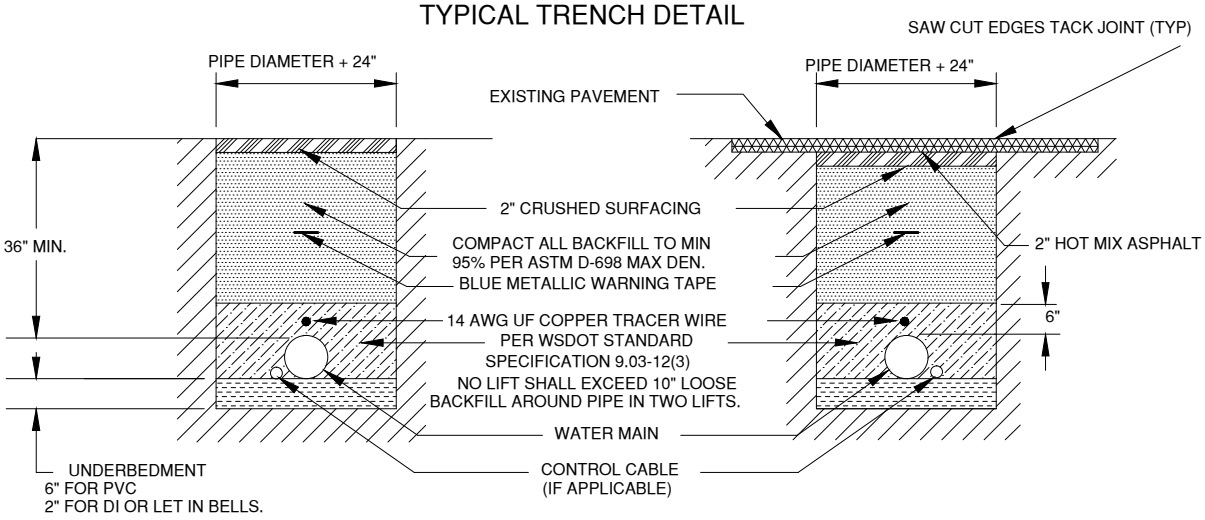
CAPITAL BUDGET	BASE	2024	2025	2026	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Spreading Capital $$$ Estimates over initial 20 year period.	**Present Value of Capex**																				
Inflation Multiplier	3.10%	1.00	1.03	1.06	1.06	1.10	1.13	1.16	1.20	1.24	1.28	1.32	1.36	1.40	1.44	1.49	1.53	1.58	1.63	1.68	1.73
General CAP Needs (per year, assuming pre-galv pipe replacement)	1,000	1,000	1,031	1,063	1,063	1,096	1,130	1,165	1,201	1,238	1,277	1,316	1,357	1,399	1,442	1,487	1,533	1,581	1,630	1,680	1,732
One Year Capital Needs, Description Cost																					
1-1 Chlorination system upgrades and replumbing of N and S Tanks to series (conn'd to 5-4)	50,000		51,550																		
1-3 Electrical and operational manual $ 4,000	4,000		4,124																		
Two Year Capital Needs Description																					
2-1 Update source plumbing and controls	10,000		10,310																		
2-2 Build (re-build) source pump enclosures	15,000	-	15,465																		
2-4 Investigate reason(s) for short pump lives	3,000		3,093																		
2-5 Resolve short pump lives	5,000		5,155																		
2-6 Update electrical	3,000		3,093																		
Five Year Capital Needs Description Cost																					
5-1 Replace remaining galvanized pipe - reduced per actual remaining galv pipe (3,210 ft)	453,500	140,748																		242,560	
5-3 Booster station & PRV for 30 psi to all*	70,000	70,000																			
5-4 N. Reservoir roof replacement and additional structural improvements (connected to 1-1)	50,000		51,550																		
5-5 New planning document (included in Total Projects Tab)																					
5-6 Water rights processing	30,000																	23,712	24,447		
Twenty Year Capital Needs Description																					
20-2 8-inch transmission line out of 150K [change to serve upper 10-20 homes]	30,000								36,031												
20-3 Update source and tank controls	5,000							5,825													
20-4 Update planning document	7,000											9,214									
20-5 Boardwalk/trail/path maintenance	8,000												10,856								
Optional Capital Projects																					
Opt-2 Back-up power [may not be necessary - system needs such little power]	15,000																				
Opt-3 Upgrade small PVC for fireflow	966,616					395,905				287,771						288,572			291,607		
Opt-5 GIS record collection system* [good idea]	10,000	10,000																			
Opt-6 Drill deep well [no deep well but multiple new wells in wellfield - $150k-$174	200,000											65,811			72,123			79,041			86,622
USDA Construction Costs (per "Total Project Costs tab") (no inflation adj)	2,094,600		1,047,300	1,047,300																	
WA State Sales Tax-USDA (10.2%)	213,649		106,825	106,825																	
Estimating/Construction Contingency-USDA @ 20%	461,650		230,825	230,825																	
Right of Way Permits	6,000	6,000																			
Bid Docs/Permit Submission/Bidding/ Bid Eval/Const Inspec/Draw/ETC-USDA	44,000	44,000	-																		
As-Built Record Drawings	5,000		5,000																		
USDA Resident Construction Management (40 hrs/week for 8 mos @$45)	83,200	41,600	41,600																		
Project/Construction Management	45,000	22,500	22,500																		
WA State Sales Tax-Coop Projects	-	22,175	14,537	106	106	39,700	113	699	3,723	28,901	128	7,634	1,221	140	7,357	29,006	153	10,433	31,768	24,424	8,835
Estimating/Construction Contingency-Coop @ 20%	-																				
Bid Documents-Coop	-																				
Capitalized Construction Period Interest	175,543		35,121	140,422																	
		358,023	**1,649,078**	**1,526,541**	**1,169**	**436,701**	**1,243**	**7,688**	**40,955**	**317,910**	**1,404**	**83,975**	**13,435**	**1,539**	**80,922**	**319,065**	**1,687**	**114,767**	**349,452**	**268,664**	**97,189**
USDA Financed costs in blue																					
FEASIBILITY AND TRANSACTION COSTS	**At Close**	2024	2025	2026	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Feasibility	62,650																				
BWC Purchase	1,200,000																				
Closing Costs	50,285																				
Start Up	10,000																				
USDA Funded Construction	3,128,642																				
Coop Funded Capital projects	136,278																				
Total Capital Required	**4,587,855**	**358,023**	**1,649,078**	**1,526,541**	**1,169**	**436,701**	**1,243**	**7,688**	**40,955**	**317,910**	**1,404**	**83,975**	**13,435**	**1,539**	**80,922**	**319,065**	**1,687**	**114,767**	**349,452**	**268,664**	**97,189**
Debt Service Reserve (one year P+I)			218,488																		
Operating Reserve				100,000																	
Total Required reserves		-	**218,488**	**100,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL Capital Required		**358,023**	**1,867,566**	**1,626,541**	**1,169**	**436,701**	**1,243**	**7,688**	**40,955**	**317,910**	**1,404**	**83,975**	**13,435**	**1,539**	**80,922**	**319,065**	**1,687**	**114,767**	**349,452**	**268,664**	**97,189**
SOURCES																					
USDA LOAN PART 1	1,322,935																				
USDA LOAN PART 2																					
CONSTRUCTION LOAN	3,128,642																				
Coop Funds	136,278																				
TOTAL Capital Provided	**4,587,855**																				
SOURCES DURING POST CLOSE PERIOD																					
USDA Loan Proceeds		114,100	1,489,170	1,525,372																	
Member Capital Contribution		596,000	101,000	101,000	101,000	101,000	101,000	5,000	5,000	5,000	5,000	5,000									
Cashflow From Operations		86,683	171,457	14,754	39,997	40,508	41,009	66,216	66,690	67,149	92,311	92,735	93,141	118,246	118,608	118,947	143,981	144,267	144,524	169,470	169,662
TOTAL Sources		796,783	1,761,627	1,641,126	140,997	141,508	142,009	71,216	71,690	72,149	97,311	97,735	93,141	118,246	118,608	118,947	143,981	144,267	144,524	169,470	169,662
NET CASH AVAILABLE annually		438,760	(105,939)	14,585	139,827	(295,193)	140,766	63,528	30,735	(245,761)	95,907	13,761	79,706	116,707	37,686	(200,118)	142,294	29,500	(204,929)	(99,194)	72,473
CUMULATIVE SURPLUS/(DEFICIT)			332,821	347,407	487,234	192,041	332,807	396,335	427,070	181,309	277,215	290,976	370,682	487,389	525,075	324,958	467,252	496,751	291,823	192,628	265,101

Residential Rate Comparison
Public Water Systems on Vashon Island

Water System	Burton Water Coop (3/4" meter)	Burton Water Coop (1" meter)	Burton Water Company (3/4" meter)	Burton Water Company (1" meter)	Heights	Dockton	Westside	King Co WD19	Gold Beach	Maury Mutual
Bi-Monthly Base Rate (3/4")	$59.76	$99.79	$68.00	$113.56	$74.00	$74.00	$74.70	$93.00	$65.50	$45.00
Bi-Monthly Capital Surcharge	$58.75	$58.75	$0.00	$0.00	$47.00	$34.00			$10.00	$51.00
Total	**$118.51**	**$158.54**	**$68.00**	**$113.56**	**$121.00**	**$108.00**	**$74.70**	**$93.00**	**$75.50**	**$96.00**
	Proposed	*Proposed*								
Tiered Usage (per cu ft)										
0-200	$0.0305	$0.0305	$0.0305	$0.0305	$0.0286	$0.0300	$0.0000	$0.0000	$0.0000	$0.0300
201-500	$0.0305	$0.0305	$0.0305	$0.0305	$0.0286	$0.0300	$0.0000	$0.0370	$0.0000	$0.0300
501-600	$0.0305	$0.0305	$0.0305	$0.0305	$0.0303	$0.0300	$0.0000	$0.0370	$0.0050	$0.0300
601-1000	$0.0305	$0.0305	$0.0305	$0.0305	$0.0303	$0.0300	$0.0226	$0.0370	$0.0050	$0.0500
1001-1500	$0.0305	$0.0305	$0.0305	$0.0305	$0.0303	$0.0300	$0.0250	$0.0576	$0.0050	$0.0500
1501-1800	$0.0305	$0.0305	$0.0305	$0.0305	$0.0329	$0.0300	$0.0250	$0.0576	$0.0050	
1801-2000	$0.0600	$0.0600	$0.0540	$0.0305	$0.0329	$0.0300	$0.0250	$0.0576	$0.0050	
2001-3000	$0.0600	$0.0600	$0.0540	$0.0305	$0.0329	$0.0300	$0.0385	$0.0730	$0.0050	
3001-3400	$0.0600	$0.0600	$0.0540	$0.0540	$0.0372	$0.0300	$0.0385	$0.0730	$0.0100	
3401-4000	$0.0900	$0.0900	$0.0610	$0.0540	$0.0372	$0.0300	$0.0385	$0.0730	$0.0100	
4001-5000	$0.0900	$0.0900	$0.0610	$0.0540	$0.0372	$0.0300	$0.0385	$0.1016	$0.0100	
5000-5640				$0.0540						
5001-6000	$0.1200	$0.1200	$0.0610		$0.0372	$0.0300	$0.0742	$0.1016	$0.0100	
5640+			$0.0610							
6001-10000	$0.1200	$0.1200	$0.0610	$0.0610	$0.0501	$0.0300	$0.0742	$0.1463	$0.0100	
10001-19000	$0.1200	$0.1200	$0.0610	$0.0610	$0.0501	$0.0300	$0.1458	$0.1463	$0.0100	
19000+	$0.1200	$0.1200	$0.0610	$0.0610	$0.0501	$0.0300	$0.1580	$0.1463	$0.0100	

Chapter 10-15: Construction Standards

TYPICAL TRENCH DETAIL



WATER MAINS SHALL BE NSF61 CERTIFIED. WATER MAINS LESS THAN 4-IN NOMINAL DIAMETER SHALL BE SCHED. 40 PVC OR BETTER; WATER MAINS 4-IN NOMINAL DIAMETER AND GREATER SHALL BE DR18 C900 PVC OR BETTER. IT IS REQUIRED FOR THE CONTRACTOR TO CALL FOR UTILITY LOCATES BEFORE DIGGING, PER RCW. TRACER WIRE SHALL BE TAPED TO WATER MAIN. DISTRIBUTION SYSTEM SHALL BE PRESSURE TESTED BY DESIGNER'S SPECIFICATIONS PRIOR TO BACKFILLING. ANY TRENCH OVER 4 FT IN DEPTH SHALL HAVE CAVE IN PROTECTION AS REQUIRED IN CHAPTER 49.17 RCW

WATER MAIN DISINFECTION

STERILIZATION OF THE WATER MAINS SHALL BE ACCOMPLISHED BY THE SYSTEM INSTALLER IN ACCORDANCE WITH THE REQUIREMENTS OF THE HEALTH DISTRICT AND THE WASHINGTON STATE DEPARTMENT OF HEALTH.

DURING CONSTRUCTION, CALCIUM HYPOCHLORITE GRANULES SHALL BE PLACED AT THE UPSTREAM END OF EACH LENGTH OF PIPE LAID SUCH THAT, UPON FILLING THE MAIN , THE INITIAL CONCENTRATION OF CHLORINE WILL BE 50 MG/L. THIS EQUATES TO 1/4 TEASPOON OF 65% HIGH TEST CALCIUM HYPOCHLORITE PER 20 FT OF 2" PIPE, 1 TEASPOON/20FT OF 4" PIPE, 2 TEASPOONS/20FT OF 6" PIPE, AND 4 TEASPOONS/20FT OF 8" PIPE.

WHEN INSTALLATION IS COMPLETE, THE MAINS SHALL BE FILLED SLOWLY WITH WATER SUCH THAT THE MAXIMUM VELOCITY OF FLOW SHALL BE LESS THAN 1 FPS. ALL AIR POCKETS SHALL BE BLED FROM THE SYSTEM DURING THE FILLING PROCESS, AND ALL VALVES SHALL BE OPERATED. FOLLOWING A 24-HOUR SOAKING PERIOD, THE SYSTEM SHALL BE FLUSHED UNTIL NO TRACE OF CHLORINE REMAINS.

ALTERNATIVELY, PROVISIONS MAY BE MADE IN THE CONSTRUCTION OF THE SYSTEM TO ALLOW FOR EFFICIENT INTRODUCTION OF CHLORINE INTO THE MAINS FOLLOWING CONSTRUCTION TO A CONCENTRATION OF 50 MG/L.

A REPRESENTATIVE OF NORTHWEST WATER SYSTEMS, INC. MUST BE ON-SITE DURING THE INITIAL FLUSHING OF THE SYSTEM AND DURING THE FLUSHING OF THE MAINS AFTER THE SOAKING PERIOD. FOLLOWING THE FLUSHING, A BACTERIOLOGICAL SAMPLE WILL BE TAKEN AND SUBMITTED FOR TESTING. THE SYSTEM MUST PASS BACTERIOLOGICAL TESTING BEFORE IT CAN BE PLACED INTO SERVICE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT NORTHWEST WATER SYSTEMS, INC. 24 HOURS PRIOR TO INITIAL FILLING OF THE SYSTEM.

HYDROSTATIC TESTING

ALL WATER MAIN INSTALLATIONS SHALL BE INSPECTED AND APPROVED BY NORTHWEST WATER SYSTEMS, INC. NO NEW PIPE OR PIPE EXTENSIONS SHALL BE PUT INTO SERVICE OR CONNECTED TO AN EXISTING WATER SYSTEM WITHOUT A STATE DEPARTMENT OF HEALTH APPROVED BACKFLOW PREVENTER INSTALLED IN THE CONNECTING LINE.

ALL WATER MAIN AND EQUIPMENT INSTALLATIONS SHALL BE HYDROSTATIC AND LEAK TESTED. SUCH TESTING SHALL BE WITNESSED BY NORTHWEST WATER SYSTEMS, INC. ALL WATER MAIN JOINTS MUST BE EXPOSED TO VIEW AND BACKFILL MATERIAL MUST BE ON-SITE AT THE TIME OF THE TEST. ALL THRUST BLOCKING, IF REQUIRED, SHALL BE POURED-IN-PLACE OF TYPE 1 PORTLAND CEMENT. BLOCKING SHALL CURE AT LEAST SEVEN DAYS BEFORE TESTING. THE PRESSURE GAUGE USED IN THE PERFORMANCE OF SUCH TESTS SHALL HAVE MINIMUM DIVISIONS OF 5 PSI.

THE MAINS SHALL BE FILLED SLOWLY (NOT MORE THAN 2 FPS WATER VELOCITY IF USING 50PPM CHLORINATED WATER, 1FPS IF POWDERED CHLORINE WAS ADDED TO EACH PIPE) AND TRAPPED AIR COMPLETELY VENTED THROUGH AIR VENTS OR SERVICES.

AFTER COMPLETELY FILLING THE PIPE WITH WATER IT SHALL BE SUBJECTED TO A HYDROSTATIC TEST PROCEDURE AS FOLLOWS:

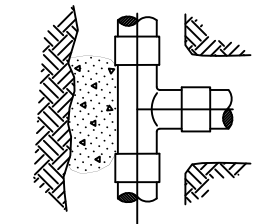
FOR PVC AND DUCTILE IRON PIPE TEST PRESSURE SHALL BE 200 PSI, UNLESS THE ENGINEER DETERMINES BASED ON SITE CONDITIONS THAT A LOWER PRESSURE IS APPROPRIATE. PRESSURE SHALL NOT IN ANY CASE BE LESS THAN 150% OF THE WORKING PRESSURE AT THE LOWEST ELEVATION POINT OF THE SEGMENT TESTED. COMPONENTS NOT COMPATIBLE WITH THE TEST OVERPRESSURE (PRESSURE RELIEF VALVES, HYDROPNEUMATIC TANKS, ETC.) MAY BE ISOLATED FROM THE SECTION UNDER TEST. THE TEST PRESSURE SHALL BE APPLIED BY PUMPING AND THE PRESSURE MAINTAINED FOR TWO HOURS. PRESSURE LOSS MAY NOT EXCEED 5 PSI ONCE THE PIPE HAS BEEN FILLED WITH WATER AND AIR EXPELLED; ADDITIONAL PUMPING MAY BE PERFORMED AS REQUIRED TO MAINTAIN THE TEST PRESSURE. LEAKAGE IS DEFINED BY THE VOLUME OF WATER REQUIRED TO MAINTAIN PRESSURE. ALLOWABLE LEAKAGE CAN BE CALCULATED PER AWWA C600-93 AS:

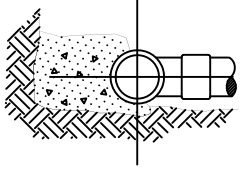
$$L=S*D*[SQRT(P)] / 133,200$$

WHERE L IS THE ALLOWABLE LEAKAGE IN GALLONS PER HOUR, S IS THE LENGTH OF PIPE IN FEET, D IS THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND P IS THE AVERAGE TEST PRESSURE (PSI).

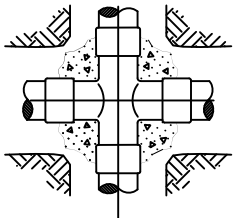
FOR HDPE PIPING, THE MODIFIED PRESSURE REBOUND METHOD SHALL BE USED PER ASTM F2164. HDPE SHALL BE TESTED AT THE LESSER OF 150% OF DESIGN WORKING PRESSURE, OR THE PRESSURE RATING OF THE LOWEST PRESSURE RATED COMPONENT EXPOSED TO TEST PRESSURE. THE TEST SECTION SHALL BE PRESSURIZED FOR 2 HOURS TO ALLOW FOR EXPANSION; THE TEST SECTION SHALL BE MAINTAINED AT THE INITIAL STARTING PRESSURE AND MAKE-UP WATER MAY BE NECESSARY TO MAINTAIN THE PRESSURE; AFTER 2 HOURS, THE PRESSURE SHALL THEN BE REDUCED BY 10 PSI AND OBSERVED FOR 1 HOUR; SUCCESSFUL TESTING REQUIRES LESS THAN 5% VARIATION IN PRESSURE. HDPE SHALL NOT BE SUBJECT TO PRESSURES ABOVE DESIGN PRESSURE FOR MORE THAN 8 CONTINUOUS HOURS; AFTER DEPRESSURIZING, A MINIMUM 8 HOURS SHALL BE ALLOWED FOR RELAXATION PRIOR TO RETESTING.

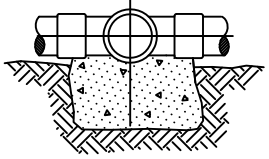
DURING THE TEST, THE SECTION BEING TESTED SHALL BE INSPECTED FOR LEAKAGE. NO WATER SYSTEM FACILITY SHALL BE PLACED IN SERVICE WITHOUT A PROPER CERTIFICATE OF COMPLETION EXECUTED BY THE DESIGNER.



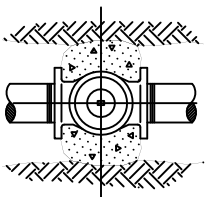


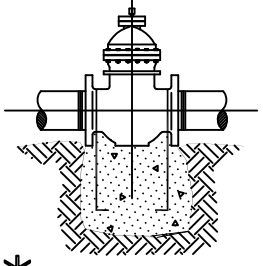
TEE



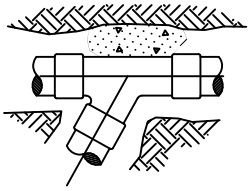


CROSS



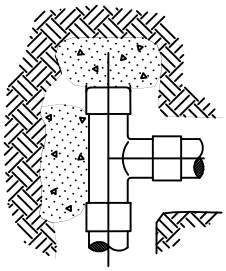


GATE VALVE

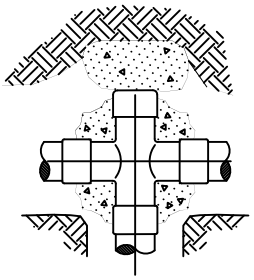


WYE

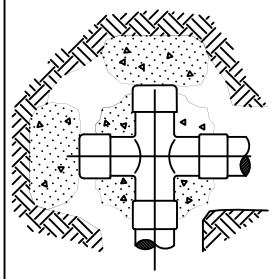
HORIZ. BEND



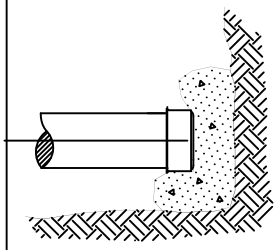
TEE WITH PLUG



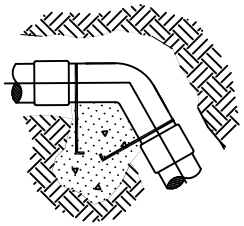
CROSS WITH PLUG



CROSS WITH PLUGS



PLUG OR CAP



45° – 90° VERTICAL BEND

NOTES:

1. *CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.*
2. *PLASTIC BARRIER SHALL BE PLACED BE–TWEEN ALL THRUST BLOCKS & FITTINGS.*
3. *ANCHOR REBAR SHALL BE #5 ON 12" DIA. AND LESS WITH 30" IMBEDMENT, #5 ON 16"–24" DIAMETER WITH 36" IMBEDMENT.*
4. *PLUGS TO BE MINIMUM OF 5' FROM TEE, WYE, CROSS ON VALVE.*

* *IF IN THE OPINION OF THE ENGINEER THE VALVE IS ON A SLOPE AND/OR THE COVER ON THE PIPE WOULD APPLY UPWARD THRUST, THEN THRUST BLOCKING WILL BE REQUIRED.*

RESTRAINT BLOCKING

FILE NO.	FILE NAME	SHEET NO.
DETAILS	THRUST	
DATE: 12/30/99	SCALE: NO SCALE	

NORTHWEST WATER SYSTEMS
DESIGN–CONSULTING–MANAGEMENT
P.O. BOX 123
PORT ORCHARD, WA 98366
(360) 876–0958

THRUST LOADS

THRUST AT FITTINGS IN POUNDS AT 200 POUNDS PER SQUARE INCH OF WATER PRESSURE

PIPE DIAMETER	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND	DEAD END OR TEE
4"	3,600	2,000	1,000	500	2,600
6"	8,000	4,400	2,300	1,200	5,700
8"	14,300	7,700	4,000	2,000	10,100
10"	22,300	12,100	6,200	3,100	15,800
12"	32,000	17,400	8,900	4,500	22,700
14"	43,600	23,600	12,100	6,100	30,800
16"	57,000	30,800	15,700	7,900	40,300

NOTES:

1. BLOCKING SHALL BE CEMENT CONCRETE CLASS "B" POURED IN PLACE AGAINST UNDISTURBED EARTH. FITTING SHALL BE ISOLATED FROM CONCRETE THRUST BLOCK WITH PLASTIC OR SIMILAR MATERIAL.

2. TO DETERMINE THE BEARING AREA OF THE THRUST BLOCK IN SQUARE FEET (S.F.):

   EXAMPLE: 12" – 90° BEND IN SAND AND GRAVEL
   32,000 LBS ÷ 3000 LB/S.F. = 10.7 S.F. OF AREA

3. AREAS MUST BE ADJUSTED FOR OTHER PIPE SIZE, PRESSURES AND SOIL CONDITIONS.

4. BLOCKING SHALL BE ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.

SAFE SOIL BEARING LOADS

FOR HORIZONTAL THRUSTS WHEN THE DEPTH OF COVER OVER THE PIPE EXCEEDS 2 FEET

SOIL	POUNDS PER SQUARE FOOT
MUCK, PEAT	0
SOFT CLAY	1,000
SAND	2,000
SAND & GRAVEL	3,000
SAND & GRAVEL CEMENTED WITH CLAY	4,000
HARD SHALE	10,000

RESTRAINT BLOCKING

FILE NO.	FILE NAME	SHEET NO.
DETAILS	THRUST	
DATE: 12/30/99	SCALE: NO SCALE	

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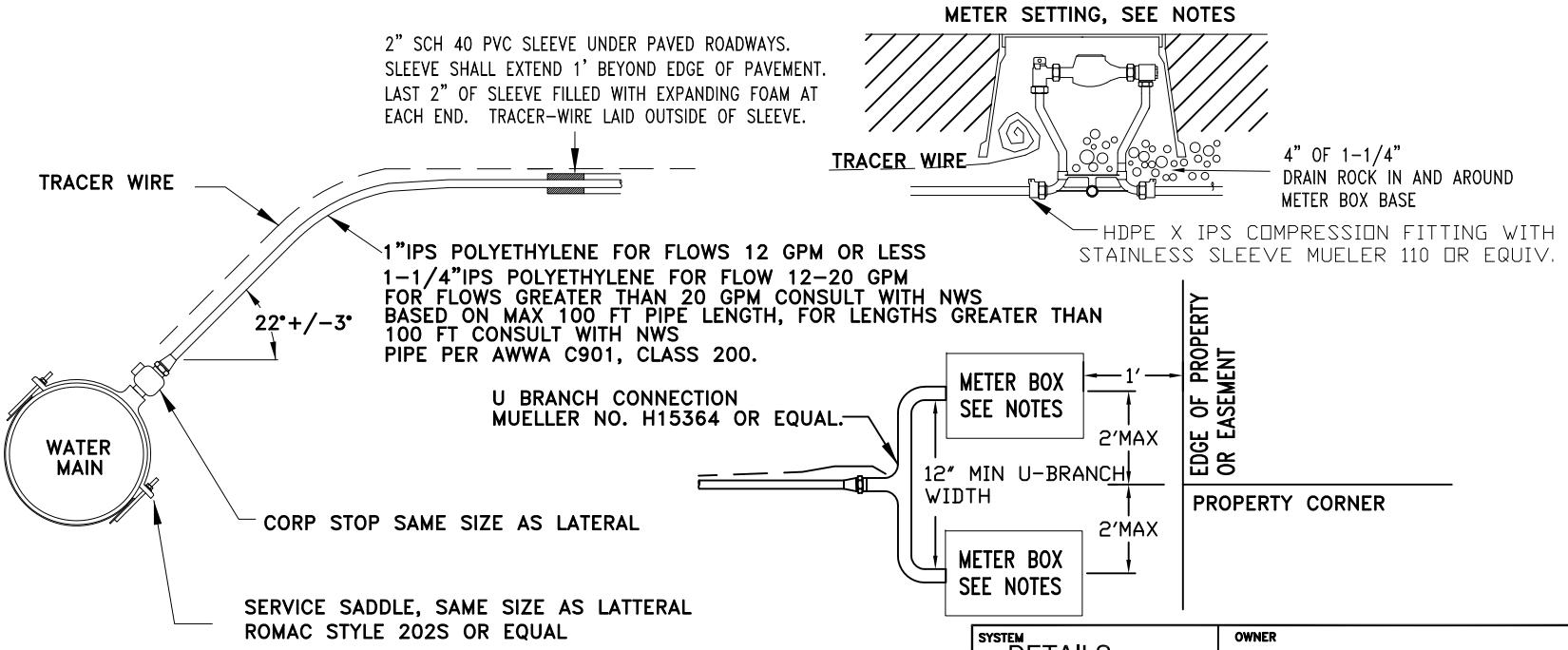
1. METER CONFORMING TO AWWA C700, FROST PROOF MODEL WITH MAGNETICALLY DRIVEN REGISTER & STRAIGHT READING REGISTERS MEASURING IN CU. FT. BADGER M25, OR EQUAL.
2. METER SETTING – 12" COPPER METER SETTER INCLUDING METER VALVE WITH LOCKWING AND OUTLET CHECK VALVE. MUELLER OR EQUAL.
3. METER BOX – PARKING STRIP INSTALLATION
   PRECAST CONCRETE AND STEEL LID, FOG TITE METER SEAL CO 1D OR EQUAL.
4. METER BOX – OFF ROAD INSTALLATION
   PLASTIC BOX WITH READER LID COVER, CARSON 1419–15 OR EQUAL.
5. INSTALL METER IN EASEMENT RIGHT OF WAY ADJACENT TO PROPERTY LINE.
6. SET METER HORIZONTALLY IN BOTH AXES WITH METER PORTS 5–7" BELOW GRADE.
7. SET METER BOX WITH LID AT GRADE (IN TRAFFIC) OR 2" ABOVE GRADE (NON–TRAFFIC) LEVEL AND READER PORT CENTERED OVER METER DIAL.
8. INSTALL COPPER TRACER WIRE IN TRENCH BESIDE POLYETHYLENE PIPE. PROVIDE 36" EXCESS LENGTH ON METER BOX. ELECTRICALLY BOND THE END OF TRACER WIRE TO MAIN LINE TRACER WIRE USING SPLIT NUT CONNECTION.
9. INSTALL PRESSURE REDUCING VALVE WHERE PRESSURE EXCEEDS 80 PSI (recommended) PER UNIFORM PLUMBING CODE 608.2 OR AS REQUIRED BY LOCAL CODES. ZURN 70XL OR EQUAL.
10. SCH 80 PVC TEE MAY BE SUBSTITUTED FOR SADDLE ON 2" WATER MAIN
11. ALL EQUIPMENT/FITTINGS IN SUBSTANTIAL CONTACT WITH WATER SHALL CONFORM TO ANSI 61 NSF



SERVICE CONNECTION DETAIL

SYSTEM: DETAILS	OWNER: BURTON WATER COOPERATIVE
FILE NO.: DETAILS	FILE NAME: SVC METER
SHEET NO.:	
DATE: JANUARY 12, 2024	SCALE: NTS

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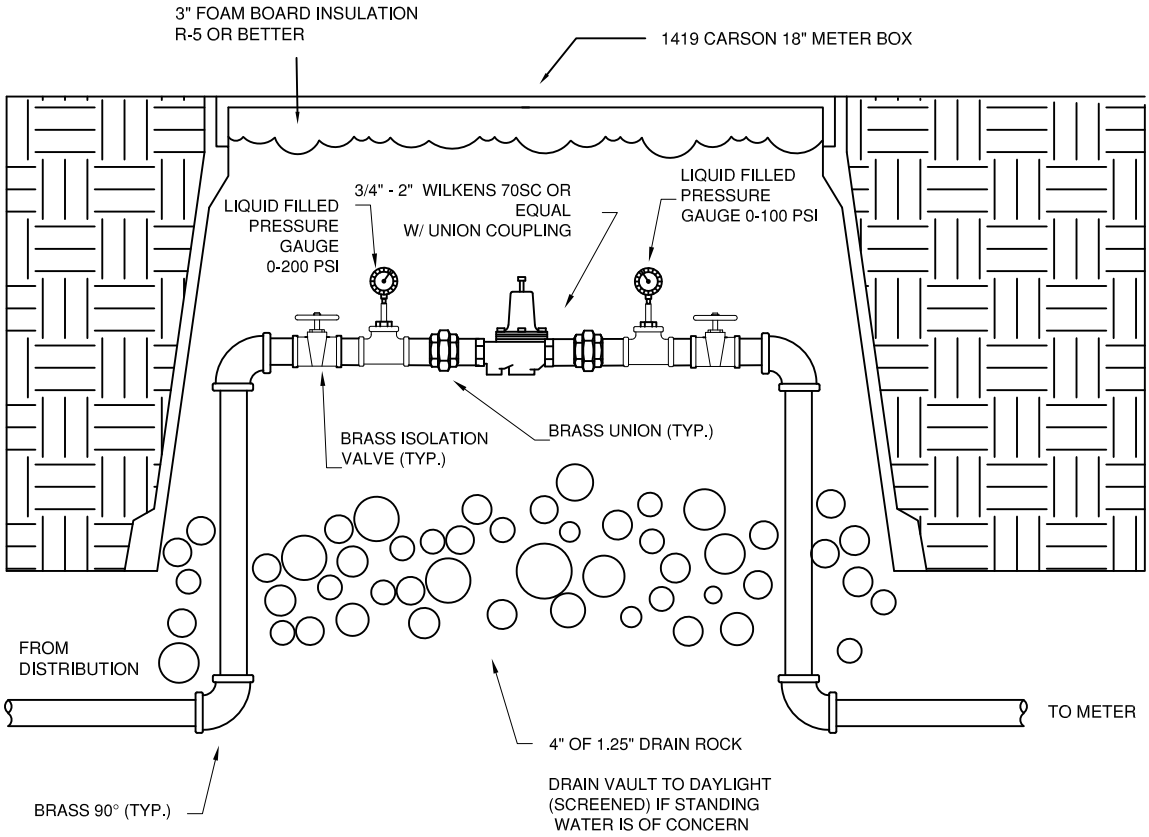

36" MINIMUM COVER TO BURIED PIPE

ALL PIPING TO BE BRASS, 3/4" - 2"

ADDITIONAL UNIONS NOT REQUIRED IF PRV MODEL CHOSEN INCLUDES UNIONS.

TITLE: PRIVATE PRV DETAIL			
FILE NO.: DETAIL	FILE NAME: PRV		SHEET NO.: 1 OF 1
DATE: OCTOBER 3, 2019	SCALE: NO SCALE		

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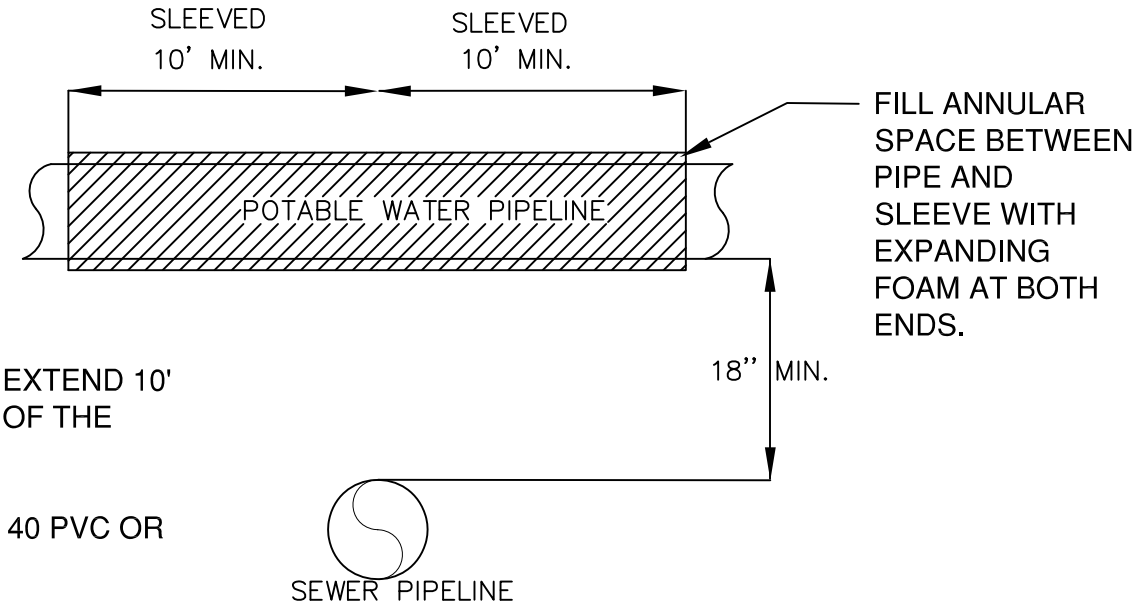
SEWER CROSSING DETAIL

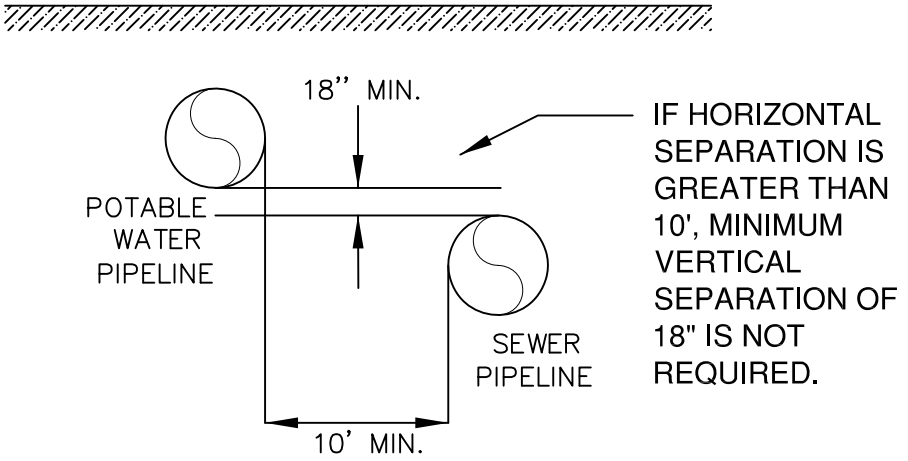
PERPENDICULAR SEPARATION



PIPE SLEEVE SHALL EXTEND 10' BEYOND EACH SIDE OF THE CROSSING.

PIPE SLEEVE IS SCH 40 PVC OR BETTER.

PARALLEL SEPARATION



PERPENDICULAR SEPARATION SHOULD BE AS CLOSE TO 90 DEGREES AS POSSIBLE.

IF THE VERTICAL SEPARATION IS LESS THAN 18", OR THE SEWER LINE MUST CROSS UNDER THE POTABLE WATER LINE, THE POTABLE LINE MUST BE CASED AS ABOVE.

IF HORIZONTAL DISTANCE IS LESS THAN 10', SEWER MAY BE LAID IN SEPARATE TRENCH. CHECK WITH LOCAL GOVERNMENT STANDARDS FOR CONSISTENCY.

IF OUTSIDE CONFIGURATION AS SHOWN, CONTACT ENGINEER FOR APPROVAL.

TITLE: SEWER CROSSING DETAIL		
FILE NO.: DETAILS	FILE NAME: SEWER	SHEET NO.: OF
DATE: 2016	SCALE: NO SCALE	

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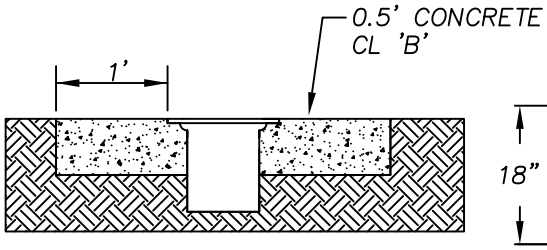
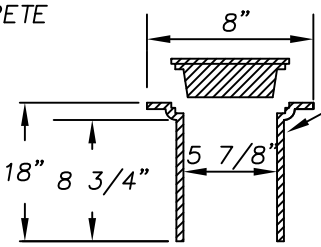
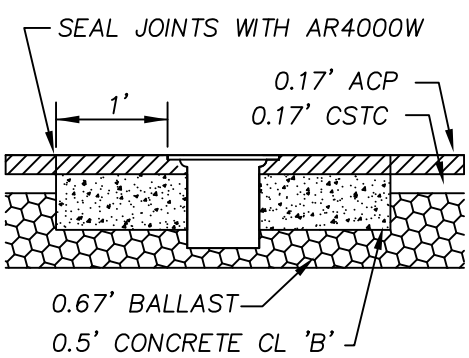


OUTSIDE PAVED AREA

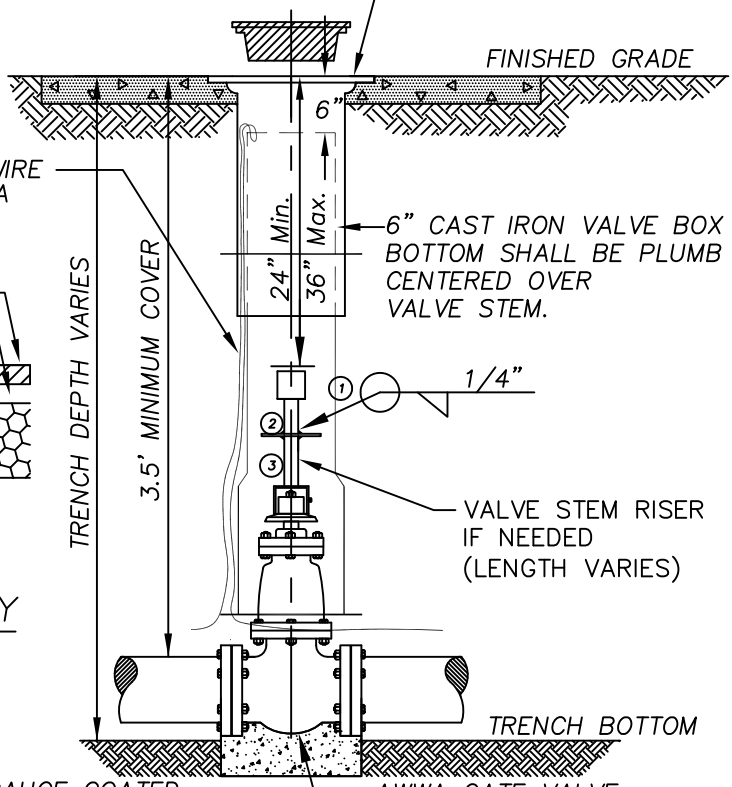


RICH #940 VALVE BOX VALVE BOX SHALL BE INSTALLED SUCH THAT THE LUGS LINE UP WITH THE DIRECTION OF THE PIPE. THE LIDS SHALL BE ANTI KICK OUT.

SECTION



INSIDE PAVED ROADWAY



NOTE:

ALL VALVES SHALL HAVE 14 GAUGE COATED COPPER TRACER WIRE TIED OFF AT VALVE BODY, EXTENDING TO THREE FEET ABOVE TOP OF VALVE BOX BOTTOM BETWEEN VALVE BOX BOTTOM AND VALVE BOX LID.

VALVE STEM EXTENSION LEGEND

① VALVE OPERATING NUT OR 1 7/8" X 1 7/8" X 2" HIGH GRADE STEEL WELDED TO GUIDE PLATE.

② 3/16" THICK X 5 1/5" DIA STEEL GUIDE PLATE WELDED TO RISER SHAFT.

③ 2"X2"X 3/16" SQUARE STRUCTURAL STEEL TUBING TO FIT OPERATING NUT. LENGTH AS REQUIRED.

NOTE:

WELD ALL AROUND, AS SPECIFIED ABOVE

EQUIVALENT MATERIALS AND EQUIPMENT MAY BE SUBSTITUTED WITH ENGINEER'S APPROVAL

WATER SYSTEM		
FILE NO. DETAILS	FILE NAME GVALVE	SHEET NO. 1 OF 1
DATE SEPTEMBER 22, 2014	SCALE NO SCALE	

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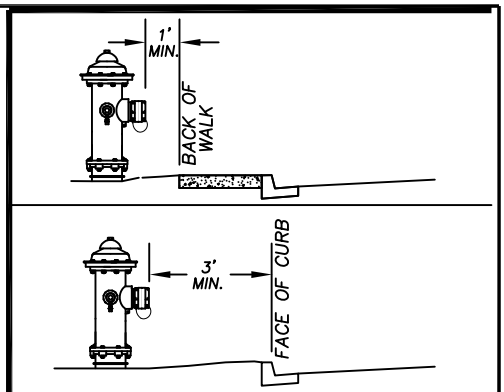
NOTES

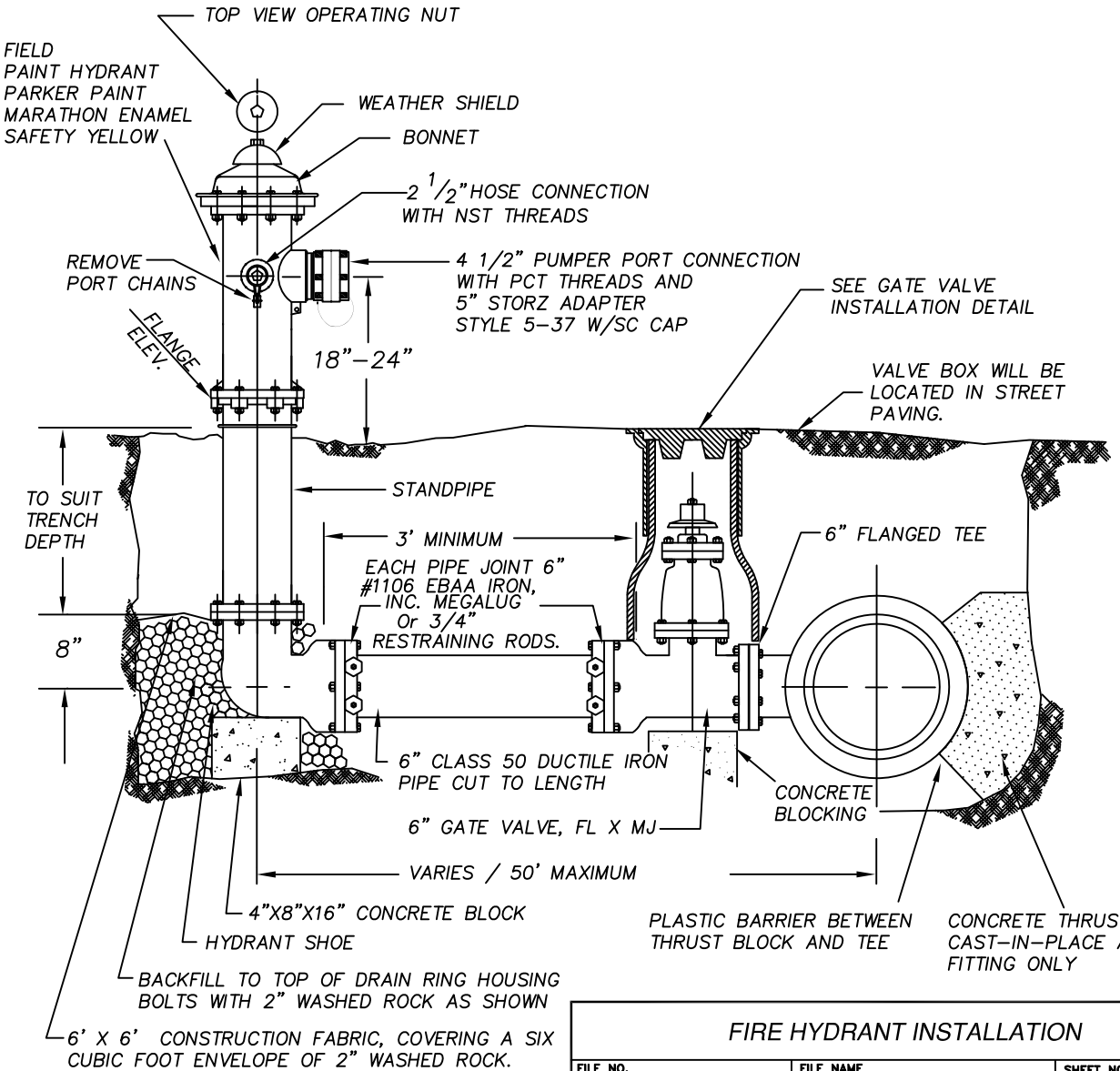
1. HYDRANTS SHALL BE LOCATED WITH A MINIMUM THREE FOOT RADIUS UNOBSTRUCTED WORKING AREA PROVIDED AROUND ALL HYDRANTS, AND IN NO CASE SHALL BE LOCATED IN SIDEWALK.

2. WHEN R/W IS NOT ADEQUATE, A MINIMUM 5' EASEMENT IS REQUIRED ON ALL SIDES OF THE HYDRANT.

3. HYDRANT SHALL BE DRESSER M & H RELIANT STYLE 929, MUELLER CENTURION, OR CLOW MEDALLION.



HYDRANT OFFSET



FIRE HYDRANT INSTALLATION

FILE NO.	FILE NAME	SHEET NO.
DETAILS	HYDRANT	
DATE: OCTOBER 15, 2013	SCALE: NTS	

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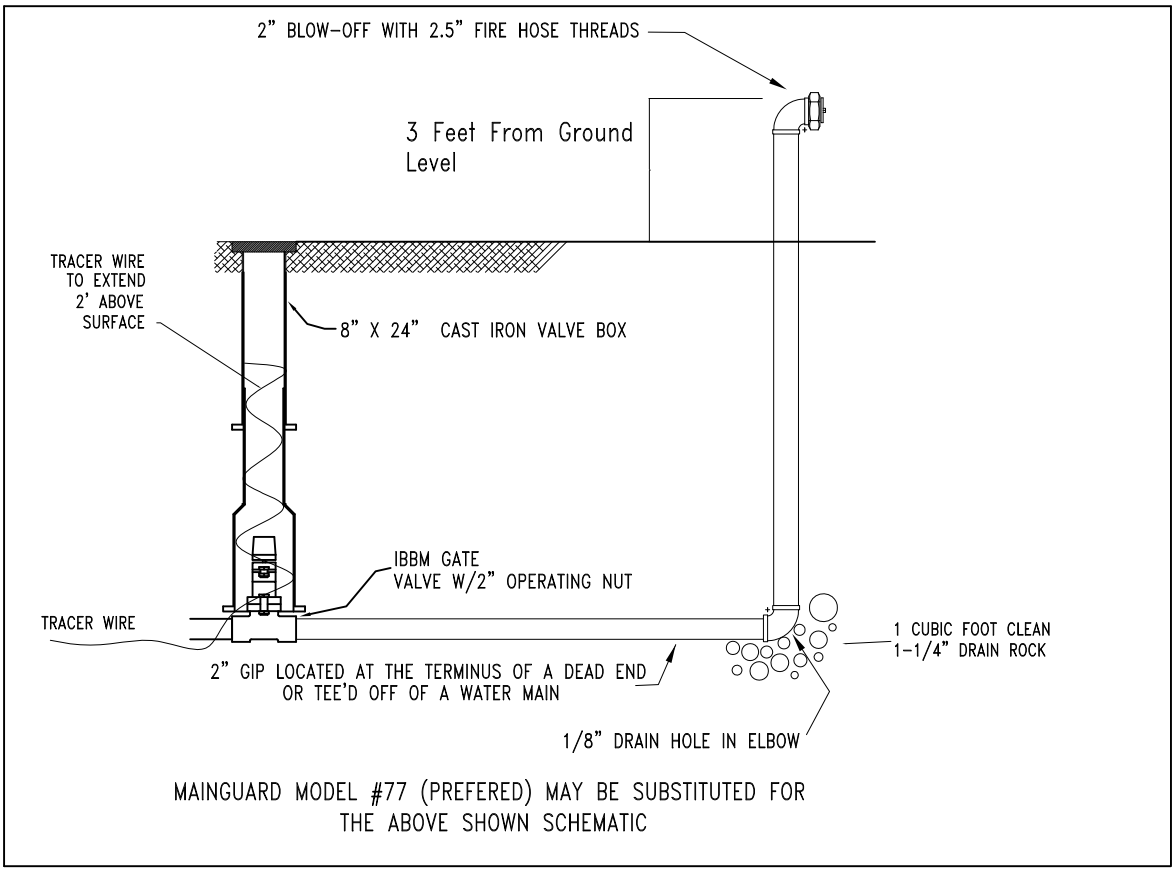
2" BLOWOFF STANDARD DETAIL



MAINGUARD MODEL #77 (PREFERED) MAY BE SUBSTITUTED FOR THE ABOVE SHOWN SCHEMATIC

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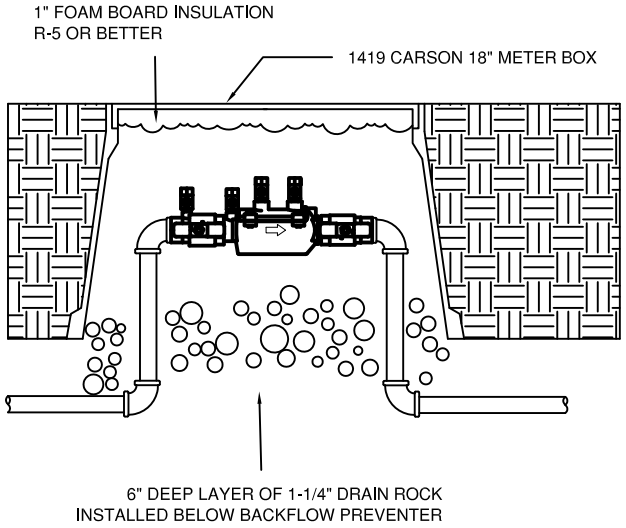
BACKFLOW PREVENTION ASSEMBLY
INSTALLATION DETAIL



STANDARDS

BACKFLOW PREVENTER SHALL BE INSTALLED BY QUALIFIED, LICENSED PERSONNEL. INSTALLER SHALL CONFIRM THAT THE CORRECT DEVICE HAS BEEN SELECTED.

DOUBLE CHECK VALVE ASSEMBLY (DCVA) FROM 3/4" TO 2" SHALL BE WILKINS MODEL 350 XL OR EQUAL, CONSULT ENGINEER FOR OTHER SIZES.

A REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) SHALL NOT BE INSTALLED IN THIS MANNER, CONSULT APPROVED CROSS CONNECTION CONTROL SPECIALIST FOR INSTALLATION STANDARDS AND DETAILS.

INSTALL VALVE AT LEAST 12 INCHES ABOVE SURROUNDING FLOOD LEVEL

NO STANDING WATER IS PERMITTED WITHIN THE VALVE BOX. DRAINAGE SHALL BE PROVIDED IF NECESSARY.

POSITION VALVE WITHIN BOX TO PROVIDE ADEQUATE SPACE AROUND THE INSTALLED UNIT SO THAT TEST COCKS WILL BE ACCESSIBLE FOR TESTING AND SERVICES.

INSTALLER SHALL CONFIRM ACCESSIBILITY OF IDENTIFICATION TAGS AND SERIAL NUMBERS.

INSTALLATION INSTRUCTIONS

BEFORE INSTALLATION, FLUSH THE LINE THOROUGHLY TO REMOVE ALL DEBRIS, CHIPS AND OTHER FOREIGN MATTER.

CONNECT DCVA WITH BOTH VALVES CLOSED.

SLOWLY OPEN THE INLET SHUT-OFF VALVE UNTIL THE BACKFLOW PREVENTER IS COMPLETELY PRESSURIZED

WHEN THE UNIT HAS BEEN PRESSURIZED, VENT ANY TRAPPED AIR BY SLIGHTLY OPENING EACH FO THE OUR TEST COCKS.

SLOWLY OPEN THE DOWNSTREAM SHUT-OFF VALVE. THE DCVA IS NOW IN SERVICE.

AFTER THE DCVA HAS BEEN PROPERLY INSTALLED, TEST THE DEVICE. IF THE DEVICE FAILS THE TEST, REMOVE THE FIRST AND SECOND CHECK VALVES AND THOROUGHLY FLUSH THE DEVICE. CLEAN RUBBER SEATS OF ALL DEBRIS AND PLACE THE UNIT BACK IN SERVICE.

DETAIL: BACKFLOW PREVENTER INSTALLATION		
FILE NO.: DETAILS	FILE NAME: BACKFLOW	SHEET NO.:
DATE: DECEMBER 12, 2013	SCALE: NTS	

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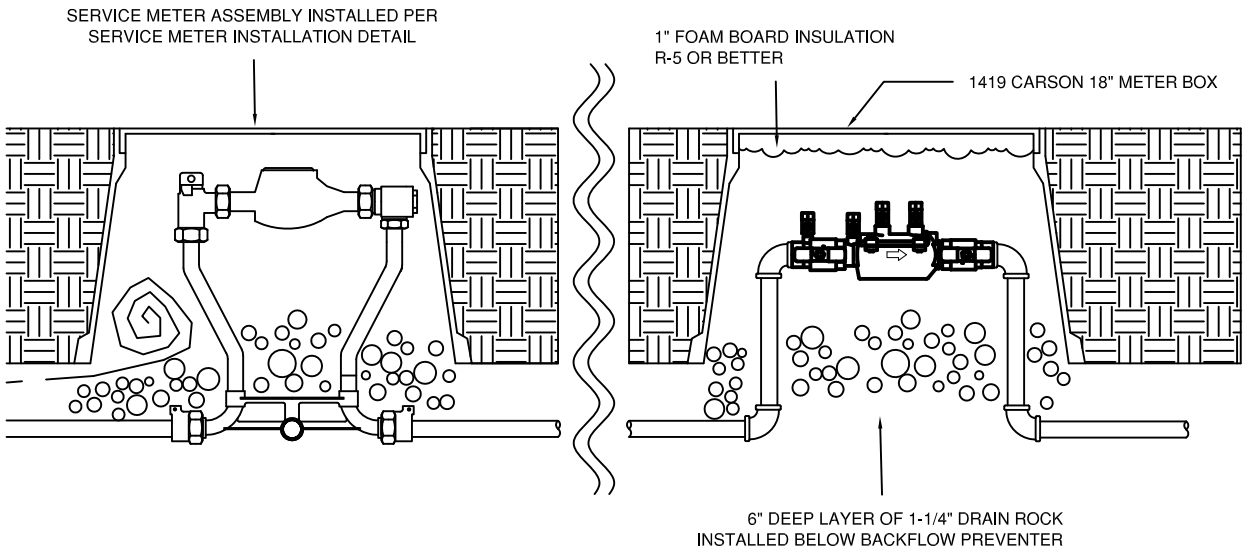
BACKFLOW PREVENTION ASSEMBLY INSTALLATION DETAIL



STANDARDS

BACKFLOW PREVENTER SHALL BE INSTALLED BY QUALIFIED, LICENSED PERSONNEL. INSTALLER SHALL CONFIRM THAT THE CORRECT DEVICE HAS BEEN SELECTED.

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DETAIL: BACKFLOW PREVENTER INSTALLATION		
FILE NO.: DETAILS	FILE NAME: BACKFLOW	SHEET NO.:
DATE: DECEMBER 12, 2013	SCALE: NTS	

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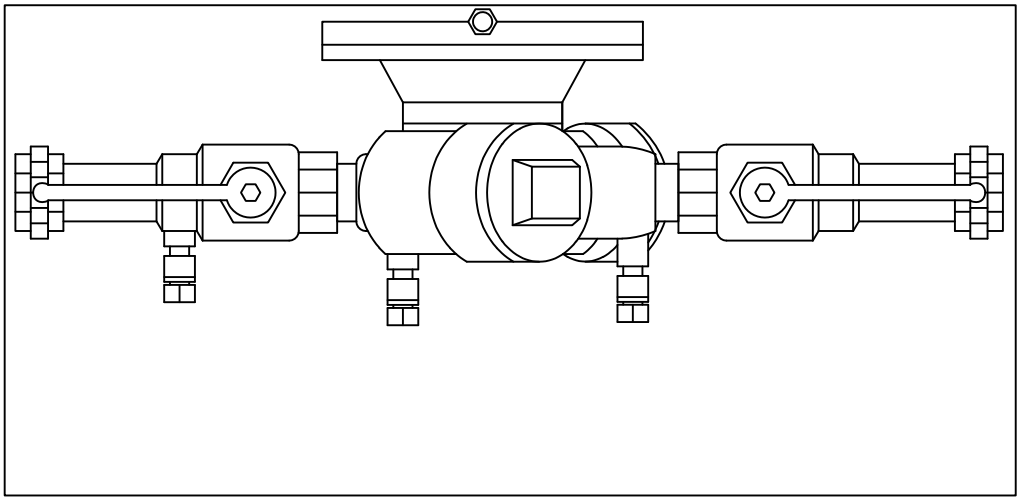
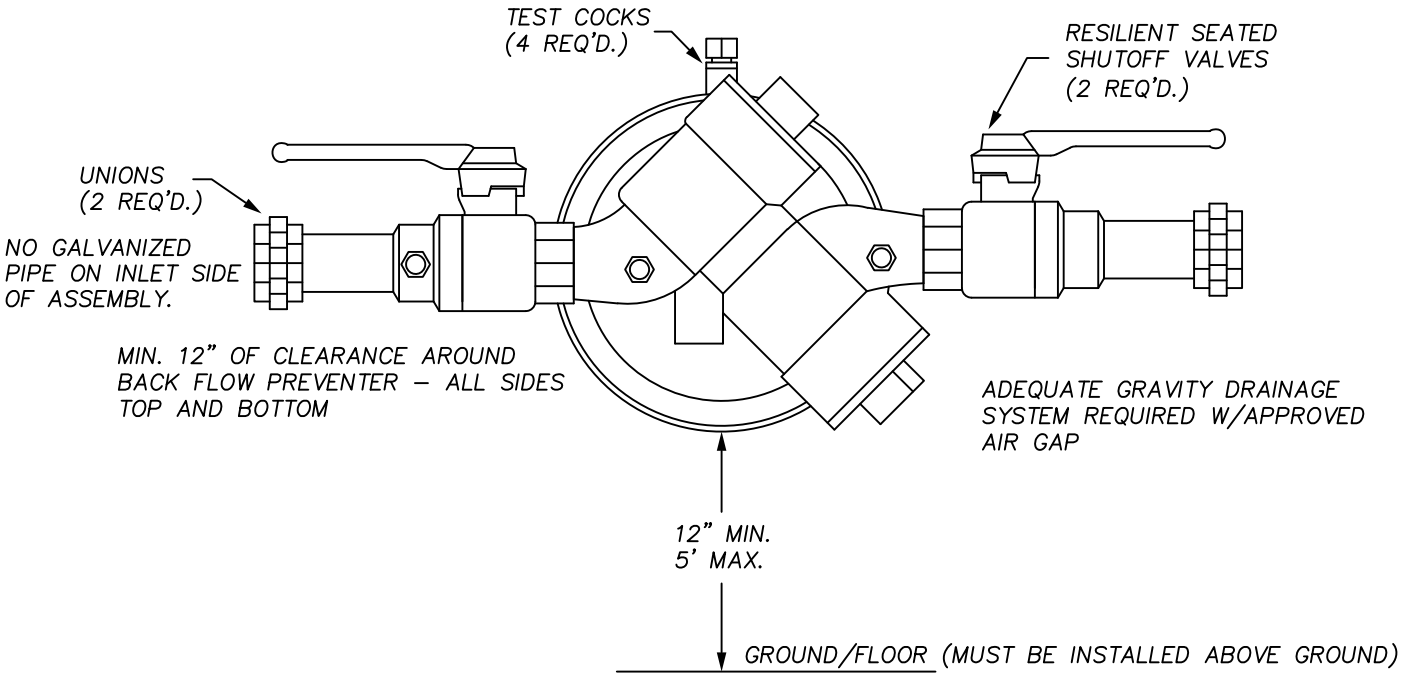
A BURTON COOPERATIVE APPROVED AWWA VALVE IS REQ'D. BETWEEN THE SUPPLY MAIN AND THE VAULT

PROVIDE HEAT OR REMOVABLE INSULATED ENCLOSURE ON OUTSIDE APPLICATIONS: PRO–BOX, HOT BOX OR EQUAL INSULATED ENCLOSURES.



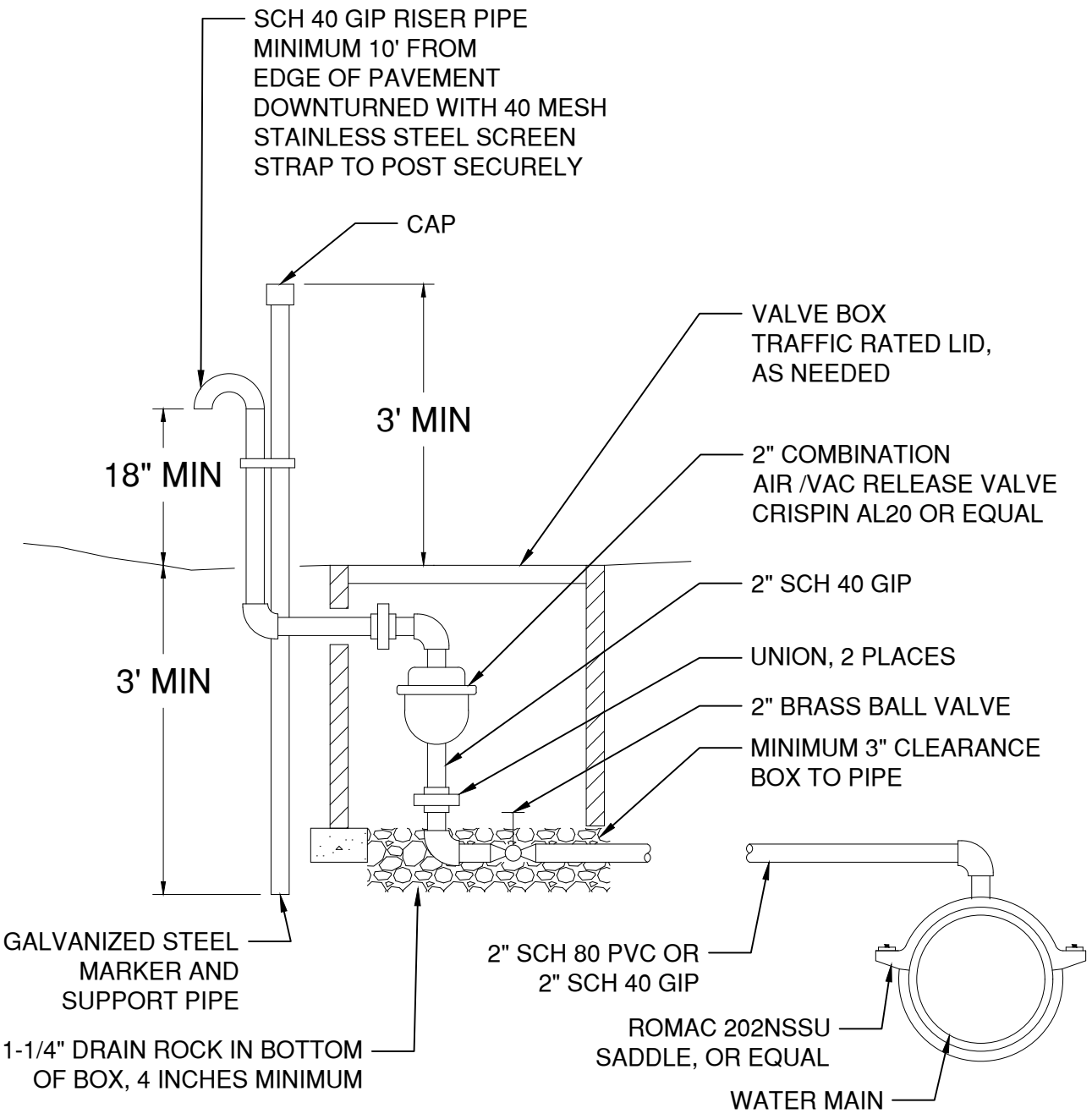


NOTE: ALL ITEMS SHALL COMPLY WITH THE FOLLOWING.

- 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.
- NO GALVANIZED PIPE BEFORE ASSEMBLY
- VALVE SHALL BE PROTECTED FROM FREEZING CONDITIONS.
- THE BACK FLOW ASSEMBLY SHALL BE A CURRENT WASHINGTON STATE DEPARTMENT OF HEALTH APPROVED MODEL.
- A PLUMBING PERMIT IS REQUIRED.

(ABOVE GROUND INSTALLATION)

REVISED DATE	NORTHWEST WATER SYSTEMS	JOB NUMBER
1/15/18	REDUCED PRESSURE BACK FLOW ASSEMBLY– 2" & SMALLER	DETAIL



AIR RELEASE/AIR-VAC DETAIL

TITLE: AIR/VAC INSTALLATION		
FILE NO.: DETAILS	FILE NAME: AIR/VAC	SHEET NO.: 1 OF 1
DATE: JUNE 18, 2025	SCALE: NO SCALE	

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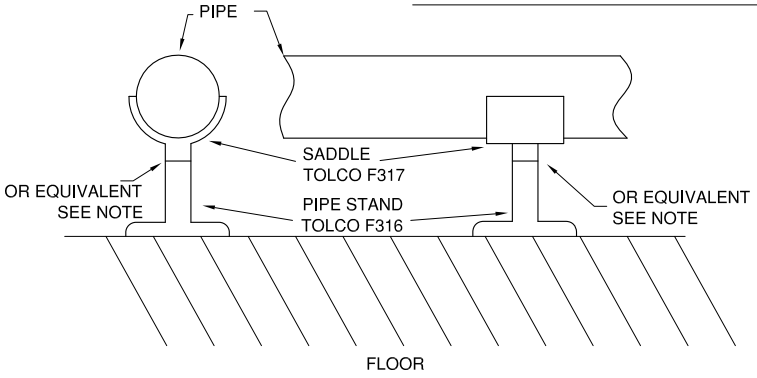
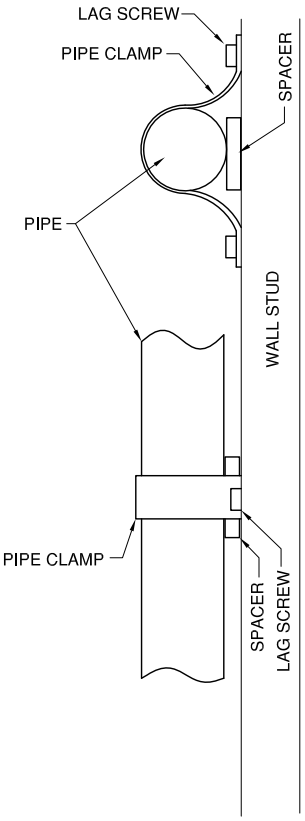
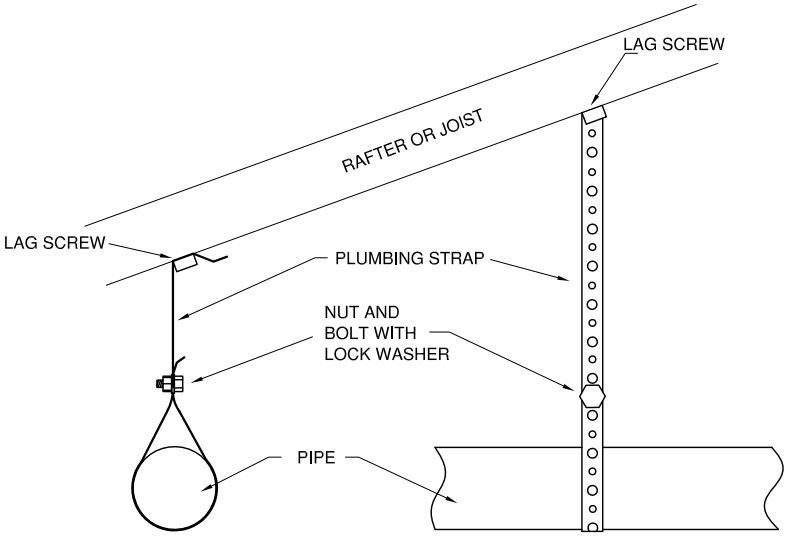
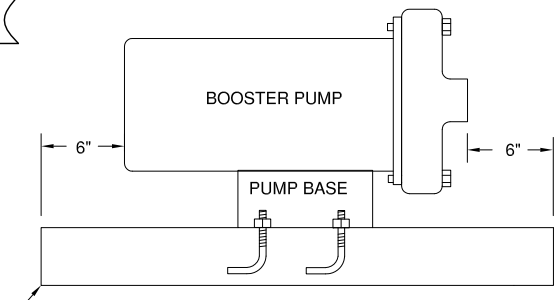
ANCHORING DETAILS









POURED CONCRETE BASE WITH 1/2"-ANCHOR BOLTS (4 MINIMUM). BASE HEIGHT 3.5" EXTENDING A MINIMUM OF 6" PAST LENGTH AND WIDTH OF PUMP

DRILLED HOLES AND CONCRETE ANCHOR LAGS INSTALLED INTO PUMPHOUSE FLOOR MAY BE SUBSTITUTED FOR CONCRETE BASE

NOTES:

PIPE SUPPORTS SHALL BE SPACED AT A MINIMUM OF EVERY FOUR FEET

BOOSTER PUMPS AND CHEMICAL FEED PUMPS SHALL BE SECURED USING MASONARY OR WOOD LAGS AS APPROPRIATE AND PUMP BRACKETS SUPPLIED BY THE MANUFACTURER

ALL PIPE SUPPORTS SHALL SUPPORT THE WEIGHT OF THE PIPE AND WATER. SUPPORTS SHALL BE CONFIGURED IN SUCH A WAY AS TO PROTECT THE PIPES FROM PHYSICAL DAMAGE.

ALL SUPPORTS SHALL BE CONSTRUCTED OF MATERIAL THAT RESISTS CORROSION.

EQUIVALENT SUPPORTS (MASONARY BLOCKS, PIPE RACKS, COMPRESSION CLAMPS, U-CHANNEL, ETC.) MAY BE USED AS SUPPORTS AND ANCHORS AS LONG AS THEY FOLLOW GENERALLY ACCEPTED INDUSTRY STANDARDS AND WSDOH GUIDELINES.

DRAWING: ANCHORING DETAILS		
FILE NO.: DETAILS	FILE NAME: ANCHORING	SHEET NO.
DATE: APRIL 30, 2007	SCALE: NTS	

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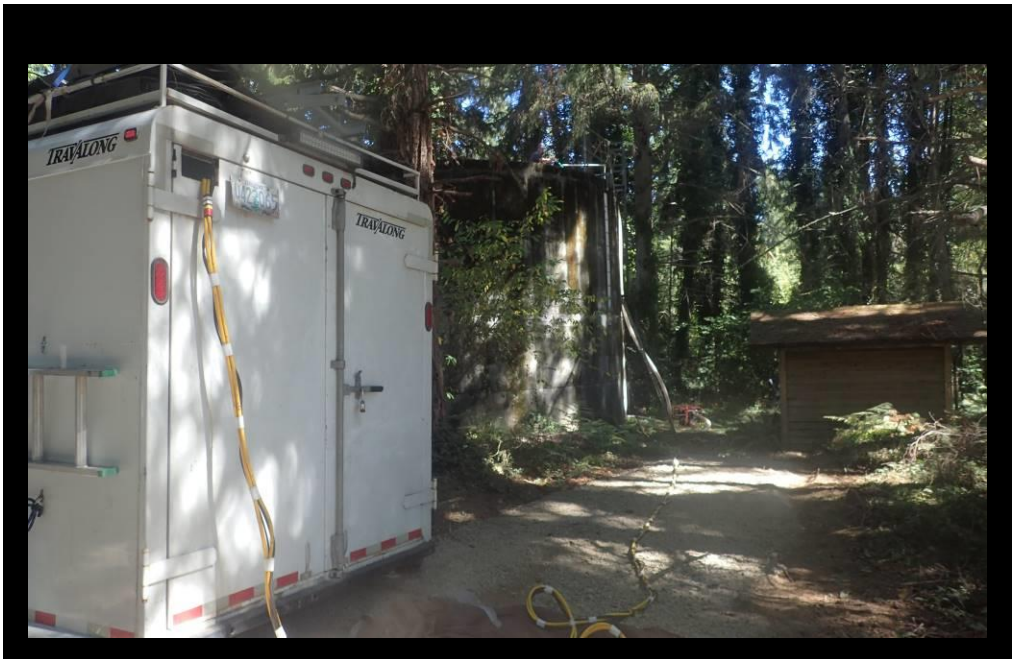
Chapter 10-16: Tank Inspection Reports



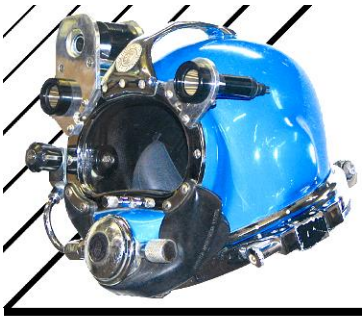
100KG Reservoir

Burton Water Co.

Report of Findings
From the
Diving Operations
Conducted on

September 8, 2021

by



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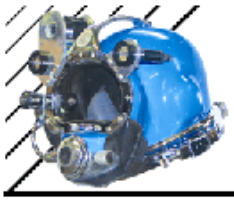

LiquiVision Technology
DIVING SERVICES

Office/Mailing Address
711 Market Street
Klamath Falls, OR 97601

Western Operations
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Underwater Inspection of 100KG Reservoir

September 8, 2021

Jim Garrison
Burton Water Co.
P.O. Box 1938
Vashon, WA 98070

Following is the report of findings during the underwater work conducted on your reservoir.

It will focus on issues of concern or areas that need attention. To see a complete and detailed inspection, please view each video.

Color images of all plumbing fixtures, components and areas of concern were taken via underwater digital camera. The images should give you a clear view of the conditions described. The video may give you another view and a clearer understanding of any area that you may wish to look at more closely.

METHODOLOGY:

Disinfection of All Equipment With 200ppm+ Chlorine Solution Immediately Prior to Entering System: This process prevents contamination of the water supply. All LVT equipment was properly disinfected prior to entering the potable water system.

Full-Time Voice Communication between surface and Diver: The system allowed for constant communication between the diver, and all surface personnel. In addition, customers were able to communicate with the diver at any time. For purposes of a more efficient inspection, cleaning, and repair program, that enabled the diver to immediately discuss any observations he made inside the reservoir.

Full-Time Live High Resolution Color Video: Allowed for constant viewing of the diver's work and observations. This also enabled the district personnel to view what the diver in the reservoir was witnessing.

100KG Reservoir

TERMINOLOGY:

When describing the features or areas of interest inside the reservoir, an image number is placed next to the description that corresponds with the inspection findings. The diagram is shown in a view looking from the top down. The entry hatch is referred to as the 12:00 o'clock position.

Following the diagram are pictures of the pertinent areas of the reservoir and the locations where the pictures were taken. Each picture is descripted and numbered.

The standards used to evaluate the condition of the reservoir include Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85 NACE Standard RP0196-96 & RP0388-2001 or Condition of Concrete In-service – ACI 201.1R-92.

100KG Reservoir

OVERVIEW OF RESERVOIR INSPECTED:

Customer Name:	Burton Water Co.	**Reservoir Name:**	100KG Reservoir
Manager:	Jim Garrison	Construction:	OG Concrete
Job Number:	WA108021R2	Capacity (gal.):	105,700
Date of Inspection:	September 8, 2021	Diameter or L x W:	30'
Report Writer:	JayTee Donaldson	Height:	20'
Diver:	Sam Nunez	Floor Square FT:	706.8
Tender:	Chris Westphal	Date Built:	Unknown

N/A –not applicable **Excellent** (Ex.) –like new condition, no repairs needed. **Good** – Cosmetic only problems, repairs if wanted. **Fair**-Minor problems, repairs needed, not immediate. **Poor** –Major problems, structural or like, immediate repairs needed.

1. Rust Grades

Grades	% Of Surface Rusted	Description
10	0% - 0.01%	No rusting or less than 0.01% of surface rusted
9	0.01% - 0.03%	Minute rusting, less than 0.03% of surface rusted
8	0.03% - 0.1%	Few isolated rust spots, less than 0.1% of surface rusted
7	0.1%- 0.3%	Less than 0.3% of surface rusted
6	0.3% - 1%	Extensive rust spots, but less than 1% of surface rusted
5	1% - 3%	Rusting to the extent of 3% of surface rusted
4	3% - 10%	Rusting to the extent of 10% of surface rusted
3	10% - 16%	Approximately one sixth of the surface rusted (16%)
2	16% - 33%	Approximately one third of the surface rusted (33%)
1	33% - 50%	Approximately one half of the surface rusted (50%)
0	50% - 100%	Approximately 100% of the surface rusted

2. Concrete Deformities

Unable to Evaluate	Good Condition	Cracks	Blistering	Chalking	De-Lamination	Pitting	Pop outs	Scaling	Spalling	Warping
UE	GC	CK	BL	CH	DL	PT	PO	SC	SP	WA

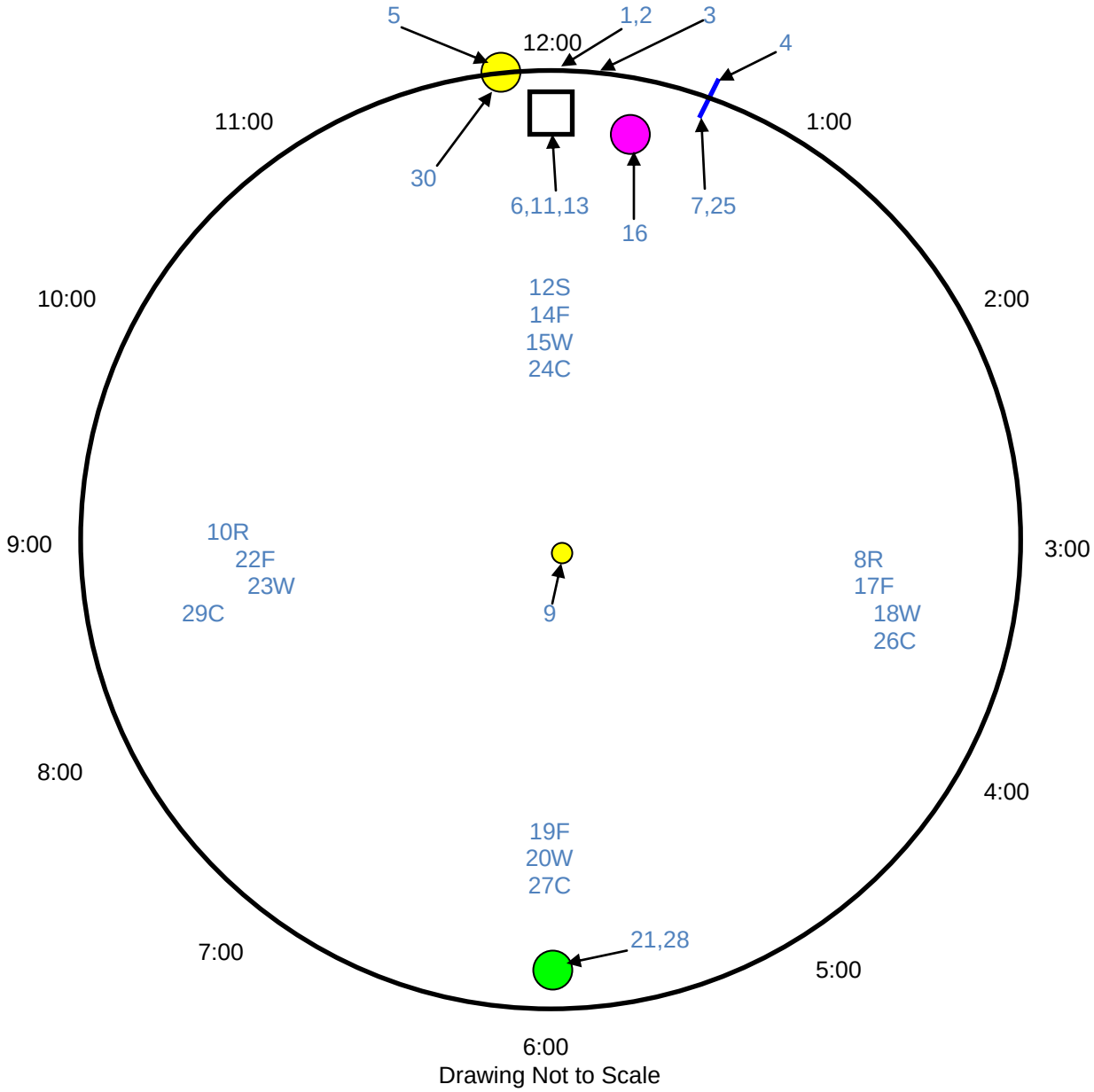
100KG Reservoir

RECOMMENDATIONS:

Recommendation	Estimated Time - Hrs.
Perform a regular cleaning, inspection and repair cycle every 2-3 years to ensure superior water quality and proper maintenance of coating condition and appurtenances is performed.	Please contact our sales office for an estimate.

100KG Reservoir

Reservoir Diagram



Drawing Not to Scale

	Entry Hatch		Overflow		Air Vent
	Inlet		Liquid Level Indicator		Outlet

100KG Reservoir

Image #**1** *Exterior Base 12:00* **Condition:** Concrete Deform[3] **UE**. **Description:** Unable to evaluate the condition of the Exterior Base due to vegetation around the base of the reservoir.	
Image #**2** *Exterior Wall 12:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Exterior Wall appeared to be in good condition.	

100KG Reservoir

Image #**3** *Exterior Ladder 12:05* **Condition:** Rust Grade[1] **8.** **Description:** Exterior Ladder appeared to be in good condition with a minor amount of corrosion.	
Image #**4** *Liquid Level Indicator Reader Board 12:30* **Description:** Liquid Level Indicator Reader Board appeared to be in good condition.	

100KG Reservoir

Image #**5** *Overflow 11:55* **Description:** Overflow appeared to be in good condition.	
Image #**6** *Entry Hatch 12:00* **Condition:** Rust Grade[1] **7.** **Description:** 48" x 24" Entry Hatch appeared to be in good condition with a minor amount of corrosion.	

100KG Reservoir

Image #**7** *Liquid Level Indicator Penetration 12:30* **Condition:** Rust Grade[1] **8.** **Description:** Liquid Level Indicator Penetration appeared to be in good condition with a minor amount of corrosion.	
Image #**8** *Roof 3:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Roof appeared to be in good condition.	

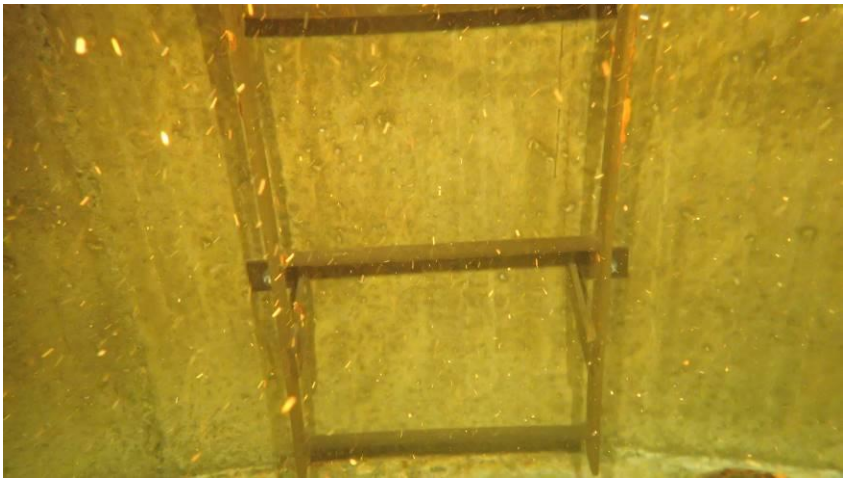
100KG Reservoir

Image #**9** *Vent Center* **Condition:** Rust Grade[1] **8.** **Description:** Vent appeared to be in good condition with a minor amount of corrosion.	
Image #**10** *Roof 9:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Roof appeared to be in good condition.	

100KG Reservoir

Image #**11** *Diver*	
Image #**12** *Sediment* **Description:** 1/16" of sediment was removed from reservoir floor.	

100KG Reservoir

Image #**13** *Interior Ladder 12:00* **Condition:** Rust Grade[1] **7.** **Description:** Interior Ladder appeared to be in good condition with a minor amount of corrosion.	
Image #**14** *Floor 12:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	

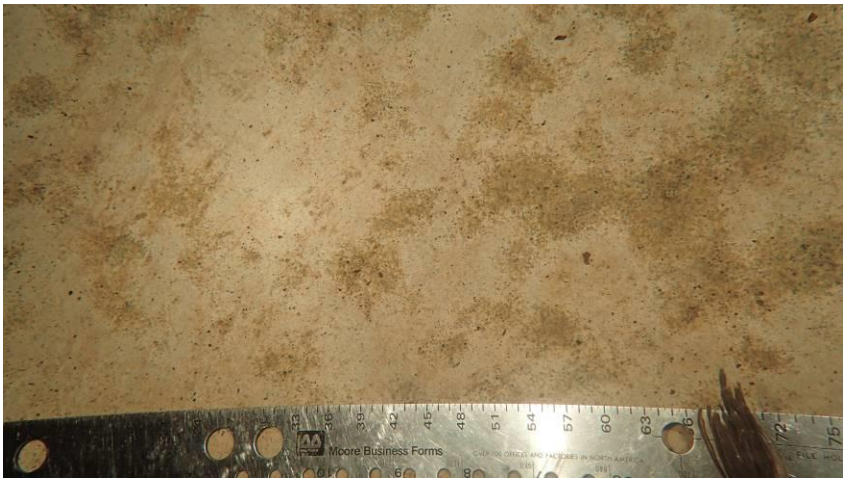
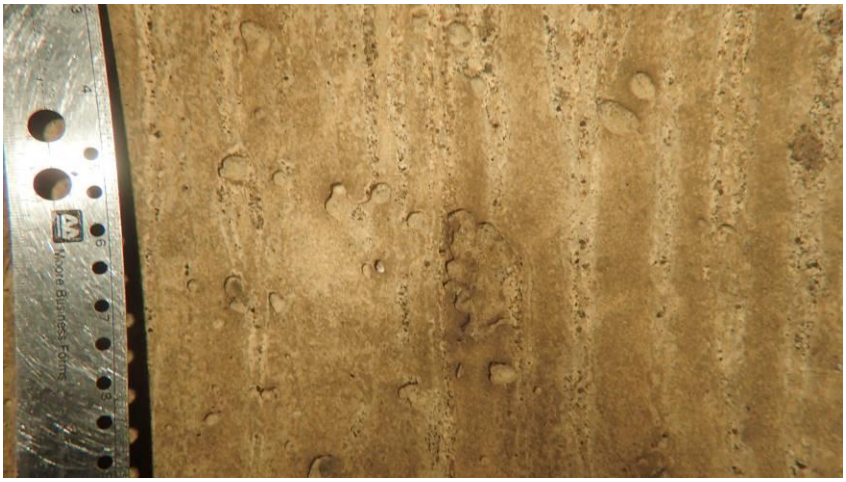
100KG Reservoir

Image #**15** *Wall 12:00* **Condition:** Concrete Deform[3] **PT**. **Description:** Wall appeared to be in good condition with a minor amount of pitting.	
Image #**16** *Outlet 12:05* **Condition:** Rust Grade[1] **8.** **Description:** Outlet appeared to be in good condition with a minor amount of corrosion.	

100KG Reservoir

Image #**17** *Floor 3:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	
Image #**18** *Wall 3:00* **Condition:** Concrete Deform[3] **PT**. **Description:** Wall appeared to be in good condition with a minor amount of pitting.	

100KG Reservoir

Image #**19** *Floor 6:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	
Image #**20** *Wall 6:00* **Condition:** Concrete Deform[3] **PT**. **Description:** Wall appeared to be in good condition with a minor amount of pitting.	

100KG Reservoir

Image #**21** *High Fill Inlet 6:00* **Description:** High Fill Inlet appeared to be in good condition. There was a moderate amount of corrosion observed on the flange.	
Image #**22** *Floor 9:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	

100KG Reservoir

Image #**23** *Wall 9:00* **Condition:** Concrete Deform[3] **PT**. **Description:** Wall appeared to be in good condition with a minor amount of pitting.	
Image #**24** *Ceiling 12:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Ceiling appeared to be in good condition.	

100KG Reservoir

Image #**25** *Liquid Level Indicator Float 12:30* **Description:** Liquid Level Indicator Float appeared to be in good condition.	
Image #**26** *Ceiling 3:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Ceiling appeared to be in good condition.	

100KG Reservoir

Image #**27** *Ceiling 6:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Ceiling appeared to be in good condition.	
Image #**28** *High Fill Inlet 6:00* **Description:** High Fill Inlet appeared to be in good condition.	

100KG Reservoir

Image #**29** *Ceiling 9:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Ceiling appeared to be in good condition.	
Image #**30** *Overflow 11:50* **Condition:** Concrete Deform[3] **GC**. **Description:** Overflow appeared to be in good condition.	

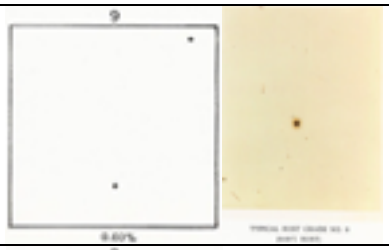
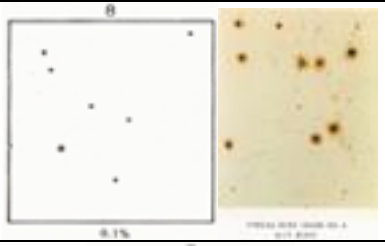
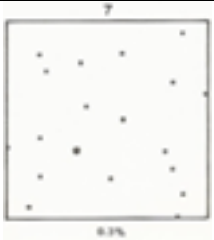
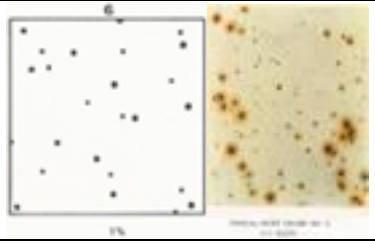
100KG Reservoir

REFERENCES:

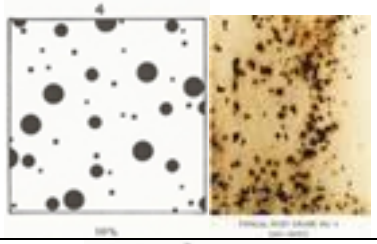
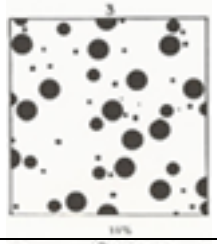
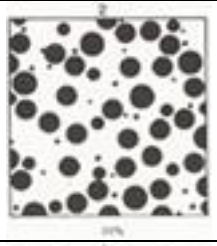
Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85 (1989)

The graphical representations show examples of area percentages, which may be helpful in rust grading. The use of photographical reference standards requires the following precautions:

1. Some finishes are stained by rust. This staining must not be confused with the actual rusting involved.
2. Accumulated dirt or other material may make accurate determination of the degree of rusting difficult.
3. Certain types of deposited dirt that contain iron or iron compounds may cause surface discoloration that should not be mistaken for corrosion.
4. It must be realized that failure may vary over a given area and discretion must therefore be used in applying these reference standards.
5. In evaluating surfaces, consideration shall be given to the color of the finish coating, since failures will be more apparent on a finish that shows color contrast with rust, such as white, than on a similar color, such as iron oxide finish.
6. The photographic reference standards are not required for use of the rust-grade scale since the scale is based upon the percent of the area rusted and any method of assessing area rusted may be used to determine the rust grade.

Rust Grades	Description	Graphical Representation
10	No rusting or less than 0.01% of surface rusted	Unnecessary
9	Minute rusting, less than 0.03% of surface rusted	
8	Few isolated rust spots, less than 0.1% of surface rusted	
7	Less than 0.3% of surface rusted	
6	Extensive rust spots, but less than 1% of surface rusted	

100KG Reservoir

5	Rusting to the extent of 3% of surface rusted	
4	Rusting to the extent of 10% of surface rusted	
3	Approximately one sixth of the surface rusted (16%)	
2	Approximately one third of the surface rusted (33%)	
1	Approximately one half of the surface rusted (50%)	
0	Approximately 100% of the surface rusted	Unnecessary

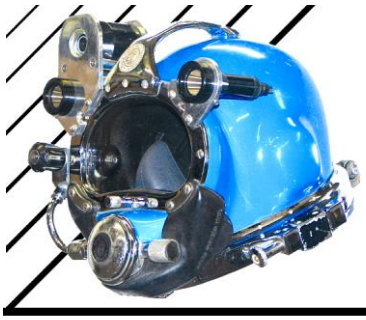
North Inground 1

Burton Water Co.

Report of Findings
From the
Diving Operations
Conducted on

September 8, 2021

by



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liquivision@divingservices.com

Underwater Inspection of North Inground 1

September 8, 2021

Jim Garrison
Burton Water Co.
P.O. Box 1938
Vashon, WA 98070

Following is the report of findings during the underwater work conducted on your storage tank.

It will focus on issues of concern or areas that need attention. In order to see a complete and detailed inspection, please view each video.

Color images of all plumbing fixtures, components and areas of concern were taken via underwater digital camera. The images should give you a clear view of the conditions described. The video may give you another view and a clearer understanding of any area that you may wish to look at more closely.

METHODOLOGY:

Disinfection of All Equipment With 200ppm+ Chlorine Solution Immediately Prior to Entering System: This process prevents contamination of the water supply. All LVT equipment was properly disinfected prior to entering the potable water system.

Full-Time Voice Communication between surface and Diver: The system allowed for constant communication between the diver, and all surface personnel. In addition, customers were able to communicate with the diver at any time. For purposes of a more efficient inspection, cleaning, and repair program, that enabled the diver to immediately discuss any observations he made inside the storage tank.

Full-Time Live High Resolution Color Video: Allowed for constant viewing of the diver's work and observations. This also enabled the district personnel to view what the diver in the storage tank was witnessing.

North Inground 1

TERMINOLOGY:

When describing the features or areas of interest inside the storage tank, an image number is placed next to the description that corresponds with the inspection findings. The diagram is shown in a view looking from the top down. The entry hatch is referred to as the 12:00 o'clock position.

Following the diagram are pictures of the pertinent areas of the storage tank and the locations where the pictures were taken. Each picture is descript and numbered.

The standards used to evaluate the condition of the storage tank include: Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85 NACE Standard RP0196-96 & RP0388-2001 or Condition of Concrete In-service – ACI 201.1R-92.

North Inground 1

OVERVIEW OF STORAGE TANK INSPECTED:

Customer Name:	Burton Water Co.	**Tank Name:**	North Inground 1
Manager:	Jim Garrison	Construction:	PBG Concrete
Job Number:	WA108021R3T3	Capacity (gal.):	29,920
Date of Inspection:	September 8, 2021	Diameter or L x W:	40' X 20'
Report Writer:	JayTee Donaldson	Height:	5'
Diver:	Chris Westphal	Floor Square FT:	800
Tender:	Sam Nunez	Date Built:	Unknown

N/A –not applicable **Excellent** (Ex.) –like new condition, no repairs needed. **Good** – Cosmetic only problems, repairs if wanted. **Fair**-Minor problems, repairs needed, not immediate. **Poor** –Major problems, structural or like, immediate repairs needed.

1. Rust Grades

Grades	% of Surface Rusted	Description
10	0% - 0.01%	No rusting or less than 0.01% of surface rusted
9	0.01% - 0.03%	Minute rusting, less than 0.03% of surface rusted
8	0.03% - 0.1%	Few isolated rust spots, less than 0.1% of surface rusted
7	0.1%- 0.3%	Less than 0.3% of surface rusted
6	0.3% - 1%	Extensive rust spots, but less than 1% of surface rusted
5	1% - 3%	Rusting to the extent of 3% of surface rusted
4	3% - 10%	Rusting to the extent of 10% of surface rusted
3	10% - 16%	Approximately one sixth of the surface rusted (16%)
2	16% - 33%	Approximately one third of the surface rusted (33%)
1	33% - 50%	Approximately one half of the surface rusted (50%)
0	50% - 100%	Approximately 100% of the surface rusted

2. Concrete Deformities

Unable to Evaluate	Good Condition	Cracks	Blistering	Chalking	De-Lamination	Pitting	Pop outs	Scaling	Spalling	Warping
UE	GC	CK	BL	CH	DL	PT	PO	SC	SP	WA

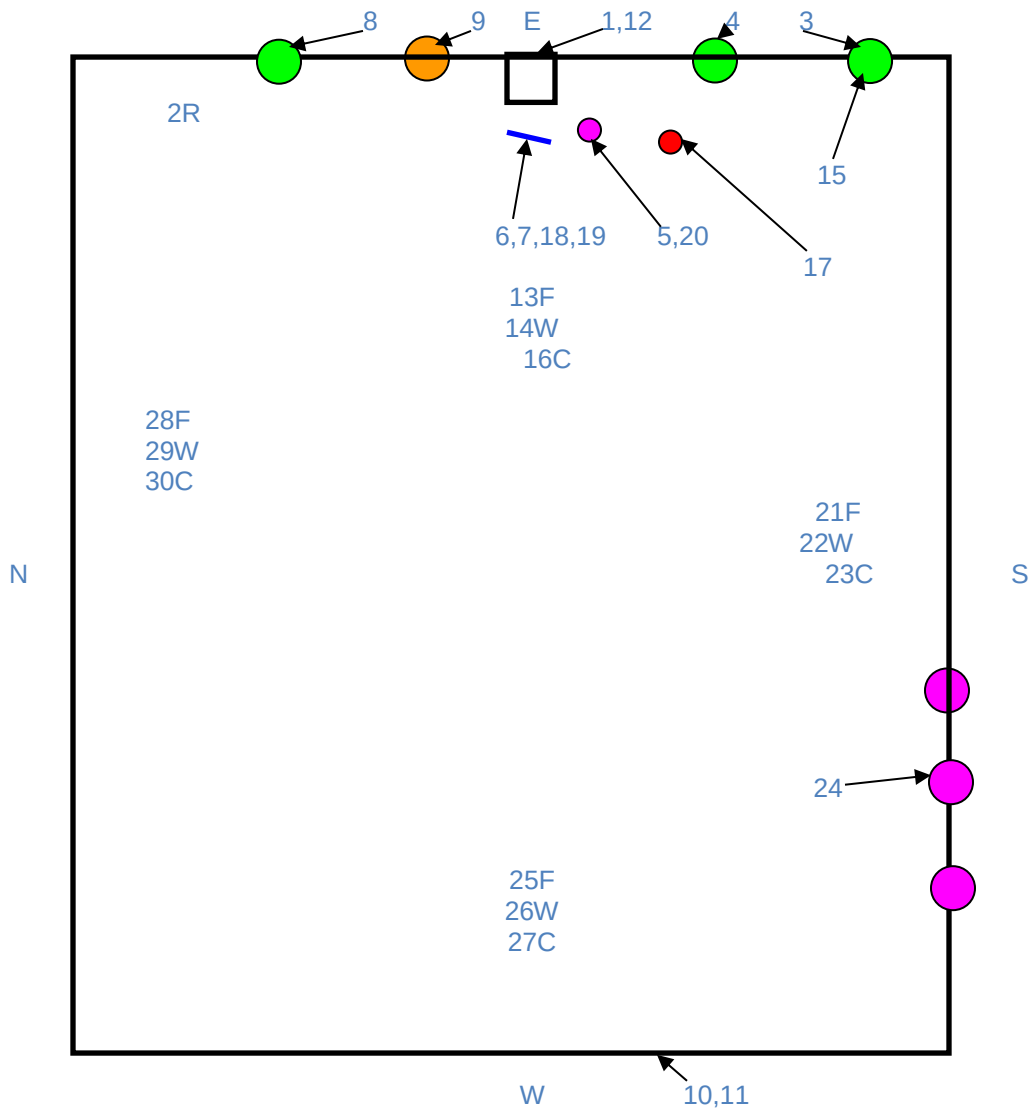
North Inground 1

RECOMMENDATIONS:

Recommendation	Estimated Time - Hrs.
Install finer mesh screens on exterior vents to limit the risk of bugs and other matter from entering the storage tank.	Please contact our sales office for an estimate.
Perform a regular cleaning, inspection and repair cycle every 2-3 years to ensure superior water quality and proper maintenance of coating condition and appurtenances is performed.	Please contact our sales office for an estimate.

North Inground 1

Tank Diagram



Drawing Not To Scale

	Entry Hatch		Liquid Level Indicator		Chlorine Injector
	Inlet		Penetration		Telemetry
	Outlet				

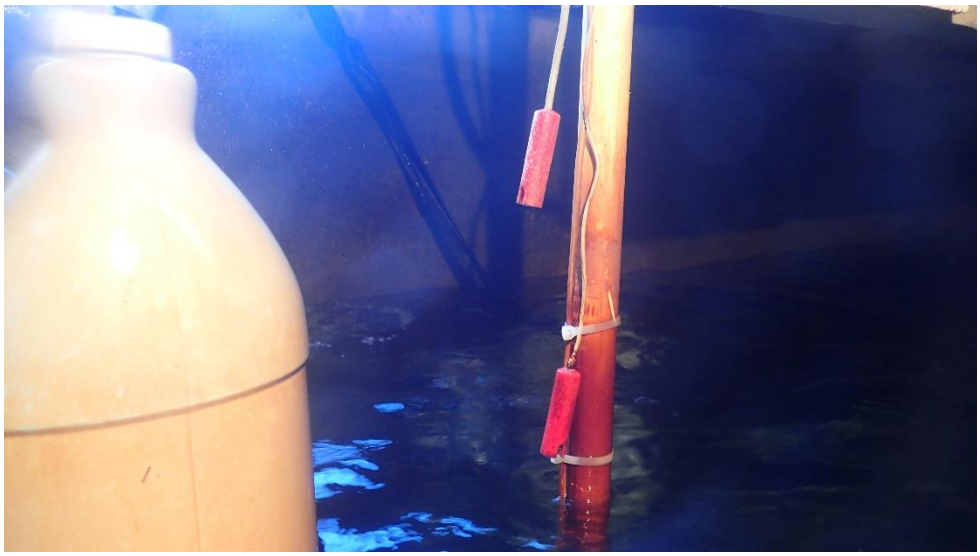
North Inground 1

Image #**1** *Entry Door* **Description:** 60" x 32" Entry Door appeared to be in good condition.	
Image #**2** *Roof East* **Description:** Roof appeared to be in good condition.	

North Inground 1

Image #**3** *Inlet East* **Description:** Inlet appeared to be in good condition.	
Image #**4** *Inlet East* **Description:** Inlet appeared to be in good condition.	

North Inground 1

Image #**5** *Telemetry East* **Description:** Telemetry appeared to be in good condition.	
Image #**6** *Liquid Level Indicator Float East* **Description:** Liquid Level Indicator Float appeared to be in good condition.	

North Inground 1

Image #**7** *Liquid Level Indicator Reader Board East* **Description:** Liquid Level Indicator Reader Board appeared to be in good condition.	
Image #**8** *Inlet East* **Description:** Inlet appeared to be in good condition.	

North Inground 1

Image #**9** *Penetration East* **Condition:** Rust Grade[1] **8.** **Description:** Penetration appeared to be in good condition with a minor amount of corrosion.	
Image #**10** *Exterior Base West* **Condition:** Concrete Deform[3] **CK**. **Description:** Exterior Base appeared to be in good condition with a minor amount of cracking.	

North Inground 1

Image #**11** *Exterior Wall West* **Condition:** Concrete Deform[3] **GC**. **Description:** Exterior Wall appeared to be in good condition.	
Image #**12** *Diver*	

North Inground 1

Image #**13** *Floor East* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	
Image #**14** *Wall East* **Condition:** Concrete Deform[3] **GC**. **Description:** Wall appeared to be in good condition.	

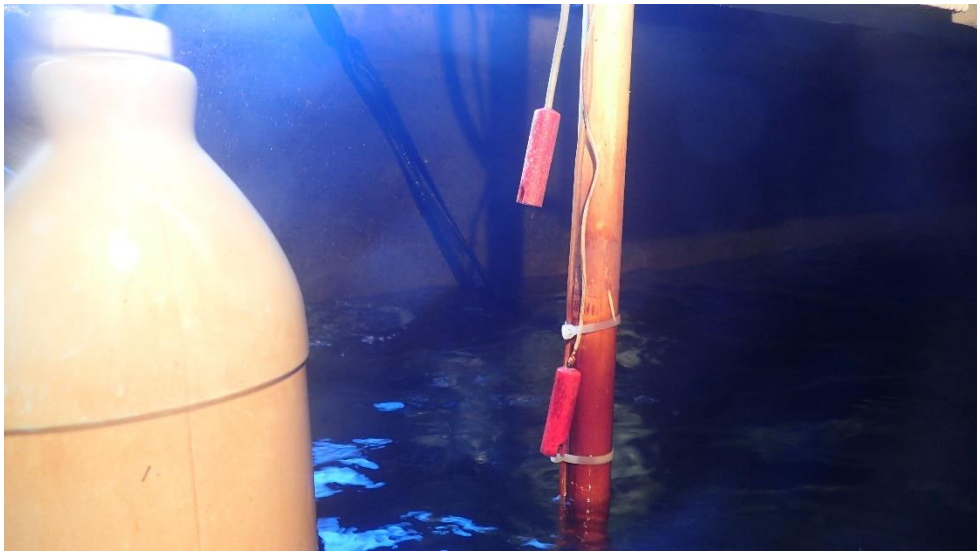
North Inground 1

Image #**15** *Inlet x6 East* **Condition:** Deform[3] **GC**. **Description:** Inlet x6 appeared to be in good condition.	
Image #**16** *Ceiling East* **Description:** Ceiling appeared to be in good condition.	

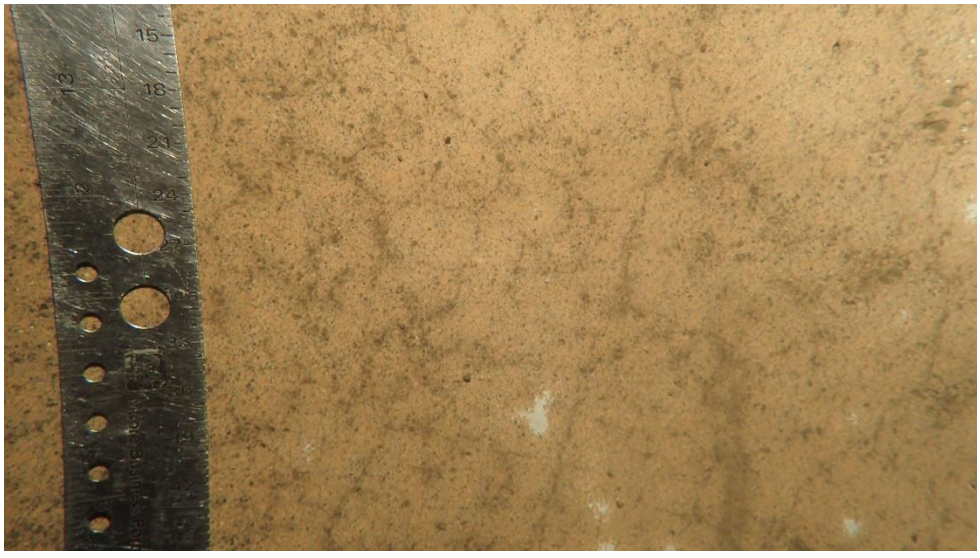
North Inground 1

Image #**17** *Chlorine Injector East* **Description:** Chlorine Injector appeared to be in good condition.	
Image #**18** *Liquid Level Indicator Reader Board East* **Description:** Liquid Level Indicator Reader Board appeared to be in good condition.	

North Inground 1

Image #**19** *Liquid Level Indicator Float East* **Description:** Liquid Level Indicator Float appeared to be in good condition.	
Image #**20** *Telemetry East* **Description:** Telemetry appeared to be in good condition. .	

North Inground 1

Image #**21** *Floor South* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	
Image #**22** *Wall South* **Condition:** Concrete Deform[3] **GC**. **Description:** Wall appeared to be in good condition.	

North Inground 1

Image #**23** *Ceiling South* **Description:** Ceiling appeared to be in good condition.	
Image #**24** *Outlet x3 South* **Condition:** Rust Grade[1] **8.** **Description:** Outlet x3 appeared to be in good condition with a minor amount of corrosion.	

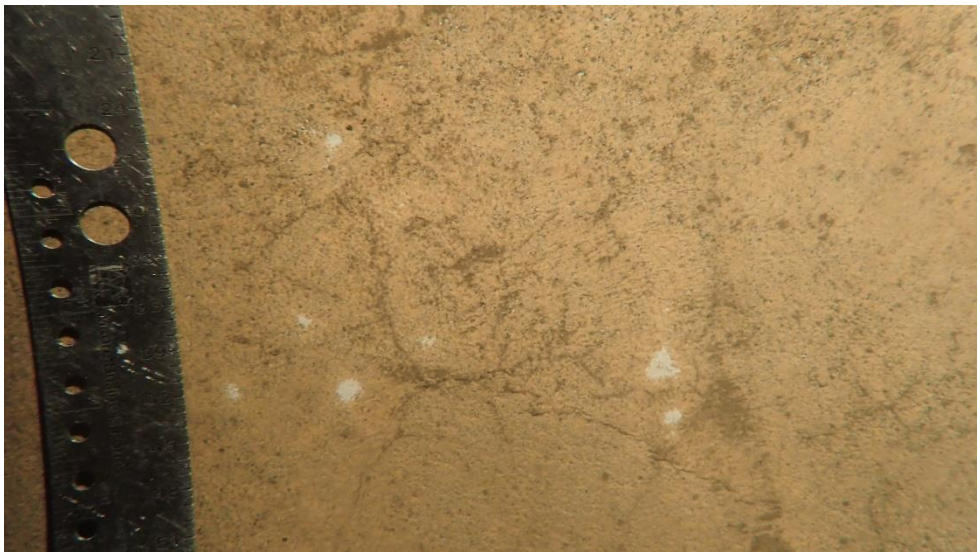
North Inground 1

Image #**25** *Floor West* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	
Image #**26** *Wall West* **Condition:** Concrete Deform[3] **GC**. **Description:** Wall appeared to be in good condition.	

North Inground 1

Image #**27** *Ceiling West* **Description:** Ceiling appeared to be in good condition.	
Image #**28** *Floor North* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	

North Inground 1

Image #**29** *Wall North* **Condition:** Concrete Deform[3] **GC**. **Description:** Wall appeared to be in good condition.	
Image #**30** *Ceiling North* **Description:** Ceiling appeared to be in good condition.	

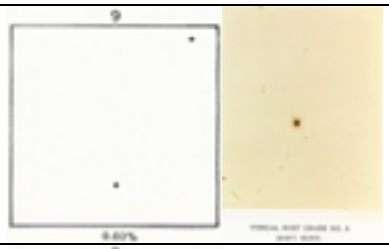
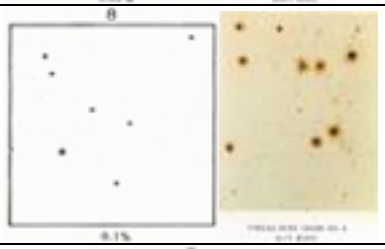
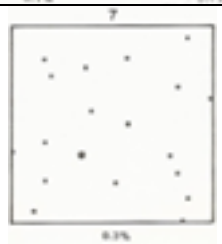
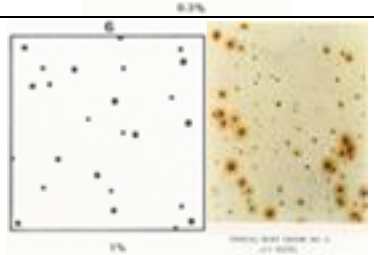
North Inground 1

REFERENCES:

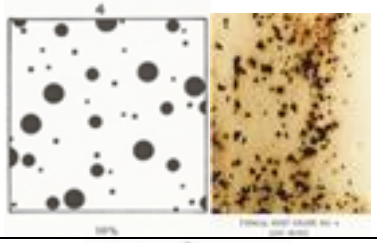
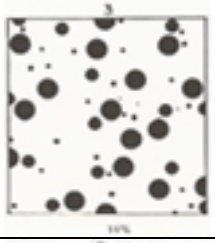
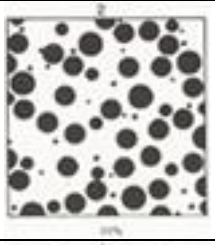
Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85 (1989)

The graphical representations show examples of area percentages, which may be helpful in rust grading. The use of photographical reference standards requires the following precautions:

1. Some finishes are stained by rust. This staining must not be confused with the actual rusting involved.
2. Accumulated dirt or other material may make accurate determination of the degree of rusting difficult.
3. Certain types of deposited dirt that contain iron or iron compounds may cause surface discoloration that should not be mistaken for corrosion.
4. It must be realized that failure may vary over a given area and discretion must therefore be used in applying these reference standards.
5. In evaluating surfaces, consideration shall be given to the color of the finish coating, since failures will be more apparent on a finish that shows color contrast with rust, such as white, than on a similar color, such as iron oxide finish.
6. The photographic reference standards are not required for use of the rust-grade scale since the scale is based upon the percent of the area rusted and any method of assessing area rusted may be used to determine the rust grade.

Rust Grades	Description	Graphical Representation
10	No rusting or less than 0.01% of surface rusted	Unnecessary
9	Minute rusting, less than 0.03% of surface rusted	
8	Few isolated rust spots, less than 0.1% of surface rusted	
7	Less than 0.3% of surface rusted	
6	Extensive rust spots, but less than 1% of surface rusted	

North Inground 1

5	Rusting to the extent of 3% of surface rusted	
4	Rusting to the extent of 10% of surface rusted	
3	Approximately one sixth of the surface rusted (16%)	
2	Approximately one third of the surface rusted (33%)	
1	Approximately one half of the surface rusted (50%)	
0	Approximately 100% of the surface rusted	Unnecessary

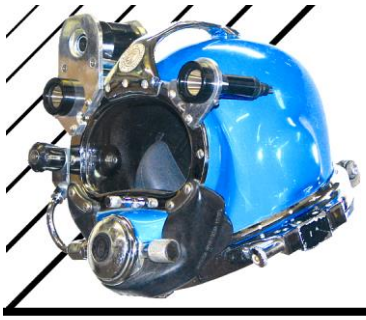
South Inground 2

Burton Water Co.

Report of Findings
From the
Diving Operations
Conducted on

September 8, 2021

by



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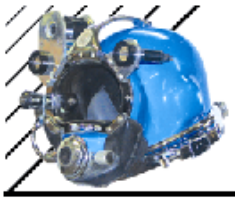

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Fax: (541) 883-1361

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liquivision@divingservices.com

Underwater Inspection of South Inground 2

September 8, 2021

Jim Garrison
Burton Water Co.
P.O. Box 1938
Vashon, WA 98070

Following is the report of findings during the underwater work conducted on your storage tank.

It will focus on issues of concern or areas that need attention. In order to see a complete and detailed inspection, please view each video.

Color images of all plumbing fixtures, components and areas of concern were taken via underwater digital camera. The images should give you a clear view of the conditions described. The video may give you another view and a clearer understanding of any area that you may wish to look at more closely.

METHODOLOGY:

Disinfection of All Equipment With 200ppm+ Chlorine Solution Immediately Prior to Entering System: This process prevents contamination of the water supply. All LVT equipment was properly disinfected prior to entering the potable water system.

Full-Time Voice Communication between surface and Diver: The system allowed for constant communication between the diver, and all surface personnel. In addition, customers were able to communicate with the diver at any time. For purposes of a more efficient inspection, cleaning, and repair program, that enabled the diver to immediately discuss any observations he made inside the storage tank.

Full-Time Live High Resolution Color Video: Allowed for constant viewing of the diver's work and observations. This also enabled the district personnel to view what the diver in the storage tank was witnessing.

South Inground 2

TERMINOLOGY:

When describing the features or areas of interest inside the storage tank, an image number is placed next to the description that corresponds with the inspection findings. The diagram is shown in a view looking from the top down. The entry hatch is referred to as the 12:00 o'clock position.

Following the diagram are pictures of the pertinent areas of the storage tank and the locations where the pictures were taken. Each picture is descript and numbered.

The standards used to evaluate the condition of the storage tank include: Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85 NACE Standard RP0196-96 & RP0388-2001 or Condition of Concrete In-service – ACI 201.1R-92.

South Inground 2

OVERVIEW OF STORAGE TANK INSPECTED:

Customer Name:	Burton Water Co.	**Tank Name:**	South Inground 2
Manager:	Jim Garrison	Construction:	PBG Concrete
Job Number:	WA108021R4T3	Capacity (gal.):	29,920
Date of Inspection:	September 8, 2021	Diameter or L x W:	40' X 20'
Report Writer:	JayTee Donaldson	Height:	5'
Diver:	Chris Westphal	Floor Square FT:	800
Tender:	Sam Nunez	Date Built:	Unknown

N/A –not applicable **Excellent** (Ex.) –like new condition, no repairs needed. **Good** – Cosmetic only problems, repairs if wanted. **Fair**-Minor problems, repairs needed, not immediate. **Poor** –Major problems, structural or like, immediate repairs needed.

1. Rust Grades

Grades	% of Surface Rusted	Description
10	0% - 0.01%	No rusting or less than 0.01% of surface rusted
9	0.01% - 0.03%	Minute rusting, less than 0.03% of surface rusted
8	0.03% - 0.1%	Few isolated rust spots, less than 0.1% of surface rusted
7	0.1%- 0.3%	Less than 0.3% of surface rusted
6	0.3% - 1%	Extensive rust spots, but less than 1% of surface rusted
5	1% - 3%	Rusting to the extent of 3% of surface rusted
4	3% - 10%	Rusting to the extent of 10% of surface rusted
3	10% - 16%	Approximately one sixth of the surface rusted (16%)
2	16% - 33%	Approximately one third of the surface rusted (33%)
1	33% - 50%	Approximately one half of the surface rusted (50%)
0	50% - 100%	Approximately 100% of the surface rusted

2. Concrete Deformities

Unable to Evaluate	Good Condition	Cracks	Blistering	Chalking	De-Lamination	Pitting	Pop outs	Scaling	Spalling	Warping
UE	GC	CK	BL	CH	DL	PT	PO	SC	SP	WA

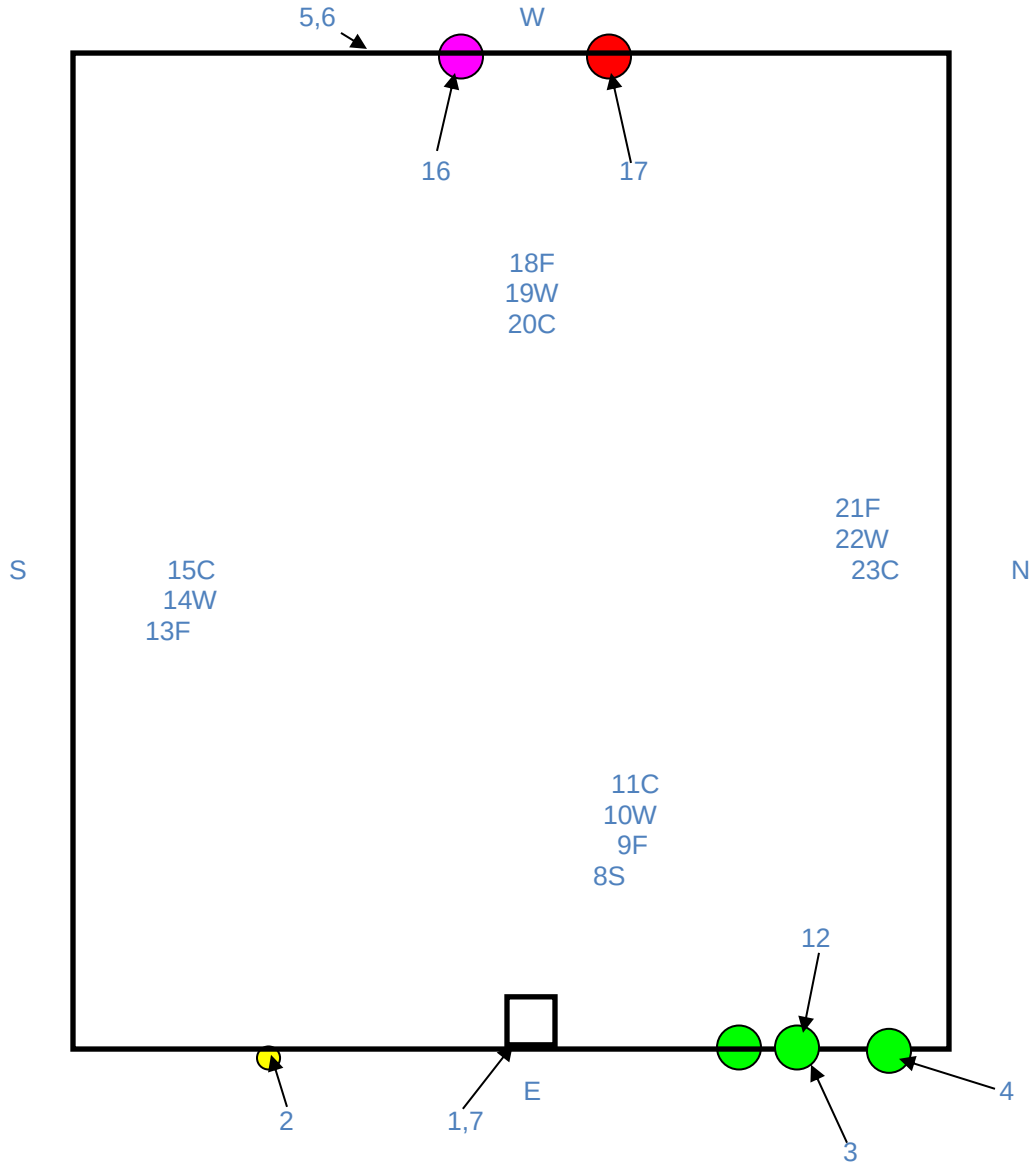
South Inground 2

RECOMMENDATIONS:

Recommendation	Estimated Time - Hrs.
Install finer mesh screens on exterior vents to limit the risk of bugs and other matter from entering the storage tank.	Please contact our sales office for an estimate.
Perform a regular cleaning, inspection and repair cycle every 2-3 years to ensure superior water quality and proper maintenance of coating condition and appurtenances is performed.	Please contact our sales office for an estimate.

South Inground 2

Tank Diagram



Drawing Not To Scale

	Entry Hatch		Liquid Level Indicator		Air Vent
	Inlet		Outlet		Drain/Scour

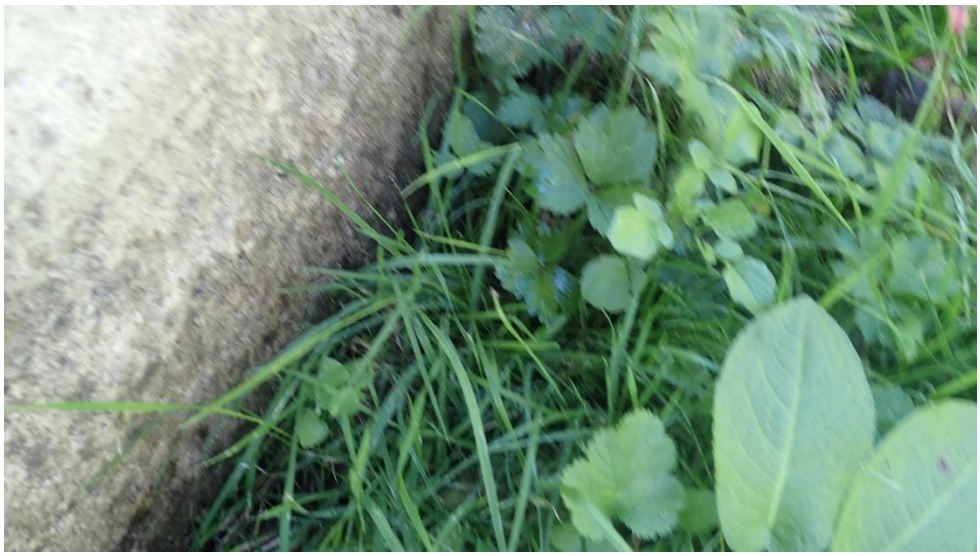
South Inground 2

Image #**1** *Entry Hatch East* **Description:** 60" x 60" Entry Hatch appeared to be in good condition with no problems.	
Image #**2** *Vent East* **Condition:** Concrete Deform[3] **GC**. **Description:** Vent appeared to be in good condition.	

South Inground 2

Image #**3** *Inlet East* **Description:** Inlet appeared to be in good condition.	
Image #**4** *Inlet East* **Description:** Inlet appeared to be in good condition.	

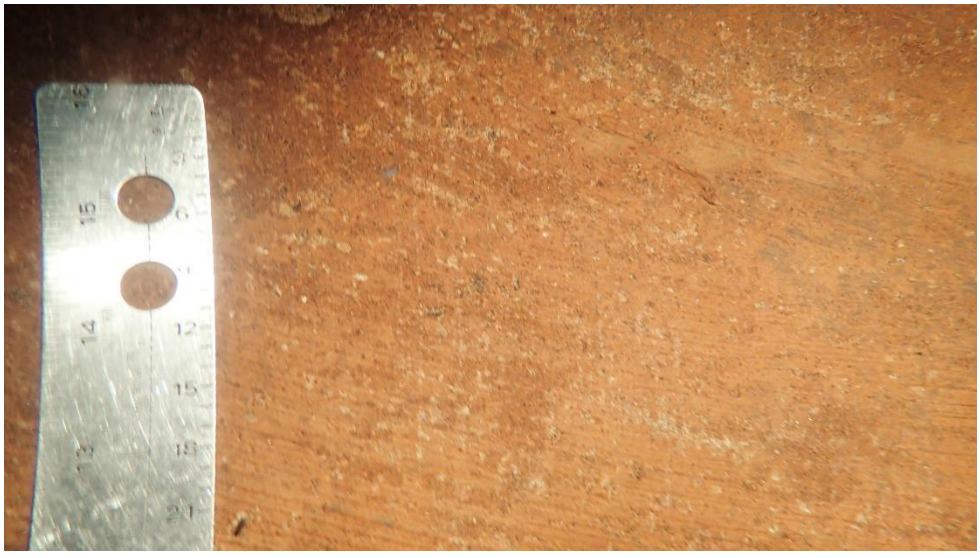
South Inground 2

Image #**5** *Exterior Base West* **Condition:** Concrete Deform[3] **UE**. **Description:** Unable to evaluate the condition of the Exterior Base.	
Image #**6** *Exterior Wall West* **Condition:** Concrete Deform[3] **GC**. **Description:** Exterior Wall appeared to be in good condition.	

South Inground 2

Image #**7** *Diver*	
Image #**8** *Sediment* **Description:** 1/16" of sediment was removed from reservoir floor.	

South Inground 2

Image #**9** *Floor East* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	
Image #**10** *Wall East* **Condition:** Concrete Deform[3] **GC**. **Description:** Wall appeared to be in good condition.	

South Inground 2

Image #**11** *Interior Roof* **Description:** Roof appeared to be in good condition.	
Image #**12** *Inlet x3 East* **Description:** Inlet x3 appeared to be in good condition with no problems.	

South Inground 2

Image #**13** *Floor South* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	
Image #**14** *Wall South* **Condition:** Concrete Deform[3] **GC**. **Description:** Wall appeared to be in good condition.	

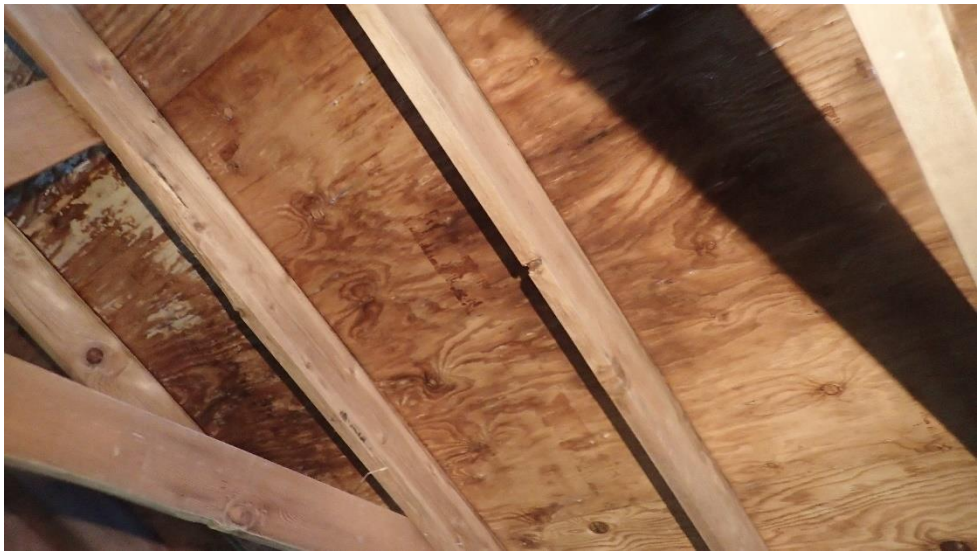
South Inground 2

Image #**15** *Ceiling South* **Description:** Ceiling appeared to be in good condition.	
Image #**16** *Outlet West* **Description:** Outlet appeared to be in good condition.	

South Inground 2

Image #**17** *Drain West* **Description:** Drain appeared to be in good condition.	
Image #**18** *Floor West* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	

South Inground 2

Image #**19** *Wall West* **Condition:** Concrete Deform[3] **GC**. **Description:** Wall appeared to be in good condition.	
Image #**20** *Ceiling West* **Description:** Ceiling appeared to be in good condition.	

South Inground 2

Image #**21** *Floor North* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	
Image #**22** *Wall North* **Condition:** Concrete Deform[3] **GC**. **Description:** Wall appeared to be in good condition.	

South Inground 2

Image #**23** *Ceiling North* **Description:** Ceiling appeared to be in good condition.	

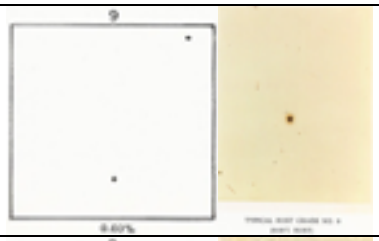
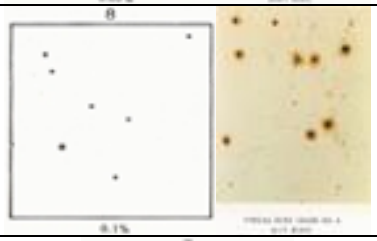
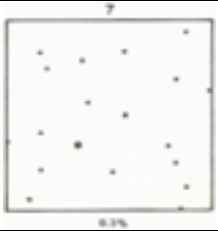
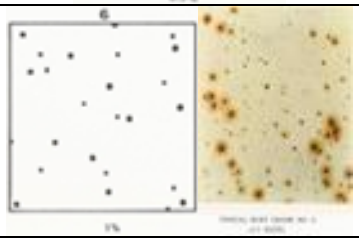
South Inground 2

REFERENCES:

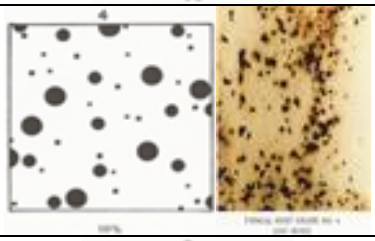
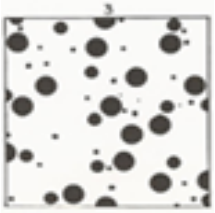
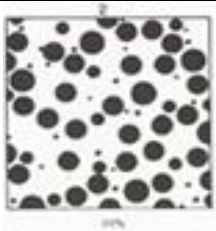
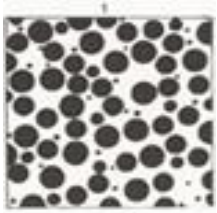
Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85 (1989)

The graphical representations show examples of area percentages, which may be helpful in rust grading. The use of photographical reference standards requires the following precautions:

1. Some finishes are stained by rust. This staining must not be confused with the actual rusting involved.
2. Accumulated dirt or other material may make accurate determination of the degree of rusting difficult.
3. Certain types of deposited dirt that contain iron or iron compounds may cause surface discoloration that should not be mistaken for corrosion.
4. It must be realized that failure may vary over a given area and discretion must therefore be used in applying these reference standards.
5. In evaluating surfaces, consideration shall be given to the color of the finish coating, since failures will be more apparent on a finish that shows color contrast with rust, such as white, than on a similar color, such as iron oxide finish.
6. The photographic reference standards are not required for use of the rust-grade scale since the scale is based upon the percent of the area rusted and any method of assessing area rusted may be used to determine the rust grade.

Rust Grades	Description	Graphical Representation
10	No rusting or less than 0.01% of surface rusted	Unnecessary
9	Minute rusting, less than 0.03% of surface rusted	
8	Few isolated rust spots, less than 0.1% of surface rusted	
7	Less than 0.3% of surface rusted	
6	Extensive rust spots, but less than 1% of surface rusted	

South Inground 2

5	Rusting to the extent of 3% of surface rusted	
4	Rusting to the extent of 10% of surface rusted	
3	Approximately one sixth of the surface rusted (16%)	
2	Approximately one third of the surface rusted (33%)	
1	Approximately one half of the surface rusted (50%)	
0	Approximately 100% of the surface rusted	Unnecessary

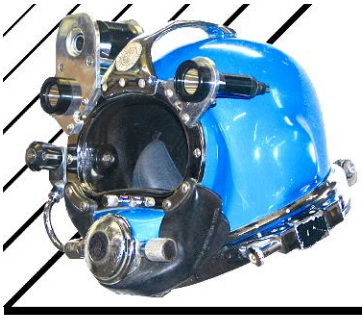
150KG Reservoir

Burton Water Co.

Report of Findings
From the
Diving Operations
Conducted on

September 08, 2021

by



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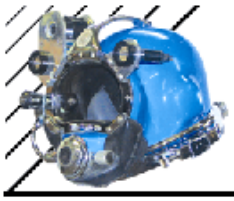

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Toll Free: (800) 229-6959
Phone: (541) 883-6473
Fax: (541) 883-1361

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liquivision@divingservices.com

Underwater Inspection of 150KG Reservoir

September 08, 2021

Jim Garrison
Burton Water Co.
P.O Box 1938
Vashon, WA 98070

Following is the report of findings during the underwater work conducted on your reservoir.

It will focus on issues of concern or areas that need attention. To see a complete and detailed inspection, please view each video.

Color images of all plumbing fixtures, components and areas of concern were taken via underwater digital camera. The images should give you a clear view of the conditions described. The video may give you another view and a clearer understanding of any area that you may wish to look at more closely.

METHODOLOGY:

Disinfection of All Equipment With 200ppm+ Chlorine Solution Immediately Prior to Entering System: This process prevents contamination of the water supply. All LVT equipment was properly disinfected prior to entering the potable water system.

Full-Time Voice Communication between surface and Diver: The system allowed for constant communication between the diver, and all surface personnel. In addition, customers were able to communicate with the diver at any time. For purposes of a more efficient inspection, cleaning, and repair program, that enabled the diver to immediately discuss any observations he made inside the reservoir.

Full-Time Live High Resolution Color Video: Allowed for constant viewing of the diver's work and observations. This also enabled the district personnel to view what the diver in the reservoir was witnessing.

150KG Reservoir

TERMINOLOGY:

When describing the features or areas of interest inside the reservoir, an image number is placed next to the description that corresponds with the inspection findings. The diagram is shown in a view looking from the top down. The entry hatch is referred to as the 12:00 o'clock position.

Following the diagram are pictures of the pertinent areas of the reservoir and the locations where the pictures were taken. Each picture is descripted and numbered.

The standards used to evaluate the condition of the reservoir include Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85 NACE Standard RP0196-96 & RP0388-2001 or Condition of Concrete In-service – ACI 201.1R-92.

150KG Reservoir

OVERVIEW OF RESERVOIR INSPECTED:

Customer Name:	Burton Water Co.	**Reservoir Name:**	150KG Reservoir
Manager:	Jim Garrison	Construction:	OG Concrete
Job Number:	WA108021R1T3	Capacity (gal.):	146,805
Date of Inspection:	September 08, 2021	Diameter or L x W:	25'
Report Writer:	JayTee Donaldson	Height:	40'
Diver:	Chris Westphal	Floor Square FT:	490.9
Tender:	Sam Nunez	Date Built:	UNKNOWN

N/A –not applicable **Excellent** (Ex.) –like new condition, no repairs needed. **Good** – Cosmetic only problems, repairs if wanted. **Fair**-Minor problems, repairs needed, not immediate. **Poor** –Major problems, structural or like, immediate repairs needed.

1. Rust Grades

Grades	% Of Surface Rusted	Description
10	0% - 0.01%	No rusting or less than 0.01% of surface rusted
9	0.01% - 0.03%	Minute rusting, less than 0.03% of surface rusted
8	0.03% - 0.1%	Few isolated rust spots, less than 0.1% of surface rusted
7	0.1%- 0.3%	Less than 0.3% of surface rusted
6	0.3% - 1%	Extensive rust spots, but less than 1% of surface rusted
5	1% - 3%	Rusting to the extent of 3% of surface rusted
4	3% - 10%	Rusting to the extent of 10% of surface rusted
3	10% - 16%	Approximately one sixth of the surface rusted (16%)
2	16% - 33%	Approximately one third of the surface rusted (33%)
1	33% - 50%	Approximately one half of the surface rusted (50%)
0	50% - 100%	Approximately 100% of the surface rusted

2. Concrete Deformities

Unable to Evaluate	Good Condition	Cracks	Blistering	Chalking	De-Lamination	Pitting	Popouts	Scaling	Spalling	Warping
UE	GC	CK	BL	CH	DL	PT	PO	SC	SP	WA

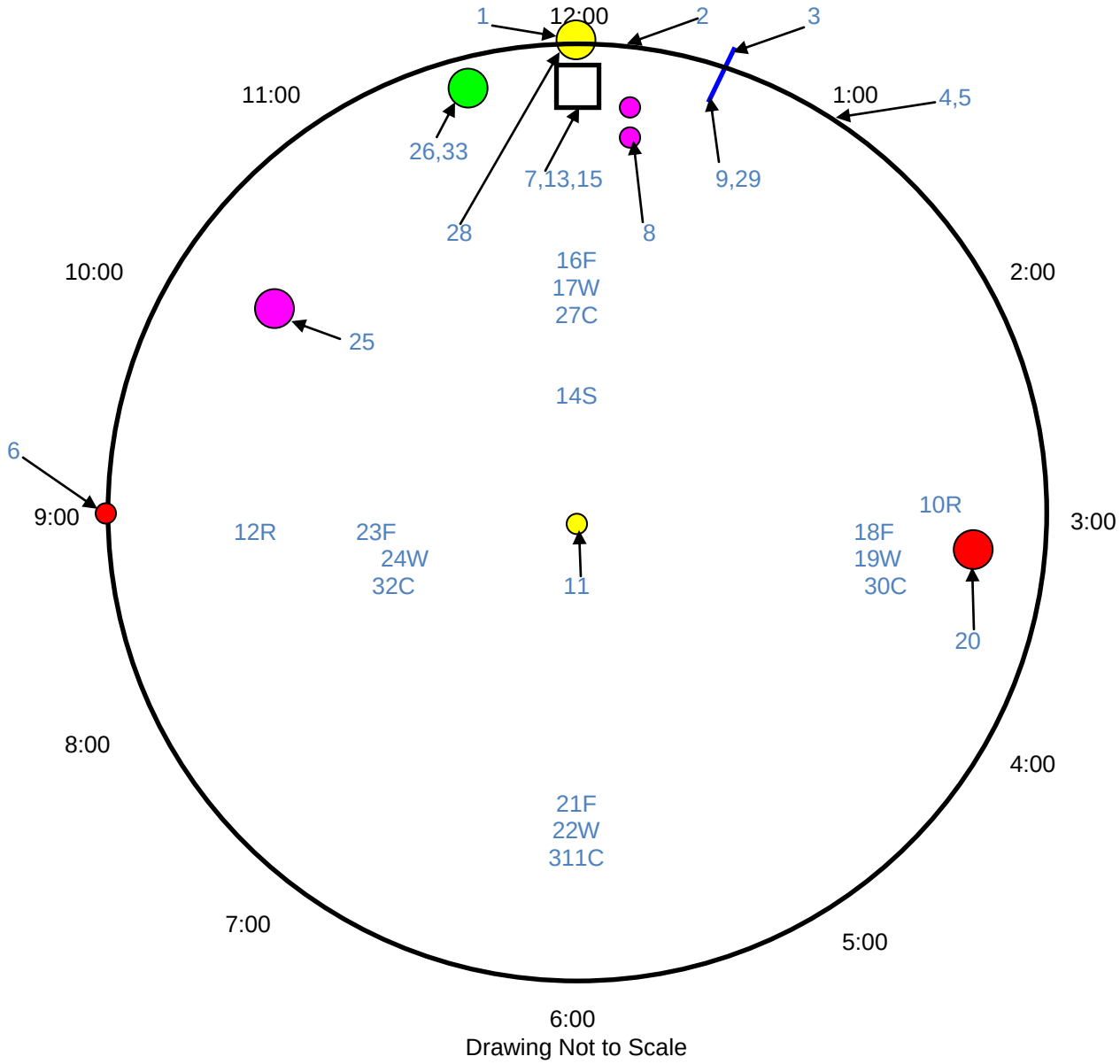
150KG Reservoir

RECOMMENDATIONS:

Recommendation	Estimated Time - Hrs.
Perform a regular cleaning, inspection and repair cycle every 2-3 years to ensure superior water quality and proper maintenance of coating condition and appurtenances is performed.	Please contact our sales office for an estimate.
Total Estimated Hours	Please contact our sales office for an estimate.

150KG Reservoir

Reservoir Diagram



Drawing Not to Scale

	Entry Hatch		Overflow		Water Tap
	Inlet		Liquid Level Indicator		Air Vent
	Outlet		Drain/Scour		Capped Penetration

150KG Reservoir

Image #**1** *Overflow 12:00* **Description:** Overflow appeared to be in good condition.	
Image #**2** *Exterior Ladder 12:15* **Condition:** Rust Grade[1] **8.** **Description:** Exterior Ladder appeared to be in good condition with a minor amount of corrosion.	

150KG Reservoir

Image #**3** *Liquid Level Indicator Reader Board 12:30* **Description:** Liquid Level Indicator Reader Board appeared to be in good condition.	
Image #**4** *Exterior Base 1:00* **Condition:** Concrete Deform[3] **UE**. **Description:** Unable to evaluate the condition of the Exterior Base.	

150KG Reservoir

Image #**5** *Exterior Wall 1:00* **Condition:** Concrete Deform[3] **CK**. **Description:** Exterior Wall appeared to be in good condition with a minor amount of cracking.	
Image #**6** *Water Tap 9:00* **Condition:** Rust Grade[1] **8.** **Description:** Water Tap appeared to be in good condition with a minor amount of corrosion.	

150KG Reservoir

Image #**7** *Entry Hatch 12:00* **Condition:** Rust Grade[1] **9.** **Description:** 24" x 40" Entry Hatch appeared to be in good condition with a minor amount of corrosion.	
Image #**8** *Capped Off Penetration 12:05* **Condition:** Rust Grade[1] **9.** **Description:** Capped Off Penetration appeared to be in good condition with a minor amount of corrosion.	

150KG Reservoir

Image #**9** *Liquid Level Indicator Penetration 12:15* **Condition:** Rust Grade[1] **8.** **Description:** Liquid Level Indicator Penetration appeared to be in good condition with a minor amount of corrosion.	
Image #**10** *Roof 3:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Roof appeared to be in good condition.	

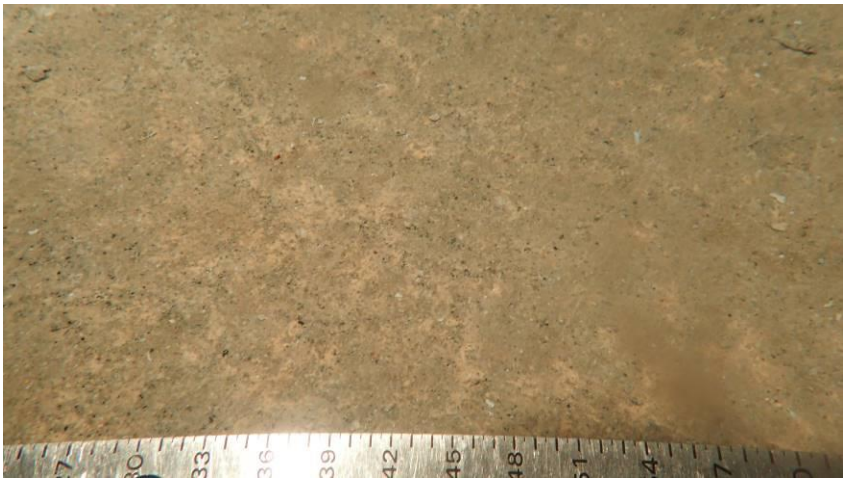
150KG Reservoir

Image #**11** *Vent Center* **Condition:** Rust Grade[1] **9.** **Description:** Vent appeared to be in good condition with a minor amount of corrosion.	
Image #**12** *Roof 9:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Roof appeared to be in good condition.	

150KG Reservoir

Image #**13** *Diver*	
Image #**14** *Sediment* **Description:** 1/4" of sediment was removed from reservoir floor.	

150KG Reservoir

Image #**15** *Interior Ladder 12:00* **Condition:** Rust Grade[1] **9.** **Description:** Interior Ladder appeared to be in good condition with a minor amount of corrosion.	
Image #**16** *Floor 12:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	

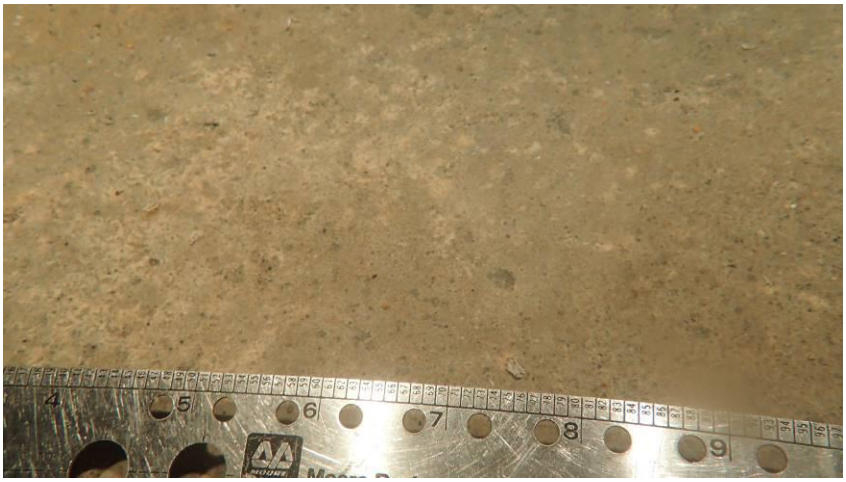
150KG Reservoir

Image #**17** *Wall 12:00* **Condition:** Concrete Deform[3] **CK**. **Description:** Wall appeared to be in good condition with a minor amount of cracking.	
Image #**18** *Floor 3:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	

150KG Reservoir

Image #**19** *Wall 3:00* **Condition:** Concrete Deform[3] **CK**. **Description:** Wall appeared to be in good condition with a minor amount of cracking.	
Image #**20** *Drain 3:00* **Condition:** Rust Grade[1] **8.** **Description:** Drain appeared to be in good condition with a minor amount of corrosion.	

150KG Reservoir

Image #**21** *Floor 6:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	
Image #**22** *Wall 6:00* **Condition:** Concrete Deform[3] **CK**. **Description:** Wall appeared to be in good condition with a minor amount of cracking.	

150KG Reservoir

Image #**23** *Floor 9:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Floor appeared to be in good condition.	
Image #**24** *Wall 9:00* **Condition:** Concrete Deform[3] **CK**. **Description:** Wall appeared to be in good condition with a minor amount of cracking.	

150KG Reservoir

Image #**25** *Outlet 10:00* **Condition:** Rust Grade[1] **8.** **Description:** Outlet appeared to be in good condition with a minor amount of corrosion.	
Image #**26** *High Fill inlet 11:50* **Condition:** Deform[3] **GC**. **Description:** High Fill inlet appeared to be in good condition.	

150KG Reservoir

Image #**27** *Ceiling 12:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Ceiling appeared to be in good condition.	
Image #**28** *Overflow 12:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Overflow appeared to be in good condition.	

150KG Reservoir

Image #**29** *Liquid Level Indicator Float 12:15* **Condition:** Deform[3] **GC**. **Description:** Liquid Level Indicator Float appeared to be in good condition.	
Image #**30** *Ceiling 3:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Ceiling appeared to be in good condition.	

150KG Reservoir

Image #**31** *Ceiling 6:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Ceiling appeared to be in good condition.	
Image #**32** *Ceiling 9:00* **Condition:** Concrete Deform[3] **GC**. **Description:** Ceiling appeared to be in good condition.	

150KG Reservoir

Image #**33** *High Fill Inlet 11:50* **Description:** High Fill Inlet appeared to be in good condition.	

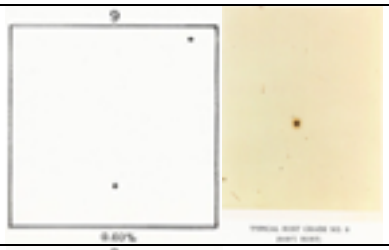
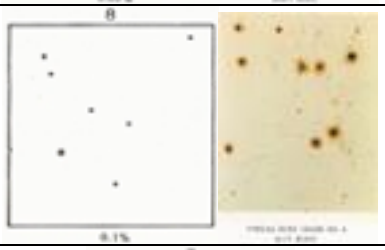
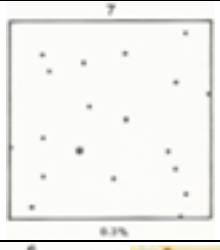
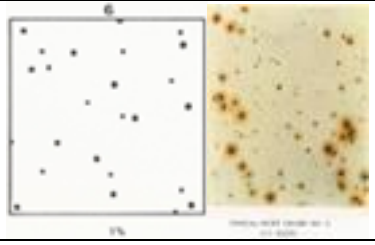
150KG Reservoir

REFERENCES:

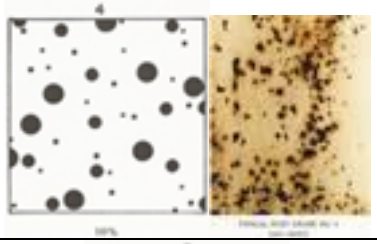
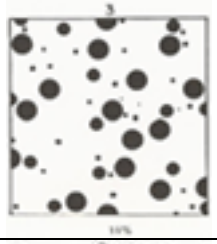
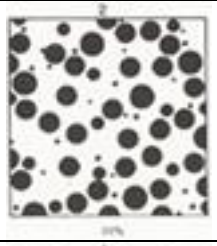
Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85 (1989)

The graphical representations show examples of area percentages, which may be helpful in rust grading. The use of photographical reference standards requires the following precautions:

1. Some finishes are stained by rust. This staining must not be confused with the actual rusting involved.
2. Accumulated dirt or other material may make accurate determination of the degree of rusting difficult.
3. Certain types of deposited dirt that contain iron or iron compounds may cause surface discoloration that should not be mistaken for corrosion.
4. It must be realized that failure may vary over a given area and discretion must therefore be used in applying these reference standards.
5. In evaluating surfaces, consideration shall be given to the color of the finish coating, since failures will be more apparent on a finish that shows color contrast with rust, such as white, than on a similar color, such as iron oxide finish.
6. The photographic reference standards are not required for use of the rust-grade scale since the scale is based upon the percent of the area rusted and any method of assessing area rusted may be used to determine the rust grade.

Rust Grades	Description	Graphical Representation
10	No rusting or less than 0.01% of surface rusted	Unnecessary
9	Minute rusting, less than 0.03% of surface rusted	
8	Few isolated rust spots, less than 0.1% of surface rusted	
7	Less than 0.3% of surface rusted	
6	Extensive rust spots, but less than 1% of surface rusted	

150KG Reservoir

5	Rusting to the extent of 3% of surface rusted	
4	Rusting to the extent of 10% of surface rusted	
3	Approximately one sixth of the surface rusted (16%)	
2	Approximately one third of the surface rusted (33%)	
1	Approximately one half of the surface rusted (50%)	
0	Approximately 100% of the surface rusted	Unnecessary

Chapter 10-17: Hydraulic Analysis

Burton Water Cooperative Hydraulic Analysis

Background

The Burton Water Cooperative (BWC) water system on Vashon Island proposes to perform water main pipe upgrades to improve fire flow capacity of the distribution system.

The hydraulic design goals for the distribution system include the following:

- Supply fire flow of 1,000 gallons per minute (gpm) concurrently with maximum daily demand (MDD) flow at a minimum of 20 psi residual pressure throughout distribution.
- Supply peak hourly demand (PHD) flow at a minimum 20 psi residual for existing connections, or 30 psi residual pressure for new connections.
- The maximum recommended pressure at service connections is 80 psi.
- The maximum recommended pipe velocity for PHD conditions is 8 feet per second (fps).
- The maximum recommended pipe velocity for fire flow conditions is 10 fps.

Description

The hydraulic analysis was prepared using EPANET2. The model is comprised of nodes representing service connection locations and hydrants. The nodes are assigned a unit demand and distributed to represent the distribution layout. It is assumed that domestic flow is evenly distributed throughout the system during peak demand. Unit demand at each node is based on the modeled flow rate divided by the number of equivalent residential units (ERU) represented by each node. Node elevations were assigned based on five-foot interval contour isolines from the King County iMap GIS application. The existing 6-inch steel main on 115th St and 238th St was determined to have a Hazen-Williams factor of 95 during field testing in December 1995 per a hydraulic analysis in the 1996 Project Report for the 100,000-gallon lower tank. The following Hazen-Williams friction factors were used for distribution and transmission water main pipes:

Table 1. Hazen-Williams Friction Factors

Material	Hazen-Williams Friction Factor
Steel	95
Asbestos Cement	140
Galvanized Iron	120
Polyethelyne	150
PVC	150

Most of the existing system is gravity-pressurized by the two 35,000-gallon rectangular tanks at the wellfield and one 100,000-gallon lower tank on 238th St. The 158,000-gallon upper tank at the wellfield is not included as part of this hydraulic analysis as it is currently only used for standby storage and is normally isolated from the system and does not provide gravity pressure. An upper pressure zone serving approximately 28 residential connections on 107th Ave SW and the east end of SW 232nd St is supplied by a 1-hp booster pump at the intersection of 107th Ave SW and SW 238th St which runs continuously. Water main size near the wellfield is 8-inch PVC and reduces to 6-inch steel on 115th St, then transitions to 6-inch asbestos cement pipe on 238th St for transporting water to the rest of the system. The remaining distribution piping consists of various sizes of PVC, polyethylene, and 2-inch galvanized iron pipe. A map of existing pipe sizes and types is included in Chapter 10 of the water system plan.

A future distribution pipe replacement project is planned to increase capacity to meet the adopted fire flow goal of 1,000 gpm in as much of the service area as practicable. The proposed distribution upgrades include an 8-inch main from 115 St to 97th Ave, a 6-inch looped main on 97th Ave to Bayview Dr to Harbor Dr, and a 6-inch looped main from 107th St. to 228th St to Vashon Hwy. These future upgrades will provide a pipe infrastructure capable of meeting the fire flow goal in most of the service area.

Scenarios

The following system configurations and hydraulic scenarios were modeled. Parameters used in the model are shown in Table 2 and Table 3.

(1) Existing Gravity-Pressurized System with 6-inch Main Line, Non-Looped
   a. Static High-Pressure Condition
   b. PHD Condition

(2) Future System with Gravity-Pressurized 8-inch Main Line and 6-inch Looped Distribution
   a. Limiting Condition
   b. Hydrant Flow

The existing static high-pressure condition shows the highest potential pressures in the gravity fed system. This high-pressure condition is a worst-case scenario which is driven by the elevation of the storage reservoirs and is unaffected by the distribution pipe size because it assumes zero flow. Therefore, additional static high-pressure modeling of the future system with proposed distribution pipe upgrades is not necessary.

The existing PHD condition model validates that the existing distribution system meets pressure requirements for all existing connections. The future limiting condition model depicts a maximum future PHD the distribution system can support after the 8-inch water main and 6-inch loop distribution upgrades are complete. The future distribution system can support a greater PHD than the existing system while providing 30 psi residual pressure to all connections. Therefore, it is unnecessary to model the future distribution system at current PHD flow.

The 2001 Water System Plan indicates that previous flow tests showed the existing system was capable of hydrant flows of 600 – 750 gpm at the Yacht Club and at the intersection of Vashon Hwy and Burton Dr, but that other portions of the system are known to not support fire flow due to undersized water main pipe. Modeling of hydrant flow conditions for the existing system without the proposed 8-inch water main and 6-inch loops is unnecessary as the existing system is known to be inadequate for fire flow. Hydrant flows for the future system with the proposed distribution upgrades is accomplished to demonstrate the proposed upgrades will improve fire flow capacity.

Table 2. Hydraulic Analysis Parameters

Rectangular Tank Base Elevation	250.0	ft MSL
Lower Tank Base Elevation	226.6	ft MSL
Lower Tank Infill	43	gpm
Existing PHD	396	gpm
MDD Flow	164	gpm

Table 3. Storage Tank Reservoir Levels

Tank Name, Volume	Storage Parameter	Total Volume (gal)	Tank Height (ft)	Reservoir Level Elevation (ft MSL)	Scenario
North & South 20-ft x 40-ft Rectangular Tanks, 35,000 gallons each, 70,000 gallons total	Freeboard Dead Storage	6,000	0.5	255.9	
	Operational Storage	6,000	0.5	255.4	Static
	Equalizing Storage	22,312	1.9	254.9	
	Standby Storage	0	0.0	253.0	
	Fire Flow Storage	29,688	2.5	253.0	PHD
	Extra Storage	0	0.0	250.5	Fire Flow
	Dead Storage Bottom	6,000	0.5	250.5	
	Bottom of Tank	0	0.0	250.0	Empty
Lower Reservoir, 30-ft Diameter, 100,000 gallons total	Freeboard Dead Storage	3,000	0.6	245.6	
	Operational Storage	3,000	0.6	245.0	Static
	Equalizing Storage	0	0.0	244.4	
	Standby Storage	0	0.0	244.4	
	Fire Flow Storage	30,312	5.7	244.4	PHD
	Extra Storage	60,688	11.5	238.7	Fire Flow
	Dead Storage Bottom	3,000	0.6	227.2	
	Bottom of Tank	0	0.0	226.6	Empty

Model Results

A summary of the model results and hydraulic analysis scenarios are shown on the following pages. Due to the EPANET2 model having numerous junctions and pipe links, the tabular data for the analyzed scenarios would amount to more than 100 pages and could be somewhat intangible or potentially cause distortion and is therefore excluded from this report. Tabular results for the model inputs and outputs are available upon request.

The primary deficiencies of the existing system are low pressure (<30 psi) in the upper elevations west of the lower tank and the high pressures (>80 psi) at the lower elevations near sea level. The low-pressure connections are reported to have private booster pumps installed. The highest static pressure is 100 psi, which is within the rated working pressure range for the distribution pipe. Customers with connections having above 80 psi are recommended to install private pressure reducing valves (PRVs) to preclude damage to residential plumbing and appliances, especially if the building location is much lower than the elevation of the property line. Installation of PRVs to serve the smaller diameter non-looped branch lines on Vashon Hwy and Governors Ln would resolve the higher pressures on these streets and eliminate the need for private PRVs.

During PHD flow of 396 gpm the lowest pressures (excluding upper elevation connections with private booster pumps) are 29 psi on the west end of SW 232nd St. and at the higher elevation area on Bayview Dr. This PHD flow of 396 gpm is also considered to be a limiting condition for the existing distribution system due to the 29-psi minimum pressure, which is slightly below the required minimum residual of 30 psi at PHD, but is acceptable for existing conditions. These minimum pressure conditions will be improved when the proposed 8-inch main is extended to 97th Ave and the 6-inch loop is completed on Bayview Dr. and Harbor Dr.

The limiting condition PHD flow increases to 452 gpm after the proposed 8-inch main and 6-inch looped system is completed. At this flow rate pressure drops to 30 psi on 232nd St and the previous low-pressure condition on Bayview Dr is eliminated. Maximum system pressure after these improvements is the same as maximum static pressure of the existing distribution system. Although there will be a 6-inch loop on 107th, 228th and Vashon Hwy, the existing 107th booster station has an estimated maximum flow capacity of 42 gpm and cannot meet a looped demand. Therefore, a valve on 228th St must remain shut as a pressure zone boundary for this booster station until a future project establishes additional pumping capacity.

Fire flow modeling of the 8-inch main and 6-inch looped system shows that ten of the existing hydrants will meet the 1,000-gpm goal without residual system pressures decreasing below 20 psi or flow velocities greater than 10 fps. Five existing hydrants will support flow rates of at least 700 gpm and two will flow less than 100 gpm. A summary of hydrant flow rates is provided below. The 2-inch pipe supplying HYD 13 near Governors Ln on 99th Ave needs to be replaced with an 8-inch pipe to supply 1,000 gpm to that hydrant. Additional pumping capacity is needed to increase flow around the 6-inch loops from 107th St to 228th St to Vashon Hwy and Harbor Dr to Bayview Dr.

Table 4. Summary of Hydrant Flows and Restricting Factors

Hydrant	Location	Flow (gpm)	Restricting Factor
HYD1	238th and 107th	1,000	
HYD2	107th	29	107th St booster pump capacity
HYD3	238th and 105th	1,000	
HYD4	104th Fire Station	1,000	
HYD5	Burton Dr and Vashon Hwy	1,000	
HYD6	Edson House Vashon Hwy	1,000	
HYD7	Snug Harbor Vashon Hwy	1,000	
HYD8	Quartermaster Yacht Club	880	10 fps in non-looped 6-in pipe on Vashon Hwy
HYD9	23226 Vashon Hwy	780	20 psi residual at closed loop on 228th Ave
HYD10	23030 Vashon Hwy	700	20 psi residual at closed loop on 228th Ave
HYD11	Burton Dr and 99th	1,000	
HYD12	99th and Ames (238th)	1,000	
HYD13	99th near Governors Ln	85	10 fps velocity in 2-in pipe on 99th Ave
HYD14	Camp Burton	920	20 psi residual on Bayview Dr near this hydrant
HYD15	9404 Harbor Dr	1,000	
HYD16	9132 Harbor Dr	990	20 psi residual on Harbor Dr near this hydrant
HYD17	9016 & 9028 Harbor Dr	1,000	

After the 8-inch main and 6-inch looped distribution system improvements are installed, the next steps to meet the required 30 psi residual pressure at upper elevations during PHD and the adopted fire flow goal of 1,000 gpm on the 6-inch loops include reconfiguring the existing wellfield storage facilities to provide flow directly from the 158,000 gallon upper tank and adding a booster/fire pump station at the wellfield location and PRV stations on 228th St and 238th St. The existing 107th Ave booster station will need to be relocated to pressurize only the 2-inch PVC main supplying the four upper elevation connections 232nd street which are vulnerable to residual pressure below 20 psi during a fire flow event on Vashon Hwy. An additional hydraulic analysis model will be submitted with a future project report for these improvements.

Field Calibration

A previous hydraulic analysis of the existing system was included in the 2001 Water System Plan. Field testing for that analysis was accomplished to verify the accuracy of assumed friction factors by measuring system demand at the wellfield and measuring pressure at remote locations of the system. The pressures approximated by the previous analysis were reported to be within 10 percent of the field measurements. The EPANET2 hydraulic analysis model discussed in this report closely aligns with the previous model when comparing flow and pressure results for the aged 6-inch water main from 115th St to the 97th Ave. This same 6-inch water main is planned to be replaced with an 8-inch main in 2025. The accuracy of this EPANET2 hydraulic analysis is sufficient to identify the primary system deficiencies and needed improvements and further field calibration of the current hydraulic analysis will not provide additional benefit.

Report Preparation

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Report Prepared By:

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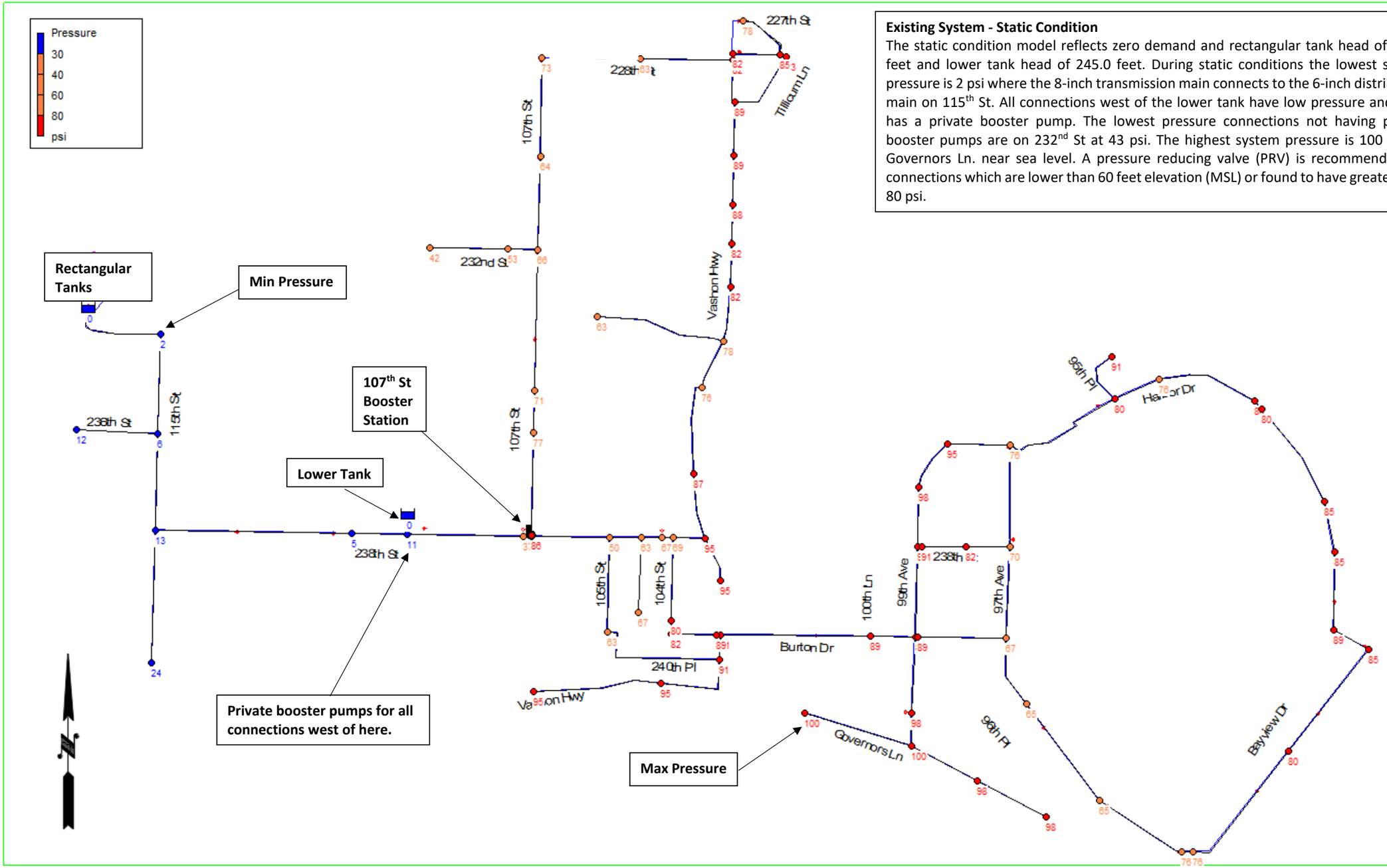
Table 5. Summary of Hydraulic Analysis Results

Parameter	Existing System with 6-inch Non-Looped Main		Future 8-inch Main with 6-inch Loops	
	Static Condition	PHD Condition	Limiting Condition	Hydrant Flows
Flow Rate (gpm)	0	396	452	See Table 3
Rectangle Reservoir Head (ft)	255.4	253.0	253.0	250.5
Lower Reservoir Head (ft)	245.0	244.4	244.4	238.6
Minimum Pressure (psi)[1]	2 (see footnote)	1 (see footnote)	1 (see footnote)	-1 (see footnote)
Minimum Connection Pressure excluding private booster pump connections (psi)	43	29	30	20
Maximum System Pressure (psi)	100	88	94	90
Peak Line Velocity (ft/s)	0	4	3	10

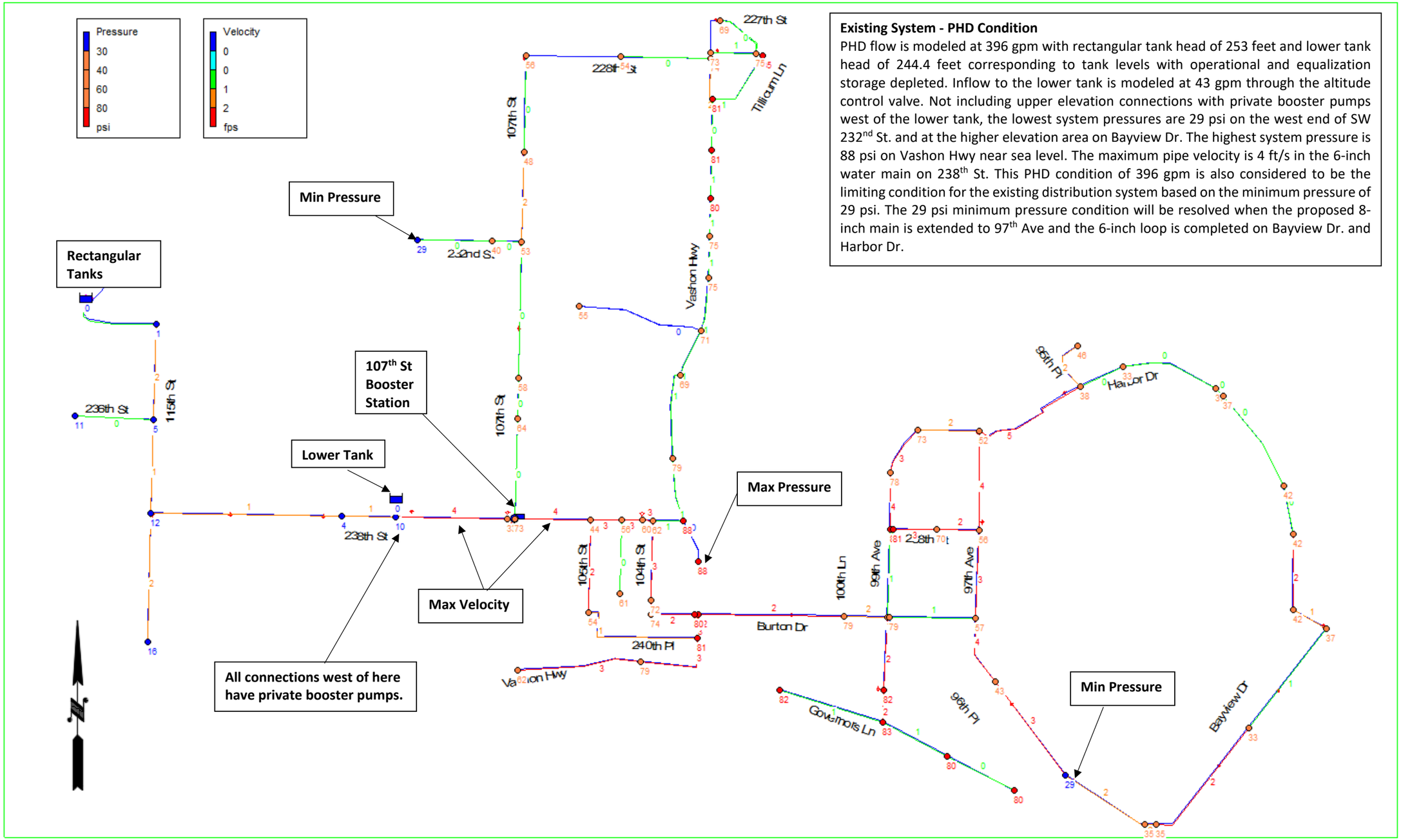
[1] Minimum pressure location is transmission line upstream of the first connection.



Existing System - Static Condition

The static condition model reflects zero demand and rectangular tank head of 255.4 feet and lower tank head of 245.0 feet. During static conditions the lowest system pressure is 2 psi where the 8-inch transmission main connects to the 6-inch distribution main on 115th St. All connections west of the lower tank have low pressure and each has a private booster pump. The lowest pressure connections not having private booster pumps are on 232nd St at 43 psi. The highest system pressure is 100 psi on Governors Ln. near sea level. A pressure reducing valve (PRV) is recommended for connections which are lower than 60 feet elevation (MSL) or found to have greater than 80 psi.

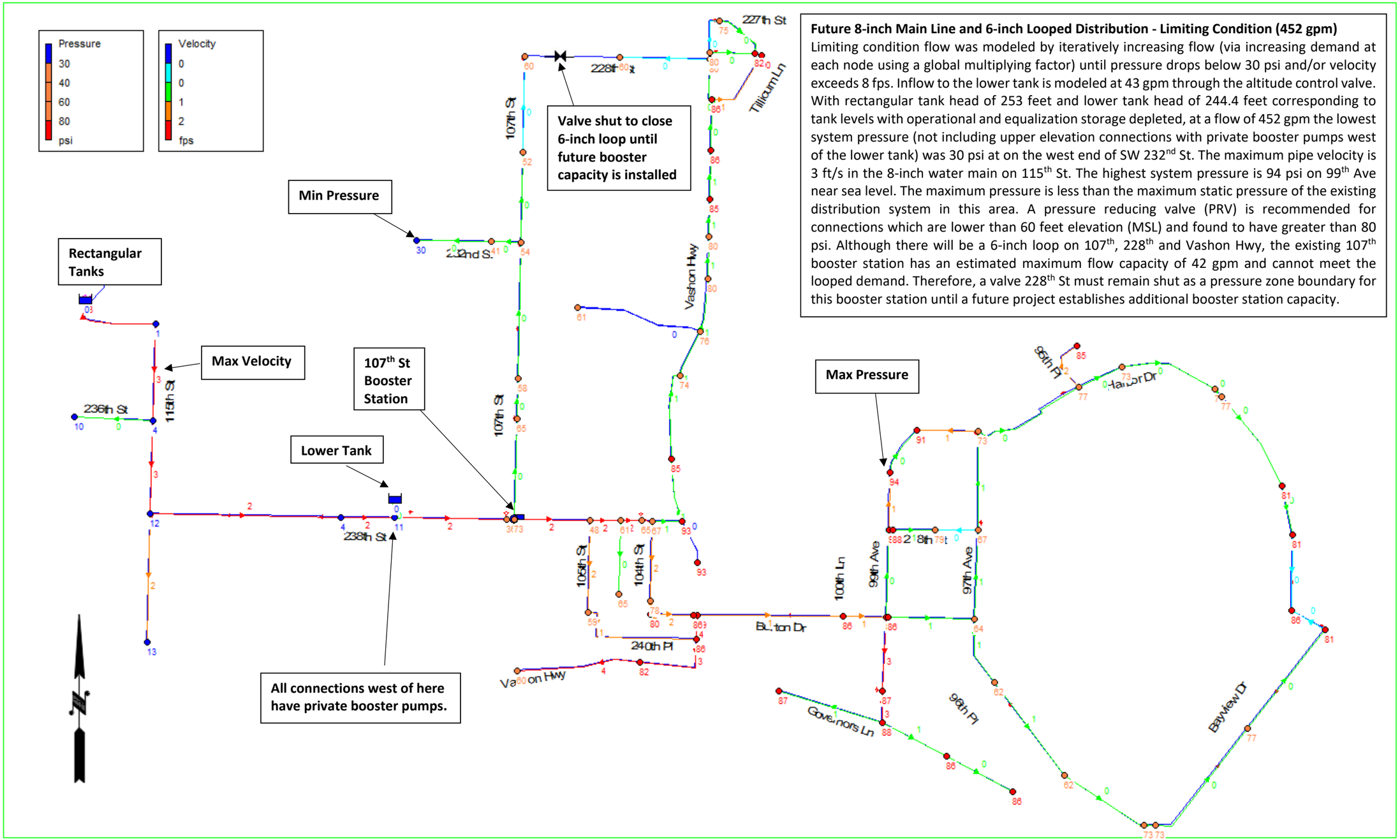
Figure 1: Existing System Static High-Pressure Condition (0 gpm)



Existing System - PHD Condition

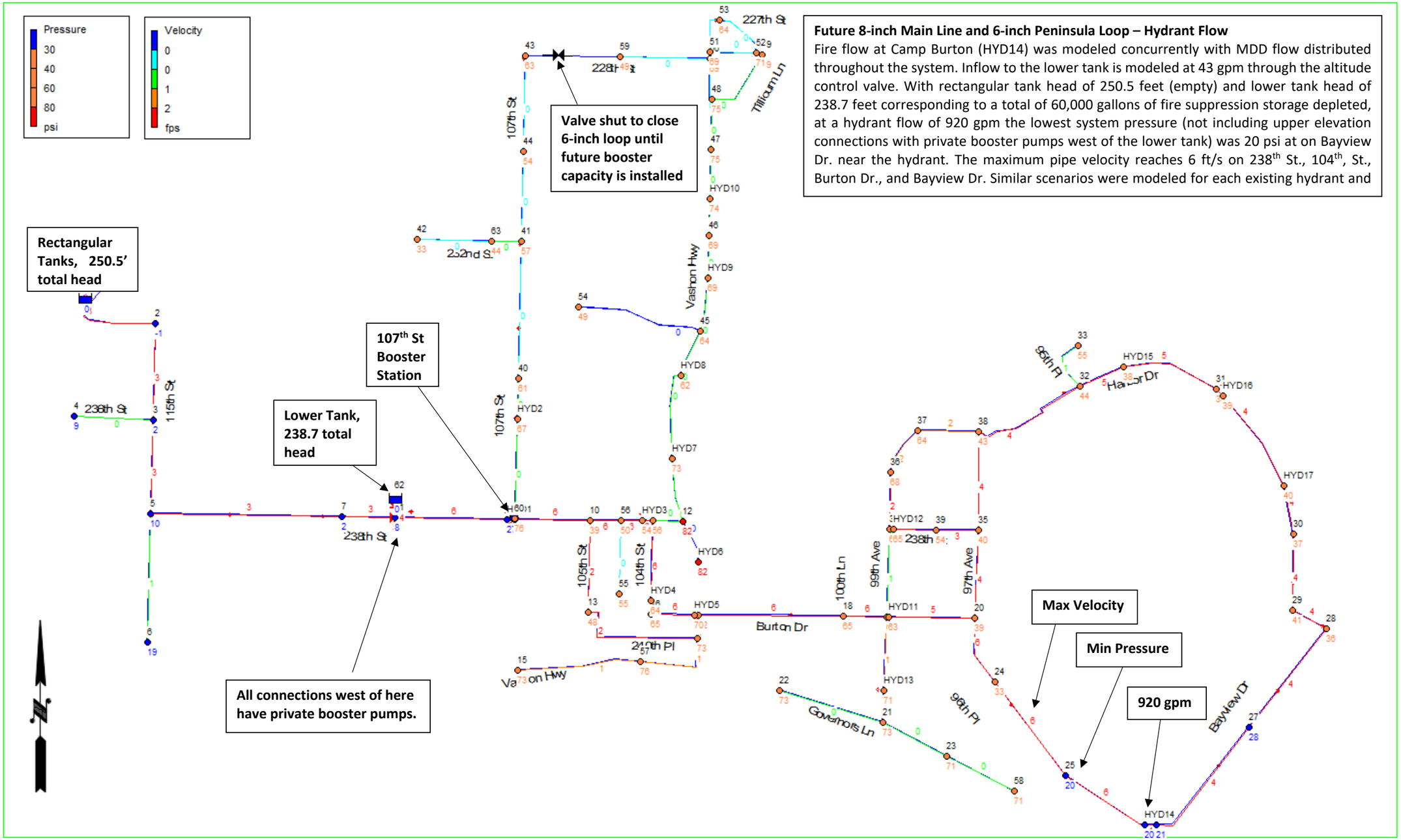
PHD flow is modeled at 396 gpm with rectangular tank head of 253 feet and lower tank head of 244.4 feet corresponding to tank levels with operational and equalization storage depleted. Inflow to the lower tank is modeled at 43 gpm through the altitude control valve. Not including upper elevation connections with private booster pumps west of the lower tank, the lowest system pressures are 29 psi on the west end of SW 232nd St. and at the higher elevation area on Bayview Dr. The highest system pressure is 88 psi on Vashon Hwy near sea level. The maximum pipe velocity is 4 ft/s in the 6-inch water main on 238th St. This PHD condition of 396 gpm is also considered to be the limiting condition for the existing distribution system based on the minimum pressure of 29 psi. The 29 psi minimum pressure condition will be resolved when the proposed 8-inch main is extended to 97th Ave and the 6-inch loop is completed on Bayview Dr. and Harbor Dr.

Figure 2: Existing System PHD (396 gpm)



Future 8-inch Main Line and 6-inch Looped Distribution - Limiting Condition (452 gpm)
Limiting condition flow was modeled by iteratively increasing flow (via increasing demand at each node using a global multiplying factor) until pressure drops below 30 psi and/or velocity exceeds 8 fps. Inflow to the lower tank is modeled at 43 gpm through the altitude control valve. With rectangular tank head of 253 feet and lower tank head of 244.4 feet corresponding to tank levels with operational and equalization storage depleted, at a flow of 452 gpm the lowest system pressure (not including upper elevation connections with private booster pumps west of the lower tank) was 30 psi at on the west end of SW 232nd St. The maximum pipe velocity is 3 ft/s in the 8-inch water main on 115th St. The highest system pressure is 94 psi on 99th Ave near sea level. The maximum pressure is less than the maximum static pressure of the existing distribution system in this area. A pressure reducing valve (PRV) is recommended for connections which are lower than 60 feet elevation (MSL) and found to have greater than 80 psi. Although there will be a 6-inch loop on 107th, 228th and Vashon Hwy, the existing 107th booster station has an estimated maximum flow capacity of 42 gpm and cannot meet the looped demand. Therefore, a valve 228th St must remain shut as a pressure zone boundary for this booster station until a future project establishes additional booster station capacity.

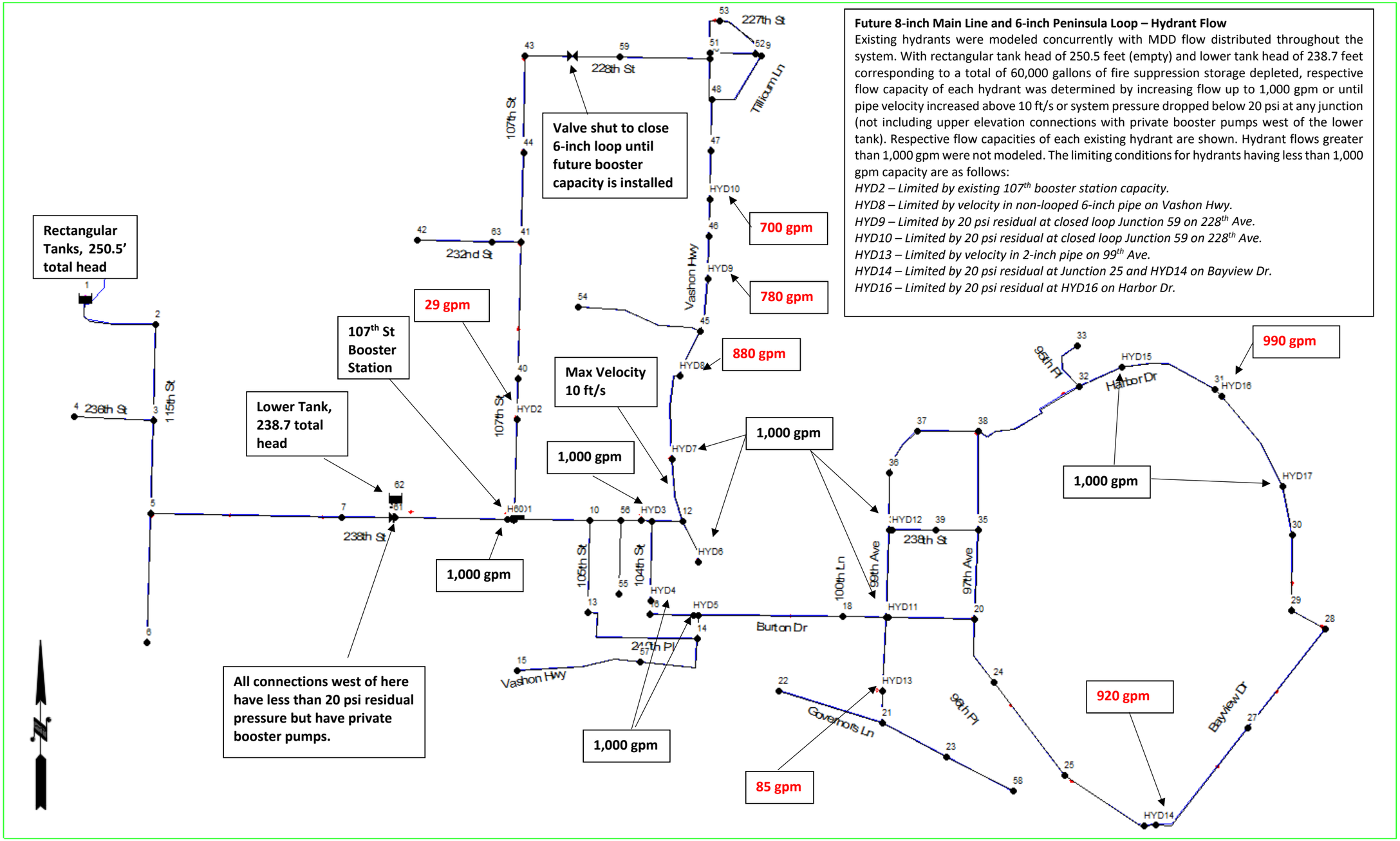
Figure 3: Future 8-inch Main Line and 6-inch Peninsula Loop - Limiting Condition (452 gpm)



Future 8-inch Main Line and 6-inch Peninsula Loop – Hydrant Flow

Fire flow at Camp Burton (HYD14) was modeled concurrently with MDD flow distributed throughout the system. Inflow to the lower tank is modeled at 43 gpm through the altitude control valve. With rectangular tank head of 250.5 feet (empty) and lower tank head of 238.7 feet corresponding to a total of 60,000 gallons of fire suppression storage depleted, at a hydrant flow of 920 gpm the lowest system pressure (not including upper elevation connections with private booster pumps west of the lower tank) was 20 psi at on Bayview Dr. near the hydrant. The maximum pipe velocity reaches 6 ft/s on 238th St., 104th, St., Burton Dr., and Bayview Dr. Similar scenarios were modeled for each existing hydrant and

Figure 4: Future 8-inch Main Line and 6-inch Peninsula Loop – Hydrant Flow to Camp Burton (920 gpm)



Future 8-inch Main Line and 6-inch Peninsula Loop – Hydrant Flow

Existing hydrants were modeled concurrently with MDD flow distributed throughout the system. With rectangular tank head of 250.5 feet (empty) and lower tank head of 238.7 feet corresponding to a total of 60,000 gallons of fire suppression storage depleted, respective flow capacity of each hydrant was determined by increasing flow up to 1,000 gpm or until pipe velocity increased above 10 ft/s or system pressure dropped below 20 psi at any junction (not including upper elevation connections with private booster pumps west of the lower tank). Respective flow capacities of each existing hydrant are shown. Hydrant flows greater than 1,000 gpm were not modeled. The limiting conditions for hydrants having less than 1,000 gpm capacity are as follows:

HYD2 – Limited by existing 107th booster station capacity.
HYD8 – Limited by velocity in non-looped 6-inch pipe on Vashon Hwy.
HYD9 – Limited by 20 psi residual at closed loop Junction 59 on 228th Ave.
HYD10 – Limited by 20 psi residual at closed loop Junction 59 on 228th Ave.
HYD13 – Limited by velocity in 2-inch pipe on 99th Ave.
HYD14 – Limited by 20 psi residual at Junction 25 and HYD14 on Bayview Dr.
HYD16 – Limited by 20 psi residual at HYD16 on Harbor Dr.

Figure 5: Future 8-inch Main Line and 6-inch Peninsula Loop – Hydrant Flow Map

Chapter 10-18: Correspondence

Burton Water Cooperative Special Board Meeting
November 19, 2024
2:00 to 2:30 PM

Attendees: Ben Lee, Chuck Weinstock, Merrilee Runyan, Steve Hill, Norm Seethoff

Absent: William Shadbolt, James Culbertson (previously announced)

Meeting called to order at 2:04 PM by Ben Lee with a quorum present

Single Topic: Discuss and vote on the Water System Plan and Loss Control Plan prepared by NWS

- Redlined Word version showing revisions clearly for the main document only
- Compiled Draft WSP (PDF)
- Draft Loss Control Plan

Following an extended discussion, Steve moved to approve the draft Water System Plan with the changes as noted. Norm seconded. The motion passed with one abstention by Chuck.

Merrilee moved to approve the draft Loss Control Plan with the changes as noted. Norm seconded. The motion passed unanimously.

Meeting adjourned just before 3 PM with Comcast service going out in multiple areas.

Next regular meeting November 25 at 3:30 PM

- Earlier date due to Thanksgiving holiday

These minutes were approved by the Burton Water Cooperative Board at a meeting held on November 25, 2024, at which a quorum was present

ATTESTED BY: Nov 25, 2024

Norm Seethoff, Board Secretary

VASHON FIRE
Vashon Island Fire and Rescue
10020 SW Bank Road PO Box 1150 Vashon WA 98070
206.463.2405 www.vifr.org

April 12, 2023

To Whom It May Concern,

Vashon Island Fire and Rescue (VIFR) provides fire, emergency medical and all-hazards response to Vashon-Maury Island. Our agency recently developed a strategic plan which continues our mission to enhance the delivery of emergency services across the island. Throughout our strategic planning process, our team worked closely with several community-based organizations to identify our strengths and opportunities to improve our emergency services. More specifically, several of our planned improvements to our response capabilities identified in our process are centered around the Burton fire station and the surrounding community.

The ability to source, pre-plan, and deliver large volumes of water for fire suppression and incident mitigation is challenging on the island. However, one critical area of opportunity to address these challenges is our collaboration with the local water utilities on Vashon and Maury Island. The island's water distribution and hydrant systems provide a vital fire suppression resource. Many of the local water utilities were developed decades ago and provide varying levels of fire flow capacity. The improvement to the fire flow capacity have a direct positive impact on our ability to protect lives and save property during a structure, vehicle, or vegetation fire.

With over 400 homes and two large marinas connected to the Burton water system, this valuable resource protects one of the largest residential communities on the island and provides a vital water suppression source to support our water-tender operations in areas of the island without fire hydrants. The location of the Burton water system is largely beneficial to our overall fire suppression operations.

We understand that the current owners of the Burton water system are actively working to sell the system. And we further understand that the Burton community has organized a non-profit entity - the Burton Water Cooperative - to purchase the system and convert its management into a community-based cooperative. The Burton Water Cooperative, if successful with the purchase, plans to leverage a significant level of low-interest USDA loan financing to dramatically improve fire flow capacity throughout the majority, if not all, of its distribution system, including larger pipe size, more hydrants, and improved hydraulic efficiencies.

We have met with representatives from the Burton Water Cooperative about their planned improvements and to gather feedback on this critical infrastructure initiative. We have coordinated meetings with the King County Fire Marshal's office and the Washington Survey and Rating Bureau to discuss the improvement plans and clarify the current local fire flow standards.

The Burton Water Cooperative's planned capital improvements for improved fire flow capacity would be very beneficial for the Burton community and our island. The planned improvements will significantly enhance VIFR's fire emergency response capabilities, not just in Burton, but also in the surrounding island communities.

Please consider this letter of support when reviewing the Burton Water Cooperative's plans for cooperative ownership and capital improvements for the Burton water system.

Respectfully,

Matthew Vinci

Matthew Vinci, Fire Chief

Phillip Thomas

From: Wood, Doug (ECY) <DWOO461@ECY.WA.GOV>
Sent: Friday, June 13, 2025 1:41 PM
To: Phillip Thomas
Cc: Chavez, Krista R (DOH); Lauden, Andrea (ECY); Ben Lee; info@burtonwater.org; Board; Norm Seethoff; Carter, Brietta J (DOH)
Subject: RE: Dept. of Ecology: Burton Water Cooperative 2024 WSP - ECY Comment Letter

Phillip,

Ecology has received and has reviewed your email and the attached updated WRSA and letter from Nick Simmons.

I looked at my files and could not find a reference for the 38.2 ac-ft you asked about in your email. The error is therefore likely mine.

Our office is satisfied that Burton Water Cooperative is diligently pursuing solutions to the challenges its water rights portfolio poses in meeting its obligations as a water purveyor.

Please feel free to contact me if you have additional questions.

Thank you,

Doug Wood
Water Resources Program
Dept. of Ecology - NW Region
PO Box 330316, Shoreline, WA 98133-9716
Phone: (206) 594-0196

This communication is a public record and may be subject to disclosure as per the Washington State Public Records Act, RCW 42.56.

From: Phillip Thomas <phillip@nwwatersystems.com>
Sent: Friday, June 13, 2025 10:49 AM
To: Wood, Doug (ECY) <DWOO461@ECY.WA.GOV>; Wood, Doug (ECY) <DWOO461@ECY.WA.GOV>
Cc: Chavez, Krista R (DOH) <Krista.Chavez@DOH.WA.GOV>; Lauden, Andrea (ECY) <alau461@ECY.WA.GOV>; Ben Lee <bendavidlee@gmail.com>; info@burtonwater.org; Board <board@burtonwater.org>; Norm Seethoff <nseethoff@gmail.com>; Carter, Brietta J (DOH) <brietta.carter@doh.wa.gov>
Subject: RE: Dept. of Ecology: Burton Water Cooperative 2024 WSP - ECY Comment Letter

External Email

Hello Doug,

Thank you for your review comments for the Burton Water Cooperative Water System Plan (WSP) and water right self-assessment (WRSA). Ben Lee (from the Coop Board) and I met with Andrea Lauden in your absence on April 23rd, 2025 to discuss the issues that you identified. I am sending this follow-up email with responses to the issues raised in your comment letter based on our discussion with Andrea and provide clarification and context regarding current and future water withdrawal at Burton.

Water Right Self-Assessment

The WRSA included in the WSP was a preliminary draft and for the sake of simplicity I listed the combined instantaneous flow capacities from the wellfield sources shown on the Water Facilities Inventory (WFI) form. Categorizing the withdrawals from the two wellfields is not actually so simple. While the sum of the individual source capacities does exceed the allowed maximum cumulative instantaneous rate of 245 gpm, the system operator manages source flow as necessary to ensure the individual sources never operate concurrently in such a manner as to exceed 245 gpm. Although the sum of the maximum instantaneous withdrawal from individual sources in a calendar year may exceed 245 gpm, the actual maximum instantaneous withdrawal at any given time is less than 245 gpm because the individual sources are not all operated concurrently at maximum rates. Attached is a memorandum from the system operator which discusses the instantaneous withdrawal and validates that the Qi allowance of 245 gpm has not been exceeded. The actual maximum withdrawal recorded in the last year is 224 gpm. The current and projected demands of the water system can be met with a total Qi of 245 gpm. Section 3.3.2 of the WSP addresses this and shows that 245 gpm can support up to 565 ERU, which is greater than the projected buildout for the next 20 years shown in Table 2-16 of the WSP.

As you noted, several of the S06 wellfield sources that were associated with the surface water certificate are actually wells and may be better classified as associated with the groundwater claim. After discussion with Andrea and based on your comments, we consider that the S06 sources should be dually associated to both the surface water certificate and groundwater claim. We have updated the WRSA form accordingly.

We noted that your letter mentioned 38.2 ac-ft/yr as the annual withdrawal from all sources. The actual annual withdrawal listed on the WRSA was 103.2 ac-ft/yr. Can you please clarify how the 38.2 ac-ft/yr was determined?

As noted, and discussed with Andrea, there are some historical complexities between the system's surface water certificate/groundwater claim and how they are exercised by a combination of shallow wellpoints at the wellfield spring and more modern wells throughout the source area. While we don't have reason to believe that the water rights are anything less than fully valid, the Burton Water Cooperative intends to submit a water-right change application in the coming years to update the water rights documentation to be consistent with apparent de facto changes and how actual operations of the system evolved many decades ago. That water right maintenance work is planned for after they get into a regular rhythm following the very recent system ownership transition and the important infrastructure upgrades that are in process are completed; at the moment, they are focused on the ownership transition and the system upgrades. A water-right change application is beyond the current scope of this WSP. The future change application will address the unspecified annual quantity of the surface water certificate. A historical evaluation will accompany the change application and address the original intent of the surface water certificate and actual historical use and current validity of the rights, within the context of municipal water law. The water system is not seeking expansion and is not projecting to increase withdrawal under this WSP. Therefore, for the intents and purposes of this WSP, the noted annual quantity of of the surface water certificate, 72.3 ac-ft/yr, is taken as the maximum possible

withdrawal under the surface water certificate with the understanding that this amount is subject to change when the future change application is processed.

Water Right Claim

The validity of water right claim (GL-043145CL) will also be addressed concurrently with the future water right change application discussed above. The water system has historically relied on this claim for a number of groundwater wells, some of which likely date back to the 1930s or earlier as hand dug shallow wells.

Future Demand

We also noted that your letter mentioned that 251 gpm was used in calculations for future demand adequacy. Future system demand is discussed in Section 2.2.4 of the WSP and is not based on 251 gpm. The total capacity of all water system sources is 251 gpm. However, this does not imply that all sources are used concurrently, which would exceed the maximum Qi of 245 gpm. The 251-gpm flow is only used in the limiting factor calculation for source capacity shown in Section 3.3.3 of the WSP. The limiting factors for water rights is discussed in Section 3.3.2 of the WSP and correctly uses a Qi of 245 gpm. The limiting factors analysis in Section 3.3 of the WSP identifies limitations for each specific component of the water system. It is not uncommon for a water system to have more source capacity than water right capacity and to manage the system as necessary to operate within the allowed withdrawal amounts. Again, 251 gpm was not used for calculations of future demand.

We are hoping to get have resolution of Ecology's comments so that we can progress the WSP approval process with DOH in the coming weeks. While some water right maintenance is required (and is planned), it appears that the Burton Water Cooperative system is currently operating within its water rights. We have improved how we have documented the water rights on the attached updated WRSA form. And we have hopefully provided clarity to address some of your other comments with the WSP itself. Will you please review the attached updated WRSA form which reflects the changes discussed above?

Please let us know if you have additional questions or comments. Otherwise, we're hoping that you can provide a follow-up letter or email indicating that Ecology's concerns have been addressed, for the purpose of this WSP update.

Very respectfully,

Phillip Thomas, P.E.
Northwest Water Systems, Inc.
phillip@nwwatersystems.com
(360) 876-0958 Ext 118

Burton Water Cooperative

June 2, 2025

Transmitted via email to: board@burtonwater.org

Burton Water Cooperative
PO Box 1938
Vashon, WA 98070

Attn: Cooperative Board

Re: Burton Water Cooperative Source Metering

Dear Board Members:

This letter is in response to your inquiry about how the total instantaneous water source withdrawal rate (from wells and wellpoints) is monitored and managed.

Historically, I, as the system operator, or Morgan, as the system backup operator, have informally evaluated total instantaneous withdrawal rates by occasionally reading the individual source meters (i.e., by observing the amount of movement on the meter dial over a minute, or similar) and then summing all of those individual meter observations up. Recall that all sources are metered, though some of the individual meters are plumbed to multiple wellpoints/wells. While this has historically been an informal practice and we have not kept records of these observations, we have generally done this on an occasional basis at various times throughout the year, including during what we consider to be peak water demand periods (e.g., between 5 am and 9 am July to September). To my knowledge, we have never exceeded the 245 gpm total withdrawal rate authorized by the system's water rights. I have recently (today) evaluated the potential total source instantaneous withdrawal rate by turning all source pumps on and observing meter movements over a 1-minute timeframe each. That test resulted in a total withdrawal rate, at the time of testing, of approximately 224 gpm.

Going forward, I have implemented a more formal process of recording instantaneous source withdrawal rates by following the procedure outlined above (observing individual source meter rates for a predetermined amount of time - one minute) on a daily basis between 5 am and 9 am and recording individual meter and total withdrawal rates in a dedicated notebook. I will manage the source withdrawals now and in the future to ensure that we do not exceed our total authorized 245 gpm. I will report any anomalies to the Board as they occur.

Please let me know if you have any questions.

Nick Simmons
Operator

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

CONSTRUCTION COMPLETION REPORT FORM FOR DISTRIBUTION MAIN PROJECTS

In accordance with WAC 246-290-120(5), a ***Construction Completion Report*** is required for all construction projects. Under the submittal exception process for distribution main projects, designed by a professional engineer but not submitted to the Department of Health (DOH) for approval, the report does not need to be submitted. **However, the purveyor must keep the Construction Completion Report on file and make it available for review upon request by DOH in accordance with WAC 246-290-125 (2)(b).** Furthermore:

(1) The report form **must** bear the seal, date and signature of a professional engineer (PE) licensed in the state of Washington; and

(2) Per WAC 246-290-120(5)(c), the amount of change in the physical capacity of a system must be documented, if the project results in a change in physical capacity.

Burton Water Cooperative
Name of Water System

DOH System ID No.: **09800 L**

Burton Water Cooperative
Name of Purveyor (Owner or System Contact)

Date Water System Plan that includes Standard Construction Specifications

20211 Vashon Highway SW #29
Mailing Address

Date Standard Specifications Approved by DOH: _____

Vashon **WA** **98070**
City State Zip

PROJECT NAME AND DESCRIPTIVE TITLE:

(Include the name of any development project and number of services.)

Date Project or Portions Thereof Completed

PROFESSIONAL ENGINEER'S ACKNOWLEDGMENT

The undersigned professional engineer (PE), or his/her authorized agent, has inspected the above-described project that, as to layout, size and type of pipe, valves and materials, and other designed physical facilities, has been constructed and is substantially completed in accordance with construction documents reviewed by the purveyor's engineer. In the opinion of the undersigned engineer, the installation, physical testing procedures, water quality tests, and disinfection practices were carried out in accordance with state regulations and principles of standard engineering practice.

I have reviewed the disinfection procedures, pressure test results, and results of the bacteriological test(s) for this project and certify that they comply with the requirements of the construction standards/specifications approved by DOH.

P.E.'s Seal

Date Signed

Name of Engineering Firm

Name of PE Acknowledging Construction

Mailing Address

City State Zip

Engineer's Signature

State/Federal Funding Type (if any) _____

Please keep a completed, signed, and stamped copy on file.

☒ Northwest Drinking Water
Department of Health
PO Box 47800
Olympia WA 98504
Phone: 253-395-6750
Fax: 253-395-6760

☐ Southwest Drinking Water
Department of Health
PO Box 47823
Olympia, WA 98504-7823
Phone: 360-236-3030
Fax: 360-664-8058

☐ Eastern Drinking Water
Department of Health
16201 E Indiana Ave, Suite 1500
Spokane Valley, WA 99216
Phone: 509-329-2100
Fax: 509-329-2104

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).

King County Local Services

PERMITS

King County Certificate of Water Availability

☑ Building Permit ☑ Preliminary Plat or PUD

☑ Short Subdivision ☑ Rezone or other: _____

Applicant name: _____

Proposed use: _____

King County Tax Parcel No.: _____

WATER PURVEYOR: _____ ☑ "not within existing water service area"

1. The water system is a municipal water system as defined in RCW 90.03.015. ☑ Yes ☑ No
2. Water System has a Duty to Serve and will provide water service. ☑ Yes ☑ No
3. If #2 is "No" and the water system is a municipal water system, check which factor(s) is applicable:
   - ☑ Insufficient capacity to serve water in a safe and reliable manner.
   - ☑ The service request is inconsistent with adopted local plans and development regulations.
   - ☑ Insufficient water rights to provide service.
   - ☑ The service is not timely and reasonable.
4. If #2 is "Yes, conditions of service:
   - ☑ a. Water will be provided by service connection only to an existing _____ (size) water main that is _____ feet from the site.
   - ☐ b. Water service will require an improvement to the water system of:
     - ☑ (1) _____feet of water main to reach the site; and/or
     - ☑ (2) The construction of a distribution system on the site; and/or
     - ☑ (3) Other (describe):_____
5. ☑ a. Water is or will be available at the rate of flow and duration indicated below at no less than 20 psi measured at the nearest fire hydrant_____feet from the building/property (or as marked on the attached map):

   Rate of flow at Peak Demand: ☑ less than 500 gpm (approx._____gpm) ☐ 500 to 999 gpm ☐ 1000 gpm or more
   ☑ flow test of_____gpm ☐ calculation of_____gpm

   Duration: ☐ less than 1 hour ☑ 1 hour to 2 hours ☐ 2 hours or more Other: _____

   (**Note**: Commercial building permits which include multifamily structures require flow test or calculation.)

   ☐ b. Water system is not capable of providing fire flow.
6. Annexation or Boundary Review Board (BRB) approval is necessary to provide service: ☐ Yes ☐ No
7. Water Service will be provided by a new water system: ☐ Yes ☐ No

Comments/conditions:_____

I certify that the above water purveyor information is true. This certification shall be valid for ☐ year(s) from date of signature.

Agency name | Signatory name

Title | Signature | Date