Washington State Department of Corrections (DOC)

State Contract # K12876
KPFF Project #10182200055

WATER SYSTEM PLAN

July 10, 2023

Prepared for:
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ENGINEER OF RECORD CERTIFICATION

This Water System Plan for Washington State Department of Corrections has been prepared by or under the supervision of the engineer below and meets the standard of care and expertise which is usual and customary in this community for professional engineers.

CONTENTS

ABBREVIATIONS

AC	asbestos cement
ADD	average day demand
afy	acre-feet per year
AG	air gap
AHCC	Airway Heights Corrections Center
APWA	American Public Work Association
BAT	backflow assembly tester
bgs	below ground surface
BTO	basin treatment operator
CBCC	Clallam Bay Corrections Center
CCCC	Cedar Creek Corrections Center
CCS	cross-connection control specialist
CI	cast iron
CIP	capital improvement program
CPU	Clark Public Utilities
CRCC	Coyote Ridge Corrections Center
CWSP	coordinated water system plan
CWSSA	critical water supply service area
D/DBP	disinfectants/disinfection by-products
DCDA	double check valve detector assembly
DCVA	double check valve assembly
DI	ductile iron
DNR	Washington State Department of Natural Resources
DOC	Washington State Department of Corrections
DOH	Washington State Department of Health
DOT	Washington State Department of Transportation
DSHS	Washington State Department of Social and Health Services
Ecology	Washington State Department of Ecology
EPA	Environmental Protection Agency
ERU	equivalent residential unit
ES	equalizing storage
FF	fire flow
FFS	fire flow suppression storage

gal	gallon
GI	galvanized iron
gpd	gallons per day
gpm	gallons per minute
HAA5	five haloacetic acids
HAZCOM	chemical hazard communication
HGL	hydraulic grade line
IMU	intensive management unit
IOC	inorganic compound
L	liter
LCC	Larch Corrections Center
LCR	Lead and Copper Rule
MCC	Monroe Correctional Complex
MCCCW	Mission Creek Corrections Center for Women
MCLG	maximum contaminant level goal
MCL	maximum contaminant level
MDD	maximum day demand
mg	milligram
MICC	McNeil Island Corrections Center
MLCC	Maple Lane Corrections Center
MRDL	maximum residual disinfectant level
O&M	operations and maintenance
OCC	Olympic Corrections Center
OS	operational storage
PHD	peak hour demand
Plan	Water System Plan
PNWS-AWWA	Pacific Northwest Section of the American Water Works Association
PRV	pressure reducing valve
psi	pounds per square inch
PSV	pressure sustaining valve
PUD	public utility district
PVBA	pressure vacuum breaker assembly
PVC	polyvinyl chloride
RPBA	reduced pressure backflow assembly

RPDA	reduced pressure detector assembly
SCC	Special Commitment Center
SCCC	Stafford Creek Corrections Center
SCTF	Secure Community Transfer Facility
SDWA	Safe Drinking Water Act
smcl	secondary maximum contaminant level
Standards	technical standards and specifications
TCR	Total Coliform Rule
TTHM	total trihalomethane
UPC	Uniform Plumbing Code
VOC	volatile organic compound
WAC	Washington Administrative Code
WCC	Washington Corrections Center
WCCW	Washington Corrections Center for Women
WDM	Water Distribution Manager
WDS	Water Distribution Specialist
WHPA	Wellhead Protection Area
WHPP	Wellhead Protection Program
WSP	Washington State Penitentiary
WTPO	Water Treatment Plant Operator
WWTP	wastewater treatment plant

Part A

Organization-Wide Information

CONTENTS

TABLES

A1 Introduction

A1.1 Purpose

The purpose of this Plan is to update the 2014 Washington Department of Corrections (DOC) Statewide Water System Plan (WSP) Draft. This document provides a summary of information from previous water system planning efforts, as well as current information regarding water system operation and management. This Plan was developed in accordance with the Washington Administrative Code (WAC) 246-290-100.

Part A of the Plan provides a summary overview of DOC water systems, a discussion of analysis utilized within Part B, statewide operational procedures for DOC systems, and a summary of the Capital Improvement Program. This document references and updates information provided in the prior 2014 DOC Statewide Water System Operations and Maintenance Plan.

A1.2 Report Organization

This Plan includes eight separate analyses for the water systems operated by DOC. The plan is organized in the following volumes:

- Part A – This volume of the Plan contains general planning information applicable to all DOC water systems. General information related to water conservation, operations and maintenance, cross-connection control programs, and financial information is consolidated in this section.
- Part B - This volume contains eight separate sections detailing system-specific information and analyses for each water system.
- Part C – This volume contains appendices that contain system documentation, including DOC's water system technical standards and specifications, which were previously approved by DOH in January of 2005.

A1.3 Overview of System Ownership and Management

DOC operates 12 correctional facilities in the state of Washington. Six of these facilities rely on their own independent Group A Community Public Water Systems. DOC also manages two facilities operated by the Department of Social and Health Services that have their own water systems. These 8 facilities are the focus of this plan. The remaining facilities purchase water from local purveyors, and the responsibility of maintaining these water systems lies with said purveyors. These systems are not analyzed in this Plan.

Table A-1 includes a list of the 12 DOC institutions and the two facilities owned by the DSHS. The water systems serving the eight highlighted facilities are owned and operated by DOC.

A1.4 Overview of System History and Background

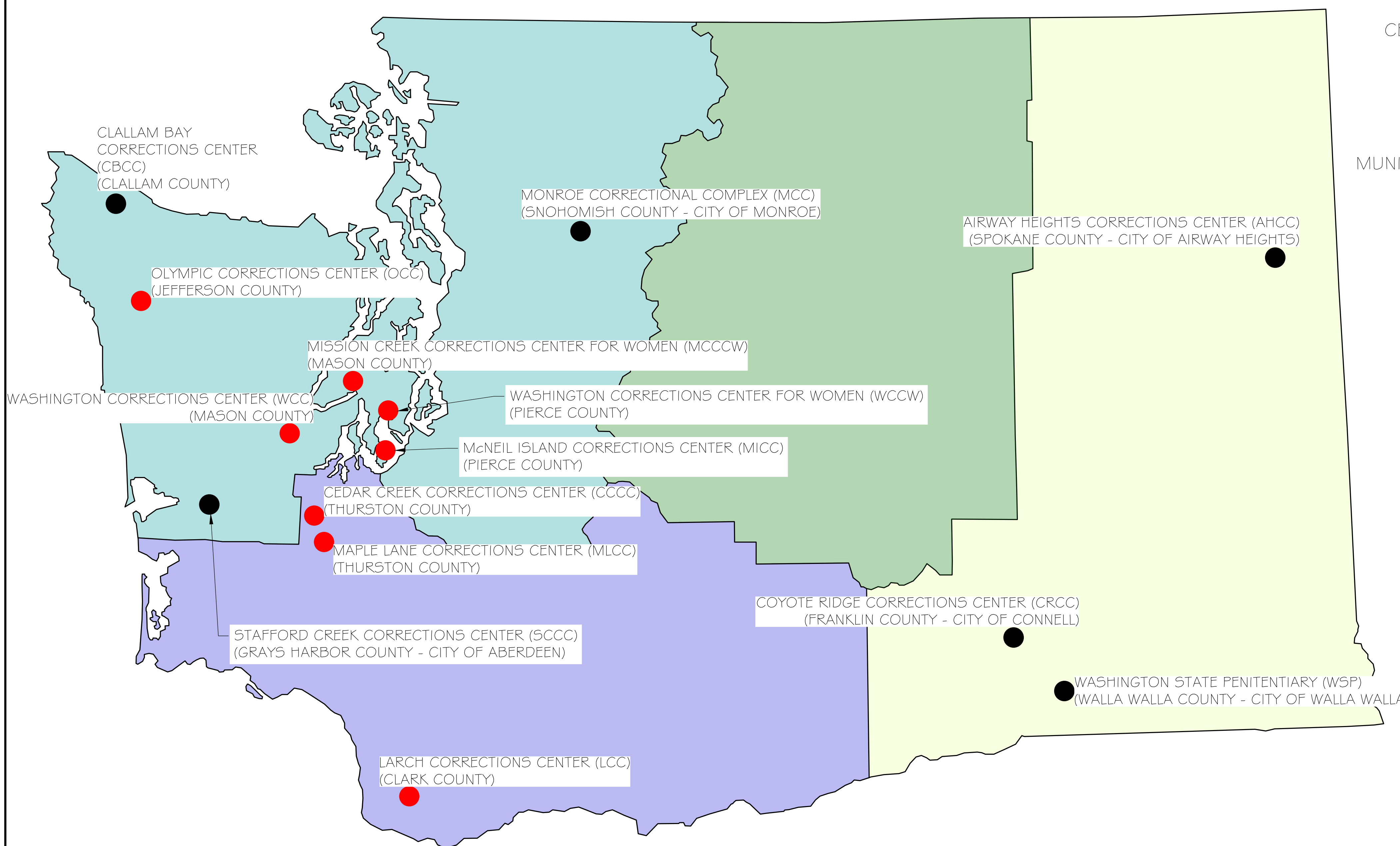
The Washington State Department of Corrections was established in 1981 as part of the '1981 Corrections Reform Act.' This transferred administration of adult correctional institutions from the DSHS to the DOC. Since its founding, the DOC has owned and operated the correctional facilities, including facility water systems, and coordinates system maintenance and operation for each of the DOC facilities.

EXHIBIT A-1

WASHINGTON DEPARTMENT OF CORRECTIONS - LOCATION MAP

LEGEND

- NORTHWEST WATERWAY REGION
- SOUTH GORGE REGION
- CENTRAL CORRIDOR REGION
- EASTERN PLAINS REGION
- DOC WATER SYSTEMS
- MUNICIPAL WATER CUSTOMERS



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WASHINGTON DEPARTMENT OF CORRECTIONS - LOCATION MAP

EXHIBIT

A-1

PLOTTED: Jun 26, 2023 - 13:46a6p6 PLOTTED BY: Cole.Rau

Individual system history and background is included in Part B of this Plan.

Table A-1: DOC Facilities

Facility Name	Facility Name Abbreviation	Location	Public Water System Identification No.	Source of Supply	Independent Water System
DOC FACILITIES INCLUDED IN THIS WATER SYSTEM PLAN					
Cedar Creek Corrections Center	**CCCC**	**Thurston County**	**118827**	**Wells**	**Yes**
Larch Corrections Center	**LCC**	**Clark County**	**06461Y**	**Wells**	**Yes**
Maple Lane Corrections Center (Formerly Maple Lane School)	**MLCC**	**Thurston County**	**511958**	**Wells**	**Yes**
McNeil Island Corrections Center	**MICC**	**Pierce County**	**52900E**	**Wells**	**Yes**
Mission Creek Corrections Center for Women	**MCCCW**	**Mason County**	**55325Y**	**Wells**	**Yes**
Olympic Corrections Center	**OCC**	**Jefferson County**	**13560D**	**Wells**	**Yes**
Washington Correction Center	**WCC**	**Mason County**	**93063K**	**Wells**	**Yes**
Washington Corrections Center for Women	**WCCW**	**Pierce County**	**69945J**	**Wells, City of Gig Harbor**	**Yes**
DOC FACILITIES NOT INCLUDED IN THIS WATER SYSTEM PLAN					
Airway Heights Corrections Center	AHCC	City of Airway Heights	-	City of Airway Heights	No
Clallam Bay Corrections Center	CBCC	Clallam County	-	Clallam County PUD	No
Coyote Ridge Corrections Center	CRCC	City of Connell	-	City of Connell	No
Monroe Correctional Complex	MCC	City of Monroe	-	City of Monroe	No
Stafford Creek Corrections Center	SCCC	City of Aberdeen	-	City of Aberdeen	No
Washington State Penitentiary	WSP	City of Walla Walla	-	City of Walla Walla	No

A1.5 Relation to Other Planning Efforts

DOC utilizes DOH's *Local Government Consistency Determination Form* and coordinates with local planning staff to ensure consistency between its efforts and those of local planning agencies.

Three of the eight DOC facilities are in counties where Critical Water Supply Service Areas (CWSSAs) have been identified county-wide. Additionally, Coordinated Water System Plans have been developed at these counties. These facilities are LCC (Clark County), MICC (Pierce County), and OCC (Jefferson County).

A water system plan within a CWSSA shall undergo a review process described in the CWSSA to determine appropriate planning coordination. For this Plan, coordinated submittals are provided to the DOH and to individual county review staff to satisfy local planning consistency coordination. A Consistency Statement Checklist is provided to satisfy requirements.

The activities of LCC, MICC, and OCC water systems described in this Plan have little to no impact on other water systems and resources within the CWSSAs mentioned above, as the systems are not expanding or otherwise modifying their service areas.

A1.6 Policies

DOC water systems observe the following general policies.

A1.6.1 Design Standards

Standards and specifications for future repair, replacement, and new service connections are included in Appendix C1.

A1.6.2 Outside customers

DOC water systems do not currently serve outside customers and do not have plans in the future to serve outside customers.

A1.6.3 Cross-Connection Control Program

DOC utilizes its own cross-connection control program, as detailed in Section A6.

A1.6.4 Duty to Serve

DOC water systems have a duty to serve new connections located within their service area boundaries so long as the following conditions are met:

- The connection serves a Washington Department of Corrections, Washington Department of Social and Human Services, or Washington Department of Natural Resources facility.
- The Water Facilities Inventory (WFI) for the system allows a number of approved service connections greater than the number of current connections.
- The water system has sufficient capacity to produce and provide the amount of water necessary for a new connection.
- The water system has sufficient water rights to support additional usage.
- The water system can provide service in a timely and reasonable manner.

A2 General Methods for Individual System Analysis

A2.1 Introduction

The analysis provided in Part B follows the methodology described in this section unless otherwise noted. The methods described in this section of the Water System Plan are used to evaluate the Washington Department of Corrections (DOC) facilities. The following water system analyses are discussed:

- Population and demand projections
- Water rights
- Source capacity
- Storage capacity
- Distribution system hydraulic analysis
- Water quality compliance
- Water conservation

- Source protection
- Operations and maintenance
- Cross-connection control
- Capital improvement program

A2.2 Design Standards

Design and construction of the water system shall meet the requirements of the Washington State Department of Health Water System Design Manual. The following is a summary of relevant standards:

ADD	Section	3.3
MDD	Section	3.4.1
PHD	Section	3.4.2
Capacity Analysis	Chapter	4
Distribution System	Chapter	6
Hydraulic Analysis	Section	6.1
Storage Requirements	Chapter	7

Technical standards and specifications are included in Appendix C1.

A2.3 Population and Demand Projections

The planning periods detailed in this Plan align with DOC's 10-year capital planning efforts. Current water demands are based on water production and usage data for 2020-2022 for each system, unless otherwise noted. Average day and maximum day demands are calculated based on these data. For the purposes of this Plan, equivalent residential units (ERUs) are defined as demand per DOC resident.

Year zero for this plan is designated as 2024 with the 10-year planning horizon stretching to 2034 and the 20-year planning horizon ending with 2044.

A2.4 Water Rights

Water rights sufficiency is evaluated for each system on an instantaneous and annual basis. Water Rights Self-Assessment Forms for each system are included in Appendix C4.

A2.5 Source Capacity

Water sources adequacy is determined by the Maximum Daily Demand (MDD). Water supply must be designed to meet the MDD to be considered sufficient.

A2.6 Storage Capacity

Each facility's storage capacity is evaluated per Washington State Department of Health (DOH) design guidelines. The following storage components are included in these evaluations:

- Operation Storage
- Equalizing Storage
- Standby Storage
- Fire Flow Storage

- Dead Storage

Operational storage (OS) is the volume in the reservoir that supplies a water system when the sources of supply are off.

Equalizing storage (ES) is the volume that accommodates the peak hour demand and replenishes in low demand periods. ES may be excluded from the system's storage requirement if the combined capacity of the supply sources, Q_s, is greater than the peak hour demand. For multiple DOC facilities this condition is met, and ES can be excluded. However, to enhance system reliability, a minimum ES volume equal to 5% of maximum day demand is assumed. In this Plan, equalizing storage is defined as the greater of two ES equations:

Equation 1: ES = (PHD – Q_S)*(150 minutes), but not less than zero.

ES = Equalizing Storage

PHD = Peak hour demand, in gpm

Q_S = Sum of all active supply source capacities except emergency supply, in gpm.

Equation 2: ES = 5% of (MDD)

ES = Equalizing Storage

MDD = Maximum Day Demand

Standby storage (SS) is the volume that maintains continued water supply during abnormal operating conditions or in the event of source contamination. For systems with multiple sources, standby storage is defined as the greater of Equation 3 and Equation 4:

Equation 3: SS (gal) = t *(ADD/N) – (1440* (Q_S – Q_L))

ADD = Average Day Demand

N = number of residents

Q_S = Sum of all active supply source capacities except emergency supply, in gpm.

Q_L = The largest capacity source available to the system, in gpm.

t = time that remaining sources are pumped on the day the largest source is not available in days (assumed as 2 days).

Equation 4: SS (gal) = 200 * N

N = number of residents

(The recommended standby storage should not be less than 200 gallons per ERU.)

Fire flow storage (FFS) depends on the fire flow rate and duration defined by the county fire marshal. Fire flow storage is defined by the following equation:

Equation 5: FFS (gal) = FF * t

FF = Required fire flow rate, in gpm

t = Duration of FF rate, in minutes

Dead storage (DS) is the volume of stored water that is not available to the consumers at the minimum design pressure. DS is assumed to be the volume that is at an elevation lower than that necessary to provide 20 psi at the meter of the highest customer in the pressure zone.

Total required storage for each water system is determined by operational storage, equalizing storage, fire flow storage, standby storage, and nested storage. Standby storage or fire flow storage may be consolidated, or nested, with the smaller of the two excluded from the water system's storage requirement.

Equation 6: Total Required Storage = OS + ES + FFS + SS – Nested Storage

The total available storage for each water system includes the total volume of all storage tanks currently in use and dead storage.

Equation 7: Total Available Storage = sum of storage tank volume – DS

A2.7 Distribution System Hydraulic Analysis

Each DOC facility's distribution system must deliver water at adequate service pressures and provide fire flow meeting the requirements of the authority having jurisdiction. Generally, a distribution system is sufficient if the system can maintain a residual pressure of at least 30 psi during peak hour demand, maximum day demand, and at least 20 psi during fire flow demand. These pressure thresholds are consistent for all 8 facilities identified in this report.

The DOC water systems were evaluated using the hydraulic modeling software program WaterCAD. The distribution systems were analyzed under the peak hour demand and fire flow scenarios. System deficiencies and proposed improvements are noted for each facility in Part B of this Plan.

A2.8 Summary of System Population and ERUs

Table A-2 provides a summary of the population and ERUs for each water system. Due to the differences in the systems, a separate ERU value has been calculated and utilized for each water system. For the purpose of this analysis, one ERU is defined as the average water use for a typical single-family residence, based on assumptions of 100 gallons per day (gpd) per person, and 2.3 persons per ERU. One ERU is equivalent to 230 gpd. Each system shall divide its residential population by the resident per ERU factor to obtain the number of ERUs reported on their Water Facilities Inventory. See Part B of this plan for each system's resident per ERU factor calculations.

Table A-2: Summary of Water System Populations

Facility Name	2024 Population (1)	Resident per ERU factor (2)	2024 ERUs
Cedar Creek Corrections Center (CCCC)	480	2.55	188
Larch Corrections Center (LCC)	480	1.89	254
Maple Lane Corrections Center (MLCC) (Formerly Maple Lane School)	100	2.08	48
McNeil Island Corrections Center (MICC)	271	0.39	695
Mission Creek Corrections Center for Women (MCCCW)	120	2.11	57
Olympic Corrections Center (OCC)	380	2.5	152
Washington Corrections Center (WCC)	1,800	1.84	978

Washington Corrections Center for Women (WCCCW)	800	2.30	348

(1) Population most recently reported by water system manager.
(2) System specific resident per ERU factor reported in Part B.
Resident per ERU Factor = Carrying Capacity Population / Carrying Capacity in ERUs

A3 Water Quality Compliance Requirements

A3.1 Safe Drinking Water Act and Washington Administrative Code Regulations

The Safe Drinking Water Act (SDWA) sets the federal standards for drinking water quality. Washington has incorporated the SDWA and its amendments into Washington State Administrative Code Chapter 246-290 (WAC 246-290). The DOC facilities are required to meet water quality regulations for Group A water systems, as defined in WAC 246-290. The facilities are required to comply with the following regulations:

Water Quality Regulation	Federal Register Citation	WAC Reference
■ Phase I (inorganic chemicals)	50 FR 47155	246-290-300 and 246-290-390
■ Phase II (synthetic organic chemicals)	50 FR 46901	246-290-300 and 246-290-390
■ Phase V (volatile organic chemicals)	50 FR 46901	246-290-300 and 246-290-390
■ Arsenic Rule		246-290-300 and 246-290-310
■ Stage 1 Disinfectant/ Disinfectant Byproduct Rule	63 FR 69390-69476	246-290-390
■ Stage 2 D/DBP Rule	71 FR 388	
■ Long-Term 2 Enhanced Surface Water Treatment Rule	71 FR 654	
■ Lead & Copper Rule	56 FR 26460-26564	246-290-390
■ Radionuclides Rule	65 FR 76708-76753	246-290-300 and 246-290-390
■ Source Water Protection Programs	SDWA Sec. 1428	246-290-135(3) and 246-290-135(4)
■ Consumer Confidence Rule	40 CFR Part 141, Subpart O	246-290-390
■ Public Notification Rule	65 FR 25981	246-290-390
■ Surface Water Treatment Rule	54 FR 27486	246-290-668
■ Total Coliform Rule	54 FR 27544-27568	246-290-300
■ National Secondary Drinking Water Regulations		246-290-310
■ Groundwater Rule	71 FR 65574	

A list of the National Primary Drinking Water Regulations can be found in Appendix C11.

A3.2 Source Water Quality Regulations

This section details some of the relevant water quality regulations enforced by the EPA and DOH.

A3.2.1 Phase I, II, and V Regulations

WAC 246-290-300 and 246-290-390 defer to the maximum contaminant levels set forth by Phase I, II, and V of federal Primary Drinking Water Regulations. WAC Chapter 246-290 requires that the contaminants are tested based on a vulnerability of occurrence assessment. The contaminants are to be monitored on 12 to 36 month sampling cycles, depending on the contaminant. Table A-3 lists the regulated contaminants.

Table A-3: Drinking Water Quality Parameters			
Inorganic Contaminants			
Antimony	Arsenic	Asbestos	Barium
Beryllium	Cadmium	Chromium	Cyanide
Fluoride	Mercury	Nickel	Nitrate (as N)
Nitrite (as N)	Selenium	Thallium	
Synthetic Organic Contaminants			
2,4 – D	2,4,5-TP (Silvex)	Alachlor (Lasso)	Aldicarb (Temik)
Aldicarb sulfone	Aldicarb sulfoxide	Atrazine	Benzo(a)pyrene
BHC-gamma (Lindane)	Carbofuran	Chlordane	Dalapon
Dibromochloropropane	Di(ethylhexyl)adipate	Di(2-ethylhexyl) phthalate	Dinoseb
Dioxin	Diquat	Endothall	Endrin
Ethylene dibromide	Glyphosate (Roundup)	Heptachlor	Heptachlor epoxide “B”
Hexachlorocyclopentadiene	Methoxychlor	Oxamyl (Vydate)	Polychlorinated biphenyls (PCBs)
Pentachlorophenol	Picloram	Simazine	Trichloroethylene
Toxaphene			
Volatile Organic Contaminants			
Benzene	Carbon tetrachloride	Chlorobenzene	o-Dichlorobenzene
p-Dichlorobenzene	1,2-dichloroethane	1,1-Dichloroethylene	Cis-1,2-dichloroethylene
Trans-1,2-dichloroethylene	Dichloromethane	1,2-Dichloropropane	Ethylbenzene
Styrene	Tetrachloroethylene	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane
1,1,2-trichloroethane	Trihalomethanes (total)	Toluene	Vinyl chloride
Xylene (total)			

A3.2.2 Source Water Protection Programs

DOH requires public water systems, including Group A community and non-community water systems, to protect groundwater, groundwater under the influence of surface water, and filtered and non-filtered surface water sources. DOH requires all Group A water systems that maintain their own sources to implement a Wellhead Protection Program (WAC 246-290-135(3)), or a Watershed Control Program (WAC 246-290-135(4)), or a combination as deemed appropriate by DOH. Specific source water protection programs are provided in Part B of this Plan.

A3.2.3 Secondary Drinking Water Regulations

WAC 246-290-310 establishes the maximum contaminant levels to manage non-health related contaminants. These standards address contaminants that affect taste, color, and odor of drinking water.

Table A-4: Secondary Drinking Water Parameters and SMCLs	
Parameter	**SMCL**
Chloride	250 mg/L
Fluoride	2 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Silver	0.1 mg/L
Sulfate	250 mg/L
Zinc	5 mg/L
Color	15 color units
Conductivity	700 umhos/cm
Total Dissolved Solids (TDS)	500 mg/L

A3.3 Monitoring Requirements

DOH provides each water system with an annual water quality report, which specifies monitoring requirements for that year. Specific monitoring requirements for each DOC facility are provided in Part B of this Plan.

A4 Water Use Efficiency Program

This section of the Water System Plan (Plan) presents a general water use efficiency program for DOC. Water conservation planning requirements have been set forth by the Department of Ecology (Ecology) and the Department of Health (DOH) in their Conservation Planning Requirements. The emphasis upon water conservation has been further bolstered by passage of the Municipal Water Law – Efficiency Requirements Act (Second Engrossed Second Substitute House Bill 1338 Chapter 5, Laws of 2003) and the subsequent Water Use Efficiency Rule.

This section provides information to comply with DOH guidance regarding conservation planning requirements. Included is a statement of conservation objectives, evaluations of water conservation measures, and identification of water conservation activities that DOC intends to implement at all facilities, as resources permit. Discussion of system specific water conservation activities, both historical and planned, is provided in Part B of this Plan.

A4.1 Conservation Objectives

DOC has established programs that strive to make efficient use of water. DOC's commitment to conservation is reflected in the following objectives:

- Promote resident and staff awareness about the need for the wise use of water though an effective water conservation education program.
- Minimize non-potable uses of water, and/or replace such uses with non-potable supplies.
- Decrease DOC's level of unaccounted for water use through implementation of proven supply side management strategies such as leak detection and repair and replacement of water mains.

A4.2 Conservation Planning Requirements

The conservation planning requirements that must be addressed in water system plans are contained in the following sources:

- State of Washington Municipal Water Law – Efficiency Requirements Act (January 2003)
- Department of Health Water Use Efficiency Guidebook (January 2017)
- Department of Health Water System Planning Guidebook (August 2020)

Table A-5 lists the requirements of the Water Use Efficiency requirements as detailed in WAC 246-290.

Table A-5: Water Use Efficiency Requirements	
Category	**Requirement**
Meters	1. Meter all sources 2. Meter all service connections
Data Collection	1. Provide annual consumption by customer class 2. Provide "seasonal variations" consumption by customer class 3. Evaluate reclaimed water opportunities 4. Consider water use efficiency rate structure 5. Provide monthly and annual production for each source
Demand Forecast	Provide demand forecast reflecting no additional conservation. Provide demand forecast reflecting savings from efficiency program. Provide demand forecast reflecting all "cost effective" evaluated measures.
Efficiency Program	1. Describe existing conservation plan. 2. Estimate water saved over last 6 years due to conservation program. 3. Describe conservation goals. 4. Implement or evaluate 1-12 measures, depending on size. 5. Describe conservation programs for next 6 years including schedule, budget, and funding mechanism. 6. Describe how customers will be educated on efficiency practices. 7. Estimate projected water savings from selected measures. 8. Describe how efficiency program will be evaluated for effectiveness. 9. Estimate leakage from transmission lines (if not included in distribution system leakage).
Distribution System Leakage	1. Calculate annual volume and percent using formula defined in the Rule. 2. Report annually: annual leakage volume, annual leakage percent, and for systems not fully metered, meter installation progress and leak minimization activities. 3. Develop water loss control action plan (if leakage is over 10% for 3 year average).
Goals	1. Establish measurable (in terms of water production or usage) conservation goals and re-establish every 6 years. Provide schedule for achieving goals. 2. Use a public process to establish goals. 3. Report annually on progress.
Performance Reports	1. Develop annual report including goals and progress towards meeting them, total annual production, annual leakage volume and percent and, for systems not fully metered, status of meter installation and actions taken to minimize leakage. 2. Submit annually by July 1 to DOH and customers and make available to the public.

A4.3 Evaluation of Conservation Program Elements

Following are the key elements of DOC's statewide water conservation program. All of these activities either have been or will be implemented at the eight facilities, as resources allow. Information regarding system-specific activities is found in Part B.

A4.3.1 Meters and Data Collection

- *Source Meters* - All water sources serving the eight facilities are metered. Water production is tracked, with historical trends serving as the tool for monitoring many other conservation measures. DOC will continue to meter all sources.
- *Service Meters* – As there are no utility bills or customer use charges for these systems, service meters were not installed during initial construction of the facilities. Tracking of water use beyond source metering was historically very limited at DOC facilities, due to the lack of building water meters. In 2002, DOC began a program to identify key service meter locations and install such devices. Installation took place during 2004 and in the early months of 2005. While not every building is currently

metered, the additional meters facilitate better water use tracking and leak detection for the systems.

A4.3.2 Distribution System Leakage

- *Leak Detection and Water Main Replacement* – It is recommended the DOC implements leak detection programs to ensure system integrity. It is recommended that leak detection is performed every 5 years for independent water systems under DOC control.

A4.3.3 Efficiency Program and Goals

- *Education* - Education is the foundation of every successful water conservation program. Patterns of water use are primarily an individual activity based on habits and underlying values. For water conservation to be effective over the long term, use patterns (i.e., behaviors) must be addressed, which often requires changes in understanding, beliefs, and finally implementation.

DOC's level of water conservation education has historically varied throughout the eight facilities. DOC headquarters staff work with facilities to ensure maximum system efficiency via the following methods:

- ♦ Monitoring levels of water use and how conservation activities could lower such levels.
- ♦ Assessment of ways in which certain uses of water (e.g., irrigation) can be minimized or eliminated.
- ♦ Implementation of water conservation improvement projects and water savings devices.

As DOC continues to implement a variety of conservation measures, education will serve as a fundamental element.

- *Landscape Management/ Xeriscaping* - There are a number of ways in which DOC can effect significant peak season water demand reduction by employing effective landscape irrigation management.

  Irrigation-related conservation activities that have been implemented at various facilities include:

  - ♦ Limit all landscape watering to no more than 1 inch per week, applied once per week (and when precipitation has not already provided 1 inch). Water application is measured via the "tuna can" method.
  - ♦ Eliminate all turf irrigation during summer months (e.g., July through September).
  - ♦ Conduct irrigation in early mornings or late evenings, to reduce evaporation.

  Additional, long-term activities that DOC will consider implementing, especially at facilities where water resources are most limited include:

  - ♦ Replace current landscaped and turf areas with native species, reducing water requirements.
  - ♦ Install drip irrigation or other water efficient systems in greenhouses and landscaping beds.

- ♦ Mulching, as opposed to standard lawn moving procedures. This will increase organic matter, which in turn will increase water-holding capacity and reduce evaporation and water usage.
- ♦ Use of hybrid grass varieties to reduce fertilizer, water and mowing frequency.

- *Housing Units* –Water use in facility housing typically comprises the most significant portion of water use at DOC facilities. Conservation activities aimed at addressing housing-related uses can be effective in reducing per-resident water usage. Housing unit-related conservation activities that have been implemented at various facilities include:

  - ♦ Installation of low-flow faucet aerators.
  - ♦ Installation of shower flow restrictors. Shower timers have also been installed at some facilities.
  - ♦ Temporary reduction in shower length and number of showers per resident per day.
  - ♦ Installation of flushometer toilets.
  - ♦ Installation of waterless urinals. In most cases where these have been installed, they have subsequently been removed due to what have been described by facility staff as flaws in the design of early technologies.
  - ♦ Repair of leaky faucets, showers, and toilets.

  Recommended activities that DOC should implement, especially at facilities where water resources are most limited include:

  - ♦ Permanent restriction of shower length (e.g., to 5-7 minutes per resident per day). This is only likely to be successful in the long term with an aggressive education approach, rather than by mandate
  - ♦ Evaluation of new waterless urinal technologies.

- *Laundry* – Laundry water use comprises another significant portion of water use at most DOC facilities. Activities that have been implemented at various facilities to reduce water use at facility laundry systems include:

  - ♦ Replacement of old residential washing machines with high-efficiency models.
  - ♦ Replacement of old commercial washing machines with high-efficiency models.
  - ♦ Installation of a laundry rinse water recycle system (still under construction).

  Additional activities that have been and will continue to be considered include:

  - ♦ Installation of a complete laundry wash and rinse water recycle system.
  - ♦ Ship all laundry to a commercial laundry facility or another DOC facility. In some cases, this may only be considered during peak water use times.

- *Reclaimed Water* - Reclaimed water has the potential to reduce potable water demands by replacing use of potable water for non-potable purposes (e.g., irrigation, toilet flushing, etc.). DOC has evaluated the feasibility of upgrading or replacing some wastewater treatment facilities in order to produce reclaimed water for these types of usesAt WCC, improvements were recently made to allow use of treated wastewater effluent for in-plant washdown purposes at the wastewater treatment facility, resulting in some potable water savings. DOC will continue to consider reclaimed water as a viable water savings option, especially in those cases where facility expansion is planned, and current wastewater treatment capacities are limited and necessitate system modifications.

A5 Operation and Maintenance Program

This section describes the statewide DOC water system operations and maintenance program. System specific information regarding operations and maintenance is provided in Part B of this Plan.

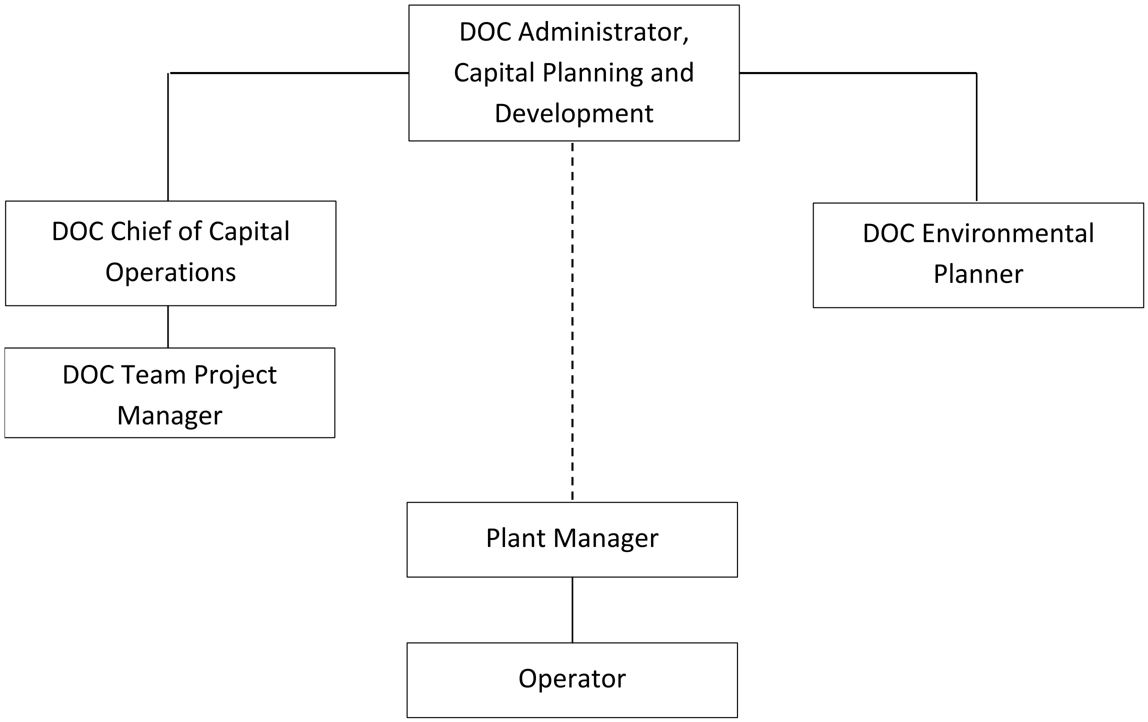
A5.1 Water System Management and Personnel

A5.1.1 Personnel Organization

The water systems in this Plan are all operated by DOC. See Part B of this Plan for system specific operation and management information.

An organizational chart showing the typical chain of command for the eight DOC water systems is provided in *Figure 5.1-1*. The water system plant manager oversees the day to day operations of the system. The systems are operated by the system operators. Emergency phones numbers for each of the facilities are located in Part B of this Plan.

Figure 5.1-1 Organization Chart



A5.1.2 Operator Certification

The Washington State Department of Health (DOH) requires all Group A water systems to have at least one certified operator under WAC 2246-292-050. Table A-6 summarizes the operator requirements according to population.

Table A-6: DOH Classification of DOC Water Systems		
Classification	**Population Served (2)**	**DOC Systems**
Class S	<251	-
Class 1	251 to 1,500	CCCC, LCC, MLCC, MICC (3), MCCW, OCC, WCCCW
Class 2	1,501 to 15,000	WCC
Class 3	15,001 to 50,000	-
Class 4	>50,000	-

(1) Source: WAC 246-292-040.
(2) Residential Population (See Table A-2)
(3) McNeil Island has no plans to house more than 1,500 residents in the future.

Table A-7 summarizes the minimum certification requirements for public water systems.

Table A-7: Minimum Operator Certification Requirements

Operator Type	Where Required, as a Minimum	DOC Systems
WDS	Responsible for the operation of Group A community or non-transient noncommunity water system with: • Population of 250 people of less	-
WDM 1	Responsible for the operation of Group A water system with: • Population greater than 250 people, or • A Class 1 purification plant rating or higher	CCCC, LCC, MLCC , MCCW, OCC, WCCW
WDM 2	Responsible for the operation of Group A water system with: • Population greater than 1,500 people, or • A Class 1 purification plant rating or higher	WCC
WTPO	Responsible for the operation of: • A purification plant with a Class 1 or higher, or • Any purification plant using complex filtration technology, or • Any unfiltered Group A surface water or GWI system with 100 or more services.	MLCC, MICC, WCC
CCS	Responsible for the system's cross-connection control program and inspection of premises served by the system.	All systems
BAT	Responsible for inspecting, testing, and monitoring backflow prevention assemblies.	All systems

(1) Source: WAC 246-292-050.

Current operators and certification levels for each facility are provided in Part B of this plan.

A5.1.3 Safety Training Requirements

The DOC safety training policies are detailed in a draft safety program manual written in 1994. Each individual facility is required to adopt programs to comply with the policies outlined in the manual. The policies include the following:

- Safety program policies including management of the agency safety program and vehicle safety.
- Risk management including accident prevention and safety program management.
- Loss control including claims management and performance analysis.
- Emergency procedure for the following:
  - Fatal/Multiple injury accidents
  - Life safety hazards
  - Fire and disaster planning
  - Earthquake survival
- Reference Sources.
- Special emphasis bulletins and memos for the following:
  - Flammable liquid container safety
  - Hazardous chemical safety
  - Emergency washing facilities
  - How to protect automotive maintenance staff from asbestos
  - Confined spaces

  - PVC pipe hazard alert
  - Video display terminals
  - Cleaning agents for electronic equipment screens
  - Sharps alert
  - Dust control

- Local policies and procedures

- Special emphasis programming for the following:
  - Division directive development
  - Modified duty/return to work program
  - Hepatitis B employee protection
  - First-aid and emergency medical treatment
  - DOC Safety Program Manual
  - Confined space entry written program
  - Hazardous/Dangerous waste management
  - Container management
  - Chemical hazard communication (HAZCOM)
  - Asbestos program
  - Respirator program
  - Fall protection plan for construction/maintenance workers
  - Employee tuberculosis program
  - Excellence in safety awards

A5.2 Routine and Preventative Maintenance

DOC facilities generally have established operations and maintenance plans and maintenance schedules, however personnel turnover and lack of staffing have impacted general preventative maintenance procedures. Maintenance is usually performed on an as-needed basis. It is recommended that all systems employ the following preventative maintenance procedures to preserve the value of the water system components and ensure that the systems can continue to operate efficiently.

A5.2.1 Reservoirs

Reservoir maintenance includes annual inspection of screens, vents, and overflows, as well as the repair of replacement of cracked or torn screens. The reservoir drain must be operated and reservoir run to overflow to ensure that these appurtenances are functioning properly. Reservoirs must be routinely drained, the interiors carefully examined, cleaned if necessary, and needed repairs made in order to extend the reservoir's useful life. Reservoir cleaning is recommended every 5 years.

A5.2.2 Distribution System Valves

Distribution system valves are to be exercised on an annual basis to prevent valve mechanisms from freezing up. A program to document repairs and maintenance of each valve is recommended.

A5.2.3 Fire Hydrants

Inspection, exercising, and flow testing of fire hydrants should be performed annually. A program to document repairs and maintenance of each hydrant is recommended.

A5.2.4 Dead-End Water Lines

Dead-end water lines are susceptible to water quality problems and are to be flushed quarterly to remove stagnant water, debris, and deposits.

A5.2.5 Pumps and Motors

The output of a pump is to be tested annually to monitor changes in performance. This can be done by reading the pump meters, running the pumps for several hours, followed by reading the meters again to determine total volume. The pressure at the pump outlet and the power draw in amps should be recorded at least once during the pump test.

A5.2.6 Meters

Water meter testing and calibration is to be performed every three years.

A5.2.7 Records

Records are to be made and retained in accordance with WAC 246-290-480. See Section A5.4 for details.

A5.2.8 Inventory of Repair Parts

An inventory of parts and supplies, including the appurtenances needed to make emergency repairs, is to be available at each facility. At a minimum, materials necessary to repair leaks for every size and type of pipe in the system and spare valves in sizes 8-inch and smaller should be available.

A5.2.9 Preventative Maintenance Schedule

Table A-8 provides a listing and schedule of normal maintenance and operation activities. The frequency listed is a minimum and the actual frequency is to be adjusted as necessary to meet system requirements.

Table A-8: Preventative Maintenance Schedule

Activity	Frequency
Flush dead end water lines	Quarterly
Thoroughly inspect reservoir screens, vents, and overflows. Repair as needed	Annually
Operate the reservoir drain and allow the reservoir drain and allow the reservoir to run to overflow to ensure appurtenances are functioning properly	Annually
Exercise distribution valves	Annually
Inspect and exercise fire hydrants	Annually
Test and calibrate meters	Every 3 years
Drain, inspect, and service reservoir interiors	Every 5 years
Pump performance test to measure output, pressure, and power draw	Annually
Paint fixtures for rust protection as needed	Variable

A5.2.10 Equipment, Supplies, and Chemical Listing

For typical Group A water systems, DOH suggests that an accurate and comprehensive materials inventory be kept at all times to prevent unnecessary system down time. This inventory typically includes the following:

- All equipment, supplies, and chemicals used by the water system.
- Service representatives for major system components and chemical suppliers.
- Manufacturer's technical specifications for major system components.
- Stock of supplies needed to assure continuous operation of the water system.

DOC facilities have much of this information on hand, in various formats.

A5.3 Emergency Response

The DOC-wide vulnerability analysis is provided here, followed by emergency chlorination procedures. Facility-specific call-up lists and contingency plans are provided in Part B of this plan. DOC is currently in the process of funding and developing an in-depth emergency/ climate change response plan.

A5.3.1 Vulnerability and Susceptibility Assessment

Table A-9 lists potential emergency situations and prevention measures to minimize disruption to service. The intention of this table is to provide a basis of emergency planning for DOC to follow. Mitigation and prevention measures are included in the table, along with DOC's current ability to provide such measures.

Table A-9: Vulnerability Assessment

Potential Emergency	Preventive measures	Current Mitigation Efforts
Water Quality		
Exceed bacteria MCL	Chlorination	Chlorination at all facilities, except MCCCW
Exceed VOC or SOC MCL	Source protection plan	Plans previously developed, or developed as a part of this plan
Major spill event near a well or within watershed	Spill control training, absorbent materials kept on-site	Several facilities have absorbent materials and have provided some level of training
Cross-connection related distribution system contamination	Effective cross-connection control program	Program documented as a part of this plan. Implementation underway at all facilities
Source		
Major power outage	Standby emergency power. Standby storage.	Each facility has standby storage. Most facilities have emergency power
Pump or motor failure	Ensure adequate replacements are available	Nearest vendor of pump/motor parts is known
Loss of source capacity	Routine groundwater level measurements at each source. Maintain pumping records	Water level measurements taken at some facilities where concerns have been notes. Pumping records maintained at all facilities.
Chlorination equipment breakdown	Keep supply of liquid sodium hypochlorite on hand. Monitor chlorine residual daily.	All facilities have means of chlorination, except MCCCW
Distribution, Storage, and Related Issues		
Water system contamination	Flushing and reservoir disinfection	All facilities perform varying degrees of system and hydrant flushing
Reservoir overfilling or underfilling	Reliable telemetry, routine inspection of reservoir	All reservoirs are to be inspected per the preventative maintenance program

A5.3.2 Emergency Chlorination Procedures

The procedure for emergency chlorination is to introduce liquid sodium hypochlorite into a reservoir. To achieve 0.5 ppm chlorine residual, one-third gallon of 12.5 percent sodium hypochlorite or one gallon of 5.25 percent sodium hypochlorite will adequately chlorinate 100,000 gallons of water. It will be necessary to monitor the water use and periodically introduce additional chlorine throughout the duration of an emergency.

A5.3.3 Trucked Water Procedures

Most DOC facilities include trucked water as a contingency measure in the event that on-site sources of supply become contaminated or are otherwise unavailable. This is due primarily to the remote locations of most facilities and the inability to obtain water from other purveyors. When trucked water is necessary, DOC will first consult with the appropriate DOH regional Office of Drinking Water to ensure proper steps are taken. DOH's trucked water guidelines are included in Appendix C12.

A5.4 Recordkeeping, Reporting, and Consumer Complaint Program

Recordkeeping and reporting shall meet the standards identified in WAC 246-290-480 and WAC 246-290-485.

A5.4.1 Record Keeping

Each facility maintains the following records:

- Bacteriological and turbidity analysis results (kept for five years). Chemical analysis records (kept for as long as the system is in operation). Records of daily or weekly source meter readings (kept for ten years). Other records of records of operation and analyses required by the DOH (kept for ten years). All records bear the signature of the operator in responsible charge of the water system or their representative. Systems keep these records available for inspection by DOH and send records to DOH if requested.
- Actual laboratory reports may be kept or data may be transferred to tabular summaries, provided the following information is included:
    - The date, place and time of sampling, and the name of the person collecting the sample.
    - Identification of the sample type (routine distribution system sample, repeat sample, source or finished water sample, of other special purpose sample.
    - Date of analysis.
    - Laboratory and person responsible for performing analysis.
    - The analytical method used.
    - The results of analysis.
- Records of action taken by the system to correct violations of primary drinking water standards.
- Copies of any written reports, summaries, or communications relating to comprehensive system evaluations of the system conducted by system personnel, by a consultant, or by any local, state, or federal agency shall be kept for ten years after completion of the evaluation.

- Copies of project reports, construction documents and related drawings, inspection reports and approvals shall be kept for the life of the facility.
- Where applicable, daily records including:
  - Chlorine residual
  - Turbidity
  - Source meter readings
  - Water treatment plant performance including but not limited to:
    - Type quantity of chemicals used
    - Amount of water treated
    - Results of analyses
  - Other information as specified by DOH.

A5.4.2 Reporting

DOC is required to provide periodic reports to DOH which summarize the results of water quality testing. If any maximum contaminant levels (MCLs) are exceeded, DOH must be notified in accordance with WAC 246-290-71001 through 246-290-71007.

DOH, through WAC 246-290-71001, has defined situations that require water purveyors to notify consumers and DOH of the circumstances and actions being taken to address certain acute issues. Violations and other situations are categorized into three tiers, detailed below:

Tier 1 (40 CFR 141.202 (a) Table 1)

a) Violation of the MCL for total coliforms when fecal coliform or E. coli are present in the system, or when there is a failure to test for fecal coliform or E. coli when required.

b) Violation of the MCL for nitrate, nitrite, or total nitrate and nitrite, or failure to perform required confirmation sampling.

c) Certain situations when there is a violation of the maximum residual disinfectant level (MRDL) for chlorine dioxide.

d) Certain situations when there is a violation of the turbidity MCL.

e) Certain situations when there is a violation of the Surface Water Treatment Rule, Interim Enhanced Surface Water Treatment Rule, or Long Term 1 Enhanced Surface Water Treatment Rule treatment technique requirement.

f) Occurrence of a waterborne disease outbreak or other waterborne emergency.

g) Other violations or situations with significant potential to have serious adverse effects on human health.

Tier 2 (40 CFR 141.203 (a) Table 1)

a) All MCL, MRDL, and treatment technique requirement violations, except those classified as Tier 1.

b) Violations of the monitoring and testing procedure requirements, where DOH determines that a Tier 2 notice is required rather than a Tier 3 notice.

c) Failure to comply with the terms and conditions of any variance or exemption in place.

Tier 3 (40 CFR 141.204 (a) Table 1)

a) Public notice shall be provided as soon as possible but no later than 24 hours after the system learns of the violation.

b) DOH shall be contacted as soon as possible but no later than 24 hours after the system learns of the violation.

c) At a minimum, one of the following forms of delivery is to be used:

   a. Broadcast media (radio, television)

   b. Conspicuous posting

   c. Hand delivery of notice

   d. Another method approved by DOH.

Public notification distribution requirements are set forth according to the Tier system. DOC utilizes the DOH public health advisory materials included in Appendix C11 as applicable, according to the requirements outlines in the Tier system. In general, the timing and manner of public notification is as follows:

Tier 1 (40 CFR 141.202 (b) and (c))

a) Public notice shall be provided as soon as possible but no later than 24 hours after the system learns of the violation.

b) DOH shall be contacted as soon as possible but no later than 24 hours after the system learns of the violation.

c) At a minimum, one of the following forms of delivery is to be used:

   a. Broadcast media (radio, television)

   b. Conspicuous posting

   c. Hand delivery of notice

   d. Another method approved by DOH

Tier 2 (40 CFR 141.203 (b) and (c))

a. Public notice shall be provided as soon as possible but no later than 30 days after the system learns of the violation.

b. The public notice must be repeated every three months as long as the violation or situation persists, unless DOH determines that another frequency is warranted.

c. At a minimum, the form of delivery must meet the following:

   a. Mail or direct delivery

   b. Any other method reasonably calculated to reach other persons regularly served by the system, such as publication in a local newspaper, posting in public places, etc.

Tier 3 (40 CFR 141.204 (b) and (c))

a) Public notice shall be provided no later than one year after the system learns of the violation or situation.

b) The public notice must be repeated every year as long as the violation or situation persists.

c) Instead of individual Tier 3 notices, an annual report may be used to detail all violation and situations that occurred during the year.

d) The form of delivery is to meet the same requirements as that for Tier 2 notices.

A5.4.3 DOH Addresses

CCCC, LCC, MCCCW, MLCC, OCC, and WCC report to the Southwest Regional Office of DOH at the following address:

Washington State Department of Health
Office of Drinking Water
Southwest Regional Office
P.O. Box 47823
Olympia, WA 98504-7823
(360) 236-3030

MICC and WCCW report to the Northwest Regional Office of DOH at the following address:

Washington State Department of Health
Office of Drinking Water
Northwest Regional Office
P.O. Box 47800, M/S:K17-12
Olympia, WA 98504
(253) 395-6750

Consumers shall relay concerns to facility staff. Staff are to relay concerns through the chain of command structure to ensure consumer concerns are addressed in a timely and meaningful manner.

A6 Cross-Connection Control Program

This section describes the DOC cross-connection control program established in the 2014 Water System Plan Draft. This program is based on the program developed for Larch Corrections Center in 2000. The program is applicable to all 8 DOC water systems. DOC will also implement these policies and procedures, where applicable, at the DOC facilities that purchase water from other purveyors. System-specific information is provided in Part B of this Plan.

A6.1 Purpose

The purpose of this program is to protect the water system from contamination due to cross-connections. This program has been developed by DOC to establish cross-connection policies, program guidelines, and requirements for installation, testing, and maintenance of approved backflow prevention assemblies.

Water purveyors are responsible for cross-connection control from the water supply source through the public water system and ending at the point of delivery to the consumer’s water system. Generally, DOC facilities have no boundary between consumer and owner, and the cross-connection control responsibility continues to the point of consumption. One exception to this concept is at locations where DOC supplies water to another agency or consumer. At some facilities, for example, DOC's public water system serves a Washington State Department of Natural Resources (DNR) building located on the campus. It is the policy of DOC to provide cross-connection control inspection for DNR facilities to the extent necessary to protect DOC's public water system. In most cases, DOC also performs assembly testing for assemblies serving such facilities. DOC will continue to evaluate DNR premises to determine the extent of cross-connections and provide oversight of any necessary cross-connection control corrections.

A6.2 Code Authority and Enforcement

DOC implemented a cross-connection control program for each facility in the 2014 Water System Plan Draft. This program includes elements as defined in RCW 70.54 and WAC 246-290-490.

A6.3 General Program Description

Any service connection to a DOC public water system shall not allow contaminants to backflow into the system via a backflow event or backpressure. Any existing or new connection that may cause backflow of any contaminants or pollutants into the water distribution system shall be discontinued and/or eliminated. Installation of a backflow prevention assembly shall be a condition of service and public water service will not be provided until the potential for backflow is either eliminated or corrected by installation of an appropriate backflow prevention assembly.

Each DOC facility shall have a staff person who is a certified cross-connection control specialist. This staff member shall be responsible for implementing the cross-connection control program at that location.

A6.4 Program Elements

DOH regulations mandate that DOC's cross-connection control program include certain minimum functions or elements. Those elements are prescribed in WAC 246-290-490(3). The following sections describe these elements and the procedures DOC uses or intends to use to implement them. Italicized text indicates the requirements based on language extracted from WAC 246-290-490.

A6.4.1 Element 1 – Establish Local Authority

Adopt an ordinance, code, or other legal instrument that:

- *Establishes DOC's legal authority to implement a cross-connection control program*
- *Describes the operating policies and technical provisions of the cross-connection control program*
- *Describes corrective actions available to DOC for use in ensuring that consumers comply with the cross-connection control program requirements.*

Section A6.2 provides the authority by which DOC has enacted and is implementing its program. Section A6.3 provides the general operating policies and technical provisions of the program.

A6.4.2 Enforcement of cross-connection control program policies is streamlined for these facilities, as DOC typically constitutes both the purveyor and consumer of water from DOC public water systems. Element 2 – Evaluate Service Connection Hazards

Develop and implement procedures and schedules for evaluating new and existing service connections to assess the degree of hazard each poses. Notify individual consumers of the results within a reasonable time frame.

At a minimum:

a. For new connections made on or after the effective date of these regulations, conduct initial evaluations before providing water service.

Any new service installation will be evaluated by both the DOC Cross-Connection Control Specialist and the applicable Local Administrative Authority. The Local Administrative Authority is the county Building Official or other authority responsible for implementation of the Uniform Plumbing Code (UPC). Coordination between the Cross-Connection Control Specialist and Local Administrative Authority regarding new connections will occur as follows.

The Local Administrative Authority will review plans and specifications for new buildings, and conduct an evaluation of the probability of cross-connections, availability of auxiliary water supply, and/or the handling of substances which, if introduced into the building's water supply, would constitute a health, plumbing, or system hazard.

The Cross-Connection Control Specialist will then conduct an evaluation of the probability of cross-connections posing a potential health hazard to the public water system. If deemed necessary, the Cross-Connection Control Specialist will require the appropriate backflow prevention assembly be installed during construction.

During the construction phase of any new building, structure, or ground installation, and during the plumbing inspection, the Local Administrative Authority or authorized designate will also perform the required cross-connection control inspection. Upon completion of the plumbing inspections, the Local Administrative Authority shall acknowledge compliance of the installation with the UPC, latest edition. The Cross-Connection Control Specialist will then complete the Cross-Connection Control Program Field Inspection form (see Appendix C-6, to document that a cross-connection control inspection has been made and to document the location of any and all backflow prevention assemblies and/or devices.

b. For existing connections made prior to the effective date of these regulations, conduct initial evaluations in accordance with a schedule acceptable to DOH.

A systematic program of inspection will be established for cross-connection control evaluations of existing buildings and structures at each DOC facility, with priority given to those installations that pose the greatest risk to public health. At many facilities, an initial evaluation has already been performed and is documented with lists of priority installations and installed backflow prevention assemblies located onsite.

For those facilities where an initial evaluation has not been performed, the Cross-Connection Control Specialist will evaluate all existing service connections. This inspection will be based on past records and knowledge of the water supply system and its operations. If as-built drawings of the plumbing system are not available, the Cross-Connection Control Specialist will sketch a field drawing of each line to its end point, noting any actual or potential cross-connections or any conditions that might tend to pollute the public water system.

Upon completion of the inspection, the Cross-Connection Control Specialist will prepare a report that notes whether any cross-connections were found, their location, and optional methods of control. All industrial fluids, chemicals, or other contaminating liquids used or pumped under pressure and their use shall be identified. All hazards will be categorized as High or Low Health Hazards, based upon the degree of threat the situation poses to public health, and the appropriate remedy noted.

If corrective action is deemed necessary by the Cross-Connection Control Specialist, the corrective action will be completed within sixty days of identification of the hazard. This time period may be shortened by the Cross-Connection Control Specialist depending on the degree of hazard involved. If the Cross-Connection Control Specialist determines that a serious threat to public health exists, water service to the premise shall be terminated immediately and notice posted. On the corrective action date, or as soon as the correction is completed, the Cross-Connection Control Specialist shall re-inspect any items that required corrective action and ensure that any backflow prevention assembly that is installed is tested by a certified Backflow Assembly Tester (BAT).

c. For all service connections, after an initial evaluation is completed, conduct reevaluations on a periodic basis, using a schedule applicable to DOH, and whenever there is a change in the use of the premises.

Existing water service lines and locations of existing backflow prevention assemblies are evaluated once every five years for any change of use, or other condition that may affect the potential for cross-connection contamination. Proposed changes or replacements of assemblies or devices will be recommended by the Cross-Connection Control Specialist at that time.

A6.4.3 Element 3 – Establish Procedures and Schedules

Develop and implement procedures and schedules to ensure that:

a. Cross-connections are eliminated if possible.

Elimination is the optimum remedy for cross-connections.

b. Cross-connections that cannot be eliminated are controlled by approved backflow prevention assemblies appropriate to the assessed degrees of hazard.

In cases where elimination is not feasible from a mechanical or economic standpoint, the Cross-Connection Control Specialist uses the criteria and procedures detailed in Element 2 above to determine the appropriate backflow prevention for a given water service connection. For resulting installations, the Cross-Connection Control Specialist ensures that the selected type of backflow assembly meets the minimum specifications found in DOH regulations (WAC 246-290-490 (4)(a)(ii) Table 12). Table A-10 summarizes these minimum specifications.

Table A-10: Appropriate Methods of Backflow Protection for Cross-Connection Isolation

Degree of Hazard	Application Condition	Appropriate Approved Backflow Preventer [1]
High health cross-connection hazard	Backsiphonage or backpressure backflow	AG, RPBA, or RPDA

Low health cross-connection hazard	Backsiphonage or backpressure backflow	AG, RPBA, RPDA, DCVA, or DCDA

(1) Definitions:
AG approved air gap
DCDA double check detector assembly
DCVA double check valve assembly
RPBA reduced pressure backflow assembly
RPDA reduced pressure detector assembly

WAC 246-290-490 further mandates that certain categories of properties or facilities install reduced pressure backflow assemblies (RPBA) or air gaps (AG) at the service connection appropriate to protect DOC's public water system from the actual or potential degree of hazard. The core list of such categories is listed in Table 13 of WAC 246-290-490 (4) (b). A subset of this list representing activities most likely found at a DOC facility is provided in Table A-11. Thus, DOC water customers or facilities having a premise or process listed in Table A-11 or Table 13 of WAC 246-290-490 (4) (b) must install and maintain an approved AG or an approved RPBA at the customer end of the service connection, prior to any branch connections.

Table A-11: High Health Cross-Connection Hazards Requiring Premises Isolation Utilizing an AG or RPBA (1)
Agricultural (farms and dairies)
Car washes
Food Processing Plants
Hospitals, Medical/Dental Clinics
Laboratories
Metal Plating Industries
Commercial Laundries
Petroleum Processing or Storage Plants
Piers and Docks
Irrigation systems with Chemical Additions
Wastewater Lift Stations and Pumping Stations
Wastewater Treatment Plants

(1) Extracted from WAC 246-290-490 (4) (b) Table 13

c. *Approved backflow prevention assemblies are selected and installed in accordance with WAC 2460290-490 (6).*

DOC requires that all backflow prevention assemblies be selected and installed in accordance with the current edition of the *Cross-Connection Control Manual, Accepted Procedure and Practice*, published by the Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association, referred to as the Manual.

The following paragraphs provide further clarification as to minimum installation requirements, based on information in the Manual. If there is any disagreement between these minimum requirements and those listed elsewhere in the current edition of the Manual, the more restrictive shall govern. The premises isolation requirement may be waived or reduced for certain facilities, providing the Cross-Connection Control Specialist has justified and documented this decision.

Minimum Requirements – Reduced Pressure Backflow Assemblies

(1) Premises on which hazardous materials are handled shall be required to have an approved reduced pressure backflow assembly installed at the service connection.

(2) Premises having an auxiliary water supply with internal cross-connections that are not correctable or intricate plumbing arrangements which make it impractical to ascertain whether or not cross-connection exist, shall be required to have an approved reduced pressure backflow assembly installed at the service connection.

Minimum Requirements – Double Check Valve Assemblies

(1) Premises which handle a substance that is objectionable, although not a health hazard, in a manner constituting a potential cross-connection, shall be required to have an approved double check valve assembly installed at the service connection.

(2) Premises which have an auxiliary water supply with no known cross-connections shall be required to have an approved double check valve assembly installed at the service connection.

(3) Premises on which any substance that is not a health hazard but is under pressure so as to enable entry into the public water system or where a cross-connection could reasonably be expected to be present, shall be required to have an approved double check valve assembly installed at the service connection.

(4) Premises which have a repeated history of cross-connections being established or re-established, shall be required to have an approved double check valve assembly installed at the service connection

Minimum Requirements – Fire Protection Systems

(1) Premises having a fire protection system where no chemicals are allowed to be used shall be required to have an approved double check valve assembly or approved double check detector assembly installed at the fire service connection.

(2) Premises having a fire protection system with chemical addition or using an unapproved auxiliary water supply, shall be required to have a reduced pressure backflow assembly or reduced pressure detector assembly installed at the fire service connection.

Minimum Requirements – Irrigation Systems

(1) Premises having an irrigation system where chemicals or herbicides are allowed to be used shall be required to have an approved reduced pressure backflow assembly installed at the service connection.

(2) Premises having an irrigation system which is subject to flooding, backpressure, elevated piping or where compressed air is allowed to be used shall be required to have an approved double check valve assembly installed at the service connection.

(3) Premises having an irrigation system which does not fall into one of the prior two categories shall be required to have an approved pressure vacuum breaker assembly or double check valve assembly installed on the system.

A6.4.4 Element 4 – Utilize Qualified Cross-Connection Specialists

DOC must ensure that qualified personnel are available to develop and implement the program. The personnel provided must include at least one individual who holds DOH certification as a Cross-Connection Control Specialist.

Per WAC 246-292, a certified Cross-Connection Control Specialist is required to have a minimum of 12 years of education and six months of practical experience in performing hands-on duties associated with cross-connection evaluation and control.

Each facility shall have a certified Cross-Connection Control Specialist to implement the program.

A6.4.5 Element 5 – Establish Testing and Inspection Procedures

Develop and implement procedures to ensure that approved backflow prevention assemblies are inspected and/or tested in accordance with WAC 246-290-490(7).

Minimum requirements for the installation and testing of all backflow prevention assemblies shall be in accordance with the Manual, adopted by reference herein. All DOC Cross-Connection Control Specialist certified staff shall retain a copy of the latest edition of the Manual, for use in implementation of the program.

All backflow prevention assemblies shall be installed at a location that is easily accessible for inspection and testing. Assemblies located in vaults shall have adequate clearances and depths to allow the Cross-Connection Control Specialist and BAT reasonable access. Assemblies that cannot be easily and readily inspected shall be relocated and re-plumbed as necessary to assist in their inspection and testing.

All bypass lines parallel to a line on which a backflow prevention assembly is installed shall have an approved assembly installed that is equal in type to the assembly required for the main line.

All backflow prevention assemblies are to be tested on an annual basis. All backflow prevention assembly testing shall be recorded using the test report form located in Appendix C8. Completed test reports must be filed by the BAT within sixty days of completing the test.

A6.4.6 Element 6 – Establish a Quality Assurance Program for Testing

Develop and implement a quality assurance program for testing backflow prevention assemblies. The program must include documentation of tester certification and test kit calibration, test report content, and schedules for submitting test reports.

Testing of backflow prevention assemblies must be conducted by a certified BAT. A BAT-certified DOC staff person can perform this function, or the service can be contracted with a certified BAT. When the latter approach is used, DOC employs an internet-based resource as its primary tool for ensuring only certified BATs are hired. The Department of Health (DOH), Office of Drinking Water, has authorized Washington Certification Services at Green River College to maintain a list of certified Backflow Assembly Testers (BAT) that may provide testing services to the public. The resource is located at https://instruction.greenriver.edu/wacertservices/. A list of certified BATs may be accessed by selecting “Hire a BAT” link on the homepage. It is on this page that updated lists of currently certified BATs may be viewed by County or by individual BAT name.

DOC requires that all contracted BATs maintain proof of current certification and provide proof of current calibration tests for test equipment.

A6.4.7 Element 7 – Establish Incident Response Procedures

Develop and be prepared to implement procedures for responding to backflow incidents.

In the event that a backflow incident is known to have occurred, or it is probable that one has taken place, certain precautions are necessary to protect public health. The Cross-Connection Control Specialist will be responsible for coordinating the response to a backflow incident. Procedures will vary according to facility, but will include at a minimum:

- Aiding persons affected and contacting emergency agencies for their assistance.
- Determining the source and cause of the backflow.
- Determining the extent of contamination.
- Collection of bacteriological and chemical samples, depending on the nature of the known or suspected incident.
- Issuing a warning to potentially affected persons and/or posting of affected areas of the water system.
- Providing an alternative source of potable water from an approved public water supply source or bottled water as necessary.
- Decontamination, flushing, and disinfection of affected areas within the water distribution system.
- Testing of any backflow assemblies involved.
- Contacting or reporting to governmental agencies having jurisdiction (such as DOH, Labor and Industries, local health jurisdictions, etc.) prior to 5:00 pm of the next business day following the incident.
- Documenting the incident on the proper report forms.

A6.4.8 Element 8 – Implement Consumer Education

Incorporate information on cross-connection control into DOC's existing consumer education program.

DOC will distribute information to facility staff and representatives of other agencies that obtain water from DOC systems (e.g., DNR) regarding DOC's cross-connection control program. This will also include notices regarding proper use of irrigation systems, fire sprinkler systems, and any health hazards associated with the use of hose connections, utility sinks, and other potential backflow situations.

In those situations where Consumer Confidence Reports are developed (e.g., for McNeil Island Corrections Center), program information will be included in the Consumer Confidence Reports, informing staff, residents, and other Consumer Confidence Report recipients of the DOC program and informing customers of the public health implications of cross-connections.

A6.4.9 Element 9 – Maintain Program Records

Develop and maintain cross-connection control program records including:

a. A master list of service connections and/or premises where backflow prevention assemblies are installed, the assessed hazard level for each location, and the type of assembly required and/or installed at each location

b. Inventory information on:

- *Approved air gaps installed in lieu of approved assemblies, including exact location, assessed degree of hazard, history of health hazard evaluations, installation date, and inspection history (identify dates, results, and inspectors)*
- *Approved backflow prevention assemblies including exact location, description (type, manufacturer, model, size, and serial number), assessed degree of hazard, history of health hazard evaluations, installation date, and inspection history (identify dates, tests performed, test results, assembly repairs, and inspectors)*
- *Approved atmospheric vacuum breakers used for irrigation systems including exact location, description (manufacturer, model, and size), installation date, and inspection history (identify dates, results, and inspectors)*

A critical program element is the maintenance of accurate records. Each DOC facility shall retain a list of installed backflow preventer information, including for each installation the information listed above.

The level of detail regarding assembly inventories varies by DOC facility. Descriptions of the inventories are provided in Part B of this plan. Where inventory information is limited or of a minimal nature, the Cross-Connection Control Specialist will work to develop more detailed information. These inventories are retained onsite at each facility.

c. Cross-Connection Control Program summary reports and backflow incident reports required by WAC 246-290-490(8).

Each DOC facility shall maintain a copy of an annual summary report of activities associated with the cross-connection control program, as well as copies of backflow incident reports.

A6.4.10 Element 10 – Satisfy Reclaimed Water Requirements

Purveyors who distribute and/or have facilities that receive reclaimed water within their service area shall meet any additional cross-connection control requirements imposed by the DOH by obtaining a permit issued in accordance with Chapter 90.46 of the Revised Code of Washington.

Some DOC facilities utilize reclaimed water generated at their own wastewater treatment plants for various non-potable purposes (mainly wastewater treatment plant wash-down, maintenance, and landscape irrigation). In these instances, the Cross-Connection Control Specialist shall verify that the proper cross-connection controls have been made and the appropriate backflow prevention assemblies are in place.

A6.5 Definitions

The following are common terms used in cross-connection control.

Air Gap (AG) – A physical separation between the free-flowing end of a potable water supply pipeline and overflow rim of an open or nonpressurized vessel. A DOH-approved AG must be at least twice the diameter of the supply piping measured vertically from the overflow rim of the receiving vessel, and in no case less than one inch, when unaffected by vertical surfaces (sidewalls).

Approved Backflow Prevention Device – Any assembly used to prevent backflow has been approved for use by the DOH. Approved assemblies shall be those that have successfully passed performance tests of the University of Southern California Engineering Center or other testing laboratories so approved.

Atmospheric Vacuum Breaker - Shall mean a backflow preventive assembly which is operated by atmospheric pressure in combination with the force of gravity. The unit is so designed to work on a vertical plane only. The moving part consists of a poppet valve which must be carefully sized to slide in a guided chamber and effectively shut off the reverse flow of water when a negative pressure exists in the supply system. They are designed to protect against back siphonage events only.

Backflow – A flow in reverse from the normal direction of flow in a piping system. It occurs due to a differential pressure existing between two points within a continuous fluid system (i.e., fluid flowing from higher pressure to an area of lower pressure). Backflow may occur due to either backpressure or “backsiphonage.”

Backpressure - May cause a backflow to occur when the potable supply piping is connected to a system or fixture which exceeds the operating pressure of the supply piping. The higher pressure can be caused by booster pumps, well pumps, boilers, pressure vessels, or elevated piping, such as high rise buildings or tanks, or homes which are 30 feet or more above the service connection.

Backsiphonage – Caused by negative pressure in the supply piping. Some common causes of backsiphonage are:

- High velocities in pipelines.
- Line repair or break that is lower than a service point.
- Lowered main pressure due to high water withdrawal rates such as during fire fighting or water main flushing.
- Reduced supply pressure on the suction side of a booster pump.

Cross-Connection – Any actual or potential physical connection between a potable water line and any pipe, vessel, or machine which contains, or has the possibility of containing, a non-potable fluid, solid, or gas, such that it is possible for the non-potable fluid, solid, or gas to enter the potable water system via backflow.

Double Check Valve Assembly (DCVA) – An assembly composed of two single, independently acting, approved check valves, including tightly closing shut-off valves located at each end of the assembly and suitable connections for testing the water tightness of each check valve. DCVAs protect the water system from both back siphonage and back pressure events. They are not suitable for use in protecting the water system from health threatening substances.

Double Check Valve Detector Assembly (DCDA) - An assembly composed of two single, independently acting, approved check valves, including tightly closing shut-off valves located at each end of the assembly and suitable connections for testing the water tightness of each check valve. A factory installed bypass feature shall also be provided to monitor low flows on low hazard fire systems. It is used to detect unauthorized use of the water allocated for fire protection and/or to detect leaks in the fire system. DCDAs protect the water system from both back siphonage and back pressure events. They are not suitable for use in protecting the water system from health threatening substances.

Potable Water - Water that meets DOH drinking water standards.

Premise Isolation – The prevention of backflow into a public water system from a user's premises by installation of a suitable backflow preventer on the user's primary service connection or on the user's side-stream (branch) connections that are dedicated to residential fire sprinkler or landscape irrigation systems.

Pressure Vacuum Breaker Assembly – An assembly consisting of a spring loaded check valve (3-inch diameter and larger pipes consists of two spring loaded check valves), an independently operating air inlet valve, inlet and discharge shut-off valves, and properly installed test cocks. The air inlet valve is internally loaded to the open position, normally by means of a spring. This internal loading allows the device to be installed on the pressure side of a shut-off valve. They are designed to protect against back siphonage only.

Reduced Pressure Backflow Assembly (RPBA) – An assembly consisting of a minimum of two independently acting approved check valves, and an automatically operated pressure differential relief valve located between the check valves. During normal flow, the pressure between the check valves shall be less than the upstream (supply) pressure. In case either check valve leaks, the differential relief valve, by discharging to the atmosphere, shall operate to maintain a pressure not less than 2 pounds per square inch between the supply pressure and the zone between the check valves. The unit must include tightly closing shut-off valves located at each end of the assembly, and each assembly shall be fitted with properly located test cocks.

Reduced Pressure Detector Assembly – An assembly consisting of two approved RPBAs, set in parallel, equipped with a meter on the bypass line to detect small amounts of water leakage or use. This unit must be purchased as a complete assembly.

A7 Capital Improvement Program

This section provides a summary of the capital improvement program (CIP) developed for the DOC facilities. Projects and their costs are presented, followed by a brief discussion of DOC's financial program.

A7.1 Improvement Prioritization

Improvement projects have been developed for the eight facilities, based on analyses presented in Part B of this water system plan. Details regarding the projects at each facility are provided in Part B. Table A-12 presents a summary of the projects and their costs, purpose, and priority. Those projects given a priority ranking of "1" are of highest priority.

The CIP does not include the operations and maintenance budgets developed for each facility. The purpose of the CIP is to identify larger scale projects for which dedicated funds are required.

A7.2 Financial Program

The implementation of DOC's water system CIP is contingent upon the state budget developed on a biennial schedule. Every two years, DOC is provided a new budget with which to fund improvement such as these. DOC will include these projects in their budget requests. However, it is noted that there is uncertainty as to what funds DOC will have available for these types of projects, since the budget is ultimately decided upon by the Legislature and is subject to changes prior to being approved.

Table A-12: Summary of DOC Water System Capital Improvement Projects 2024-2034				
Project Code[(1)]	**Description[(2)]**	**Cost**	**Purpose[(3)]**	**Priority Ranking[(4)]**
Cedar Creek Corrections Center				
CCCC - 1	Annual Renewal & Replacement	$300,000	OP	1
CCCC - 2	Booster Pump Replacement	$5,000	OP	1
CCCC – 3	New Well	$102,000	OP	1
CCCC - 4	New Storage Reservoir	$300,000	OP	1
CCCC - 5	Upsize Distribution Mains	$1,500,000	H/S	1
CCCC - 6	Water Level Sensor	$5,000	OP	2
CCCC - 7	Automated Pump Configuration	$20,000	OP	2
CCCC - 8	Leak Detection Survey	$10,000	OP	2
Subtotal - CCCC		**$2,242,000**		
Larch Corrections Center				
LCC - 1	Annual Renewal & Replacement	$250,000	OP	1
LCC - 2	Calibrate Water Meters	$15,000	OP	1
Subtotal - LCC		**$265,000**		
Maple Lane Corrections Center				
MLCC - 1	Annual Renewal & Replacement	$350,000	OP	1
MLCC - 2	Distribution System Metering	$25,000	OP	1
MLCC - 3	Upsize Distribution Mains	$1,242,000	OP	1
MLCC – 4	Pump Station Improvement	$29,000	OP	2
MLCC - 5	Water Level Sensor	$4,000	OP	2
MLCC - 6	Chlorine Meter	$1,000	OP	2
Subtotal - MLCC		**$1,651,000**		
McNeil Island Corrections Center				
MICC - 1	Annual Renewal & Replacement	$500,000	OP	1
MICC - 2	Distribution System Metering	$25,000	OP	1
MICC - 3	Water Loss Control	$200,0000	OP	1
Subtotal - MICC		**$525,000**		
Mission Creek Corrections Center for Women				
MCCCW – 1	Annual Renewal & Replacement	$250,000	OP	1
MCCCW – 2	Distribution System Metering	$5,000	OP	1
MCCCW – 3	Supplemental Water Rights Application	$12,500	OP	2
MCCCW – 4	Water Loss Control	$200,000	H/S	2
MCCCW – 5	Lead Pipe Survey	$5,000	OP	1
MCCCW – 6	Air-Gap Installation	$10,000	OP	1
MCCCW – 7	New Water Storage Tank	$200,000		
Subtotal - MCCCW		**$682,500**		
Olympic Corrections Center				
OCC - 1	Annual Renewal & Replacement	$250,000	OP	1
OCC - 2	Water Loss Control	$20,000	OP	1
OCC - 3	Transmission Line Repair	$500,000	OP	1
Subtotal - OCC		**$770,000**		
Washington Corrections Center				
WCC - 1	Annual Renewal & Replacement	$350,000	OP	1
WCC - 2	Well Pump Replacement	$20,000	OP	1
WCC – 3	Upsize Distribution Mains	$1,480,000	OP	1
WCC - 4	Reservoir Painting	$250,000	OP	2
Subtotal - WCC		**$2,100,000**		
Washington Correction Center for Women				
WCCW - 1	Annual Renewal & Replacement	$350,000	OP	1
WCCW -2	New Well Installation	$12,700	OP	2
WCCW -3	New Booster Pump	$10,000	OP	
Subtotal - WCCW		**$372,700**		
DOC Total		**$8,608,200**		

(1) See Part B of the WSP for details regarding each project.

(2) Annual renewal and replacement costs are presented as total costs over the 10-year planning period, not as annual costs
(3) H/S = Health/Safety, OP = Operational, G = Growth
(4) “1” = High Priority, “2” = Moderate Priority

Section B1

Cedar Creek Corrections Center

CONTENTS

TABLES

EXHIBITS

1 Description of Water System

1.1 Ownership and Management

The Cedar Creek Corrections Center (CCCC) water system is owned and operated by the Washington State Department of Corrections (DOC) and is a type ST ownership. An operator oversees the daily operations of the water system. Contact information for relevant water system personnel is identified in Table B1-1 below.

Table B1-1: Water System Contacts

	Name	Address	Phone Number
Owner	Cedar Creek Corrections Center	12200 Bordeaux Rd. SW Little Rock, WA 98556	(360) 664-0718
Water System Manager	Larry Vene	PO Box 37 Little Rock, WA 98556	(360) 490-9866

1.2 System History and Background

CCCC is located approximately seven miles west of Littlerock in Thurston County. It is located on a remote site on Department of Natural Resources (DNR) property within the Capital State Forest. The site is leased from DNR the by the Washington State DOC and is under shared use by the two departments. The facility was originally opened by DNR in the 1930s and became a juvenile detention facility in 1955. Currently, the facility houses 480 male residents and employs 159 staff. The majority of the water system features were constructed in the 1960s. See Section 3.1 for a detailed inventory of water system assets.

The existing structures on the site are clustered into three general areas:

- Main facility area, which includes the following:
  - Alpine Barracks
  - Cascade Barracks
  - Dormitory
  - Clinic
  - Aid Station
  - Dining Hall
  - Visitors Center
  - Administration
  - DNR White House
  - Warehouse
  - DNR Tree Cooler
  - Sawmill
- Timberline area, which includes:
  - Timberline Building
  - Commissary and Business Office
  - Gymnasium
  - Maintenance Shop
- Wastewater Treatment Plant

Exhibit B1-1 provides a location map of the facility.

1.3 Related Plans

Thurston County has a comprehensive plan that includes policies regarding drinking water service within urban growth areas. Because Cedar Creek is not located within an urban growth boundary, it is not included within the County's comprehensive plan.

As a part of the upper Chehalis River Basin within Water Resource Inventory Area (WRIA) 23, the Cedar Creek water system is subject to the requirements and recommendations in the Watershed Management Plan for the WRIA. Included in the Watershed Management Plan is the Chehalis Watershed (WRIA 22/23) Response to 2018 Streamflow Restoration Law, which outlines groundwater withdraw impacts on streams in the area and identifies anticipated growth in the inventory area.

1.4 Service Area, Maps, and Land Use

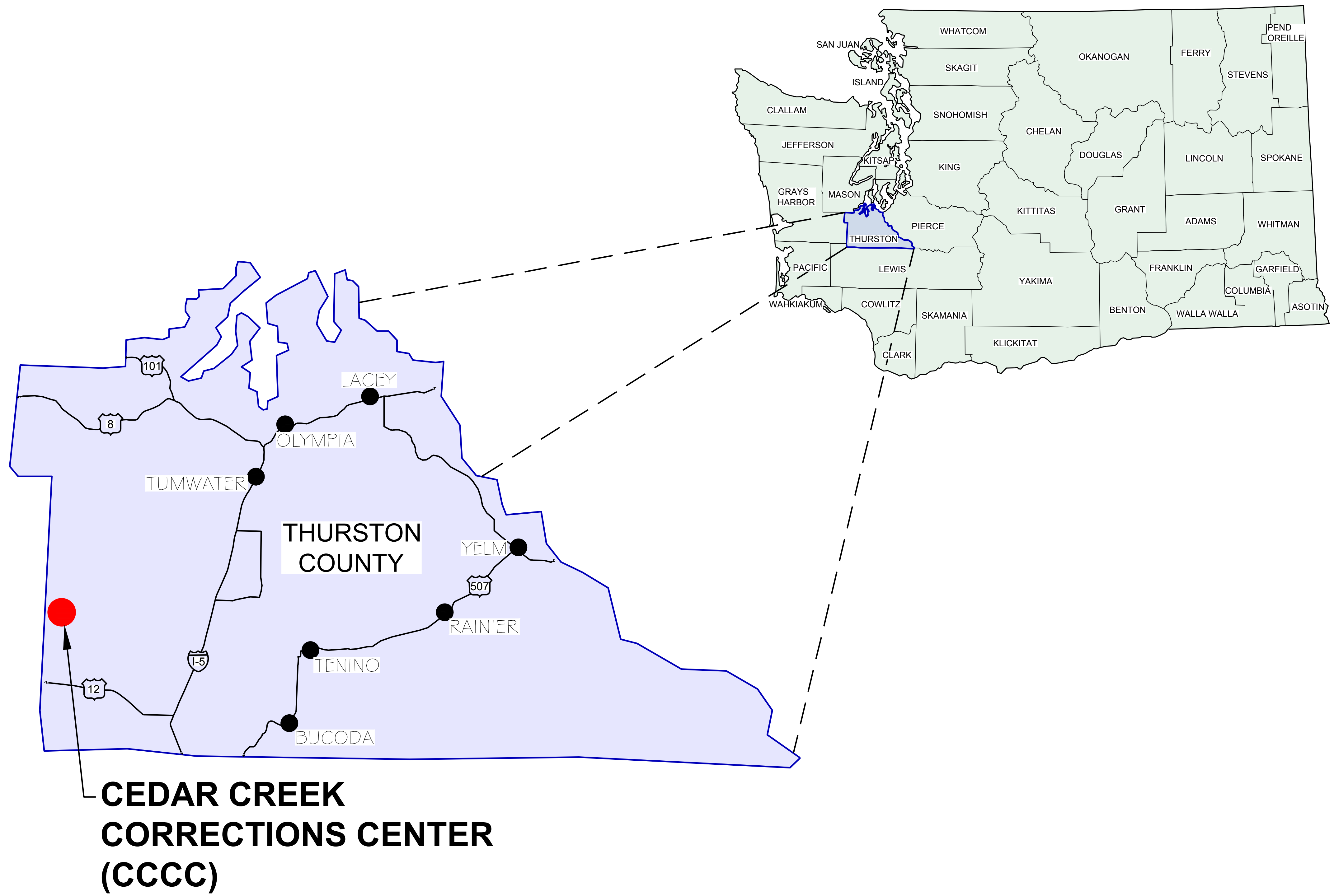
Cedar Creek's water service area includes the facility grounds and is generally bounded by the property lines. The facility serves DNR and wastewater treatment facilities that extend beyond the property. Exhibit B1-2 provides a map of the water service area. Exhibit B1-3 shows a map of the water system features for Cedar Creek.

1.5 System Description

CCCC pumps water from Well No. 2 and No. 3 to the Well No. 2 well house where the water is blended and chlorinated. Well No. 1 has been taken offline and has not been in use since 2007, though it is still functional and can be used as an emergency source if necessary. Pumps in wells No. 2 and 3 operate based on water levels in the lower in-ground reservoirs. Water is pumped from the in-ground reservoirs to a concrete standpipe reservoir located at a higher elevation via a booster pump, which is operated manually. The Cedar Creek water system is gravity-fed from the upper standpipe reservoir.

EXHIBIT B1-1

CEDAR CREEK CORRECTIONS CENTER - VICINITY MAP



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DOC WATER SYSTEM PLAN UPDATE

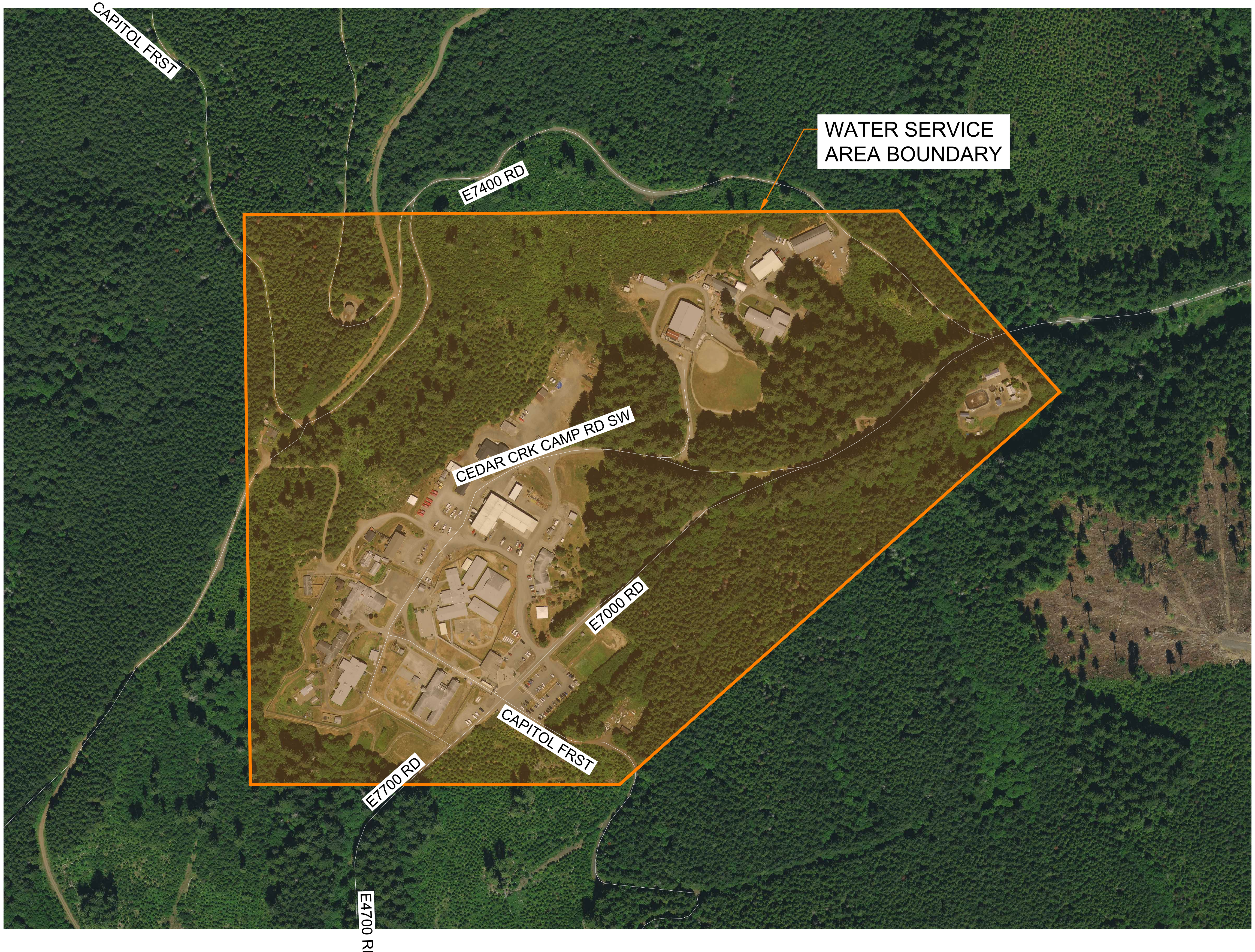
CEDAR CREEK CORRECTIONS CENTER - VICINITY MAP

EXHIBIT

B1-1

EXHIBIT B1-2

CEDAR CREEK CORRECTIONS CENTER - WATER SERVICE AREA



LEGEND

WATER SERVICE AREA BOUNDARY

0 375' 750'
SCALE

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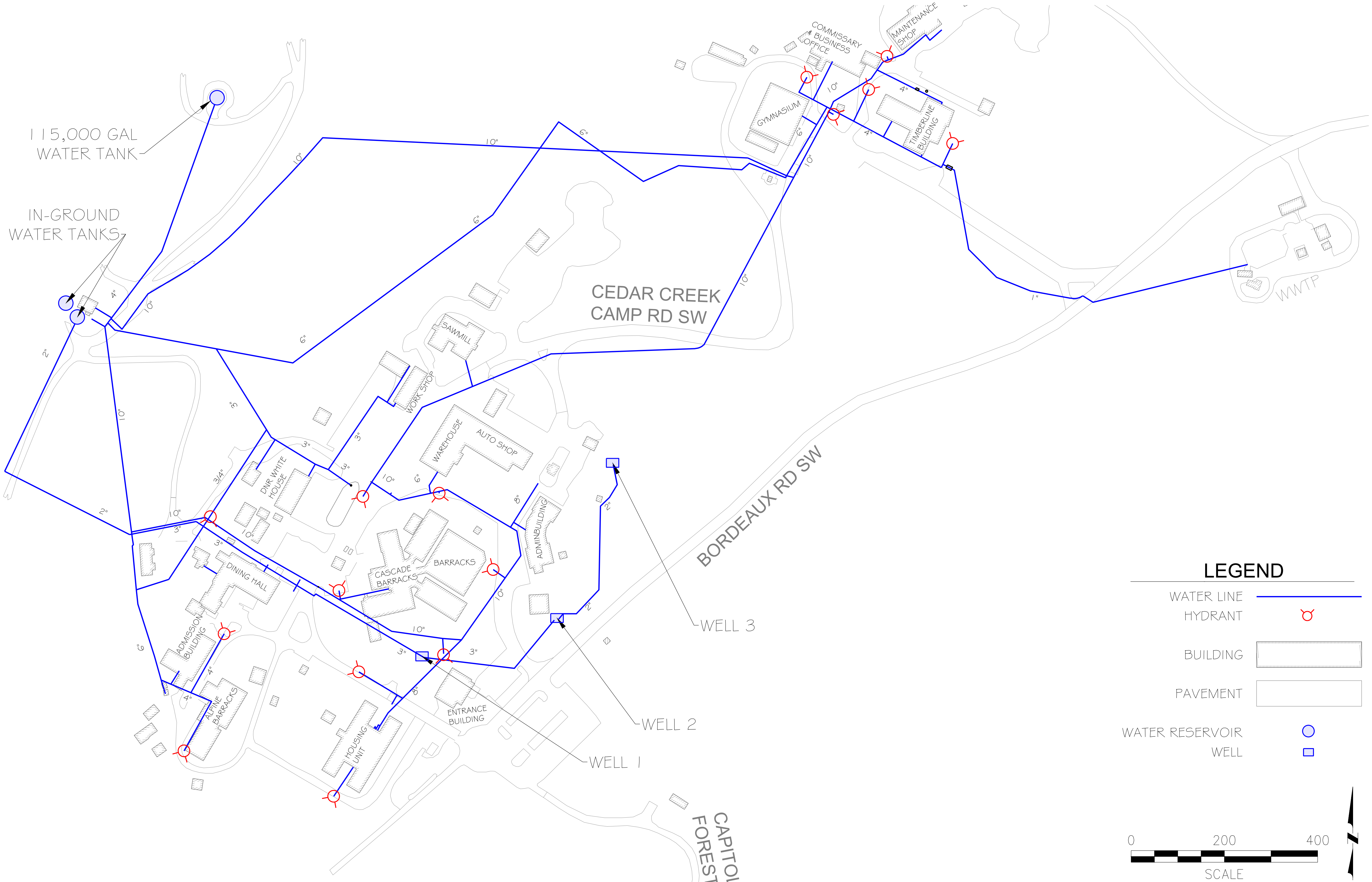
DOC WATER SYSTEM PLAN UPDATE

CCCC - WATER SERVICE AREA

EXHIBIT
B1-2

EXHIBIT B1-3

CEDAR CREEK CORRECTIONS CENTER - WATER SYSTEM LAYOUT



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SCALE: 1" = 250'

DOC WATER SYSTEM PLAN UPDATE

CCCC WATER SYSTEM LAYOUT

EXHIBIT

B1-3

2 Basic Planning Data

2.1 Current Population

There are currently 20 buildings served by the Cedar Creek Corrections Center water system. There are 271 approved service connections at the facility. There are currently 480 residents and 115 employees at CCCC. The number of temporary and transient users is 700 visitors a month.

Table B1-2 shows a summarization of the population.

Table B1-2: Population	
Population Type	**Population**
Full-Time Residential	480
Non-Residential	115
Temporary	700
Total	1,295

2.2 Water Production and Usage

This system does not have customer classes or rates. Table B1-3 shows the monthly and annual totals for source production and water use. Monthly production and consumption rates are calculated from available well and water meter readings for 2020 through 2022 (See Appendix C13). Annual rates are calculated as twelve months of average monthly production or consumption, respectively.

Table B1-3: Water Production and Usage (2020 - 2022)		
Source	Average Monthly Production (gal)	Annual Production (gal)
Wells	1,454,770	17,457,238
Use	Average Monthly Consumption (gal)	Annual Consumption (gal)
Total	1,192,916	14,314,996

2.3 Water Supply Characteristics

Two wells, Well No. 2 and No. 3, located approximately 300 feet apart from each other at the facility provide all water used by the institution. Well No. 1, which is located within the same wellfield, is an emergency source only used if the other wells are not in use. CCCC is located near Cedar Creek and Mill Creek in the Upper Chehalis WRIA.

2.4 Water Supply Reliability Evaluation

Originally noted in the *Cedar Creek Corrections Center Utility Expansion Cost Evaluation* from 2004, the static and pumping water levels in the wells have declined since initial construction. This issue has been noted among other well owners that utilize basalt zones in the Black Hills area. It has been noted in previous water plans that the Black Hills basalt aquifer recharges slower than it depletes. Well No. 3 was drilled to support the facility’s water needs. DOC may develop new sources of water off-site to provide a more sustainable supply in the future.

See Section 5.1.5 for CCCC’s water supply contingency plan.

2.5 Future Population Projections and Land Use

The current population is 480 and is expected to remain constant for the next 10 years. DOC has no capital improvement projects scheduled to add buildings or services to the system.

2.6 Future Water Demand

Table B1-4 summarizes the 2024 and projected 2034, and 2044 residential population and water demand.

Table B1-4: Water Demand Forecast			
Year	2024 (1)	2034	2044
Resident Population	480	480	480
Average Day Demand (gpd)			
Facility	55,238	55,238	55,238
Per Resident	115	115	115
Maximum Day Demand (gpd)			
Facility	90,150	90,150	90,150
Per Resident	188	188	188
Peak Hour Demand (gpm)			
Facility	147	147	147

(1) 2024 Demand is the average of 2020-2022 data.

3 System Analysis and Asset Management

3.1 Asset Management – Asset Inventory and Analysis

3.1.1 Asset Inventory

Table B1-5 shows the water system assets of Cedar Corrections Center.

Table B1-5: Asset Inventory			
Asset	**Description**	**Capacity/ Size**	**Year Built**
Well No. 1	Depth = 200 feet 7.5 hp pump Emergency Supply	50 gpm	1986
Well No. 2	Depth = 200 feet 5 hp pump	35 gpm	1993
Well No. 3	Depth = 402 feet 12 hp pump	50 gpm	2006
Treatment Process	Chlorination	-	-
Concrete Reservoir	Concrete	115,000 gal	1992
In-ground Storage Tank		16,000 gal	1965
In-ground Storage Tank		42,000 gal	1965
Booster Pump	7.5 hp	120 gpm	Replaced 2014
Distribution Pipe	AC	2 – 10 inch	
Distribution Pipe	PVC	2 – 10 inch	
Distribution Pipe	Steel	2 – 10 inch	

3.1.2 Asset Condition & Criticality

The two in-ground storage tanks have noticeable water damage to their lids. These tanks were constructed in 1965 and are nearing the end of their useful life. The low booster pump requires re-priming after every use. The above-ground tank does not have telemetry for water level within the tank, and the pumps are manually operated.

Remaining useful life and condition are general and applied to the full inventory of the asset identified. Considering the age of the assets, there may be isolated locations of poor conditions due to joint separation caused from tree roots or settlement, however there are not any known or expected failures.

Table B1-6 details the condition of the water system assets.

Table B1-6: Asset Condition

Component	Units	# of Units	Remaining Useful Life	Condition	Replacement Cost
Distribution System Inventory					
10” PVC	LF	5,747	~30-50 years	Good	
8” DI	LF	543	~30-50 years	Good	
6” AC	LF	2,090	~20-40 years	Good	
4” AC	LF	1,319	~20-40 years	Good	
Raw & Finished Storage Inventory					
In-ground tanks (2)	gal (combined)	58,000	Installed 1965	Deteriorating Exterior	$400,000
In Ground Tank Pump	gpm	120	Replaced 2014	Good	$20,000
Ground-level tank	gal	115,000	Installed 1992	Good	$300,000
Source Pump Inventory					
Well No. 1 Pump	gpm	50	10+ years w/ maintenance.	Functional	$10,000
Well No. 2 Pump	gpm	35	10+ years w/ maintenance.	Functional	$10,000
Well No. 3 Pump	gpm	50	10+ years w/ maintenance.	Functional	$10,000

3.2 Water Quality

Table B1-7 details the water quality monitoring requirements at CCCC. Coliform is tested monthly, has a monitoring population of 639, and requires one routine sample a month. The facility has maintained compliance with water quality regulations.

Table B1-7: Water Quality Monitoring Schedule			
Test Panel	**# of Samples Required**	**Frequency**	**Next Sample Due**
Coliform	1	monthly	
Chemical Monitoring			
Lead & Copper	10	3 year	Jul 2023
Asbestos	0	9 year	
Total Trihalomethane (THM)	1	1 year	Aug 2023
Halo-Acetic Acids	1	1 year	Aug 2023
Source Monitoring – Well #2			
Nitrate	1	1 year	May 2024
Complete Inorganic	1	9 year	May 2027
Volatile Organics	1	6 year	May 2024
Herbicides	1	9 year	May 2030
Pesticides	0	3 year	
PFAs	1	3 year	Aug 2024
Soil Fumigants	0	3 year	
Gross Alpha	1	6 year	Oct 2023
Radium 228	1	6 year	Oct 2023
Source Monitoring – Well #3			
Nitrate	1	1 year	Aug 2023
Complete Inorganic	1	9 year	Jul 2027
Volatile Organics	1	6 year	May 2024
Herbicides	1	9 year	May 2030
Pesticides	0	3 year	
PFAs	1	3 year	Aug 2024
Soil Fumigants	0	3 year	
Gross Alpha	1	6 year	Aug 2022
Radium 228	1	6 year	Aug 2022

See Appendix C6 for CCCC's water quality monitoring plan.

3.3 Design Standards

Section 2.2 of Part A of this plan includes DOC-wide design standards.

3.4 Capacity Analysis

3.4.1 Water Right Analysis

The total annual water right available to CCCC is 76 acre-feet per year (afy), including 6 afy for irrigation of 3 acres. The total amount of water available for domestic use is 70 afy, with a maximum instantaneous withdrawal rate of 130 gallons per minute (gpm). As shown in the Cedar Creek Water Rights Self-Assessment Form, these rights are sufficient to support present and projected demands. While the instantaneous water rights would not accommodate the simultaneous use of all three wells, Well No. 1 would only be in use if one of the other wells were not usable. See Appendix C4 for Cedar Creek's Water Rights Self-Assessment Form.

3.4.2 Source Capacity Analysis

Table B1-8 shows the available source capacity for the facility.

Table B1-8: Source Capacity Analysis			
	2024	2034	2044
Available Source (gpd)			
Well No. 1 (50 gpm)	-	-	-
Well No. 2 (55 gpm)	79,200	79,200	79,200
Well No. 3 (35 gpm)	50,400	50,400	50,400
Total	**129,600**	**129,600**	**129,600**
Maximum Day Demand (gpd)	90,150	90,150	90,150
Source Capacity Surplus/(Deficiency) (gpd)	**39,450**	**39,450**	**39,450**

The wells have enough capacity to provide sufficient water for CCCC. However, according to a utility expansion cost evaluation for the facility in 2004, there is concern that the water levels in the wells have declined since installation. Long term water level declines are common in wells that tap fractured basalt zones in the Black Hills. One option to improve the sustainability of CCCC's water supply is to develop a new groundwater source.

3.4.3 Storage Capacity Analysis

CCCC is currently served by three storage reservoirs, totaling 173,000 gallons of storage. Only the upper 115,000-gallon reservoir is accessible to the system by gravity. The total required storage is based primarily on a fire flow requirement of 1,810 gpm for one hour, as established by the Thurston County Fire Marshal.

The facility has encountered empty reservoirs in the summertime. This indicates that current storage is not sufficient to provide water during the summer.

Table B1-9 shows the available storage for the facility.

Table B1-9: Storage Capacity Analysis			
	2024	2034	2044
Required Storage (gal)			
Operational Storage (1)	10,051	10,051	10,051
Equalizing Storage (2)	4,508	4,508	4,508
Fire Flow Storage (3)	108,600	108,600	108,600
Standby Storage (Nested) (4)	96,000	96,000	96,000
Total Required (5)	**123,158**	**123,158**	**123,158**
Available Storage			
42,000-gal reservoir	42,000	42,000	42,000
16,000-gal reservoir	16,000	16,000	16,000
115,000-gal reservoir	115,000	115,000	115,000
Dead Storage (6)	8,041	8,041	8,041
Total Available (7)	**164,959**	**164,959**	**164,959**
Storage Capacity Surplus/(Deficiency)	41,801	41,801	41,801

(1) Required operational storage = Estimated 10% (ES + SS)
(2) Required equalizing storage = Greater of 5% of MDD or DOH equation.

DOH equation = (Peak Hour Demand - Total Available Source) * (150)
PHD : (Maximum Day Demand per ERU / 1440) * [(C) * (N) + F] + 18
(C & F values obtained from Table 3-1 in DOH June 2020 WSDM.)

(3) Required fire flow storage = Flow * duration = 1810gpm * 1 hr * 60min/hr (According to Thurston County Fire Marshal).

(4) Required standby storage for existing source = Greater of (2*ADD/ERU)-(1440*(Qs-Ql))) or (200 gpd*ERU).
Qs: Total source capacity
Ql: Largest source capacity
Nested storage = Lesser of SS and FFS

(5) Total required storage = equalizing + fire flow + standby storage + operational – nested storage.

(6) Dead storage = Estimated 8% (ES + SS)

(7) Total available storage = sum of reservoir storage – dead storage.

3.4.4 Limiting Factor Summary

Table B1-10 details the limiting factor for Cedar Creek.

Table B1-10: Limiting Factor Analysis	
Capacity Parameter	**Available Capacity (gpd)**
Water Right Capacity (Qa = 70 afy)	62,493
Source Capacity	129,600
Storage Capacity	164,983
Limiting Factor Capacity	**62,493**

As shown in the above table, water rights are the limiting factor for capacity at CCCC. In order to determine an accurate amount of water use per ERU, a resident per ERU factor must be defined.

For this analysis, one ERU is defined as the average water usage of a typical single-family residence, assuming the average person uses 100 gallons per day and the average single-family residence includes 2.3 residents, one ERU is equivalent to 230 gallons per day. According to Table B1-4, a resident uses 90 gpd under average day demand. The facility has a capacity of 62,493 gpd, which can serve 694 residents on the average day, or 272 ERUs. Therefore, the resident per ERU factor is 694 residents per 272 ERUs, or 2.55 residents per 1 ERU.

3.5 Hydraulic Analysis

The goal of this hydraulic analysis is to determine whether the distribution system can maintain minimum pressures during peak hour demand and fire flow demand under current and future conditions. A new hydraulic model was developed for Cedar Creek using WaterCAD hydraulic modeling software.

The model includes the upper water tank and the water distribution network. The system was evaluated under present condition peak hour demand. The demand was modeled by dividing total system peak hour demand across the system at the connections to residential units, where demand is typically the highest. This analysis indicated that three nodes within the system are unable to maintain a pressure of at least 30 pounds per square inch (psi). These nodes are not located at service connections.

The system was also evaluated under fire flow requirements. The fire flow requirement is 1,810 gallons per minute (gpm) for 1 hour. This analysis showed that all nodes were able to maintain pressures of at least 20 psi but are unable to provide flows of 1,810 gpm.

Appendix C9 includes hydraulic analysis data and a map of the hydraulic model for the Cedar Creek water system.

3.6 Summary of System Deficiencies

Table B1-11 shows the deficiencies of the water system plan. The results of the capacity analysis indicate that the water rights, source capacity, and available storage are sufficient to accommodate current and projected demands. The hydraulic analysis indicates that three nodes cannot maintain a minimum of 30 psi under peak hour demand, though these nodes are not located at service connections. Under fire flow conditions, none of the system hydrants can provide the required fire flow.

Table B1-11: System Deficiencies

Classification of Deficiency	Description of Project Solution	Total Project Cost
Failed Fire Flow Analysis	Upsize distribution mains to 12”	$1,500,000

4 Water Use Efficiency Program

4.1 Source and Service Metering

4.1.1 Production/Source Metering:

The wells are metered and read every month.

4.1.2 Service Meters

CCCC has twenty service meters, which are read every month.

4.2 Distribution System Leakage

4.2.1 Methodology

Distribution System Leakage is calculated using American Water Works Association Water Audit methodology and is reported in yearly Water Use Efficiency Annual Performance Reports. Cedar Creek’s last three WUE Reports are included in Appendix C14.

The most current distribution system leakage information from the most recent Water Use Efficiency Reports is shown in Table B1-12 below.

Table B1-12: Distribution System Leakage

Year	Total Water Produced (gal)	Authorized Consumption (gal)	Distribution System Leakage (gal)	Distribution System Leakage (%)	3-year annual average (%)
2021	16,878,721	13,686,438	3,192,283	18.9	16.3
2020	18,821,887	15,678,725	3,143,162	16.7	16.0
2019	19,813,684	17,206,970	2,606,714	13.2	19.5
2018	20,904,598	17,098,445	3,806,153	18.2	21.3

4.2.2 Leak Detection

The three-year average Distribution System Leakage volume according to the most current data, 2019-2021, is 2,980,719 gallons. The three-year average DSL percentage is 16.3%. A portion of the unauthorized water usage could be attributed to water used by DNR through unmetered connections. The extent of distribution system leakage is unknown.

4.2.3 Water Loss Control Action Plan

A leak detection survey should be performed on the Cedar Creek system. This project is included in the financial program included in Section 7. Regular calibration of water system meters should be conducted and recorded.

4.3 Water Use Efficiency Program

As a part of an analysis of water limitations at Cedar Creek in 2004, water conservation recommendations were developed, including the following:

- Install flow restrictors on showerheads.
- Restrict showers to 5-7 minutes.
- Evaluate efficient urinals.
- Repair plumbing leaks immediately.
- Ship all laundry to a neighboring institution for washing routinely or during peak use times, such as firefighting season.
- Invest in a complete wash water and rinse re-use system.
- Invest in a system to return rinse water to the wash cycle.

New water use efficiency goals should be developed for CCCC. It is a requirement of DOH to set Water Use Efficiency Goals in a public forum. The water system manager can coordinate the details of a public forum with the DOC Environmental Manager.

All meters, including source meters should be calibrated on an annual basis. These practices will improve operation efficiency and leak management.

5 Source Water Protection

5.1 Wellhead Protection Program

5.1.1 Overview

CCCC's wellhead protection plan was developed in 1999 and is included in Appendix C7. Updates to the contaminant source inventory were conducted in conjunction with this Water System Plan update. Ecology's Facility/Site Identification System database was reviewed to identify any known or potential sources of contamination within CCCC's wellhead protection area, and none were identified. The discussion presented in the wellhead protection plan remains valid in light of this review.

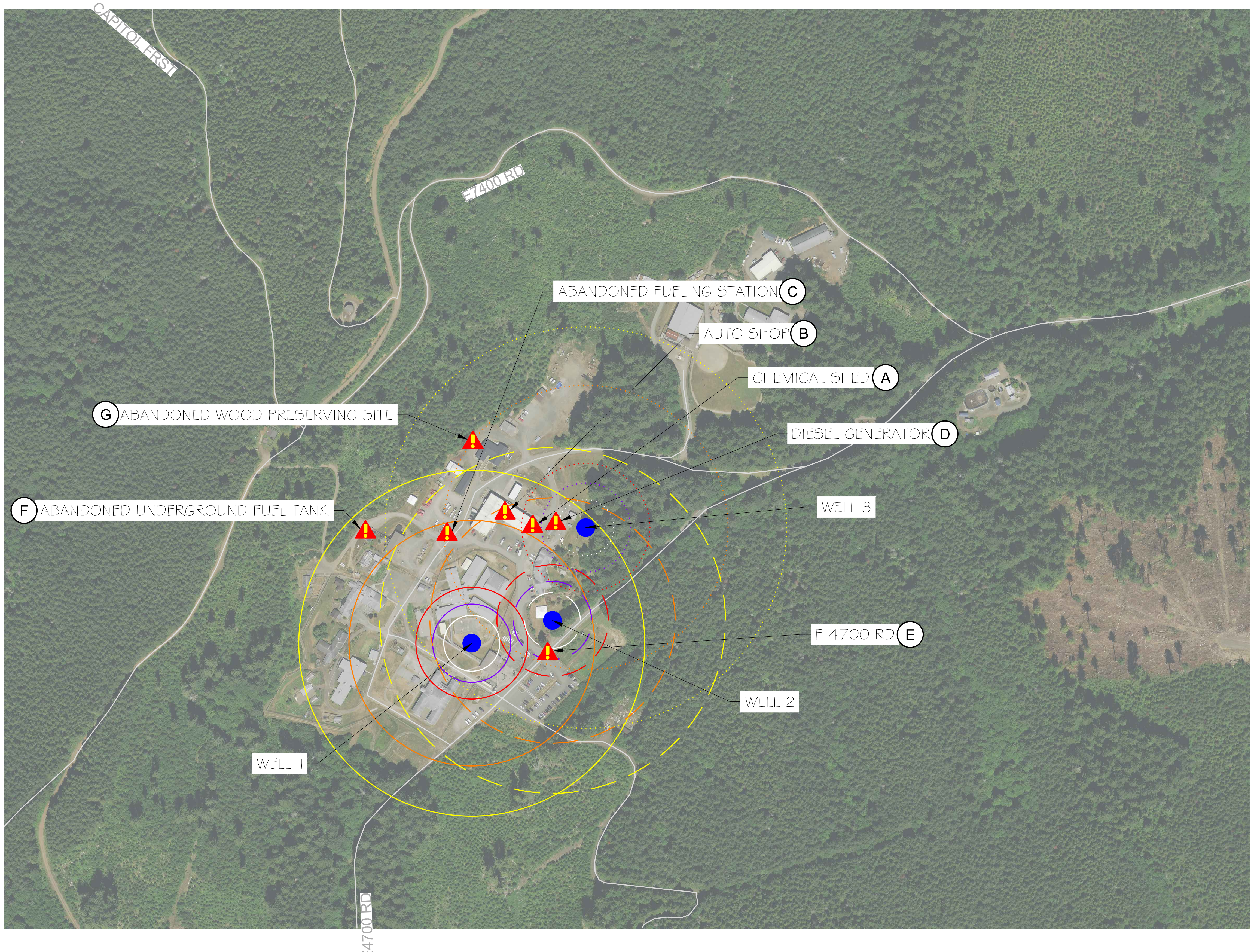
5.1.2 Susceptibility Assessment

The susceptibility of Well Nos. 1 and 2 is low. CCCC has adopted management strategies including contingency planning and spill response planning to protect the wells.

5.1.3 Wellhead Protection Area Delineation

See Exhibit B1-4 for the wellhead protection area. The following five zones of the wellhead protection area were delineated: Sanitary control area, Six-month time of travel zone, One-year time of travel zone, Five-year time of travel zone, and Ten-year time of travel zone. The sanitary control area includes the area within a 100-foot radius around the wells that serve the facility. The Calculated Fixed Radius method was used to determine the radii for these zones, as documented in the wellhead protection program.

EXHIBIT B1-4
CEDAR CREEK CORRECTIONS CENTER - WELLHEAD ZONES OF CONTRIBUTION



LEGEND

WELLHEAD

POTENTIAL SOURCE OF CONTAMINATION

ROAD

WELL NO. 1

100' SANITARY CONTROL AREA

140' 6 MONTH TIME OF TRAVEL

200' 1 YEAR TIME OF TRAVEL

440' 5 YEAR TIME OF TRAVEL

620' 10 YEAR TIME OF TRAVEL

WELL NO. 2

100' SANITARY CONTROL AREA

140' 6 MONTH TIME OF TRAVEL

200' 1 YEAR TIME OF TRAVEL

440' 5 YEAR TIME OF TRAVEL

620' 10 YEAR TIME OF TRAVEL

WELL NO. 3

100' SANITARY CONTROL AREA

160' 6 MONTH TIME OF TRAVEL

230' 1 YEAR TIME OF TRAVEL

510' 5 YEAR TIME OF TRAVEL

720' 10 YEAR TIME OF TRAVEL

0 375' 750'

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DOC WATER SYSTEM PLAN UPDATE

CCCC - WELLHEAD ZONES OF CONTRIBUTION

EXHIBIT

B1-4

5.1.4 Contaminant Source Inventory

The primary sources of potential contamination at the facility, as previously documented in the wellhead protection plan, are listed in Table B1-13.

Table B1-13: Contaminant Inventory
6 Month Time of Travel
A - Chemical Shed
B - Auto Shop
C - Abandoned fuel station
D - Diesel generator
E - E-line road
6 Month to 1 Year Time of Travel
F - Abandoned underground fuel tank
1 to 5 Year Time of Travel
G - Above-ground diesel generator
H - Fueling station
I - Abandoned wood preserving site
5 to 10 Year Time of Travel
J - Wastewater Treatment Plant
K - Above-ground diesel generator

5.1.5 Contingency Plan

CCCC has arranged for water to be delivered to the facility by DNR tanker trucks or private vendors in case of an emergency, per the trucked water plan in Section A5.3.3 of this Plan.

5.1.6 Notify Emergency Responders

In the event of an accidental spill, CCCC facility staff will notify the Water System Manager. The Water System Manager or switchboard operator would in turn notify West Thurston County Fire Dispatch as a first responder. The 24-hour Ecology spill response hotline would also be contacted.

6 Operations and Maintenance

6.1 Water System Management and Personnel

The certified operator at the facility is Larry Vene (WDM1, No. 10892). Operators of DOC water systems are responsible for the duties listed in Section A5.2.

Table B1-14: Operator Info		
Operator Name	**Operator Number**	**Certification**
Larry Vene	010892	WDM 1
Valeria Huested	015291	-

In lieu of staffing a cross connection control specialist, Cedar Creek contracts a certified backflow assembly testing specialist. Backflow prevention assemblies are present at the following locations:

- Olympic fire system (2”)
- Olympic fire system (4”)
- Olympic boiler make-up (3/4”)

- Warehouse fire system (6”)
- Furnace room hot water tank (1”)
- Vault by water tower (4”)
- Vault by water tower (3/4”)
- Lower reservoir pump room (2”)
- Vault behind T-line (4”)
- T-line boiler room (3/4”)

All assemblies are tested on an annual basis.

6.2 Emergency Call-Up List

Table B1-15 provides the emergency call-up list for Cedar Creek.

Table B1-15: Emergency Call-Up List		
Personnel/ Agency	**Working Hours Number**	**Off-Duty Number**
Water System Manager – Larry Vene	(360) 664-0718	(360) 490-9866
Superintendent – Tim Thrasher	(360) 359-4100	
DOC Environmental Manager – Darin Klein	(360) 764-3093	
DOH Office of Drinking Water – SWRO	(360) 236-3100	(877) 481-4901
DOH Regional Engineer – Deborah Johnson	(360) 433-4054	
DOH Regional Engineer – Candida Granillo-Dodds	(564) 669-3170	
Thurston County Environmental Health	(360) 867-2685	
Parts Supplier – Keller Plumbing & Parts	(206) 378-0459	
Electrical Utility – Puget Sound Energy	(888) 225-5773	
Thurston County Office of Emergency Management	(360) 867-2811	
24-hour Spill Response – Ecology	(800) 258-5990	
Police/Security	911	
Fire Department	(360) 352-1614	911
Emergency Medical	911	

Section A5.3 of this Plan provides a DOC-wide emergency response plan.

6.3 Water Quality Testing Laboratory

CCCC uses the following laboratories for water quality testing:

Am Test
13600 NE 125th Pl
Suite C
Kirkland, WA 98034

Washington State Public Health Laboratory
1610 NE 150th St
Shoreline, WA 98155

6.4 Operations and Maintenance Deficiencies

Table B1-16: Summary of O&M Deficiencies

O&M Deficiency	Action to be Taken	Estimated Cost
Upper reservoir water level is unknown	Install water level sensor	$5,000
Lower booster pump loses prime and requires reset by staff	Replace booster pump	$5,000
Distribution System Leakage	Leak Detection Survey	$10,000
Decline in well water levels	Drill new well	$102,000
Storage Capacity – Empty reservoirs in summer	Install new 100,000 gallon tank	$300,000
Failed Fire Flow Analysis – system unable to meet fire flow requirements	Upsize distribution mains to 12”	$1,500,000
Manual booster pump operation	Install automated pump configuration	$20,000

The pumped flow rate of the booster pump exceeds the individual flow rate from wells No. 2 and 3, and both wells must produce water to ensure the lower reservoirs are not depleted while the booster pump is operating.

7 Improvement Program

7.1 Prioritization of Improvements

The following are maintenance and improvement projects recommended for Cedar Creek.

1. The booster pump between the lower and upper reservoirs requires frequent resets by facility staff. This pump is essential to system operation. The replacement of this pump is a high priority.

2. The static and pumping water levels have declined in the wells over time, and aquifer recharge is a known issue in the area around Cedar Creek. A new source of supply should be established for the water system, at a greater depth than the existing wells.

3. Currently, the well pumps must be on to maintain water levels in the lower reservoirs when the booster pump is in operation. Adding more storage capacity would reduce the need for excessive well pumping, allowing the aquifer to recharge. This would also reduce the occurrence of empty reservoirs at the facility. A new storage reservoir should be built next to the existing 115,000 gallon reservoir. This project is a high priority.

4. As noted in Section 3.5, the system does not meet fire flow requirements. To increase the volume of water available at the system fire hydrants, the distribution mains should be replaced with larger diameter pipes. This project is recommended as a high priority to improve fire protection at the facility.

5. The upper storage reservoir does not have a water level readout. Installing a water level sensor would allow the water system operator to turn on the booster pump when the water levels in the upper reservoir are low. This project would improve system operations and is considered a moderate priority.

6. The booster pump is currently operated manually. An automated pump system would allow the pump to turn on and off as needed depending on the water level in the upper reservoir. This project is a moderate priority.

7. The full extent of distribution system leakage is unknown. A leak detection survey should be conducted to identify any sources of water loss within the system. This project is a moderate priority.

7.2 Capital Improvement Summary and Schedule

CCCC-1: Annual Renewal and Replacement. This refers to annual distribution system maintenance and upgrade activities necessary to maintain reliable operation of the water system. This includes activities such as leak detection and repair, replacement of aging lines and valves, etc. The annual cost is estimated to be $30,000.

CCCC-2: Booster Pump Replacement. The existing 120 gallon-per-minute booster pump that directs water to the upper reservoir will be removed and replaced.

CCCC-3: New Well. This project involves drilling a new well on-site, in a separate location from the existing wells. This new well should be drilled to a depth of 600 feet and connected to the existing water treatment plant.

CCCC-4: New 100,000-Gallon Storage Reservoir. This project includes the construction of one 100,000 gallon storage reservoir and a new 8-inch pipe connecting to the existing 115,000 gallon reservoir.

CCCC-5: Upsize Distribution Mains**.** This project includes the demolition of the existing 10-inch distribution mains and installation of 12-inch mains.

CCCC-6: Water Level Sensor. This project includes installing a water level sensor in the upper water reservoir.

CCCC-7: Automated Pump Configuration. This project includes installing an automated pump configuration for the booster pump between the lower and upper storage reservoirs.

CCCC-8: Leak Detection Survey. It is recommended that a leak survey be conducted for the facility to identify sources of water loss in the water system.

Table B1-17: Cedar Creek Corrections Center Capital Improvement Projects 2024-2034

Project Code	Description	Cost(1)	Purpose(2)	Priority Ranking(3)
CCCC-1	Annual Renewal & Replacement	$300,000	OP	1
CCCC-2	Booster Pump Replacement	$5,000	OP	1
CCCC-3	New Well	$102,000	OP	1
CCCC-4	New 100,000-Gallon Storage Reservoir	$300,000	OP	1
CCCC-5	Upsize Distribution Mains	$1,500,000	H/S	1
CCCC-6	Water Level Sensor	$5,000	OP	2
CCCC-7	Automated Pump Configuration	$20,000	OP	2
CCCC-8	Leak Detection Survey	$10,000	OP	2
CCCC-Total		$2,242,000		

(1) Annual renewal and replacement costs are presented as total costs over the 10-year planning period, not as annual costs
(2) H/S = Health/Safety, OP = Operational, G = Growth
(3) “1” = High Priority, “2” = Moderate Priority

Section B2

Larch Corrections Center

CONTENTS

TABLES

EXHIBITS

1 Description of Water System

1.1 Ownership and Management

The Larch Corrections Center (LCC) is owned and operated by the Washington State Department of Corrections (DOC) and is a type ST ownership. An on-site operator oversees the daily operations of the water system and reports to the water system manager. Contact information for relevant water system personnel is identified in Table B2-1 below.

Table B2-1: Water System Contacts			
	Name	**Address**	**Phone Number**
Owner	Larch Corrections Center	15314 NE Dole Valley Rd Yacolt, WA 98675	(360) 667-3730
Water System Manager	Steven Blahut		(360) 260-6300 ext. 291
Operator	Connie Cavers		(360) 260-6300 ext. 291

1.2 System History and Background

LCC is located in unincorporated Clark County approximately 10 miles east of Brush Prairie. It is located on a remote 38-acre site at the base of Larch Mountain. The facility is mixed use with the Department of Natural Resources (DNR). DNR and DOC work cooperatively to provide forest management jobs for residents. The facility currently houses 480 male residents and employs 225 staff. There are also 16 DNR employees that work on-site. They maintain a lumber mill, tree storage coolers, and several other maintenance buildings on the site. The existing structures on the site include the following:

- Silverstar Housing
- Elkhorn Housing
- Secure Housing
- Administration Building
- Family Visitor Building
- Warehouse
- Kitchen
- Laundry
- Campbell Building
- Auto Shop
- Boiler Room
- Boot Room
- Control Building
- Program Building
- Recreation Hall
- Recycling Plant
- DNR Equipment Building
- DNR Shop
- Wastewater Treatment Plant

Exhibit B2-1 provides a location map for the facility.

1.3 Related Plans

LCC is located in Clark County and this Plan shall be consistent with the Clark County Coordinated Water System Plan. The water system should practice and encourage water conservation. Because Larch is located on a remote site, it is not located within an Urban Growth Area and does not have neighboring systems to coordinate with.

Larch is located in the Lewis watershed, within Water Resource Inventory Area (WRIA) 27, and is subject to the requirements and recommendations in the Salmon-Washougal and Lewis Watershed management Plant. Water availability is a concern and additional water rights requests would need to be carefully planned to protect upstream flows.

1.4 Service Area, Maps, and Land Use

LCC's water service area includes the facility grounds and is bounded by the property lines. Exhibit B2-2 provides a map of the water service area. Exhibit B2-3 provides a map of the water system features.

1.5 System Description

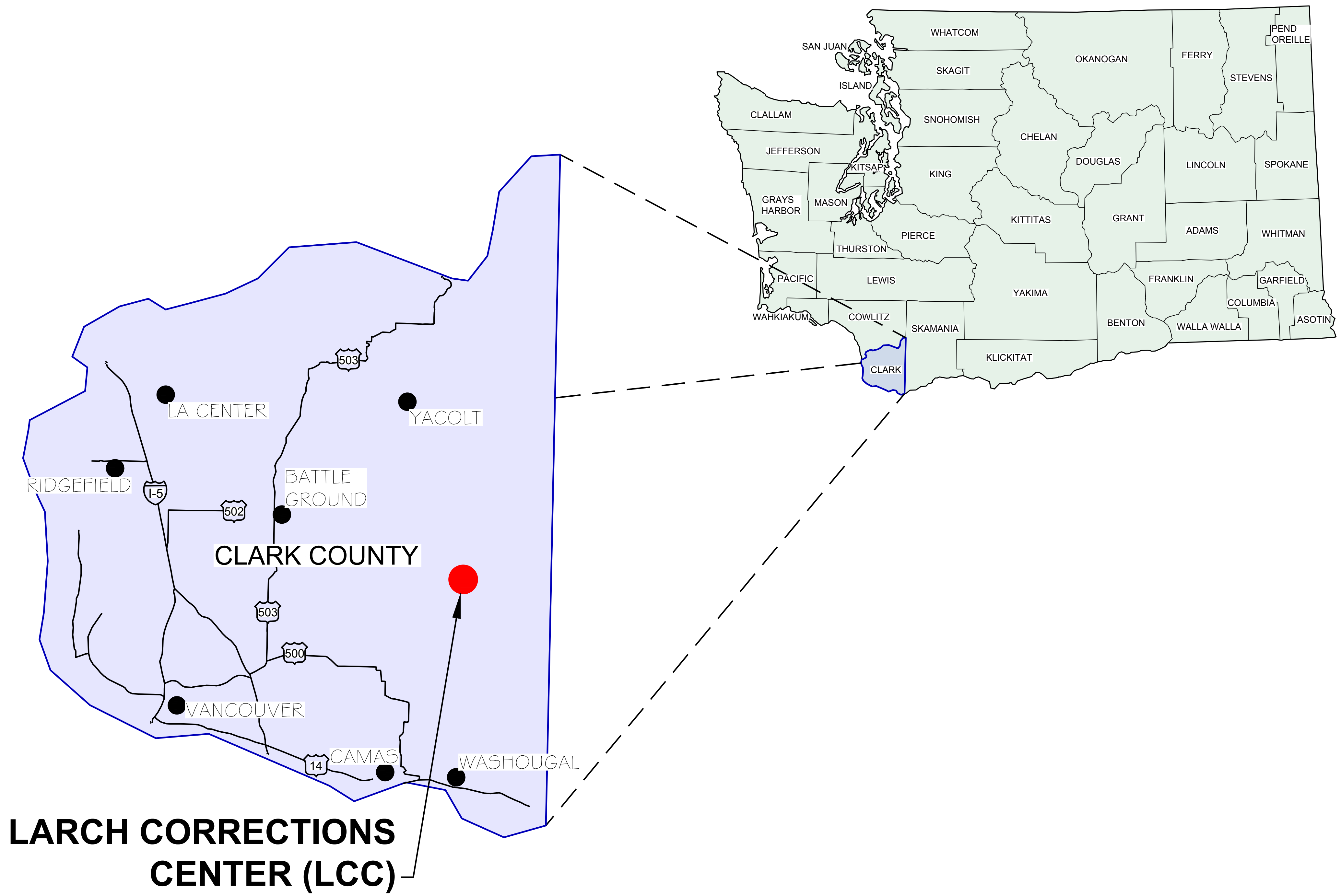
Water from Wells No. 3 and 4 is disinfected and pumped directly to the standpipe storage reservoirs. The storage reservoirs include one concrete tank constructed in 1994, which is in the same area as three newer concrete tanks that were constructed in 2015. All reservoirs are hydraulically equal. Water is conveyed via gravity from the reservoirs to the distribution system.

Most of the current water system was constructed in the 1990s, including Well No. 3, the 120,000-gallon standpipe reservoir, and the majority of the distribution piping. A metering project in 2014 involved installation of 19 new water meters throughout the system.

PLOTTED: May 22, 2023 - 15:21a5p5 PLOTTED BY: Cole.Rau

EXHIBIT B2-1

LARCH CORRECTIONS CENTER - VICINITY MAP



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DOC WATER SYSTEM PLAN UPDATE

LARCH CORRECTIONS CENTER - VICINITY MAP

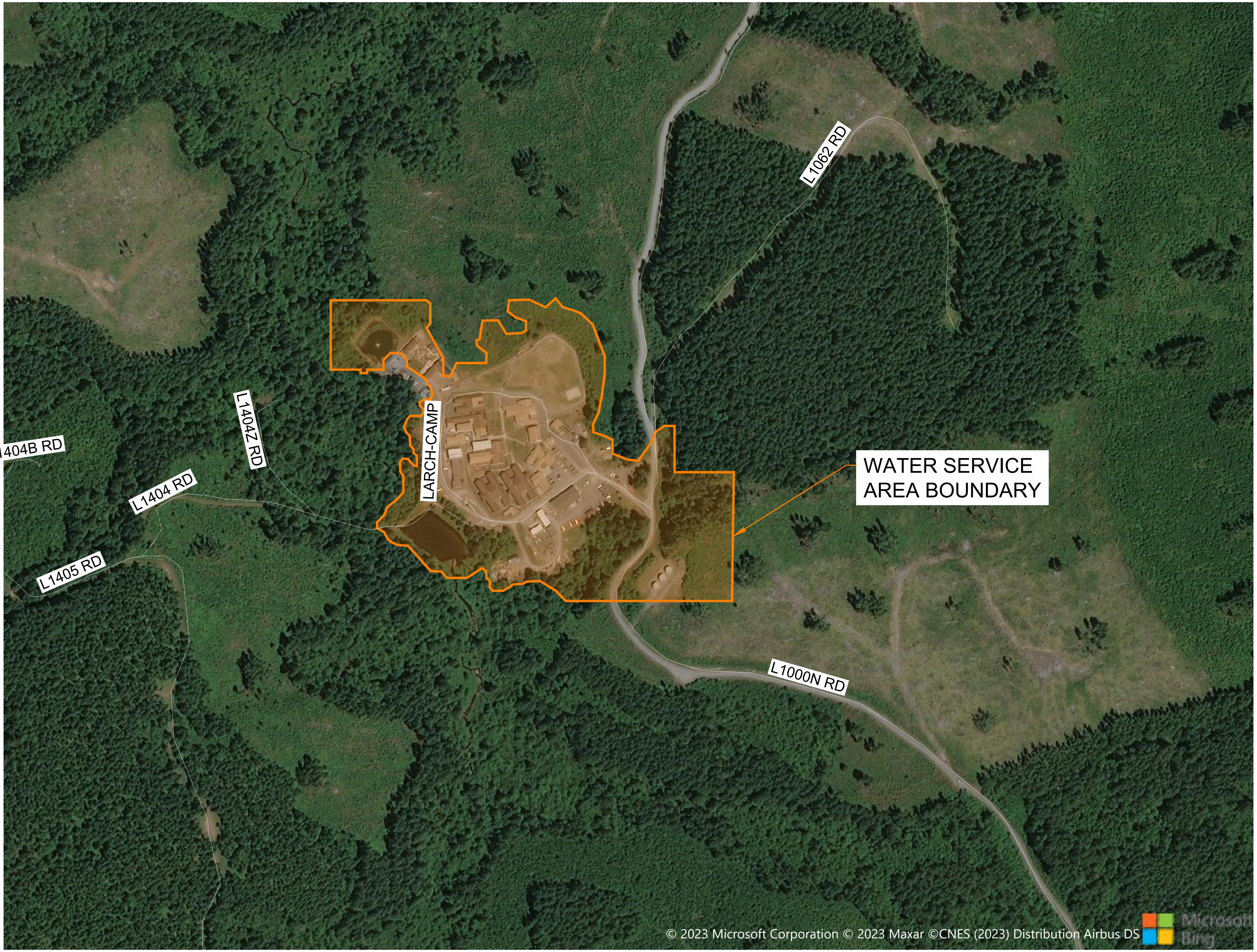
EXHIBIT

B2-1

PLOTTED: May 22, 2023 - 15:24a5p5 PLOTTED BY: Cole.Rau

EXHIBIT B2-2

LARCH CORRECTIONS CENTER - WATER SERVICE AREA



LEGEND

WATER SERVICE AREA BOUNDARY

0 500' 1000'

SCALE

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SCALE: 1" = 500'

DOC WATER SYSTEM PLAN UPDATE

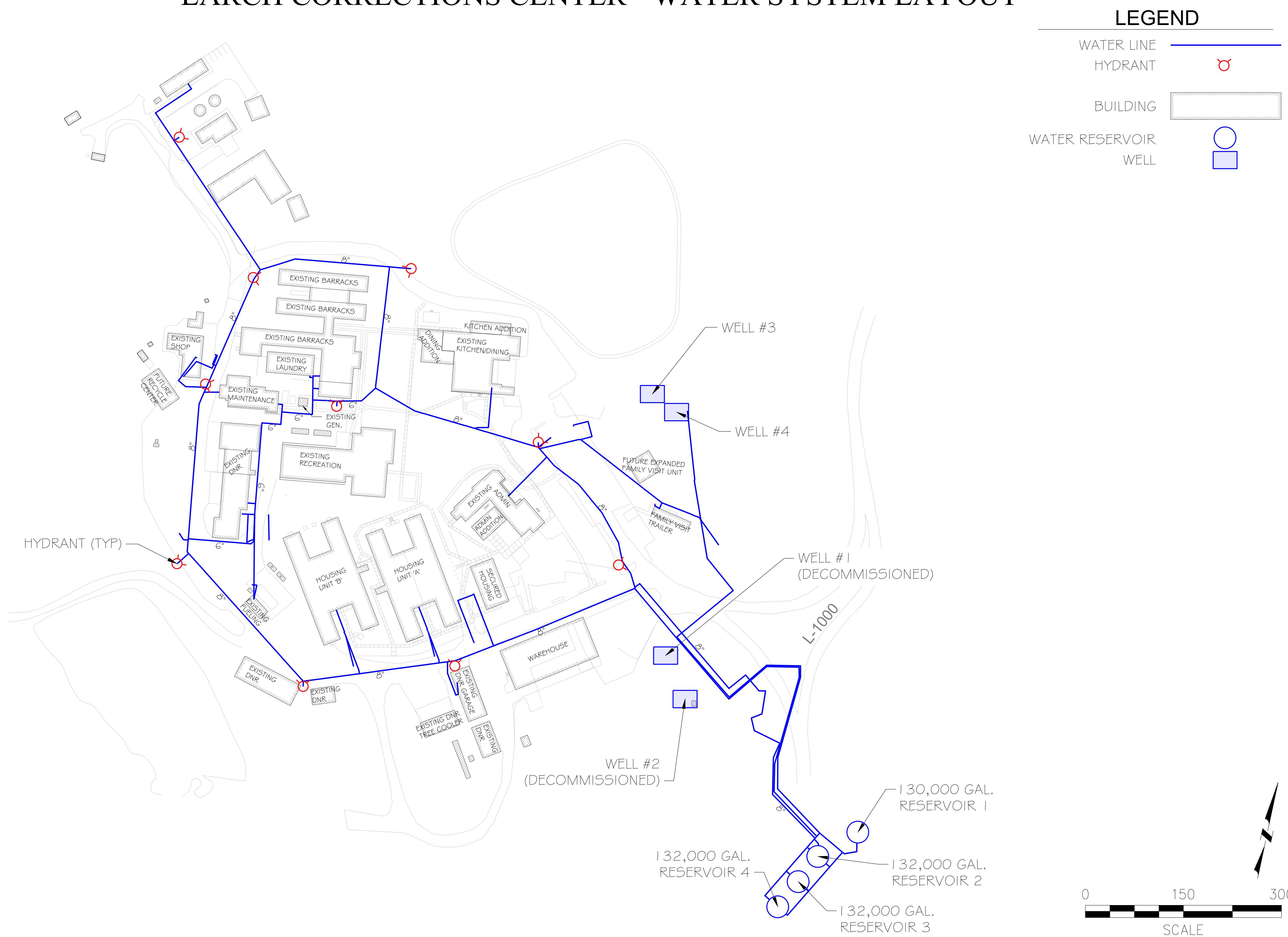
LARCH - WATER SERVICE AREA

EXHIBIT

B2-2

EXHIBIT B2-3

LARCH CORRECTIONS CENTER - WATER SYSTEM LAYOUT



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SCALE: 1" = 150'

DOC WATER SYSTEM PLAN UPDATE

LCC WATER SYSTEM LAYOUT

EXHIBIT

B2-3

PLOTTED: Jul 07, 2023 - 16:38a7p7 PLOTTED BY: kellenm

2 Basic Planning Data

2.1 Current Population

There are currently 18 buildings served by the Larch Corrections Center water system. There are 496 approved service connections at the facility. The facility has 480 residents and 225 employees. The number of temporary and transient users is 800 people a month.

Table B2-2 shows a summarization of the population.

Table B2-2: Population	
Population Type	**Population**
Full-Time Residential	480
Non-Residential	225
Temporary	800
Total	1,505

2.2 Water Production and Usage

This system does not have customer classes and rates. Table B2-3 shows the monthly and annual totals for source production and water use. Monthly production and consumption are calculated from available well and water meter readings for Larch for 2020, 2021, and 2022 (See Appendix C13).

Table B2-3: Water Production and Usage (2020 – 2022)		
Source	Monthly Production (gal)	Annual Production (gal)
Wells	1,625,115	19,501,382
Use	Monthly Consumption (gal)	Annual Consumption (gal)
Total	1,596,934	19,163,206

2.3 Water Supply Characteristics

LCC relies upon two wells as its source of water supply. Well No. 3 produces approximately 65 gallons per minute (gpm), and Well No. 4 operates at 100 gpm. Two other wells located within the property boundaries of the institution (Wells No. 1 and 2) have been abandoned and properly decommissioned. According to well reports, the static water level has not decreased since drilling Well No. 3 in 1993. Larch is located near Cedar Creek in the Lewis watershed.

2.4 Water Supply Reliability Evaluation

The wells currently utilized by LCC have been reliable and show no need for additional sources. If one of the wells becomes inoperable, the other well would serve as the primary source for the water system. Due to water availability constraints within the Lewis watershed, LCC would need to confer with Clark County and DOH to discuss the feasibility of drilling a new well.

See Section 5.1.5 for LCC's water supply contingency plan.

2.5 Future Population Projections and Land Use

The current population is 480 and is expected to remain constant within the next 10 years. DOC has no capital improvement project scheduled to add buildings or services to the system.

2.6 Future Water Demand

Table B2-4 summarizes the 2024 and projected 2034 and 2044 residential population and water demand.

Table B2-4: Water Demand Forecast			
Year	2024 (1)	2034	2044
Resident Population	480	480	480
	Average Day Demand (gpd)		
Facility	58,464	58,464	58,464
Per Resident	122	122	122
	Maximum Day Demand (gpd)		
Facility	154,959	154,959	154,959
Per Resident	323	323	323
	Peak Hour Demand (gpm)		
Facility	240	240	240

(1) 2022 Demand is the average of 2020-2022 data

3 System Analysis and Asset Management

3.1 Asset Management – Asset Inventory and Analysis

3.1.1 Asset Inventory

Table B2-5 shows the assets of Larch Corrections Center.

Table B2-5: Asset Inventory			
Asset	**Description**	**Capacity/ Size**	**Year Built**
Well No. 3	Depth = 200 feet 5 hp pump	65 gpm	1993
Well No. 4	Depth = 170 feet 7 hp pump	100 gpm	2003
Treatment Process	Chlorination	-	-
Circular Storage Tank	Concrete	130,000 gal	1994
Storage Tank	Concrete	132,000 gal	2015
Storage Tank	Concrete	132,000 gal	2015
Storage Tank	Concrete	132,000 gal	2015
Distribution Pipe	PVC	8 inch	1998

3.1.2 Asset Condition & Criticality

The assets at LCC are generally in good condition. The three new storage tanks have not been inspected since their construction in 2015.

Remaining useful life and condition are general and applied to the full inventory of the asset identified. Considering the age of the assets, there may be isolated locations of poor conditions due to joint separation caused from tree roots or settlement, however there are not any known or expected failures.

Table B2-6: Asset Condition

Component	Units	# of Units	Remaining Useful Life	Condition Rating	Replacement Cost
Distribution System Inventory					
8” PVC	LF	2,700	Installed 1998	Good	
6” PVC	LF	400	Installed 1990s	Good	
Raw & Finished Storage Inventory					
Reservoir (3)	gal (combined)	381,000	Installed 2015	Good	$1,000,000
Reservoir	gal	130,000	Installed 1994	Good	$200,000
Source Pump Inventory					
Well No. 3 Pump	gpm	65	10+ years w/ maintenance	Functional	$10,000
Well No. 4 Pump	gpm	100	10+ years w/ maintenance	Functional	$10,000

3.2 Water Quality

Table B2-7 details the water quality testing schedule. Coliform is tested monthly, has a monitoring population of 705, and requires one routine sample a month.

Table B2-7: Water Quality Monitoring Schedule			
Test Panel	**# of Samples Required**	**Frequency**	**Next Sample Due**
Coliform	1	monthly	
Chemical Monitoring			
Lead & Copper	10	3 year	Sep 2023
Asbestos	0	9 year	
Total Trihalomethane (THM)	1	1 year	Aug 2023
Halo-Acetic Acids	1	1 year	Aug 2023
Source Monitoring – Well #3			
Nitrate	1	1 year	Sep 2023
Complete Inorganic	1	9 year	Sep 2028
Volatile Organics	1	6 year	Mar 2028
Herbicides	1	9 year	Oct 2024
Pesticides	0	3 year	
PFAs	1	3 year	Jul 2023
Soil Fumigants	0	3 year	
Gross Alpha	1	6 year	Nov 2027
Radium 228	1	6 year	Nov 2027
Source Monitoring – Well #4			
Nitrate	1	1 year	Sep 2023
Complete Inorganic	1	9 year	Sep 2028
Volatile Organics	1	6 year	Sep 2025
Herbicides	1	9 year	Oct 2024
Pesticides	0	3 year	
PFAs	1	3 year	Jul 2023
Soil Fumigants	0	3 year	
Gross Alpha	1	6 year	Nov 2027
Radium 228		6 year	Nov 2027

See Appendix C6 for LCC's water quality monitoring plan.

3.3 Design Standards

Section 2.2 of Part A of this plan includes DOC-wide design standards.

3.4 Capacity Analysis

3.4.1 Water Right Analysis

The total annual water right available to LCC is 66.1 acre-feet per year (afy) for domestic use and an additional 4.0 afy for irrigation. The total amount of water available for domestic use is 66.1 afy, with a maximum instantaneous withdrawal rate of 115 gallons per minute (gpm). The annual and instantaneous water rights are sufficient to support projected needs. See Appendix C4 for Larch's Water Rights Self-Assessment Form.

3.4.2 Source Capacity Analysis

Table B2-8 shows the available source capacity for the facility.

Table B2-8: Source Capacity Analysis			
	2024	2034	2044
Available Source (gpd)			
Well No. 3 (65 gpm)	93,600	93,600	93,600
Well No. 4 (100 gpm)	144,000	144,000	144,000
Total	**237,600**	**237,600**	**237,600**
Maximum Day Demand (gpd)	154,959	154,959	154,959
Source Capacity Surplus/(Deficiency) (gpd)	**82,641**	**82,641**	**82,641**

The wells have enough capacity to provide sufficient water for LCC.

3.4.3 Storage Capacity Analysis

LCC is currently served by four storage reservoirs, totaling 526,000 gallons of storage. The total required storage is based primarily on a fire flow requirement of 1,000 gpm for two hours, as established by the Clark County Fire Marshal.

Table B2-9 shows the available storage for the facility.

Table B2-9: Storage Capacity Analysis			
	2024	2034	2044
Required Storage			
Operational Storage (1)	10,721	10,721	10,721
Equalizing Storage (2)	11,208	11,208	11,208
Fire Flow Storage (3)	120,000	120,000	120,000
Standby Storage (Nested) (4)	96,000	96,000	96,000
Total Required (5)	141,929	141,929	141,929
Available Storage			
130,000-gal reservoir	130,000	130,000	130,000
3 x 132,000-gal reservoir	396,000	396,000	396,000
Dead Storage (6)	8,577	8,577	8,577
Total Available (7)	517,423	517,423	517,423
Storage Capacity Surplus/(Deficiency)	375,494	375,494	375,494

(1) Required operational storage = Estimated 10% (ES + SS)
(2) Required equalizing storage = Greater of 5% of MDD or DOH equation.
DOH equation = (Peak Hour Demand - Total Available Source) * (150)
PHD: (Maximum Day Demand per ERU / 1440) * [(C) * (N) + F] + 18
(C & F values obtained from Table 3-1 in DOH June 2020 WSDM.)
(3) Required fire flow storage = Flow * duration = 1000 gpm * 2 hr * 60min/hr. (According to Clark County Fire Marshal).
(4) Required standby storage for existing source = Greater of (2*ADD/ERU) -(1440*(Qs-Ql))) or (200 gpd*ERU).
Qs: Total source capacity
Ql: Largest source capacity
Nested storage = Lesser of SS and FFS
(5) Total required storage = equalizing + fire flow + standby storage + operational – nested storage.
(6) Dead storage = Estimated 8% (ES + SS)
(7) Total available storage = sum of reservoir storage – dead storage.

3.4.4 Limiting Factor Summary

The below table details the limiting factor for Cedar Creek.

Table B3-10: Limiting Factor Analysis	
Capacity Parameter	**Available Capacity (gpd)**
Water Right Capacity (Qa = 66.1 afy)	59,010
Source Capacity	237,600
Storage Capacity	507,423
Limiting Factor Capacity	**59,010**

As shown in Table B3-10, water rights are the limiting factor for capacity at LCC. In order to determine an accurate amount of water use per ERU, a resident per ERU factor must be defined.

For this analysis, one ERU is defined as the average water usage of a typical single-family residence, assuming the average person uses 100 gallons per day and the average single-family residence includes 2.3 residents, one ERU is equivalent to 230 gallons per day. According to Table B2-4, a resident uses 122 gpd under average day demand. The facility has a capacity of 59,010 gpd, which can serve 483 residents on the average day, or 256 ERUs. Therefore, the resident per ERU factor is 483 residents per 256 ERUs, or 1.89 residents per 1 ERU.

3.5 Hydraulic Analysis

The goal of this hydraulic analysis is to determine whether the distribution system can maintain minimum pressures during peak hour demand and fire flow demand under current and future conditions. A new hydraulic model was developed for LCC using WaterCAD hydraulic modeling software.

The model includes a reservoir and the water distribution network. The system was evaluated under present condition peak hour demand. The demand was modeled by dividing total system peak hour demand across the system at connections to residential units, where demand is typically highest. The results of this analysis indicated that the system can accommodate peak hour demand while maintaining pressures of at least 30 pounds per square inch (psi).

The system was also evaluated under fire flow conditions. The fire flow requirement is 1,000 gallons per minute (gpm) for 2 hours. This fire flow analysis showed that all nodes were able to provide the required flow while maintaining pressures of at least 20 psi.

Appendix C9 includes hydraulic analysis data and a map of the hydraulic model for the Larch water system.

3.6 Summary of System Deficiencies

The results of the capacity analysis indicate that the water rights, source capacity and storage capacity are sufficient to accommodate current and projected demands. The hydraulic analysis indicates that the system is able to accommodate peak hour demand and fire flow requirements.

4 Water Use Efficiency Program

4.1 Source and Service Metering

4.1.1 Production/Source Metering:

The wells are metered and read every month.

4.1.2 Service Meters

LCC has eighteen service meters, one at each building service connection, which are read every month.

4.2 Distribution System Leakage

4.2.1 Methodology

Distribution System Leakage is calculated using American Water Works Association Water Audit methodology and is reported in yearly Water Use Efficiency Annual Performance Reports. Larch's last four WUE Reports are included in Appendix C14.

The most current distribution system leakage information from the recent meter readings and Water Use Efficiency reports is shown in Table B2-11 below.

Table B2-11: Distribution System Leakage

Year	Total Water Produced (gal)	Authorized Consumption (gal)	Distribution System Leakage (gal)	Distribution System Leakage (%)	3-year annual average (%)
2022	16,048,532	14,548,450	1,500,082	9.3%	4.7%
2021	18,891,341	19,822,340	(930,999)	-4.9%	0.9%
2020	21,196,272	20,978,033	218,239	1.0%	0.9%
2019	24,867,102	25,314,049	(446,947)	-1.8%	3.8%
2018	26,328,517	25,976,804	351,713	1.3%	3.8%

The negative distribution system leakage volumes for 2021 and 2019 are excluded from DSL calculations. The system meters should be calibrated regularly to ensure accuracy. The three-year average DSL volume for 2018, 2020, and 2022 is 690,011 gallons. The three-year average DSL percentage is 4.7%.

4.2.2 Leak Detection

The three-year average Distribution System Leakage volume according to the most current data, assuming there was no leakage in 2019, is 690,011 gallons. The three-year average DSL percentage is 4.7%.

4.3 Water Use Efficiency Program

New water use efficiency goals should be developed for LCC. It is a requirement of DOH to set Water Use Efficiency Goals in a public forum. The water system manager can coordinate the details of a public forum with the DOC Environmental Manager.

All meters, including source meters should be calibrated on an annual basis. These practices will improve operation efficiency and leak management.

5 Source Water Protection

5.1 Wellhead Protection Program

5.1.1 Overview

LCC's wellhead protection plan was developed in 1997 and is included in Appendix C7. Since the development of the wellhead protection plan, the facility's sources have changed. The delineated wellhead zones of contribution (i.e., time-of-travel zones) have been updated to reflect these changes.

5.1.2 Susceptibility Assessment

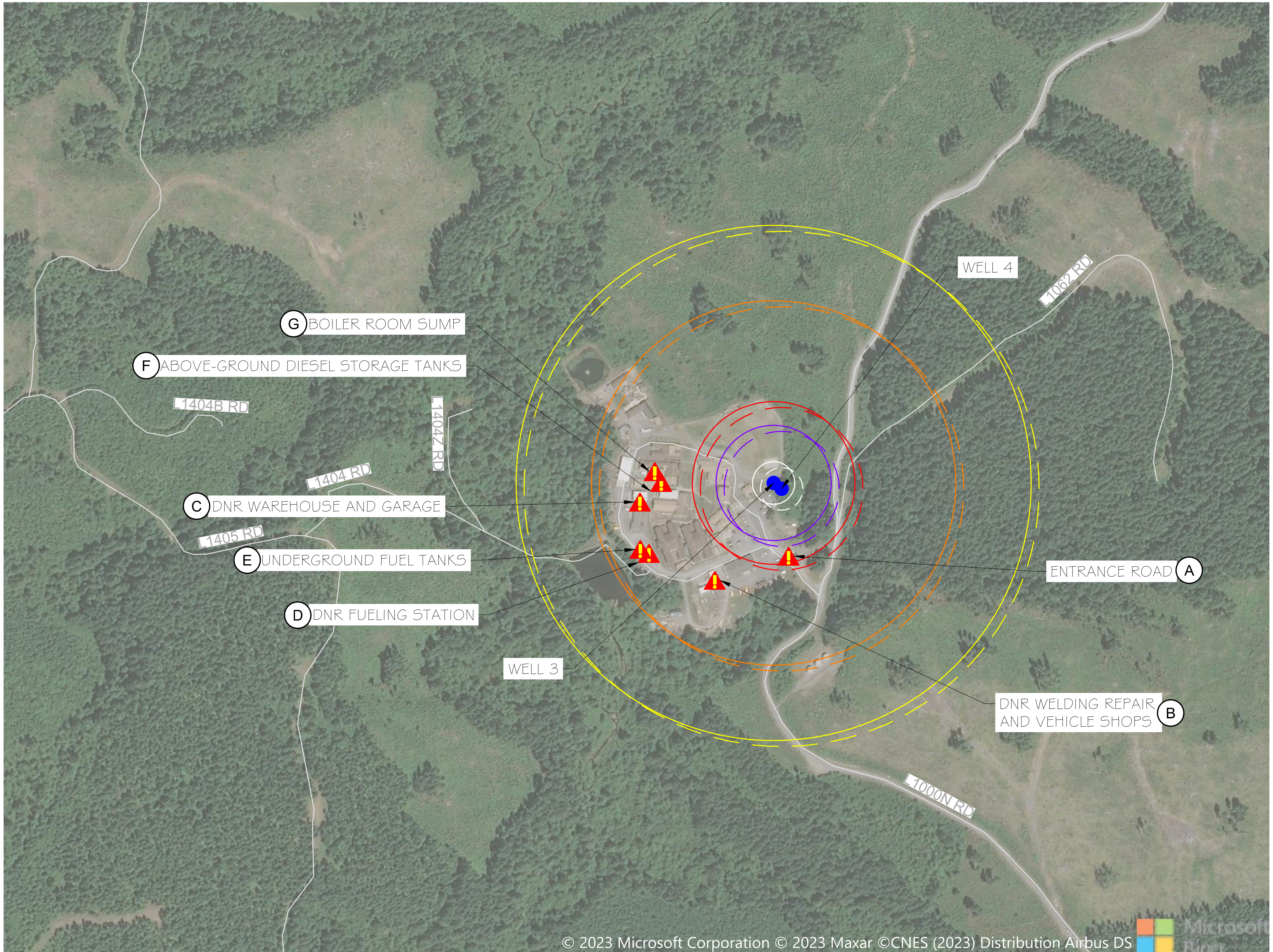
The susceptibility of Well Nos. 3 and 4 is low. The susceptibility assessments for these sources are included in Appendix C7.

5.1.3 Wellhead Protection Area Delineation

The following five zones of the wellhead protection area were delineated: Sanitary control area, Six-month time of travel zone, One-year time of travel zone, Five-year time of travel zone, and Ten-year time of travel zone. The sanitary control area includes all area within a 100-foot radius around the two wells that serve the facility. The Calculated Fixed Radius method was used to determine the radii for these zones, as documented in the wellhead protection plan. Exhibit B3-4 depicts the zones of contribution for Wells No. 3 and 4, the two active wells at the site.

EXHIBIT B2-4

LARCH CORRECTIONS CENTER - WELLHEAD ZONES OF CONTRIBUTION



LEGEND

WELLHEAD

POTENTIAL SOURCE OF CONTAMINATION

ROAD

WELL NO. 3

100' SANITARY CONTROL AREA

271' 6 MONTH TIME OF TRAVEL

383' 1 YEAR TIME OF TRAVEL

858' 5 YEAR TIME OF TRAVEL

1213' 10 YEAR TIME OF TRAVEL

WELL NO. 4

100' SANITARY CONTROL AREA

271' 6 MONTH TIME OF TRAVEL

383' 1 YEAR TIME OF TRAVEL

858' 5 YEAR TIME OF TRAVEL

1213' 10 YEAR TIME OF TRAVEL

0 500' 1000'

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DOC WATER SYSTEM PLAN UPDATE

LCC - WELLHEAD ZONES OF CONTRIBUTION

EXHIBIT

B2-4

5.1.4 Contaminant Source Inventory

The primary sources of potential contamination at the facility, as previously documented in the wellhead protection plan and recently confirmed by staff, are listed in Table B2-12.

Table B2-12: Contaminant Inventory
6 Month to 1 Year Time of Travel
A - Entrance road
1 to 5 Year Time of Travel
B - DNR welding repair and vehicle shops
5 to 10 Year Time of Travel
C - DNR warehouse and garage
D - DNR fueling station
E - Underground fuel tanks
F - Above-ground diesel storage tanks
G - Boiler room sump

5.1.5 Contingency Plan

LCC has arranged for water to be delivered by private vendors, per the trucked water plan in Part A5.3.3 of this Plan. The nearest community is the Town of Yacolt, which is provided water by Clark Public Utilities (CPU). CPU could be contacted in the event of an emergency.

5.1.6 Notify Emergency Responders

In the event of an accidental spill, LCC facility staff will notify the Plant Manager/Water Operator. The Plant Manager or switchboard operator would in turn notify Clark County Fire Protection District 13 (360) 686-3271 as a first responder. The 24-hour Ecology spill response hotline would also be contacted.

6 Operations and Maintenance Program

6.1 Water System Management and Personnel

The current water system manager is in the process of training a replacement in anticipation of his retirement. Operators of DOC water systems are responsible for the duties listed in Section A5.2. The facility does not currently have a cross-connection control specialist.

Table B2-13: Operator Info		
Operator Name	**Operator Number**	**Certification**
Steven Blahut	014287	WDM 1

Larch contracts a cross-connection control specialist to test backflow prevention devices on an annual basis. There are thirteen double check valve backflow prevention assemblies and five reduced pressure backflow assemblies on site.

6.2 Emergency Call-Up List

Table B2-14 provides the emergency call-up list for Larch.

Table B2-14: Emergency Call-Up List		
Personnel/ Agency	**Working Hours Number**	**Off-Duty Number**
Water System Manager – John Alderman	(360) 260-6300 ext. 291	
Water System Operator – Connie Cavers	(360) 260-6300 ext. 291	
Superintendent – JC Miller	(360) 260-6300	
DOC Environmental Manager – Darin Klein	(360) 764-3093	
DOH Office of Drinking Water – SWRO	(360) 236-3100	(877) 481-4901
DOH Regional Engineer – Fern Schultz	(564) 669-0853	
DOH Regional Engineer – Scott Pollock	(564) 669-0854	
Clark County Public Health Department	(564) 397-8000	
Parts Supplier – Hall & Son Pump Co.	(360) 892-3368	
Emergency Water Supplier – Mountain View Trucking	(425) 888-9796	
Electrical Utility – Clark County PUD	(360) 992-8000	
Clark Regional Emergency Services Agency	(360) 737-1911	
24-hour Spill Response – Ecology	(800) 258-5990	
Police/Security	911	
Fire Department	(360) 686-3271	911
Emergency Medical	911	

Section A5.3 of this Plan provides a DOC-wide emergency response plan.

6.3 Water Quality Testing Laboratory

LCC uses the following laboratory for water quality testing:

Pyxis Laboratories
12423 NE Whitaker Way
Portland OR, 97230

6.4 Operations and Maintenance Deficiencies

No Operations and Maintenance deficiencies are identified for LCC.

7 Improvement Program

7.1 Prioritization of Improvements

Improvement projects for LCC include the annual maintenance projects associated with reliable operation of the water system.

1. The DSL volumes calculated in 2019 and 2021 were negative, which is inaccurate. The system meters are due to be calibrated. Costs associated with this project include labor costs to calibrate all system meters.

7.2 Capital Improvement Summary and Schedule

LCC-1: Annual Renewal and Replacement. This refers to annual distribution system maintenance and upgrade activities necessary to maintain reliable operation of the water system. This includes activities such as leak detection and repair, replacement of aging lines and valves, etc. The annual cost is estimated to be $25,000.

LCC-2: Calibrate Water Meters. This project involves the calibration of the 18 service meters and the two source meters.

Table B2-15: Larch Corrections Center Capital Improvement Projects 2024-2034				
Project Code	**Description**	**Cost(1)**	**Purpose(2)**	**Priority Ranking(3)**
LCC-1	Annual Renewal & Replacement	$250,000	OP	1
LCC-2	Calibrate Water Meters	$15,000	OP	1
LCC-Total		$265,000		

(1) Annual renewal and replacement costs are presented as total costs over the 10-year planning period, not as annual costs
(2) H/S = Health/Safety, OP = Operational, G = Growth
(3) “1” = High Priority, “2” = Moderate Priority

Section B3

Maple Lane Corrections Center

CONTENTS

TABLES

EXHIBITS

1 Description of Water System

1.1 Ownership and Management

The Maple Lane Corrections Center (MLCC) is a youth correctional and mental health facility. The water system is owned and operated by the Washington State Department of Corrections (DOC) and is a type ST ownership. An operator oversees the daily operations of the water system. Contact information for relevant water system personnel is identified in Table B3-1 below.

Table B3-1: Water System Contacts			
	Name	**Address**	**Phone Number**
Owner	Maple Lane Corrections Center	20311 Old HWY 9 SW, Centralia, WA 98531	
Water System Manager	Valeria Huested		
Operator	Cory Postma		(360) 489-5357

1.2 System History and Background

The Maple Lane Corrections Center (MLCC), formerly Maple Lane School, is located in Thurston County, near Grand Mound. The facility was built in 1913 and has switched back and forth between DOC and Washington State Department of Social and Health Services (DSHS) facilities a few times in recent history. DSHS currently manages a program at this facility, but DOC currently owns and operates the water system. The most recent improvements to the water system were in 2000 and included replacement of three sections of water main, installation of backflow prevention devices and fire hydrants, demolition of an elevated storage tank, and improvements to the pump house. Since 2000, multiple buildings have been demolished at the facility.

The current facilities on site include the following:

- Cascade Housing
- Columbia Housing
- Laurel Housing
- Birch Housing
- Olympic Housing
- Rainier Housing
- Pacific Housing
- Spruce Housing
- Maintenance Buildings
- Chicken Coop
- Administration Building
- Multi-Services Building
- Commissary
- Gymnasium
- School
- Vocational Tech Building

- DSHS Community Based-Facility

Exhibit B3-1 provides a location map for the facility.

1.3 Related Plans

Maple Lane is included in Grand Mound Water System's service area, according to Grand Mound's water system plan. Because of the lack of intertie between Maple Lane and Grand Mound Water System, Maple Lane is not subject to Grand Mound's policies. If an intertie were to be established and Maple Lane were to become a customer of Grand Mound, the policies would need to be reviewed and updated for MLCC.

As a part of the Upper Chehalis River Basin, within Water Resource Inventory Area (WRIA) 23, Maple Lane must be mindful of water usage and conservation and is subject to the requirements and recommendations in the Watershed Management Plant for the WRIA. The Chehalis Watershed Management Plan outlines groundwater withdraw impacts on streams in the area and identifies anticipated growth in the WRIA. Groundwater availability is limited within the basin, and additional water rights requests or additional sources of supply would need to be carefully planned.

1.4 Service Area, Maps, and Land Use

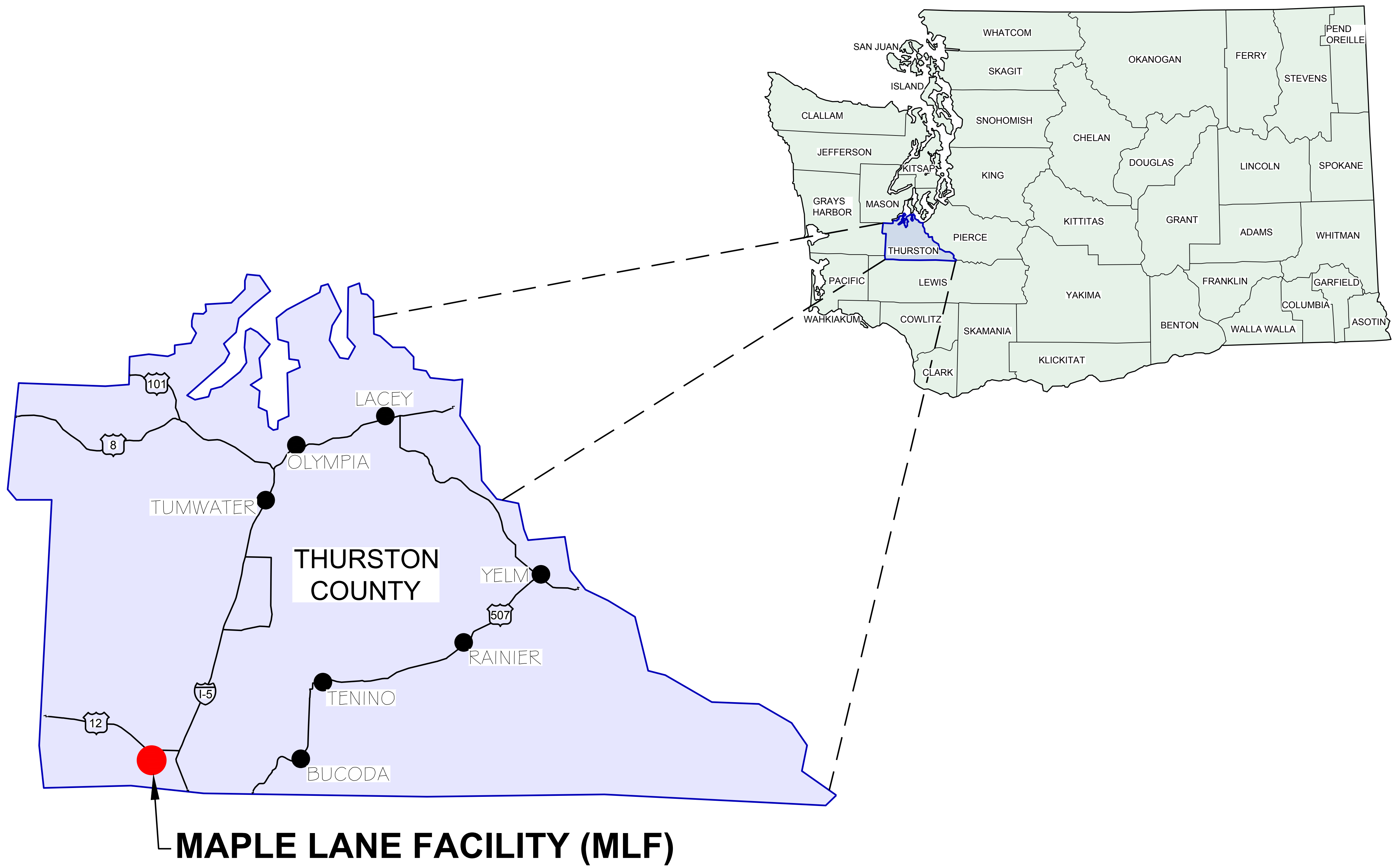
The water service area of MLCC includes the grounds of the facility and is bounded by the property lines. Exhibit B3-2 provides a map of the water service area. Exhibit B3-3 shows a map of the water system features for Maple Lane.

1.5 System Description

Maple Lane pumps groundwater from Well No. 1 and No. 2 to the pump house, which includes a chlorine injection system, a soda ash tank and injection system, a pressure tank, and booster pumps. After soda ash injection and chlorination well water is discharged into the at-grade storage tank. Water from the storage tank is then pumped into the distribution system via the booster pumps in the pump house.

EXHIBIT B3-1

MAPLE LANE FACILITY - VICINITY MAP



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DOC WATER SYSTEM PLAN UPDATE

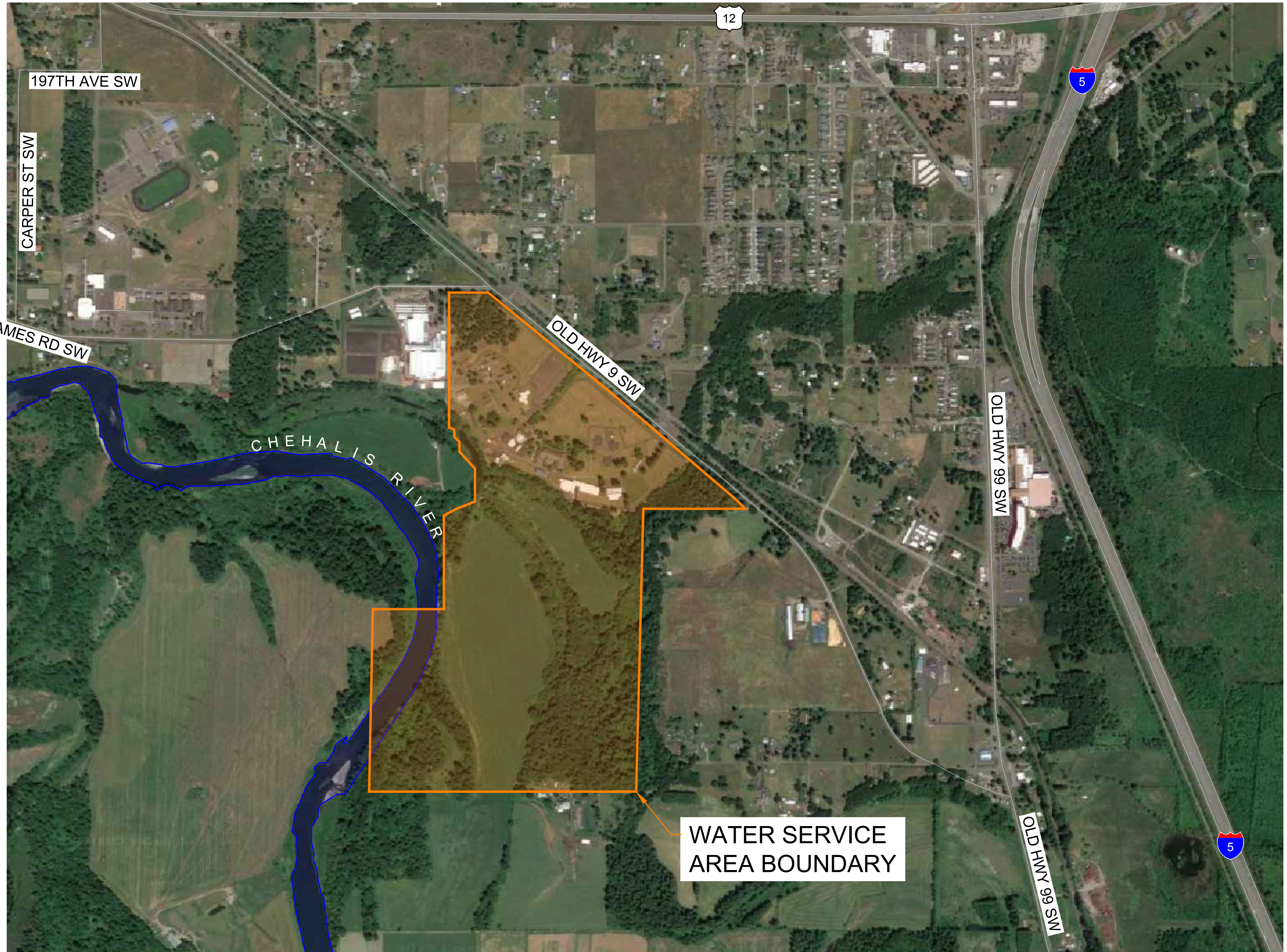
MAPLE LANE FACILITY - VICINITY MAP

EXHIBIT

B3-1

EXHIBIT B3-2

MAPLE LANE FACILITY - WATER SERVICE AREA



LEGEND

WATER SERVICE AREA BOUNDARY

0 1000' 2000'

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DOC WATER SYSTEM PLAN UPDATE

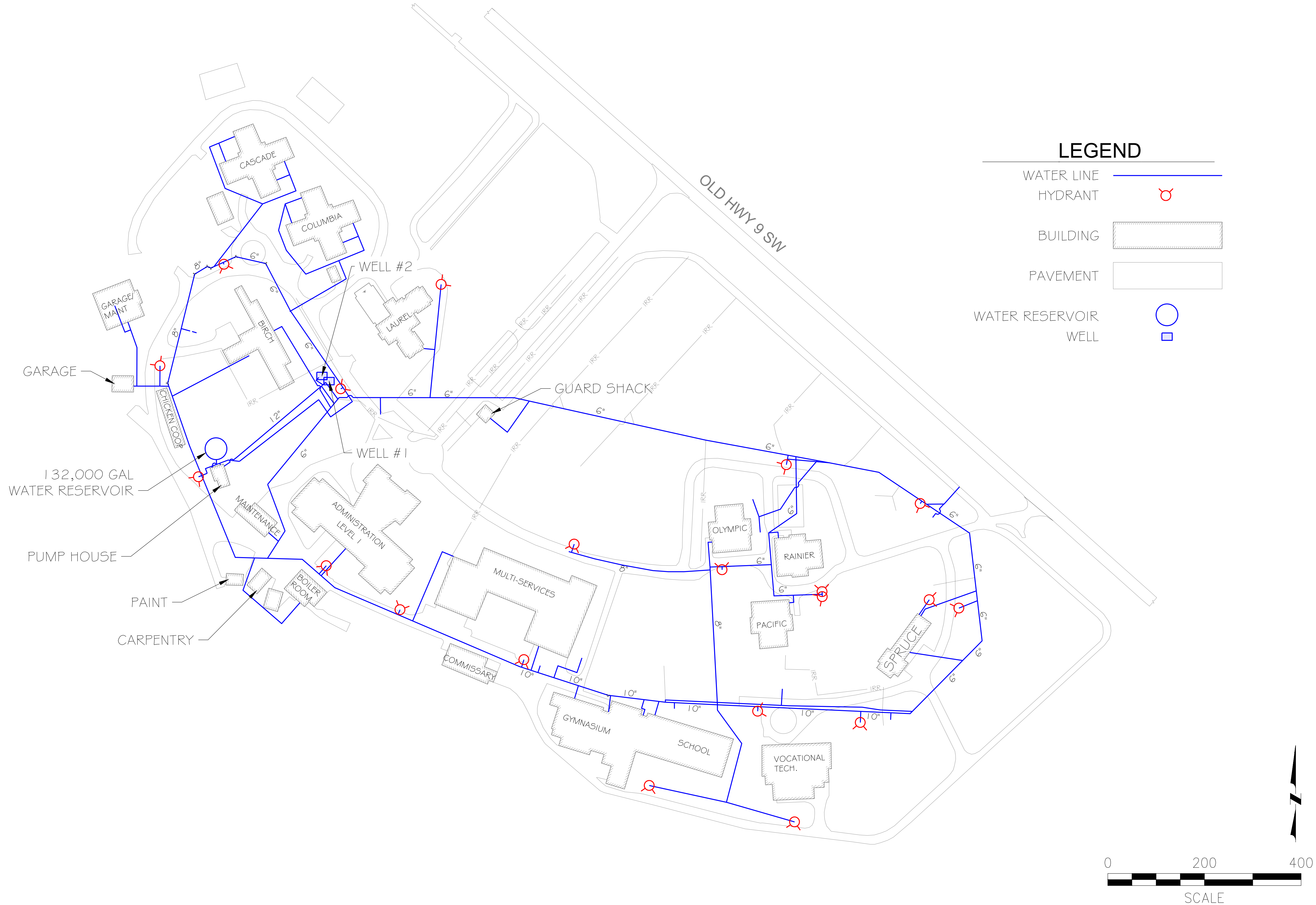
MLF - WATER SERVICE AREA

EXHIBIT

EX B3-2

EXHIBIT B3-3

MAPLE LANE CORRECTIONS CENTER - WATER SYSTEM LAYOUT



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DOC WATER SYSTEM PLAN UPDATE

MLCC WATER SYSTEM LAYOUT

EXHIBIT

B3-3

PLOTTED: Jul 07, 2023 - 16:34a7p7 PLOTTED BY: kellenm

2 Basic Planning Data

2.1 Current Population and Service Connections

There are 18 buildings served by the Maple Lane water system and 200 approved service connections at the facility. According to the water system operator, there are approximately 100 residents and 101 employees at MLCC. The number of transient users, typically visitors, is 750 visitors per month.

Table B3-2 shows a summarization of the population at the facility.

Table B3-2: Population	
Population Type	**Population**
Full-Time Resident	100
Non-residential	101
Temporary	750
Total	951

2.2 Water Production and Usage

This system does not have customer classes and rates. Table B3-3 shows the monthly and annual totals for source production and water use. Monthly production rates are calculated from available well meter readings for 2020 through 2022 (See Appendix C13). Due to a lack of service meters, consumption is assumed to be equivalent to production.

Table B3-3: Water Production and Usage (2020 – 2022)		
Source	Average Monthly production (gal)	Annual Production (gal)
Wells SO1 and SO2	294,909	3,538,913
Use	Average Monthly Consumption (gal)	Annual Consumption (gal)
Total	294,909	3,538,913

2.3 Water Supply Characteristics

Two wells, Well No. 1 and 2, supply the Maple Lane water system. The wells are located in close proximity to each other and are classified as a well field source. Maple Lane is located in WRIA 23, near Prairie Creek and Chehalis River. The wells have been in effect since 1939 and have not affected water levels of the surrounding waterbodies.

2.4 Water Supply Reliability Evaluation

The wells have been reliable and have consistent yield.

See Section 5.1.5 for MLCC's water supply contingency plan.

2.5 Future Population Projections and Land Use

The current residential population is approximately 100. DOC has no capital improvement projects scheduled to add buildings or services to the system. DSHS recently built a facility on-site and it is unknown what further projects are planned. For the purposes of this Plan, the population is anticipated to grow to 300 residents by 2034.

2.6 Future Water Demand

Table B3-4 summarizes the 2024 and projected 2034 and 2044 residential population and water demand.

Table B3-4: Water Demand Forecast			
Year	2024 (1)	2034	2044
Resident Population	100	300	300
	Average Day Demand (gpd)		
Facility	9,550	28,651	28,651
Per Resident	96	318	318
	Maximum Day Demand (gpd)		
Facility	36,037	108,112	108,112
Per Resident	360	360	360
	Peak Hour Demand (gpm)		
Facility	93	184	184

(1) 2024 Demand is the average of 2020-2022 data.

3 System Analysis and Asset Management

3.1 Asset Management – Asset Inventory and Analysis

3.1.1 Asset Inventory

Table B3-5 shows the assets of Maple Lane Corrections Center.

Table B3-5: Asset Inventory			
Asset	**Description**	**Capacity/ Size**	**Year Built**
Well No. 1	Depth = 80 feet 5 hp pump	260 gpm	1939
Well No. 2	Depth = 75 feet 10 hp pump	340 gpm	1949
Treatment Process	Chlorination	-	-
Booster Pumps (2)	7.5 hp	165 gpm	-
Booster Pumps (3)	30 hp	2,500 gpm total	-
Ground-Level Reservoir	Concrete	132,000 gal	1992
Distribution Pipe	AC	4 – 12 inch	1939 - 1992
Distribution Pipe	PVC	4 – 12 inch	1980 - 1992
Distribution Pipe	DI	4 – 12 inch	1980 - 1992
Distribution Pipe	CI	4 – 12 inch	1939 - 1992

3.1.2 Asset Condition & Criticality

Remaining useful life and condition are general and applied to the full inventory of the asset identified. Considering the age of the assets, there may be isolated locations of poor conditions due to joint separation caused from tree roots or settlement, however there are not any known or expected failures.

Table B3-6 details the condition of the water system assets.

Table B3-6: Asset Condition

Component	Units	# of Units	Remaining Useful Life	Condition	Replacement Cost
Distribution System Inventory					
12” Pipe	LF	356	~60-80 years	Good	
10” Pipe	LF	814	~60-80 years	Good	
8” Pipe	LF	1,154	~60-80 years	Good	
6” Pipe	LF	4,839	~20-40 years	Aged	
Raw & Finished Storage Inventory					
Storage Tank	gal	132,000	Installed 1992	Good	$200,000
Booster Pump Station Inventory					
Distribution Booster Pump	gpm	165	Installed 2000	Good	$10,000
Distribution Booster Pump	gpm	165	Installed 2000	Good	$10,000
Fire Pump (3)	gpm	2500 (total)	Installed 1980s	Good	$45,000
Source Pump Inventory					
Well No. 1 Pump	gpm	260	10+ years w/ maintenance.	Functional	$20,000
Well No. 2 Pump	gpm	340	10+ years w/ maintenance.	Functional	$40,000

3.2 Water Quality

Table B3-7 details the water quality monitoring requirements at MLCC. Coliform is tested monthly, has a monitoring population of 156, and requires one routine sample a month. The facility has maintained compliance with water quality regulations.

Table B3-7: Water Quality Monitoring Schedule			
Test Panel	**# of Samples Required**	**Frequency**	**Next Sample Due**
Coliform	1	monthly	
Chemical Monitoring			
Lead & Copper	5	3 year	Sep 2023
Asbestos	0	9 year	
Total Trihalomethane (THM)	1	3 year	Nov 2023
Halo-Acetic Acids	1	3 year	Nov 2023
Source Monitoring – Wellfield (Well #1 & #2)			
Nitrate	1	1 year	Sep 2023
Complete Inorganic	1	9 year	Oct 2025
Volatile Organics	1	6 year	Sep 2023
Herbicides	1	9 year	May 2023
Pesticides	0	3 year	
PFAs	1	3 year	Aug 2024
Soil Fumigants	0	3 year	
Gross Alpha	1	6 year	Apr 2026
Radium 228	1	6 year	Apr 2026

See Appendix C6 for MLCC's water quality monitoring plans.

3.3 Design Standards

Section 2.2 of Part A of this plan includes DOC-wide design standards.

3.4 Capacity Analysis

3.4.1 Water Right Analysis

The total annual water right available to MLCC is 96 acre-feet per year (afy). The total amount of water available for domestic use is 96 afy, with a maximum instantaneous withdrawal rate of 310 gallons per minute (gpm). The installed well pump capacity for well no 2 is listed as 30 gpm above the maximum instantaneous withdrawal rate. The actual pumping rate of this well is being confirmed so that withdrawal can be reduced if necessary. See Appendix C4 for Maple Lane's Water Rights Self-Assessment Form.

3.4.2 Source Capacity Analysis

Table B3-8 shows the available source capacity for the facility.

Table B3-8: Source Capacity Analysis		
	2021	2041
Available Source (gpd)		
Well No. 1 (260 gpm)	374,400	374,400
Well No. 2 (340 gpm)	489,600	489,600
Total	**864,000**	**864,000**
Maximum Day Demand (gpd)	36,037	108,112
Source Capacity Surplus/(Deficiency) (gpd)	**827,963**	**755,888**

The wells have enough capacity to provide sufficient water for MLCC.

3.4.3 Storage Capacity Analysis

MLCC is currently served by one 130,000 gallon reservoir. The total required storage is based on equalizing storage, standby storage, and fire flow storage. The fire flow storage must facilitate a required 1,500 gpm flow for one hour, as established by the Thurston County Fire Marshal. Table B3-9 shows the available storage for the facility. The current storage capacity is adequate to accommodate current and future storage requirements.

Table B3-9: Storage Capacity Analysis

	2024	2034	2044
Required Storage (gal)			
Operational Storage (1)	780	6,541	6,541
Equalizing Storage (2)	1,802	5,406	5,406
Fire Flow Storage (3)	90,000	90,000	90,000
Standby Storage (Nested) (4)	6,000	60,000	60,000
Total Required (5)	92,582	101,946	101,946
Available Storage			
130,000-gal reservoir	132,000	132,000	132,000
Dead Storage (6)	624	5,232	5,232
Total Available (7)	131,376	126,768	126,768
Storage Capacity Surplus/(Deficiency)	38,794	24,821	24,821

(1) Required operational storage = Estimated 10% (ES + SS)
(2) Required equalizing storage = Greater of 5% of MDD or DOH equation.
DOH equation = (Peak Hour Demand - Total Available Source) * (150)
PHD : (Maximum Day Demand per ERU / 1440) * [(C) * (N) + F] + 18
(C & F values obtained from Table 3-1 in DOH June 2020 WSDM.)
(3) Required fire flow storage = Flow * duration = 1500 gpm * 1 hr * 60min/hr. (According to Thurston County Fire Marshal).
(4) Required standby storage for existing source = Greater of (2*ADD/ERU)-(1440*(Qs-Ql))) or (200 gpd*ERU).
Qs: Total source capacity
Ql: Largest source capacity
Nested storage = Lesser of SS and FFS
(5) Total required storage = equalizing + fire flow + standby storage + operational – nested storage.
(6) Dead storage = Estimated 8% (ES + SS)
(7) Total available storage = sum of reservoir storage – dead storage.

3.4.4 Limiting Factor Analysis

Table B3-10 details the limiting factor for Maple Lane.

Table B3-10: Limiting Factor Analysis

Capacity Parameter	Availability Capacity (gpd)
Water Right Capacity (Qa = 96 afy)	85,703
Source Capacity	864,000
Storage Capacity	131,376
Limiting Factor Capacity	**85,703**

As shown in the above table, water rights are the limiting factor for capacity at Maple Lane. In order to determine an accurate amount of water use per ERU, a resident per ERU factor must be defined.

For this analysis, one ERU is defined as the average water usage of a typical single-family residence, assuming the average person uses 100 gallons per day and the average single-family residence includes 2.3 residents, one ERU is equivalent to 230 gallons per day. According to Table B3-4, a resident uses 96 gpd under average day demand. The facility has a capacity of 85,703 gpd, which can serve 892 residents on the average day, or 428 ERUs. Therefore, the resident per ERU factor is 892 residents per 428 ERUs, or 2.08 residents per ERU.

3.5 Hydraulic Analysis

The goal of this hydraulic analysis is to determine whether the distribution system can maintain minimum pressures during peak hour demand and fire flow demand under current and future conditions. A new hydraulic model was developed for Maple Lane using WaterCAD hydraulic modeling software.

The model includes the water tank, a booster pump, and the water distribution network. The system was evaluated under present condition peak hour demand. The demand was modeled by dividing total system peak hour demand across the system at the connections to residential units, where demand is typically the highest. The results of this analysis show that the system was able to provide peak hour demand and maintain a system pressure of at least 30 pounds per square inch (psi).

The model under fire flow conditions was modeled using the fire pumps. The system was also evaluated under the fire flow requirement of 1,500 gallons per minute (gpm). This analysis indicated that the hydrants were unable to provide flows of 1,500 gpm.

Appendix C9 includes a hydraulic analysis map for the Maple Lane water system.

3.6 Summary of System Deficiencies

Table B3-11 shows the deficiencies of the water system plan. The results of the capacity analysis indicated that the current water rights are not sufficient to accommodate current well withdrawal. The hydraulic analysis indicated that the water system was unable to provide the required fire flow.

Table B3-11: System Deficiencies

Classification of Deficiency	Description of Project Solution	Total Project Cost
Instantaneous Water Rights	Application for Additional Water Rights	$12,500
Failed Fire Flow Analysis	Upsize 6” distribution mains to 10”	$1,242,000

4 Water Use Efficiency Program

4.1 Source and Service Metering

4.1.1 Production/Source Metering:

The wells are metered and read every month.

4.1.2 Service Meters

Maple Lane has no metered service connections.

4.2 Distribution System Leakage

4.2.1 Methodology

Distribution System Leakage is calculated using American Water Works Association Water Audit methodology and is reported in yearly Water Use Efficiency Annual Performance Reports. Cedar Creek's last three WUE Reports are included in Appendix C14.

The three-year average Distribution System Leakage volume according to the most current data, 2019-2021, is 0 gallons. This number likely does not reflect actual leakage due to the lack of service meters in this system.

The most current distribution system leakage information that came from the most recent Water Use Efficiency Report is shown in Table B3-12 below.

Table B3-12: Distribution System Leakage					
Year	**Total Water Produced & Purchased (gal)**	**Authorized Consumption (gal)**	**Distribution System Leakage (gal)**	**Distribution System Leakage (%)**	**3-year annual average (%)**
2021	3,828,400	3,828,400	0	0.0	0.0
2020	2,576,800	2,576,800	0	0.0	0.0
2019	3,989,600	3,989,600	0	0.0	0.0
2018	3,843,500	3,843,500	0	0.0	0.0

4.2.2 Leak Detection

The three-year average DSL volume according to the most current data, 2019-2021, is 0 gallons. The three-year average DSL percentage is 0.0%. The leakage volume is likely inaccurate due to a lack of service meters at the facility. According to the system operator, water usage in recent years is much higher than previous years. This change could be attributed to leakage in the distribution system.

4.3 Water Use Efficiency Program

The current water use efficiency goals for Maple Lane are to install water meters throughout the system. Currently, the facility is waiting for funding from DOC to facilitate the project. To accurately measure water usage, the facility should install meters at all service connections. All meters, including source meters should be calibrated on an annual basis. These practices will improve operation efficiency and leak management.

5 Source Water Protection

5.1 Wellhead Protection Program

5.1.1 Overview

Maple Lane's wellhead protection program was developed in 1998 and is included in Appendix C7. Updates to the contaminant source inventory were conducted in conjunction with this Water System Plan update. Ecology's Facility/ Site Identification System identified the Grand Mound Municipal Wastewater Treatment Facility as a potential source of contamination. All other elements of the WHPP are retained with this Plan.

5.1.2 Susceptibility Assessment

The two wells are rated as highly susceptible to contamination.

5.1.3 Wellhead Protection Area Delineation

See Exhibit B3-4 to see the wellhead protection area delineation. The following five zones of the wellhead protection area were delineated: Sanitary control area, Six-month time of travel zone, One-year time of travel zone, Five-year time of travel zone, and Ten-year time of travel zone. The sanitary control area includes the area within a 100-foot radius around the wells that serve the facility. The Calculated Fixed Radius method was used to determine the radii for these zones, as documented in the wellhead protection program.

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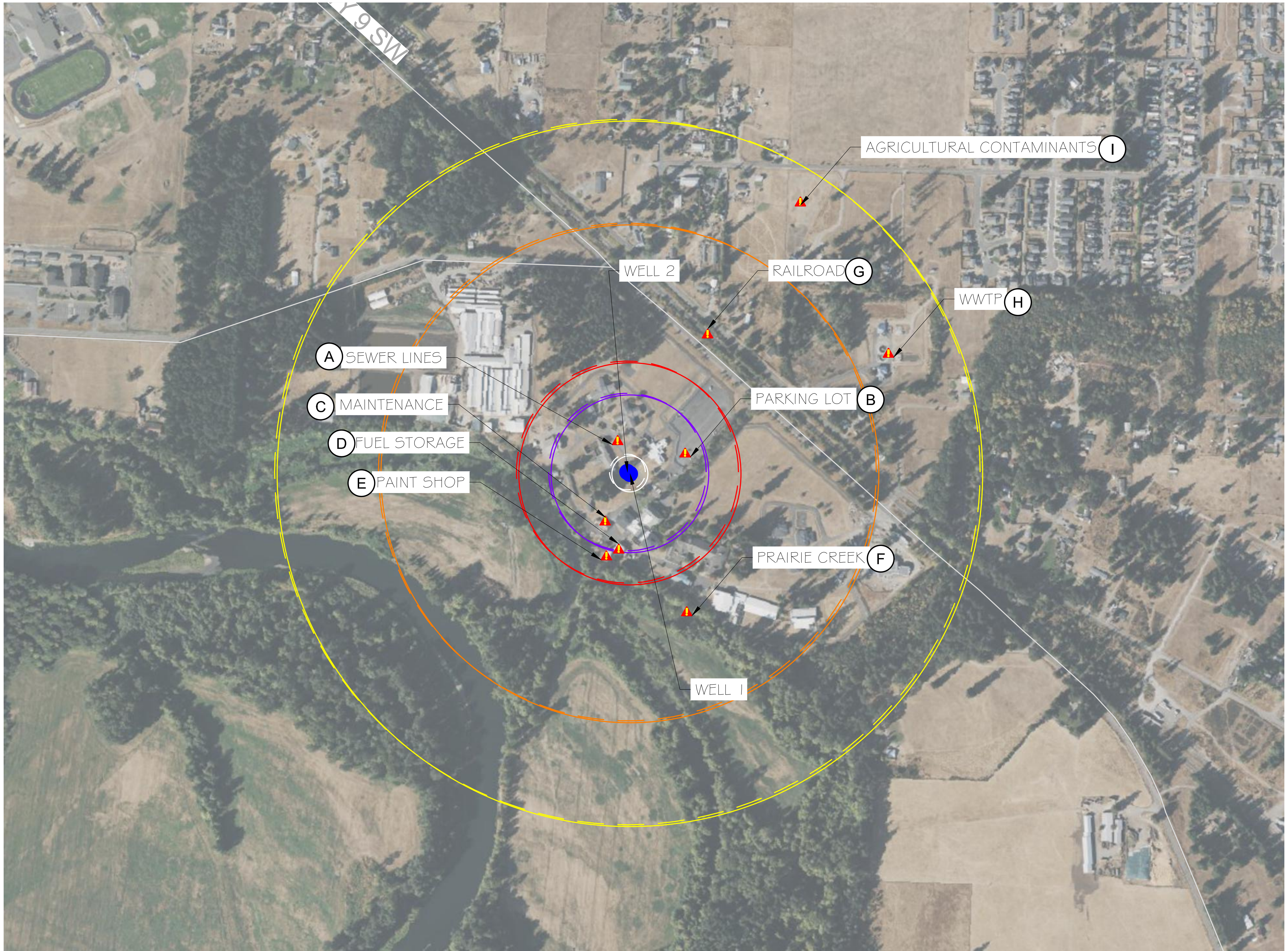
EXHIBIT B3-4

MAPLE LANE CORRECTIONS CENTER - WELLHEAD ZONES OF CONTRIBUTION



LEGEND

WELLHEAD

POTENTIAL SOURCE OF CONTAMINATION

ROAD

WELL NO. 1

100' SANITARY CONTROL AREA

440' 6 MONTH TIME OF TRAVEL

620' 1 YEAR TIME OF TRAVEL

1390' 5 YEAR TIME OF TRAVEL

1970' 10 YEAR TIME OF TRAVEL

WELL NO. 2

100' SANITARY CONTROL AREA

440' 6 MONTH TIME OF TRAVEL

620' 1 YEAR TIME OF TRAVEL

1390' 5 YEAR TIME OF TRAVEL

1970' 10 YEAR TIME OF TRAVEL

0 1000' 2000'

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DOC WATER SYSTEM PLAN UPDATE

MLCC - WELLHEAD ZONES OF CONTRIBUTION

EXHIBIT

B3-4

5.1.4 Contaminant Source Inventory

The sources of potential contamination at the facility are listed in Table B3-13.

Table B3-13: Contaminant Inventory
6 Month Time of Travel
A - On-site sewage collection lines
B - On-site Visitor Parking
C - Maintenance shop and storage buildings
D - On-site above ground fuel storage tanks
6 Month to 1 Year Time of Travel
E - On-site Paint Shop
1 to 5 Year Time of Travel
F - Prairie Creek
G - Burlington Northern Railroad
5 to 10 Year Time of Travel
H - Grand Mound Municipal Wastewater Treatment Facility
I - Agricultural contaminants
Upgradient and potentially within a 10 Year Time of Travel
J - 3 gas stations approximately 5,500 feet to the Northeast

5.1.5 Contingency Plan

In the event of an emergency, water will be delivered to the facility by private vendors, per the trucked water plan in Part A5.3.3 of this Plan. For further emergency preparation, an intertie with the Grand Mound water system or an evaluation of new wells on site could be pursued. Water rights may have to be transferred in either case.

5.1.6 Notify Emergency Responders

In the event of an accidental spill, MLCC staff will notify the Plant Manager/Water Operator. The Plant Manager or switchboard operator would in turn notify West Thurston Fire Dispatch (360) 352-1614 as a first responder. The 24-hour Ecology spill response hotline would also be contacted.

6 Operations and Maintenance

6.1 Water System Management and Personnel

The certified operator at the facility is Valeria Huested.

Table B3-14: Operator Info		
Operator Name	**Operator Number**	**Certification**
Valeria Huested	015291	WDS
Cory Postma	-	-

Maple Lane contracts a cross-connection control specialist on an annual basis. A list of cross-connection control device locations is retained at the facility.

6.2 Emergency Call-Up List

Table B3-15 provides the emergency call-up list for Maple Lane.

Table B3-15: Emergency Call-Up List		
Personnel/ Agency	Working Hours Number	Off-Duty Number
Water System Manager – Valeria Huested	(360) 489-5357	
DOC Environmental Manager – Darin Klein	(360) 764-3093	
DOH Office of Drinking Water – SWRO	(360) 236-3100	(877) 481-4901
DOH Regional Engineer – Deborah Johnson	(360) 433-4054	
DOH Regional Engineer – Candida Granillo-Dodds	(564) 669-3170	
Thurston County Environmental Health	(360) 867-2685	
Electrical Utility – Peninsula Light	(253) 857-5950	
Thurston County Office of Emergency Management	(360) 867-2811	
24-hour Spill Response – Ecology	(800) 258-5990	
Police/Security	911	
Fire Department	(360) 352-1614	911
Emergency Medical	911	

Section A5.3 of this Plan provides a DOC-wide emergency response plan.

6.3 Water Quality Testing Laboratory

MLCC uses the following laboratory for water quality testing:

Water Management Laboratories, Inc.
1515 80th St. E.
Tacoma WA 98404

6.4 Operations and Maintenance Deficiencies

Table B3-16 details the Operations and Maintenance deficiencies as identified by the system operator.

Table B3-16: Summary of O&M Deficiencies		
O&M Deficiency	Action to be Taken	Estimated Cost
No telemetry for water levels in storage tank	Install water level sensor	$4,000
System uses a large pressure tank	Install variable frequency drive	$10,000
Booster pumps do not turn on together	Install pump lead-lag controller	$15,000
Water pressure hammer valve is due for replacement	Install new water pressure hammer valve	$4,000
No digital chlorine readout	Install digital chlorine meter	$1,000

The installed well pumps are understood to be rated at a higher flow rate than the approved instantaneous withdrawal rate. Operators shall ensure well withdrawal does not exceed the maximum instantaneous water right of 310 gpm via the pump control panel.

7 Improvement Program

7.1 Prioritization of Improvements

The following are maintenance and improvement projects recommended for Maple Lane.

1. The system currently does not have any water service meters. Service meters should be installed at all building connections. A flow meter should also be installed in the pump station.

2. To increase the volume of water available at the system fire hydrants, the distribution mains should be replaced with larger diameter pipes. This project would improve fire protection at the facility and is considered a high priority.

3. Multiple improvements can be made to the pump station to increase the efficiency of system operations. The system currently relies on a large pressure tank; the installation of a variable frequency drive would allow the facility to utilize a pressure tank of smaller size. The booster pumps do not turn on together, according to the operator. A lead-lag configuration should be utilized on-site to efficiently utilize both booster pumps. Additionally, the water pressure hammer valve is due for replacement. These improvements are of moderate priority.

4. The system lacks a digital readout of water level in the storage reservoir. It is recommended that a water level sensor be installed. The priority of this project is moderate.

5. The water treatment building does not have a digital chlorine meter. The installation of a digital chlorine meter will improve the accuracy of water quality monitoring and recordkeeping at the facility. This project is of moderate priority.

7.2 Capital Improvement Summary and Schedule

MLCC-1: Annual Renewal and Replacement. This refers to annual distribution system maintenance and upgrade activities necessary to maintain reliable operation of the water system. This includes activities such as leak detection and repair, replacement of aging lines and valves, etc. The annual cost is estimated to be $35,000.

MLCC-2: Distribution System Metering. It is recommended that a water meter is installed at every building service connection, a total of 18 water meters. A flow meter should also be installed near the booster pumps.

MLCC-3: Upsize Distribution Mains. This project includes the abandonment of portions of the existing 6-inch and 8-inch distribution mains and construction of 10-inch mains.

MLCC-4: Pump Station Improvements. This project involves pump station improvements including installing a variable frequency drive, a lead-lag pump configuration, and replacing the water pressure hammer valve.

MLCC-5: Water Level Sensor. Installation of a water level sensor in the storage reservoir.

MLCC-6: Chlorine Meter. This refers to the installation of a digital chlorine meter in the water treatment building.

Table B3-17: Maple Lane Corrections Center Capital Improvement Projects 2024-2034				
Project Code	**Description**	**Cost[(1)]**	**Purpose[(2)]**	**Priority Ranking[(3)]**
MLCC-1	Annual Renewal & Replacement	$350,000	OP	1
MLCC-2	Distribution System Metering	$25,000	OP	1
MLCC-3	Upsize Distribution Mains	$1,242,000	OP	1
MLCC-4	Pump Station Improvements	$29,000	OP	2
MLCC-5	Water Level Sensor	$4,000	OP	2
MLCC-6	Chlorine Meter	$1,000	OP	2
MLCC-Total		$1,651,000		

(1) Annual renewal and replacement costs are presented as total costs over the 10-year planning period, not as annual costs
(2) H/S = Health/Safety, OP = Operational, G = Growth
(3) "1" = High Priority, "2" = Moderate Priority

Section B4

McNeil Island Corrections Center

CONTENTS

TABLES

EXHIBITS

1 Description of Water System

1.1 Ownership and Management

The McNeil Island Corrections Center is operated by the Washington State Department of Social and Health Services (DSHS). The water system is owned and operated by the Washington State Department of Corrections (DOC) and is a type ST ownership. An on-site plant manager oversees the daily operations of the water system and reports to the operator. Contact information for relevant water system personnel is identified in **Table B4-1** below.

Table B4-1: Water System Contacts			
	Name	**Address**	**Phone Number**
Owner	McNeil Island Water	PO Box 41112 Tumwater, WA 98501	
Water System Manager	Charri Garber	PO Box 41112 Tumwater, WA 98501	

1.2 System History and Background

McNeil Island Corrections Center is located on McNeil Island, which is owned by the State of Washington. The island is in the south Puget Sound Area, northwest of the City of Steilacoom and approximately 10 miles southwest of the City of Tacoma. The island is approximately 4,445 acres in size, of which about 100 acres has been developed for correctional facilities. The facilities on the island originally operated as a federal prison, and from 1981 to 2011 operated as an adult correctional facility. In 2003, DSHS established the Special Commitment Center (SCC) and the Secure Community Transition Facility (SCTF) in their current location in the Northern Complex, in the center of the island. In 2011, the correctional facility shut down, and the DSHS facilities continue to operate on McNeil Island. DOC has retained the responsibility to operate and maintain the water and wastewater facilities that serve the island, although there are no other DOC operations on the island.

Historically, McNeil Island has obtained its water from surface sources on the island. Most recently, the facility relied on Eden Creek Reservoir, and impoundment of approximately 100 acre-feet, located in the south central portion of the island. In 2019, a well was drilled near the Northern Complex, and became the primary source of water in 2022. The Eden Creek Reservoir has been decommissioned.

Facilities on McNeil Island consist of the Main Institution and the North Complex. The Main Institution is located on the southeast side of the island and contains the former DOC facilities. The North Complex is in the center of the island, 2 miles northwest of the Main Institution, and includes the SCC and SCTF. There are homes scattered throughout a large portion of the island. The residences are owned by the state and are currently vacant.

Existing structures on-site include the following:

- DSHS SCC Housing Units
- DSHS SCTF Housing Units
- DOC Main Institution Buildings (currently vacant)
- Still Harbor Dock
- Main Dock
- Wastewater Treatment Plant
- Single-family residences (currently vacant)

Exhibit B4-1 provides a location map for the facility.

1.3 Related Plans

McNeil Island is located in Pierce county and is subject to the standards set forth in the Pierce County Coordinated Water System Plan (CWSP). The DOC design standards and specifications are consistent with the requirements of the Pierce County CWSP.

1.4 Service Area, Maps, and Land Use

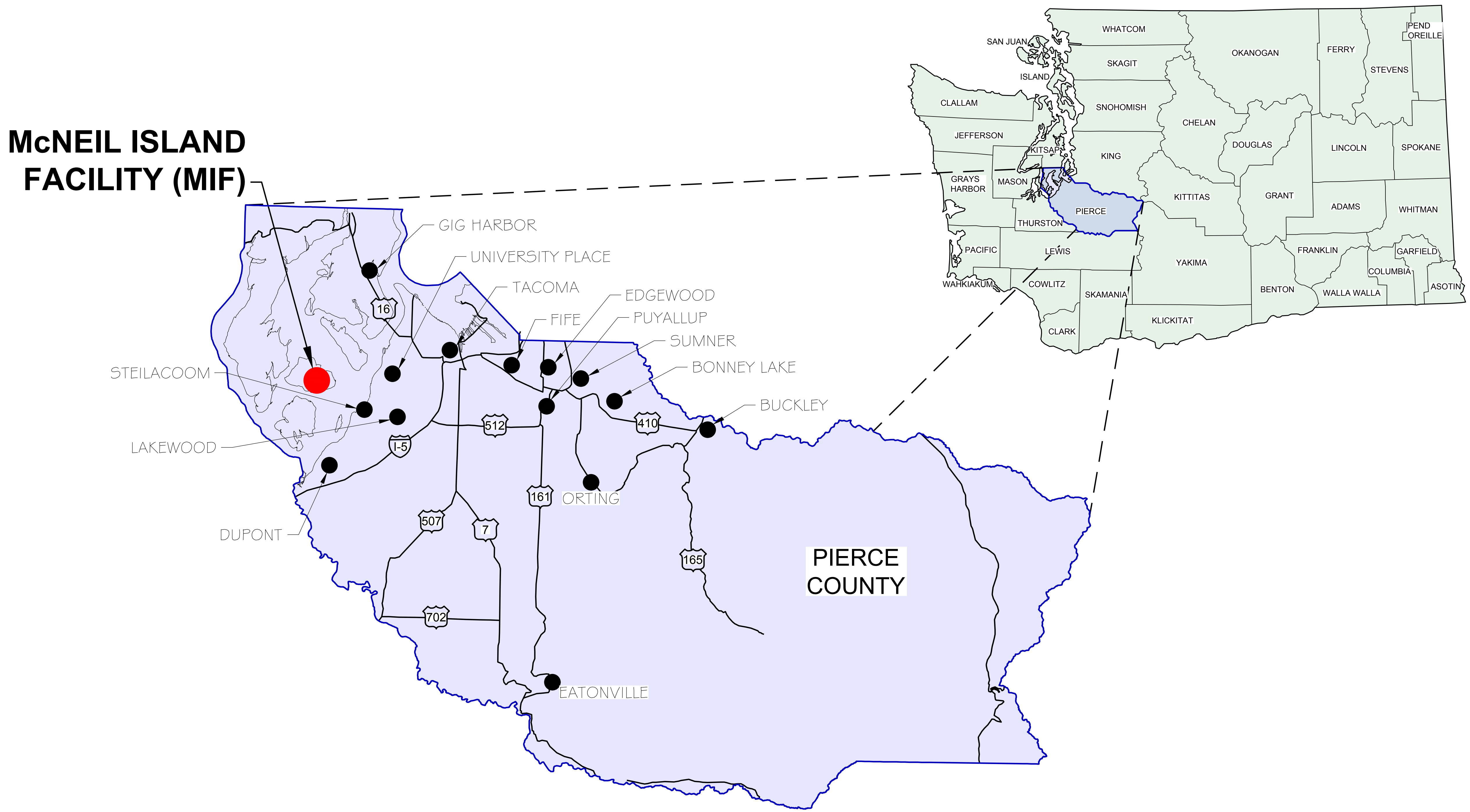
Exhibit B4-2 provides a map of the water service area. The service area includes the entire island. Exhibit B4-3 shows a map of the McNeil Island water system features. DOC has no plans to expand the water service area.

1.5 System Description

Water is pumped from Well No. 1 through treatment filters and into the 1-million-gallon tank. The well operates with two six-inch well pumps that discharge through the same outlet pipe. The water is distributed by gravity from the tank to a looped distribution system consisting of various materials including ductile iron (DI), PVC, asbestos concrete (AC), and cast iron (CI).

EXHIBIT B4-1

MCNEIL ISLAND FACILITY - VICINITY MAP



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DOC WATER SYSTEM PLAN UPDATE

McNEIL ISLAND FACILITY - VICINITY MAP

EXHIBIT

B4-1

EXHIBIT B4-2

MCNEIL ISLAND FACILITY - WATER SERVICE AREA

LEGEND

WATER SERVICE AREA BOUNDARY

0 3000' 6000'

SCALE

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DOC WATER SYSTEM PLAN UPDATE

MIF - WATER SERVICE AREA

EXHIBIT

B4-2

EXHIBIT B4-3

MCNEIL ISLAND CORRECTIONS CENTER - WATER SYSTEM LAYOUT

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DOC WATER SYSTEM PLAN UPDATE

MICC WATER SYSTEM LAYOUT

EXHIBIT

B4-3

2 Basic Planning Data

2.1 Current Population

The McNeil Island water system currently serves the DSHS SCC and SCTF buildings near the center of the island. The system maintains connections to more than thirty vacant buildings including the old DOC institutional buildings and homes previously occupied by DOC staff. There are 1,883 approved service connections at the facility. MICC currently has 271 full-time residents and 421 employees.

Table B4-2 shows a summarization of the population.

Table B4-2: Population	
Population Type	**Population**
Full-Time Residential	271
Non-Residential	421
Temporary	0
Total	692

2.2 Water Production and Usage

This system does not have customer classes and rates. Table B4-3 shows the monthly and annual totals for source production and water use. Monthly production rates are calculated from available well meter readings for 2021 and 2022 (See Appendix C13). Annual production is calculated as twelve months of average monthly production. Due to a lack of service meters on site, consumption is assumed to be equal to production.

Table B4-3: Water Production and Usage (2021 – 2022)		
Source	Average Monthly Production (gal)	Annual Production (gal)
Well	4,695,363	56,344,352
Use	Average Monthly Consumption (gal)	Annual Consumption (gal)
Total	4,695,363	56,344,352

2.3 Water Supply Characteristics

In 2019, a new well was drilled to a depth of 741 feet. In 2022, McNeil Island switched from using surface water to exclusively using well water.

2.4 Water Supply Reliability Evaluation

The well serving the water system was installed recently and should provide a reliable source of supply well into the future. See Section 5.1.5 for McNeil Island's contingency plan.

2.5 Future Population Projections and Land Use

Currently the residential population is 271 and is expected to remain constant for the next ten years. There are no known plans for expansion.

2.6 Future Water Demand

Table B4-4 summarizes the 2024 and projected 2034 and 2044 residential population and water demand.

Table B4-4: Water Demand Forecast			
Year	2024 (1)	2034	2044
Resident Population	271	271	271
Average Day Demand (gpd)			
Facility	158,454	118,840	118,840
Per Resident	585	439	439
Maximum Day Demand (gpd)			
Facility	344,643	258,482	258,482
Per Resident	1,272	954	954
Peak Hour Demand (gpm)			
Facility	559	424	424

(1) 2024 Demand is the average of 2020-2022 data.

System leakage is a known issue at MISS, and accounts for a portion of current demand. The facility is currently undergoing improvement projects to address leakage issues. The projected demand is expected to decrease be 25% once leakage is mitigated.

3 System Analysis and Asset Management

3.1 Asset Management – Asset Inventory and Analysis

3.1.1 Asset Inventory

Table B4-5 shows the water system assets of McNeil Island.

Table B4-5: Asset Inventory			
Asset	**Description**	**Capacity/ Size**	**Year Built**
Well No. 1	Depth = 741 feet	251 gpm	2019
0.5 MG Elevated Tank	Steel	500,000 gal	1938
1 MG Tank	Steel	1,000,000 gal	2002
Distribution Pipe	Ductile Iron	4 – 12 inch	1990
Distribution Pipe	PVC	4 – 12 inch	
Distribution Pipe	AC	4 – 12 inch	
Distribution Pipe	CI	4 – 12 inch	1930’s

3.1.2 Asset Condition & Criticality

The main loop consists of approximately 30,000 feet of 10 and 12-inch piping from the SCC to the Main Institution Area. The main loop includes a mix of 10 and 12-inch DI, 10-inch AC, 10-inch CI, and 12-inch PVC piping. The AC and CI pipes in the main loop were installed in the 1930’s and the condition is unknown. The SCC area is served by a combination of 8-inch cast iron and 12-inch PVC lines, which are in good condition.

Due to leakage volumes, the water system has recently replaced portions of the distribution system and will continue to do so to mitigate continued leaking.

The 500,000 gallon storage tank is currently being decommissioned.

Remaining useful life and condition are general and applied to the full inventory of the asset identified. Considering the age of the assets, there may be isolated locations of poor conditions due to joint separation caused from tree roots or settlement, however there are not any known or expected failures.

Table B4-6 details the condition of the water system assets.

Table B4-6: Asset Condition

Component	Units	# of Units	Remaining Useful Life	Condition	Replacement Cost
Distribution System Inventory					
4” Pipe	LF	446	Installed 1930s	Poor	
6” Pipe	LF	5,106	Installed 1930s	Poor	
8” Pipe	LF	2,906	Installed 1990s	Good	
10” Pipe	LF	17,308	Installed 1990s	Good	
12” Pipe	LF	12,939	Installed 1990s	Good	
Raw & Finished Storage Inventory					
Steel Tank	gal	1,000,000	Installed 2002	Good	$2,500,000
Steel Tank	gal	500,000	Installed 1938	Poor	1 MG tank is replacement
Source Pump Inventory					
Well No. 1 Pump (2)	gpm	160 (each)	Installed 2019	Good	$20,000

3.2 Water Quality

Table B4-7 details the water quality monitoring requirements at McNeil Island. Coliform is tested monthly, has a monitoring population of 692, and requires one routine sample per month. The facility has maintained compliance with water quality regulations.

Table B4-7: Water Quality Monitoring Schedule			
Test Panel	**# of Samples Required**	**Frequency**	**Next Sample Due**
Coliform	1	monthly	
Chemical Monitoring			
Lead & Copper	10	3 year	Aug 2025
Asbestos	1	9 year	Oct 2030
Total Trihalomethane (THM)	1	quarterly	Nov 2023
Halo-Acetic Acids (HAA5)	1	quarterly	Nov 2023
Source Monitoring – Butterworth Lake			
Complete Inorganic	1	9 year	Mar 2031
Iron	1	3 year	Mar 2025
Manganese	1	3 year	Mar 2025
Volatile Organics	1	6 year	Jun 2028
Herbicides	1	9 year	Jul 2031
Pesticides	0	9 year	Jul 2031
Soil Fumigants	0	3 year	Sep 2023
Gross Alpha	1	6 year	Jun 2028
Radium 228	1	6 year	Jun 2028
Source Monitoring – Well #1 (BLN215)			
Nitrate	1	1 year	Sep 2023
Complete Inorganic (IOC)	1	3 year	Feb 2024
Volatile Organics (VOC)	1	3 year	May 2024
Volatile Organics (VOC)	1	3 year	Aug 2025
Herbicides	1	9 year	Mar 2029
Pesticides	1	9 year	Mar 2029
PFAS	1	3 year	May 2025
Soil Fumigants	0	3 year	
Gross Alpha	1	quarterly	Oct 2023
Radium 228	1	quarterly	Oct 2023

See Appendix C6 for MICC's water quality monitoring plan.

3.3 Design Standards

Section 2.2 of Part A of this plan includes DOC-wide design standards.

3.4 Capacity Analysis

3.4.1 Water Right Analysis

The total amount of water available under the ground water right for domestic use is 170 afy, with a maximum instantaneous rate of 251 gpm. As shown in McNeil Island's Water Rights Self-Assessment Form, these rights are sufficient to support projected demands. See Appendix C4 for McNeil Island's Water Rights Self-Assessment Form.

3.4.2 Source Capacity Analysis

Table B4-8 shows the available source capacity for the facility.

Table B4-8: Source Capacity Analysis			
	2024	2034	2044
Available Source (gpd)			
Well No. 1 (251 gpm)	361,440	361,440	361,440
Total	**361,440**	**361,440**	**361,440**
Maximum Day Demand (gpd)	344,643	344,643	344,643
Source Capacity Surplus/(Deficiency) (gpd)	**16,797**	**16,797**	**16,797**

The well has enough capacity to provide sufficient water for MICC.

3.4.3 Storage Capacity Analysis

MICC is currently served by two steel storage reservoirs totaling 1.5 million gallons in volume. The 500,000 gallon tank is currently being decommissioned. The total required storage is 560,603 gallons based primarily on a fire flow requirement of 2,750 gpm for three hours, as established by the Pierce County Fire Marshal.

Table B4-9 shows the available storage values for the facility.

Table B4-9: Storage Capacity Analysis			
	2024	2034	2044
Required Storage (gal)			
Operational Storage (1)	10,891	10,891	10,891
Equalizing Storage (2)	54,712	54,712	54,712
Fire Flow Storage (3)	495,000	495,000	495,000
Standby Storage (Nested) (4)	54,200	54,200	54,200
Total Required (5)	560,603	560,603	560,603
Available Storage			
1.0 MG Tank	1,000,000	1,000,000	1,000,000
Dead Storage (6)	8,713	8,713	8,713
Total Available (7)	991,287	991,287	991,287
Storage Capacity Surplus/(Deficiency)	430,684	430,684	430,684

(1) Required operational storage = Estimated 10% (ES + SS)
(2) Required equalizing storage = Greater of 5% of MDD or DOH equation.
DOH equation = (Peak Hour Demand - Total Available Source) * (150)
PHD : (Maximum Day Demand per ERU / 1440) * [(C) * (N) + F] + 18
(C & F values obtained from Table 3-1 in DOH June 2020 WSDM.)
(3) Required fire flow storage = Flow * duration = 2750 gpm * 3 hr * 60min/hr. (According to Pierce County Fire Marshal).
(4) Required standby storage for existing source = Greater of (2*ADD/ERU)-(1440*(Qs-Ql))) or (200 gpd*ERU).
Qs: Total source capacity
Ql: Largest source capacity
Nested storage = Lesser of SS and FFS
(5) Total required storage = equalizing + fire flow + standby storage + operational – nested storage.
(6) Dead storage = Estimated 8% (ES + SS)
(7) Total available storage = sum of reservoir storage – dead storage.

3.4.4 Limiting Factor Summary

The below table details the limiting factor for McNeil Island.

Table B4-10: Limiting Factor Analysis	
Capacity Parameter	**Available Capacity (gpd)**
Water Right Capacity (Qa = 170 afy)	151,753
Source Capacity	361,440
Storage Capacity	1,491,287
Limiting Factor Capacity	**151,753**

As shown in Table B4-10, water right capacity is the limiting factor for capacity at McNeil Island. In order to determine an accurate amount of water use per ERU, a resident per ERU factor must be defined.

For this analysis, one ERU is defined as the average water usage of a typical single-family residence, assuming the average person uses 100 gallons per day and the average single-family residence includes 2.3 residents, one ERU is equivalent to 230 gallons per day. According to Table B4-4, a resident uses 585 gpd under average day conditions. The facility has a capacity of 151,753 gpd, which can serve 259 residents or 660 ERUs. Therefore, the resident per ERU factor is 259 residents per 660 ERUs, or 0.39 residents per 1 ERU.

3.5 Hydraulic Analysis

An existing hydraulic model of the McNeil Island water system was utilized from a previous project involving replacing portions of the distribution system in 2019. The model includes the distribution piping, the 1-million-gallon tank, two pressure reducing valves, and one gradient proportioning valve.

The storage tank is located near the SCC and has a hydraulic grade line of 293 feet. The pressure reducing valves are located near the main institution, which is in a lower pressure zone that the remainder of the system. The hydraulic grade line of the higher zone is 293 feet, while the grade of the lower zone is 198 feet. The pressure reducing valves are set at 198 feet to maintain a consistent hydraulic grade within the main institution.

The system was evaluated under present condition peak hour demand. The demand was modeled by dividing total system peak hour demand across the system in residential areas and at known leak locations. This analysis indicated that the system was able to maintain peak hour demand and pressures exceeding 30 pounds per square inch (psi).

The system was also evaluated under fire flow requirements. The results of this analysis indicated that multiple hydrants in the system were unable to accommodate fire flows of 2,750 gallons per minute (gpm).

Appendix C9 includes hydraulic analysis data and a map of the hydraulic model for the McNeil Island water system.

3.6 Summary of System Deficiencies

Table B4-11 shows the deficiencies of the water system. The results of the water rights analysis indicated that the water rights are not sufficient to accommodate projected demands. The source capacity and available storage are sufficient for current and projected needs. The results of the hydraulic analysis indicate that the system is able to accommodate peak hour flow and meet fire flow requirements.

Table B4-11: Asset Inventory		
Classification of Deficiency	**Description of Project Solution**	**Total Project Cost**
Annual Water Rights	Application for Additional Water Rights	$12,500

4 Water Use Efficiency Program

4.1 Source and Service Metering

4.1.1 Production/Source Metering

The well is metered and read every day.

4.1.2 Service Meters

The water system currently does not have metered service connections. It is the intent of DOC to repair the infrastructure causing leaks and install service meters throughout the system once the improvements are finished.

4.2 Distribution System Leakage

4.2.1 Methodology

Distribution System Leakage is calculated using American Water Works Association Water Audit methodology and is reported in yearly Water Use Efficiency Annual Performance Reports. McNeil's last four WUE Reports are included in Appendix C14.

The most current distribution system leakage information that came from the most recent Water Use Efficiency Report is shown in Table B4-12 below.

Table B4-12: Distribution System Leakage					
Year	**Total Water Produced & Purchased (gal)**	**Authorized Consumption (gal)**	**Distribution System Leakage (gal)**	**Distribution System Leakage (%)**	**3-year annual average (%)**
2020	54,700,000	54,700,000	0	0.0	0.0
2018	53,400,000	53,400,000	0	0.0	0.0
2017	50,500,000	50,500,000	0	0.0	0.0
2016	43,500,000	43,500,000	0	0.0	0.0

4.2.2 Leak Detection

Due to the lack of meters, MICC is unable to estimate distribution system leakage. Leaks have been detected via visual exploration throughout the system and portions of the distribution system have been replaced.

4.2.3 Water Loss Control Action Plan

Water meters should be installed throughout the system to monitor water usage and leakage. This project is included in the financial program in Section 7. Regular calibration of water system meters should be conducted and recorded.

4.3 Water Use Efficiency Program

The system does not currently have any Water Use Efficiency goals. It is a requirement of DOH to set Water Use Efficiency Goals in a public forum. The water system manager can coordinate the details of a public forum with the DOC Environmental Manager.

All meters, including source meters should be calibrated on an annual basis. These practices will improve operation efficiency and leak management.

5 Source Water Protection

5.1 Wellhead Protection Program

5.1.1 Overview

The objective of this Wellhead Protection Program (WHPP) is to reduce the potential risk of contamination of groundwater within the wellhead protection area.

5.1.2 Susceptibility Assessment

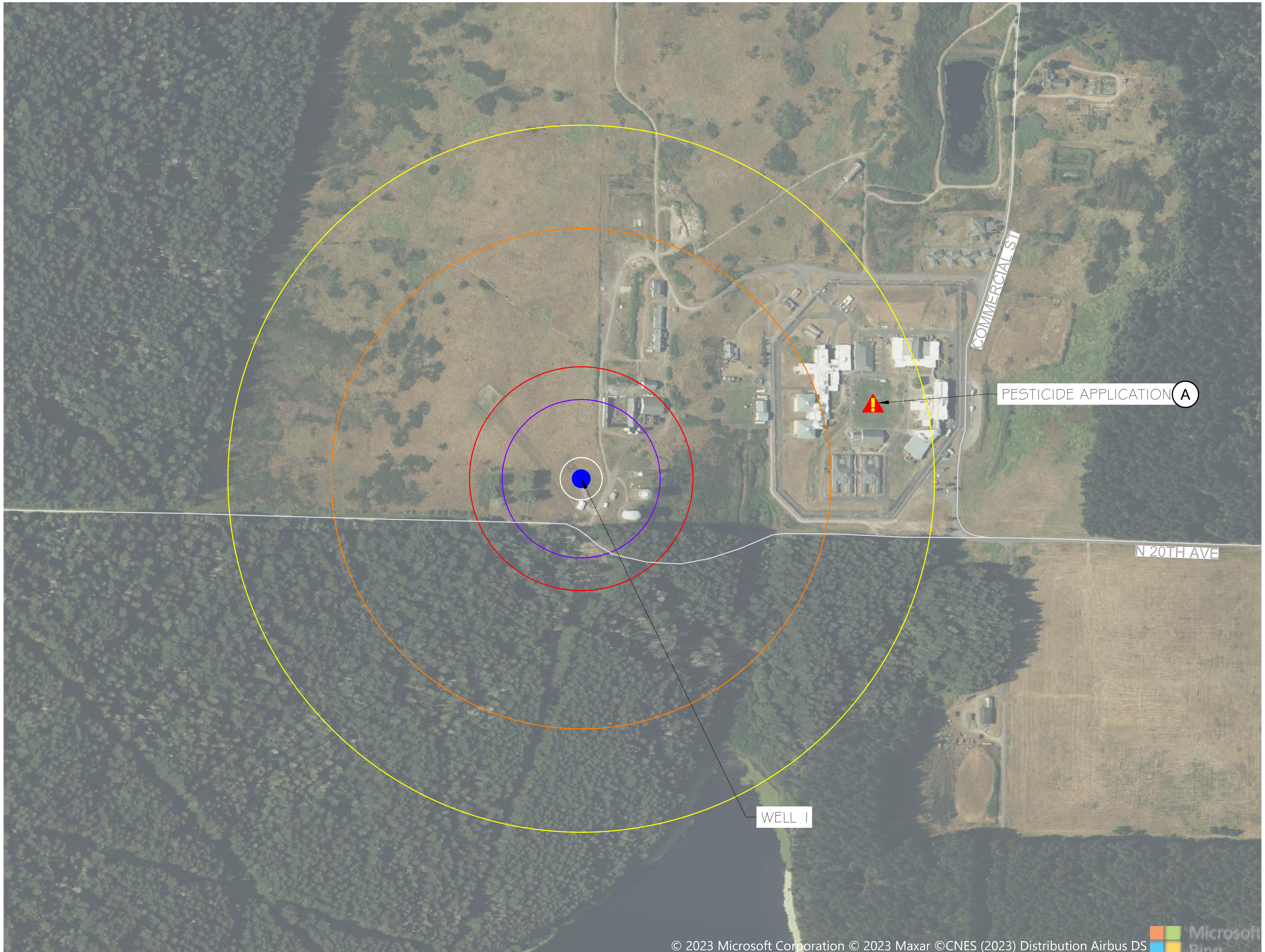
The susceptibility assessment for Well No. 1 is provided in Appendix C7.

5.1.3 Wellhead Protection Area Delineation

See Exhibit B4-4 to see the wellhead protection area delineation in the wellhead protection plan. The following five zones of the wellhead protection area were delineated: Sanitary control area, Six-month time of travel zone, One-year time of travel zone, Five-year time of travel zone, and Ten-year time of travel zone. The sanitary control area includes the area within a 100-foot radius around the wells that serve the facility. The Calculated Fixed Radius method was used to determine the radii for these zones, as documented in the susceptibility assessment.

EXHIBIT B4-4

MCNEIL ISLAND CORRECTIONS CENTER - WELLHEAD ZONES OF CONTRIBUTION



LEGEND

WELLHEAD

POTENTIAL SOURCE OF CONTAMINATION

ROAD

WELL NO. 1

100' SANITARY CONTROL AREA

375' 6 MONTH TIME OF TRAVEL

530' 1 YEAR TIME OF TRAVEL

1185' 5 YEAR TIME OF TRAVEL

1675' 10 YEAR TIME OF TRAVEL

0 500' 1000'

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DOC WATER SYSTEM PLAN UPDATE

MICC - WELLHEAD ZONES OF CONTRIBUTION

EXHIBIT

B4-4

5.1.4 Contaminant Source Inventory

The primary sources of potential contamination at the facility are listed in Table B4-13.

Table B4-13: Contaminant Inventory
6 Month Time of Travel
None
6 Month to 1 Year Time of Travel
None
1 to 5 Year Time of Travel
None
5 to 10 Year Time of Travel
A - Pesticide Application
Upgradient and potentially within a 10 Year Time of Travel
None

5.1.5 Contingency Plan

In the event of an emergency, water will be imported by private vendors, per the trucked water plan in Part A5.3.3 of this Plan. There is currently no potential for an intertie with another water system.

5.1.6 Notify Emergency Responders

In the event of a contaminant spill, MICC staff will notify the Water System Manager. The Manager or operator would notify West Pierce County Fire & Rescue as a first responder. The 24-hour Ecology spill response hotline would also be contacted.

6 Operation and Maintenance Program

6.1 Water System Management and Personnel

The certified operators at the facility are Michael Trust and Charri Garber. Operators of DOC water systems are responsible for the duties listed in Section A5.2.

Table B4-14: Operator Info		
Operator Name	**Operator Number**	**Certification**
Michael Trust	007896	WDM 1, WTPO 1
Charri Garber		WTPO 2

MICC has installed approximately 50 backflow prevention assemblies throughout the system. The assemblies are tested on an annual basis by a contracted cross connection control specialist.

6.2 Emergency Call-Up List

Table B4-15 provides the emergency call-up list for McNeil Island.

Table B4-15: Emergency Call-Up List		
Personnel/ Agency	**Working Hours Number**	**Off-Duty Number**
Water System Manager – Charri Garber	(253) 254-1143	
DOC Project Manager – Darin Klein	(360) 764-3093	
DOH Office of Drinking Water – SWRO	(360) 236-3100	(877) 481-4901
DOH Regional Engineer – Jennifer Kropack	(253) 395-6769	
DOH Regional Engineer – Carol Stuckey	(253) 395-6763	
Tacoma-Pierce County Health Department	(253) 649-1500	
Electrical Utility – Tacoma Power	(253) 502-8762	
Pierce County Office of Emergency Management	(253) 798-6595	
24-hour Spill Response – Ecology	(800) 258-5990	
Police/Security	911	
Fire Department	(253) 564-1623	911
Emergency Medical	911	

Section A5.3 of this Plan provides a DOC-wide emergency response plan.

6.3 Water Quality Testing Laboratory

MICC uses the following laboratory for water quality testing:

Water Management Laboratories, Inc.
1515 80th St. E.
Tacoma WA 98404

6.4 Operations and Maintenance Deficiencies

Table B4-16: Summary of O&M Deficiencies		
O&M Deficiency	**Action to be Taken**	**Estimated Cost**
No service meters	Install water meters at building service connections	$25,000

7 Improvement Program

7.1 Prioritization of Improvements

The following are maintenance and improvement projects recommended for McNeil Island.

1. The facility currently does not have any service meters. The installation of water meters will facilitate more accurate recording of water loss in the system. Distribution system metering is a high priority.

2. Water loss is a known issue throughout the water system. The improvement projects proposed in this section are high priority due to the significant volume of water loss. The recommended improvement projects include a leak detection survey and leak repair based on the conclusions of the survey.

7.2 Capital Improvement Summary and Schedule

MICC-1: Annual Renewal and Replacement. This refers to annual distribution system maintenance and upgrade activities necessary to maintain reliable operation of the water system. This includes activities such as leak detection and repair, replacement of aging lines and valves, etc. The annual cost is estimated to be $50,000.

MICC-2: Distribution System Metering. It is recommended that a water meter is installed at every active building service connection.

MICC-3: Water Loss Control. This project includes a leak detection survey to identify sources of water loss. Sources of leaks should be repaired as necessary to reduce water loss.

Table B4-17: McNeil Island Corrections Center Capital Improvement Projects 2024-2034

Project Code	Description	Cost(1)	Purpose(2)	Priority Ranking(3)
MICC-1	Annual Renewal & Replacement	$500,000	OP	1
MICC-2	Distribution System Metering	$25,000	OP	1
MICC-3	Water Loss Control	$200,000	OP	1
MICC-Total		$725,000		

(1) Annual renewal and replacement costs are presented as total costs over the 10-year planning period, not as annual costs
(2) H/S = Health/Safety, OP = Operational, G = Growth
(3) “1” = High Priority, “2” = Moderate Priority

Section B5

Mission Creek Corrections Center for Women

CONTENTS

TABLES

EXHIBITS

1 Description of Water System

1.1 Ownership and Management

The Mission Creek Corrections Center for Women (MCCCW) water system is owned and operated by the Washington State Department of Corrections (DOC) and is a state ownership. An operator oversees the daily operations of the water system. Contact information for relevant water system personnel is identified in Table B5-1 below.

Table B5-1: Water System Contacts

	Name	Address	Phone Number
Owner	Mission Creek Corrections Center for Women	3420 NE Sandhill Rd Belfair, WA 98528	
Water System Manager	Jonathan Rice		(360) 277-2483

1.2 System History and Background

Mission Creek Corrections Center for Women is located in Mason County, approximately three miles northwest of the City of Belfair. The facility is located on 19.5 acres of land leased from the Department of Natural Resources (DNR). The facility was opened in the 1960s as Mission Creek Youth Camp, originally under the management of the Department of Social and Health Services (DSHS). At that time, the facility was used as a juvenile detention facility. In 2003, the facility was transferred to DOC and became MCCCW, currently housing 189 female residents.

Existing structures on site include the following:

- Three Residential Buildings
- Gymnasium
- Classroom
- Maintenance Building
- DNR Building

Exhibit B5-1 provides a location map for the facility.

1.3 Related Plans

Mission Creek Corrections Center for Women is not part of a coordinated water system plan and does not have close neighboring systems to coordinate with.

The facility is located in Kitsap watershed, within Water Resource Inventory Area (WRIA) 15. The Watershed Restoration and Enhancement Committee is currently planning to adopt a watershed plan. The MCCCW water system is subject to the requirements and recommendations once the watershed plan is finalized.

1.4 Service Area, Maps, and Land Use

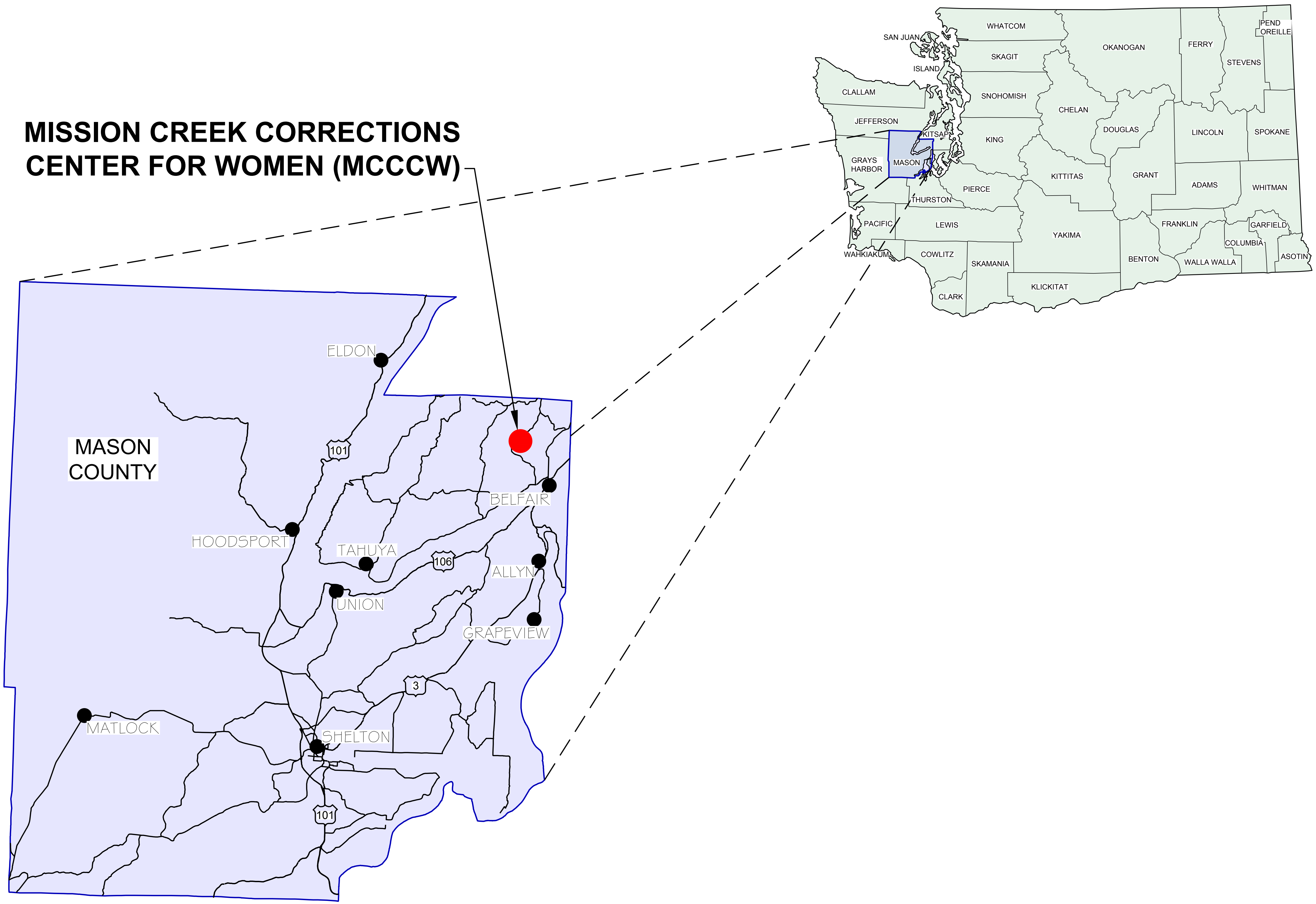
Mission Creek's water service area includes the facility grounds. Exhibit B5-2 provides a map of the water service area. Exhibit B5-3 shows a map of the water system features for Mission Creek.

1.5 System Description

MCCCW's water supply is obtained from two wells, Well No. 1 and 3. Well No. 2 has been decommissioned and is not in use. Water is pumped from the wells to the 225,00-gallon reservoir. An older 30,000 gallon storage tank was decommissioned in 2010, but the valving remained in place. A booster pump pulls water from the reservoir and feeds the distribution system which serves as both fire suppression as well as drinking water. Water distribution piping consists primarily of 4-inch diameter mains and an outer fire suppression loop. The water system is not chlorinated but has pumps and injection points for future chlorination. Water meters have been installed at every building on site.

EXHIBIT B5-1

MISSION CREEK CORRECTIONS CENTER FOR WOMEN - VICINITY MAP



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DOC WATER SYSTEM PLAN UPDATE

MISSION CREEK CORRECTIONS CENTER FOR WOMEN - VICINITY MAP

EXHIBIT

B5-1

EXHIBIT B5-2

MISSION CREEK CORRECTIONS CENTER FOR WOMEN - WATER SERVICE AREA

LEGEND

WATER SERVICE AREA BOUNDARY

0 1000' 2000'

SCALE

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DOC WATER SYSTEM PLAN UPDATE

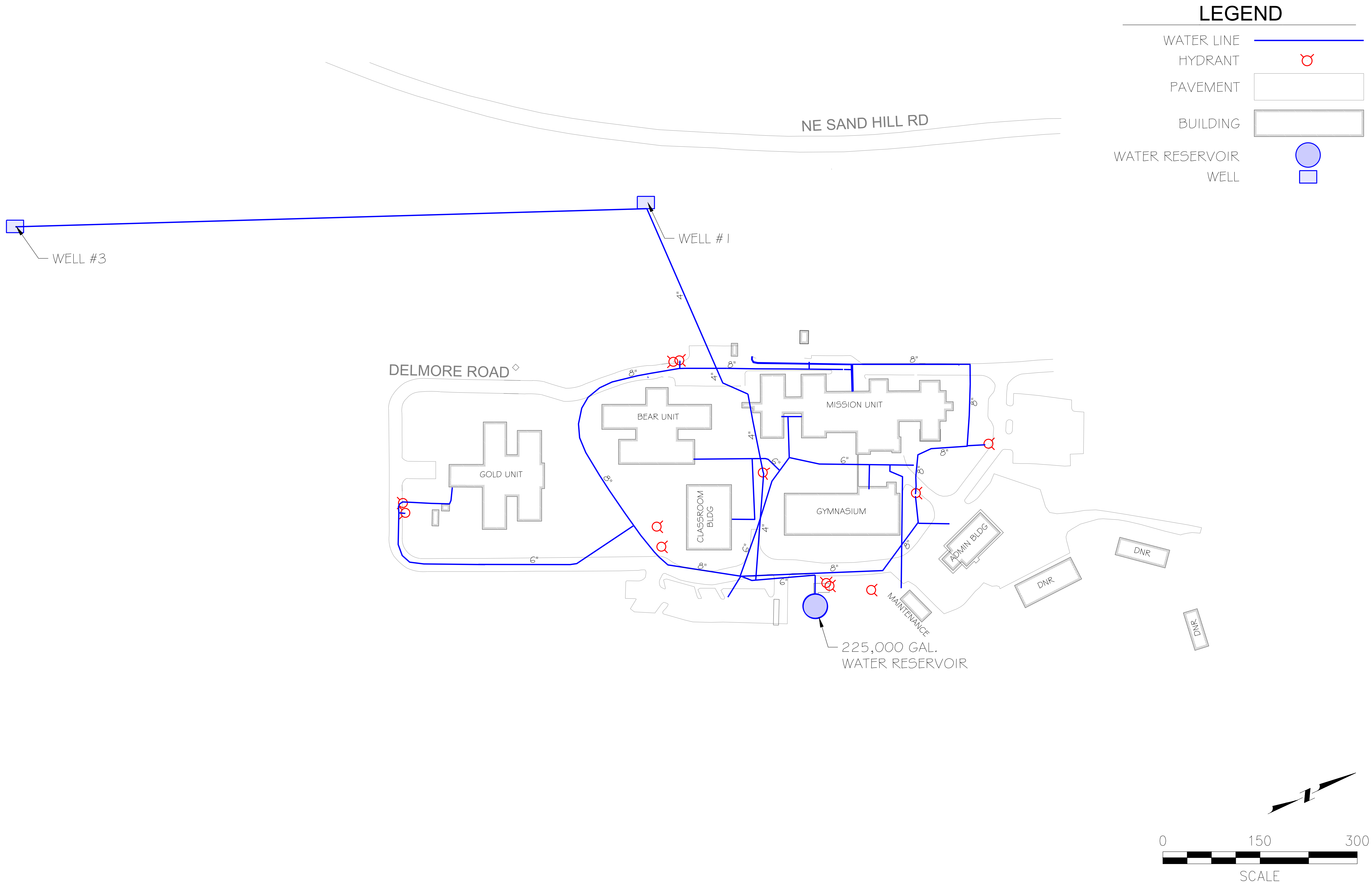
MCCCW - WATER SERVICE AREA

EXHIBIT

B5-2

EXHIBIT B5-3

MISSION CREEK CORRECTIONS CENTER FOR WOMEN - WATER SYSTEM LAYOUT



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DOC WATER SYSTEM PLAN UPDATE

MCCCW WATER SYSTEM LAYOUT

EXHIBIT

B5-3

2 Basic Planning Data

2.1 Current Population and Service Connections

There are currently 7 institutional buildings served by the water system. There are 137 approved connections at the facility. In recent years, the population at the facility has decreased due to the effects of COVID-19. The facility currently houses 120 residents and has 40 employees.

Table B5-2 shows a summarization of the population.

Table B5-2: Population	
Population Type	**Population**
Full-Time Residential	120
Non-Residential	40
Temporary	0
Total	160

2.2 Water Production and Usage

The system does not have customer classes and rates. Table B5-3 shows the monthly and annual totals for source production and water use. Monthly rates are calculated from sustainability data for 2021 through 2022 (See Appendix C13). Annual rates are calculated as twelve months of average monthly production or consumption, respectively. Due to a lack of service meter readings at the facility, production and consumption are assumed to be equivalent.

Table B5-3: Water Production and Usage (2021 – 2022)		
Source	Average Monthly Production (gal)	Annual Production (gal)
Wells	398,610	4,783,325
Use	Average Monthly Consumption (gal)	Annual Consumption (gal)
Total	398,610	4,783,325

2.3 Water Supply Characteristics

MCCCW's water supply is obtained from two wells, Well No. 1 and 3. Well No. 1 was drilled in 1960, approximately 650 feet from Mission Creek. A second well, located in the same area as Well No. 1, was decommissioned before the installation of Well No. 3 in 2012. MCCCW is located in the Kitsap WRIA.

2.4 Water Supply Reliability Evaluation

The first well on-site has been in use since 1960 and has shown no impact to the nearby Mission Creek. Well No. 3 was installed recently and should be a viable source of supply for the foreseeable future. In the event that one of the wells is not usable, the other well will be used as a primary source of supply for the water system. There are currently no nearby systems to provide an intertie with MCCCW.

See Section 5.1.5 for MCCCW's water supply contingency plan.

2.5 Future Population Projections and Land Use

In recent years, the population has decreased to 120, less than half of the facility's residential capacity. While there are no known plans for expansion at the facility, the 20 year population forecast for this analysis will assess the system's adequacy at full residential capacity.

2.6 Future Water Demand

Table B5-4 summarizes the 2024 and projected 2034 and 2044 residential population and water demand.

Table B5-4: Water Demand Forecast			
	2024(1)	2034	2044
Resident Population	120	300	300
Average Day Demand (gpd)			
Facility	13,105	32,763	32,763
Per Resident	109	109	109
Maximum Day Demand (gpd)			
Facility	28,452	71,130	71,130
Per Resident	237	237	237
Peak Hour Demand (gpm)			
Facility	65	127	127

(1) 2024 Demand is the average of 2021-2022 data.

3 System Analysis and Asset Management

3.1 Asset Management – Asset Inventory and Analysis

3.1.1 Asset Inventory

Table B5-5 shows the assets of Mission Creek Corrections Center.

Table B5-5: Asset Inventory

Asset	Description	Capacity/ Size	Year Built
Well No. 1	Depth = 170 feet 15 hp pump	100 gpm	1960
Well No. 3	Depth = 168 feet 15 hp pump	125 gpm	2012
Ground-Level Tank	Steel	225,000 gal	1998
Distribution Pipe	Misc.	4, 6, 8 inch	-
Booster Pump	10 hp	160 gpm	-
Fire Pump	90 hp	1,500 gpm	-

The age and condition of distribution piping is generally unknown.

3.1.2 Asset Condition & Criticality

Remaining useful life and condition are general and applied to the full inventory of the asset identified. Considering the age of the assets, there may be isolated locations of poor conditions due to joint separation caused from tree roots or settlement, however there are not any known or expected failures.

Table B5-6 details the condition of the water system assets.

Table B5-6: Asset Condition

Component	Units	# of Units	Remaining Useful Life	Condition	Replacement Cost
Distribution System Inventory					
6” Pipe	LF	1,245	~30-50 years	Good	
8” Pipe	LF	1,551	~40-60 years	Good	
Raw & Finished Storage Inventory					
Ground-Level Tank	gal	225,000	Installed 1998	Good	$500,000
Booster Pump Inventory					
Booster Pump	gpm	160	10+ years w/ maintenance.	Good	$10,000
Fire Pump	gpm	1,500	10+ years w/ maintenance.	Good	$20,000
Source Pump Inventory					
Well No. 1 Pump	gpm	100	Installed 1960	Good	$20,000
Well No. 3 Pump	gpm	125	Installed 2012	Good	$20,000

3.2 Water Quality

Table B5-7 details the water quality testing schedule. Coliform is tested monthly, has a monitoring population of 229, and requires one routine sample a month.

Table B5-7: Water Quality Monitoring Schedule			
Test Panel	**# of Samples Required**	**Frequency**	**Next Sample Due**
Coliform	1	monthly	
Chemical Monitoring			
Lead & Copper	10	6 month	Sep 2023
Asbestos	0	9 year	
Total Trihalomethane (THM)	1	1 year	Sep 2023
Halo-Acetic Acids (HAA5)	1	1 year	Sep 2023
Source Monitoring – Well #1			
Nitrate	1	1 year	May 2024
Complete Inorganic	1	9 year	Feb 2024
Volatile Organics	1	6 year	Oct 2023
Herbicides	1	9 year	Oct 2029
Pesticides	0	3 year	
PFAs	1	3 year	Oct 2024
Soil Fumigants	0	3 year	
Gross Alpha	1	6 year	Sep 2027
Radium 228	1	6 year	Sep 2027
Source Monitoring – Well #3			
Nitrate	1	1 year	Sep 2023
Complete Inorganic	1	9 year	Mar 2027
Volatile Organics	1	6 year	Mar 2024
Herbicides	1	9 year	Oct 2029
Pesticides	0	3 year	
PFAs	1	3 year	Oct 2024
Soil Fumigants	0	3 year	
Gross Alpha	1	6 year	Sep 2027
Radium 228	1	6 year	Sep 2027

See Appendix C6 for MCCCW's water quality monitoring plans.

3.3 Design Standards

See Section 2.2 of Part A for DOC-wide design standards.

3.4 Capacity Analysis

3.4.1 Water Right Analysis

The two water rights for Mission Creek allow 35.3 acre-feet per year withdrawal for multiple domestic use. No irrigation is allowed, except as necessary for fire prevention and safety. The maximum instantaneous withdrawal rate is 225 gallons per minute (gpm). The annual water rights are not sufficient to support future needs. See Appendix C4 for Mission Creek's Water Rights Self-Assessment Form.

3.4.2 Source Capacity Analysis

Table B5-8 shows the available source capacity for the facility.

Table B5-8: Source Capacity Analysis			
	2024	2034	2044
Available Source (gpd)			
Well No. 1 (100 gpm)	144,000	144,000	144,000
Well No. 3 (125 gpm)	180,000	180,000	180,000
Total	**324,000**	**324,000**	**324,000**
Maximum Day Demand (gpd)	28,452	71,130	71,130
Source Capacity Surplus/(Deficiency) (gpd)	**295,548**	**252,870**	**252,870**

The wells have enough capacity to provide sufficient water for MCCCW.

3.4.3 Storage Capacity

MCCCW is currently served by a 225,000 gallon storage reservoir. The total required storage is 221,345 gallons based primarily on a fire flow requirement of 1,800 gpm for two hours, as established by the Mason County Fire Marshal.

Table B5-9 shows the available storage for the facility.

Table B5-9: Storage Capacity Analysis			
	2024	2034	2044
Required Storage (gal)			
Operational Storage (1)	3,922	6,356	6,356
Equalizing Storage (2)	1,423	3,556	3,556
Fire Flow Storage (3)	216,000	216,000	216,000
Standby Storage (Nested) (4)	37,800	60,000	60,000
Total Required (5)	221,345	225,912	225,912
Available Storage			
225,000 gallon Reservoir	225,000	225,000	225,000
Dead Storage (6)	3,138	5,085	5,085
Total Available (7)	221,862	219,915	219,915
Storage Capacity Surplus/(Deficiency)	517	(5,997)	(5,997)

(1) Required operational storage = Estimated 10% (ES + SS)
(2) Required equalizing storage = Greater of 5% of MDD or DOH equation.
DOH equation = (Peak Hour Demand - Total Available Source) * (150)
PHD : (Maximum Day Demand per ERU / 1440) * [(C) * (N) + F] + 18
(C & F values obtained from Table 3-1 in DOH June 2020 WSDM.)
(3) Required fire flow storage = Flow * duration = 1800gpm * 2 hr * 60min/hr. (According to Mason County Fire Marshal).
(4) Required standby storage for existing source = Greater of (2*ADD/ERU)-(1440*(Qs-Ql))) or (200 gpd*ERU).
Qs: Total source capacity
Ql: Largest source capacity
Nested storage = Lesser of SS and FFS
(5) Total required storage = equalizing + fire flow + standby storage + operational – nested storage.
(6) Dead storage = Estimated 8% (ES + SS)
(7) Total available storage = sum of reservoir storage – dead storage.

Current storage capacity is adequate for present needs but not sufficient to support future needs.

3.4.4 Limiting Factor Summary

Table B5-10 details the summary of the limiting factor for MCCCW.

Table B5-10: Limiting Factor Analysis	
Capacity Parameter	**Available Capacity (gpd)**
Water Right Capacity (Qa = 35.3 afy)	31,514
Source Capacity	324,000
Storage Capacity	219,915
Limiting Factor Capacity	**31,514**

As shown in the above table, water rights are the limiting factor for capacity. In order to determine an accurate amount of water use per ERU, a resident per ERU factor must be defined.

For this analysis, one ERU is defined as the average water usage of a typical single-family residence, assuming the average person uses 100 gallons per day and the average single-family residence includes 2.3 residents, one ERU is equivalent to 230 gallons per day. According to Table B5-4, a resident uses 109 gpd under average day demand. The facility has a capacity of 31,514 gpd, which can serve 289 residents on the average day, or 137 ERUs. Therefore, the resident per ERU factor is 289 residents per 137 ERUs, or 2.11 residents per 1 ERU.

3.5 Hydraulic Analysis

The goal of this hydraulic analysis is to determine whether the distribution system can maintain minimum pressures during peak hour demand and fire flow demand under current and future conditions. A new hydraulic model was developed for Mission Creek using WaterCAD hydraulic modeling software.

The model includes the water tank, the booster pump, and the distribution network. The system was evaluated under present condition peak hour demand. The demand was modeled by dividing the total system peak hour demand across the system at the connections to residential units, where demand is typically the highest. The results of this analysis showed that the system is able to provide peak hour demand while sustaining pressures of at least 30 pounds per square inch (psi).

The system was also evaluated under the fire flow requirement of 1,800 gallons per minute (gpm). The results of this analysis indicated that all nodes were able to maintain pressure of at least 20 psi under fire flow conditions.

Appendix C9 includes a hydraulic analysis map for the Mission Creek water system.

3.6 Summary of System Deficiencies

Table B5-11: **System Deficiencies** shows the deficiencies of the water system plan.

Table B5-11: System Deficiencies		
Classification of Deficiency	**Description of Project Solution**	**Total Project Cost**
Storage Capacity	Construct new storage reservoir	$200,000
Annual Water Rights	Application for Additional Water Rights	$12,500

4 Water Use Efficiency Program

4.1 Source and Service Metering

4.1.1 Production/Source Metering:

The wells are metered and read every month.

4.1.2 Service Meters

The distribution system is 100% metered, with a meter at every building service connection. Service meters are currently not read on a regular basis. The facility computers do not have the program needed to read the service meters.

4.2 Distribution System Leakage

4.2.1 Methodology

Distribution System Leakage is calculated using American Water Works Association Water Audit methodology and is reported in yearly Water Use Efficiency Annual Performance Reports. Mission Creek's last three WUE Reports are included in Appendix C14.

The most current distribution system leakage information that came from the most recent Water Use Efficiency Report is shown in Table B5-12 below.

Table B5-12: Distribution System Leakage					
Year	**Total Water Produced & Purchased (gal)**	**Authorized Consumption (gal)**	**Distribution System Leakage (gal)**	**Distribution System Leakage (%)**	**3-year annual average (%)**
2021	4,324,000	4,324,000	0	0	5.6
2020	5,416,700	5,416,700	0	0	11.5
2019	7,091,00	5,898,420	1,192,580	16.8	17.1
2018	8,359,150	6,879,070	1,480,080	17.7	17.2
2017	8,085,820	6,719,430	1,366,390	16.9	12.8

4.2.2 Leak Detection

According to the most recent Water Use Efficiency Report, the system had recorded no leakage in 2020 and 2021. The service meters were not read in 2020 and 2021 because the facility computers do not currently have the necessary software to interface with the meters. Because of this, the reported distribution system leakage percentages for 2020 and 2021 are not accurate. The three-year average DSL volume according to the most accurate data, 2017-2019, is 1,346,350 gallons. The three-year average DSL percentage is 17.1%. A leak detection survey should be conducted to identify sources of water loss in the system.

4.3 Water Use Efficiency Program

Water conservation measures were established by the Mason County Water Conservancy Board in 2005 and include the following:

- Ship all laundry to another facility for washing, no individual machines are provided for personal laundry.
- Install low-flow shower heads and timers that limit showers to no more than 5 minutes. Educate the custody officers to continuously enforce the 5 minute shower rule.
- Install low-flow, high pressure toilets.
- Install low-flow faucets with motion sensors in sinks.
- Repair all dripping taps immediately.
- Prohibit staff from showering at the facility, except in the event of exposure to bodily fluids or hazardous chemicals.
- Prepare meals at off-site locations and transport to MCCCW. If possible, return dishes and flatware to the place of origin to be washed.
- Install flow restrictors on all faucets and sprays.
- If dishes must be washed on site, install low water use dishwashers. Use dishwasher rather than hand washing dishes, whenever possible.
- Investigate the feasibility of rise water reuse for the dishwashers.
- If hand washing is necessary, hand was dishes in batches and only in plugged sinks, rather than individually with running water.
- Limit other cleanup to small buckets of wipe down water.
- Repair all dripping taps immediately.
- Do not water any gardens, lawns, or other landscaping outdoors. If native plants are established, they will not require watering. Landscaping can be replaced gradually with low water use plants.
- Prohibit vehicle washing on site. Take vehicles to car washed, if necessary. Maximize other uses of water outdoors.
- If not already a member, become a member of the local Rural Water Association and request a free audit of the water distribution system that will detect leaks. Repair all leaks immediately.
- Develop an agreement with DNR to ensure that they understand the seriousness of the water limitation and follow water conservation practices. Retrofit DNR bathrooms with low-flow, high pressure toilets, and motion activated sinks.
- Install water meters on DNR line(s) and MCCCW line(s).

According to the 2021 Water Use Efficiency Report, the current WUE goals include a continued effort to conserve water and fix leaks in a timely manner. Mission Creek staff would like to expand their horticultural and landscaping programs, but water conservation goals and a lack of irrigation rights prevent them from doing so. New water use efficiency goals should be established for MCCCW.

It is a requirement of DOH to set Water Use Efficiency Goals in a public forum. The water system manager can coordinate the details of a public forum with the DOC Environmental Manager.

All meters, including source meters should be calibrated on an annual basis. These practices will improve operation efficiency and leak management.

5 Source Water Protection

5.1 Wellhead Protection Program

5.1.1 Overview

MCCCW's wellhead protection plan was developed as a part of the 2005 Water System Plan. The goal of the WHPP is to protect MCCCW's water supply by identifying and managing sources of groundwater contamination.

5.1.2 Susceptibility Assessment

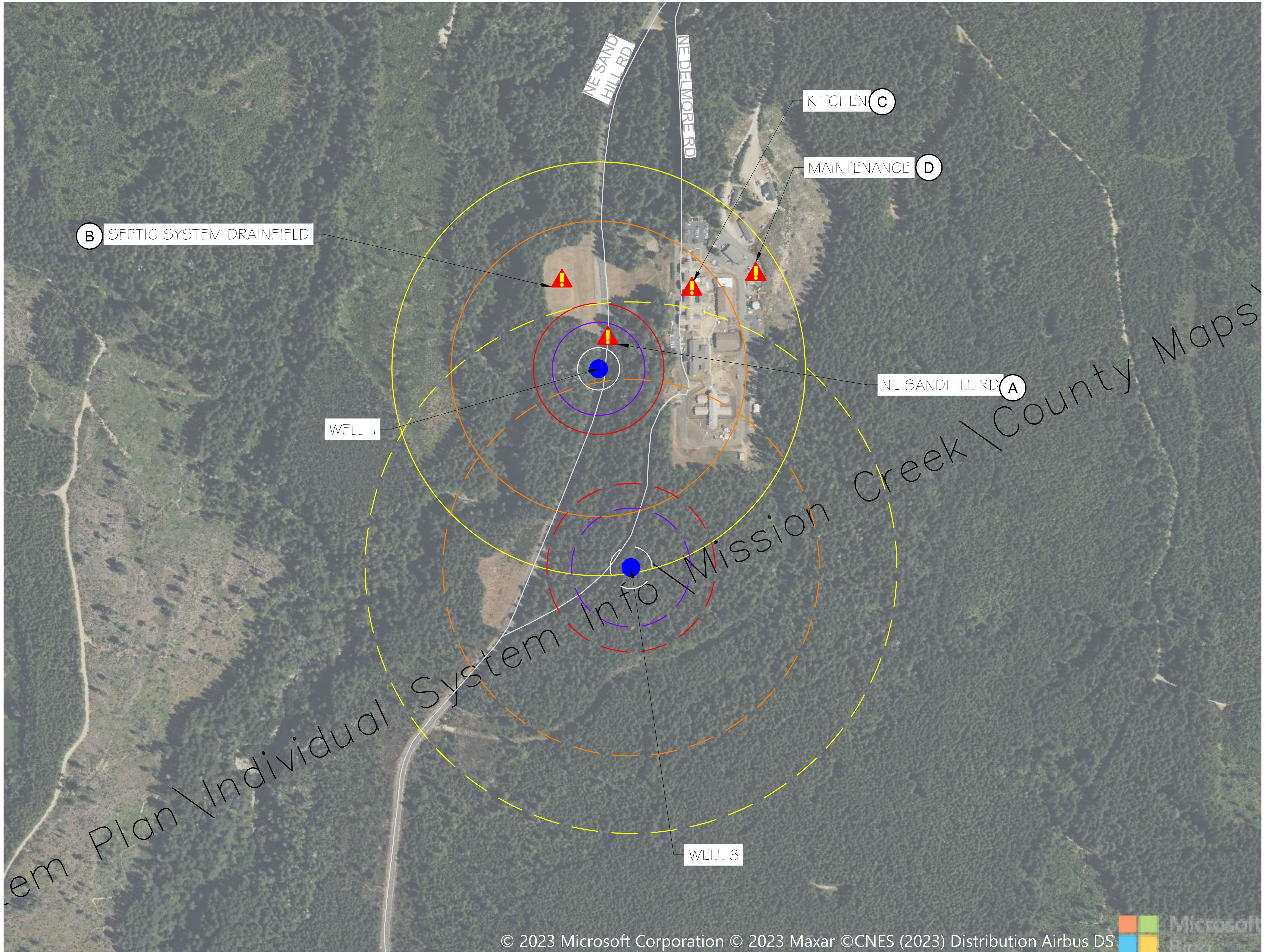
The susceptibility of Wells No. 1 and 3 is moderate. MCCCW has adopted management strategies including contingency planning and spill response planning to protect the wells.

5.1.3 Wellhead Protection Area Delineation

See Exhibit B5-4 for the wellhead protection area delineation. The following five zones of the wellhead protection area were delineated: Sanitary control area, Six-month time of travel zone, One-year time of travel zone, Five-year time of travel zone, and Ten-year time of travel zone. The sanitary control area includes all areas within a 100-foot radius around the two wells that serve the facility. The Calculated Fixed Radius method was used to determine the radii for these zones, as documented in the Susceptibility Assessment Survey Form completed for Well No. 1., included in Appendix C7.

EXHIBIT B5-4

MISSION CREEK CORRECTIONS CENTER FOR WOMEN - WELLHEAD ZONES OF CONTRIBUTION



LEGEND

- WELLHEAD
- POTENTIAL SOURCE OF CONTAMINATION
- ROAD

WELL NO. 1

- 100' SANITARY CONTROL AREA
- 220' 6 MONTH TIME OF TRAVEL
- 310' 1 YEAR TIME OF TRAVEL
- 700' 5 YEAR TIME OF TRAVEL
- 980' 10 YEAR TIME OF TRAVEL

WELL NO. 3

- 100' SANITARY CONTROL AREA
- 282' 6 MONTH TIME OF TRAVEL
- 399' 1 YEAR TIME OF TRAVEL
- 892' 5 YEAR TIME OF TRAVEL
- 1260' 10 YEAR TIME OF TRAVEL

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DOC WATER SYSTEM PLAN UPDATE

MCCCW - WELLHEAD ZONES OF CONTRIBUTION

EXHIBIT

B5-4

5.1.4 Contaminant Source Inventory

The primary sources of potential contamination at the facility, as previously documented in the wellhead protection plan, are listed in Table B5-13.

Table B5-13: Contaminant Inventory
6 Month Time of Travel
A - Accidental spills on roadways
6 Month to 1 Year Time of Travel
None
1 to 5 Year Time of Travel
B - Septic system drainfield
C - Grease trap in kitchen
5 to 10 Year Time of Travel
D - Oil/water separator at the Maintenance Shop

Most of the area within the ten-year time of travel zone is state forest land. There are several small residences with septic systems that present a potential source of contamination.

5.1.5 Contingency Plan

Water will be delivered to the facility by private vendors if reservoir storage is not adequate to address emergency situations, per the trucked water plan presented in Section A5.3.3 of this Plan. The nearest large water purveyor is Belfair Water District No. 1, which could also be contacted in the event of an emergency.

5.1.6 Notify Emergency Responders

In the event of an accidental spill, MCCCW facility staff will notify the Water System Manager. The Manager or operator would in turn notify Mason County Fire Dispatch as a first responder. The 24-hour Ecology spill response hotline would also be contacted.

6 Operations and Maintenance

6.1 Water System Management and Personnel

The certified operator at the facility is Jonathan Rice. DOH has allowed a one-year training exemption for certification. After this exemption period has expired, the facility is required to have a WDM 1 operator on staff. Operators of DOC water systems are responsible for the duties listed in Section A5.2.

Table B5-14: Operator Info		
Operator Name	**Operator Number**	**Certification**
Jonathan Rice	-	-

There following cross-connection control devices have been installed on-site:

- Ball field double check valve assembly
- Two kitchen double check valve assemblies
- Dental dark room reduced pressure backflow assembly
- Gymnasium reduced pressure backflow assembly

- Three boiler room reduced pressure backflow assemblies
- Multiple air gaps at hose bibs
- Multiple atmospheric vacuum breakers at hose bibs

The facility contracts a cross connection control specialist on an annual basis. All assemblies are tested on an annual basis by a contracted cross connection control specialist.

6.2 Emergency Call-Up List

Table B5-15 provides the emergency call-up list for Mission Creek.

Table B5-15: Emergency Call-Up List

Personnel/ Agency	Working Hours Number	Off-Duty Number
Water System Manager – Jonathan Rice	(360) 277-2483	
Superintendent – Arminda Miller	(360) 277-2400	
DOC Environmental Specialist – Darin Klein	(360) 764-3093	
DOH Office of Drinking Water – SWRO	(360) 236-3100	(877) 481-4901
DOH Regional Engineer – Fern Schultz	(564) 669-0853	
DOH Regional Engineer – Regina Grimm	(564) 669-0857	
Mason County Public Health Department	(360) 427-9670 ext. 400	
Electrical Utility – Mason County PUD #3	(360) 426-8255	
24-hour Spill Response – Ecology	(800) 258-5990	
Police/Security	911	
Fire Department	(360)-275-2888	911
Emergency Medical	911	

Section A5.3 of this Plan provides a DOC-wide emergency response plan.

6.3 Water Quality Testing Laboratory

MCCCW uses the following laboratories for water quality testing:

Edge Analytical
1620 S Walnut St
Burlington, WA 98233

Kitsap County Health District
345 6th St
Unit 300
Bremerton, WA 98337

Spectra Laboratories
26276 Twelve Tree Ln #C
Poulsbo, WA 98370

6.4 Operations and Maintenance Deficiencies

Table B5-16: Summary of O&M Deficiencies		
O&M Deficiency	**Action to be Taken**	**Estimated Cost**
Unable to read service meters	Install necessary meter reading software on system computers	$0
Lead pipe survey required by 2024	Conduct lead pipe survey	$5,000
Water system is connected to abandoned water tower	Install airgap at the connection to abandoned water tower	$500
No flow meter on distribution booster pump	Install flow meter for booster pump	$5,000

7 Improvement Program

7.1 Prioritization of Improvements

The following are maintenance and improvement projects recommended for Mission Creek.

1. Service meters have been installed throughout the system, but there is no meter at the booster pump. A flow meter should be installed at the booster pump to track the total water usage at the facility. The computer software used to read the service meters is not currently installed on the facility computers. This software should be installed on the computers and the meters should be read on a regular basis.

2. The annual water rights are not sufficient to support projected demands at the facility and do not allow for any irrigation. The maximum fee for water right change applications through the Washington State Department of Health is $12,500.

3. Water loss has been a known issue at the facility for multiple years, as shown in WUE Reports. Conducting a leak detection survey and repairing leaks is a high priority project.

4. A lead pipe survey of the system is required to be completed by 2024. This project is considered a high priority.

5. The decommissioned water reservoir is still connected to the water system, which leads to air accumulation in this location. It is recommended that an airgap be installed to allow for the release of pressure.

6. According to the storage capacity analysis, the current storage at the facility is not sufficient to support future population growth at the facility. If DOC has plans to increase the residential occupancy, a new storage reservoir should be constructed. This project is considered a moderate priority.

7.2 Capital Improvement Summary and Schedule

MCCCW-1: Annual Renewal and Replacement. This includes annual maintenance of the distribution system including leak detection and repair, replacement of parts, etc. The annual cost is estimated to be $25,000. Therefore, the total 10-year planning period estimated cost is $250,000. Priority Ranking = 1.

MCCCW-2: Distribution System Metering. A flow meter should be installed at the distribution booster pump that feeds the system. The computer program that reads the meters should be installed on the facility computers.

MCCCW-3: Supplemental Water Rights Application. This water right change application would seek to increase the annual water rights to allow future growth and for irrigation at the facility. Additional water rights should be requested through the Mason County Water Conservation Board and DOH.

MCCCW-4: Water Loss Control. A leak detection survey should be conducted to identify sources of water loss in the system. Sources of leaks should be repaired as necessary to reduce water loss.

MCCCW-5: Lead Pipe Survey. A survey should be conducted at the facility to identify lead pipes located within the system.

MCCCW-6: Air-gap Installation. An air gap should be installed at the connection to the decommissioned water reservoir.

MCCCW-7: New Water Storage Tank. A new 50,000 gallon storage reservoir should be constructed and connected to the existing storage reservoir. The reservoirs should be hydraulically equal.

Table B5-17: Mission Creek Cedar Corrections Center Capital Improvement Projects 2024-2034

Project Code	Description	Cost(1)	Purpose(2)	Priority Ranking(3)
MCCCW-1	Annual Renewal & Replacement	$250,000	OP	1
MCCCW-2	Distribution System Metering	$5,000	OP	1
MCCCW-3	Supplemental Water Rights Application	$12,500	G	1
MCCCW-4	Water Loss Control	$200,000	OP	1
MCCCW-5	Lead Pipe Survey	$5,000	H/S	1
MCCCW-6	Air Gap Installation	$10,000	OP	2
MCCCW-7	New Water Storage Tank	$200,000	OP	2
MCCCW-Total		$682,500		

(1) Annual renewal and replacement costs are presented as total costs over the 10-year planning period, not as annual costs
(2) H/S = Health/Safety, OP = Operational, G = Growth
(3) “1” = High Priority, “2” = Moderate Priority

Section B6

Olympic Corrections Center

CONTENTS

TABLES

EXHIBITS

1 Description of Water System

1.1 Ownership and Management

The Olympic Corrections Center (OCC) is owned and operated by the Washington State Department of Corrections (DOC) and is a type ST ownership. An operator oversees the daily operations of the water system. Contact information for relevant water system personnel is identified in Table B6-1 below.

Table B6-1: Water System Contacts			
	Name	**Address**	**Phone Number**
Owner	Olympic Corrections Center	11235 Hoh Mainline Forks, WA 98331-9492	(360) 374-7001
Water System Manager	Greg Banner		(360) 640-2191

1.2 System History and Background

The Olympic Corrections Center (OCC) is located in Jefferson County, about 25 miles southeast of the City of Forks, in a rural area near Mount Octopus on the Olympic Peninsula. The site and surrounding area are owned by the Washington Department of Natural Resources (DNR). The Clearwater Camp was opened in 1967 and is currently used by DOC and DNR. The Olympic camp, located a quarter mile north of the Clearwater Camp, was built in 1980 and then expanded in 1991. OCC currently houses approximately 380 male residents and employs approximately 120 staff.

The existing facilities include the following:

- Olympic Camp
    - Hoh Living Unit
    - Ozette Living Unit
    - Vehicle Shop
    - Maintenance Building
    - Kitchen/ Dining Room
    - Gymnasium
    - Administration Building
    - DNR Warehouse
- Clearwater Camp
    - Administration Building
    - Clearwater Living Unit
    - Gymnasium/ Activity Center
    - Education/ Medical Building
    - Extended Family Visit Building
    - Chapel/ Training Complex
    - 2 DNR Buildings
- Wastewater Treatment Plant

Exhibit B6-1 provides a location map of the facility.

1.3 Related Plans

OCC is located outside the boundaries of Jefferson County's Clean Water District and does not have close neighboring systems to coordinate with. The facility is located within the Queets-Quinalt Water Resource Inventory Area (WRIA), which does not have a watershed plan.

1.4 Service Area, Maps, and Land Use

OCC's service area includes the facility grounds and the wastewater treatment plant. Exhibit B6-2 provides a map of the water service area. Exhibit B6-3 shows a map of the water system features.

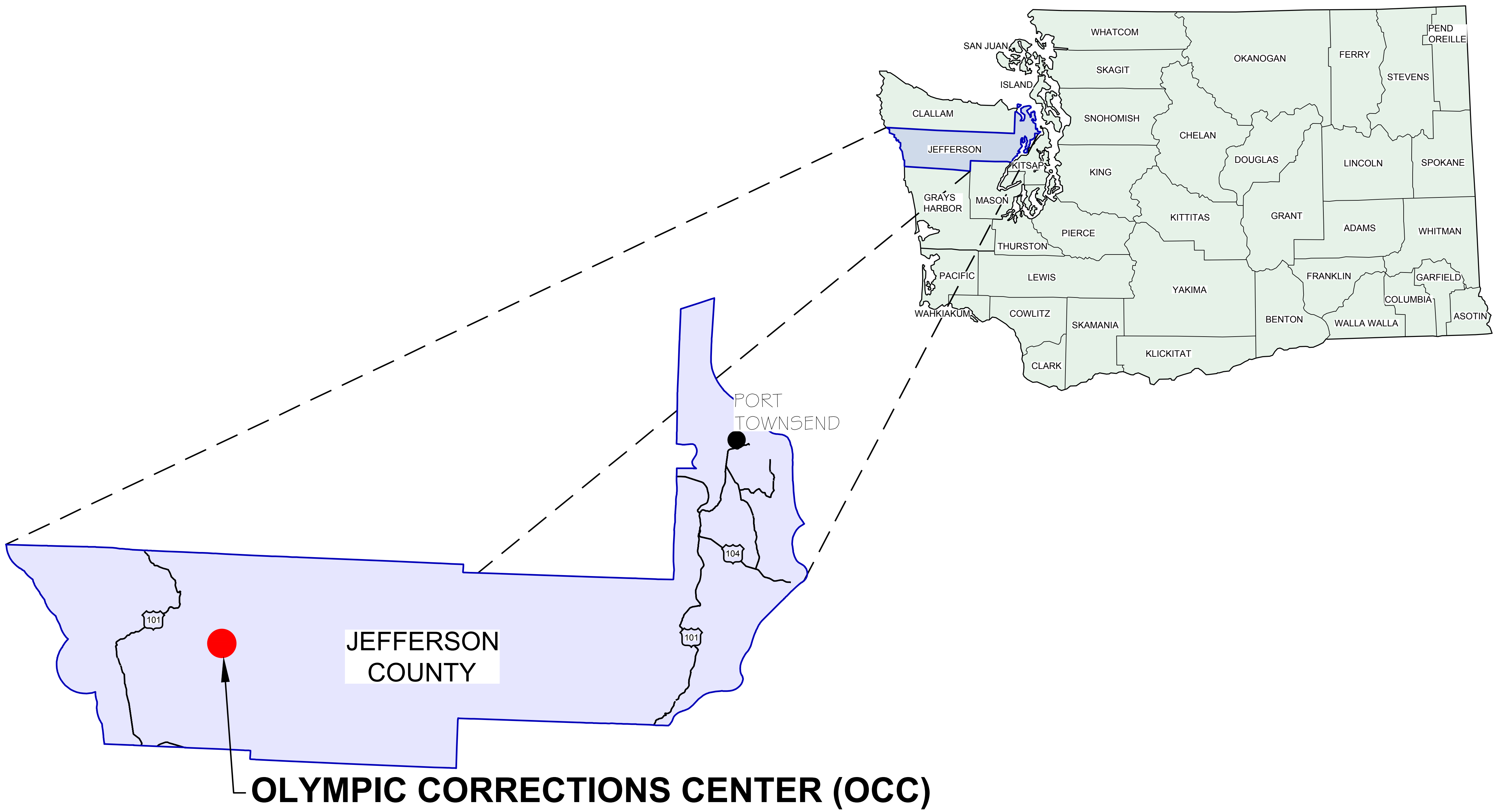
1.5 System Description

Wells No. 1 and 2 serve as the main water supply for the system; Well No. 3 is not currently in use. Water is conveyed from the wells via 3-inch PVC lines that connect to an 8-inch loop around Olympic Camp. A 10-inch PVC line connects the Olympic Camp loop to the Clearwater Camp distribution system. A 12-inch PVC line connects the two storage tanks to the 10-inch line. The distribution system consists of 4-, 6-, and 8-inch PVC lines. Pressure reducing valves are located at each building in Olympic Camp, and a pressure reducing valve vault serves Clearwater Camp.

PLOTTED: May 22, 2023 - 15:22a5p5 PLOTTED BY: Cole.Rau

EXHIBIT B6-1

OLYMPIC CORRECTIONS CENTER - VICINITY MAP



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DOC WATER SYSTEM PLAN UPDATE

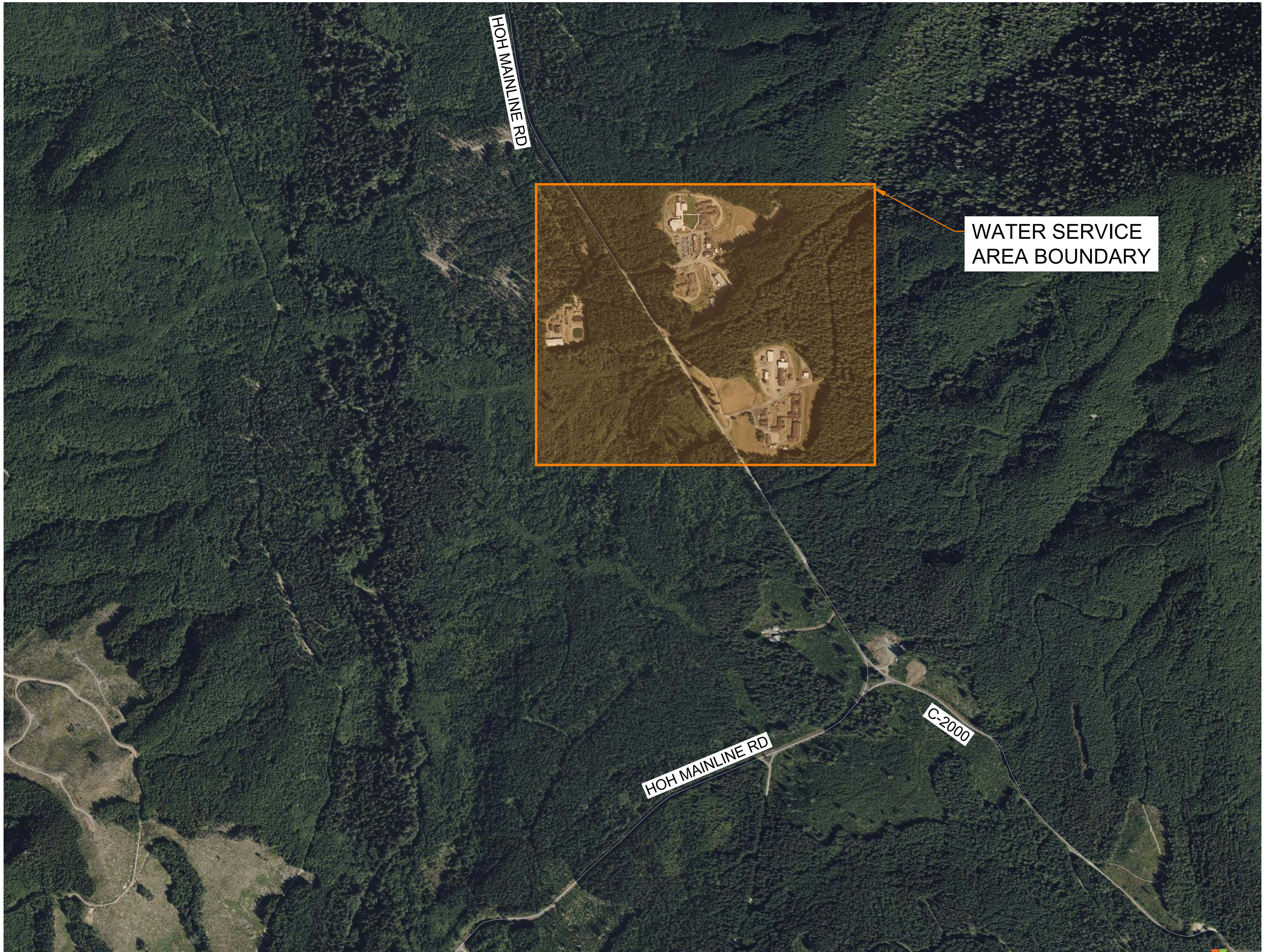
OLYMPIC CORRECTIONS CENTER - VICINITY MAP

EXHIBIT

B6-1

EXHIBIT B6-2

OLYMPIC CORRECTIONS CENTER - WATER SERVICE AREA



LEGEND

WATER SERVICE AREA BOUNDARY

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DOC WATER SYSTEM PLAN UPDATE

OCC - WATER SERVICE AREA

EXHIBIT

B6-2

EXHIBIT B6-3

OLYMPIC CORRECTIONS CENTER - WATER SYSTEM LAYOUT

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DOC WATER SYSTEM PLAN UPDATE

OCC WATER SYSTEM LAYOUT

EXHIBIT

B6-3

2 Basic Planning Data

2.1 Current Population and Service Connections

Olympic Corrections Center serves 19 institutional buildings and has 582 DOH approved connections. The facility has 380 residents and 120 employees.

Table B6-2 shows a summarization of the population.

Table B6-2: Population	
Population Type	**Population**
Full-Time Residential	380
Non-Residential	120
Temporary	-
Total	500

2.2 Water Production and Usage

This system does not have customer classes and rates. Table B6-3 shows the monthly and annual totals for source production and water use. Monthly rates are calculated from available well and water meter readings for 2020 through 2022 (See Appendix C13). Annual rates are calculated as twelve months of average monthly production or consumption, respectively. It should be noted that a leak was found and repaired in February 2021, which could explain the reduced usage in 2022.

Table B6-3: Water Production and Usage (2020-2022)		
Source	Average Monthly Production (gal)	Annual Production (gal)
Well 1	917,385	11,008,615
Well 2	648,757	7,785,080
Well 3	-	-
Total	**1,566,141**	**18,793,695**
Use	Average Monthly Consumption (gal)	Annual Consumption (gal)
Total	1,110,408	13,324,896

2.3 Water Supply Characteristics

OCC pumps water from 3 wells from one wellfield located north of the main facility. Two wells, Well No. 1 and No. 2, provide all water used by the institution. Well No. 3 is typically used as a standby emergency supply, but has not been in use since 2008, due to leaks in the transmission line, which is approximately 0.25 miles long. OCC is located near the Snahapish River in the Queets-Quinalt WRIA.

2.4 Water Supply Reliability Evaluation

The wells have operated properly and have not indicated any need for additional sources. Well No. 3 could be in use if the transmission line were repaired.

See Section 5.1.5 for LCC’s water supply contingency plan.

2.5 Future Population Projections and Land Use

The current population is 380 and is expected to remain constant within the next 20-year planning period. DOC has no capital improvement projects scheduled to add buildings or services to the system.

2.6 Future Water Demand

Table B6-4 summarizes the 2024 and projected 2034 and 2044 residential population and water demand.

Table B6-4: Water Demand Forecast			
	2024(1)	2034	2044
Resident Population	380	380	380
Average Day Demand (gpd)			
Facility	43,385	43,385	43,385
Per Resident	114	114	114
Maximum Day Demand (gpd)			
Facility	110,758	110,758	110,758
Per Resident	291	291	291
Peak Hour Demand (gpm)			
Facility	182	182	182

(1) 2024 Demand is the average of 2020-2022 data.

3 System Analysis and Asset Management

3.1 Asset Management – Asset Inventory and Analysis

3.1.1 Asset Inventory

Table B6-5 shows the assets of Olympic Corrections Center.

Table B6-5: Asset Inventory			
Asset	**Description**	**Capacity/ Size**	**Year Built**
Well No. 1	Depth = 76 feet 20 hp pump	120 gpm	1980
Well No. 2	Depth = 80 feet 20 hp pump	120 gpm	1980
Well No. 3	Depth = 76 feet 20 hp pump	120 gpm	1994
Treatment Process	Chlorination	-	-
Redwood Reservoir	Wood	375,000 gal	1981
Concrete Tank	Concrete	300,000 gal	1995
Distribution Pipe	PVC	3 - 12 inch	1980-1995

3.1.2 Asset Condition & Criticality

Well No. 3 has not been in service since 2008 because of leakage in the transmission line. Leaks have been observed in the transmission lines between the wells and the distribution system. The well pump for Well No. 2 was replaced and installed in November of 2022. The redwood reservoir is undergoing relining and reroofing in 2023, and telemetry is being upgraded.

Remaining useful life and condition are general and applied to the full inventory of the asset identified. Considering the age of the assets, there may be isolated locations of poor conditions due to joint separation caused from tree roots or settlement, however there are not any known or expected failures.

Table B6-6 details the condition of the water system assets.

Table B6-6: Asset Condition

Component	Units	# of Units	Remaining Useful Life	Condition	Replacement Cost
Distribution System Inventory Component					
4” Pipe	LF	136	~30-50 years	Good	
6” Pipe	LF	1,663	~30-50 years	Good	
8” Pipe	LF	2,456	~40-60 years	Good	
10” Pipe	LF	2,162	~40-60 years	Good	
12” Pipe	LF	1,747	~40-60 years	Good	
Transmission System Inventory					
3” PVC	LF	10,779	~40-60 years	Good	
Raw & Finished Storage Inventory					
Redwood Reservoir	gal	375,000	Installed 1981	Improvements in 2023	$500,000
Concrete Reservoir	gal	300,000	Installed 1995	Good	$500,000
Source Pump Inventory					
Well No. 1 Pump	gpm	120	Installed 1980	Good	$10,000
Well No. 2 Pump	gpm	120	Replaced 2022	Good	$10,000
Well No. 3 Pump	gpm	120	Installed 1994	Good	$10,000

3.2 Water Quality

Table B6-7 details the water quality testing schedule. Coliform is tested monthly, has a monitoring population of 500, and requires one routine sample a month. See Appendix C6 for OCC's water quality monitoring plan.

Table B6-7: Water Quality Monitoring Schedule			
Test Panel	**# of Samples Required**	**Frequency**	**Next Sample Due**
Coliform	1	monthly	
Chemical Monitoring			
Lead & Copper	5	3 year	Jul 2023
Asbestos	0	9 year	
Total Trihalomethane (THM)	1	1 year	Jul 2023
Halo-Acetic Acids	1	1 year	Jul 2023
Source Monitoring – Well 1, 2, 3			
Nitrate	1	1 year	Jul 2023
Complete Inorganic	1	9 year	Aug 2028
Volatile Organics	1	6 year	Apr 2024
Herbicides	1	9 year	Jul 2027
Pesticides	0	3 year	
PFAs	1	3 year	
Soil Fumigants	0	3 year	
Gross Alpha	1	6 year	July 2027
Radium 228	1	6 year	July 2027

3.3 Design Standards

See Section 2.2 of Part A for DOC-wide design standards.

3.4 Capacity Analysis

3.4.1 Water Right Analysis

Wells No. 1 and 2 have an annual water right of 50 acre-feet per year (afy), and a maximum instantaneous withdrawal rate of 100 gpm. Under water rights permit G2-29403, Well No. 3 has an annual right of 100 afy, and an instantaneous withdrawal rate of 220 gpm. The total annual water right available to OCC is 150 afy and maximum instantaneous withdrawal rate of 320 (gpm). Currently, the annual water rights are sufficient, but instantaneous water rights for Wells No. 1 and 2 do not accommodate 120 gpm pumps. See Appendix C4 for OCC's Water Rights Self-Assessment Form.

3.4.2 Source Capacity Analysis

Table B6-8 shows the available source capacity for the facility.

Table B6-8: Source Capacity Analysis			
	2024	2034	2044
Available Source (gpd)			
Well No. 1 (120 gpm)	172,800	172,800	172,800
Well No. 2 (120 gpm)	172,800	172,800	172,800
Well No. 3 (120 gpm)	172,800	172,800	172,800
Total	**518,400**	**518,400**	**518,400**
Maximum Day Demand (gpd)	110,758	110,758	110,758
Source Capacity Surplus/(Deficiency) (gpd)	**407,642**	**407,642**	**407,642**

The wells have enough capacity to provide sufficient water for OCC.

3.4.3 Storage Capacity Analysis

OCC is currently served by two storage reservoirs, totaling 675,000 gallons. The total required storage is based primarily on a fire flow requirement of 3,500 gpm for 3 hours, as established by the Jefferson County Fire Marshal.

Table B6-9 shows the available storage for the facility.

Table B6-9: Storage Capacity Analysis		
	2022	2042
Required Storage (gal)		
Operational Storage (1)	8,154	8,154
Equalizing Storage (2)	5,538	5,538
Fire Flow Storage (3)	630,000	630,000
Standby Storage (Nested) (4)	76,000	76,000
Total Required (5)	**643,692**	**643,692**
Available Storage		
Redwood Reservoir	375,000	375,000
Concrete Tank	300,000	300,000
Dead Storage (6)	6,523	6,523
Total Available (7)	**668,477**	**668,477**
Storage Capacity Surplus/(Deficiency)	24,785	24,785

(1) Required operational storage = Estimated 10% (ES + SS)
(2) Required equalizing storage = Greater of 5% of MDD or DOH equation.
DOH equation = (Peak Hour Demand - Total Available Source) * (150)
PHD : (Maximum Day Demand per ERU / 1440) * [(C) * (N) + F] + 18
(C & F values obtained from Table 3-1 in DOH June 2020 WSDM.)
(3) Required fire flow storage = Flow * duration = 3,500 gpm * 3 hr * 60min/hr. (According to Jefferson County Fire Marshal).
(4) Required standby storage for existing source = Greater of (2*ADD/ERU)-(1440*(Qs-Ql))) or (200 gpd*ERU).
Qs: Total source capacity
Ql: Largest source capacity
Nested storage = Lesser of SS and FFS
(5) Total required storage = equalizing + fire flow + standby storage + operational – nested storage.
(6) Dead storage = Estimated 8% (ES + SS)
(7) Total available storage = sum of reservoir storage – dead storage.

3.4.4 Limiting Factor Summary

Table B6-10: Limiting Factor Analysis	
Capacity Parameter	**Available Capacity (gpd)**
Water Right Capacity (Qa = 150 afy)	133,911
Source Capacity	518,400
Storage Capacity	668,477
Limiting Factor Capacity	**133,911**

As shown in Table B6-10, water rights are the limiting factor for capacity at CCCC. In order to determine an accurate amount of water use per ERU, a resident per ERU factor must be defined.

For this analysis, one ERU is defined as the average water usage of a typical single-family residence, assuming the average person uses 100 gallons per day and the average single-family residence includes 2.3 residents, one ERU is equivalent to 230 gallons per day. According to Table B6-4, a resident uses 92 gpd under average day demand. The facility has a capacity of 133,911 gpd, which can serve 1,455 residents on the average day, or 582

ERUs. Therefore, the resident per ERU factor is 1455 residents per 582 ERUs, or 2.50 residents per 1 ERU.

3.5 Hydraulic Analysis

The goal of this hydraulic analysis is to determine whether the distribution system can maintain minimum pressures during peak hour demand and fire flow demand under current and future conditions. A new hydraulic model was developed for OCC using WaterCAD hydraulic modeling software.

The model includes a reservoir, the distribution system, and a pressure reducing valve. The system was evaluated for the present condition peak hour demand. The demand was modeled by dividing the total peak hour demand among the residential service connections, where demand is typically highest. This analysis indicated that the system was able to accommodate peak hour demand and sustain pressure of at least 20 pounds per square inch (psi). In this model, some nodes had pressures that exceeded 70 psi, which exceeds typical service pressures. The model did not include the pressure reducing valves in place at building connections throughout the system, which maintain desired service pressures.

The system was also evaluated under the fire flow requirement of 3,500 gallons per minute (gpm). This analysis showed that multiple hydrants throughout the system were unable to accommodate fire flow requirements.

Appendix C9 includes hydraulic analysis data and a map of the hydraulic model for the OCC water system.

3.6 Summary of System Deficiencies

Table B6-11 shows the deficiencies of the water system plan. The results of the water rights analysis indicate that the instantaneous water rights for Wells No. 1 and 2 are not sufficient to support the current well pump capacity. The source capacity and available storage are sufficient to accommodate current and projected demands. The hydraulic analysis shows that the water system can provide peak hour demand and satisfy fire flow requirements.

Table B6-11: Asset Inventory

Classification of Deficiency	Description of Project Solution	Total Project Cost
Instantaneous Water Rights	Application for Supplemental Water Rights	$12,500

4 Water Use Efficiency Program

4.1 Source and Service Metering

4.1.1 Production/Source Metering:

The wells are metered and read every week.

4.1.2 Service Meters

OCC has meters at all 19 building service connections, and the service meters are read every week.

4.2 Distribution System Leakage

4.2.1 Methodology

Distribution System Leakage is calculated using American Water Works Association Water Audit methodology and is reported in yearly Water Use Efficiency Annual Performance Reports. Cedar Creek's last three WUE Reports are included in Appendix C14.

The most current distribution system leakage information that came from the most recent Water Use Efficiency Report is shown in Table B6-12 below.

Table B6-12: Distribution System Leakage

Year	Total Water Produced (gal)	Authorized Consumption (gal)	Distribution System Leakage (gal)	Distribution System Leakage (%)	3-year annual average (%)
2022	13,671,400	9,966,569	3,704,831	27.1	28.3
2021	16,878,721	13,686,438	3,192,283	18.9	16.3
2020	22,267,490	15,162,505	7,104,505	31.9	28.0
2019	21,749,060	16,826,305	4,922,755	22.6	23.7
2018	24,392,209	17,209,580	7,182,629	29.4	23.9

4.2.2 Leak Detection

The three-year average Distribution System Leakage volume according to the most current data, 2020-2022 is 4,667,206 gallons. The three-year DSL percentage is 28.3%.

4.2.3 Water Loss Control Action Plan

A leak detection survey should be performed on the Cedar Creek system. This project is included in the financial program included in Section 7. Regular calibration of water system meters should be conducted and recorded.

4.3 Water Use Efficiency Program

A water conservation program was developed for OCC in 1995 and included the following measures:

- Test source meters every 3 to 5 years.
- Install service meters throughout the facility.
- Leak detection projects.
- Install low flow showerheads.
- Install low flush toilets.
- Replace kitchen condensing unit.
- Use reclaimed wastewater for nonpotable uses.

In 1995, the average daily demand was 83,500 gallons per day and the facility housed 340 residents. Currently, the average daily demand is 35,760 gallons per day and the facility houses 380 residents. New water use efficiency goals should be established for OCC.

It is a requirement of DOH to set Water Use Efficiency Goals in a public forum. The water system manager can coordinate the details of a public forum with the DOC Environmental Manager.

All meters, including source meters should be calibrated on an annual basis. These practices will improve operation efficiency and leak management.

5 Source Water Protection

5.1 Wellhead Protection Program

5.1.1 Overview

The goal of this WHPP is to protect OCC's water supply by identifying and managing sources of groundwater contamination.

5.1.2 Susceptibility Assessment

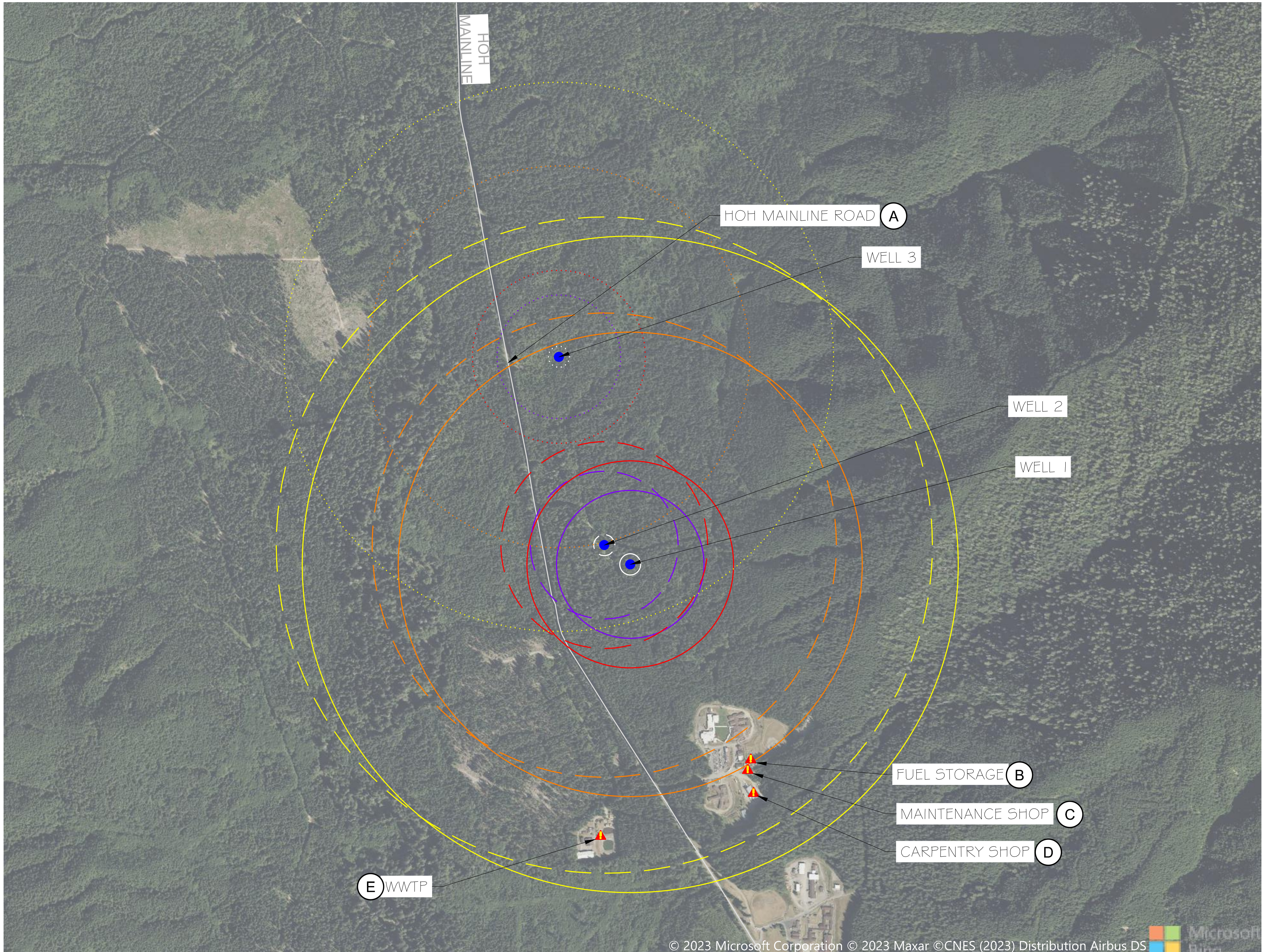
The susceptibility of the OCC wells is moderate. OCC has adopted management strategies including contingency planning and spill response planning to protect the wells.

5.1.3 Wellhead Protection Area Delineation

See Exhibit B6-4 for the wellhead protection area. The following five zones of the wellhead protection area were delineated: Sanitary control area, Six-month time of travel zone, One-year time of travel zone, Five-year time of travel zone, and Ten-year time of travel zone. The sanitary control area includes all area within a 100-foot radius around the three wells that serve the facility. The Calculated Fixed Radius method was used to determine the radii for these zones, as documented in the Susceptibility Assessment Survey Form completed for Well No. 1., included in Appendix C7.

EXHIBIT B6-4

OLYMPIC CORRECTIONS CENTER - WELLHEAD ZONES OF CONTRIBUTION



LEGEND

WELLHEAD

POTENTIAL SOURCE OF CONTAMINATION

ROAD

WELL NO. 1

100' SANITARY CONTROL AREA

700' 6 MONTH TIME OF TRAVEL

980' 1 YEAR TIME OF TRAVEL

2200' 5 YEAR TIME OF TRAVEL

3110' 10 YEAR TIME OF TRAVEL

WELL NO. 2

100' SANITARY CONTROL AREA

700' 6 MONTH TIME OF TRAVEL

980' 1 YEAR TIME OF TRAVEL

2200' 5 YEAR TIME OF TRAVEL

3110' 10 YEAR TIME OF TRAVEL

WELL NO. 3

100' SANITARY CONTROL AREA

586' 6 MONTH TIME OF TRAVEL

820' 1 YEAR TIME OF TRAVEL

1810' 5 YEAR TIME OF TRAVEL

2603' 10 YEAR TIME OF TRAVEL

0 1000' 2000'

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DOC WATER SYSTEM PLAN UPDATE

OCC - WELLHEAD ZONES OF CONTRIBUTION

EXHIBIT

B6-4

5.1.4 Contaminant Source Inventory

Ecology's Facility/Site Identification System database was reviewed to identify any known or potential sources of contamination within OCC's wellhead protection area.

In 2008, while removing a failed well pump, mercury was accidentally released into the environment from a cut well pipe. A cleanup was performed shortly after, and a site assessment in 2012 recommended no further action at the site.

The primary sources of potential contamination at the facility, as previously documented in the wellhead protection program, are listed in **Table B6-13**.

Table B6-13: Contaminant Inventory
6 Month Time of Travel
A - Hoh Mainline Road
6 Month to 1 Year Time of Travel
None
1 to 5 Year Time of Travel
B - Fuel stored in above ground fuel storage tank
C - Oils in maintenance shop
D - Paint in carpentry shop
5 to 10 Year Time of Travel
E - Wastewater Treatment Plant

5.1.5 Contingency Plan

OCC has arranged for water to be delivered to the facility by private vendors in the event that reservoir storage is not adequate to address emergency situations, per the trucked water plan presented in Section A5.3.3. The facility also has an additional 1,000-gallon potable water tank onsite. The nearest water purveyor is the City of Forks, which could also be contacted in the event of an emergency.

5.1.6 Notify Emergency Responders

In the event of an accidental spill, OCC facility staff will notify the Plant Manager. The Plant Manager or switchboard operator would in turn notify the fire departments in the communities of Forks and Clearwater as first responders. The 24-hour Ecology spill response hotline would also be contacted.

6 Operations and Maintenance

6.1 Water System Management and Personnel

The certified operator at the facility is Howard "Mike" Henry. Operators of DOC water systems are responsible for the duties listed in Section A5.2.

Table B6-14: Operator Info		
Operator Name	**Operator Number**	**Certification**
Howard "Mike" Henry	007644	WDM 1

The cross connection control devices located on-site include the following:

- Ozette Living Unit double check valve assembly
- Hoh Living Unit double check valve assembly
- Clearwater Living Unit double check valve assembly

These devices are checked on an annual basis by a contracted cross connection control specialist.

6.2 Emergency Call-Up List

Table B6-15 provides the emergency call-up list for Olympic Corrections Center.

Table B6-15: Emergency Call-Up List

Personnel/ Agency	Working Hours Number	Off-Duty Number
Water System Manager – Greg Banner	(360) 374-8232	
Operator – Mike Henry	(360) 374-8327	
Superintendent – Scott Speer	(360) 725-8345	
DOC Environmental Manager – Darin Klein	(360) 764-3093	
DOH Office of Drinking Water – SWRO	(360) 236-3100	(877) 481-4901
DOH Regional Engineer – Fern Schultz	(564) 669-0853	
DOH Regional Engineer – Scott Pollock	(564) 669-0854	
Jefferson County Public Health Department	(360) 379-9444	
Parts Supplier – Keller Plumbing & Parts	(206) 378-0459	
Emergency Water Supplier – Water Truck Services	(253) 237-3878	
Electrical Utility – Clallam County PUD	(360) 452-9771	
24-hour Spill Response – Ecology	(800) 258-5990	
Police/Security	911	
Fire Department	911	
Emergency Medical	911	

Section A5.3 of this Plan provides a DOC-wide emergency response plan.

6.3 Water Quality Testing Laboratory

OCC uses the following laboratories for water quality testing:

Edge Analytical
1620 S Walnut St
Burlington, WA 98233

Spectra Laboratories
26276 Twelve Tree Ln #C
Poulsbo, WA 98370

6.4 Operations and Maintenance Deficiencies

Table B6-16: Summary of O&M Deficiencies

O&M Deficiency	Action to be taken	Estimated Cost
Well No. 3 not in use	Construct well transmission line improvement project designed in 2008.	$500,000

7 Improvement Program

7.1 Prioritization of Improvements

The following includes a list of maintenance and improvement projects recommended for OCC.

1. Water loss has been a continual issue at the facility for the last six years, and a number of leak repairs were completed in 2021. Leak repairs should continue as necessary to limit water loss. This project is considered high priority.
2. The transmission line for Well No. 3 should be repaired to utilize the source. In 2008, a transmission line improvement plan was fully developed, but not constructed due to DNR concerns about accessibility to the road between the well and the main facility area. It is recommended that DOC and DNR coordinate to complete this project. This project is considered high priority.

7.2 Capital Improvement Summary and Schedule

OCC-1: Annual Renewal and Replacement. This refers to annual distribution system maintenance and upgrade activities necessary to maintain reliable operation of the water system. This includes activities such as leak detection and repair, replacement of aging lines and valves, etc. The annual cost is estimated to be $25,000.

OCC-2: Water Loss Control. This includes addressing distribution leaks as necessary to reduce system water loss.

OCC-3: Transmission Line Repair. This project includes the construction of a new 4-inch diameter transmission line from Well No. 3 to the Olympic Camp Area. Costs associated with this project are limited to construction costs because the design is complete.

Table B6-17: Olympic Corrections Center Capital Improvement Projects 2024-2034

Project Code	Description	Cost(1)	Purpose(2)	Priority Ranking(3)
OCC-1	Annual Renewal & Replacement	$250,000	OP	1
OCC-2	Water Loss Control	$20,000	OP	1
OCC-3	Transmission Line Repair	$500,000	OP	1
OCC-Total		$770,000		

(1) Annual renewal and replacement costs are presented as total costs over the 10-year planning period, not as annual costs
(2) H/S = Health/Safety, OP = Operational, G = Growth
(3) “1” = High Priority, “2” = Moderate Priority

Part B7

Washington Corrections Center

CONTENTS

TABLES

EXHIBITS

1 Description of Water System

1.1 Ownership and Management

The Washington Corrections Center (WCC) is owned and operated by the Washington State Department of Corrections (DOC) and is a type ST ownership. An on-site plant manager oversees the daily operations of the water system and reports to the operator. Contact information for relevant water system personnel is identified in Table B7-1 below.

Table B7-1: Water System Contacts			
	Name	**Address**	**Phone Number**
Owner	Washington Corrections Center	2321 W Dayton Airport Road, Shelton, WA 98584	(360) 427-4696
Water System Manager	Matthew Murphy-Dickson		
Operator	Jordan Kettel		

1.2 System History and Background

WCC is located approximately five miles northwest of the City of Shelton in Mason County. WCC was opened in 1964 under the management of the Department of Social and Health Services. In 1981, WCC was transferred to DOC and is currently a multi-custody correctional institution. WCC's total acreage is approximately 455 acres, with 125 acres developed for correctional facilities. The remainder of the property consists of timberland and grassed areas.

The existing structures on the site include the following:

- Cedar Housing
- Evergreen Housing
- R1, R2, and R3 Housing Unit
- R4, R5, and R6 Housing Units
- Administrative and Visitor Buildings
- Reception Center
- IMU Building
- Training Building
- IT Building
- Infirmary
- Greenhouse
- Warehouse
- Heavy Equipment Storage
- Motor Pool Warehouse
- Chapel and Education Building
- Wastewater Treatment Plant
- Guard Towers

Exhibit B7-1 provides a location map for the facility.

1.3 Related Plans

WCC's water system does not include interties with any neighboring systems and is not part of a coordinated water system plan. If there was ever a need for an intertie in the future, the City of Shelton and the City of Dayton are the closest neighboring systems. WCC is located in the Kennedy-Goldsborough Water Resource Inventory Area (WRIA 14). The Watershed Restoration and Enhancement Committee is currently planning to adopt a watershed plan. The WCC water system will be subject to the requirements and recommendations within the watershed plan once it is finalized.

1.4 Service Area, Maps, and Land Use

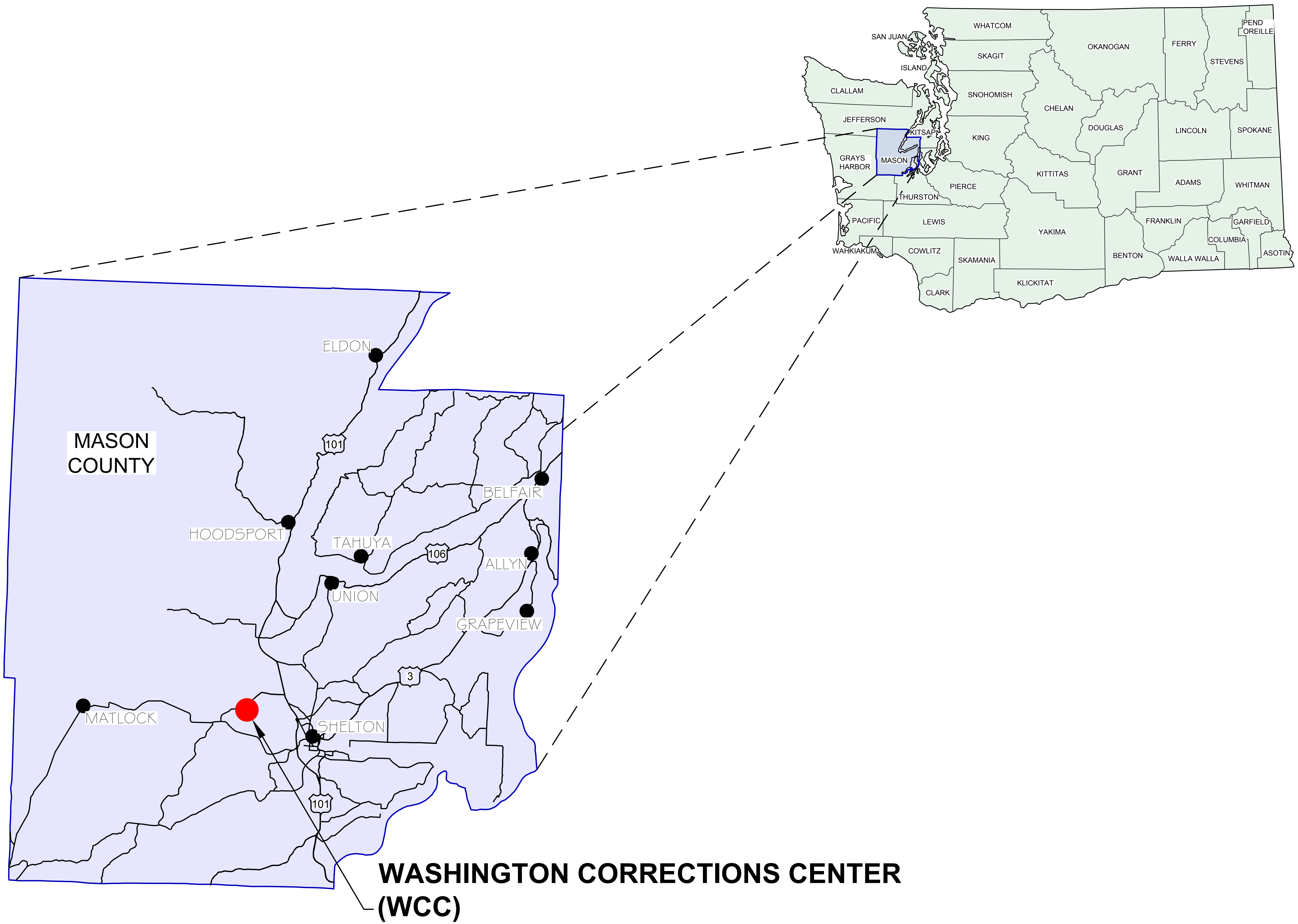
WCC's service area includes the facility grounds and is bounded by the property lines. Exhibit B7-2 provides a map of the water service area. Exhibit B7-3 shows a map of the water system features for Cedar Creek.

1.5 System Description

Well No. 1 water is pumped directly to the steam plant untreated and is used exclusively for boiler make-up water. Water pumped from Wells No. 2, 3, and 4 is conveyed to a water treatment building, which contains soda ash feed equipment for use in increasing the pH of the water, as well as an on-site sodium hypochlorite generation system for disinfection. From the treatment building, water is pumped to the 500,000-gallon reservoir, and then to the 300,000-gallon reservoir which floats on the system. Service lines range in size from 2.5 inches to 14 inches with the majority consisting of 4-inch to 10-inch PVC pipe.

EXHIBIT B7-1

WASHINGTON CORRECTIONS CENTER - VICINITY MAP



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DOC WATER SYSTEM PLAN UPDATE

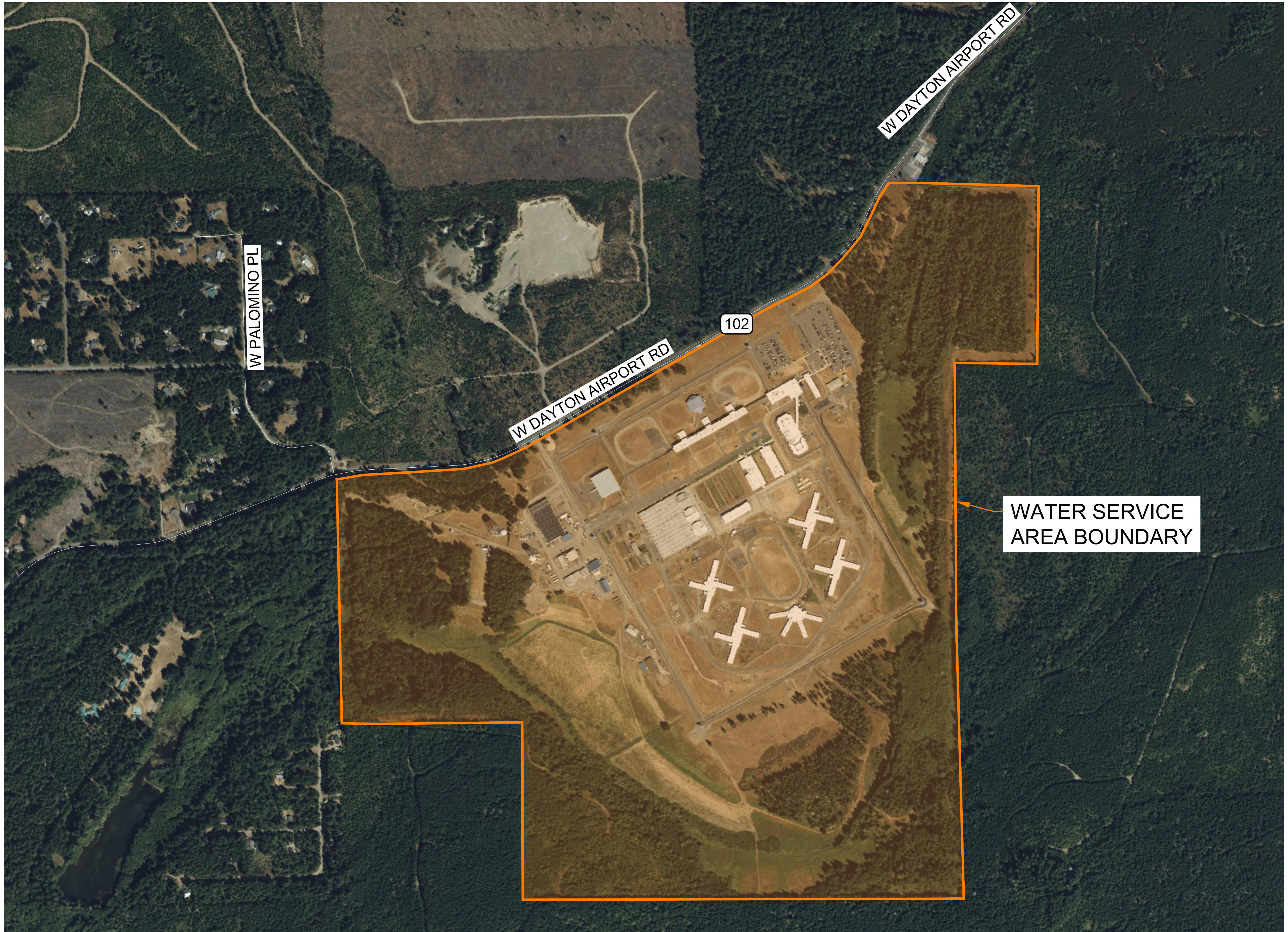
WASHINGTON CORRECTIONS CENTER - VICINITY MAP

EXHIBIT

B7-1

EXHIBIT B7-2

WASHINGTON CORRECTIONS CENTER - WATER SERVICE AREA



LEGEND

WATER SERVICE AREA BOUNDARY

0 800' 1600'

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DOC WATER SYSTEM PLAN UPDATE

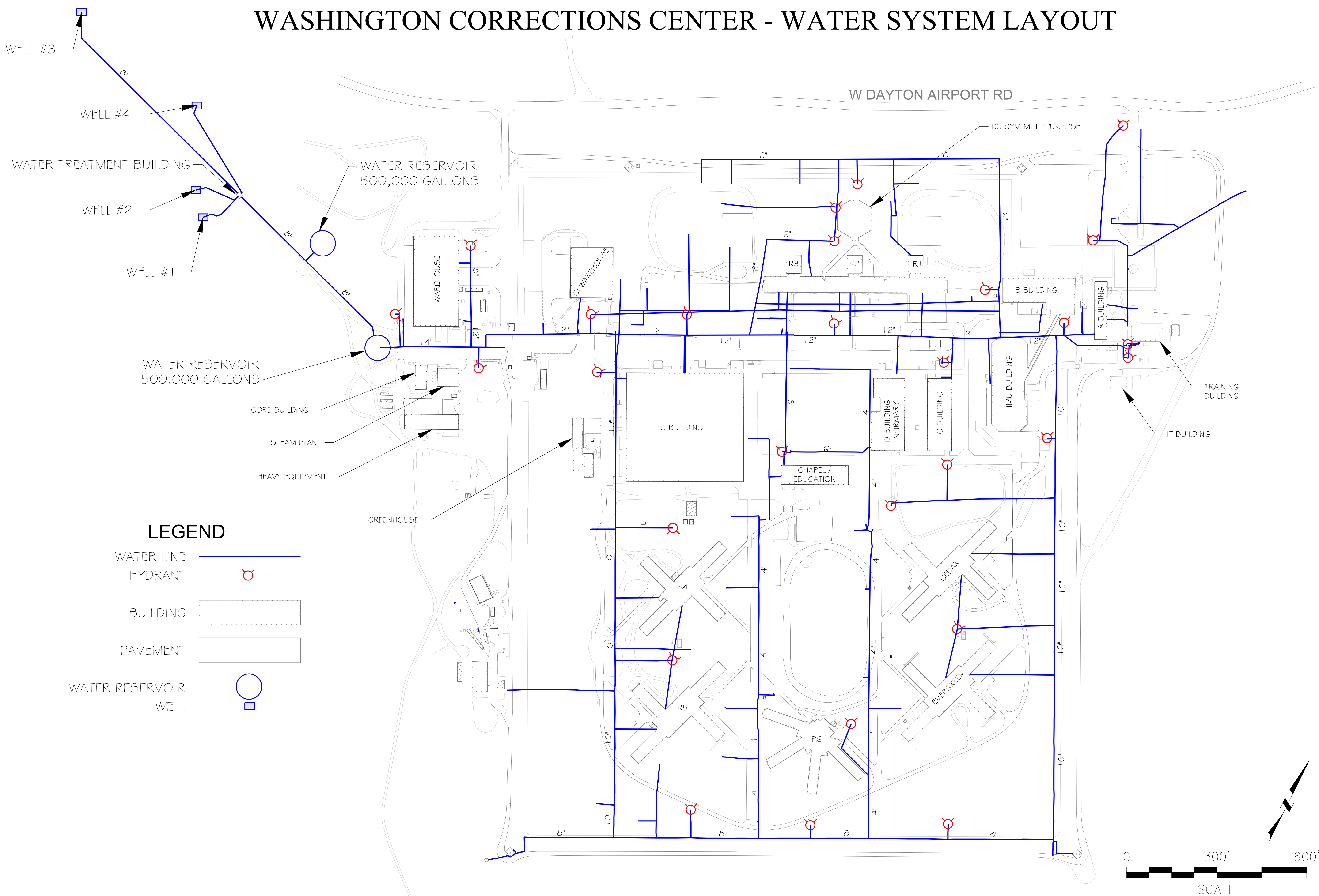
WCC - WATER SERVICE AREA

EXHIBIT

B7-2

EXHIBIT B7-3

WASHINGTON CORRECTIONS CENTER - WATER SYSTEM LAYOUT



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DOC WATER SYSTEM PLAN UPDATE

WCC WATER SYSTEM LAYOUT

EXHIBIT

B7-3

2 Basic Planning Data

2.1 Current Population and Service Connections

WCC water system currently serves 70 institutional buildings. The facility has 1800 residents and 400 employees. The number of temporary and transient users is 700 people per month.

Table B7-2 shows a summarization of the population.

Table B7-2: Population	
Population Type	**Population**
Full-Time Residential	1800
Non-Residential	400
Temporary	700
Total	2900

2.2 Water Production and Usage

This system does not have customer classes and rates. Table B7-3 shows the monthly and annual totals for source production and water use. Monthly production and consumption are calculated from available well and water meter readings for 2020 through 2022 (See Appendix C13).

Table B7-3: Water Production and Usage (2020 – 2022)		
Source	Average Monthly Production (gal)	Annual Production (gal)
Well 1	-	-
Well 2	2,991,485	35,897,819
Well 3	1,258,606	15,103,273
Well 4	3,129,939	37,559,273
Total	7,380,030	88,560,365
Use	Average Monthly Consumption (gal)	Annual Consumption (gal)
Residential	6,839,795	82,077,535
Irrigation	34,543	414,520
Total	6,874,338	82,492,055

2.3 Water Supply Characteristics

Four wells provide water to WCC. Water from Wells No. 2, 3, and 4 is used to supply the distribution system. Well No. 1 is used exclusively for boiler make-up water. The wells are located near North Fork Goldsborough Creek in the Kennedy-Goldsborough WRIA.

2.4 Water Supply Reliability Evaluation

In the event that water from one of the wells is unfit for use, WCC would rely upon the other wells. See Section 5.1.5 for WCC's water supply contingency plan.

2.5 Future Population Projections and Land Use

The facility population is currently 1,800. DOC has not capital improvement projects scheduled to add buildings or service to the system. For the purposes of this analysis, the 20-year projected growth at the facility is 300 additional residents.

2.6 Future Water Demand

Table B7-4 summarizes the 2024 and projected 2034 and 2044 residential population and water demand.

Table B7-4: Water Demand Forecast

Year	2024 (1)	2034	2044
Resident Population	1,800	2,100	2,100
Average Day Demand (gpd)			
Facility	224,843	262,317	262,317
Per Resident	125	125	125
Maximum Day Demand (gpd)			
Facility	358,612	418,381	418,381
Per Resident	199	199	199
Peak Hour Demand (gpm)			
Facility	448	514	514

(1) 2024 Demand is the average of 2020-2022 data.

3 System Analysis and Asset Management

3.1 Asset Management – Asset Inventory and Analysis

3.1.1 Asset Inventory

Table B7-5 shows the assets of Washington Corrections Center.

Table B7-5: Asset Inventory

Asset	Description	Capacity/ Size	Year Built
Well No. 1	Depth = 177 feet	179 gpm	1962
Well No. 2	Depth = 46 feet 25 hp pump	320 gpm	1963
Well No. 3	Depth = 184 feet 25 hp pump	144 gpm	1962
Well No. 4	Depth = 56 feet 60 hp pump	640 gpm	1984
Treatment Process	Chlorination (onsite hypochlorite) Soda Ash addition	-	-
Elevated Reservoir	Steel	300,000 gal	1962-1963
Elevated Reservoir	Steel	500,000 gal	2003
Distribution Pipe	Ductile Iron	2.5 – 8 inch	1962-1963
Distribution Pipe	PVC	2.5 – 8 inch	1962-1963

3.1.2 Asset Condition & Criticality

The well pumps are at the end of their useful life and are in need of replacement. The storage reservoirs are in good condition and are scheduled to be repainted. The distribution piping was installed in the 1960s but is generally in good condition. The reservoirs are in good condition, and the older reservoir has 20 more useful years.

Remaining useful life and condition are general and applied to the full inventory of the asset identified. Considering the age of the assets, there may be isolated locations of poor conditions due to joint separation caused from tree roots or settlement, however there are not any known or expected failures.

Table B7-6: Asset Condition

	Units	# of Units	Remaining Useful Life	Condition	Replacement Cost
Distribution System Inventory					
4" Pipe	LF	2,895	Installed 1962-1963	Good	
6" Pipe	LF	4,874	Installed 1962-1963	Good	
8" Pipe	LF	2,372	Installed 1962-1963	Good	
10" Pipe	LF	3,355	Installed 1962-1963	Good	
12" Pipe	LF	1,837	Installed 1962-1963	Good	
14" Pipe	LF	594	Installed 2003	Good	
Raw & Finished Storage Inventory					
Steel Water Tower	gal	300,000	Installed 1962-1963	Due for Repainting	~$1,200,000
Steel Water Tower	gal	500,000	Installed 2003	Good	~$2,000,000
Source Pump Inventory					
Well No. 1 Pump	gpm	179	Installed 1962	Due for replacement	$20,000
Well No. 2 Pump	gpm	320	Installed 1963	Due for replacement	$40,000
Well No. 3 Pump	gpm	144	Installed 1962	Due for replacement	$20,000
Well No. 4 Pump	gpm	640	Installed 1984	Due for replacement	$60,000

3.2 Water Quality

Table B7-7 details the water quality monitoring requirements at WCC. Coliform is tested monthly, has a monitoring population of 2223, and requires two routine samples a month.

Table B7-7:Water Quality Monitoring Schedule			
Test Panel	**# of Samples Required**	**Frequency**	**Next Sample Due**
Coliform	2	monthly	
Chemical Monitoring			
Lead & Copper	10	3 year	Aug 2024
Asbestos	0	9 year	
Total Trihalomethane (THM)	1	1 year	Aug 2023
Halo-Acetic Acids	1	1 year	Aug 2023
Source Monitoring – Well #3			
Nitrate	1	1 year	Oct 2023
Complete Inorganic	1	9 year	Oct 2030
Volatile Organics	1	6 year	Aug 2025
Herbicides	1	9 year	Oct 2025
Pesticides	0	3 year	
PFAs	1	3 year	Oct 2024
Soil Fumigants	0	3 year	
Gross Alpha	1	6 year	Oct 2027
Radium 228	1	6 year	Oct 2027
Source Monitoring – Well #2, 4			
Nitrate	1	1 year	Aug 2023
Complete Inorganic	1	9 year	Oct 2024
Iron	1	3 year	Aug 2025
Volatile Organics	1	6 year	Oct 2028
Herbicides	1	9 year	Aug 2029
Pesticides	0	3 year	
PFAs	1	3 year	Oct 2024
Soil Fumigants	0	3 year	
Gross Alpha	1	6 year	Dec 2023
Radium 228	1	6 year	Dec 2023

See Appendix C6 for WCC's water quality monitoring plan.

3.3 Design Standards

Section 2.2 of Part A of this plan includes DOC-wide design standards.

3.4 Capacity Analysis

3.4.1 Water Right Analysis

The total annual water right available for WCC is 268 acre-feet per year (afy), with a maximum instantaneous rate of 563 gallons per minute (gpm). Well No. 4 currently operates with a 640-gpm pump, which exceeds the instantaneous rate allowed under existing rights. Annual rights are sufficient for current demands but insufficient for future demand.

See Appendix C4 for WCC's Water Rights Self-Assessment Form.

3.4.2 Source Capacity Analysis

Table B7-8 shows the available source values for the facility.

Table B7-8: Source Capacity Analysis

	2024	2034	2044
Available Source (gpd)			
Well No. 1 (100 gpm)	144,000	144,000	144,000
Well No. 2 (320 gpm)	460,800	460,800	460,800
Well No. 3 (144 gpm)	207,360	207,360	207,360
Well No.4 (640 gpm)	921,600	921,600	921,600
Total	**1,733,760**	**1,733,760**	**1,733,760**
Maximum Day Demand (gpd)	358,612	418,381	418,381
Source Capacity Surplus/(Deficiency) (gpd)	**1,375,148**	**1,315,379**	**1,315,379**

The wells have enough capacity to provide sufficient water for WCC.

3.4.3 Storage Capacity

WCC is currently served by two storage reservoirs, totaling 800,000 gallons of storage. Total required storage is based primarily on a fire flow requirement of 3,750 gpm for 3 hours, as established by the Mason County Fire Marshal. Existing storage is adequate to meet present and future needs.

Table B7-9 shows the available storage for the facility. The facility has enough storage to meet present and future demands.

Table B7-9: Storage Capacity Analysis			
	2024	2034	2044
Required Storage (gal)			
Operational Storage (1)	37,793	44,092	44,092
Equalizing Storage (2)	17,931	20,919	20,919
Fire Flow Storage (3)	675,000	675,000	675,000
Standby Storage (Nested) (4)	360,000	420,000	420,000
Total Required (5)	730,724	740,011	740,011
Available Storage			
300,000-gal reservoir	300,000	300,000	300,000
500,000-gal reservoir	500,000	500,000	500,000
Dead Storage (6)	30,234	35,274	35,274
Total Available (7)	830,234	835,274	835,274
Storage Capacity Surplus/(Deficiency)	99,511	95,263	95,263

(1) Required operational storage = Estimated 10% (ES + SS)
(2) Required equalizing storage = Greater of 5% of MDD or DOH equation.
DOH equation = (Peak Hour Demand - Total Available Source) * (150)
PHD : (Maximum Day Demand per ERU / 1440) * [(C) * (N) + F] + 18
(C & F values obtained from Table 3-1 in DOH June 2020 WSDM.)
(3) Required fire flow storage = Flow * duration = 3,750 gpm * 3 hr * 60min/hr. (According to Mason County Fire Marshal).
(4) Required standby storage for existing source = Greater of (2*ADD/ERU)-(1440*(Qs-Ql))) or (200 gpd*ERU).
Qs: Total source capacity
Ql: Largest source capacity
Nested storage = Lesser of SS and FFS
(5) Total required storage = equalizing + fire flow + standby storage + operational – nested storage.
(6) Dead storage = Estimated 8% (ES + SS)
(7) Total available storage = sum of reservoir storage – dead storage.

3.4.4 Limiting Factor Summary

The below table details the limiting factor for WCC.

Table B7-10: Limiting Factor Analysis	
Capacity Parameter	Available Capacity (gpd)
Water Right Capacity (Qa = 268 afy)	239,255
Source Capacity	1,733,760
Storage Capacity	830,234
Limiting Factor Capacity	**239,255**

As shown in Table B7-10, water rights are the limiting factor for capacity at WCC. In order to determine an accurate amount of water use per ERU, a resident per ERU factor must be defined.

For this analysis, one ERU is defined as the average water usage of a typical single-family residence, assuming the average person uses 100 gallons per day and the average single-family residence includes 2.3 residents, one ERU is equivalent to 230 gallons per day. According to Table B7-4, a resident uses 125 gpd under average day demand. The facility has a capacity of 239,255 gpd, which can serve 1,914 residents on the average day, or

1,040 ERUs. Therefore, the resident per ERU factor is 1,914 residents per 1,040 ERUs, or 1.84 residents per 1 ERU.

3.5 Hydraulic Analysis

The goal of this hydraulic analysis is to determine whether the distribution system can maintain minimum pressures during peak hour demand and fire flow demand under current and future conditions. A new hydraulic model was developed for WCC using WaterCAD hydraulic modeling software.

The model includes a water tank and the water distribution network. The system was evaluated under present condition peak hour demand. The demand was modeled by dividing total system peak hour demand across the system are connections to residential units, where demand is typically the highest. The results of this analysis indicated that the system was able to provide peak hour demand while sustaining pressures of at least 30 pounds per square inch (psi).

The system was also evaluated under the fire flow requirement of 3,750 gallons per minute (gpm). This analysis showed that all nodes were able to maintain pressures of at least 20 psi but were unable to provide flows of 3,750 gpm.

Appendix C9 includes hydraulic analysis data and a map of the hydraulic model for the WCC water system.

3.6 Summary of System Deficiencies

Table B7-11 shows the deficiencies of the water system plan.

Table B7-11: Asset Inventory

Classification of Deficiency	Description of Project Solution	Total Project Cost
Instantaneous Water Rights	Application for Supplemental Water Rights	$12,500
Failed Fire Flow Analysis	Upsize distribution mains to 12”	$1,480,000

4 Water Use Efficiency Program

4.1 Source and Service Metering

4.1.1 Production/Source Metering:

The wells are metered and read every month.

4.1.2 Service Meters

Service meters are in place at every building service connection and two irrigation connections, for a total of 41 meters. Service meters are read monthly.

4.2 Distribution System Leakage

4.2.1 Methodology

Distribution System Leakage is calculated using American Water Works Association Water Audit methodology and is reported in yearly Water Use Efficiency Annual Performance Reports. WCC's last three WUE Reports are included in Appendix C14.

The most current distribution system leakage information that came from the most recent Water Use Efficiency Report is shown in Table B7-12 below.

Table B7-12: Distribution System Leakage

Year	Total Water Produced & Purchased (gal)	Authorized Consumption (gal)	Distribution System Leakage (gal)	Distribution System Leakage (%)	3-year annual average (%)
2022	92,350,003	82,609,395	9,740,608	10.5	7.5
2021	87,067,000	82,457,800	4,609,200	5.3	5.4
2020	87,729,000	82,905,340	4,823,660	5.5	5.5
2019	89,983,200	85,111,120	4,872,080	5.4	5.4
2018	90,067,000	84,991,430	5,075,570	5.6	6.7

The three-year average DSL volume according to the most current data, 2018-2020, is 6,391,156 gallons. The three-year average DSL percentage is 7.5%.

4.2.2 Leak Detection and Water Main Replacement

The three-year average DSL volume according to the most current data, 2018-2020, is 4,923,770 gallons. The three-year average DSL percentage is 5.5%.

4.3 Water Use Efficiency Program

A water conservation plan was developed for WCC in 2003 and included the following measures:

- Eliminate turf irrigation.
- Restrict showers to once per day. Reduce showering times.
- Optimize central laundry practices.
- Optimize vehicle washing practices.
- Install high-efficiency cooling systems.
- Find and repair plumbing leaks inside buildings.
- Install high-efficiency shower heads.
- Install shower timers.
- Install a closed-loop water-cooled refrigeration system.
- Replace washing machines with high-efficiency models.
- Repair hydrant line leaks.
- Distribution system leak detection projects.

In 2001, the average day demand was 130 gallons per day per resident. In 2021, the average day demand was 125 gallons per day per resident, which is a slight reduction from 2001. New water use efficiency goals should be established for WCC.

It is a requirement of DOH to set Water Use Efficiency Goals in a public forum. The water system manager can coordinate the details of a public forum with the DOC Environmental Manager.

All meters, including source meters should be calibrated on an annual basis. These practices will improve operation efficiency and leak management.

5 Source Water Protection

5.1 Wellhead Protection Program

5.1.1 Overview

WCC's wellhead protection plan was developed in 2005. The goal of the WHPP is to protect WCC's water supply by identifying and managing potential sources of ground water contamination that could impact the facility's wells. Wells No. 2 and 4 are the primary sources of supply, with Wells No. 1 and 3 used only on emergency bases. Wells No. 2 and 4 are completed in coarse sand, overlain with clay and hard sand. The depths of the wells are 46 and 56 feet, respectively. Wells No. 1 and 3 are deeper, at 177 and 184 feet below ground surface, respectively.

5.1.2 Susceptibility Assessment

The susceptibility of the WCC wells is high. WCC has adopted management strategies including contingency planning and spill response planning in order to protect the wells.

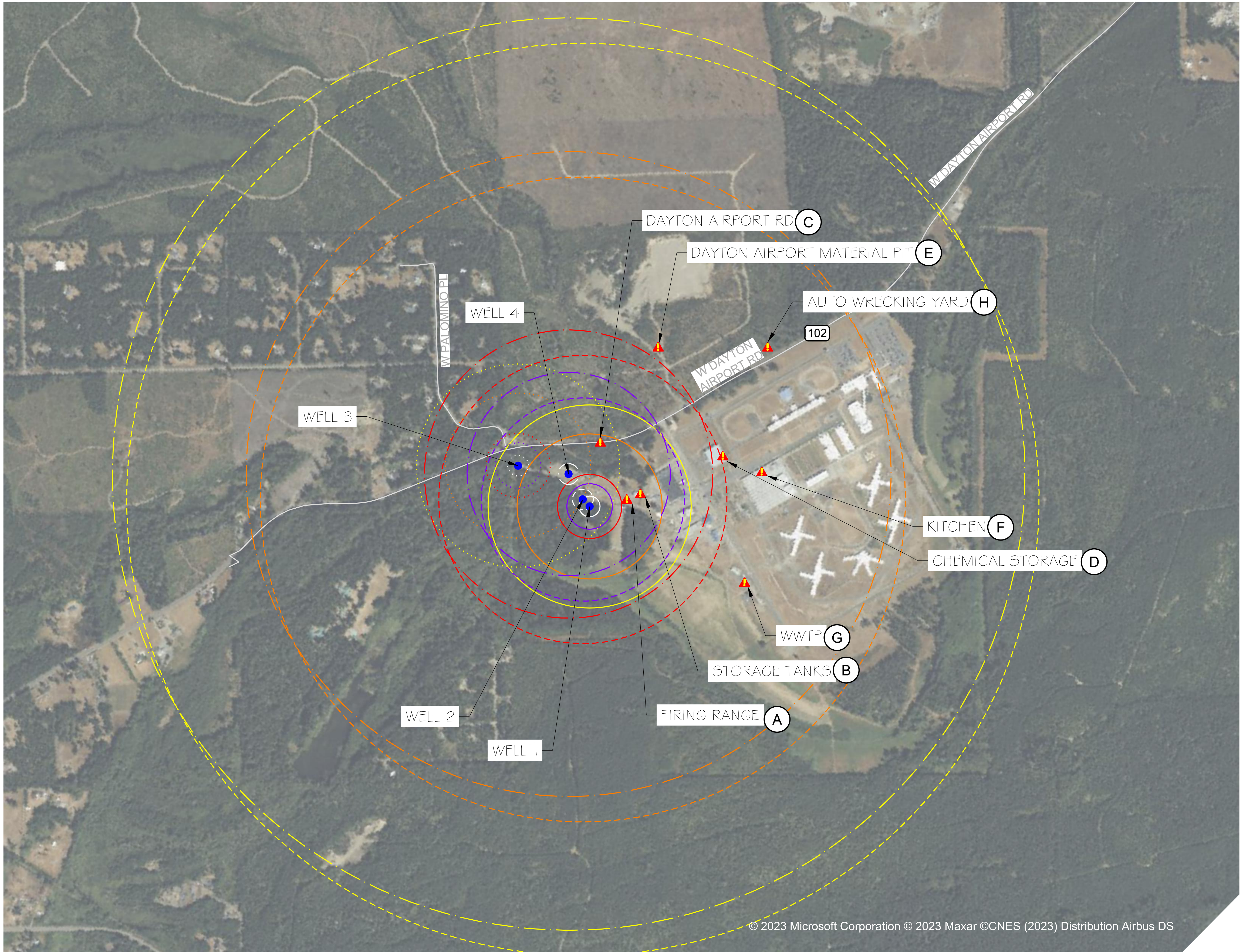
Due to their greater depths, Wells No. 1 and 3 are less susceptible to contamination, and may be fit for use if Wells No. 2 and 4 (the primary wells) become contaminated. If all wells become contaminated, WCC plans to have water delivered to the facility by tanker truck, as described within Section 5.1.5.

5.1.3 Wellhead Protection Area Delineation

See Exhibit B7-4 for the wellhead protection area. The following five zones of the wellhead protection area were delineated for each well: Sanitary control area, Six-month time of travel zone, One-year time of travel zone, Five-year time of travel zone, and Ten-year time of travel zone. The sanitary control area consists of a 100-foot radius around the wells. The Calculated Fixed Radius method was used to determine the radii for these zones, as documented in the Susceptibility Assessment Survey Forms completed for the well.

EXHIBIT B7-4

WASHINGTON CORRECTIONS CENTER - WELLHEAD ZONES OF CONTRIBUTION



LEGEND

WELLHEAD

POTENTIAL SOURCE OF CONTAMINATION

ROAD

WELL NO. 1

100' SANITARY CONTROL AREA

219' 6 MONTH TIME OF TRAVEL

309' 1 YEAR TIME OF TRAVEL

699' 5 YEAR TIME OF TRAVEL

979' 10 YEAR TIME OF TRAVEL

WELL NO. 2

100' SANITARY CONTROL AREA

980' 6 MONTH TIME OF TRAVEL

1390' 1 YEAR TIME OF TRAVEL

3110' 5 YEAR TIME OF TRAVEL

4400' 10 YEAR TIME OF TRAVEL

WELL NO. 3

100' SANITARY CONTROL AREA

220' 6 MONTH TIME OF TRAVEL

310' 1 YEAR TIME OF TRAVEL

700' 5 YEAR TIME OF TRAVEL

980' 10 YEAR TIME OF TRAVEL

WELL NO. 4

100' SANITARY CONTROL AREA

980' 6 MONTH TIME OF TRAVEL

1390' 1 YEAR TIME OF TRAVEL

3110' 5 YEAR TIME OF TRAVEL

4400' 10 YEAR TIME OF TRAVEL

0 1000' 2000'

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DOC WATER SYSTEM PLAN UPDATE

WCC - WELLHEAD ZONES OF CONTRIBUTION

EXHIBIT

B7-4

5.1.4 Contaminant Source Inventory

Ecology's Facility/Site Identification System database was reviewed to identify any known or potential sources of contamination within WCC's wellhead protection area. The Mason County solid waste transfer station and landfill is located northeast of WCC but outside the wellhead protection area. The primary sources of potential contamination at the facility are listed in Table B7-13.

Table B7-13: Contaminant Inventory
6 Month Time of Travel
A - Firing Range
B - Above-Ground Storage Tanks
C - Spills on Dayton Airport Road
6 Month to 1 Year Time of Travel
None
1 to 5 Year Time of Travel
D - Chemical Storage Onsite
E - Dayton Airport Materials Pit Off-site
F - Kitchen Grease Trap
G - Wastewater Treatment Plant
H - Spills at Auto Wrecking Yard Off-site
5 to 10 Year Time of Travel
None

5.1.5 Contingency Plan

WCC has two 300-gallon water trailers. If these are brought into service, they will first be disinfected using a concentrated chlorine solution. WCC has also arranged for water to be delivered to the facility by Water Truck Services if reservoir storage is not adequate to address emergency situations, per the trucked water plan presented in Section A5.3.3. The nearest water purveyors are the City of Shelton and the City of Dayton, which could also be contacted in the event of an emergency.

5.1.6 Notify Emergency Responders

In the event of an accidental spill, WCC facility staff will notify the Water System Manager. The Water System Manager or operator would in turn notify Fire Dispatch as a first responder. The 24-hour Ecology spill response hotline would also be contacted.

6 Operations and Maintenance

6.1 Water System Management and Personnel

Operators of DOC water systems are responsible for the duties listed in Section A5.2.

Table B7-14: Operator Info		
Operator Name	Operator Number	Certification
Matthew Murphy-Dickson	015268	WDM 2
Jordan Kettel	015708	WDM 1
Marc Salnave	014124	-

There are 45 cross connection control devices located throughout the water system, including double check and reduced pressure backflow preventers. These devices are checked on an annual basis by a contracted cross connection control specialist.

6.2 Emergency Call-Up List

Table B7-15 provides the emergency call-up list for Washington Corrections Center.

Table B7-15: Emergency Call-Up List

Personnel/ Agency	Working Hours Number	Off-Duty Number
Water System Manager – Matthew Murphy-Dickson		
Superintendent – Dean Mason	(360) 427-4696	
DOC Project Manager – Darin Klein	(360) 764-3093	
DOH Office of Drinking Water – SWRO	(360) 236-3100	
Emergency Water Supplier – Water Truck Services	(253) 237-3878	
Electrical Utility – Puget Sound Energy		
Thurston County Office of Emergency Management	(360) 867-2800	
24-hour Spill Response – Ecology	(800) 258-5990	
Police/Security	911	
Fire Department	911	
Emergency Medical	911	

6.3 Water Quality Testing Laboratory

WCC uses the following laboratory for water quality testing:

Thurston County Environmental Health
Drinking Water Lab
2000 Lakeridge Drive SW
Olympia, WA 98502

6.4 Operations and Maintenance Deficiencies

Table B7-16: Summary of O&M Deficiencies

O&M Deficiency	Action to be Taken	Estimated Cost
None	None	N/A

The installed Well No. 4 pump is understood to be rated at a higher flow rate than the approved instantaneous withdrawal rate. Operators shall ensure well withdrawal does not exceed the maximum instantaneous water right of 563 gpm via the pump control panel.

7 Improvement Program

7.1 Prioritization of Improvements

The following are recommended maintenance and improvement projects planned for implementation at WCC within the ten year planning period.

1. The pumps in all four wells are due for replacement. The functionality of the pumps is essential to meet demand at the facility. This project is considered high priority due to the limited remaining useful life of the pumps.

There are 45 cross connection control devices located throughout the water system, including double check and reduced pressure backflow preventers. These devices are checked on an annual basis by a contracted cross connection control specialist.

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Superintendent – Dean Mason	(360) 427-4696	
DOC Project Manager – Darin Klein	(360) 764-3093	
DOH Office of Drinking Water – SWRO	(360) 236-3100	(877) 481-4901
DOH Regional Engineer – Fern Schultz	(564) 669-0853	
DOH Regional Engineer – Regina Grimm	(564) 669-0857	
Mason County Public Health Department	(360) 427-9670 ext. 400	
Emergency Water Supplier – Water Truck Services	(253) 237-3878	
Electrical Utility – Puget Sound Energy	(888) 225-5773	
Thurston County Office of Emergency Management	(360) 867-2800	
24-hour Spill Response – Ecology	(800) 258-5990	
Police/Security	911	
Fire Department	911	
Emergency Medical	911	

Section A5.3 of this Plan provides a DOC-wide emergency response plan.

6.3 Water Quality Testing Laboratory

WCC uses the following laboratory for water quality testing:

Thurston County Environmental Health
Drinking Water Lab
2000 Lakeridge Drive SW
Olympia, WA 98502

6.4 Operations and Maintenance Deficiencies

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7 Improvement Program

7.1 Prioritization of Improvements

The following are recommended maintenance and improvement projects planned for implementation at WCC within the ten year planning period.

1. The pumps in all four wells are due for replacement. The functionality of the pumps is essential to meet demand at the facility. This project is considered high priority due to the limited remaining useful life of the pumps.
2. As shown in the fire flow analysis, the system is not able to satisfy fire flow requirements. To increase the volume of water available at the system hydrants, the distribution mains should be replaced with larger diameter pipes. This project is recommended as a high priority to improve fire protection at the facility.
3. The water reservoirs are due to be repainted within the ten year planning period. This involves applying a new coating to the exterior and interior of both water towers. This project is of low priority.

7.2 Capital Improvement Summary and Schedule

WCC-1: Annual Renewal and Replacement. This refers to annual distribution system maintenance and upgrade activities necessary to maintain reliable operation of the water system. This includes activities such as leak detection and repair, replacement of aging lines and valves, etc. The annual cost is estimated to be $35,000.

WCC-2: Well Pump Replacement. This includes replacing the pumps for all 4 wells.

WCC-3: Upsize Distribution Mains. This project includes the demolition of 8-inch and 10-inch distribution mains and the installation of 12-inch mains.

WCC-4: Reservoir Painting. This project involves applying a new coating to the exterior and interior of both water towers.

Washington Corrections Center Capital Improvement Projects 2024-2034				
Project Code	**Description**	**Cost(1)**	**Purpose(2)**	**Priority Ranking(3)**
WCC-1	Annual Renewal and Replacement	$350,000	OP	1
WCC-2	Well Pump Replacement	$20,000	OP	1
WCC-3	Upsize Distribution Mains	$1,480,000	OP	1
WCC-4	Reservoir Painting	$250,000	OP	2
WCC-Total		$2,100,000		

(1) Annual renewal and replacement costs are presented as total costs over the 10-year planning period, not as annual costs
(2) H/S = Health/Safety, OP = Operational, G = Growth
(3) “1” = High Priority, “2” = Moderate Priority

Part B8

Washington Corrections Center for Women

CONTENTS

TABLES

EXHIBITS

1 Description of Water System

1.1 Ownership and Management

The Washington Corrections Center for Women (WCCW) water system is owned and operated by the Washington State Department of Corrections (DOC) and is a type ST ownership. An operator oversees the daily operations of the water system. Contact information for relevant water system personnel is identified in Table B8-1 below.

Table B8-1: Water System Contacts			
	Name:	Address:	Phone Number
Owner:	Washington Corrections Center for Women	9601 Bujacich Road Gig Harbor, WA 98332	(253) 858-4234
Operator:	Joshua Baese		(253) 858-4200 ext. 452

1.2 System History and Background

The Washington Corrections Center for Women (WCCW) is located in Pierce County, near the City of Gig Harbor. Existing structures on the facility consist of the following:

- Control, Visitation, and Offices Building
- Medical Annex
- Maintenance Operations
- Kennel
- Health Care Building
- 2 Education Buildings
- Kitchen and Dining Room
- Plant Services
- Close Custody Housing
- Mental Health Building
- 3 Industries and Crew Buildings
- 3 Minimum Security Housing Units
- Minimum Security Offices
- Minimum Security Kitchen and Dining Room
- 2 Family Visit Units
- Administrative Office
- Warehouse and Storage Buildings
- Sally Port
- Gymnasium
- Chapel
- Medium Security Housing
- Key Vault/ Weapon Storage/ MDF Phone Room
- Special Needs Unit/ Receiving/ TEC/ Segregation Building

Exhibit B8-1 provides a location map for the facility.

1.3 Related Plans

WCCW is a customer of the City of Gig Harbor and pays for water in accordance with the city's ordinance rate.

WCCW is located in the Kitsap watershed, within Water Resource Inventory Area (WRIA) 15. The Watershed Restoration and Enhancement Committee is currently planning to adopt a watershed plan. The WCCW water system is subject to the requirements and recommendations once the watershed plan is finalized.

WCCW is located in Pierce County and is subject to the standards set forth in the Pierce County Coordinated Water System Plan (CWSP). The DOC design standards and specifications are consistent with the requirements of the Pierce County CWSP.

1.4 Service Area, Maps, and Land Use

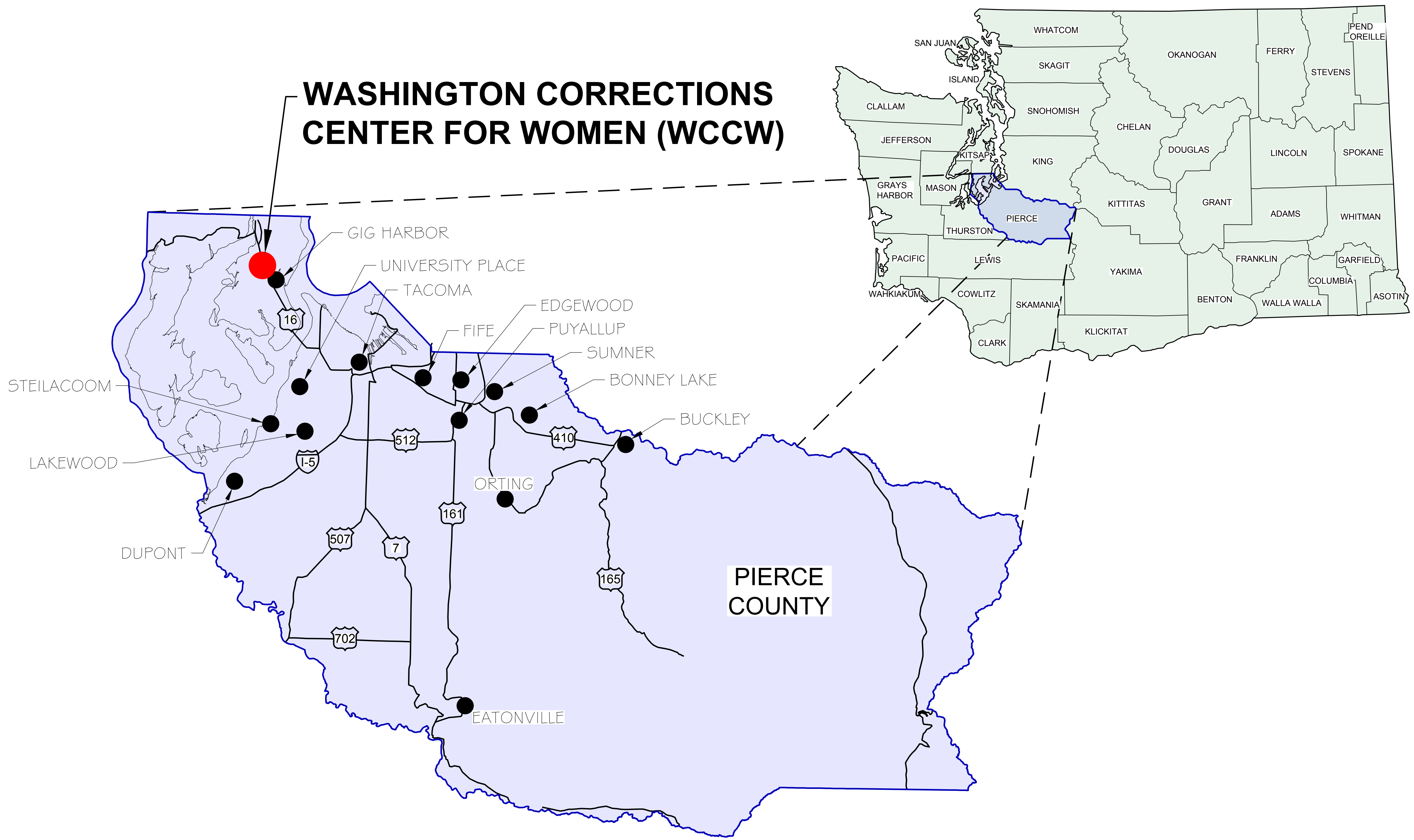
Exhibit B8-2 provides a map of the water service area. Exhibit B8-3 shows a map of the water system features. DOC has no plans to expand the water service area.

1.5 System Description

WCCW pumps water from Well No. 1 and the Gig Harbor Intertie to the 300,000-gallon tank. Well water is disinfected with chlorine and is mixed with water from the Gig Harbor intertie before delivery to the ground level storage tank. Water is pumped to the elevated tank and the distribution system by the pump station adjacent to the tank, which contains one variable-speed pony pump and two 60 hp pumps. The pumps are driven by a variable frequency drive system which maintains the system pressure at a constant 60 pounds per square inch (psi). Three emergency generators are located next to the pump building. The elevated tank is 138 feet off the ground and floats on system pressure.

EXHIBIT B8-1

WASHINGTON CORRECTIONS CENTER FOR WOMEN - VICINITY MAP



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DOC WATER SYSTEM PLAN UPDATE

WASHINGTON CORRECTIONS CENTER FOR WOMEN - VICINITY MAP

EXHIBIT

B8-1

EXHIBIT B8-2

WASHINGTON CORRECTIONS CENTER FOR WOMEN - WATER SERVICE AREA

LEGEND

WATER SERVICE AREA BOUNDARY

0 500' 1000'

SCALE

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DOC WATER SYSTEM PLAN UPDATE

WCCW - WATER SERVICE AREA

EXHIBIT

B8-2

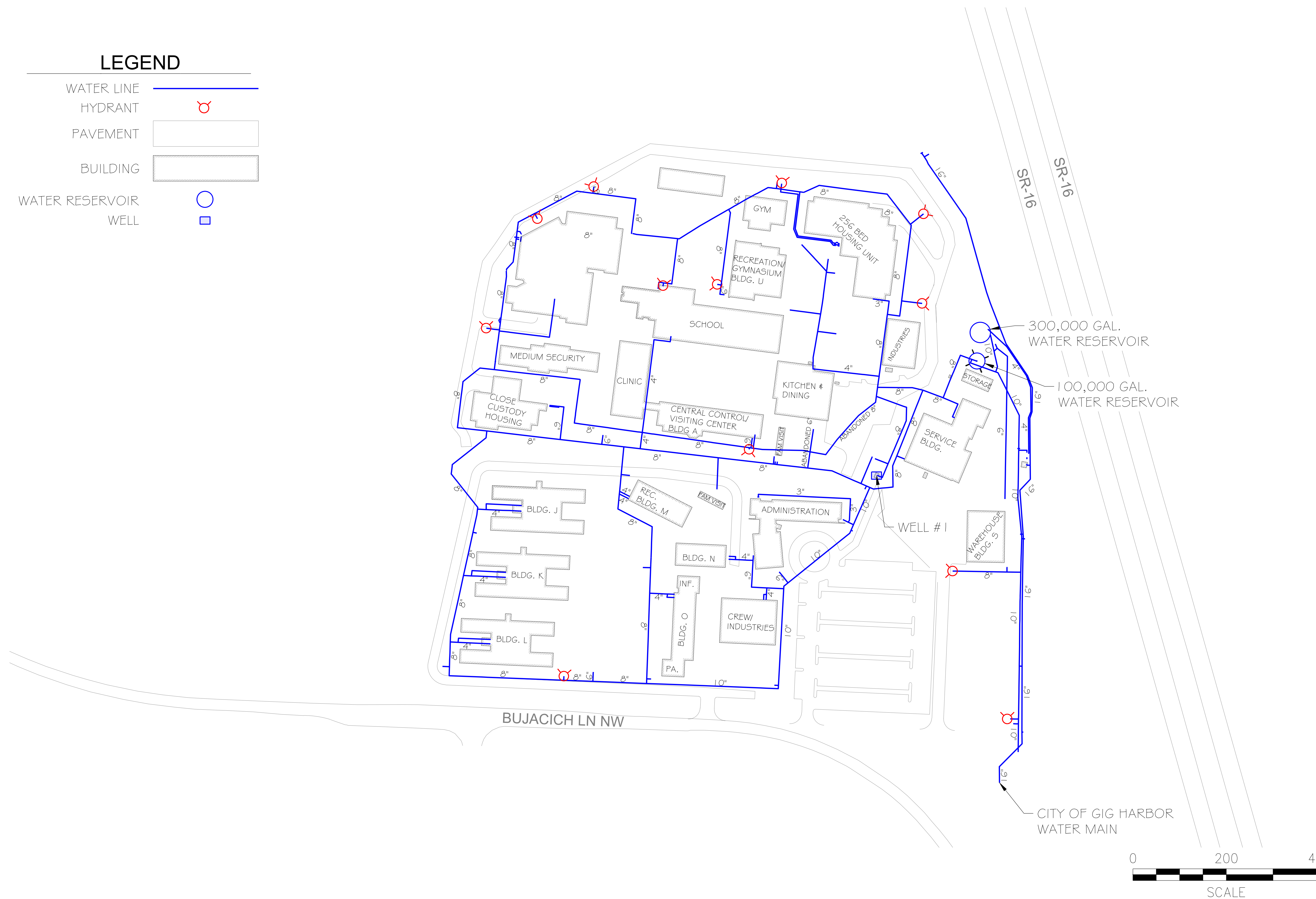
EXHIBIT B8-3

WASHINGTON CORRECTIONS CENTER FOR WOMEN - WATER SYSTEM LAYOUT

PLOTTED: Jul 07, 2023 - 16:45a7p7 PLOTTED BY: kellenm

LEGEND

WATER LINE
HYDRANT
PAVEMENT
BUILDING
WATER RESERVOIR
WELL



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DOC WATER SYSTEM PLAN UPDATE

WCCW WATER SYSTEM LAYOUT

EXHIBIT

B8-3

2 Basic Planning Data

2.1 Current Population and Service Connections

Washington Corrections Center for Women serves 36 buildings on-site. There are 543 approved connections. The facility houses approximately 800 female residents and employs 405 staff. The number of temporary and transient users is 150 people per month.

Table B8-2 shows a summarization of the population.

Table B8-2: Population	
Connection Type	**Population**
Full-Time Residential	800
Non-Residential	400
Temporary	150
Total	1,350

2.2 Water Production and Usage

All water usage is considered residential use for the purpose of this plan, as this system does not have customer classes and rates. Table B8-3 shows the monthly and annual totals for source production and water use. Monthly water consumption and well production rates are calculated from the well and water meter readings for 2020 through 2022 (See Appendix C13). Data from 2022 is limited to the months of January through September. In comparison to previous years, water usage in 2022 was slightly less that typical.

Table B8-3: Water Production and Usage		
Source	Average Monthly Production (gal)	Annual Production (gal)
Well 1	360,972	4,331,665
Use	Average Monthly Consumption (gal)	Annual Consumption (gal)
Total	2,827,289	27,330,461

2.3 Water Supply Characteristics

WCCW currently obtains water from one onsite well, Well No. 1, and from the City of Gig Harbor. A formerly operational well, Well No. 2R, was decommissioned in 2005. Well No. 1 was drilled to a depth of 350 feet in 1968, and currently provides approximately 20% of the water used at the facility. Well No. 1 currently has a pumping capacity of 18 gallons per minute. The remaining water is obtained through an intertie with the City of Gig Harbor. The agreement between WCCW and the City was established in 1994 and expired when the intertie was constructed and paid for. The City 80,000 gallons per average day, or 29.2 million gallons per year average use to the facility and 210,000 gpd per peak day use. See Appendix C3 to review the agreement.

2.4 Water Supply Reliability Evaluation

According to an assessment of Well No. 1 conducted in 2002 by Robinson Noble, the well's efficiency has gradually declined since 1978. Previous redevelopment efforts have had limited success. Currently, the well pump is rated for 18 gallons per minute (gpm) but does not operate at full capacity. Over time, the facility has relied more heavily on the intertie with the City of Gig Harbor.

See Section 5.1.4 for WCCW's water supply contingency plan.

2.5 Future Population Projection

The current population is 800 and DOC has no capital improvement project scheduled to add building or services to the system. While there are no known plans for expansion at the facility, the 20-year population forecast for this analysis will assess the system's adequacy at full residential capacity.

2.6 Future Water Demand

Table B8-4 shows the water demand forecast for the 20-year planning period.

Table B8-4: Water Demand Forecast

Year	2024	2034	2034
Resident Population	800	1,000	1,000
	Average Day Demand (gpd)		
Facility	80,169	100,211	100,211
Per Resident	100	100	100
	Maximum Day Demand (gpd)		
Facility	138,494	173,118	173,118
Per Resident	173	173	173
	Peak Hour Demand (gpm)		
Facility	199	237	237

(1) 2024 Demand is the average of 2020-2022 data.

3 System Analysis and Asset Management

3.1 Asset Management – Asset Inventory and Analysis

3.1.1 Asset Inventory

Table B8-5 shows the assets of Washington Corrections Center for Women.

Table B8-5: Asset Inventory

Asset	Description	Capacity/ Size	Year Built
Well No. 1	Depth = 350 feet 10 hp pump	18 gpm	1968
City of Gig Harbor Intertie		56 gpm	-
Treatment System	Chlorination		-
Ground Level Reservoir	Steel	300,000 gal	-
Elevated Reservoir	Steel	100,000 gal	-
Pony Pump	Variable speed 20 hp	100 gpm	-
Fire Pumps (2)	60 hp (each)	1,250 gpm (each)	-
Distribution Pipe	Ductile Iron	2.0 – 10 inch	1969-1971
Distribution Pipe	PVC	2.0 – 10 inch	1969-1971

3.1.2 Asset Condition & Criticality

The well pump is rated to pump at 18 gpm, but currently operates at 9 gpm to maintain pressure. The groundwater depth gauge in the well is currently nonoperational. The pumping capacity has consistently declined since installation.

The fire pumps trigger multiple times a day in order to maintain pressure. This indicates that the variable frequency drive system is not functioning correctly.

The storage standpipe is in good condition.

The steel elevated tank has been drained and is no longer used due to structural concerns.

Remaining useful life and condition are general and applied to the full inventory of the asset identified. Considering the age of the assets, there may be isolated locations of poor conditions due to joint separation caused from tree roots or settlement, however there are not any known or expected failures.

Table B8-6 details the condition of the water system assets.

Table B8-6: Asset Condition

Component	Units	# of Units	Remaining Useful Life	Condition	Replacement Cost
Distribution System Inventory					
4” Pipe	LF	940	Installed 1969-1971	Good	
6” Pipe	LF	162	Installed 1969-1971	Good	
8” Pipe	LF	5,757	Installed 1969-1971	Good	
10” Pipe	LF	1,062	Installed 1969-1971	Good	
Raw & Finished Storage Inventory					
Steel Standpipe	gal	300,000	Installed 1990s		$500,000
Steel Elevated Tank	gal	100,000	0 years. (not used)	Structural concerns.	$500,000
Booster Pump Station Inventory					
Pony Pump	gpm	100	10+ years w/ maintenance	Good	$8,000
Fire Pump (2)	gpm (each)	1,250	10+ years w/ maintenance	Good	$25,000
Source Pump Inventory					
Well No. 1	gpm	18	Installed 1968	Unknown	$10,000

3.2 Water Quality

Table B8-7 details the water quality monitoring requirements at WCCW. Coliform is tested monthly, has a monitoring population of 1205, and requires two routine samples a month. The facility received a nitrate monitoring violation in 2018. See Appendix C6 for WCCW’s water quality monitoring plans.

Table B8-7: Water Quality Monitoring Schedule			
Test Panel	**# of Samples Required**	**Frequency**	**Next Sample Due**
Coliform	2	monthly	
Chemical Monitoring			
Lead & Copper	10	3 year	Jul 2023
Asbestos	0	9 year	
Total Trihalomethane (THM)	1	1 year	Aug 2023
Halo-Acetic Acids	1	1 year	Aug 2023
Source Monitoring – Well #1			
Nitrate	1	1 year	Mar 2024
Complete Inorganic	1	9 year	Feb 2031
Arsenic	1	3 year	Feb 2025
Manganese	1	3 yea	Feb 2025
Volatile Organics	1	6 year	Apr 2025
Herbicides	1	9 year	Feb 2031
Pesticides	0	3 year	Feb 2031
PFAs	1	3 year	Sep 2023
Soil Fumigants	0	3 year	
Gross Alpha	1	6 year	Dec 2028
Radium 228	1	6 year	Dec 2028

3.3 Design Standards

Section 2.2 of Part A of this plan includes DOC-wide design standards.

3.4 Capacity Analysis

3.4.1 Water Right Analysis

The total annual water right available for WCCW is 135 acre-feet per year (afy), based on the original water right associated with Well No. 1. As depicted in the WCCW Water Rights Self-Assessment Form, these rights are sufficient to support present and projected demands. See Appendix C4 for WCC's Water Rights Self-Assessment Form.

3.4.2 Source Capacity Analysis

Table B8-8 shows the available source capacity for the facility.

Table B8-8: Source Capacity Analysis			
	2024	2034	2044
Available Source (gpd)			
Well No. 1 (18 gpm)	25,920	25,920	25,920
City of Gig Harbor	210,000	210,000	210,000
Total	**235,920**	**235,920**	**235,920**
Maximum Day Demand (gpd)	138,494	173,118	173,118
Source Capacity Surplus/(Deficiency) (gpd)	**97,426**	**62,802**	**62,802**

Well No. 1 is not sufficient to meet facility demands on its own. However, combined with the supply from the City of Gig Harbor, the current source capacity is adequate for current and future water demands.

3.4.3 Storage Capacity

WCCW is served by a 300,000-gallon storage tank. The required fire flow storage must accommodate a fire flow of 1,500 gallons per minute for 1.5 hours, or 135,000 gallons. Table B8-9 shows the available storage for the facility.

Table B8-9: Storage Capacity Analysis

	2024	2034	2044
Required Storage (gal)			
Operational Storage (1)	17,632	20,866	20,866
Equalizing Storage (2)	16,317	8,656	8,656
Fire Flow Storage (Nested) (3)	135,000	135,000	135,000
Standby Storage (4)	160,000	200,000	200,000
Total Required (5)	193,949	229,522	229,522
Available Storage			
Ground-Level Reservoir	300,000	300,000	300,000
Dead Storage (6)	14,105	16,692	16,692
Total Available (7)	285,895	283,308	283,308
Storage Capacity Surplus/(Deficiency)	91,946	53,786	53,786

(1) Required operational storage = Estimated 10% (ES + SS)
(2) Required equalizing storage = Greater of 5% of MDD or DOH equation.
DOH equation = (Peak Hour Demand - Total Available Source) * (150)
PHD: (Maximum Day Demand per ERU / 1440) * [(C) * (N) + F] + 18
(C & F values obtained from Table 3-1 in DOH June 2020 WSDM.)
(3) Required fire flow storage = Flow * duration = 1,500 gpm * 1.5 hr * 60min/hr. (According to Pierce County Fire Marshal).
Nested storage = Lesser of SS and FFS
(4) Required standby storage for existing source = Greater of (2*ADD/ERU) -(1440*(Qs-Ql))) or (200 gpd*ERU).
Qs: Total source capacity
Ql: Largest source capacity
(5) Total required storage = equalizing + fire flow + standby storage + operational – nested storage.
(6) Dead storage = Estimated 8% (ES + SS)
(7) Total available storage = sum of reservoir storage – dead storage.

3.4.4 Limiting Factor Analysis

The below table details the limiting factor for WCCW.

Table B8-10: Limiting Factor Analysis

Capacity Parameter	Available Capacity (gpd)
Water Right Capacity (Qa = 107 afy)	95,523
Source Capacity	235,920
Storage Capacity	385,895
Limiting Factor Capacity	**95,523**

As shown in Table B8-9, water rights are the limiting factor for capacity at WCCW. In order to determine an accurate amount of water use per ERU, a resident per ERU factor must be defined.

For this analysis, one ERU is defined as the average water usage of a typical single-family residence, assuming the average person uses 100 gallons per day and the average single-family residence includes 2.3 residents, one ERU is equivalent to 230 gallons per day. According to Table B8-4, a resident uses 100 gpd under average day demand. The facility has a capacity of 95,523 gpd, which can serve 955 residents on the average day, or 415 ERUs. Therefore, the resident per ERU factor is 955 residents per 415 ERUs, or 2.30 residents per 1 ERU.

3.5 Hydraulic Analysis

The goal of this hydraulic analysis is to determine whether the distribution system can maintain minimum pressures during peak hour demand and fire flow demand under current and future conditions. A new hydraulic model was developed for WCCW using WaterCAD hydraulic modeling software.

The model includes the storage tank, the booster pump, and the water distribution network. The system was evaluated under present condition peak hour demand. The demand was modeled by dividing the total system peak hour demand at the residential service connections, where demand is typically the highest. The results of this analysis indicated that the system was able to accommodate peak hour demand while sustaining pressures of at least 30 pounds per square inch (psi).

The system was also evaluated under fire flow requirements of 1,500 gallons per minute (gpm). This analysis indicated that all hydrants were able to provide adequate fire flow while sustaining a pressure of at least 20 psi.

Appendix C9 includes a hydraulic analysis map for the WCCW water system.

3.6 Summary of System Deficiencies

The results of the capacity analysis indicate that water rights, source capacity, and storage capacity are sufficient to accommodate current and projected demands. The hydraulic analysis showed that the water system is able to accommodate peak hour demand and fire flow requirements.

4 Water Use Efficiency Program

4.1 Source and Service Metering

4.1.1 Production/Source Metering:

Well No. 1 and the City of Gig Harbor intertie are both metered and read daily by DOC staff.

4.1.2 Service Meters

WCCW has service meters installed at all building connections, for a total of 36 meters. The service meters are ready every month.

4.2 Distribution System Leakage

4.2.1 Methodology

Distribution System Leakage is calculated using American Water Works Association Water Audit methodology and is reported in yearly Water Use Efficiency Annual Performance Reports. Cedar Creek’s last three WUE Reports are included in Appendix C14.

The most current distribution system leakage information that came from the most recent Water Use Efficiency Reports is shown in Table B8-11 below.

Table B8-11: Distribution System Leakage

Year	Total Water Produced & Purchased (gal)	Authorized Consumption (gal)	Distribution System Leakage (gal)	Distribution System Leakage (%)	3-year annual average (%)
2022	22,027,689	21,966,146	61,543	0.3	0.2
2021	21,393,450	21,320,510	72,940	0.3	0.2
2020	30,767,397	30,767,397	0	0.0	0.1
2019	28,913,940	28,856,463	57,477	0.2	0.1
2018	34,750,854	34,750,854	0	0.0	1.5
2017	26,094,079	26,094,079	0	0.0	1.5

4.2.2 Leak Detection

The three-year average Distribution System Leakage according to the most current data, 2020-2022, is 44,828 gallons. The three-year average DSL percentage is 0.2%.

4.3 Water Use Efficiency Program

A water conservation program developed in 2002 included the following measures:

- Reduce watering of turf areas to the minimum to keep the grass alive.
- Reduce or eliminate water as food waste disposal service.
- Optimize irrigation scheduling, application, and soil characteristics.
- Optimize laundry practices by eliminating partial washing machine loads.
- Optimize kitchen use of water by ensuring dishwashers are run at full capacity and restricting sink flow.
- Install automated shower timers.
- Use high-efficiency toilets.

In 2002, the average day demand at the facility was 118 gallons per day per resident. In 2021, the average day demand was 100 gallons per day per resident, which is a slight reduction from 2002. New water use efficiency goals should be set at WCCW.

It is a requirement of DOH to set Water Use Efficiency Goals in a public forum. The water system manager can coordinate the details of a public forum with the DOC Environmental Manager.

All meters, including source meters should be calibrated on an annual basis. These practices will improve operation efficiency and leak management.

5 Source Water Protection

5.1 Wellhead Protection Program

5.1.1 Overview

WCCW's wellhead protection plan was developed in 2001 and is included in Appendix C7. An update to the contaminant source inventory was conducted in conjunction with this Water System Plan update. Ecology's Facility/Site Identification System database was reviewed to identify any known or potential sources of contamination within WCCW's wellhead protection area. Table B8-12 provides a list of all such sites located within the protection area and Exhibit B8-4 depicts site locations.

5.1.2 Susceptibility Assessment

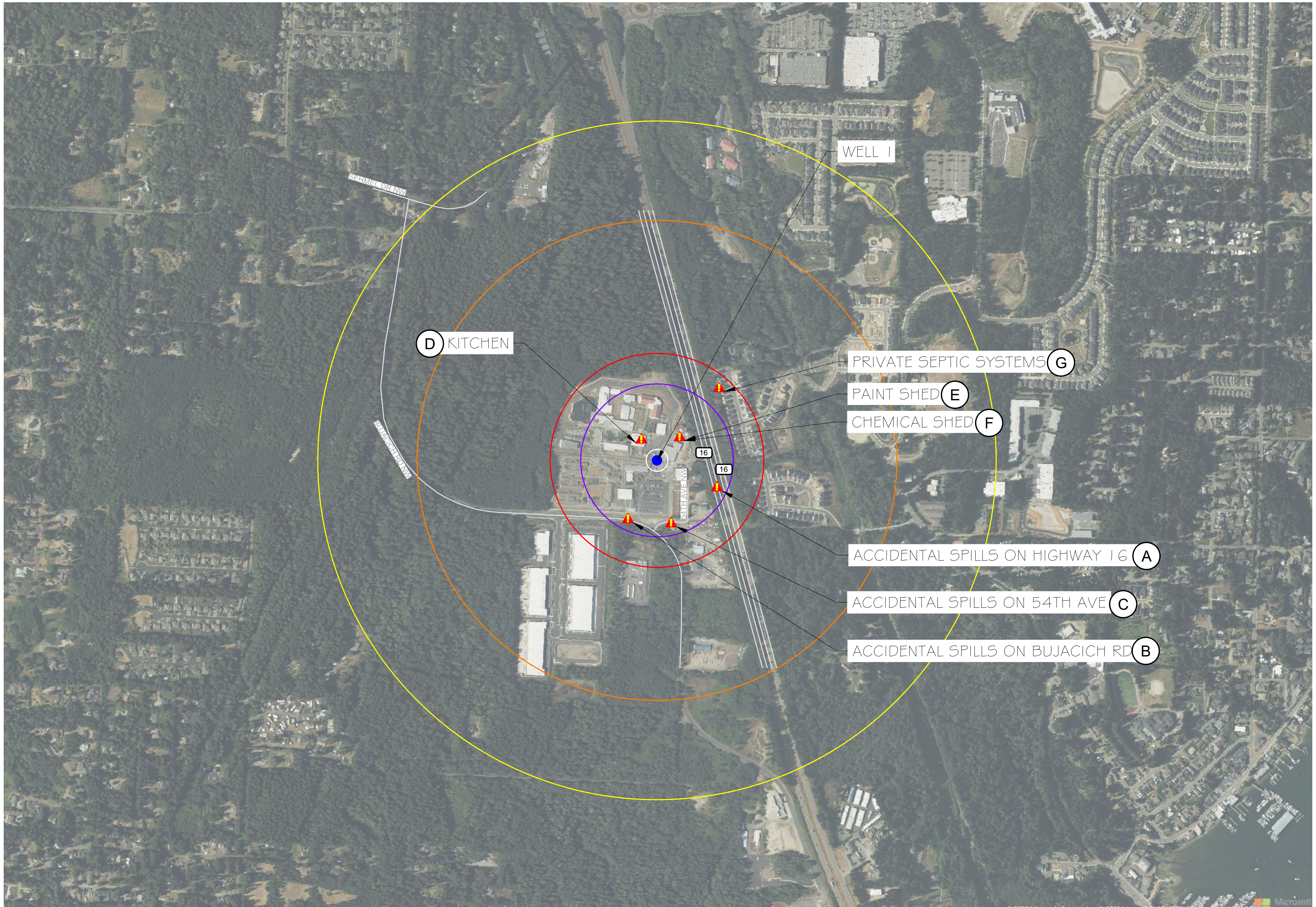
The susceptibility of Well No. 1 is moderate, as shown in the susceptibility assessment form included in Appendix C7.

5.1.3 Wellhead Protection Area Delineation

See Exhibit B8-4 for the wellhead protection area. The following five zones of the wellhead protection area were delineated: Sanitary control area, Six-month time of travel zone, One-year time of travel zone, Five-year time of travel zone, and Ten-year time of travel zone. The sanitary control area includes the area within a 100-foot radius around the wells that serve the facility. The Calculated Fixed Radius method was used to determine the radii for these zones, as documented in the wellhead protection program.

EXHIBIT B8-4

WASHINGTON CORRECTIONS CENTER FOR WOMEN - WELLHEAD ZONES OF CONTRIBUTION



LEGEND

WELLHEAD

POTENTIAL SOURCE OF CONTAMINATION

ROAD

WELL NO. 1

100' SANITARY CONTROL AREA

700' 6 MONTH TIME OF TRAVEL

980' 1 YEAR TIME OF TRAVEL

2200' 5 YEAR TIME OF TRAVEL

3110' 10 YEAR TIME OF TRAVEL

0 1000' 2000'

SCALE

612 Woodland Square Loop,
Suite 100
Lacey, WA 98503
360.292.7230
www.kpff.com

CALL 48 HOURS BEFORE YOU DIG 811

PROJ #:1018220055
DRAWN BY: CVR
CHECKED BY: BEE
DATE: 07-06-2023
SCALE: 1" = 1000'

DOC WATER SYSTEM PLAN UPDATE

WCCW - WELLHEAD ZONES OF CONTRIBUTION

EXHIBIT

B8-4

5.2.4 Contaminant Source Inventory

The primary sources of potential contamination at the facility, as previously documented in the wellhead protection plan, are listed in Table B8-12.

Table B8-12: Contaminant Inventory
6 Month Time of Travel
A - Accidental Spills on Highway 16
B - Accidental Spills on Bujacich Rd
C - Accidental Spills on 54th Ave
D - Grease Trap in Kitchen
E - Paint Stored in Paint Shed
F - Chemical Shed
6 Month to 1 Year Time of Travel
None
1 to 5 Year Time of Travel
None
5 to 10 Year Time of Travel
G - Septic systems associated with private residences

5.1.4 Contingency Plan

In the event that water from the well is unusable, WCCW would use the City of Gig Harbor as the source of supply. If the reservoir needs to be taken off-line, WCCW could direct water from the City of Gig Harbor into the distribution system and bypass the reservoir altogether. However, water pressure may be inadequate in this scenario since the booster pump station would not be available to provide adequate pressure to the distribution system.

If the entire system were shutdown, then WCCW could transport potable water from a nearby municipality or private water company with tanker trucks, per the trucked water plan presented in Section A5.3.3 of this Plan. The nearest water purveyor is the City of Gig Harbor.

5.1.5 Notify Emergency Responders

In the event of an accidental spill, WCCW facility staff will notify the Water System Manager. The Water System Manager or switchboard operator would in turn notify Gig Harbor Fire & Medic One as a first responder. The 24-hour Ecology spill response hotline would also be contacted.

6 Operations and Maintenance

6.1 Water System Management and Personnel

The certified operator at the facility is Joshua Baese. Operators of DOC water systems are responsible for the duties listed in Section A5.2.

Table B8-13: Operator Info		
Operator Name	**Operator Number**	**Certification**
Joshua Baese	014852	WDM 1

There are approximately 40 cross connection control devices located throughout the water system, including double check and reduced pressure backflow preventers. A list of their locations is retained at the facility. The devices are checked on an annual basis by a contracted cross connection control specialist.

6.2 Emergency Call-Up List

Table B8-14 provides the emergency call-up list for WCCW.

Table B8-14: Emergency Call-Up List		
Personnel/ Agency	**Working Hours Number**	**Off-Duty Number**
Water System Manager - Joshua Baese	(253) 858-4200 ext. 452	
Superintendent – Charlotte Headley	(253) 858-4200 ext. 234	
DOC Project Manager – Darin Klein	(360) 764-3093	
DOH Office of Drinking Water – SWRO	(360) 236-3100	(877) 481-4901
DOH Regional Engineer – Jennifer Kropack	(253) 395-6769	
DOH Regional Engineer – Carol Stuckey	(253) 395-6763	
Tacoma-Pierce County Health Department	(253) 649-1500	
Emergency Water Supplier – Water Truck Services	(253) 237-3878	
Electrical Utility – Peninsula Light	(253) 857-5950	888-809-8021
Pierce County Emergency Management	(253) 798-6595	
24-hour Spill Response – Ecology	(800) 258-5990	
Police/Security	911	
Fire Department	(253) 851-3111	911
Emergency Medical	911	

Section A5.3 of this Plan provides a DOC-wide emergency response plan.

6.3 Water Quality Testing Laboratory

WCCW uses the following laboratory for water quality testing:

Water Management Laboratories, Inc.
1515 80th St E.
Tacoma, WA 98404

6.4 Operations and Maintenance Deficiencies

Table B8-15: Summary of O&M Deficiencies		
O&M Deficiency	**Action to be Taken**	**Estimated Cost**
Broken well depth gauge	Install new well depth gauge	$700
Declining well pumping capacity	Well rehabilitation	$12,000
Fire pumps trigger daily	Install new pony pump	$10,000

7 Improvement Program

7.1 Prioritization of Improvements

The following are maintenance and improvement projects recommended for WCCW.

1. Well No. 1 is in poor condition and is clogged with fines. The pumping rate of the well has declined significantly since it was originally drilled. The groundwater depth gauge for the well is broken, as well. It is recommended that this well be rehabilitated. This project is considered high priority.
2. The fire pumps are triggered multiple times a day, which suggests that the pony pump is not able to maintain minimum system pressure. The pony pump should be replaced with a sufficient pump. This project is considered high priority.

7.2 Capital Improvement Summary and Schedule

WCCW-1: Annual Renewal and Replacement. This refers to annual distribution system maintenance and upgrade activities necessary to maintain reliable operation of the water system. This includes activities such as leak detection and repair, replacement of aging lines and valves, etc. The annual cost is estimated to be $35,000.

WCCW-2: Well Rehabilitation. This project includes removing the well pump and cleaning the screen and gravel pack surrounding the well.

WCCW-3: New Booster Pump. This project includes replacing the distribution system booster pump.

Project Code	Description	Cost(1)	Purpose(2)	Priority Ranking(3)
WCCW-1	Annual renewal & Replacement	$350,000	OP	1
WCCW-2	Well Rehabilitation	$12,700	OP	1
WCCW-3	New Booster Pump	$10,000	OP	1
WCCW-Total		$372,700		

(1) Annual renewal and replacement costs are presented as total costs over the 10-year planning period, not as annual costs
(2) H/S = Health/Safety, OP = Operational, G = Growth
(3) “1” = High Priority, “2” = Moderate Priority

APPENDIX C1

DOC Water System Technical Standards and Specifications

Appendix C1

DOC Water System Technical Standards and Specifications

CONTENTS

1 Introduction

The Technical Standards and Specifications (Standards) outline the general and specific design and construction requirements for water systems operated and maintained by or for the Department of Corrections. Work completed by on-site staff must also comply with the standards and specifications listed herein.

Throughout this document any reference to DOC or project manager shall be the DOC Project Manager, DOC Plant Manager, or their authorized representative.

In general, all construction activities and material specifications shall conform to the following specifications. Specifications are listed in priority order. In case of conflicts between two sets of specifications, the one listed first below shall have precedence:

- Detailed plans and technical specifications written for a single project
- This document
- Rules and regulations of the Department of Health regarding the health aspects of Public Water Systems, Chapter 246-290 WAC, latest revision
- Recommendations of the manufacturer of materials or equipment
- “Standard Specifications for Road, Bridge, and Municipal Construction,” Washington Department of Transportation/American Public Work Association, (DOT/APWA), latest edition
- Standards of the American Water Works Association (AWWA), latest revision.

2 Design Standards

2.1 Facility Placement

All DOC owned lines, pumps, wells, storage, and other facilities shall be located on property owned or leased by the DOC, public rights-of-way, or utility easements dedicated to the DOC. Normally utility easements will be a minimum of 20 feet in width, and lines will be installed no closer than five feet from the edge of easement. All location of DOC facilities within city or county rights-of-way must be approved by the appropriate entity.

In general, water lines within facility boundaries shall not be laid in travel way of existing roadways. Site specific modification to this requirement may be made with approval of the project manager.

2.2 Water Source Development

Water Source Construction

New water sources must be designed to meet the Department of Ecology (Ecology) and DOH regulations and design guidelines. Reference documents include RCW 18.104, Water Well Construction, administered by DOH; WAC 173-160, Minimum Standards for Construction and Maintenance of Water Wells, administered by Ecology; and WAC 246-290, regulations regarding the health aspects of public water system, as administered by DOH.

All test and production wells must be drilled in accordance with detailed drilling and testing specifications, which have either been prepared by, or approved by the DOC.

All new groundwater sources shall be provided with an access port for insertion of devices to measure depth to water and a meter to measure total production.

Water Rights

Water rights must be obtained in accordance with Ecology regulations and procedures (RCW 90.03 and 90.44). Water rights documents, correspondence, and other associated records will be maintained at DOC Headquarters by Environmental Services and at the appropriate institution. Ecology will also have a complete set of records.

Water Quality

Water quality must be proven to conform with the Federal Safe Drinking Water Act (as amended), DOH criteria specified in WAC 246-290, and/ or any additional requirements of the health district that has jurisdiction over the DOC facility.

2.3 Storage Requirements

Storage requirements are based upon adding the three components listed below, less any credit for the operation of reliable multiple wells, or other sources of water, with the largest source assumed to be out of service:

1. Standby storage (two times average day demand) required to supplement production from water sources during high demand periods.

2. Equalizing storage (greater of 150 * (peak hour demand (PHD) – Source capacity) or 15 percent of one peak day demand) required to supplement production from water sources during high demand periods.
3. Fire storage is equal to the flow/duration required for the area by applicable city or county ordinances, or the appropriate local fire district, whichever is more stringent.
4. Storage shall be in full compliance with Section 9 of the DOH Design Manual (latest edition).

2.4 Pressure Requirements

Water systems shall be designed to maintain a minimum residual pressure of 40 psi at meter outlets under peak hourly design flow conditions, excluding fire demand. This is higher than the DOH regulatory minimum system pressure of 30 psi under the conditions described above, for which water systems are analyzed to determine regulatory compliance. Furthermore, water systems shall be hydraulically designed to provide to service connections a maximum pressure range of 30-100 psi, with a desired range of 40-90 psi. For water systems requiring fire flow capability, the design shall be adequate to maintain, under peak day demand plus fire flow conditions, positive pressure throughout the system of 20 psi, as per WAC 246-290-230 requirements.

2.5 Pipe Sizing

Water mains shall be sized using the current edition of "Sizing Guidelines for Public Water Supplies," prepared by DOH. In general, pipe sizes shall not be less than 6 inches in diameter. For sizes 6 inches and above, minimum line size may be established by a licensed engineer using recognized hydraulic analysis techniques. Water line size shall be adequate to deliver required fire flow and to maintain the pressure requirement defined in paragraph 2.4 above.

Design criteria and analysis for water line improvements will normally use a maximum design velocity of 7 feet per second and a maximum head loss of 10 psi per 1,000 feet, although both criteria may be exceeded in certain cases under transient high flow conditions.

Water mains serving fire hydrants, as part of new construction, planned phased improvements, or replacement projects, shall be not less than 8 inches in diameter for a dead end line, nor less than 6 inches in diameter if looped. Hydrant leads extending less than 50 feet shall be of suitable size to carry the required fire flow, but shall not be less than 6 inches in diameter.

2.6 Pipe Cover

The depth of trenching, installation of water lines, and backfill shall be such as to give a minimum cover of 36 inches over the top of the pipe. This standard applies to transmission, distribution, and service lines. Backfill and compaction will be in accordance with applicable construction standards identified below. Materials capable of damaging the pipe or its coating shall be removed from the backfill material. Backfill material shall not contain rocks greater than 3/4-inch in diameter.

2.7 Isolation Valves

Valves shall be installed at all crosses and tees. The number of valves at each intersection shall equal the number of connecting lines. In addition, unvalved lengths of pipe shall not exceed 500 feet within the distribution system and 1,000 feet in transmission mains. Dead end mains, having the potential for future extension, shall have a valve installed on the end of the main which shall be the same size as the existing main. A blind flange or plug (depending on valve connection) shall be installed on the valve.

All services to buildings shall have a valve located between the building connection and the distribution line.

2.8 Air and Air-vacuum Relief Valves

In order to minimize problems associated with air entrainment, air or combined air-vacuum relief valves shall be installed at points of high elevation throughout each distribution system. To prevent freezing, the vault lid and vault cavity will be insulated as directed by the DOC. These valves shall be installed as per these standard specifications and Standard Detail No. 1.

2.9 Blowoff Valve

A blowoff valve assembly shall be installed on all permanent dead-end runs and at designated points of low elevation within the distribution system. The blowoff valves shall be installed on DOC property or utility rights-of-way except where a written access and construction easement is provided to the DOC. In no case shall the location be such that there is a possibility of back-siphoning into the distribution system.

2.10 Fire Hydrant Locations

The requirements of the local fire authority shall dictate the location and placement of fire hydrants.

2.11 Water and Sewer Line Separation Distances

Transmission and distribution water piping shall be separated at least 10 feet horizontally (center-to-center) from waste disposal piping, drain fields, and/or wastewater gravity or force mains (where possible). The bottom of the water main shall be 18 inches above the top of the sewer component. All parallel and crossing installations of water and sewer lines shall be in accordance with provisions of WAC 248-96 (septic systems) and Section 2.413 of Ecology criteria for sewage works design.

2.12 Lids for Buried Vaults

All steel hatch lids for buried vaults shall be lockable and designed to meet HS-20 loading requirements. Openings in buried vaults for pipe to pass through shall be core drilled and sealed with link-seals.

3 Material and Installation Specifications

3.1 Introduction

All pipe, valves, meters, hydrants, fittings, and special material shall be undamaged, and designated for use in potable water systems. If used, undamaged materials are considered for service, they must be fully disinfected prior to being put into service. All material suppliers shall be bonded sufficiently for the value of material supplied. The subsequent paragraphs list specific requirements of the DOC. As time passes, industry is expected to develop water system components which are superior to the products or standards specified below. Use of components with proven, superior qualities is encouraged; however, deviations from the specifications in this manual will require prior, written authorization of the Plant Manager for the facility. Where a component is specified by manufacturer and/or model number, "or approved equivalent," the DOC must approve the equivalent component in writing.

3.2 Pipe, Joints, and Fittings

General

All pipe sizes, as shown on the drawings, and as specified herein, are in reference to "nominal" diameter, unless otherwise indicated. All pipe shall meet the DOC's standard specifications. One type of pipe shall be used throughout entire projects, except as necessary to match existing water lines, or as otherwise specified in writing by the DOC. Where relocation of, or replacement of, existing water lines is necessary during construction, materials used shall be subject to the written approval of the DOC.

The DOC does not allow the installation of new lead-based pipe, joints, or fittings.

Ductile Iron (DI) Pipe

Ductile iron pipe shall conform to the requirements of AWWA C151-76 specifications. Pipe thickness shall be of Class 50 or greater, if required, in accordance with the criteria specified in AWWA C150-76.

DI pipe shall be cement lined and sealed in accordance with AWWA C104-80. In addition, all pipe shall have mechanized joints or push-on rubber gasket joints and be furnished in ten to twenty foot lengths unless design conditions dictate otherwise.

DI pipe shall be Pacific States, or approved equivalent.

Polyvinyl Chloride (PVC) Pipe

PVC pipe shall conform to the requirements of AWWA C900-81 specifications. PVC pipe for distribution lines shall be pressure class 200. The pipe shall bear the seal of the National Sanitation Foundation for potable water pipe. All pipe shall be listed by the Underwriters Laboratories, Inc.

PVC pipe shall be made from Class 12454-A or Class 12454-B virgin compounds, as defined in ASTM D1784. Joints shall conform to ASTM D3139 using a restrained rubber gasket conforming to ASTM 3477. Solvent welded pipe joints will not be permitted.

PVC pipe shall be Johns Manville, or approved equivalent.

Galvanized Iron (GI) Pipe

Galvanized iron pipe shall conform to the latest revision of ASTM A-120 or A53, Grade A, Schedule 40, seamless pipe. Pipe shall be hot-dip galvanized. Pipe fittings shall be galvanized and threaded.

Fittings

All fittings shall be of the size, and type specified on the plans or by the pipe manufacturer.

Locator Wire and Warning Tape

All pipe shall be laid with one piece of No. 14 insulated copper wire. The locating wire shall be placed immediately adjacent to the pipe and connected to all valves. Warning tape will not be used as an alternative to wire but in some situations will be used in addition to the wire. Warning tape will be laid approximately 18 inches below the finish grade.

Compression (crimp) fittings shall be used in all wire splices. Locator wire shall be extended 1 foot above the ground at all valve locations except in offender areas and areas of foot traffic. For fire hydrants and blow-off valves, the locator wire shall be extended 1 foot above the hydrant traffic flange and 1 foot above grade at the blow-off valve.

3.3 Valves

Gate Valves

Valves shall be manufactured and tested in accordance with AWWA C500 specifications. They shall be equipped with mechanical joints or flange ends of Class 125 in accordance with ANSI B16 1. All gate valves shall open counterclockwise and, unless otherwise specified, shall be non-rising stem type, equipped with standard square stem nuts.

Gate valves, 2 inches and larger, shall be iron-body, resilient wedge valves which conform to AWWA C509 standards.

Gate valves smaller than 2 inches shall be 125 psi, wedge disk, all brass or bronze valves with screwed, soldered, or flanged ends which are compatible with the connecting pipe.

Gate valves shall be Dresser, Kennedy, Mueller, or approved equivalent.

Butterfly Valves

Butterfly valves shall be approved for use only where special applications are required. Butterfly valves shall meet or exceed all AWWA C504-80 specifications and shall be Class 150-B valves with short body which are suitable for direct bury. When they are installed, they shall have a position indicator which clearly shows the position of the disc. All butterfly valves shall be installed with the operator nut located toward the center line of the street. All valves shall be equipped with an underground manual operator with AWWA 2-inch square nut, and shall open with a counterclockwise rotation.

All butterfly valves shall be Dresser, Pratt, or approved equivalent.

Check Valve

Check valves, 3 inches or larger, shall be iron body, iron disc, bronze-mounted, swing type, clearway, quiet closing, lever and spring valves with flanged ends. All valves shall comply with AWWA C508-76 specifications.

Check valves, smaller than 3 inches, shall be bronze body, bronze-mounted, swing type with flanged or threaded ends depending upon installation.

Check valves shall be Dresser, Mueller, or approved equivalent.

Air and Air-Vacuum Relief Valve Assembly

Air and air-vacuum relief valves shall have cast iron bodies and covers and stainless steel floats. Float guides, bushings, and lever pins shall be stainless steel or bronze. Valves shall be designed for operating service to 150 pounds per square inch (psi). Air and air-vacuum relief valve assembly materials shall conform to Standard Detail No. 1.

Air and air-vacuum relief valves shall be APCO Model No. 142 or No. 143C for one-inch, or No. 144 or No. 145C for 2-inch, or approved equivalent.

Pressure Reducing Valves

PRVs within distribution systems shall maintain a constant outlet pressure with varying inlet pressures. PRVs shall be hydraulically operated, pilot-controlled, diaphragm-type, globe or angle valves. The main valve shall have a single removable seat and a resilient disc. The stem shall be guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. No external packing glands are permitted, and there shall be no pistons operating the main valve or any pilot controls. The pilot control shall be a direct-acting, adjustable, spring-loaded, normally open, diaphragm valve, designed to permit flow when controlled pressure is less than the spring setting. The control system shall include a fixed orifice.

A bypass line of no less than three-quarters (3/4) the size of the main line PRV with isolation valves and pressure reducer shall be installed in parallel to the main PRV to manage low flows and assure continuity of service in event of main PRV failure.

Main line PRV installations shall conform to Standard Detail No. 2.

Main-line PRVs shall be Cla-Val Co. or approved equivalent and must have a local service representative.

Individual service pressure reducing valves shall be of bronze body construction with a renewable stainless steel seat, stainless steel integral strainer, and temperature resistant diaphragm. When required, they will be installed as directed by the DOC, on the owner's service line after the meter.

Individual service PRVs shall be Watts, Wilkins, or approved equivalent.

Valve Boxes

All valve boxes shall be two-piece cast iron, and equipped with a suitable extension for a 36-inch to 65-inch trench depth. Top sections and lids will be designed for installation in vehicular areas. Lids will be labeled "WATER," and lid tabs will point in the direction of the water main. Lids shall be lockable or secured as directed by the facility custody representative. All valves and valve boxes will be set plumb with the valve box centered on the valve. Valve box installation shall comply with Standard Detail No. 3A for paved area locations and No. 3B for unpaved area locations.

Cast iron valve boxes shall be Olympic Foundry or approved equivalent and must be compatible with the DOC's system.

Blowoff Valve Assembly

Two-inch blowoff assemblies shall be provided in accordance with either Standard Detail No. 4A or No. 4B at locations prescribed by the DOC.

The blowoff assembly shall consist of an approved saddle or cap, two-inch galvanized iron pipe, a valve box, a two-inch square nut gate valve, a two-inch stand pipe extending 36 inches above ground (24 inches between the valve and the stand pipe), an elbow at the bottom of the standpipe with a drain hole which discharges to drainage rock, a two-inch elbow with a two-inch male IPS inlet and a 2 1/2-inch male NST outlet, and a 2 1/2-inch locking fire cap.

Valve Marker Posts

A pre-cast valve marker post shall be furnished and installed with each single or closely grouped combination of valves. Marker posts shall be located as directed by the DOC. Size of valve and distance (to the nearest foot) shall be stenciled on the face of the post with two-inch black painted figures. The top portion of the marker will be painted with blue enamel on all sides to aid location.

Valve marker posts shall be Fog-Tite Meter Seal Company, or approved equivalent.

3.4 Fire Hydrant Assembly

Fire Hydrant

Fire hydrant installation and flow requirements shall comply with the specifications and standards of the local fire authority.

Fire hydrants shall match existing hydrants at the specific facility or conform to AWWA Standard 502-80 for post-type, dry-barrel, self-draining hydrants suitable for at least a 54-inch depth. Each hydrant shall have a six-inch inlet, a minimum valve opening of 5 1/4 inches, two 2 1/2-inch hose connections, and a 4 1/2-inch pumper port with storz fitting. All ports shall have National Standard Threads or other connection devices consistent with local fire protection authority requirements. All valves and caps shall open counterclockwise and have a 1 1/2-inch flat point pentagon operation and cap nuts. Caps on fire hydrants within the secure perimeter must be lockable or secured as directed by the facility custody representative. Hydrants shall be break-away traffic models.

The configuration of the fire hydrant assembly shall be as shown in Standard Detail No. 5. The assembly shall have a cast iron tee (with mechanical joint connections to the main) a flanged tee, a 6-inch flanged gate valve with valve box, a 6-inch ductile iron pipe extension and shackle rods to connect the hydrant to the auxiliary valve at the main. The shackle rods shall be 3/4-inch diameter steel rods of suitable length.

Hydrants added to existing systems will be installed by wet tap. The hydrant shall have at least an 18-inch clearance between the ground and the lower port, and a 36-inch unobstructed radius around it for operation of a hydrant wrench. The steamer/pumper port shall face the street or the most likely direction of emergency approach.

Fire hydrants shall be Mueller, Iowa, or approved equivalent.

Hydrant Guard Posts

At locations specified by the DOC, schedule 40 steel posts filled with concrete 7 feet long and a minimum of 6 inches in diameter shall be installed according to standard detail No. 5 for fire hydrant installations.

3.5 Thrust Blocking

All hydrants shall be thrust blocked. Valves, tees and bends shall be either thrust blocked or installed with restrained joints (mega lug or equal). Only concrete thrust blocking is acceptable for installation of water system facilities. Concrete blocking shall be APWA Class 5 (1 1/2) concrete mix, poured in place against undisturbed soil. Thrust blocking shall comply with the provisions of Standard Detail No. 6.

3.6 Cross-Connection Control Devices

Where the possibility of contamination of the supply exists, water services shall be equipped with appropriate cross-connection control devices, in accordance with the cross-connection control program (see Section A7 of the Water System Plan for details).

3.7 Meters

Meter Set Assembly

Meter sets shall be installed using a meter yoke equipped with a locking angle meter valve and an angle check valve. Meter yoke inlets and outlets shall have male iron pipe size threads.

Meter yoke assemblies shall be Mueller H-1434-2, or approved equivalent as shown in Standard Details 11A and 11B.

Where static water pressure exceeds 80 psi, pressure reducing valves may be installed at the meter as directed by the DOC. Pressure reducing valves shall be Wilkins 600 or approved equivalent.

If meters need to be raised, Mueller H-14118 Meter Relocater, or approved equivalent shall be used.

Meter Boxes

Meter boxes shall be pre-cast concrete with steel cover and reader lid; Fog-Tite No. 1-D or approved equivalent. Carson 1419-15 with reader lid or approved equivalent may be used when meter location is away from vehicle traffic.

3.8 Water Treatment Chemicals

Any chemicals used in water treatment shall comply with the requirements of ANSI/NSF 60 Water Treatment Chemicals.

3.9 Materials in Substantial Contact with Drinking Water

Any products used to coat, line, seal, patch water contact surfaces (paint, pipe liners, interior tank coatings) or that have substantial water contact within collection, treatment, or distribution systems must comply with ANSI/NSF 61 Drinking Water System Components and Materials.

4 General Construction Standards

4.1 Safety

Contractors shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of work.

The Contractor shall comply with safety and health standards identified in Section 5.07 of the General Conditions for Washington State Facility Construction, latest edition.

4.2 Inspection Requirements

Unless previously authorized by the DOC, work on water mains shall not proceed without a DOC inspector or designee under contract to DOC being present. The DOC may refuse acceptance of any water mains installed without a DOC inspection. The presence or absence of an Inspector on any job will be at the sole discretion of the DOC. Such presence or absence of an Inspector will not relieve a Contractor of responsibility to deliver the construction results specified in the contract documents.

To permit scheduling an inspector, the DOC must receive a hard copy of the construction schedule at least two full working days before construction activities covered by the schedule begin. The DOC must be kept advised of changes to the construction schedule. When significant breaks in construction occur, the contractor must give two working days notice before resuming work. If contractor is working outside normal working hours, overtime expenses for DOC staff are the responsibility of the contractor.

All projects require design by a registered professional engineer licensed in the state of Washington. All work shall be inspected by the DOC or its designated representative, before closure of any excavation. Inspectors will be provided by the DOC or its designated representative. Inspectors will have access to work sites as necessary to keep the DOC informed of the progress of the work and the manner in which it is being done, to keep records, to act as liaison between the Contractor and the Manager, and to report any deviations from Plans or Specifications.

Inspectors shall have the authority to reject defective material and to suspend any work that is not conducted in accordance with the DOC's Technical Standards and Specifications only. DOC Inspectors are not authorized to issue instructions or to approve or accept any portion of the work which is contrary to the Plans and Specifications.

Failure of an inspector to call the attention of a Contractor to faulty work or deviations from the Plans or Specifications shall not constitute acceptance of said work.

Approvals, acceptances, or instructions, when given, must be in writing and signed by the DOC.

Any personal assistance which an Inspector may give a Contractor will not be construed as the basis of any assumption of responsibility in any manner, financial or otherwise, by the Inspector or the DOC..

4.3 Materials Delivery

Pipe and appurtenances shall be handled in such a manner as to ensure delivery to the trench in a sound, undamaged condition. Particular care shall be taken not to injure the pipe, pipe coating, or lining. Before installation, the pipe and appurtenances shall be cleaned of foreign material and inspected for defects. Valves shall be cleaned of all foreign material and operated before installation to ensure proper functioning.

Pipe shall be delivered to the site capped and shall be stored in the same condition until ready for installation and disinfection.

Rubber gaskets shall be stored in a cool, dark place to prevent damage from the direct rays of the sun

4.4 Alignment

Pipe shall be laid to specified grade and alignment as staked in the field. Alignment deviation shall not exceed plus or minus 0.5 feet, horizontally and vertically. Replacement of stakes lost or destroyed shall be made at the Contractor's expense and in accordance with contract plans, including modifications specified by the DOC.

4.5 Trench Excavation and Backfill

Trench excavation and backfill shall be performed in accordance with APWA Section 73-3, with a minimum cover of 36 inches. Grade staking, when required, will be performed by the contractor prior to installation of the mains. Compaction of backfill shall be accomplished by mechanical tamper in lifts not exceeding six inches to obtain 95 percent compaction. If the trench soil is unsuitable for trench backfill, as determined by the Inspector, the Contractor shall remove and dispose of unsuitable material and backfill the trench with approved backfill. The Contractor will keep the DOC informed of the disposal site of all unsuitable material removed form the project. New or unsuitable material shall not be dumped on neighboring properties. A typical trench section is shown in Standard Detail 10.

Finished backfill work shall leave all existing drainage ditches, culverts, and other appurtenances in a useable state equal to or better than their original condition.

4.6 Surface Restoration

Roads, driveways, shoulders, landscaping and all other areas removed, broken, caved-in, settled or otherwise damaged as a result of construction work, shall be repaired and/or resurfaced to match the existing surface or landscaped areas.

Existing shoulders and gravel surfaces shall be restored with like, crushed rock surfacing. Existing lawns shall be re-sodded after proper back-filling and consolidation. Existing landscaping, fences, mailboxes, ornamentation, etc. shall be restored as close to original conditions as possible. Private driveways, walks, and other surfaced areas shall be restored, patched, or resurfaced as required to match the original surface condition.

4.7 Excavation Standards

Excavation standards shall be adhered to in accordance with the provisions of the state of Washington Department of Labor and Industries and WAC Chapter 296-155 Part N - Excavation, Trenching, and Shoring.

4.8 Construction Site Erosion Control

Erosion control measures during construction shall be in full compliance with the Stormwater Pollution Prevention Plan prepared for the specific project and the General Industrial Stormwater Permit for the facility.

4.9 Sanitation Requirements

Extreme care should be used in checking and cleaning all pipe and fittings of dirt, debris and foreign matter during installation. All material shall be kept clean. Plugs shall be used to seal installed water mains when they are to be left for any period of time, including lunch breaks, coffee break, overnight, etc. Material contaminated by petroleum products or questionable chemicals shall be rejected. No trench water shall be allowed to enter installed water mains.

4.10 Main Testing and Flushing

All water mains shall be pressure tested in accordance with Section A8.4.11 of the DOC's Technical Standards and Specification. The Contractor shall provide all testing equipment. During construction, new water mains must be separated from the existing system (e.g. with a gate valve). Until satisfactory flushing, disinfection, and bacteriological sampling has been completed, the new water main must be treated as if it were contaminated. A connection can be made from DOC water mains to supply water for initial flushing, line filling, pressure testing, and disinfection. An approved backflow prevention assembly must be used on the supplying water line. The final testing shall be performed in the presence of a DOC inspector.

4.11 Hydrostatic Pressure and Leak Testing

A hydrostatic pressure and leakage test will be conducted on all newly-constructed water mains, fire lines, fire hydrant leads, and stubouts, after flushing, in accordance with APWA Section 7-11.3(11) and AWWA C-600 specifications. **Note: The DOC will assume no responsibility for the water tightness of existing valves.**

4.12 Disinfection and Bacteriological Testing

All water lines, reservoirs, and appurtenances shall be disinfected and tested at the contractor's expense in accordance with AWWA C601-68 and D105-80, DOT/APWA Section 7-11.2(12), and the requirements of DOH. Disinfected lines shall be flushed with water from the DOC's system and samples collected by DOC personnel from all mains for bacteriological testing. Copies of test results shall be retained by the both the Institution and DOC headquarters Environmental Services. If test results are not satisfactory, lines shall again be disinfected, flushed, and tested until two consecutive, satisfactory series of samples are obtained. Bacteriological testing must satisfy DOH criteria prior to acceptance or utilization of new water facilities.

4.13 Disposal of Disinfection Water

The chlorine concentration used for disinfection procedures (minimum 25 mg/L) renders water non-potable. Disinfection water, which contains chlorine, must be disposed of in accordance with Ecology specifications. Discharge of disinfection water into a storm drain, drainage ditch, or natural channel is a discharge to waters of the state and is prohibited by state law. Permission to discharge disinfection water must be obtained in advance from Ecology's Water Quality Section unless the water has been previously treated with a neutralizing agent. The chlorine in the water used to disinfect water lines, components, storage units, etc. may be toxic to fish and other aquatic life in the receiving waters.

Potential locations for disposal include, but are not limited to, the following:

- Tank truck for proper disposal off-site
- Sanitary sewer system (dechlorination is likely to be necessary for this option)
- Dechlorination and disposal to the stormwater collection system

4.14 Utility Location

New water lines and facilities shall be installed in accordance with the applicable county ordinance and specified utility location system. Where no ordinance applies, water mains shall be installed so as to be compatible with the existing water system, the terrain, geology, and the location of other utilities. Where practical, all water mains shall be installed parallel to the centerline on the North or East side of the street or road as shown on Standard Detail 7A and 7B. Deviations from standard locations must be documented, receive prior written approval by the DOC, and be accompanied by accurate "As-Built" maps. Water lines shall be located as follows:

Shoulder and Ditch Configuration

> If practical, pipe shall be installed outside the ditch line, otherwise, it shall be installed in the shoulder, three feet from the edge of the travel lane.

Curb and Gutter Configuration

> Pipe shall be installed three feet outside of the curb when there is a curb and gutter in the road cross-section.

4.15 Record Drawings

Prior to final payment to the contractor, accurate record drawings, tied to local horizontal and vertical data, shall be completed and delivered to the project manager in the format specified in the project specifications.

If included in the design contract, the design engineer shall prepare digital copies of the record drawings from the contractor. Both a digital and hard copy of the record drawing set shall be submitted to the project manager.

5 Standard Detail Drawings

Installation of water facilities shall conform with the preceding material and construction standards, and standard detail drawings below:

1. Air and air-vacuum relief valve assembly
2. Pressure reducing station

3A. Valve box - paved roadway

3B. Valve box - unpaved roadway

4A. 2-inch blowoff assembly

4B. 2-inch blowoff assembly - bottom connection

5. Fire hydrant assembly
6. Concrete thrust blocking

7A. Standard utilities location - shoulder and ditch configuration

7B. Standard utilities location - curb and gutter configuration

8A. Reduced pressure principle backflow devices (RPBD)

8B. Double check valve assemblies (DCVA)

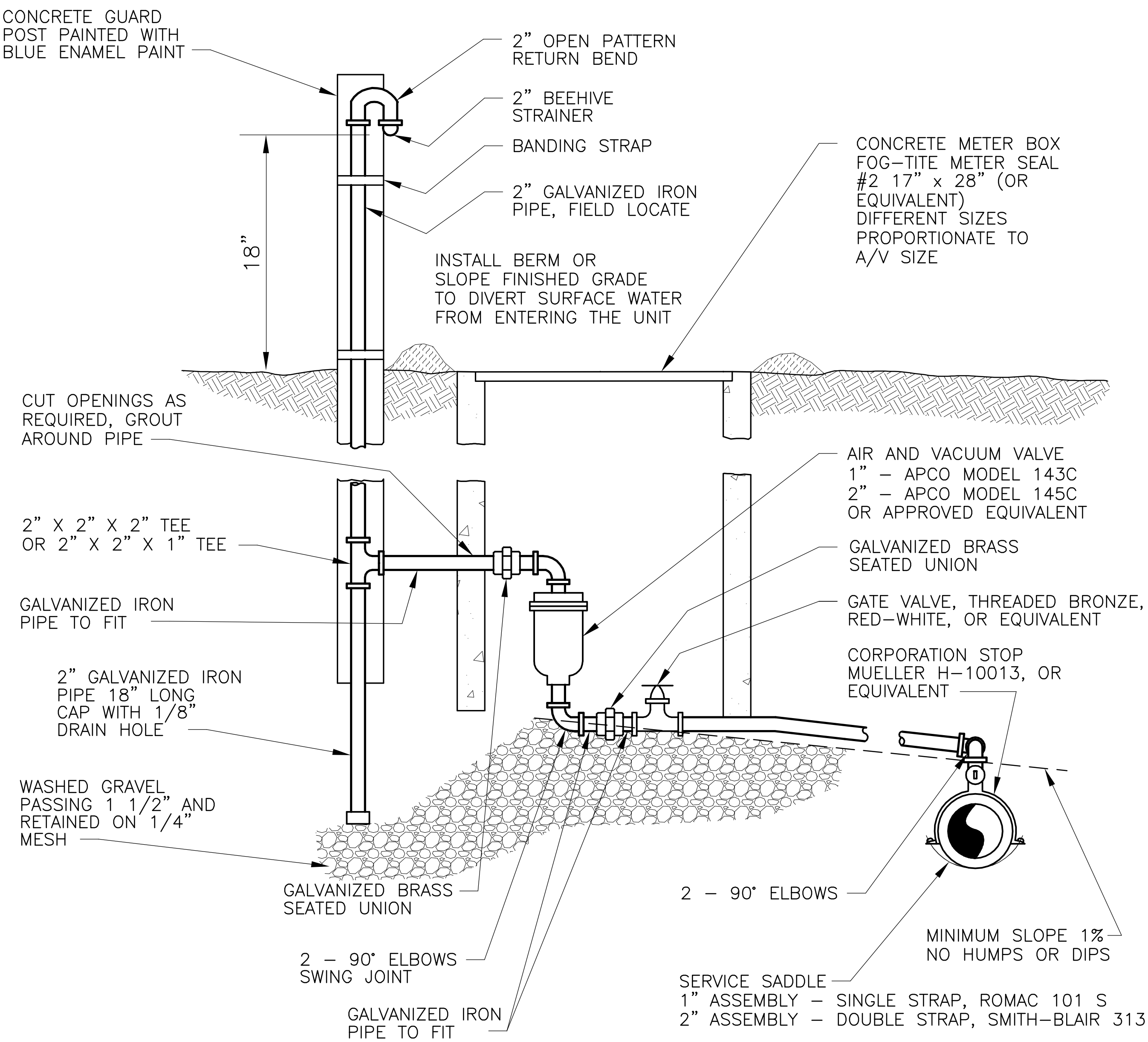
8C. Double detector check valve assemblies (DDC)

8D. Pressure & atmospheric vacuum breakers (PVB/AVB)

9. Altitude valve assembly, vault plan, and elevation
10. Typical trench detail

11A. 1 1/2-inch and 2-inch meter yoke assemblies

11B. Meter set with pressure reducing valve.



NOTE:
AIR & VACUUM VALVE ASSEMBLY MUST BE INSTALLED AT HIGHEST POINT OF LINE. IF HIGH POINT FALLS IN A LOCATION WHERE ASSEMBLY CANNOT BE INSTALLED, PROVIDE ADDITIONAL DEPTH OF LINE TO CREATE HIGH POINT AT A LOCATION WHERE ASSEMBLY CAN BE INSTALLED. ALL PIPE AND FITTINGS TO BE GALVANIZED IRON.

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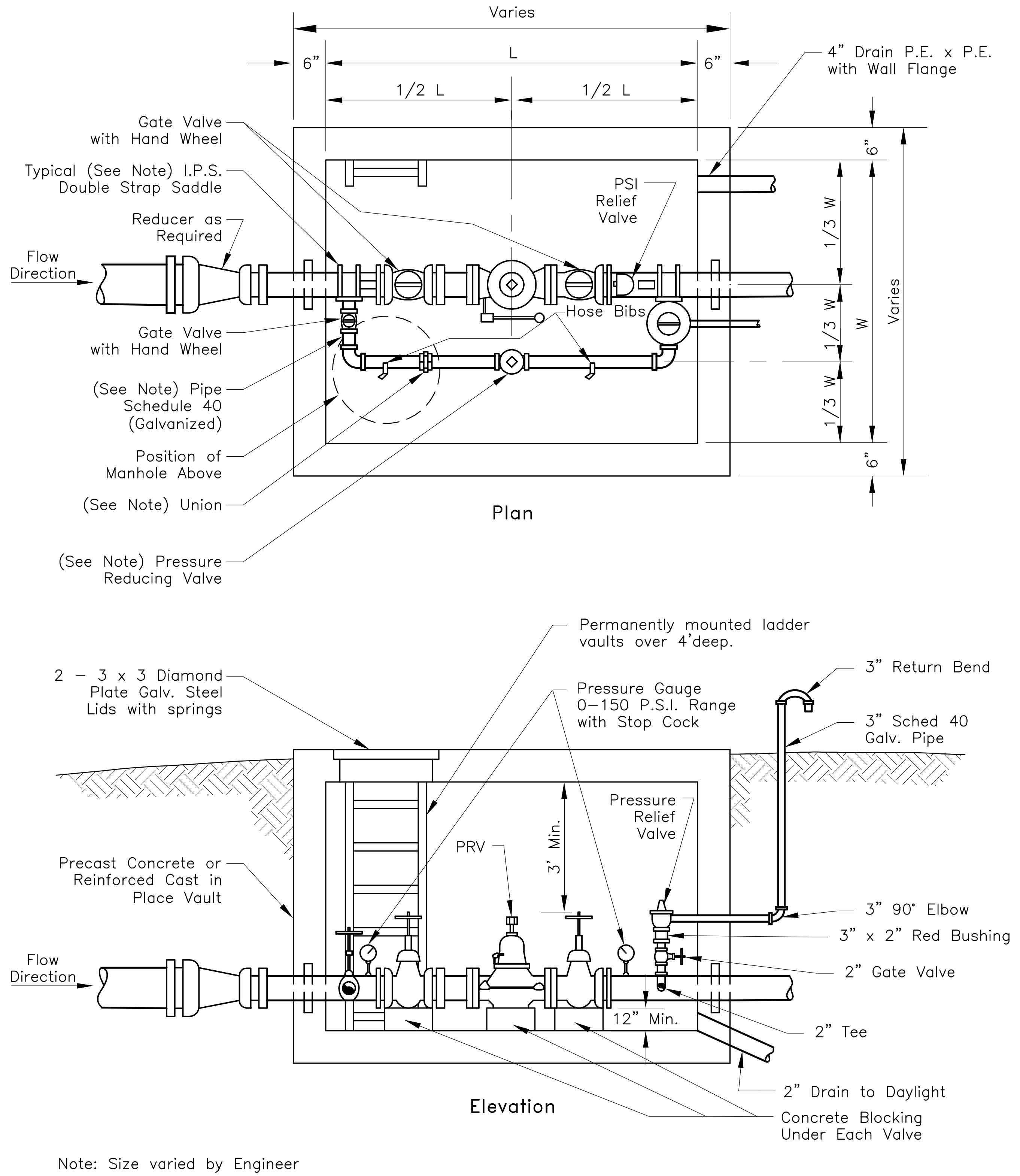
Standard Detail #1
Air and Air-Vacuum
Relief Valve Assembly



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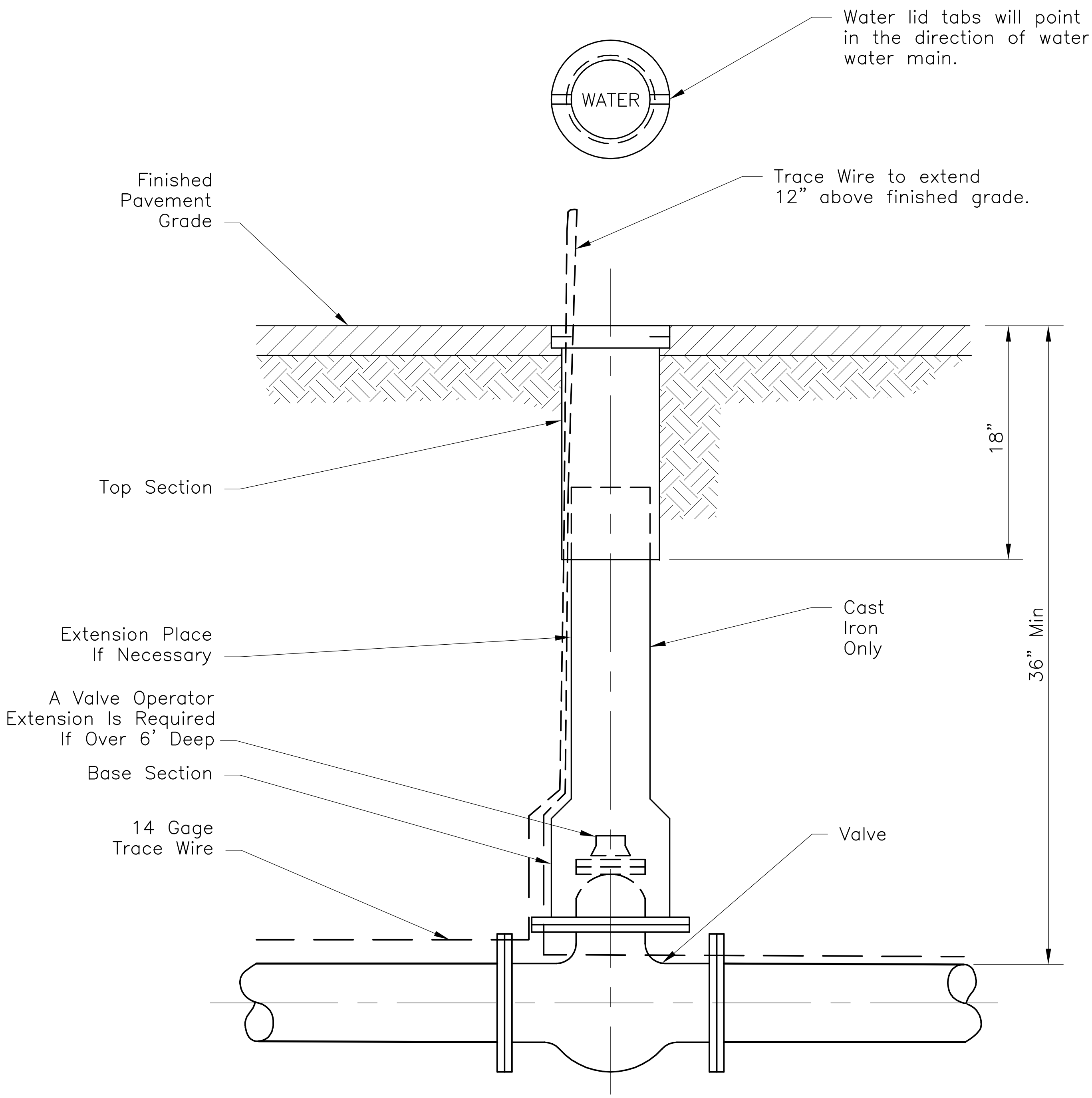
Standard Detail #2
Pressure Reducing
Station



NOTE:
Valve Box by Olympic Foundry, or approved Equivalent.

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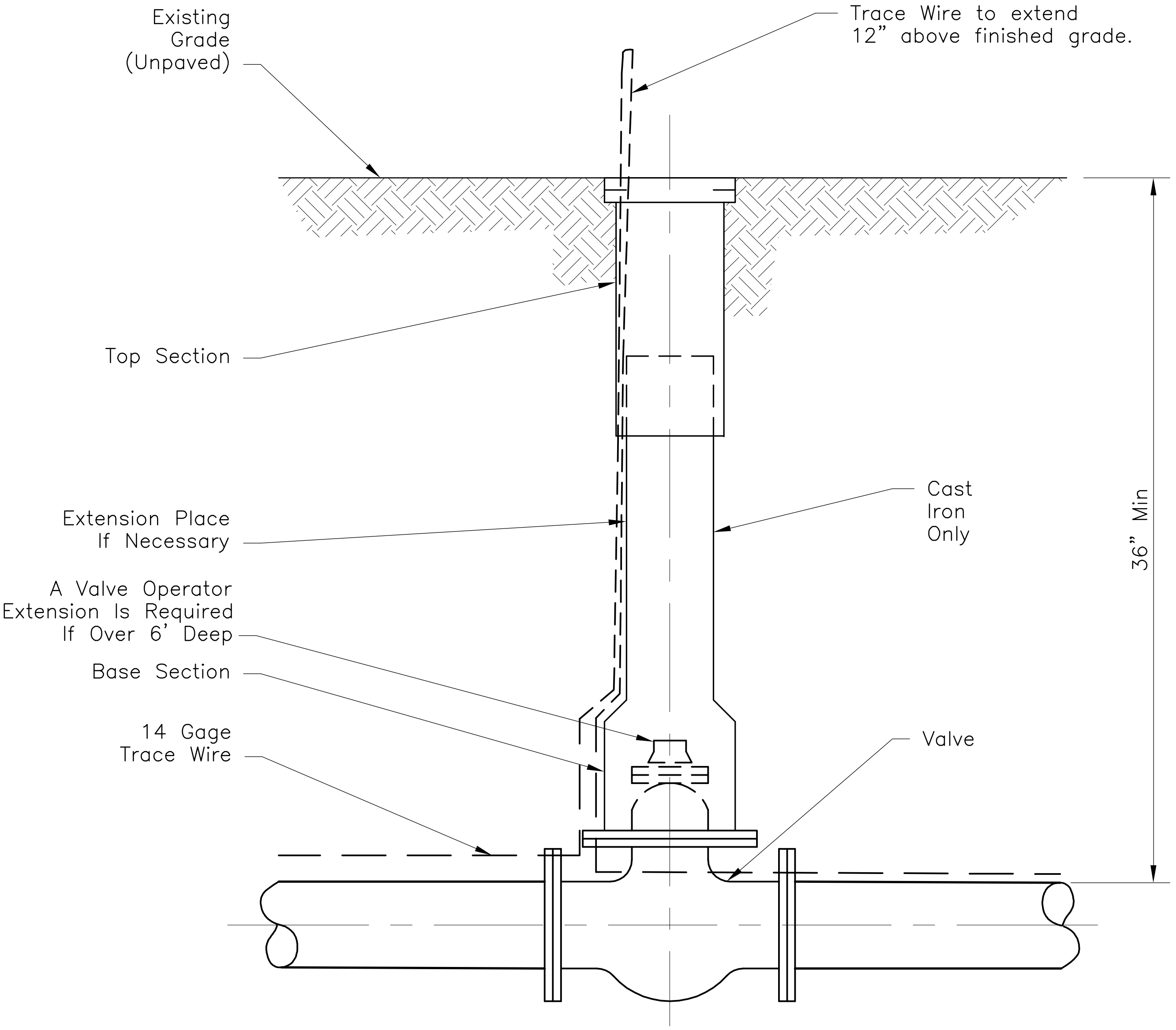
Standard Detail #3A
Valve Box
Paved Roadway



NOTE:
Valve Box by Olympic
Foundry, or approved Equivalent.

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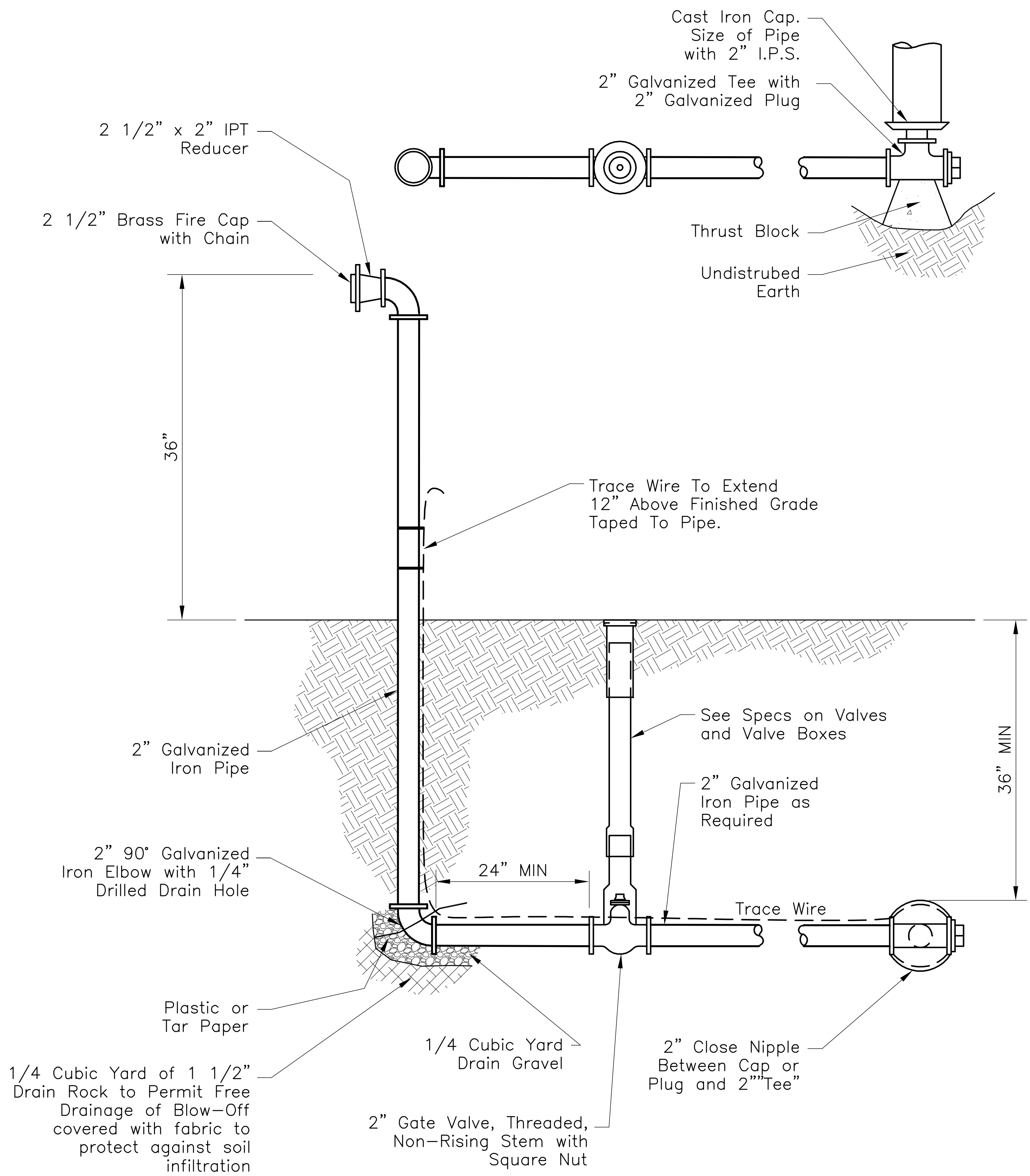
Standard Detail #3B
Valve Box
Unpaved Roadway



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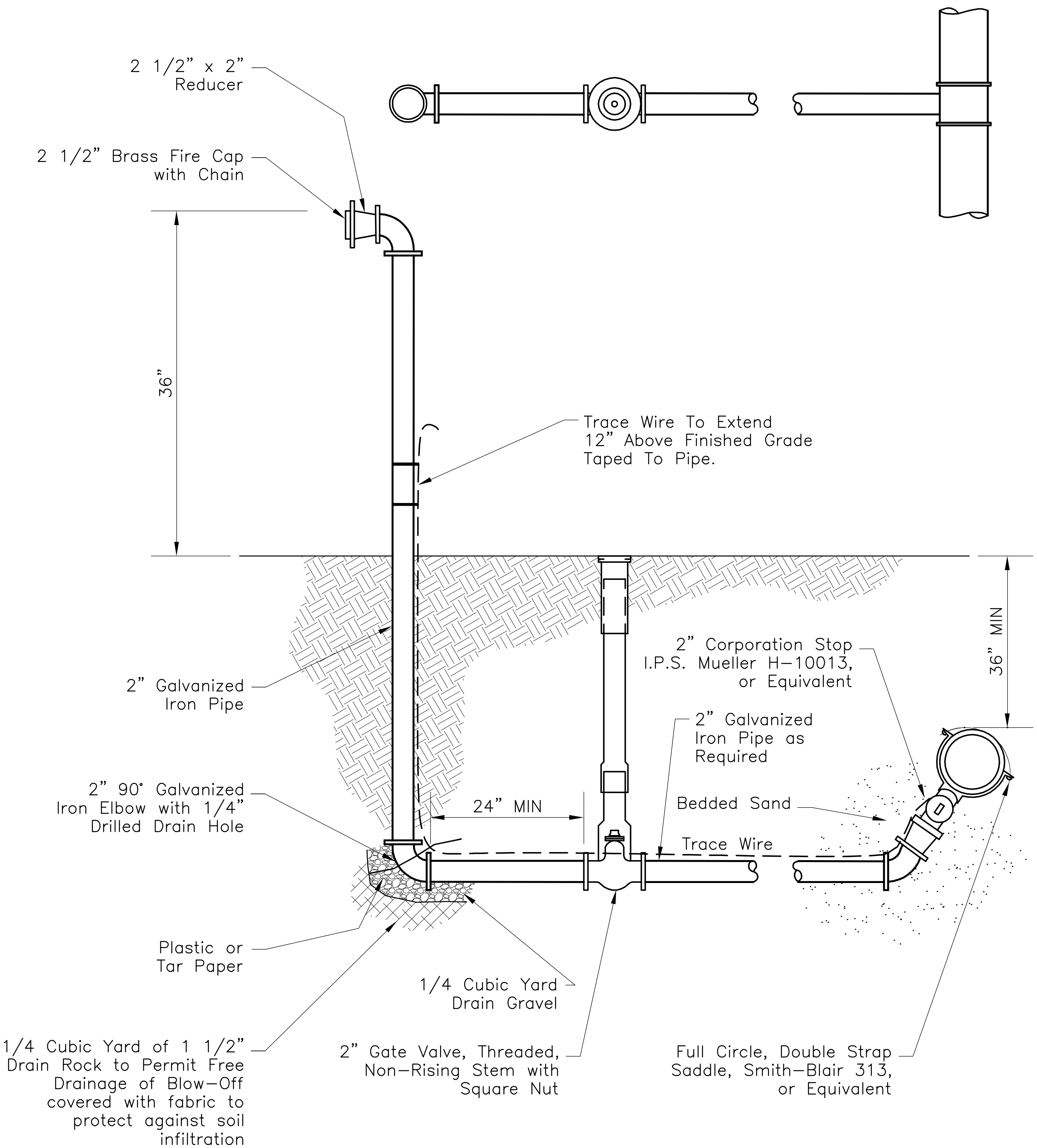
Standard Detail #4A
2" Blow-Off Assembly



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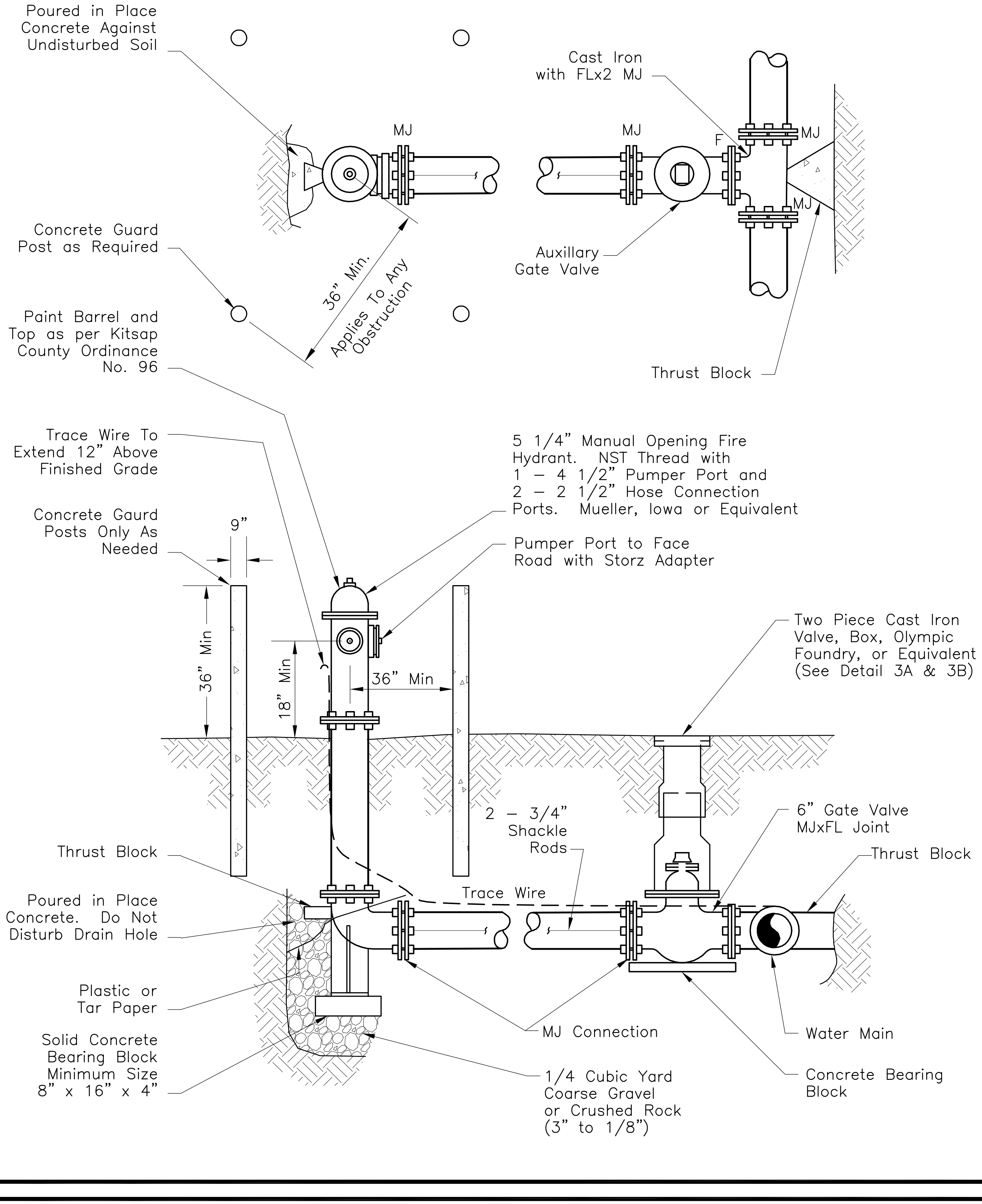
Standard Detail #4B
2" Blow-Off Assembly
Bottom Connection



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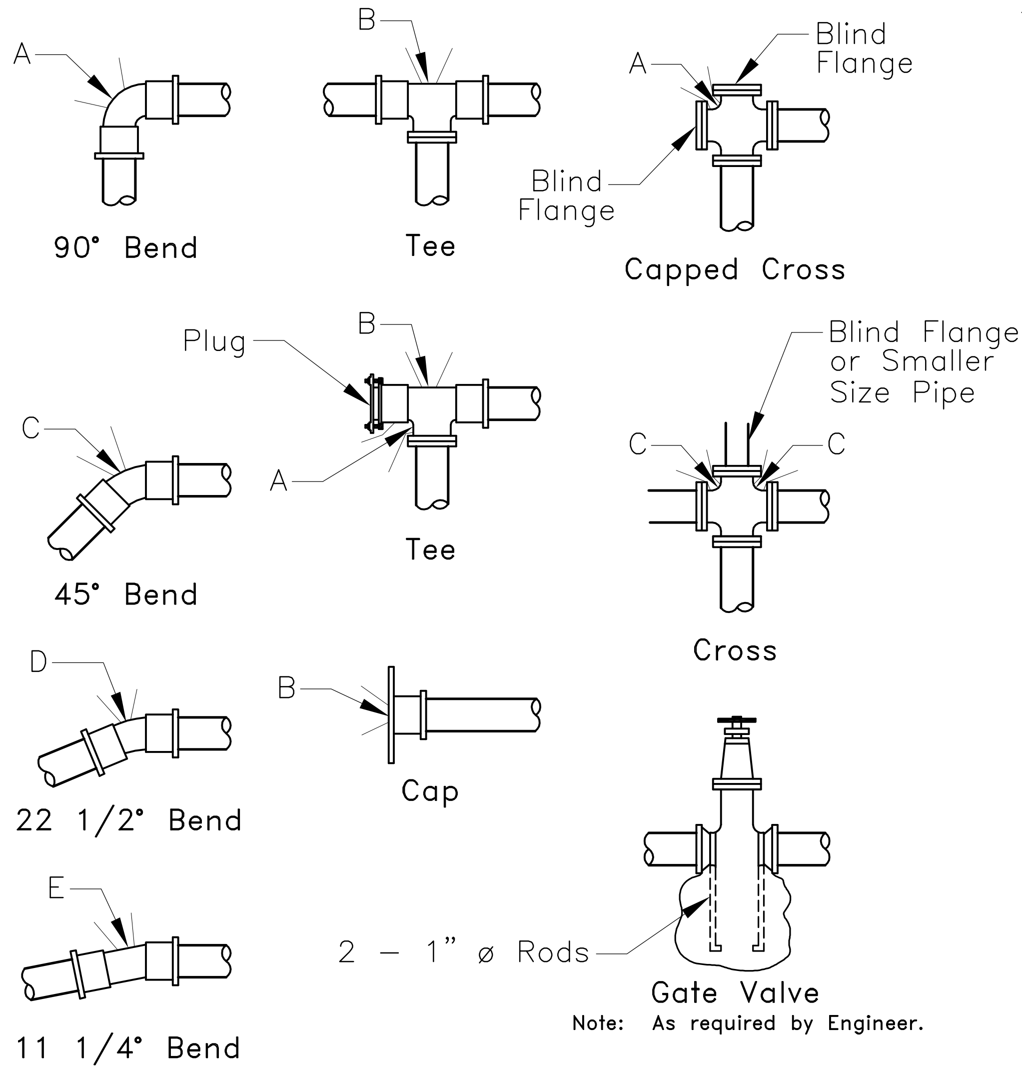
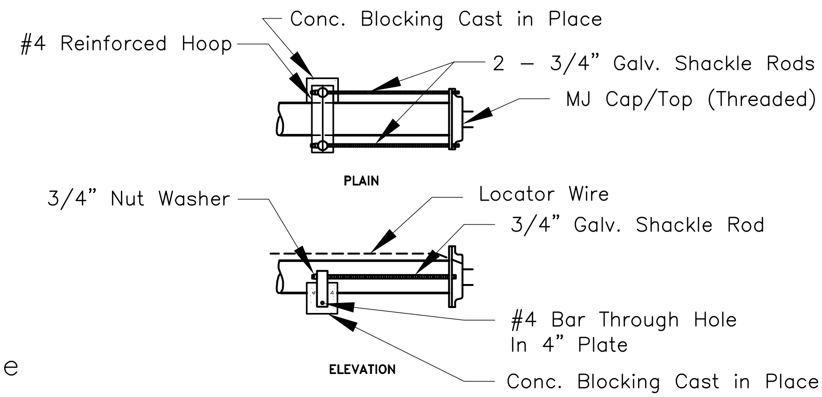
Standard Detail #5
Fire Hydrant
Assembly



Concrete Blocking



Tie–Back Blocking

Note: #4 Shackle Rods Required

Min. Bearing Area Against Undisturbed Soil
Square Feet

Pipe Size	A(ft.²)	B(ft.²)	C(ft.²)	D(ft.²)	E(ft.²)
4"	3	1	1	1	1
6"	4	4	2	1	1
8"	7	6	4	2	1
10"	11	10	6	3	2
12"	16	14	9	5	3

Notes:

1. Bearing area of concrete thrust–block based on 200 psi pressure and save soil bearing load of 2,000 pounds per square foot.
2. Areas must be adjusted for other pipe sizes, pressures and soil conditions.
3. Concrete blocking shall be cast in place and have a minimum of 1/4 square foot bearing against the fitting.
4. Block shall bear against fittings only and shall be clear of joints to permit taking up or dismantling of joint.
5. Contractor shall install blocking adequate to withstand operation pressure under all conditions of service.

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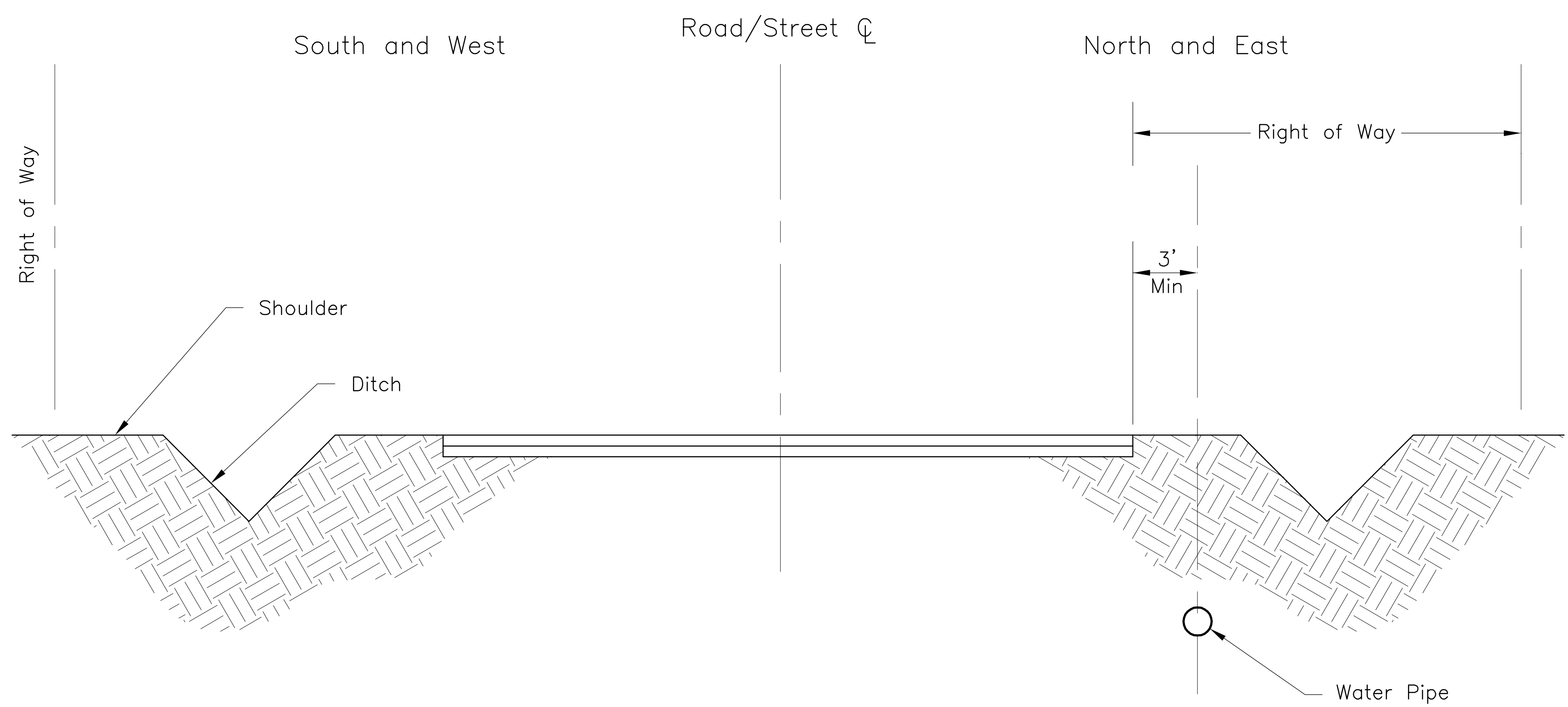
Standard Detail #6
Concrete Thrust
Blocking



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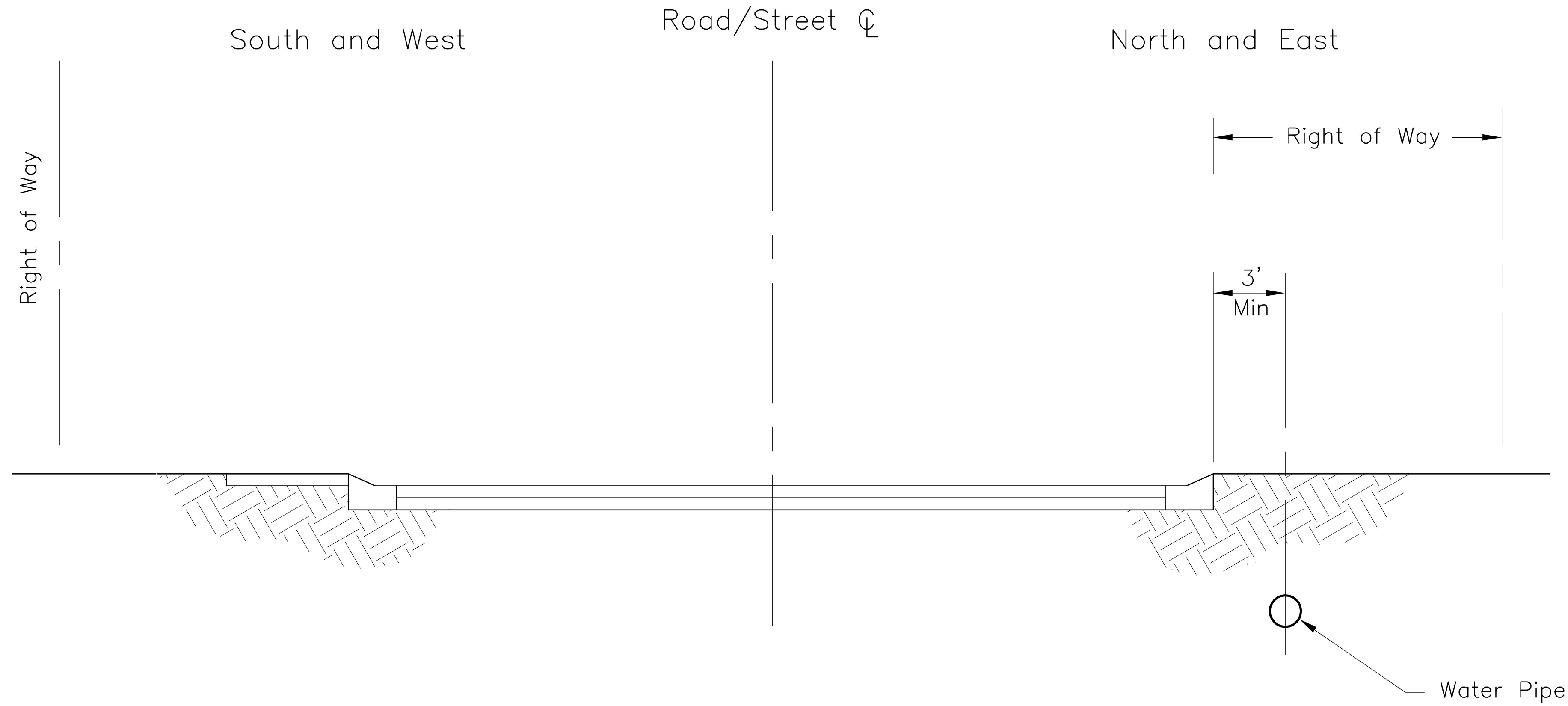
Standard Detail #7A
Standard Off–Site
Utilities Location
Shoulder and Ditch Configuration



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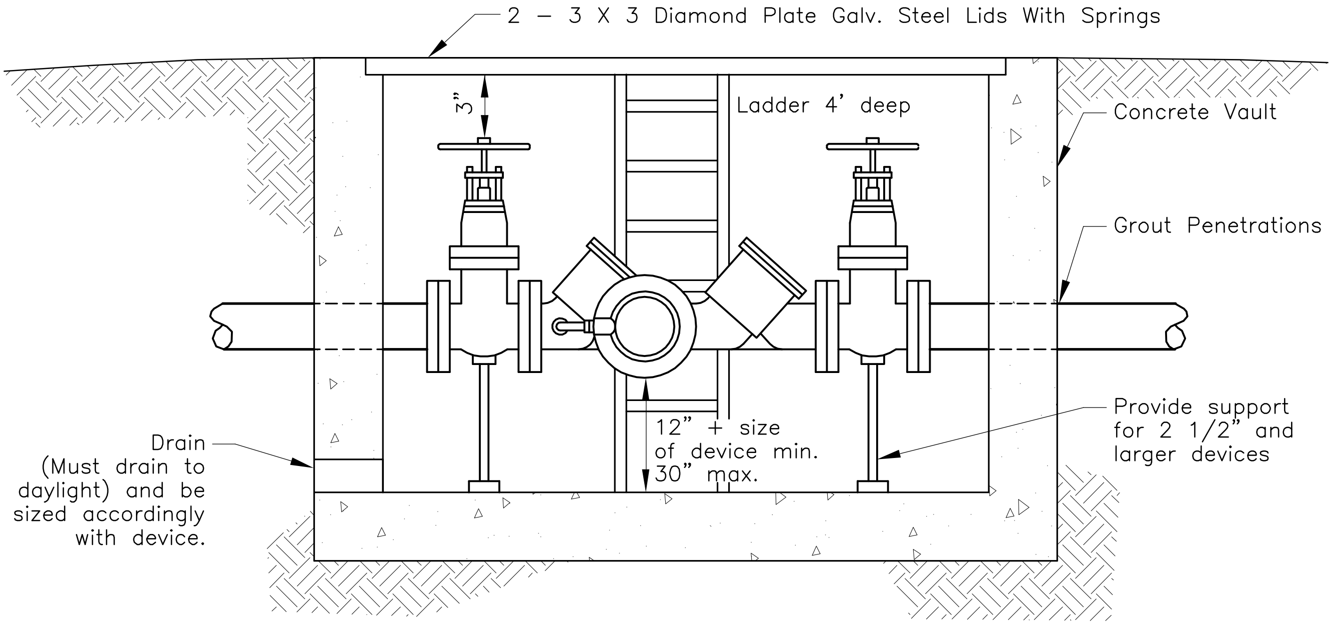
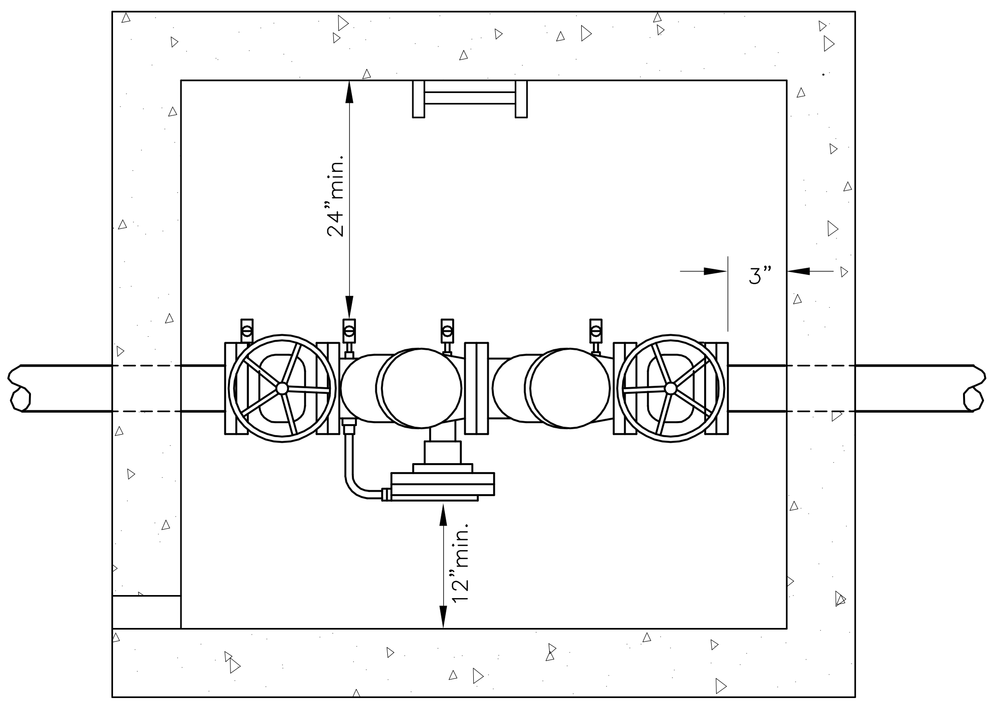
Standard Detail #7B
Standard Utilities Location
Curb and Gutter
Configuration





NOTE: Clearances still apply when devices are installed inside buildings.

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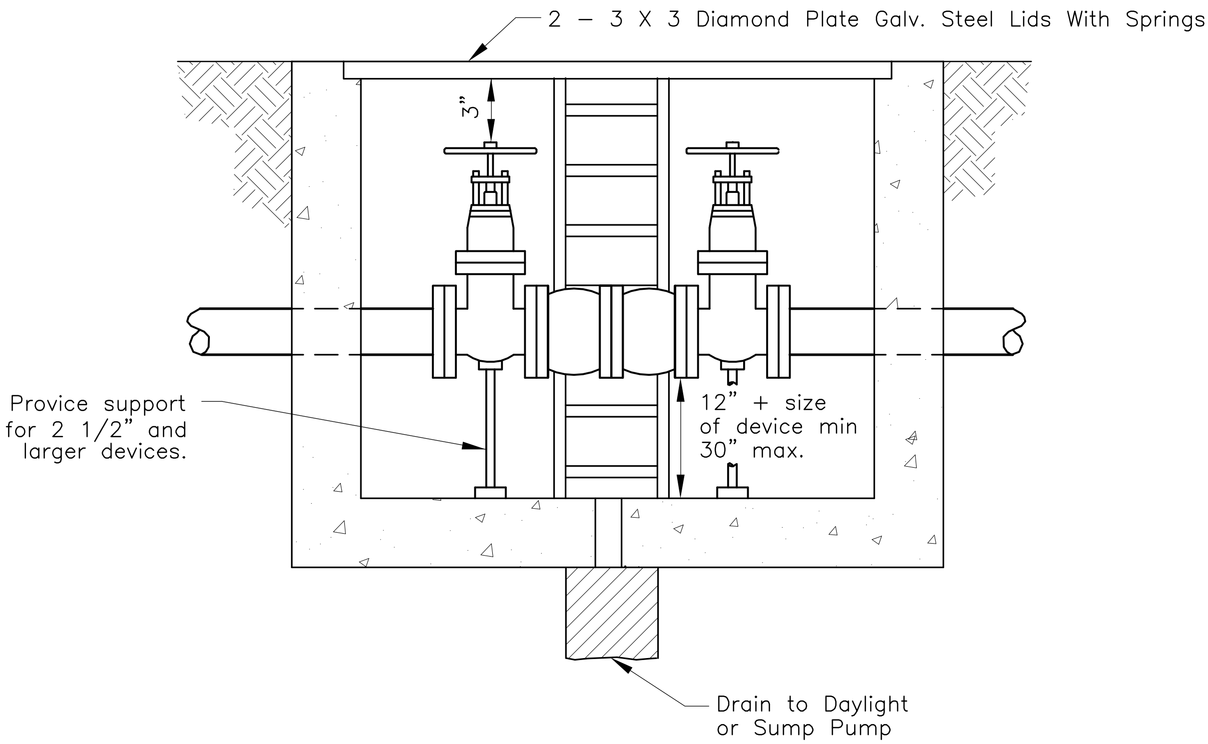
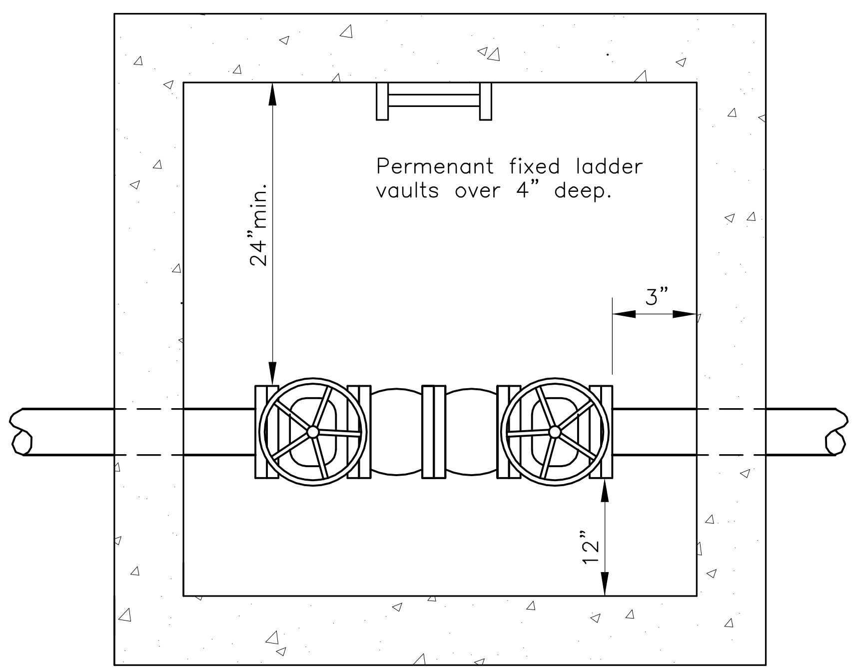
Standard Detail #8A
Reduced Pressure Principle
Backflow Devices (RPBD)





NOTE: Clearances still apply when devices are installed inside buildings.

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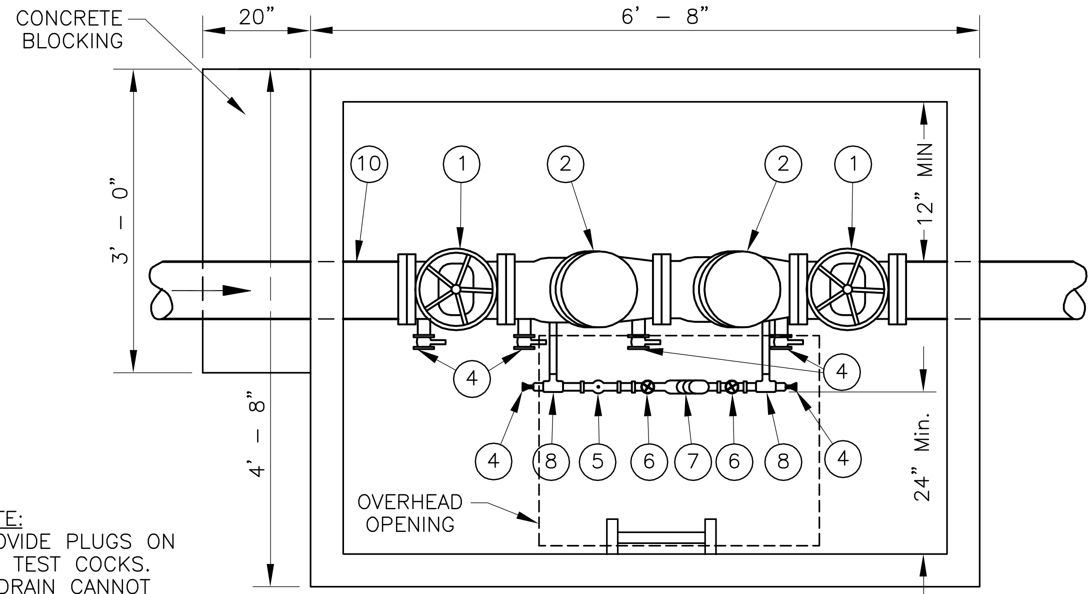
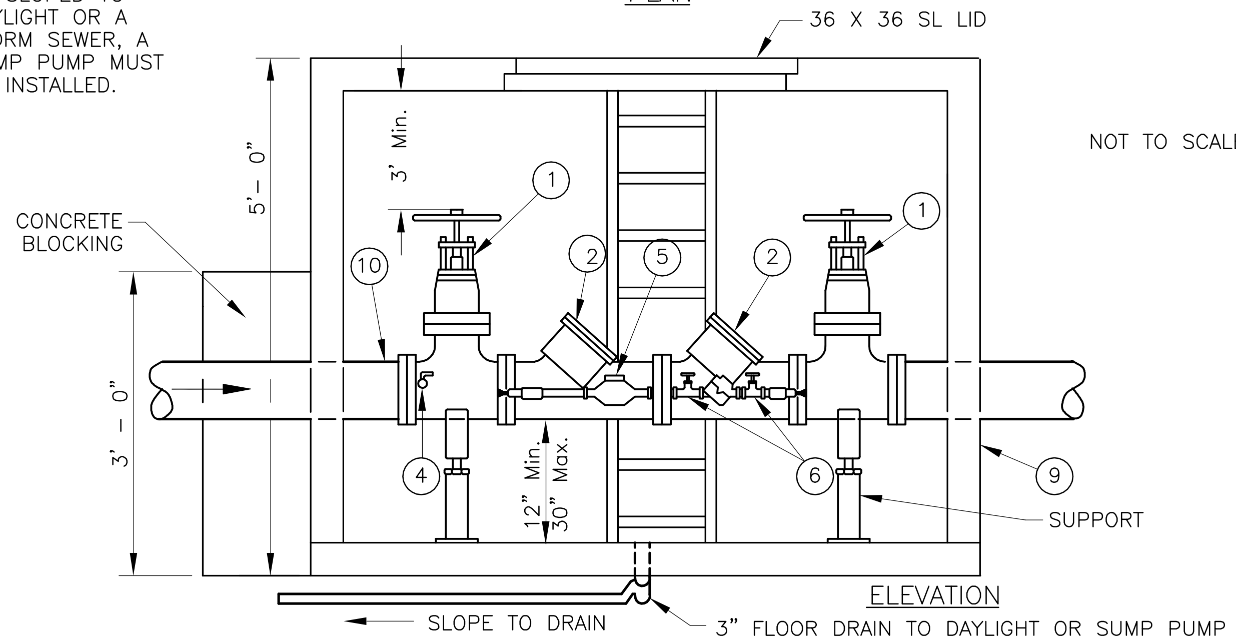
Standard Detail #8B
Double Check Valve
Assemblies (DCVA)



PLAN

NOTE:
PROVIDE PLUGS ON ALL TEST COCKS. IF DRAIN CANNOT BE SLOPED TO DAYLIGHT OR A STORM SEWER, A SUMP PUMP MUST BE INSTALLED.



ELEVATION

NOT TO SCALE

MATERIAL LIST

1. MAIN GATE VALVE, RESILIENT SEATED FULL FLOW SHUT OFF VALVES/TEST COCKS.
2. DOUBLE DETECTOR CHECK CONFORMED TO AWWA STANDARDS C506–78.
3. POST INDICATOR VALVE
4. 3/4" BALL VALVE (TEST COCK)
5. 5/8" X 3/4" DOMESTIC METER, 1 TO 20 GPM
6. 3/4" GATE VALVE, ASTM B584–78
7. 3/4" DOUBLE CHECK VALVE BACKFLOW PREVENTOR
8. 3/4" TEE
9. VALVE CHAMBER, PIPE INTERNATIONAL. PIPE 8 ENGINEERING, INC. WM19 W/12" RISER OR EQUAL.
10. WALL PIPE, FXPE WITH INTEGRALLY CAST COLLAR

NOTE: ITEMS 1–10 ARE PACKAGED AS AN "APPROVED ASSEMBLY" NO SUBSTITUTIONS ON ALTERATIONS ALLOWED AND ARE SUBJECT TO FIRE MARSHALL'S APPROVAL.

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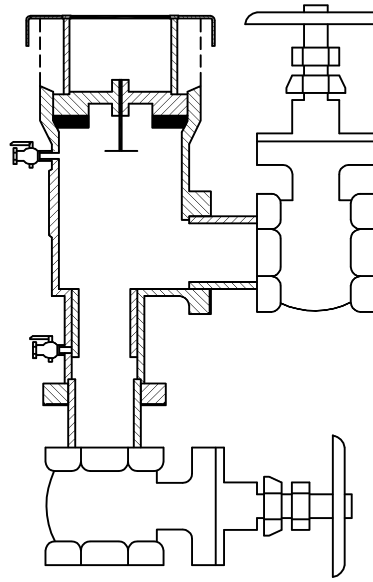
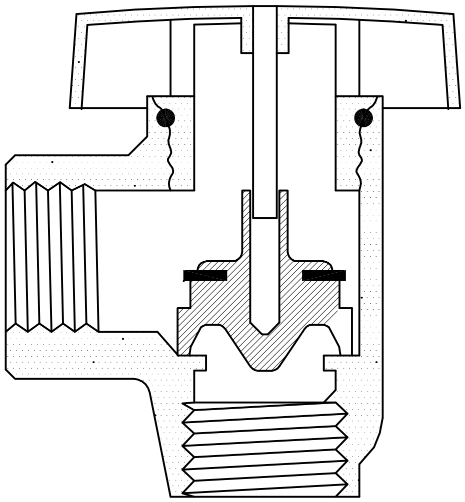
Standard Detail #8C
Double Detector
Check Valve Assemblies



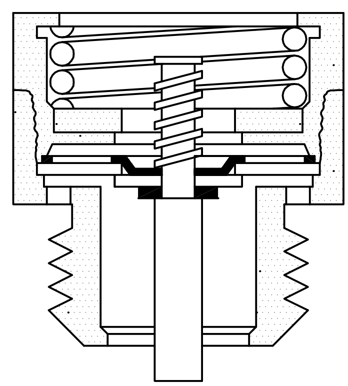
Must be installed a minimum of 12" above highest downstream point.

PRESSURE TYPE VACUUM BREAKER

Must be installed a minimum of 6" above highest downstream point. No valves downstream.



ATMOSPHERIC VACUUM BREAKER CROSS SECTION



HOSE BIBB VACUUM BREAKER CROSS SECTION

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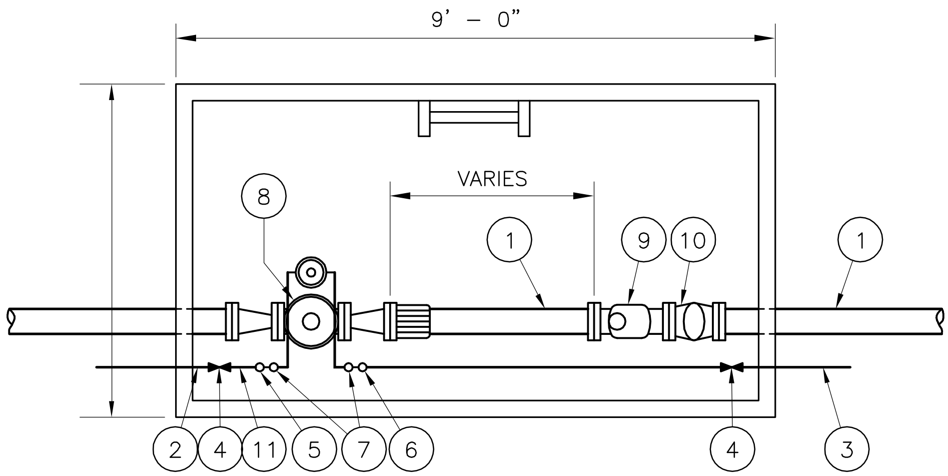
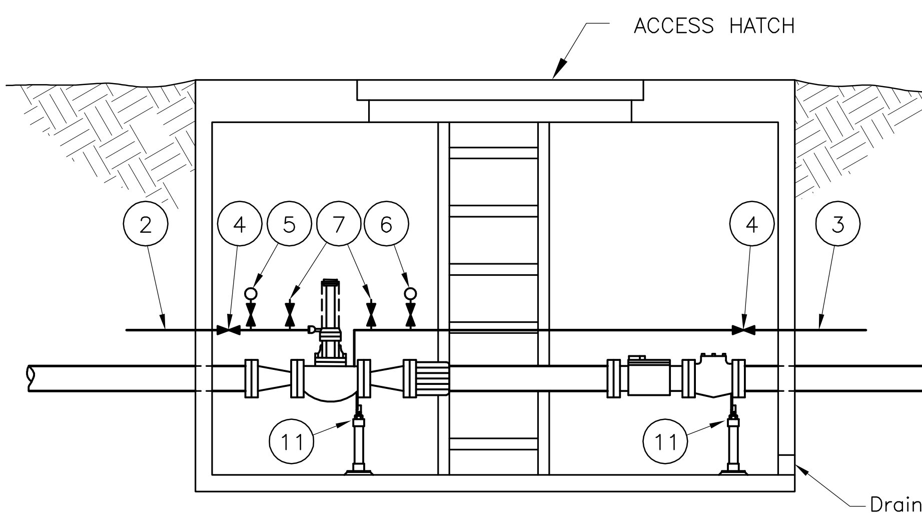
Standard Detail #8D
Pressure and Atmospheric Vacuum Breakers

FITTING SCHEDULE

1. DUCTILE IRON SPOOL, LENGTH TO FIT, 3 PLACES
2. 3/4" POLYETHYLENE RESERVOIR SENSING LINE, TAPPED INTO RESERVOIR SIDE OF INSTALLATION WITH SERVICE SADDLE AND CORPORATION STOP
3. 3/4" POLYETHYLENE BACK PRESSURE SENSING LINE TAPPED INTO INLET SIDE OF MAIN WITH SERVICE SADDLE AND CORPORATION STOP
4. 3/4" BALL VALVE, SHUT OFF
5. LIQUID FILLED PRESSURE GAGE, 0 TO 30 PSI, WITH 3/4" BALL VALVE AND 3/4" TEE
6. LIQUID FILLED PRESSURE GAGE 0 TO 100 PSI, WITH 3/4" BALL VALVE AND 3/4" TEE
7. 3/4" TEE WITH 3/4" BALL VALVE. THESE TO BE INSTALLED NEAR ALTITUDE VALVE AT POINT IN LINES TO PROVIDE FOR AIR RELEASE. PROVIDE I.P.T. TO HOSE THREAD ADAPTER ON DISCHARGE
8. ALTITUDE VALVE FLANGED. CLA-VAL OR EQUAL. THIS INCLUDES A BACK PRESSURE SUSTAINING FEATURE AND OPENING AND CLOSING SPEED CONTROL.
9. TURBO METER, SENUS OR EQUAL
10. STRAINER (SEDIMENT TRAP TYPE), FLANGED
11. SUPPORT AS REQUIRED



PLAN



ELEVATION

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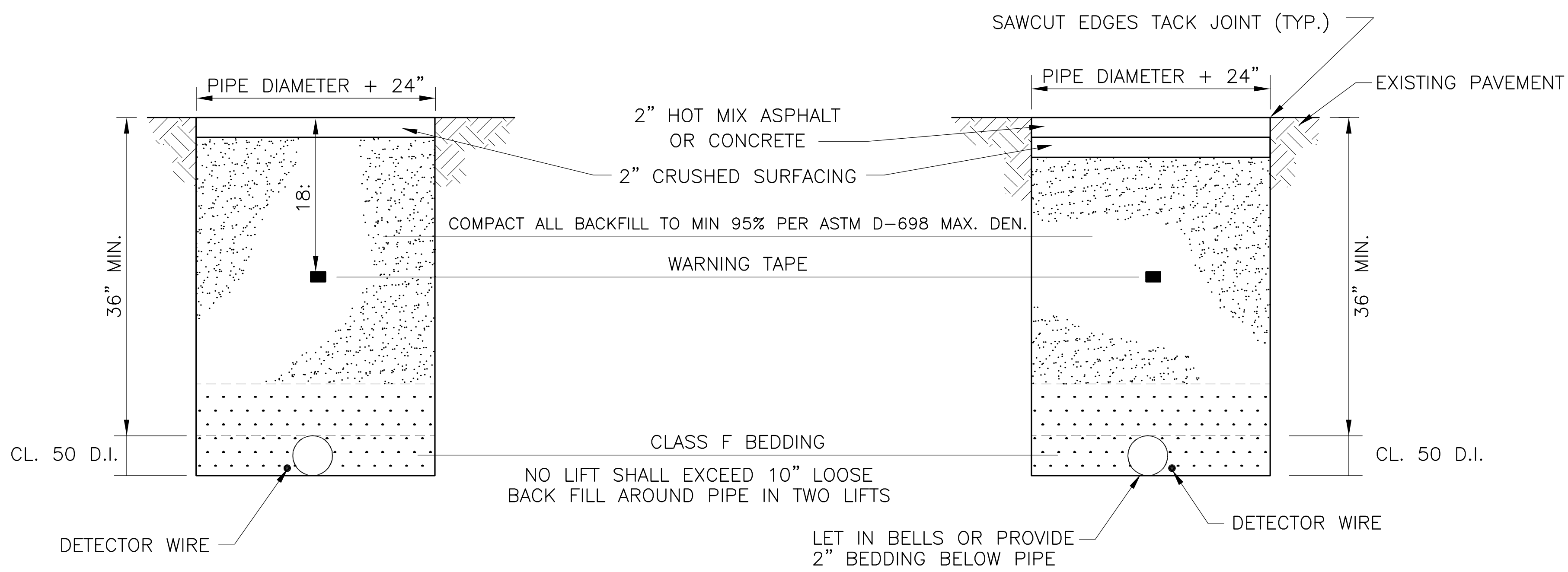
Standard Detail #9
Altitude Valve Assembly
Vault Plan & Elevation

NOTE: Contractors are required to meet all Washington State D.O.T. Standards and Kitsap County Standards for Trench and Asphalt Surfacing.



ALONG SHOULDER

WITHIN PAVING

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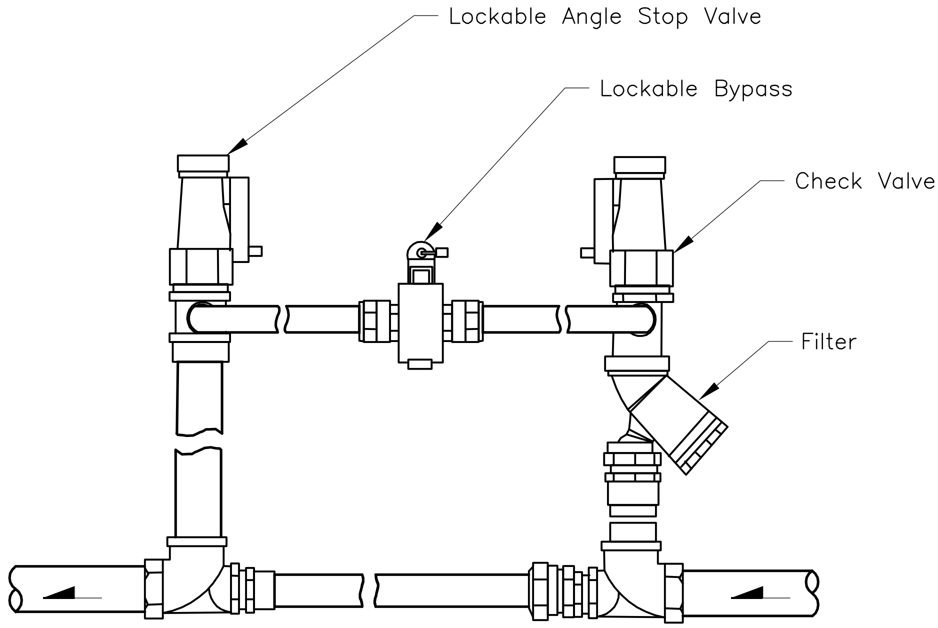
Standard Detail #10
Typical
Trench Detail



OR EQUAL

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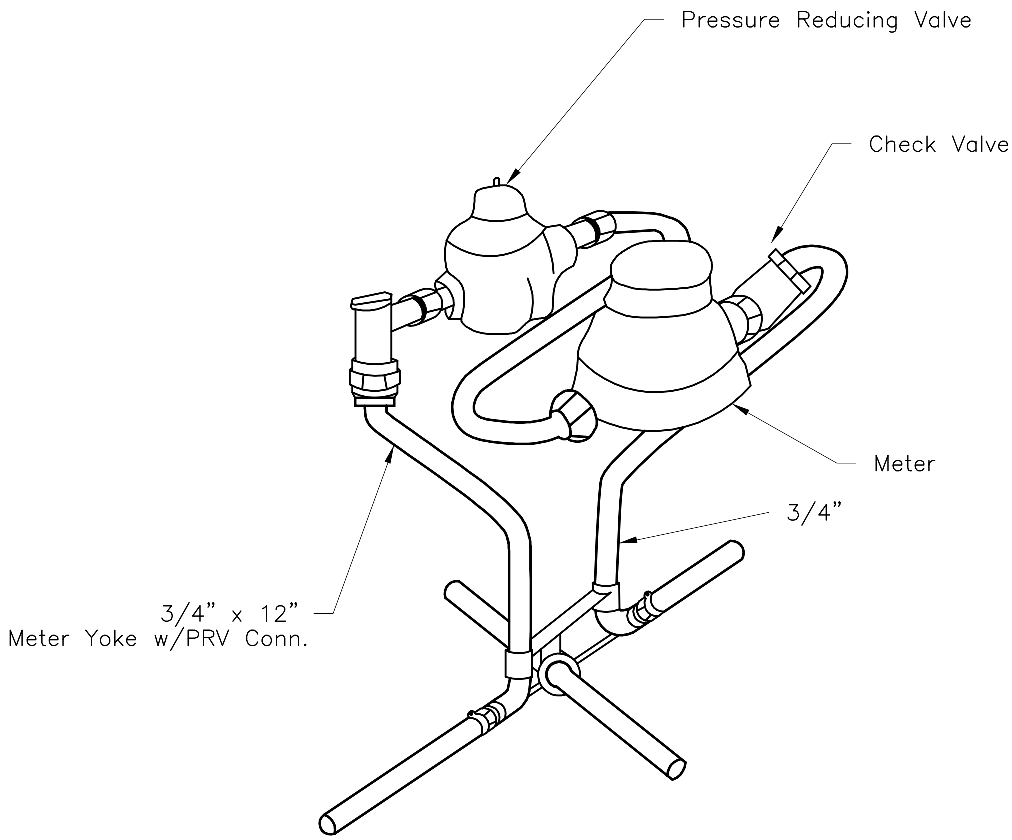
Standard Detail #11A
1 1/2" and 2" Meter Yoke



OR EQUAL

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Standard Detail #11B
Meter Set w/ PRV

APPENDIX C2

Local Government Consistency Statements

Local Government Consistency Determination Form

Water System Name: Larch Corrections Center PWS ID: 06461 Y

Planning/Engineering Document Title: Water System Plan Plan Date: June 2023

Local Government with Jurisdiction Conducting Review: Clark County Community Planning

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system Identify the page(s) in submittal	For use by local government Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	B2-2	
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	B2-7	
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	N/A	
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	A2-3	
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	B2-2	

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signature Date

Printed Name, Title, & Jurisdiction

Consistency Review Guidance

For Use by Local Governments and Municipal Water Suppliers

This checklist may be used to meet the requirements of WAC 246-290-108. When using an alternative format, it must describe all of the elements; 1a), b), c), d), and e), when they apply.

For **water system plans (WSP)**, a consistency review is required for the service area and any additional areas where a municipal water supplier wants to expand its water right's place of use.

For **small water system management programs**, a consistency review is only required for areas where a municipal water supplier wants to expand its water right's place-of-use. If no water right place-of-use expansion is requested, a consistency review is not required.

For **engineering documents,** a consistency review is required for areas where a municipal water supplier wants to expand its water right's place-of-use (water system plan amendment is required). For noncommunity water systems, a consistency review is required when requesting a place-of-use expansion. All engineering documents must be submitted with a service area map (WAC 246-290-110(4)(b)(ii)).

A) Documenting Consistency: The planning or engineering document must include the following when applicable.

a) A copy of the adopted **land use/zoning** map corresponding to the service area. The uses provided in the WSP should be consistent with the adopted land use/zoning map. Include any other portions of comprehensive plans or development regulations that relate to water supply planning.

b) A copy of the **growth projections** that correspond to the service area. If the local population growth projections are not used, explain in detail why the chosen projections more accurately describe the expected growth rate. Explain how it is consistent with the adopted land use.

c) Include water service area policies and show that they are consistent with the **utility service extension ordinances** within the city or town boundaries. *This applies to cities and towns only.*

d) All **service area policies** for how new water service will be provided to new customers.

e) **Other relevant elements** the Department of Health determines are related to water supply planning. See Local Government Consistency – Other Relevant Elements, Policy B.07, September 2009.

B) Documenting an Inconsistency: Please document the inconsistency, include the citation from the comprehensive plan or development regulation, and explain how to resolve the inconsistency.

C) Documenting a Lack of Local Review for Consistency: Where the local government with jurisdiction did not provide a consistency review, document efforts made and the amount of time provided to the local government for review. Please include: name of contact, date, and efforts made (letters, phone calls, and emails). To self-certify, please contact the DOH Planner.

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

Local Government Consistency Determination Form

Water System Name: McNeil Island PWS ID: 52900 E

Planning/Engineering Document Title: Water System Plan Plan Date: June 2023

Local Government with Jurisdiction Conducting Review: Pierce County Planning and Public Works

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system: Identify the page(s) in submittal	For use by local government: Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	B4-2	
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	B4-7	
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	N/A	
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	A2-3	
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	B4-2	

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

_______________________________ _______________
Signature Date

____
Printed Name, Title, & Jurisdiction

Consistency Review Guidance

For Use by Local Governments and Municipal Water Suppliers

This checklist may be used to meet the requirements of WAC 246-290-108. When using an alternative format, it must describe all of the elements; 1a), b), c), d), and e), when they apply.

For **water system plans (WSP)**, a consistency review is required for the service area and any additional areas where a municipal water supplier wants to expand its water right's place of use.

For **small water system management programs**, a consistency review is only required for areas where a municipal water supplier wants to expand its water right's place-of-use. If no water right place-of-use expansion is requested, a consistency review is not required.

For **engineering documents,** a consistency review is required for areas where a municipal water supplier wants to expand its water right's place-of-use (water system plan amendment is required). For noncommunity water systems, a consistency review is required when requesting a place-of-use expansion. All engineering documents must be submitted with a service area map (WAC 246-290-110(4)(b)(ii)).

A) Documenting Consistency: The planning or engineering document must include the following when applicable.

a) A copy of the adopted **land use/zoning** map corresponding to the service area. The uses provided in the WSP should be consistent with the adopted land use/zoning map. Include any other portions of comprehensive plans or development regulations that relate to water supply planning.

b) A copy of the **growth projections** that correspond to the service area. If the local population growth projections are not used, explain in detail why the chosen projections more accurately describe the expected growth rate. Explain how it is consistent with the adopted land use.

c) Include water service area policies and show that they are consistent with the **utility service extension ordinances** within the city or town boundaries. *This applies to cities and towns only.*

d) All **service area policies** for how new water service will be provided to new customers.

e) **Other relevant elements** the Department of Health determines are related to water supply planning. See Local Government Consistency – Other Relevant Elements, Policy B.07, September 2009.

B) Documenting an Inconsistency: Please document the inconsistency, include the citation from the comprehensive plan or development regulation, and explain how to resolve the inconsistency.

C) Documenting a Lack of Local Review for Consistency: Where the local government with jurisdiction did not provide a consistency review, document efforts made and the amount of time provided to the local government for review. Please include: name of contact, date, and efforts made (letters, phone calls, and emails). To self-certify, please contact the DOH Planner.

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

Local Government Consistency Determination Form

Water System Name: Olympic Corrections Center PWS ID: 13560 D

Planning/Engineering Document Title: Water System Plan Plan Date: June 2023

Local Government with Jurisdiction Conducting Review: Jefferson County Community Development

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system Identify the page(s) in submittal	For use by local government Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	B6-2	
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	B6-7	
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	N/A	
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	A2-3	
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	B6-2	

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

______________________________ ____________
Signature Date

____
Printed Name, Title, & Jurisdiction

Consistency Review Guidance

For Use by Local Governments and Municipal Water Suppliers

This checklist may be used to meet the requirements of WAC 246-290-108. When using an alternative format, it must describe all of the elements; 1a), b), c), d), and e), when they apply.

For **water system plans (WSP)**, a consistency review is required for the service area and any additional areas where a municipal water supplier wants to expand its water right's place of use.

For **small water system management programs**, a consistency review is only required for areas where a municipal water supplier wants to expand its water right's place-of-use. If no water right place-of-use expansion is requested, a consistency review is not required.

For **engineering documents,** a consistency review is required for areas where a municipal water supplier wants to expand its water right's place-of-use (water system plan amendment is required). For noncommunity water systems, a consistency review is required when requesting a place-of-use expansion. All engineering documents must be submitted with a service area map (WAC 246-290-110(4)(b)(ii)).

A) Documenting Consistency: The planning or engineering document must include the following when applicable.

a) A copy of the adopted **land use/zoning** map corresponding to the service area. The uses provided in the WSP should be consistent with the adopted land use/zoning map. Include any other portions of comprehensive plans or development regulations that relate to water supply planning.

b) A copy of the **growth projections** that correspond to the service area. If the local population growth projections are not used, explain in detail why the chosen projections more accurately describe the expected growth rate. Explain how it is consistent with the adopted land use.

c) Include water service area policies and show that they are consistent with the **utility service extension ordinances** within the city or town boundaries. *This applies to cities and towns only.*

d) All **service area policies** for how new water service will be provided to new customers.

e) **Other relevant elements** the Department of Health determines are related to water supply planning. See Local Government Consistency – Other Relevant Elements, Policy B.07, September 2009.

B) Documenting an Inconsistency: Please document the inconsistency, include the citation from the comprehensive plan or development regulation, and explain how to resolve the inconsistency.

C) Documenting a Lack of Local Review for Consistency: Where the local government with jurisdiction did not provide a consistency review, document efforts made and the amount of time provided to the local government for review. Please include: name of contact, date, and efforts made (letters, phone calls, and emails). To self-certify, please contact the DOH Planner.

APPENDIX C3

WCCW Water Supply Agreement with City of Gig Harbor

425401 6

Recorded at the Request of,
When Recorded, Return To:

The City of Gig Harbor
City Administrator
M/A: P.O. Box 145
Gig Harbor, WA 98335

UTILITY EXTENSION, CAPACITY AGREEMENT AND AGREEMENT WAIVING RIGHT TO PROTEST LID

THIS AGREEMENT is entered into on this 11th day of October, 1994, between the City of Gig Harbor, Washington (hereinafter referred to as the "City"), and the Washington State Departments of Natural Resources (hereinafter referred to as "DNR") and Corrections (hereinafter referred to as "DOC").

WHEREAS, DNR is the owner of certain real property located in Pierce County, legally described as set forth in Exhibit "A", attached hereto and incorporated herein by this reference as though set forth in full, and

WHEREAS, DOC leases certain real property from DNR located in Pierce County, legally described as set forth in Exhibit "A", and

WHEREAS, DOC is also the owner of certain real property located in Pierce County, legally described as set forth in Exhibit "B" attached hereto and incorporated herein by this reference as though set forth in full, and

WHEREAS, the properties owned by DNR and DOC are not currently within the City limits of Gig Harbor, and

WHEREAS, DOC, as the leasee on certain real property owned by the DNR as described in Exhibit "A", and the owner of certain real property as described in Exhibit "B", desires to connect to the City water, hereinafter referred to as "the utility", and the City is willing to allow connection only under certain terms and conditions in accordance with Title 13 of the Gig Harbor Municipal Code, as now enacted or hereinafter amended, NOW THEREFORE,

FOR AND IN CONSIDERATION OF the mutual benefits and conditions hereinafter contained, the parties agree as follows:

1. Warranty of Title. DOC and DNR warrant that they are the owners of fee title or a substantial beneficial interest in the properties described in Exhibit "A", and "B" and are authorized to enter into this Agreement.

DOC Contract CCAP3374

2. Extension Authorized. The City hereby authorizes DOC to extend service to DOC and DNR propety from the existing lines on Skansie Avenue at the following location:

Bujacich Drive

3. Costs. DOC will pay all costs of designing, engineering and constructing the extension. All construction shall be done to City standards and according to plans approved by the City's Public Works Director. Any and all costs incurred by the City in reviewing plans and inspecting construction shall be paid for by the DOC.

4. The City agrees to provide 80,000 gallons per day average use and 210,000 gallons per day peak usage water service to DOC, on DNR property as described in Exhibit A. DOC will connect to the City water via a 16" water line extension on 54th Street from the existing water main on Skansie Avenue. DOC will provide 2" and 8" compound water meters at the point of connection to the City water.

5. Capacity Commitment Payment. The City agrees to reserve the above said capacity for a period of 12 months after execution of this Agreement by all parties, provided that a payment for water capacity commitment is received within 45 days after City Council approval of extending water service to DNR and DOC's properties. Water capacity shall not be committed beyond a three year period.

DOC agrees to pay the City the sum of $790.88 for water capacity reservation for a one year period of 12 months after execution of this Agreement by all parties.

6. Extension of Commitment Period. In the event DOC chooses to permanently reserve water capacity by paying the entire connection fee before the expiration date set forth above, DOC shall be responsible for paying the City's monthly water base charge. The current City water base charge for a 2" meter is $47.52 per month.

7. Permits - Easements. DOC shall secure and obtain, at their sole cost and expense, any necessary permits, easements and licenses to construct the extension, including, but not limited to, all necessary easements, excavation permits, street use permits, or other permits required by state, county and city governmental departments including the DNR, the Pierce County Public Works and Planning Departments, Pierce County Environmental Health Department, State Department of Ecology, Pierce County Boundary Review Board and City of Gig Harbor Public Works and Planning Departments.

8. Turn Over of Capital Facilities. DNR and DOC agree to dedicate to the City an easement of combined length of 5,100 lineal feet, for the purpose of constructing a 16 inch water main. DNR and DOC agree to turn over this utility at no cost, upon completion of construction, approval and acceptance of the same by the City. That portion of this easement, as dedicated by DNR, is further described by separate easement contract between DNR, is further described by separate easement contract between DNR and the City and attached hereto as Exhibit "C".

As a prerequisite to such turn over and acceptance, DNR and DOC, as applicable, will furnish to the City the following:

A. As built plans or drawings in a form acceptable to the City Public Works Department;

B. Any necessary easements, permits or licenses for the continued operation, maintenance, repair or reconstruction of such facilities by the City, in a form approved by the City Attorney;

C. A bill of sale in a form approved by the City Attorney; and

D. A bond or other suitable security in a form approved by the City Attorney and in an amount approved by the Public Works Director, ensuring that the facilities will remain free from defects in workmanship and materials for a period of two (2) years.

9. Connection Charges. DOC agrees to pay the connection charges, in addition to any costs of construction as a condition of connecting to the city utility system at the rate schedules applicable at the time DOC requests to actually connect its property to the system. Any commitment payment that has not been forfeited shall be applied to the City's connection charges as they are levied.

10. Service Charges. In addition to the charges for connection, DOC agrees to pay for utility service rendered according to the rates for services applicable to properties outside the city limits as such rates exist, which is presently at 150% the rate charged to customers inside city limits, or as they may be hereafter amended or modified.

11. Annexation. DOC and DNR understand that annexation of the properties described in Exhibit "A" and "B" to the City will result in the following consequences:

A. Pierce County ordinances, resolutions, rules and regulations will cease to apply to the properties upon the effective date of annexation;

B. City of Gig Harbor ordinances, resolutions, rules and regulations will begin to apply to the properties upon the effective date of annexation;

C. Governmental services, such as police, fire and utility service, will be provided to the properties by the City of Gig Harbor upon the effective date of annexation;

D. The properties as identified in Exhibit "A" and Exhibit "B", may be required to assume all or any portion of the existing City of Gig Harbor indebtedness, and property tax rates and assessments applicable to the property may be different from those applicable prior to the effective date of annexation;

E. Zoning and land use regulations applicable to the properties after annexation may be different from those applicable to the property prior to annexation; and

F. All or any portion of the properties may be annexed and the properties may be annexed in conjunction with, or at the same time as, other property in the vicinity.

With full knowledge and understanding of these consequences of annexation and with full knowledge and understanding of DNR and DOC's decision to forego opposition to annexation of the property to the City of Gig Harbor, DNR and DOC agree to sign a petition for annexation to the City of the properties described on Exhibit "A" and "B" as provided in RCW 35.14.120, as that statute now exists or may hereafter be amended, at such time as DNR and DOC are requested by the City to do so. DNR and DOC also agree and appoint the Mayor of the City as DNR and DOC's attorney-in-fact to execute an annexation petition on DNR and DOC's behalf in the event that DNR and/or DOC shall fail or refuse to do so and agree that such signature shall constitute full authority from DNR and DOC for annexation as if DNR or DOC had signed the petition itself. DNR and DOC further agree not to litigate, challenge or in any manner contest, annexation to the City. This Agreement shall be deemed to be continuing, and if DNR and/or DOC's property is not annexed for whatever reason, including a decision by the City not to annex, DNR and DOC agree to sign any and all subsequent petitions for annexations. In the event that any property described on Exhibit "A" and "B" is subdivided into smaller lots, the purchasers of each subdivided lot shall be bound by the provisions of this paragraph.

12. Land Use. DNR and DOC agree that any development or redevelopment of the properties described on Exhibit "A" and "B" shall meet the following conditions after execution of Agreement:

A. The use of the properties will be restricted to uses allowed in accordance with the City's Comprehensive Plan designation at the time of development or redevelopment.

B. The development or redevelopment of the properties shall comply with all requirements of the City Comprehensive Land Use Plan, Zoning Code and Building Regulations for similar zoned development or redevelopment in effect in the City at the time of such development or redevelopment. The intent of this section is that future annexation of the properties to the City of Gig Harbor shall result in a development which does conform to City standards.

C. It is understood by the City that the property described in Exhibit "A" and "B" is utilized for a correctional facility and this type of use will not be prohibited in the City after the annexation.

13. Liens. If any of the property described in Exhibits "A"and "B" is owned by the State at the time any payment delinquency under this Agreement arises, the City's remedies under this paragraph shall be limited as provided in RCW 79.44.060, as that statute now exists or may hereafter be amended. However, if these properties are sold to persons or entities other than the State, DNR and DOC, then their successors, assigns, and legal representatives agree that delinquent payments under this Agreement shall constitute a lien upon the above described property. If the extension is for sewer service, the lien shall be as provided in RCW 35.67.200, and shall be enforced in accordance with RCW 35.67.220 through RCW 35.67.280, all as now enacted or hereafter amended. If the extension is for water service, the lien shall be as provided in RCW 35.21.290 and enforced as provided in RCW 35.21.300, all as currently enacted or hereafter amended.

14. Termination for Non-Compliance. In the event DNR or DOC fails to comply with any term or condition of this Agreement, the City shall have the right to terminate utility service to DNR and/or DOC's properties, in addition to any other remedies available to it.

15. Latecomers Agreement. DOC has the right to initiate a latecomers agreement, pursuant to RCW 35.91.010, as that statute now exists or may hereafter be amended, with the City after the construction completion of the project. DOC's request is already approved by the City Council to initiate such. DOC will be responsible for providing all necessary documentation and recording such documents with the Pierce County Auditor's office.

16. Specific Enforcement. In addition to any other remedy provided by law or this Agreement, the terms of this Agreement may be specifically enforced by a court of competent jurisdiction.

17. Covenant. This agreement shall be recorded with the Pierce County Auditor and shall constitute a covenant running with the land described on Exhibit "A" and "B" and shall be binding on the DNR, DOC, their heirs, lessees, successors and assigns. All costs of recording this Agreement with the Pierce County Auditor shall be borne by the DOC.

18. Attorney's Fees. In any suit or action seeking to enforce any provision of this Agreement, the prevailing party shall be entitled to reasonable attorney's fees and costs, in addition to any other remedy provided by law or this Agreement.

DATED this 11th day of October, 1994.

CITY OF GIG HARBOR

Gretchen Wilbert

Mayor Gretchen Wilbert

ATTEST/AUTHENTICATED:

City Clerk, Mark Hoppen

APPROVED AS TO FORM:

City Attorney

WASHINGTON STATE DEPARTMENT
OF NATURAL RESOURCES

SIGNED

Name:
Title:

WASHINGTON STATE DEPARTMENT
OF CORRECTIONS

Name: CHASE RIVELAND
Title: SECRETARY

STATE OF WASHINGTON)
) ss.
COUNTY OF PIERCE)

On this 11th day of October, 1994, before me personally appeared Mayor and City Clerk of the municipal corporation described in and that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said municipal corporation, for the uses and purposes therein mentioned, and on oath stated that he/she was authorized to execute said instrument.

IN WITNESS THEREOF, I have hereto set my hand and affixed by official seal the day and year first above written.

Molly M Towslee

Molly M. Towslee
(print or type name)
NOTARY PUBLIC for the State
of Washington, residing at
Gig Harbor.
My commission expires 12/2/95.

STATE OF WASHINGTON)
) ss.
COUNTY OF PIERCE)

On this ______ day of ____________________, 1994, before me personally appeared ________________________ described in and that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of the Department of Natural Resources for the uses and purposes therein mentioned, and on oath stated that he/she was authorized to execute said instrument.

IN WITNESS THEREOF, I have hereto set my hand and affixed by official seal the day and year first above written.

____

____
(print or type name)
NOTARY PUBLIC for the State
of Washington, residing at
______________________________.
My commission expires ______________.

STATE OF WASHINGTON)
) ss.
COUNTY OF PIERCE)

On this 14th day of October, 1994, before me personally appeared Chase Riveland described in and that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of the Department of Corrections for the uses and purposes therein mentioned, and on oath stated that he/she was authorized to execute said instrument.

IN WITNESS THEREOF, I have hereto set my hand and affixed by official seal the day and year first above written.

VERLENE M. SMITH
COMMISSION EXPIRES
NOTARY

PUBLIC
SEP. 16, 1996
STATE OF WASHINGTON

Verlene M. Smith
VERLENE M. SMITH
(print or type name)
NOTARY PUBLIC for the State
of Washington, residing at
Olympia.
My commission expires 9/16/96.

F:\USERS\MARK\UTILITY\DOC.WTR

EXHIBIT 'A'

Legal Description of Premises

That portion of the south 1/2 of the southeast 1/4 of Section 36, Township 22 North, Range 1 East, Willamette Meridian, County of Pierce, State of Washington, lying east of the thread of the west fork of McCormick Creek; containing an area of 62.6 acres, more or less.

EXHIBIT 'B'

PARCEL "A":

That portion of the South half of the South half of the Southwest quarter of Section 31, Township 22 North, Range 2 East of the Willamette Meridian, lying West of the West line of State Highway No. 16 (Primary State Highway No. 14), in Pierce County, Washington.

EXCEPT the South 510 feet thereof.

TOGETHER with an easement for ingress, egress and utilities over, under and across the West 30 feet of the South 510 feet of the South half of the South half of the Southwest quarter of Section 31, Township 22 North, Range 2 East of the Willamette Meridian.

EXCEPT the South 60 feet thereof.
ALSO EXCEPT 54th Avenue N.W.

PARCEL "B":

That portion of the North half of Government Lot 4 of Section 31, Township 22 North, Range 2 East of the Willamette Meridian lying West of the Westerly right of way line of Primary State Highway No. 16, in Pierce County, Washingtron.

EXCEPT the West 10 feet thereof conveyed to Pierce County for 54th Avenue N.W. by Deed recorded under Auditor's No. 2497083.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
JENNIFER M. BELCHER, Commissioner of Public Lands
Olympia, Washington 98504

Agreement No. 50-054204

EXHIBIT C

THIS AGREEMENT, made and entered into this 11th day of Oct, 1994, by and between CITY OF GIG HARBOR, herein called the "Grantee," Grantee and the STATE OF WASHINGTON, acting by and through the Department of Natural Resources, herein called the "State," WITNESSETH:

The State, for and in consideration of mutual benefits, terms and conditions specified herein, hereby grants and conveys to the Grantee, its successors and assigns:

A permanent easement for a right of way for the construction, operation, use and maintenance of a water line only, over and across portions of certain real property in Pierce County legally described as set forth in Exhibit A of the Utility Extension, Capacity Agreement, attached hereto and incorporated herein by this reference, the location of which is shown on Exhibit C-1, indicating said right of way in red, and by this reference made a part hereof.

Subject, however, to the following encumbrances:

Inst. Type	No.	For	Term	Grantee	Date Gtd.
LSE	60-058866	PRISON	10/31/00	DOC	
ESE	50-CR2994	SEWER	INDEF	PIERCE COUNTY	

Assignment

This Agreement, or any of the rights granted herein, shall not be assigned without prior written consent of the State, except that said rights granted herein may be used by any employee, contractor, or representative of the Grantee, hereinafter collectively referred to as "Permittee," while engaged in the Grantee's operations.

Forfeiture

In the event that any portion of the right of way as shown on attached Exhibit C-1 is not used by the Grantee, or its assigns, for the purpose for which it was granted, within a period of five (5) years from the day and year first above written, the rights of the Grantee within said portions of the right of way shall revert to the State, its successors or assigns; and said portions of the right of way shall be freed from the easement as fully and completely as if this Agreement had not been entered into; provided, however, an extension of time may be granted upon written request prior to the expiration date of said 5-year period and upon the terms and conditions as specified by the State; such terms and conditions shall be limited to the State's right to extend said period and modify the considerations due the State which shall include, but not be limited to, additional charges for administrative costs and appreciation of land and valuable material.

Should the Grantee, or its assigns, cease to use this easement for the purposes specified herein for a period of two (2) years, it shall notify the State of such nonuse; and the rights granted herein shall revert to the State, its successors or assigns.

Removal of Improvements and Equipment

All improvements, buildings, fixtures and other property erected or permanently affixed upon State lands by the Grantee during the term of said easement, which remain upon said land sixty (60) days from the termination or abandonment of said easement, shall become the property of the State and be considered a part of the land upon which they are located; provided, however, that any time within sixty (60) days after the termination or abandonment of said easement, the Grantee shall be entitled to remove such of said improvements as can be removed without damage to said lands;

or, the State may require the Grantee to remove all improvements, buildings, fixtures and other property affixed upon State lands by the Grantee, at the Grantee's cost.

All tools, equipment and other property not permanently affixed upon the land by the Grantee during the term of said easement shall remain the property of the Grantee but shall be removed within sixty (60) days after the expiration of this easement.

Reservations to State

State reserves for itself, its successors and assigns, the right at all times and for any purpose to cross and recross said right of way at any place on grade or otherwise, and to use said right of way for road purposes, insofar as is compatible with Grantee's operation, and provided such reserved rights shall be exercised in a manner that will not unreasonably interfere with the rights of the Grantee hereunder.

The State reserves to itself, its successors and assigns, the right to develop, improve, and utilize the land and natural resources thereon, within the limits of the right of way granted herein, insofar as such reservations are compatible with the Grantee's operation and insofar as such action will not unreasonably interfere with the rights of the Grantee.

In the event the State, its successors or assigns, elects to act within the reservation, it shall give written notice to the Grantee of such election and will then assume responsibility for allowing no growth or obstruction on the right of way that will be incompatible or interfere with the Grantee's use thereof.

The State may grant to third parties, upon such terms as it chooses, any or all of the rights reserved by it herein; provided that use by such third party shall be subject to the terms and conditions of this easement and shall not unreasonably interfere with the rights granted hereunder.

Compliance with Laws and Regulations

The Grantee shall comply with all applicable laws to the extent that it can legally do so, including all Department of Natural Resources regulations, county and municipal laws, ordinances, or regulations in effect and authorized by law or laws of the State of Washington.

Indemnification

Grantee shall indemnify, defend and save harmless the State, its officials, employees, and agents, while acting within the scope of their duties, from and against all loss, costs, damages, claims, demands, and cause of action of any kind or character, including the cost of defense thereof, for bodily or personal injuries, death, or damage to property arising out of or incident to rights exercised, operations, performance or failure to perform by Grantee, and/or its agents, employees, subcontractors, licensees or representatives under this Agreement; provided, to the extent RCW 4.24.115 is applicable, State agrees that this indemnity provision shall not require Grantee to indemnify State from State's sole or concurrent negligence, if any, Grantee waives its immunity under title 51 RCW to the extent required by this provision.

Damage and Protection from Damage

Grantee, when using the rights granted herein, shall repair or cause to be repaired, at its sole cost and expense, all damage to improvements on State lands occasioned by it, which is in excess of that which it would cause through normal and prudent use of such rights.

During operations under this Agreement, including the construction of roads and facilities, the Grantee shall take such precautions as necessary to minimize, insofar as possible, soil erosion and damage to the soil. Equipment will not be operated when ground conditions are such that excessive damage will result.

All legal land subdivision survey corners and witness objects are to be preserved. If such are destroyed or disturbed by the Grantee, the Grantee shall re-establish them by a registered professional engineer or licensed land surveyor in accordance with U. S. General Land Office standards at his own expense. Corners and/or witness objects that must necessarily be disturbed or destroyed in process of construction must be adequately referenced and/or replaced in accordance with all applicable laws of the State of Washington in force at the time of construction, reconstruction, or development of the right of way including but not limited to chapter 58.24 RCW, and all Department of Natural Resources rules and regulations pertaining to preservation of such corners and/or witness objects. Such references must be approved by the State prior to removal of said corners and/or witness objects.

Preinstallation Requirement

Thirty (30) days prior to the commencement of said operations, the Grantee shall submit to the Regional Manager at Enumclaw, Washington, for written approval, a complete and detailed Plan of Operation for the development of the right of way. The Grantee shall provide for the examination of the right of way, with the State's Regional Manager, before any construction, reconstruction, or development is commenced.

Grantee agrees that no construction will commence until all documents have been signed by all parties and that neither construction nor reconstruction will commence until the written Plan of Operation has been approved by the State's Regional Manager at Enumclaw, Washington.

Installation Specifications

The Grantee shall so place, protect, and/or bury said waterline as to allow the unobstructed movement of any equipment or materials across the surface of the right of way and shall install said waterline at such depth as to not interfere with the normal and usual use of the land.

Provided that the waterline shall be buried at a minimum depth of 36 inches below the surface of said right of way.

Provided, within 30 days after completion of said waterline, the City of Gig Harbor shall provide to the Washington State Department of Natural Resources an as-built survey showing the location of the waterline as constructed.

Response to an Emergency

Nothing contained herein shall prevent the Grantee from responding to an emergency relating to the facilities on the right of way.

Notice of Noncompliance

Grantee is aware that failure to follow installation specifications as per this document shall constitute non compliance with the terms and conditions of this agreement.

The State shall notify the Grantee by United States mail, addressed to the address shown on the application for this easement on file in the office of the Commissioner of Public Lands in Olympia, Washington, of any instance of noncompliance with any of the terms and conditions hereof including installation specifications. Such notice will specifically identify the manner of noncompliance herewith. Upon receipt of such notice the Grantee shall immediately take or cause to be taken effective remedial action.

In the event the Grantee does not undertake, or cause to be undertaken, remedial action within fifteen (15) days following receipt of said notice, the State, acting by and through its Regional Manager at Enumclaw, Washington, may suspend the Grantee's operations on State lands until such time as effective remedial action is taken.

IN WITNESS WHEREOF, the parties hereto have executed this instrument, in duplicate, as of the day and year first above written.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

JENNIFER M. BELCHER
Commissioner of Public Lands

CITY OF GIG HARBOR

By Gretchen Wilbert, Mayor
Title

~~PO Box 145~~ 3105 Judson ST.
Gig Harbor, WA. 98335

App. No. 50-054204

02/rightawa/50054204.agr

STATE OF Washington)
)ss
County of Pierce)

On this 17th day of October, 1994, personally appeared before me Gretchen A. Wilbert to me known to be the Mayor of the corporation that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that he/she/was they were authorized to execute said instrument for said corporation and that the seal affixed is the corporate seal of the said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

Molly M. Towslee
Notary Public in and for the State of Washington residing at Gig Harbor.

My appointment expires 12/2/95.

STATE OF WASHINGTON)
) ss
County of)

On this ____ day of ____________, 19 ___, personally appeared before me JENNIFER M. BELCHER, to me known to be the Commissioner of Public Lands, and ex officio administrator of the Department of Natural Resources of the State of Washington, the Department that executed the within and foregoing instrument on behalf of the State of Washington, and acknowledged said instrument to be the free and voluntary act and deed of the State of Washington for the uses and purposes therein mentioned, and on oath stated that she was authorized to execute said instrument and that the seal affixed is the official seal of the Commissioner of Public Lands for the State of Washington.

IN WITNESS WHEREOF, I have hereunto set my hand and seal the day and year first above written.

____
Notary Public in and for the State of Washington, residing at ___________.

My appointment expires ___________.

SE1/4 SE1/4, SECTION 36, T22N, R1E

Revised 9/27/94

SCALE:

0 400

EXHIBIT C

APPENDIX C4

Water Rights Documentation

Cedar Creek Corrections Center

Department of Corrections/Cedar Creek-DNR
PO Box 9699 MS-FN-61
Olympia, Washington 98501-9699

WASHINGTON STATE DEPARTMENT OF ECOLOGY

STATE OF WASHINGTON
CERTIFICATE OF WATER RIGHT
SUPERSEDING

Document Title: Certificate of Water Right

Agency: Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Applicant: Department of Corrections/Cedar Creek-DNR
PO Box 9699 MS-FN-61
Olympia, Washington 98501-9699

Reference Number:

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
May 24, 1991	G2-28164	G2-28164	G2-28164

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
Well #2	

MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR
	60	76*

QUANTITY/TYPE OF USE/PERIOD OF USE

40.5 Acre-feet per year (Primary Supply)	Multiple domestic supply	Year-round, as needed
6 Acre-feet per year	Irrigation of 3 acres	May 1 - October 1
*29.5 Acre-feet per year supplemental to G2-27061C		

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
E1/2 SE1/4	11	16	4W	23	Thurston

PARCEL # 14611000000

ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

1/4 1/4	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
N/A	N/A	N/A	N/A	23	Thurston

PARCEL # 14611000000

ADDITIONAL LEGAL IS ON PAGE 2

CONTINUED LEGAL DESCRIPTION FOR LOCATION OF DIVERSION/WITHDRAWAL

1800 feet North and 750 feet West of the Southeast corner of Section 11.

CONTINUED LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

The East half of Section 11, and the West half of Section 12, T. 16 N., R. 4 W.W.M. Thurston County, Washington.

PROVISIONS

All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below.

"The total annual withdrawal under this filing (G2-28164) and Certificate No. G2-27061 shall not exceed 76 A-F/Y."

An approved metering device shall be installed and maintained in accordance with RCW 90.03.360, 90.44.450 and WAC 508-64-020 through -040. Meter readings shall be recorded at least monthly.

Issuance of this water right is subject to the implementation of the minimum requirements established in the Conservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the states water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for non-use of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Olympia, Washington, this 26th *day of* February *, 1998.*

DEPARTMENT OF ECOLOGY STATE OF WASHINGTON

Tom Fitzsimmons
Department of Ecology

By [signature]
J. Mike Harris, Section Supervisor

ENGINEERING DATA
OK

ECY 040-1-2 (Rev. 8-97)

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
March 2, 1987	G 2-27061	G 2-27061 P	G 2-27061 C

NAME
Dept. of Natural Resources/Cedar Creek Corrections Center

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
P. O. Box 9699; MS: FN-61	Olympia	Washington	98504

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
A well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	70	29.5

QUANTITY, TYPE OF USE, PERIOD OF USE
29.5 acre-feet per year community domestic supply year round as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
1540 feet North and 750 feet West of Southeast corner of Section 11.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
E½SE¼	11	16N	4W	23	Thurston

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The E½ of Section 11 and the W½ of Section 12, T. 16 N., R. 4 W.W.M.

PROVISIONS

The Water Resources Act of 1971 specifies certain criteria regarding utilization and management of the waters of the State in the best public interest. Issuance of this certificate was based on sufficient waters available, at least during portions of the year. However, it is pointed out to the certificate holder that his use of the water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Olympia *Washington, this* 4 *day of* January, *19* 89

Christine O. Gregoire, Director
Department of Ecology

ENGINEERING DATA
OK

by Gary E. Hanson
Gary E. Hanson, Water Resources Supervisor

FOR COUNTY USE ONLY

S. F. No. 369—1938—2M. 13900.

CERTIFICATE RECORD NO. 4, PAGE NO. 1624

STATE OF WASHINGTON, COUNTY OF Thurston

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 Supervisor of Hydraulics thereunder.)

This is to certify, that State of Washington Division of Forestry *of* Olympia, *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* Cedar Creek, *a tributary of* Chehalis River, *for the purposes of* Irrigation *under* Appropriation *Permit No.* 3267 *issued by 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* 4, *at Page* 1624, *on the* 20th *day of* June, *19*41; *that the right hereby confirmed dates from* March 6, 1940; *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 of a cubic foot per second.

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

PLACE OF USE			LEGAL SUBDIVISION	FOR IRRIGATION	
Section	Township	Range		No. Acres Described in Permit	No. Acres Actually Irrigated
11	16 N.	4 W.W.M.	$E\frac{1}{2}$ of $SE\frac{1}{4}$	15	15

LOCATION OF POWER PLANT			LEGAL SUBDIVISION	FOR POWER	
Section	Township	Range		H. P. Described in Permit	H. P. Actually Developed

Section	Township	Range	LEGAL SUBDIVISION	FOR OTHER USES

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 20th *day of* June, *19*41

Chas. J. Bartholet

State Supervisor of Hydraulics.

ENGINEERING DATA

Permit No. 3267

Certificate of Water Right

Recorded in the office of State Supervisor of Hydraulics, Olympia, Washington, in Book No. 4 of Water Right Certificates, on Page 1624, on the 20th day of June, 1941

STATE OF WASHINGTON,
County of Thurston } 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....

....

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
G2-27061C	Well #1	70		29.5		-				-							
G2-28164	Well #2	60		40.5		55				55				55			
	Well #3					35				35				35			
	TOTALS =	130.0		70.0		90	40	57.8	12.2	90	40	61.9	8.1	90	40	61.9	8.1
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:

Larch Corrections Center

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
AMENDED
PERMIT
TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
May 10, 1994	G2-29044	G2-29044	

NAME
Department of Corrections

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
15314 NE Dole Valley Road	Yacolt	Washington	98675-9531

The applicant is pursuant to the Report of Examination which has been accepted by the applicant, hereby granted a permit to appropriate the following public waters of the State of Washington, subject to existing rights and to the limitations and provisions set herein.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Wells 3 & 4

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE FEET PER YEAR
	115	70.1*

QUANTITY, TYPE OF USE, PERIOD OF USE

*52.1 Acre-feet per year (Primary)	Multiple domestic supply	Year-round, as needed
14.0 Acre-feet per year (Suppl.)	Multiple domestic supply	Year-round, as needed
4.0 Acre-feet per year	Irrigation/Fire Protection	Irrigation Season/Year-round

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
Well 3: 600 feet East and 600 feet North of the center of Section 20.
Well 4: 614 feet East and 582 feet North of the center of Section 20.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼ NE¼	20	3	4E	27	Clark

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The Southwest quarter of the Northeast quarter of Section 20, T. 3 N., R. 4 E.W.M.

DESCRIPTION OF PROPOSED WORKS

Replace well 2 with well 4.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	Completed	June 1, 2004

PROVISIONS

"This Amended Permit is to reflect a replacement well for Well #2 with Well #4 and is authorized by a showing of compliance with RCW 90.44.100(3) that was filed on May 23, 2003."

"Total combined water use from Wells 3 & 4 is not to exceed 115 gpm and 70.1 acre-feet per year under Water Right Permit G2-29044 and Certificate of Water Right G2-00438."

In order to maintain a sustainable supply of water, pumping must be managed so that static water levels do not progressively decline from year to year. Water levels shall be measured and recorded monthly, using a consistent methodology. The length of the pumping period or recovery period prior to each measurement shall be constant, and shall be included in the record. Data for the previous year shall be submitted by January 31 to the Department of Ecology.

Static water levels data shall be submitted in digital format and shall include the following elements:

1. Unique Well ID Number
2. Measurement date and time
3. Measurement method (air line, electric tape, pressure transducer, etc.)
4. Well status (pumping, recently pumped, etc.)
5. Water level accuracy (to nearest foot, tenth of foot, etc.)
6. Description of the measuring point (top of casing, sounding tube, etc.)
7. Measuring point elevation above or below land surface to the nearest 0.1 foot
8. Land surface elevation at the well head to the nearest foot.
9. Static water level below measuring point to the nearest 0.1 foot.

Installation and maintenance of an access port as described in Chapter 173-160 is required. An air line and gauge may be installed in addition to the access port.

Issuance of this water right is subject to the implementation of the minimum requirements established in the Conservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the State's water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

(continued on page 3)

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or to give notice to the Department of Ecology on forms provided by that Department documenting such compliance.

Given under my hand and the seal of this office at Olympia, Washington,

this 9th *day of* December, *2003.*

Department of Ecology

ENGINEERING DATA
OK MD

by
Thomas Loranger, Section Manager

Provisions Continued

The permittee is advised that the quantity of water allocated by this permit may be reduced at the time of final certification to reflect system capacity and actual usage.

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

Water use data shall be recorded weekly. The maximum rate of diversion/withdrawal and the annual total volume shall be submitted to Ecology by January 31st of each calendar year.

The following information shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, WRIA, Permit/Certificate/Claim No., source name, annual quantity used including units, maximum rate of diversion including units, monthly meter readings including units, peak monthly flow including units, Department of Health WFI water system number and source number(s), purpose of use, well tag number and period of use. In the future, Ecology may require additional parameters to be reported or more frequent reporting. Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

The subject well has been tagged with a well identification number. This unique well number shall remain attached to the well, please reference this number when submitting data.

The Water Resources Act of 1971 specifies certain criteria regarding utilization and management of the waters of the state in the best public interest. Use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
AMENDED

PERMIT

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
May 10, 1994	G2-29044	G2-29044	

NAME
Department of Corrections/Department of Natural Resources

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
15314 NE Dole Valley Road	Yacolt	Washington	98675-9531

The applicant is, pursuant to the Report of Examination which has been accepted by the applicant, hereby granted a permit to appropriate the following described public waters of the State of Washington, subject to existing rights and to the limitations and provisions set out herein.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well #2 & #3

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	115	70.1*

QUANTITY, TYPE OF USE, PERIOD OF USE

*52.1 Acre-feet per year (Primary)	Multiple domestic supply	Year-round, as needed
Supplemental to Existing Rights		
14.0 Acre-feet per year	Multiple domestic supply	Year-round, as needed
4.0 Acre-feet per year	Irrigation	Irrigation season
	Fire Protection	Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION–WITHDRAWAL
600 feet East and 600 feet North of the center of Section 20.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼ NE¼	20	3	4E	27	Clark

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The Southwest quarter of the Northeast quarter of Section 20, T. 3 N., R. 4 E.W.M.

DESCRIPTION OF PROPOSED WORKS

6" well, 7.5 horsepower submersible pump connected to existing water supply system.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	June 1, 1997	~~June 1, 1998~~ June 1, 2004

PROVISIONS

"Total combined water use from all wells connected to the LCC water system is not to exceed 115 gpm and 70.1 a-f/y under all water rights issued to Larch Corrections Center."

"Prior to issuance of a certificate, Larch Corrections Center shall properly abandon Well 0 to prevent contamination of the water source in accordance with Chapter 173-160 Washington Administration Code (WAC), Minimum Standards for Construction and Maintenance of Wells."

An approved metering device shall be installed and maintained in accordance with RCW 90.03.360, WAC 508-64-020 through -040. Meter readings shall be recorded at least monthly.

In order to maintain a sustainable supply of water, pumping must be managed so that static water levels do not progressively decline from year to year. Water levels shall be measured and recorded monthly, using a consistent methodology. The length of the pumping period or recovery period prior to each measurement shall be constant, and shall be included in the record. Data shall be submitted annually, in the month of February, to the Department of Ecology.

"Installation and maintenance of an access port as described in WAC 173-160-355 is required."

Issuance of this water right is subject to the implementation of the minimum requirements established in the Conservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the states water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or fail to give notice to the Department of Ecology on forms provided by that Department documenting such compliance.

Given under my hand and the seal of this office at Olympia, Washington,

this 31st *day of* October, *19*96.

Mary Riveland, Director

Department of Ecology

ENGINEERING DATA
OK JD

by Gail Blomstrom

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
G2-29044	Well 3	115		52.1		65	50			65	50			65	50		
	Well 4	115		14.0		100	15			100	15			100	15		
	TOTALS =	230		66.1		165	65	64.4	1.7	165	65	65.5	0.6	165	65	65.5	0.6
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:

Maple Lane Corrections Center

2223763

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Olympia, Washington

IN THE MATTER OF APPLICATION FOR CHANGE FILED BY THE DEPARTMENT OF SOCIAL AND HEALTH SERVICES TO ADD A POINT OF WITHDRAWAL TO WATER RIGHT CLAIM NO. 300076	))))))	ORDER # 99WR-S123 FINDINGS OF FACT AND DECISION for Certificate of Change 154 (Volume 1-2-154)

TO: Department of Social & Health Services
Capital Programs
PO Box 45848
Olympia WA 98504-5848

BACKGROUND:

On April 15th 1998 Sandra Youngen, representing the Department of Social and Health Services, filed an *Application for Change of Water Right* to add an additional point of withdrawal to Water Right Claim #300076, for use at the Maple Lane School near Grand Mound.

Two wells currently supply the needs of the Maple Lane School. Although the Maple Lane School was established many years ago, water rights for the use of these wells were never obtained. In 1997, the Washington State Legislature opened a new filing period for the Water Right Claims Registry. During this filing period the Department of Social and Health Services filed Water Right Claim #300076 asserting that Well #2 had been used at the Maple Lane School for domestic and commercial use and irrigation of 50 acres since October 1939. Well #1 was reportedly constructed in 1949, and both wells are intertied.

The intent of this application for change is to add Well #1 (ABV 397) as an additional point of withdrawal on the existing water right claim for Well #2 (ABV 398), to allow the use of both wells for domestic supply and other uses at the Maple Lane School.

A legal notice of the proposed appropriation was published. No protests were received.

INVESTIGATION:

The investigation of this application included conversations with Gayle Bonnett and Gary Avery of the Department of Social and Health Services, Mike Olden of Gibbs & Olson, Inc., a site visit on February 2nd, 1999, and review of the information submitted by the applicant. I also reviewed relevant Department of Ecology records including water right records, well construction logs and other hydrologic information, and applicable publications.

The Maple Lane School is located southwest of the town of Grand Mound, and about ½ mile southeast of the locally prominent Grand Mound. The facility is situated on a bluff overlooking a bend of the Chehalis River and its floodplain. The once rural surrounding area is steadily becoming more developed with residential subdivisions. The Grand Mound Water and Sewer district was recently established to serve the town of Grand Mound, however the Maple Lane School lies outside the boundaries of the water and sewer district.

The Maple Lane School has been in existence since 1911. Over the years the Maple Lane School has been used as a reform school for girls and as a residence for homeless girls, and is now used as a correctional facility for young men. The facility is being upgraded through the construction of several new buildings, and the Department of Social and Health Services wishes to add Well #1 as an additional point of withdrawal to meet Department of Health requirements.

Until 1939, the school utilized a spring located directly below the steam plant/power house for domestic and irrigation use. After an epidemic of intestinal disease and several bacteriological test failures, a well was drilled to provide water for the school. Well #2 was completed on October 9, 1939, at a depth of 74 feet below ground surface. Well #1 was reportedly constructed in 1949, and completed at a depth of approximately 70 feet below ground surface, approximately 20 feet from Well #2. Both wells are located approximately 300 feet south and 700 feet west of the N¼ corner of Section 14, Township 15N, Range 3W.W.M. in Thurston County. The wells are used alternately, and discharge to two reservoirs, an elevated reservoir containing 40,100 gallons, and a ground level reservoir of 132,000 gallons used for fire flow supply. The water is used within the confines of the Maple Lane School, which constitutes the service area.

Water use in May 1937 (first available recorded use information) was 57,000 gallons per day (gpd) for a population of 90 students. The average daily domestic withdrawal in 1938 was 47,000 gpd, and although no population information is available, there were reportedly 7-10 housing units with up to 15 students per building. Historically the student population has ranged from 100 to 150 residents, not including staff. Water is also used for process water in the steam plant and has been used for up to 50 acres of irrigation. The applicant's consultant, Gibbs & Olson, Inc., estimated historic water usage of up to 106 acre-feet per year, and current use of 96 acre-feet per year, including the current use for the steam plant and irrigation of approximately 15 acres of landscaping.

The building upgrades will not result in an increase in the number of inmates or an increase in water use. The addition of another point of withdrawal will not cause a decrease in ground water static levels in the immediate vicinity or affect nearby wells.

FINDINGS:

It is my finding that this change will not affect existing rights or be detrimental to the public welfare.

RECOMMENDATION:

I recommend approval of this application and issuance of Certificate of Change No. 1-2-154. The quantities claimed are 310 gpm and 96 acre-feet per year for domestic supply, steam plant usage, and irrigation of 15 acres of landscaping, from two wells.

The Certificate of Change shall be subject to the following provisions:

Provisions:

The filing of a statement of claim does not constitute an adjudication of any claim to the right to use water between the water use claimant and the state, or between one or more water use claimants.

A water right embodied in a statement of claim filed under 90.14.068 RCW is subordinate to any water right embodied in a permit or certificate issued under Chapter 90.03 or 90.44 RCW prior to the date the statement of claim is filed with the Department of Ecology, and is subordinate to any water right embodied in a statement of claim filed in the water right claims registry before July 27, 1997.

The well access port shall be maintained at all times.

The water appropriated under this application will be used for public water supply. The State Board of Health rules require public water supply owners to obtain written approval from the Office of Water Supply, Department of Health, 1112 SE Quince Street, PO Box 47890, Olympia, Washington 98504-7890, prior to any new construction or alterations of a public water supply system.

An approved metering device shall be installed and maintained in accordance with RCW 90.03.360, 90.44.450 and WAC 508-64-020 through –040, and WAC 508-12-030. Meter readings shall be recorded at least monthly.

The Water Resources Act of 1971, Chapter 90.54 RCW specifies certain criteria regarding utilization and management of the waters of the State in the best public interest. Favorable consideration of this application has been based on sufficient waters available, at least during portions of the year. However, it is pointed out to the applicant that this use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

Issuance of this water right is subject to the implementation of the minimum requirements established in the Conservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the states water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

REPORTED BY: Jon Davidson Date: March 8, 2000

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Signed at Olympia, Washington, this 8th day of March, 2000.

Mike Harris

J. Mike Harris
Water Resources Supervisor
Southwest Regional Office

JMH:DD:th

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Accepted By	SC
Date	4/15/98
Is Field Exam. Required?	☐ YES ☐ NO
Determined By	

APPLICATION FOR CHANGE OF WATER RIGHT

☐ PURPOSE ☐ DIVERSION OR WITHDRAWAL
☐ PLACE ☒ ADDITIONAL POINT OR POINTS

NAME
Department of Social and Health Services (DSHS)
Capital Programs Attn: Salley Hunter, Chief

Bus. Tel. (360) 902-8156
Home Tel.
Other Tel.

ADDRESS	(CITY)	(STATE)	(ZIP CODE)
P.O. Box 45848,	Olympia,	WA	98504-5848

~~APPLICATION NUMBER~~	PERMIT NUMBER	CERTIFICATE NUMBER
Claim No. 300076		

DECREED RIGHT (TITLE OF CASE)

APPROPRIATIONS MADE (GIVE DATE IF PRIOR TO JUNE 7, 1917 IF SURFACE WATER, OR JUNE 7, 1945 IF GROUND WATER)

IS THE WATER RIGHT RECORDED IN YOUR NAME?	IF NO, GIVE NAME RECORDED UNDER
☒ YES ☐ NO	

1. RIGHT CONSISTS OF

WATERS USED FROM (STREAM, LAKE, WELL, OR TRENCH, ETC.)	GALLONS PER MINUTE OR CUBIC FEET PER SECOND
Well	310 gpm/96af/y

WATER CURRENTLY USED FOR	TIME OF USE
Domestic (Primarily)	Continuous

2. LOCATION OF PRESENT POINT OF DIVERSION OR WITHDRAWAL

ENTER BELOW THE DISTANCES FROM THE NEAREST SECTION OR PROPERTY CORNER TO THE DIVERSION OR WITHDRAWAL.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
300' S. & 1,200' E. of the NW Corner of	14	15	3W	Thurston

IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, COMPLETE THIS SECTION

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
		Tax Parcel No. 13514210000

3. LEGAL DESCRIPTION OF LANDS WATER IS USED ON

The boundary of the property line (Service Area) of the Maple Lane School.

SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
14	15	3W	Thurston

(ATTACH SEPARATE SHEET IF NECESSARY)

ARE YOU THE LEGAL OWNER OF THE ABOVE DESCRIBED LANDS	IF NO, EXPLAIN YOUR INTEREST
☒ YES ☐ NO	

REASONS FOR THE PROPOSED CHANGE
To allow legal use of Well No. 1 supplemental to the registered claim for Well No. 2.

A MINIMUM FEE OF $10.00 MUST ACCOMPANY THIS APPLICATION

CONTINUE ON REVERSE SIDE

WRIA 23

4. **CHANGE REQUESTED**

CHANGE WATER USE TO	TIME OF USE	GALLONS PER MINUTE OR CUBIC FEET PER SECOND

5. **LOCATION OF PROPOSED POINT OF DIVERSION OR WITHDRAWAL**

ON ACCOMPANYING SECTION MAPS, ACCURATELY MARK AND IDENTIFY EACH POINT OF DIVERSION. SHOW NORTH-SOUTH AND EAST-WEST DISTANCES FROM NEAREST SECTION CORNER OR PROPERTY CORNER.

ALSO, ENTER BELOW THE DISTANCES FROM THE NEAREST SECTION OR PROPERTY CORNER TO THE DIVERSION OR WITHDRAWAL.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
300' S. & 1,200' E. of the N.W. Corner of	14	15	3W	Thurston

6. **IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, COMPLETE THIS SECTION**

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
		Tax Parcel No. 13514210000

ARE YOU THE OWNER OF THE LAND ON WHICH THE PROPOSED POINT OF DIVERSION OR WITHDRAWAL IS TO BE LOCATED

☒ YES ☐ NO

LEGAL DESCRIPTION OF LANDS WATER IS USED ON

The boundary of the property line (Service Area) of the Maple Lane School.

SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
14	15	3W	Thurston

(ATTACH SEPARATE SHEET IF NECESSARY)

ARE YOU THE LEGAL OWNER OF THE ABOVE DESCRIBED LANDS	IF NO, EXPLAIN YOUR INTEREST
☒ YES ☐ NO	

* PLEASE NOTE LEGAL LAND OWNER SIGNATURE AND APPLICANT SIGNATURE ARE BOTH REQUIRED. IF THE LEGAL LAND OWNER AND APPLICANT ARE THE SAME, PLEASE SIGN IN BOTH PLACES. THANK YOU.

State of Washington

LEGAL LANDOWNER (PLEASE PRINT)

Sandra K. Youngen

APPLICANT'S SIGNATURE

John Rengstorff

LEGAL LANDOWNER SIGNATURE (OWNER OF PROPERTY DESCRIBED IN ITEM NUMBER 3)

P.O. Box 45848
Olympia, WA 98504-5848

LEGAL LANDOWNER'S ADDRESS

4. CHANGE REQUESTED

CHANGE WATER USE TO	TIME OF USE	GALLONS PER MINUTE OR CUBIC FEET PER SECOND

5. LOCATION OF PROPOSED POINT OF DIVERSION OR WITHDRAWAL

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ALSO, ENTER BELOW THE DISTANCES FROM THE NEAREST SECTION OR PROPERTY CORNER TO THE DIVERSION OR WITHDRAWAL.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
300' S. & 1,200' E. of the N.W. Corner of	14	15	3W	Thurston

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		Tax Parcel No. 13514210000

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☒ YES ☐ NO

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The boundary of the property line (Service Area) of the Maple Lane School.

SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
14	15	3W	Thurston

(ATTACH SEPARATE SHEET IF NECESSARY)

ARE YOU THE LEGAL OWNER OF THE ABOVE DESCRIBED LANDS	IF NO, EXPLAIN YOUR INTEREST
☒ YES ☐ NO	

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State of Washington
LEGAL LANDOWNER (PLEASE PRINT)

Sandra K. Youngen
APPLICANT'S SIGNATURE

John Rugett
LEGAL LANDOWNER SIGNATURE (OWNER OF PROPERTY DESCRIBED IN ITEM NUMBER 3)

P.O. Box 45848
Olympia, WA 98504-5848
LEGAL LANDOWNER'S ADDRESS

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Accepted By	
Date	
Is Field Exam. Required? ☐ YES ☐ NO	
Determined By	

APPLICATION FOR CHANGE OF WATER RIGHT

☐ PURPOSE ☐ DIVERSION OR WITHDRAWAL
☐ PLACE ☒ ADDITIONAL POINT OR POINTS

NAME	
Department of Social and Health Services (DSHS) Capital Programs Attn: Salley Hunter, Chief	Bus. Tel. (360) 902-8156 Home Tel. Other Tel.

ADDRESS	(CITY)	(STATE)	(ZIP CODE)
P.O. Box 45848,	Olympia,	WA	98504-5848

~~APPLICATION NUMBER~~	PERMIT NUMBER	CERTIFICATE NUMBER
Claim No. 300076		

DECREED RIGHT (TITLE OF CASE)

APPROPRIATIONS MADE (GIVE DATE IF PRIOR TO JUNE 7, 1917 IF SURFACE WATER, OR JUNE 7, 1945 IF GROUND WATER)

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1. RIGHT CONSISTS OF

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LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
300' S. & 1,200' E. of the NW Corner of	14	15	3W	Thurston

IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, COMPLETE THIS SECTION

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
		Tax Parcel No. 13514210000

3. LEGAL DESCRIPTION OF LANDS WATER IS USED ON

The boundary of the property line (Service Area) of the Maple Lane School.

SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	COUNTY
14	15	3W	Thurston

(ATTACH SEPARATE SHEET IF NECESSARY)

ARE YOU THE LEGAL OWNER OF THE ABOVE DESCRIBED LANDS	IF NO, EXPLAIN YOUR INTEREST
☒ YES ☐ NO	

REASONS FOR THE PROPOSED CHANGE

To allow legal use of Well No. 1 supplemental to the registered claim for Well No. 2.

A MINIMUM FEE OF $10.00 MUST ACCOMPANY THIS APPLICATION

CONTINUE ON REVERSE SIDE

CHANGE

ECY 040-1-97
Rev. 3/96

WRIA 23

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
Claim #300076	Well #1	310		96		260	50			260	50			260	50		
	Well #2	310		96		340	-30			310	0			310	0		
	TOTALS =	310		96		340	-30	11.7	84.3	310	0	32.1	63.9	310	0	32.1	63.9
Column Identifiers for Calculations:		A		B		C	=A-C	D	=B-D	E	= A-E	F	=B-F	G	=A-G	H	=B-H

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	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:

McNeil Island Corrections Center

DEPARTMENT OF ECOLOGY
State of Washington

Application for a Water Right Permit

For Ecology Use
(Date Stamp)

'18 AUG 23 A9:59

DEPT OF ECOLOGY FISCAL & BUDGET

A NON-REFUNDABLE MINIMUM FEE OF $50.00 MUST ACCOMPANY THIS APPLICATION FOR THE FOLLOWING:

☒ **GROUND WATER** ☐ **SURFACE WATER** ☐ **PERMANENT**
☐ **SHORT TERM** ☐ **TEMPORARY**

NO FEE REQUIRED FOR THE FOLLOWING:
☐ **DROUGHT** ☐ **COST REIMBURSEMENT**

Follow the attached instructions. Attach additional sheets as necessary.

Section 1. APPLICANT

☐ **I have participated in a pre-application conference with Ecology.**

Applicant/Business Name: Department of Corrections	Phone No: 360-725-8397	Other No:
Address: PO Box 41112		
City: Olympia	State: WA	Zip:98504-1112
Email Address (if available): efheinitz@doc1.wa.gov		

Contact Name (if different from above): Eric Heinitz	Phone No: 360-725-8397	Other No:
Relationship to Applicant: Environmental Manager		
Address: PO Box 41112		
City: Olympia	State: WA	Zip: 98504-1112
Email Address (if available): efheinitz@doc1.wa.gov		

Legal Land Owner or Part Owner Name of the Proposed Place of Use: State of Washington	Phone No:	Other No:
Address:		
City:	State:	Zip:
Email Address (if available):		

Department of Ecology

For Ecology Use	APPLICATION NO: G2-30732 (AUG 24 2018) SEPA: Exempt/Not Exempt
	Fee Paid: ✓ Check No: (Water Resources Program) ECY Coding: 001-001-WR1-0285-000011
Date Returned ______ By ______ Priority Date 8/24/18 By SC WRIA: 15/Pierce	
Pre-application interviewer:	

Section 2. STATEMENT OF INTENT

Do you own the land on which the proposed point of diversion/withdrawal is located? ☒ YES ☐ NO
If no, do you have legal authority to make this application for use of another's land? ☐ YES ☐ NO

Briefly describe the purpose of your proposed project: Install a new water system for the residents and staff at McNeil Island.

Anticipated length of time to compete your project: 1 Year

Water Use List all purposes for which water will be applied to a beneficial use and list quantity required for each.

Purpose(s) of Use	Rate (check one box only) ☐Cubic Feet per Second (CFS) ☒Gallons per Minute (GPM)	Acre-Feet per Year (AF/YR) (If known)	Period of Use (Continuously or Seasonal)
Domestic Use	50 GPM	80.45	Continuously
TOTAL:			

Short Term/Temporary Water Use
Is this a request for a short term project (less than four months and non-recurring)? ☐ YES ☒ NO

Is this request for a temporary permit? ☐YES ☒ NO

If yes to either question above, indicate the dates that the water will be needed:

FROM: ____/____/____ TO: ____/____/____

Section 3. POINT OF DIVERSION OR WITHDRAWAL
(Complete A or B, and C below)

A.) If Surface Water Source	B.) If Ground Water Source
☐ Spring ☐ Creek ☐ River ☐ Lake	☒ Well(s) ☐ Other:
☐ Other:	
Source Name:	Well diameter & depth: 8 inches, depth to be determined
Tributary to:	Number of proposed points of withdrawal: 1
	Do you have an existing well? ☐ YES ☒ NO
Number of proposed diversion points: 1	If available, attach Water Well Report and pump test.
Do you have an existing diversion? ☐ YES ☐ NO	Well Tag ID No.________

C.) Point of Diversion/Withdrawal – Legal Description						
Parcel No.	¼	¼	Section	Township	Range	County
17	SW	SW	16	T 20 N	R 1 E	Pierce
Lot(s)	Block(s)		Subdivision			
NA	NA		NA			

If known, enter the distances in feet from the point of diversion or withdrawal to the nearest section corner:

______ Feet (☐ North/☐ South) and _____ feet (☐ East/☐ West)

from the (☐NW ☐SW ☐NE ☐SE ☐ _____) corner of Section_____.

Parcel No.	¼	¼	Section	Township	Range	County
Lot(s)	Block(s)		Subdivision			

If known, enter the distances in feet from the point of diversion or withdrawal to the nearest section corner:

_____feet (☐ North/☐ South) and _____feet (☐ East/☐ West)

from the (☐NW ☐SW ☐NE ☐SE ☐ _____) corner of Section_____

NOTE: If more than two points of diversion/withdrawal attach additional information on a separate sheet of paper.

Section 4. PLACE OF USE

Attach a copy of the legal description of the property (on which the water will be used) taken from a real estate contract, property deed or title insurance policy, or copy it carefully in the space below.

¼	¼	Section	Twp.	Range	County	Parcel No.
		16	20N	1E	Pierce	17

Do you own all the lands on which the proposed place of use is located? ☒ YES ☐ NO.

If no, do you have legal authority to make this application for use of another's land? ☐ YES ☐ NO
Provide owner name(s), address, and phone number: _____

Are there any other water rights or claims associated with this property or water system? ☒ YES ☐ NO

If yes, provide the water right and/or claim numbers: S2-27135

Attach a map of your project showing the point of diversion/withdrawal and place of use. If platted property, be sure to include a complete copy of the plat map.

Department of Ecology

AUG 24 2018

Water Resources Program

Section 5. WATER SYSTEM DESCRIPTION

Describe your proposed water system (include type and size of devices used to divert or withdraw water from source): ______________________________

Section 6. DOMESTIC WATER SUPPLY SYSTEM INFORMATION

(Complete A or B, and C below)

A.) Domestic Water Systems only	**B.) Municipal Water Systems only** *(defined under RCW 90.03.015)*
Projected number of connections to be served: ____________	Present population to be served water: 700
Type of connections: Domestic *(e.g., home, recreational cabin)*	Estimate future population to be served: 1000 (20 year projection)

C.) Water System Planning

Do you have a Water System Plan approved by the Washington State Department of Health, Drinking Water Division? ☒ YES ☐ NO

If yes, date plan was approved ____/____/____ Water System Number: 52900

Name of water system: McNeil Island Water System

Are you within the service area of an existing water system? ☒ YES ☐ NO

If yes, explain why you are unable to connect to the system: DOC is under an Agreed Order from the Dept of Health to install a new water system preferably from ground water

Department of Ecology

AUG 24 2018

Water Resources Program

Section 7. IRRIGATION/STOCKWATER/OTHER FARM USES

Irrigation

Total number of acres requested to be irrigated under this application = ___________ACRES
NOTE: Outline the area to be irrigated on your attached map.

Stockwater

List number and kind of stock: ____

____

Is the proposed project for a dairy farm? ☐ YES ☒ NO

Other Proposed Farm Uses

Describe all proposed uses: ____

____

____

Family Farm Water Act (RCW 90.66):

Calculate the acreage in which you have a controlling interest, including only:

- Acreage irrigated under water rights acquired after December 8, 1977,
- Acreage proposed to be irrigated under this application, and
- Acreage proposed to be irrigated under other pending application(s).

Is the combined acreage under existing rights greater than 6000 acres? ☐ YES ☐ NO

Do you have a controlling interest in a Family Farm Development Permit? ☐ YES ☐ NO

If yes, enter Permit No: ______________________________

Section 8. OTHER WATER USES

Hydropower

Indicate total feet of head ______________ and proposed capacity in kilowatts:_____

Describe works:____

____

____

Indicate all uses to which power is to be applied:______________________________

FERC License No:____

Mining/Industrial Use

Describe use, method of supplying and utilizing water:____________________

Other Use

Section 9. WATER STORAGE

Will you be using a dam, dike, or other structure to retain or store water? ☒ YES ☐ NO

Are you proposing to store more than 10 acre-feet of water? ☐ YES ☒ NO

Will the water depth be 10 feet or more? ☒ YES ☐ NO

If you answered yes to any of the above questions, please describe: Water will be stored in above ground storage tanks

NOTE: If you will be storing 10 acre-feet or more of water and/or if the water depth will be 10 feet or more at the deepest point and some portion of the storage will be above grade, you must also complete an Application for Permit to Construct a Reservoir and a Dam Construction Permit and Application.

Section 10. DRIVING DIRECTIONS

Provide detailed driving directions to the project site:____________________

Site Address: ____________________

Section 11. REQUIRED SIGNATURES

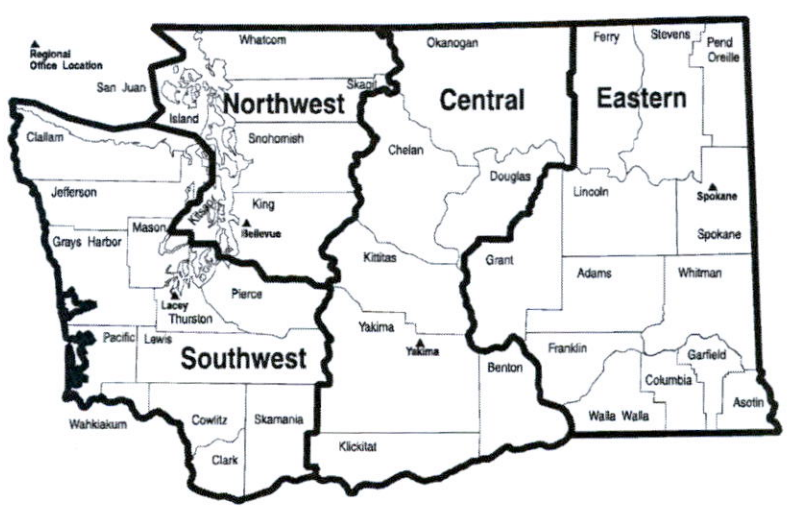
I certify that the information provided in this application is true and accurate to the best of my knowledge. I understand that in order to process my application, I grant staff from the Department of Ecology access to the site for inspection and monitoring purposes. Even though the employees of the Department of Ecology may have assisted me in the preparation of the above application, all responsibility for the accuracy of the information rests with me, the applicant.

Eric Heintz		21 Aug 18
Print Name (Applicant or Authorized representative)	Signature	Date
Nanette Graham, Director, Capital Planning & Development		8/21/18
Print Name (Legal Owner or Part Owner Place of Use)	Signature	Date
Print Name (Legal Owner or Part Owner Place of Use)	Signature	Date

Please check the region in which the project is located:

***Submit your application to:** DEPARTMENT OF ECOLOGY CASHIERING SECTION PO BOX 47611 OLYMPIA, WA 98504-7611	☐ Central Regional Office 1250 W. Alder Street Union Gap, WA 98903-0009 (509) 575-2490	☐ Eastern Regional Office 4601 N. Monroe Street Spokane, WA 99205-1265 (509) 329-3400
	☐ Northwest Regional Office 3190 – 160th Avenue SE Bellevue, WA 98008-5452 (425) 649-7000	☒ Southwest Regional Office PO Box 47775 Olympia, WA 98504-7775 (360) 407-6300

If you have questions about your application, contact the Water Resources program at the regional office in which your project is located.



EI
Water
Rights

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

P.O. Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

October 21, 1999

Department of Corrections
C\o Gray & Osborne, Inc.
2401 Bristol Court SW
Olympia, Washington 98502

Dear Mr. McCauley:

229875

Re: Temporary Use Surface Water Permit S2-~~29975~~ – McNeil Island

On August 10, 1999, on behalf of the Department of Corrections, you filed the above referenced application to appropriate public surface water from the Eden Creek and Butterworth Reservoirs for the McNeil Island correctional facility.

It is our understanding that the withdrawal rate of 1.55 cfs (696 gpm), authorized by the project's existing water right certificate S2-27135, does not reflect the system's actual intake capacity of 1.5 million gallons per day or 2.34 cfs. Surface water is currently pumped from the Eden Creek Reservoir to the filtration plant by two vertical turbine pumps with the capacity of 1,050 gallons.

In response to your request for permit authorization, this letter constitutes a Temporary Use Permit issued to authorize the Department of Correction's existing diversion rate for the potable water treatment plant.

The system's annual allocation of 1,329 acre-feet per year granted under existing rights, is adequate to serve the facility, and no additional water will be withdrawn. The water will be used beneficially, and as the water system has historically been operating at this withdrawal rate this appropriation will not impact existing rights or be detrimental to the public interest.

Under the provisions of Chapter 90.44.020 RCW, the Department of Ecology may issue a Temporary Permit during the pendency of a water right application.

Accordingly, this letter serves as a Temporary Permit, which is issued subject to existing rights and to the following provisions:

1. The effective date of this permit is October 21, 1999.
2. This Temporary Permit is effective until such a time as a formal water right permit is issued.
3. This permit authorizes a maximum withdrawal rate of 1,050 gallons per minute – 2.34 cfs, under both the existing certificate and this authorization.
4. An approved measuring device shall be installed and maintained in accordance with RCW 90.03.360,

WAC 508-64-020 through -040 (installation, operation, and maintenance requirements are attached). Meter readings shall be recorded at least monthly.

Any person wishing to appeal this action may obtain a review by submitting a written request to the Washington Pollution Control Hearings Board with a copy to the Director of the Department of Ecology, within 30 days from receipt of this letter. These procedures are consistent with the provisions of Chapter 43.21B RCW and associated rules and regulations.

If you have any questions, please call Jill Walsh at (360) 407-0274.

Sincerely,

Jill E Walsh

J. Mike Harris
Water Resources Section Supervisor
Southwest Regional Office

JMH:JW:th

WASHINGTON STATE DEPARTMENT OF ECOLOGY

State of Washington
Application for a Water Right

For Ecology Use
Fee Paid ______
Date ______

Please follow the attached instructions to avoid unnecessary delays.

Section 1. APPLICANT - PERSON, ORGANIZATION, OR WATER SYSTEM

Name State of WA, Dept. of Corrections Home Tel: (____) N/A - ______

Mailing Address P.O. Box 41112, 417 W. 4th Work Tel: (360) 753 - 3975

City Olympia State WA Zip+4 98504 + 1112 FAX: (360) 586 - 8723

Section 2. CONTACT - PERSON TO CALL ABOUT THE APPLICATION

☐ Same as above

Name Gray and Osborne, Inc. Home Tel: (____) N/A - ______

Mailing Address 2401 Bristol Ct. SW Work Tel: (360) 754 - 4266

City Olympia State WA Zip+4 98502 + ____ FAX: (360) 754 - 4240

Relationship to applicant consulting engineer

Section 3. STATEMENT OF INTENT

The applicant requests a permit to use not more than 2.34 (☐ gallons per minute or ☒ cubic feet per second) from a ☒ surface water source or ☐ ground water source (check only one) for the purpose(s) of institutional supply, community domestic supply, stockwater, & irrigation **ATTACH A "LEGAL" DESCRIPTION OF THE PLACE OF USE.** (**See instructions.**) *NOTE: A tax parcel number or a plat number is not sufficient.* "See attachment"

Estimate a maximum annual quantity to be used in acre-foot per year: 1,329 acre-ft. /year

☐ Check if the water use is proposed for a short-term project. Indicate the period of time that the water will be needed:

From ___/___/___ to ___/___/___

Section 4. WATER SOURCE

If SURFACE WATER	If GROUNDWATER
Name the water source and indicate if stream, spring, lake, etc. If unnamed, write "unnamed spring," "unnamed stream," etc.: ① Eden Creek Reservoir ② Butterworth Reservoir Number of diversions: 6 (see attachment)	A permit is desired for ______ well(s).
Source flows into (name of body of water): Puget Sound	Size & depth of well(s):

LOCATION

Enter the north-south and east-west distances in feet from the point of diversion or withdrawal to the nearest section corner: ① Eden Creek Reservoir - 800' North and 700' West of Southwest corner of Sec. 20
② Butterworth Reservoir - 100' East and 2350' South of the Northwest corner of Sec. 21.

Section 5. GENERAL WATER SYSTEM INFORMATION

A. Name of system, if named: Mc Neil Island Corrections Center

B. Briefly describe your proposed water system. (**See instructions.**)

Water is collected and stored in both the Butterworth and Eden reservoirs. Water is conveyed via two 1050 gpm pumps to the water treatment plant. From there it is pumped via two 700 gpm pumps to the water distribution system and finished water storage.

C. Do you already have any water rights or claims associated with this property or system? ☒ YES ☐ NO
PROVIDE DOCUMENTATION.

ection 6. DOMESTIC/PUBLIC WATER SUPPLY SYSTEM INFORMATION
(Completed for all domestic/public supply uses.)

A. Number of "connections" requested: N/A Type of connection Institutional
(Homes, Apartment, Recreational, etc.)

B. Are you within the area of an approved water system? ☒ YES ☐ NO
If yes, explain why you are unable to connect to the system. *Note: Regional water systems are identified by your County Health Department.*

Complete C. and D. only if the proposed water system will have fifteen or more connections.

C. Do you have a current water system plan approved by the Washington State Department of Health? ☒ YES ☐ NO
If yes, when was it approved? June 24, 1998 Please attach the current approved version of your plan.

D. Do you have an approved conservation plan? ☐ YES ☒ NO
If yes, when was it approved? ________ Please attach the current approved version of your plan.

Section 7. IRRIGATION/AGRICULTURAL/FARM INFORMATION
(Completed for all irrigation and agriculture uses.)

A. Total number of acres to be irrigated: 1176

B. List total number of acres for other specified agricultural uses:

Use ________ Acres ________
Use ________ Acres ________
Use ________ Acres ________

C. Total number of acres to be covered by this application: 1176

D. Family Farm Act (Initiative Measure Number 59, November 3, 1977)
Add up the acreage in which you have a controlling interest, including only:
‡ Acreage irrigated under water rights acquired after December 8, 1977;
‡ Acreage proposed to be irrigated under this application;
‡ Acreage proposed to be irrigated under other pending application(s)

Section 8. WATER STORAGE

Will you be using a dam, dike, or other structure to retain or store water? ☒ YES ☐ NO

NOTE: If you will be storing 10 acre-feet or more of water and/or if the water depth will be 10 feet or more at the deepest point, and some portion of the storage will be above grade, you must also apply for a reservoir permit. You can get a reservoir permit application from the Department of Ecology.

Section 9. DRIVING DIRECTIONS

Provide detailed driving instructions to the project site.

Take ferry from Steilacoom to McNeil Island. This is for an existing facility with existing certificate of water rights.

Section 10. REQUIRED MAP

Attach a map of the project. (**See instructions.**)

Section 11. PROPERTY OWNERSHIP

A. Does the applicant own the land on which the water will be used? ☒ YES ☐ NO
If no, explain the applicant's interest in the place of use and provide the name(s) and address(es) of the owner(s):

B. Does the applicant own the land on which the water source is located? ☒ YES ☐ NO
If no, submit a copy of agreement:

I certify that the information above is true and accurate to the best of my knowledge. I understand that in order to process my application, I grant staff from the Department of Ecology access to the site for inspection and monitoring purposes. Even though I may have been assisted in the preparation of the above application by the employees of the Department of Ecology, all responsibility for the accuracy of the information rests with me.

[signature] for DOC 7/29/99

Use this page to continue your answers to any questions on the application. Please indicate section number before answer.

We are returning your application for the following reason(s):	
______ Examination fee was not enclosed	APPLICANT PLEASE RETURN TO CASHIER, PO BOX 5128, LACEY, WA 98509-5128
______ Section number(s) ______________________ is/are incomplete	APPLICANT PLEASE RETURN TO THE APPROPRIATE REGIONAL OFFICE
Explanation:	
Please provide the additional information requested above and return your application by ______________ ______________________ (date).	

Ecology staff________________________ Date______________

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

[X] Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

[ ] Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
February 25, 1987	S2-27135	S2-27135	S2-27135

NAME
State of Washington, Department of Corrections

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
Post Office Box 900	Steilacoom	Washington	98388

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Eden Creek Reservoir/Butterworth Reservoir

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
1.55		1329

QUANTITY, TYPE OF USE, PERIOD OF USE

458.5 acre-feet	Institutional supply	Year-round as needed
27 acre-feet	Community domestic supply	Year-round as needed
18.5 acre-feet	Stockwater	Year-round as needed
825 acre-feet	Irrigation/Butterworth Reservoir	May 1 to October 1

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
Eden Creek Reservoir - 800' north and 700' west of the southeast corner of Section 20.

Butterworth Reservoir - 100' east and 2350' south of the northwest corner of Section 21.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SE¼SE¼Sec.20/SW¼NW¼Sec.21	20 & 21	20	1E	15	Pierce

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Water will be drawn and utilized on McNeil Island, which is a 4,400 acre island located in T. 20 N., R. 1 E.

PROVISIONS

That portion of this authorization relating to irrigation is classified as a Publicly Owned Land Permit in accordance with Chapter 90.66 (Initiative Measure No. 59).

The amount of water granted is a maximum limit that shall not be exceeded. The water user shall be entitled only to that amount of water within the specified limit that is beneficially used, and that amount of water required for the actual crop grown on the number of acres and place of use specified.

Water available under this authorization may not provide a continual supply throughout each irrigation season.

At such time that the Department of Ecology determines the regulation and management of the subject waters is necessary and in the public interest, an approved measuring device shall be installed and maintained in accordance with RCW 90.03.360 and WAC 508-64-020 through -040.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Olympia, Washington,

this 22nd *day of* August, *19* 96.

Mary Riveland, Director

Department of Ecology

ENGINEERING DATA
OK ✓

by Gale Blomstrom

FOR COUNTY USE ONLY

Certificate Record No. 2, Page No. 728

State of Washington, County of Pierce

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 John H. Lidke [illegible]

State of Washington, *has made proof to the satisfaction of the* [illegible] *Hydraulics of Washington, of a right to the use of the waters of* [illegible]

a tributary of Pitt Passage, *for the purposes of* irrigation and power [illegible]

under appropriation *Permit No.* 1088 *of the State Supervisor of* [illegible]

that said right to the use of said waters has been perfected in accordance with the laws of [illegible]

and is hereby confirmed by the State Supervisor of Hydraulics of Washington and entered [illegible]

Volume 2, *at Page* 728 *on the* 8th *day of* [illegible]

the right hereby confirmed dates from December 10th, 19[illegible]

which such right is entitled and hereby confirmed, for the purposes aforesaid, [illegible]

actually beneficially used for said purposes, and shall not exceed [illegible]

A description of the lands under such right, and to which the water [illegible]

or if for other purposes, the place where such water is put to beneficial use, is as follows:

Place of Use			Legal Subdivisions	[illegible]	[illegible]
Section	Township	Range			
[illegible]	20 N.	1 W.W.M.	S½ of Lot 3	[illegible]	[illegible]
[illegible]	20 N.	1 W.W.M.	S½ of Lot 2	[illegible]	[illegible]

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 33, Chapter 117, Session Laws 1917.

WITNESS the seal and signature of the State Supervisor of Hydraulics affixed this [illegible] *day*

of [illegible], 19[illegible]

Chas. J. Bartholet
State Supervisor of Hydraulics

Recorded [illegible]

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

RESERVOIR
CERTIFICATE OF WATER RIGHT

TO CONSTRUCT A RESERVOIR AND STORE FOR BENEFICIAL USE WATERS OF THE STATE OF WASHINGTON

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER	DAM INVENTORY NUMBER
February 25, 1987	R2-27134	R2-27134	R2-27134	

NAME			
State of Washington, Department of Corrections			
ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
PO Box 900	Steilacoom	Washington	98388

The applicant is hereby granted a certificate to maintain a reservoir and store unappropriated waters of the State of Washington, subject to existing rights and the following provisions; and shall maintain or make repairs to said structure as may be considered necessary by the Department of Ecology to insure safety to life and property.

NOTE: NOPL means NORMAL OPERATING POOL LEVEL

NAME OF STREAM OR OTHER SOURCE FOR RESERVOIR SUPPLY	TRIBUTARY OF
Springs, seeps, natural rainfall and runoff	Puget Sound
NUMBER OF ACRE-FEET STORED WHEN RESERVOIR IS FILLED TO NOPL 2,500	USE(S) TO BE MADE OF IMPOUNDED WATER Institutional/domestic sply., stockwtr. & irrigation

LOCATION OF IMPOUNDING STRUCTURE

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)
NW¼ SW¼ Butterworth Res./SE¼ SE¼ Eden Creek Res.

SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
20 & 21	20	1E	15	Pierce

LEGAL SUBDIVISION OF LANDS IN WHICH THE SUBMERGED AREA IS TO BE LOCATED

East half of Section 21 and Section 21.

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED (IF DIFFERENT THAN ABOVE)

McNeil Island, Township 20 N., Range 1 E., Pierce County.

CONSTRUCTION OF IMPOUNDING STRUCTURE

HEIGHT OF DAM (FEET)	LENGTH ON TOP (FEET)	WIDTH ON TOP (FEET)
Butwrth-50/EC-25	Butwrth-300/EC-270	Butwrth-55/EC-55

SLOPE OF FRONT OR WATER SIDE (NUMBER OF FEET HORIZONTAL TO ONE FOOT VERTICAL)	SLOPE OF BACK SIDE (NUMBER OF FEET HORIZONTAL TO ONE FOOT VERTICAL)
2HIV (Both Dams)	2HIV (Both Dams)

HEIGHT OF DAM ABOVE WATER LINE AT NOPL (FEET)
Butterworth-5 Eden Creek-4

TYPE OF CONSTRUCTION OF DAM AND CONSTRUCTION MATERIALS
Earth - Butterworth and Eden Creek dams are constructed of compacted local silty sands and gravels. Eden Creek Dam is faced on the upstream face with concrete slabs of undetermined length.

LOCATION AND APPROXIMATE DIMENSIONS OF SPILLWAY INCLUDING CREST LENGTH
Butterworth - No spillway
Eden Creek - 6' wide and 2.5' deep spillway notch, located 112' east of the right abutment.

LOCATION, SIZE AND TYPE OF VALVE AND OUTLET CONDUIT STRUCTURE
Butterworth - Low level outlet conduit discharging water through the operation of three gates located in an 8' square concrete outlet structure.

Eden Creek - Low level conduit discharging water through the operation of five gates located in an 8' square concrete outlet structure.

NUMBER OF ACRES SUBMERGED WHEN RESERVOIR IS FILLED TO NOPL	MAXIMUM DEPTH (FEET) AT NOPL	APPROXIMATE AVERAGE DEPTH (FEET)
Butterworth-83/Eden Creek-10	Butwrth-50/EC30	Butwth28/EC18

PROVISIONS

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380 and 90.03.390.

Given under my hand and the seal of this office at Olympia, Washington, this 22nd *day of* August, *19* 96. Mary Riveland, Director

Department of Ecology

ENGINEERING DATA

OK ✓

by Gale Blomstrom

FOR COUNTY USE ONLY

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
S2-27135	Reservoir	1,050		585.5		700	350	159.2	426.3	-	-	-	-	-	-	-	-
G2-3-732	Well #1	251		170		150	101	13.7	156.3	150	101	133.1	36.9	150	101	133.1	36.9
	TOTALS =	1,301		755.5		700	601	181.1	582.6	150	101	133.1	36.9	150	101	133.1	36.9
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:

Mission Creek Corrections Center for Women

Gray & Osborne, Inc.
CONSULTING ENGINEERS

DATE: **April 30, 2012**

TO: Washington State Department of Ecology **ATTN:** Water Resources Section
Southwest Rgional Office
PO Box 47775
Olympia, WA 98504-7775

FROM: **Mike Johnson, P.E.**

SUBJECT: WSDOC - Mission Creek Corrections Center - Well No. 3 Showing of Compliance Forms

WE ARE TRANSMITTING:	*THE FOLLOWING:*	*FOR:*
☒ Herewith	☐ Prints	☐ Review & Comment
☐ Under Separate Cover	☐ Construction Drawings	☐ Approval
	☐ Specifications	☐ Signature
Number of Copies	☐ Shop Drawings	☒ Your Use & Files
	☐ Change Order	☐ As Requested
one (1)	☐ Legal Description	☐ Action Noted Below
	☐ Letters	☐
	☒ Showing of Compliance Forms	☐

COMMENTS

On behalf of the Washington State Department of Corrections (WSDOC), please find enclosed Showing of Compliance with RCW 90.44.100(3) Forms for the Mission Creek Corrections Center Well No. 3. The forms state that WSDOC has drilled Well No. 3 in the same ¼, ¼ section and it is tapping the same body of public ground water as the original Well No. 1 which is operated under Water Rights No. 5724 and G2-21634C. WSDOC intends to operate Well No. 3 as an additional well on these water rights. WSDOC has also recently decommissioned Well No. 2 that was an additional well on these water rights. Water Well Reports for both Well No. 2 and Well No. 3 are attached. Please contact me at 360-292-7481 if you have any questions regarding these forms.

Mike Johnson, P.E.
Gray & Osborne, Inc.

Cc: Mr. Ed Hampton, DOC

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

May 8, 2012

Department of Corrections
Attn: Jack Olson
PO Box 41112
Olympia, WA 98504

Re: Showing of Compliance, Ground Water Certificate 5826, Department of Natural Resources.

Dear Jack:

This letter acknowledges that Ecology has received a Showing of Compliance (SOC) under RCW 90.44.100(3). The replacement well has been noted under Ground Water Certificate 5826.

Ground Water Certificate 5826 authorizes withdrawal of 125 gpm and 8 acre-feet per year. The original well has been properly decommissioned.

Your notarized statement is part of the permanent record associated with Ground Water Certificate 5826.

Call me at 360-407-6099 if you have questions.

Sincerely,

Tammy H

Tammy Hall, L.HG.
Hydrogeologist/SWRO
Water Resources Program

TH:th

Cc: John Ryding, Department of Health
Jennifer Kropack, Department of Health

WASHINGTON STATE DEPARTMENT OF ECOLOGY

DEPARTMENT OF ECOLOGY

RECEIVED
MAY 03 2012
WA State Department of Ecology (SWRO)

Showing of Compliance with RCW 90.44.100(3)

Water Right Certificate or Permit Number: 5724 G2-05757-5826

Parcel tax identification number: 223130060000

Landowner(s) name: STATE OF WASHINGTON DEPARTMENT OF NATURAL RESOURCES

Part of complying with RCW 90.44.100(3) is for the project proponent to notify the Department of Ecology (Ecology) that the statutory criteria of RCW 90.44.100(3) have been satisfied. Please attach (to this document) the water well report for the additional or replacement wells and any additional information you have to support your affidavit.

Affidavit:

I, Jack A. Olson, do certify that I caused the well or wells described in the attached water well report to be drilled as additional or replacement wells for use under Water Right Number 5724. This notice and attached documents describe and support my assertion that the replacement or additional well or wells comply with RCW 90.44.100(3) (a-g) and RCW 90.44.100(4), specifically:

a. The well taps the same body of public ground water as the original well or wells;

b. If a replacement well is constructed, the use of the original well or wells has been discontinued and the original well or wells have been properly decommissioned as required under chapter 18.104 RCW;

c. If a new additional well has been constructed, the original well or wells are continuing to be used, but the combined total withdrawal from the original and additional well or wells has not enlarged the right conveyed by the original water use permit or certificate;

d. The construction and use of the well does not interfere with or impair water rights with an earlier date of priority than the water right or rights for the original well or wells;

e. The replacement or additional well is located no closer than the original well to a well it might interfere with;

f. The well or wells have been constructed in a manner approved by the department and in compliance with chapter 18.104 RCW and chapter 173-160 WAC; and

g. The location of the replacement or new additional well or wells is the area described as the point of withdrawal in the original public notice published for the application for the water right for the well. Both the original well and the additional or replacement well or wells are located in SE 1/4, NE 1/4, SEC. 13, TWN 23, R 2W (legal description).

Therefore the well is in compliance with the requirements for a statutorily granted amendment to the water right permit or certificate.

I understand the acceptance of this affidavit, and any attachments, by the Department of Ecology shall not be construed as affirming the validity of any water right permit or certificate. The *responsibility to comply with RCW 90.44.100(3) is with the water right permit or certificate holder asserting an amendment pursuant to RCW 90.44.100(3).*

Jack A Olson _______________ Date 4/24/12
Name

Acknowledgement:

State of Washington
County of Thurston

I certify that I know or have satisfactory evidence that Jack A Olson *is the person who appeared before me, and said person acknowledged that (he/she) signed this affidavit and acknowledged it to be (his/her) free and voluntary act for the uses and purposes mentioned in the affidavit.*

Dated: April 24, 2012

LISA MARIE PERPLIES NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES 2-10-13

(Seal or stamp)

(Signature)

Thurston
Residing in

Notary
Title

My appointment expires: 2-10-13

If you have any questions please contact the Water Resources Section of the closest regional office. Please submit copies of new well logs and decommissioned well logs along with this completed and notarized form to the nearest regional office.

Northwest Regional Office
3190 – 160th Avenue SE
Bellevue, WA 98008-5452
(425) 649-7000; TDD (425) 649-4259

Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775
(360) 407-6300; TDD (360) 407-6306

Eastern Regional Office
N. 4601 Monroe, Suite 202
Spokane, WA 99205-1295
(509) 329-3529; TDD (509) 458-2055

Central Regional Office
15 W. Yakima Ave., Suite 200
Yakima, WA 98902-3452
(509) 575-2597; TDD (509) 454-7673

Vancouver Field Office
2108 Grand Boulevard
Vancouver, WA 98661-4622
(360) 690-7171; TDD (360) 690-7147

Nooksack Field Office
1204 Railroad Ave., Suite 200
Bellingham, WA 98225
(360) 738-6250; TDD (425) 649-4259

WATER WELL REPORT

ECOLOGY

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

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

☒ Construction

☐ Decommission *ORIGINAL INSTALLATION*

Notice of Intent Number WE13963

PROPOSED USE: ☐ Domestic ☐ Industrial ☒ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
☒ New well ☐ Reconditioned *Method:* ☐ Dug ☐ Bored ☐ Driven
☐ Deepened ☒ Cable ☒ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 8 inches, drilled 193 ft.
Depth of completed well 193 ft.

CONSTRUCTION DETAILS

Casing Installed: ☒ Welded 8 " Diam. from 0 ft. to 166 ft.
☐ Liner installed " Diam. from ft. to ft.
☐ Threaded " Diam. From ft. to ft.

Perforations: ☐ Yes ☒ No
Type of perforator used
SIZE of perfs in. by in. and no. of perfs from ft. to ft.

Screens: ☒ Yes ☐ No ☐ K-Pac Location
Manufacturer's Name Johnson
Type Stainless Steel Model No. Telescope
Diam. See Slot size *** from ft. to ft.
Diam. *** Slot size from ft. to ft.

~~**Gravel/Filter packed:**~~ ☐ Yes ☒ No ~~Size of gravel/sand~~
Materials placed from ft. to ft.

Surface Seal: ☒ Yes ☐ No To what depth? 18 ft.
Material used in seal
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* 395 ± ft.
Static level 145.9 ft. below top of well Date 12-13-2012
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? NDI
Yield: 125 gal./min. with 1.4 ft. drawdown after 1 hrs.
Yield: 125 gal./min. with 1.6 ft. drawdown after 12 hrs.
Yield: 125 gal./min. with 1.8 ft. drawdown after 24 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
10min	143.4				
30min	143.2				
60min	143.2				

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.**~~ WE13963
Unique Ecology Well ID Tag No. BCA-385
Water Right Permit No. G2-21634
Property Owner Name MISSION CREEK CORRECTION CENTER
Well Street Address 3420 SAND HILL RD
City BELFAIR County MASON
Location NW 1/4-1/4 NW 1/4 Sec 13 Twn 23 R 02W EWM ☐ Or WWM ☒ Check One
(s, t, r Still REQUIRED)

~~**Lat/Long**~~ Lat Deg Lat Min/Sec
Long Deg Long Min/Sec
Tax Parcel No. (Required) 22310060010

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
Pipe stick up	0	3
Brown sand, gravel, clay	3	13
Brown sand, gravel, silt, wet	13	20
Brown sand, gravel, clay	20	53
Brown sand, gravel, clay, wet	53	74
Brown silty sandy clay, gravel, wet	74	146
Brown gravel, sand, water	146	173
Brown sand, gravel, clay lenses, decreasing water	173	193
Screens		
Diam. 8" Slot size: 60 from 168' to 173'		
Diam. 8" Slot size: 30 from 173' to 183'		
Diam. 8" Slot size: 40 from 183' to 193'		

RECEIVED
MAY 03 2017
WA State Department of Ecology (SWRO)

Start Date 12-01-2011 Completed Date 02-13-2012

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) Nicholas Sample
Driller/Engineer/Trainee Signature Nic Sample
Driller or trainee License No. 2770
IF TRAINEE: Driller's License No:
Driller's Signature:

Drilling Company Nicholson Drilling Inc.
Address PO Box 123
City, State, Zip Port Orchard, WA, 98366
Contractor's Registration No. NICHODI137OM Date 02-13-2012

WATER WELL REPORT

ECOLOGY

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

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

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION*

Notice of Intent Number AE16278

PROPOSED USE: ☒ Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other ____

TYPE OF WORK: Owner's number of well (if more than one) ____

☐ New well ☐ Reconditioned *Method:* ☐ Dug ☐ Bored ☐ Driven

☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well ____ inches, drilled ____ ft.

Depth of completed well ____ ft.

CONSTRUCTION DETAILS

Casing Installed: ☐ Welded ____ " Diam. from ____ ft. to ____ ft.

☐ Liner installed ____ " Diam. from ____ ft. to ____ ft.

☐ Threaded ____ " Diam. From ____ ft. to ____ ft.

Perforations: ☐ Yes ☐ No

Type of perforator used ____

SIZE of perfs ____ in. by ____ in. and no. of perfs ____ from ____ ft. to ____ ft.

Screens: ☐ Yes ☐ No ☐ K-Pac Location ____

Manufacturer's Name ____

Type ____ Model No. ____

Diam. ____ Slot size ____ from ____ ft. to ____ ft.

Diam. ____ Slot size ____ from ____ ft. to ____ ft.

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand ____

Materials placed from ____ ft. to ____ ft.

Surface Seal: ☐ Yes ☐ No To what depth? ____ ft.

Material used in seal ____

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water? ____ Depth of strata ____

Method of sealing strata off ____

PUMP: Manufacturer's Name ____

Type: ____ H.P. ____

WATER LEVELS: Land-surface elevation above mean sea level ± ____ ft.

Static level ____ ft. below top of well Date ____

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? ____

Yield: ____ gal./min. with ____ ft. drawdown after ____ 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. AE16278

Unique Ecology Well ID Tag No. APM063

Water Right Permit No. G2-21634

Property Owner Name MISSION CREEK CORRECTION CENTER

Well Street Address 3420 SAND HILL RD

City APM063 County ____

Location ____ 1/4-1/4 ____ 1/4 Sec ____ Twn ____ R ____ EWM ☐ Or WWM ☐ Check One

(s, t, r Still REQUIRED)

Lat/Long Lat Deg ____ Lat Min/Sec ____

Long Deg ____ Long Min/Sec ____

Tax Parcel No. (Required) ____

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
4 PERFORATIONS PER FT	7	140
CUT OFF TOP 7 FT		
PRESSURE GROUTED WITH BENTONITE		
FROM BOTTOM TO TOP.		
CAPPED WITH 3/8 HOLE PLUG.		

RECEIVED
MAY 03 2012
WA State Department of Ecology (SWRO)

Start Date 2-7-12 Completed Date 2-11-12

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) Nicolas Sample

Driller/Engineer/Trainee Signature *NiE Sample*

Driller or trainee License No. 2770

IF TRAINEE: Driller's License No: ____

Driller's Signature: ____

Drilling Company Nicholson Drilling Inc.

Address PO Box 123

City, State, Zip Port Orchard, WA, 98366

Contractor's Registration No. NICHODI137OM Date 02-16-12

For Ecology Use Only

Received: RECEIVED DEPT. OF ECOLOGY/SWRO

'05 APR -1 P12:01

Reviewed by: ______________

Date Reviewed: ______________

Mason County
WATER CONSERVANCY BOARD
Application for Change/Transfer

Record of Decision

Applicant: Department of Corrections

Application Number: MASO-04-01

This record of decision was made by a majority of the board at an open public meeting of the Mason County Water Conservancy Board held on March 24, 2005.

☒ **Approval:**

The Mason County Water Conservancy Board hereby **grants** conditional approval for the water right transfer described and conditioned within the report of examination on 3/24/05 and submits this record of decision and report of examination to the Department of Ecology for final review.

☐ **Denial:**

The Mason County Water Conservancy Board hereby **denies** conditional approval for the water right transfer as described within the report of examination on 3/24/05 and submits this record of decision to the Department of Ecology for final review.

Signed:

[signature]
George Campbell, Chair
Mason County Water Conservancy Board
Date: 3/24/05
☒ Approve ☐ Deny ☐ Abstain ☐ Recuse

[signature] Reese Hastings
Reese Hastings, Secretary
Mason County Water Conservancy Board
Date: 3/24/05
☒ Approve ☐ Deny ☐ Abstain ☐ Recuse

[signature]
Jim Throckmorton,
Mason County Water Conservancy Board
Date: 3/24/05
☒ Approve ☐ Deny ☐ Abstain ☐ Recuse

Not Present
Drew Noble ,
Mason County Water Conservancy Board
Date: ______________
☐ Approve ☐ Deny ☐ Abstain ☐ Recuse

Not Present
John Noble, Treasurer
Mason County Water Conservancy Board
Date: ______________
☐ Approve ☐ Deny ☐ Abstain ☐ Recuse

Mailed to the Department of Ecology Southwest Regional Office of Ecology, via certified mail, and other interested parties on 3/25/05.

Mason County
WATER CONSERVANCY BOARD
Application for Change/Transfer
Report of Examination
TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ Surface Water ☒ Ground Water

DATE APPLICATION RECEIVED	PERMIT NUMBER	CERTIFICATE NUMBER	CHANGE APPLICATION NUMBER
1/1/04		G2-21634C	MASO-04-01

NAME			
Department of Corrections (DOC)			
ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
2417 W 4th Ave	Olympia	WA	98504

Changes Proposed:

☐ Point of Diversion/Withdrawal ☐ Place of Use ☒ Purpose ☐ Temporary ☐ Other

DECISION HISTORICAL SUMMARY

Existing Use						Proposed Use					
QUANTITY, TYPE OF USE, PERIOD OF USE						QUANTITY, TYPE OF USE, PERIOD OF USE					
20 AF irrig May1- Oct 1 7.3 AF Community Domestic Continous						27.3 Communty Domestic					
Point of Diversion or Withdrawal						**Point of Diversion or Withdrawal**					
SOURCE: Well			TRIBUTARY OF (IF SURFACE WATER): N/A			SOURCE: Well			TRIBUTARY OF (IF SURFACE WATER): N/A		
NO.	¼	¼	SECTION	TOWNSHIP N.	RANGE,	NO.	¼	¼	SECTION	TOWNSHIP N.	RANGE,
	SE	NE	13	23	2W		SE	NE	13	23	2W
Place of Use						**Place of Use**					
LEGAL DESCRIPTION OF LANDS WHEREWATER IS PRESENTLY USED:)						LEGAL DESCRIPTION OF LANDS WHERE NEW USE IS PROPOSED					
Same plus						Same as certificate of record					
NO.	¼	¼	SECTION	TOWNSHIP N.	RANGE,	NO.	¼	¼	SECTION	TOWNSHIP N.	RANGE, (
	SW	NW	18	23	1W		SW	NW	18	23	1W

SEPA

The board has reviewed the provisions of the State Environmental Policy Act of 1971, Chapter 43.21C RCW and the SEPA rules, chapter 197-11 WAC and has determined the application is: ☒ Exempt ☐ Not exempt

Water Right Priority Date:(date)

BOARD'S TENTATIVE DETERMINATION

MAXIMUM CUB FT/ SECOND	MAXIMUM GAL/MINUTE	MAXIMUM ACRE-FT/YR	TYPE OF USE, PERIOD OF USE
	100	27.3	Community Domestic

SOURCE	TRIBUTARY OF (IF SURFACE WATER)
Well	N/A

AT A POINT LOCATED: PARCEL NO.	¼	¼	SECTION	TOWNSHIP N.	RANGE	WRIA	COUNTY.

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Same as certificate G2-21634C

PARCEL NO.	¼	¼	SECTION	TOWNSHIP N.	RANGE,

DESCRIPTION OF PROPOSED WORKS

We observed a 300,000-gallon ground-level storage tank that was full. The primary use for the tank was reported as fire suppression. We also observed a 30,000 gallon elevated storage tank that was also full. That tank supplies the regular water system for the facility.
The water source is a well located on a flat terrace a short distance west of the facility and about 40 feet below the facility. The terrace is about 500 feet east of Mission Creek and about 100 feet above the creek at this point. The well is in a large concrete pump house that contains the full set of controls and valving. The pump is reportedly 15 hp and reportedly discharges 100 gpm. There is a flow meter and a depth-to-water airline both inoperable at this time.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	COMPLETE CHANGE AND PUT WATER TO FULL USE BY THIS DATE:
Spring of 2005	Sping of 2005	Summer of 2011

REPORT

See WAC 173-153-130 - The following sections may be expanded onto additional pages.

BACKGROUND

DOC plans to open Mission Creek Corrections Center for Women (MCCCW) as an adult facility in spring 2005 with 80 to 120 offenders. DOC's Ten-Year Capital Plan requests a capital budget that would expand the facility to 200 offenders by 2007 and to 300 offenders by the end of fiscal year 2011. The expansion is contingent upon two actions:

- Receipt of the capital funds from the legislature and
- Approval of the request to change the use of 20 AF/yr from irrigation to community domestic supply.

In spring 2005, the facility will operate using the 8 AF/yr from water right 5724 and 7.3 AF/yr of water right G2-21634C. This amount of water would support 113 offenders using 120 gallons per day per offender (gpod), which is DOC's standard assumption for construction. However, DOC anticipates implementing strict water conservation measures (attached) to reduce water use to 100 gpod. With the strict water conservation measure implementation that achieves 100 gpod, the facility would support 136 offenders. The additional 20 AF/yr (if 100 percent of the water right use is converted) would allow support of an additional 179 offenders.

The additional 20 AF/yr would allow expansion of the facility to slightly over 300 offenders. The 20 AF/yr would continue to be put to beneficial use as community domestic supply. Opening the MCCCW facility is in the public interest based on the fact that prisons are considered "essential public facilities;" and Washington prisons are currently overcrowded. The 2004 *Department of Corrections Statewide Master Plan* projects the prison population will increase by approximately 5,700 offenders by 2014. Clearly, additional prison facilities are needed. Expansion of an existing state facility is more cost-effective for taxpayers than siting a new facility.

COMMENTS AND PROTESTS

No Protests

INVESTIGATION

A field examination was made at the Mission Creek site on June 14, 2004 by board members George Campbell and John Noble. Wes Anderson and Leo Gleason, who are Plant Mangers of the Cedar Creek Correction Facility and the Mission Creek site, respectively, met us there. The Mission Creek site was under previous use by the Department of Social and Health Services as a juvenile care facility The Department of Corrections who plan future use as a residential facility, presently manages the site.

Currently the site is not utilized but is maintained. We observed a 300,000-gallon ground-level storage tank that was full. The primary use for the tank was reported as fire suppression. We also observed a 30,000 gallon elevated storage tank that was also full. That tank supplies the regular water system for the facility.

The water source is a well located on a flat terrace a short distance west of the facility and about 40 feet below the facility. The terrace is about 500 feet east of Mission Creek and about 100 feet above the creek at this point. The well is in a large concrete pump house that contains the full set of controls and valving. The pump is reportedly 15 hp and reportedly discharges 100 gpm. There is a flow meter and a depth-to-water airline both inoperable at this time. The pump cycled on during our visit , sending water to the elevated storage.

Leo Gleason gave a partial well log copy to us. The log, by Stoican Drilling, shows it to be started on 10/17/1960 and tested on 11/15/1960. The report shows it to be 6-inch diameter, 180 feet deep, and screened from 170 to 180 feet. SWL was 141 feet below ground. Stoican ran a pump test intermittently for two days totaling about 24 hours at rates up to 160 gpm. Drawdown at 160 gpm was estimated at 16 feet.

Records provided to the Board upon receipt of this application showed a record of pumping during the occupancy of DSHS.

CONCLUSIONS

Pipes and pumps exist to supply 100 gpm to storage. The old irrigation system has been bypassed. Water is available for Community Domestic. For futher information on Historic use, see attached DOC document "**Supplementary Information for Water Right Change Application at Mission Creek Corrections Center for Women**".

RECOMMENDATIONS

The recent passage of House Bill (HB)1338 may allow DOC or DNR, as the property owner, to qualify as using water for "municipal water supply purposes." We posed this question to our Assistant Attorney General who responded with the following analysis.

HB 1338 states that:

Continued

(3) "Municipal water supplier" means an entity that supplies water for municipal water supply purposes.

(4) "Municipal water supply purposes" means a beneficial use of water: (a) For residential purposes through fifteen or more residential service connections or for providing residential use of water for a nonresidential population that is, on average, at least twenty-five people for at least sixty days a year; ...

This section goes on to state:

If a governmental entity holds a water right that is for the purposes listed in (a), (b), or (c) of this subsection, its use of water or its delivery of water for any other beneficial use generally associated with the use of water within a municipality is also for "municipal water supply purposes," including, but not limited to, beneficial use for commercial, industrial, irrigation of parks and open spaces, institutional, landscaping, fire flow, water system maintenance and repair, or related purposes. (Underlining for emphasis.)

These definitions are the same ones used in the water code, RCW 90.03.015.

DOC is a governmental entity, and holds a water right for 8 acre feet for the purpose set out in subparagraph (a) above, which is for residential purposes through 15 or more service connections. In addition, DNR has a water right for the property for 27.3 acre feet, 20 acre feet of which is for irrigation purposes. A water right is appurtenant to the land, so the entity that has ownership or possession of the land (such as through a lease) is entitled to the use of the water right.

HB 1338 amends RCW 90.03.260 to state in part:

This section authorizes a water right or portion of a water right held or acquired by a municipal water supplier that is for municipal water supply purposes as defined in RCW 90.03.015 to be identified as being a water right for municipal water supply purposes. However, it does not authorize any other water right or other portion of a right held or acquired by a municipal water supplier to be so identified without the approval of a change or transfer of the right or portion of the right for such a purpose.

DOC's Assistant Attorney General's conclusions from review of these sections are that (1) DOC is a municipal water supplier; (2) DOC is entitled to have the 8 acre feet and the 7.3 acre feet granted to DNR identified as being for municipal water supply purposes; and (3) DOC and DNR may request that the 20 acre feet currently approved for irrigation use be approved by Ecology for municipal water supply purposes pursuant to RCW90.03.560 and RCW 90.03.380.

Do to the information provide by DOC, the Board finds that MCCC qualifies under 1.4.a of HSB 1338.
The board recommends that the previously permitted 27.3 AF be allowed for community domestic use only and no irrigation use.

PROVISIONS AND CONDITIONS

No irrigation performed under the original certificate shall be allowed, except as necessary for fire prevention and safety.
Following are the water usage guidelines that DOC is establishing for its' Mission Creek Facility. The information was written by Nancy Winters of DOC.
Occupancy of Mission Creek Corrections Center (MCCC) at the level of 80 offenders will cause stress on the water and sewer systems. Currently, the water rights will support 54 to 65 offenders based on use of 120 to 100 gpid, respectively. Similarly, the sewer capacity is limited by the design of the system which is designed to manage the waste from 65 offenders. In order not to exceed the water rights or sewage system capacity, I suggest implementation of the water conservation measures presented in this memorandum. The water conservation measures suggested are stringent because of the severe limitations of water and sewer capacity. I recommend continued implementation of these until expansion of water rights and sewer capacity can be accomplished to better serve the needs at the 80 offender level. Further expansion to an offender population of 200 to 300 will be contingent on obtaining additional water rights and physical improvements to the sewage treatment system.

SUGGESTED WATER CONSERVATION MEASURES

Laundry

- Ship all laundry to another facility for washing.
- Do not provide individual machines to wash personal laundry. Send all personal laundry off-site.

Restrooms (Offenders and Staff)

- Install low-flow shower heads and timers with a delay cycle that will limit showers to no more than 5 minutes. Educate the custody officers to continuously enforce the 5 minute shower rule.
- Install low-flow, high pressure toilets.
- Install low-flow faucets with motion sensors in sinks.
- Repair all dripping taps immediately.
- Prohibit staff from showering at the facility, except in the event of exposure to bodily fluids or hazardous chemicals.

Kitchen

- Prepare meals at off-site locations and transport to MCCC to re-therm. If possible, return dishes and flatware to place of origin to be washed.
- Install flow restrictors on all faucets and sprays.

Continued

- If dishes must be washed on site, install low water use dishwashers. Use dishwasher rather than hand washing dishes, whenever possible.
- Investigate the feasibility of rinse water reuse for the dishwashers.
- If hand washing is necessary, hand wash dishes in batches and only in plugged sinks, rather than individually with running water.
- Limit other cleanup to small buckets of wipe down water.
- Repair all dripping taps immediately.

Landscaping

- Do not water any gardens, lawns, or other landscaping outdoors. If native plants are established they will not require watering. Landscaping can be replaced gradually with low water use plants.

Outdoor Activities

- Prohibit vehicle washing on site. Take vehicles to car washes, if necessary. Minimize other uses of water outdoors.

Leak Detection and Repair

- If not already a member, become a member of the local Rural Water Association and request a free audit of the water distribution system that will detect leaks. Repair all leaks immediately

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DNR Activities

- Develop an agreement with DNR to ensure that they understand the seriousness of the water limitation and follow water conservation practices. Currently DNR has offices with bathrooms (toilets and sinks only). These should be retrofitted with low-flow, high pressure toilets, and motion activated sinks.
- Install water meters on DNR lines(s) and MCCC line(s).

Signed at Shelton, Washington
This 24 day of March, 2005

George Campbell, Chair
Mason County Water Conservancy Board

COPY

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

November 15, 2004

RECEIVED
NOV 17 2004
DEPARTMENT OF CORRECTIONS
CAPITAL PLANNING & DEVELOPMENT

Nancy Winters
Department of Corrections
PO Box 41112
Olympia, WA 98504-1112

Dear Ms. Winters

RE: Water Rights for Mission Creek Corrections Center

The Department of Ecology has reviewed the water right documents for the Mission Creek Correction facility site and concurs with your evaluation.

We agree that both ground water certificates 5724-A issued in the amount of 125 gallons per minute, and 8 acre-feet per year, and certificate G2-21634 issued in the amount of 100 gpm, and 27.3 acre-feet per year are appurtenant to the Mission Creek water system.

Combined the two rights authorize a withdrawal of 15.3 acre-feet per year for domestic supply, and an additional 20 acre-feet per year for the irrigation of 10 acres of lawn area.

It is our understanding that you have filed an Application for Change of Water Rights with the Mason County Conservancy Board, requesting that they change the purpose of use associated with the lawn irrigation to domestic supply. The Department of Ecology is prepared to evaluate the Board's recommendation as soon as they are submitted to us.

If you have any additional questions regarding these water rights, please contact either myself or Jill Walsh at (360) 407-0274.

Sincerely,

Tom Loranger

Tom Loranger
Water Resources Section Manager

TL:JW:th

STATE OF WASHINGTON
DEPARTMENT OF CORRECTIONS
OFFICE OF ADMINISTRATIVE SERVICES
CAPITAL PLANNING AND DEVELOPMENT
P.O. Box 41112 • Olympia, Washington 98504-1112 • (360) 586-6131
FAX (360) 586-8723

November 8, 2004

Ms. Jill Walsh
Department of Ecology
Southwest Regional Office
PO Box 46700
Olympia, Washington 98504-6700

Dear Ms. ~~Walsh~~ Jill:

RE: Water Rights
Mission Creek Corrections Center

The Washington Department of Corrections (DOC) has investigated water rights issues at the Mission Creek Corrections Center (MCCC). We are requesting your concurrence to allow the full use of the existing domestic water at 15.3-acre feet/year from the noted point of withdrawal.

DOC is currently leasing MCCC from the Department of Natural Resources (DNR), the property owner. MCCC was formerly operated by the Department of Social and Health Services (DSHS) for youthful offenders as Mission Creek Youth Camp.

Associated with the property are two water rights:

- Water right 5724
- Water right G2-21634C

It is our assessment that both water rights appear to be for the same point of withdrawal, or at a minimum, are located within the same ¼ - ¼ section.

Water right 5724 with a priority date of October 10, 1960, was issued to the Department of Institutions (predecessor to DSHS and DOC) for 8 acre feet/year (AF/yr) for community domestic supply at Mission Creek Youth Camp. The well was located "60 feet north and 260 feet west of the east quarter corner within SE ¼ NE ¼ of Section 13, Township 23 N, Range 2 WWM." The Application for a Permit indicated that a 6-inch well would be installed to a depth of approximately 150 feet. The well log indicated that the well was drilled to 210 feet, then pulled back and screened between 170 and 180 feet below the ground surface. Hand written notes on the Proof of Appropriation of Water indicated that the well pumped approximately 7,000 gpd year round (7.8 AF/yr) with a 125 gpm pump capacity. The Application for Permit indicates that a 6-inch deep well turbine pump would be used with a 10 HP electric motor, 208 volt (estimated).

A second water right, G2-21634C, was issued to the DNR (property owner) with a priority date of October 24, 1973. This water right provides for 7.3 AF/yr for community domestic supply and 20 AF/yr for irrigation of ten acres. The location of the point of withdrawal is provided in the Report of Examination and the Application for a Permit as "62 feet west and 256 feet north of the east quarter corner within SE ¼ NE ¼ of Section 13, Township 23 N, Range 2 WWM." No well log was provided with the application package and the Progress Sheet indicates that the requirement for a well log was waived. The application also indicates that the well had already been drilled. Specifically, the application states that the "well is drilled and has a diameter of 8 inches and an estimated depth of 280 feet.

At first glance, the second water right appears to have a point of withdrawal very near the 1960 point of withdrawal and within the same ¼-¼ section. The record is not clear about whether in fact, this second water right applies to the same or a different well. The locations may not have been accurately recorded. This is supported by the fact that applications for both permits have a lined out description of the location, indicating some possible confusion about the methodology for locating. Both permit applications indicate the same ¼-¼ section. From the diagrams that provide the locations of the two wells, one cannot be certain that the wells were not in the same location. To shed light on this issue, the former Mission Creek Youth Camp Plant Manager, John Williams, was interviewed. He worked at the facility from 1971 until 2000 and does not recall that there were ever two wells on the property. Further, he recalls no well installation in the middle 1970's, the time in which the second water right application was submitted.

The former Superintendent at the youth camp, Karen Brunson, recalls that the well may have been refurbished. John Williams also recalls replacement of the bowls. A record (attached) from the Pacific Pumping Company, dated April 11, 1967, would confirm their recollections. The transmittal from Pacific Pumping provides specifications for "Existing Well Pump Revisions," including a "General Electric or equal 15 h.p., three phase, 220 volt, 360 rpm vertical hollow shaft high thrust drip-proof motor with non reverse ratchet," a column assembly consisting of "160 ft. of Byron Jackson 1" line shaft," and a bowl assembly. This documentation appears to provide revisions for the 1960 well.

A second inconsistency in the records is the discrepancy in the diameter and depth of the well(s). The driller's well log from the 1960 well shows a 6-inch diameter and a 180 foot depth. Since no well log was required for the 1973 water right application a conclusive comparison cannot be made. The application indicates a diameter of 8 inches and a depth of 280 feet. While this information differs from the 1960 well, it may have been estimated. According to John Williams and the current Plant Manager, Leo Gleason, one cannot measure the diameter of the existing well due to the placement of the pump. However, both of the plant managers believe that the existing well is 6 inches in diameter. The description of the pump in the 1973 application matches the description in the Pacific Pumping Company specifications from 1967 (a 15 h.p. General Electric 220 volt pump. One might conclude that the 8-inch diameter and 280 foot well depth presented in the 1973 application may have been the application preparer's best estimate, rather than first hand knowledge.

There are virtually no other records for this period and DSHS engineering staff that may have had knowledge of the site, have long since retired.

Although not entirely conclusive, this investigation strongly suggests that water right 5724 (1960) and water right G2-21634C (1973) apply to the same point of withdrawal, or at least to withdrawal within the same ¼-¼ section. DOC requests your concurrence with this assessment so that we may utilize the combined rights of 15.3 AF/yr for community domestic supply when we open the Mission Creek Correction Center in the Spring of 2005.

Thank you for all of your help in investigating this matter. We await your concurrence, so that our plans for occupancy may proceed. If you have any additional questions, please do not hesitate to call me at (360) 753-6547.

Sincerely,

Nancy

Nancy L. Winters
Assistant Director of Environmental Services

Enclosure(s)
NW:rb
cc: Joseph D. Lehman
Tracy Guerin
Bill Phillips
Pam Jenkins
Dan Pacholke
Leo Gleason

\\Efcp_server\Correspond\2004\Environmental\Ltr Nov 4 04 Jill Walsh.doc

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

☐ *Surface Water* (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ *Ground Water* (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

CERTIFICATE NUMBER	PERMIT NUMBER	APPLICATION NUMBER	PRIORITY DATE
G2-21634C	G2-21634P	G2-21634	October 24, 1973

NAME
WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
	Olympia	Washington	98504

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	100	27.3

QUANTITY, TYPE OF USE, PERIOD OF USE

7.3 acre-feet per year	community domestic supply	continuously
20 acre-feet per year	irrigation of 10 acres	May 1 to October 1 each year

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION/WITHDRAWAL
62 feet west and 256 feet north of the east quarter corner of Sec. 13

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SE¼NE¼	13	23	2 W	15	Mason

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY WATER TO BE USED ON

That portion of the SE¼NE¼ AND NE¼SE¼, Sec. 13, T. 23 N., R. 2 W.W.M., AND Government Lots 2 and 3, Sec. 18, T. 23 N., R. 1 W.W.M., included within the limits of the following described tract:
beginning at a point which is west 450 feet from the east quarter corner of said Sec. 13; thence south 200 feet; thence east 980 feet; thence north 865 feet; thence west 980 feet; thence south 665 feet to the point of beginning; LESS roads. Referred to as Mission Creek Youth Camp.

PROVISIONS

The access port as required on your permit, shall be maintained at all times.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Olympia, Washington, this 20th *day of* May, *19* 76.

JOHN A. BIGGS, *Director*
Department of Ecology

ENGINEERING DATA
OK P

by E.W. Asselstine
E. W. Asselstine, Regional Manager

FOR COUNTY USE ONLY

S. F. No. 7361—OS—6-67.

CERTIFICATE RECORD NO. 12 PAGE NO. 5826-A

STATE OF WASHINGTON, COUNTY OF Mason

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Water Resources thereunder.

THIS IS TO CERTIFY *That* STATE OF WASHINGTON, DEPARTMENT OF INSTITUTIONS

of Olympia, Washington *, has made proof to the satisfaction of the Department of Water Resources of Washington, of a right to the use of the ground waters of a* well

located within SE¼NE¼

Sec. 13 *, Twp.* 23 *N., R.* 2 W. *W.M.,*

for the purpose of community domestic supply for Mission Creek Youth Forest Camp

under and subject to provisions contained in Ground Water Permit No. 5726 *issued by the Department of Water Resources and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the Department of Water Resources of Washington and entered of record in Volume* 12 *at page* 5826-A*; that the right hereby confirmed dates from* October 10, 1960*; that the quantity of ground water under the right hereby confirmed for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed* 125 gallons per minute; 8 acre-feet per year, for community domestic supply for Mission Creek Youth Forest Camp.

Special provisions required by the Department of Water Resources:

A description of the lands to which such ground water right is appurtenant:

Begin at a point 450 feet west of quarter corner of Sec. 13, T. 23 N., R. 2 W.W.M., and Sec. 18, T. 23 N., R. 1 W.W.M., thence 90° in an easterly direction for a distance of 980 feet to a point, thence 90° in a northerly direction for a distance of 865 feet to a point, thence 90° in a westerly direction for a distance of 980 feet to a point, thence 90° in a southerly direction for a distance of 665 feet to the point of beginning.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.

This certificate of ground water right is specifically subject to relinquishment for nonuse of water as provided in Section 18, Chapter 233, Laws of 1967.

WITNESS the seal and signature of the Assistant Director, Division of Water Management, Department of Water Resources affixed this 9th *day of* October *, 19*67

H.W. Pollock

Assistant Director
Division of Water Management
Department of Water Resources

ENGINEERING DATA
O.K. Bo

Ground Water Permit No...............................

CERTIFICATE OF GROUND WATER RIGHT

Recorded in the Department of Water Resources, Olympia, Washington, in Book No...............................*of Ground Water Right Certificates, on page*..............................*, on the*..............................*day of*..............................*19*..........

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

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

....

STATE PRINTING PLANT OLYMPIA, WASH.

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
5826	Well #1	125		8		100				100				100			
	Well #3	125				125				125				125			
G2-21634C	Well #1	100		27.3													
	TOTALS =	225		35.3		225	0	15.2	20.1	225.0	0	36.7	-1.4	225.0	0	36.7	-1.4
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:

Olympic Corrections Center

WASHINGTON STATE DEPARTMENT OF ECOLOGY

DEPARTMENT OF ECOLOGY

RECEIVED
DEPT. OF ECOLOGY/SWRO
04 MAY 19 AM 11:01

Showing of Compliance with RCW 90.44.100(3)

Water Right Certificate or Permit Number: G2-26035C

Parcel tax identification number: N/A

Landowner(s) name: State of Washington, Dept of Natural Resources

Part of complying with RCW 90.44.100(3) is for the project proponent to notify the Department of Ecology (Ecology) that the statutory criteria of RCW 90.44.100(3) have been satisfied. Please attach to this document the water well report for the additional or replacement well and any additional information you have to support your affidavit.

Affidavit:

I, Jerry Sullivan, do certify that I caused the well described in the attached water well report to be drilled as an additional or replacement well(s) for use under Water Right Number G2-26035C. This notice and attached documents describe and support my assertion that the replacement or additional well(s) complies with RCW 90.44.100(3) (a-g) and RCW 90.44.100(4):

a. The well is an additional or replacement well(s) that will tap the same body of public ground water as the original well;
b. If a replacement well is constructed, the use of the original well(s) shall be discontinued and the original well(s) shall be properly decommissioned;
c. The combined withdrawal of water from the additional or replacement well(s) and the original well authorized by the water right certificate does not enlarge the water right conveyed by the original water right certificate to the extent the certificate has been developed (perfected) and maintained by use of water;
d. The construction and use of the additional or replacement well(s) does not interfere with or impair water rights with an earlier priority date;
e. The additional or replacement well(s) is located no closer than the original well to a well or surface water body it might interfere with;
f. A specified manner of construction for the additional or replacement well(s) has been complied with, if required, and the new well was constructed in compliance with chapter 18.104 RCW and chapter 173-160 WAC;
g. The additional or replacement well(s) is located within the area described as the point of withdrawal in the public notice published for the original application for water right, or the most current legal description published for the right. Both the original well and the additional or replacement well(s) are located in NE1/4 SE1/4 S 29 T 26 N R 11 W (legal description)

Therefore the well is in compliance with the requirements for a statutorily granted amendment to the water right permit or certificate.

I understand the acceptance of this affidavit, and any attachments, by the Department of Ecology shall not be construed as affirming the validity of any water right permit or certificate. The responsibility to comply with RCW 90.44.100(3) is with the water right permit or certificate holder asserting an amendment pursuant to RCW 90.44.100(3).

Jerry Sullivan ______ 5/18/04 ______
Name Date

Acknowledgement:

State of Washington
County of Jefferson

I certify that I know or have satisfactory evidence that Terry Sullivan *is the person who appeared before me, and said person acknowledged that (he/she) signed this affidavit and acknowledged it to be (his/her) free and voluntary act for the uses and purposes mentioned in the affidavit.*

Dated: May 18, 2004

Denise L. Larson ______
(Signature)

(Seal or stamp)

DENISE L. LARSON
Residing Notary Public, Kitsap County, Washington
My Commission Expires November 9, 2004

Title
My appointment expires: ______

If you have any questions please contact the Water Resources Section of the closest regional office. Please submit copies of new well logs and decommissioned well logs along with this completed and notarized form to the nearest regional office.

Northwest Regional Office
3190 – 160th Avenue SE
Bellevue, WA 98008-5452
(425) 649-7000; TDD (425) 649-4259

Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775
(360) 407-6300; TDD (360) 407-6306

Eastern Regional Office
N. 4601 Monroe, Suite 202
Spokane, WA 99205-1295
(509) 456-2926; TDD (509) 458-2055

Central Regional Office
15 W. Yakima Ave., Suite 200
Yakima, WA 98902-3452
(509) 575-2597; TDD (509) 454-7673

Vancouver Field Office
2108 Grand Boulevard
Vancouver, WA 98661-4622
(360) 690-7171; TDD (360) 690-7147

Nooksack Field Office
1204 Railroad Ave., Suite 200
Bellingham, WA 98225
(360) 738-6250; TDD (425) 649-4259

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PERMIT
TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
July 25, 1996	G2-29403	G2-29403	

NAME
State of Washington, Department of Corrections

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
11235 Hoh Mainline	Forks	Washington	98331-9432

The applicant is hereby granted a permit to appropriate the following public waters of the State of Washington, subject to existing rights and to the limitations and provisions set herein.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well #3

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE FEET PER YEAR
	220	100

QUANTITY, TYPE OF USE, PERIOD OF USE

100 Acre-feet per year	Multiple domestic supply	Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
1070 feet North and 20 feet West of the Southeast corner of Section 29.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NE¼ SE¼	29	26	11W	21	Jefferson

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Olympic Corrections Center, located within the NE¼ NE¼ of Section 2, T. 26 N., R. 11 W.W.M.

DESCRIPTION OF PROPOSED WORKS

8-inch well connected to a distribution system serving corrections facilities.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	August 1, 2006	January 1, 2015

PROVISIONS

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

The subject well has been tagged with a well identification number. This unique well number shall remain attached to the well, please reference this number when submitting data.

Water use data shall be recorded bi-weekly. The maximum rate of diversion/withdrawal and the annual total volume shall be submitted to Ecology by January 31st of each calendar year.

The following information shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, WRIA, Permit/Certificate No., source name, annual quantity used including units, maximum rate of diversion, including units monthly meter readings including units, peak monthly flow including units, purpose of use and well tag number.
In the future, Ecology may require additional parameter to be reported or more frequent reporting. Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information.

Chapter 173-173 WAC describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition Ecology for modifications to some of the requirements. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements".

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

Installation and maintenance of an access port as described in Chapter 173-160 is required. An air line and gauge may be installed in addition to the access port.

The Water Resources Act of 1971 specifies certain criteria regarding utilization and management of the waters of the state in the best public interest. Use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

This permit shall be subject to cancellation should the permittee fail to comply with the above development schedule and/or to give notice to the Department of Ecology on forms provided by that Department documenting such compliance.

Given under my hand and the seal of this office at Olympia, Washington,

this 8th *day of* Sept. *, 2005.*

OK JM

Department of Ecology

by Thomas Loranger

Thomas Loranger, Section Manager

If you require this publication in an alternate format, please contact Water Resources at (360) 407-6300, or TTY (for the speech or hearing impaired) 711 or 800-833-6388.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
October 14, 1981	G 2-26035	G 2-26035 P	G 2-26035 C

NAME
CLEARWATER/OLYMPIC CORRECTION CENTER FOR WASH. STATE DEPT. OF NATURAL RESOURCES

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
Star Route 1, Box 2500	Forks	Washington	98331

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
2 wells

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	100	50.0

QUANTITY, TYPE OF USE, PERIOD OF USE
50 acre-feet per year community domestic supply continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
800 feet North and 100 feet East of Southwest Corner of Section 28 and 1000 feet North and 100 feet West of Southeast Corner of Section 29 within the SW¼SW¼ of Section 28 and SE¼SE¼ of Section 29.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
		26	11 W.	21	Jefferson

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

13 acres more or less, state forest land situated in the north half of the northwest quarter of Sec. 33, T. 26 N., R. 11 W.W.M., Jefferson County, Washington.

PROVISIONS

The access port shall be maintained at all times on the well (s).

At such time that the Department of Ecology determines the regulation and management of the subject waters is necessary and in the public interest, an approved measuring device shall be installed and maintained in accordance with RCW 90.03.360 and WAC 508-64-020 through WAC 508-64-040.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Olympia *Washington, this* 5th *day*

of September, *19* 85

ANDREA BEATTY RINIKER, Director
Department of Ecology

by Clark Haberman
Clark Haberman, Regional Manager

ENGINEERING DATA
OK RLC

FOR COUNTY USE ONLY

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
G2-26035C	Well 1, Well 2	100		50		120	-20	56.7	-6.7	100	0			100	0		
G2-29403	Well 3	220		100		0	220	0	100	120	100			120	100		
	TOTALS =	320		150			-20		-6.7	220	100	48.6	1.4	220	100	48.6	1.4
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:

Washington Corrections Center

WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

DEPARTMENT OF ECOLOGY

Showing of Compliance with RCW 90.44.100(3)

RECEIVED
JUL 27 2006
Washington State
Department of Ecology

Water Right Certificate or Permit Number: **5376-A**

Parcel tax identification number: **42009-00-6000**

Landowner(s) name: **Washington Department of Corrections**

Part of complying with RCW 90.44.100(3) is for the project proponent to notify the Department of Ecology (Ecology) that the statutory criteria of RCW 90.44.100(3) have been satisfied. Please attach to this document the water well report for the additional or replacement well and any additional information you have to support your affidavit.

Affidavit:

I, Garin Schrieve, do certify that the Washington State Department of Corrections caused the wells described in the attached water well report to be drilled as an additional or replacement wells for use under Water Right Certificate Number 5376-A. This notice and attached documents describe and support my assertion that the replacement or additional well(s) comply with RCW 90.44.100(3) (a-g) and RCW 90.44.100(4):

a. The wells are additional or replacement well(s) that will tap the same body of public ground water as the original well;
b. If a replacement well is constructed, the use of the original well(s) shall be discontinued and the original well(s) shall be properly decommissioned;
c. The combined withdrawal of water from the additional or replacement well(s) and the original well authorized by the water right certificate does not enlarge the water right conveyed by the original water right certificate to the extent the certificate has been developed (perfected) and maintained by use of water;
d. The construction and use of the additional or replacement well(s) does not interfere with or impair water rights with an earlier priority date;
e. The additional or replacement well(s) is located no closer than the original well to a well or surface water body it might interfere with;
f. A specified manner of construction for the additional or replacement well(s) has been complied with, if required, and the new well was constructed in compliance with chapter 18.104 RCW and chapter 173-160 WAC;
g. The additional or replacement well(s) is located within the area described as the point of withdrawal in the public notice published for the original application for water right, or the most current legal description published for the right. Both the original well and the additional or replacement well(s) are located in the SW ¼ of the NW ¼ of Section 9, T. 20 N., R. 4 W.W.M.

Therefore the wells are in compliance with the requirements for a statutorily granted amendment to the water right permit or certificate.

I understand the acceptance of this affidavit, and any attachments, by the Department of Ecology shall not be construed as affirming the validity of any water right permit or certificate. The responsibility to comply with RCW 90.44.100(3) is with the water right permit or certificate holder asserting an amendment pursuant to RCW 90.44.100(3).

7-26-06

Garin Schrieve, P.E., Environmental Manager   Date

Acknowledgement:

State of Washington
County of Thurston

I certify that I know or have satisfactory evidence that Garin Schrieve is the person who appeared before me, and said person acknowledged that (he/she) signed this affidavit and acknowledged it to be (his/her) free and voluntary act for the uses and purposes mentioned in the affidavit.

Dated: 7/26/06

LISA M. PERPLIES
COMMISSION EXPIRES
NOTARY
PUBLIC
2-10-09
STATE OF WASHINGTON

(Signature)
Washington
Residing in
Administrative Assistant
Title
My appointment expires: 2-10-09

If you have any questions please contact the Water Resources Section of the closest regional office. Please submit copies of new well logs and decommissioned well logs along with this completed and notarized form to the nearest regional office.

Northwest Regional Office
3190 – 160th Avenue SE
Bellevue, WA 98008-5452
(425) 649-7000; TDD (425) 649-4259

Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775
(360) 407-6300; TDD (360) 407-6306

Eastern Regional Office
N. 4601 Monroe, Suite 202
Spokane, WA 99205-1295
(509) 456-2926; TDD (509) 458-2055

Central Regional Office
15 W. Yakima Ave., Suite 200
Yakima, WA 98902-3452
(509) 575-2597; TDD (509) 454-7673

Vancouver Field Office
2108 Grand Boulevard
Vancouver, WA 98661-4622
(360) 690-7171; TDD (360) 690-7147

Nooksack Field Office
1204 Railroad Ave., Suite 200
Bellingham, WA 98225
(360) 738-6250; TDD (425) 649-4259

S. F. No. 7361—1-64—3M. 83360.

CERTIFICATE RECORD NO. 11 PAGE NO. 5376-A

STATE OF WASHINGTON, COUNTY OF Mason

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.

THIS IS TO CERTIFY *That* STATE OF WASHINGTON, DEPARTMENT OF INSTITUTIONS

of Olympia, Washington, *has made proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of the ground waters of* ~~xx~~ two (2) wells (No. 2 and No. 3)

located within SW¼NW¼ and NW¼SW¼

Sec. 9, *Twp.* 20 *N., R.* 4 W. *W. M.,*

for the purpose of domestic supply for Washington Correction Institution

under and subject to provisions contained in Ground Water Permit No. 6937 *issued by the State Supervisor of Water Resources and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Water Resources of Washington and entered of record in Volume* 11 *at page* 5376-A; *that the right hereby confirmed dates from* April 2, 1964; *that the quantity of ground water under the right hereby confirmed for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed* 563 gallons per minute; 268 acre-feet per year, for domestic supply for Washington Correction Institution.

Special provisions required by the Supervisor of Water Resources: The total annual withdrawal under this right shall not exceed 268 acre-feet, less any quantity diverted to this use under existing rights.

A description of the lands to which such ground water right is appurtenant:

All of Sec. 9, T. 20 N., R. 4 W.W.M., lying southerly of County Road, EXCEPT the SW¼SW¼, AND EXCEPT the easterly one-half (½) of the SE¼NE¼ AND EXCEPT the easterly half of the NE¼SE¼, and the easterly half of the SE¼SE¼.

The right to the use of the ground water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.

WITNESS the seal and signature of the State Supervisor of Water Resources affixed this

1st *day of* April, 19 66

M G Walker

State Supervisor of Water Resources.

NEERING DATA

Ground Water Permit No...............................

CERTIFICATE OF GROUND WATER RIGHT

Recorded in the office of the State Supervisor of Water Resources, Olympia, Washington, in Book No...............................*of Ground Water Right Certificates, on page*....................., *on the*....................*day of*.. *19*...........

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

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

....

STATE PRINTING PLANT OLYMPIA, WASH., 1964

S. F. No. 7361—5-60—3M. 62306.

CERTIFICATE RECORD NO. 10 PAGE NO. 4789-A

STATE OF WASHINGTON, COUNTY OF Mason

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.

THIS IS TO CERTIFY *That* STATE OF WASHINGTON, DEPARTMENT OF INSTITUTIONS

of Olympia, Washington, *has made proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of the ground waters of a* well (No. 1, producing)

located within SW¼NW¼

Sec. 9, *Twp.* 20 *N., R.* 4 W. *W. M.,*

for the purpose of Domestic supply for Washington Correction Institution

under and subject to provisions contained in Ground Water Permit No. 5764 *issued by the State Supervisor of Water Resources and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Water Resources of Washington and entered of record in Volume* 10 *at page* 4789-A; *that the right hereby confirmed dates from* November 16, 1961; *that the quantity of ground water under the right hereby confirmed for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed* 140 gallons per minute; 224 acre-feet per year for domestic supply for Washington Correction Institution.

Special provisions required by the Supervisor of Water Resources:

A description of the lands to which such ground water right is appurtenant:

All of Sec.9, T.20 N., R.4 W.W.M., lying southerly of county road, comprising 400 acres, more or less.

The right to the use of the ground water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.

WITNESS the seal and signature of the State Supervisor of Water Resources affixed this 27th *day of* April, *19*64.

M G Walker

State Supervisor of Water Resources.

ERING DATA

Bn

Ground Water Permit No...............................

CERTIFICATE OF GROUND WATER RIGHT

Recorded in the office of the State Supervisor of Water Resources, Olympia, Washington, in Book No...............................*of Ground Water Right Certificates, on page*....................*, on the*....................*day of*..............................

19...........

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

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

....

STATE PRINTING PLANT OLYMPIA, WASH., 1960

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
4789-A	Well 1	140		224													
5376-A	Well 2, 3, 4, 5	563		268		640	-77			563				563			
	TOTALS =	563		268		640	-77	252.8	15.2	563.0	-	293.6	-25.6	563.0	-	293.6	-25.6
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:

Washington Corrections Center for Women

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
August 24, 1977	G 2-24678	G 2-24678 P	G 2-24678 C

NAME
STATE OF WASHINGTON, PURDY TREATMENT CENTER FOR WOMEN

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
Box 17,	Gig Harbor	Washington	98335

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
well #2

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	100	100

QUANTITY, TYPE OF USE, PERIOD OF USE
100 acre-feet per year community domestic supply continuously
for the institution

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
750 feet north and 1100 feet west from the Southeast corner of Section 36.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SE¼SE¼	36	22	1 E	15	Pierce

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

That portion of the E½SE¼, Section 36, T. 22 N., R. 1 E.W.M., included within the limits of a tract of land described by metes and bounds as follows:
Beginning at the southeast corner of said Section 36 and running thence, along the south line thereof, south 89°15'07" west 547.45 feet; thence north 50°28'08" west 120.03 feet; thence north 44°28'23" west 282.70 feet; thence north 58°56'53" west 209.11 feet; thence north 87°36'08" west 278.23 feet; thence north 0°40'39" east 153.53 feet; thence north 0°01'23" west 263.12 feet; thence north 6°14'22" west 314.65 feet; thence north 25°29'22" east 183.39 feet; thence north 63°22'07" east 137.03 feet; thence south 82°50'08" east 326.98 feet; thence north 78°38'22" east 568.85 feet, to a point of the westerly right of way line of primary State Highway No. 14; thence, along said right of way line, south 18°48'40" east 440.77 feet, to a point on the east line of said Section 36, and thence along said east line, south 2°21'21" east 1,040.43 feet, to the point of beginning, having an area of 33.39 acres, as shown on the plat thereof on file in the office of the Commissioner of Public Lands at Olympia, Washington.

PROVISIONS

"The total annual quantity under Ground Water Certificate No. 7311 A and this certificate (G 2-24678) shall be limited to 140 acre-feet per year for community domestic supply and industrial use. The 100 acre-feet per year authorized under G 2-24678 shall be an alternate and/or supplemental supply to Ground Water Certificate No. 7311 A."

The access port as required on your permit shall be maintained at all times.

A suitable measuring device shall be installed and maintained in accordance with WAC 508-64-020 through WAC 508-64-040.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Olympia *Washington, this* 9th *day of* May, *19* 79

WILBUR G. HALLAUER, DIRECTOR
Department of Ecology

ENGINEERING DATA
OK RPB
VES

by E.W. Asselstine
E.W. ASSELSTINE, Regional Manager

FOR COUNTY USE ONLY

S. F. No. 7361—(Rev. 6-70).

CERTIFICATE RECORD NO. 15, PAGE NO. 7311-A

STATE OF WASHINGTON, COUNTY OF Pierce

CERTIFICATE OF GROUND WATER RIGHT

(Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology thereunder.)

THIS IS TO CERTIFY *That* WASHINGTON STATE DEPARTMENT of NATURAL RESOURCES *of* Olympia, Washington, *has made proof to the satisfaction of the Department of Ecology of a right to the use of the public ground waters of the State of Washington from* a well *located within* SE¼SE¼SE¼ of *Sec.* 36, *Twp.* 22 *N., R.* 1 E. *W.M., for the purpose(s) of* community domestic supply and industrial use *under and specifically subject to provisions contained in Ground Water Permit No.* 8955 *issued by the Department of Ecology and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the Department of Ecology and entered of record in Volume* 15 *at page* 7311-A; *that the priority of the right hereby confirmed dates from* October 3, 1968; *that the quantity of ground water under the right hereby confirmed for the aforesaid purposes, is limited to an amount actually beneficially used for said purposes, and shall not exceed* 107 gallons per minute, 135 acre-feet per year, during entire year for community domestic supply; and 5 acre-feet per year, during entire year, for industrial use.

A description of the lands to which such ground water right is appurtenant is as follows:

That part of the east 2000 feet of the south 2000 feet of SE¼, Sec. 36, T. 22 N., R. 1 E.W.M. lying westerly of State Highway 16 (14).

The right to use of water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390 and 90.44.020.

This certificate of ground water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and seal of this office at Olympia, Washington, this 11th *day of* June, *19*71.

JOHN A. BIGGS, *Director*
Department of Ecology

Engineering Data
OK A.F.

by Glen H. Fiedler
Glen H. Fiedler

Ground Water Permit No.........................

Certificate of Ground Water Right

Recorded in the Department of Ecology, Olympia, Washington, in Book No..............

.... of Ground Water Right Certificates, on page..........................., on the

........................day of.......................................

19..........

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

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

...., 19..........

....

STATE PRINTING PLANT, OLYMPIA, WASHINGTON

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 (gpm)	Non-Additive Qi Maximum Rate Allowed	Primary Qa Maximum Volume Allowed (AFY)	Non-Additive Qa Maximum Volume Allowed	Total Qi Maximum Instantaneous Flow Rate Withdrawn (gpm)	Current Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume Withdrawn (AFY)	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
7311-A	Well #1	107		135		18	89.0	103.0	32.0	100	7.0	112.3	22.7	100	7.0	112.3	22.7
G2-24678C	Well #1, Well #2	100		100													
	TOTALS =	107.0		135.0		18.0	89.0	103.0	32.0	100	7.0	112.3	22.7	100	7.0	112.3	22.7
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 Maximum day (gpd)	Maximum Qa Average Day (gpd)		Maximum Qi Maximum Day (gpd)	Current Excess or (Deficiency) Qi	Maximum Qa Annual Volume	Current Excess or (Deficiency) Qa	Maximum Qi 10-Year Forecast (Maximum Day)	Future Excess or (Deficiency) Qi	Maximum Qa 10-Year Forecast (Annual Volume)	Future Excess or (Deficiency) Qa	Maximum Qi 20-Year Forecast (Maximum Day)	Future Excess or (Deficiency) Qi	Maximum Qa 20-Year Forecast (Annual Volume)	Future Excess or (Deficiency) Qa
City of Gig Harbor	210,000	80,000		207,034	2,966	75,458	4,542	207,034	2,966	75,458	4,542	207,034	2,966	75,458	4,542
TOTALS =	210,000	80,000		207,034	2,966	75,458	4,542	207,034	2,966	75,458	4,542	207,034	2,966	75,458	4,542
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:

APPENDIX C5

Water Conservation Plans

Cedar Creek Corrections Center

VATER

STATE OF WASHINGTON
DEPARTMENT OF CORRECTIONS
OFFICE OF ADMINISTRATIVE SERVICES
CAPITAL PLANNING AND DEVELOPMENT
P.O. Box 41112 • Olympia, Washington 98504-1112 • (360) 586-6131
FAX (360) 586-8723

June 15, 2004

TO: Dan Pacholke, Superintendent CCCC
Wes Anderson, Plant Manager
Ed Burns, Water System Manager

FROM : Nancy Winters, Assistant Director of Environmental Services NW

SUBJECT: WATER LIMITATIONS AND CONSERVATION AT CCCC

After several delays, I have completed the pump test report (attached). The report will also be appended to the EES final report.

From our discussion last week, it is clear that we all realize the water limitations at CCCC and the importance of appropriate water management from the point of water withdrawal through its use. You have already begun a commendable program of strict water conservation and are coupling the conservation measures with an aggressive program of stormwater collection and use. Your efforts in the area of water conservation can serve as a model to all of our institutions.

We also discussed the fact that although the existing wells can provide water for the current institutional needs, the gradual, long-term decline in the aquifer indicates that water conservation will need to become a permanent way of life at CCCC. This is confirmed in both the attached pump test report and the EES report. I recommend that as soon as feasible you begin operating Wells 1 and 2 to meet the institutional water supply needs while optimizing the short-term recovery and long-term preservation of the aquifer. EES will provide a conceptual management scheme to tailor the operation of the well pumps and the reservoir transfer pumps. They are also willing to work with you on the details of the management scheme.

Finally, I am recommending that a pump test be conducted for Well 1 during the dry season. To ensure the success of the test, the pump capacity needs to be reduced to provide a lower, but constant rate. The reduced rate (between 35 and 50 gpm) should be the highest rate that is sustainable for 7 to 10 hours (i.e., the duration of the test). The purpose is to demonstrate the highest rate of withdrawal that can be sustained with a constant pumping water level above the well intake. I would be happy to conduct the pump test in late summer or early fall, at your convenience.

Thank you for your willingness to implement water conservation measures and stormwater collection and utilization. Thank you also for your willingness to work with us and EES to optimize well operation to extend the life of the aquifer.

NW:rb
cc: Russell Paxson, w/ Attachment
\\Efcp_server\Correspond\2004\Environmental\CCCC Pump test Memo 6 15 04.doc

Cedar Creek Corrections Center
Water Limitations and
Recommendations for Water Conservation

Prepared by

Nancy L. Winters
Environmental Services
Capital Planning and Development
Department of Corrections

June 2004

Cedar Creek Corrections Center
Water Limitations and Recommendations for Water Conservation

1.0 INTRODUCTION

1.1 Background

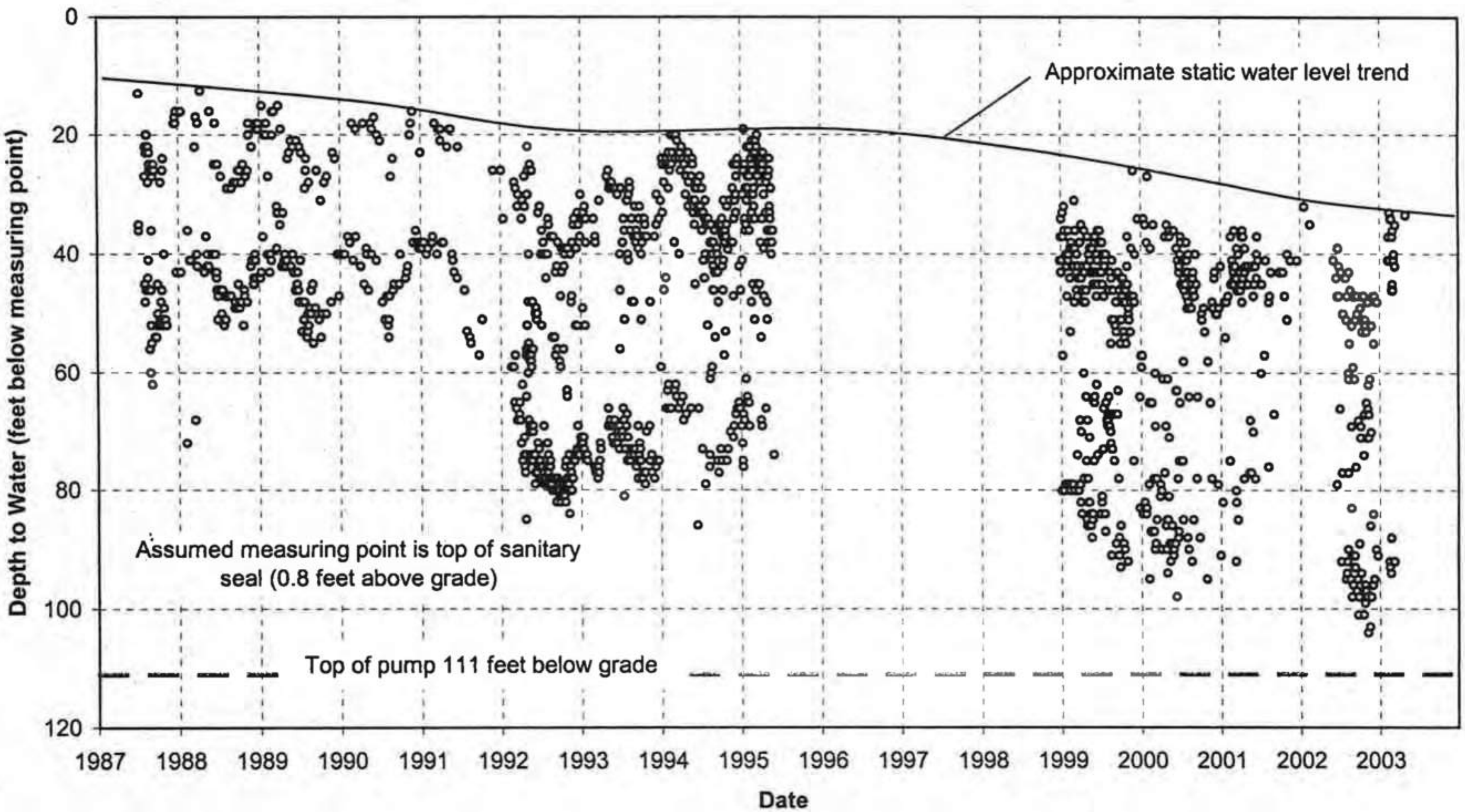
Cedar Creek Corrections Center (CCCC) obtains its water supply from groundwater withdrawn from a fractured basalt aquifer. The two existing wells draw water from the unconfined aquifer that extends from approximately 60 feet to 200 feet below the ground surface (bgs). As a fractured basalt unconfined aquifer, water that infiltrates from the surface is stored in localized pockets or fractures.

Prior to the drought of 2003, the facility reported a declining pumping water level. The water system manager reported that the water level in Well 1 was being drawn down to the extent that the pumps in were in jeopardy of drawing air. He requested assistance to remedy the declining water level situation.

Economic and Engineering Services, Inc. (EES) was contracted to assess the situation and provide recommendations. Their report recognized that the aquifer was being depleted in the long term, noting that the estimated static water level had declined 25 feet, since the 1990s (Figure 1) (EES, 2003). Based on this analysis, the long term recharge (rate of water replenishment) is less than the withdrawal. Their report culminated in a recommendation for meeting the immediate water need at the facility however EES acknowledged that the recommendation was a short-term solution only.

To provide the facility with relief from the predicted drought, the Department of Corrections (DOC) elected to implement the EES recommendations of increasing the pump capacity and lowering the pump in Well 1. Previously, the pumps in the two wells had been set at approximately 120 feet below the ground. Well 1 had two 30 gallon per minute (gpm) pumps, and Well 2 had one 50 gpm pump. DOC purchased a higher capacity pump (70 gpm) to replace the two 30 gpm pumps in Well 1. The new, higher capacity pump was installed at a depth of 170 feet bgs, 50 feet lower than the previous pumps.

The solutions appear to have exacerbated the situation. According to the water system manager, the operation of Well 1 in late summer drew the water to within 5 feet of the lowered pump in Well 1. In fact, the pumping water level was lowered about 65 feet more than prior to installation of the new pump. This rapid decline occurred even though water use in June through August was generally less than it had averaged the three previous summers (Figure 2). The higher capacity pump in Well 1 substantially lowered the water level during pumping jeopardizing the pump and causing a steeper cone of depression. The cone of depression is a function of the ability of the aquifer to transmit water from the formation into the well. This phenomenon should not be confused with the longer-term depletion of the aquifer.

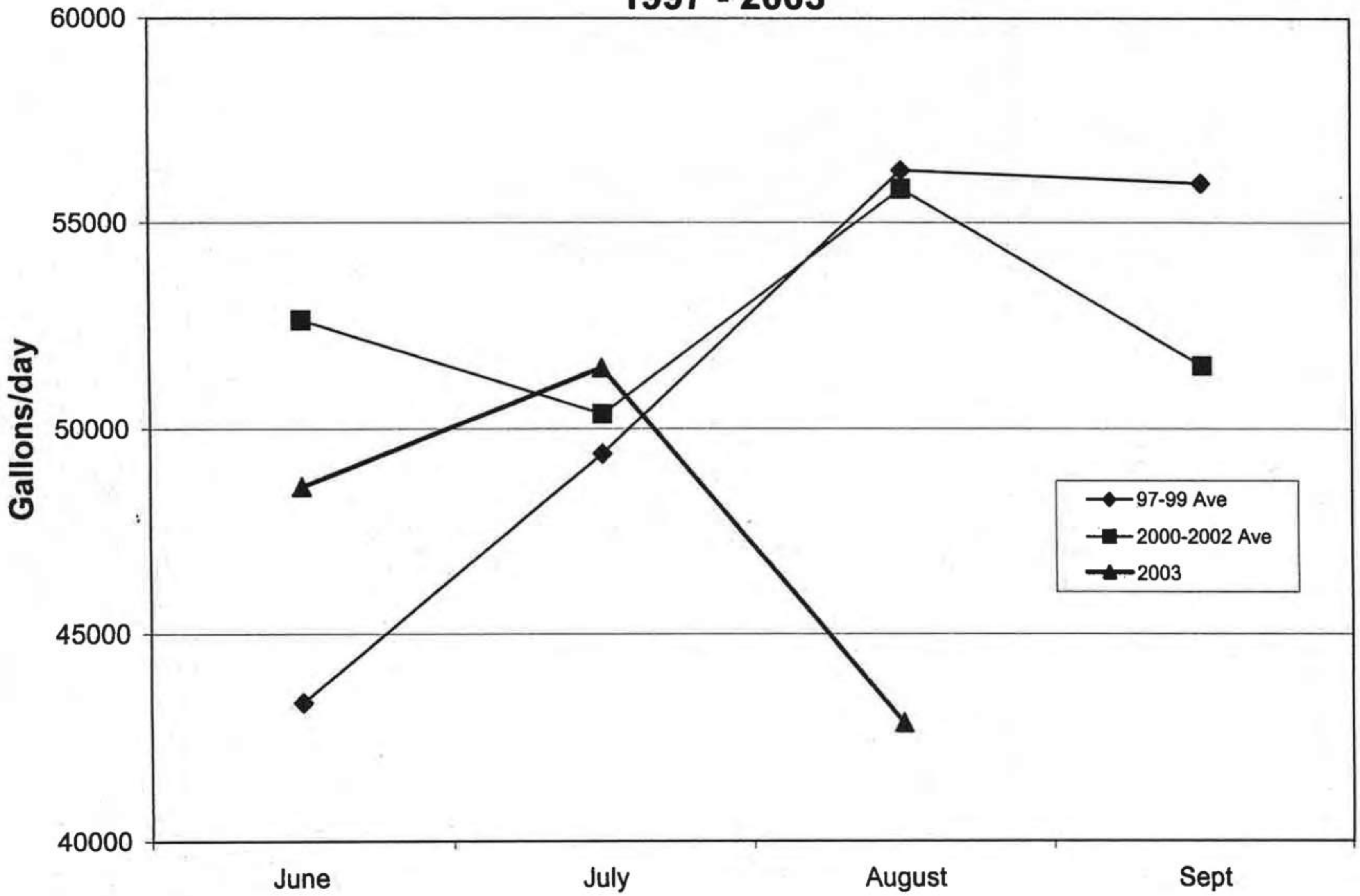


Aspect consulting IN-DEPTH PERSPECTIVE

Depth to Water in Well #1

Figure 1

Figure 2. Summer Water Usage at CCCC 1997 - 2003



A number of water conservation measures had already been implemented based on the 1996 Gray & Osborne, Inc. (G&O) Water Conservation Plan with a resultant decline in water usage. CCCC implemented additional, more stringent water conservation measures beginning in the summer of 2003 and continuing. Implementation of these measures has resulted in a reduction in monthly water use (Figure 3).

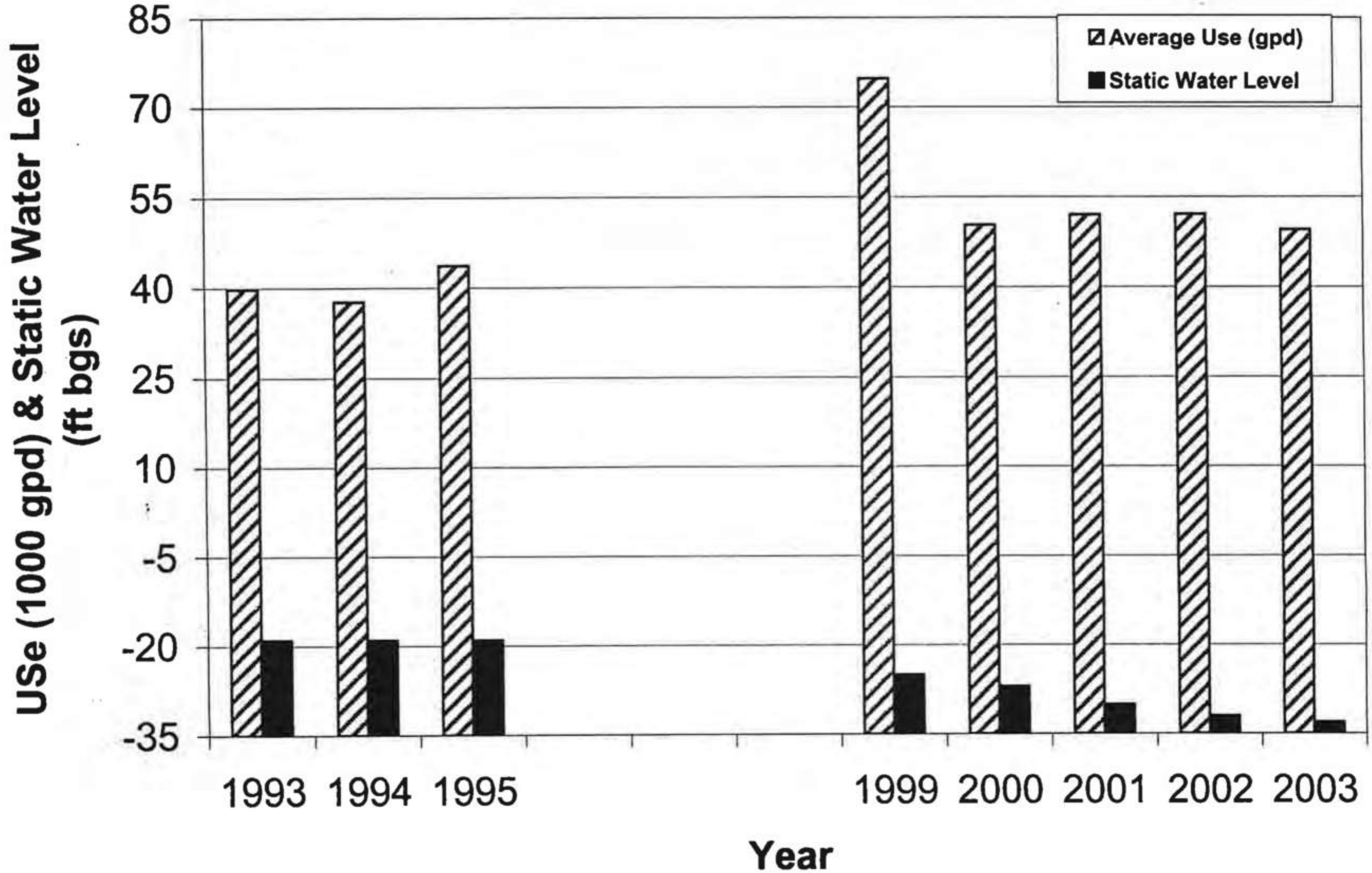
1.2 Purpose

The purpose of this study and report was two pronged. The first objective was to evaluate how the water system might be better operated to ensure a long-term water supply to the institution. Specifically, the objective was to determine a pumping volume, rate, and regime that the aquifer could sustain while providing an adequate water supply to the institution. To accomplish this objective, historic and more recent static water level data were evaluated to assess the long-term aquifer sustainability. A constant rate pumping test was conducted to determine a rate of pumping at which the water in the aquifer could be recharged as quickly as it is withdrawn, and to ascertain the amount of resting time needed for the water in the wells to return to 95 percent of the measured static water level.

The second objective of the study was to evaluate short and long-term options to provide water for the current population level at the institution. This included a discussion of water use and assessment of additional applicable water conservation measures and water re-use.

Section 2.0 of this report assesses historic data regarding static water levels in the aquifer, the rate of decline, and causal factors. Section 3.0 describes the pumping test methods and results. This section also provides an analysis and interpretation of the pumping test data in light of other information available, and provides a recommended pumping regime for the water system. Section 3.0 also identifies potential new sources of water. Section 4.0 of this report describes water conservation measures, many of which have been implemented since undertaking this study. Section 5.0 summarizes the recommendations derived from the study.

Figure 3. Average Water Use & Static Water Level



2.0 ANALYSIS OF STATIC WATER LEVELS

2.1 Static Water Level Decline

EES reported a decline in the static water level of approximately 20 feet since installation of Well 1 in 1986 (EES, 2003). This value was an estimate based on the water levels recorded in the well log at the time of drilling (13 feet below the top of the well) and an estimate derived from data provided by the institution.

As EES noted, a decline in the water level of about 6 feet occurred between 1987 and 1992 (Figure 1). (Measurement data were not available between mid-1995 and early 1999). The report depicts a more pronounced decline in the estimated static water level, which occurred with increased production after 1992. Production increase was associated with an increase in the CCCC population from 200 to 400 offenders in mid-1998. This coincident rise in use and population is illustrated in Figure 3. Average consumption in 1993 was 38,280 gpd, while it had increased to 58,926 gpd by 2000. The increased consumption reflects the increased population, although consumption per inmate was tempered by implementation of some water conservation measures (G&O, 2000). Between 1998 and 2003, the rate of decline of the aquifer went from 6 feet the first five years to slightly double that.

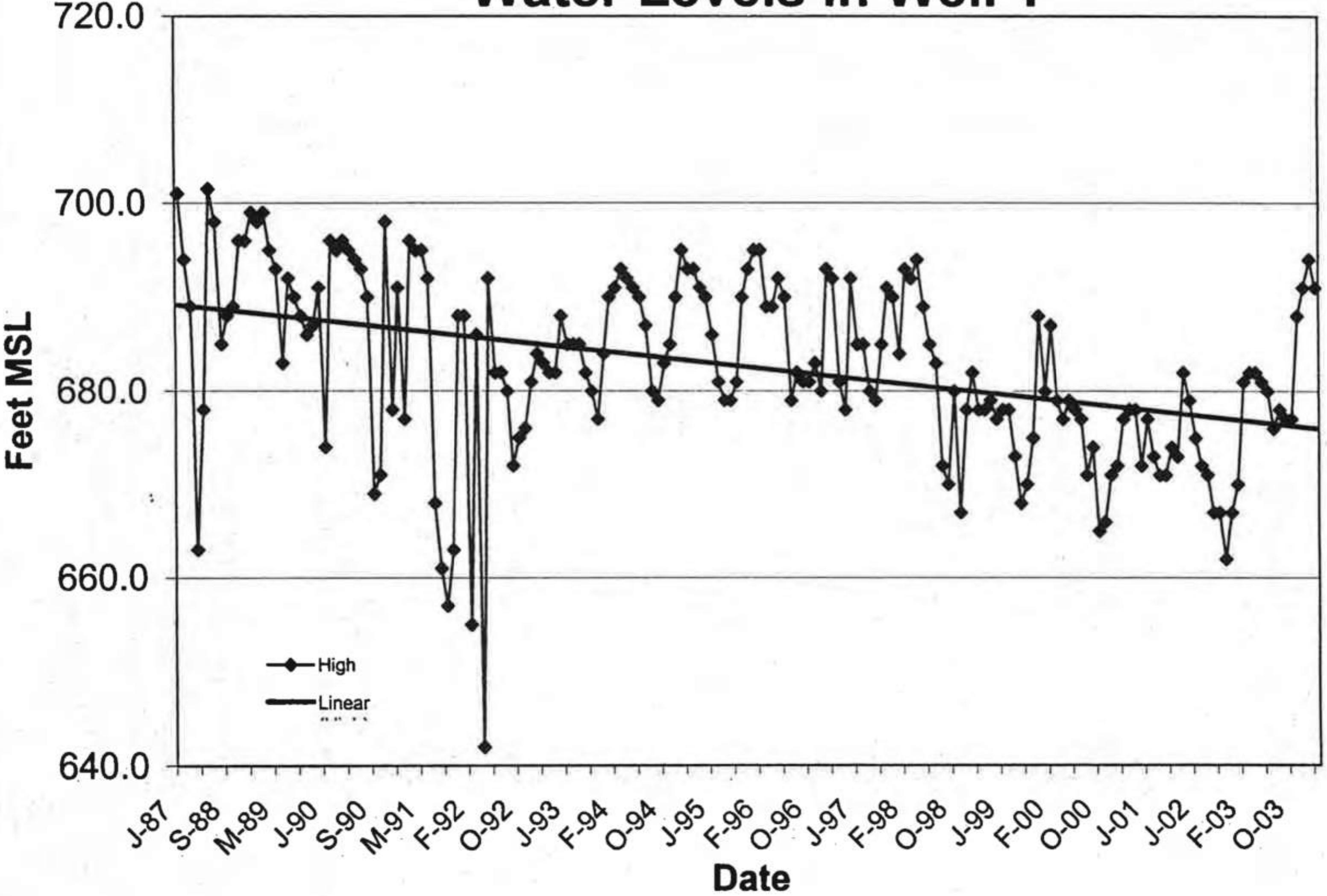
It is noteworthy that even with a 36 percent lower withdrawal rate prior to 1998, water table decline was observed. At the greater daily withdrawal rates required to support a larger offender population, a much greater rate of static water decline occurred.

The data presented in Figure 1 have two flaws. First, data are missing between mid 1995 and 1999. This flaw has been remedied with the recent submittal of the highest monthly water levels recorded between 1987 and the present. These data are illustrated in Figure 4, and confirm the net downward trend in the estimated static water levels since well installation.

The second and more important flaw is the fact that water level readings presented in both Figures 1 and 4 were obtained during various periods of pumping, rather than at the end of an aquifer recovery period. Historically, there was no standardization of water level measurements, (i.e., measurements were obtained at a variety of times during a pumping period). The data obtained resulted in the scatter of points on Figure 1. Despite this flaw, an interesting observation can be made. Not only did the highest recorded water levels decline over time, but the lowest recorded water levels declined as well. This downward trend is particularly evident when comparing mid-1994 to mid-2000 and late 2002. The trend also indicates that water in the aquifer is declining. In other words, in the long-term, water is being withdrawn faster than it can be replenished.

To remedy the second flaw, beginning in December 2003, data are being collected at the same time each day and after a minimum of 2 to 3 hours in which pumps at both wells have been turned off. This standardization of water level measurement will allow trends in the static water level to be determined with greater accuracy. An evaluation of the last few points taken since December 2003 (Figure 4) indicates a static water level between 20 and 23 feet bgs. This would equate to a 7 to 10-foot decline since well installation. Although this decline is less than the

Figure 4. Highest Recorded Monthly Water Levels in Well 1



20-foot decline reported by EES, the data continue to support a gradual loss in aquifer productivity due to higher rate of water withdrawal than recharge. Should the population of the facility increase over the current level of 400 offenders, accompanied by a higher total daily water consumption, the aquifer could be depleted even more rapidly.

On the other hand, with a lower daily usage per inmate through implementation of water conservation measures, the productivity of the aquifer can be extended. In August 2003, the facility implemented some aggressive water conservation measures. At that time, the average daily withdrawal decreased to 42,891 gpd (107 gallons per person per day, assuming 400 offenders), a savings of 16 percent over the 2001 usage of 128 gallons per person per day).

2.2 Causes for the Decline in Static Water Level

A number of causes for the decline in static water levels in the aquifer have been hypothesized. The first and most likely causal factor is utilization by the institution. This factor is supported by the previously discussed data, correlating CCCC population increase and water level decrease.

A second contributing factor considered is water withdrawal by other water users. However, no other major water rights holders are located within five miles of the institution. The Weyerhauser nursery has a large water right, but the nursery is not likely in hydraulic continuity with aquifer at the institution for two reasons. Weyerhauser is quite a distance from CCCC and their nursery withdraws water from the alluvial aquifer, rather than the basalt aquifer. Therefore, this causal factor is not supported by the available information.

Third, reduced recharge due to reduced precipitation was considered another possible causal factor in the declining static water levels. This factor was eliminated from consideration based on a recent memorandum from Department of Ecology (Appendix A). The memorandum provided historical precipitation data that refuted the reduced precipitation hypothesis.

Finally, declining water levels might be attributed to reduced recharge due to land use patterns such as timber clear cutting, or development that would reduce infiltration. The recent Ecology memorandum (Appendix A) cites timber harvest as a potential contributing factor.

While reduced recharge from timber clearing cannot be eliminated as a contributing factor, the explanation which is most directly linked to the long-term decline in water level is withdrawal by the institution.

3.0 PUMP TESTING AND WATER AVAILABILITY

3.1 Pumping Test Methods

A 12-hour constant rate pumping test was conducted on December 17, 2003, by Nancy Winters, Shane Loper, and Doug Raines; all three are DOC, Environmental Services staff. Well 2 was selected as the pumping well, with Well 1 the observation well. (Data describing the two wells are presented in Table 1.) While both pumps operate a constant pumping rate, the 70 gpm rate in

Well 1 had caused rapid and significant drawdown, to the extent that the pumping water level approached the pump intake. Thus, Well 2 was selected for its lower pump rate.

Table 1. Well location information, well and pump statistics, and static water level

Parameter	Well 1	Well 2
Land elevation at well head (ft. MSL*)	718	708
Height of casing above grade (ft)	2.71	2.71
Initial water level (ft. bgs from casing top)	22.94	25.1
Pump level (ft. bgs)	170	120
Pump capacity (gpm)	70	50
Distance between the wells (ft.)	322.85	

*MSL = above mean sea level

Prior to commencement of the pump test, the aquifer was allowed to equilibrate for approximately 16 hours. The pumps in both wells were manually stopped in mid-afternoon on December 16, 2004. The static water levels in the Wells 1 and 2 were 22.94 and 25.10 feet bgs, respectively, prior to the start of the test. Well 2 began pumping at approximately 50 gpm at 7:34 am. Water level measurements were obtained using the digital water level sensor installed in Well 1 and a manual electronic tape in Well 2. Measurements of the water levels in each of the wells were taken simultaneously at the time intervals and for the periods listed below:

- every 30 seconds for 10 minutes
- every 5 minutes for one hour
- every 15 minutes for 3 hours
- every 30 minutes for 2.5 hours
- every hour for 3 hours

The water volume pumped for the interval was also recorded to allow the rate of pumping to be calculated. By 7:22 pm, the water level in Well 2 had remained constant (within 0.5 ft) for 7 hours, and the pump in Well 2 was stopped. As the water levels in both wells recovered, measurements were recorded in each well simultaneously at the time intervals and for the periods listed below:

- every 30 seconds for 10 minutes
- every 5 minutes for 1.5 hour
- every 15 minutes for 45 minutes

When the water level in Well 2 had returned to within 97 percent of its original level, the pumping test was terminated.

3.2 Results

The pumping test curves are presented in Figure 5 for the pumping well (Well 2) and the observation well (Well 1). Expanded graphs and detailed data analyses are provided in Appendix B.

The pumping test demonstrated that at a pump rate of 50 gpm, the water level in Well 2 declines precipitously (67 feet) in the first 10 minutes of pumping. The water level reached equilibrium in Well 2 after approximately 100 minutes and remained at approximately 112 feet bgs (594 ft MSL) for the remainder of the pump test.

The water level in Well 1 declined approximately 9.5 feet over the duration of the test in which Well 2 was pumping. As expected, the water level in Well 1 did not reach equilibrium during the 12 hour test. Generally, the greater the distance between wells drawing from the same aquifer, the slower the water level in the distant well is to respond or be drawn down.

Within 2 hours after pumping ceased, Well 2 recovered to within 97 percent of its static level. Well 1 recovered to only 70 percent of its static level within 2 hours. By extrapolating the recovery curve, 95 percent recovery of the static water level in Well 1 is estimated to require between 6 and 10 hours.

3.3 Pumping Test Analysis

The pumping test demonstrates that the aquifer is capable of supporting a constant pumping rate of 50 gpm at Well 2. Higher pumping rates from a single well (either Well 1 or Well 2) have not been demonstrated to be sustainable. However, one might assume that pumping at 60 gpm is likely to be sustainable in Well 1 based on prior operation of the two, 30 gpm pumps with a drawdown of about 120 feet with the pumps set at 166 feet bgs.

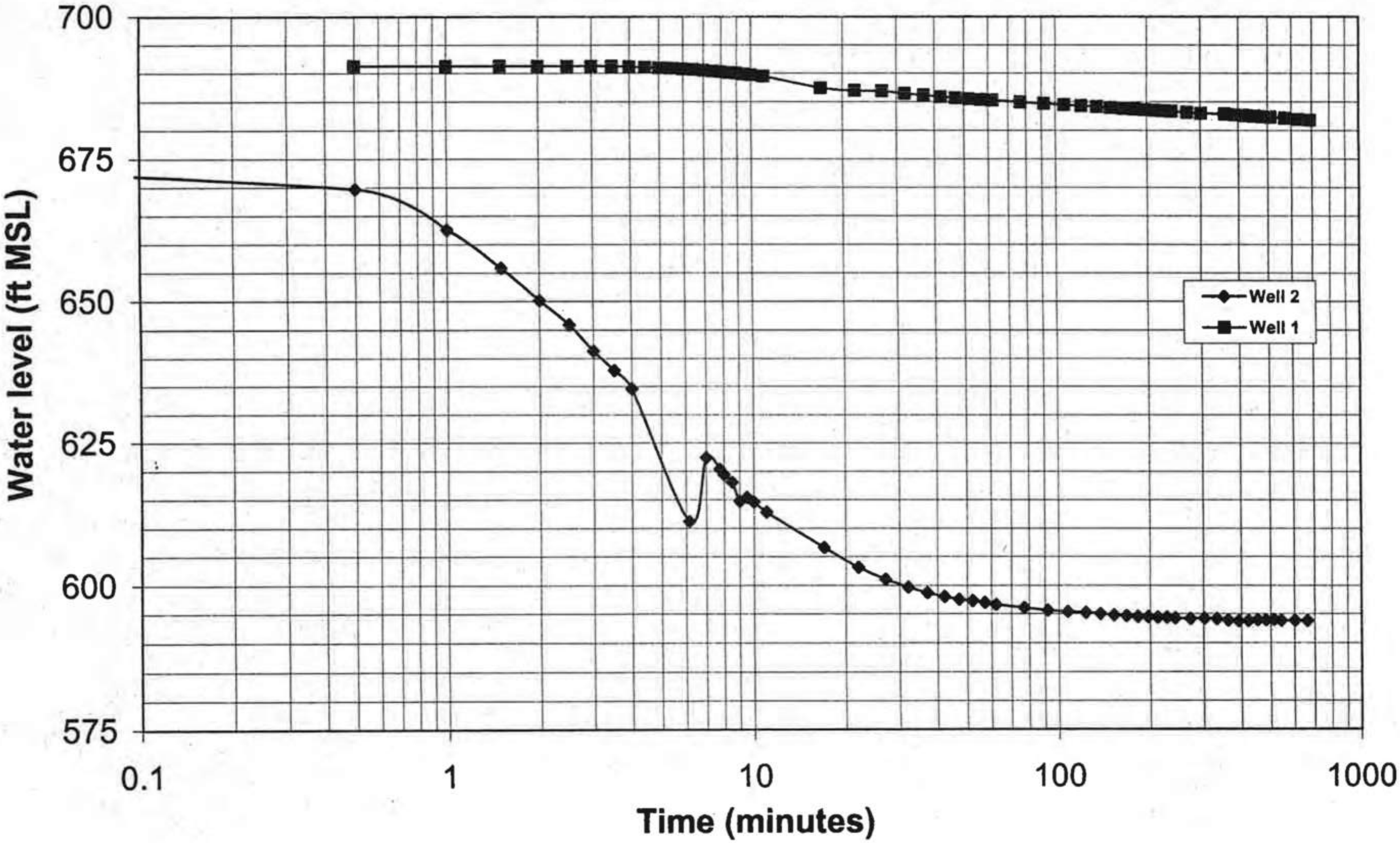
At a 50 gpm pumping rate, Well 2 can supply the institution's average needs of 52,000 gpd in about 17 hours and maintain a constant water level of 113 feet bgs or 592 feet MSL. This is 6 feet above the pump in the well. Well 2 can supply the institutions water needs pumping only 14 hours a day when implementing conservation measures similar to those in effect since December 2003.

Although Well 2 recovered to within 95 percent of the original water level within 2 hours, the aquifer requires a much longer period (as evidenced by the slower recovery in Well 1, Appendix B). On the basis of this pumping test, Well 2 should be operated continuously until the needs for the day are met, and then allowed to rest for the maximum amount of time. Transfer pumps in the reservoirs would need to be adjusted to accomplish this pumping regime.

Calculations described in Appendix B indicate that the aquifer's ability to transmit water (transmissivity) is different between the two locations. At both wells, the transmissivities are below the average range that provide major municipal supplies, but appear adequate for the size of the population at CCCC.

Figure 5. Pumping Test

Pumping - Well 2; Observation - Well 1



The tranmissivity calculations were used to extrapolate drawdown at higher pumping rates. Well 2 would not be expected to support a 70 gpm rate of withdrawal with the pump set at the current level of 120 feet bgs. A similar extrapolation for Well 1 predicts that it might be capable of supporting a flow of 70 gpm. However, this has not been the experience of the well system manager. When the two smaller 30-gpm pumps in Well 1 were replaced with a single 70 gpm pump, which was set substantially lower in the borehole (at 170 feet bgs or 545 ft MSL), the drawdown resulted in a water level within five feet of the pump within two hours of pump startup (E. Burns, pers. comm.). Apparently, there are sufficient differences in the aquifer between the two wells that the current pump test cannot be used to successfully extrapolate to a pumping scenario at Well 1. A pumping test at Well 1should be conducted to gain greater understanding of the proper operation of Well 1.

3.4 Recommendations for Pump Operation and Future Testing

The constant rate pumping test indicated water could be predictably pumped at 50 gpm from Well 2 without severe drawdown that would jeopardize the pump. Currently, Well 1 can only be operated at 70 gpm, when operated alone. This results in severe drawdown and jeopardizes the operation of the pump. Based on this information and the analysis of the pump test, the following recommendations for water system operations are made:

- Well 2 should be operated to provide all of the water needs for the facility, until a pump test can be conducted on Well 1. Well 2 can pump an average of 52,000 gpd in 17 hours which will meet the current water needs of the facility.

- Within each 24-hour period, Well 2 should be operated to allow the aquifer a recovery time of at least two hours between pumping periods. Longer periods of recovery are encouraged.

- The pump test on Well 2 was conducted during December, which is not during the dry season when the aquifer may be under more stress. It is recommended that a step drawdown pump test be conducted in a drier period, when the aquifer receives less recharge from precipitation.

- The pump in Well 1 should be retrofitted with either a variable frequency drive to reduce the pumping rate to a rate the aquifer can sustain (likely between 50 and 60 gpm), or a globe valve should be placed on the discharge to reduce the flow to between 50 and 60 gpm.

- A step drawdown pump test should be conducted on Well 1 after it is retrofitted as described above. This should also be conducted during the dry season.

- Well 1 should be operated alone only in an emergency situation until an appropriate pumping rate can be established for it. This will protect the pump by preventing drawdown that may approach the pump intake. (Simultaneous pumping of Wells 1 and 2 can reduce the withdrawal rate in Well 1 and thereby reduce the drawdown.)

3.5 New Sources Of Water

3.5.1 New Sources of Groundwater

The institution could contract to evaluate options for installation of a new well in a deeper aquifer. Mr. Bob Bergquist, formerly employed by DOC, vaguely recalled that another well was drilled in approximately 1992, possibly in conjunction with the installation of Well 2. The driller selected the top of the hill and drilled to a depth between 400 or 500 feet bgs without locating any water (Bergquist, pers. comm.). Well drilling is an expensive endeavor without the certainty of locating a water supply, and should be undertaken after other options have been explored.

Additionally, the installation of a new well would require a water right. Currently, water right applications at the Department of Ecology Southwest Regional Office are severely backlogged. In the Chehalis watershed, the watershed in which CCCC is located, water right decisions will likely be made only after the Chehalis Basin Partnership completes its Watershed Management Plan. Since about 1999, water rights applicants have had an option to reduce the wait for processing, by hiring a third party consulting firm to conduct the necessary studies. However, the applicant must assume the costs for all applications in the queue prior to theirs. This could become a costly option.

3.5.2 Wastewater Reuse

Wastewater re-use may be the most viable option to identify "new water." This option is particularly attractive because it would support the DOC's Sustainability Plan.

G&O evaluated wastewater re-use in the Water Conservation Plan Update (G&O, 2000). Cost estimates ranged between $720,000 and $800,000, for Class B and Class A reclaimed water, respectively. Both classes can be used for a variety of applications such as landscape irrigation, fire fighting, and equipment washing. These costs do not include storage and distribution and would need to be inflated for current dollars. Costs may not be reflective of current regulations. Thus, the institution should consider evaluation of current costs to use wastewater for landscape irrigation. These costs could be included as a budget item for consideration by the legislature for FY 2005-2007.

4.0 WATER CONSERVATION RECOMMENDATIONS

Several water conservation measures are identified in the following section, grouped according to activity. These measures were either identified in the Water Conservation Plan (G&O, 2000) or developed after a discussion of water use at CCCC in November 2003. These measures are consistent with and support the implementation of the agency's Sustainability Plan (DOC, 2003). Many of these measures have been implemented at the institution since the drafting of this report and are recorded here for completeness. Continued integration of these measures into the on-going culture of CCCC may be able to provide some water for a potential expansion of the facility.

Descriptions of water use in each of the activities at the institution are largely estimates based on the Water Conservation Plan (G&O, 2000). Water metering, either with portable water meters and/or day/night patterns of water use is necessary to determine the areas of largest potential savings.

4.1 Education

Education is the foundation of every successful water conservation program. Patterns of water use are primarily an individual activity based on habits and underlying values. For water conservation to be effective over the long term, use patterns (i.e., behaviors) must be changed, requiring changes in understanding, beliefs, and finally implementation. This is as true for offenders as it is for staff. Thus, implementation of recommendations will support the success of an integrated water conservation and water-reuse program.

- Begin a program of water conservation awareness and education for staff and offenders alike. Classes can provide attendees with an understanding for the need to implement conservation measures, as well as practical examples for their daily duties. Most importantly the education/awareness course should be designed to foster and encourage new ideas from the audiences for further water savings.

- Institute a water conservation committee that assesses the feasibility of water conservation opportunities generated in awareness classes and elsewhere. Water conservation could be integrated as a pivotal part of the site Sustainability Committee, or a subcommittee could be formed to address water conservation/water re-use. One idea is to include offenders as well as staff on the committee; this would foster greater success in implementation. The committee could ensure that feasible water conservation measures are approved at the necessary levels and are implemented. They could track water savings achieved.

4.2 Residences

Showers represent the greatest proportion (25 percent) of known use, according to Gray and Osborne, Inc. (2000). Flow restrictors have been installed limiting flow to 2.5 gallons per minute. Length and number of showers per offender per day has been curtailed in the past with some success. Waterless urinals were installed but were subsequently removed due to what were described as failures in the design of the early technology.

- Permanently restrict showers to 5-7 minutes per offender per day. However, this is only likely to be successful in the long term with an education campaign approach, rather than by mandate.

- Evaluate new technology waterless urinals. This should include an assessment of similar institutions that have recently installed various brands. Determine whether the designs have improved to make purchase and installation cost-effective.

- Repair leaky faucets, showers, and toilets as soon as they begin dripping.

4.3 Laundry

Laundry represented 20 percent of known water use (G&O, 2000). Recently, the commercial washers have been reduced by 35 percent of the normal flow decreasing the proportion of overall use. Water conservation options are presented in order of most water saving:

- Ship all laundry to a neighboring institution for washing (e.g., WCC) routinely, or only during peak use times such as fire fighting season.

- Invest in a complete wash water and rinse re-use system such as the AquaRecycle system ($90,000). Appendix C provides cost details and contact for this system.

- Invest in a system to return rinse water to the wash cycle.

4.4 Grounds Maintenance

The G&O study could only provide approximate estimates for irrigation water use. Seasonally, irrigation represents a significantly greater proportion of the total water use than the 9 percent estimated in the report based on an average over all seasons. Water metering could provide an estimate of the actual water use for the grounds and greenhouse.

During the December pumping test, a hose was observed flowing into the landscape pond adjacent to the Administration Building. In discussions with officers, this practice commonly results in the hose running 24 hours a day seven days per week to maintain the level of the pond. Thus, implementation of conservation measures for grounds maintenance activities is likely to result in a larger water savings than estimated by the G&O plan.

Short-term and continuing water conservation measures include:

- Makeup water for the pond adjacent to the Administration Building should be added only from roof runoff collected during the rainy season. If the pond is being recharged because it leaks, bentonite clay should be added to the bottom (after removing fish and plants) to prevent leakage.

- Collect roof runoff during the rainy season and use for irrigation and pond make-up water, as needed. Roof runoff can be collected in 2,000 to 4,000 gallon tanks.

- From July through September, completely stop watering lawns. The lawns will green up again in the fall.

- In other seasons, limit all landscape watering to no more than 1 inch per week applied once during the week, and only when precipitation has not provided 1 inch. Water application can be measured using the low tech "tuna can" method.

- Water in the early mornings or late evenings, rather than during the heat of the day, to reduce evaporation.

- Water landscaping plants other than lawns with buckets and only 1 inch per week. If these are native species, they will only require watering the first year.

Long-term measures, which can begin immediately include:

- To the maximum extent possible, replace current landscaped and lawn areas with native species, reducing the high water requirements of these plants. Native plants are attractive and can withstand drought conditions, similar to the summer of 2003, without watering. The G&O report provides a long list of appropriate species which is reproduced in Appendix D. A list of native plant resources and technical contacts are provided in Appendix E.

- Install drip irrigation or another water efficient system in the greenhouse (especially if mosses will be grown commercially) and in the vegetable garden. Ensure water applications do not exceed the weekly needs of the specific species, but not more than 1 inch per week.

- With Department of Ecology, investigate whether CCCC still holds a surface water right for the local stream identified in the G&O water conservation plan. Determine whether or not this water can be used for grounds irrigation.

4.5 Kitchen

While the kitchen use represents less than 3 percent of the total water used at the institution, all means of conserving water should be implemented.

- Install flow restrictors on all faucets and sprays.

- Investigate the feasibility of rinse water re-use for the dishwashers.

- Use dish washer rather than hand washing dishes, whenever possible. If hand washing is necessary, hand wash dishes in batches and only in plugged sinks, rather than individually with running water.

- Repair leaky faucets as soon as they begin dripping.

- Continue to scrape food from dishes prior to rinsing.

4.6 DNR Facilities

Water at the DNR-operated facilities is predominantly used for vehicle washing. Water conservation measures should be implemented by all entities using the limited water supply.

- Install water reuse system for vehicle washing. Request that DNR eliminate vehicle washing during drought seasons.

- Install flow restrictors on all lines.

- Use automatic shutoff nozzles on hoses.

- Repair dripping faucets as soon as they begin dripping.

4.7 Leak Detection and Flow Monitoring

If not already a member, CCCC should become a member of the Evergreen Rural Water Association and request a free audit of the water distribution system that will detect leaks.

CCCC can use the portable flow meters recently purchased by Capital Planning and Development to monitor and maintain records of the water use in various areas. Focus should be given to areas in which high use is suspected (see also G&O, 2000).

5.0 SUMMARY & CONCLUSIONS

Water is extremely limited at CCCC. Although the aquifer provides water for the current institutional needs, the declining static water level of the aquifer would indicate that future water needs may be in jeopardy if use is not reduced to the maximum extent possible. Water conservation measures need to become a permanent way of life at CCCC.

In the short term, Well 2 can be operated to meet the demand and optimize recovery of the aquifer. Well 2 can provide for the water needs of the institution, while awaiting testing at Well 1. Step drawdown pump tests at both Wells 1 and 2 are recommended during the drier periods. The results of this further testing in conjunction with an evaluation of reservoir transfer pump operations can be used to optimize institutional water management.

Long-term solutions include continue implementation of stringent conservation measures, stormwater storage and use, and wastewater re-use. A combination of solutions need to be evaluated to support a population greater than the current population.

6.0 REFERENCES

Bergquist, R. 2004. Personal communication with Nancy Winters, concerning failed well installation.

Burns, E. 2003. Personal communication with Nancy Winters, concerning pumping operations at CCCC.

Driscoll, F.G. 1986. Groundwater and Wells, Second Edition. Johnson Division, St. Paul MN.

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APPENDIX A

EMAIL COMMUNICATION FROM DEPARTMENT OF ECOLOGY CONCERNING WATER LIMITATIONS AT CEDAR CREEK CORRECTION CENTER

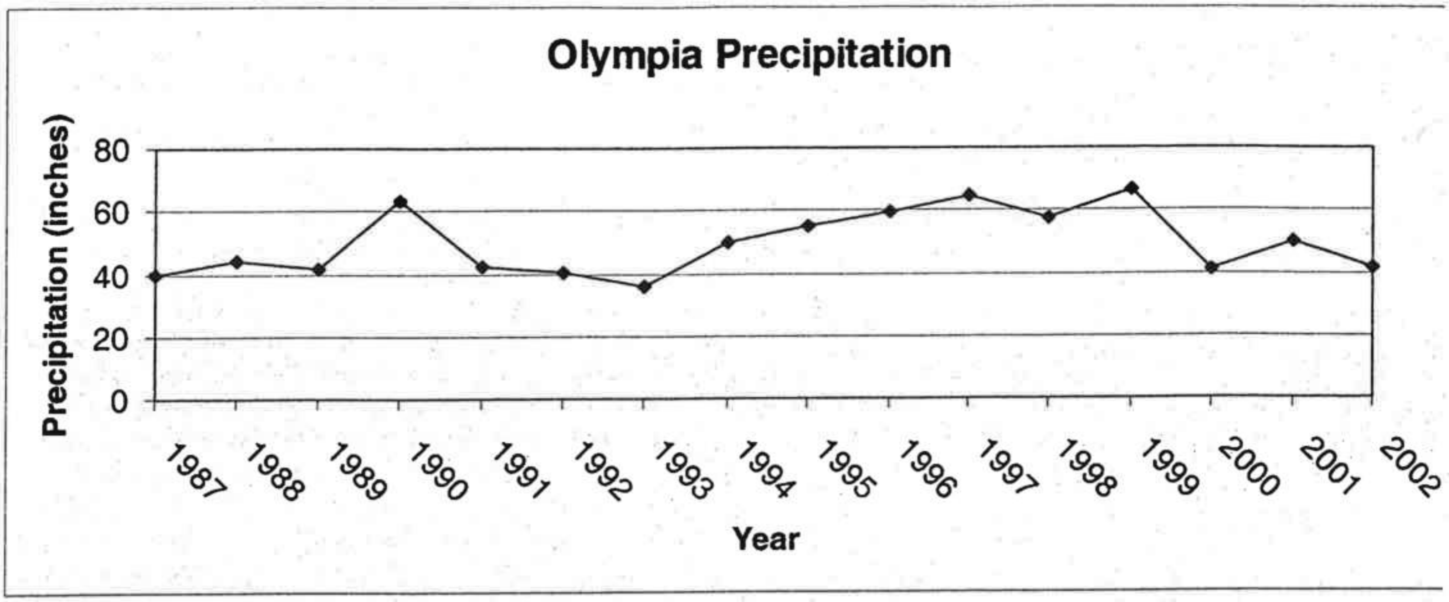
Winters, Nancy L.

From: Culhane, Tom
›nt: Friday, September 19, 2003 2:42 PM
J: Winters, Nancy L.
Cc: Davidson, Don; Walsh, Jill
Subject: Water level decline in the vicinity of Cedar Creek Correctional Center (CCCC)

I just want to provide you an update on what Jill and I found regarding your concerns about declining ground water levels in vicinity of Cedar Creek Correctional Center (CCCC). When we spoke to you a few days ago I mentioned wondering whether logging in the area might have increased surface water runoff and subsequently decreased ground water recharge. I hypothesized that this could have led to a regional decline of the water level in the aquifer. To get a better idea regarding this Jill and I drove out to the CCCC facility this morning. From the street and parking areas we were able to see several of the facility's wells. We also drove on logging roads several miles to the west and east. The vegetation we saw was a mix of re-planted clear cuts with the clear cut age quite variable (but generally with uniform-age "reprod" in each clear cut), and some mixed-age stands of "reprod". From this very limited sampling of land use it did appear to us that increased surface water runoff would be a major reason for a regional decline.

As a follow up to your concerns regarding possible well interference caused by heavy pumping at the Weyerhaeuser tree farm located off of Mima Mounds Road, we spoke with someone at this facility. That individual indicated that they typical use only a small portion of their allocated Qi, and that their heavy pumping only occurs for frost protection on certain days generally September through November. They do irrigate smaller areas at other times of the year (I believe he said perhaps fields of 25 to 35 acres), but this is generally for periods of only 3 or 4 hours a day. This information suggests that it is unlikely that pumping from the tree farm caused last year's water shortage at the CCCC site. Additionally, as we discussed, the CCCC wells tap fractures in bedrock while the tree farm wells are completed in an extensive alluvial aquifer much ›rther down in the watershed and over 3 miles away. Consequently, I suspect the tree farm pumping has ..tle to do with the decline experienced at the CCCC. I should also mention that Jill looked at water rights in the area. Close in, say perhaps within about a mile, the CCCC utilizes the only allocated water rights of any significance. Within a broader area of say 3 miles, the tree farm has by far the largest right. As I said, however, I don't suspect that the tree farm pumping has created your problems. Regarding the possible effect of exempt or illegal withdrawals, I looked at Ecology's well log data base. There are no wells indicated within a mile or two of the CCCC other than those belonging to DOC or DNR.

Regarding other possible reasons for your decline, I took a quick look at precipitation. The graph below is for Olympia since 1982 - the year that the CCCC began collecting water level data. While Olympia is some distance away, for long-term trend purposes I think these data represent similar conditions to what has been experienced at the site. As you can see, there has not been any obvious long-term decline in precipitation that would explain the aquifer water-level decline that has produced your problems.



So at this point, the only explanation that comes to my mind regarding a possible cause for the drop in water levels experienced at the CCCC site would be the aggregate effects of pumping by the CCCC itself. In other words, I am wondering if increased production from the CCCC wells has drained the fracture system supplying your wells and that the decline in your "static" measurements reflect this. One way to better evaluate this hypothesis would be to plot pumping data along side declining water level data for the site. If you can get me such pumping records, I would be happy to try to see if this sheds any light.

At any rate, this is about all that I can suggest at this point. Other than that, it would appear that DOC may need to deepen it's existing wells or drill additional ones.

Tom Culhane
Hydrogeologist
Washington State Department of Ecology
Water Resources Program
(360) 407-0297

APPENDIX B

DETAILED DISCUSSION OF AQUIFER TRANMISSIVITY AND COEFFICIENT OF STORAGE AND PUMPING TEST GRAPHS

Figure B-1. Pumping Test Drawdown at Well 2

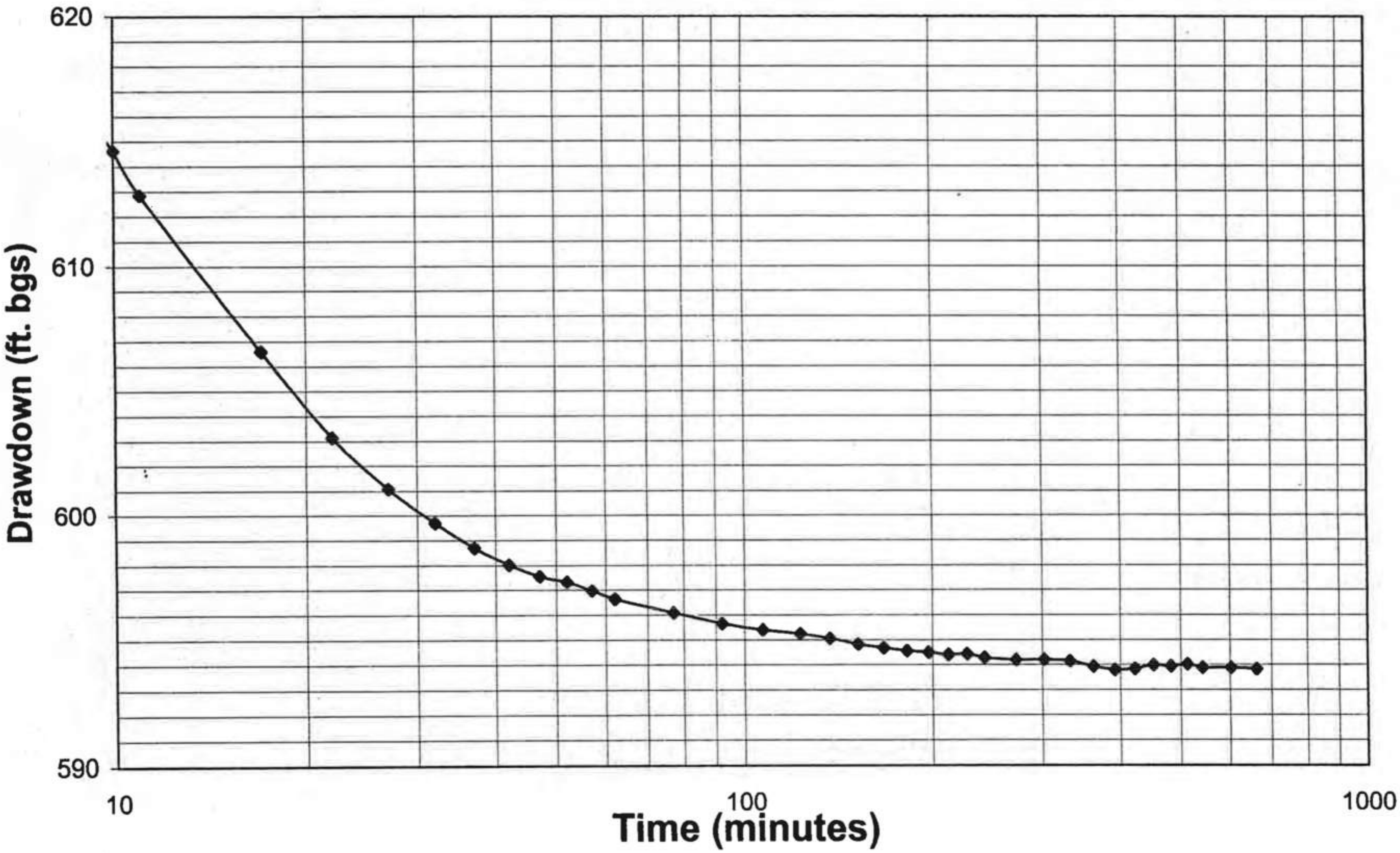


Figure B-2. Pumping Test
Well 2 - Recovery

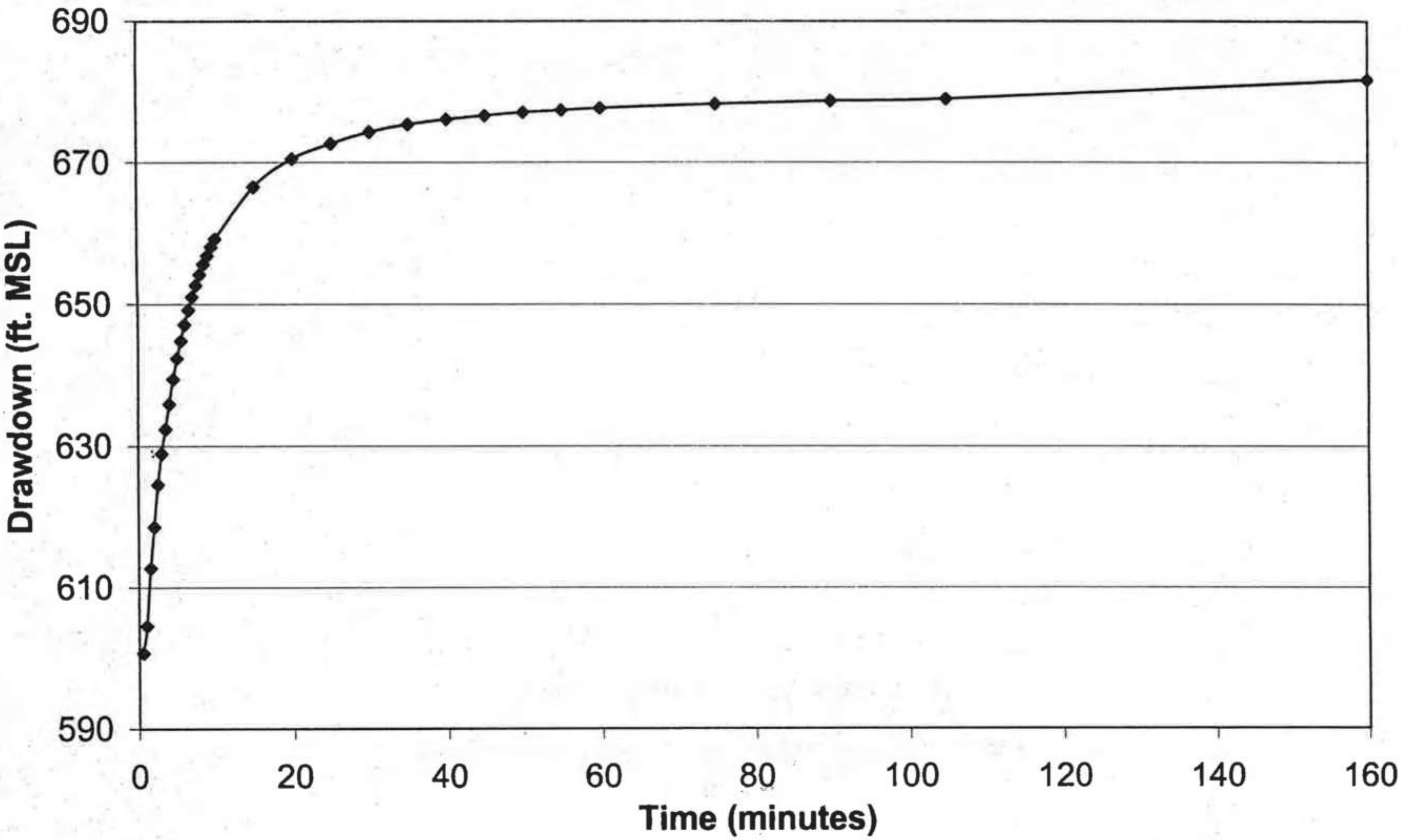
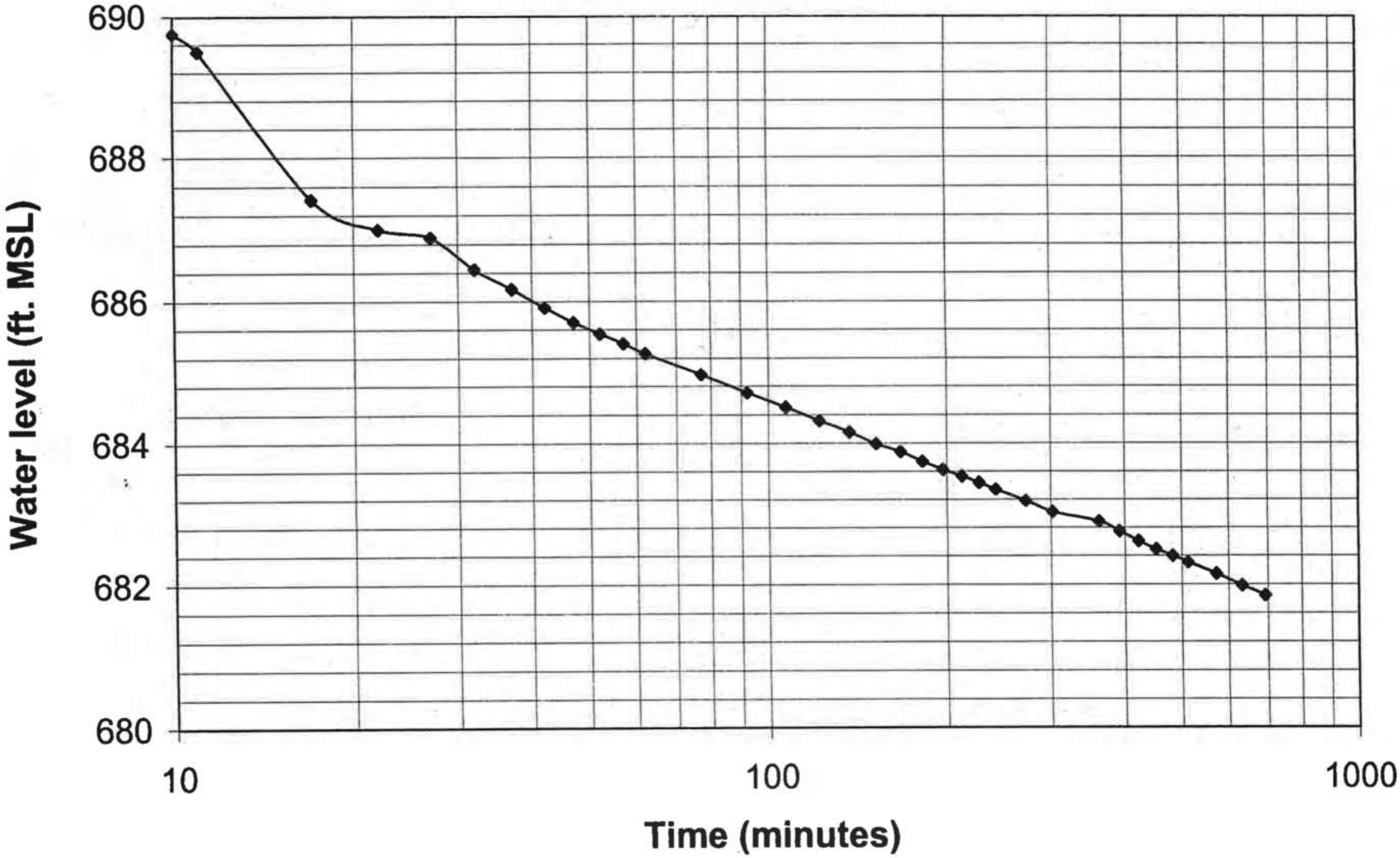
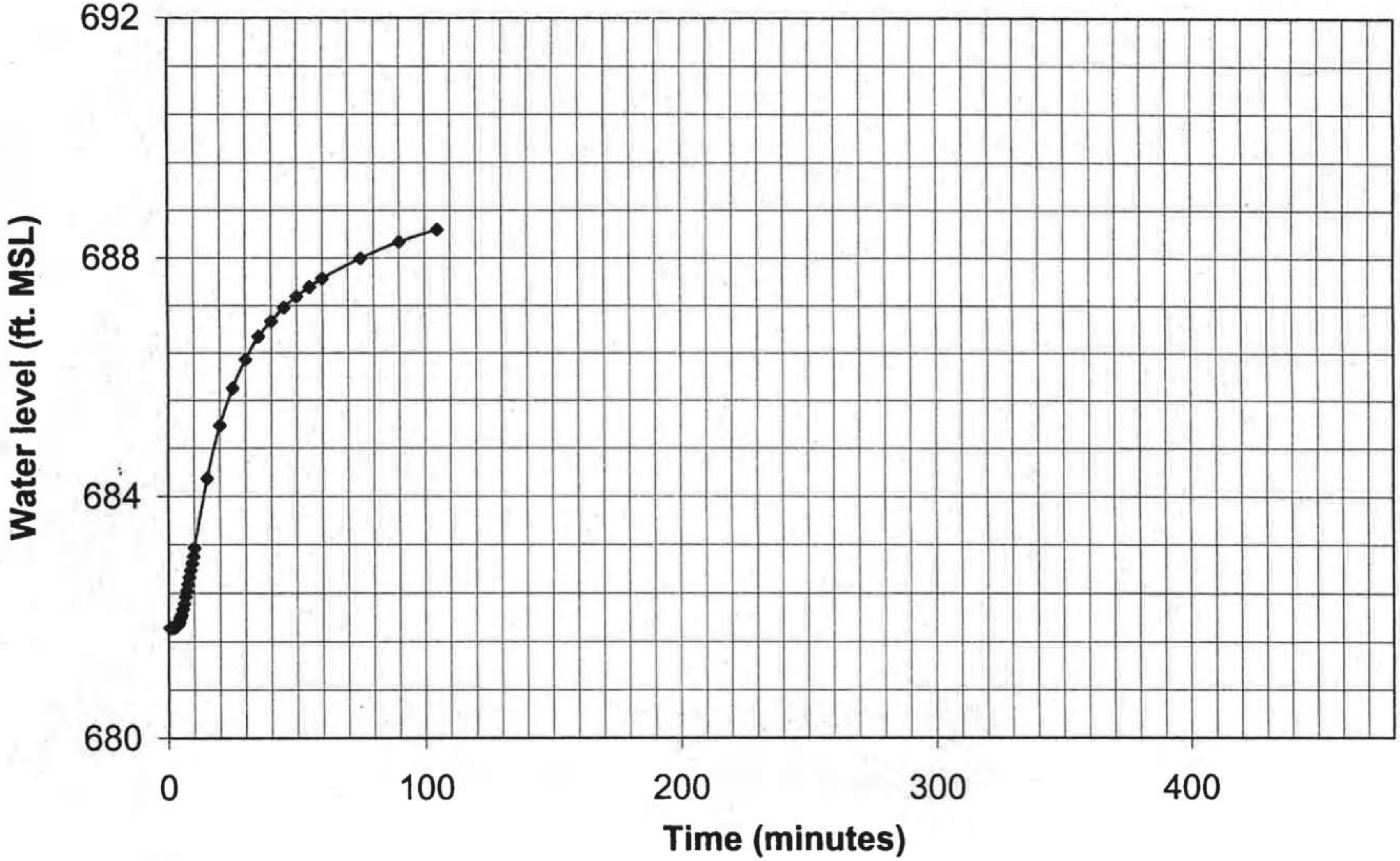


Figure B-3. Pumping Test
Well 1 - Observation Well



Firuge B-4. Pumping Test
Well 1 - Observation Well Recovery



Appendix B
Detailed Discussion of Aquifer
Tranmissivity and Coefficient of Storage and
Pumping Test Graphs

Transmissivity

Transmissivity of an aquifer is defined as the rate at which water flows through a vertical strip of the aquifer 1 foot wide, over the thickness of the aquifer. Transmissivities less than 1000 gpd/ft can supply only enough water for domestic wells, while transmissivities of 10,000 gpd/ft can provide adequate supply for municipal, industrial or irrigation purposes. Transmissivity (T) was calculated following Driscoll (1986) using the following equation:

$$T = \frac{264\,Q}{\Delta s}$$

Where:

Q is the average flow 51.4 gpm, as measured at the pumphouse pressure transducer
Δs is the difference in water level between minute a log cycle at steady state, in this case between minute 100 and minute 1000, from the graph

Transmissivities were comparable at the two wells; at Well #2, T was 5,654 gpd/ft, and at Well #1 at 3,769 gpd/ft, indicating possible heterogeneities in the aquifer between the two wells. These transmissivities are lower than normally cited for municipal supply; however, CCCC supplies water to a much smaller population than would be served by a normal municipality.

Transmissivity can be used to calculate the predicted drawdown at higher pumping rates. The predicted drawdown in Well #2 at a pumping rate of 70 gallons per minute would be 135.7 feet bgs. This is below the level at which the pump is currently set. Applying a similar calculation at Well #1, but extrapolating from the pumping well curves at Well #2, would indicate a drawdown of 133 feet bgs at 70 gpm. However, this is not supported by operational information. Operation of the Well #1 pump alone at 70 gallons per minute has reported to result in a drawdown approaching 160 feet bgs a few feet above the pressure transducer at 166 ft bgs. Apparently the aquifer in the vicinity of Well #1 cannot recharge at a rate that would support the 70 gpm pumping rate. A pumping test at a reduced pumping rate between 50 and 60 gpm would yield additional information useful for operation of the system.

Well recovery occurred relatively rapidly and returned to within 95 percent of the original static water level within 160 minutes (25 hours) in Well #2. Well #1, located 322.8 feet away from the pumping well, recovered substantially more slowly; it recovered to 70 percent of the original level within 2.5 hours. Extrapolating the recovery curve for Well #1, 95 percent recovery would be anticipated in approximately 20 hours. Thus, aquifer recovery could be enhanced by maximizing the resting (no pump) periods.

Coefficient of Storage

Transmissivity in the observation well can be used to describe the coefficient of storage of the aquifer, S. The coefficient of storage (S) is defined as the volume of water released from a formation per unit storage area of the aquifer and per unit change in head. It is readily calculated from the time drawdown graph by using the zero-drawdown intercept for the straight line as one of the terms in the equation.

$$S = \frac{0.3\, T\, t_o}{r^2}$$

Where:

T is the transmissivity of the observation well
t_o is the intercept of the straight line at zero drawdown, in days
r is the distance between the pumping well and the observation well, in feet.

The coefficient of storage for the aquifer is 2.15×10^{-5}, a unitless number. Storage coefficients for unconfined aquifers generally range between 0.01 and 0.3, and those for confined aquifers range between 10^{-3} and 10^{-5} (Driscoll, 1986). Thus the fractured basalt of the aquifer underlying the CCCC facility demonstrates some characteristics of a confined aquifer.

Mission Creek Corrections Center for Women

STATE OF WASHINGTON
DEPARTMENT OF CORRECTIONS
OFFICE OF ADMINISTRATIVE SERVICES
CAPITAL PLANNING AND DEVELOPMENT
P.O. Box 41112• Olympia, Washington 98504-1112• (360) 586-6131
FAX (360) 586-8723

October 19, 2004

To: Pam Jenkins

From : Nancy Winters

Subject: Suggested Water Conservation Measures for Mission Creek

Occupancy of Mission Creek Corrections Center (MCCC) at the level of 80 offenders will cause stress on the water and sewer systems. Currently, the water rights will support 54 to 65 offenders based on use of 120 to 100 gpid, respectively. Similarly, the sewer capacity is limited by the design of the system which is designed to manage the waste from 65 offenders. In order not to exceed the water rights or sewage system capacity, I suggest implementation of the water conservation measures presented in this memorandum. The water conservation measures suggested are stringent because of the severe limitations of water and sewer capacity. I recommend continued implementation of these until expansion of water rights and sewer capacity can be accomplished to better serve the needs at the 80 offender level. Further expansion to an offender population of 200 to 300 will be contingent on obtaining additional water rights and physical improvements to the sewage treatment system.

SUGGESTED WATER CONSERVATION MEASURES

Laundry

- Ship all laundry to another facility for washing.

- Do not provide individual machines to wash personal laundry. Send all personal laundry off-site.

Restrooms (Offenders and Staff)

- Install low-flow shower heads and timers with a delay cycle that will limit showers to no more than 5 minutes. Educate the custody officers to continuously enforce the 5 minute shower rule.

- Install low-flow, high pressure toilets.

- Install low-flow faucets with motion sensors in sinks.

- Repair all dripping taps immediately.

- Prohibit staff from showering at the facility, except in the event of exposure to bodily fluids or hazardous chemicals.

Kitchen

- Prepare meals at off-site locations and transport to MCCC to re-therm. If possible, return dishes and flatware to place of origin to be washed.

- Install flow restrictors on all faucets and sprays.

- If dishes must be washed on site, install low water use dishwashers. Use dishwasher rather than hand washing dishes, whenever possible.

- Investigate the feasibility of rinse water reuse for the dishwashers.

- If hand washing is necessary, hand wash dishes in batches and only in plugged sinks, rather than individually with running water.

- Limit other cleanup to small buckets of wipe down water.

- Repair all dripping taps immediately.

Landscaping

- Do not water any gardens, lawns, or other landscaping outdoors. If native plants are established they will not require watering. Landscaping can be replaced gradually with low water use plants.

Outdoor Activities

- Prohibit vehicle washing on site. Take vehicles to car washes, if necessary. Minimize other uses of water outdoors.

Leak Detection and Repair

- If not already a member, become a member of the local Rural Water Association and request a free audit of the water distribution system that will detect leaks. Repair all leaks immediately

DNR Activities

- Develop an agreement with DNR to ensure that they understand the seriousness of the water limitation and follow water conservation practices. Currently DNR has offices with bathrooms (toilets and sinks only). These should be retrofitted with low-flow, high pressure toilets, and motion activated sinks.

- Install water meters on DNR lines(s) and MCCC line(s).

Olympic Corrections Center

WASHINGTON STATE
DEPARTMENT OF CORRECTIONS

OLYMPIC CORRECTIONS CENTER

WATER CONSERVATION PLAN

G & O NO. 94519.13

NOVEMBER 1995

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WASHINGTON STATE

DEPARTMENT OF CORRECTIONS

OLYMPIC CORRECTIONS CENTER
WATER CONSERVATION PLAN
NOVEMBER 1995

GRAY & OSBORNE, INC.
CONSULTING ENGINEERS
SEATTLE, WASHINGTON

DEPARTMENT OF CORRECTIONS
OLYMPIC CORRECTIONS CENTER

WATER CONSERVATION PLAN

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INTRODUCTION

This Water Conservation Plan summarizes the existing water system facilities, outlines historical water production, presents an analysis of existing water system facilities, indicates data collection requirements for water conservation, and presents a program for water conservation. Water conservation plans are required by the Department of Ecology for water right applications submitted after June 1994. This Water Conservation Plan was prepared according to guidance published in *Conservation Planning Requirements*, (Mar 1994, DOE Pub. # 94-24, DOH Pub. # 331-008).

BACKGROUND

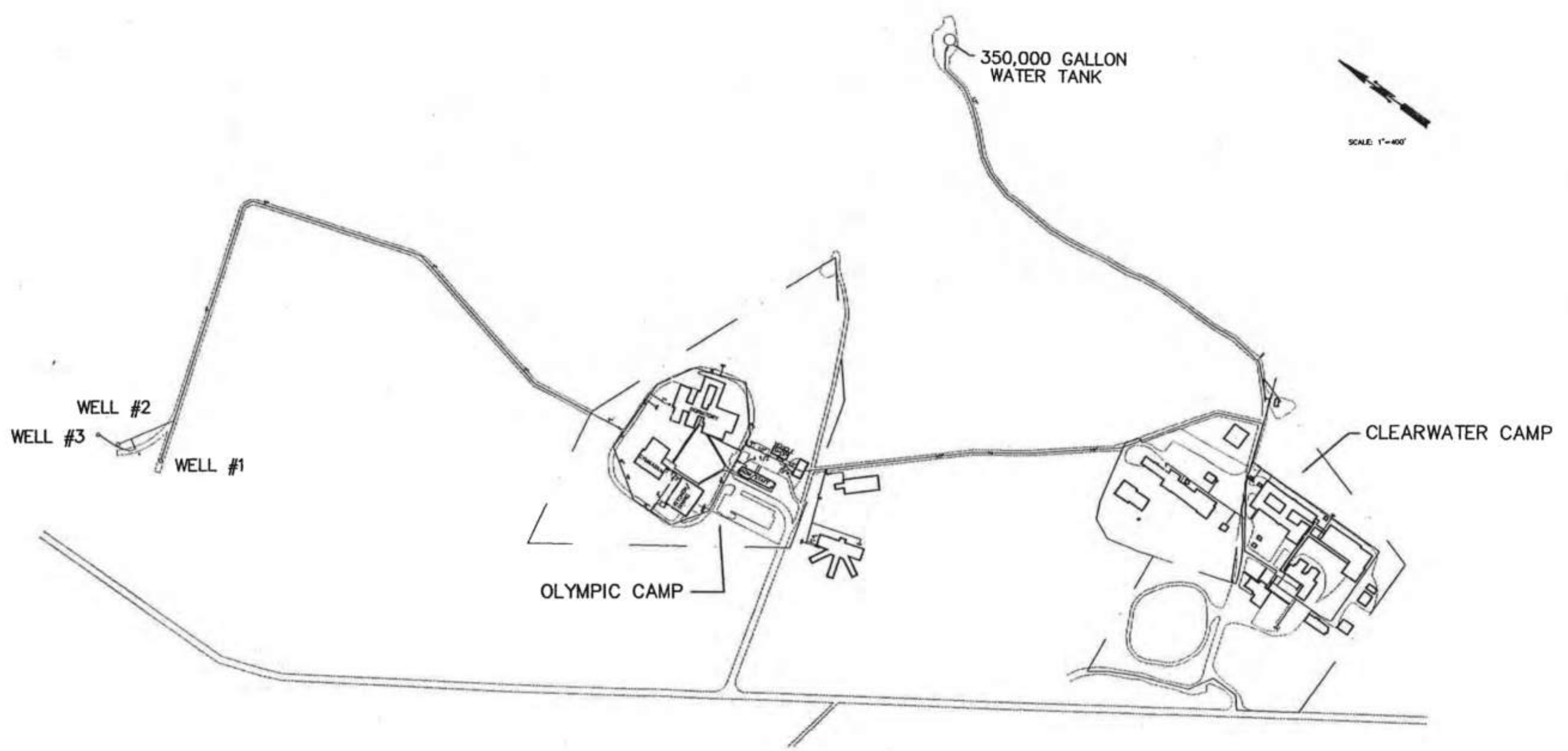
Olympic Corrections Center (OCC) is located in unincorporated, western Jefferson County on the Olympic peninsula in the Snahapish River valley. A site plan for the facility is provided as Figure 1. Currently, there are approximately 345 inmates and about 105 Department of Corrections staff and 30 Department of Natural Resources staff. Staff at OCC work eight hour shifts and there are no staff living on site. Total inmate and staff populations have fluctuated only slightly from month to month since the facility was expanded in 1991.

Olympic Corrections Center consists of two facilities. The Clearwater Camp was constructed in 1967 and is currently used by the DOC and Washington State Department of Natural Resources (DNR). It consists of a DNR shop, administration building, gymnasium, barracks, and a chapel. Approximately 1/4 mile to the north is the Olympic Camp which was built in 1980 and expanded in 1991. This facility consists of the Ozette dorm, gymnasium, cafeteria, administration building, shop area, warehouse, and the Hoh dorm. Both facilities are served by the same utilities, including a potable water system.

Gray & Osborne has previously prepared a Wellhead Protection Plan and a Report on Fireflow Testing for Olympic Corrections Center. The Wellhead Protection Plan, prepared in 1993, delineated wellhead protection zones for OCC's sources. The plan discussed emergency supply and spill response as well as an inventory of potential contamination sources in the various travel time boundaries.

The Report on Fireflow Testing was the result of some fireflow tests done on site at Olympic Corrections Center in 1993. The tests measured the ability of the distribution system to provide a fireflow of 3,500 gpm for three hours according to the Unified Fire Code (UFC) specifications. The report showed that hydrants at the Olympic Camp met fireflow while the hydrants at the Clearwater Camp provided fireflows of less than 1000 gpm at the time of the report. The report recommended system changes to remedy the fireflow deficiency.

According to Mike Ajax, Jefferson County Fire Marshall, the minimum industrial fireflow requirement in Jefferson County is 1000 gpm for 60 minutes while minimum fireflow for



DEPARTMENT OF CORRECTIONS
OLYMPIC\CLEARWATER CORRECTIONS CENTER
FIGURE 1
SITE PLAN
Gray & Osborne, Inc.
CONSULTING ENGINEERS

multifamily dwellings is 750 gpm for 60 minutes. The building structures, as defined by the UFC, dictate the required fireflow.

For this report a fireflow of 1,500 gpm for 120 minutes is used. This value is the minimum required for sprinklered buildings under the U.F.C.

EXISTING WATER SYSTEM

Sources of Supply

Currently, OCC has two wells that are operating and a third that is being developed. Copies of the well reports for these wells are included in the Appendix.

Well no. 1 was drilled in 1980 to a depth of 76 feet. The water well report indicates that the casing is perforated from 65 feet to 75 feet. A surface seal of drill cuttings was placed to a depth of 18 feet. The static water level was 36.1 feet below the top of the well in August of 1980. Ground elevation in the vicinity of Well no. 1 is roughly 760 MSL. A bailer test at 102 gpm indicated a drawdown of 3.2 feet after 15 minutes.

Well no. 2 was completed in 1980 to depth of 80 feet. The water well report indicates that the casing is perforated from 67 feet to 77 feet. A surface seal of drill cuttings was installed to a depth of 18 feet. The static water level was 42.5 feet below the top of the well in July, 1980. Ground elevation in the vicinity of the wellhead is estimated at 760 MSL. A pump test on this well indicated an 11 foot 8 inch drawdown after 24 hours of 102 gpm pumping.

Well no. 3 was drilled in 1994. The well has not yet been developed, but is capable of producing 200 gpm according to a pump test.

Olympic Corrections Center has one existing water right certificate for ground water, G2-26035C, priority date of October 14, 1981. The certificate was issued to the Department of Natural Resources (DNR), and allows for the average annual withdrawal of 50 acre-feet (or a maximum withdrawal of 100 gpm) from wells 1 and 2. A copy of the certificate is included in the Appendix.

The wells are currently metered and the meters are recorded on a monthly basis. The water is disinfected by the injection of sodium hypochlorite after which the water is pumped through a 3" PVC line approximately 2800 feet to the OCC system.

Storage Reservoirs

OCC has one storage reservoir on its water system. A 375,000 gallon redwood reservoir was constructed above the Clearwater Camp in 1981. The reservoir rides on the system and has a float system to control inflow. The 40 foot diameter reservoir is 40 feet in height and is located at an elevation of approximately 1000 feet while facility buildings are located between 800 and 960 feet.

Distribution System

Figure 2 illustrates the water distribution system at OCC. Water at OCC is pumped from the wells to the Olympic Camp through a 3" PVC line. The Olympic Camp is encircled by a 6" PVC line. Each of the buildings at the Olympic Camp have a PRV in their service line to reduce the building pressure.

A 10 " PVC water line connects the Olympic Camp with the Clearwater Camp. The line ties into a 12" PVC water line coming down the hill from the water tank. The 12" line flows into a PRV in a vault just above the Clearwater Camp. The distribution system at the Clearwater Camp consists of various lines of mostly 4", 6", and 8" PVC. An improvement project at the Clearwater Camp in 1994 installed an 8" line in the DNR shop area and a 6" loop around the rest of the compound.

HISTORICAL WATER PRODUCTION

Water production at the wells is metered and recorded on a monthly basis. Table 1 shows the annual production for the years 1989 through 1994, population and staff figures for that period, and a per capita use number. The water use values were calculated by using the meter readings for the beginning and end of the year.

TABLE 1

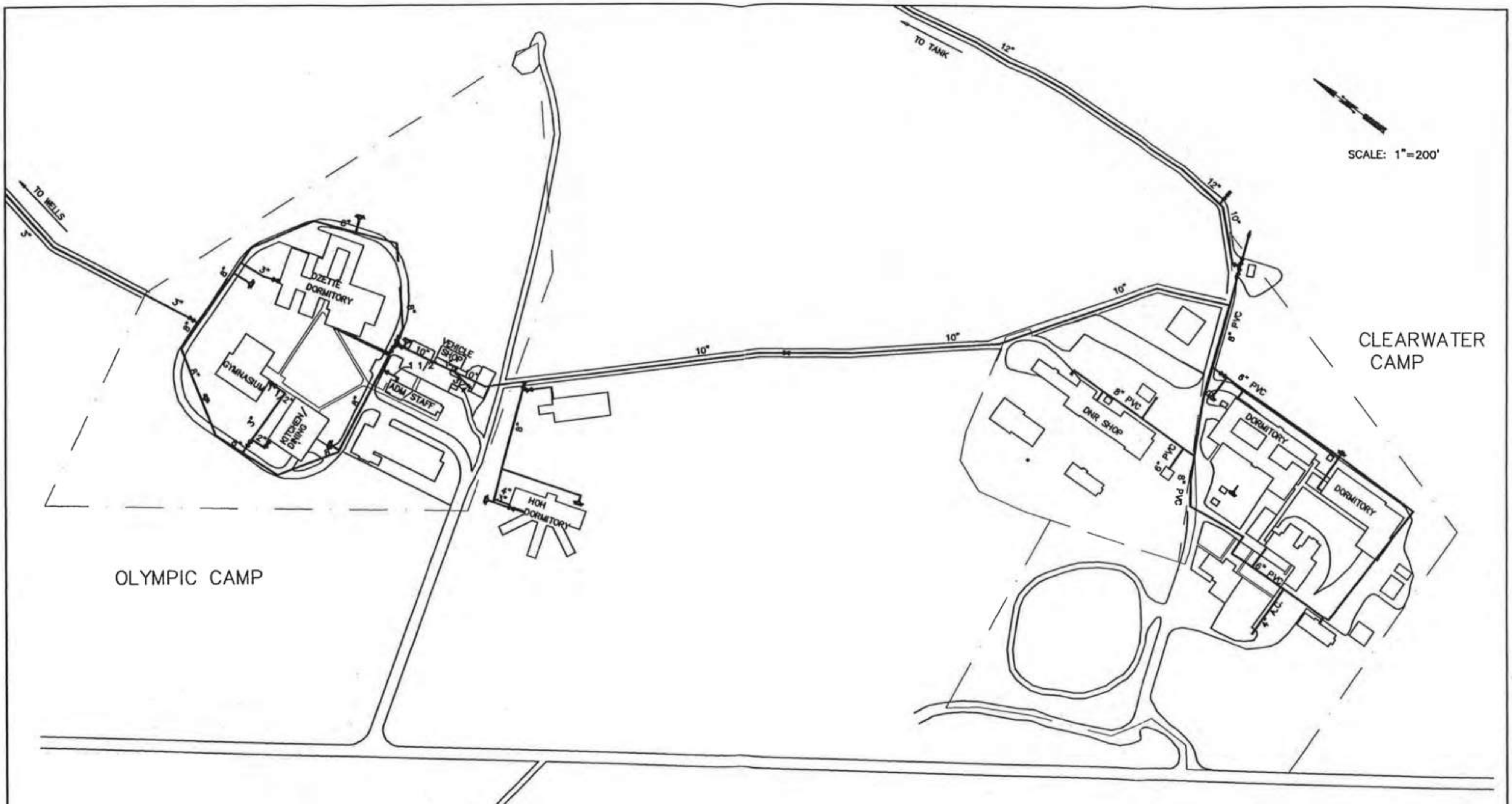
WATER USE AND POPULATION DATA

Year	Water Production (Gallons)	Water Right (Gallons)	Inmate Population	DOC Staff	DNR Staff	Per Capita Use (Gallons per Day)(1)
1989	19,140,000	16,290,000	236	78	30	193
1990	26,490,000	16,290,000	254	78	30	251
1991	28,420,000(2)	16,290,000	293	90	30	234
1992	28,420,000(2)	16,290,000	339	105	30	203
1993	35,700,000	16,290,000	344	105	30	251
1994	27,280,000	16,290,000	341	105	30	194
					Average	221

(1.) *Based on water production/(inmate population + DOC staff/3 + DNR staff/3)*

(2.) *Values for 1991-1992 are a two year average calculated from meter readings for January 1991 and December 1992.*

Table 1 indicates that water production has risen with the increase in population and has plateaued at a value of 26,000,000 - 28,000,000 gallons per year with the exception of 1993. The summer of 1993 was unusually wet throughout the Western United States and there was relatively little forest fire activity. Consequently, crews were not dispatched



DEPARTMENT OF CORRECTIONS
OLYMPIC/CLEARWATER CORRECTIONS CENTER
FIGURE 2
DISTRBUTION MAP

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\WSDOC\943[illegible]\FIG2

from OCC to fight forest fires so the summer population actually staying at the camp was higher than in other years.

The population at the facility was increased during 1991 and 1992 with the opening of the Hoh Dorm while the staff numbers also increased. The actual number of staff at the facility in 1991 is not known and was calculated by interpolating between the staff level prior to expansion and the final staff level of roughly 104 to 107 persons using a an inmate to staff ratio of 3.25:1. It was assumed that each staff member works an eight hour shift at the facility. There have also been approximately 30 employees at any given time at OCC who are employed by Washington State Department of Natural Resources.

In absence of specific data, it was assumed for the purposes of this plan that the peak day demand at OCC is approximately 150,250 gallons. This value was calculated by multiplying a 1.8 peaking factor to the average day value. The 1.8 peaking factor is an accepted number based on national averages (Metcalf & Eddy, *Wastewater Engineering*). The average day water production for the last three years was 83,500 gallons per day.

The per capita use numbers show a relatively high water use for Olympic Corrections Center. At other Department of Corrections' institutions, Gray & Osborne has observed average annual water production rates of 107 to 147 gallons per capita per day. Table 2 presents information on per capita water production at Indian Ridge Corrections Center (prior to its conversion to a youth facility), Pine Lodge Corrections Center, Larch Corrections Center, and Washington Corrections Center. Olympic Correction Center's production is much higher than the other institutions, even institutions of a similar nature such as Larch and Indian Ridge.

TABLE 2

PER CAPITA WATER PRODUCTION AT DEPARTMENT OF CORRECTIONS INSTITUTIONS

Institution	Equivalent Population (1)	Ave. Annual per Capita Use (gpcpd)
Pine Lodge Corrections Center	560	107
Indian Ridge Corrections Center	133	113
Larch Corrections Center	175	141
Washington Corrections Center	1,895	147
Olympic Corrections Center	376	221

1. Equivalent Population = Inmate Population + Staff/3

Olympic Corrections Center has drawn an average of 29,955,000 gallons per year or 92 acre feet from its well sources, an 84% exceedance of its water right. To stay within the water right, per capita consumption at OCC needs to be below 118 gallons per capita per day. Olympic Corrections Center must apply for additional water rights or reduce per capita consumption to 118 gpcpd.

ANALYSIS OF EXISTING WATER FACILITIES

Sources of supply, storage, and distribution have been analyzed individually to estimate the maximum population that can be supported by the institution's water system. The maximum allowable water service population will be limited by the most stringent criteria. This analysis will provide an indication on where water conservation efforts can most effectively be applied.

Source Quantity

A common source for water system recommendations is the *Recommended Standards for Water Works*, commonly called the "10 State Standards." This resource suggests that groundwater derived water systems have (1) a minimum of 2 sources, (2) total source capacity should equal or exceed the peak day demand, and (3) with the largest source out of service, remaining source capacity should equal or exceed the average day demand. In *Sizing Guidelines*, the Washington State Department of Health recommends a minimum of two sources capable of meeting peak day demand. Olympic Corrections Center currently has two developed sources and one source under development to provide the suggested redundancy in sources.

The second test, that of total source capacity meeting or exceeding peak day demands, is calculated as follows. At OCC, only one pump can operate at a time making the maximum production 100 gallons per minute. Assuming a pump operates for 21 hours, allowing for some downtime and aquifer recharge, the maximum daily production is 126,000 gallons. This value is 24,250 gallons less than the calculated peak day described above.

A third well is currently being developed which has a rated capacity of 200 gpm. Upon final development, the limiting factor in source quantity will be the capacity of the pipeline from the wells to the facility's water system. The pipeline consists of 2800 feet of 3" PVC. The maximum flow through this section of line should be roughly 176 gpm providing a 21 hour peak day flow of 222,070 gallons per day.

The third source criteria requires that the system be able to meet average day demands with the largest pump out of service. Both wells currently on line can meet this criteria easily. Either well is capable of 100 gpm performance and, assuming 21 hours of pumping, can pump 126,000 gallons per day. This production is 28,000 gallons more than the daily average production in the peak year 1993. Assuming the per capita usage seen in Table 1 of 221 gpcpd, under this source criteria an additional 127 inmates could be housed at OCC.

Potable Water Storage

OCC currently has a 375,000 gallon redwood storage tank and is the process of constructing a concrete 440,000 gallon tank providing a total of 815,000 gallons of storage.

The "10 State Standards" determine storage adequacy by analyzing a system's ability to meet fireflow and provide standby storage. Fireflow storage is defined as the required fireflow multiplied by the duration. Standby storage can be considered one day average use.

- As mentioned previously fireflow standards suggest 1500 gpm for

  Fireflow storage = 1500 gpm X 120 minutes
  = 180,000 gallons

- Standby storage equals average day use, or 83,500 gallons.

The total required storage for OCC is about 263,500 gallons. Assuming no changes in the required fireflow, the number of additional persons the storage facility can support, based on additional equalization storage and peak day requirements, is 714 inmates and 283 staff.

Distribution System

Tests were conducted at OCC in 1993 to determine available fireflow at the two facilities. Two hydrants were tested at each facility. The two hydrants at the Olympic Camp, one by the Hoh dorm and one by the Ozette dorm, had fireflow capabilities of 3,603 and 3,594 gpm, respectively, with residual pressures of 90 psi and 88 psi, respectively. These values indicate a flow of more than 2500 gpm in excess of the fireflow requirement delivered at 30 psi, the minimum pressure for domestic use. This value for the flow in the Olympic Camp is roughly 10 times the peak hour flow for the entire institution and suggests the Olympic Camp could house roughly 10 times the number of current inmates, based on the distribution system.

Two hydrants, one near the gym and one near building #3, were tested at the Clearwater Camp. The results of these test showed a fireflow of 875 gpm and 625 gpm, respectively, with residual pressures of 69 psi and 28 psi, respectively. The distribution system at the Clearwater camp at that time was composed mostly of unlooped 4' PVC pipe. A loop around the Clearwater Camp was constructed in 1994 with 6" PVC.

Summary

Source quantity, storage, and distribution were analyzed to determine the maximum population that could be supported by the OCC water system. Currently, future expansion at the facility is limited by the water right. Without an increase in water right or a substantial decrease in per capita use, expansion of the facilities will be prohibited by State or county regulatory agencies. The results of the analyses are given in Table 3.

TABLE 3

ANALYSIS OF EXISTING SYSTEM FACILITIES

(Current Population 341 Inmates/135 DOC and DNR Staff)

Categories	Existing Requirement	Existing System Capability	Maximum Water Service Population
Source Quantity (As is)			
Average Day	83,500 gal	126,000 gal	515 inmates/204 staff
Peak Day	150,250 gal	126,000 gal	no increase
Source Quantity (w/ Well 3 Development)			
Average Day	83,500 gal	126,000 gal	515 inmates/204 staff
Peak Day	150,250 gal	222,070 gal	504 inmates/200 staff
Storage (w/new tank)	263,500 gal	815,000 gal	*
Distribution	230 gpm	2500 gpm	**

* *The excess storage capacity available is not a limiting factor for growth.*
** *The excess capacity available in the distribution system at the Olympic Camp is large enough that this system at that facility is not a limiting factor for growth.*

DATA COLLECTION REQUIREMENTS FOR WATER CONSERVATION

Guidance published in the Conservation Planning Requirements stipulates that water systems should gather and report specific items of information. Table 4 indicates the information requested for systems under 1,000 direct service connections such as OCC.

TABLE 4

DATA COLLECTION REQUIREMENTS FOR WATER SYSTEMS WITH LESS THAN 1,000 DIRECT SERVICE CONNECTIONS

Type of Data	Frequency of Collection	Remarks
Source of Supply Meter Readings	Annually and Monthly	Separate meters req'd for each well.
Unaccounted for Water (1)	Annually	Can't presently determine.
Service Population and # of Connections	Annually	Information is available.
Conservation Actions	Annually	Not presently recorded.
Service Meter Readings	Monthly	No meters presently installed.

(1) Water that is lost due to leaks, evaporation, or unrecorded usage.

OCC collects a portion of the data listed in Table 4. Information on service population and number of service connections is readily available. Total source production is recorded on a monthly basis. Service meter usage and unaccounted for water cannot be determined because service meters are not installed on each service line. Finally, to date, OCC has not maintained a program specifically directed at water conservation and therefore, has not recorded conservation actions. Measures to ensure full compliance with the requirements in Table 4 are discussed in the following section.

PROGRAM FOR WATER CONSERVATION

The goal of the water conservation plan for Olympic Corrections Center is to more efficiently use water resulting in a lower per capita water use. Additional water rights will likely be contingent upon reducing per capita use. Some of the suggestions contained in this plan are requirements for water conservation plans set forth in *Conservation Planning Requirements* published jointly by Washington State Departments of Health and Ecology. The plan outlines specific strategies and indicates the estimated water savings where appropriate.

Source Meters

Source meters are required for all systems requesting new water rights. Olympic Corrections Center meets this requirements by having meters on Wells 1 and 2 which are currently used for production. The meters are read monthly and records of the production are kept.

If not having done so already, Olympic Corrections Center should have the meters tested for accuracy. Meter maintenance is important for obtaining accurate results from meter measurements. Large source meters should be tested every 3 to 5 years.

Service Meters

Olympic Corrections Center does not currently meter any services. Installation of meters, either temporary or permanent, at building services would allow for pinpointing of large users and also provide a comparison of meter data from which an assessment of water lost through leakage can be obtained.

Service meters are smaller than source meters and are generally less expensive. A positive displacement style meter is capable of accurately measuring a wide range of flows and is the meter of choice for individual services. Service should be sized according to the data in Table 5 below.

TABLE 5

SERVICE METERS
(POSITIVE DISPLACEMENT STYLE)

Meter Size	Normal Flow Range (gpm)	Rated Continuous Flow (gpm)	Meter Cost (1)
5/8-inch	1 - 20	10	\$55
3/4-inch	2 - 30	15	\$80
1 - inch	3 - 50	25	\$150
1.5-inch	5 - 100	50	\$350
2-inch	8 - 160	80	\$575

Notes:
(1) Includes cost of shipment to job site.

Where possible, meters should be installed indoors for ease of reading and maintenance. Materials costs for concrete meter boxes with concrete covers and hinged lids range from \$40 to \$80 (including shipment to job site). Meter setters are approximately \$75 for a 5/8-inch size, \$115 for a 1-inch, and \$400 for a 1.5-inch assuming a 12-inch setter height (includes shipment to the job site). Installation details and catalog cuts for the service meters, meter boxes, and meter setters are in the Appendix. It is assumed that the service meters will be installed by Olympic Corrections Center personnel. There are roughly 11 service lines at the Clearwater Camp and 9 or 10 at the Olympic Camp. The total cost to install service meters should no exceed $10,000. It is recommended that the service meters be installed no later than 1996. Service meters can indirectly impact water production by allowing OCC to track water usage at each facility. Those with higher usages can be targeted for conservation actions.

Previously, Table 4 indicated that service meter readings should be read and recorded monthly. At least annually, the institution should determine the quantity of unaccounted for water by comparing water production records with service meter records. It is recommended that OCC determine unaccounted for water on a monthly basis to provide quick detection of leaks or meter malfunction.

Leak Detection

If it is discovered after the service meters have been installed that there is a great discrepancy between the source and service meter data a leak detection program should be adopted. Leaks are not expected to be a major problem at the Olympic Camp due to its relatively new construction. Portions of the Clearwater Camp have also been replaced very recently and are not expected to be leaking. However, if unaccounted for water proves to be high, leaks in the distribution system must not be overlooked. If a discrepancy greater than 10% between source and service meters is determined, a leak detection program should be implemented.

Program Publicity

According to *Conservation Planning Guidelines*, public publicity is a required part of a water conservation plan. For typical public water systems, publicizing the need for water conservation efforts has proven to be effective for both short and long term reductions in water usage. The impact at correctional institutions has not been documented. Beginning in 1995, it is recommended that OCC adopt the following methods for publicizing the conservation program, using materials readily available through the DOH:

- Display posters at selected locations.
- Periodic reminders to staff and inmates by OCC managers.

Table 4, Data Collection Requirements, indicated that water conservation activities should be recorded annually. Actions taken to publicize conservation should also be recorded.

Low Flow Showerheads

Standard showerheads use 3-8 gpm while low flow showerheads use 1 - 2.5 gpm. Recent design changes have produced showerheads which provide a better stream than the original flow restricting showerheads and are better accepted by users.

OCC has installed relatively low flow (2.75 gpm) showerheads in, at least, some of its showers. The Hoh dormitory was fitted with such showerheads when it was constructed. A brief inspection by Gray & Osborne staff in June 1995 revealed that roughly half of the showerheads in the two locations investigated had showerheads that had been tampered with. Inmates had removed the center portion of the showerhead which controls the flow, rendering the showerheads useless for conservation.

It is recommended that periodic inspections of showerheads be done by OCC staff and low flow showerheads be installed in all locations where they don't exist or have been tampered with. An estimated 2300 gallons per day is lost through the broken showerheads assuming each inmate showers for 6 minutes and a 5 gpm stream comes through the broken showerheads. OCC should even consider using 1 gpm shower heads to obtain a greater water savings. Assuming each inmate showers once daily for 6 minutes, a 3500 gpd savings could be achieved over the use of 2.75 gpm showerheads.

If inmate vandalism continues to be a problem another conservation that could be implemented is a shower timer. Timers would limit the duration of the inmate's showers, thus promoting water conservation.

Low flow showerheads are inexpensive. Installation is a simple matter of removing the old showerhead and screwing on the low flow showerhead. Material costs for each showerhead are estimated at less than $25. Showerheads should be of sufficient quality to provide an adequate spray pattern so as to reduce inmate dissatisfaction and vandalism.

Low Flush Toilets

Standard toilets use 3.5 to 7 gallons per flush while low flush toilets use 1.6 to 3.5 gallons per flush. An inspection by Gray & Osborne revealed that some flush toilets using 3.3 gallons per flush are installed at the facility. It is recommended that OCC personnel inspect all toilets at the facility and retrofit the toilets with conservation devices where necessary. Toilet bags or bottles can be placed in the toilet tanks to reduce the amount of water used during each flush. These devices can save roughly 1/2 gallon per flush. Assuming 376 equivalent population using the toilet 3 times daily a savings of roughly 550 gallons is realized. Toilets can be retrofitted with toilet bags for roughly $1 each.

Toilets should also be inspected periodically for leaky flapper valves. Dye should be placed in the toilet tank and the toilet allowed to remain unflushed overnight. If dye is apparent in the toilet bowl the flapper valve is leaky and should be replaced. The City of Everett estimated that in household situations a leaking flapper valve can waste as much as 20 gallons per capita per day. New flapper valves and leak detection dye are available for less than $5.

A toilet water conservation program at OCC could be implemented where toilets could be fitted with reservoir devices and tested for leaks for a cost of less than $500. Depending on the number of leaky toilets a water savings of 500 to 1000 gallons would result.

Kitchen Condensing Unit

Currently, the OCC kitchen has a cooling condensing unit which is linked to the potable water system. The unit uses water for cooling and wastes it to drain. OCC personnel have estimated that the unit uses 1500 gallons daily. Replacement of the unit with a closed system would result in a significant water savings.

Water Reuse

As water conservation issues become more important there is an increased interest in the use of reclaimed wastewater for nonpotable uses. OCC currently treats its wastewater at an aerated lagoon facility. The lagoon effluent is sand filtered, UV treated, and released into the Snahapish River. During periods of low stream flow the effluent is sprayed on a 17 acre forested sprayfield.

The Washington State Department of Health has issued standards for water reuse in which reclaimed water is classified and its uses regulated. The highest class, Class A, is wastewater the has been oxidized, coagulated, filtered, and disinfected with a median coliform count of 2.2 cells/100 ml. The highest class attainable by the present OCC system is Class B, defined as having a median coliform level of 2.2 cells/100 ml from a system without coagulation. Class C and Class D waters are defined as having median values of 23 cells/100 ml and 240 cells/100 ml, respectively.

Water reuse for toilets, landscape irrigation in publicly accessible areas, fire hydrants and sprinklers, and spray washing of streets all require Class A reclaimed water and may be applicable depending upon cell count testing for OCC. Vehicle washdown water is not specifically addressed in the current regulations.

Any water reuse at Olympic or Clearwater Camps would require significant infrastructure improvements. Pumping facilities, storage (either a holding pond or tank), at least 2000 feet of transmission line, and a distribution system to points of use could be constructed, but most probably are not cost effective.

There is some possible water reuse at the wastewater treatment facility. Currently, treated, filtered water is reused to backwash the sand filter but potable water is used for all other applications. The amount of potable water used at the Waste Treatment Plant is not known since the facility is unmetered. Filtered water could be used for outdoor pressure washing of the lagoon apron, washdown of buildings and equipment, and possibly for watering plants in the greenhouse.

Spray washing where misting is possible requires at least Class A reclaimed water. To reuse water, OCC would have to ensure that the wastewater plant was operating effectively enough to maintain Class A effluent.

The reuse of water for washdown at the wastewater plant would require a nonpotable system. Such systems generally consist of a set of pumps, a pressure tank, and distribution piping. At the OCC facility, a tank or pond would need to be installed after the UV disinfection to provide a place to install the pumps. A system composed of a 1,000 gallon pumping tank, two 5 H.P. pumps, and a 400 gallon pressure tank would provide a 50 gallon per minute flow at 30 to 70 psi. A system such as this would cost approximately $25,000.

Other Measures

Increased awareness of water conservation by OCC staff can also produce results. Periodic inspections of the facility can reveal sources of wasted water such as drinking fountains and hose bibs left on, leaky valves, and leaky faucets. An inspection by Gray & Osborne personnel in February 1995 revealed a continuous flow of water at the Hoh dormitory boot wash station. The flow was estimated to be 2 gpm which translates to 2900 gallons per day or 8.5 gallons per capita per day. It is important to locate and remedy all such water losses.

SUMMARY AND RECOMMENDATIONS

Summary

Olympic Corrections Center currently operates two wells which produce 100 gallons per minute and are developing a well capable of 200 gallons per minute. Water is currently stored in a 375,000 gallon reservoir and is distributed in PVC mains throughout the institution. A second 440,000 gallon reservoir is under construction. The distribution at the Olympic Camp is known to be able to deliver over 2500 gpm at 30 psi.

OCC currently has roughly 340 inmates and 105 DOC staff and 30 DNR staff. Water production data from the last three years indicates an annual average day water production of roughly 83,500 gallons. Assuming 8 hour staff shifts, per capita water production averaged 221 gallons per person. This figure is much higher than expected compared with other DOC facilities.

Currently, OCC has a water right for 50 acre feet but is using 92 acre feet yearly, an 84% exceedance over their right. Any further growth at the institution will come only through conservation or increased water rights.

Recommendations

The following items concerning water conservation and water rights are recommended at OCC:

1. OCC is currently out of compliance with respect to their water right. OCC should apply for additional water rights.

2. OCC should install low flow showerheads in locations where there are none or existing ones have been disabled. OCC personnel should also implement a toilet conservation plan whereby reservoir devices are installed in toilet reservoirs and flapper valves are checked for leakiness.

3. OCC personnel should periodically inspect the facility for water wasting situations such as leaks, or open faucets.

4. The condensing unit at the kitchen should be replaced with a closed system, resulting in a water savings.

5. OCC should install service meters to monitor water use at each building. Service meters will aid in the detection of system leaks.

6. OCC should publicize the need for water conservation through the use of posters and handouts given to staff.

7. After installing a service meter to determine potable water use at the wastewater treatment plant, OCC should determine the amount of potable water used at that facility and the cost effectiveness of installing a water reuse system for washdown and other uses.

A summary of the conservation plan including costs and expected water savings is given in Table 6.

TABLE 6

SUMMARY OF CONSERVATION EFFORTS

Conservation Action	Estimated Cost	Estimated Daily Water Savings	Estimated Per Capita Savings
Service Meters (1)	$10,000	NA	NA
Low flow showerheads	$500	5800 gal/day	15.4 gal/day
Toilet retrofit	$600	600 gal/day	1.7 gal/day
Kitchen condenser (2)	NA	1500 gal/day	4 gal/day
Publicity	$100	100 gal/day	0.3 gal/day
Leak Testing (3)	NA	NA	NA
Water Reuse	$25,000	NA	NA
Staff inspection	$0	4000 gal/day	10.6 gal/day
Totals	$36,200	11,400 gal/day	32 gal/day

(1) Service meters will not directly affect water consumption. However, their installation will enable a greater understanding of water use and aid in the detection of possible leaks.

(2) The kitchen condenser unit is currently slated for replacement.

(3) Leak detection could be accomplished through either pressure testing or source and service meter data if available.

If the water conservation recommendations are implemented by OCC the per capita daily water use will decrease from 221 gpcpd to 189 gpcpd, a reduction of 14%.

After implementing a Water Conservation Plan, it is recommended that Olympic Corrections Center apply for an increased water right. This water right would allow both expected use and future expansion.

Washington Corrections Center

Water Conservation Plan Update

Washington Corrections Center
Shelton, Washington

January 2003

Prepared for:

Washington State Department of Corrections

Prepared by:

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Acknowledgements

An undertaking of this magnitude is not possible without the efforts of numerous individuals and groups. Economic and Engineering Services, Inc. would like to pay particular tribute to the following individuals, agencies, and companies:

- Washington Corrections Center Staff (of which the following were most instrumental in this effort):
  - Dwight Johnson
  - Larry Lauzon
  - George Campbell
  - Dan Waters
  - Roy Ebert
- Moya McKeehan, Department of Corrections
- Linda Glasier, Department of Corrections
- Western State Design Staff
- Utility Services Associates Staff
- Members of the Department of Health

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Executive Summary

Background and Objectives

This water conservation plan serves as an update to the 1997 Draft Water Conservation Plan (1997 Plan) developed for the Washington Corrections Center (WCC), located in Mason County, near the City of Shelton. The 2003 Water Conservation Plan Update (2003 Plan) identifies and evaluates means of improving the efficiency of water use at the facility, building upon findings and recommendations presented in the 1997 Plan. Through increased water use efficiency, the WCC hopes to achieve the following objectives:

- Remain within limitations imposed by the facility's water rights;
- Avoid the need to obtain additional water supplies;
- Foster good management practices and environmental stewardship.

Water Usage

Metering data from the facility's production wells indicates that the WCC used a total of 76,943,900 gallons in year 2001. This is equivalent to approximately 210,800 gallons per day (gpd) on a year-round average daily basis, and is within the facility's water rights of 268 acre-feet per year (equivalent to 239,072 gpd on an average daily basis). An estimated breakdown of water uses at the facility is presented in Exhibit ES-1.

The largest individual uses are:

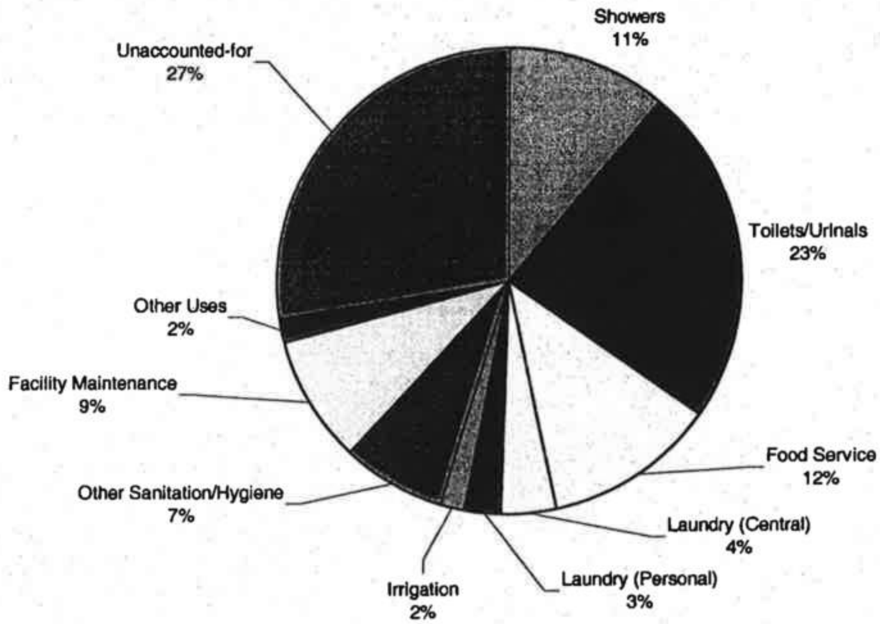
■ Toilets/Urinals	23 percent (49,740 gpd)
■ Food Service	12 percent (25,000 gpd)
■ Showers	11 percent (23,400 gpd)
■ Unaccounted-for	27 percent (58,200 gpd)

Approximately 27 percent of the facility's total production is "unaccounted-for". This is likely due in part to the high uncertainties involved in the usage estimates, a result of the lack of service meters to accurately record water consumption. However, it is also suspected that a large portion of this water is lost to leakage in yard hydrant lines.

Water Conservation Opportunities

The water conservation measures described in the 2003 Plan include activities already implemented by the facility, those that are currently under detailed analysis in separate studies concurrent to this effort, and additional measures that are feasible for the facility. A summary of all the water conservation measures applicable to the WCC is presented in Table ES-1.

Exhibit ES-1
Estimated Water Usage by Category for 2001
(as percentages of total production)



Recommendations

The WCC has been active in water conservation over the past five years. Due to their effectiveness in reducing recent water demands, it is recommended that the facility continue to implement all measures that have been exercised prior to the development of the 2003 Plan, as depicted in Table ES-1. The facility has also recently implemented additional activities and projects that will result in reduced water consumption. Once these measures have been fully implemented, it is recommended that Washington Department of Corrections (DOC) take the following steps to further the WCC conservation program:

- ***Monitor the effect of existing conservation activities.*** As discussed in Section 3.1, a project is currently underway that involves the installation of service meters at most buildings. By systematically monitoring water use as measured by these meters, in conjunction with tracking well production as measured by the facility's source meters, facility staff should be able to observe the effects of conservation activities recently implemented. This will guide the facility in determining what additional measures would be beneficial in striving to meet the conservation program objectives.

- ***Further evaluate the opportunity to increase well withdrawals via wastewater reclamation.*** This activity is noted in Table ES-1 as "Wastewater Reuse". As discussed in detail in Section 6.5, there is a potential for WCC to increase its water supply by as much as approximately 60 percent, by being permitted to withdraw water that recharges the ground water aquifer via surface percolation from the facility's wastewater effluent sprayfield. Although such withdrawals would be made via the existing wells, the withdrawals could be considered as separate and distinct from the amount of withdrawal allowed under the water rights associated with the wells. In order for this to occur, DOC must take certain steps, in coordination and consultation with the Washington Department of Ecology. Upgrades to the existing wastewater treatment plant are required in order for the facility to be permitted as a wastewater reclamation facility, and a hydrogeologic study is needed to confirm that the reclaimed water is recharging the same aquifer from which WCC withdraws its water supply. Pending the outcome of this process, WCC could obtain the right to significantly increase its water supply from the existing wells.

- ***Depending upon the outcome of the above activities, further consider additional conservation measures.*** Aside from wastewater reuse, there are other water conservation measures recommended for further consideration, as listed in Table ES-1. These activities should be evaluated in greater detail if the facility is not able to meet its conservation program objectives via existing measures and those activities described above.

Table ES-1
Water Conservation Opportunities

Description	Category (1)	Water Savings (as percentage of total consumption) (2)	Notes
Measures Implemented Prior to the 2003 Water Conservation Plan Update			
Reduce Irrigation – Allow Turf to go Dormant in Summer	O&M	5%	
Reduce Showering Times and Frequencies	O&M	7.5%	
Optimize Central Laundry Practices	O&M	Not Quantifiable Based on Year 2000 Data	
Optimize Vehicle Washing Practices	O&M	Not Quantifiable Based on Year 2000 Data	
Install High-Efficiency Cooling Systems	C	15%	
Find and Repair Plumbing Leaks Inside Buildings	O&M	Not Quantifiable Based on Year 2000 Data	
Install High-Efficiency Showerheads	C	Not Quantifiable Based on Year 2000 Data	
Measures Implemented During Development of the 2003 Water Conservation Plan Update(3)			
Water Use Efficiency in Central Laundry	C	2%	In Design
Wastewater Treatment Plant Effluent for Washdown	C	4.5%	In Design
Replace Personal Washing Machines with High-Efficiency Models	C	0.9%	Being Implemented
Repair Hydrant Line Leaks	C	10%	In Design
Distribution System Leak Detection(6)	C	2%	Completed
Measures Recommended for Future Consideration			
Wastewater Reuse	C	20-60%(4)	
Replace Toilets with High-Efficiency Models	C	NA(5)	
Composting of Food Waste	C	1%	Under Study
Optimize Kitchen Uses of Water	O&M	1.2%	
Install Automated Shower Timers	C	1.1%	

Footnotes:

(1) O&M = Operations & Maintenance Practices; C = Capital Projects/Plumbing Fixtures

(2) For measures already implemented, percentage water savings are based upon year 2000 total production, as most measures were implemented at the end of that year and during 2001. For all other measures, percentage water savings are based upon year 2001 total production, as measures would have an effect on future demands.

(3) This water conservation plan was developed from August 2002 - January 2003. During that time, these conservation activities were initiated.

(4) These percentages indicate the potential amount of additional water allowed to be withdrawn from the facility's wells if the wastewater treatment plant is permitted as a reclamation facility and it is verified that the reclaimed water recharges the same aquifer from which WCC withdraws its water supply. See Section 6.5 for details.

(5) Not calculated in this analysis.

(6) This project included the identification and remedy of leaking check valves at Well Nos. 2 an 4.

Section 1
Background and Objectives

Economic and Engineering Services, Inc. (EES) has developed this water conservation plan as an update to the 1997 Draft Water Conservation Plan (1997 Plan) developed for the Washington Corrections Center (WCC), located in Mason County, near the City of Shelton. The facility is owned and operated by the Washington Department of Corrections (DOC).

The 2003 Water Conservation Plan Update (2003 Plan) identifies and evaluates means of improving the efficiency of water use at the facility, building upon findings and recommendations presented in the 1997 Plan. Through increased water use efficiency, the WCC hopes to achieve the following objectives:

- Remain within limitations imposed by the facility's water rights;
- Avoid the need to obtain additional water supplies;
- Foster good management practices and environmental stewardship.

Research efforts related to this update included a site walkthrough, interviews with on-site personnel, and review of water production data from source meters. The site walkthrough, interviews, and data review occurred during July and August, 2002.

The 2003 Plan contains the following:

- Description of the facility;
- Summary of prior water conservation efforts and measures already employed;
- Historical trends in water usage;
- Estimates of the quantity of water used for different purposes;
- Identification of additional water-efficiency measures applicable to the facility;
- Analysis of the cost and financial benefits of carrying out these measures.

Section 2
Facility Description

2.1 History of Facility

The Washington Corrections Center (WCC) is located approximately five miles northwest of the City of Shelton in Mason County (see Exhibit 2-1). The WCC was opened in 1964 under the management of the Washington Department of Social and Health Services (DSHS). In 1981, the WCC was transferred to the Washington Department of Corrections (DOC) and is currently a multi-custody correctional institution. The facility contains the following categories of offender housing: medium security (Level III), the Training Center (also Level III), an Intensive Management Unit (IMU, a Level V facility), and the Reception Center, for processing of all male offenders receiving state prison sentences, except for "death row" inmates.

The total acreage of state-owned land at the WCC site is approximately 455 acres, with 125 acres developed for correctional facilities. The remainder of the property consists of timberland and open land.

The oldest portion of the WCC was constructed in 1964. This includes the Receiving Units (where those offenders being processed live) and two of the medium security living units (i.e., In-House Units), as well as most administration buildings. The third medium security In-House Unit, Training Center, and IMU were all constructed in the 1980s. The most recent additions to the facility include a gymnasium (1995) and a warehouse operated by Correctional Industries (CI) (1999). Exhibit 2-2 displays a map of the facility, while Table 2-1 lists each individual building, its age and size in square feet.

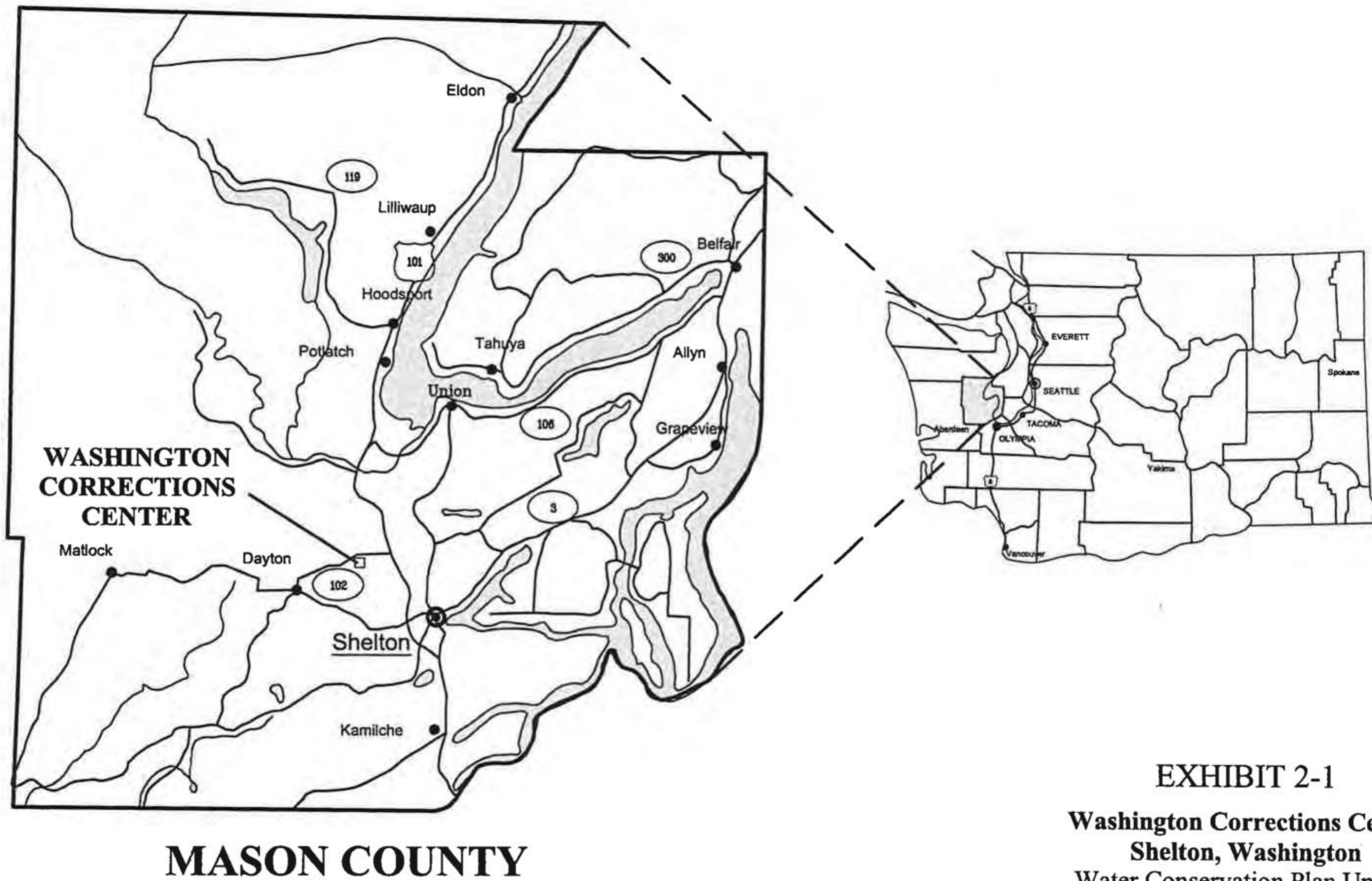


EXHIBIT 2-1

Washington Corrections Center
Shelton, Washington
Water Conservation Plan Update
Vicinity Map

January 2003

ECONOMIC AND ENGINEERING SERVICES, INC.

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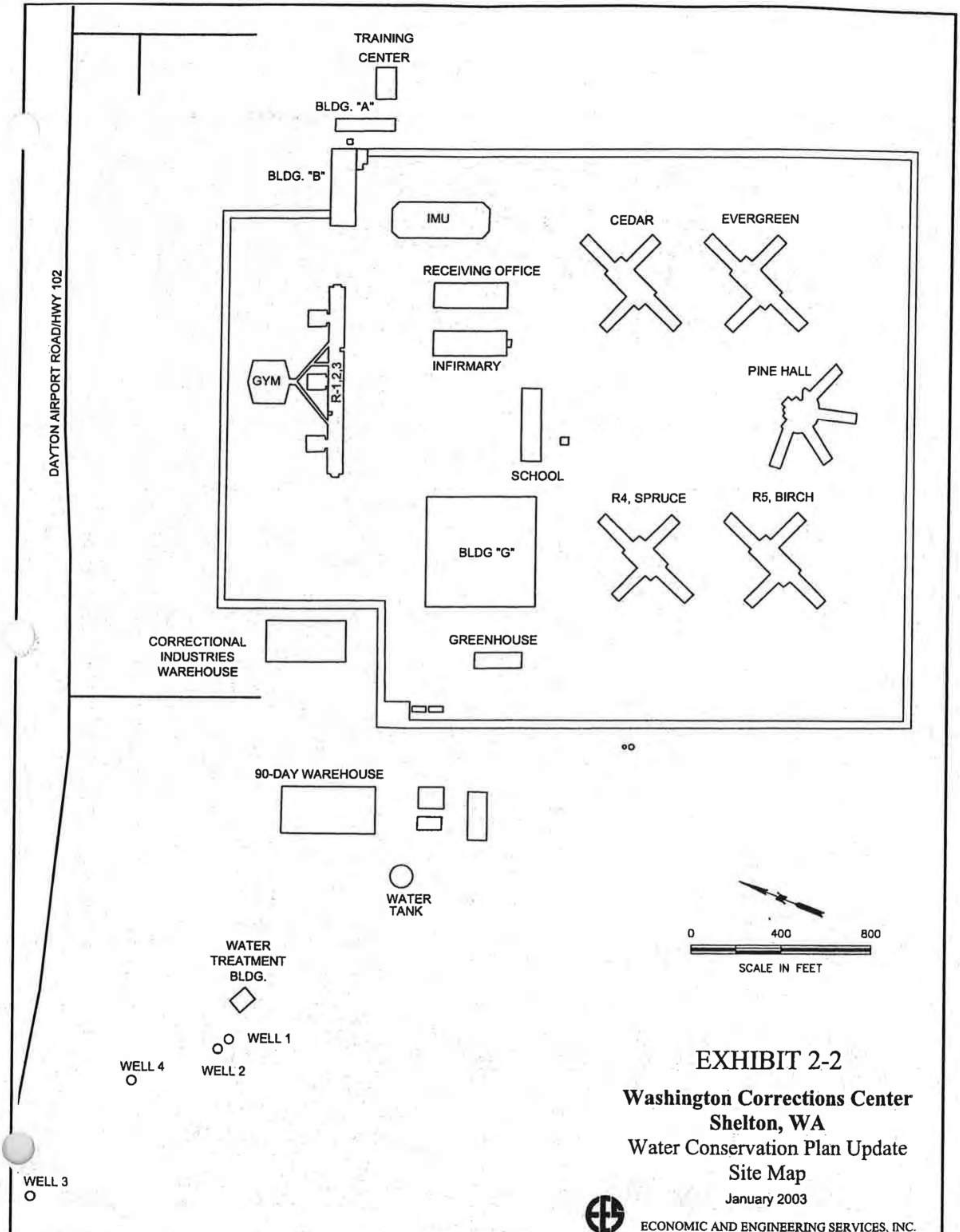

EXHIBIT 2-2

Washington Corrections Center
Shelton, WA
Water Conservation Plan Update
Site Map

January 2003

ECONOMIC AND ENGINEERING SERVICES, INC.

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<EES_OLY>:PLOT DATE:01/27/03 TIME:16:06

Table 2-1
Building Data

Building/Function	Letter Code	Approximate Size (ft ^{2})	Approximate Construction Date
A - Administration	A	8,000	1964
B – Major Control & Visitation	B	19,200	1964
Receiving Office	C	19,200	1964
Infirmary	D	19,200	1964
IMU		37,800	1985
School		13,200	1964
"G" Building	G	129,600	1964
R-1, 2, 3 – Receiving Units	R-Units	39,000	1964
Gymnasium		16,200	1995
Spruce – Receiving Unit	R-4	30,800	1964
Birch – Receiving Unit	R-5	33,600	1964
Cedar – Living Unit		33,600	1964
Evergreen – Living Unit		33,600	1964
Pine Hall – Living Unit		26,000	1985
Warehouse (90-day)		45,000	1964
Warehouse (Correctional Industries)		24,360	1999
Training Center		700	1987
Steam Plant		4,900	1964
Greenhouse		900	1964

2.2 Water System

The WCC's water supply system consists of four wells, a storage tank, and the distribution system. The primary water supply comes from Well No. 4, with supplemental supply from Well No. 2. Well No. 4 was drilled to a depth of 56 feet in 1984 and Well No. 2 was drilled to a depth of 46 feet in 1963. The rated capacities of Wells Nos. 4 and 2 are 640 and 320 gallons per minute (gpm), respectively. Well No. 1, drilled to a depth of 177 feet in 1962, is currently dedicated to steam plant makeup water, but may also be used as an emergency domestic water supply. Well No. 3, drilled to a depth of 184 feet in 1962, is only used for emergency purposes.

All water pumped is conveyed to a treatment building, where the water is disinfected and pH is adjusted. A single, 230,000 gallon reservoir provides elevated storage for the facility. A new 500,000 gallon reservoir is under design, with construction completion anticipated in 2003.

Except for recent additions at the facility, the distribution system was installed during 1962 and 1963, prior to the opening of the WCC in 1964. Service lines range in size from 2.5 inches to 8 inches, with the majority consisting of 4-inch pipe. Water system static pressure averages about 76 pounds per square inch (psi) throughout the system.

During the site walkthrough, WCC staff provided an estimated count of plumbing fixtures and water-using appliances at the WCC. The most common of these are listed in Table 2-2.

Table 2-2
Inventory of Selected Plumbing Fixtures and Appliances

Location	Toilets	Urinals	Sinks (1)	Showers	Washing Machines (2)
A – Administration	4	2	6	0	0
B – Major Control & Visitation	7	6	11	2	0
Receiving Office	8	4	12	0	0
Infirmary	16	4	24	4	0
IMU	130	4	130	12	0
School	8	4	12	0	0
"G" Building	12	8	18	6	0
R-1, 2, 3 – Receiving Units	240	4	240	36	0
Gymnasium	2	2	3	6	0
Spruce – Receiving Unit	240	4	240	16	0
Birch – Receiving Unit	240	4	240	16	0
Cedar – Living Unit	16	4	24	16	4
Evergreen – Living Unit	16	4	24	16	4
Pine Hall – Living Unit	240	4	240	16	4
Warehouse (90-day)	4	1	6	0	0
Warehouse (Correctional Industries)	4	0	4	0	0
Training Center	4	2	6	2	0
Steam Plant	2	1	3	0	0
Greenhouse	1	0	1	0	0
Heavy Equipment Storage	1	0	1	0	0
Towers (6)	6	0	6	0	0
Restrooms below Towers 3 & 5	2	0	2	0	0
Firing Range	2	0	2	0	0
Total	**1,205**	**62**	**1,255**	**148**	**12**

Footnotes:

(1) For "wet cells", which have combination sink/toilets, the number of sinks is equal to the number of toilets. For buildings with large, common restrooms, the number of sinks is estimated as 1.5 times the number of toilets, based on the general sink:toilet ratio at other institutions. This accounts for restroom sinks and general purpose sinks, but does not include maintenance sinks or sinks in food service areas.

(2) Lists only residential-style washing machines located in living units. Central laundry facilities are discussed elsewhere.

2.3 Water Rights

DOC's annual water right for the WCC facility is 268 acre-feet per year (AF/yr). This is equivalent to 239,072 gallons per day (gpd) on an average daily basis. The instantaneous quantity associated with the facility's water rights is 563 gallons per minute (gpm).

Section 3
Prior Water Conservation Efforts

In the mid-1990s, a regulatory compliance review revealed that water rights were insufficient to meet water demands at the Washington Corrections Center (WCC). The 1997 Draft Water Conservation Plan (1997 Plan) was developed by Gray & Osborne, Inc., in support of an application for additional water rights submitted to the Washington Department of Ecology (Ecology) in May 1996. Washington Department of Corrections's (DOC) strategy to meet current and future water demands at that time was to reduce water usage while also pursuing additional supplies.

The 1997 Plan included a water balance for the facility, with estimates of water used for different purposes. While well meter records provided sound production data, an accurate accounting of water uses was not available because there was no metering of usage. Therefore, estimates were based upon calculations using information received from DOC staff and equipment vendors. From this analysis, the highest water uses were determined to be toilets and urinals, showers, and kitchen uses, comprising 19 percent, 16 percent, and 8 percent of daily water use, respectively. Additionally, it was estimated that the facility had 38 percent unaccounted-for water (i.e., the difference between water production and usage). This water was assumed to be lost through leaks or hydrant and line flushing.

In order to reduce water usage, the 1997 Plan proposed a two-phase conservation program for the WCC. Phase 1 consisted of measures outlined in the *Conservation Planning Requirements* guidelines published by and Ecology the Washington Department of and Health. Phase 2 consisted of supplemental actions to be considered in addition to Phase 1 measures.

A summary of the key elements of the proposed conservation program is provided below, including the degree to which each element has been implemented since 1997.

3.1 1997 Phase 1 Recommendations

- ***Education***. The intent of this element is to make staff and offenders more aware of water use. Key recommended actions include periodic reminders by WCC managers in memos or during staff meetings to inform staff of conservation issues, and enhanced monitoring of areas where excessive water use may occur but can be regulated (e.g., showers, kitchen, irrigation, vehicle washing).
- ***Implementation***. This measure has been successfully implemented over the past five years. WCC staff closely monitor the amount of water withdrawn by the wells, and compare this usage on a monthly basis with the amount of water authorized by water rights. If it is determined that the rate of water usage will lead to an exceedance of the annual water right, WCC maintenance staff initiate various water-saving activities, which involve participation by other staff throughout the facility. This close attention to water usage and communication of the need to conserve water at certain times aided the facility in remaining within its water right limitations during the drought in 2001.

- ***Service Meters.*** Service meters can be used to quantify and track the amount of water used for various activities. During the course of the 1997 Plan development, WCC staff were asked to prioritize the facility's buildings in terms of need for service meters.
- ***Implementation.*** This measure is currently being implemented by WCC staff as part of a project to replace interior building piping throughout the facility. Phase 1 of this project has been completed as of January 2003, and included replacement of copper lines in buildings C, D, R-1, R-2, R-3, and the 90-day warehouse. Phase 2 (i.e., piping replacement in the remaining buildings) is yet to be completed. As a part of this project, which is anticipated to be completed by early summer 2003, individual building meters are being installed, in order to provide the ability to track water consumption at the building level.
- ***Irrigation.*** Turf and landscape irrigation can consume large quantities of water during the summer months. Reductions in irrigated areas and close monitoring of irrigation practices can result in substantial summertime water savings. Further efficiencies can be gained by ensuring that watering is done during the mornings and evenings.
- ***Implementation.*** At the writing of the 1997 Plan, WCC staff had already decreased the amount of irrigated land to the "mounds" (i.e., grassy areas directly in front of the living units) and landscaped areas along sidewalks and near certain buildings. The remaining areas were allowed to dry up during the summer. This practice was discontinued in some subsequent years (1998-2000). However, in 2001 the facility resumed the practice of no turf irrigation. In general, landscape irrigation (accomplished largely by hoses) is done during morning and evening hours.

3.2 1997 Phase 2 Recommendations

- ***Leak Detection and Repair.*** The 1997 Plan estimated that 38 percent of water is unaccounted-for. Some of this water may be lost through leaks in the distribution system. A complete leak detection program at the facility was estimated to cost $2,000.
- ***Implementation.*** A formal leak detection and repair program was implemented during the development of the 2003 Water Conservation Plan Update (2003 Plan). Details are provided in Section 6.4.
- ***Low-Flow Fixtures.*** A large portion of water use at the facility is attributed to showers, toilets, and urinals. Installation of low-flow fixtures may significantly reduce water use for these purposes.
- ***Implementation.*** At the writing of the 1997 Plan, WCC staff had fitted all showerheads with ball cocks that were throttled to reduce flows. During preparation of the 2003 Plan, staff indicated that some of the ball cocks have come out of adjustment and are no longer operating in a low-flow manner. No low-flow toilets or urinals have been installed, except for staff areas in Building B (administration).
- ***Laundry.*** The 1997 Plan identified various ways by which to reduce water-use by the laundry operations. One option is to optimize the wash/rinse programs of the commercial machines in order to minimize cycles and water used per cycle. Other options involve replacement of existing machines with more efficient models (e.g., replacing commercial machines with machines that recycle water, and replacing the residential-style machines with more efficient models).

- ***Implementation.*** Since 1997, the operations in the commercial laundry have been optimized. The number of cycles has been reduced and a minimum amount of water is used, per equipment specifications. Additional water savings are being investigated in a separate study being conducted concurrent to the 2003 Plan.
- ***Kitchen.*** The 1997 Plan recommended replacement of a food grinder with a "HeliClean" food waste dewatering unit, in order to reduce water usage and organic loadings to the wastewater treatment plant.
- ***Implementation.*** The HeliClean unit was installed in 1997. The system has not worked efficiently, requiring periodic washdown by hand-held hoses.
- ***Wastewater Reuse.*** As of the writing of the 1997 Plan, the WCC planned to upgrade its wastewater treatment plant and add a sprayfield for effluent disposal. Upon completion of these upgrades, it was recommended that DOC further consider using wastewater treated to Class A reclaimed water standards for various non-potable purposes throughout the facility.
- ***Implementation.*** The plant upgrades and sprayfield have been completed and are operational. A separate study is being performed concurrent to the 2003 Plan, evaluating the feasibility of utilizing reclaimed wastewater for washdown purposes at the treatment plant.

3.3 Additional Conservation Measures Already Employed

In addition to the items listed above, the WCC implemented other conservation measures between 1997 and 2001 that have resulted in substantial water savings. These items are discussed below.

3.3.1 Changes in Showering Practices

Historically, offenders in the Receiving Units[(1)] were allowed to shower once every day. Offenders in the In-House Units were essentially allowed to shower whenever they desired, with no limits on showering times. In an effort to reduce water usage, changes to the showering practices were instituted at the beginning of 2001. Offenders in Receiving Units were allowed to shower only once every other day, while offenders in the In-House Units were restricted to showering once per day. Based upon these changes reported by staff, by staff Economic and Engineering Services, Inc. (EES) estimates that this had the effect of reducing the amount of water used for showering by approximately 50 percent.

3.3.2 Installation of a Closed-Loop Water-Cooled Refrigeration System

The facility's old refrigeration process for the kitchen utilized a once-through water-cooled compressor system. Upon installation of a replacement, closed-loop system in late 2000, WCC staff noted an immediate reduction in daily water usage. This system has continued to operate in a water-efficient manner.

[1] See Section 2.1 for definition of Receiving and In-House Units.

Section 4
Breakdown of Water Uses

4.1 Historical Water Use

Water production at the Washington Corrections Center (WCC) is measured by source meters on each well. Production data for years 1995-2001 is summarized in Table 4-1 and Exhibit 4-1. Data regarding offender population for years 1999-2001 are also presented in the table and exhibit.

From this data, several observations can be made. Total usage generally increased slightly from 1995 to 2000. However, there was a substantial decrease in usage between years 2000 and 2001. There are multiple reasons for this change in water production, including a drop in offender population (approximately 9 percent). Beginning in the late 1990s, greater attention was paid to water usage, as the facility became aware that annual usage had historically been exceeding the amount allowed by its water rights. More frequent monitoring of well meters and water consumption activities began to take place. In 1997, the Draft Water Conservation Plan (1997 Plan) was developed, which identified areas of high water use and strategies for reducing consumption, as discussed in Section 3. In response to these activities and in light of the high amount of water used in 2000, three important factors were addressed at the end of year 2000 and during 2001, resulting in considerably less water consumption facility-wide during the latter year. These key factors, which were discussed in Section 3, are:

- ***Installation of a closed-loop water-cooled refrigeration system.*** The facility's old refrigeration process for the kitchen utilized a once-through water-cooled compressor system. Upon installation of the replacement, closed-loop system for the kitchen in late 2000, WCC staff noted an immediate reduction in daily water usage. Based upon comparison of monthly usage for December of 1999 and December of 2000 (during which months the population was similar), the amount of water savings attributable to this equipment replacement is on the order of 50,000 gallons per day (gpd). This system has continued to operate in a water-efficient manner.

- ***Changes in shower practices.*** As described in Section 3, offenders were allowed to shower more often and for longer periods of time prior to 2001. In an effort to reduce water consumption, showering times were reduced by approximately 50 percent in 2001, providing a similar reduction in water use.

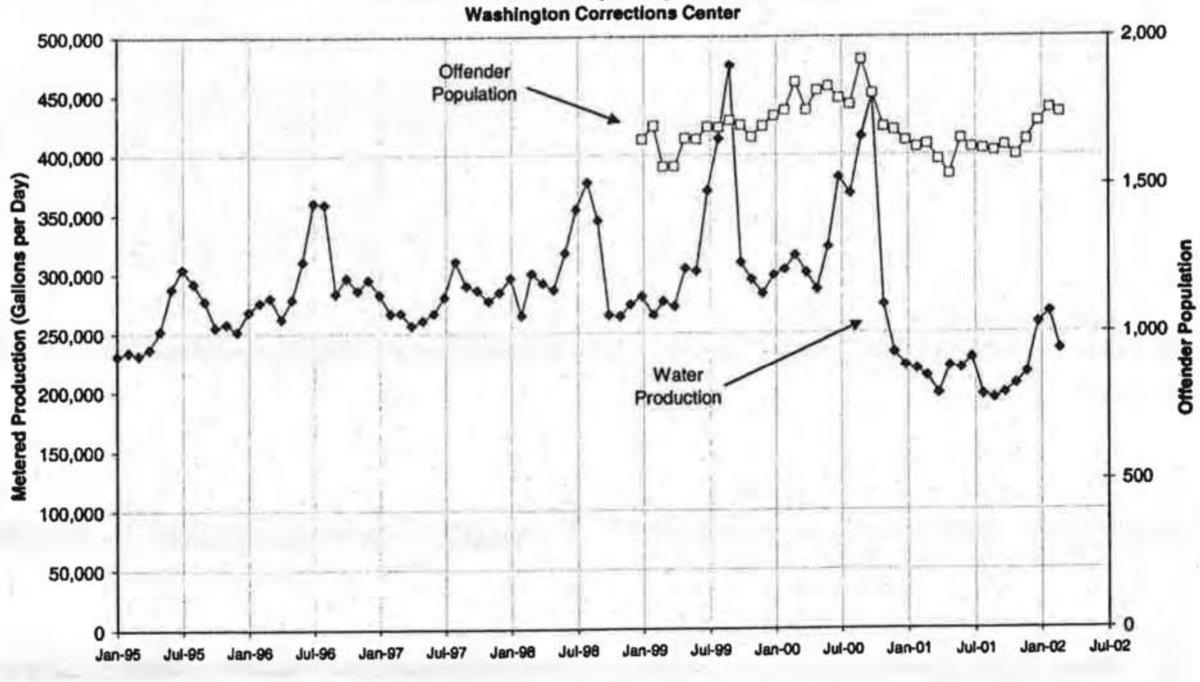
- ***No turf irrigation.*** Historically, the facility attempted to maintain green turf areas throughout the summer months, using hose-mounted sprinklers and two water cannons to apply substantial amounts of water. In 2001, no turf irrigation was performed, aside from that used on the mounds in front of the living units, resulting in no substantial peak in summertime water usage, as compared to previous years.

Table 4-1
Aggregate Historical Water Use

Year	Total YearlyUse (Gallons) (1)	Average Daily Use (gpd) (2)	Base Use (gpd) (3)	Summer Use (gpd) (4)	Average Offenders (5)	Average Daily Use per Offender (gpcd) (6)
1995	94,688,000	259,419	243,868	290,393	ND	ND
1996	108,511,000	296,478	281,506	328,730	ND	ND
1997	101,190,000	277,233	272,481	286,697	ND	ND
1998	110,571,000	302,934	280,144	348,328	ND	ND
1999	116,999,000	320,545	285,716	389,918	1,661	192
2000	120,331,000	328,773	308,770	371,311	1,783	184
2001	76,943,900	210,805	211,383	209,655	1,618	130

Note: gpd = gallons per day; gpcd = gallons per capita per day; ND = No Data
(1) Based on well meter data.
(2) Calculated as total use divided by 365 days (366 days for leap years 1996 and 2000).
(3) Calculated as use during October-May, divided by 243 days. Base consumption is not seasonal in nature, and therefore occurs year-round.
(4) Calculated as use during June-September, divided by 122 days.
(5) Based on administrative records.
(6) Calculated as average daily use divided by number of offenders.

Exhibit 4-1
Monthly Offender Population (January 1999 - March 2002)
and
Metered Water Production (January 1995 - March 2002)
Washington Corrections Center



Another observation from the water usage data is that water consumption has historically had a strong seasonal component, with an increase during the June through September summer season. This is true for all years except for 1997 and 2001. The low summer use in 1997 was due to the lack of turf irrigation. This practice, along with stricter observance of showering practices, also resulted in the low summertime usage in 2001.

The data in Table 4-1 also highlight that over the past three years, there has been a decrease in per offender water use. A 4 percent reduction occurred between 1999 and 2000, while a more substantial drop of 30 percent occurred between 2000 and 2001.

4.2 Categories of Water Use

The total quantity of water consumed was used to develop a water balance for the WCC. In the absence of water meters to measure water usage, the results of the on-site walkthrough, interviews, and standard estimates from the literature on water conservation (see Bibliography) were used to estimate the quantity of water used for different purposes. The water balance was developed for both years 2000 and 2001, since significant changes in water use practices were made between these two years, as noted in the previous section. The assumptions, calculations, and results of the water balance are summarized in Table 4-2. The following sections describe each major category of water use at the facility.

4.2.1 Sanitation and Hygiene

Sanitation and hygiene includes water used for showering, hand washing, toilets, and laundry (personal and central). For purposes of this analysis, these uses were further subdivided into estimates of water used by offenders, and water used by staff, due to the different characteristics of these uses. For example, offenders in the living units were assumed to shower once per day, while it was assumed that staff showering is essentially zero. Water use estimates were derived from a number of studies in the northwest and nationwide, including conservation studies produced by the American Water Works Association, Seattle Public Utilities, and Portland Water Bureau. These figures were combined with data on the number of inmates and staff at the WCC.

The total estimated water used for personal sanitation and hygiene was approximately 135,500 gpd in 2000. This amount was reduced to approximately 102,600 gpd in 2001. Key components are discussed below.

- *Toilets and Urinals.* Toilets and urinals are wall-hung units which operate directly off the system pressure. Many toilets in the institution are combination sink/toilets in "wet cells". The amount of water per flush ranges from 3.5 to 5 gallons for the toilets and from 1.5 to 2.0 gallons for the urinals.
- *Showers.* All showers at the WCC are hand-operated and do not have timers (i.e., they are manually turned off). A 1996 pollution prevention plan listed shower use as the largest contributor to wastewater flow; therefore, an effort has been made to reduce water usage in the showers. All showerheads have been fitted with ball cocks, which have throttled the flow rates to approximately 2.0 gallons per minute (gpm), according to WCC staff. However, staff also report that some of the ball cocks have come out of adjustment and are no longer operating in a low-flow manner.

Table 4-2
Water Balance Worksheet [1]

Category	Assumptions/ Comments	Calculations	Year 2000 Results (gpd)	Year 2001 Results (gpd)
Turf and Landscape Irrigation				
Estimate of all irrigation in year 2000, year-round average [2]	Difference between summer consumption and remainder of year is assumed to be total irrigation; 122 days of irrigation	Summer consumption less base consumption; total summer use divided by 365 days in full year	20,904	NA
Estimate of landscape irrigation in year 2001, year-round average [3]	2.5 acres of flower beds and "mounds"; average 0.14 inches per day; 122 days of irrigation	Acres x (inches per day/12 inches per foot) x 325,851 gallons per acre-foot x 122 days of irrigation/365 days	NA	3,177
		Total, Turf and Landscape Irrigation:	**20,904**	**3,177**
Sanitation and Hygiene				
Toilet flushing - offenders	6 flushes per day (fpd); average 4 gallons per flush (gpf)	Offenders x fpd x gpf	42,792	38,832
Toilet flushing - staff	2 fpd; average 4 gpf	Staff x fpd x gpf	5,112	5,112
Urinal flushing - offenders	1 fpd; average 2 gpf	Offenders x fpd x gpf	3,566	3,236
Urinal flushing - staff	2 fpd; average 2 gpf	Staff x fpd x gpf	2,556	2,556
Showers - offenders - receiving units [4]	10 minutes every day (2000); 10 minutes every other day (2001); 2.0 gpm	Offenders x minutes x gpm/2 (to account for every-other-day practice)	21,260	8,980
Showers - offenders - in-house units [4]	20 minutes every day (2000); 10 minutes every day (2001); 2.0 gpm	Offenders x minutes x gpm	28,800	14,400
Central laundry	Average 1.44 gal/pound of laundry (from Alternatives Analysis for Laundry System Water Use Efficiency); laundry processed: 2000=2,190,575 lbs; 2001=2,056,130 lbs; assume additional 10% leakage of older machines	Pounds x gal/pounds / 365 days + leakage	8,973	8,428
Laundry – offenders personal	12 machines; 15 loads per machine per day; 30 gal. per load	machines x loads per day x gal. per load	5,400	5,400
Faucets – offenders (personal hygiene)	3.5 minutes per day; 1.7 gpm	Offenders x minutes x gpm	10,609	9,627
Faucets – staff (personal hygiene)	2.0 minutes per day; 1.7 gpm	Staff x minutes x gpm	2,173	2,173
Water coolers and air-cooled ice machines (separate from food service areas)	Assume staff and offenders consume one quart per person per day, including losses; and cooling uses 100 gpd	(staff plus offenders) x (¼ gal.) plus 100 gpd	706	664
Leakage, etc. from domestic plumbing fixtures	Appear minimal (no leaks observed). Assume 2 gal. per offender per day. (one-fifth national average for domestic)	Offenders x gpd	3,566	3,236
		Total, Sanitation and Hygiene:	**135,512**	**102,644**

Table 4-2 (cont)
Water Balance Worksheet (1)

Category	Assumptions/ Comments	Calculations	Year 2000 Results (gpd)	Year 2001 Results (gpd)
Food Service				
Dishwashing - 3-tank washers (5)	3 units; 275 gal/hour; 4 hours/day	Units x gal/hour x hours/day	3,300	3,300
Dishwashing - 1-tank washers (5)	2 units; 230 gal/hour; 4 hours/day	Units x gal/hour x hours/day	1,840	1,840
Kettle cleaning (5)	General cleaning	NA	3,500	3,500
Kitchen sink usage (5)	General usage	NA	3,600	3,600
Heliclean cleaning	Hose operation (approx. 10 gpm); 3 hours per day	Gpm x hours x 60 minutes/hour	1,800	1,800
Water consumed at meals (used to make food and drink) (5)	Assume 2 gal/meal served; 3 meals/offender; 1 meal/staff	Number of meals x gal per meal	11,976	10,986
		Total, Food Service:	**26,016**	**25,026**
Facility Maintenance and Cleaning				
Daily floor mopping	510,500 square feet in facility; One 5-gal. bucket per 2,500 square feet; average mopped 1.5 times per day	Bucket volume x number of buckets x number of times per day	1,532	1,532
Other interior cleaning (inmate cells, counter tops, etc.)	Assume quantity similar to quantity used for mopping.	N/A	1,532	1,532
Vehicle washing	Summer: 5 bus washings/week; Winter: 10 bus washings/week; 10 gpm hose; 20 min. per vehicle	Minutes x gpm x washes per year/365 days (assume 4 summer months, 8 winter months)	241	241
Boiler water makeup (steam system leaks)	Based on metered source data (Well #1 is dedicated to boiler makeup)	Yearly total/365 days	5,447	4,696
Boiler maintenance-flooding	Two boilers (2,312 gal capacity) flooded to 3,391 gal. One boiler (2,760 gal capacity) flooded to 4,003 gal. Assume this is performed 3 times per year for each boiler.	Additional flooding volume for each boiler x number of floodings/365 days	28	28
Boiler maintenance-refill	Each boiler is drained and refilled once per year.	Boiler volumes x 1 filling per year, divided by 365 days/year	20	20
Wastewater treatment plant	Estimated based upon staff comments	NA	10,000	10,000
Water used as coolant in once-through cooling systems for refrigeration at Building G	Estimated based upon comparison of December 1999 and December 2000 water usage; a closed-loop system was installed in November 2000	NA	50,000	0
Miscellaneous maintenance and cleaning	Assume 500 gpd, average	NA	500	500
		Total, Maintenance and Cleaning:	**69,299**	**18,548**

Table 4-2 (cont)
Water Balance Worksheet [1]

Category	Assumptions/ Comments	Calculations	Year 2000 Results (gpd)	Year 2001 Results (gpd)
Other Uses				
Infirmary - sink use	Assume each of 24 sink faucets run five minutes per hour (8-hour day) at 1.7 gpm		1,632	1,632
Infirmary - shower use	Assume equivalent of five showers per day, 10 minutes, 2.0 gpm		100	100
Greenhouse	Assume 2 5.0 gpm hoses operate 1 hour per day, 6 days per week		513	513
Miscellaneous or intermittent uses	Assume 1,000 gpd, averaged over entire year		1,000	1,000
		Total, Other Uses:	**3,245**	**3,245**
		Total of estimated uses:	**254,976**	**152,640**
		Total metered production:	**329,674**	**210,805**
		Unaccounted-for consumption:	**74,698**	**58,165**

Footnotes:
(1) This worksheet summarizes water balance assumptions, calculations and results. It should be noted that for many uses calculations are based on assumptions or limited data, and the certainty of the results is therefore limited. Uncertainty is estimated to be on the order of plus/minus 15% in each water use category. Values are rounded.
(2) The calculation methodology includes all irrigation (turf and landscape).
(3) In year 2001, turf was not irrigated; however, landscape irrigation was performed.
(4) Showering policies are altered as needed to reduce water usage. More showering occurred in 2000 than in 2001. On average, offenders in the receiving units were allowed to shower once a day in 2000 and prior years, but were only allowed to shower every other day in 2001. Offenders in the in-house units were allowed to shower whenever they chose in 2000 and prior years, but were restricted to certain times of the day during 2001. It is estimated that this latter policy has had the effect of reducing in-house offender showering by approximately 50%.
(5) Based upon data obtained for the 1997 Draft Water Conservation Plan. Confirmed by EES as still being accurate for the 2003 Water Conservation Plan Update.

In addition, showering practices are altered when water use approaches water right limitations. This is highlighted in the differences between estimated water usage in showering between years 2000 and 2001 in Table 4-2. More showering took place in 2000 than in 2001. Offenders in the Receiving Units were allowed to shower once every day in 2000. Offenders in the In-House Units were essentially allowed to shower whenever they desired. As a result, some offenders would shower multiple times per day and at extended periods of time or with multiple showerheads operating. In an effort to reduce water usage, changes to the showering practices were instituted at the beginning of 2001. Offenders in Receiving Units were allowed to shower only once every other day, while offenders in the In-House Units were restricted to showering once per day. It is estimated that this had the effect of reducing the amount of water used for showering by 50 percent.

- ***Personal Laundry.*** There are 12 household-type washing machines located in the In-House Units. WCC staff report that these machines receive heavy use. It is assumed that each machine washes 15 loads of laundry per day.
- ***Central Laundry.*** The facility currently maintains a laundry service operated by offenders. Eight commercial machines are operated Monday through Friday. The amount of water used varies between the machines and is also dependent upon the content of the loads. On average, the commercial machines use 1.44 gallons per pound of laundry, as currently programmed. Records indicate that 2,190,575 pounds of laundry were processed in 2000,

while 2,056,130 pounds were processed in 2001. Including leakage of the older machines, this equates to approximately 8,973 gpd and 8,428 gpd in 2000 and 2001, respectively.

- *Plumbing Fixture Leaks.* This category also includes an estimate of leakage from plumbing fixtures such as toilets, faucets, and showers (average of 3,400 gpd; or 2.4 gpm for the entire facility). This estimate is at the low end of the range for leakage estimates nationwide, based on on-site observations. No leaking fixtures were observed on the day of the site walkthrough. Consistent with this observation, facility personnel reported that leaking fixtures are generally reported immediately and repaired promptly.

4.2.2 Food Service

All kitchen and dining areas are located in Building G. Water-using activities include general food preparation and washing, food waste disposal through sink drains and via a HeliClean machine, dishwashing machines, additional wash-up of pots and pans in sinks, water served as a beverage, and ice machines.

The total estimate of water used for food service was approximately 26,000 gpd in 2000 and 25,000 gpd in 2001. Key components are discussed below.

- *Food Preparation and Consumption.* The amount of water assumed to be consumed each day (i.e., water used for food and beverage preparation) was 2.0 gallons per meal served, based on estimates presented in the 1997 Plan.
- *Dishwashing.* There are five large commercial washers in the kitchen: three 3-tank units and two 1-tank units. Each dishwasher operates for approximately four hours per day. Manufacturer information for the washers indicates that the 3-tank washers use approximately 275 gallons for each hour of use, while the 1-tank washers use approximately 230 gallons for each hour.
- *HeliClean Maintenance.* In 1997, the WCC replaced a garbage disposal system that grinded food scraps and flushed them to the sewer with a steady stream of water, thus using a substantial amount of water. The newer process, a HeliClean system, dewaters food waste, with the compacted food being disposed of as solid waste. This process requires periodic cleaning by hose washdown, and has therefore continued to consume substantial amounts of water. WCC staff indicated that the offenders tasked with cleaning the unit often leave the hose running constantly during the machine's operation. Assuming that a hose is used for three hours per day to clean the machine, the total water consumption associated with this process is 1,800 gpd.

4.2.3 Turf and Landscape Irrigation

The WCC contains large areas of turf and landscaped flower beds and "mounds". The mounds are raised grassy areas located directly outside of the living units and are used for offender recreation. For purposes of this analysis, it is assumed that irrigation occurs primarily during the four-month period from June through September of each year. For year 2000, an estimate of the quantity of water used for irrigation was developed based on the differential between base use and peak season use during this four-month period. This differential is approximately 62,500 gpd. Irrigation use averaged throughout the entire year was approximately 20,900 gpd.

No turf irrigation was performed during 2001; therefore, a different method was used to estimate the amount of water used for landscape irrigation, typically accomplished by manually-operated hoses. Assuming that the 2.5 acres of landscaped areas are irrigated approximately 1-inch per week (i.e., 0.14 inches per day) for 122 days of the year, a total of 1,159,600 gallons were used during 2001 for this purpose. On an average daily basis, this is equal to 3,177 gpd.

4.2.4 Facility Maintenance and Cleaning

Several activities are encompassed in this category. Most areas within the buildings are mopped daily, with some areas mopped two to three times each day. Inmate cells are also cleaned daily, with some attendant water use.

The WCC's steam system experiences daily losses which can easily be quantified through review of boiler makeup records (i.e., Well No. 1 meter data). In addition, each of the three boilers undergo a flooding procedure approximately three times each year, as well as being drained and refilled once a year.

Water is used at the wastewater treatment plant for hosing down the headworks and clarifiers. Staff estimate that total usage at the plant is approximately 10,000 gpd.

Vehicle washing is assumed to be minimal, based upon staff comments. During the winter, it is estimated that there are ten bus washings per week. In the summer, this usage is curtailed to approximately five bus washings per week. Cars and trucks are washed very rarely.

Also included in this category is water usage associated with the old once-through water-cooled refrigeration system for Building G. This usage is estimated as 50,000 gpd for 2000, based upon comparison of monthly usage for December 1999 and December 2000. The water savings associated with this change in equipment has probably been greater during the hotter, summer months, but no data exists to clearly identify these savings; therefore, for the purposes of this water balance, the savings are assumed to be constant throughout the course of the year at 50,000 gpd.

On the whole, water usage in this category was estimated to be 69,300 gpd in 2000. Usage in 2001 was substantially less at 18,500 gpd due primarily to the replacement of the once-through refrigeration cooling system.

4.2.5 Other Uses

Several activities are encompassed in this category, including water use at the infirmary and greenhouse, as well as other intermittent uses.

- ***Infirmary.*** The WCC has an on-site infirmary providing medical, pharmaceutical, and dental services to offenders. There are 24 sinks and 4 showers in the facility. Assuming the sinks are used five minutes per hour each day and that approximately five showers occur per day, water use within the infirmary is estimated to be 1,732 gpd (this estimate is subject to considerable uncertainty).

- *Greenhouse.* The WCC has a greenhouse, available for use by the offenders. Minor watering of plants and flowers is assumed to consume 513 gpd.
- *Miscellaneous or Intermittent Uses.* Certain water uses are not accounted for in the uses described above, or do not occur on a regular, daily basis. For example this may include unusual cleaning events, or major leaks that are repaired quickly. To account for these types of uses and events, a single estimate of 1,000 gallons per day was used. This represents all such uses combined, averaged over the 365-day year.

4.2.6 Unaccounted-for Water

Unaccounted-for water is defined for the WCC as the difference between the metered amount of water produced by the facility's wells and the estimated amount of water used for the various purposes discussed above. An accurate accounting of water usage is not available because there are no service meters. Therefore, there is substantial uncertainty in the consumption estimates for each category of use, and therefore this category as well. Given the estimated usage and measured production records, the amount of unaccounted-for water at the WCC is estimated as 23 and 26 percent of total production for years 2000 and 2001, respectively.

This unaccounted-for water likely includes a substantial amount of water associated with leaks in hydrant lines. WCC staff indicated that recent testing of galvanized steel hydrant lines has revealed multiple leaks. Without better data, it is difficult to determine what portion of the unaccounted-for water may be comprised of such leaks. However, staff indicate that the leaks likely represent approximately 10 percent of total production. This category may also include water lost to leaks in other portions of the distribution system as well as water line flushing.

Section 5
Water Conservation Measures

Based on the review of prior water conservation efforts and water-using activities at the Washington Corrections Center (WCC), this section identifies current conservation activities that could be continued and additional water-efficiency measures that could be employed at the facility to increase water savings. These measures include both capital projects and changes in standard operating procedures or maintenance practices. Based on a qualitative screening of potential water savings and costs, an initial list of measures was narrowed down to six additional measures for more detailed analysis, excluding those measures that are already being implemented or are under consideration in separate studies being conducted concurrent to the 2003 Water Conservation Plan Update (2003 Plan). This section presents the initial set of measures and results of the qualitative screening. Section 6.0 presents the cost analysis for the six measures described in detail.

For each of the water uses identified in Section 4.0, there are various techniques that could be used to improve efficiency. For some water uses, either capital investments or operational modifications could result in water use efficiencies. In some cases, measures that target the same type of water use overlap in their effects. In other cases, alternative measures are mutually exclusive.

It should be noted that some water-saving measures may have important implications for security, relationships with the offender population, and staff morale. For example, changes in operational procedures could potentially create dissatisfaction, resulting in poor performance. On the other hand, in some cases improvements in efficiency may improve morale, by fostering staff and offender perceptions of a well-managed operation. In general, morale and security issues should be considered with regard to any water-efficiency measures that are candidates for implementation.

5.1 Initial Screening of Potential Water Conservation Measures

Table 5-1 lists 26 candidate water conservation measures that were identified initially, grouped into two main categories:

- Operations & Maintenance (O&M) Practices, and
- Capital Projects/Plumbing Fixtures.

Within each of these two categories, measures are ranked, first by relative water savings (high, medium or low), and then by relative cost per unit of water saved (low, medium, or high). For example, a measure that ranks high in water savings and low in unit cost would be preferred over another measure that ranks medium in water savings and high in unit cost.

Table 5-1 was used as a screening tool to identify those conservation measures that are already being implemented and those that appear to be most cost-effective for future use at the WCC. As noted repeatedly throughout this document, the WCC been active in water conservation over the past five years. Table 5-1 contains many water conservation measures that have already been employed and which should continue to be utilized. In addition, some listed items are under detailed consideration in separate but concurrent studies. These measures were not considered for further evaluation in the 2003 Plan, as their feasibility and cost-effectiveness are being determined in separate studies.

It should also be noted that this table was first developed in August 2002. In the time leading up to finalization of the 2003 Plan, some items were implemented, as discussed further in Section 6.

Table 5-1
Screening Matrix - Water Conservation Measures

Code	Category	Description	Relative Volume of Water Savings	Relative Cost Per Unit of Water Saved	Comments
Operations & Maintenance (O&M) Practices					
OM-1	Turf/landscape	Reduce watering, allow turf to go dormant for summer	H	L	Already implemented
OM-2	Sanitation/hygiene	Reduce showering times/frequency	H	L	Already Implemented
OM-3	Maintenance/cleaning	Install high-efficiency cooling systems	H	H	Already Implemented
OM-4	Sanitation/hygiene	Optimize central laundry practices	M	L	Already implemented
OM-5	Sanitation/hygiene	Reduce personal laundry usage	L	L	Offender dissatisfaction
OM-6	Food Service	Optimize kitchen uses of water	M	L	Potential staff dissatisfaction
OM-7	Maintenance/cleaning	Optimize vehicle washing practices	L	L	Already implemented
OM-8	Maintenance/cleaning	Find and repair plumbing leaks inside buildings	L	L	Already implemented
OM-9	Turf/landscape	Optimize irrigation scheduling, application, and soil characteristics.	L	L	Soil type may limit savings
OM-10	Maintenance/cleaning	Optimize boiler maintenance/cleaning	L	L	
OM-11	Maintenance/cleaning	Optimize mopping practices and scheduling	L	L	Health and safety considerations
OM-12	Maintenance/cleaning	Optimize general cleaning practices and scheduling	L	L	

Table 5-1 (cont)
Screening Matrix - Water Conservation Measures

Code	Category	Description	Relative Volume of Water Savings	Relative Cost Per Unit of Water Saved	Comments
Capital Projects/Plumbing Fixtures					
C-1	Sanitation/hygiene	Water use efficiency in central laundry (e.g. install reuse system)	H	H	Under evaluation
C-2	Sanitation/hygiene	Replace personal clothes washers with high-efficiency models	M	M	Energy savings
C-3	Maintenance/cleaning	Repair hydrant line leaks	H	M-H	Cost depends on whether WCC staff or private contractor performs work
C-4	Various	Wastewater reuse for various purposes throughout facility	H	H	
C-5	Sanitation/hygiene	Replace toilets with high-efficiency models – special "combination" toilets in wet cells	H	H	
C-6	Food Service	Install composting facility to reduce water used for food waste disposal	M	H	Under consideration
C-7	Maintenance/cleaning	Wastewater reuse for washdown purposes at WWTP	M	M	Under consideration
C-8	Maintenance/cleaning	Distribution system leak detection	M	M	
C-9	Sanitation/hygiene	Install automated shower timers	M	M	Offender dissatisfaction
C-10	Sanitation/ hygiene	Replace toilets with high-efficiency models – standard toilets	L	M	
C-11	Sanitation/hygiene	Install/maintain ball cocks in showerheads to throttle flow	L	L	Already implemented, but settings need to be checked/adjusted
C-12	Sanitation/hygiene	Install/maintain faucet aerators	L	L	Most faucets already have aerator
C-13	Food Service	Replace dishwashing equipment with high-efficiency models	M	H	
C-14	Sanitation/hygiene	Lavatory faucet timers/ pneumatic control	L	M	

Note:
WWTP = wastewater treatment plant

The qualitative information on water savings and unit cost were used jointly to screen the measures. It was assumed that conservation measures yielding "low" water savings did not warrant detailed analysis (although some of these measures may be desirable for implementation). Similarly, measures with a "high" unit cost were not analyzed in detail. Based on this approach, all measures meeting the paired criteria shown in Table 5-2 were selected for more detailed analysis of cost-effectiveness.

Table 5-2
Paired Criteria for Screening Additional Conservation Measures

	Relative Volume of Water Savings	Relative Cost per Unit of Water Saved
a.	High	Low
b.	High	Medium
c.	Medium	Low
d.	Medium	Medium

The following five measures meet these paired criteria, and were not already implemented as of August 2002 (the time of draft development of the 2003 Plan), nor are they under detailed consideration in another study:

- ***O&M Practices***
  - OM-6 Optimize kitchen uses of water
- ***Capital Projects/Plumbing Fixtures***
  - C-2 Replace personal clothes washers with high-efficiency models
  - C-3 Repair hydrant line leaks
  - C-8 Distribution system leak detection
  - C-9 Install automated shower timers

Each of these measures is described in greater detail in the following section, together with quantitative estimates of water savings and cost of each measure.

Section 6
Description and Evaluation of Selected Conservation Measures

This section describes in greater detail each of the five measures identified in Section 5. An estimate of water savings and cost is presented for each measure. In addition, the financial benefits or "avoided cost" of each measure is presented. The net benefit of each measure is the benefit (avoided cost) less the implementation cost. The implementation status of each activity is also discussed.

6.1 Implementation Costs

Based on the measure descriptions and assumptions presented in Section 6.4, an estimate was developed of the implementation cost of each measure. This implementation cost is summarized in Table 6-1. To facilitate comparisons, all costs are standardized in terms of cost per 1,000 gallons of water saved, over a ten-year period. Costs are in year 2002 dollars.

Table 6-1
Calculation of Implementation Cost
Selected Water Conservation Measures

Measure		Daily Water Savings (year-round) (gpd)	10-yr. Water Savings (1,000 gal.)	Capital Cost ($$ in Year 1)	Annual O&M Cost ($$/yr.)	10-yr. Cost ($$/10 yrs.)	10-yr. Unit Cost ($$/1,000 gal.)
Operations & Maintenance (O&M) Practices							
OM-6	Optimize kitchen uses of water	2,500	9,125	$0	$0	$0	$0.00
Capital Projects/Plumbing Fixtures							
C-2	Replace personal washing machines with high-efficiency models	1,800	6,570	$9,000	$500	$14,000	$2.13
C-3	Repair hydrant line leaks	21,000	76,650	$25,000	$0	$25,000	$0.32
C-8	Distribution system leak detection and repair	4,200	15,330	$5,000	$0	$5,000	$0.33
C-9	Install automated shower timers	2,338	8,534	$49,700	$0	$49,700	$5.82

To determine the cost-effectiveness and payback period associated with each measure, the implementation costs shown in Table 6-1 must be compared with the financial savings that accrue from reduced water consumption. These financial savings, or "avoided costs" are described in Section 6.2 below.

6.2 Avoided Cost Analysis

In financial terms, the benefit of a conservation measure can be estimated as the dollar savings associated with reducing water consumption. This is termed the "avoided cost" associated with conservation actions. For each unit of water saved (e.g. 1,000 gallons), the Washington

Corrections Center (WCC) experiences cost savings. Appendix A contains information on calculation of these avoided cost components. The main components of these cost savings are:

- Reduced energy and chemical treatment costs associated with production from WCC wells. This is estimated to be $0.09 per 1,000 gallons of water saved (assuming $0.04 per kWh).
- Reduced energy and chemical treatment costs associated with WCC wastewater treatment plant operation. This is estimated to be $0.37 per 1,000 gallons of water saved (assuming $0.04 per kWh).
- Reduced energy costs for heating water (this applies only to conservation measures that reduce consumption of hot water). This is estimated to be $4.57 per 1,000 gallons of hot water saved. However, for those uses that involve a mix of hot and cold water, a value of $2.29 per thousand gallons is used, representing equal proportions of hot and cold water.

Costs were based on estimated pump run times and recent natural gas bills provided by WCC staff. It should be noted that utility charges are subject to change.

Generally, outdoor uses of water will mainly involve the first category only (cost of water production). Indoor uses will generally include production costs and wastewater costs, and may also involve energy savings associated with hot water. The cost components are shown in Table 6-2 (values are rounded).

Table 6-2
Components of Avoided Cost
(bolded rows are applied directly to the cost effectiveness calculations in Section 6.4)

	Type of Avoided Cost	Avoided Cost ($ per 1,000 gal.)
a.	**Well production component**	**$0.09** [1]
b.	Wastewater component	$0.37 [1]
c.	Hot water component (at 140° F)	$4.57 [2]
d.	**Production and wastewater combined**	**$0.46**
e.	**Production, wastewater and hot water combined**[3]	**$2.75**

Footnotes:

(1) Assumes energy cost of $0.04 per kilowatt-hour (kWh).

(2) See Appendix A for assumptions and calculations. Value reported is for hot water, unmixed with cold water.

(3) Various end uses mix hot and cold water in different ratios. Value reported here assumes 50 percent hot and 50 percent cold water. Therefore, the hot water component of avoided cost is halved to $2.29 per 1,000 gallons, before being added to item "d".

For each of the five measures described in Section 6.4, the appropriate avoided cost was applied to the cost-effectiveness analysis.

6.3 Additional Benefits of Conservation Measures

Implementation of conservation measures at the WCC will yield other benefits that will likely be considered of greater value than the avoided-costs calculated in Section 6.2. As stated previously, two of the objectives of water conservation at the WCC are to remain within limitations imposed by the facility's water rights and to avoid the need to obtain additional water supplies. In the absence of conservation, the facility's water demand exceeds its water rights, as demonstrated in past years. Therefore, the facility will be required to obtain additional sources of supply, likely in the form of new water rights or purchasing of water from the City of Shelton, and may face building moratoriums, if conservation measures are not implemented. The "avoided costs" associated with developing additional supplies are highly complex and are therefore not quantified for this analysis; however, the benefit of avoiding the need for such supplies should be taken into consideration along with the quantifiable cost-effectiveness when determining which conservation measures to implement. For example, a certain measure may not meet a strict test of cost-effectiveness, but may result in substantial water savings and therefore yield a sizeable benefit in terms of meeting the facility's overall water conservation objectives.

6.4 Savings and Costs of Selected Water Conservation Measures

This section describes the six measures that passed the initial screen, and summarizes water savings, costs, and cost-benefit information. In order to provide a consistent basis for comparison, all costs were calculated on the basis of water savings and financial costs over a ten-year period.

6.4.1 OM-6: Optimize Kitchen Uses of Water

Because food service represents a significant component (estimated 12 percent) of daily water usage at the WCC, examining other operations and maintenance (O&M) practices is likely to yield additional savings. For example, ensuring dishwashers are run at full capacity, reducing flow levels or faucet run times for certain types of sink uses, and monitoring the maintenance of the HeliClean unit may permit additional reductions in food-service water uses. This measure (or collection of practices) would require discussion with food-service personnel, and training of staff.

For purposes of this analysis, it is assumed that review and modification of O&M practices could reduce these uses by 10 percent, or roughly 2,500 gallons per day (gpd).

The cost of this measure is essentially zero in financial terms. However, this measure would require training, and could potentially cause dissatisfaction among food-service personnel asked to modify long-standing practices

The water uses involved in this measure would likely involve a combination of hot and cold water. Assuming 50 percent hot and 50 percent cold water, the avoided cost from Table 6-2 (line "e") would be $2.75 per 1,000 gallons. Because the financial cost of the measure is zero, the payback period is also zero. In other words, financial savings would begin immediately upon implementation of this measure.

Costs and benefits are summarized as shown on Table 6-3. As of January 2003, this measure has not been implemented.

Table 6-3 OM-6: Optimize Kitchen Uses of Water	
Measure Cost (per 1,000 gal.)	$0.00
Measure Benefit (Avoided Cost, per 1,000 gal.)	$2.75
Net Benefit (per 1,000 gal.)	$2.75
Payback Period (years)	Immediate

6.4.2 C-2: Replace Personal Clothes Washers with High-efficiency Models

Offenders in the In-House living units are allowed to wash their own personal laundry in residential-style machines located in the living units. Staff report that these machines experience very heavy use. One conservation option is to replace the existing machines with high-efficiency models. Average residential-style washing machines typically use 40 gallons of water per load when set for large loads, while high-efficiency machines use approximately 30 gallons of water for large loads. Some offenders may wash only a few items of clothing at a time, and, therefore, use small or medium settings on the washing machines. To account for this variability, it was assumed that the machines use 30 gallons of water per load (i.e., approximately the amount used by residential-style machines on medium load settings). Water use by high-efficiency machines set on medium load levels is approximately 20 gallons per load. Therefore, installation of such machines would result in water savings of 10 gallons per load, or approximately 1,800 gpd.

The cost of this measure was estimated based on the assumption that all 12 personal laundry machines would be replaced at a cost of $750 per machine. Annual maintenance costs are estimated at $500 per year. Spread over a ten-year time period, this results in a total estimated cost of $2.13 per 1,000 gallons saved (see Table 6-1).

This measure involves an avoided cost associated with production of well water and wastewater disposal, as well as hot water energy savings. The appropriate avoided cost comparison is therefore $2.75 per 1,000 gallons, from Table 6-2 (line "e"). Based on this comparison, this measure is cost-effective with a net financial savings of $0.62 per 1,000 gallons of water saved. At an up-front capital cost of $9,000, the payback period is estimated to be approximately 22 years. Costs and benefits of this measure are summarized as shown on Table 6-4.

Table 6-4 C-2: Replace Personal Clothes Washers with High-Efficiency Models	
Measure Cost (per 1,000 gal.)	$2.13
Measure Benefit (Avoided Cost, in per 1,000 gal.)	$2.75
Net Benefit (per 1,000 gal.)	$0.62
Payback Period (years)	22

It should also be noted that there are additional avoided costs not captured in this analysis. High-efficiency washing machines require less detergent and spin clothes up to 30 percent dryer than traditional machines; therefore, detergent costs and energy costs associated with dryer times will be reduced upon installation of high-efficiency machines.

After this measure was identified in August 2002, the Washington Department of Corrections (DOC) pursued implementation. Twelve high-efficiency residential-style washing machines are anticipated to be purchased by summer 2003.

6.4.3 C-3: Repair Hydrant Line Leaks

Based on the year 2001 water balance developed for the facility, it is estimated that 27 percent of total water production is unaccounted-for. WCC staff have indicated that aging galvanized steel water lines extending from distribution mains to yard hydrants are leaking substantially and that these leaks likely account for approximately 10 percent of water production.

While some lines have been fixed, staff have identified approximately 6,000 lineal feet of 1.5-inch diameter lines that remain to be fixed or replaced. This conservation measure involves the replacement of these lines with PVC pipe. The cost of this measure is variable, dependent upon whether WCC staff and offenders perform the work, or if a private contractor is hired for the project. Assuming the in-house labor and equipment is utilized, the estimated cost of this pipe replacement project is approximately $25,000. This is based on a pipe material unit cost of $3 per foot of pipe, plus the costs associated with tapping the distribution system and reconnecting to the yard hydrants. Utilizing a private contractor, the capital cost is estimated to increase to approximately $65,000.

Assuming that the lower cost method is chosen and water savings of 10 percent are realized, based on WCC staff comments, the estimated cost over a ten-year time frame is $0.32 per 1,000 gallons saved (see Table 6-1).

This measure involves an avoided cost primarily associated with production of well water. Since the water saved comes directly from the distribution system without being heated and is currently lost to soil infiltration, there are no associated avoided costs with hot-water heating or wastewater treatment. The appropriate avoided cost comparison is therefore $0.09 per 1,000 gallons, from Table 6-2 (line "a"). Costs and benefits of this measure are summarized as shown on Table 6-5.

Table 6-5 C-3: Repair Hydrant Line Leaks	
Measure Cost (per 1,000 gal.)	$0.32
Measure Benefit (Avoided Cost, in per 1,000 gal.)	$0.09
Net Benefit (per 1,000 gal.)	$-0.23
Payback Period (years)	NA

DOC pursued implementation of this measure after it was identified in August 2002. As of January 2003, this project was underway, consisting of the abandonment of the aging steel lines.

6.4.4 C-8: Distribution System Leak Detection and Repair

Aside from the hydrant line leaks addressed above, another component of the unaccounted-for water is likely to be leaks throughout the rest of the distribution system. Staff indicate that the ductile iron distribution system is in good shape; however, leaks would go unnoticed, as they have with the hydrant line leaks, due to infiltration.

Professional leak detection services by a contractor could be used to assess the magnitude of this potential loss of water and identify leak locations. It is assumed that identified leaks could be fixed by WCC staff.

The cost of this measure is estimated at $5,000 (i.e., $2,000 for a leak detection study and $3,000 for repairs). Assuming water savings are on the order of 2 percent of total production (approximately 4,200 gpd), this results in a total estimated cost of $0.33 per 1,000 gallons saved (see Table 6-1).

This measure involves an avoided cost associated only with production of well water. Since the water saved comes directly from the distribution system without being heated and is currently lost to soil infiltration, there are no associated avoided costs with hot-water heating or wastewater treatment. The appropriate avoided cost comparison is therefore $0.09 per 1,000 gallons, from Table 6-2 (line "a"). Costs and benefits of this measure are summarized as shown on Table 6-6.

Table 6-6
C-8: Distribution System Leak Detection

Measure Cost (per 1,000 gal.)	$0.33
Measure Benefit (Avoided Cost, in per 1,000 gal.)	$0.09
Net Benefit (per 1,000 gal.)	$-0.24
Payback Period (years)	NA

This conservation measure was implemented after its identification in August 2002. A leak detection study conducted in September 2002 confirmed that the ductile iron distribution system was not leaking, but verified that portions of the steel hydrant lines were leaking, as were the check valves at Well Nos. 2 and 4. These valves were repaired in December 2002. Appendix B contains the final report of the leak detection study.

6.4.5 C-9: Install Automated Shower Timers

Showering accounts for an estimated 11 percent of water consumption at the WCC. Therefore, it represents a significant potential for water savings.

Facility staff reported that all showerheads have been fitted with throttling valves to reduce flow rates, but that some of these ball cock valves have come out of adjustment. Therefore, while low-flow showerheads are not considered here as a conservation opportunity, it is recommended that WCC maintenance staff inspect all showerheads and readjust if needed to maintain a flow rate of approximately 2.0 gallons per minute (gpm).

Installation of shower timers may provide additional water savings. However, they have the potential to cause dissatisfaction among inmates, leading to vandalism and associated maintenance needs.

This measure assumes that showers throughout the facility are retrofitted with shower timers. It is assumed that timers are set in such a way as to reduce the overall volume of showering by 10 percent on a daily basis. This would yield 2,338 gpd in water savings.

The cost of retrofitting with shower timers is estimated to be $350 per shower, based on analyses at other institutions. Based on this cost, it would cost $49,700 to retrofit all 142 showers at the facility. On a unit basis, this is equal to $5.82 per thousand gallons (see Table 6-1). Water saved would be a combination of hot water and cold water. It is assumed that the water saved would be approximately 50 percent hot water and 50 percent cold water. Based on these assumptions, the avoided cost from Table 6-2 (line "e") would be $2.77 per 1,000 gallons. The costs and benefits of this measure are summarized as shown on Table 6-7.

Table 6-7
C-9: Install Automated Shower Timers

Measure Cost (per 1,000 gal.)	$5.82
Measure Benefit (Avoided Cost, per 1,000 gal.)	$2.77
Net Benefit (per 1,000 gal.)	$-3.05
Payback Period (years)	NA

Although this measure does not pass the avoided cost analysis, it should still be considered due to the other substantial benefits discussed in Section 6.3, including remaining within water right limitations, and therefore avoiding building moratoriums and/or the need to obtain additional water supplies. While this measure should still be considered, it is not as attractive as other options, due to its higher relative cost and greater potential for offender dissatisfaction compared with other measures.

6.5 Additional Measures Not Analyzed in Detail

In addition to the five measures analyzed in detail above, there are two measures from Table 5-1 that are not currently under separate consideration and were rated as potentially yielding "high" water savings, but that did not meet the criteria of "low" or "medium" costs. These measures are:

- C-4: Wastewater reuse for various purposes throughout facility
- C-5: Replace toilets with high-efficiency models (specialty combination toilets in "wet cells")

These measures may be worthy of further consideration, even though they are unlikely to meet a strict test of financial cost-effectiveness. Measure C-4 is of particular interest, as one of the potential "uses" of reclaimed wastewater at WCC is ground water recharge via surface percolation, which could in turn allow the facility to withdraw an additional amount of water from the aquifer. This is allowed under the Revised Code of Washington (RCW) as the owner of a wastewater reclamation facility has the exclusive right to any water generated by the facility (RCW 90.46.120). Therefore, if treated effluent is allowed to percolate to a ground water aquifer, such water may be subsequently withdrawn and used for potable purposes, as long as water quality and time of travel (i.e., distance from point of recharge to point of withdrawal) criteria are met. Although they would occur via the use of existing wells, such withdrawals could be considered as separate and distinct from the amount of withdrawals allowed under the water rights associated with the wells.

Such projects are evaluated by the Washington Department of Ecology (Ecology) on an individual, case-by-case basis; therefore, it is difficult to state with certainty whether such an activity would be permitted. Although other such cases are being considered throughout Washington, no final determinations have been made on any proposals as of January 2003. To pursue such an activity, the following steps would have to be taken:

- ***Upgrade of wastewater treatment plant to be permitted as a reclaimed water facility.*** A review of the existing wastewater treatment plant is needed to identify improvements required for the facility to be permitted as a Class A reuse facility. The key upgrade would likely be addition of redundant filtration facilities.
- ***Conduct hydrogeologic study.*** A study is needed to: 1) determine the amount of treated effluent applied via the existing sprayfield that recharges the ground water aquifer; 2) verify that the aquifer recharged is the same one from which water is withdrawn by the existing wells; 3) determine the time of travel for ground water movement between the sprayfield and the wells; and, 4) evaluate water quality of treated effluent. Considering that approximately 80 percent of water pumped by WCC's wells is converted to wastewater, and assuming losses to evaporation and transpiration are between 25 and 75 percent, it is estimated that between 20 and 60 percent of the water pumped by the wells may eventually be returned to the ground water aquifer via the wastewater reclamation process, and may therefore be available for subsequent withdrawal.
- ***Obtain water reuse permit from Ecology.*** Once the wastewater treatment plant is upgraded and the appropriate studies are completed, DOC would pursue a water reuse permit with Ecology, which would allow the treated effluent to be used for ground water recharge purposes. Furthermore, DOC would request that Ecology allow the facility to withdraw this water and consider it as separate and distinct from the existing water rights.

If the permitting process for this project were successful, the facility would be able to bolster its potable water supply by a significant amount (i.e., by as much as 60 percent). DOC should consider exploring this option further prior to obtaining additional sources of supply.

6.6 Measures Under Consideration in Separate Studies

In addition to the conservation measures already implemented at the institution and those analyzed in detail above, there are three measures listed in Table 5-1 that are currently the focus of separate studies.

An analysis of alternative water use efficiency measures for the central laundry facility was underway during the course of development of the 2003 Water Conservation Plan Update. The objective of this analysis was to identify and evaluate options for reducing water use in the central laundry. Alternatives included changes to operational practices, replacement of equipment with high-efficiency machines, and installation of a water reuse system. Based upon this evaluation, a rinse water recycle and heat recovery system was selected for design and implementation. This project is anticipated to be completed by July 2003. Anticipated water savings are on the order of 50 percent of total central laundry water use, which equates to approximately 2 percent of total water production for the facility.

A project is underway to reuse wastewater treatment plant effluent for washdown purposes at the wastewater treatment plant. This measure may result in water savings of 9,250-9,500 gpd, based upon staff estimates of water used for this purpose. This equates to approximately 4.5 percent of total production. As of January 2003, the design of this system is underway.

As of January 2003, another study is underway to determine the feasibility of composting biosolids, food wastes, and landscape trimmings at the facility. While the primary focus is upon reducing solid waste and associated costs with disposal, there will likely be water savings as well. The composting of kitchen wastes may eliminate the need for the HeliClean machine, which would in turn eliminate the water used to clean and maintain the equipment (approximately 1,800 gpd).

Section 7
Conclusion

Table ES-1 in the Executive Summary provides a summary of the conservation measures that have been implemented by the Washington Corrections Center (WCC), those that are currently under detailed analysis, and the additional measures recommended for further evaluation. Due to their effectiveness in reducing recent water demands, it is recommended that the facility continue to implement all measures that have been exercised prior to the development of the 2003 Water Conservation Plan Update. The facility has also recently implemented additional water conservation activities and projects. Once these measures have been fully implemented, it is recommended that the Washington Department of Corrections take the following steps, which are discussed in greater detail in the Executive Summary, to further the WCC conservation program:

- Monitor the effect of existing conservation activities;
- Further evaluate the opportunity to increase well withdrawals via wastewater reclamation;
- Depending upon the outcome of the above activities, further consider additional conservation measures.

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Washington Corrections Center for Women

Technical Memorandum

Water Conservation Audit
Washington Corrections Center for Women
Pierce County, Washington

January 2002

ECONOMIC AND ENGINEERING SERVICES, INC.

Technical Memorandum

Water Conservation Audit
Washington Corrections Center for Women
Pierce County, Washington

January 2002

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1.0 Background and Objective

Economic and Engineering Services, Inc. (EES) performed a water conservation audit at the Washington Corrections Center for Women (WCCW), located in Pierce County, Washington, near Gig Harbor. This facility is operated by Washington State Department of Corrections (DOC).

The purpose of the audit was to identify and evaluate means of improving the efficiency of water use at the facility. The water conservation audit included a site walkthrough, interviews with on-site personnel, and review of water consumption data from meters recording total water consumption at the WCCW. The site walkthrough, interviews, and data review occurred during 2001.

This technical memorandum presents results of the water audit, including:

- ❑ estimates of the quantity of water used for different purposes,
- ❑ identification of water-efficiency measures applicable to the facility, and
- ❑ analysis of the cost and financial benefits of carrying out these measures.

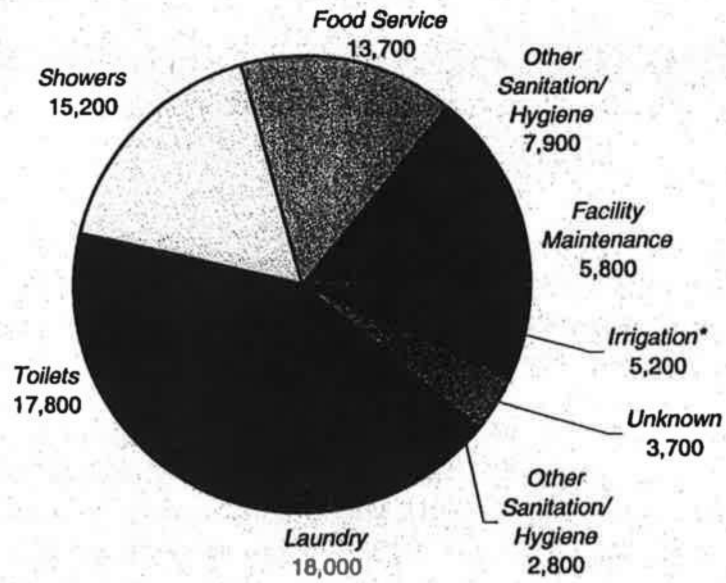
This information is intended to be used in designing an effective conservation program for the WCCW. Additional work products will be completed subsequent to this memo. These additional work products include an approach to using expanded metering to monitor water consumption and inform decisions on capital projects and operations; and an implementation plan for the WCCW water conservation program.

2.0 Summary of Findings

2.1 Water Uses

Metering data indicates that the WCCW uses an average of 90,051 gallons per day on an average, year round basis. Summer consumption is higher than non-summer consumption. An estimated breakdown of water uses at the facility is presented in Exhibit 1.

Exhibit 1
Estimated Water Usage by Category
(gallons per day)



*Irrigation uses occur mainly in summer. The value presented here is averaged over the entire year, for comparison with other uses.

The largest individual uses are:

- Laundry 18,000 gpd
- Toilets 17,800 gpd
- Showers 15,200 gpd
- Food Service 13,700 gpd

Together, these four uses account for 64,700 gpd, or approximately 72 percent of all water used at the facility.

Turf and landscape irrigation also involves significant volumes of water consumption, but this use is concentrated in the four month irrigation season. During the peak season, irrigation accounts for approximately 15 percent of the facility's consumption. On a year-round basis, however, irrigation accounts for just 6 percent of total water use.

2.2 Water Conservation Opportunities

Twenty-nine individual water conservation measures were identified for the WCCW for preliminary screening. These measures were characterized in terms of potential water savings and cost. Based on this characterization, seven of the measures were selected for more detailed analysis of cost effectiveness. Results for these seven measures are shown in Table 1:

Table 1
Cost-effectiveness of Selected Conservation Measures

Code	Measure	Water Saved (gpd)	Net Benefit [1] per 1,000 Gal.	Payback Period [2] (yrs.)
Operations & Maintenance (O&M) Practices				
OM-1	Reduce watering; allow some or all turf to go dormant for part of summer	2,900 [3]	$0.20	Immediate
OM-2	Reduce or eliminate water as food waste disposal practice:	1,200	$3.06	Immediate
OM-3	Optimize irrigation scheduling, areal application and soil characteristics	1,300	- $1.38 [4]	N/A [4]
OM-4	Optimize laundry practices	2,700	$8.45	Immediate
OM-5	Optimize other kitchen uses of water	1,800	$8.45	Immediate
Capital Projects / Plumbing Fixtures				
C-4	Install automated shower timers	1,520	$1.51	8.3
C-5	Replace toilets with high-efficiency models	5,800	$3.52	3.4

(1) Net Benefit is the financial savings from reduced energy costs, reduced wastewater costs, etc., less the cost of implementing the measure.

(2) Payback period is calculated as the length of time needed for the net benefits to equal the initial cost of the measure, based on the accrual of water savings over time.

(3) Year-round average. Savings are approximately three times higher in summer months.

(4) The negative benefit indicates the measure costs more to implement than it saves in avoided costs. Therefore there is no financial payback.

It is important to note that some measures that do not pass a strict cost-effectiveness standard or payback-period threshold may still be worthwhile to implement, due to non-financial benefits.

In addition to the seven measures analyzed in detail above, there are three measures that were rated as potentially yielding "high" water savings, but that did not meet the criteria of "low" or "medium" costs. These measures are:

- C-1 Replace decentralized laundry machines with centralized laundry facility
- C-2 Replace dishwashing equipment with high-efficiency models
- C-3 Replace clothes washers with high-efficiency models

These measures may be worthy of further consideration, even though they are unlikely to meet a strict test of financial cost-effectiveness.

3.0 Facility Description

The WCCW occupies approximately 30 acres, and contains 29 separate buildings. It includes a Main Institution comprising medium- and high-security areas; a Minimum Security Compound; and administrative and maintenance facilities located outside the fences. The oldest portion of the WCCW is the Main Institution, constructed in 1971. Several structures were added to the Main Institution during the 1970s through 1990s. The Minimum Security Compound was constructed in 1994. Exhibit 2 displays a map of the facility, while Table 2 lists each individual building, its age and size in square feet. A new Special Needs Unit (SNU) building was under construction at the time this audit was performed; and is therefore not included.

EES reviewed data on the offender population from 1997 through 2000. The population varies from month to month, but has generally risen from 597 in July 1997 to 758 in January 2001. The peak population during this time period was 780 offenders in February 2000. For purposes of this water conservation audit, a population of 760 offenders was used. The staff level has generally increased along with population. Staffing data provided by DOC indicates a staffing level of approximately 450. The facility is staffed 24 hours a day, seven days a week.

Two water wells are located at the WCCW. However, from September 1995 through August 2000 these wells generally were not used, and DOC purchased all water for the facility from the City of Gig Harbor. In September 2000 the two wells were reactivated. DOC intends to use the wells as the primary source of supply in the future, with City water remaining available as an emergency backup supply. Wastewater from the WCCW is conveyed to the City of Gig Harbor wastewater treatment plant.

The WCCW is heated with steam generated at a central boiler plant. With one exception (a medical clinic) the buildings are not air-conditioned.

The WCCW contains several areas with irrigated turf, totaling approximately 116,000 square feet (2.7 acres). In addition, there are ornamental plantings comprising approximately 7,000 square feet (0.16 acre). Both the turf and ornamental plantings are watered using an automated, buried irrigation system.

Other specialized activities at the WCCW include two food service buildings; daily vehicle washing; a small child-care area; the medical/dental clinic; and the Prison Pet Program, which includes 28 kennels housed in a separate building.

During the site walkthrough, EES staff counted plumbing fixtures and water-using appliances at the WCCW. The most common of these are listed in Table 3.

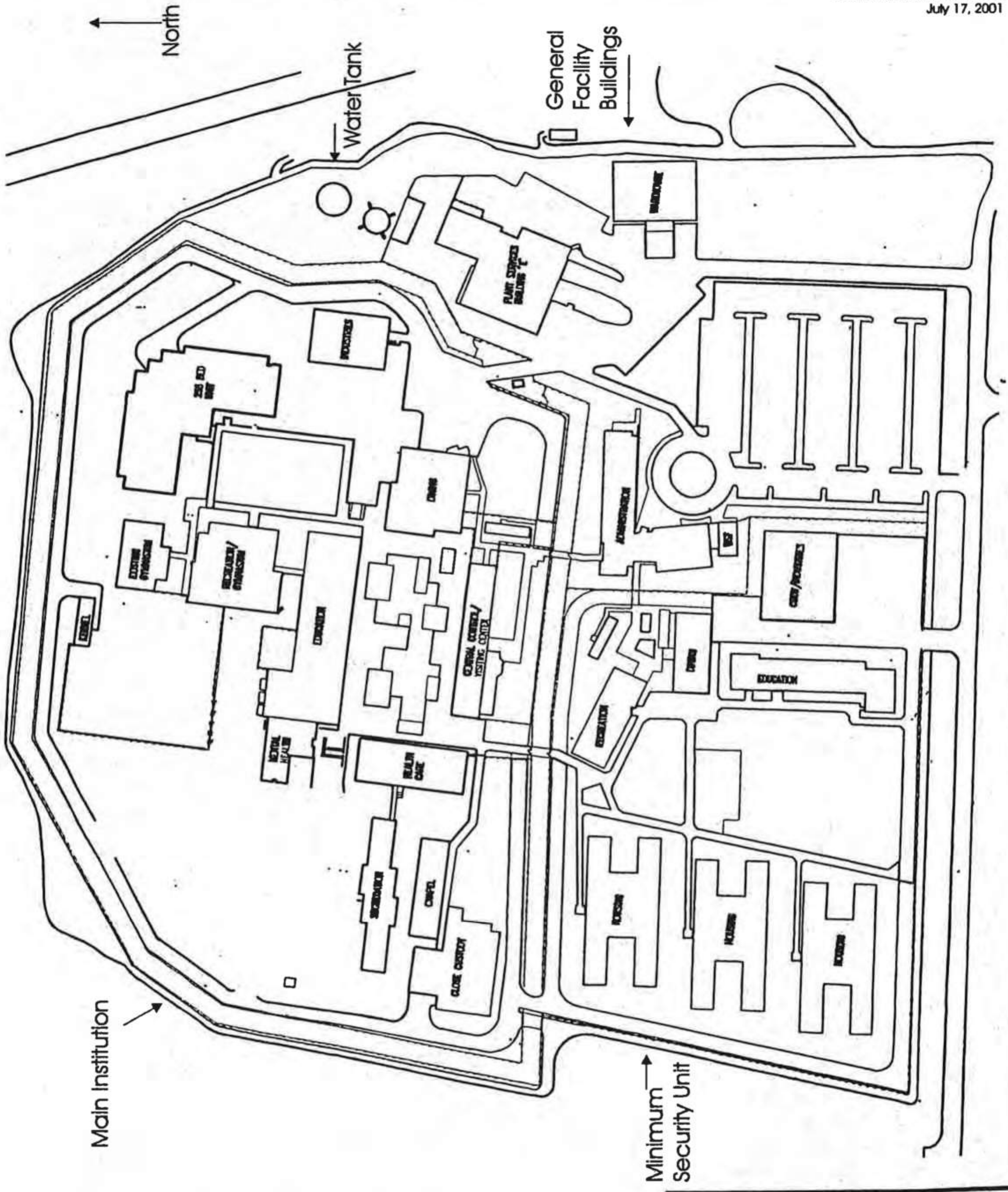


Exhibit 2
Site Layout
Washington Corrections
Center for Women

Table 2
Building Data
Washington Corrections Center for Women

Building	Letter Code	Approximate Size (ft^2)	Approx. Construction Date	Approx. Date of Major Renovation (if applicable)
Main Institution:				
Administration	A	10,200	1971	1996 (addition)
Clinic	B	9,807	1971	
Education	C	21,094	1971	
Food Service	D	12,990	1971	
Segregation Unit	F	8,319	1971	
Mental Health	H	4,360	1996	
Industries	I	7,000	1984	1985 (improvements)
Visit Trailer	Q-1	830	1994	
Gymnasium	U	12,320	1996	
Existing SNU (TEC)	W	6,171	1976	
Medium-Security Unit (MSU/256)	X	40,742	1997	
Closed Custody Unit	CCU	21,265	1994	
Prison Pet Program	PPP	6,610	1996	
Chapel	---	4,352	1996	
DSHS Custody	---	1,100	1997	
Minimum Security Compound:				
Living Unit #1	J	15,240	1994	
Living Unit #2	K	15,240	1994	
Living Unit #3	L	15,240	1994	
Offices/Meeting Rm.	M	6,240	1994	
Food Service	N	5,184	1994	
School/Child Care	O	10,180	1994	
Industries	P	11,520	1994	
Visit Trailer	Q-2	830	1994	
General Facility:				
Maintenance	E	14,699	1971	
Administration	R	14,122	1994	
Warehouse	S	8,914	1996	
Armory	Y	1,400	1997	
Paint Shop	---	1,449	1978	
Guard Shack	T	134	1994	
Well No. 1	---	68	1971	
Well No. 2	---	100	1979	

Table 3
Inventory of Selected Plumbing Fixtures and Appliances

Location	Standard Toilets	Combination Toilets [1]	Urinals	Sinks [2]	Showers	Washing Machines
Main Institution	82	94	1	122	60	17
Minimum-Security Compound	69	0	1	76	44	15
Administration & Maintenance [3]	13	0	4	19	6	1
Total	164	94	6	217	110	33

[1] Combination toilets combine a toilet and sink in a single metal unit in the offender's cell. They are used in high-security units such as the Segregation Unit and Closed Custody Unit.

[2] Includes all restroom sinks and general purpose sinks. Does not include maintenance sinks or sinks in food service areas.

[3] Includes the five buildings located outside the fences (not counting guard shack and well houses).

4.0 Breakdown of Water Uses

Consumption of City water is measured by two side-by-side meters located on the City water main that services the WCCW[1]. EES reviewed water meter records provided by DOC and covering the time period July 1997 through September 2000. During this time period, all water consumed at the facility was purchased from the City. Therefore the meter records provide a useful record of total consumption. Table 4 summarizes the results of this review. Exhibit 3 displays demand information together with data on the offender population.

Table 4
Aggregate Water Use
Washington Corrections Center for Women

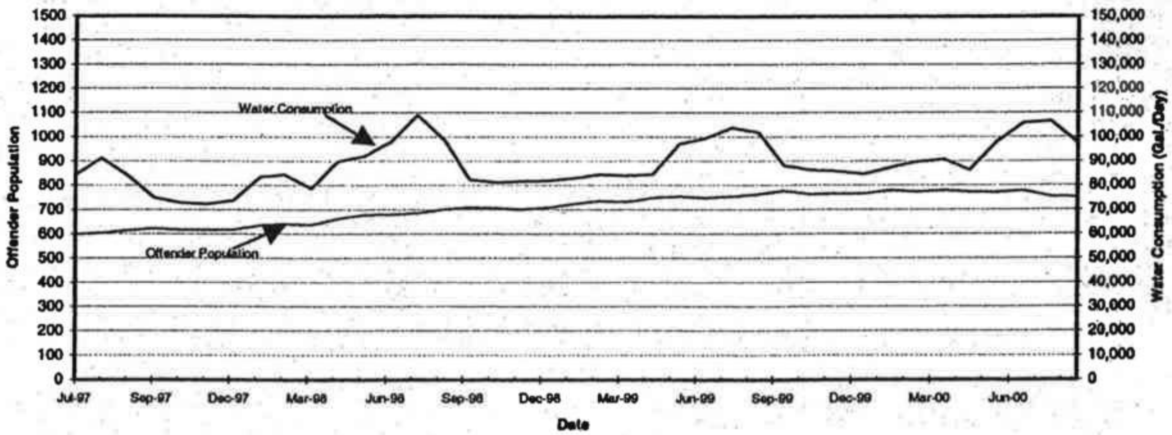
Description	Comments	Consumption	Units
Total Consumption Averaged Over 365 Days	Based on metered city water in 1999 (1999 used because 100% of water came from City of Gig Harbor)	90,051	gpd
Base Consumption [1] (Oct. – May)	Metered city water, 1999.	84,813	gpd
Summer Consumption (June – Sept.)	Metered city water, 1999.	100,527	gpd
Total Consumption Per Offender	Based on average of 760 offenders.	118	gpcd

[1] Base consumption is not seasonal in nature, and therefore occurs year-round.

Units: gpd = gallons per day; gpcd = gallons per capita per day

[1] One meter is located on the water main. The second meter measures flow through a smaller pipe that bypasses the first meter and then rejoins the water main within a single utility vault.

Exhibit 3
Monthly Population and Metered Water Consumption
July 1997 - September 2000
Washington Corrections Center for Women
(note differing scales for the two variables)



From this data several observations can be made. Water consumption has a strong seasonal component, with an increase during the June through September summer season. Base usage (i.e. usage outside the peak season) has risen gradually as the offender population has grown. Per capita usage has fallen during this period from 131 to 120 gallons per offender per day. This may be due to the fact that the offender population has risen, but the facility has not expanded physically during this time period.

The total quantity of water consumed was used to develop a water balance for the WCCW. EES used the results of the on-site walkthrough, interviews, and standard estimates from the literature on water conservation (see Bibliography) to estimate the quantity of water used for different purposes. The assumptions, calculations, and results of the water balance are summarized in Table 5. The following sections describe each major category of water use at the facility.

4.1 Turf and Landscape Irrigation

The WCCW contains approximately 1.6 acres of irrigated turf and 0.15 acre of irrigated landscaping. For purposes of this analysis, it is assumed that irrigation usage occurs primarily during the four-month period from June through September of each year. An estimate of the quantity of water used for irrigation was developed based on the differential between base use and peak season use during this four-month period. This differential is approximately 15,700 gpd (see Table 5). Irrigation use averaged throughout the entire year is approximately 5,200 gpd.

Table 5
Water Balance Worksheet[1]
Washington Corrections Center For Women (WCCW)

Category	Assumptions/Comments	Calculations	Results (gpd)
Turf and Landscape Irrigation			
Estimate of all irrigation uses in summer months only	Difference between summer consumption and remainder of year is assumed to be irrigation.	Summer consumption less base consumption[2]	15,700
Estimate of irrigation uses, year-round average	N/A	Total summer season use (15,700 gpd x 122 days) divided by 365 days in full year	5,200
Personal Sanitation and Hygiene			
Toilet flushing - offenders	7 flushes per day (fpd); average 2.5 gallons per flush (gpf)	Offenders x fpd x gpf	13,300
Toilet flushing - staff	4 fpd; average 2.5 gpf	Staff x fpd x gpf	4,500
Showers - offenders	10 minutes per day; 2.0 gpm	Offenders x minutes x gpm	15,200
Laundry – offenders and staff	600 loads per day (per DOC estimate); 30 gal. per load	loads per day x gal. per load	18,000
Faucets – offenders (personal hygiene)	3.5 minutes per day; 1.7 gpm (with aerators as observed)	Offenders x minutes x gpm	4,500
Faucets – staff (personal hygiene)	2.0 minutes per day; 1.7 gpm (with aerators as observed)	Staff x minutes x gpm	1,500
Water coolers and air-cooled ice machines (separate from food service areas)	Assume staff and offenders consume one quart per person per day, including losses; and cooling uses 100 gpd	(staff plus offenders) x (¼ gal.) plus 100 gpd	400
Leakage, etc. from domestic plumbing fixtures	Appear minimal (no leaks observed). Assume 2 gal. per offender per day. (one-fifth national average for domestic)	Offenders x gpd	1,500
		Total, Personal Sanitation and Hygiene:	58,900

Table 5 (cont)
Water Balance Worksheet[1]
Washington Corrections Center For Women (WCCW)

Category	Assumptions/Comments	Calculations	Results (gpd)
Food Service			
Total Estimated Food Service	Assume 5 gal. per meal served. Offenders 3 meals per day. Staff one meal per day.	Number of meals x gal. per meal	13,700
Facility Maintenance and Cleaning			
Daily floor mopping	285,000 square feet in facility (per DOC data); One 5-gal. bucket per 2,500 square feet; average mopped 1.5 times per day	Bucket volume x number of buckets x number of times per day	900
Other cleaning (inmate cells, counter tops, etc.)	Assume quantity similar to quantity used for mopping.	N/A	900
Vehicle washing	3,000 vehicle washes per year (per DOC estimate); assume use 5 gpm hose; 20 min. per vehicle	Minutes x gpm x washes per year divided by 365 days	800
Boiler water makeup (steam system leaks)	Staff report makeup of 2,000 gpd in cooling season; 1,200 gpd summer	2,000 gpd for 8 months, 1,200 gpd for 4 months	1,700
Annual boiler flushing/cleaning	Three boilers each have capacity of 2,500 gal. Dump one boiler every three months. Assume one-hour flushing w/fire hose equates to two additional volumes.	7,500 gal. X 4 flushings per year, divided by 365 days/year	80
Water main leakage	Assumed low. Staff report leak detection in early '90s found minimal leakage. Oldest part of facility built 1971. Much of facility built 1994 and later. Assume one percent of total annual use.	1 % x facility average daily consumption	900
Building cooling	Clinic only water-cooled system. Closed loop. Add 20 gal. to system, once per year.		0
Miscellaneous maintenance and cleaning	Assume 500 gpd, average		500
		Total Maintenance and Cleaning:	5,780

Table 5 (cont)
Water Balance Worksheet[1]
Washington Corrections Center For Women (WCCW)

Category	Assumptions/Comments	Calculations	Results (gpd)
Pet Program			
Pet bathing	5 animals bathed per day; 30 gallons per bath; 5 days out of seven	Baths x gal. Per bath x 5 days/7 days	100
Daily kennel cleaning	28 kennels washed each day; 10 gallons per kennel; 6 days out of seven	Kennels x gallons per kennel x 6/7	200
Pet drinking water	One quart per animal per day; 28 animals	Quantity per day x number of animals	10
Laundry	Assume two loads per week; 40 gallons per load	Loads x volume x divided by seven days per week	10
Miscellaneous uses	Assume 100 gpd		100
		Total Pet Program:	420
Medical Clinic			
Sinks	Assume each of the 16 sink faucets runs five minutes per hour (8-hour day) at 1.7 gpm.	Faucets x minutes x gpm	1,100
Laundry	Assume one 40-gal. load of laundry per day.		40
Bathing	Assume equivalent of two showers per day, 10 minutes, 2.0 gpm.		40
Miscellaneous uses	Assume 500 gallons		500
		Total Medical Clinic:	1,680
Child Care	Assume 8 children present 5 days per week; 5 flushes per day per child; 2.5 gpf; one laundry load per day total; 40 gal. per load. 50 gallons miscellaneous uses.	(children x flushes x gpf x 5/7) plus 40 gpd plus 50 gpd	200
Miscellaneous or Intermittent Uses	Assume 500 gpd, averaged over entire year		500
		Total of estimated uses:	**86,380**
		Total metered consumption	**90,051**
		Unaccounted-for consumption:	**3,671**

(1) This worksheet summarizes water balance assumptions, calculations and results. It should be noted that for many uses calculations are based on assumptions or limited data, and the certainty of the results is therefore limited. Uncertainty is estimated to be on the order of plus/minus 15 % in each water-use category. Values are rounded.

(2) Base consumption is usage during the non-peak season.

Units: gpd = gallons per day; gpf = gallons per flush; fpd = flushes per day; gpm = gallons per minute

4.2 Personal Sanitation and Hygiene

Personal sanitation and hygiene includes water used for showering, hand washing, toilets, and laundry. For purposes of this audit, these uses were further subdivided into estimates of water used by offenders, and water used by staff, due to the different characteristics of these uses. For example, offenders were assumed to shower once per day, while it was assumed that staff showering is essentially zero. Water use estimates were derived from a number of studies in the northwest and nationwide, including conservation studies produced by the American Water Works Association, Seattle Public Utilities, and Portland Water Bureau. These figures were combined with data on the number of inmates and staff at the WCCW. Most of the toilets at the WCCW appear to be relatively new models. No old style toilets (e.g. 5 – 7 gallon per flush) were observed during the site walkthrough. There are very few urinals at the WCCW (see Table 3).

A breakdown of personal sanitation and hygienic uses is presented in Table 5. The total consumption in this category is estimated to be 58,900 gpd. The largest individual uses within this category appear to be:

- Toilets (17,800 gpd including both offenders and staff)
- Showers (15,200 gpd for offenders only), and
- Laundry (18,000 gpd for both offenders and staff).

This category also includes an estimate of leakage from plumbing fixtures such as toilets, faucets and showers (average of 1,500 gpd; or 1 gpm for the entire facility). This estimate is at the low end of the range for leakage estimates nationwide, based on on-site observations. No leaking fixtures were observed on the day of the site walkthrough. Consistent with this observation, facility personnel reported that leaking fixtures are generally reported immediately and repaired promptly.

4.3 Food Service

There are two food services at the WCCW: one in the Minimum Security Facility and one in the Main Institution. Both staff and offenders receive meals at the food service areas. Water-using activities include general food preparation and washing, food waste disposal through sink drains equipped with a disposal system, dishwashing machines, additional wash-up of pots and pans in sinks, water served as a beverage, ice machines, and laundry processed within the food service areas. In addition, the Main Institution food service has a water-using "cook-chill" system used both for cooking foods and for bringing cooked food down to refrigeration temperatures. The kitchen refrigeration systems are air-cooled, and are therefore not considered further. Ice machines are also air-cooled and therefore use water only for direct production of the ice. There are restrooms in both food-service areas. However, sanitary and hygienic uses are addressed separately, in Section 4.2, and are therefore not included in the Food Service category.

At this time, a detailed assessment of individual water uses within the food service areas has not been conducted. A general estimate of water use in these areas was prepared, based on national data from the restaurant industry. An average value of 5 gallons per meal served was used, based on documentation from other studies. It was assumed that each offender eats three meals per day, and each staff person one meal per day. The resulting estimate of food service water use was 13,700 gpd.

4.4 Facility Maintenance and Cleaning

Several activities are encompassed in this category. Most areas within the buildings are mopped daily, with some areas mopped two to three times each day. Inmate cells are also cleaned daily, with some attendant water use.

The WCCW's steam system experiences daily losses which can easily be quantified through review of boiler makeup records. In addition, each of the three boilers are cleaned and flushed annually. As with any water system, a certain quantity of leakage from buried water mains is expected. WCCW staff reported that water mains were tested for leaks during the early 1990s, and leakage was found to be minimal.

Only one building at the facility (the clinic) is air conditioned, and this building uses a closed-loop water cooling system. Because the system is already closed-loop, water consumption is minimal.

On the whole, water usage in this category was estimated to be 5,780 gpd.

4.5 Pet Program

The WCCW has a Prison Pet Program, housed in a separate building with a floor area of approximately 6,600 square feet. The Pet Program includes boarding of dogs owned by members of nearby communities. There are 28 individual dog kennels, which are washed daily, six days a week. Approximately five animals receive baths each day, five days a week. There is also a washing machine in the Pet Program building.

Water use in the Pet Program building is estimated to be approximately 420 gpd.

4.6 Medical Clinic

The WCCW has an on-site clinic providing medical, pharmaceutical, and dental services to offenders. The building occupies approximately 9,800 square feet. It includes one restroom for staff and another for offenders, with one sink and one toilet in each restroom. There is a dentist office with four sinks, seven examining rooms containing a total of 8 sinks and 3 toilets, three additional rooms with one sink and toilet in each, and a room with a shower and bathtub. The Clinic also has a small laundry room with one washing machine, as well as a break room for staff use. There are two autoclave units for sterilizing equipment, but these use bottled, distilled water rather than water from the WCCW water system. Water use within the Clinic is estimated to be 1,680 gpd (this estimate is subject to considerable uncertainty).

4.7 Child Care

The Minimum Security Unit includes a child-care facility. At the current time, the childcare facility provides care for approximately eight children. For purposes of this audit, however, it was assumed that on average there are five children cared for, five days a week. Including laundry and toilet use, the water use associated with childcare activity was estimated to be 200 gallons per day.

4.8 Miscellaneous or Intermittent Uses

Certain water uses are not accounted for in the uses described above, or do not occur on a regular, daily basis. For example this may include occasional, high-volume flushing of fire hydrants; unusual cleaning events, or major leaks that are repaired quickly. To account for these types of uses and events, a single estimate of 500 gallons per day was used. This represents all such uses combined, averaged over the 365-day year.

4.9 Summary of Major Uses

Based on the estimates presented in Table 5, the largest uses of water at the WCCW include:

- Toilet flushing (17,800 gpd);
- Showers (15,200 gpd);
- Laundry (18,000 gpd); and
- Food Service (13,700 gpd).

Together, these four uses account for 64,700 gpd, or approximately 72 percent of water consumption at the facility, on an average, year round basis.

Turf and landscape irrigation also involves significant volumes of water consumption, but only during the four-month irrigation season. Therefore the impact is reduced in looking at total, year-round consumption. During the peak season, irrigation accounts for approximately 15 percent of the facility's consumption. On a year-round basis, however, irrigation accounts for just 6 percent of total facility use.

5.0 Water Efficiency Measures

Based on the review of water-using activities at the WCCW, this section identifies potential water-efficiency measures that could be employed at the facility. These measures include both capital projects and changes in standard operating procedures or maintenance practices. Based on a qualitative screening of potential water savings and costs, an initial list of measures was narrowed down to seven measures for more detailed analysis. This section presents the initial set of measures and results of the qualitative screening. Following this section, Section 6.0 presents the cost analysis for the seven measures described in detail.

For each of the water uses identified in Section 4.0, there are various techniques that could be used to improve efficiency. For some water uses, either capital investments or operational modifications could result in water-use efficiencies. For example, water consumption for laundry purposes can be reduced in at least two ways: 1.) by replacing conventional washing machines with high-efficiency machines; or 2.) by modifying loading practices as necessary to ensure that machines are fully loaded when run, since partially loaded machines may use water less efficiently than fully loaded machines. In some cases, measures that target the same type of water use overlap in their effects. In other cases, alternative measures are mutually exclusive.

In the discussion and tables presented in this Task Memorandum, various alternatives are listed, some targeting the same type of water use. This should be considered at such time as specific measures are selected and an implementation program is developed.

It should be noted that some water-saving measures may have important implications for security, relationships with the offender population, and staff morale. For example, changes in operational procedures could potentially create dissatisfaction, resulting in poor performance. Reduction in the number of laundry loads washed may affect the daily routine of offenders and this should be considered. Allowing turf in some areas to go dormant for a period of time may affect the morale of some offenders and staff. On the other hand, in some cases improvements in efficiency may improve morale, by fostering staff and offender perceptions of a well-managed operation. In general, morale and security considerations should be considered with regard to any water-efficiency measures that are candidates for implementation.

WCCW personnel reported that changes have been instituted in year 2001 that will reduce water usage, partly in response to DOC's efforts to reduce energy consumption. For example, limits have been placed on the time of day offenders can shower, to reduce showering during peak energy-consumption hours (e.g. 8-10 a.m. and 4-5 p.m.). Irrigation of turf is also being reduced. Laundry is currently being washed only using cold water. At this time it is not known whether these changes will become permanent.

5.1 Initial Screening of Potential Efficiency Measures

Table 6 lists 29 candidate measures that were identified initially, grouped into two main categories:

- ❑ Operations & Maintenance (O&M) Practices, and
- ❑ Capital Projects/Plumbing Fixtures.

Within each of these two categories, measures are ranked, first by relative water savings (high, medium or low), and then by relative cost per unit of water saved (low, medium, or high). For example, a measure that ranks high in water savings and low in unit cost would be preferred over another measure that ranks medium in water savings and high in unit cost.

Table 6 was used as a screening tool to identify those efficiency measures that appear to be most cost effective for the WCCW. The qualitative information on water savings and unit cost were used jointly to screen the measures. It was assumed that conservation measures yielding "low" water savings did not warrant detailed analysis (although some of these measures may be desirable for implementation). Similarly, measures with a "high" unit cost were not analyzed in detail. Based on this approach, all measures meeting the paired criteria shown in Table 7 were selected for more detailed analysis of cost-effectiveness:

Table 6
Screening Matrix
Water Conservation Opportunities
Washington Corrections Center for Women

Code	Category	Description	Relative Volume of Water Savings	Relative Cost Per Unit of Water Saved	Comments
OPERATIONS & MAINTENANCE (O&M) PRACTICES					
OM-1	Turf/ landscape	Reduce watering, allow turf to go dormant for part of summer	H	L	Aesthetics issue
OM-2	Food Service	Reduce or eliminate water as food waste disposal practice	H	L	Education / supervision
OM-3	Turf/ landscape	Optimize irrigation scheduling, application, and soil characteristics.	M	L	Soil type may limit savings
OM-4	Sanitation/ hygiene	Optimize laundry practices	M	L	Education/ supervision
OM-5	Food Service	Optimize other kitchen uses of water	M	L	
OM-6	Kennel	Reduce or optimize kennel cleaning practices	L	L	Health and safety considerations
OM-7	Kennel	Reduce or optimize animal bathing practices	L	L	Health and safety considerations
OM-8	Maintenance/ cleaning	Optimize vehicle washing practices	L	L	
OM-9	Maintenance/ cleaning	Optimize boiler maintenance/ cleaning	L	L	
OM-10	Maintenance/ cleaning	Optimize mopping practices and scheduling	L	L	Health and safety considerations
OM-11	Maintenance/ cleaning	Optimize general cleaning practices and scheduling	L	L	
OM-12	Maintenance/ cleaning	Find and repair plumbing leaks	L	L	Routine inspection and replacement already occurs
OM-13	Child Care	Optimize water uses	L	L	
OM-14	Clinic	Optimize water uses	L	L	May conflict with health & safety
OM-15	Food Service	Reduce or eliminate cook/chill system; replace with alternative practices	L	M	Significant operational change; may also require capital projects

Table 6 (cont)
Screening Matrix
Water Conservation Opportunities
Washington Corrections Center for Women

Code	Category	Description	Relative Volume of Water Savings	Relative Cost Per Unit of Water Saved	Comments
CAPITAL PROJECTS/PLUMBING FIXTURES					
C-1	Sanitation/ hygiene	Replace decentralized laundry machines with central laundry facility	H	H	Eliminate shipping bedding offsite; may increase water needs
C-2	Food Service	Replace dishwashing equipment with high-efficiency models	H	H	
C-3	Sanitation/ hygiene	Replace clothes washers with high-efficiency models	H	H	Energy savings
C-4	Sanitation/ hygiene	Install automated shower timers	M	M	Have tried successfully
C-5	Sanitation/ hygiene	Replace toilets with high-efficiency models – standard toilets	M	M	Facility has mix of new and old toilets
C-6	Sanitation/ hygiene	Replace toilets with high-efficiency models – special "combination" toilets in wet cells	M	H	New SNU will use high-efficiency toilets
C-7	Food Service	Replace cook-chill system with alternate technology (also see above as O & M)	M	H	
C-8	Maintenance/ cleaning	Steam lines	M	H	Energy savings
C-9	Sanitation/ hygiene	Install/maintain high-efficiency showerheads	L	L	Efficient showerheads installed early '90s
C-10	Sanitation/ hygiene	Install/maintain faucet aerators	L	L	Most faucets already have aerator
C-11	Sanitation/ hygiene	Lavatory faucet timers/ pneumatic control	L	M	Target high-use areas
C-12	Sanitation/ hygiene	Toilets – frequency-of-flush regulators	L	M	Main benefit is security-related
C-13	Maintenance/ cleaning	Find and repair water main leaks	L	H	Tested in 90's. Leakage minimal.
C-14	Maintenance/ cleaning	Purchase vehicle washing equipment	L	H	Environmental benefits.

Table 7
Paired Criteria for Screening Conservation Measures

	Relative Volume of Water Savings	Relative Cost per Unit of Water Saved
a.	High	Low
b.	High	Medium
c.	Medium	Low
d.	Medium	Medium

The following seven measures meet these paired criteria:

- *O & M Practices*

OM-1 Reduce watering; allow some or all turf to go dormant for part of summer

OM-2 Reduce or eliminate water as food waste disposal practice

OM-3 Optimize irrigation scheduling, areal application and soil characteristics

OM-4 Optimize laundry practices

OM-5 Optimize other kitchen uses of water (i.e., besides food waste disposal)

- *Capital Projects / Plumbing Fixtures*

C-4 Install automated shower timers

C-5 Replace toilets with high-efficiency models

Each of these measures is described in greater detail in the following section, together with quantitative estimates of water savings and cost of each measure.

6.0 Description and Evaluation of Selected Conservation Measures

This section describes in greater detail each of the seven measures identified above. An estimate of water savings and cost is presented for each measure. In addition, the financial benefits or "avoided cost" of each measure is presented. The net benefit of each measure is the benefit (avoided cost) less the implementation cost. The net benefits of all seven measures were summarized previously in Table 1.

6.1 Implementation Costs

Based on the measure descriptions and assumptions presented in Section 6.3, an estimate was developed of the implementation cost of each measure. This implementation cost is summarized in Table 8. To facilitate comparisons, all costs are standardized in terms of cost per 1,000 gallons of water saved, over a ten-year period. Costs are in year 2001 dollars.

Table 8
Calculation of Implementation Cost
Selected Water Conservation Measures
Washington Corrections Center for Women

	Measure	Daily Water Savings (year-round) (gpd)	10-yr. Water Savings (1,000 gal.)	Capital Cost ($$ in Year 1)	Annual O&M Cost ($$/yr.)	10-yr. Cost ($$/10 yrs.)	10-yr. Unit Cost ($$/1,000 gal.)
Operations & Maintenance (O&M) Practices							
OM-1	Reduce irrigation; allow turf to go dormant for part of summer	2,900	10,579	$0	$0	$0	$0.00
OM-2	Reduce or eliminate water as food waste disposal practice	1,200	4,378	$0	$720	$7,200	$1.64
OM-3	Optimize irrigation scheduling, areal application and soil characteristics	1,300	4,742	$0	$750	$7,500	$1.58
OM-4	Optimize laundry practices	3,600	13,133	$0	$0	$0	$0.00
OM-5	Optimize other kitchen uses of water	1,800	6,566	$0	$0	$0	$0.00
Capital Projects / Plumbing Fixtures							
C-4	Install automated shower timers	1,520	5,545	$38,500	$0	$38,500	$6.94
C-5	Replace toilets with high-efficiency models	5,800	21,158	$25,000	$0	$25,000	$1.18

To determine the cost-effectiveness and payback period associated with each measure, the implementation costs shown in Table 8 must be compared with the financial savings that accrue from reduced water consumption. These financial savings, or "avoided costs" are described in Section 6.2 below.

6.2 Avoided-Cost Analysis

In financial terms the benefit of a conservation measure can be estimated as the dollar savings associated with reducing water consumption. This is termed the "avoided cost" associated with conservation actions. For each unit of water saved (e.g. 1,000 gallons), the WCCW experiences cost savings. Appendix A contains information on calculation of these avoided cost components. The main components of these cost savings are:

- Reduced energy and chemical treatment costs associated with production from WCCW wells. This is estimated to be $0.20 per 1,000 gallons of water saved (assuming $0.05 per kwh).
- Reduced wastewater fees paid to the City of Gig Harbor, for water that would be discharged as wastewater (this applies only to conservation measures affecting water that would be discharged to the sanitary sewer system). This is estimated to be $4.50 per 1,000 gallons of water saved.
- Reduced energy costs for heating water (this applies only to conservation measures that reduce consumption of hot water). This is estimated to be $7.50 per 1,000 gallons of hot water saved. However, for those uses that involve a mix of hot and cold water, a value of $3.75 per thousand gallons is used, representing equal proportions of hot and cold water.

Costs were based on recent utility bills provided by WCCW staff. It should be noted that utility charges are subject to change. In particular, costs of electricity are expected to rise due to recent events in regional electricity markets. To account for this, the electric rate used in the analysis ($0.05/kwh) is 66 percent higher than current rates ($0.03/kwh).

Generally, outdoor uses of water will mainly involve the first category only (cost of water production). Indoor uses will generally include production costs and wastewater costs, and may also involve energy savings associated with hot water. The cost components are shown in Table 9 (values are rounded).

Table 9
Components of Avoided Cost
(bolded rows are applied directly to the cost effectiveness calculations in Section 6.2)

	Type of Avoided Cost	Avoided Cost ($$ per 1,000 gal.)
a.	**Well production component**	**$0.20** [1]
b.	Wastewater component	$4.50 [2]
c.	Hot water component (at 140° F)	$7.50 [3]
d.	**Production and wastewater combined**	**$4.70**
e.	**Production, wastewater and hot water combined** [4]	**$8.45**

(1) Assumes energy cost of $0.05 per kilowatt-hour (kWh). This is higher than current rate of $0.03 per kwh, in anticipation of likely rate increases due to regional energy markets.

(2) Based on City of Gig Harbor rate. Consumption per unit charge is $3.36 per hundred cubic feet, which equates to $4.50 per 1,000 gallons.

(3) See Appendix for assumptions and calculations. Value reported is for hot water, unmixed with cold water.

(4) Various end uses mix hot and cold water in different ratios. Value reported here assumes 50% hot and 50% cold water. Therefore, the hot water component of avoided cost is halved to $3.75 per 1,000 gallons, before being added to item "d".

For each of the seven measures described below, the appropriate avoided cost was applied to the cost-effectiveness analysis.

6.3 Savings and Costs of Selected Water Conservation Measures

This section describes the seven measures that passed the initial screen, and summarizes water savings, costs, and cost-benefit information. In order to provide a consistent basis for comparison, all costs were calculated on the basis of water savings and financial costs over a ten- year period.

OM-1 Reduce Watering; Allow Some or All Turf to go Dormant for Part of Summer

One measure involving landscape irrigation at the WCCW is reduction of water applications on turf areas, to the minimum needed to keep grass alive. Turf grasses have a natural adaptation that allows them to go dormant during periods of low moisture. In western Washington, the period of lowest rainfall typically occurs from July through September of each year. The fullest implementation of this measure would involve reducing irrigation to very low levels (not zero) during these three months. As developed here, this would not include ornamental landscaping. Ornamental landscaping would receive a full allotment of irrigation throughout the dry months[2].

This measure offers flexibility, both in terms of the areas where watering is reduced, and the time period involved. For example, one permutation could be reduced watering in one-half of the turf areas (to be selected based on facility priorities); for only one-half of the time period (e.g. from August 15 through September 30). Of course, this scaled-down example would reduce the water savings achieved.

For purposes of this analysis, it was assumed that irrigation uses on turf during the period covered represent two-thirds of irrigation applied to turf. Based on the respective areas devoted to turf and ornamental landscaping, it was assumed that 95 percent of irrigation use is applied to turf. It was further assumed that the turf areas would still receive irrigation at a level of 10 percent, compared with current application during the dry months. Based on these assumptions, this measure would reduce daily water consumption (year-round average) by approximately 2,900 gpd. Savings would be considerably higher (approximately 8,700 gpd) during the irrigation season. All water saved would be cold water, and there would be no wastewater benefits.

The cost of this measure in financial terms is zero. It would require a modest increase in attention from facility staff, to modify the irrigation schedule at the beginning and end of the months selected. The avoided cost yielded by

[2] One measure that has not been discussed is modification of some turf areas to permanent, drought-tolerant ornamental landscaping. This represents an additional option, that would depend on specific facility needs.

this measure is $0.20 per 1,000 gallons (line "a" from Table 9). Because the financial cost of the measure is zero, the payback period is also zero. In other words, financial savings would begin immediately upon implementation of this measure. Costs and benefits are summarized as follows:

OM-1 Reduce Watering	
Measure Cost (per 1,000 gal.)	$0.00
Measure Benefit (Avoided Cost, per 1,000 gal.)	$0.20
Net Benefit (per 1,000 gal.)	$0.20
Payback Period (years)	Immediate

This measure would reduce the amount of green turf at the facility, and could affect morale and perceptions by staff, offenders and visitors. This consideration, however, could be managed by carefully selecting the areas and timing of the irrigation reduction, as discussed previously.

OM-2 Reduce or Eliminate Water as Food Waste Disposal Practice

Use of water for disposing of food waste is a common practice in institutions, restaurants, hotels and homes. In both food service areas at WCCW, sinks equipped with waste disposal equipment are used for this purpose. Water carrying food waste is then discharged to the sanitary sewer system.

This practice, if eliminated, would likely produce a significant reduction in kitchen water uses. This measure would involve switching to a solid waste alternative for disposal of food wastes. For example, dishes and cooking equipment would be scraped into trash receptacles, reducing or eliminating part of the rinsing process prior to dishwashing. Another alternative could involve developing on-site composting suitable for handling food wastes (together with landscaping wastes). Some water would still be required for disposal of a limited quantity of food waste (e.g. liquids and semi-liquids). It should be recognized that this would generate an increase in solid waste generated at WCCW.

As part of this water conservation audit, total water use by the two food service areas is estimated to be 13,700 gpd. It is assumed that food waste disposal accounts for 10 percent of this use, or approximately 1,370 gpd. If the use of water for food waste disposal were reduced by 90 percent, this would yield average daily savings of approximately 1,200 gpd.

The cost of this measure with regard to operations within the kitchen is essentially zero in financial terms. However, as noted above, there would be a net increase in solid waste disposal costs. This increase is difficult to estimate, since the volume of food-waste disposed in this way is not known. A recent bill from American Disposal indicates a monthly cost of $1,247 for disposal of solid waste. If the volume of solid waste increased by 5 percent, this would increase costs by roughly $60 per month, or $720 per year. This equates to $1.97 per day. Based on the estimated water savings at 1,200 gpd, the cost of added solid waste disposal is therefore estimated to be $1.64 per 1,000 gallons. This estimate has a high-level of uncertainty.

This measure would require training of staff and offenders assigned to food service, and could potentially create dissatisfaction among food service personnel asked to change long-standing practices involving cleanup duties.

This measure would provide a financial benefit, in terms of the avoided cost of water used in current food-waste disposal practices. It is assumed that all water saved by this measure would be cold water. Therefore, the avoided cost includes production costs and wastewater disposal costs, but does not include hot water costs. From Table 9 (line "d"), the avoided cost is therefore $4.70 per 1,000 gallons of water saved. Comparing this value with an estimated cost of $1.64 per thousand gallons (see above) indicates this measure would be cost effective. Since there is no up-front capital cost, the payback period is zero. In other words, financial savings would begin immediately upon implementation of this measure. Costs and benefits are summarized as follows:

OM-2 Reduce or Eliminate Water as Food Waste Disposal Practice	
Measure Cost (per 1, 000 gal.)	$1.64
Measure Benefit (Avoided Cost, per 1,000 gal.)	$4.70
Net Benefit (per 1,000 gal.)	$3.06
Payback Period (years)	Immediate

OM-3 Optimize Irrigation Scheduling, Application and Soil Characteristics

The WCCW has an in-ground, automated irrigation system covering approximately 116,000 square feet (2.7 acres) of turf and an additional 7,000 square feet (0.16 acre) of ornamental landscaping. These systems can be highly efficient if they are properly calibrated and maintained. However, several factors can cause inefficient water usage, such as sprinkler heads that are aimed improperly or located in the wrong place, a watering schedule that is inappropriate for the soil moisture conditions prevailing during a given month; watering that occurs during or soon after rainfall episodes; and uneven application rates that provide too little water in some areas and too much in others.

In addition to these factors with regard to the irrigation system, soil characteristics and maintenance practices affect water consumption. Practices such as top-dressing turf with organic material, aerating soil annually, modifying mowing practices, and modifying fertilizer types and application all can reduce the quantity of moisture taken up by turf.

Similar practices, including adding organic matter and mulching, use of perennial plants instead of annuals, and use of plants that tolerate dry conditions in summer, can reduce the quantity of water needed by ornamental landscaping.

This measure would involve contracting with an irrigation professional for annual or biennial inspection of the sprinkler system for the purpose of optimizing the timing and application rates. In addition, this measure would involve annual additions of organic matter to soil in irrigated areas, together with modification of mowing and other practices, in consultation with a landscape professional.

Based on estimates that have been developed for other, similar conservation studies, it is assumed that this measure can reduce summer irrigation usage by 25 percent. This represents a year round average of approximately 1,300 gpd. During the summer irrigation season, savings would be considerably higher: estimated at approximately 3,900 gpd. All savings would be cold water, and there would be no wastewater benefits.

Costs of this measure are based on the following assumptions: \$500 every other year, for services of outside contractors (irrigation and landscape professionals); and \$500 every year for soil amendments. This results in an average annual O & M cost of \$750. The avoided cost is \$0.20 per 1,000 gallons of water saved (Table 9, line "a"). Based on these assumptions, the unit costs (from Table 8) and benefits (from Table 9), averaged over a ten-year period, are estimated to be:

OM-3 Optimize Irrigation Scheduling, etc.	
Measure Cost (per 1,000 gal.)	\$1.58
Measure Benefit (Avoided Cost, per 1,000 gal.)	\$0.20
Net Benefit (per 1,000 gal.)	-\$1.38
Payback Period (years)	N/A

Based on this information, this measure is not cost-effective. It will cost more to conserve water using this measure, than the water costs to produce, and therefore the payback period does not apply. This does not necessarily mean the measure should not be implemented. It simply means this measure should not be implemented solely on the basis of expected cost-savings. It is worth noting that the annual cost is relatively low. Furthermore, this measure, if implemented as designed, would result in essentially no change in perceptions on the part of staff, offenders or visitors regarding the quality of turf and ornamental landscaping at the WCCW.

OM-4 Optimize Laundry Practices

Currently laundry at the WCCW is washed in decentralized machines located throughout the facility. Offenders wash their own laundry and some staff uniforms. Some bedding is shipped offsite for laundering at McNeil Island. In addition to personal clothing, linen and uniforms, laundry includes items from various specialized activities such as the Clinic, child-care, pet program, food service, etc.

Because of the decentralized nature of laundering, it is likely that laundry practices do not use water as efficiently as possible. One solution might be construction of a centralized laundry facility. This measure is listed in the initial screening matrix (Table 6), but was not analyzed in detail due to the high cost involved. A different solution would be altering laundry practices within the decentralized system, to improve overall efficiency of water use. The main way of accomplishing this is to minimize running of washing machines with partial loads. In some areas of the facility, it is likely that partial loads are typical, while in other areas full loads may be typical. This measure would involve identifying these differences and altering practices to reduce or eliminate partial washing machine loads.

For purposes of this analysis, it is assumed that implementation of this measure could reduce water consumption for laundering by 15 percent. Total water use for laundering is estimated to be 18,000 gpd. A 15 percent reduction is equivalent to approximately 2,700 gpd.

The cost of this measure is essentially zero in financial terms. However, this measure would require training, and could potentially cause dissatisfaction among staff and offenders asked to modify long-standing practices or experience inconvenience related to laundered items. In addition, facility staff indicated that the WCCW's steam-based system for heating water is not currently capable of producing hot water meeting health department standards for laundering of mixed loads (i.e., loads including clothing from more than one person). This issue would need to be addressed as part of a review of laundry optimization, and may involve costs to correct.

The water uses involved in this measure would likely involve a combination of hot and cold water. Assuming 50 percent hot and 50 percent cold water, the avoided cost from Table 9 (line "e") would be $8.45 per 1,000 gallons. There would likely be additional cost savings from reduced use of detergent. Because the financial cost of the measure is zero, the payback period is also zero. In other words, financial savings would begin immediately upon implementation of this measure.

Costs and benefits are summarized as follows:

OM-4 Optimize Laundry Practices	
Measure Cost (per 1,000 gal.)	$0.00
Measure Benefit (Avoided Cost, per 1,000 gal.)	$8.45
Net Benefit (per 1,000 gal.)	$8.45
Payback Period (years)	Immediate

OM-5 Optimize Other Kitchen Uses of Water

Because food service represents a significant component (estimated 15 percent) of daily water usage at the WCCW, examining other O & M practices is likely to yield additional savings. For example, ensuring dishwashers are run at full capacity, ensuring washing machines in the food service area are run at full capacity, reducing flow levels or faucet run times for certain types of sink uses, and reviewing use of the cook-chill system may permit additional reductions in food-service water uses. This measure (or collection of practices) would require discussion with food-service personnel, and training of staff.

For purposes of this audit, it is assumed that other water uses (not food waste disposal) account for 90 percent of all water used in the food service areas (i.e. an estimated 12,330 gpd). It is further assumed that review and modification of O & M practices could reduce these uses by 15 percent, or roughly 1,800 gpd.

The cost of this measure is essentially zero in financial terms. However, this measure would require training, and could potentially cause dissatisfaction among food-service personnel asked to modify long-standing practices

The water uses involved in this measure would likely involve a combination of hot and cold water. Assuming 50 percent hot and 50 percent cold water, the avoided cost from Table 9 (line "e") would be $8.45 per 1,000 gallons. Because the financial cost of the measure is zero, the payback period is also zero. In other words, financial savings would begin immediately upon implementation of this measure.

Costs and benefits are summarized as follows:

OM-5 Optimize Other Kitchen Uses of Water	
Measure Cost (per 1,000 gal.)	$0.00
Measure Benefit (Avoided Cost, per 1,000 gal.)	$8.45
Net Benefit (per 1,000 gal.)	$8.45
Payback Period (years)	Immediate

C-4 Install Automated Shower Timers

Showering accounts for an estimated 17 percent of water consumption at the WCCW. Therefore it represents a significant potential for water savings.

Facility staff reported that low-flow showerheads were installed on all showers in the facility during the early 1990s, as part of a conservation initiative from the City of Gig Harbor. Therefore, low-flow showerheads are not considered here as a conservation opportunity.

Facility staff reported that they have experimented with shower timers, which can be pre-set to run for a given length of time. These appear to be successful. However, they have the potential to cause dissatisfaction among inmates, leading to vandalism and associated maintenance needs.

This measure assumes that showers throughout the facility are retrofitted with shower timers. It is assumed that timers are set in such a way as to reduce the overall volume of showering by ten percent on a daily basis. This would yield 1,520 gpd in water savings.

The cost of retrofitting with shower timers is estimated to be $350 per shower. Based on this cost, it would cost $38,500 to retrofit all 110 showers at the facility. On a unit basis, this is equal to $6.94 per thousand gallons (see Table 8). Water saved would be a combination of hot water and cold water. It is assumed that the water saved would be approximately 50 percent hot water and 50 percent cold water. Based on these assumptions, the avoided cost from Table 9 (line "e") would be $8.45 per 1,000 gallons. Therefore, this measure is cost effective at the WCCW. The payback period would be approximately 8.3 years. The costs and benefits of this measure are summarized as follows:

C-4 Install Automated Shower Timers	
Measure Cost (per 1,000 gal.)	$6.94
Measure Benefit (Avoided Cost, per 1,000 gal.)	$8.45
Net Benefit (per 1,000 gal.)	$1.51
Payback Period (years)	8.3

C-5 Replace Toilets with High-efficiency Models

Water consumption related to toilets can be reduced by replacing older toilets with high-efficiency models that use only 1.6 gallons per flush (gpf). Most toilets at the facility are flushometer–type toilets. Older models typically use 2.5 to 5 gallons per flush.

Toilets manufactured and sold in the U.S. since 1993 are high-efficiency models. The WCCW includes a mix of buildings constructed before 1993 and since 1993 (see Table 2). In addition, it is likely that many of the toilets in older buildings at the facility have been replaced due to normal aging and turnover. This turnover will continue to occur over time, so that eventually all of the toilets in the facility would be high-efficiency models (assuming the Plumbing Code continues to require high-efficiency models). The new SNU building currently under construction will have 105 wet cells, each with a high-efficiency combination toilet. Given this, a program to replace older toilets with high-efficiency models would essentially accelerate a trend that is already in progress at the facility.

As noted previously, there are approximately 150 standard toilets at the WCCW, and an additional 94 "combination" toilets in the wet cells of the Main Institution's Segregation Unit and Closed Custody Unit. Most of these combination toilets will be eliminated when the new SNU is completed and offenders are transferred to the new building. Therefore, the 94 offenders in those units were subtracted from the 760 offenders in the facility. It was assumed that the remaining offenders each flush toilets seven times per day, and that the 450 staff each flush toilets four times per day. It was assumed that installation of tank displacement devices would reduce flushes by an average of 0.9 gpf. This was based on the assumption that the mix of old and new toilets currently at the facility results in an average of 2.5 gpf, and that installation of high-efficiency models would reduce this figure to 1.6 gpf. Based on these assumptions, average daily water savings are estimated to be approximately 5,800 gpd.

The cost of this measure was estimated based on the assumption that 100 toilets require retrofitting at a cost of $250 per toilet. Spread over a ten-year time period, this results in an estimated cost of $1.18 per 1,000 gallons saved (see Table 8).

This measure involves an avoided cost associated with production of well water and wastewater disposal. Hot water is not involved in this measure, so there are no hot-water energy savings included in the avoided cost. The appropriate avoided cost comparison is therefore $4.70 per 1,000 gallons, from Table 9 (line "d"). Based on this comparison, this measure is cost effective with a net financial savings of $3.52 per 1,000 gallons of water saved. At an up-front capital cost of $25,000, the payback period is estimated to be approximately 3.4 years. Costs and benefits of this measure are summarized as follows:

C-5 Replace Toilets with High-Efficiency Models	
Measure Cost (per 1,000 gal.)	$1.18
Measure Benefit (Avoided Cost, in per 1,000 gal.)	$4.70
Net Benefit (per 1,000 gal.)	$3.52
Payback Period (years)	3.4

This measure raises issues with regard to potential dissatisfaction among offenders and staff. It should be noted that some toilet models perform better than others. If this measure is implemented, careful attention should be given to selecting the appropriate brand and model for effective performance.

6.4 Additional Measures Not Analyzed in Detail

In addition to the seven measures analyzed in detail above, there are three measures from Table 6 that were rated as potentially yielding "high" water savings, but that did not meet the criteria of "low" or "medium" costs. These measures are:

- C-1 Replace decentralized laundry machines with centralized laundry facility
- C-2 Replace dishwashing equipment with high-efficiency models
- C-3 Replace clothes washers with high-efficiency models

These measures may be worthy of further consideration, even though they are unlikely to meet a strict test of financial cost-effectiveness.

7.0 Role of Water Metering

Installation of water meters at WCCW and other DOC facilities has been identified as a potential capital project for future years. As part of this overall project, EES is also tasked with developing a program for management and use of water metering data. This program will be included in a separate deliverable.

A well-designed metering program at WCCW could greatly improve quantification of water consumption, and thereby contribute to implementation and ongoing management of conservation initiatives. For example, metering data could be used to track water consumption before and after specific conservation measures are implemented. Water uses that are location-specific, such as those in the food services and clinic, can be measured to a fairly high degree of precision. Estimates of uses that are diffused throughout the facility will continue to be difficult to isolate, but estimates can be greatly improved from current estimates, when meters are in place.

8.0 Implementation Program

As part of this overall project, EES is also tasked with developing an implementation plan for the conservation measures that are selected for implementation. This plan will be included in a separate deliverable, after DOC staff have reviewed this memorandum and identified the measures which are most likely candidates for implementation.

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APPENDIX C6

Monitoring Plans

Cedar Creek Corrections Center

Coliform Monitoring Plan for: Cedar Creek Corrections Center

A. System Information

Plan Date: June 2023

Water System Name Cedar Creek Corrections Center	**County** Thurston	**System I.D. Number** 118827
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	**Source 01** – Well #1 ABS216 Capacity: 50 gpm, Depth: 200 ft **Source 02** – Well #2 Capacity: 35 gpm, Depth: 200 ft **Source 03** – Well #3 APP651 Capacity: 55 gpm, Depth: 402 ft	
Storage: List and Describe	In-ground Storage Tank – 42,000 gal In-ground Storage Tank – 16,000 gal Concrete Standpipe – 115,000 gal	
Treatment: Process	Chlorination	
Pressure Zones: Number and name	1 – Main Facility Area 2 – Timberline Area	
Population	480 total residents	
Number of Routine Samples Required Monthly by Regulation:		1
Number of Sample Sites Needed to Represent the Distribution System:		4
***Request DOH Approval of Triggered Source Monitoring Plan?**		**Yes** ☐ **No** ☒

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

Emergency Laboratory Name ______	**Office Phone - -** **After Hours Phone - -**
Address ______	**Cell Phone - -** **Email ______**
Hours of Operation ______	
Contact Name ______	

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office **- -** After Hours **- -**		
We sell groundwater to other public water systems.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office **- -** After Hours **- -**		

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****
X1. Kitchen	**1-1.** EFV	**S**___
	1-2. Medical	**S**___
	1-3. Alpine	**S**___
		S___
		S___
X2. Admin	**2-1.** Cascade	**S**___
	2-2. Olympic	**S**___
	2-3. Warehouse	**S**___
		S___
		S___
X3. DNR Foreman Hut	**3-1.** DNR Carpentry Shop	**S**___
	3-2. White House	**S**___
	3-3. Black Hills Office	**S**___
		S___
		S___
X4. Maintenance	**4-1.** T-Line	**S**___
	4-2. Gym	**S**___
	4-3. WWTP	**S**___
		S___
		S___

**** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.**

Important Notes for Sample Collector:

____

____

____

____

Reduced Triggered Source Monitoring Justification (add sheets as needed):

E. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	Admin	**July**	DNR
February	Maintenance	**August**	Kitchen
March	DNR	**September**	Admin
April	Kitchen	**October**	Maintenance
May	Admin	**November**	DNR
June	Maintenance	**December**	Kitchen

F. Level 1 and Level 2 Assessment Contact Information

Name	**Office Phone** - - **After Hours Phone** - -
Address	**Email**
Name	**Office Phone** - - **After Hours Phone** - -
Address	**Email**

G. *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. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

***E. coli*-Present Triggered Source Sample Response Checklist – All Sources**				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☐	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☐	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	☐ ☐	☐ ☐	☐ ☐	☐ ☐
We routinely inspect our well site(s).	☐	☐	☐	☐
We have a good raw water sample tap installed at each source.	☐	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☐	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☐
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☐	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☐	☐	☐	☐

E. coli*-Present Triggered Source Sample Response Checklist – Source S__				
Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☐	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☐	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☐	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☐	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☐	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☐	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

E. coli-Present Triggered Source Sample Response Plan – Source ___

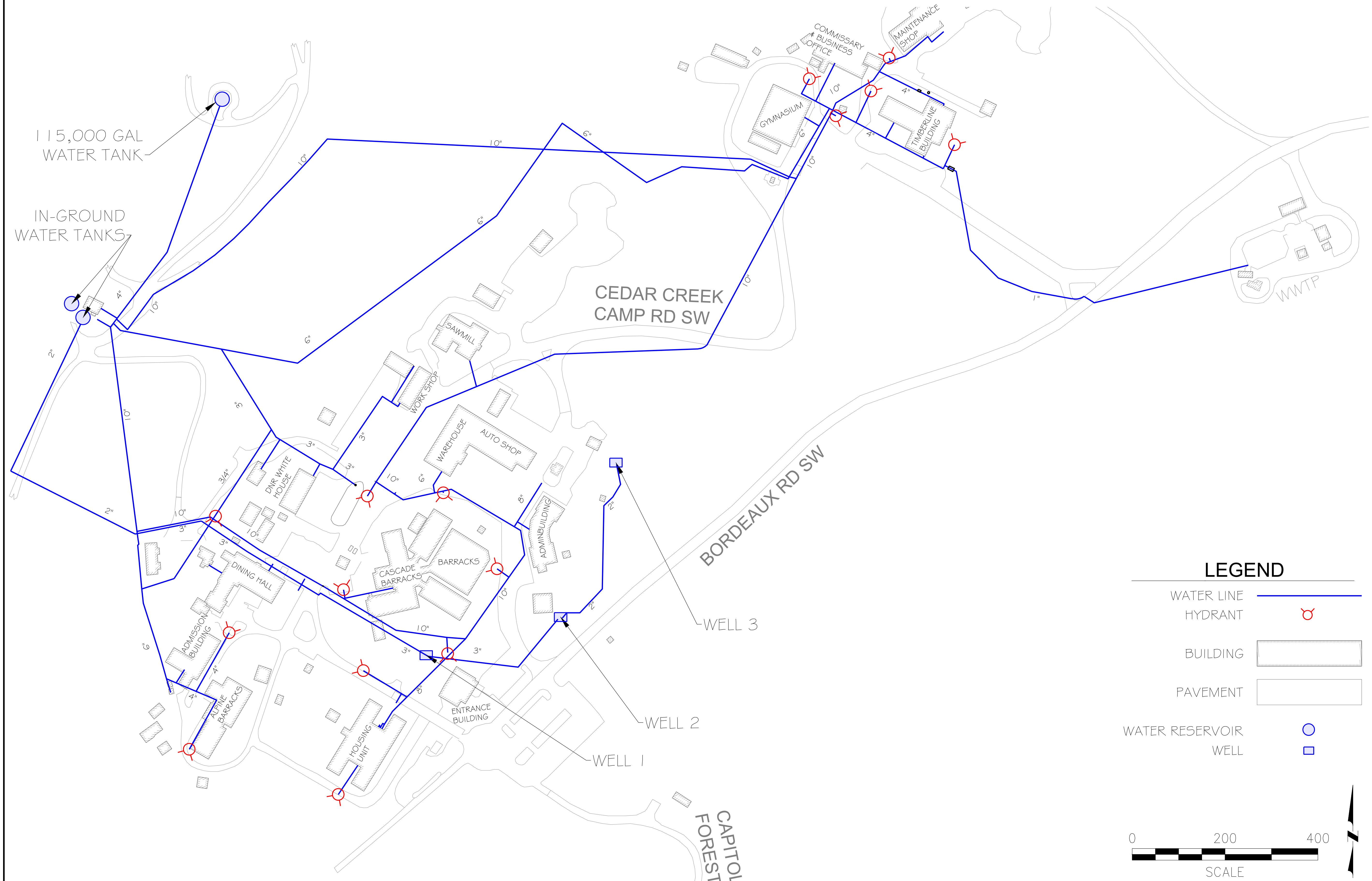
If we have *E. coli* in Source ___ water we will immediately:

1. Call DOH.
2. ____
3. ____
4. ____
5. ____

H. System Map

EXHIBIT B1-3

CEDAR CREEK CORRECTIONS CENTER - WATER SYSTEM LAYOUT



612 Woodland Square Loop,
Suite 100
Lacey, WA 98503
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www.kpff.com

kpff

PROJ # 10182200055
DRAWN BY: VARIOUS
CHECKED BY: BEE
DATE: 07-06-2023
SCALE: 1" = 250'

DOC WATER SYSTEM PLAN UPDATE

CCCC WATER SYSTEM LAYOUT

EXHIBIT

B1-3

PLOTTED: Jul 07, 2023 - 16:53a7p7 PLOTTED BY: kellenm

Lead and Copper Monitoring Plan for: Cedar Creek Corrections Center

A. System Information

Plan Date: June 2023

Water System Name Cedar Creek Corrections Center	**County** Thurston	**System I.D. Number** 118827
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Population	480 total residents	
Number of Sample Sites Required:		10

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

C. Sample Sites

Location/Address for **Sample Sites**	
January - June	**July - December**
1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

D. Sample Collection Procedures

1. Prepare to Collect the Sample
The sample must come from a regularly used kitchen or bathroom cold-water faucet.
The object is to get the “first draw” of water that has been sitting stagnant in the pipes for at least 6 hours, but no longer than 12 hours prior to sampling.
To ensure stagnant water conditions exist, the best sampling time is first thing in the morning.
Make sure that cold water is the last water to go through the faucet before the water sits stagnant in the pipes 6-12 hours prior to sampling.
Do not remove the aerator from the faucet before the stagnation time nor before collecting the sample.
2. Prepare to Collect the Sample
Do not run any water immediately prior to collecting the sample.
Make sure the water does not go through a hose, water softener, or any kind of filter before it reached the sample container.
Place the open bottle below the faucet and gently open the cold-water tap.
Fill the sample container to the shoulder of the bottle or the line marked “1,000 ml” and turn the water off.
Cap the bottle lightly.
Label the bottle and place it in the sample kit provided.
3. Complete Lab Form and Sample Label; include the following
Water system name and ID number
System type (group A)
Date and time each sample was collected
Sample location
DOH source number – write in “distribution” to indicate distribution samples
Sample purpose (“RC” for routine compliance)
Sample type (post-treatment)
4. Ship the Samples

E. Distribute Consumer Notice

F. Submit Verification Form to DOH Regional Office.

Community Water System
CONSUMER NOTICE
Lead and Copper Water Sample Results

The Cedar Creek Water System, I.D. 118827, is providing you with the lead and copper test results on the water sample collected at your location. Please share this notice with everyone who uses or drinks the water.

The results at ____

are: **lead ____________ mg/L and copper ___________ mg/L.**

The maximum contaminant level goal (MCLG) is the level of a contaminant in drinking water below which there are no known or expected risks to health. MCLGs allow for a margin of safety. The regulatory limits for lead and copper are called action levels. An exceedance occurs when the concentration of the lead or copper in more than 10 percent of the tap water samples exceeds an action level.

- The MCLG for lead is "0" and the action level is 15 ppb (or .015 mg/L).
- The MCLG and action level for copper is 1,300 ppb (or 1.3 mg/L).

Lead or copper action level exceedances will trigger corrosion control treatment or other requirements. We will notify all water users if our system exceeds the lead action level.

For more information, please contact: ____
(owner or operator)

at (   )   -   or ____
(phone number)   (address)

This notice is sent to you by ___________________________ Water System on ___/___/_____

How Lead Gets Into Water

Lead in drinking water most often comes from water distribution lines or household plumbing rather than from the water system source. Plumbing sources can include lead pipes, lead solder, faucets, valves, and other components made of brass. Lead from other sources (such as lead-based paint and contaminated dust or soil) can increase a person's overall exposure, which adds to the effects of lead in water.

Potential Health Effects of Lead

The greatest risk of lead exposure is to infants, young children, and pregnant women. Lead can cause serious health problems if too much enters the body. Lead is stored in the bones and can be released later in life. Lead can cause damage to the brain and kidneys, interfere with production of red blood cells that carry oxygen, and may result in lowered IQ in children. During pregnancy, the child receives lead from the mother's bones, which may affect brain development. Low levels of lead can affect adults with high blood pressure or kidney problems.

How Copper Gets Into Water

Copper is a mineral and natural component in soils. In the correct amounts, it is an essential nutrient for humans and plants. In Washington State, most copper in drinking water comes from corrosion of household plumbing. Plumbing sources can include copper pipe and brass fixtures. Copper from plumbing corrosion can accumulate overnight.

Potential Health Effects of Copper

Although copper is an essential mineral in the diet, too much copper can cause health problems. Copper is widely distributed within the tissues of the body, but accumulates primarily in the liver and kidneys. A single dose of 15 mg of copper can cause nausea, vomiting, diarrhea, and intestinal cramps. Severe cases of copper poisoning have led to anemia and to disruption of liver and kidney functions. Individuals with Wilson's or Menke's diseases are at higher risk from copper exposure.

How you can reduce exposure:

- When your water has been sitting for several hours, flush the pipe by running the cold-water tap until the water is noticeably colder before using the water for drinking or cooking. **(The longer water has been sitting in the pipes, the more dissolved metals it may contain).**
- Use only cold water for drinking, cooking, and making baby formula. Hot water may contain higher levels of lead or copper.
- Frequently clean the filter screens and aerators in faucets to remove captured particles.
- If building or remodeling, only use "lead free" or low lead piping and materials. Avoid using copper piping or brass fixtures for locations where water will be consumed or used in food preparation (such as kitchen or bathroom sinks).

Larch Corrections Center

Coliform Monitoring Plan for: Larch Corrections Center

A. System Information

Plan Date: June 2023

Water System Name Larch Corrections Center	**County** Clark	**System I.D. Number** 06461Y
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	**Source 01** – Well #1 ABR944 Capacity: 23 gpm, Depth: 124 ft **Source 02** – Well #2 AFP635 Capacity: 55 gpm, Depth: 160 ft **Source 03** – Well #3 AFP634 Capacity: 65 gpm, Depth: 200 ft **Source 04** – Well #4 AFP432 Capacity: 100 gpm, Depth: 170 ft	
Storage: List and Describe		
Treatment: Source Number & Process		
Pressure Zones: Number and name	1 – Main Facility Area	
Population by Pressure Zone	480	
Number of Routine Samples Required Monthly by Regulation:		1
Number of Sample Sites Needed to Represent the Distribution System:		4
***Request DOH Approval of Triggered Source Monitoring Plan?**		**Yes** ☐ **No** ☐

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

Emergency Laboratory Name ______	**Office Phone - -** **After Hours Phone - -**
Address ______	**Cell Phone - -** **Email ______**
Hours of Operation ______	
Contact Name ______	

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
We sell groundwater to other public water systems.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		

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****
X1. Upper Program Area	**1-1.** Lower Program Area	**S**___
	1-2. Boiler Room	**S**___
	1-3. WWTP	**S**___
		S___
		S___
X2. WWTP	**2-1.** Lower Program Area	**S**___
	2-2. Upper Program Area	**S**___
	2-3. Elkhorn Living Unit	**S**___
		S___
		S___
X3. Admin Offices	**3-1.** Kitchen	**S**___
	3-2. Silver Star Living Unit	**S**___
	3-3. WWTP	**S**___
		S___
		S___
X4. Elkhorn Living Unit	**4-1.** Silver Star Living Unit	**S**___
	4-2. DNR Shop	**S**___
	4-3. WWTP	**S**___
		S___
		S___

**** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.**

Important Notes for Sample Collector:

E. Reduced Triggered Source Monitoring Justification (add sheets as needed):

F. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	Upper Program Area	**July**	Admin Offices
February	WWTP	**August**	Elkhorn Living Unit
March	Admin Offices	**September**	Upper Program Area
April	Elkhorn Living Unit	**October**	WWTP
May	Upper Program Area	**November**	Admin Offices
June	WWTP	**December**	Elkhorn Living Unit

G. Level 1 and Level 2 Assessment Contact Information

Name	**Office Phone - -** **After Hours Phone - -**
Address	**Email**
Name	**Office Phone - -** **After Hours Phone - -**
Address	**Email**

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. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

***E. coli*-Present Triggered Source Sample Response Checklist – All Sources**				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☐	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☐	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and	☐	☐	☐	☐
If yes, we can eliminate them.	☐	☐	☐	☐
We routinely inspect our well site(s).	☐	☐	☐	☐
We have a good raw water sample tap installed at each source.	☐	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☐	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☐
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☐	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☐	☐	☐	☐

E. coli*-Present Triggered Source Sample Response Checklist – Source S__				
Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☐	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☐	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☐	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☐	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☐	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☐	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

E. coli-Present Triggered Source Sample Response Plan – Source ___

If we have *E. coli* in Source ___ water we will immediately:

1. Call DOH.
2. ____
3. ____
4. ____
5. ____

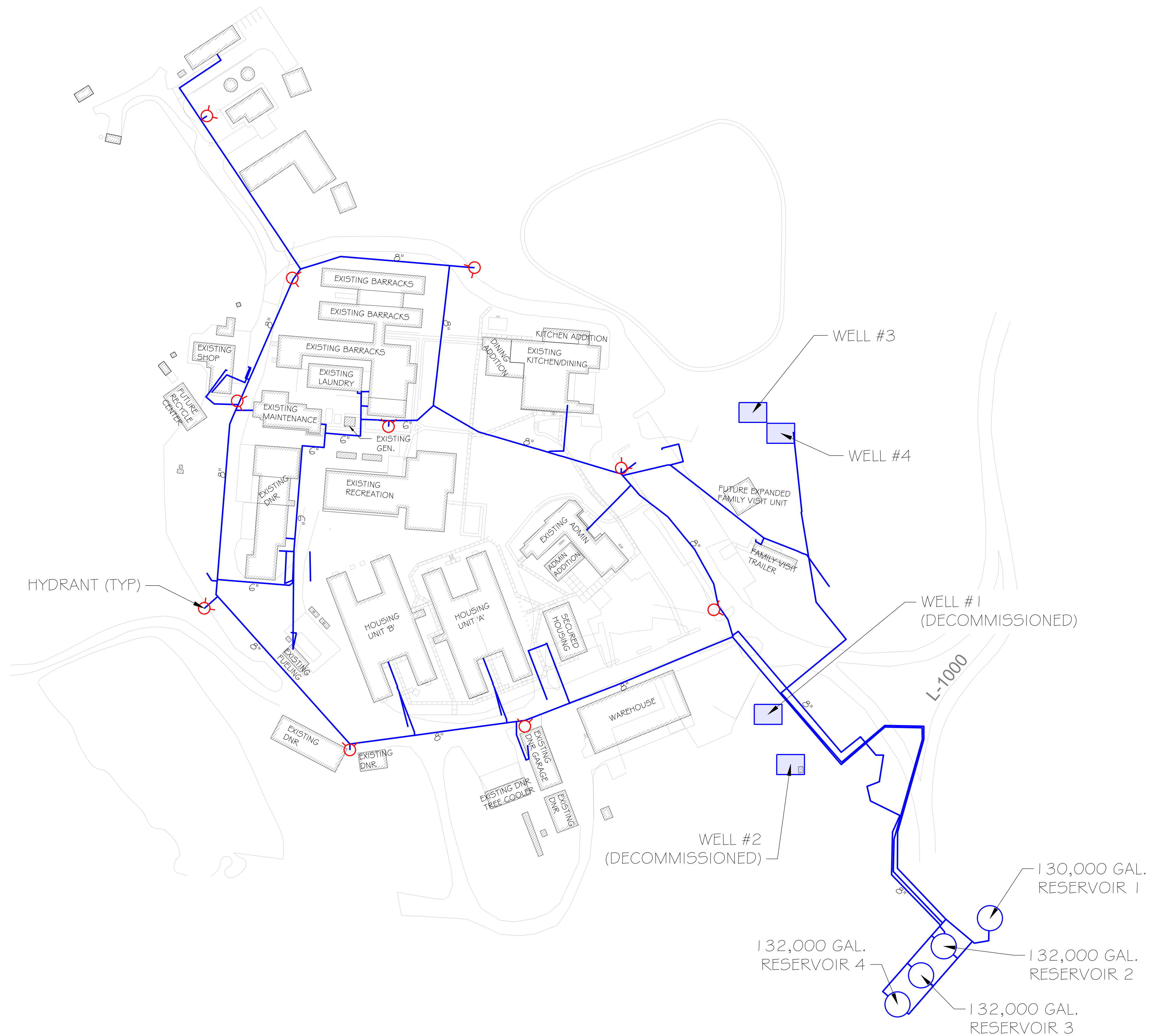
I. System Map

EXHIBIT B2-3

LARCH CORRECTIONS CENTER - WATER SYSTEM LAYOUT

LEGEND

- WATER LINE
- HYDRANT
- BUILDING
- WATER RESERVOIR
- WELL



612 Woodland Square Loop,
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Lacey, WA 98503
360.292.7230
www.kpff.com
kpff

PROJ # 101822000055
DRAWN BY: VARIOUS
CHECKED BY: BEE
DATE: 07-06-2023
SCALE: 1" = 150'

DOC WATER SYSTEM PLAN UPDATE

LCC WATER SYSTEM LAYOUT

EXHIBIT

B2-3

Lead and Copper Monitoring Plan for: Larch Corrections Center

A. System Information

Plan Date: June 2023

Water System Name Larch Corrections Center	**County** Clark	**System I.D. Number** 06461Y
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Population	480 total residents	
Number of Sample Sites Required:		10

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

C. Sample Sites

Location/Address for **Sample Sites**	
January - June	**July - December**
1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

D. Sample Collection Procedures

1. Prepare to Collect the Sample
The sample must come from a regularly used kitchen or bathroom cold-water faucet.
The object is to get the "first draw" of water that has been sitting stagnant in the pipes for at least 6 hours, but no longer than 12 hours prior to sampling.
To ensure stagnant water conditions exist, the best sampling time is first thing in the morning.
Make sure that cold water is the last water to go through the faucet before the water sits stagnant in the pipes 6-12 hours prior to sampling.
Do not remove the aerator from the faucet before the stagnation time nor before collecting the sample.
2. Prepare to Collect the Sample
Do not run any water immediately prior to collecting the sample.
Make sure the water does not go through a hose, water softener, or any kind of filter before it reached the sample container.
Place the open bottle below the faucet and gently open the cold-water tap.
Fill the sample container to the shoulder of the bottle or the line marked "1,000 ml" and turn the water off.
Cap the bottle lightly.
Label the bottle and place it in the sample kit provided.
3. Complete Lab Form and Sample Label; include the following
Water system name and ID number
System type (group A)
Date and time each sample was collected
Sample location
DOH source number – write in "distribution" to indicate distribution samples
Sample purpose ("RC" for routine compliance)
Sample type (post-treatment)
4. Ship the Samples

E. Distribute Consumer Notice

F. Submit Verification Form to DOH Regional Office.

Community Water System
CONSUMER NOTICE
Lead and Copper Water Sample Results

The Cedar Creek Water System, I.D. 118827, is providing you with the lead and copper test results on the water sample collected at your location. Please share this notice with everyone who uses or drinks the water.

The results at ____

are: **lead** ____________ **mg/L and copper** ___________ **mg/L.**

The maximum contaminant level goal (MCLG) is the level of a contaminant in drinking water below which there are no known or expected risks to health. MCLGs allow for a margin of safety. The regulatory limits for lead and copper are called action levels. An exceedance occurs when the concentration of the lead or copper in more than 10 percent of the tap water samples exceeds an action level.

- The MCLG for lead is “0” and the action level is 15 ppb (or .015 mg/L).
- The MCLG and action level for copper is 1,300 ppb (or 1.3 mg/L).

Lead or copper action level exceedances will trigger corrosion control treatment or other requirements. We will notify all water users if our system exceeds the lead action level.

For more information, please contact: ____
(owner or operator)

at ( ) - or ____
(phone number) (address)

This notice is sent to you by ___________________________ Water System on ___/___/_____

How Lead Gets Into Water

Lead in drinking water most often comes from water distribution lines or household plumbing rather than from the water system source. Plumbing sources can include lead pipes, lead solder, faucets, valves, and other components made of brass. Lead from other sources (such as lead-based paint and contaminated dust or soil) can increase a person's overall exposure, which adds to the effects of lead in water.

Potential Health Effects of Lead

The greatest risk of lead exposure is to infants, young children, and pregnant women. Lead can cause serious health problems if too much enters the body. Lead is stored in the bones and can be released later in life. Lead can cause damage to the brain and kidneys, interfere with production of red blood cells that carry oxygen, and may result in lowered IQ in children. During pregnancy, the child receives lead from the mother's bones, which may affect brain development. Low levels of lead can affect adults with high blood pressure or kidney problems.

How Copper Gets Into Water

Copper is a mineral and natural component in soils. In the correct amounts, it is an essential nutrient for humans and plants. In Washington State, most copper in drinking water comes from corrosion of household plumbing. Plumbing sources can include copper pipe and brass fixtures. Copper from plumbing corrosion can accumulate overnight.

Potential Health Effects of Copper

Although copper is an essential mineral in the diet, too much copper can cause health problems. Copper is widely distributed within the tissues of the body, but accumulates primarily in the liver and kidneys. A single dose of 15 mg of copper can cause nausea, vomiting, diarrhea, and intestinal cramps. Severe cases of copper poisoning have led to anemia and to disruption of liver and kidney functions. Individuals with Wilson's or Menke's diseases are at higher risk from copper exposure.

How you can reduce exposure:

- When your water has been sitting for several hours, flush the pipe by running the cold-water tap until the water is noticeably colder before using the water for drinking or cooking. **(The longer water has been sitting in the pipes, the more dissolved metals it may contain).**
- Use only cold water for drinking, cooking, and making baby formula. Hot water may contain higher levels of lead or copper.
- Frequently clean the filter screens and aerators in faucets to remove captured particles.
- If building or remodeling, only use "lead free" or low lead piping and materials. Avoid using copper piping or brass fixtures for locations where water will be consumed or used in food preparation (such as kitchen or bathroom sinks).

Maple Lane Corrections Center

Coliform Monitoring Plan for: Maple Lane Corrections Center

A. System Information

Plan Date: June 2023

Water System Name Maple Lane Corrections Center	**County** Thurston	**System I.D. Number** 511958
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	**Source 01** – Well #1 Capacity: 260 gpm, Depth: 73 ft **Source 02** – Well #2 AAF164 Capacity: 340 gpm, Depth: 74 ft	
Storage: List and Describe	Concrete Standpipe – 132,000 gal	
Treatment: Source Number & Process	Chlorination	
Pressure Zones: Number and name	1 – Main Facility Area	
Population by Pressure Zone	100	
Number of Routine Samples Required Monthly by Regulation:		1
Number of Sample Sites Needed to Represent the Distribution System:		4
***Request DOH Approval of Triggered Source Monitoring Plan?**		**Yes** ☐ **No** ☐

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

Emergency Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
We sell groundwater to other public water systems.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		

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****
X1.	**1-1.**	**S___**
	1-2.	**S___**
	1-3.	**S___**
		S___
		S___
X2.	**2-1.**	**S___**
	2-2.	**S___**
	2-3.	**S___**
		S___
		S___
X3.	**3-1.**	**S___**
	3-2.	**S___**
	3-3.	**S___**
		S___
		S___
X4.	**4-1.**	**S___**
	4-2.	**S___**
	4-3.	**S___**
		S___
		S___

**** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.**

Important Notes for Sample Collector:

___

___

___

E. Reduced Triggered Source Monitoring Justification (add sheets as needed):

F. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January		July	
February		August	
March		September	
April		October	
May		November	
June		December	

G. Level 1 and Level 2 Assessment Contact Information

Name	Office Phone - - After Hours Phone - -
Address	Email
Name	Office Phone - - After Hours Phone - -
Address	Email

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. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

E. coli-Present Triggered Source Sample Response Checklist – All Sources

Background Information	Yes	No	N/A	To Do List
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☐	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☐	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	☐ ☐	☐ ☐	☐ ☐	☐ ☐
We routinely inspect our well site(s).	☐	☐	☐	☐
We have a good raw water sample tap installed at each source.	☐	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☐	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☐
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☐	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☐	☐	☐	☐

E. coli-Present Triggered Source Sample Response Checklist – Source S__*				
Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☐	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☐	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☐	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☐	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☐	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☐	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

E. coli-Present Triggered Source Sample Response Plan – Source ___

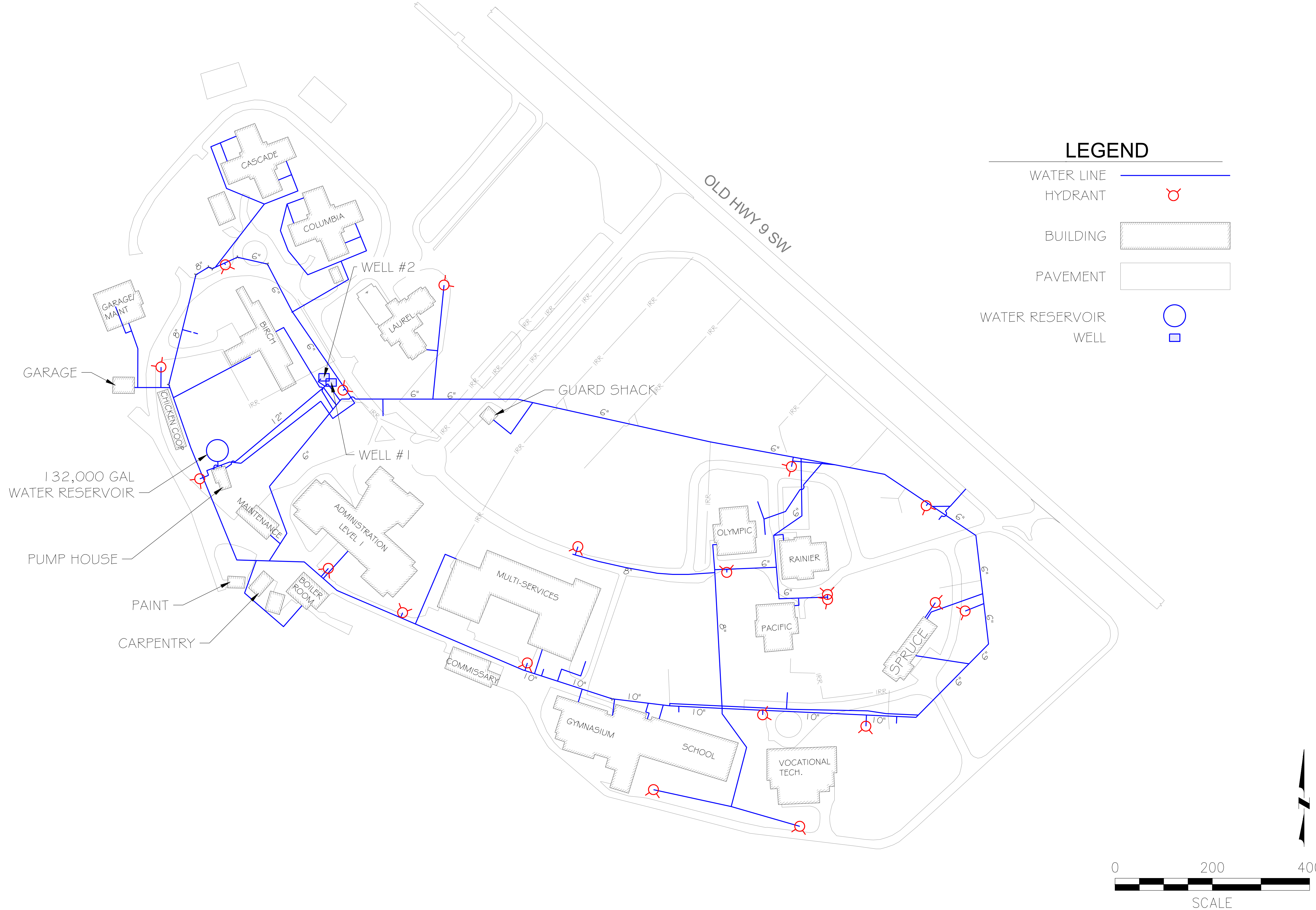
If we have *E. coli* in Source ___ water we will immediately:

1. Call DOH.
2. ____
3. ____
4. ____
5. ____

I. System Map

EXHIBIT B3-3

MAPLE LANE CORRECTIONS CENTER - WATER SYSTEM LAYOUT



kpff
612 Woodland Square Loop, Suite 100
Lacey, WA 98503
360.292.7230
www.kpff.com

PROJ # 10182200055
DRAWN BY: VARIOUS
CHECKED BY: BEE
DATE: 07-06-2023
SCALE: 1" = 200'

DOC WATER SYSTEM PLAN UPDATE

MLCC WATER SYSTEM LAYOUT

EXHIBIT

B3-3

Lead and Copper Monitoring Plan for: Maple Lane Corrections Center

A. System Information

Plan Date: June 2023

Water System Name Maple Lane Corrections Center	**County** Thurston	**System I.D. Number** 511958
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Population	100	
Number of Sample Sites Required:		10

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

C. Sample Sites

Location/Address for **Sample Sites**	
January - June	**July - December**
1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

D. Sample Collection Procedures

1. Prepare to Collect the Sample
The sample must come from a regularly used kitchen or bathroom cold-water faucet.
The object is to get the "first draw" of water that has been sitting stagnant in the pipes for at least 6 hours, but no longer than 12 hours prior to sampling.
To ensure stagnant water conditions exist, the best sampling time is first thing in the morning.
Make sure that cold water is the last water to go through the faucet before the water sits stagnant in the pipes 6-12 hours prior to sampling.
Do not remove the aerator from the faucet before the stagnation time nor before collecting the sample.
2. Prepare to Collect the Sample
Do not run any water immediately prior to collecting the sample.
Make sure the water does not go through a hose, water softener, or any kind of filter before it reached the sample container.
Place the open bottle below the faucet and gently open the cold-water tap.
Fill the sample container to the shoulder of the bottle or the line marked "1,000 ml" and turn the water off.
Cap the bottle lightly.
Label the bottle and place it in the sample kit provided.
3. Complete Lab Form and Sample Label; include the following
Water system name and ID number
System type (group A)
Date and time each sample was collected
Sample location
DOH source number – write in "distribution" to indicate distribution samples
Sample purpose ("RC" for routine compliance)
Sample type (post-treatment)
4. Ship the Samples

E. Distribute Consumer Notice

F. Submit Verification Form to DOH Regional Office.

Community Water System
CONSUMER NOTICE
Lead and Copper Water Sample Results

The Cedar Creek Water System, I.D. 118827, is providing you with the lead and copper test results on the water sample collected at your location. Please share this notice with everyone who uses or drinks the water.

The results at ____

are: **lead ____________ mg/L and copper ___________ mg/L.**

The maximum contaminant level goal (MCLG) is the level of a contaminant in drinking water below which there are no known or expected risks to health. MCLGs allow for a margin of safety. The regulatory limits for lead and copper are called action levels. An exceedance occurs when the concentration of the lead or copper in more than 10 percent of the tap water samples exceeds an action level.

- The MCLG for lead is "0" and the action level is 15 ppb (or .015 mg/L).
- The MCLG and action level for copper is 1,300 ppb (or 1.3 mg/L).

Lead or copper action level exceedances will trigger corrosion control treatment or other requirements. We will notify all water users if our system exceeds the lead action level.

For more information, please contact: ____

(owner or operator)

at (   )   -   or ____

(phone number) (address)

This notice is sent to you by ____________________________ Water System on ___/___/_____

How Lead Gets Into Water

Lead in drinking water most often comes from water distribution lines or household plumbing rather than from the water system source. Plumbing sources can include lead pipes, lead solder, faucets, valves, and other components made of brass. Lead from other sources (such as lead-based paint and contaminated dust or soil) can increase a person's overall exposure, which adds to the effects of lead in water.

Potential Health Effects of Lead

The greatest risk of lead exposure is to infants, young children, and pregnant women. Lead can cause serious health problems if too much enters the body. Lead is stored in the bones and can be released later in life. Lead can cause damage to the brain and kidneys, interfere with production of red blood cells that carry oxygen, and may result in lowered IQ in children. During pregnancy, the child receives lead from the mother's bones, which may affect brain development. Low levels of lead can affect adults with high blood pressure or kidney problems.

How Copper Gets Into Water

Copper is a mineral and natural component in soils. In the correct amounts, it is an essential nutrient for humans and plants. In Washington State, most copper in drinking water comes from corrosion of household plumbing. Plumbing sources can include copper pipe and brass fixtures. Copper from plumbing corrosion can accumulate overnight.

Potential Health Effects of Copper

Although copper is an essential mineral in the diet, too much copper can cause health problems. Copper is widely distributed within the tissues of the body, but accumulates primarily in the liver and kidneys. A single dose of 15 mg of copper can cause nausea, vomiting, diarrhea, and intestinal cramps. Severe cases of copper poisoning have led to anemia and to disruption of liver and kidney functions. Individuals with Wilson's or Menke's diseases are at higher risk from copper exposure.

How you can reduce exposure:

- When your water has been sitting for several hours, flush the pipe by running the cold-water tap until the water is noticeably colder before using the water for drinking or cooking. **(The longer water has been sitting in the pipes, the more dissolved metals it may contain).**
- Use only cold water for drinking, cooking, and making baby formula. Hot water may contain higher levels of lead or copper.
- Frequently clean the filter screens and aerators in faucets to remove captured particles.
- If building or remodeling, only use "lead free" or low lead piping and materials. Avoid using copper piping or brass fixtures for locations where water will be consumed or used in food preparation (such as kitchen or bathroom sinks).

McNeil Island Corrections Center

Coliform Monitoring Plan for: Maple Lane Corrections Center

A. System Information

Plan Date: June 2023

Water System Name Maple Lane Corrections Center	**County** Thurston	**System I.D. Number** 511958
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	**Source 01** – Well #1 Capacity: 260 gpm, Depth: 73 ft **Source 02** – Well #2 AAF164 Capacity: 340 gpm, Depth: 74 ft	
Storage: List and Describe	Concrete Standpipe – 132,000 gal	
Treatment: Source Number & Process	Chlorination	
Pressure Zones: Number and name	1 – Main Facility Area	
Population by Pressure Zone	100	
Number of Routine Samples Required Monthly by Regulation:	1	
Number of Sample Sites Needed to Represent the Distribution System:	4	
***Request DOH Approval of Triggered Source Monitoring Plan?**	**Yes** ☐ **No** ☐	

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

Emergency Laboratory Name ______	**Office Phone - -** **After Hours Phone - -**
Address ______	**Cell Phone - -** **Email ______**
Hours of Operation ______	
Contact Name ______	

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office **- -** After Hours **- -**		
We sell groundwater to other public water systems.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office **- -** After Hours **- -**		

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****
X1.	**1-1.**	**S___**
	1-2.	**S___**
	1-3.	**S___**
		S___
		S___
X2.	**2-1.**	**S___**
	2-2.	**S___**
	2-3.	**S___**
		S___
		S___
X3.	**3-1.**	**S___**
	3-2.	**S___**
	3-3.	**S___**
		S___
		S___
X4.	**4-1.**	**S___**
	4-2.	**S___**
	4-3.	**S___**
		S___
		S___

**** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.**

Important Notes for Sample Collector:

____

____

____

E. Reduced Triggered Source Monitoring Justification (add sheets as needed):

F. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January		July	
February		August	
March		September	
April		October	
May		November	
June		December	

G. Level 1 and Level 2 Assessment Contact Information

Name	Office Phone - - After Hours Phone - -
Address	Email
Name	Office Phone - - After Hours Phone - -
Address	Email

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. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

E. coli-Present Triggered Source Sample Response Checklist – All Sources				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☐	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☐	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	☐ ☐	☐ ☐	☐ ☐	☐ ☐
We routinely inspect our well site(s).	☐	☐	☐	☐
We have a good raw water sample tap installed at each source.	☐	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☐	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☐
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☐	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☐	☐	☐	☐

E. coli-Present Triggered Source Sample Response Checklist – Source S__*				
Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☐	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☐	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☐	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☐	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☐	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☐	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

E. coli-Present Triggered Source Sample Response Plan – Source ___

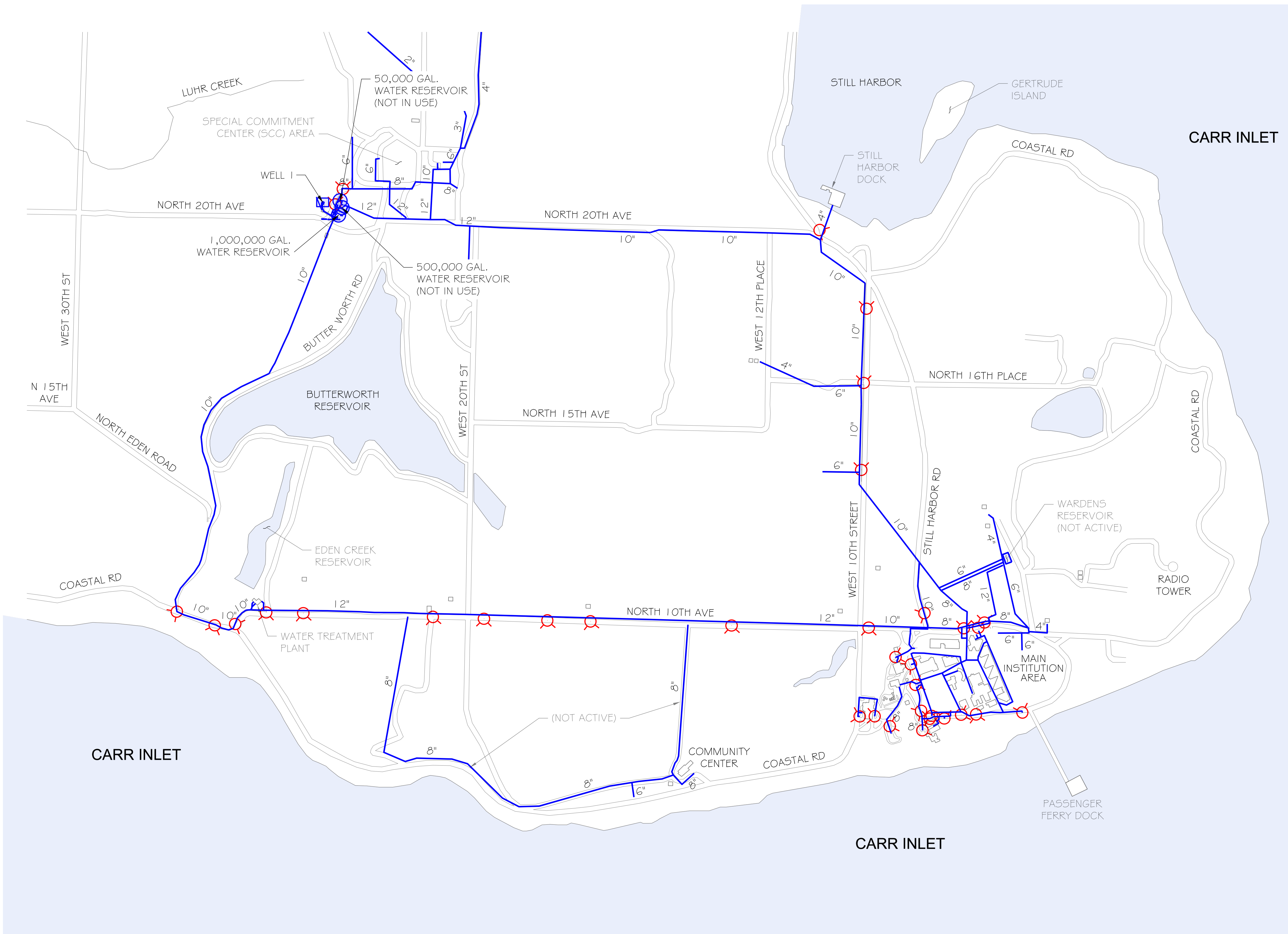
If we have *E. coli* in Source ___ water we will immediately:

1. Call DOH.
2. ____
3. ____
4. ____
5. ____

I. System Map

EXHIBIT B4-3

MCNEIL ISLAND CORRECTIONS CENTER - WATER SYSTEM LAYOUT



LEGEND

- WATER LINE
- HYDRANT
- BUILDING
- PAVEMENT
- WATER RESERVOIR
- WELL

0 1500' 3000'

SCALE

kpff
612 Woodland Square Loop, Suite 100
Lacey, WA 98503
360.292.7230
www.kpff.com

CALL 48 HOURS BEFORE YOU DIG 811

PROJ #10182200055
DRAWN BY: VARIOUS
CHECKED BY: BEE
DATE: 07-06-2023
SCALE: 1" = 1500'

DOC WATER SYSTEM PLAN UPDATE

MICC WATER SYSTEM LAYOUT

EXHIBIT

B4-3

Lead and Copper Monitoring Plan for: McNeil Island Corrections Center

A. System Information

Plan Date: June 2023

Water System Name McNeil Island	**County** Pierce	**System I.D. Number** 52900E
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Population	271	
Number of Sample Sites Required:		10

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

C. Sample Sites

Location/Address for **Sample Sites**	
January - June	**July - December**
1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

D. Sample Collection Procedures

1. Prepare to Collect the Sample
The sample must come from a regularly used kitchen or bathroom cold-water faucet.
The object is to get the “first draw” of water that has been sitting stagnant in the pipes for at least 6 hours, but no longer than 12 hours prior to sampling.
To ensure stagnant water conditions exist, the best sampling time is first thing in the morning.
Make sure that cold water is the last water to go through the faucet before the water sits stagnant in the pipes 6-12 hours prior to sampling.
Do not remove the aerator from the faucet before the stagnation time nor before collecting the sample.
2. Prepare to Collect the Sample
Do not run any water immediately prior to collecting the sample.
Make sure the water does not go through a hose, water softener, or any kind of filter before it reached the sample container.
Place the open bottle below the faucet and gently open the cold-water tap.
Fill the sample container to the shoulder of the bottle or the line marked “1,000 ml” and turn the water off.
Cap the bottle lightly.
Label the bottle and place it in the sample kit provided.
3. Complete Lab Form and Sample Label; include the following
Water system name and ID number
System type (group A)
Date and time each sample was collected
Sample location
DOH source number – write in “distribution” to indicate distribution samples
Sample purpose (“RC” for routine compliance)
Sample type (post-treatment)
4. Ship the Samples

E. Distribute Consumer Notice

F. Submit Verification Form to DOH Regional Office.

Community Water System
CONSUMER NOTICE
Lead and Copper Water Sample Results

The Cedar Creek Water System, I.D. 118827, is providing you with the lead and copper test results on the water sample collected at your location. Please share this notice with everyone who uses or drinks the water.

The results at ____

are: **lead** ____________ **mg/L and copper** ___________ **mg/L.**

The maximum contaminant level goal (MCLG) is the level of a contaminant in drinking water below which there are no known or expected risks to health. MCLGs allow for a margin of safety. The regulatory limits for lead and copper are called action levels. An exceedance occurs when the concentration of the lead or copper in more than 10 percent of the tap water samples exceeds an action level.

- The MCLG for lead is “0” and the action level is 15 ppb (or .015 mg/L).
- The MCLG and action level for copper is 1,300 ppb (or 1.3 mg/L).

Lead or copper action level exceedances will trigger corrosion control treatment or other requirements. We will notify all water users if our system exceeds the lead action level.

For more information, please contact: ____
(owner or operator)

at ( ) - or ____
(phone number) (address)

This notice is sent to you by ____________________________ Water System on ___/___/_____

How Lead Gets Into Water

Lead in drinking water most often comes from water distribution lines or household plumbing rather than from the water system source. Plumbing sources can include lead pipes, lead solder, faucets, valves, and other components made of brass. Lead from other sources (such as lead-based paint and contaminated dust or soil) can increase a person's overall exposure, which adds to the effects of lead in water.

Potential Health Effects of Lead

The greatest risk of lead exposure is to infants, young children, and pregnant women. Lead can cause serious health problems if too much enters the body. Lead is stored in the bones and can be released later in life. Lead can cause damage to the brain and kidneys, interfere with production of red blood cells that carry oxygen, and may result in lowered IQ in children. During pregnancy, the child receives lead from the mother's bones, which may affect brain development. Low levels of lead can affect adults with high blood pressure or kidney problems.

How Copper Gets Into Water

Copper is a mineral and natural component in soils. In the correct amounts, it is an essential nutrient for humans and plants. In Washington State, most copper in drinking water comes from corrosion of household plumbing. Plumbing sources can include copper pipe and brass fixtures. Copper from plumbing corrosion can accumulate overnight.

Potential Health Effects of Copper

Although copper is an essential mineral in the diet, too much copper can cause health problems. Copper is widely distributed within the tissues of the body, but accumulates primarily in the liver and kidneys. A single dose of 15 mg of copper can cause nausea, vomiting, diarrhea, and intestinal cramps. Severe cases of copper poisoning have led to anemia and to disruption of liver and kidney functions. Individuals with Wilson's or Menke's diseases are at higher risk from copper exposure.

How you can reduce exposure:

- When your water has been sitting for several hours, flush the pipe by running the cold-water tap until the water is noticeably colder before using the water for drinking or cooking. **(The longer water has been sitting in the pipes, the more dissolved metals it may contain).**
- Use only cold water for drinking, cooking, and making baby formula. Hot water may contain higher levels of lead or copper.
- Frequently clean the filter screens and aerators in faucets to remove captured particles.
- If building or remodeling, only use "lead free" or low lead piping and materials. Avoid using copper piping or brass fixtures for locations where water will be consumed or used in food preparation (such as kitchen or bathroom sinks).

Mission Creek Corrections Center for Women

Coliform Monitoring Plan for: Mission Creek Corrections Center for Women

A. System Information

Plan Date: June 2023

Water System Name Mission Creek Corrections Center for Women	**County** Mason	**System I.D. Number** 55325Y
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	**Source 01** – Well #1 Capacity: 100 gpm, Depth: 180 ft **Source 03** – Well #3 Capacity: 125 gpm, Depth: 193 ft	
Storage: List and Describe	Standpipe – 225,000 gal	
Treatment: Source Number & Process	None	
Pressure Zones: Number and name	1 - Main Facility Area	
Population by Pressure Zone	120	
Number of Routine Samples Required Monthly by Regulation:		1
Number of Sample Sites Needed to Represent the Distribution System:		7
***Request DOH Approval of Triggered Source Monitoring Plan?**		**Yes** ☐ **No** ☒

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

Emergency Laboratory Name ______	**Office Phone - -** **After Hours Phone - -**
Address ______	**Cell Phone - -** **Email ______**
Hours of Operation ______	
Contact Name ______	

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
We sell groundwater to other public water systems.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		

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****
X1. Main Dorm and Admin	**1-1.**	**S___**
	1-2.	**S___**
	1-3.	**S___**
		S___
		S___
X2. Bear Creek	**2-1.**	**S___**
	2-2.	**S___**
	2-3.	**S___**
		S___
		S___
X3. Gold Creek	**3-1.**	**S___**
	3-2.	**S___**
	3-3.	**S___**
		S___
		S___
X4. Education	**4-1.**	**S___**
	4-2.	**S___**
	4-3.	**S___**
		S___
		S___
X5. Gymnasium	**5-1.**	**S___**
	5-2.	**S___**
	5-3.	**S___**
		S___

X6. Maintenance	**6-1.** **6-2.** **6-3.**	**S___** **S___** **S___** **S___**
X7. Ramirez	**7-1.** **7-2.** **7-3.**	**S___** **S___** **S___** **S___**

**** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.**

Important Notes for Sample Collector:

____

____

____

____

____

____

E. Reduced Triggered Source Monitoring Justification (add sheets as needed):

F. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	Main Dorm and Admin	**July**	Ramirez
February	Bear Creek	**August**	Main Dorm and Admin
March	Gold Creek	**September**	Bear Creek
April	Education	**October**	Gold Creek
May	Gymnasium	**November**	Education
June	Maintenance	**December**	Gymnasium

G. Level 1 and Level 2 Assessment Contact Information

Name	**Office Phone** - - **After Hours Phone** - -
Address	**Email**
Name	**Office Phone** - - **After Hours Phone** - -
Address	**Email**

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. ____
4. ____
5. ____
6. ____
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

E. coli-Present Triggered Source Sample Response Checklist – All Sources

Background Information	**Yes**	**No**	**N/A**	**To Do List**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☐	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☐	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and	☐	☐	☐	☐
If yes, we can eliminate them.	☐	☐	☐	☐
We routinely inspect our well site(s).	☐	☐	☐	☐
We have a good raw water sample tap installed at each source.	☐	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☐	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☐
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☐	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☐	☐	☐	☐

E. coli-Present Triggered Source Sample Response Checklist – Source S__*				
Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☐	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☐	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☐	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☐	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☐	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☐	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

E. coli-Present Triggered Source Sample Response Plan – Source ___

If we have *E. coli* in Source ___ water we will immediately:

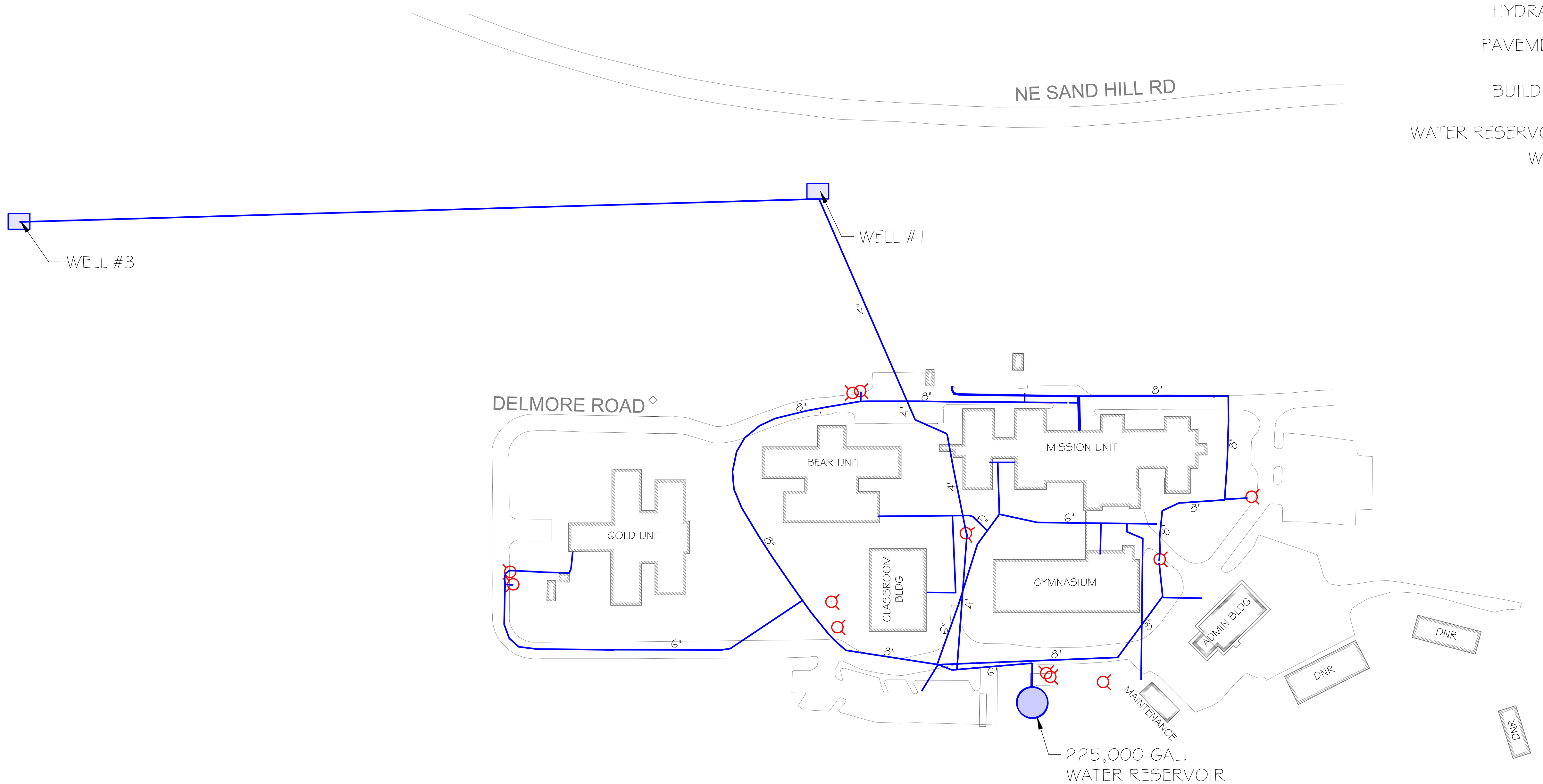
1. Call DOH.
2. ____
3. ____
4. ____
5. ____

I. System Map

PLOTTED: Jul 07, 2023 - 16:41a7p7 PLOTTED BY: kellenm

EXHIBIT B5-3

MISSION CREEK CORRECTIONS CENTER FOR WOMEN - WATER SYSTEM LAYOUT



LEGEND

WATER LINE

HYDRANT

PAVEMENT

BUILDING

WATER RESERVOIR

WELL

0 150 300

SCALE

612 Woodland Square Loop,
Suite 100
Lacey, WA 98503
360.292.7230
www.kpff.com

kpff

PROJ # 10182200055

DRAWN BY: VARIOUS

CHECKED BY: BEE

DATE: 07-06-2023

SCALE: 1" = 150'

DOC WATER SYSTEM PLAN UPDATE

MCCCW WATER SYSTEM LAYOUT

EXHIBIT

B5-3

Lead and Copper Monitoring Plan for: Mission Creek Corrections Center for Women

A. System Information

Plan Date: June 2023

Water System Name Mission Creek Corrections Center for Women	**County** Mason	**System I.D. Number** 55325Y
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Population	120 total residents	
Number of Sample Sites Required:		10

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

C. Sample Sites

Location/Address for **Sample Sites**	
January - June	**July - December**
1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

D. Sample Collection Procedures

1. Prepare to Collect the Sample
The sample must come from a regularly used kitchen or bathroom cold-water faucet.
The object is to get the “first draw” of water that has been sitting stagnant in the pipes for at least 6 hours, but no longer than 12 hours prior to sampling.
To ensure stagnant water conditions exist, the best sampling time is first thing in the morning.
Make sure that cold water is the last water to go through the faucet before the water sits stagnant in the pipes 6-12 hours prior to sampling.
Do not remove the aerator from the faucet before the stagnation time nor before collecting the sample.
2. Prepare to Collect the Sample
Do not run any water immediately prior to collecting the sample.
Make sure the water does not go through a hose, water softener, or any kind of filter before it reached the sample container.
Place the open bottle below the faucet and gently open the cold-water tap.
Fill the sample container to the shoulder of the bottle or the line marked “1,000 ml” and turn the water off.
Cap the bottle lightly.
Label the bottle and place it in the sample kit provided.
3. Complete Lab Form and Sample Label; include the following
Water system name and ID number
System type (group A)
Date and time each sample was collected
Sample location
DOH source number – write in “distribution” to indicate distribution samples
Sample purpose (“RC” for routine compliance)
Sample type (post-treatment)
4. Ship the Samples

E. Distribute Consumer Notice

F. Submit Verification Form to DOH Regional Office.

Community Water System
CONSUMER NOTICE
Lead and Copper Water Sample Results

The Cedar Creek Water System, I.D. 118827, is providing you with the lead and copper test results on the water sample collected at your location. Please share this notice with everyone who uses or drinks the water.

The results at ____

are: **lead ____________ mg/L and copper ___________ mg/L.**

The maximum contaminant level goal (MCLG) is the level of a contaminant in drinking water below which there are no known or expected risks to health. MCLGs allow for a margin of safety. The regulatory limits for lead and copper are called action levels. An exceedance occurs when the concentration of the lead or copper in more than 10 percent of the tap water samples exceeds an action level.

- The MCLG for lead is "0" and the action level is 15 ppb (or .015 mg/L).
- The MCLG and action level for copper is 1,300 ppb (or 1.3 mg/L).

Lead or copper action level exceedances will trigger corrosion control treatment or other requirements. We will notify all water users if our system exceeds the lead action level.

For more information, please contact: ____

(owner or operator)

at (   )   -   or ____

(phone number) (address)

This notice is sent to you by ___________________________ Water System on ___/___/_____

How Lead Gets Into Water

Lead in drinking water most often comes from water distribution lines or household plumbing rather than from the water system source. Plumbing sources can include lead pipes, lead solder, faucets, valves, and other components made of brass. Lead from other sources (such as lead-based paint and contaminated dust or soil) can increase a person's overall exposure, which adds to the effects of lead in water.

Potential Health Effects of Lead

The greatest risk of lead exposure is to infants, young children, and pregnant women. Lead can cause serious health problems if too much enters the body. Lead is stored in the bones and can be released later in life. Lead can cause damage to the brain and kidneys, interfere with production of red blood cells that carry oxygen, and may result in lowered IQ in children. During pregnancy, the child receives lead from the mother's bones, which may affect brain development. Low levels of lead can affect adults with high blood pressure or kidney problems.

How Copper Gets Into Water

Copper is a mineral and natural component in soils. In the correct amounts, it is an essential nutrient for humans and plants. In Washington State, most copper in drinking water comes from corrosion of household plumbing. Plumbing sources can include copper pipe and brass fixtures. Copper from plumbing corrosion can accumulate overnight.

Potential Health Effects of Copper

Although copper is an essential mineral in the diet, too much copper can cause health problems. Copper is widely distributed within the tissues of the body, but accumulates primarily in the liver and kidneys. A single dose of 15 mg of copper can cause nausea, vomiting, diarrhea, and intestinal cramps. Severe cases of copper poisoning have led to anemia and to disruption of liver and kidney functions. Individuals with Wilson's or Menke's diseases are at higher risk from copper exposure.

How you can reduce exposure:

- When your water has been sitting for several hours, flush the pipe by running the cold-water tap until the water is noticeably colder before using the water for drinking or cooking. **(The longer water has been sitting in the pipes, the more dissolved metals it may contain).**
- Use only cold water for drinking, cooking, and making baby formula. Hot water may contain higher levels of lead or copper.
- Frequently clean the filter screens and aerators in faucets to remove captured particles.
- If building or remodeling, only use "lead free" or low lead piping and materials. Avoid using copper piping or brass fixtures for locations where water will be consumed or used in food preparation (such as kitchen or bathroom sinks).

Olympic Corrections Center

Coliform Monitoring Plan for: Olympic Corrections Center

A. System Information

Plan Date: June 2023

Water System Name Olympic Corrections Center	**County** Jefferson	**System I.D. Number** 13560D
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	**Source 01** – Well C #1 ACM523 Capacity: 120 gpm, Depth: 80 ft **Source 02** – Well D #2 ACM549 Capacity: 120 gpm, Depth: 76 ft **Source 03** – Well F #3ACM548 Capacity: 120 gpm, Depth: 60 ft	
Storage: List and Describe	Redwood Reservoir – 375,000 gal Concrete Tank – 300,000 gal	
Treatment: Source Number & Process	Chlorination	
Pressure Zones: Number and name	1 – Olympic Camp 2 – Clearwater Camp	
Population by Pressure Zone	380 Total	
Number of Routine Samples Required Monthly by Regulation:		1
Number of Sample Sites Needed to Represent the Distribution System:		3
***Request DOH Approval of Triggered Source Monitoring Plan?**		**Yes** ☐ **No** ☐

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

Emergency Laboratory Name ______	**Office Phone - -** **After Hours Phone - -**
Address ______	**Cell Phone - -** **Email ______**
Hours of Operation ______	
Contact Name ______	

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
We sell groundwater to other public water systems.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		

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****
X1. Clearwater Restroom	**1-1.** Hoh Restroom	**1-1.** Hoh Restroom
	1-2. Kitchen	**1-2.** Kitchen
	1-3. S01 Sample Tap	**1-3.** S01 Sample Tap
		S1-4. Tanks
		S1-5. S02 Sample Tap
X2. Hoh Restroom	**2-1.** Clearwater Restroom	**2-1.** Clearwater Restroom
(B Tier)	**2-2.** Kitchen	**2-2.** Kitchen
	2-3. S01 Sample Tap	**2-3.** S01 Sample Tap
		S2-4. Tanks
		S2-5. S02 Sample Tap
X3. Kitchen	**3-1.** Hoh Restroom	**3-1.** Hoh Restroom
Handwashing Station	**3-2.** Clearwater Restroom	**3-2.** Clearwater Restroom
	3-3. S01 Sample Tap	**3-3.** S01 Sample Tap
		S3-4. Tanks
		S3-5. S02 Sample Tap

**** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.**

Important Notes for Sample Collector:

E. Reduced Triggered Source Monitoring Justification (add sheets as needed):

F. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	Clearwater Restroom	**July**	Clearwater Restroom
February	Hoh Restroom	**August**	Hoh Restroom
March	Kitchen	**September**	Kitchen
April	Clearwater Restroom	**October**	Clearwater Restroom
May	Hoh Restroom	**November**	Hoh Restroom
June	Kitchen	**December**	Kitchen

G. Level 1 and Level 2 Assessment Contact Information

Name	**Office Phone** - - **After Hours Phone** - -
Address	**Email**
Name	**Office Phone** - - **After Hours Phone** - -
Address	**Email**

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. ____
4. ____
5. ____
6. ____
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

E. coli-Present Triggered Source Sample Response Checklist – All Sources

Background Information	Yes	No	N/A	To Do List
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☐	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☐	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	☐ ☐	☐ ☐	☐ ☐	☐ ☐
We routinely inspect our well site(s).	☐	☐	☐	☐
We have a good raw water sample tap installed at each source.	☐	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☐	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☐
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☐	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☐	☐	☐	☐

E. coli*-Present Triggered Source Sample Response Checklist – Source S__				
Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☐	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☐	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☐	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☐	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☐	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☐	☐	☐

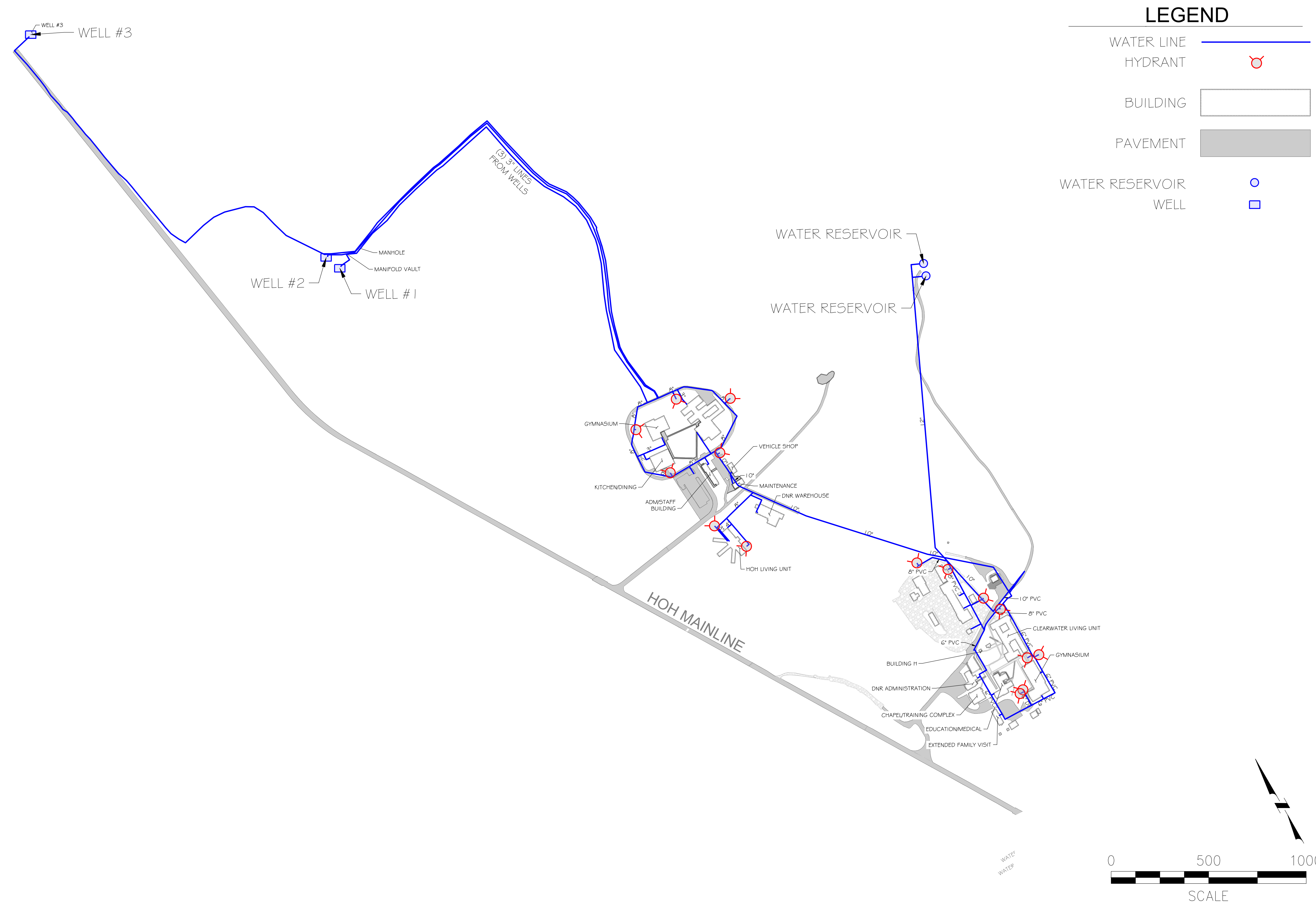
*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

***E. coli*-Present Triggered Source Sample Response Plan – Source ___**
If we have *E. coli* in Source ___ water we will immediately: 1. Call DOH. 2. ______________________________ 3. ______________________________ 4. ______________________________ 5. ______________________________

I. System Map

EXHIBIT B6-3

OLYMPIC CORRECTIONS CENTER - WATER SYSTEM LAYOUT



612 Woodland Square Loop,
Suite 100
Lacey, WA 98503
360.292.7230
www.kpff.com

PROJ # 10182200055
DRAWN BY: VARIOUS
CHECKED BY: BEE
DATE: 07-06-2023
SCALE: 1" = 500'

DOC WATER SYSTEM PLAN UPDATE

OCC WATER SYSTEM LAYOUT

EXHIBIT

B6-3

PLOTTED: Jul 07, 2023 - 17:13a7p7 PLOTTED BY: kellenm

Lead and Copper Monitoring Plan for: Olympic Corrections Center

A. System Information

Plan Date: June 2023

Water System Name Olympic Corrections Center	**County** Jefferson	**System I.D. Number** 13560D
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Population	380	
Number of Sample Sites Required:		10

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

C. Sample Sites

Location/Address for **Sample Sites**	
January - June	**July - December**
1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

D. Sample Collection Procedures

1. Prepare to Collect the Sample
The sample must come from a regularly used kitchen or bathroom cold-water faucet.
The object is to get the "first draw" of water that has been sitting stagnant in the pipes for at least 6 hours, but no longer than 12 hours prior to sampling.
To ensure stagnant water conditions exist, the best sampling time is first thing in the morning.
Make sure that cold water is the last water to go through the faucet before the water sits stagnant in the pipes 6-12 hours prior to sampling.
Do not remove the aerator from the faucet before the stagnation time nor before collecting the sample.
2. Prepare to Collect the Sample
Do not run any water immediately prior to collecting the sample.
Make sure the water does not go through a hose, water softener, or any kind of filter before it reached the sample container.
Place the open bottle below the faucet and gently open the cold-water tap.
Fill the sample container to the shoulder of the bottle or the line marked "1,000 ml" and turn the water off.
Cap the bottle lightly.
Label the bottle and place it in the sample kit provided.
3. Complete Lab Form and Sample Label; include the following
Water system name and ID number
System type (group A)
Date and time each sample was collected
Sample location
DOH source number – write in "distribution" to indicate distribution samples
Sample purpose ("RC" for routine compliance)
Sample type (post-treatment)
4. Ship the Samples

E. Distribute Consumer Notice

F. Submit Verification Form to DOH Regional Office.

Community Water System
CONSUMER NOTICE
Lead and Copper Water Sample Results

The Cedar Creek Water System, I.D. 118827, is providing you with the lead and copper test results on the water sample collected at your location. Please share this notice with everyone who uses or drinks the water.

The results at ____

are: **lead ____________ mg/L and copper ___________ mg/L.**

The maximum contaminant level goal (MCLG) is the level of a contaminant in drinking water below which there are no known or expected risks to health. MCLGs allow for a margin of safety. The regulatory limits for lead and copper are called action levels. An exceedance occurs when the concentration of the lead or copper in more than 10 percent of the tap water samples exceeds an action level.

- The MCLG for lead is “0” and the action level is 15 ppb (or .015 mg/L).
- The MCLG and action level for copper is 1,300 ppb (or 1.3 mg/L).

Lead or copper action level exceedances will trigger corrosion control treatment or other requirements. We will notify all water users if our system exceeds the lead action level.

For more information, please contact: ____
(owner or operator)

at (   )   -   or ____
(phone number) (address)

This notice is sent to you by ____________________________ Water System on ___/___/_____

How Lead Gets Into Water

Lead in drinking water most often comes from water distribution lines or household plumbing rather than from the water system source. Plumbing sources can include lead pipes, lead solder, faucets, valves, and other components made of brass. Lead from other sources (such as lead-based paint and contaminated dust or soil) can increase a person's overall exposure, which adds to the effects of lead in water.

Potential Health Effects of Lead

The greatest risk of lead exposure is to infants, young children, and pregnant women. Lead can cause serious health problems if too much enters the body. Lead is stored in the bones and can be released later in life. Lead can cause damage to the brain and kidneys, interfere with production of red blood cells that carry oxygen, and may result in lowered IQ in children. During pregnancy, the child receives lead from the mother's bones, which may affect brain development. Low levels of lead can affect adults with high blood pressure or kidney problems.

How Copper Gets Into Water

Copper is a mineral and natural component in soils. In the correct amounts, it is an essential nutrient for humans and plants. In Washington State, most copper in drinking water comes from corrosion of household plumbing. Plumbing sources can include copper pipe and brass fixtures. Copper from plumbing corrosion can accumulate overnight.

Potential Health Effects of Copper

Although copper is an essential mineral in the diet, too much copper can cause health problems. Copper is widely distributed within the tissues of the body, but accumulates primarily in the liver and kidneys. A single dose of 15 mg of copper can cause nausea, vomiting, diarrhea, and intestinal cramps. Severe cases of copper poisoning have led to anemia and to disruption of liver and kidney functions. Individuals with Wilson's or Menke's diseases are at higher risk from copper exposure.

How you can reduce exposure:

- When your water has been sitting for several hours, flush the pipe by running the cold-water tap until the water is noticeably colder before using the water for drinking or cooking. **(The longer water has been sitting in the pipes, the more dissolved metals it may contain).**
- Use only cold water for drinking, cooking, and making baby formula. Hot water may contain higher levels of lead or copper.
- Frequently clean the filter screens and aerators in faucets to remove captured particles.
- If building or remodeling, only use "lead free" or low lead piping and materials. Avoid using copper piping or brass fixtures for locations where water will be consumed or used in food preparation (such as kitchen or bathroom sinks).

Washington Corrections Center

Coliform Monitoring Plan for: Washington Corrections Center

A. System Information

Plan Date: June 2023

Water System Name	**County**	**System I.D. Number**
Washington Corrections Center	Mason	93063K
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	**Source 02** – Well #2 Capacity: 320 gpm, Depth: 46 ft **Source 03** – Well #3 Capacity: 144 gpm, Depth: 184 ft **Source 04** – Well #4 Capacity: 640 gpm, Depth: 56 ft	
Storage: List and Describe	Steel Tank 1 – 300,000 gal Steel Tank 2 – 500,000 gal	
Treatment: Source Number & Process	Chlorination & Soda Ash	
Pressure Zones: Number and name	1 – Main Facility Area	
Population by Pressure Zone	1800	
Number of Routine Samples Required Monthly by Regulation:	2	
Number of Sample Sites Needed to Represent the Distribution System:	4	
***Request DOH Approval of Triggered Source Monitoring Plan?**	**Yes** ☐ **No** ☒	

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

Emergency Laboratory Name ______	**Office Phone - -** **After Hours Phone - -**
Address ______	**Cell Phone - -** **Email ______**
Hours of Operation ______	
Contact Name ______	

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
We sell groundwater to other public water systems.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		

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****
X1. Motorpool - Restroom Sink	**1-1.** Motorpool - Restroom Sink	**1-1.** Motorpool - Restroom Sink
	1-2. Reargate Shack - Restroom Sink	**1-2.** Reargate Shack - Restroom Sink
	1-3. Warehouse - Restroom Sink	**1-3.** Warehouse - Restroom Sink
		S1-4. Steam Plant - Sample Tap
X2. "A" Building – Staff Breakroom Sink	**2-1.** "A" Building – Staff Breakroom Sink	**2-1.** "A" Building – Staff Breakroom Sink
	2-2. Armory/Training Building	**2-2.** Armory/Training Building
	2-3. "B" Building – Staff Restroom Sink	**2-3.** "B" Building – Staff Restroom Sink
		S2-4. Steam Plant – Sample Tap
X3. R-6 – Staff Restroom Sink	**3-1.** R-6 – Staff Restroom Sink	**3-1.** R-6 – Staff Restroom Sink
	3-2. Evergreen Hall – Staff Restroom Sink	**3-2.** Evergreen Hall – Staff Restroom Sink
	3-3. R-5 – Staff Restroom Sink	**3-3.** R-5 – Staff Restroom Sink
		S3-4. Steam Plant – Sample Tap
X4. "G" Building Plumbing Shop – Hand Sink	**4-1. "**G" Building Plumbing Shop – Hand Sink	**4-1. "**G" Building Plumbing Shop – Hand Sink
	4-2. Greenhouse – Utility Sink	**4-2.** Greenhouse – Utility Sink
	4-3. Education Building – Officer Restroom Sink	**4-3.** Education Building – Officer Restroom Sink
		S4-4. Steam Plant – Sample Tap

**** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.**

Important Notes for Sample Collector:

Reduced Triggered Source Monitoring Justification (add sheets as needed):

E. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	Motorpool	**July**	R-6
February	"A" Building	**August**	"G" Building Plumbing Shop
March	R-6	**September**	Motorpool
April	"G" Building Plumbing Shop	**October**	"A" Building
May	Motorpool	**November**	R-6
June	"A" Building	**December**	"G" Building Plumbing Shop

F. Level 1 and Level 2 Assessment Contact Information

Name	**Office Phone - -** **After Hours Phone - -**
Address	**Email**
Name	**Office Phone - -** **After Hours Phone - -**
Address	**Email**

G. *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. ____
4. ____
5. ____
6. ____
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

E. coli-Present Triggered Source Sample Response Checklist – All Sources

Background Information	**Yes**	**No**	**N/A**	**To Do List**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☐	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☐	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	☐ ☐	☐ ☐	☐ ☐	☐ ☐
We routinely inspect our well site(s).	☐	☐	☐	☐
We have a good raw water sample tap installed at each source.	☐	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☐	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☐
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☐	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☐	☐	☐	☐

E. coli-Present Triggered Source Sample Response Checklist – Source S__*				
Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☐	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☐	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☐	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☐	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☐	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☐	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

E. coli-Present Triggered Source Sample Response Plan – Source ___

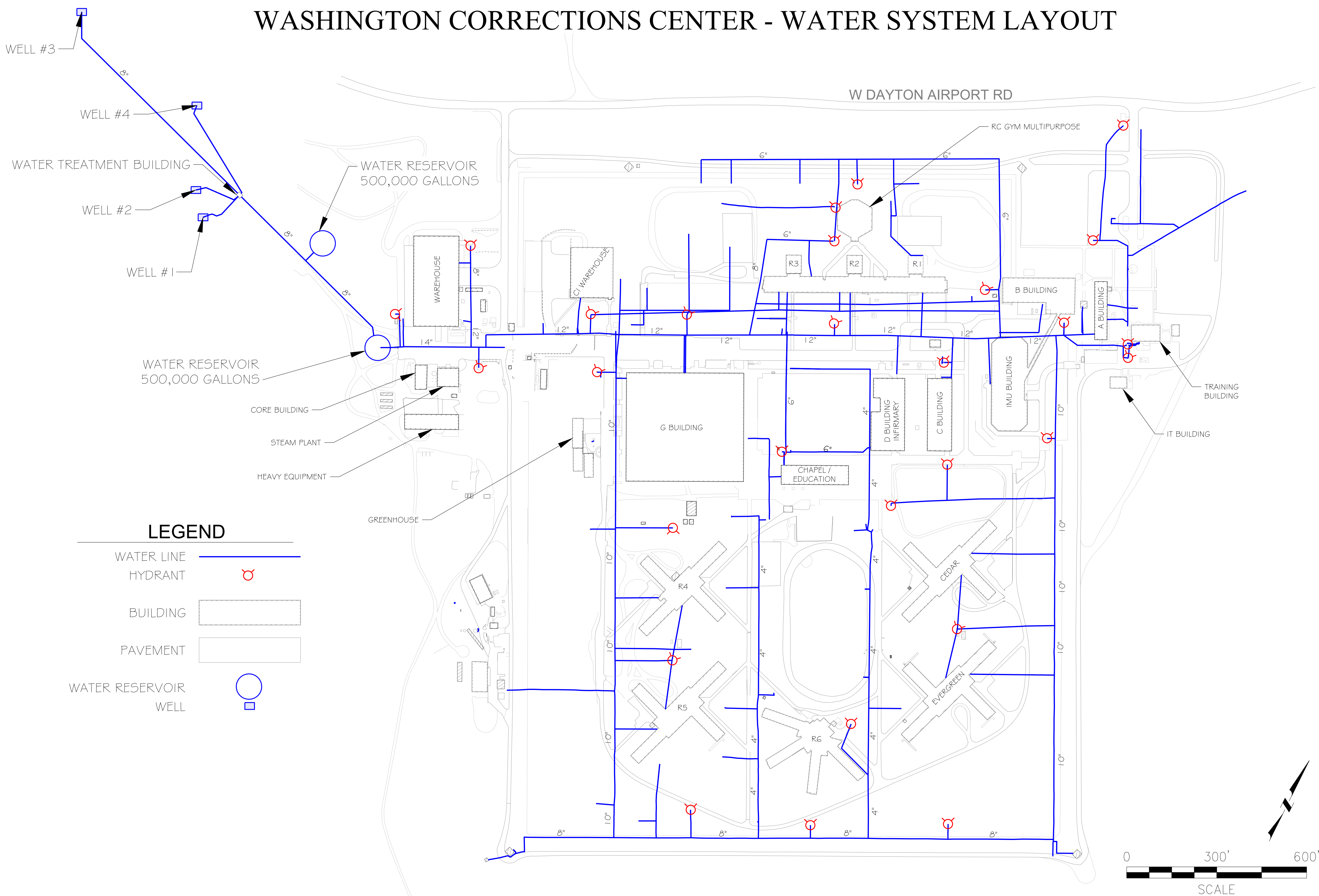
If we have *E. coli* in Source ___ water we will immediately:

1. Call DOH.
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________

H. System Map

EXHIBIT B7-3

WASHINGTON CORRECTIONS CENTER - WATER SYSTEM LAYOUT



612 Woodland Square Loop,
Suite 100
Lacey, WA 98503
360.292.7230
www.kpff.com

PROJ # 10182200055
DRAWN BY: VARIOUS
CHECKED BY: BEE
DATE: 07-06-2023
SCALE: 1" = 300'

DOC WATER SYSTEM PLAN UPDATE

WCC WATER SYSTEM LAYOUT

EXHIBIT

B7-3

Lead and Copper Monitoring Plan for: Washington Corrections Center

A. System Information

Plan Date: June 2023

Water System Name Washington Corrections Center	**County** Mason	**System I.D. Number** 93063K
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Population	1800	
Number of Sample Sites Required:		20

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

C. Sample Sites

Location/Address for **Sample Sites**	
January - June	**July - December**
1.	21.
2.	22.
3.	23.
4.	24.
5.	25.
6.	26.
7.	27.
8.	28.
9.	29.
10.	30.
11.	31.
12.	32.
13.	33.
14.	34.
15.	35.
16.	36.
17.	37.
18.	38.
19.	39.
20.	40.

D. Sample Collection Procedures

1. Prepare to Collect the Sample
The sample must come from a regularly used kitchen or bathroom cold-water faucet.
The object is to get the “first draw” of water that has been sitting stagnant in the pipes for at least 6 hours, but no longer than 12 hours prior to sampling.
To ensure stagnant water conditions exist, the best sampling time is first thing in the morning.
Make sure that cold water is the last water to go through the faucet before the water sits stagnant in the pipes 6-12 hours prior to sampling.
Do not remove the aerator from the faucet before the stagnation time nor before collecting the sample.
2. Prepare to Collect the Sample
Do not run any water immediately prior to collecting the sample.
Make sure the water does not go through a hose, water softener, or any kind of filter before it reached the sample container.
Place the open bottle below the faucet and gently open the cold-water tap.
Fill the sample container to the shoulder of the bottle or the line marked “1,000 ml” and turn the water off.
Cap the bottle lightly.
Label the bottle and place it in the sample kit provided.
3. Complete Lab Form and Sample Label; include the following
Water system name and ID number
System type (group A)
Date and time each sample was collected
Sample location
DOH source number – write in “distribution” to indicate distribution samples
Sample purpose (“RC” for routine compliance)
Sample type (post-treatment)
4. Ship the Samples

E. Distribute Consumer Notice

F. Submit Verification Form to DOH Regional Office.

Community Water System
CONSUMER NOTICE
Lead and Copper Water Sample Results

The Cedar Creek Water System, I.D. 118827, is providing you with the lead and copper test results on the water sample collected at your location. Please share this notice with everyone who uses or drinks the water.

The results at ____

are: **lead ____________ mg/L and copper ___________ mg/L.**

The maximum contaminant level goal (MCLG) is the level of a contaminant in drinking water below which there are no known or expected risks to health. MCLGs allow for a margin of safety. The regulatory limits for lead and copper are called action levels. An exceedance occurs when the concentration of the lead or copper in more than 10 percent of the tap water samples exceeds an action level.

- The MCLG for lead is "0" and the action level is 15 ppb (or .015 mg/L).
- The MCLG and action level for copper is 1,300 ppb (or 1.3 mg/L).

Lead or copper action level exceedances will trigger corrosion control treatment or other requirements. We will notify all water users if our system exceeds the lead action level.

For more information, please contact: ____
(owner or operator)

at (   )   -   or ____
(phone number)   (address)

This notice is sent to you by ___________________________ Water System on ___/___/_____

How Lead Gets Into Water

Lead in drinking water most often comes from water distribution lines or household plumbing rather than from the water system source. Plumbing sources can include lead pipes, lead solder, faucets, valves, and other components made of brass. Lead from other sources (such as lead-based paint and contaminated dust or soil) can increase a person's overall exposure, which adds to the effects of lead in water.

Potential Health Effects of Lead

The greatest risk of lead exposure is to infants, young children, and pregnant women. Lead can cause serious health problems if too much enters the body. Lead is stored in the bones and can be released later in life. Lead can cause damage to the brain and kidneys, interfere with production of red blood cells that carry oxygen, and may result in lowered IQ in children. During pregnancy, the child receives lead from the mother's bones, which may affect brain development. Low levels of lead can affect adults with high blood pressure or kidney problems.

How Copper Gets Into Water

Copper is a mineral and natural component in soils. In the correct amounts, it is an essential nutrient for humans and plants. In Washington State, most copper in drinking water comes from corrosion of household plumbing. Plumbing sources can include copper pipe and brass fixtures. Copper from plumbing corrosion can accumulate overnight.

Potential Health Effects of Copper

Although copper is an essential mineral in the diet, too much copper can cause health problems. Copper is widely distributed within the tissues of the body, but accumulates primarily in the liver and kidneys. A single dose of 15 mg of copper can cause nausea, vomiting, diarrhea, and intestinal cramps. Severe cases of copper poisoning have led to anemia and to disruption of liver and kidney functions. Individuals with Wilson's or Menke's diseases are at higher risk from copper exposure.

How you can reduce exposure:

- When your water has been sitting for several hours, flush the pipe by running the cold-water tap until the water is noticeably colder before using the water for drinking or cooking. **(The longer water has been sitting in the pipes, the more dissolved metals it may contain).**
- Use only cold water for drinking, cooking, and making baby formula. Hot water may contain higher levels of lead or copper.
- Frequently clean the filter screens and aerators in faucets to remove captured particles.
- If building or remodeling, only use "lead free" or low lead piping and materials. Avoid using copper piping or brass fixtures for locations where water will be consumed or used in food preparation (such as kitchen or bathroom sinks).

Washington Corrections Center for Women

Coliform Monitoring Plan for: Washington Corrections Center for Women

A. System Information

Plan Date: June 2023

Water System Name Washington Corrections Center for Women	**County** Pierce	**System I.D. Number** 69945J
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	Well No. 1, 350 feet, 18 gpm Intertie – City of Gig Harbor, 56 gpm	
Storage: List and Describe	300,000 gal tank	
Treatment: Source Number & Process	Chlorination	
Pressure Zones: Number and name	1 – Main Facility	
Population by Pressure Zone	800	
Number of Routine Samples Required Monthly by Regulation:		1
Number of Sample Sites Needed to Represent the Distribution System:		3
***Request DOH Approval of Triggered Source Monitoring Plan?**		**Yes** ☐ **No** ☐

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	
Emergency Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	

Contact Name
______

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	☒	☐
If yes, Water System Name: **City of Gig Harbor** Contact Name: Telephone Numbers Office **- -** After Hours **- -**		
We sell groundwater to other public water systems.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office **- -** After Hours **- -**		

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****
X1. Z-Building – Staff Restroom	**1-1.**	**S___**
	1-2.	**S___**
	1-3.	**S___**
		S___
		S___
X2. MSU – Staff Restroom	**2-1.**	**S___**
	2-2.	**S___**
	2-3.	**S___**
		S___
		S___
X3. Education Building – Staff Restroom	**3-1.**	**S___**
	3-2.	**S___**
	3-3.	**S___**
		S___
		S___

*NOTE: If you need more than three routine samples to cover the distribution system, attach additional sheets as needed.

**** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.**

Important Notes for Sample Collector:

____

____

____

____

____

____

E. Reduced Triggered Source Monitoring Justification (add sheets as needed):

F. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	Z- Building	**July**	Z- Building
February	MSU	**August**	MSU
March	Education Building	**September**	Education Building
April	Z- Building	**October**	Z- Building
May	MSU	**November**	MSU
June	Education Building	**December**	Education Building

G. Level 1 and Level 2 Assessment Contact Information

Name	**Office Phone - -** **After Hours Phone - -**
Address	**Email**
Name	**Office Phone - -** **After Hours Phone - -**
Address	**Email**

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. ____
4. ____
5. ____
6. ____
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

***E. coli*-Present Triggered Source Sample Response Checklist – All Sources**				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☐	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☐	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	☐ ☐	☐ ☐	☐ ☐	☐ ☐
We routinely inspect our well site(s).	☐	☐	☐	☐
We have a good raw water sample tap installed at each source.	☐	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☐	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☐
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☐	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☐	☐	☐	☐

E. coli-Present Triggered Source Sample Response Checklist – Source S__*				
Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☐	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☐	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☐	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☐	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☐	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☐	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

E. coli-Present Triggered Source Sample Response Plan – Source ___

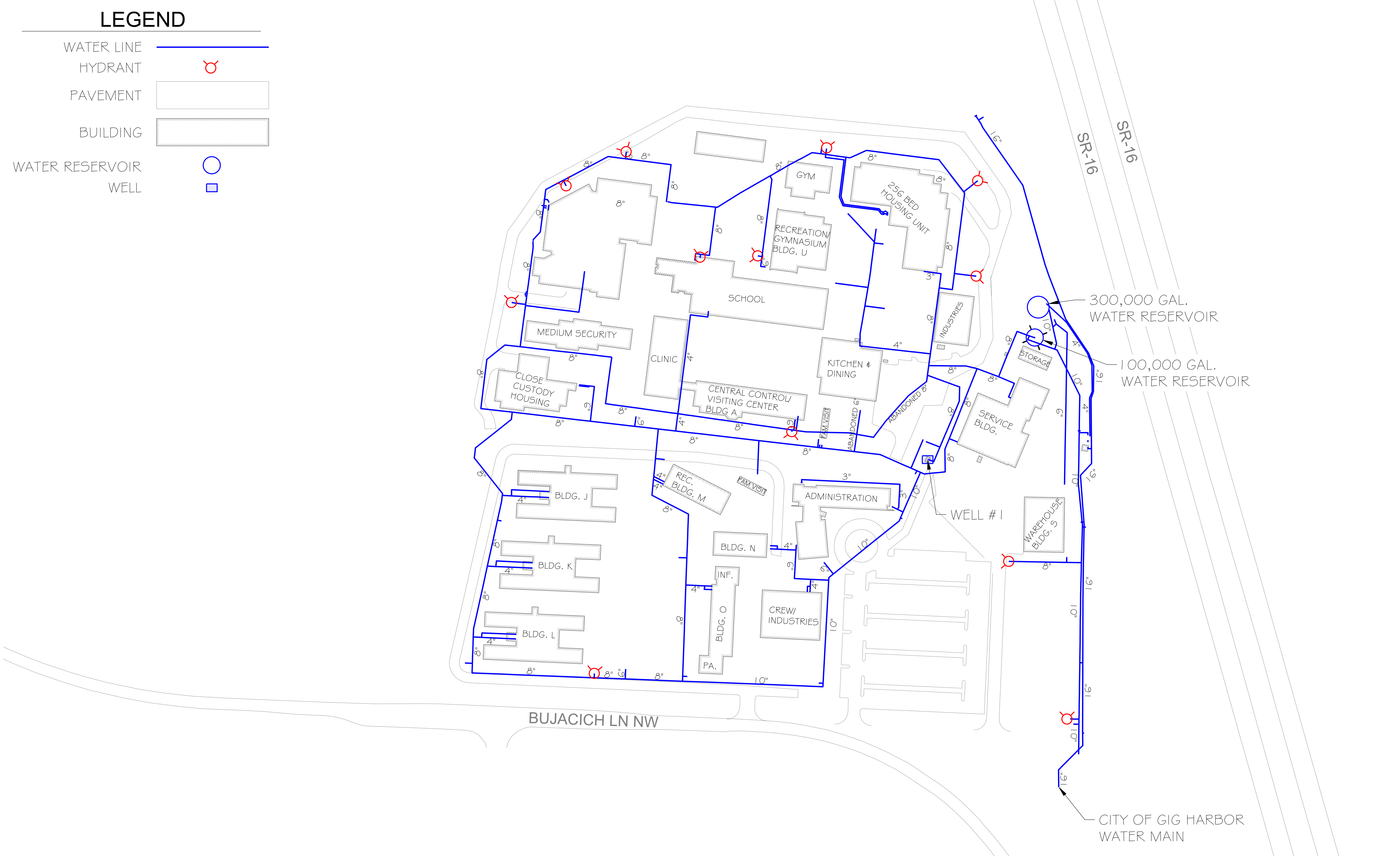
If we have *E. coli* in Source ___ water we will immediately:

1. Call DOH.
2. ____
3. ____
4. ____
5. ____

I. System Map

EXHIBIT B8-3

WASHINGTON CORRECTIONS CENTER FOR WOMEN - WATER SYSTEM LAYOUT



612 Woodland Square Loop, Suite 100
Lacey, WA 98503
360.292.7230
www.kpff.com

PROJ # 101822000055
DRAWN BY: VARIOUS
CHECKED BY: BEE
DATE: 07-06-2023
SCALE: 1" = 200'

DOC WATER SYSTEM PLAN UPDATE

WCCW WATER SYSTEM LAYOUT

EXHIBIT

B8-3

Lead and Copper Monitoring Plan for: Washington Corrections Center for Women

A. System Information

Plan Date: June 2023

Water System Name	**County**	**System I.D. Number**
Washington Corrections Center for Women	Pierce	69945J
Name of Plan Preparer	**Position**	**Daytime Phone** - -
Population	800	
Number of Sample Sites Required:		20

B. Laboratory Information

Laboratory Name ______	**Office Phone** - - **After Hours Phone** - -
Address ______	**Cell Phone** - - **Email** ______
Hours of Operation ______	
Contact Name ______	

C. Sample Sites

Location/Address for **Sample Sites**	
January - June	**July - December**
1.	21.
2.	22.
3.	23.
4.	24.
5.	25.
6.	26.
7.	27.
8.	28.
9.	29.
10.	30.
11.	31.
12.	32.
13.	33.
14.	34.
15.	35.
16.	36.
17.	37.
18.	38.
19.	39.
20.	40.

D. Sample Collection Procedures

1. Prepare to Collect the Sample
The sample must come from a regularly used kitchen or bathroom cold-water faucet.
The object is to get the "first draw" of water that has been sitting stagnant in the pipes for at least 6 hours, but no longer than 12 hours prior to sampling.
To ensure stagnant water conditions exist, the best sampling time is first thing in the morning.
Make sure that cold water is the last water to go through the faucet before the water sits stagnant in the pipes 6-12 hours prior to sampling.
Do not remove the aerator from the faucet before the stagnation time nor before collecting the sample.
2. Prepare to Collect the Sample
Do not run any water immediately prior to collecting the sample.
Make sure the water does not go through a hose, water softener, or any kind of filter before it reached the sample container.
Place the open bottle below the faucet and gently open the cold-water tap.
Fill the sample container to the shoulder of the bottle or the line marked "1,000 ml" and turn the water off.
Cap the bottle lightly.
Label the bottle and place it in the sample kit provided.
3. Complete Lab Form and Sample Label; include the following
Water system name and ID number
System type (group A)
Date and time each sample was collected
Sample location
DOH source number – write in "distribution" to indicate distribution samples
Sample purpose ("RC" for routine compliance)
Sample type (post-treatment)
4. Ship the Samples

E. Distribute Consumer Notice

F. Submit Verification Form to DOH Regional Office.

Community Water System
CONSUMER NOTICE
Lead and Copper Water Sample Results

The Cedar Creek Water System, I.D. 118827, is providing you with the lead and copper test results on the water sample collected at your location. Please share this notice with everyone who uses or drinks the water.

The results at ____

are: **lead ____________ mg/L and copper ___________ mg/L.**

The maximum contaminant level goal (MCLG) is the level of a contaminant in drinking water below which there are no known or expected risks to health. MCLGs allow for a margin of safety. The regulatory limits for lead and copper are called action levels. An exceedance occurs when the concentration of the lead or copper in more than 10 percent of the tap water samples exceeds an action level.

- The MCLG for lead is “0” and the action level is 15 ppb (or .015 mg/L).
- The MCLG and action level for copper is 1,300 ppb (or 1.3 mg/L).

Lead or copper action level exceedances will trigger corrosion control treatment or other requirements. We will notify all water users if our system exceeds the lead action level.

For more information, please contact: ____
(owner or operator)

at (   )   -   or ____
(phone number)   (address)

This notice is sent to you by ____________________________ Water System on ___/___/_____

How Lead Gets Into Water

Lead in drinking water most often comes from water distribution lines or household plumbing rather than from the water system source. Plumbing sources can include lead pipes, lead solder, faucets, valves, and other components made of brass. Lead from other sources (such as lead-based paint and contaminated dust or soil) can increase a person's overall exposure, which adds to the effects of lead in water.

Potential Health Effects of Lead

The greatest risk of lead exposure is to infants, young children, and pregnant women. Lead can cause serious health problems if too much enters the body. Lead is stored in the bones and can be released later in life. Lead can cause damage to the brain and kidneys, interfere with production of red blood cells that carry oxygen, and may result in lowered IQ in children. During pregnancy, the child receives lead from the mother's bones, which may affect brain development. Low levels of lead can affect adults with high blood pressure or kidney problems.

How Copper Gets Into Water

Copper is a mineral and natural component in soils. In the correct amounts, it is an essential nutrient for humans and plants. In Washington State, most copper in drinking water comes from corrosion of household plumbing. Plumbing sources can include copper pipe and brass fixtures. Copper from plumbing corrosion can accumulate overnight.

Potential Health Effects of Copper

Although copper is an essential mineral in the diet, too much copper can cause health problems. Copper is widely distributed within the tissues of the body, but accumulates primarily in the liver and kidneys. A single dose of 15 mg of copper can cause nausea, vomiting, diarrhea, and intestinal cramps. Severe cases of copper poisoning have led to anemia and to disruption of liver and kidney functions. Individuals with Wilson's or Menke's diseases are at higher risk from copper exposure.

How you can reduce exposure:

- When your water has been sitting for several hours, flush the pipe by running the cold-water tap until the water is noticeably colder before using the water for drinking or cooking. **(The longer water has been sitting in the pipes, the more dissolved metals it may contain).**
- Use only cold water for drinking, cooking, and making baby formula. Hot water may contain higher levels of lead or copper.
- Frequently clean the filter screens and aerators in faucets to remove captured particles.
- If building or remodeling, only use "lead free" or low lead piping and materials. Avoid using copper piping or brass fixtures for locations where water will be consumed or used in food preparation (such as kitchen or bathroom sinks).

APPENDIX C7

Source Protection Programs

Cedar Creek Corrections Center

STATE OF WASHINGTON
DEPARTMENT OF CORRECTIONS
CEDAR CREEK CORRECTIONS CENTER

THURSTON COUNTY **WASHINGTON**

PROJECT No. 98-380

WELLHEAD PROTECTION PLAN

KARL W. JOHNSON
STATE OF WASHINGTON
29986
REGISTERED
PROFESSIONAL ENGINEER

9-30-99

EXPIRES: 2-14-2000

G & O #97754.61
SEPTEMBER 1999

Gray & Osborne, Inc.
CONSULTING ENGINEERS
701 DEXTER AVENUE NORTH SUITE 200
SEATTLE, WASHINGTON 98109 • (206) 284-0860

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CHAPTER 1

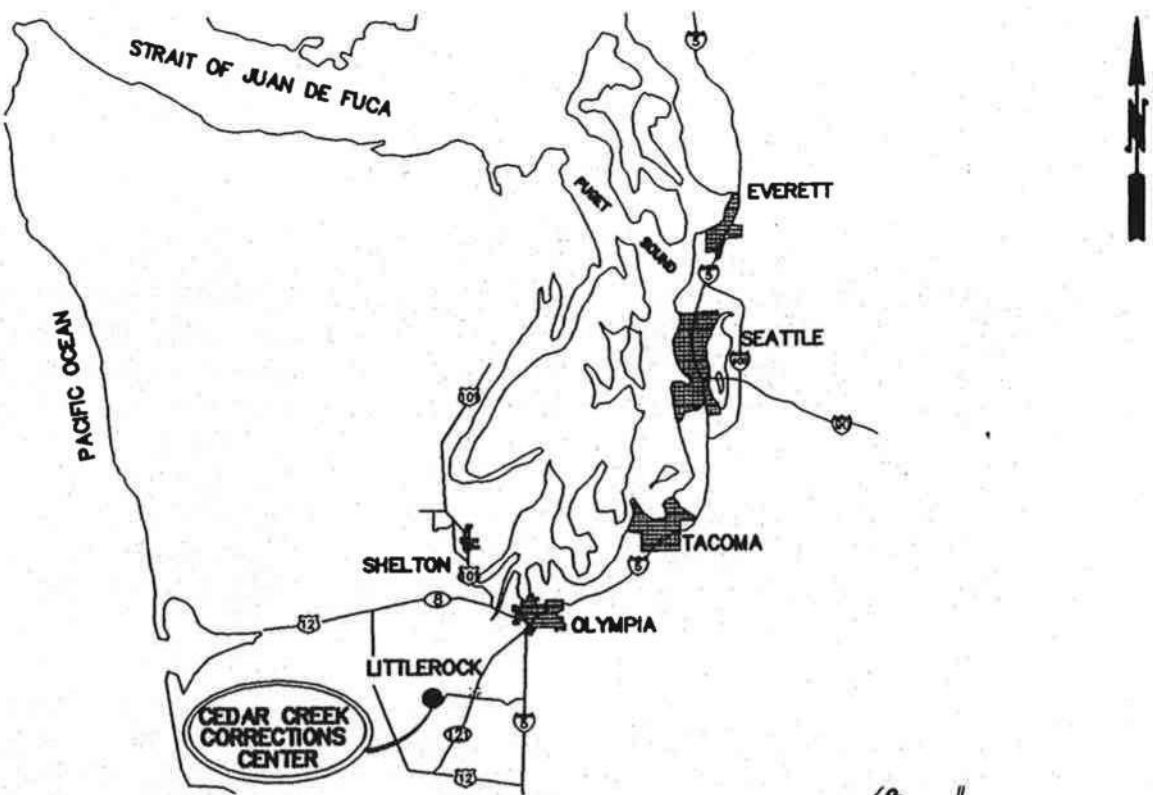
INTRODUCTION

Gray & Osborne, Inc. was retained by the Washington State Department of Corrections to prepare a Wellhead Protection Plan (WHPP) for the Cedar Creek Corrections Center (CCCC). The CCCC is a minimum security facility located in Southwest Thurston County approximately 16 miles from Southwest Olympia, 7 miles west of the unincorporated community of Littlerock and 2½ miles North of the unincorporated community of Gate as shown in Figure 1. The facility is entirely within the Capitol Forest which is owned by the State of Washington and managed by the Washington State Department of Natural Resources (DNR). CCCC is located on property leased from DNR.
The Cedar Creek Correction Center (CCCC) relies on a well water source for its domestic supply. To protect groundwater supplies, the Environmental Protection Agency (EPA) and the Department of Health (DOH) now require public water utilities to develop WHPPs.

Water from underground aquifers, commonly referred to as groundwater, forms the primary source of drinking water for an estimated 65 percent of Washington state residents. The purpose of a WHPP is to provide local utilities with a pro-active program for preventing groundwater contamination. The major components of the plan are described below and form the basis of the following chapter.

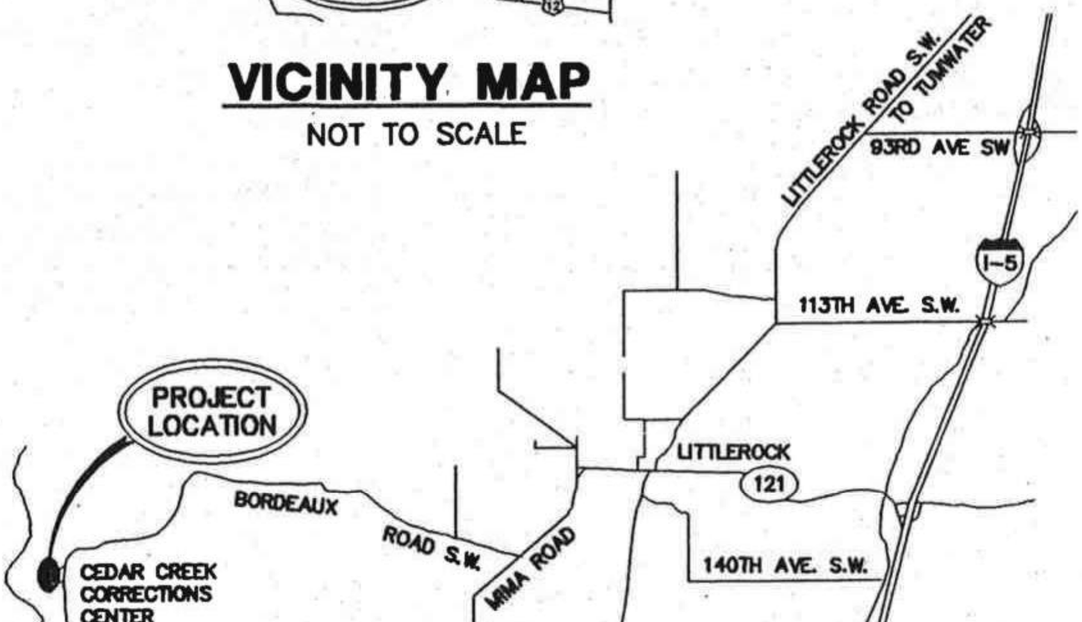
- A *Susceptibility Assessment* determining the susceptibility to contamination.
- A *delineated wellhead protection area (WHPA)*, for each well indicating the 6 month, 1 year, 5 year and 10 year time of travel zones to each well based on all reasonably available hydrogeologic information, including the Susceptibility Assessment.
- An *inventory* within each WHPA of potential sources of contamination (potential sources of contamination).
- Documentation of the purveyor's *notification to all owners and operators of actual or potential sources of groundwater contamination* within each WHPA.
- Documentation of the purveyor's *notification to regulatory agencies* regarding the location and dimensions of the WHPA and the inventory of the potential sources of contamination within the WHPA.
- A *spill response plan* for each WHPA containing documentation for coordination with local first responders.
- *Contingency plans* for providing alternate sources of drinking water in the event that contamination does occur and management recommendations to reduce the likelihood that potential contaminant sources will pollute the drinking water supply.

FILENAME: M:\WSDOC\9573006\FIG-1.DWG OPERATOR: RONM CREATED: MAR 03 1995 10:11:14 UPDATED: MAR 10 1995 06:41:44 PLOTTED: FEB 16 1996 09:04:57



VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE

W. S. D. O. C.

FIGURE 1

CEDAR CREEK CORECTION CENTER

VICINITY & LOCATION MAP

Gray & Osborne, Inc.

CONSULTING ENGINEERS

FACILITY DESCRIPTION

The Cedar Creek Corrections Center Water System, Washington State Department of Health (DOH) ID #118827, is owned and operated by the Washington State Department of Corrections (DOC) and provides water service solely to the CCCC. The population of the CCCC is approximately 384 inmates and 114 staff. Staff, including DOC and DNR staff are generally on site for 8 hour shifts.

CCCC is supplied by two groundwater sources. There are two wells located on the CCCC site. Well #1 was drilled in 1986 by Dale McGhee & Sons Well Drilling, Inc. out of Kelso to a finished depth of 200 feet. The first 74 feet is in unconsolidated materials and the last 126 feet is in rock. It is cased with an 8 inch welded steel casing to a depth of approximately 60 feet, below which the well is an open hole. There is no well screen. The water well report indicates the well had a static water level of 13' 4" below ground level at the time the well was drilled and was pump tested at 70 gpm with 64' 7" of drawdown after 24 hours. Well #2 was drilled in 1993 also to a finished depth of 200 feet, the first 75 feet of which is unconsolidated material and the last 125 feet of which is rock. It is cased with an 8 inch welded steel casing to a depth of 80 feet, below which the well is an open hole. Well #2 also has no well screen. The water well report indicates the well had a static water level of 54' below ground level at the time the well was drilled and was pump tested at 60 gpm with 81' of drawdown after 24 hours. Each well is capable of producing approximately 50 gpm as presently equipped.

The water right for Well #1 allows it to be pumped up to 70 gpm and 29.5 AF/Y. The water right for Well #2 allows it to be pumped up to 60 gpm and 76 AF/Y, 46.5 AF/Y of which is primary right and 29.5 AF/Y of which is supplemental to the water right for Well #1. The combined annual water right for the two wells is 76 AF/Y. In the year from August 1, 1998 through July 31, 1999 the total water use was 66 AF/Y.

The output of the two wells is chlorinated and pumped directly to a 16,000 gallon reservoir, which is connected to a 42,000 gallon reservoir. The water is pumped again to a higher level reservoir of 115,000 gallon capacity. From the higher level reservoir water then gravity feeds the water distribution system. Table 1 is a summary of major water system components.

TABLE 1
Major Water System Components at CCCC

Source Water Components	Well #1	Well #2
Well Status	In Use	In Use
Well Capacity (gpm)	30 - 50	50
Well Logs Available	Yes	Yes
Well Pump Type	Submersible	Submersible
Pump Horsepower	2 pumps, 3 hp each	5 hp
Average Daily Hours of Operation	9.8 hours	9.8 hours
Drawdown Information Available	Yes	Yes
Emergency or Backup Power	Generator with automatic transfer switch	

Reservoir Components	Reservoir #1	Reservoir #2	Reservoir #3
Capacity, gallons (173,000 total)	16,000	42,000	115,000
Year Built	~ 1965	~ 1965	1992
Material	Concrete	Concrete	Concrete

SUSCEPTIBILITY ASSESSMENT

A susceptibility assessment for the CCCC wells was completed and submitted to the Department of Health in 1994. A copy of this susceptibility assessment is included in the appendix. Susceptibility assessments are an important initial step in selecting appropriate delineation methods to define the WHPA boundaries. Drinking water supplies vary in their susceptibility to contaminants discharged at the surface. Wells that have been poorly constructed or have been improperly cased have an increased susceptibility. Additionally, sources located in an unconfined aquifer with no confining layer (layer of low permeability) between the aquifer and surface have a much higher susceptibility than those drawing water from confined aquifers deep below the ground surface.

After review of the susceptibility assessment, the CCCC wells were given a low susceptibility rating by the Department of Health. A copy of the susceptibility rating is also included in the appendix.

CHAPTER 2

WELLHEAD PROTECTION AREA DELINEATION

The first step in developing a WHPP is to establish the land areas around each well from which ground water may be flowing to the well. These are areas from which pollutants, if they reached the groundwater, could get to the well and are referred to as zones of contribution (ZOCs). ZOCs require proper land use management to minimize the possibility of contaminants entering the groundwater system.

A WHPA is an area in which special attention is focused on prevention of groundwater contamination. Activities which could cause groundwater contamination are not strictly prohibited in the WHPA, but they are discouraged and, if permitted, are closely monitored. This is to be differentiated from the sanitary control area. The sanitary control area is the area within 100 feet from the well, unless a different size area has been approved by DOH. In the sanitary control area, no sources of contamination are allowed without approval of the water purveyor and DOH. A WHPA is generally larger than a sanitary control area. The size varies depending on the aquifer characteristics and water use rates. A WHPA is also less restrictive than a sanitary control area.

The WHPA is generally divided into 4 ZOCs. These are based on estimated time of travel to the well. ZOCs commonly used are 6 month, 1 year, 5 year and 10 year time of travel zones. The purpose of dividing the area into ZOCs is to give a graphical representation of the likely travel time of any contaminant from a contamination site to the public water supply well and to establish appropriate types of land use controls within various zones. For example one might want to restrict spreading of raw manure within the 6 month time of travel ZOC because any pathogens which could be in the manure could potentially live up to 6 months in the environment and thereby reach the well. However in the 5 to 10 year time of travel ZOC it is unlikely that any pathogens would survive long enough to reach the well, so manure spreading in this ZOC might not be as much of a concern to the water system so long as application rates are managed so as not to create other groundwater contamination problems.

METHODS OF DELINEATION

Estimation of groundwater flow direction and velocity is a very complicated science. So long as water is flowing through an aquifer of uniform porous media and infinite extent in all directions with no other water withdrawals or inputs then it is fairly simple to estimate the flow. But in the real world, groundwater flows through media which is not uniform, is quite limited in extent in various directions, and is generally poorly defined. Often there are no more than a few wells in the vicinity on which to base estimates as to the makeup of the aquifer and little of no information on water table levels in the area. To obtain such information requires surveying, test drilling and water level monitoring over time. The more test wells that can be drilled and monitored, the better an estimate of groundwater flow that can be obtained.

The degree of sophistication used for an estimate of the WHPA for a given water system will depend on several factors. These include:

a) The complexity of the geology in the vicinity of the water supply well.
b) The degree of threat posed by local land use activities in the vicinity of the water supply well.
c) The degree to which there is a need to focus groundwater protection resources to the specific areas of concern.
d) The financial capabilities of the water utility.

The most commonly accepted tools for delineating wellhead protection zones are the calculated fixed radius method, analytical models, and numerical models. These methods are discussed below.

Calculated Fixed Radius Method

The simplest groundwater model is the Calculated Fixed Radius (CFR) method. This is the estimate based on the assumption that the aquifer is uniform and infinite and has no other withdrawals. In this method, ZOCs are delineated by concentric areas around each well, usually several hundred feet in radius. In the Calculated Fixed Radius method, the delineation is calculated based on pumping data and known or assumed aquifer characteristics. If there is no need to closely delineate the WHPA, or if the aquifer is nearly uniform with few other withdrawals in the area, or if the utility has a minimal amount of money to spend on WHPA designation, then the CFR method would be appropriate.

Analytical Models

The analytical model requires the incorporation of basic hydrological information and certain physical characteristics of the aquifer and source. The most common analytical model is the CFR with a groundwater flow superimposed on it. The result is elliptical or pie-shaped WHPAs, depending on the groundwater flow rate relative to the well pumping rate. Major assumptions and simplifications to the hydrogeologic regime occur in analytical modeling, but the incorporation of the hydraulic gradient and hydrogeologic boundaries allows for a more realistic representation of the ground water flow regime than in the calculated fixed radius method. The analytical model is appropriate when there is a need to somewhat more clearly define the WHPA, especially when there is reason to believe that the groundwater may have a substantial natural flow, when there is existing background information on the geology in the area and where there is a need to better focus wellhead protection activities where they are needed. Costs are somewhat higher than for a CFR method, but not so high as numerical methods.

Numeric Method

The Numeric method requires significantly more data. In numeric modeling, a grid is superimposed over the study area. Each square in the grid, called a cell, is characterized by physical parameters which are estimated from data collected from a variety of sources. The sources may include well logs, borings, geologic and hydrogeologic maps, geophysical data, groundwater elevation data, stream flow discharge and meteorological data.

The Numeric method generates more accurate results than the Fixed Radius or Analytical methods. However, Numeric models are very costly to develop. Consequently, Numeric models are more commonly used by large utilities with complex aquifers who have the resources to collect the extensive model input required.

ANALYSIS

The CFR Method was used to analyze the source protection area ZOCs for the CCCC wells. This method was chosen because there are no known potential sources of contamination in the general vicinity of the CCCC water system wells other than the CCCC facility itself. Also land use throughout the general area around the CCCC facility is uniform and there is no plans for any development in the area. In these circumstances the CFR method is adequate and minimizes the cost of the WHPP.
The ZOCs for the CCCC wells were calculated using the CFR equation provided in Figure 2 of DOH's *Wellhead Protection Program Guidance Document:*

$$\mathbf{r = (Qt/\pi nH)^{1/2}}$$

where:

- r = the radius of the CFR ZOC
- Q = annual average rate in cubic feet per year
- n = aquifer porosity
- H = Open Interval or length of well screen
- t = time of travel in years (6 months, 1 year, 5 years and 10 years)

The annual water rights limit of 29.5 AF/Y for Well #1 and 46.5 AF/Y for Well #2 for a combined water right of 76 AF/Y (3,310,560 ft^3/Y) were assumed to be the highest potential annual average water use. An aquifer porosity of n = 0.22 was used.[1] Both wells have an open interval at the bottom of the well instead of well screen, so a well screen interval of 10 feet was used.[1] Since both wells pump from the same aquifer and are near each other the WHPA should be based on the combined annual demand of both wells and should be centered at a point half way between the two wells.[1] Radius values calculated for the various times of travel are presented in Table 2 below. Figures 2 and 3 present the delineation's of the six month, one, five, and ten year ZOCs.

[1] As recommended in the *Wellhead Protection Program Guidance Document*, DOH, 1995

TABLE 2

CCCC Source Protection ZOCs (CFR Method)

Time of Travel	ZOC Radius (feet)
6 month	489
1 year	692
5 years	1550
10 years	2190

CHAPTER 3

CONTAMINANT SOURCE INVENTORY

An essential element of source protection is an inventory of all potential sources of groundwater contamination in and around the delineated protection areas. The purpose of the inventory is to identify past, present and proposed activities that may pose a threat to the source or surrounding area. The inventory can also help to plan management strategies such as provide notification to owners of potential sources of contamination located within the WHPA.

POTENTIAL CONTAMINANT SOURCES

An internet search of the Washington State Department of Ecology database of known contamination sites, hazardous materials handlers and underground storage tanks was conducted. The only sites identified within 5 miles of the CCCC wells were Rhodes Chemical Company about 3 miles Southwest from the CCCC site near Gate, and the CCCC site itself. A site visit was conducted by G&O personnel on August 11, 1999 to review and document potential groundwater contamination sources at the CCCC site. Locations of potential contaminant sources within the WHPA for the CCCC wells are shown in Figures 2 and 3. Descriptions of the potential contamination sources are listed in Table 3. The only potential sources of contamination within the CCCC WHPA are at the CCCC site itself and the road in front of the site. The only property owner within the WHPA is DNR. The CCCC facility itself is on leased DNR land, and the only DNR operations in the WHPA other than road maintenance are at the CCCC site. Facilities at the CCCC site include DOC facilities and DNR facilities.

TABLE 3

Potential Contaminant Sources in CCCC WHPA

Site Map Location	Potential Contaminant Source	Description
		Zero to Six Month Zone of Contribution
A	Chemical Shed	Contains motor oils and small quantities of fuels. Information per personal communication with CCCC Staff, internet search and site visit.
B	Auto Shop	Contains motor oils, machine cutting oils and degreasing solvents. Information per personal communication with CCCC Staff, internet search and site visit.
C	Abandoned fueling station	Underground storage tank removed. Information per personal communication with CCCC Staff.
D	Diesel Generator	In frequently used during power outages. Contained in a double walled vaulted tanks. Information per personal communication with CCCC Staff and site visit.
E	E-Line Road	Very low volume public road. Primarily CCCC staff, supplies for CCCC and recreational users. Information per map review and site visit.
		Six Month to One Year Zone of Contribution
F	Abandoned Underground Fuel Tank	Underground storage tank removed. Information per personal communication with CCCC Staff.
E	E-Line Road	See above.
		One Year to Five Year Zone of Contribution
G	Abandoned Wood Preserving Site (Creosote)	Site is in latter stages of remediation process. Contaminated soils have been removed. No groundwater contamination. Information per internet search and personal communication with CCCC Staff.
E	E-Line Road	See above.
I	Diesel Generator	See above.
K	Vehicle Fueling Facility	Above ground automotive fuel storage in concrete vaulted tank. Information per personal communication with CCCC Staff and site visit.
		Five Year to Ten Year Zone of Contribution
H	Wastewater Treatment Plant	The CCCC wastewater treatment plant has a surface water discharge downstream from CCCC.
E	E-Line Road	See above.
J	Diesel Generator	See above.

The Chemical Shed, identified as A in Figure 2, is a small room at the eastern end of the Auto Shop/Warehouse building next to the Vehicle washing facility. At the time of the site visit the room contained several drums of oil of various types and small containers of fuel. The room has a concrete slab floor with a concrete curb about 6 inches high all around for secondary containment. Potential contaminants from this site include waste oil and fuel.

The Auto Shop, identified as B in Figure 2, is a large warehouse type building with a concrete slab floor containing facilities for routine vehicle maintenance. The building contains several vehicle lifts, waste oil drain tanks, drums of new oil, degreaser tanks, various machine tools including lathes, a milling machine, various punches and breaks, and a welding shop. Potential contaminants from this site include waste oils, antifreeze, solvents, acids, paints and soaps.
The Abandoned Fueling Station, identified as C in Figure 2, was not inspected during the site visit. DOC staff stated that the fuel tanks at the site have been removed and that they are not aware of any contamination problem at the site. The potential contaminants from this site include gasoline, diesel and waste oil.

The Diesel Generators Facility, identified as D in Figure 2, and I and J in Figure 3, were identified during site visit and personal communication with DOC Staff. The Generators are contained in a double walled vaulted tanks. They are used during power outages, which is very infrequent. The potential contaminant from these site includes diesel fuel.

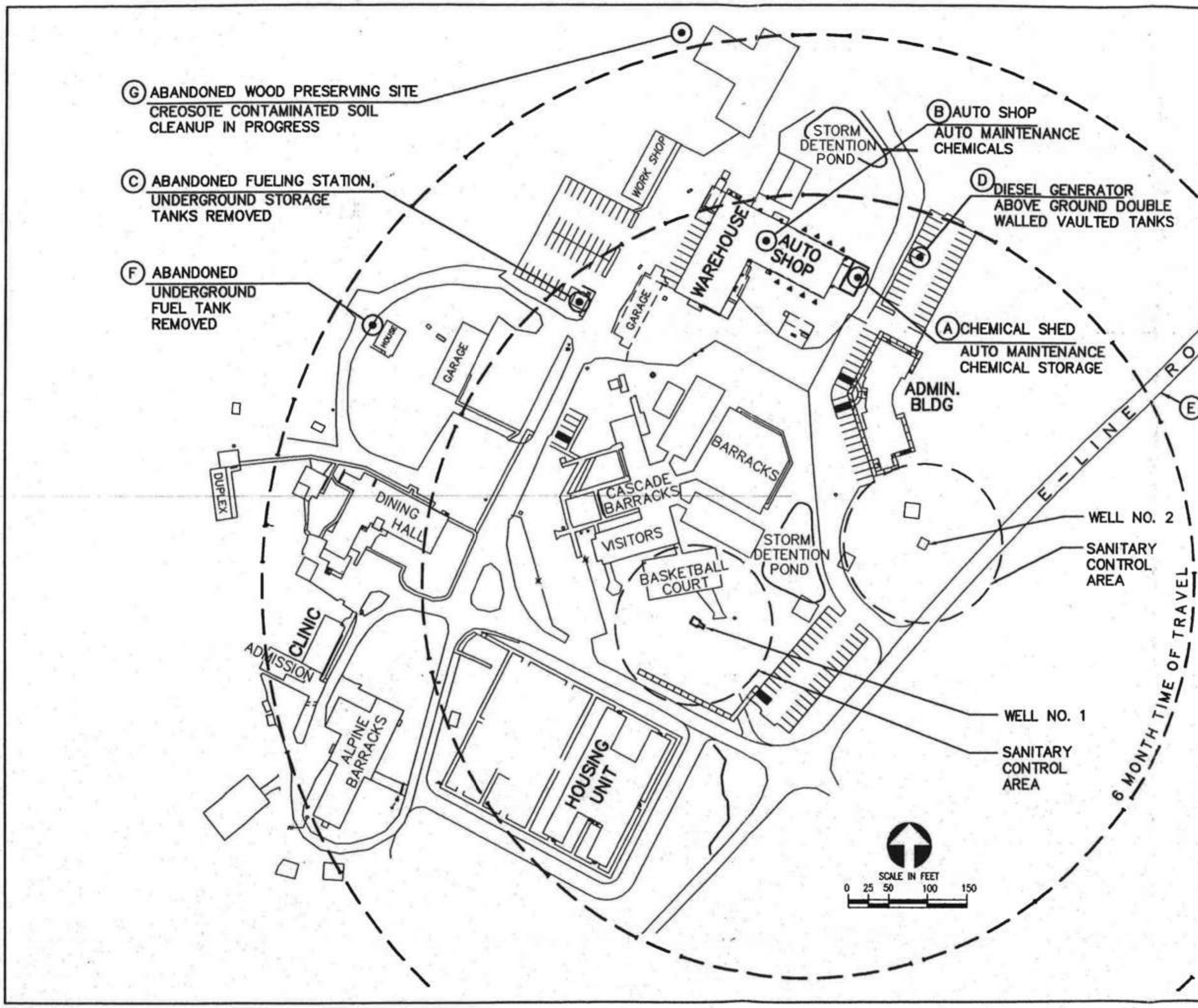
E-Line Road, identified as E in Figure 2, is a very low volume public road. The primary use of the road is for access to and from the CCCC. The road is also for outdoor recreation, pleasure driving and access to various Capitol Forest facilities. The worst case scenario on this road would probably be if a fuel tanker bringing fuel to the CCCC fueling facility were to overturn on this road. Other vehicles as well could also cause groundwater contamination if they were to spill their contents or their fuel tanks on the road. The most likely potential contaminants from the E-Line Road are vehicle fuel and motor oil. Anything else hauled on this road could potentially contaminate the groundwater as well.

The Abandoned Underground Fuel Tank, identified as F in Figure 2, was not inspected during the site visit. DOC staff stated that the fuel tank at the site has been removed and that they are not aware of any contamination problem at the site. The potential contaminants from this site include gasoline, diesel and heating oil.

The Abandoned Wood Preserving Site, identified as G in Figure 2, is one of two sites identified at CCCC in the DOE internet site search. The site was not inspected during the site visit. DOE describes the site as a "voluntary cleanup site." According to DOC staff contaminated soil at this site has been removed and no groundwater contamination was involved. Potential contaminants from the site include solvents, pentachlorophenol (PCP), creosote and coal tar compounds.

The CCCC Wastewater Treatment Plant (WWTP), identified as H in Figure 3, is the other of two sites identified at CCCC in the DOE internet site search. The site was not inspected during the site visit. DOE regulates the waste discharge from the CCCC WWTP under NPDES Permit No. 003773-7. The WWTP receives wastewater from dormitories, laundries, kitchens and plumbing fixtures at buildings throughout the CCCC facility. When considering a WWTP as a potential source of contamination consideration should also be given to the potential for contamination from the wastewater collection system. There are no industries at CCCC that would discharge significant industrial wastes. The WWTP treatment process includes an extended aeration activated sludge treatment process and ultraviolet light disinfection. Potential contaminants from this site include human pathogens, nitrate, and any chemicals which may be dumped into the sewer system.

The Vehicle Fueling Facility, identified ask in Figure 3, consists of above ground concrete vaulted double walled storage tanks with built in leak detection systems. The facility is used to fuel CCCC and DNR vehicles. Potential for contamination from the site comes from possible leakage of the tanks, spillage of fuel during the fueling process, spillage of fuel during the filling of the storage tanks and leakage of fueling pipes and hoses. The likelihood of ground water contamination from above ground fueling facilities is greatly reduced relative to below ground fuel storage and piping systems. Potential contaminants from this site include gasoline and diesel fuel.



W. S. D. O. C.
FIGURE 2
CEDAR CREEK CORRECTION CENTER
WELLHEAD PROTECTION PLAN – SITE PLAN
Gray & Osborne, Inc.
CONSULTING ENGINEERS

BY: YBP CREATED: NOV 21 1995 13:43:36 UPDATED: AUG 13 1999 13:57:47 PLOTTED: AUG 30 1999 11:02:54 FILE: M:\WSDOC\97754.61\CFR-1_2.DWG

PWSID: 118827	CEDAR CREEK CORRECTIONS CENTER	Source: 03

[Part] III: Synthetic Organic Chemical Monitoring (SOC):

1. The following table shows a summary of the number and type of SOC (pesticide) samples that were required for this source during the 1993-1995 compliance period, the number of samples that were completed and if there were any detections.

1993-1995 SOC Monitoring Requirements

Test methods	Number of samples required	Was this requirement met?	Any SOC detections
515.1	NONE	YES	NO
525.2	NONE	YES	NO
531.1	NONE	YES	NO
547	NONE		
549	NONE		
Other			

Comments: This source was tested by DOH as part of the Area Waiver Study.

2. Based on the results of your previous sampling, the following table shows a summary of the SOC monitoring requirements for 1996-1998, both *with* a waiver and *without* a waiver. The table has space for you to record the month and year in which you plan to test for SOCs (if sampling is required).

1996-1998 SOC Monitoring Requirements

Test Methods	Number of samples required, *without* a waiver	Number of samples required, *with* a waiver	Month and year you will begin sampling (if sampling is required).
[51]5.1	1 qtr	0	
525.2	1 qtr	0	
531.1	1 qtr	0	
Other:			

Comments:

Part IV: Water System Response Form for 1996-1998:

The information in Parts I - III above outlines the sampling requirements and waiver options that are available for this source. You may choose to apply for a waiver (which may include a requirement for limited sampling, as shown in the tables above). **If you do not want a waiver, you will be required to monitor for VOCs and SOCs as outlined in the table in Part III. You must plan to begin any required monitoring before November 1997 at the latest.**

Indicate your waiver choice on the attached Water System Response form (pink sheet) for each of your sources and return the form, along with any corrections or test results, to the DOH address shown on page 2 of the pink response sheet.

Process Date: *2/17/97* ***Edit Date:***

Chemical Monitoring Worksheet for Waivers and Waiver Renewals: 1996-1998

PWSID: 118827	CEDAR CREEK CORRECTIONS CENTER	**Source:** 03

Introduction: This **2-page form** summarizes information used by DOH in deciding what type of waiver options are available for the water system and source listed above. Please review this information carefully. If the information is not correct, draw a line through the incorrect information, and make corrections to the form. If you collected samples during 1993-1995 that are not shown here, make corrections to the green form and attach copies of any missing test results to the form. **Return the corrected form with data (if applicable) to DOH with the pink "Water System Response Form". You should keep a copy of this form for your records.**

PART I: Waiver and other source information:

1. The Susceptibility Rating for this source is: (L = low, M = moderate, H = high) **L**

2. If the susceptibility for this source is "M" or "H", did this source apply (and pay) for an AREA waiver during the 1993-1995 Compliance Period? (NOTE: sources with susceptibility ratings of "Low" did not need an AREA waiver.) **NO**

3. The Pesticide Vulnerability for this source is: (L = low, M = moderate, H = high). **L**

4. Was this source sampled under the terms and conditions of the Chafee Lautenberg Amendment? (NOTE: systems under 3300 population that sampled for VOCs or SOCs between Oct. 1, 1992 and Sept.30, 1993, with no detections, were waived from having to collect 4 quarters of samples during 1993-1995.) **NO**

5. The type of waiver you can obtain for this source in 1996-1998 is: **Organic Waiver Renewal**

Part II: Volatile Organic Chemical Sampling (VOC):

1. The following table shows a summary of the VOC samples required for this source during the 1993-1995 compliance period, and the results of the VOC samples.

1993-1995 VOC Monitoring Requirement			
Test method	**Number of required samples**	**Was this requirement met?**	**Any detections other than trihalomethanes (THMS)?**
524.2	1 qtr	YES	NO

Comments: VOC submitted 9/95.

2. The following table shows the VOC monitoring requirements for this source during the 1996-1998 Compliance Period. It shows only the required number of samples that must be collected. It does not show any samples that you may have already collected after the 1993-1995 Compliance Period. The table has a space for you to record the month and year in which you plan to test for VOCs. (Recording the VOC date is for <u>your</u> information only. You do <u>not</u> have to return this green sheet to us if this is the <u>only</u> change to this form.)

1996-1998 VOC Monitoring Requirement		
Test method	**Number of required samples**	**Month/year you plan to sample (or did sample)?**
524.2	1 qtr	

Comments:

Appendix 1

Susceptibility Assessments and Susceptibility Ratings

CHAPTER 4

WELLHEAD PROTECTION AREA MANAGEMENT

A wellhead protection program will not protect the water supply without implementation of risk reducing measures or pollution prevention efforts. Management strategies can be focused only after WHPAs have been clearly defined and established and potential sources of contamination have been identified. The two wells pump from the same aquifer and have a common WHPA defined in Chapter 2 and shown in Figures 2 and 3. Potential sources of contamination are identified in Chapter 3, summarized in Table 3, and shown on Figures 2 and 3. Minimum WHPA management requirements are specified in WAC 246-290-135. These are:

- Documentation of the purveyor's *notification to all owners and operators of actual or potential sources of groundwater contamination* within the WHPA.
- Documentation of the purveyor's *notification to regulatory agencies* regarding the location and dimensions of the WHPA and the inventory of the potential sources of contamination within the WHPA.
- A *spill response plan* for each WHPA containing documentation for coordination with local first responders.
- *Contingency plans* for providing alternate sources of drinking water in the event that contamination does occur and management recommendations to reduce the likelihood that potential contaminant sources will pollute the drinking water supply.

In addition, the DOH's *Wellhead Protection Program Guidance Document* recommends the following management elements:

- *Establishing a Local Wellhead Protection Committee. This would consist of* representatives of a representative of the water system owner, owners of some of the major potential sources of contamination, a representative of the land use control and planning agencies in the WHPA, and citizen action groups. The purpose of the committee would be to facilitate communication among affected parties about strategies to protect groundwater in the WHPA, develop consensus among owners of potential sources of contamination, and seek input to the water purveyor on contamination concerns and effective management strategies.

- *Individual Potential Contaminant Source Management.* Once the potential sources of contamination have been identified the purveyor can work with the owners of the potential sources of contamination to find practical strategies to minimize the risk of groundwater contamination from the potential sources of contamination, and to improve communication in the event of a contaminant spill.

- *Developing a Pollution Prevention Program.* DOH encourages communities to develop pollution prevention strategies, long term waste management plans which reduce the creation of waste at the source. EPA recognizes three categories of pollution prevention techniques. (a) Source reduction, creating less waste to begin with; (b) recycling, reusing materials instead of discarding them, and (c) treatment to reduce the contamination threat of the wastes before discharging them.

- *Management Tools for Local Governments.* Tools for local governments include wellhead protection ordinances, zoning, use permits, building codes, operating standards, monitoring and reporting requirements, water conservation measures and public education.

Following is a discussion of WHPA Management Strategies.

REQUIRED WELLHEAD PROTECTION AREA MANAGEMENT ACTIONS

NOTIFICATIONS TO OWNERS OF POTENTIAL SOURCES OF CONTAMINATION

Potential sources of contamination are identified in Table 3. The only owners of potential sources of contamination in the WHPA are DNR and CCCC. The only notification required is to DNR. A sample notification letter is included in the appendix. Notification should be provided to:

Eric Huart
Department of Natural Resources
PO Box 47014
Olympia, WA 98504-7014

NOTIFICATION TO REGULATORY AGENCIES AND LOCAL GOVERNMENT

Regulations require notification of WHPA and potential sources of contamination to regulatory agencies and local government. Following are the regulatory agencies and local government offices which should receive this notification: A copy of the WHPA maps and list of potential sources of contamination must be provided to each of these agencies. A sample letter transmitting these items is included in the Appendix.

Dick Szamerik, Wellhead Protection
  Program Coordinator
Washington State Department of
  Ecology
Water Resources Division
PO Box 47775
Olympia, WA 98504-7775
Phone: (360) 407-6000

Rich Hoey, P.E.

Regional Engineer
Washington State Department of Health
Division of Drinking Water
Southwest Regional Office
2411 Pacific Avenue
PO Box 47823
Olympia, WA 98504-7823
Washington State Department of
Community Trade and Economic
Development
Division of Growth Management
906 Columbia Street SW
PO Box 48300
Olympia, WA 98504-8300
Phone: (360) 753-2222
Keith Smith, Director
Division of Environmental Health
Public Health and Social Services
Department
2000 Lakeridge Drive, SW
Olympia, WA 98502
Phone: (360) 786-5455

SPILL/INCIDENT RESPONSE PROGRAM

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

In order for spill response procedures to be effectively executed, coordination, cooperation, and communication among the responding agencies, organizations, and individuals is imperative. Depending on the magnitude and type of the release, any of several agencies may be involved in a spill response for a WHPA in Washington State. Table 5 is a summary of response agencies which may be involved in a spill in the CCCC WHPA. Preliminary discussions regarding spill response have been held with these agencies. A copy of the WHPA maps and list of potential sources of contamination must be provided to each of these agencies. A sample letter transmitting these items is included in the Appendix.

TABLE 5:

Emergency Response Agencies for CCCC WHPA

Emergency Response Agency	Contact Name and Phone	Service Provided
Cedar Creek Corrections Center PO Box 37 Littlerock, WA 98556	Leroy Wallace, Plant Manager Emergency: 911 Business: (360) 753-7278	Water System Operations, overall CCCC facilities management.

TABLE 5 - Continued

Emergency Response Agency	Contact Name and Phone	Service Provided
Emergency Dispatch System Thurston County Department of Communications 2703 Pacific Ave. Suite A Olympia 98506	Emergency: 911 Business: (360) 704-2740	Serves as point of contact and coordinates information to emergency responders.
Thurston County Fire District #11 10828 Littlerock Ave. SW Olympia, WA 98512	Mike Harris, Chief Emergency: 911 Business: (360) -352-1614	Initial response to a hazardous spill. Spill containment, surface cleanup, public safety
Thurston County Sheriff 2000 Lakeridge Drive, SW Olympia, WA 98502	Emergency: 911 Business: (360) 786-5500	Initial response to a hazardous spill. Spill containment, surface cleanup, public safety
Thurston County Road Department 9605 Tilley Road SW Olympia WA 98512	Emergency: 911 Business: (360) 786-5495	Spill response assistance through traffic control, equipment, and personnel for non-hazardous clean-up activities on County roads.
Fire Protection Bureau Washington State Patrol General Administration Building PO Box 42600 Olympia, WA 98504-2600	Sgt. Roy Glass Emergency: 911 Business: (360) 753-0500	The state patrol is responsible for managing spills on interstate and state highways.
Wellhead Protection Program Washington State Department of Ecology PO Box 47775 Olympia, WA 98504-7775	Dick Szamerik, Coordinator Business: (360) 407-6000	Coordinates information and keeps records on WHPAs.
Spill Response Program Washington State Department of Ecology PO Box 47775 Olympia, WA 98504-7775	Jim Oberlander Emergency: 911 Business: (360) 407-6000	Determines the source, cause and responsible party. If responsible party is unknown, DOE will investigate to determine who is responsible and ensure containment, clean-up and disposal.

CONTINGENCY PLANNING

Contingency planning is an important component of a WHPP. In the event that one or both wells need to be taken off line due to contamination, a contingency plan provides immediate mitigation. A properly prepared and updated contingency plan helps ensure the water system, and local officials, are prepared to respond to emergency situations. Contingency planning includes emergency response to loss of a water source due to contamination, provision of temporary alternative sources of drinking water as an interim measure in the event that groundwater should become contaminated and replacement or treatment of contaminated water supplies as a permanent fix to a contamination problem.

Contamination detected in the water supply: In the event that contamination should be detected in the water supply the first action should be to contact the DOH. The regional engineer is Richard Hoey. He can be reached at (360) 664-8058. DOH will determine the public health significance of the contamination and advise CCCC regarding necessary follow-up actions. Generally, one sample test result is not enough to verify a contamination problem and re-sampling is recommended. However, depending on the nature and concentration of the contaminant it may be best to immediately provide notification to all water users and provide an alternative source of water immediately. DOH will advise on this issue.

In the event that contamination is verified or a judgment call is made to require notification of the water users, there are statutory requirements for notification language. DOH will provide the mandatory language and CCCC may add other information to the notification as deemed appropriate. Other information may include details of how much contaminant was found, what is being done to correct the problem and what alternatives are available to the users to minimize their risks.

Provision of temporary alternative sources of drinking water: In the event that contamination renders the water supply undrinkable, a temporary alternative water supply may be provided until either a new source of supply can be found or treatment can be provided. DOH has guidelines for trucking of water. Copies of the guidelines should be obtained and followed. Water must be obtained from a DOH approved water supply. The transportation container must be free of any and all contamination. Containers previously used for transporting petroleum products or solvents should not be used. The transport container must be disinfected pursuant to strict standards in the DOH guidance.

DOC has arrangements with DNR and with Kelly's Water Service to provide an emergency supply of water. CCCC water system is served by a gravity storage system. Therefore trucked-in water could be placed directly into a reservoir to provide water for CCCC in an emergency.

Replacement or treatment of contaminated water supplies: In the event that a source of supply should become contaminated and it appears that the contamination will not go away soon, it will be necessary to either replace the contaminated source or provide treatment for the source. The preferred recommendation will depend on the nature and extent of the contamination. Generally contamination problems tend to be very localized and treatment costs tend to be very expensive, depending on the nature and concentration of the contaminant. Development of a new source away from the contamination problem would likely be the best solution. CCCC is located on a large tract of DNR property and it is anticipated that development of a new source of supply away from contamination would likely be a feasible solution to any groundwater contamination problem.

RECOMMENDED ADDITIONAL WELLHEAD PROTECTION

AREA MANAGEMENT STRATEGIES

Optional strategies recommended in the DOH *Wellhead Protection Program Guidance Document* are discussed briefly below. Those which are recommended for CCCC are discussed in more detail in the following sections:

- Establishing a *Local Wellhead Protection Committee* would not be practical for this particular water system because the only owners of potential sources of contamination in the WHPA are DNR and DOC and there is no development activity in the WHPA.
- *Individual Potential Contaminant Source Management* is a practical approach for CCCC because most of the potential sources of contamination are under the direct control of CCCC or DNR and the number of potential sources of contamination is small.
- *Developing a Pollution Prevention Program* may be practical for the CCCC on a small scale and is essentially the same thing as Individual Potential Contaminant Source Management, since CCCC controls most potential sources of contamination in the WHPA.
- *Management Tools for Local Governments* is not directly applicable to CCCC because CCCC is not a local government. The local government for CCCC is Thurston County. CCCC may want to utilize some of the wellhead protection tools which have been developed by Thurston County.

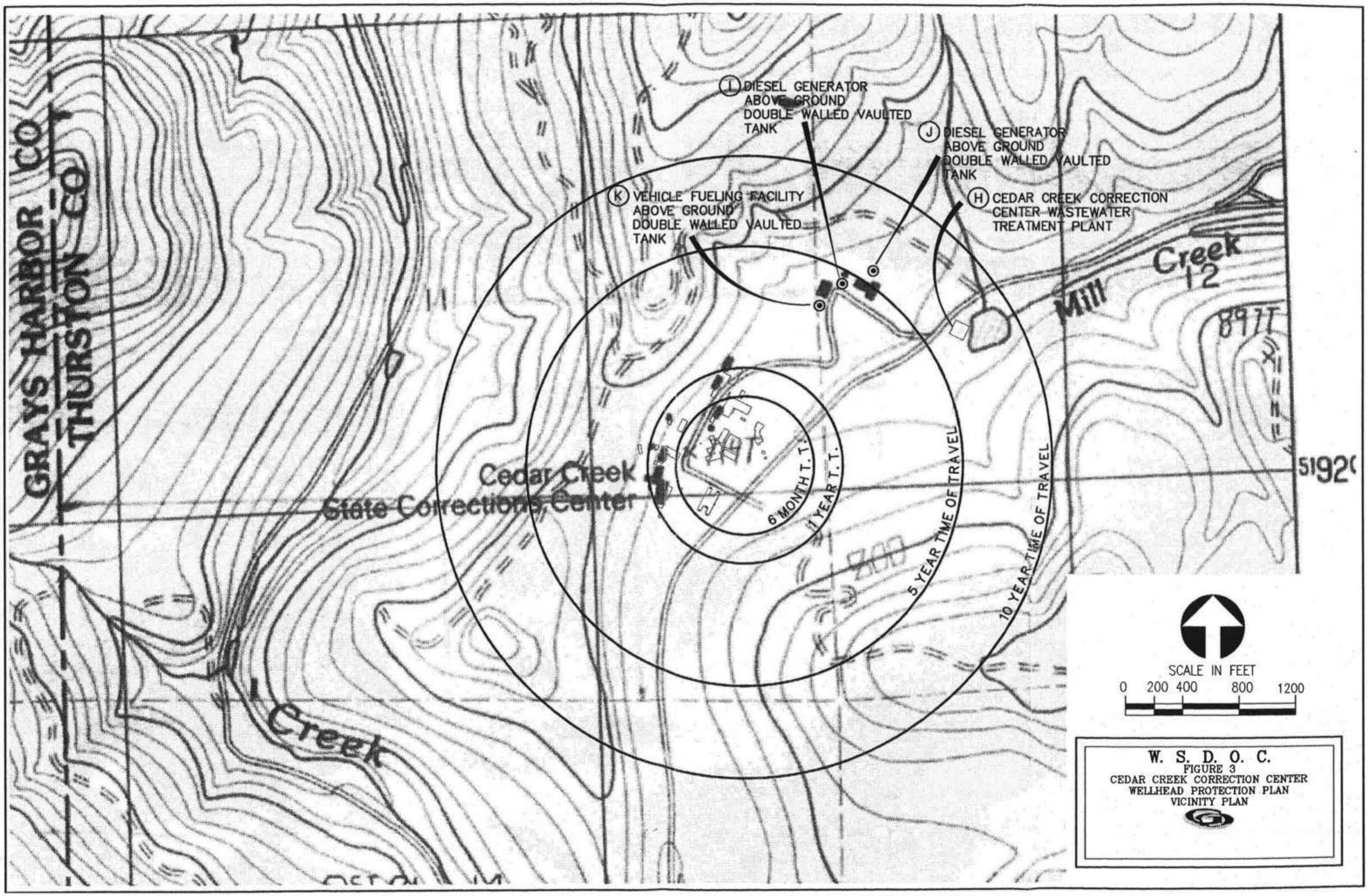
INDIVIDUAL POTENTIAL CONTAMINANT SOURCE MANAGEMENT

The potential sources of contamination identified in Chapter 3 are already fairly well managed. Continued vigilance, continued education of all staff regarding hazardous materials handling and regular review of all hazardous materials handling and storage in the CCCC WHPA is recommended. Best Management Practices (BMPs) have been developed for most potential sources of contamination identified in the WHPA. Selected BMPs from the *Stormwater Management Manual for the Puget Sound Basin* (DOE, 1992) are included in the Appendix.

MANAGEMENT TOOLS FOR LOCAL GOVERNMENTS

Thurston County has adopted a critical areas ordinance which identifies rules which apply to WHPAs. Thurston County is also in the process of amending their wellhead protection portion of the critical areas ordinance. A copy of the Critical areas ordinance and the Draft Wellhead Protection Area Ordinance are included in the Appendix. Public education is one tool which CCCC can use to their advantage for wellhead protection. Regular training on hazardous materials management and water resource protection would help to keep staff vigilant to potential problems. Training is available through Thurston County Environmental Health. The county contact on this program is Sally Toteff. She can be reached in Olympia at (360) 754-4663.

Posting signs on E-Line Road at the boundaries of the WHPA would inform materials haulers and the motoring public of the sensitivity of the area. A sample sign is included in the Appendix.



W. S. D. O. C.
FIGURE 3
CEDAR CREEK CORRECTION CENTER
WELLHEAD PROTECTION PLAN
VICINITY PLAN

BY: YBP ... ED: NOV 21 1995 13:43:36 UPDATED: AUG 13 1999 13:57:47 PLOTTED: A... 1999 10:49:55 FILE: M:\WSDOC\97754.61\CFR-1_2.DWG

Received 5/24/94 with request for Well Field designation. (Slu) Drinking Wtr. Operations)

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 : Leroy WAllAce / STATE of WA - DOC

Water system name : CedAr CreeK Corrections Center

County: Thurston

Water system number: 118827 Source number: S02 (XX)

Well depth: 200 (ft.) (*From WFI form*)

Source name: Well #2

WA well identification tag number:___ ___ ___-___ ___ ___

X well not tagged

Number of connections: 35 Population served: 240

Township: 16 N Range: 04W

Section: 11 1/4 1/4 Section: NE / SE

Latitude/longitude (if available): 46 55 40 / 123 05 58

How was lat./long. determined?

_____ global positioning device _____ survey _____ topographic map

X other: FCC License

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 2 / 4 / 93 month/day/year

last reconstruction: ___ / ___ / ___ month/day/year

_____ information unavailable

(Maps & WQ data in separate packet; in file.)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20-50 ft X 50-100 ft ___ 100-200 ft ___ > 200 ft

___ information unavailable (*'< ' means less than; '> ' means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft ___ 20-50 ft X 50-100 ft ___ > 100 ft

___ flowing well/spring (artesian)

How was water level determined?

X well log __ other: Depth finder

__ 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): 715 (ft)

How was elevation determined? X topographic map ___ Drilling/Well Log ___ altimeter

__ other: ______________________

__ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

X evidence of a confining layer in well log

__ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the ~~top~~ Bottom of the ~~open interval?~~ lowest confining layer X YES ___ NO

___ information unavailable

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: _________ (gallons) New well

How was this determined?

X meter

___ estimated: X pumping rate (60 GPM)

___ pump capacity ( )

___ other: ______

2) "Calculated Fixed Radius" estimate of ground water movement: (see Instruction Packet)

6 month ground water travel time :	140 (ft)
1 year ground water travel time :	200 (ft)
5 year ground water travel time:	440 (ft)
10 year ground water travel time:	620 (ft)

Information available on length of screened/open interval?

X YES __ NO

Length of screened/open interval: ~~80~~ 120' (ft) (open casing below 80')

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: well #2 has a stormwater detention pond 100' from the well.

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

	YES	NO
A. Nitrate: (Nitrate MCL = 10 mg/l)		
Results greater than MCL	___	X

	YES	NO
< 2 mg/liter nitrate — Test results enclosed	X	___
2-5 mg/liter nitrate — < 0.2	___	___
> 5 mg/liter nitrate	___	___

___ Nitrate sampling records unavailable

	YES	NO
B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)		
Results greater than MCL or SAL — Test results	___	X
VOCs detected at least once — Enclosed from	___	___
VOCs never detected — well #1	X	___

___ VOC sampling records unavailable

	YES	NO
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 — Test results enclosed from well #1	X	___

___ EDB/DBCP tests required but not yet completed

___ EDB/DBCP tests not required

Wells 1 + 2 as OK'd well field 11/94 SW

	YES	NO
D. Other SOCs (Pesticides):		
Other SOCs detected (pesticides and other synthetic organic chemicals).	___	___

___ Other SOC tests performed but none detected (list test methods in comments

X Other SOC tests not performed

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: ________________

____

____

____

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

_______ YES _______ NO ?

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	—	X	—
6 month–1 year travel time	—	X	—
1–5 year travel time	—	X	—
5–10 year travel time	—	X	—

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	—	X	—
1–5 year travel time	—	X	—
5–10 year travel time	—	X	—

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 200511

Water Right Permit No. ______

(1) OWNER: Name Cedar Creek Correction Center Address Little Rock WA

(2) LOCATION OF WELL: County Thurston NE ¼ SE ¼ Sec 11 T. 16 N., R. 4W W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) Little Rock WA

(3) PROPOSED USE: ☑ Domestic ☐ Irrigation ☐ DeWater Industrial ☐ Test Well ☐ Municipal ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) ______
Abandoned ☐ New well ☑ Deepened ☐ Reconditioned ☐ Method: Dug ☐ Cable ☐ Rotary ☑ Bored ☐ Driven ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 200 feet. Depth of completed well 200 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Diam. from 0 ft. to 80 ft.
Welded ☐ ______" Diam. from ______ ft. to ______ ft.
Liner installed ☐
Threaded ☐ ______" Diam. from ______ ft. to ______ ft.

Perforations: Yes ☐ No ☑
Type of perforator used ______
SIZE of perforations ______ in. by ______ in.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.

Screens: Yes ☐ No ☑
Manufacturer's Name ______
Type ______ Model No. ______
Diam. ______ Slot size ______ from ______ ft. to ______ ft.
Diam. ______ Slot size ______ from ______ ft. to ______ ft.

Gravel packed: Yes ☐ No ☑ Size of gravel ______
Gravel placed from ______ ft. to ______ ft.

Surface seal: Yes ☑ No ☐ To what depth? 18' ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? ______ Depth of strata ______
Method of sealing strata off ______

(7) PUMP: Manufacturer's Name ______
Type: ______ H.P. ______

(8) WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level 54 ft. below top of well Date Feb 4 93.
Artesian pressure ______ lbs. per square inch Date ______
Artesian water is controlled by ______ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☑ No ☐ If yes, by whom? TPC Pump
Yield: 60 gal./min. with 81 ft. drawdown after 24 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
0	90'	0:01	79'	0:02	72'
0:03	66'	0:04	62'	0:05	51'
0:10	45'	0:15	43'	0:25	40.65'

Date of test FEB 4, 1993

Bailer test ______ gal./min. with ______ ft. drawdown after ______ hrs.
Airtest 60 gal./min. with stem set at 180' ft. for 1 hrs.
Artesian flow ______ g.p.m. Date ______
Temperature of water ______ Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Silty (Yellow-Brown) [redacted]	0	20
Silty sand & 'Red' [redacted]	20	55
Silty sand + Gravel [redacted] (Brown)	55	65
Less silty more sand + Gravel (Brown)	65	75
Black Rock tra[redacted] Rock & trace of Red	75	*90
Black Rock trace of White Rock	90	155
Black Red white + Red Rock Water Barring	155	200
Black Rock - Hard	200'	

*(5 feet from here to bottom of casing)

Work started Feb 2, 19 Completed Feb 4, 1993

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Tacoma Pump & Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 30316 Mountain Hwy Graham
(Signed) ______ (WELL DRILLER) License No. 1964
Contractor's Registration No. TACOMAPD203?? Date Feb 4, 1993

(USE ADDITIONAL SHEETS IF NECESSARY)

Received 5/24/94 with request for Well Field designation. (initials) DOH SW Drinking Water Operations

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 : Leroy WAllAce / state of WA - DOC

Water system name : Cedar Creek Corrections Center

County: Thurston

Water system number: 118827 Source number: S01

Well depth: 200 (ft.) (*From WFI form*)

Source name: Well #1

WA well identification tag number: __ __ __-__ __ __

X well not tagged

Number of connections: 35 Population served: 240

Township: 16 N Range: 04 W

Section: 11 1/4 1/4 Section: NE / SE

Latitude/longitude (if available): 46 55 40 / 123 05 58

How was lat./long. determined?

___ global positioning device ___ survey ___ topographic map
X other: FCC License

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 12 / 6 / 86 month/day/year

last reconstruction: — / — / — month/day/year

___ information unavailable

(Maps & WQ data in separate packet, in file (initials)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20–50 ft _X_ 50–100 ft ___ 100–200 ft ___ >200 ft

___ information unavailable ('< ' *means less than;* '> ' *means greater than*)

2) Depth to ground water (static water level):

_X_ < 20 ft ___ 20–50 ft ___ 50–100 ft ___ >100 ft

___ flowing well/spring (artesian)

How was water level determined?

_X_ well log __ other: Depth finder

__ 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): 765 (ft)

How was elevation determined? _X_ 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~~ Bottom of the ~~open interval?~~ lowest confining layer. _X_ YES ___ NO

___ information unavailable

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 12,750,000 (gallons)

How was this determined?

X meter

___ estimated: X pumping rate (70 GPM)

___ pump capacity ( )

___ other: ___

2) "Calculated Fixed Radius" estimate of ground water movement: (see Instruction Packet)

6 month ground water travel time : 140 (ft)

1 year ground water travel time : 200 (ft)

5 year ground water travel time: 440 (ft)

10 year ground water travel time: 620 (ft)

Information available on length of screened/open interval?

X YES _ NO

Length of screened/open interval: 140' ~~59' 8"~~ (ft) (open casing below 59'8" [illegible]

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: ~~well #2 has a stormwater detention pond 100' from the well.~~ (Well #1)

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

	YES	NO
A. Nitrate: (Nitrate MCL = 10 mg/l)		
Results greater than MCL	___	X

	YES	NO
< 2 mg/liter nitrate	X	___
2-5 mg/liter nitrate — Test results Enclosed	___	___
> 5 mg/liter nitrate — < 0.2	___	___
___ Nitrate sampling records unavailable		

	YES	NO
B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)		
Results greater than MCL or SAL	___	X
VOCs detected at least once — Test results	___	___
VOCs never detected — Enclosed.	X	___
___ VOC sampling records unavailable		

	YES	NO
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 — Test results Enclosed	X	___
___ EDB/DBCP tests required but not yet completed		
___ EDB/DBCP tests not required		

	YES	NO
D. Other SOCs (Pesticides):		
Other SOCs detected (pesticides and other synthetic organic chemicals).	___	___

___ Other SOC tests performed but none detected (list test methods in comments

X Other SOC tests not performed

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: ______________

____

____

____

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

_____ YES __X__ NO ?

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

...nd Copy — Owner's Copy
...rd Copy — Driller's Copy

STATE OF WASHINGTON (Cmell)

Permit No. ......

OWNER: Name Cedar Creek Corrections Center Address Little Rock, Wa. ...

LOCATION OF WELL: County Thurston — NE ¼ SE ¼ Sec. 11 T. 16 N., R. 4W W.M.

...ring and distance from section or subdivision corner

PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒ Irrigation ☐ Test Well ☐ Other ☐

TYPE OF WORK: Owner's number of well (if more than one) ......

New well ☒ Method: Dug ☐ Bored ☐

Deepened ☐ Cable ☐ Driven ☐

Reconditioned ☐ Rotary ☒ Jetted ☐

DIMENSIONS: Diameter of well 8 inches.

Drilled 200 ft. Depth of completed well 200 ft.

CONSTRUCTION DETAILS:

Casing installed: 8 " Diam. from +2'9" ft. to 59'8" ft.

Threaded ☐ ......" Diam. from ...... ft. to ...... ft.

Welded ☒ ......" Diam. from ...... ft. to ...... ft.

Perforations: Yes ☐ No ☒

Type of perforator used ......

SIZE of perforations ...... in. by ...... in.

...... perforations from ...... ft. to ...... ft.

...... perforations from ...... ft. to ...... ft.

...... perforations from ...... ft. to ...... ft.

Screens: Yes ☐ No ☒

Manufacturer's Name ......

Type ...... Model No. ......

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

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

Gravel packed: Yes ☐ No ☒ Size of gravel: ......

Gravel placed from ...... ft. to ...... ft.

Surface seal: Yes ☒ No ☐ To what depth? 30 ft.

Material used in seal cement 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.

...tic level 13'4" ft. below top of well Date 12-08-86

...tesian 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

...a pump test made? Yes ☒ No ☐ If yes, by whom? Driller

...d: 70 gal./min. with 64'7" ft. drawdown after 24 hrs.

...overy 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 ......

...er test ...... gal./min. with ...... ft. drawdown after ...... hrs.

...sian flow ...... g.p.m. Date ......

...mperature of water ...... Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Sand & gravel fill	0	2
Top soil	2	4
Clay yellow-brown	4	25
Sandy-clay red	25	35
Shale rock redish soft	35	52'4"
Decomposed basalt	52'4"	69
Rock & some clay	69	74
Shale rock red & black medium	74	98
Rock blue medium hard	98	105
Rock blue hard	105	126
Rock blue, green, white medium	126	129
Rock blue & red medium	129	132
Rock blue medium	132	137
Shale rock blue & red medium soft	137	148
Rock blue medium - hard	148	200
Water @ 40 - Iron		
Water @ 70 - Iron		
Water @ 120 - Iron		
Water @ 163' - good		

JAN 30 '87

Work started 12-04 19 86. Completed 12-06 19 86

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Dale McGhee & Sons Well Drilling, Inc. (Person, firm, or corporation) (Type or print)

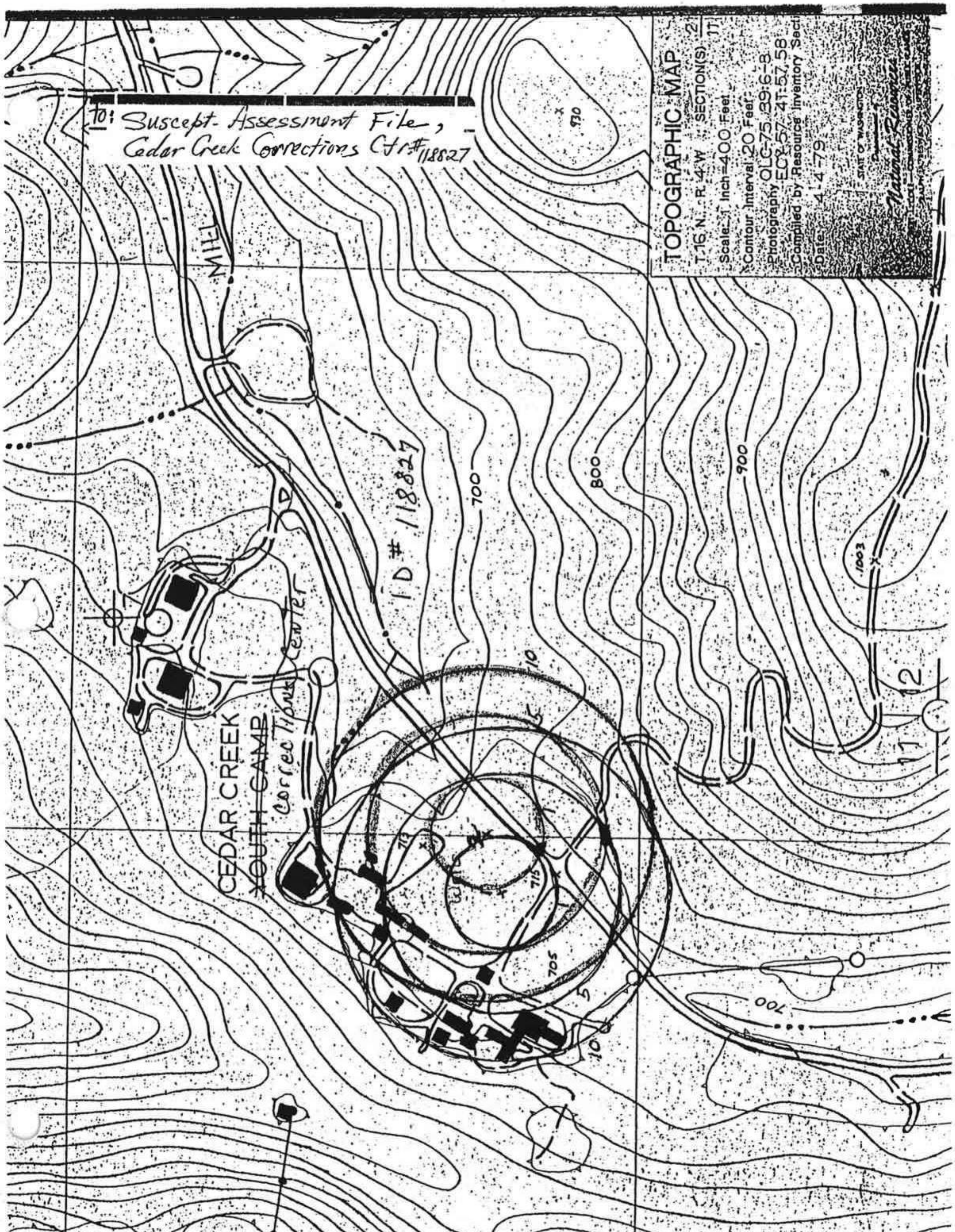
Address 3032 Allen Street Kelso, Wa. 98626

[Signed] J. Steve McGhee (Well Driller)

License No. 0298 Date December 24 19 86

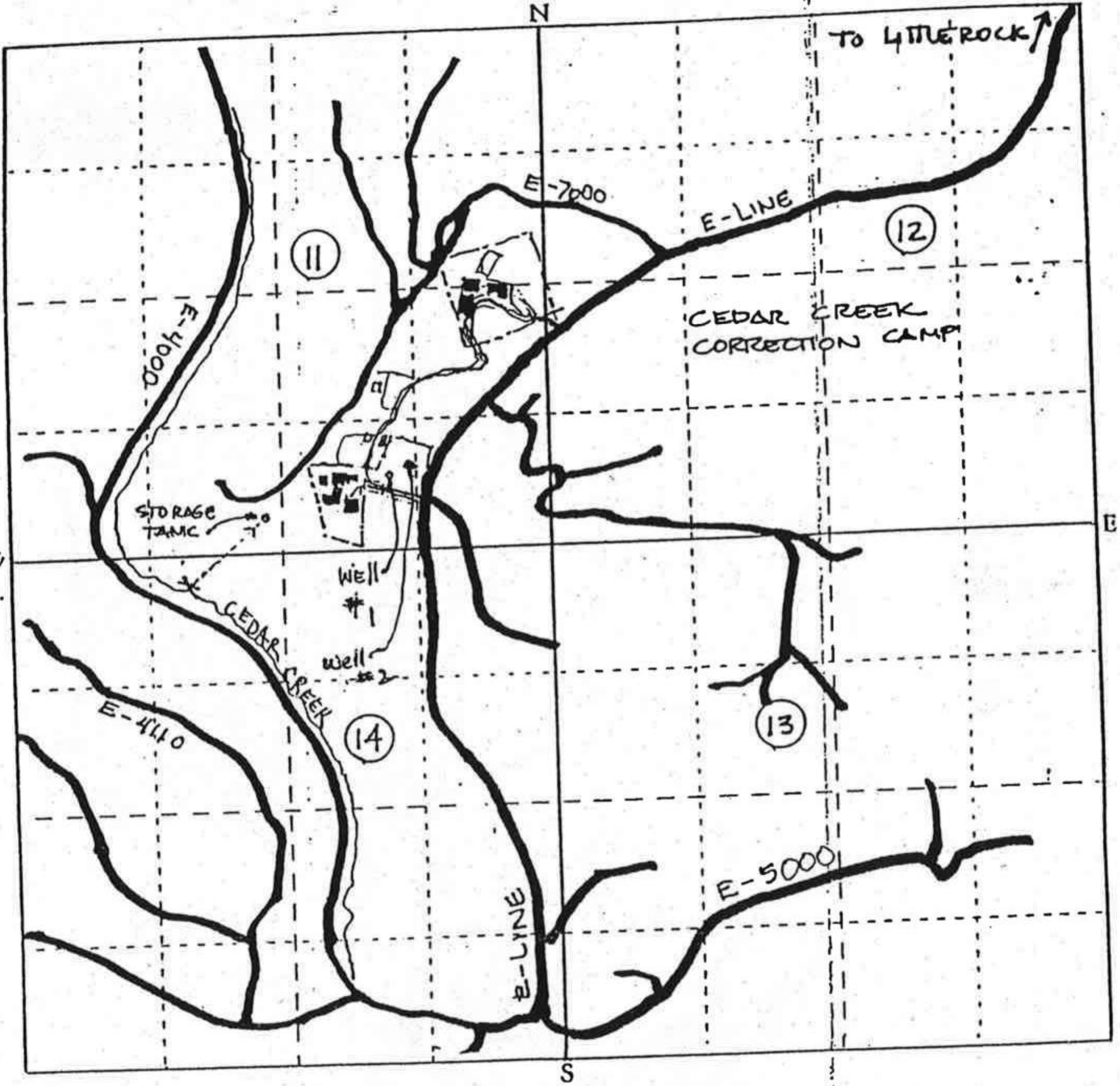
(USE ADDITIONAL SHEETS IF NECESSARY)

To: Suscept Assessment File,
Cedar Creek Corrections Ctr #118827



SECTION MAP

Sec. 11 & 12 Twp. 16 N. R. 4 West



Scale: 1 inch = 800 feet (each small square = 10 acres)

Show by a cross (X) the location of point of diversion (surface water source) or point of withdrawal (ground water source): For ground water applications, show by a circle (O) the locations of other wells or works within a quarter of a mile.

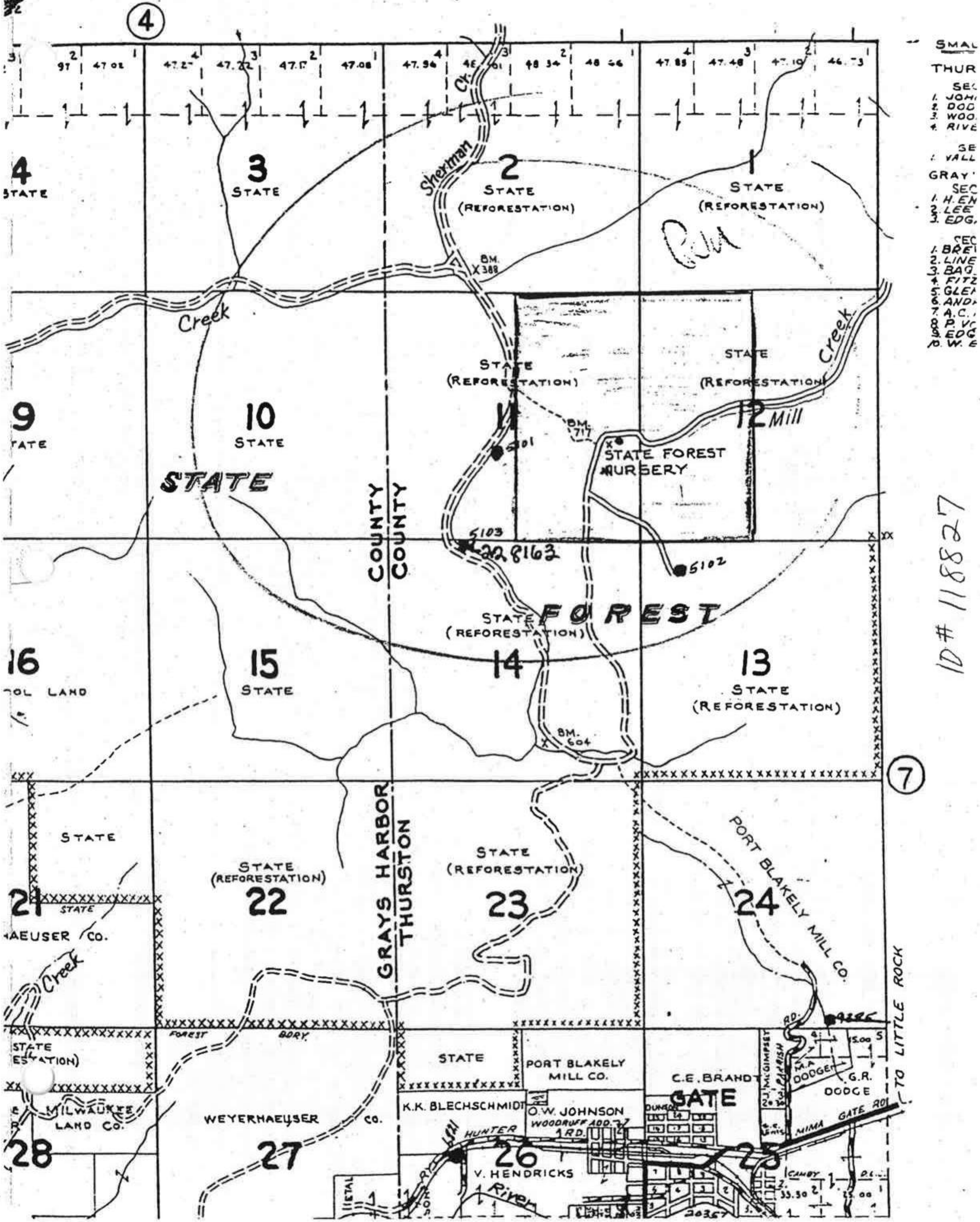
Indicate traveling directions from nearest town in space below.

From Littlerock go South on Mima Road to Bordeaux Road. Turn right and continue to bear left and Bordeaux will become the E-Line shown above. Follow signs to camp, take second entrance.

NOTE: Also see Exhibit B for enlarged plan of camp.

SHIP 16 N. RANGE 4 W.W.M.

RBOR & THURSTON COUNTY. WASHINGTON



ID# 118827

Water System Response Form: complete and return to:

Dept. of Health
Attn: Belle Fuchs
PO Box 47823
Olympia WA 98504-7823

RECEIVED
APR 09 1997
DOH S.W. D.
WATER OPERATIONS

System name: Cedar Creek Correction Center PWS ID#: 118827

Complete this form with answers as indicated below. List source numbers across the top row. ***(Return to DOH by April 10, 1997)***

Source Number: *List the source numbers for each active permanent or seasonal source as shown on the "Source Summary Sheet"*(S01, S02 etc.). →	S 03	S 01	S 02	S ____	S ____
Yes, I want a waiver renewal or new waiver for this source. *Check "yes" for each source for which you want a waiver.*	Yes ✓	Yes ✓	Yes ✓	Yes ____	Yes ____
I do NOT want a waiver (or this source is ineligible for a waiver). I must monitor for methods 525.2, 515.1 and 531 instead. (*Check "no" for each source for which you do NOT want a waiver or which is ineligible for one, and write the month/year you will sample for SOCs*) See comment about scheduling on the green Chemical Monitoring Summary sheet.	No ____ Sample Date: ___/___ *month/year*	No ____ Sample Date: ___/___ *month/year*	No ____ Sample Date: ___/___ *month/year*	No ____ Sample Date: ___/___ *month/year*	No ____ Sample Date: ___/___ *month/year*
Date (month/year) source will be monitored (or was last sampled) for VOCs in 1996-1998. (See comment about scheduling on the green Chemical Monitoring Summary sheet.)	Sample Date: 5/97 *month/year*	Sample Date: 5/97 *month/year*	Sample Date: 5/97 *month/year*	Sample Date: ___/___ *month/year*	Sample Date: ___/___ *month/year*
Have there been any changes to this source which may affect the susceptibility rating? *(Check "yes" or "no:) If "yes", describe.* Examples would include: a new VOC detection, nitrate levels increased to over 5 ppm, changes in well construction, changes in adjacent land use or other contaminant presence. Use the comments section below if more space is needed.	Yes ____ No ✓ Comment:	Yes ____ No ✓ Comment:	Yes ____ No ✓ Comment:	Yes ____ No ____ Comment:	Yes ____ No ____ Comment:

Comments:

Signature of person completing form: Leroy Wallace **Title:** Plant Manager (water system owner, manager, etc.) **Date:** 4-3-97

Name of person completing form (print): Leroy Wallace **Phone Number:** 360-753-7278 x 217

Washington State Department of Health
Division of Drinking Water

Invoice # № 40661

INVOICE
SUSCEPTIBILITY / USE WAIVER REVIEW

Attention: LEROY WALLACE

To:
CEDAR CREEK CORRECTIONS CENTER

PWS ID: 11882 7

4-11-97

Thurston

PO BOX 37
LITTLEROCK WA 98556

DATE	DESCRIPTION	AMOUNT
4/12/97	Organic Waiver Renewal 1 Sources @ $75.00 each	$75.00
	Total	$75.00
	A detailed description of the billing can be found on the accompanying SOC/VOC Waiver Status Sheet.	

Make check or money order payable to ***Department of Health****. Tear off lower portion and* ***send payment and lower portion within 30 days to:***

DEPARTMENT OF HEALTH
PO BOX 1099
OLYMPIA WA 98507-1099

DOH 710-010(7/96)

Division of Drinking Water
Susceptibility / Use Waiver Review

PWS ID / PWS NAME: 11882 7 CEDAR CREEK CORRECTIONS CENTER	**DEPARTMENT OF HEALTH**
SOURCE ID(S): '96 - '98 Organic Chemical Monitoring Waivers	**REVENUE SECTION**
INVOICE #: № 40661 — INVOICE DATE: 4/12/97	**PO BOX 1099**
AMOUNT: $75.00	**OLYMPIA WA 98507-1099**

2F 0420241070 01666

SOC / VOC Chemical Monitoring Waiver Status Sheet

Report Date: *11-Apr-97*

PWSID: 11882 7 **System Name:** CEDAR CREEK CORRECTIONS CENTER

Region: SW **County:** THURSTON **System Type** COMM **Total Connections:** 36

Source		Src Type	Use Code	Waiver Type	Waiver Fee	Invoice#:	Invoice Date:
01	WELL #1	WW	P	No Waiver Needed			
02	WELL #2	WW	P	No Waiver Needed			
03	WELL FIELD (1 & 2)	WF	P	Organic Waiver Renewal	$75.00	40661	4/12/97

Cedar Creek Corrections Center
Cedar Creek Corrections Center
PO Box 37
Littlerock, WA 98556
(360) 753-7278

August 30, 1999

Addressee

SUBJECT: CEDAR CREEK CORRECTIONS CENTER WELLHEAD PROTECTION PROGRAM, WELLHEAD PROTECTION AREA

Dear ____:

As part of the wellhead protection program for the Cedar Creek Corrections Center Water System we are hereby informing you of the findings of our wellhead protection area delineation. This is in accordance with State regulations (WAC 246-290-135).

Our water system serves about 400 inmates and 100 staff. The State Department of Health has given our water sources a rating of low susceptibility. This means our drinking water supply has a low vulnerable to contamination.

The enclosed map shows the 1, 5 and 10 year time of travel boundaries for our wellhead protection area. Any ground water contamination that occurs within this wellhead protection area has a potential to reach our wells. It is therefore of utmost importance to us that all reasonable steps be taken to ensure that land use activities within this area do not contaminate our drinking water supplies.

Thank you for your support in protecting our drinking water.

Sincerely

Leroy Wallace, Plant Manager
Bob Bergquist, (TITLE)
Washington State Department of Corrections

Appendix 3

Selected Best Management Practices

IV-2.1.7 INDUSTRIAL MACHINERY AND EQUIPMENT, TRUCKS AND TRAILERS, AIRCRAFT, PARTS AND AEROSPACE, RAILROAD EQUIPMENT
SIC: 3500, 3713/14*, 3720*, 3740*, 3760*, 3800*

DESCRIPTION: Businesses that manufacture a variety of equipment including engines and turbines, farm and garden equipment, construction and mining machinery, metal working machinery, pumps, computers and office equipment, automatic vending machines, refrigeration and heating equipment, and equipment for the manufacturing industries described elsewhere. This group also includes many small machine shops. Also included here is the manufacturing of trucks, trailers, and parts. Manufacturing processes will include various forms of metal working and finishing, and the production of plastic and fiberglass parts. This group also includes manufacturing of airplanes and parts, missiles, spacecraft, and railroad equipment and instruments.

MATERIALS USED AND WASTES GENERATED: Manufacturers of engines or engine-driven equipment can be expected to have fueling facilities. Larger equipment may be stored outside. Outside storage of gasoline, diesel, and cleaning fluids may occur. In contrast, smaller businesses may only have outside containers for temporary storage of waste products.

Businesses making equipment in the Puget Sound area that were surveyed for Dangerous Wastes have been found to produce waste acids, used solvents, paints, metal chips with machine oil, various chemicals, and used oil.

Source Control BMPs: See BMPs S1.10, S1.20, S1.30, S1.40, S1.50, S1.60, S1.80, S2.00 and S2.20 in Chapter IV-4 to determine appropriate actions.

Regulatory Requirements: See R.1, R.2, R.3, R.4, R.6, R.7, R.9, R.10 and R.11 in Chapter IV-5.

Stormwater Treatment BMPs: Stormwater from outside equipment storage areas where dripping of oil or hydraulic fluids is likely to occur shall be treated by an API or CPI-type oil/water separator (BMP RD.35 in Volume III, Runoff Control).

Source control BMPs such as good housekeeping should always be used to control stormwater pollution. Stormwater from parking lots and outside areas where manufacturing processes occur shall be treated using infiltration and/or detention as detailed in Volume III, Runoff Control. Those practices shall be used in combination with other appropriate pre-treatment and treatment BMPs such as biofiltration, pre-settling basins and oil/water separators or equivalent (see Volume III).

Stormwater runoff from rooftops may be discharged to the storm drain below the treatment system as long as the drainage requirements of the local Public Works Department are met. If there is no stormwater drainage system (storm sewer) to discharge to, runoff from rooftops should be disposed of through the use of an infiltration facility wherever possible (see BMPs RI.15 and RI.16 in Chapter III-3 of the Runoff Control Volume).

IV-2.3 WHOLESALE AND RETAIL BUSINESSES

IV-2.3.1 GAS STATIONS

SIC: 5540

DESCRIPTION: Gasoline service stations primarily sell gasoline and lubricating oils. Most perform minor repair and maintenance including: servicing of engine hydraulic systems, brakes, transmission, and differential; replacement of engine coolant; lubrication of the body chassis and wheel bearings; engine cleaning; servicing of the air-conditioning system; and the servicing of tires and batteries.

Ancillary activities often present are: car washing and/or steam cleaning that may occur within the building or outside on the paved area; sale of food products; and the rental of trucks or trailers.

MATERIALS USED AND WASTES GENERATED: Both solid and liquid wastes are produced, as well as stormwater runoff from the paved surfaces. Waste materials generated by the various operations include: used oils, oil filters, antifreeze, solvents, brake fluid, and batteries, sulfuric acid, battery acid sludges, empty contaminated containers and soiled rags. Spillage of gasoline and diesel fuels occurs, from the pumps and during transfer from tanker trucks to the underground storage tanks. Leaking underground storage tanks can cause surface and/or ground water contamination as well as being a safety hazard.

Stormwater can be contaminated by: fuels and oil spilled on exposed paved surfaces; by solid and liquid wastes (noted above) that are not properly stored while awaiting disposal or recycling; dirt, oils and greases from steam cleaning and vehicle washing that occurs outside; and dripping of these same materials from parked vehicles. Stormwater and/or ground water contaminated by fuels may contain significant concentrations of dissolved organics that cannot be removed by an oil/water separator.

Deliberate disposal of materials to the storm drain can occur, in particular used oils and brake fluid, used antifreeze and radiator flush. It is currently common practice to temporarily store used oils, brake fluid, and solvent in underground mixed tanks although the latter is more frequently stored in steel drums.

Source Control BMPs: See BMPs S1.10, S1.20, S1.30, S1.40, S1.50, S1.80, S2.00 and S2.20 in Chapter IV-4 to determine appropriate actions.

Additionally:

> *Drain oil filters while the oil is warm for as long as possible (24 hours) and at an angle. Collect the oil for recycling in a separate, labeled container. Drained filters should be kept in a suitable container or drum and sent to a scrap metal recycler or hazardous waste management facility. Don't put undrained filters in the dumpster, or put drained filters in the dumpster without first checking with your local health department.*

For more information on automotive repair and disposal requirements for solid and hazardous wastes, see Step By Step: Fact Sheets for Hazardous Waste Generators, Publication 91-12, available from Ecology's Regional Offices.

Regulatory Requirements: See R.1, R.2, R.3, R.6, R.7, and R.10 in Chapter IV-5.

Stormwater Treatment BMPs: Stormwater from parking and maintenance areas where dripping oil or hydraulic fluids is likely to be occurring shall be treated by an API or CPI-type oil/water separator or equivalent (BMP RD.35 in Volume III, Runoff Control).

Stormwater runoff from rooftops may be discharged to the storm sewer below the treatment system as long as the drainage requirements of the local Public Works Department are met. If there is no stormwater drainage system (storm sewer) to discharge to, runoff from rooftops should be disposed of through the use of an infiltration facility wherever possible (see BMPs RI.15 and RI.16 in Chapter III-3 of the Runoff Control Volume).

IV-2.4.2 COMMERCIAL CAR AND TRUCK WASHES
SIC: 7542

DESCRIPTION: Facilities include automatic systems found at individual businesses or at gas stations and 24-hour convenience stores, as well as self-service. There are three main types: tunnels, rollovers and hand-held wands. The tunnel wash, the largest, is housed in a long building through which the vehicle is pulled. At a rollover wash the vehicle remains stationary while the equipment passes over. Wands are used at self-serve car washes. Some car washing businesses also sell gasoline.

MATERIALS USED AND WASTES GENERATED: The main ingredients are water and detergents. Waxes may be present in the commercial operations. Wastewaters are discharged to sanitary sewers. In self-service operations a drain is located inside each car bay.

Although these businesses discharge the wastewater to the sanitary sewer, some washwater can find its way to the storm drain, particularly with the rollover and wand systems. Rollover systems often do not have air drying. Consequently, as it leaves the enclosure the car sheds water to the pavement. With the self-service system, wash water with detergents can spray outside the building and be lost to the storm drain. Users of self-serve operations may also clean engines and change oil, dumping the used oil into the drain.

Source Control BMPs: See BMP S1.10, Fueling Stations, if gas is sold on premises. Also see BMPs S1.20, S1.80, S2.00 and S2.20 in Chapter IV-4 to determine appropriate actions.

The following BMPs also apply:

- *With rollover systems that do not have air drying, a drain shall be located at the exit of the building to which extraneous wash water can drain. This drain shall be connected to the sanitary sewer.*

- *The solution preventing loss of water at self-service businesses is to construct an embayment of sufficient length. Observation of several such operations indicates the individual bay should be at least 30 feet in length.*

- *Vehicles should be washed in an area that is tied directly into the sanitary sewer per the guidelines of the local Sewer Authority. The detergents in wash water from vehicles which runs into the stormwater treatment systems will render oil/water separators useless otherwise.*

Regulatory Requirements: See R.1 and R.10 in Chapter IV-5.

<u>Stormwater Treatment BMPs</u>: Source control BMPs such as good housekeeping should always be used to control stormwater pollution. Stormwater from parking lots and outside areas where manufacturing processes occur shall be treated using infiltration and/or detention as detailed in Volume III, Runoff Control. Those practices shall be used in combination with other appropriate pre-treatment and treatment BMPs such as biofiltration, pre-settling basins and oil/water separators or equivalent (see Volume III).

Downspouts from the wash building may be discharged downstream of any treatment BMP as long as the drainage control requirements of the local Public Works Department are met. If there is no stormwater drainage system (storm sewer) to discharge to, runoff from rooftops should be disposed of through the use of an infiltration facility wherever possible (see BMPs RI.15 and RI.16 in Chapter III-3 of the Runoff Control Volume).

IV-2.4.4 LAUNDRIES AND OTHER CLEANING SERVICES
SIC: 7211 through 7217

DESCRIPTION: This category includes all types of cleaning services such as laundries, linen suppliers, diaper services, coin-operated laundries and dry cleaners, and carpet and upholstery services.

Materials used differ depending on whether wet or dry cleaning is used. Wet washing may involve the use of acids, bleaches and/or multiple organic solvents. Dry cleaners use an organic-based solvent, although small amounts of water and detergent are sometimes used. Solvents may be recovered and filtered for further use.

Carpet and upholstery cleaning may occur on location or at the plant. On-location is done with dry materials or by a hot water extraction process. In-plant processes usually use solvents followed by a detergent wash.

MATERIALS USED AND WASTES GENERATED: Wash liquids are discharged to sanitary sewers. Of concern is the loading and unloading of liquid materials, particularly at large commercial operations, and the disposal of spent solvents and solvent cans.

Source Control BMPs: See BMPs S1.30, S1.40, S1.50, S1.80, S2.00 and S2.20 in Chapter IV-4 to determine appropriate actions.

The following BMPs also apply:

- *Mobile cleaning units shall not discharge the accumulated wash water to storm drains or to surface or ground water. Such water shall be discharged to the sanitary sewer according to local Sewer Authority requirements.*
- *A spill response plan must be developed for each facility. This plan should be implemented immediately upon the spill or release of any liquid.*
- *Spent solvent cans must be disposed of properly in an appropriate, covered container.*

For more information on dry cleaning and disposal requirements for solid and hazardous wastes, see Step By Step: Fact Sheets for Hazardous Waste Generators, publication 91-12, available from Ecology's Regional Offices.

Regulatory Requirements: See R.1, R.2, R.3, and R.10 in Chapter IV-5.

Stormwater Treatment BMPs: Source control BMPs such as good housekeeping should always be used to control stormwater pollution. Stormwater from parking lots and outside areas where manufacturing processes occur shall be treated using infiltration and/or detention as detailed in Volume III, Runoff Control. Those practices shall be used in combination with other appropriate pre-treatment and treatment BMPs such as biofiltration, pre-settling basins and oil/water separators or equivalent (see Volume III).

Stormwater from roof-tops may be discharged to the storm drain below the treatment system as long as the drainage requirements of the local Public Works Department are met. If there is no stormwater drainage system (storm sewer) to discharge to, runoff from rooftops should be disposed of through the use of an infiltration facility wherever possible (see BMPs RI.15 and RI.16 in Chapter III-3 of the Runoff Control Volume).

IV-2.4.9 VEHICLE MAINTENANCE AND REPAIR
SIC: 4000**, 7530

DESCRIPTION: Includes businesses that repair and maintain automobiles, trucks, and buses, excluding those businesses listed elsewhere in this manual. Businesses included here are lube and tune shops, auto and truck repair and painting shops; and battery, radiator, muffler, and tire shops. Excluded here are vehicle dealers and gasoline service stations that also repair vehicles.

MATERIALS USED AND WASTES GENERATED: Wastes generated are similar to those produced by general purpose gas stations, although businesses that provide specialized maintenance activities will not produce all the wastes listed below.

Materials include waste oil, solvents, degreasers, antifreeze, radiator flush, acid solutions with chromium, zinc, copper, lead and cadmium, brake fluid, soiled rags, oil filters, sulfuric acid and battery sludges, and machine chips with residual machining oil.

A large number of vehicles may be parked in and around the service buildings.

Source Control BMPs: See BMPs S1.10, S1.20, S1.30, S1.40, S1.50, S1.70, S1.80, S2.00 and S2.20 in Chapter IV-4 to determine appropriate actions.

Additionally:

- *Drain oil filters while the oil is warm for as long as possible (24 hours) and at an angle. Collect the oil for recycling in a separate, labeled container. Drained filters should be kept in a suitable container or drum and sent to a scrap metal recycler or hazardous waste management facility. Don't put undrained filters in the dumpster, or put drained filters in the dumpster without first checking with your local health department.*

For more information on automotive repair and disposal requirements for solid and hazardous wastes, see Step By Step: Fact Sheets for Hazardous Waste Generators, publication 91-12, available from Ecology's Regional Offices.

Regulatory Requirements: See R.1, R.2, R.3, R.7, R.10 and R.11 in Chapter IV-5.

Stormwater Treatment BMPs: Stormwater from parking and maintenance areas where dripping oil or hydraulic fluids is likely to be occurring shall be treated by an API or CPI-type oil/water separator (BMP RD.35 in Volume III, Runoff Control).

Source control BMPs such as good housekeeping should always be used to control stormwater pollution. Stormwater from parking lots and outside areas shall be treated using infiltration and/or detention as detailed in Volume III, Runoff Control. Those practices shall be used in combination with other appropriate pre-treatment and treatment BMPs such as biofiltration, pre-settling basins and oil/water separators.

Stormwater runoff from rooftops may be discharged to the storm drain below the treatment system as long as the drainage requirements of the local Public Works Department are met. If there is no stormwater drainage system (storm sewer) to discharge to, runoff from rooftops should be disposed of through the use of an infiltration facility wherever possible (see BMPs RI.15 and RI.16 in Chapter III-3 of the Runoff Control Volume).

Appendix 4
County Ordinances

Revised April 6, 1999

DRAFT REVISED LANGUAGE 98-02
THURSTON COUNTY CRITICAL AREAS ORDINANCE
NEW LAND USES AND EXISTING AND EXPANDING FACILITIES

Proposed Revisions: ***(note - additions are indicated by underlined text and deletions are indicated by ~~text strike out~~)***

6.5 "AKART" means **A**ll **K**nown, **A**vailable, and **R**easonable methods of prevention, control, and **T**reatment. AKART may include, but not be limited to, pollution prevention plan development and implementation, engineering solutions, and practices deemed necessary to prevent release.

6.6 "Animal Unit"is defined as 1,000 pounds of live weight of any given livestock species or any combination of livestock species. Animal equivalents are calculated for each livestock and poultry sector according to estimated rates of manure production for each species. Common examples of livestock species include, but are not limited to, cattle (beef and dairy), chickens, horses, goats, pigs, and llamas. For additional information, refer to the U.S. Department of Agriculture Natural Resource Conservation Service Animal Waste Field Handbook.

63.5 "MPCs" means reasonable **M**ethods of **P**revention and **C**ontrol. Examples of MPCs include, but are not limited to, pollution prevention plan development and implementation, routine maintenance, secondary containment, and measures to eliminate contaminant pathways to the source water .

73.5 "Pollution Prevention Plan" means a site-specific plan that addresses the avoidance of unplanned chemical release in the air, water, or land. It is based on deliberate waste management planning, site design, and operational practices.

116.5 "Wellhead Protection Area, Designated" means the surface and subsurface area surrounding a water well or well field, supplying a public water supply system with over 1,000 connections, through which contaminants are reasonably likely to move toward and reach such well or well field within one, five, and ten years. A designated wellhead protection area is an area for which the water purveyor has adopted a wellhead protection plan and the plan has been approved by the Washington State Department of Health.

17.15.850 Special Management Areas--Wellhead Protection Areas Map. The requirements of Sections 17.15.855, 17.15.856, and 17.51.857 shall apply to lands within the one, five and ten year time of travel zones of those wellhead protection areas depicted on the map entitled "Designated Wellhead Protection Areas." A copy of this map shall be on file with the Thurston County Development Services Department. Refer to Figures 30 and 31 for a general location of

County Wellhead Ordinance.doc

these designated areas. (Ordinance No. 11590, 12/15/97).

17.15.855 Special Management Areas - Wellhead Protection Area Standards for New Uses.

A. The following uses shall be prohibited within the designated one (1) year time of travel zone:

1. Land Spreading disposal facilities (as defined by WAC 173-304 and WAC 173-308 - disposal above agronomic rates);
2. ~~Confined animal feeding operations (defined as over 200 dairy cattle or the equivalent animal unit)~~ Agricultural operations with over 200 animal units. For purposes of this section, one animal unit is the equivalent number of livestock and/or poultry as defined by the U.S. Department of Agriculture Natural Resource Conservation Service Animal Waste Field Handbook;
3. Gas stations, petroleum products refinement, reprocessing, and storage (except underground storage of heating oil or agricultural fueling in quantities less than 1,100 gallons for consumptive use on the parcel where stored), and liquid petroleum products pipelines ~~(SIC Codes 517,554, 598, 461)~~;
4. Automobile wrecking yards;
5. Wood waste landfills; and
6. Dry cleaners, excluding drop-off only facilities ~~(SIC Code 721)~~.

B. The following uses shall be prohibited within the designated one (1), five (5) and ten (10) year time of travel zones:

1. Landfills (municipal sanitary solid waste and hazardous waste);
2. Hazardous waste transfer, storage and disposal facilities;
3. Wood and wood products preserving ~~(SIC Code 2491)~~; and
4. Chemical manufacturing ~~(SIC Code 28)~~.

C. For any use proposed within the designated one (1), five (5), and ten (10) year time of travel zones which uses, stores, handles or disposes of hazardous materials above the minimum quantities listed below, the applicant shall submit for review and approval documentation that ~~all known available and reasonable technologies (~~AKART~~)~~ are proposed to be ~~will~~ used to prevent impact to the source water. The health officer ***(note in City ordinances this will be the permitting authority)***, in consultation with the water purveyor, will review this documentation to determine ~~if conditions need to be placed on the use~~ whether the application shall be approved, denied, or approved with conditions ~~need to be placed on the use~~ to e~~i~~nsure adequate protection of the source water supply.

Notwithstanding the minimum quantity thresholds listed below, the health officer ***(or permitting authority)*** may, at his/her discretion and with reasonable expectation of risk to ground water, require pollution prevention plans and MPCs on any use proposed within the one (1), five (5), and ten (10) year time of travel zones.

1. Types of c~~C~~hemical substances regulated in Table 8001.~~13-b~~ 15-a,b,c,d of the Uniform Fire Code, and as subsequently amended, ~~which are associated with daily operations, including routine maintenance~~. *Minimum cumulative quantity:* 160 pounds (or the equivalent 20 gallons)

~~2.~~ ~~Maintenance chemical substances that are actively in use for non-routine maintenance or repair of property. Minimum quantity: 400 pound or the equivalent 50 gallons)~~

~~3.~~2. Cleaning substances ~~that are cleaning agents~~ for janitorial use or retail sale ~~packaged for personal or household use or are~~ present in the same ~~form~~ size, packaging, and concentrations as a product packaged for use by the general public. Chlorinated solvents and non-chlorinated solvents which are derived from petroleum or coal tar will not be considered a cleaning ~~regulated~~ substance under this ~~category~~ sub-section, but rather a chemical substance under subsection 17.15.855 (C)(1) above. *Minimum cumulative quantity:* 800 pounds ~~cumulative~~ (or the equivalent 100 gallons), not to exceed 55 gallons for any single package

~~4.~~ ~~Laboratory related substances (medical and research laboratory substances). No single container/package or any chemical substance shall exceed 50 gallons. *Minimum quantity:* cumulative exceeding 2,000 pounds (or the equivalent 250 gallons)~~

~~5.~~ ~~School related substances (a combination of laboratory, maintenance and cleaning regulated substances). No single container/package shall exceed 50 gallons. *Minimum quantity:* cumulative exceeding 2,000 pounds (or the equivalent 250 gallons) (Ordinance No. 11590, 12/15/97)~~

3. Businesses which use, store, handle or dispose of chemicals listed in WAC 173-303-9903 as "P" chemicals. *Minimum cumulative quantity*: 2.2 pounds.

Additions: *(note - all the following text is new)*

17.15.856 Special Management Areas - Wellhead Protection Area Standards for Expansion of Existing Uses. The following shall apply to expansion of use of facilities located within the designated wellhead protection areas defined in Section 17.15.850. In this section, "expansion" shall be defined as any addition, remodel, or structural change that requires a building permit. ***(Cities will use their own definitions of expansion here.)***

A. Expansion of the following uses will be prohibited within the designated one (1) year time of travel zone:

1. Land Spreading disposal facilities (as defined by WAC 173-304 and WAC 173-

308 - disposal above agronomic rates);

2. Gas stations (fuel related uses), petroleum products refinement, reprocessing, and storage (except underground storage of heating oil or agricultural fueling in quantities less than 1,100 gallons for consumptive use on the parcel where stored), and liquid petroleum products pipelines;

3. Automobile wrecking yards;

4. Wood waste landfills; and

5. Dry cleaners, excluding drop-off only facilities.

6. Agricultural operations with less than 200 animal units cannot expand to over 200 animal units. For purposes of this section, one animal unit is the equivalent number of livestock and/or poultry as defined by the U.S. Department of Agriculture Natural Resource Conservation Service Animal Waste Field Handbook.

B. Expansion of the following uses shall be prohibited within the designated one (1), five (5) and ten (10) year time of travel zones:

1. Landfills (municipal sanitary solid waste and hazardous waste);

2. Hazardous waste transfer, storage and disposal facilities;

3. Wood and wood products preserving; and

4. Chemical manufacturing; and

C. For any expansion of an existing use proposed within the designated one (1), five (5), and ten (10) year time of travel zones which uses, stores, handles or disposes of hazardous materials above the minimum quantities listed below, the applicant shall submit for review and approval, documentation that AKART is proposed to be used to prevent impact to source water. The health officer ***(or permitting authority)*** will review this documentation to determine whether the expansion shall be approved, denied, or approved with conditions to ensure adequate protection of the source water supply.

Notwithstanding the minimum quantity thresholds listed below, the health officer ***(or permitting authority)***, at his/her discretion and with reasonable expectation of risk to ground water, may require pollution prevention plan development and implementation of MPCs on any use located within the one (1), five (5), and ten (10) year time of travel zones. The health officer ***(or permitting authority)*** will review this documentation to determine whether the expansion shall be approved, denied or approved with conditions to ensure adequate protection of the source water supply.

1. Types of chemical substances regulated in Table 8001.15-a,b,c,d of the Uniform Fire Code, and as subsequently amended. *Minimum cumulative quantity:* 160 pounds (or the equivalent 20 gallons).

2. Cleaning substances for janitorial use or retail sale present in the same packaging and concentrations as products packaged for use by the general public. Chlorinated solvents and non-chlorinated solvents which are derived from petroleum or coal tar will not be considered a cleaning regulated substance under this category, but rather a chemical substance under subsection 17.15.856 (C)(1) above. *Minimum cumulative quantity:* 800 pounds(or the equivalent 100 gallons), not to exceed 55 gallons for any single package.

3. Businesses which use, store, handle or dispose of chemicals listed in WAC 173-303-9903 as "P" chemicals. *Minimum cumulative quantity*: 2.2 pounds.

17.15.857 Special Management Areas—Wellhead Protection Area Standards for Existing Uses. The following shall apply to existing uses located within the designated wellhead protection areas defined in Section 17.15.850.

A. For any existing use identified by the pollution source inventory in an area with an approved wellhead protection plan, within the one (1), five (5), and ten (10) year time of travel zones which uses, stores, handles or disposes of hazardous materials above the minimum quantity thresholds listed in 17.15.855 (C)(1-3), the owner, upon request of the health officer, shall submit a pollution prevention plan that will ensure adequate protection of the source water supply. The health officer ***(note in City ordinances this will be the permitting authority)***, in consultation with the water purveyor in which the use is located, shall review this plan to determine whether the plan shall be approved, or approved with conditions to ensure adequate protection of the source water supply.

   Notwithstanding the minimum quantity thresholds listed in 17.15.855(C)(1-3), the health officer ***(or permitting authority)***, at his/her discretion, for good cause and with reasonable expectation of risk to ground water, may require pollution prevention plans and MPCs on any use proposed within the one (1), five (5), and ten (10) year time of travel zones.

B. For any existing agricultural use located within the designated one (1), five (5), and ten (10) year time of travel zones, the owner, upon request of the health officer ***(or permitting authority)***, at his/her discretion, for good cause and with reasonable expectation of risk to ground water, and with consultation with the Thurston

<u>Conservation District, shall develop and implement a farm conservation plan in conformance with the U.S. Natural Resources Conservation Service Field Office Technical Guide and obtain approval of the Thurston Conservation District Board of Supervisors. For purposes of this section, only those activities in an approved farm plan related to groundwater protection must be implemented. However, nothing in this section relieves an agricultural operation from meeting the requirements of other jurisdictions.</u>

	Prohibited	AKART (includes P2 Plan)	MPCs	P2 Plan	Farm Conservation Plan
New Uses					
Extremely high risk activities	X				
Uses with cumulative quantities > minimum thresholds		X			
Uses determined by the Health Officer to pose a risk		D			
Expanding Uses					
Extremely high risk activities	X				
Uses with cumulative quantities of hazardous materials > minimum thresholds		X			
Other uses with quantities < minimum quantities determined by the Health Officer to pose a risk			D	D	
Existing Uses					
Uses with cumulative quantities of hazardous materials > minimum thresholds			D	X	
Other uses with quantities < minimum thresholds determined by the Health Officer to pose a risk			D	D	
Farms with > 2 animal units/acre					X

AKART means means all known, available, and reasonable methods of prevention, control, and treatment. AKART may include, but not be limited to, pollution prevention plan development and implementation, engineering solutions, and practices deemed necessary to prevent release.

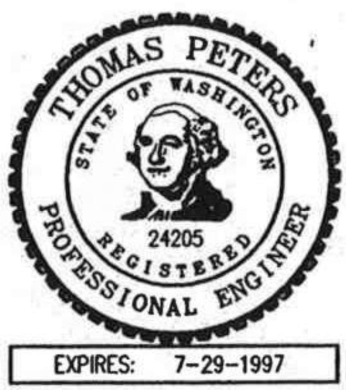
MPCs means reasonable methods of prevention and control. Examples of MPCs include, but are not limited to, Pollution prevention plan development and implementation, routine maintenance, secondary containment, and measures to eliminate contaminant pathways to the source water .

P2 Plan = Pollution Prevention Plan; X = Required; D = Determination by Health Officer
Prohibitions for **new** uses listed in Section 17.15.855, prohibitions for **expanding uses** listed in Section 17.15.856.

Larch Corrections Center

WASHINGTON STATE
DEPARTMENT OF CORRECTIONS
LARCH CORRECTIONS CENTER

DRAFT
LARCH WELLHEAD PROTECTION PLAN



G&O No. 95730.32

FEBRUARY 1997

Gray & Osborne, Inc.
CONSULTING ENGINEERS

TABLE OF CONTENTS

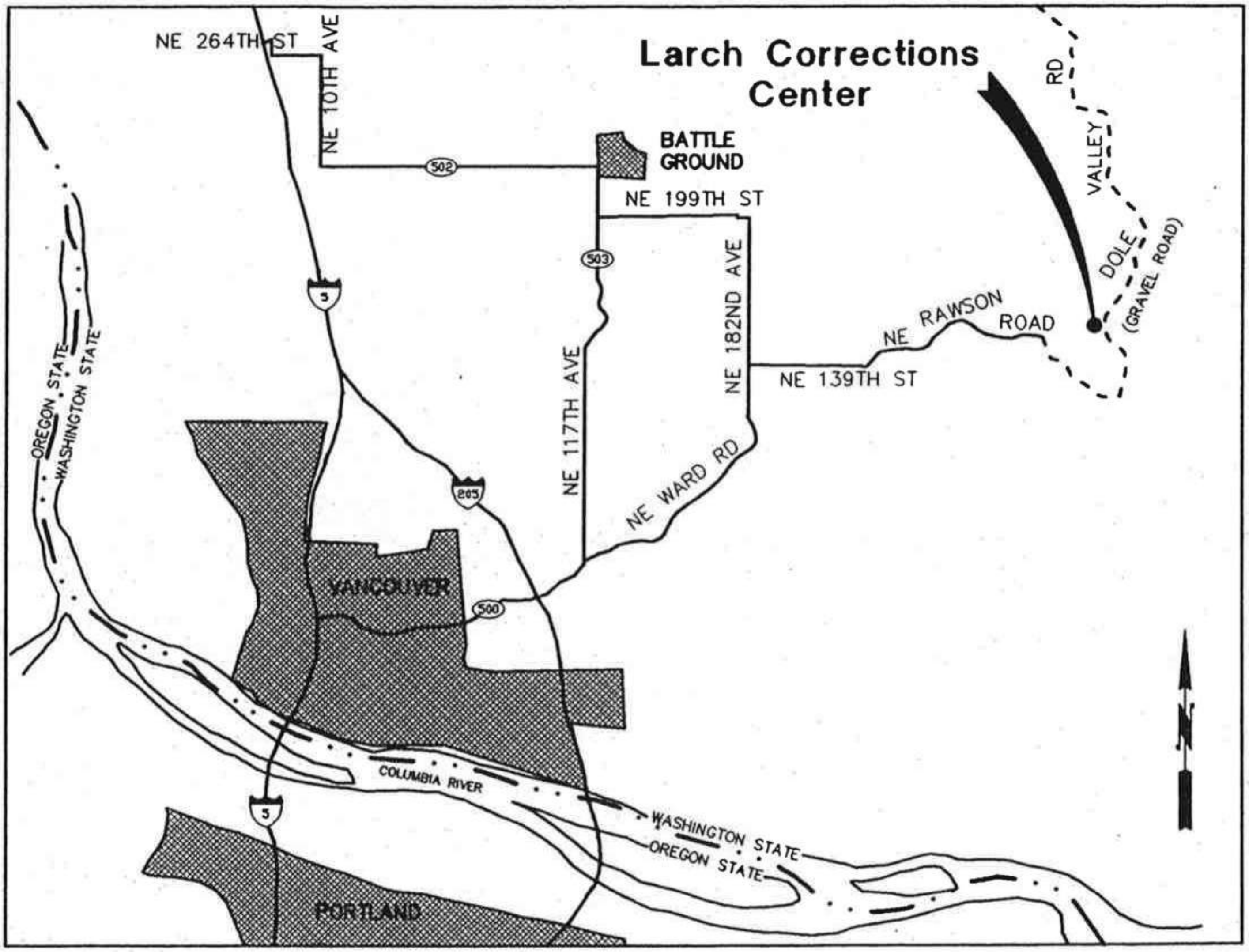
CHAPTER 1
INTRODUCTION

Gray & Osborne, Inc. was retained by the Washington State Department of Corrections (DOC) to prepare a Wellhead Protection Plan for the Larch Corrections Center (LCC). The LCC is a minimum security facility located 10 miles south of the Town of Yacolt in Clark County (Figure 1-1). It has a current inmate population of approximately 165 with a staff population of 44. The facility is currently undergoing expansion to become a 400 bed facility which should be completed in the fall of 1997. Figure 1-2 is a site map which includes the major structures and water system components of the LCC.

Source protection, which includes either a watershed control program or a wellhead protection program, is a required component of a water system plan (WAC 246-290-100 (4)(m)) or a small water system management program (WAC 246-290-100 (4)(d)). The contents of a wellhead protection program are listed in WAC 246-290-135 (4) and are as follows:

- A susceptibility assessment;
- Wellhead protection area (WHPA) delineation for each well, wellfield, or spring with the one, five, and ten year time of travel boundaries marked;
- A list of all actual and potential groundwater contaminant sources within the defined WHPA(s);
- Documentation of purveyor's notification to all owners/operators of actual and potential sources of groundwater contamination within WHPA boundaries;
- Documentation of purveyor's notification to regulatory agencies and local governments of the boundaries of the WHPA(s) and the finding of the WHPA inventory;
- A contingency plan to ensure consumers have an adequate supply of potable water in the event that contamination results in the temporary or permanent loss of the principal source of supply; and
- Documentation of coordination with local emergency spill responders, including notification of WHPA boundaries, results of susceptibility assessment, inventory findings, and contingency plan.

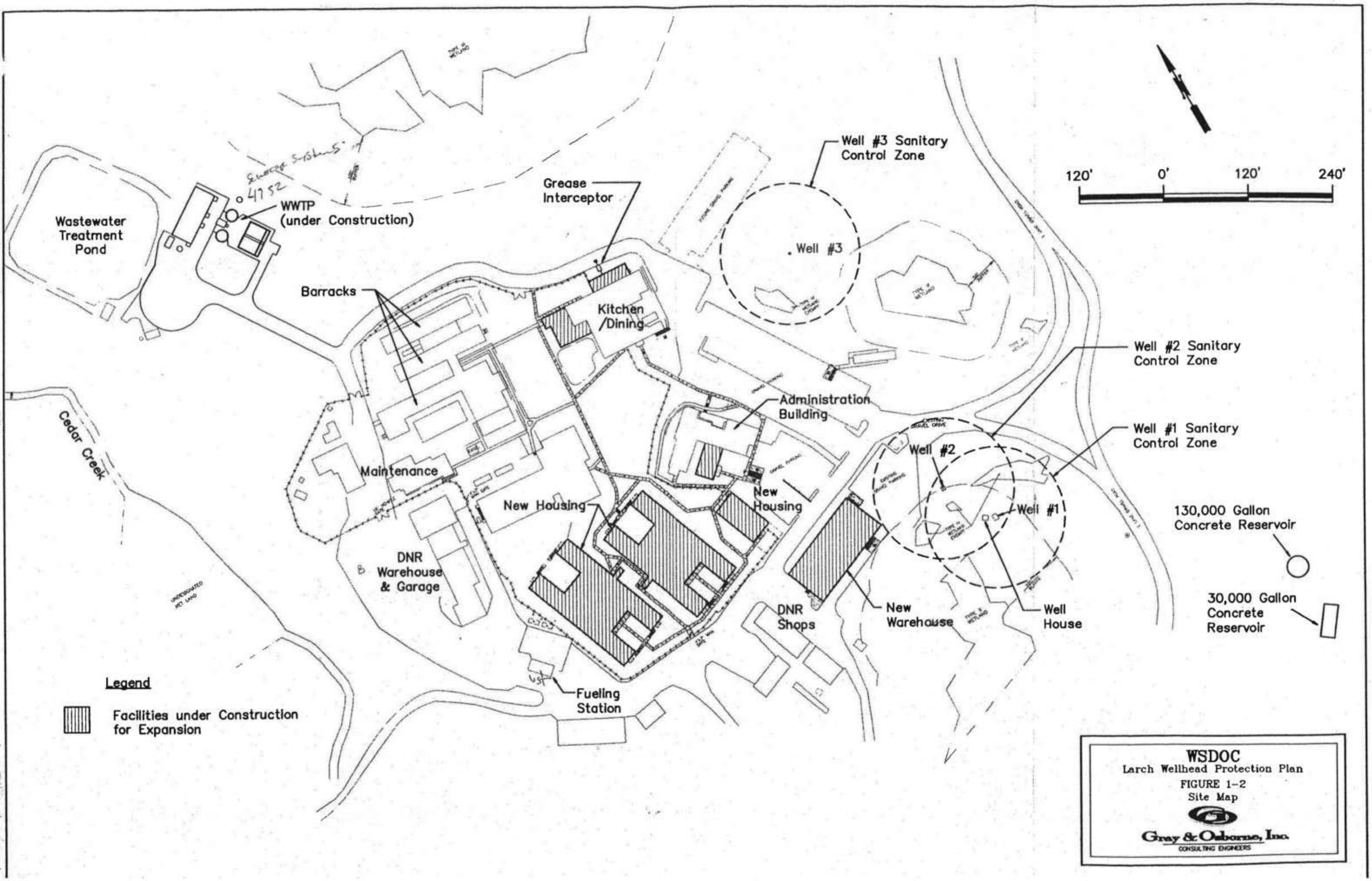
A wellhead protection plan (WPP) is a component of the wellhead protection program and is designed to protect groundwater sources of supply. The first step is a delineation of the Wellhead Protection Area(s) (WPA) to define the boundaries of aquifer recharge. Delineation is discussed in Section 2 of this report. The second step, presented in Section 3, is an inventory of potential pollution sources located at the LCC and their locations within the boundaries of the WPA. Section 4, Wellhead Protection Area Management, provides a discussion of agencies with an interest in wellhead protection and provides a summary of management tools that will aid in the effort to protect groundwater quality.



NOT TO SCALE

WSDOC
Larch Wellhead Protection Plan
FIGURE 1-1
Location Map

Gray & Osborne, Inc.
CONSULTING ENGINEERS



WSDOC
Larch Wellhead Protection Plan
FIGURE 1-2
Site Map

Gray & Osborne, Inc.
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Sections 5 and 6 address Contingency Planning and Spill Response. Section 7 includes a summary of the report findings and gives recommendations for implementing the WPP.

FACILITY DESCRIPTION

LCC is supplied by groundwater sources. Four wells are located within the property boundaries of the institution. Two wells are active, one is inactive, and one has been capped. Well logs for the active wells (Wells 2 and 3) are included in Appendix A. All wells pump directly to the reservoirs. The capped well was completed in 1971 to a depth of 81 feet and is located nearby a well house. The well is to remain capped since it does not meet Washington State Department of Ecology regulations listed in WAC 173-160, Minimum Standards for Construction and Maintenance of Wells.

Well No. 1, drilled in 1980 to a depth of 124 feet, is operable but is no longer in active use due to limited production capacity. The LCC anticipates pumping this well once per week to ensure the well is available for emergencies. The water well report indicates the casing was perforated from 104 feet to 124 feet. A surface seal of cement was placed to a depth of 20 feet. Well No. 2 was completed in 1980 to a depth of 160 feet. The water well report indicates that the casing was perforated from 145 feet to 155 feet. A surface seal of bentonite was installed to a depth of 18 feet. The well has a 5 HP pump and was observed to be pumping at 50 gpm during two site visits in August and October 1994. Well No. 3 was drilled in 1993 to a depth of 200 feet. The casing was installed to a depth of 68 feet and the remainder of the well was drilled in fractured rock. Bentonite chips were used to provide a surface seal to a depth of 18 feet. The well is equipped with a 3 HP pump and was observed to be pumping at 36 gpm during an October 1994 site visit. The well will be outfitted with a 65 gpm pump after the 400-bed expansion.

Water from the wells is pumped through a central well house where it is chlorinated with a sodium hypochlorite solution. Water flows directly through the well house to the reservoirs. The reservoirs consist of a 30,000 gallon rectangular concrete tank constructed in 1982 and a 130,000 gallon circular concrete tank constructed in 1994. Water from the reservoirs enters the distribution system without any additional treatment. Table 1-1 summarizes the major system components of the LCC water system.

TABLE 1-1

Major Water System Components at LCC

Source Water Components	Well No. 1	Well No. 2	Well No. 3
Well Status	Not in use	In Use	In Use
Well Capacity (gpm)	20 gpm	50 gpm	65 gpm (1)
Well Logs available	yes	yes	yes
Well Pump Type	submersible	submersible	submersible
Pump Horsepower	unknown	5 HP	5 HP
Average Daily hours of operation	NA	5 - 5.5	5 - 5.5
Drawdown Information Available	no	no	no
Emergency or Backup Power	Generator with automatic transfer switch		

(1) Well 3 is currently equipped with a 35 gpm pump. It will be equipped with a 65 gpm pump after the 400-bed expansion.

Reservoir Components	Reservoir No. 1	Reservoir No. 2
Storage Capacity	30,000 gal	130,000 gal
Year Constructed	1982	1994
Material Type	Concrete	Concrete

SUSCEPTIBILITY ASSESSMENT

LCC submitted Susceptibility Assessment Survey Forms for each of its wells to the DOH. The forms include the following information: system, well construction and source, hydrogeologic, groundwater resource mapping, assessment of water quality, and geographic or hydrologic factors contributing to a non-circular zone of contribution. Based on this information, LCC was given a "low" susceptibility rating by the DOH. This means that the system is not very susceptible to contamination and is eligible to receive susceptibility waivers from the DOH. The LCC Susceptibility Assessment Survey Forms are included in Appendix B.

AREA SOILS

Soil types at LCC are classified as Kinney Silt Loam 3 to 15 percent slopes (symbol KeC) or Kinney Silt Loam 15 to 30 percent slopes (symbol KeE) (USDA, 1972). The Kinney series consists of deep, well-drained, gently sloping to very steep soils. These are medium-textured soils that have a moderately fine textured topsoil. They formed in volcanic ash and residuum that weathered from igneous rock. Surface runoff from KeC is slow to medium and the erosion hazard is slight to moderate if the soil is left bare. The main use of this soil is for timber and a few small areas are cleared for pasture. Surface runoff from KeE is medium to rapid and the erosion hazard is moderate to severe if the soil is left bare. This soil is suitable for timber and recreation. Both soil types are listed as moderately corrosive to untreated steel pipe and concrete conduits. They have permeabilities in the range of 0.6 - 2.0 inches per hour and available water capacities of 0.14 - 0.16 inches of water per inch of soil (USDA, 1972).

CHAPTER 2
DELINEATION OF WELLHEAD PROTECTION AREAS

Delineation of the wellhead protection area(s) (WHPA) for given groundwater sources is the first step in developing a local Wellhead Protection Plan (WPP). A WHPA is defined by WAC 246-260-010 as "the portion of a well's, wellfield's, or spring's zone of contribution. . ." A zone of contribution is "the area surrounding a pumping well or spring that encompasses all areas or features that supply groundwater recharge to the well or spring".

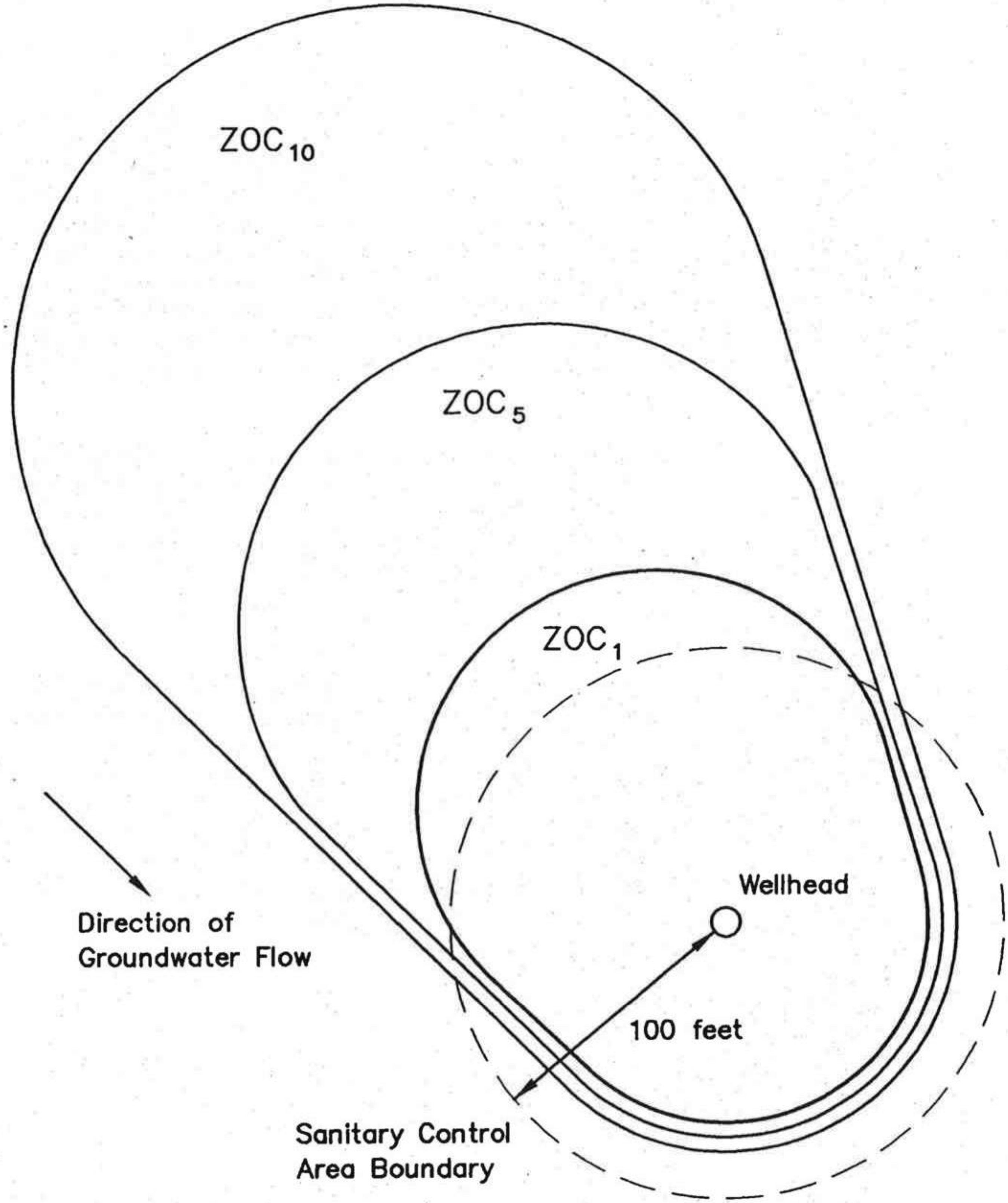
A wellhead protection area consists of up to five primary zones: a sanitary control zone, the one, five, and ten year time of travel boundaries, and a buffer zone (if necessary). As defined by WAC 246-290-135, the minimum sanitary control zone for wells shall have a radius of 100 feet, unless engineering justification supports a smaller area. No source of contamination may be constructed, stored, disposed of, or applied within the sanitary control zone without the permission of the DOH and the water purveyor.

The three time of travel boundaries or zones are determined by estimating the travel paths of a hypothetical particle of water through the aquifer to the pumping well. These zones define aquifer management regions around the pumping well that can be used to determine potential sources of contamination that could conceivably impact the water supply. (DOH, 1993b) For this report, these time of travel zones will be referred to as the one, five and 10 year zones of contribution (ZOC_1, ZOC_5, ZOC_{10}, respectively). In terms of aquifer gradient, ZOC_{10} is upgradient to ZOC_5 which is upgradient to ZOC_1. The sanitary control zone will always contain a portion of ZOC_1 and may contain portions of ZOC_5 and ZOC_{10}. Figure 2-1 shows a hypothetical well with a sanitary control zone and hypothetical zones of contribution. A buffer zone may be extended upgradient of ZOC_{10} to focus on selected areas of control such as aquifer recharge areas.

DELINEATION METHODS

There are four general delineation methods acceptable to the DOH to determine ZOCs and wellhead protection areas. They are:

- Calculated Fixed Radius (CFR);
- Analytical Models;
- Hydrogeologic Mapping; and
- Numerical Flow/Transport Models.



LEGEND

ZOC_1 – One Year Zone of Contribution

ZOC_5 – Five Year Zone of Contribution

ZOC_{10} – Ten Year Zone of Contribution

WSDOC
Larch Wellhead Protection Plan
FIGURE 2–1
Hypothetical Well and ZOCs

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In general, there is an increase in complexity and input data from the top to the bottom of the list. However, the increase in input data and complexity generally results in greater accuracy and reliability. The CFR method is the minimum acceptable interim method of delineation for public water systems with between 100 and 1000 connections. There are two scenarios under which the water system would be expected to upgrade their initialdelineation: 1) if the susceptibility assessment indicates that the system is highly susceptible, or 2) there are irregular or steep groundwater gradients in the vicinity of the well. If either of these two conditions exist, the public water supply should upgrade the initial delineation to an analytical or a groundwater flow model within 5 years (DOH, 1993b). Figure 2-2 gives a sample representation of the zones of contribution calculated from a CFR delineation.

The isolation of the LCC, the small number of connections, the low susceptibility of the water source, and the limited number of potential pollution sources lends itself well to the use of the CFR method. In addition, the lack of readily available information regarding the aquifer and local hydrological conditions (such as groundwater gradient and aquifer transmissivity) eliminates the options of the more complex models.

LCC CFR DELINEATION

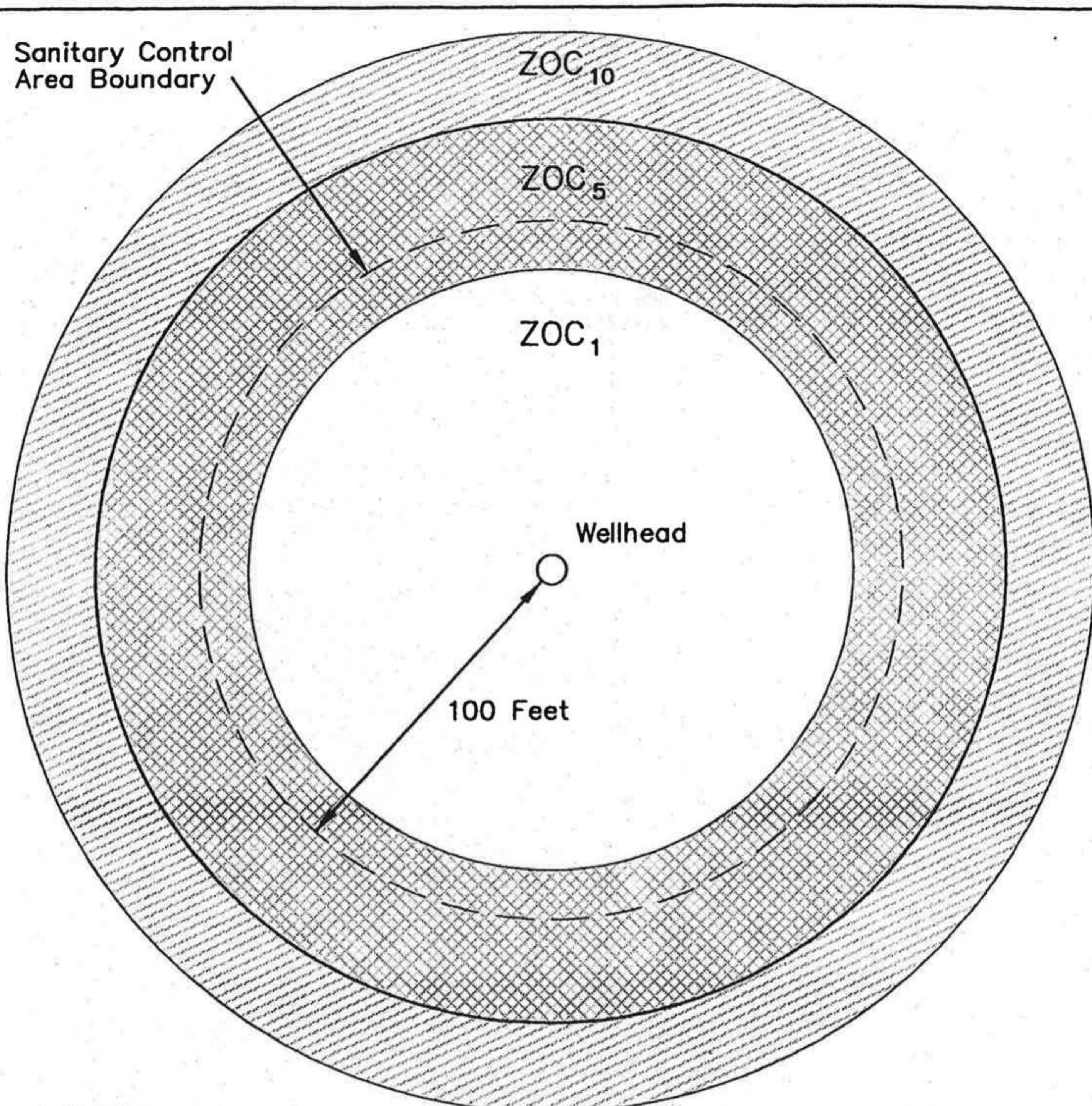
Clark County has summarized existing Group A Water System WHPAs and performed delineations for all Group A Water Systems within the county. Two methods (CFR and analytical model) were used to determine well head protection areas for the Group A wells without previous delineations. The method for each well was selected based on the following criteria: 1) whether the well serves a residential population or a school, or was for business use, 2) whether or not there was water-level information for the aquifer tapped by the well, and 3) the presence or absence of a well construction record (Clark County, 1995). Aquifer water-levels were required to map gradient and flow direction. Due to the lack of flow direction and gradient information, a CFR delineation was conducted for LCC in the same fashion as the county.

The CFR model is based on a simple volumetric flow equation (U.S. EPA, 1994) which calculates the radius of a cylindrical volume of water bearing strata that holds the volume of water pumped during a specified period of time. The equation for calculating the radius for a ZOC is:

$$\mathbf{radius = (Qt/\pi nH)^{1/2}}$$

Where:

- **radius** - the radius in feet of a delineation for a selected time of travel
- **Q** - the volume of water pumped by the well in a year in cubic feet
- **t** - the number of years selected for the time of travel (1, 5, 10 years)
- **n** - the aquifer porosity as a decimal fraction
- **H** - the water bearing interval of the well (aquifer thickness)



LEGEND

ZOC_1 – One Year Zone of Contribution

ZOC_5 – Five Year Zone of Contribution

ZOC_{10} – Ten Year Zone of Contribution

ZOC RADIUS = $\sqrt{\frac{Qt}{\pi nH}}$ (ft.)

Q– Pumping Rate of Well (ft^3/yr)
n– Aquifer Porosity
H– Water Bearing Interval of Well
(aquifer thickness, ft.)
t– Travel Time to Well (1,5,10 yr.)

WSDOC
Larch Wellhead Protection Plan
FIGURE 2-2
Hypothetical Well and ZOCs

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The method assumes that the aquifer has a flat water-level surface with no regional groundwater flow, is uniformly thick and porous, and does not receive recharge from above and below. The method is sensitive to changes in each parameter. As pumping rate (Q) increases, a delineation radius increases because a larger volume of aquifer is required to hold the water used by the well in a specific period of time. Increasing porosity decreases the radius because the volume of aquifer needed to produce a volume of water is inversely proportional to porosity. Increasing the open interval decreases the radius by making a taller, thinner cylinder (Clark County, 1995).

Current LCC water use flows (Q) used by Gray & Osborne were determined using the recorded flows for the period October 1, 1995 to September 30, 1996. The average daily water production for LCC during this period was 26,900 gallons for a total of 9.82 million gallons (1,310,000 cubic feet). Given a pumping capacity of 50 gpm for Well 2 and 35 gpm for Well 3, the annual volume of water pumped from Well 2 was 771,000 cubic feet and 539,000 cubic feet from Well 3.

To determine the flows after the 400-bed expansion, the LCC Water Conservation Plan was referenced (G&O, 1994). A production per capita value of 137 gallons per capita per day was estimated after implementation of Phase I of the Plan. The per capita value is based on the number of inmates plus one third the number of staff since the staff is on 8-hour shifts and does not live at the facility. This corresponds to a per inmate production of 152 gallons per inmate per day, or 60,800 gpd after expansion, since the number of staff is projected to increase proportionally with the number of inmates. This results in an annual production of 68.1 acre-feet (2,970,000 cubic feet). Given a pumping capacity of 50 gpm for Well 2 and 65 gpm for Well 3, the volume of water from Well 2 is estimated to be 1,290,000 cubic feet and 1,680,000 cubic feet from Well 3.

Tables 2-1 and 2-2 summarize the parameters used in the CFR model and the results obtained by Clark County and Gray & Osborne.

L

TABLE 2-1

CFR Model Parameters and Results for LCC Well 2.

Parameter	Clark County, Delineation	Gray & Osborne, Current LCC Water Use	Gray & Osborne, LCC Water Use after 400-Bed Expansion
Q	545,000 cubic feet	771,000 cubic feet	1,290,000 cubic feet
t	1, 5, 10 year	1, 5, 10 year	1, 5, 10 year
n	0.1	0.1	0.1
H	100 feet	100 feet	100 feet
Radius (ZOC_1)	132 feet	157 feet	203 feet
Radius (ZOC_5)	295 feet	350 feet	453 feet
Radius (ZOC_{10})	417 feet	496 feet	641 feet

TABLE 2-2

CFR Model Parameters and Results for LCC Well 3.

Parameter	Clark County, Delineation	Gray & Osborne, Current LCC Water Use	Gray & Osborne, LCC Water Use after 400-Bed Expansion
Q	431,000 cubic feet	539,000 cubic feet	1,680,000 cubic feet
t	1, 5, 10 year	1, 5, 10 year	1, 5, 10 year
n	0.1	0.1	0.1
H	132 feet	132 feet	132 feet
Radius (ZOC_1)	102 feet	114 feet	201 feet
Radius (ZOC_5)	228 feet	255 feet	450 feet
Radius (ZOC_{10})	322 feet	361 feet	636 feet

The water bearing thickness of the Well 2 aquifer is 100 feet. Well 3 was drilled to 200 feet of which 132 feet was drilled in fractured rock. The porosity estimate of 0.1 was considered to be typical of fractured rock aquifers which are typical of those found in the Cascade Mountains (Clark County, 1995).

CHAPTER 3
INVENTORY OF POTENTIAL CONTAMINATION SOURCES

A site visit was conducted by G&O personnel on October 24, 1996 to review and document potential groundwater contamination sources. Table 3-1 lists the potential groundwater contaminant sources encountered at LCC during the site visit.

TABLE 3-1

Potential Groundwater Contamination Sources at LCC

Site Map	Source	Typical Activities	Potential Contaminant Types
A	DNR Warehouse & Garage	Vehicle storage and maintenance welding repair	Diesel fuel, motor oil, heavy metals
B	DNR Fueling Station	Vehicle fueling	Gasoline, diesel fuel
C	Underground storage tanks at DNR fueling station	Diesel and gasoline storage	Gasoline, diesel fuel
D	DNR O/W Separator	Collects runoff from DNR shops and fueling station	Gasoline, diesel fuel, motor oil, heavy metals
E	Aboveground diesel storage tanks (4000 & 2000 gal)	Boiler room fuel storage	Diesel fuel
F	DOC paint and flammables storage sheds	Painting, flammables storage	Paints, solvents
G	Garbage can wash	Garbage can washing	Fats, oils, grease, metals
H	Entrance road	Vehicle entry, Material transport	Gasoline, diesel fuel, motor oil, heavy metals, herbicides applied to roadsides above LCC
I	Boiler room sump	Sump pump pumps fugitive boiler water into a dry well	Diesel fuel, metals, nutrients
J	DNR Shops welding repair	Vehicle and material storage	Gasoline, diesel fuel, motor oil, heavy metals

In addition, existing data source information was reviewed in *Inventory of Potential Contaminant Sources in Washington's Wellhead Protection Areas* (DOH, 1993a). The Ecology database of Underground Storage Tanks was reviewed. Three operational tanks appeared on the list at the LCC. Two are reported to hold unleaded gasoline while one is reported to hold diesel fuel. These are the tanks at the DNR fueling station. The DNR plans on removing these thanks in the spring of 1997 and replacing them with two aboveground storage tanks (one unleaded and one diesel).

Two leaking underground storage tanks were listed on the Ecology Leaking Underground Storage Tank database. DNR personnel indicated the first listing was attributed to a detected leak in the parking area adjacent to the fueling station. Upon excavating soil to find the leak, a previously unknown 1000 gallon tank was discovered that had caused the leak. The tank and contaminated soil have been removed. The second listing was in reference to the removal of an old diesel tank for replacement which resulted in the discovery of contaminated soil which has since been removed.

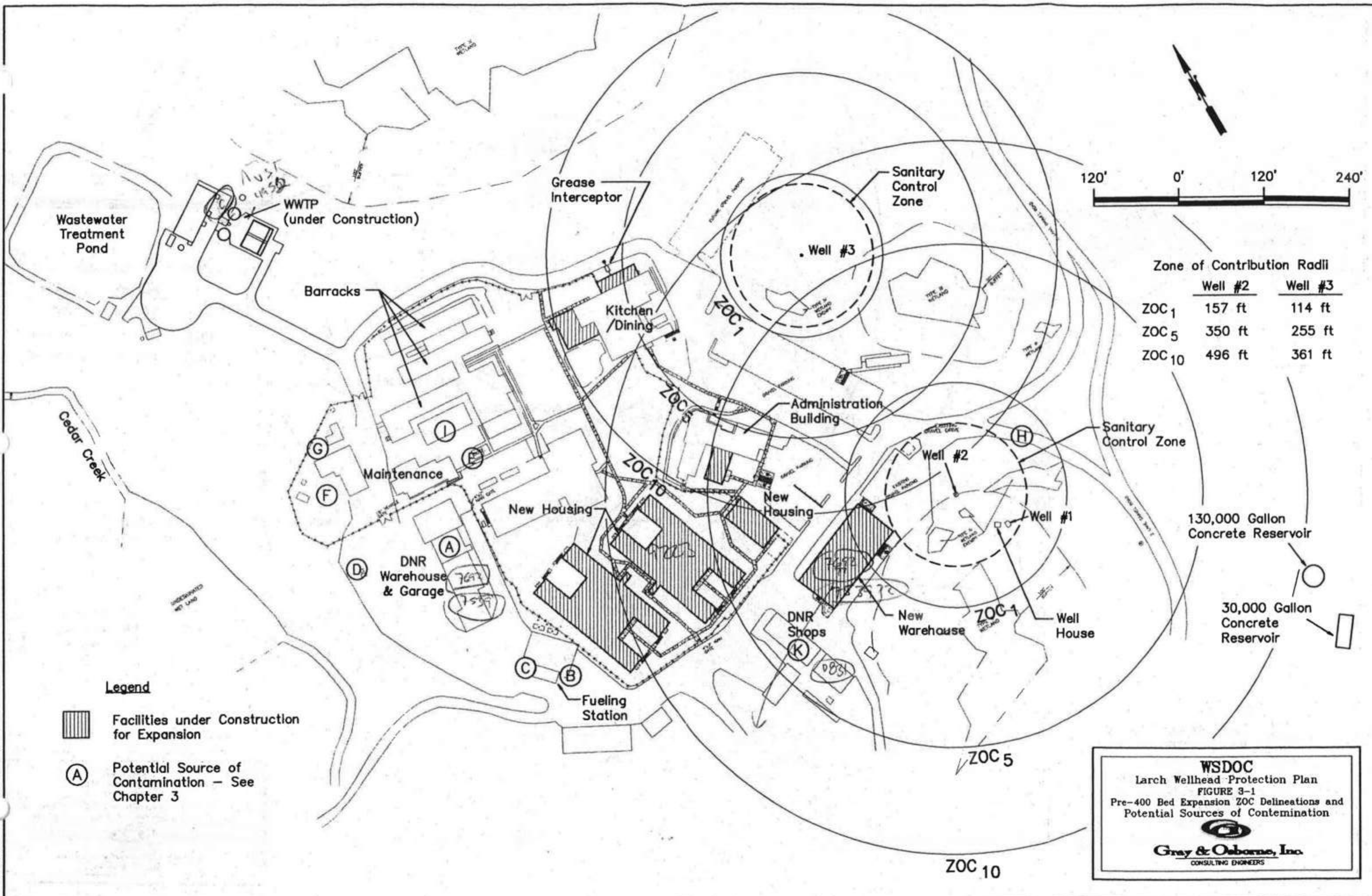
DNR personnel also indicated that the local DNR unit based in Battle Ground occasionally applies herbicides to the roadside above the LCC for control of competing vegetation. The total area affected is relatively small and the DNR uses Best Management Practices for the application of herbicides. The LCC has received a low susceptibility rating from the DOH and has received a waiver from performing synthetic organic chemical (SOC) analyses. It is recommended the DOC should consider conducting a herbicide analysis of one of the wells once every five years. The herbicide analysis is a subset of the entire body of SOCs and would be specific to the potential contamination posed by the forest management practices.

Figures 3-1 and 3-2 show the pre-400-bed expansion and post-400-bed expansion ZOC_1, ZOC_5, and ZOC_{10} for Wells 2 and 3. These figures also summarize the approximate locations of the potential groundwater contamination sources relative to these ZOCs. The following potential contamination sources were located within one or more pre-expansion ZOCs as determined using current water production data. A feature that is contained in a ZOC_1 for a source is, by definition, also included in the ZOC_5 and ZOC_{10} for the source.

- Entrance Road - Located within ZOC_1 for Well No. 2. Located within ZOC_5 for Well No. 3.
- DNR Shops - Located within ZOC_5 for Well No. 2.

The following contamination sources will be located within a ZOC after expansion of LCC to a 400 bed facility. The ZOCs were calculated based on water production estimated by the *Larch Corrections Center Water Conservation Plan* (G&O, 1994).

- Entrance Road - Located within ZOC_1 for Well No. 2. Located within ZOC_5 for Well No. 3.
- DNR Shops - Located within ZOC_5 for Well No. 2. Located within ZOC_{10} for Well No. 3
- DNR Fueling Station - Located within ZOC_{10} for Well No. 2. The underground tanks at the fueling station are on the fringe of the ZOC_{10}.
- DNR Garage and Warehouse - Located within and on the fringe of ZOC_{10} for Well No. 3.



WSDOC
Larch Wellhead Protection Plan
FIGURE 3-1
Pre-400 Bed Expansion ZOC Delineations and Potential Sources of Contemination

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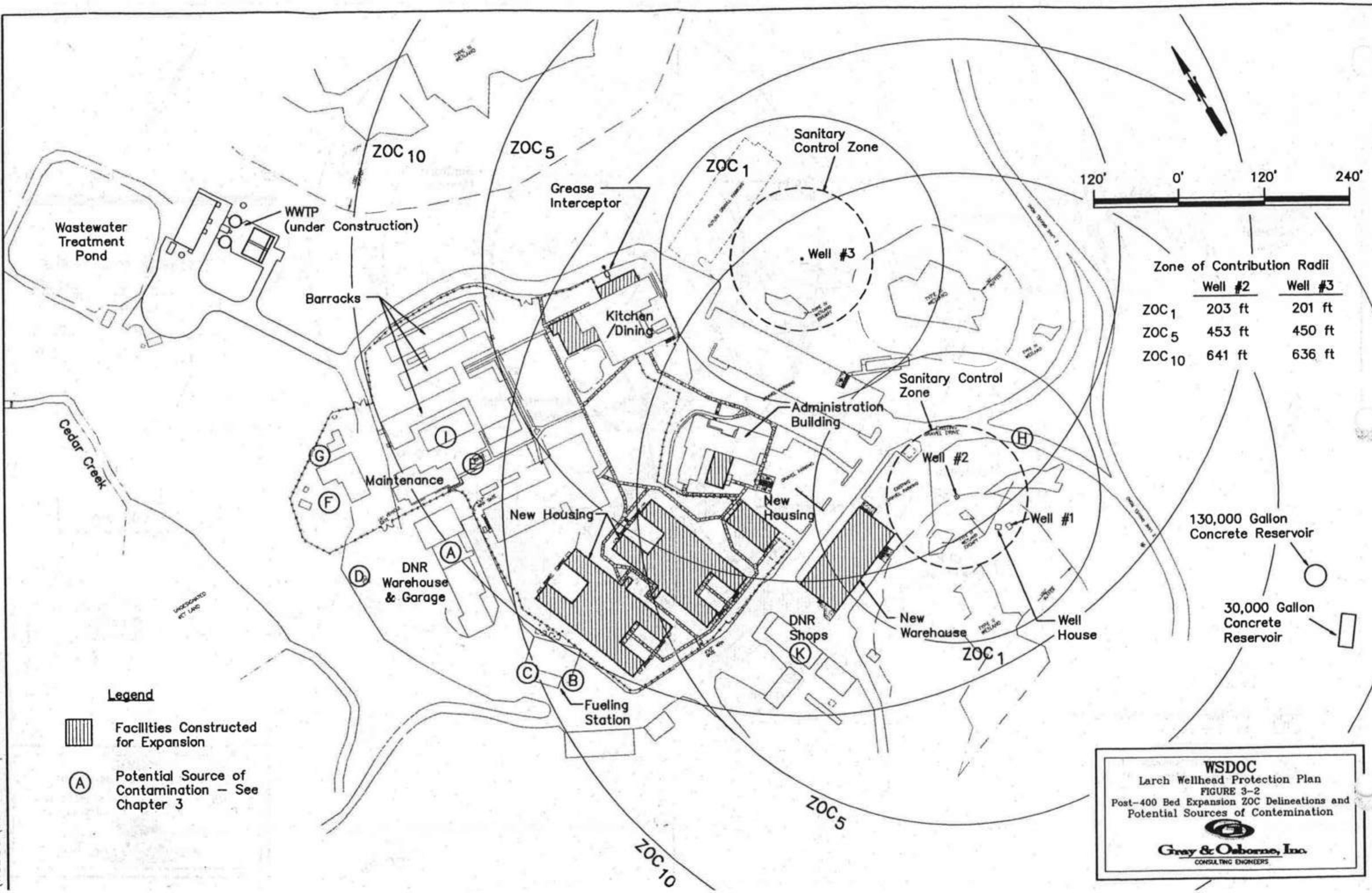


\WSDOC\95730.32\POST-EXP.DWG

- Aboveground Diesel Storage Tanks - Located within the ZOC_{10} for Well No. 3.
- Boiler Room Sump - Located within the ZOC_{10} for Well No. 3.

Although most of the potential contamination sources are located outside of the one, five, and ten year zones of contribution, it is important to note that several critical groundwater characteristics are unknown such as the general direction and velocity of groundwater flow, and the cone of groundwater depression induced by the well pumps. It is possible that these sources, although outside of the 10 year zone of contribution, may still pose contamination hazards.

CHAPTER 4
WELLHEAD PROTECTION AREA MANAGEMENT

A wellhead protection program will not protect the water supply without implementation of risk reducing measures or pollution prevention efforts. Management strategies can be focused only after Wellhead Protection Areas (WHPA) have been clearly defined and established and potential sources of groundwater contamination have been identified. Two wells with separate WHPAs were defined in Chapter 2 of this report. The individual WHPAs overlap to some degree to form a single merged WHPA. At LCC, several management tools have been identified to assist facility managers in preventing potential contamination of the water supply.

SIGNS

At a minimum, signs should be posted within the sanitary control zone of each well identifying the boundaries of the zone and stating the restrictions placed on activities within the zone. These signs should be placed on the actual well vaults for wells 1, 2, and 3.

GROUNDWATER MONITORING

The 1996 DOH Draft Waterworks Guidelines define aquifer/source reliability as the safe yield of a groundwater source (Section 7.1.1) (DOH, 1996). Safe yield is determined by the physical characteristics of the well and the aquifer in which the well is located. Safe well yield is demonstrated through a properly conducted pump test or a hydrogeological analysis prepared by a licensed engineer or hydrogeologist. At a minimum, LCC should develop and implement a monthly program to measure static and dynamic water levels in Wells 2 and 3. In addition, the specific capacity of each well should be determined three to four times per year by facility personnel. Specific capacity is the rate of discharge of a well per unit of drawdown and is commonly expressed as gpm/ft. Specific capacity can be determined by allowing the well pump to run to a steady state, measuring the gallons pumped in a period of time, and measuring the water level in the well at that time. Specific capacity records should be kept with pumping records.

Routine sampling of bacteriological and chemical parameters is also required under WAC 246-290. Coliform, organic chemical, and inorganic chemical sampling schedules for LCC are summarized in the *Sampling and Monitoring Plan* contained in the *Statewide Water System Plan* (G&O, 1996). Written coliform plans do not exist for LCC. Coliform samples are collected monthly and different sites are chosen each time. However, written coliform monitoring plans are required in WAC 246-290-300 (2)(b) and should be developed for LCC.

FOREST MANAGEMENT PRACTICES

The valley, owned entirely by the DNR, is managed for timber production. WAC 222, Washington Forest Practices Rules and Regulations, governs the way in which the DNR conducts its timber resource activities. WAC 222 offers a number of mechanisms that can be used for groundwater protection. WAC 222-16-050, Classes of Forest Practices, suggests that activity within a Well head Protection Area is likely considered a "Class-IV-Special" practice because the activity has the potential for substantial impact on the environment. All Class IV-Special practices require an environmental checklist in accordance with the State Environmental Policy Act (SEPA). Activities may have to modified or abandoned depending on the outcome of the SEPA checklist.

Protecting groundwater begins by insuring that the DOC is aware of forest practices proposed for the valley and surrounding hills. WAC 222-20-10, Notices of Forest Practices, instructs the DNR to establish a register of incorporated cities and towns that wish to be notified of forest practices applications in their region. The DOC should include LCC on the register.

The DOC may appeal unfavorable forest practices decisions according to WAC 222-12-0080, Administrative and Judicial Appeals. Appeals are first made to the Forest Practices Board and then, if necessary, to the local superior court.

WAC 222 provides definitive guidance for protecting surface water supplies which could potentially be used for groundwater protection as well. WAC 222-38, Forest Chemicals, states that water purveyors may request DNR to designate lands upstream from a surface water intake as an "area of water supply interest". The designation is applied if the DNR believes the application of pesticides may adversely impact the affected water supply. The designation only applies to aerial applications. An "area of water supply interest" automatically elevates the proposed aerial application to a Class IV-Special practice.

WATER CONSERVATION

A two phase conservation program was proposed for LCC in the *Larch Corrections Center Water Conservation Plan*. Phase I consists of the following program elements:

1. A program to publicize the need for efficient use of water,
2. Individual meters for each source of supply,
3. Service meters, and
4. A recommendation that LCC consider performing preliminary leak testing of the old galvanized distribution system.

Phase II consists of several program elements that should be considered if additional water savings above those achieved in Phase I are needed or LCC is not able to secure additional water rights to satisfy future demands. The objective of Phase II is to reduce average day production. Phase II consists of the following program elements:

1. Install low flow showerheads,
2. Install low flush toilets,
3. Leak detection, and
4. Wastewater reuse at the wastewater treatment plant, vehicle facilities, and greenhouse.

The *Larch Corrections Center Water Conservation Plan* estimated a reduction of per inmate use to 152 gpid (137 gpcd in the Plan) after implementation of Phase I of the Water Conservation Plan (G&O, 1994). This would lead to an annual average production of 60,800 gpd or 68.1 acre-feet per year which would be within the allowed water rights for the facility. Implementation of Phase II of the Water Conservation Plan would lead to an estimated per inmate use of 132 gpid (119 gpcd in the Plan) which would result in an average water production of 52,800 gpd or 59.2 acre-feet per year.

CHAPTER 5
CONTINGENCY PLAN FOR ALTERNATIVE WATER SUPPLY SOURCES

Subsection 1428 (a)(5) of the 1986 amendments to the Safe Drinking Water Act specifies that state programs require public water systems to develop contingency plans ". . . for the locations and provisions of alternate drinking water supplies for each public water system in the event of well or wellfield contamination . . .". Contingency plans are a required component of water system plans (WAC 246-290-100 (4)(m) and 246-290-135 (4)(c)(vi)) and small water system management plans (WAC 246-290-410 (4)(m) and 246-290-135 (4)(c)(vi)).

Contingency plans for LCC include supplying emergency backup power to the well pumps to supply power during power outages. LCC has contacted a private water vendor who will be able to supply water to the facility via tanker trunks in the event the LCC water supply becomes unusable.

WATER RIGHTS

One water rights certificate exists for groundwater withdrawal from the existing wells at LCC.

- Certificate number G2-00438C, priority date August 13, 1971, allows an annual withdrawal of 14 acre-feet at a maximum rate of 60 gpm from the capped well (Well 0) for multiple domestic use and 4.0 acre-feet per year for irrigation.

A water rights application, G2-29044, has been filed for Wells 2 and 3 with the Department of Ecology. A Report of Examination, dated 9/19/96, has been issued by Ecology for this application. The Report allows withdrawal of 70.1 acre-feet per year from Wells 2 and 3 at a maximum rate of 115 gpm. The total water rights consist of 70.1 acre-feet of which 52.1 acre-feet are primary rights for multiple domestic supply. The following water rights are supplemental to existing rights (from G2-00438C): 14.0 acre-feet for multiple domestic supply and 4.0 acre-feet for irrigation. The Report also states that prior to issuance of a certificate, "Larch Corrections Center shall properly abandon Well 0 to prevent contamination of the water source in accordance with WAC 173-160, Minimum Standards for Construction and Maintenance of Wells." An existing surface water right, certificate number S2-22209C, has been relinquished by LCC. Copies of the Report of Examination is included in Appendix A.

STORAGE CAPACITY

LCC maintains two concrete reservoirs. The reservoirs consist of a 30,000 gallon rectangular concrete tank constructed in 1982 and a 130,000 gallon circular concrete tank constructed in 1994. The total required storage for LCC is 123,000 gallons which consists of standby and fire flow storage. Equalizing storage is not required under the current system configuration. The total required storage for LCC after the 400-bed expansion is estimated to be 178,000 gallons which consists of the sum of standby and fire storage requirements. The storage requirements for LCC were determined using the DOH Draft Group A Public Water Systems Waterworks Standards (DOH, 1996) and are summarized in the 1996 *Statewide Water System Plan* (G&O, 1996).

INTERTIES

There are no public water systems within 5 miles of the LCC. The closest Group A water system is the DNR Cold Creek Campground Well approximately two miles north of LCC. An intertie with another system is not feasible for LCC.

EMERGENCY SOURCE

A private water supply source has been located to provide bulk potable water deliveries to LCC in the event the LCC water supply becomes unusable. The company is Water Truck Services, Inc. in Enumclaw, Washington at (360) 825-5445. Water Truck Services has supplied water to the Valley Water District in Orting and the Covington Water District and has undergone random water quality testing by the DOH during the delivery operations. The company has also supplemented DNR water trucks for fire fighting.

CHAPTER 6
SPILL RESPONSE

To provide adequate spill response planning, a public water system must coordinate with local emergency responders, the Department of Ecology's Spill Operations Section, the Department of Community Development's Emergency Management Program, the local health department, and any local emergency planning committees. (DOH, 1993b) They should evaluate whether changes in spill response measures are needed to better protect groundwater quality within wellhead protection areas.

The DOC has instituted policies regarding hazardous waste management at LCC which is included in Appendix C. These policies identify procedures for identifying, labeling, storing, and shipping of hazardous wastes kept at the LCC. Emergency phone numbers for contacting DOH, the Department of Ecology, and the local fire department are included in Table 6-1. The LCC keeps a supply of oil absorbent pads on-site to handle small petroleum product spills.

ECOLOGY SPILL RESPONSE

The **24-Hour Emergency Spill Response** phone number for the Department of Ecology is **(360) 407-6300**. This is the number for the Southwest Regional Office receptionist and is answered by a an answering service during non-business hours.

Other Emergency Phone Numbers

TABLE 6-1

Emergency Phone Call-Up List

Personnel/Agency	Working Hours Number	Off-Duty Number
James Tooley - Plant Manager	(360) 260-6300	(360) 892-3930
Jim Oja - Treatment Plant Operator	(360) 260-6300	(360) 687-6117
Terry Haines - Main Office/Superintendent	(360) 260-6300	
Paul Szumlanski - DOC Project Mgr.	(360) 753-1656	
Bob Bergquist - DOC Environmental Mgr.	(360) 753-3975	
Jim Messer - DNR Representative	(360) 260-6286	
Jim McCauley - DOH Engineer	(360) 586-5209	
Clark County PUD - Electrical Utility	(360) 253-8886	
Water Truck Services - Bulk Water Delivery	(360) 825-5445	
Ecology 24-Hour Spill Response	(360) 407-6300	
Police/Security	911	
Fire Department	911	
Emergency Medical	911	

CHAPTER 7
CONCLUSIONS AND RECOMMENDATIONS

1. A Report of Examination has been made by Ecology that recommends granting LCC the water rights necessary for operation of the facility. However, the capped well (Well 0) at LCC must be abandoned according to WAC 173-160 prior to Ecology issuing the Certificate of Water Right for Wells 2 and 3.

2. In order to be issued a water rights certificate for Wells 2 and 3, LCC must develop a monthly program to measure water levels in Wells 2 and 3. In addition, the specific capacity of each well should be determined three to four times per year by facility personnel. Specific capacity is the rate of discharge of a well per unit of drawdown and is commonly expressed as gpm/ft. Specific capacity can be determined by allowing the well pump to run to a steady state, measuring the gallons pumped in a period of time, and measuring the water level in the well at that time. Specific capacity records should be kept with pumping records.

3. The training requirements for water system personnel are contained in WAC 246-292-050 and are summarized in the Statewide Operations and Maintenance Manual. Briefly, a WDM is required of all Group A water systems that service 100 or more services or use complex filtration technologies. Because of the size and the high profile nature of the LCC water system it is recommended that the person(s) responsible for overseeing the water system receive training to become a certified WDM.

4. Signs should be posted on the well vaults of wells 1, 2, and 3 identifying the sanitary control zones and the restrictions placed on activities within the zones.

5. Due to the application of herbicides on the roadsides above the LCC, the DOC should consider conducting a herbicide analysis of one of the wells once every five years.

REFERENCES

Clark County Water Quality Division (Clark County). 1995. *Wellhead Protection Area Delineations for Clark County*. September 1995.

Gray & Osborne (G&O). 1994. *Larch Corrections Center Water Conservation Plan*. Prepared for the Washington Department of Corrections. November 1994.

Gray & Osborne (G&O). 1996. *Draft Statewide Water System Plan*. Prepared for the Washington Department of Corrections. December 1996.

U.S. Department of Agriculture (USDA). 1972. *Soil Survey of Clark County Washington*. November 1972.

U.S. Environmental Protection Agency (U.S. EPA). 1994. *Ground Water and Wellhead Protection*. EPA/625/R-94/001. September 1994.

Washington State Department of Health (DOH). 1993a. *Inventory of Potential Contaminant Sources in Washington's Wellhead Protection Areas*. December 1993.

DOH. 1993b. *Washington State Wellhead Protection Program*. December 1993.

DOH. 1996. *Draft Group A Public Water Systems Waterworks Standards*. April 1996.

APPENDIX A

Wells Logs and Water Rights Certificates

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
AMENDED

LCC Wells 2+3

REPORT OF EXAMINATION

TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

..ITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
...ay 10, 1994	G2-29044		

...partment of Corrections/Department of Natural Resources

...DRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
...5314 NE Dole Valley Road	Yacolt	Washington	98675-9531

PUBLIC WATERS TO BE APPROPRIATED

...CE
...Vell #2 & #3

...TARY OF (IF SURFACE WATERS)

...UM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	115	70.1*

...TITY, TYPE OF USE, PERIOD OF USE

...1 Acre-feet per year (Primary) ...plemental to Existing Rights	Multiple domestic supply	Year-round, as needed
...4.0 Acre-feet per year	Multiple domestic supply	Year-round, as needed
...0 Acre-feet per year	Irrigation	Irrigation season
	Fire Protection	Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

...PROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
...00 feet East and 600 feet North of the center of Section 20.

...ED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
...¼ NE¼	20	3	4E	27	Clark

RECORDED PLATTED PROPERTY

...	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

...he Southwest quarter of the Northeast quarter of Section 20, T. 3 N., R. 4 E.W.M.

TOMZ
SEP 23 1996
JDSB
MJJ
RAH

DESCRIPTION OF PROPOSED WORKS

6" ", 7.5 horsepower submersible pump connected to existing water supply system.

DEVELOPMENT SCHEDULE

...IN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
:arted	June 1, 1997	June 1, 1998

REPORT

ACKGROUND:

On May 10, 1994, the Department of Corrections/Department of Natural Resources filed two applications for e Larch Corrections Center, under the provisions of Chapter 90.44 Revised Code of Washington (RCW), to ppropriate public ground water from two wells in the amount of 155 gallons per minute (gpm) and 75 gpm for domestic supply. The applications were accepted for processing and assigned application numbers G2-29044 and G2-29045.

legal notice of the applicants proposed appropriation for both applications were published February 28 and March 6, 1996 in the Battle Ground Reflector. No objections were received in response to the public notice.

pon further review of the project plans, the applicant has elected to proceed with a single application. ...cordingly, application G2-29045 will be rejected. The intent of application G2-29044 is to increase the withdrawal rate for the system, and to secure additional primary rights for Well 2 and Well 3 for expansion of " e facilities.

based on the provisions of Chapters 90.03 and 90.44 RCW, and the following information, I recommend the approval of application G2-29044, and issuance of a permit.

INV...TIGATION:

consideration of this application, I conducted a field examination on April 5, 1996. I met with Jim Tooley ... water system operator. I also reviewed the information submitted with the application, relevant reports, and Department of Ecologys' records. These findings were reviewed by a staff hydrogeologist.

: Location and Description

Larch Corrections Center (LCC) is located in unincorporated Clark County approximately 17 miles northeast Vancouver, Washington. LCC is a minimum security prison with an inmate population of 162. Presently, lities at the institution can support a maximum inmate population of 164. A staff of 52 is assigned to the LCC.

: institution includes a barracks facility, dining hall and kitchen, administration building, chapel, greenhouse, ...ehouse and garage, repair shed, boiler facility, gymnasium, and a wastewater treatment plant. According the local USGS topographic map, elevations of the main portion of the institution vary from 1,280 feet to ""0 feet MSL. Cedar Creek, a tributary to the East Fork of the Lewis River, flows immediately west of the itution.

ydrogeologic Environment

applicant submitted no information on the geology, climate, ground water, or surface waters of the area, the following is based on Ecology's brief research for the area. The wells are completed in volcanic rock, dicated on the most recent geology map as "basaltic-andesite and basalt flows" of Oligicene age (Phillips, W. .987, Geologic Map of the Vancouver Quadrangle, Washington and Oregon, Wa. Div. Geology and Earth ...ources Open File Report 87-10). No analysis of the hydraulic properties of this formation is available. The ell indicated clay at ground surface, probably volcanic saprolite, grading down into partly weathered ...ock and finally to mostly unweathered, though highly fractured, volcanic rock in the water-bearing :. The hydraulic conductivity and storativity cannot be predicted at any distance from the wells but based the pumping tests appears to be adequate to provide the predicted pumping rate and annual quantity of iter.

Existing Water Right Certificates

e Larch Corrections Center has one Ground Water Right Certificate, No. G2-00438C, for a well that uthorizes 60 gpm and 14 acre feet per year (a-f/y) for domestic supply, 4 acre feet per year for irrigation during he irrigation season, and fire protection as needed. This has been designated as Well 0.

rface Water Right Certificate S2-22209C, was issued as a supplemental supply. Because of the intermittent lature of the stream, the supply pipes and intertie with the facility water system have been recently removed nd surface water is not in use. This surface water right should be relinquished and could be considered as igation if withdrawal of ground water impacts surface water flows in the zone of contribution for the Larch rrections Center wells.

ther than the existing LCC water rights, there are no recorded water rights within a 2-mile radius of the rrections Center. Within that same 2-mile radius, there are six recorded wells, four of which are for the rrections Center.

mand Projection

alculations for water demand are based on permanent inmate populations and 8 hour shifts for the staff opulation. Staff population is calculated to use approximately 1/3 of the water that a full time inmate uses.

sent water demand requires 75 gpm and approximately 27 acre feet per year. The facility plans to increase he number of inmates to approximately 400 and the number of staff to 132. With additional service staff, a ervice population of 444 is calculated. Based on a reported 141 gallons per capita per day water demand, 604 gallons of water per day will be required. Yearly demand will require 70.1 acre feet of water.

s certificate G2-00438 already authorizes an annual withdrawal of 14 acre-feet per year for domestic supply, issuance of an additional 52.1 acre-feet per year is needed to meet future demand.

nalysis of Existing Data

ere are four wells on the property. Three of these wells are used to supply water to two storage tanks. The rage tanks hold up to 160,000 gallons of water that is gravity fed back to the facility for domestic uses, rigation, and fire protection.

ll 0, the original well, failed and is not connected to the water supply system, but the well still exists. Well as drilled to replace Well 0 in February of 1980. Well 1 produces approximately 25 gpm for about five hours nd then starts drawing air. Well 1 is not a reliable source of water but is maintained, by periodic pumping, an emergency supply. Well 2 was drilled in April of 1988 and produces 50 gpm. Well 3 was drilled in July 1993 and produces 35 gpm.

ll three wells are screened in different zones between 100 and 200 feet. It appears from well records, static er levels, and limited pumping data, that all of the wells are taking water from the same source. Well 2 and ll 3 are the main supply wells for the LCC water system.

ccording to the Larch Corrections Center Water Conservation Plan, written by Grey and Osborne, Inc. in vember, 1994;

Well 3 production can be increased from 35 gpm to 65 gpm by installing a larger pump,

Supply to the storage tanks can be increased by installing larger diameter supply pipes,

The source aquifer should be able to sustain additional withdrawal without affecting the existing wells on the property.

arch Corrections Center is approximately 4 miles from the nearest public water supply line operated by Clark ublic Utilities. Because of elevation changes between the pipeline and LCC, the new pipeline and pumplift ions required to supply water to LCC would not be cost effective.

NCLUSION:

ound water right certificate G2-00438 is issued for 60 gpm and 18 acre feet from one well (14 for domestic, for irrigation and fire protection). Well 1, which replaced well 0, is the point of withdrawal for this water t. Well 0 will be abandoned.

rface Water Right Certificate No. S2-22209C was issued to the facility as a supplemental supply. LCC is no

Well 1 is not a reliable source of water, and will be used as an emergency supply. Wells 2 and 3 are to be the main supply wells for the LCC water system; with a combined pumping capacity of 115 gpm.

The ground water source is considered to be the same for all three wells. This water right will be issued for 11 llons per minute with the understanding that a total of 115 gpm could be supplied to the LCC water ys. from a combination of withdrawal from all wells.

Based on projected demand, a total of 70.1 a-f/y is needed for facility operation. An additional 52.1 a-f/y will meet this demand. This water right will be issued for 52.1 a-f/y primary, not to exceed a total of 70.1 a-f/y ombined total withdrawal from all wells.

In accordance with Chapters 90.03 and 90.44 RCW, I find there is water available for appropriation from the source in question, that the appropriation as recommended is a beneficial use, and should not impair existing ghts or be detrimental to public welfare.

RECOMMENDATION:

Based on the above information and conclusions, I recommend that application G2-29044 be permitted for 115 gpm and 52.1 a-f/y to be used year round as needed for domestic supply from wells 2 and 3. I also recommend that application G2-29045 be rejected. Total combined water use from all wells connected to the LCC water stem is not to exceed 115 gpm and 70.1 a-f/y (52.1 primary and 18.0 supplemental) under all water rights issued to Larch Corrections Center.

rovisions

"Total combined water use from all wells connected to the LCC water system is not to exceed 115 gpm and 70.1 a-f/y under all water rights issued to Larch Corrections Center."

he water source and/or water transmission facilities are not wholly located upon land owned by the applicant. Issuance of a permit by this department for appropriation of the waters in question does not convey a right of cess to, or other right to use, land which the applicant does not legally possess. Obtaining such a right is a matter between applicant and owner of that land.

The water appropriated under this application will be used for public water supply. The State Board of Health les require public water supply owners to obtain written approval from the Office of Water Supply, epartment of Health, Mail Stop 7822, Building 3, Olympia, Washington 98504-7822, prior to any new construction or alterations of a public water supply system.

rior to issuance of a certificate, Larch Corrections Center shall properly abandon Well 0 to prevent ntamination of the water source in accordance with Chapter 173-160 Washington Administration Code (WAC), Minimum Standards for Construction and Maintenance of Wells."

nstallation and maintenance of an access port as described in WAC 173-160-355 is required."

"An approved metering device shall be installed and maintained in accordance with RCW 90.03.360, WAC 8-64-020 through -040 (installation, operation, and maintenance requirements are attached). Meter adings shall be recorded at least monthly."

"In order to maintain a sustainable supply of water, pumping must be managed so that static water levels do t progressively decline from year to year. Water levels shall be measured and recorded monthly, using a sistent methodology. The length of the pumping period or recovery period prior to each measurement shall be constant, and shall be included in the record."

ater-pumpage, well-monitoring, and static-water-level data, along with a summary and analysis of the data, shall be submitted annually, or more frequently upon request, to Ecology's Southwest Regional Office Water Resources Program. The data shall be submitted in digital format and shall include the following ments:

For Water Use Reporting:

. Measurement method (ie; totaling meter, acoustic meter, etc.) for each well;

2. Total volume pumped from each well by month in thousands or millions of gallons;

. Unique Well ID number.

For Water Level Reporting:

1. Unique Well ID Number;

Measurement data and time;

3. Measurement method (ie; air line, electric tape, pressure transducer, etc.);

Well status (ie; pumping, recently pumped, etc.);

5. Water level accuracy (ie; to nearest foot, tenth of foot, etc.);

Description of the measuring point (ie; top of casing, sounding tube, etc.);

7. Measuring point elevation above or below land surface to the nearest 0.2 foot;

Land surface elevation at the well head to the nearest foot."

Issuance of this water right is subject to the implementation of the minimum requirements established in the onservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding ater Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

nder RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphaized in the management of the states water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a ater conservation plan approved by Department of Health. The standards for such a plan may be tained from either the Department of Health or the Department of Ecology.

EPORTED BY: Chris Anderson Date: September 19, 1996

The statutory permit fee for this application is $20.00.

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been roughly investigated. Furthermore, I find water is available for appropriation and the appropriation as ecommended, is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Ground Water Application Number G2-29044, subject to sting rights and indicated provisions, to allow appropriation of public ground water for the amount and ses specified in the foregoing report.

Signed at Olympia, Washington, this 19th day of September ,1996.

Gale Blomstrom

Gale Blomstrom
Shorelands & Water Resources Supervisor
Southwest Regional Office

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

LCC #1

WATER WELL REPORT
STATE OF WASHINGTON

Application No.
Permit No. ......

(1) OWNER: Name Dept. Natural Resources   Mail ~~Dept. Natural~~ Address Olympia, Washington 98501

(2) LOCATION OF WELL: County Clark   SW ¼ NE ¼ Sec. 20 T. 3 N., R. 4

Bearing and distance from section or subdivision corner Larch mt- Honor Camp

(3) PROPOSED USE: Domestic ☒ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) 1
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 124 ft. Depth of completed well 124 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" Diam. from 0 ft. to 62 ft.
Threaded ☐ 5" Diam. from 54 ft. to 124 ft.
Welded ☒ " Diam. from ft. to ft.

Perforations: Yes ☒ No ☐
Type of perforator used Torch
SIZE of perforations 1/8 in. by 12" in.
18 perforations from 104 ft. to 124 ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☐ No ☒
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal Cement
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level.... ft.
Static level 25 ft. below top of well Date 2-14-80
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test 20 gal./min. with 75 ft. drawdown after 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Top soil	0	2
Brown clay	2	9
Brown claystone & decomposed rock	9	60
Brown & grey rock w/ broken layers	60	124

APR 7 1980

Work started Feb. 14, 1980 Completed Feb. 14

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Hansen Drilling Co. Inc. (Person, firm, or corporation) (Type or print)

Address 6711 NE. 58th Ave. Vancouver, Washington

0006 Ron Aspaas

[Signed] Ron Aspaas (Well Driller) K.M. Han

License No. C-51 Date Feb. 15

223-02HA-NS-ED-*377NT

(USE ADDITIONAL SHEETS IF NECESSARY)

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

#1

WATER WELL REPORT

LCC#2

STATE OF WASHINGTON

Water Right Permit No. ______

(1) OWNER: Name ______ + Carr-Tier Address 1.3714 NE Dale ...

(2) LOCATION OF WELL: County Clark ______ SW ¼ NE ¼ Sec. ... T. ... N., R. 4E W.M.

(2a) STREET ADDDRESS OF WELL (or nearest address) 1... NE Dale Caller, Rd ...

(3) PROPOSED USE: ☑ Domestic ☐ Irrigation ☐ DeWater Industrial ☐ Test Well ☐ Municipal ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) 2
Abandoned ☐ New well ☑ Deepened ☐ Reconditioned ☐ Method: Dug ☐ Cable ☐ Rotary ☑ Bored ☐ Driven ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 160 feet. Depth of completed well 160 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" Diam. from 0 ft. to 58 ft.
Welded ☑ Liner installed ☑ PVC 4½" Diam. from 50 ft. to 160 ft.
Threaded ☐ ______" Diam. from ______ ft. to ______ ft.

Perforations: Yes ☑ No ☐
Type of perforator used Drill
SIZE of perforations 3/4 in. by ______ in.
72 perforations from 145 ft. to 155 ft.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.

Screens: Yes ☐ No ☑
Manufacturer's Name ______
Type ______ Model No. ______
Diam. ______ Slot size ______ from ______ ft. to ______ ft.
Diam. ______ Slot size ______ from ______ ft. to ______ ft.

Gravel packed: Yes ☐ No ☑ Size of gravel ______
Gravel placed from ______ ft. to ______ ft.

Surface seal: Yes ☑ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? ______ Depth of strata ______
Method of sealing strata off ______

(7) PUMP: Manufacturer's Name ______
Type: ______ H.P. ______

(8) WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level 49 ft. below top of well Date 4/18/88
Artesian pressure ______ lbs. per square inch Date ______
Artesian water is controlled by ______ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☑ If yes, by whom? ______
Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ______
Bailer test ______ gal./min. with ______ ft. drawdown after ______ hrs.
Airtest 75 gal./min. with stem set at 158 ft. for 1 hrs.
Artesian flow ______ g.p.m. Date ______
Temperature of water ______ Was a chemical analysis made? Yes ☑ No ☐
Iron-Less than Upper ...

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Topsoil	0	1
subsoil, with broken lava Rock	1	3
Clay, brown	3	27
lava rock broken, weathered Water bearing	27	31
Conglomerate of multi-colored rock with quartz	31	54
Same, sedimentation, but Water bearing	54	154
basalt, gray, hard	154	160

Work started 4/15/88, 19__ Completed 4/19, 19__

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME RITOLA WELL DRILLING (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 14214 N.E. 202nd Ave. Ph. 892-4764
Brush Prairie, Wash. 98606

(Signed) ... Ritola III (WELL DRILLER) License No. 127
Contractor's Registration No. RITOLWD251MM Date 4/19, 19__

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20 (10 87) -1329

DX 17

File Copy — ... Copy   Water Right Permit No. ________

(1) OWNER: Name Dept Natural Resources   Address Olympia, WA. 98504

(2) LOCATION OF WELL: County Clark   SW ¼ NE ¼ Sec. 20 T. 3 N., R. 4E W.M.

STREET ADDDRESS OF WELL (or nearest address) Larch Mt Honor Camp

(3) PROPOSED USE: ☒ Domestic ☐ Irrigation ☐ DeWater   Industrial ☐ Test Well ☐ Municipal ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (If more than one) 3

Abandoned ☐ New well ☒ Deepened ☐ Reconditioned ☐   Method: Dug ☐ Cable ☐ Rotary ☒ Bored ☐ Driven ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8" inches.
Drilled 200 feet. Depth of completed well 200 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Diam. from +2 ft. to 68 ft.
Welded ☒ ________" Diam. from ________ ft. to ________ ft.
Liner installed ☐
Threaded ☐ ________" Diam. from ________ ft. to ________ ft.

Perforations: Yes ☐ No ☐
Type of perforator used ________
SIZE of perforations ________ in. by ________ in.
________ perforations from ________ ft. to ________ ft.
________ perforations from ________ ft. to ________ ft.
________ perforations from ________ ft. to ________ ft.

Screens: Yes ☐ No ☐
Manufacturer's Name ________
Type ________ Model No. ________
Diam. ________ Slot size ________ from ________ ft. to ________ ft.
Diam. ________ Slot size ________ from ________ ft. to ________ ft.

Gravel packed: Yes ☐ No ☐ Size of gravel ________
Gravel placed from ________ ft. to ________ ft.

Surface seal: Yes ☒ No ☐ To what depth? 18' ft.
Material used in seal Benton Chips
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ________ Depth of strata ________
Method of sealing strata off ________

(7) PUMP: Manufacturer's Name ________
Type ________ H.P. ________

(8) WATER LEVELS: Land surface elevation above mean sea level ________ ft.
Static level 27' ft. below top of well Date 7-28-93
Artesian pressure ________ lbs. per square inch Date ________
Artesian water is controlled by ________ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom? ________
Yield ________ gal./min. with ________ ft. drawdown after ________ hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ________
Bailer test ________ gal./min. with ________ ft. drawdown after ________ hrs.
Airtest 155 gal./min. with stem set at 170 ft. for 1 hrs.
Artesian flow ________ g.p.m. Date ________
Temperature of water ________ Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
*Reddish Brown Silty Clay	0	49
*Grayish Silt	49	52
*Yellowish Silt	52	54
Reddish Brown Silt	54	57
(All of above had Decomposed Basalt Rocks)		
Broken Pinkish Basalt Water Bearing	57	71
Conglomerate of Colored Rock w Quartz Hard	71	94
Alternating Layers of Green and Pinkish Basalt w Quartz Hard	94	200

Work started 7-25- , 19__. Completed 7-30 , 199_

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Holt Testing, Inc. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 10[illegible] Traild Rd E, Puyallup, WA
(Signed) [signature] (WELL DRILLER) License No. 1622
Contractor's Registration No. HOLTTI*0870J Date 8/2 , 199_

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20 (10/87) -1329-

LCC #3

APPENDIX B

Susceptibility Assessments

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 : LARCH CORRECTIONS CENTER/ DEPT. OF CORRECTIONS, STATE OF WA.

Water system name : LARCH CORRECTIONS CENTER - WELL #1

County: CLARK

Water system number: NR4403 Source number: ~~UNKNOWN~~

Well depth: 124(Abandoned) (ft.) (*From WFI form*)

Source name: LARCH MOUNTAIN

WA well identification tag number: ___ ___ ___-___ ___ ___

X well not tagged

Number of connections: 2 Population served: 190

Township: 3 Range: 4E

Section: 20 1/4 1/4 Section: S.W. OF N.E.

Latitude/longitude (if available): N/A / /

How was lat./long. determined?

_____ global positioning device _____ survey _____ topographic map
_____ other: _____

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 2 / 15/80 month/day/year

last reconstruction: N/A / ___ / ___ month/day/year

_____ information unavailable

2) Well driller: Hansen Drilling Co., Vancouver, Wa.

__ well driller unknown

3) Type of well:

__ Drilled: X rotary __ bored __ cable (percussion) __ Dug

__ Other: __ spring(s) __ lateral collector (Ranney)

__ driven __ jetted __ other: ________

Additional comments: ________

4) Well report available? X YES (attach copy to form) __ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 20 GAL PER MIN. (gallons/min)

Source of information: WELL REPORT

If not documented, how was pumping rate determined? ________

__ Pumping rate unknown

6) Is this source treated?

If so, what type of treatment:

X disinfection __ filtration __ carbon filter __ air stripper __ other

Purpose of treatment (describe materials to be removed or controlled by treatment):
Chlorination, to eliminate coloform bacteria from reservoir tanks.

7) If source is chlorinated, is a chlorine residual maintained: YES / NO

Residual level: .2 *(At the point closest to the source.)*

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20-50 ft _X_ 50-100 ft ___ 100-200 ft ___ > 200 ft

___ information unavailable ('< ' *means less than:* '> ' *means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft _X_ 20-50 ft ___ 50-100 ft ___ > 100 ft

___ flowing well/spring (artesian)

How was water level determined?

_X_ well log __ other: ______________________________

__ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_N/A_ 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): 1350 (ft)

How was elevation determined? _X_ topographic map ___ Drilling/Well Log ___ altimeter

__ other: ______________________________

__ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_X_ evidence of a confining layer in well log

__ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the ~~top~~ bottom
~~of open interval~~? _X_ YES __ NO
lowest confining layer
___ information unavailable

7) Sanitary setback:

___ < 100 ft* ___ 100-120 ft ___ 120-200 ft _X_ > 200 ft

* if less than 100 ft describe the site conditions:

____

____

____

8) Wellhead construction:

__ wellhead enclosed in a wellhouse

X controlled access (describe): CONCRETE DRYWELL SCHEDULED TO BE SEALED

____

___ other uses for wellhouse (describe): ____________________

____

__ no wellhead control

9) Surface seal:

_X_ 18 ft

___ < 18 ft (no Department of Ecology approval) (*'<' means less than*)

___ < 18 ft (Approved by Ecology, include documentation) (*'<' means less than*)

___ > 18 ft (*'>' means greater than*)

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10-25 in/yr _X_ > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: N/A (gallons) NOTE: CURRENTLY NOT IN USE

How was this determined?

X meter

__ estimated: X pumping rate (23 GPM)

__ pump capacity ( )

__ other: ____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 100' (ft)

1 year ground water travel time : 140' (ft)

5 year ground water travel time: 310' (ft)

10 year ground water travel time: 440' (ft)

Information available on length of screened/open interval?

x YES __ NO

Length of screened/open interval: 58' (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).

SEE ATTACHMENT

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:

NONE	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:

NONE

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

	YES	NO
A. Nitrate: (Nitrate MCL = 10 mg/l)		
Results greater than MCL	___	___

	YES	NO
< 2 mg/liter nitrate	___	___
2-5 mg/liter nitrate	___	___
> 5 mg/liter nitrate	___	___

_X_ Nitrate sampling records unavailable

	YES	NO
B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)		
Results greater than MCL or SAL	___	___
VOCs detected at least once	___	___
VOCs never detected	___	___

_X_ VOC sampling records unavailable

	YES	NO
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

_X_ EDB/DBCP tests not required

	YES	NO
D. Other SOCs (Pesticides):		
Other SOCs detected (pesticides and other synthetic organic chemicals).	___	___

__ Other SOC tests performed but none detected (list test methods in comments

_X_ Other SOC tests not performed

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: ________________

____

____

____

E. Bacterial contamination: YES NO

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records). ___ X

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source. ___ X

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

X YES ___ NO

Describe with references to map produced in Part IV:

Ver small year round stream.

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

___ YES X NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

___ YES X NO

Suggestions and Comments

Did you attend one of the susceptibility workshops? YES / NO

Did you find it useful? YES / NO

Did you seek outside asistance to complete the assessment? YES / NO

5-3-94

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

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 : LARCH CORRECTIONS CENTER/ DEPT. OF CORRECTIONS, STATE OF WA.

Water system name : LARCH CORRECTIONS CENTER - WELL #2

County: CLARK

Water system number: NR4403 Source number: UNKNOWN

Well depth: 158 (ft.) (*From WFI form*)

Source name: LARCH MOUNTAIN

WA well identification tag number: ___ ___ ___-___ ___ ___

X well not tagged

Number of connections: 2 Population served: 190

Township: 3 Range: 4E

Section: 20 1/4 1/4 Section: S.W. OF N.E.

Latitude/longitude (if available): ______ / ______

How was lat./long. determined?

___ global positioning device ___ survey ___ topographic map
___ other: ______

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 4 / 16 / 88 month/day/year

last reconstruction: N/A / ___ / ___ month/day/year

___ information unavailable

2) Well driller: Ritola Well Drilling, Brush Prairie, Wa.

___ well driller unknown

3) Type of well:

___ Drilled: X rotary ___ bored ___ cable (percussion) ___ Dug

___ Other: ___ spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: ________

Additional comments: ________________

4) Well report available? X YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 75 GAL. PER MIN. (gallons/min)

Source of information: WELL REPORT

If not documented, how was pumping rate determined? ________________

___ Pumping rate unknown

6) Is this source treated?

If so, what type of treatment:

X disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):
Chlorination, to eliminate coliform bacteria from reservoir tanks.

7) If source is chlorinated, is a chlorine residual maintained: YES / NO

Residual level: .2 (*At the point closest to the source.*)

PART III: **Hydrogeologic Information**

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20-50 ft _X_ 50-100 ft ___ 100-200 ft ___ >200 ft

___ information unavailable (*'< ' means less than; '> ' means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft _X_ 20-50 ft ___ 50-100 ft ___ >100 ft

___ flowing well/spring (artesian)

How was water level determined?

_X_ well log __ other: ______________________________

__ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_N/A_ 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): _1350_ (ft)

How was elevation determined? _X_ topographic map ___ Drilling/Well Log ___ altimeter

__ other: ______________________________

__ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_X_ evidence of a confining layer in well log

__ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the ~~top~~x BOTTOM ~~of the open interval?~~ XXXXXXXXXXXXXXX OF THE LOWEST CONFINING LAYER. ___ YES _X_ NO

___ information unavailable

7) Sanitary setback:

___ < 100 ft* ___ 100-120 ft ___ 120-200 ft _X_ > 200 ft

* if less than 100 ft describe the site conditions:

8) Wellhead construction:

__ wellhead enclosed in a wellhouse

_X_ controlled access (describe): CONCRETE DRYWELL WITH 200 LBS. LID

___ other uses for wellhouse (describe):

__ 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)*

_X_ > 18 ft *('>' means greater than)*

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10-25 in/yr _X_ > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 1,040,000 (gallons)

How was this determined?

X meter

___ estimated: X pumping rate (40 GPM)

___ pump capacity ( )

___ other: ___

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 100' (ft)

1 year ground water travel time : 140' (ft)

5 year ground water travel time: 310' (ft)

10 year ground water travel time: 440' (ft)

Information available on length of screened/open interval?

X YES __ NO

Length of screened/open interval: 58' (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).
SEE ATTACHMENT

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:

NONE

	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:

NONE ____

____

____

____

____

____

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

	YES	NO
A. Nitrate: (Nitrate MCL = 10 mg/l)		
Results greater than MCL	___	X

	YES	NO
< 2 mg/liter nitrate	X	___
2-5 mg/liter nitrate	___	X
> 5 mg/liter nitrate	___	X
___ Nitrate sampling records unavailable		

	YES	NO
B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)		
Results greater than MCL or SAL	___	X
VOCs detected at least once	___	X
VOCs never detected	X	___
___ VOC sampling records unavailable		

	YES	NO
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		
X EDB/DBCP tests not required		

	YES	NO
D. Other SOCs (Pesticides):		
Other SOCs detected (pesticides and other synthetic organic chemicals).	___	___
___ Other SOC tests performed but none detected (list test methods in comments		
X Other SOC tests not performed		

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: ____________________

____

____

____

	YES	NO
E. Bacterial contamination:		
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	___	X
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	___	X

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

__X__ YES ______ NO

Describe with references to map produced in Part IV:

Very small year round stream.

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

______ YES __X__ NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

______ YES __X__ NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

_____ YES   __?__ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month–1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	X	___
1–5 year travel time	___	X	___
5–10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

NONE

Suggestions and Comments

Did you attend one of the susceptibility workshops? YES / NO

Did you find it useful? YES / NO

Did you seek outside asistance to complete the assessment? YES / NO

5-3-94

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

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 : LARCH CORRECTIONS CENTER/ DEPT. OF CORRECTIONS, STATE OF WA.

Water system name : LARCH CORRECTIONS CENTER - WELL #3

County: CLARK

Water system number: NR4403 Source number: UNKNOWN

Well depth: 200 (ft.) (*From WFI form*)

Source name: ______

WA well identification tag number:___ ___ ___-___ ___ ___

X well not tagged

Number of connections: 2 Population served: 190

Township: 3 Range: 4E

Section: 20 1/4 1/4 Section: S.W. OF N.E.

Latitude/longitude (if available): N/A / ______

How was lat./long. determined?

____ global positioning device ____ survey ____ topographic map

____ other: ______

• Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 8 / 2 / 93 month/day/year

last reconstruction: N/A / ___ / ___ month/day/year

____ information unavailable

2) Well driller: Holt Testing Inc., Puyallup, Wa.

___ well driller unknown

3) Type of well:

___ Drilled: X rotary ___ bored ___ cable (percussion) ___ Dug

___ Other: ___ spring(s) ___ lateral collector (Ranney)

___ driven ___ jetted ___ other: ________

Additional comments: ____________________

4) Well report available? X YES (attach copy to form) ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 155 GAL. PER MIN. (gallons/min)

Source of information: WELL REPORT

If not documented, how was pumping rate determined? ____________________

___ Pumping rate unknown

6) Is this source treated?

If so, what type of treatment:

X disinfection ___ filtration ___ carbon filter ___ air stripper ___ other

Purpose of treatment (describe materials to be removed or controlled by treatment):
Chlorination, to eliminate coliform bacteria from reservoir tanks.

7) If source is chlorinated, is a chlorine residual maintained YES / NO

Residual level: .2 *(At the point closest to the source.)*

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ < 20 ft ___ 20-50 ft _X_ 50-100 ft ___ 100-200 ft ___ >200 ft

___ information unavailable ('<' *means less than;* '>' *means greater than*)

2) Depth to ground water (static water level):

___ < 20 ft _X_ 20-50 ft ___ 50-100 ft ___ > 100 ft

___ flowing well/spring (artesian)

How was water level determined?

_X_ well log __ other: ________________________________

__ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_N/A_ 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): 1300 (ft)

How was elevation determined? _X_ topographic map ___ Drilling/Well Log ___ altimeter

__ other: ________________________________

__ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_X_ evidence of a confining layer in well log

__ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the ~~top~~ bottom ~~of the open interval?~~ of the lowest confining layer _X_ YES ___ NO

___ information unavailable

7) Sanitary setback:

___ < 100 ft* ___ 100-120 ft ___ 120-200 ft _X_ > 200 ft
* if less than 100 ft describe the site conditions:

____
____
____

8) Wellhead construction:

__ wellhead enclosed in a wellhouse

_X controlled access (describe): CONCRET DRYWELL 200 LBS. LID

____

___ other uses for wellhouse (describe): ______________________

____

__ 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*)

_x_ > 18 ft ('>' *means greater than*)

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10-25 in/yr _x_ > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: ___?___ (gallons) NEW WELL / NOT YET CONNECTED

How was this determined?

_X_ meter

___ estimated: _X_ pumping rate (155 GPM)

___ pump capacity (___)

___ other: ___

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : ___100'___ (ft)

1 year ground water travel time : ___140'___ (ft)

5 year ground water travel time: ___310'___ (ft)

10 year ground water travel time: ___440'___ (ft)

Information available on length of screened/open interval?

_X_ YES ___ NO

Length of screened/open interval: ___58'___ (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).
SEE ATTACHMENT

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:

NONE	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:

NONE

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

	YES	NO
A. Nitrate: (Nitrate MCL = 10 mg/l)		
Results greater than MCL	___	X

	YES	NO
< 2 mg/liter nitrate	X	___
2-5 mg/liter nitrate	___	~~X~~
> 5 mg/liter nitrate	___	X
___ Nitrate sampling records unavailable		

	YES	NO
B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l.)		
Results greater than MCL or SAL	___	X
VOCs detected at least once	___	X
VOCs never detected	X	___
___ VOC sampling records unavailable		

	YES	NO
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		
X EDB/DBCP tests not required		

	YES	NO
D. Other SOCs (Pesticides):		
Other SOCs detected (pesticides and other synthetic organic chemicals).	___	___
__ Other SOC tests performed but none detected (list test methods in comments		
X Other SOC tests not performed		

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: ________________

	YES	NO
E. Bacterial contamination:		
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	___	X
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	___	X

___ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

X YES ______ NO

Describe with references to map produced in Part IV:

Springs area.

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?

X 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 X NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

_____ YES _?_ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month-1 year travel time	___	X	___
1-5 year travel time	___	X	___
5-10 year travel time	___	X	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	X	___
1-5 year travel time	___	X	___
5-10 year travel time	___	X	___

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

NONE

Suggestions and Comments

Did you attend one of the susceptibility workshops? YES / NO

Did you find it useful? YES / NO

Did you seek outside asistance to complete the assessment? YES / NO

5-3-94

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? Did the instruction package help you find the information needed to complete the assessment? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be appreciated.

Ground Water

SUSCEPTIBILITY SURVEY UPDATE

12/29/94

JAN 3 1995

Water system name: Larch Corrections Ctr. ID/Source# NR 440 02 LARCH CORRECTIONS CENTER (Well #2)

Your Susceptibility Assessment Survey form has been received by the Department of Health (DOH). The items checked below were found incomplete; these could affect your Waiver determination. Please make the necessary adjustments or additions and return the information to:

Vinnie Wright
Department of Health
Division of Drinking Water
~~**Technical Services Section**~~
P.O. Box ~~47822~~ 47823
Olympia WA 98504-~~7822~~ -7823

If you have questions or need assistance completing your survey form, please contact Vinnie Wright at DOH Southwest Drinking Water Operations, (206) 664-2203.

☐ We did not receive a map of the area around your source, as requested in PART IV. This map should include your calculated fixed radii and other pertinent information for determining your level of susceptibility. Please write the water system name and ID number on the map.

☑ The following items were ~~unanswered or~~ incomplete:

Page: 8+9 Part: ____ Item: ____ (pages 8+9 missing from the copy we received. Would you please send copies of those 2 pages. Thank you!)

MAILED 3/4/95 DPW

☐ We did not receive a copy of the well log or engineering report for your source, although you did say one was available (p. 2), or you cited evidence of confining layers (p. 3). Please submit a copy of the well log or report, marked with your water system's name and ID number.

☐ Other: ______________________________

APPENDIX C

Hazardous Waste Management Policy

DEPARTMENT OF CORRECTIONS

INSTITUTIONAL POLICY AND PROCEDURES

POLICY NUMBER	PAGE
I 250.065	1 of 5

REFERENCES
WAC 173-303-141, WAC 173-303-2[illegible]
WAC 173-303-071, WAC 173-303-[illegible]
WAC 173-303-060, WAC 173-303-14[illegible]
WAC 173-303-180

CHAPTER ADMINISTRATIVE SUPPORT SERVICES

SUBJECT HAZARDOUS WASTE MANAGEMENT

This policy is required to provide a safe and healthful working environment and ensure institution compliance with state law. At Larch Corrections Center, the Plant Manager shall have the responsibility for Hazardous Waste Management.

A. **PURPOSE:**

The intent of this program is to define the requirements regarding the identification and control of Hazardous Waste Management at this institution. The regulations contained herein are mandatory. Non-compliance presents not only a hazard to life safety but possibly for monetary penalty assessed by the Department of Labor and Industries.

B. **DEFINITION:**

Waste is considered hazardous if it appears on the attachment which lists wastes commonly generated by small quantity generators. Hazardous waste fall into four general categories:

1. It is easily combustible or flammable. This is called ignitable waste.

2. It dissolves metal, other materials, or burns the skin. This is called a corrosive waste.

3. It is unstable or undergoes rapid or violent chemical reaction with water or other materials. This is called a reactive waste.

4. Acutely hazardous waste. These are wastes that EPA has determined to be so dangerous in small amounts that they are regulated in the same way as are large amounts of hazardous wastes. Waste that appear on the attached list with an asterick have been designated acutely hazardous waste.

C. **IDENTIFICATION AND LABELLING OF KNOWN HAZARDOUS WASTE MATERIALS:**

1. An approved container shall be provided for waste material.

2. Container must be labelled prior to placing any contents in it. Special Note: Avoid mixing substances.

3. Once container is labelled, waste may be placed into it.

4. Labelled containers once full shall be placed in a designated storage area.

D. **IDENTIFICATION AND LABELLING OF UNKNOWN CONTENTS/HAZARDOUS WASTE MATERIALS:**

1. Test unknown substances in each container.

   a. Use approved hazardous communication identification system for containers and identify each container.

EFFECTIVE/REVISION DATE:

SUPERCEDES:

b. Obtain sample of unknown substance in each container.

c. Place container I.D. number on sample taken.

d. Send sample to approved lab, asking for following tests:

1. characteristics of flammability
2. corrosivity
3. reactivity
4. toxicity
5. toxic dangerous waste
6. persistent dangerous waste
7. characteristics of dangerous waste.

e. When test results are received, label the containers accordingly. Date when contents were actually placed in container, designation type as defined in WAC 173-303-9903 and accumulalting waste WAC 173--303-200(d). Hazardous material identification system HMIS labels should be used to accomplish this task.

E. Larch Corrections Center will manage its waste generation to generate no more than 100 kilograms about 220 pounds or 25 gallons of hazardous waste and no more than one kilogram about 2 pounds of acutely hazardous waste in any calendar month. This will classify this institution as a conditionally exempt small quantity generator and WAC requires the following:

1. Identify all hazardous waste generated.

a. A Monthly Report shall be submitted through the Business Manager to the Superintendent to identify all hazardous waste generated within a given month giving the quantity in gallons or pounds as required.

b. The generated waste shall be sent to ~~a local sanitation department for disposal.~~ transported off site for state & federal disposal per all regulations.

F. STORING HAZARDOUS WASTE ON-SITE:

1. Hazardous waste shall not be accumulated or stored for more than one calendar month. Disposal shall be monthly.

2. The storage of hazardous waste in containers shall be as follows:

a. Clearly mark each container with the words "HAZARDOUS WASTE" and the name of the material and with the date you begin to collect waste in that container.

b. Keep containers in good condition, handle them carefully and replace any leaking ones.

c. Do not store hazardous waste in a container if it may cause rupture, leaks, corrosion or other failure.

d. Keep containers closed except when you fill or empty them.

e. Inspect the containers for leak or corrosive every week.

f. In storing ignitable or reactive waste, be sure containers are placed as far as possible from facility buildings to creat a buffer zone.

g. Never store waste in the same container that could react together to cause fires, leaks or other releases.

h. Hazardous waste that is stored shall be taken off site prior to the end of a calendar month.

G. <u>SHIPPING OF HAZARDOUS WASTE</u>:

This section shall be followed only if hazardous waste in quantities exceed quanti exclusion limits as defined in WAC 173-303-071.

1. Obtain EPA state identification number as described in WAC 173-303-060.

2. Manifest shipment of hazardous waste as outlined in WAC 173-303-180. Manifest will contain:

   a. Location where shipment is going.

   b. Date shipment is to be picked up by transporter.

   c. Name of transporter that picks up shipment.

   d. Signature of both generating facility manager and transporter.

   e. One signed copy is retained at generating facility and two signed copies are sent with the transporter.

3. The storage facility will return signed copy to Larch Corrections Center stating:

   a. Date received.

   b. Disposition of waste.

c. Documentation and receipt of completed manifest must be completed within thirty-five (35) days of shipment from Larch Corrections Center. If the manifest is not received within forty-five (45) days of shipment, an Exception Report must be submitted to the Department of Ecology. This letter of explanation will include a copy of the original manifest and dates where disposal or storage was to take place.

H. RECORDING/RECORDKEEPING:

All records pertaining to hazardous waste will be retained by the facility Hazardous Waste Manager:

1. Retain copies of all manifests, chronological by date.

2. Retain copies of all laboratory test results.

3. Retain records of any on-site visits by the Department of Ecology or other agencies reviewing hazardous waste materials activities.

I. TRAINING:

All individuals handling hazardous waste are to be trained. Specific hazardous waste training will be provided by the Department of Corrections staff Training Officer and will include as a minimum:

1. Identifying hazardous waste and labelling.

2. Handling.

3. Overview on manifesting.

4. Disposal.

5. Contingency plan in case of spill.

6. Emergency procedure.

J. CONTINGENCY EMERGENCY PLANNING:

1. As part of the Emergency Response Plan for hazardous waste, emergency notification of the following will be done:

   a. Local authorities.

   b. Division of Prisons Office of Capital Programs - SCAN 321-6181.

c. Department of Corrections Safety Office - SCAN 234-4845.

d. Department of Ecology - SCAN 585-6000.

2. The following information will be provided:

a. Name of reporting party.

b. Name of facility.

c. Contact phone number.

d. Description of substance.

e. Quantity of substance spilled.

f. Potential environmental impact spilled in stream, etc.

g. Clean-up status.

K. REVIEW:

This policy will be reviewed by the Superintendent annually and the Assistant Director will review and approve all changes.

Approved, Acting Superintendent, Larch Corrections Center James E Thatcher 8-12-87

Date

EFFECTIVE/REVISION DATE:

SUPERCEDES:

EPA HAZARDOUS WASTE NUMBERS FOR WASTE STREAMS COMMONLY GENERATED BY SMALL QUANTITY GENERATORS

The Environmental Protection Agency recognizes that generators of small quantities of hazardous waste, many of which are small businesses, may not be familiar with the manner in which hazardous waste materials are identified. This Appendix has been assembled to aid 100-1000 kg/mo small quantity generators in determining the EPA Hazardous Waste Numbers for their wastes. These numbers are needed to complete the "Notification of Hazardous Waste Activity," Form 8700-12.

This Appendix contains lists of EPA Hazardous Waste Numbers for each waste stream identified in Table 2 in Chapter 1 of the handbook. Note that acutely hazardous wastes are identified with an asterisk (*).

To Use This Appendix

1. Locate your business type in Table 2 in Chapter 1. This will help you to identify the waste streams common to your activities.
2. Find each of the waste streams that you identified in Table 2 in the more detailed descriptions in this Appendix. Review the more detailed descriptions of typical wastes to determine which waste streams actually result from your activities.
3. If you determine that you actually do generate a particular waste stream, report the four-digit EPA Hazardous Waste Number in Item X of Form 8700-12, "Notification of Hazardous Waste Activity."

The specific instructions for completing Item X (Description of Hazardous Wastes) of the notification form are included in the notification package. You should note, however, that specific EPA Hazardous Waste Numbers beginning with:

- "F" should be entered in Item X, Section A.
- "K" should be entered in Item X, Section B.
- "P" or "U" should be entered in Item X, Section C.
- "D" should be entered in Item X, Section E.

The industries and waste streams described here do not provide a comprehensive list, but rather serve as a guide to potential small quantity generators in determining which of their wastes, if any, are hazardous. Except for the pesticide and wood preserving categories, this Appendix does not include EPA Hazardous Waste Numbers for commercial chemical products that are hazardous when discarded unused. These chemicals and their EPA Hazardous Waste Numbers are listed in Title 40 of the Code of Federal Regulations (40 CFR) in Section 261.33.

If the specific EPA Hazardous Waste Number that should be applied to your waste stream is unclear, please refer to 40 CFR Part 261, reprinted in the Notification Form 8700-12 package. In those cases where more than one EPA Hazardous Waste Number is applicable, all should be used. If you have any questions, or if you are unable to determine the proper EPA Hazardous Waste Numbers for your wastes, contact your state hazardous waste management agency, or the RCRA/Superfund Hotline (see Appendix A).

Solvents:

Solvents, spent solvents, solvent mixtures, or solvent still bottoms are often hazardous. This includes solvents used in degreasing (identified as F001) and paint brush cleaning and distillation residues from reclamation. The following are some commonly used hazardous solvents (also see ignitable wastes for other hazardous solvents, and 40 CFR 261.31 for most listed hazardous waste solvents):

Benzene	F005
Carbon Disulfide	F005
Carbon Tetrachloride	F001
Chlorobenzene	F002
Cresols	F004
Cresylic Acid	F004
O-Dichlorobenzene	F002
Ethanol	D001
2-Ethoxyethanol	F005
Ethylene Dichloride	D001
Isobutanol	F005

Isopropanol	D001
Kerosene	D001
Methyl Ethyl Ketone	F005
Methylene Chloride	F001
	F002
Naphtha	D001
Nitrobenzene	F004
2-Nitropropane	F005
Petroleum Solvents (Flashpoint less than 140°F)	D001
Pyridine	F005
1,1,1-Trichloroethane	F001
	F002
1,1,2-Trichloroethane	F002
Tetrachloroethylene (Perchloroethylene)	F001
	F002
Toluene	F005
Trichloroethylene	F001
	F002
Trichlorofluoromethane	F002
Trichlorotrifluoroethane (Valclene)	F002
White Spirits	D001

Acids/Bases:

Acids, bases, or mixtures having a pH less than or equal to 2 or greater than or equal to 12.5, are considered corrosive (for a complete description of corrosive wastes, see 40 CFR 261.22, Characteristic of corrosivity). All corrosive materials and solutions have the EPA Hazardous Waste Number D002. The following are some of the more commonly used corrosives:

Acetic Acid	Nitric Acid
Ammonium Hydroxide	Oleum
Chromic Acid	Perchloric Acid
Hydrobromic Acid	Phosphoric Acid
Hydrochloric Acid	Potassium Hydroxide
Hydrofluoric Acid	Sodium Hydroxide
	Sulfuric Acid

Dry Cleaning Filtration Residues:

Cooked powder residue (perchloroethylene plants only), still residues, and spent cartridge filters containing perchloroethylene or valclene are hazardous and have the EPA Hazardous Waste Number F002.

Still residues containing petroleum solvents with a flashpoint less than 140°F are considered hazardous and have the EPA Hazardous Waste Number D001.

Heavy Metals/Inorganics:

Heavy metals and other inorganic waste materials exhibit the characteristic of EP Toxicity and are considered hazardous if the extract from a representative sample of the waste has any of the specific constituent concentrations as shown in 40 CFR 261.24, Table 1. This may include dusts, solutions, wastewater treatment sludges, paint wastes, waste inks, and other such materials which contain heavy metals/inorganics (note that wastewater treatment sludges from electroplating operations are identified as F006). The following are EP Toxic:

Arsenic	D004
Barium	D005
Cadmium	D006
Chromium	D007
Lead	D008
Mercury	D009
Selenium	D010
Silver	D011

Ignitable Wastes:

Ignitable wastes include any liquids that have a flashpoint less than 140°F, any non-liquids that are capable of causing a fire through friction, absorption of moisture, or spontaneous chemical change, or any ignitable compressed gas as described in 49 CFR 173.300 (for a complete description of ignitable wastes, see 40 CFR 261.21, Characteristic of ignitability). Examples are spent solvents (see also solvents), solvent still bottoms, ignitable paint wastes (paint removers, brush cleaners and stripping agents), epoxy resins and adhesives (epoxies, rubber cements and marine glues), and waste inks containing flammable solvents. Unless otherwise specified, all ignitable wastes have the EPA Hazardous Waste Number of D001.

Some commonly used ignitable compounds are:

Acetone	F003
Benzene	F005
n-Butyl Alcohol	F003
Chlorobenzene	F002[1]
Cyclohexanone	F003
Ethyl Acetate	F003
Ethylbenzene	F003
Ethyl Ether	F003
Ethylene Dichloride	D001
Methanol	F003
Methyl Isobutyl Ketone	F003
Petroleum Distillates	D001
Xylene	F003

Ink Sludges Containing Chromium and Lead:

This includes solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead. All ink sludges have the EPA Hazardous Waste Number K086.

[1]Chlorobenzene is listed by EPA as a hazardous waste due to its toxicity and has been assigned EPA Hazardous Waste Number F002. It has a flashpoint, however, of less than 140°F and is therefore included here as an ignitable waste.

Lead-Acid Batteries:

Used lead-acid batteries should be reported on the notification form *only* if they are not recycled. Used lead-acid batteries that *are* recycled do not need to be counted in determining the quantity of waste that you generate per month, nor do they require a hazardous waste manifest when shipped off your premises. (Note: Special requirements do apply if you recycle your batteries on your own premises—see 40 CFR Part 266.)

Lead Dross	D008
Spent Acids	D002
Lead-Acid Batteries	D008

Pesticides:

The pesticides listed below are hazardous. Wastes marked with an asterisk (*) have been designated acutely hazardous. For a more complete listing, see 40 CFR 261.32 and 261.33 for specific listed pesticides, and other wastes, wastewaters, sludges, and by-products from pesticide formulators. (Note that while many of these pesticides are no longer in common use, they are included here for those cases where they may be found in storage.)

* Aldicarb	P070
* Aldrin	P004
Amitrole	U011
* Arsenic Pentoxide	P011
* Arsenic Trioxide	P012
Cacodylic Acid	U136
Carbamic Acid, Methylnitroso-, Ethyl Ester	U178
Chlordane	U036
* Copper Cyanides	P029
1,2-Dibromo-3-chloropropane	U066
1,2-Dichloropropane	U083
1,3-Dichloropropene	U084
2,4-Dichlorophenoxy Acetic Acid	U240
DDT	U061
* Dieldrin	P037
Dimethylcarbamoyl Chloride	U097

Pesticides *(Continued):*

• Dinitrocresol	P047
• Dinoseb	P020
Disodium Monomethanearsenate	D004
• Disulfoton	P039
• Endosulfan	P050
• Endrin	P051
Ethylmercuric Chloride	D009
• Famphur	P097
• Heptachlor	P059
Hexachlorobenzene	U127
Kepone	U142
Lindane	U129
2-Methoxy Mercuric Chloride	D009
Methoxychlor	D014
• Methyl Parathion	P071
Monosodium Methanearsenate	D004
• Nicotine	P075
• Parathion	P089
Pentachloronitrobenzene	U185
Pentachlorophenol	U242
Phenylmercuric Acetate	D009
• Phorate	P094
• Strychnine	P108
2,4,5-Trichlorophenoxy Acetic Acid	U232
2-(2,4,5-Trichlorophenoxy)-Propionic Acid	U233
• Thallium Sulfate	P115
Thiram	U244
• Toxaphene	P123
Warfarin	U248

Reactives:

Reactive wastes include reactive materials or mixtures which are unstable, react violently with or form explosive mixtures with water, generate toxic gases or vapors when mixed with water (or when exposed to pH conditions between 2 and 12.5 in the case of cyanide or sulfide bearing wastes), or are capable of detonation or explosive reaction when heated or subjected to shock (for a complete description of reactive wastes, see 40 CFR 261.23, Characteristic of reactivity). Unless otherwise specified, all reactive wastes have the EPA Hazardous Waste Number D003. The following materials are commonly considered to be reactive:

Acetyl Chloride	Organic Peroxides
Chromic Acid	Perchlorates
Cyanides	Permanganates
Hypochlorites	Sulfides

Spent Plating and Cyanide Wastes:

Spent plating wastes contain cleaning solutions and plating solutions with caustics, solvents, heavy metals, and cyanides. Cyanide wastes may also be generated from heat treatment operations, pigment production, and manufacturing of anti-caking agents. Plating wastes are generally Hazardous Waste Numbers F006-F009, with F007-F009 containing cyanide. Cyanide heat treating wastes are generally Hazardous Waste Numbers F010-F012. See 40 CFR 261.32 for a more complete description of plating wastes.

Wood Preserving Agents:

The wastewater treatment sludges from wastewater treatment operations are considered hazardous (EPA Hazardous Waste Number K001—bottom sediment sludges from the treatment of wastewater processes that use creosote and pentachlorophenol). In addition, unless otherwise indicated, specific wood preserving compounds are:

Chromated Copper Arsenate	D004
Creosote	U051
Pentachlorophenol	F027

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.3

IMPORTANT! Please complete one form for each ground water source (well, well in wellfield, spring, spring in springfield) used in your water system. Photocopy as necessary

PART I: System Information

Well owner / manager: **JIM OJA**

Water System Name: **LARCH CORRECTIONS CENTER WS**

County: **CLARK**

Water System Number: **06461 Y** Source Number: **04**

Well Depth: **170** (ft) (From WFI form)

Source Name: **WELL #4**

WA well identification tag number: **AGP - 432** ___ Well not tagged

Number of connections: **160** Population served: **430**

Township: **3N** Range: **4E**

Section: **20** 1/4 1/4 Section: SW/NE

Latitude / longitude (if available) ________ / ________

How was lat. / long. determined?

___ Global Positioning device ___ Survey ___ Topographic Map

___ Other: ________

* Please refer to Assistance Packet for details and explanations of all the questions in Parts II through V

PART II: Well Construction and Source Information

1) Date well originally constructed: **08/17/2002** (month/day/year)

last reconstruction: ___/___/___ (month/day/year)

X Information unavailable

2) Well Driller:

____

____

____

X Well Driller unknown

3) Type of Well:

___ Drilled:	___ Rotary	___ Bored	___ Dug
	___ Cable (percussion)		___ Unspecified
___ Other:	___ Spring(s)	___ Driven	___ Jetted
	___ Lateral collector (Ranney)		___ Unspecified

Additional comments:

4) Well report available? ___ YES X NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: _____ (gallons / min)

Source of information: __________

If not documented, how was pumping rate determined?

X Pumping rate unknown

6) Is source treated? If so what type of treatment:

X Disinfection	___ Filtration	___ Carbon Filter
___ Air Stripper	___ Other	___ Unknown

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is clorinated, is a chlorine residual maintained: X YES ___ NO

Residual level: 0.2000 (At point closest to the source)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

____ (less than) 20ft ____ 20 - 50ft ____ 50 - 100ft ____ 100 - 200ft

X (greater than) 200ft ____ Information unavailable

2) Depth to ground water (static water level)

____ (less than) 20ft X 20 - 50ft ____ 50 - 100ft ____ (greater than) 100ft

____ Flowing well spring (artesian) ____ Depth to Ground water unknown

How was water level determined?

____ Well log ____ Other: ________________ ____ Unknown

3) If source is a flowing well or spring, what is the confining pressure:

0.00 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 the source?

____ YES X NO

5) Wellhead elevation (height above mean sea level): ________ (ft)

How was elevation determined?

____ Topographic map ____ Drilling / Well Log ____ Altimeter

____ Other: ________________

____ Information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

____ Evidence of a confining layer in well log

X No evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the bottom of the lowest confining layer?

____ YES X NO

____ Information Unavailable

7) Sanitary setback:

____ (Less than) 100ft* ____ 100 - 200ft ____ 120 - 200ft ____ (greater than) 200ft

* if less than 100 ft describe the site conditions:

8) Wellhead construction:

____ Wellhead enclosed in a wellhouse

____ Controlled access (describe below in comments):

____ Other uses for wellhouse (describe below in comments):

____ No wellhead control

Wellhead construction comments

9) Surface seal:

X 18 ft

____ (less than) 18ft (No Department of Ecology approval)

____ (less than) 18ft (Approved by Ecology, include documentation)

____ (greater than) 18 ft

____ depth of seal unknown

____ no surface seal

10) Annual rainfall (inches per year)

____ (less than) 10 in/yr ____ 10 - 25 in/yr ____ (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: ____________ (gallons)

How was this determined?

X Meter

___ Estimated: ___ Pumping Rate (____________)

___ Pump Capacity (____________)

___ Other:

2) "Calculated Fixed Radius" estimate of ground water movement (see Instruction Packet)

6 Month ground water travel time:	**271**	(ft)
1 Year ground water travel time:	**383**	(ft)
5 Year ground water travel time:	**252**	(ft) 858
10 Year ground water travel time:	**1,213**	(ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/ open interval: **50** (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary?

___ YES X NO (Mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon or holding pond located within the 6 month time of travel boundary?

___ YES X NO (Mark and identify on map).

Comments:

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 Mo	1 Yr	5 yrs	Unknown
Likely pesticide application	___	___	___	___
Stormwater injection wells	___	___	___	___
Other injection wells	___	___	___	___
Abandoned ground water well	___	___	___	___
Landfills, dumps, disposal areas	___	___	___	___
Known hazardous materials clean-up site	___	___	___	___
Water system(s) with known quality problems	___	___	___	___
Population density (greater than) 1 house / acre	___	___	___	___
Residences commonly have septic tanks	___	___	___	___
Wastewater treatment lagoons	___	___	___	___
Sites used for land application of waste	___	___	___	___

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

____

____

____

____

____

____

2) Source specific water quality records:

Please indicate the occurance of any test results since 1986 that might meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	
(less than) 2 mg/liter nitrate	X
2 - 5 mg/liter nitrate	
(greater than) 5 mg/liter nitrate	
Nitrate sampling records unavailable	
B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l)	YES
Results greater than MCL or SAL	
VOCs detected at least once	
VOCs never detected	X
VOC sampling records unavailable	
C. EDB/DBCP: (EDB MCL = 0.05 ug/l or 0.00005 mg/l) (DBCP MCL = 0.2 ug/l or 0.0002 mg.l)	YES
EDB/DBCP detected below MCL at least once	
EDB/DBCP detected above MCL at least once	
EDB/DBCP never detected	
EDB/DBCP test required but not yet completed	
EDB/DBCP tests not required	
D. Other SOCs (Pesticides):	YES
Other SOCs detected (pesticides and other synthetic organic chemicals)	
Other SOC tests performed but none detected (List test methods in comments)	X
Other SOC tests not performed	

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:

E. Bacterial contamination: YES

Any bacterial detection(s) in the last 3 years in samples taken from the source (not distribution sampling records) .... ____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source .... ____

Source sampling records for bacteria unavailable .... ____

Part VI: Geographic or Hydrological 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 calculation 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 the sources. As a system developes its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrological 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 ____ Unknown

Describe with references to map produced in Part IV:

2) Aquifer Material:

a) Does the drilling log, well log or other geologic / engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

____ YES ____ NO ____ Unknown

b) 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 primarily identified as coarse sand and gravel?

____ YES ____ NO ____ Unknown

3) Is the source located in an aquafer 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 ___ Unknown

4) Are there other high capacity wells (agricultural, municipal, and/or industrial) located within the CFRs?

___ YES ___ NO ___ Unknown

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 yr 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 hydrological 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

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be

Maple Lane Corrections Center

SECTION IV

WELLHEAD PROTECTION PROGRAM

BACKGROUND

The objective of Wellhead Protection (WHP) is to reduce the potential risk for contamination of groundwater within the identified WHP area. The WHP program outlines basic activities for notification to potential contaminant sources, education of actions which are non-threatening to groundwater supply, and identify locally defined spill response procedures for spill incidents within the wellhead protection area.

WELLHEAD PROTECTION AREA DELINEATION

Table IV-1 shows the WHP areas as determined by using the Calculated Fixed Radius (CFR) method. The CFR method is conservative in most cases and is recommended for use by DOH for small water systems with low to moderately susceptible sources of supply. Since both wells were rated highly susceptible, time of travel distances should be delineated through a more sophisticated, site specific method within 5 years from July 1995 according to DOH WHP guidance.

TABLE IV-1
WELLHEAD PROTECTION AREAS BY CALCULATED FIXED RADIUS (CFR)

Time of Travel	Zone of Contribution
6 month	430 feet
1 year	610 feet
5 year	1,370 feet
10 year	1,940 feet

The draft WSP for the proposed Thurston County water system in the Grand Mound area referenced various hydrologic information for the area. Included in the information are average transmisivity (350,000gpd/ft), average hydraulic gradient (0.0025), flow direction (west to southwest) and aquifer depth (40' to 60'). Using a more site specific method, the uniform flow equation, the stagnation point down gradient of the well is approximately 85 feet and the distance to the hydraulic divide on either side of the flow axis is approximately 270'. Groundwater movement associated with pumping is approximately 190 feet per year. An estimate of aquifer movement in the area may be as high as 730 feet per year using a very simple assumption that velocity of discrete component of water in the aquifer is equal to the product of the average permeability and the average hydraulic gradient. Withdrawal from the well appears to have very little influence on the five and ten year WHP areas due to the relatively high groundwater flow in the aquifer. The cumulative impact of withdrawal and groundwater movement upstream of the wellfield is shown in Table IV-2 below.

TABLE IV-2
WELLHEAD PROTECTION AREAS BY UNIFORM FLOW

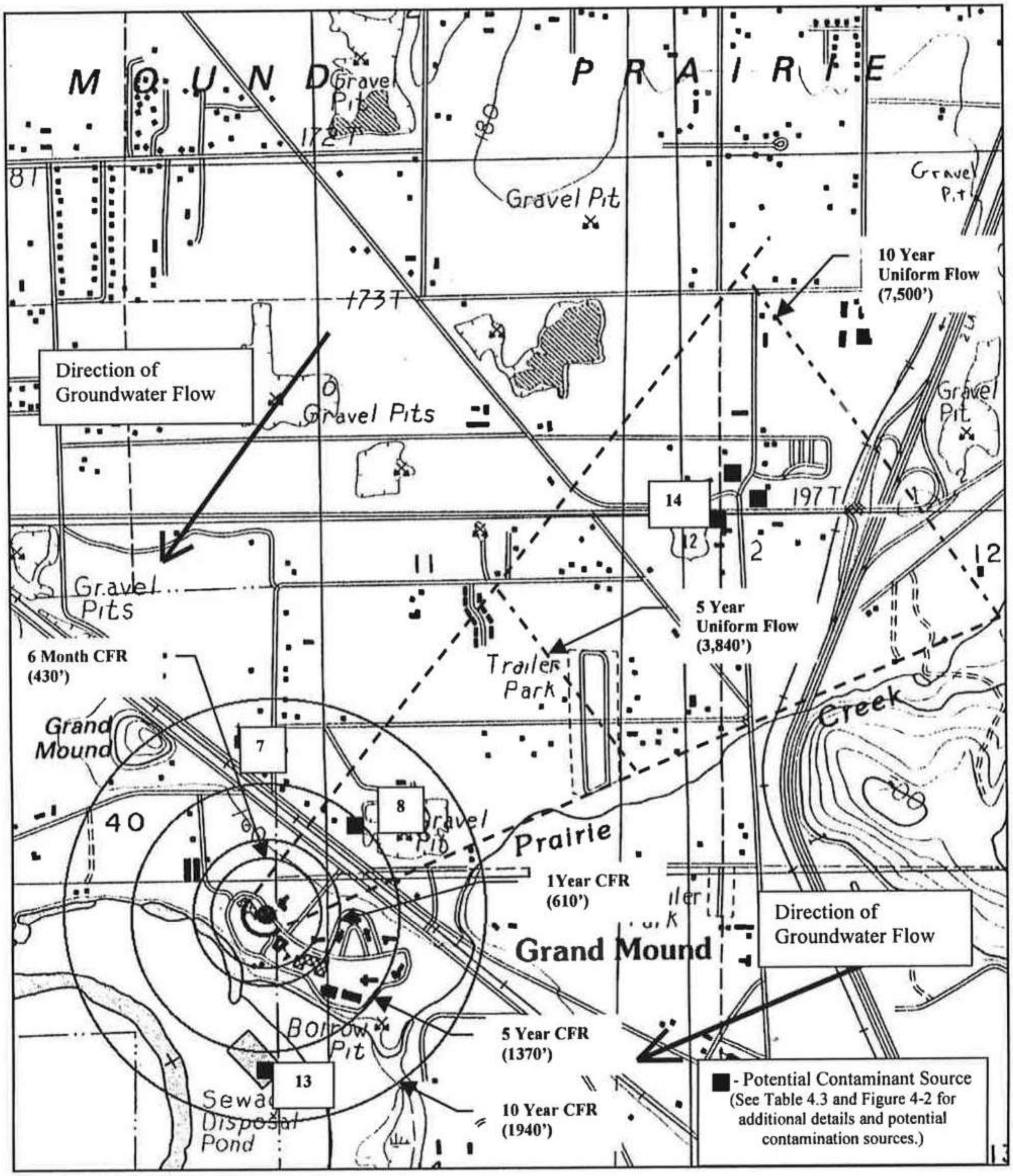
Time of Travel	Zone of Contribution
6 month	460 feet
1 year	1,020 feet
5 year	3,840 feet
10 year	7,500 feet

The WHP areas for both the CFR and the uniform flow methods are shown in Figure IV-1. Figure IV-2 identifies the six-month and one-year time of travel areas in more detail.

CONTAMINANT SOURCE INVENTORY

A contaminant source inventory was completed as part of the original susceptibility assessments submitted to DOH by the school. A much broader inventory was also completed in conjunction with the WHP program for the Grand Mound water system. A copy of the Grand Mound contaminant inventory is included in Appendix C. Table IV-3 contains a summary of the potential sources of contamination within the school's WHP areas. Known point sources of contamination are identified on the maps in Figures IV-1 and IV-2. Less specific sources of contamination such as residential on-site sewage and agriculture areas are not shown on the maps.

Figure IV-1 Wellhead Protection Areas



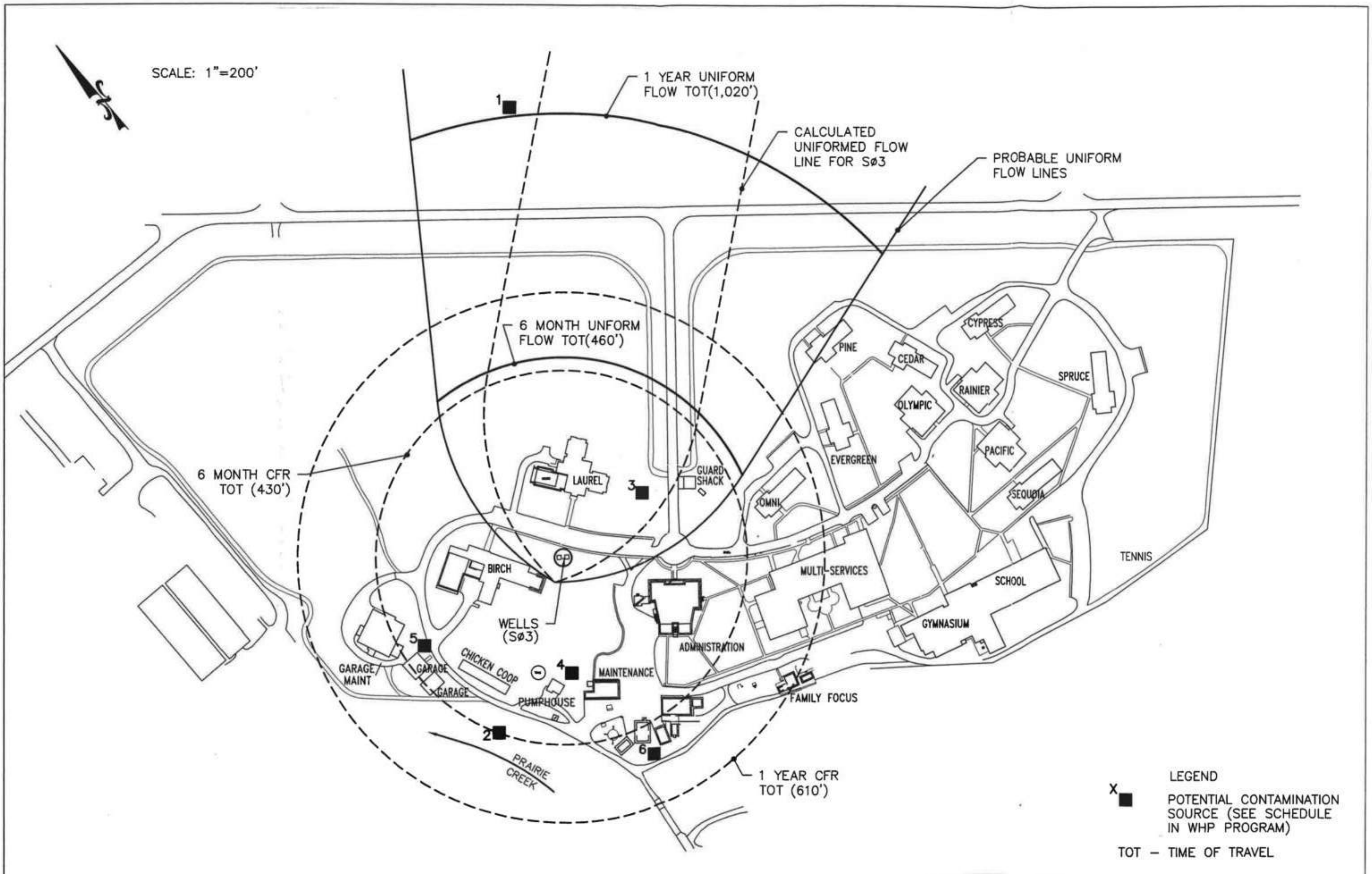


FIGURE: IV–2

6 MONTH AND 1 YEAR TIME OF TRAVEL

GIBBS & OLSON INC.
Engineers • Planners • Surveyors
LONGVIEW • TUMWATER
WASHINGTON

TABLE IV-3 WHP CONTAMINANT INVENTORY		
Map ID #	**Potential Contaminant Source**	**Potential Contamination**
6 Month Time of Travel		
1	On-site sewage collection lines.	Biological, Nitrate, VOC.
2	Prairie Creek	Biological, VOC, SOC.
3	On-site Visitor parking	VOC.
4	On-site above ground fuel storage tanks ➘	VOC.
5	Maintenance shop and storage buildings ➘	VOC, SOC
6 Month to 1 Year Time of Travel		
6	On-site paint shop➘	VOC.
1 to 5 Year Time of Travel		
7	Burlington Northern Railroad	Biological, VOC, SOC.
8	Future Wastewater Treatment Plant	Biological, VOC, SOC.
9	On-site sewage (approx. 10 single family)	Nitrate, VOC.
10	Agricultural	Nitrate, SOC.
5 to 10 Year Time of Travel		
11	On-site sewage (approx. 15 single family)	Biological, Nitrate, VOC.
12	Agricultural	Nitrate, SOC.
13	Sewage disposal pond➘	Biological, Nitrate, VOC.
Upgadient and potentially within a 10 Year Time of Travel		
14	3 gas stations approximately 5,500 feet to the Northeast.	VOC.
15	Numerous on-site sewage.	Nitrate VOC
16	Agricultural	Nitrate, SOC.

➘ - Potential contamination source within the CFR is down gradient and is not likely to affect the well field.

MANAGEMENT PROGRAM FOR THE WELLHEAD PROTECTION AREA

Public water systems are required to implement a management plan to accomplish wellhead protection. The required elements of the management plan are public notification, contingency planning, and emergency spill response. The following is a discussion of those elements.

NOTIFICATION

No notification is needed for the residents with on-site sewage disposal systems within the 6-month and 1-year time of travel boundaries. All of the potential on-site sewage sources of contamination will be replaced by the county sewage collection system in the near future. The gas station and pesticide applicators within the 5 and 10 year time of travel boundaries will be notified in conjunction with efforts by the County for the Grand Mound water system.

Several on-site facilities are listed in Table IV-3 as potential contamination sources. The maintenance shop, fuel storage tanks, paint shop, and sewage disposal pond are within the 10 year CFR, but are located down gradient of the well field. Based on the uniform flow estimates and information from the Grand Mound wellhead protection study, a release from these potential sources of contamination is not anticipated to affect the well field. Any future on-site hazards will be addressed through maintenance staff education and future construction activities. In particular, on-site sewage collection pipes will either be routed around the 100 foot protective radius around the wellfield or the pipes will be encased through the radius in accordance with methods acceptable to the DOH Regional Engineer.

CONTINGENCY PLANNING

Currently, there are no feasible intertie options. After establishment of the Grand Mound water system, a relatively feasible option will exist. In the event of a loss of the water from the main production wells due to failure or contamination, the system would have to pursue an intertie with the Grand Mound water system or evaluate whether new wells on another part of the school property are prudent. In general, aquifer contamination upgradient of the well field may preclude the use of new wells at the school. For any other events, the choice would be subject to the cost difference between the two alternatives. Water rights may have to be transferred in either case. During the interim, supply could come from a local tanker truck such as those utilized in the past. The tanker would have to be properly disinfected and equipped with a supply fitting. Additional emergency response procedures are also discussed in the Section 6 – Operations & Maintenance.

EMERGENCY SPILL RESPONSE

The local fire district and county emergency services department will be informed of the wellhead protection area through submittal of the map of the WHP zones. Procedures for response to a spill incident within the wellhead protection area will be developed by the local emergency service entities.

McNeil Island Corrections Center

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.2

Important! Please complete one form for each ground water source (well, well field, spring) used in your system. Photocopy as necessary.

Part I: System Information

Well Owner: **Department of Corrections**
Well Manager: **N/A**
Water System Name: **McNeil Island**
Water System Number: **52900 E**

County: **Pierce**
1/4, 1/4, Sec, T, R: **SW, SW, 16, 20N, 1E**
Source Name: **Well #1**
WA well ID tag number: **BLN215**
Source Number: **S03**
Well Depth: **741**
Number of Connections: **166**
Population Served: **692**

Latitude: 122.6934
Longitude: 47.2136

How was lat/long determined?

- [ ] GPS device
- [ ] survey
- [ ] topographic map
- [X] other: Well Log

*Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

Part II: Well Construction and Source Information

1) Date well originally constructed: **01/09/2019** last reconstructed: n/a

2) Well Driller: Tacoma Pump and Drilling
30316 Mountain Hwy East
Graham, WA 98338

3) Type of Well:

- [X] Drilled: **rotary** (rotary, bored, cable, dug)
- [ ] Other: (spring, lateral collection, driven, jetted, other)

Comments:

4) Well Report Available? **yes** yes/no

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets. Engineering reports, well reconstruction logs.

5) Average pumping rate: **251** gpm

Source of information: **Pump test**

If not documented, how was the pumping rate determined?

limited by instantaneous water right certificate

6) Is this source treated? **yes** yes/no (disinfection, filtration, carbon filter, airstripper, other)

If so, what type of treatment:

filtration, disinfection, chemical addition for corrosion control

purpose of treatment (describe materials to be removed or controlled by treatment):

removal of iron and manganese, disinfection, corrosion control

7) If source is chlorinated, is a chlorine residual maintained? **yes** yes/no

Residual level (at point closest to source): **0.6** ppm

Part III: Hydrogeologic Information

1) Depth to top of open interval: **694** ft

2) Depth to groundwater (static water level):
173.1 ft
no flowing artesian well/spring
How was the water level determined: sonic sounder

3) If the source is a flowing well or spring, what is the confining pressure?
n/a psi **n/a** ft

4) If the source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source:
n/a yes/no

5) Wellhead elevation (height above mean sea level): **189** ft
how was elevation determined?
- [ ] topographic map
- [ ] drilling/well log
- [ ] altimeter
- [X] other: surveyed map

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.)
Yes (yes/no) Is there evidence of a confining layer in the 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, the static water level measured on the well log is 173' below the top of the well. The lowest definite confining layer is described as "Grey Clay" from 545 to 622 feet. It is possible lower layers are confining or semi-confining.

7) Sanitary setback: **100** ft (If less than 100 feet, describe the site conditions):

8) Wellhead Construction:
- [ ] in wellhouse
- [ ] in doghouse
- [X] outside
- [ ] controlled access:
- [ ] other uses for wellhouse:

9) Surface seal:
- [ ] 18 ft
- [X] >18 ft
- [ ] <18 ft (no DOE approval)
- [ ] <18 ft (with DOE approval, include documentation)
- [ ] no surface seal
- [ ] unknown

10) Annual rainfall:
- [ ] <10 in/yr
- [ ] 10-25 in/yr
- [X] >25 in/yr

Part IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: **8,818,068** Cubic Feet

Annual volume of water estimated from 2014 WSP system ADD of 180,710 gpd.

How was this determined?

[ ] meter			
[X] estimated:	pumping rate:	**251**	gpm
	pumping capacity:	**251**	gpm
[ ] other:	aquifer/screen	**40**	ft

2) "Calculated Fixed Radius" estimate of groundwater movement: (see Instruction Packet)

groundwater travel time;	6 mo.	**375** ft	$r = [(Q*t)/(\pi*\eta H)]^{0.5}$
groundwater travel time;	1 yr.	**530** ft	where: r = radius (ft)
groundwater travel time;	5 yr.	**1185** ft	Q = flow (ft^3/yr)
groundwater travel time;	10 yr.	**1675** ft	t = time (yr)
			η = porosity (0.25 assumed)
length of screened/open interval:		**40** ft	H = screen/aquifer height (ft)

3) Is there a river, lake, pond, stream, or other surface water body within the six month travel boundary?

no yes/no (if yes, identify on a map and describe below)

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the six month time of travel boundary?

no yes/no (if yes, identify on a map and describe below)

Part V: Assessment of Water Quality

1) Regional sources of risk to groundwater:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time

	6 mo.	1 yr	5 yr	unknown
likely pesticide application			**X**	
stormwater injection wells				
other injection wells				
abandoned ground water well				
landfills, dumps, disposal areas				
known hazardous materials clean-up site				
water systems with water quality problems				
population density >1 house/acre				
residences commonly having septic tanks				
wastewater treatment lagoons				
sites used for land application of waste				

Identify on a map all of the risks listed above which are located within the six month time of travel boundary. (Please include a map of the wellhead and time of travel areas within this form. Please indicate any of the following.) If other potential sources of groundwater contamination exist within the ten year time of travel circular zone around your supply, please describe:

There are no risks located within the six month time of travel boundary. No active Ecology sites of potential contamination are located within the 10-year TOT.

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions:
(Unless listed on the assessment, MCLs are listed in assistance package.)

	MCL/detection	level >MCL?
A. Nitrate:	10 mg/l	**no**
B. VOCs:	5 ug/l	**no**
C. EDB:	0.05 ug/l	**no**
D. DBCP:	0.2 ug/l	**no**
E. Other SOC	(detectable)	**no**

If any SOC's in addition to EDB/DBPC were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list methods here:

n/a

F. Bacterial Contamination:

Are any bacteriological test samples available	**yes**	yes/no
Any bacterial detection from the source within past 3 years:	**no**	yes/no
Any bacterial detection in the distribution system and attributed to the source within the past 3 years:	**n/a**	yes/no

Part VI: Geographic or Hydrologic Factors contributing to a non-Circular Zone of Contribution

The following questions will help identify those groundwater systems which may not be accurately represented by the calculated field 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 ten year time of travel zone of the CFR?
(does the largest circle extend over a stream, river, lake, or up a steep hillside, mountain or ridge?)

no yes/no if yes, describe with references to the map produced in Part IV:

The edge of the 10-year TOT touches the Butterworth Reservoir. There are several restrictive layers noted in the well log as "till" and "clay" that would prevent any potential surface water from reaching the source water. Additionally, one motive to use the groundwater well is DOE has requested lowering the water level in the Butterworth Reservoir, so the small portion within the 10-year TOT may not have surface water in the future.

2) Aquifer Material

A) Does the drilling, well, or other geologic/engineering report identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

no yes/no

B) Does the drilling, well, or other geologic/engineering report identify that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

no 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.)

no 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 gpm within:

	6 mo. travel time
	1 yr. travel time
	5 yr. travel time
no	10 year travel time

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within:

	6 mo. travel time
	1 yr. travel time
	5 yr. travel time
no	10 year travel time

5) Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the contribution zone for this source. Reference them to locations on the map in Part IV.

DEPARTMENT OF ECOLOGY State of Washington

What's In My Neighborhood

Help | Legend | Home

2 cleanup sites within 0.5 mile - Hide Table -

Export Data   Filter Records   Filter Results

Site Name	Site Status
Tacoma Smelter Plume Area-Wide Contamination: Military Base/State Facility	Cleanup Started
WA DOC McNeil Island Corrections Center	NFA

Basemap

Clear Search

Mission Creek Corrections Center for Women

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 : DSHS , Mission Creek Youth Camp

Water system name : Mission Creek Youth Camp

County: Mason

Water system number: 55325Y   Source number: S01

Well depth: 186 ft. (ft.) (XXXXXXXXXXXX)

Source name: N/A   WATER RIGHTS PERMIT #G2-21634P

WA well identification tag number: N/A ___ ___-___ ___ ___

XX well not tagged

Number of connections: One   Population served: 120

Township: T23N   Range: R2WM

Section: Sec 13   1/4 1/4 Section: SE 1/4 -NE1/4

Latitude/longitude (if available): N/A ____ / ____

How was lat./long. determined?

___ global positioning device ___ survey ___ topographic map
___ other: ___

• Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: __ / __ / 59 month/day/year

last reconstruction: __ / __ / __ month/day/year

XX information unavailable

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

__ < 20 ft __ 20-50 ft __ 50-100 ft XX 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 XX > 100 ft

__ flowing well/spring (artesian)

How was water level determined?

__ well log XX other: Position of pump bowls and intake strainer

XXdepth 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): 350 (ft)

How was elevation determined? XX 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

XX information unavailable

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 3,650,000(gallons)

How was this determined?

_ meter

XX estimated: __ pumping rate (______________)

XX pump capacity (100 GPM ______)

XX other: Estimated 10,000 Gal./day usage

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 1550 (ft)

1 year ground water travel time : 2200 (ft)

5 year ground water travel time: 4920 (ft)

10 year ground water travel time: 6950 (ft)

Information available on length of screened/open interval?

__ YES XX NO

Length of screened/open interval: Appendix E (10)(ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? XX YES __ NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? __ YES XX NO (mark and identify on map).

Comments: There is a drainfield within the six (6) month Time of Travel Boundary,

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES	NO
Results greater than MCL	___	XX
< 2 mg/liter nitrate	XX	___
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	XX	___

___ VOC sampling records unavailable

C. EDB/DBCP: (EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)	YES	NO
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

XX 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)

XX 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: ______________________________

____

____

____

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 XX NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	__	XX	__
6 month–1 year travel time	__	XX	__
1–5 year travel time	__	XX	__
5–10 year travel time	__	XX	__

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	__	XX	__
1–5 year travel time	__	XX	__
5–10 year travel time	__	XX	__

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

Our well is located between Sandhill Rd. & Delmore Rd., higher in elevation than drainage basins that are on both our east &west sides . Most of the area around our 10 Yr. CFR is State Forest lands. Basically undeveloped with only a small number of individual private residences and no large density population developments.

2) Well driller: ______

______

______

XX well driller unknown

3) Type of well:

XX Drilled: __ rotary __ bored __ cable (percussion) __ Dug

__ Other: __ spring(s) __ lateral collector (Ranney)

__ driven __ jetted __ other: ______

Additional comments: 8 in. Steel casing

______

4) Well report available? __ YES (attach copy to form) XX NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: One hundred (gallons/min)

Source of information: Pump sizing information

If not documented, how was pumping rate determined? ______

______

__ Pumping rate unknown

6) Is this source treated? No Treatment.

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 XX NO Chlorine

Residual level: ______ *(At the point closest to the source.)*

7) Sanitary setback:

___ < 100 ft* ___ 100-120 ft ___ 120-200 ft ___ > 200 ft
* if less than 100 ft describe the site conditions:

8) Wellhead construction:

XX wellhead enclosed in a wellhouse

XX controlled access (describe): Locked door.

XX 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)*

XX depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year):

___ < 10 in/yr ___ 10-25 in/yr XX > 25 in/yr

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:

** We are not aware of any regional sources of risk in our area**

	6 month	1 year	5 year	unknown
likely pesticide application				XX
stormwater injection wells				XX
other injection wells				XX
abandoned ground water well				XX
landfills, dumps, disposal areas				XX
known hazardous materials clean-up site				XX
water system(s) with known quality problems				XX
population density > 1 house/acre				XX
residences commonly have septic tanks				XX
Wastewater treatment lagoons				XX
sites used for land application of waste				XX

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:

Junction of Sand Hill Rd. And 10 Yr. Radius in Sec.19 is a Mason County garbage transfer Station, that in the past was a landfill dump site.

E. Bacterial contamination:

	YES	NO
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	___	XX
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	___	XX

__ Source sampling records for bacteria unavailable

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

XX YES __ NO

Describe with references to map produced in Part IV:

Sec. 13, 24, sec.7 Mission Creek flows SW Parallel to Sand Hill Rd.

which is uphill from Creek Bed.

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 XX 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?

XX YES __ NO

Gravel Pit in the Area indicates that area is made up of
Glacial till with little [illegible] evidence as to the presense
of basalt

Olympic Corrections Center

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IMPORTANT! Please complete one form for each ground water source (well, well in wellfield, spring, spring in springfield) used in your water system. Photocopy as necessary

PART I: System Information

Well owner / manager: **ROD CHRISTY**

Water System Name: **OLYMPIC CORRECTIONS CENTER**

County: **JEFFERSON**

Water System Number: **13560 D** Source Number: **01**

Well Depth: **65** (ft) (From WFI form)

Source Name: **WELL C (1)**

WA well identification tag number: ___ ___ ___ - ___ ___ ___ **X** Well not tagged

Number of connections:	**188**	Population served:	**350**
Township:	**26**	Range:	**11W**
Section:	**29**	1/4 1/4 Section:	**SESE**

Latitude / longitude (if available) ________ / ________

How was lat. / long. determined?

___ Global Positioning device ___ Survey **X** Topographic Map

___ Other: ________

* Please refer to Assistance Packet for details and explanations of all the questions in Parts II through V

PART II: Well Construction and Source Information

1) Date well originally constructed: **08/14/1980** (month/day/year)

last reconstruction: ___/___/_____ (month/day/year)

___ Information unavailable

2) Well Driller:

____

____

____

X Well Driller unknown

3) Type of Well:

X Drilled: ___ Rotary ___ Bored ___ Dug

___ Cable (percussion) X Unspecified

___ Other: ___ Spring(s) ___ Driven ___ Jetted

___ Lateral collector (Ranney) ___ Unspecified

Additional comments:

4) Well report available? X YES ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: **100.0** (gallons / min)

Source of information:

If not documented, how was pumping rate determined?

___ Pumping rate unknown

6) Is source treated? If so what type of treatment:

X Disinfection ___ Filtration ___ Carbon Filter

___ Air Stripper ___ Other ___ Unknown

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is clorinated, is a chlorine residual maintained: X YES ___ NO

Residual level: **0.1500** (At point closest to the source)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ (less than) 20ft ___ 20 - 50ft **X** 50 - 100ft ___ 100 - 200ft

___ (greater than) 200ft ___ Information unavailable

2) Depth to ground water (static water level)

___ (less than) 20ft ___ 20 - 50ft **X** 50 - 100ft ___ (greater than) 100ft

___ Flowing well spring (artesian) ___ Depth to Ground water unknown

How was water level determined?

___ Well log ___ Other: ______________________ ___ 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 the source?

___ YES ___ NO

5) Wellhead elevation (height above mean sea level): **660.00** (ft)

How was elevation determined?

X Topographic map ___ Drilling / Well Log ___ Altimeter

___ Other: ______________________

___ Information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

X Evidence of a confining layer in well log

___ No evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the bottom of the lowest confining layer?

X YES ___ NO

___ Information Unavailable

7) Sanitary setback:

____ (Less than) 100ft* ____ 100 - 200ft ____ 120 - 200ft X (greater than) 200ft

* if less than 100 ft describe the site conditions:

8) Wellhead construction:

____ Wellhead enclosed in a wellhouse

____ Controlled access (describe below in comments):

____ Other uses for wellhouse (describe below in comments):

____ No wellhead control

Wellhead construction comments

9) Surface seal:

X 18 ft

____ (less than) 18ft (No Department of Ecology approval)

____ (less than) 18ft (Approved by Ecology, include documentation)

____ (greater than) 18 ft

____ depth of seal unknown

____ no surface seal

10) Annual rainfall (inches per year)

____ (less than) 10 in/yr ____ 10 - 25 in/yr X (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: **30,000,000** (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:	**700**	(ft)
1 Year ground water travel time:	**980**	(ft)
5 Year ground water travel time:	**2,200**	(ft)
10 Year ground water travel time:	**3,110**	(ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/ open interval: **10** (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary?

___ YES **X** NO (Mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon or holding pond located within the 6 month time of travel boundary?

___ YES **X** NO (Mark and identify on map).

Comments:

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 Mo	1 Yr	5 yrs	Unknown
Likely pesticide application				
Stormwater injection wells				
Other injection wells				
Abandoned ground water well			X	
Landfills, dumps, disposal areas				
Known hazardous materials clean-up site				
Water system(s) with known quality problems				
Population density (greater than) 1 house / acre				
Residences commonly have septic tanks				
Wastewater treatment lagoons				
Sites used for land application of waste			X	

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

2) Source specific water quality records:

Please indicate the occurance of any test results since 1986 that might meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	___
(less than) 2 mg/liter nitrate	X
2 - 5 mg/liter nitrate	___
(greater than) 5 mg/liter nitrate	___
Nitrate sampling records unavailable	___
B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l)	YES
Results greater than MCL or SAL	___
VOCs detected at least once	___
VOCs never detected	X
VOC sampling records unavailable	___
C. EDB/DBCP: (EDB MCL = 0.05 ug/l or 0.00005 mg/l) (DBCP MCL = 0.2 ug/l or 0.0002 mg.l)	YES
EDB/DBCP detected below MCL at least once	___
EDB/DBCP detected above MCL at least once	___
EDB/DBCP never detected	X
EDB/DBCP test required but not yet completed	___
EDB/DBCP tests not required	___
D. Other SOCs (Pesticides):	YES
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	X

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:

E. Bacterial contamination: YES

Any bacterial detection(s) in the last 3 years in samples taken from the source (not distribution sampling records) .... ____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source .... ____

Source sampling records for bacteria unavailable .... ____

Part VI: Geographic or Hydrological 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 calculation 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 the sources. As a system developes its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrological boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake up a steep hillside and/or over a mountain or ridge?)

X YES ____ NO ____ Unknown

Describe with references to map produced in Part IV:

2) Aquifer Material:

a) Does the drilling log, well log or other geologic / engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

____ YES X NO ____ Unknown

b) 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 primarily identified as coarse sand and gravel?

____ YES X NO ____ Unknown

3) Is the source located in an aquafer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs)

____ YES   X NO   ____ Unknown

4) Are there other high capacity wells (agricultural, municipal, and/or industrial) located within the CFRs?

____ YES   X NO   ____ Unknown

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 yr 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 hydrological 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

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be

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IMPORTANT! Please complete one form for each ground water source (well, well in wellfield, spring, spring in springfield) used in your water system. Photocopy as necessary

PART I: System Information

Well owner / manager: **ROD CHRISTY**

Water System Name: **OLYMPIC CORRECTIONS CENTER**

County: **JEFFERSON**

Water System Number: **13560 D** Source Number: **02**

Well Depth: **67** (ft) (From WFI form)

Source Name: **WELL D (2)**

WA well identification tag number: ___ ___ ___ - ___ ___ ___ **X** Well not tagged

Number of connections: **188** Population served: **350**

Township: **26** Range: **11W**

Section: **28** 1/4 1/4 Section: **SWSW**

Latitude / longitude (if available) ________ / ________

How was lat. / long. determined?

___ Global Positioning device ___ Survey **X** Topographic Map

___ Other: ________

* Please refer to Assistance Packet for details and explanations of all the questions in Parts II through V

PART II: Well Construction and Source Information

1) Date well originally constructed: **07/30/1980** (month/day/year)

last reconstruction: ___/___/_____ (month/day/year)

___ Information unavailable

2) Well Driller:

____

____

____

X Well Driller unknown

3) Type of Well:

X	Drilled:	X	Rotary	___ Bored	___ Dug
		___	Cable (percussion)		___ Unspecified
___	Other:	___	Spring(s)	___ Driven	___ Jetted
		___	Lateral collector (Ranney)		___ Unspecified

Additional comments:

____

4) Well report available? X YES ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: **100.0** (gallons / min)

Source of information: ______________________________

If not documented, how was pumping rate determined?

____

___ Pumping rate unknown

6) Is source treated? If so what type of treatment:

X Disinfection	___ Filtration	___ Carbon Filter
___ Air Stripper	___ Other	___ Unknown

Purpose of treatment (describe materials to be removed or controlled by treatment):

____

7) If source is clorinated, is a chlorine residual maintained: X YES ___ NO

Residual level: **0.1500** (At point closest to the source)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

X (less than) 20ft ___ 20 - 50ft ___ 50 - 100ft ___ 100 - 200ft

___ (greater than) 200ft ___ Information unavailable

2) Depth to ground water (static water level)

___ (less than) 20ft ___ 20 - 50ft X 50 - 100ft ___ (greater than) 100ft

___ Flowing well spring (artesian) ___ Depth to Ground water unknown

How was water level determined?

___ Well log ___ Other: ______________________ ___ 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 the source?

___ YES ___ NO

5) Wellhead elevation (height above mean sea level): **660.00** (ft)

How was elevation determined?

X Topographic map ___ Drilling / Well Log ___ Altimeter

___ Other: ______________________

___ Information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

X Evidence of a confining layer in well log

___ No evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the bottom of the lowest confining layer?

X YES ___ NO

___ Information Unavailable

7) Sanitary setback:

___ (Less than) 100ft* ___ 100 - 200ft ___ 120 - 200ft _X_ (greater than) 200ft

* if less than 100 ft describe the site conditions:

8) Wellhead construction:

___ Wellhead enclosed in a wellhouse

___ Controlled access (describe below in comments):

___ Other uses for wellhouse (describe below in comments):

___ No wellhead control

Wellhead construction comments

9) Surface seal:

_X_ 18 ft

___ (less than) 18ft (No Department of Ecology approval)

___ (less than) 18ft (Approved by Ecology, include documentation)

___ (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year)

___ (less than) 10 in/yr ___ 10 - 25 in/yr _X_ (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: **30,000,000** (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: **700** (ft)

1 Year ground water travel time: **980** (ft)

5 Year ground water travel time: **2,200** (ft)

10 Year ground water travel time: **3,110** (ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/ open interval: **10** (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary?

___ YES **X** NO (Mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon or holding pond located within the 6 month time of travel boundary?

___ YES **X** NO (Mark and identify on map).

Comments:

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 Mo	1 Yr	5 yrs	Unknown
Likely pesticide application				
Stormwater injection wells				
Other injection wells				
Abandoned ground water well			X	
Landfills, dumps, disposal areas				
Known hazardous materials clean-up site				
Water system(s) with known quality problems				
Population density (greater than) 1 house / acre				
Residences commonly have septic tanks				
Wastewater treatment lagoons				
Sites used for land application of waste			X	

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

2) Source specific water quality records:

Please indicate the occurance of any test results since 1986 that might meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	
(less than) 2 mg/liter nitrate	X
2 - 5 mg/liter nitrate	
(greater than) 5 mg/liter nitrate	
Nitrate sampling records unavailable	

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l)	YES
Results greater than MCL or SAL	
VOCs detected at least once	
VOCs never detected	X
VOC sampling records unavailable	

C. EDB/DBCP: (EDB MCL = 0.05 ug/l or 0.00005 mg/l) (DBCP MCL = 0.2 ug/l or 0.0002 mg.l)	YES
EDB/DBCP detected below MCL at least once	
EDB/DBCP detected above MCL at least once	
EDB/DBCP never detected	
EDB/DBCP test required but not yet completed	
EDB/DBCP tests not required	X

D. Other SOCs (Pesticides):	YES
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	X

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:

E. Bacterial contamination: YES

Any bacterial detection(s) in the last 3 years in samples taken from the source (not distribution sampling records) .... ____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source .... ____

Source sampling records for bacteria unavailable .... ____

Part VI: Geographic or Hydrological 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 calculation 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 the sources. As a system developes its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrological boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake up a steep hillside and/or over a mountain or ridge?)

X YES ____ NO ____ Unknown

Describe with references to map produced in Part IV:

____

____

2) Aquifer Material:

a) Does the drilling log, well log or other geologic / engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

____ YES X NO ____ Unknown

b) 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 primarily identified as coarse sand and gravel?

____ YES X NO ____ Unknown

3) Is the source located in an aquafer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs)

____ YES   X NO   ____ Unknown

4) Are there other high capacity wells (agricultural, municipal, and/or industrial) located within the CFRs?

____ YES   X NO   ____ Unknown

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 yr 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 hydrological 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

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be

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IMPORTANT! Please complete one form for each ground water source (well, well in wellfield, spring, spring in springfield) used in your water system. Photocopy as necessary

PART I: System Information

Well owner / manager: **ROD CHRISTY**

Water System Name: **OLYMPIC CORRECTIONS CENTER**

County: **JEFFERSON**

Water System Number: **13560 D** Source Number: **03**

Well Depth: **60** (ft) (From WFI form)

Source Name: **WELL F (3)**

WA well identification tag number: ___ ___ ___ - ___ ___ ___ **X** Well not tagged

Number of connections: **188** Population served: **350**

Township: **26** Range: **11W**

Section: **29** 1/4 1/4 Section: **NESE**

Latitude / longitude (if available) ________ / ________

How was lat. / long. determined?

___ Global Positioning device ___ Survey ___ Topographic Map

___ Other: ________

* Please refer to Assistance Packet for details and explanations of all the questions in Parts II through V

PART II: Well Construction and Source Information

1) Date well originally constructed: **11/16/1994** (month/day/year)

last reconstruction: ___/___/_____ (month/day/year)

___ Information unavailable

2) Well Driller:

____

____

____

X Well Driller unknown

3) Type of Well:

X Drilled: ___ Rotary ___ Bored ___ Dug

X Cable (percussion) ___ Unspecified

___ Other: ___ Spring(s) ___ Driven ___ Jetted

___ Lateral collector (Ranney) ___ Unspecified

Additional comments: ____________________

4) Well report available? ___ YES X NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: **100.0** (gallons / min)

Source of information: ____________________

If not documented, how was pumping rate determined?

____

___ Pumping rate unknown

6) Is source treated? If so what type of treatment:

___ Disinfection ___ Filtration ___ Carbon Filter

___ Air Stripper ___ Other ___ Unknown

Purpose of treatment (describe materials to be removed or controlled by treatment):

____

7) If source is clorinated, is a chlorine residual maintained: X YES ___ NO

Residual level: **0.2000** (At point closest to the source)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

____ (less than) 20ft ____ 20 - 50ft X 50 - 100ft ____ 100 - 200ft

____ (greater than) 200ft ____ Information unavailable

2) Depth to ground water (static water level)

____ (less than) 20ft ____ 20 - 50ft X 50 - 100ft ____ (greater than) 100ft

____ Flowing well spring (artesian) ____ Depth to Ground water unknown

How was water level determined?

____ Well log ____ Other: ________________ ____ 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 the source?

____ YES ____ NO

5) Wellhead elevation (height above mean sea level): **640.00** (ft)

How was elevation determined?

X Topographic map ____ Drilling / Well Log ____ Altimeter

____ Other: ________________

____ Information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

X Evidence of a confining layer in well log

____ No evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the bottom of the lowest confining layer?

X YES ____ NO

____ Information Unavailable

7) Sanitary setback:

___ (Less than) 100ft* X 100 - 200ft ___ 120 - 200ft ___ (greater than) 200ft

* if less than 100 ft describe the site conditions:

8) Wellhead construction:

X Wellhead enclosed in a wellhouse

X Controlled access (describe below in comments):

___ Other uses for wellhouse (describe below in comments):

___ No wellhead control

Wellhead construction comments

9) Surface seal:

X 18 ft

___ (less than) 18ft (No Department of Ecology approval)

___ (less than) 18ft (Approved by Ecology, include documentation)

___ (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year)

___ (less than) 10 in/yr ___ 10 - 25 in/yr X (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: **36,500,000** (gallons)

How was this determined?

X Meter

___ Estimated: ___ Pumping Rate (________________)

___ Pump Capacity (________________)

___ Other:

2) "Calculated Fixed Radius" estimate of ground water movement (see Instruction Packet)

6 Month ground water travel time:	**586**	(ft)
1 Year ground water travel time:	**820**	(ft)
5 Year ground water travel time:	**1,810**	(ft)
10 Year ground water travel time:	**2,603**	(ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/ open interval: **5** (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary?

___ YES **X** NO (Mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon or holding pond located within the 6 month time of travel boundary?

___ YES **X** NO (Mark and identify on map).

Comments:

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 Mo	1 Yr	5 yrs	Unknown
Likely pesticide application	____	____	____	____
Stormwater injection wells	____	____	____	____
Other injection wells	____	____	____	____
Abandoned ground water well	____	____	____	____
Landfills, dumps, disposal areas	____	____	____	____
Known hazardous materials clean-up site	____	____	____	____
Water system(s) with known quality problems	____	____	____	____
Population density (greater than) 1 house / acre	____	____	____	____
Residences commonly have septic tanks	____	____	____	____
Wastewater treatment lagoons	____	____	____	____
Sites used for land application of waste	____	____	____	____

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

____

____

____

____

____

____

2) Source specific water quality records:

Please indicate the occurance of any test results since 1986 that might meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A.	Nitrate: (Nitrate MCL = 10 mg/l)	YES
	Results greater than MCL	___
	(less than) 2 mg/liter nitrate	X
	2 - 5 mg/liter nitrate........	___
	(greater than) 5 mg/liter nitrate........	___
	Nitrate sampling records unavailable	___
B.	VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l)	YES
	Results greater than MCL or SAL	___
	VOCs detected at least once	___
	VOCs never detected	X
	VOC sampling records unavailable	___
C.	EDB/DBCP: (EDB MCL = 0.05 ug/l or 0.00005 mg/l) (DBCP MCL = 0.2 ug/l or 0.0002 mg.l)	YES
	EDB/DBCP detected below MCL at least once	___
	EDB/DBCP detected above MCL at least once	___
	EDB/DBCP never detected	___
	EDB/DBCP test required but not yet completed	___
	EDB/DBCP tests not required	___
D.	Other SOCs (Pesticides):	YES
	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

Any bacterial detection(s) in the last 3 years in samples taken from the source (not distribution sampling records) .... ___

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source .... ___

Source sampling records for bacteria unavailable .... ___

Part VI: Geographic or Hydrological 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 calculation 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 the sources. As a system developes its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrological boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake up a steep hillside and/or over a mountain or ridge?)

X YES ___ NO ___ Unknown

Describe with references to map produced in Part IV:

2) Aquifer Material:

a) Does the drilling log, well log or other geologic / engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

___ YES X NO ___ Unknown

b) 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 primarily identified as coarse sand and gravel?

___ YES X NO ___ Unknown

3) Is the source located in an aquafer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs)

____ YES X NO ____ Unknown

4) Are there other high capacity wells (agricultural, municipal, and/or industrial) located within the CFRs?

____ YES X NO ____ Unknown

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 yr 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 hydrological 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

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be

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IMPORTANT! Please complete one form for each ground water source (well, well in wellfield, spring, spring in springfield) used in your water system. Photocopy as necessary

PART I: System Information

Well owner / manager: **GEORGE CAMPBELL**

Water System Name: **WASHINGTON CORRECTIONS CENTER WS**

County: **MASON**

Water System Number: **93063 K** Source Number: **01**

Well Depth: **178** (ft) (From WFI form)

Source Name: **WELL # 1**

WA well identification tag number: ___ ___ ___ - ___ ___ ___ **X** Well not tagged

Number of connections: **1,000** Population served: **1,900**

Township: **20** Range: **04W**

Section: **09** 1/4 1/4 Section: **SWNW**

Latitude / longitude (if available) ________ / ________

How was lat. / long. determined?

___ Global Positioning device ___ Survey ___ Topographic Map

___ Other: ________

* Please refer to Assistance Packet for details and explanations of all the questions in Parts II through V

PART II: Well Construction and Source Information

1) Date well originally constructed: ___/___/______ (month/day/year)

last reconstruction: ___/___/______ (month/day/year)

X Information unavailable

2) Well Driller:

____

____

____

X Well Driller unknown

3) Type of Well:

___ Drilled: ___ Rotary ___ Bored ___ Dug

___ Cable (percussion) ___ Unspecified

___ Other: ___ Spring(s) ___ Driven ___ Jetted

___ Lateral collector (Ranney) ___ Unspecified

Additional comments:

____

4) Well report available? ___ YES X NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: ______ (gallons / min)

Source of information: ______________________________

If not documented, how was pumping rate determined?

____

X Pumping rate unknown

6) Is source treated? If so what type of treatment:

___ Disinfection ___ Filtration ___ Carbon Filter

___ Air Stripper ___ Other ___ Unknown

Purpose of treatment (describe materials to be removed or controlled by treatment):

____

7) If source is clorinated, is a chlorine residual maintained: ___ YES ___ NO

Residual level: ________ (At point closest to the source)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ (less than) 20ft ___ 20 - 50ft ___ 50 - 100ft ___ 100 - 200ft

___ (greater than) 200ft X Information unavailable

2) Depth to ground water (static water level)

___ (less than) 20ft ___ 20 - 50ft ___ 50 - 100ft X (greater than) 100ft

___ Flowing well spring (artesian) ___ Depth to Ground water unknown

How was water level determined?

___ Well log ___ Other: ______________ ___ 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 the source?

___ YES ___ NO

5) Wellhead elevation (height above mean sea level): ______ (ft)

How was elevation determined?

___ Topographic map ___ Drilling / Well Log ___ Altimeter

___ Other: ______________

___ Information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

___ Evidence of a confining layer in well log

___ No evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the bottom of the lowest confining layer?

___ YES ___ NO

X Information Unavailable

7) Sanitary setback:

____ (Less than) 100ft* ____ 100 - 200ft ____ 120 - 200ft ____ (greater than) 200ft

* if less than 100 ft describe the site conditions:

____

____

____

____

8) Wellhead construction:

____ Wellhead enclosed in a wellhouse

____ Controlled access (describe below in comments):

____ Other uses for wellhouse (describe below in comments):

____ No wellhead control

Wellhead construction comments

____

____

____

____

9) Surface seal:

____ 18 ft

____ (less than) 18ft (No Department of Ecology approval)

____ (less than) 18ft (Approved by Ecology, include documentation)

____ (greater than) 18 ft

____ depth of seal unknown

____ no surface seal

10) Annual rainfall (inches per year)

____ (less than) 10 in/yr ____ 10 - 25 in/yr ____ (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: ______________ (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: ________ (ft)

1 Year ground water travel time: ________ (ft)

5 Year ground water travel time: ________ (ft)

10 Year ground water travel time: ________ (ft)

Information available on length of screened/open interval?

____ YES __X__ NO

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:

	6 Mo	1 Yr	5 yrs	Unknown
Likely pesticide application	____	____	____	____
Stormwater injection wells	____	____	____	____
Other injection wells	____	____	____	____
Abandoned ground water well	____	____	____	____
Landfills, dumps, disposal areas	____	____	____	____
Known hazardous materials clean-up site	____	____	____	____
Water system(s) with known quality problems	____	____	____	____
Population density (greater than) 1 house / acre	____	____	____	____
Residences commonly have septic tanks	____	____	____	____
Wastewater treatment lagoons	____	____	____	____
Sites used for land application of waste	____	____	____	____

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

____

____

____

____

____

____

2) Source specific water quality records:

Please indicate the occurance of any test results since 1986 that might meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: _ (Nitrate MCL = 10 mg/l) — YES

	YES
Results greater than MCL	____
(less than) 2 mg/liter nitrate	____
2 - 5 mg/liter nitrate	____
(greater than) 5 mg/liter nitrate	____
Nitrate sampling records unavailable	____

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l)

	YES
Results greater than MCL or SAL	____
VOCs detected at least once	____
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)

	YES
EDB/DBCP detected below MCL at least once	____
EDB/DBCP detected above MCL at least once	____
EDB/DBCP never detected	____
EDB/DBCP test required but not yet completed	____
EDB/DBCP tests not required	____

D. Other SOCs (Pesticides):

	YES
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

Any bacterial detection(s) in the last 3 years in samples taken from the source (not distribution sampling records) .... ____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source .... ____

Source sampling records for bacteria unavailable .... ____

Part VI: Geographic or Hydrological 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 calculation 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 the sources. As a system developes its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrological 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 ____ Unknown

Describe with references to map produced in Part IV:

____

____

2) Aquifer Material:

a) Does the drilling log, well log or other geologic / engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

____ YES ____ NO ____ Unknown

b) 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 primarily identified as coarse sand and gravel?

____ YES ____ NO ____ Unknown

3) Is the source located in an aquafer 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 ____ Unknown

4) Are there other high capacity wells (agricultural, municipal, and/or industrial) located within the CFRs?

____ YES ____ NO ____ Unknown

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 yr 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 hydrological 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

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be

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IMPORTANT! Please complete one form for each ground water source (well, well in wellfield, spring, spring in springfield) used in your water system. Photocopy as necessary

PART I: System Information

Well owner / manager: **GEORGE CAMPBELL**

Water System Name: **WASHINGTON CORRECTIONS CENTER WS**

County: **MASON**

Water System Number: **93063 K** Source Number: **02**

Well Depth: **46** (ft) (From WFI form)

Source Name: **WELL # 2**

WA well identification tag number: ___ ___ ___ - ___ ___ ___ **X** Well not tagged

Number of connections: **1,000** Population served: **1,900**

Township: **20** Range: **04W**

Section: **09** 1/4 1/4 Section: **SWNW**

Latitude / longitude (if available) ______ / ______

How was lat. / long. determined?

___ Global Positioning device ___ Survey ___ Topographic Map

___ Other: ______

* Please refer to Assistance Packet for details and explanations of all the questions in Parts II through V

PART II: Well Construction and Source Information

1) Date well originally constructed: **09/01/1963** (month/day/year)

last reconstruction: ___/___/_____ (month/day/year)

X Information unavailable

2) Well Driller:

L R GAUDIO

____ Well Driller unknown

3) Type of Well:

X	Drilled:	____	Rotary	____	Bored	____	Dug
		____	Cable (percussion)			X	Unspecified
____	Other:	____	Spring(s)	____	Driven	____	Jetted
		____	Lateral collector (Ranney)			____	Unspecified

Additional comments:

4) Well report available? ____ YES X NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: **596.0** (gallons / min)

Source of information:

If not documented, how was pumping rate determined?

____ Pumping rate unknown

6) Is source treated? If so what type of treatment:

____	Disinfection	____	Filtration	____	Carbon Filter
____	Air Stripper	X	Other	____	Unknown

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is clorinated, is a chlorine residual maintained: ____ YES X NO

Residual level: ________ (At point closest to the source)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ (less than) 20ft ___ 20 - 50ft ___ 50 - 100ft ___ 100 - 200ft

___ (greater than) 200ft _X_ Information unavailable

2) Depth to ground water (static water level)

___ (less than) 20ft _X_ 20 - 50ft ___ 50 - 100ft ___ (greater than) 100ft

___ Flowing well spring (artesian) ___ Depth to Ground water unknown

How was water level determined?

___ Well log _X_ Other: ______________________ ___ Unknown

3) If source is a flowing well or spring, what is the confining pressure:

0.00 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 the source?

___ YES _X_ NO

5) Wellhead elevation (height above mean sea level): **277.00** (ft)

How was elevation determined?

___ Topographic map _X_ Drilling / Well Log ___ Altimeter

___ Other: ______________________

___ Information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

_X_ Evidence of a confining layer in well log

___ No evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the bottom of the lowest confining layer?

___ YES ___ NO

_X_ Information Unavailable

7) Sanitary setback:

X (Less than) 100ft* ___ 100 - 200ft ___ 120 - 200ft ___ (greater than) 200ft

* if less than 100 ft describe the site conditions:

8) Wellhead construction:

X Wellhead enclosed in a wellhouse

X Controlled access (describe below in comments):

___ Other uses for wellhouse (describe below in comments):

___ No wellhead control

Wellhead construction comments

WELLHOUSE IS LOCKED

9) Surface seal:

___ 18 ft

___ (less than) 18ft (No Department of Ecology approval)

___ (less than) 18ft (Approved by Ecology, include documentation)

___ (greater than) 18 ft

___ depth of seal unknown

X no surface seal

10) Annual rainfall (inches per year)

___ (less than) 10 in/yr ___ 10 - 25 in/yr X (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: **100,000,000** (gallons)

How was this determined?

X Meter

___ Estimated: ___ Pumping Rate (____________________)

___ Pump Capacity (____________________)

___ Other:

2) "Calculated Fixed Radius" estimate of ground water movement (see Instruction Packet)

6 Month ground water travel time:	**980**	(ft)
1 Year ground water travel time:	**1,390**	(ft)
5 Year ground water travel time:	**3,110**	(ft)
10 Year ground water travel time:	**4,400**	(ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/ open interval: **10** (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary?

X YES ___ NO (Mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon or holding pond located within the 6 month time of travel boundary?

___ YES **X** NO (Mark and identify on map).

Comments:

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 Mo	1 Yr	5 yrs	Unknown
Likely pesticide application				X
Stormwater injection wells				
Other injection wells				
Abandoned ground water well		X		
Landfills, dumps, disposal areas				
Known hazardous materials clean-up site				
Water system(s) with known quality problems				
Population density (greater than) 1 house / acre				
Residences commonly have septic tanks				
Wastewater treatment lagoons			X	
Sites used for land application of waste		X	X	

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

2) Source specific water quality records:

Please indicate the occurance of any test results since 1986 that might meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	
(less than) 2 mg/liter nitrate	X
2 - 5 mg/liter nitrate	
(greater than) 5 mg/liter nitrate	
Nitrate sampling records unavailable	

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l)	YES
Results greater than MCL or SAL	
VOCs detected at least once	
VOCs never detected	
VOC sampling records unavailable	X

C. EDB/DBCP: (EDB MCL = 0.05 ug/l or 0.00005 mg/l) (DBCP MCL = 0.2 ug/l or 0.0002 mg.l)	YES
EDB/DBCP detected below MCL at least once	
EDB/DBCP detected above MCL at least once	
EDB/DBCP never detected	
EDB/DBCP test required but not yet completed	
EDB/DBCP tests not required	X

D. Other SOCs (Pesticides):	YES
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	X

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:

E. Bacterial contamination: YES

Any bacterial detection(s) in the last 3 years in samples taken from the source (not distribution sampling records) .... ____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source .... ____

Source sampling records for bacteria unavailable .... ____

Part VI: Geographic or Hydrological 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 calculation 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 the sources. As a system developes its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrological boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake up a steep hillside and/or over a mountain or ridge?)

X YES ____ NO ____ Unknown

Describe with references to map produced in Part IV:

2) Aquifer Material:

a) Does the drilling log, well log or other geologic / engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

____ YES X NO ____ Unknown

b) 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 primarily identified as coarse sand and gravel?

X YES ____ NO ____ Unknown

3) Is the source located in an aquafer 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   X Unknown

4) Are there other high capacity wells (agricultural, municipal, and/or industrial) located within the CFRs?

____ YES   X NO   ____ Unknown

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 yr 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 hydrological 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

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.3

IMPORTANT! Please complete one form for each ground water source (well, well in wellfield, spring, spring in springfield) used in your water system. Photocopy as necessary

PART I: System Information

Well owner / manager: **GEORGE CAMPBELL**

Water System Name: **WASHINGTON CORRECTIONS CENTER WS**

County: **MASON**

Water System Number: **93063 K** Source Number: **03**

Well Depth: **184** (ft) (From WFI form)

Source Name: **WELL # 3**

WA well identification tag number: ___ ___ ___ - ___ ___ ___ **X** Well not tagged

Number of connections: **1,000** Population served: **1,900**

Township: **20** Range: **04W**

Section: **09** 1/4 1/4 Section: **SWNW**

Latitude / longitude (if available) ________ / ________

How was lat. / long. determined?

___ Global Positioning device ___ Survey ___ Topographic Map

___ Other: ________

* Please refer to Assistance Packet for details and explanations of all the questions in Parts II through V

PART II: Well Construction and Source Information

1) Date well originally constructed: **04/01/1962** (month/day/year)

last reconstruction: ___ / ___ / ______ (month/day/year)

X Information unavailable

2) Well Driller:

X Well Driller unknown

3) Type of Well:

X Drilled: X Rotary ___ Bored ___ Dug

___ Cable (percussion) ___ Unspecified

___ Other: ___ Spring(s) ___ Driven ___ Jetted

___ Lateral collector (Ranney) ___ Unspecified

Additional comments:

4) Well report available? ___ YES X NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: **144.0** (gallons / min)

Source of information:

If not documented, how was pumping rate determined?

___ Pumping rate unknown

6) Is source treated? If so what type of treatment:

___ Disinfection ___ Filtration ___ Carbon Filter

___ Air Stripper X Other ___ Unknown

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is clorinated, is a chlorine residual maintained: ___ YES X NO

Residual level: ___ (At point closest to the source)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

____ (less than) 20ft ____ 20 - 50ft ____ 50 - 100ft ____ 100 - 200ft

____ (greater than) 200ft __X__ Information unavailable

2) Depth to ground water (static water level)

____ (less than) 20ft ____ 20 - 50ft ____ 50 - 100ft __X__ (greater than) 100ft

____ Flowing well spring (artesian) ____ Depth to Ground water unknown

How was water level determined?

____ Well log __X__ Other: ______________________ ____ Unknown

3) If source is a flowing well or spring, what is the confining pressure:

__0.00__ 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 the source?

____ YES __X__ NO

5) Wellhead elevation (height above mean sea level): __267.00__ (ft)

How was elevation determined?

____ Topographic map __X__ Drilling / Well Log ____ Altimeter

____ Other: ______________________

____ Information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

__X__ Evidence of a confining layer in well log

____ No evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the bottom of the lowest confining layer?

__X__ YES ____ NO

____ Information Unavailable

7) Sanitary setback:

X (Less than) 100ft* ___ 100 - 200ft ___ 120 - 200ft ___ (greater than) 200ft

* if less than 100 ft describe the site conditions:

8) Wellhead construction:

X Wellhead enclosed in a wellhouse

X Controlled access (describe below in comments):

___ Other uses for wellhouse (describe below in comments):

___ No wellhead control

Wellhead construction comments

WELLHOUSE IS LOCKED

9) Surface seal:

___ 18 ft

___ (less than) 18ft (No Department of Ecology approval)

___ (less than) 18ft (Approved by Ecology, include documentation)

X (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year)

___ (less than) 10 in/yr ___ 10 - 25 in/yr X (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: **1,871,000** (gallons)

How was this determined?

X Meter

___ Estimated: ___ Pumping Rate ( )

___ Pump Capacity ( )

___ Other:

2) "Calculated Fixed Radius" estimate of ground water movement (see Instruction Packet)

6 Month ground water travel time:	**220**	(ft)
1 Year ground water travel time:	**310**	(ft)
5 Year ground water travel time:	**700**	(ft)
10 Year ground water travel time:	**980**	(ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/ open interval: **14** (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary?

X YES ___ NO (Mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon or holding pond located within the 6 month time of travel boundary?

___ YES **X** NO (Mark and identify on map).

Comments:

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 Mo	1 Yr	5 yrs	Unknown
Likely pesticide application				X
Stormwater injection wells				
Other injection wells				
Abandoned ground water well				
Landfills, dumps, disposal areas				
Known hazardous materials clean-up site				
Water system(s) with known quality problems				
Population density (greater than) 1 house / acre				
Residences commonly have septic tanks				
Wastewater treatment lagoons				
Sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

2) Source specific water quality records:

Please indicate the occurance of any test results since 1986 that might meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	
(less than) 2 mg/liter nitrate	X
2 - 5 mg/liter nitrate	
(greater than) 5 mg/liter nitrate	
Nitrate sampling records unavailable	

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l)	YES
Results greater than MCL or SAL	
VOCs detected at least once	
VOCs never detected	
VOC sampling records unavailable	X

C. EDB/DBCP: (EDB MCL = 0.05 ug/l or 0.00005 mg/l) (DBCP MCL = 0.2 ug/l or 0.0002 mg.l)	YES
EDB/DBCP detected below MCL at least once	
EDB/DBCP detected above MCL at least once	
EDB/DBCP never detected	
EDB/DBCP test required but not yet completed	
EDB/DBCP tests not required	X

D. Other SOCs (Pesticides):	YES
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	X

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:

E. Bacterial contamination: YES

Any bacterial detection(s) in the last 3 years in samples taken from the source (not distribution sampling records) .... ____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source .... ____

Source sampling records for bacteria unavailable .... ____

Part VI: Geographic or Hydrological 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 calculation 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 the sources. As a system developes its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrological boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake up a steep hillside and/or over a mountain or ridge?)

____ YES X NO ____ Unknown

Describe with references to map produced in Part IV:

2) Aquifer Material:

a) Does the drilling log, well log or other geologic / engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

____ YES X NO ____ Unknown

b) 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 primarily identified as coarse sand and gravel?

____ YES X NO ____ Unknown

3) Is the source located in an aquafer 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 _X_ Unknown

4) Are there other high capacity wells (agricultural, municipal, and/or industrial) located within the CFRs?

_X_ YES ___ NO ___ Unknown

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 yr travel time	X	___	___
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 hydrological 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

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be

Ground Water Contamination
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IMPORTANT! Please complete one form for each ground water source (well, well in wellfield, spring, spring in springfield) used in your water system. Photocopy as necessary

PART I: System Information

Well owner / manager: **GEORGE CAMPBELL**

Water System Name: **WASHINGTON CORRECTIONS CENTER WS**

County: **MASON**

Water System Number: **93063 K** Source Number: **04**

Well Depth: **56** (ft) (From WFI form)

Source Name: **WELL #4**

WA well identification tag number: ___ ___ ___ - ___ ___ ___ **X** Well not tagged

Number of connections: **1,000** Population served: **1,900**

Township: **20** Range: **04W**

Section: **09** 1/4 1/4 Section: **SWNW**

Latitude / longitude (if available) ________ / ________

How was lat. / long. determined?

___ Global Positioning device ___ Survey ___ Topographic Map

___ Other: ________

* Please refer to Assistance Packet for details and explanations of all the questions in Parts II through V

PART II: Well Construction and Source Information

1) Date well originally constructed: **03/01/1984** (month/day/year)

last reconstruction: ___ / ___ / ___ (month/day/year)

X Information unavailable

2) Well Driller:

___

___

___

X Well Driller unknown

3) Type of Well:

X	Drilled:	___	Rotary	___	Bored	___	Dug
		X	Cable (percussion)			___	Unspecified
___	Other:	___	Spring(s)	___	Driven	___	Jetted
		___	Lateral collector (Ranney)			___	Unspecified

Additional comments:

___

4) Well report available? X YES ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: **660.0** (gallons / min)

Source of information: ___

If not documented, how was pumping rate determined?

___

___ Pumping rate unknown

6) Is source treated? If so what type of treatment:

___	Disinfection	___	Filtration	___	Carbon Filter
___	Air Stripper	___	Other	___	Unknown

Purpose of treatment (describe materials to be removed or controlled by treatment):

___

7) If source is clorinated, is a chlorine residual maintained: ___ YES ___ NO

Residual level: ___ (At point closest to the source)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

X (less than) 20ft ___ 20 - 50ft ___ 50 - 100ft ___ 100 - 200ft

___ (greater than) 200ft ___ Information unavailable

2) Depth to ground water (static water level)

___ (less than) 20ft ___ 20 - 50ft X 50 - 100ft ___ (greater than) 100ft

___ Flowing well spring (artesian) ___ Depth to Ground water unknown

How was water level determined?

___ Well log ___ Other: ______________________ ___ Unknown

3) If source is a flowing well or spring, what is the confining pressure:

0.00 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 the source?

___ YES X NO

5) Wellhead elevation (height above mean sea level): 270.00 (ft)

How was elevation determined?

X 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

X No evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the bottom of the lowest confining layer?

___ YES ___ NO

X Information Unavailable

7) Sanitary setback:

X (Less than) 100ft* ___ 100 - 200ft ___ 120 - 200ft ___ (greater than) 200ft

* if less than 100 ft describe the site conditions:

8) Wellhead construction:

___ Wellhead enclosed in a wellhouse

___ Controlled access (describe below in comments):

___ Other uses for wellhouse (describe below in comments):

___ No wellhead control

Wellhead construction comments

9) Surface seal:

___ 18 ft

___ (less than) 18ft (No Department of Ecology approval)

___ (less than) 18ft (Approved by Ecology, include documentation)

X (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year)

___ (less than) 10 in/yr ___ 10 - 25 in/yr X (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: **100,000,000** (gallons)

How was this determined?

X Meter

___ Estimated: ___ Pumping Rate (______________)

___ Pump Capacity (______________)

___ Other:

2) "Calculated Fixed Radius" estimate of ground water movement (see Instruction Packet)

6 Month ground water travel time: **980** (ft)

1 Year ground water travel time: **1,390** (ft)

5 Year ground water travel time: **3,110** (ft)

10 Year ground water travel time: **4,400** (ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/ open interval: **15** (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary?

X YES ___ NO (Mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon or holding pond located within the 6 month time of travel boundary?

___ YES **X** NO (Mark and identify on map).

Comments:

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 Mo	1 Yr	5 yrs	Unknown
Likely pesticide application				X
Stormwater injection wells				
Other injection wells				
Abandoned ground water well		X		
Landfills, dumps, disposal areas				
Known hazardous materials clean-up site				
Water system(s) with known quality problems				
Population density (greater than) 1 house / acre				
Residences commonly have septic tanks				
Wastewater treatment lagoons			X	
Sites used for land application of waste		X	X	

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

2) Source specific water quality records:

Please indicate the occurance of any test results since 1986 that might meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	
(less than) 2 mg/liter nitrate	X
2 - 5 mg/liter nitrate	
(greater than) 5 mg/liter nitrate	
Nitrate sampling records unavailable	
B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l)	YES
Results greater than MCL or SAL	
VOCs detected at least once	
VOCs never detected	X
VOC sampling records unavailable	
C. EDB/DBCP: (EDB MCL = 0.05 ug/l or 0.00005 mg/l) (DBCP MCL = 0.2 ug/l or 0.0002 mg.l)	YES
EDB/DBCP detected below MCL at least once	
EDB/DBCP detected above MCL at least once	
EDB/DBCP never detected	
EDB/DBCP test required but not yet completed	
EDB/DBCP tests not required	X
D. Other SOCs (Pesticides):	YES
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	X

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:

E. Bacterial contamination: YES

Any bacterial detection(s) in the last 3 years in samples taken from the source (not distribution sampling records) .... ___

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source .... ___

Source sampling records for bacteria unavailable .... ___

Part VI: Geographic or Hydrological 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 calculation 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 the sources. As a system developes its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrological boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake up a steep hillside and/or over a mountain or ridge?)

X YES ___ NO ___ Unknown

Describe with references to map produced in Part IV:

____

____

2) Aquifer Material:

a) Does the drilling log, well log or other geologic / engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

___ YES X NO ___ Unknown

b) 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 primarily identified as coarse sand and gravel?

X YES ___ NO ___ Unknown

3) Is the source located in an aquafer 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 ____ Unknown

4) Are there other high capacity wells (agricultural, municipal, and/or industrial) located within the CFRs?

____ YES __X__ NO ____ Unknown

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 yr 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 hydrological 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

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be

Washington Corrections Center for Women

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IMPORTANT! Please complete one form for each ground water source (well, well in wellfield, spring, spring in springfield) used in your water system. Photocopy as necessary

PART I: System Information

Well owner / manager: **STEVE JUDY**

Water System Name: **WASHINGTON STATE CORRECTIONS-WOMEN**

County: **PIERCE**

Water System Number: **69945 J** Source Number: **01**

Well Depth: **351** (ft) (From WFI form)

Source Name: **WELL #1**

WA well identification tag number: **ACM - 654** ____ Well not tagged

Number of connections:	162	Population served:	800
Township:	22	Range:	01E
Section:	36	1/4 1/4 Section:	SESE

Latitude / longitude (if available) ________ / ________

How was lat. / long. determined?

____ Global Positioning device ____ Survey **X** Topographic Map

____ Other: ________

* Please refer to Assistance Packet for details and explanations of all the questions in Parts II through V

PART II: Well Construction and Source Information

1) Date well originally constructed: **04/05/1971** (month/day/year)

last reconstruction: ____/____/________ (month/day/year)

____ Information unavailable

2) Well Driller:

____

____

____

X Well Driller unknown

3) Type of Well:

X	Drilled:	___	Rotary	___	Bored	___	Dug
		X	Cable (percussion)			___	Unspecified
___	Other:	___	Spring(s)	___	Driven	___	Jetted
		___	Lateral collector (Ranney)			___	Unspecified

Additional comments:

4) Well report available? X YES ___ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 107.0 (gallons / min)

Source of information: ____________

If not documented, how was pumping rate determined?

___ Pumping rate unknown

6) Is source treated? If so what type of treatment:

___	Disinfection	___	Filtration	___	Carbon Filter
___	Air Stripper	___	Other	___	Unknown

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is clorinated, is a chlorine residual maintained: ___ YES ___ NO

Residual level: ________ (At point closest to the source)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

____ (less than) 20ft ____ 20 - 50ft ____ 50 - 100ft ____ 100 - 200ft

X (greater than) 200ft ____ Information unavailable

2) Depth to ground water (static water level)

____ (less than) 20ft ____ 20 - 50ft ____ 50 - 100ft X (greater than) 100ft

____ Flowing well spring (artesian) ____ Depth to Ground water unknown

How was water level determined?

____ Well log ____ Other: ________________ ____ 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 the source?

____ YES ____ NO

5) Wellhead elevation (height above mean sea level): **320.00** (ft)

How was elevation determined?

X Topographic map ____ Drilling / Well Log ____ Altimeter

____ Other: ________________

____ Information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

X Evidence of a confining layer in well log

____ No evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the bottom of the lowest confining layer?

X YES ____ NO

____ Information Unavailable

7) Sanitary setback:

X (Less than) 100ft* ___ 100 - 200ft ___ 120 - 200ft ___ (greater than) 200ft

* if less than 100 ft describe the site conditions:

8) Wellhead construction:

X Wellhead enclosed in a wellhouse

X Controlled access (describe below in comments):

___ Other uses for wellhouse (describe below in comments):

___ No wellhead control

Wellhead construction comments

9) Surface seal:

___ 18 ft

___ (less than) 18ft (No Department of Ecology approval)

___ (less than) 18ft (Approved by Ecology, include documentation)

X (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year)

___ (less than) 10 in/yr ___ 10 - 25 in/yr X (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: **43,989,885** (gallons)

How was this determined?

___ Meter

___ Estimated: ___ Pumping Rate (______________)

___ Pump Capacity (______________)

X Other:

2) "Calculated Fixed Radius" estimate of ground water movement (see Instruction Packet)

6 Month ground water travel time:	**700**	(ft)
1 Year ground water travel time:	**980**	(ft)
5 Year ground water travel time:	**2,200**	(ft)
10 Year ground water travel time:	**3,110**	(ft)

Information available on length of screened/open interval?

X YES ___ NO

Length of screened/ open interval: **13** (ft)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary?

___ YES **X** NO (Mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon or holding pond located within the 6 month time of travel boundary?

X YES ___ NO (Mark and identify on map).

Comments:

Stormwater collected from the WCCW parking lot is piped to 2 stormwater retention ponds located approximately 350 ft southeast of well #1. Water in the ponds is removed via evaporation, infiltration and discharge to a stormwatr drain.

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 Mo	1 Yr	5 yrs	Unknown
Likely pesticide application	X	X	X	
Stormwater injection wells				
Other injection wells				
Abandoned ground water well	X	X	X	
Landfills, dumps, disposal areas				
Known hazardous materials clean-up site				
Water system(s) with known quality problems				
Population density (greater than) 1 house / acre				
Residences commonly have septic tanks			X	
Wastewater treatment lagoons				
Sites used for land application of waste				

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

Potential sources of contamination within a one-mile radius of well #1 were identified by conducting a walking/driving survey, interviewing people with local knowledge, and reviewing EPA and WADOH db. A small automotive maintenance shop run by WCCW personnel is located approximately 70 ft east of well #1. WCCW has a RCRA waste handler ID # of WAD980978738. State route 16 is located approx. 450 ft east of Well #1. A company that pumps septic tanks and hauls domestic sewage to off-site disposal facilities is located approx. 2000 ft southeast of well 1.

2) Source specific water quality records:

Please indicate the occurance of any test results since 1986 that might meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	
(less than) 2 mg/liter nitrate	X
2 - 5 mg/liter nitrate	
(greater than) 5 mg/liter nitrate	
Nitrate sampling records unavailable	
B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l)	YES
Results greater than MCL or SAL	
VOCs detected at least once	
VOCs never detected	X
VOC sampling records unavailable	
C. EDB/DBCP: (EDB MCL = 0.05 ug/l or 0.00005 mg/l) (DBCP MCL = 0.2 ug/l or 0.0002 mg.l)	YES
EDB/DBCP detected below MCL at least once	
EDB/DBCP detected above MCL at least once	
EDB/DBCP never detected	
EDB/DBCP test required but not yet completed	X
EDB/DBCP tests not required	
D. Other SOCs (Pesticides):	YES
Other SOCs detected (pesticides and other synthetic organic chemicals)	
Other SOC tests performed but none detected (List test methods in comments)	X
Other SOC tests not performed	

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here:

E. Bacterial contamination: YES

Any bacterial detection(s) in the last 3 years in samples taken from the source (not distribution sampling records) .... ____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source .... ____

Source sampling records for bacteria unavailable .... ____

Part VI: Geographic or Hydrological 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 calculation 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 the sources. As a system developes its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrological boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake up a steep hillside and/or over a mountain or ridge?)

X YES ____ NO ____ Unknown

Describe with references to map produced in Part IV:

____

____

2) Aquifer Material:

a) Does the drilling log, well log or other geologic / engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

____ YES X NO ____ Unknown

b) 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 primarily identified as coarse sand and gravel?

X YES ____ NO ____ Unknown

3) Is the source located in an aquafer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs)

___ YES   X NO   ___ Unknown

4) Are there other high capacity wells (agricultural, municipal, and/or industrial) located within the CFRs?

___ YES   X NO   ___ Unknown

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 yr 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 hydrological 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

potential hydrologic boundaries and sources/sinks were identified by interpreting the US geolocial survey gig harbor 7.5-minute quadrangle, interviewing people with local knowledge and reviewing the WADOH SADIE db. Impacts to well 1 from other production wells and salt water intrusion are not anticipated. The city of Gig Harbor has the only High Capacity production well (> or equal to 500 gpm) in the vicinity of well 1. The nearest city of Gig Harbor production well is located approximately 2 miles south of well 1. Puget

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.3

IMPORTANT! Please complete one form for each ground water source (well, well in wellfield, spring, spring in springfield) used in your water system. Photocopy as necessary

PART I: System Information

Well owner / manager: **STEVE JUDY**

Water System Name: **WASHINGTON STATE CORRECTIONS-WOMEN**

County: **PIERCE**

Water System Number: **69945 J** Source Number: **05**

Well Depth: **522** (ft) (From WFI form)

Source Name: **UNAPPROVED WELL "#2R"**

WA well identification tag number: ___ ___ ___ - ___ ___ ___ **X** Well not tagged

Number of connections:	**162**	Population served:	**800**
Township:	**22**	Range:	**01E**
Section:	**36**	1/4 1/4 Section:	**SESE**

Latitude / longitude (if available) ________ / ________

How was lat. / long. determined?

___ Global Positioning device ___ Survey ___ Topographic Map

___ Other: ________

* Please refer to Assistance Packet for details and explanations of all the questions in Parts II through V

PART II: Well Construction and Source Information

1) Date well originally constructed: ___/___/______ (month/day/year)

last reconstruction: ___/___/______ (month/day/year)

X Information unavailable

2) Well Driller:

____

____

____

_X_ Well Driller unknown

3) Type of Well:

___ Drilled: ___ Rotary ___ Bored ___ Dug

___ Cable (percussion) ___ Unspecified

___ Other: ___ Spring(s) ___ Driven ___ Jetted

___ Lateral collector (Ranney) ___ Unspecified

Additional comments:

____

4) Well report available? ___ YES _X_ NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: ______ (gallons / min)

Source of information: ______________________________

If not documented, how was pumping rate determined?

____

_X_ Pumping rate unknown

6) Is source treated? If so what type of treatment:

___ Disinfection ___ Filtration ___ Carbon Filter

___ Air Stripper ___ Other ___ Unknown

Purpose of treatment (describe materials to be removed or controlled by treatment):

____

7) If source is clorinated, is a chlorine residual maintained: ___ YES ___ NO

Residual level: ________ (At point closest to the source)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

___ (less than) 20ft ___ 20 - 50ft ___ 50 - 100ft ___ 100 - 200ft

___ (greater than) 200ft X Information unavailable

2) Depth to ground water (static water level)

X (less than) 20ft ___ 20 - 50ft ___ 50 - 100ft ___ (greater than) 100ft

___ Flowing well spring (artesian) ___ Depth to Ground water unknown

How was water level determined?

___ Well log ___ Other: ______________________ ___ 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 the source?

___ YES ___ NO

5) Wellhead elevation (height above mean sea level): ________ (ft)

How was elevation determined?

___ Topographic map ___ Drilling / Well Log ___ Altimeter

___ Other: ______________________

___ Information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

___ Evidence of a confining layer in well log

___ No evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the bottom of the lowest confining layer?

___ YES ___ NO

X Information Unavailable

7) Sanitary setback:

___ (Less than) 100ft* ___ 100 - 200ft ___ 120 - 200ft ___ (greater than) 200ft

* if less than 100 ft describe the site conditions:

____

____

____

____

8) Wellhead construction:

___ Wellhead enclosed in a wellhouse

___ Controlled access (describe below in comments):

___ Other uses for wellhouse (describe below in comments):

___ No wellhead control

Wellhead construction comments

____

____

____

____

9) Surface seal:

___ 18 ft

___ (less than) 18ft (No Department of Ecology approval)

___ (less than) 18ft (Approved by Ecology, include documentation)

___ (greater than) 18 ft

___ depth of seal unknown

___ no surface seal

10) Annual rainfall (inches per year)

___ (less than) 10 in/yr ___ 10 - 25 in/yr ___ (greater than) 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: ________________ (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: ________ (ft)

1 Year ground water travel time: ________ (ft)

5 Year ground water travel time: ________ (ft)

10 Year ground water travel time: ________ (ft)

Information available on length of screened/open interval?

____ YES __X__ NO

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:

	6 Mo	1 Yr	5 yrs	Unknown
Likely pesticide application	____	____	____	____
Stormwater injection wells	____	____	____	____
Other injection wells	____	____	____	____
Abandoned ground water well	____	____	____	____
Landfills, dumps, disposal areas	____	____	____	____
Known hazardous materials clean-up site	____	____	____	____
Water system(s) with known quality problems	____	____	____	____
Population density (greater than) 1 house / acre	____	____	____	____
Residences commonly have septic tanks	____	____	____	____
Wastewater treatment lagoons	____	____	____	____
Sites used for land application of waste	____	____	____	____

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary. (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

____

____

____

____

____

____

2) Source specific water quality records:

Please indicate the occurance of any test results since 1986 that might meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. Nitrate: (Nitrate MCL = 10 mg/l) — YES

Results greater than MCL .... ____

(less than) 2 mg/liter nitrate .... ____

2 - 5 mg/liter nitrate... ____

(greater than) 5 mg/liter nitrate.. ____

Nitrate sampling records unavailable .... ____

B. VOCs: (VOC detection level 0.5 ug/l or 0.0005 mg/l) — YES

Results greater than MCL or SAL .... ____

VOCs detected at least once .... ____

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) — YES

EDB/DBCP detected below MCL at least once .... ____

EDB/DBCP detected above MCL at least once .... ____

EDB/DBCP never detected .... ____

EDB/DBCP test required but not yet completed .... ____

EDB/DBCP tests not required .... ____

D. Other SOCs (Pesticides): — YES

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

Any bacterial detection(s) in the last 3 years in samples taken from the source (not distribution sampling records) .... ____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source .... ____

Source sampling records for bacteria unavailable .... ____

Part VI: Geographic or Hydrological 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 calculation 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 the sources. As a system developes its Wellhead Protection Plan for these sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrological 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 ____ Unknown

Describe with references to map produced in Part IV:

2) Aquifer Material:

a) Does the drilling log, well log or other geologic / engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

____ YES ____ NO ____ Unknown

b) 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 primarily identified as coarse sand and gravel?

____ YES ____ NO ____ Unknown

3) Is the source located in an aquafer 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 ____ Unknown

4) Are there other high capacity wells (agricultural, municipal, and/or industrial) located within the CFRs?

____ YES ____ NO ____ Unknown

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 yr 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 hydrological 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

This form and instruction packet are still in the process of development. Your comments, suggestions and questions will help us upgrade and improve this assessment form. If you found particular sections confusing or problematic please let us know. How could this susceptibility assessment be improved or made clearer? How much time did it take you to complete the form? Were you able to complete the assessment without additional/outside expertise? Do you feel the assessment was valuable as a learning experience? Any other comments or constructive criticisms you have would be

APPENDIX C8

Cross-Connection Control Program Forms

Public Water System
Cross-Connection Control Activities
Annual Summary Report for ___

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

Part 1: Public Water System (PWS) and Cross-Connection Control Specialist (CCS) Information

PWS ID:	PWS Name:	County:
Provide name and certification number of CCS who develops and implements your CCC program.		
CCS Name (Last, First & MI):		CCS Phone: (___) ___-_____
CCS Cert. No.:	BAT Cert. No. (if applicable):	
CCS is (check one): PWS owner or employee ☐	On contract to PWS ☐	Volunteer or other ☐

Part 2: Status of Cross-Connection Control (CCC) Program at end of Reporting Year

PWS has (check one box in each column below):	
A written CCC program plan Y ☐ N ☐	CCC implementation activities Y ☐ N ☐

(CCC program plan may be a separate document or part of water system plan or small water system management program.)

Provide information about PWS's specific CCC Program Elements. ***Check one box in each column for each row***.

Program Element Number	**Description of Element [See WAC 246-290-490(3)]**	**This Program Element is Currently:** Included in Written Program	**This Program Element is Currently:** Being Implemented or is Completed
1	Legal Authority Established	Y ☐ N ☐	Y ☐ N ☐
2	Hazard Evaluation Procedures and Schedules	Y ☐ N ☐	Y ☐ N ☐
3	CCC Procedures and Schedules	Y ☐ N ☐	Y ☐ N ☐
4	Certified CCS Provided	Y ☐ N ☐	Y ☐ N ☐
5	Backflow Preventer Inspection and Testing	Y ☐ N ☐	Y ☐ N ☐
6	Testing Quality Control Assurance Program	Y ☐ N ☐	Y ☐ N ☐
7	Backflow Incident Response Procedures	Y ☐ N ☐	Y ☐ N ☐
8	Public Education Program	Y ☐ N ☐	Y ☐ N ☐
9	CCC Records	Y ☐ N ☐	Y ☐ N ☐
10	Reclaimed Water Permit	Y ☐ N ☐ N/A ☐	Y ☐ N ☐ N/A ☐

Did you check one box in EACH of the above columns for EACH row?

Part 3A: System Characteristics

Indicate the number of connections of each type that the PWS serves (whether or not they are protected by backflow preventers). **Estimate if necessary**.

Type of Service Connection	**Number**
Residential (as defined by PWS)	
All Other (include dedicated fire sprinkler and irrigation lines and PWS-owned facilities such as water and wastewater treatment plants and pumping stations, parks, piers, and docks)	
Total Number of Connections	

Part 3B: Cross-Connection Control for High-Hazard Premises or Systems Served by the PWS

If PWS does not serve any high-hazard premises or systems, check here ☐ and go to Part 4.

- Complete all cells. Count only premises PWS serves water to. Enter zero (0) if PWS doesn't serve such premises.
- **Report data as accurately as possible. DOH currently bases CCC compliance actions on this information.**

Type of High-Hazard Premises or Systems [WAC 246-290-490(4)(b)]	Number of Connections			
	A. Being Served Water by PWS[1]	B. With Premises Isolation by AG or RP[2]	C. With Column B AG Inspected or RP Tested	D. Granted Exception from Mandatory Premises Isolation
Agricultural (farms and dairies)				
Beverage bottling plants (including breweries)				
Car washes				
Chemical plants				
Commercial laundries and dry cleaners				
Both reclaimed water and potable water provided				
Film processing facilities				
Dedicated fire protection systems with chemical addition or using unapproved auxiliary supplies				
Food processing plants (including canneries, slaughter houses, rendering plants)				
Hospitals, medical centers, nursing homes, veterinary, medical and dental clinics, blood plasma centers and mortuaries. **Please complete Part 3C on next page.**				
Dedicated irrigation systems using purveyor's water supply *and* with chemical addition[4]				
Laboratories				
Metal plating industries				
Petroleum processing or storage plants				
Piers and docks				
Radioactive material processing plants or nuclear reactors				
Survey access denied or restricted				
Wastewater lift/pump stations (non-residential only)				
Wastewater treatment plants				
Unapproved auxiliary water supply interconnected with potable water supply				
Other high-hazard premises (please list):[5]				
Totals				

[1] Count multiple connections or parallel installations to the same premises as ***separate*** connections.
[2] Count only those connections with AG or RPBA installed for premises isolation. Don't include connections with in-premises protection only, or connections with DCVAs or DCDAs installed for premises isolation.
[3] Count only those connections ***whose premises isolation preventers*** were inspected (AG) or tested (RPBA) during report year.
[4] For example, dedicated lines to irrigation systems in parks, playgrounds, golf courses, cemeteries, estates, etc.
[5] Premises with hazardous materials or processes (requiring isolation by AG or RPBA) such as: aircraft and automotive manufacturers, pulp and paper mills, metal manufacturers, military bases, and wholesale customers that pose a high hazard to the PWS. May be grouped together in categories, e.g.,: *other manufacturing* or *other commercial*. ***If needed, attach additional sheet giving same information as requested in table.***

Part 3C: Cross-Connection Control for Medical Premises Served by the PWS

If PWS does not serve any medical premises of the types shown below, check here ☐ and go to Part 4.

- Complete all cells. **Do not count the same premises more than once.**
- Count only premises PWS serves water to. Enter zero (0) if PWS doesn't serve such premises.
- Report data as accurately as possible. DOH will base CCC compliance actions on this information.

Type of High-Hazard Premises or Systems [WAC 246-290-490(4)(b)]	Number of Connections at end of year			
	A. Being Served Water by PWS[1]	B. With Premises Isolation by AG or RP[2]	C. With Column B AG Inspected or RP Tested[3]	D. Granted Exception from Mandatory Premises Isolation
Hospitals				
Hospitals (include psychiatric hospitals and alcohol and drug treatment centers)				
Facilities for Treatment and Care of Patients not Located in Hospitals Counted Above				
Same day surgery centers				
Out-patient clinics and offices				
Alternative health out-patient clinics and offices				
Psychiatric out-patient clinics and offices				
Chiropractors				
Hospice care centers				
Childbirth centers				
Kidney dialysis centers				
Blood centers				
Dental clinics and offices				
Facilities for Housing Patients				
Nursing homes				
Boarding homes				
Residential treatment centers				
Other Medical-Related Facilities				
Mortuaries				
Morgues and autopsy facilities (not in hospitals)				
Veterinarian offices, clinics, and hospitals				
All other (describe in Part 6: Comments on pg 6)				
Totals				

[1] Count multiple connections or parallel installations to the same premises as ***separate*** connections.
[2] Count only connections with premises isolation AGs or RPs (RPBA or RPDA). Don't include connections with in-premises protection only or connections with DCVAs or DCDAs installed for premises isolation.
[3] Count only connections whose premises isolation preventers were inspected (AG) or tested (RP's) during report year. The number in Column C can't be larger than the number in Column B in the same row.

Part 4A: Backflow Preventer Inventory and Testing Data

- Complete all cells. **Count only backflow preventers relied on to protect the PWS.** Enter zero (0), if there are no backflow preventers in that category.
- **If PWS records don't distinguish between premises isolation and in-premises protection preventers, enter all data in rows 1-6 and check box above row 1.**
- Count AVBs on irrigation systems only. **If you don't track AVBs, check the box above the "AVB" column.**
- Count multiple tests (or failures) for any particular backflow preventer as one test (or failure).
- Count each assembly separately for multiple service connections or parallel installations. Count RPDAs and DCDAs as single assemblies (don't count bypass separately).
- Count assemblies installed on dedicated fire or irrigation lines as Premises Isolation Assemblies.

If PWS doesn't track AVBs, check here. ☐

Backflow Preventer Category and Inspection/Testing Information		Air Gap	RPBA	RPDA	DCVA	DCDA	PVBA	SVBA	AVB
Premises Isolation, including preventers isolating PWS-owned facilities. ***If In-Premises Protection preventers are also included, check here*** ☐**.**									
Rows 1 – 3 pertain ONLY to Premises Isolation preventers in service at beginning of the year ________(fill in report year)									
1	In service at beginning of year								
2	Inspected and/or tested[1]								
3	Failed inspection or test this yea								
Rows 4 – 6 pertain ONLY to NEW Premises Isolation preventers installed during the reporting year									
4	New preventers installed[2]								
5	Inspected and/or tested[1]								
6	Failed inspection or test[3]								
7	Preventers taken out of service this year[3]								
Premises Isolation Total at end of year [4]									
In-Premises Protection (Fixture Protection or Area Isolation), including preventers within PWS-owned facilities.									
Rows 8 – 10 pertain ONLY *to In-Premises Protection Preventers in service at beginning of* ***report year***									
8	In service at beginning of year								
9	Inspected and/or tested[1]								
10	Failed inspection or test this year								
Rows 11 – 13 pertain ONLY to NEW In-Premises Protection preventers installed during the reporting year									
11	New preventers installed[2]								
12	Inspected and/or tested[1]								
13	Failed inspection or test this year								
14	Preventers taken out of service[3]								
In-Premises Protection Total at end of year[4]									
Grand Total at end of reporting year									

[1] Initial and/or routine annual inspection (for proper installation and approval status) and/or test (for testable assemblies only using DOH/USC test procedures).
[2] Includes preventers installed on connections where backflow prevention was not previously required and any preventers that replaced those in service at beginning of the report year. Replacement preventers may be of a different type than the original.
[3] New or existing preventers taken out of service, whether or not they were replaced by the same type or different type of preventer.
[4] Total at end of the year should be equal to the number of preventers in service at beginning of year plus those installed during the year minus the number of preventers taken out of service during the reporting year.

Part 4B: Other Implementation Activities

Complete all cells. Enter zero (0) if not applicable.

Activity or Condition	Number
New service connections evaluated for cross-connection hazards to PWS.	
New service connections requiring backflow protection to protect the PWS.[1]	
Existing service connections evaluated for cross-connection hazards to PWS.	
Existing service connections requiring backflow protection to protect the PWS.[1, 2]	
Exceptions granted to high-hazard premises per WAC 246-290-490(4)(b).[3]	
CCC enforcement actions taken by PWS.[4]	

[1] Include services where either premises isolation or in-premises preventers were required to protect the PWS.

[2] Include existing services that need new, additional, or higher-level backflow prevention.

[3] Submit a completed DOH Exception to High-Health Hazard Premises Isolation Requirements Form (green) for each exception granted during the year.

[4] "Enforcement actions" mean actions taken by the PWS (such as water shut-off, PWS installation of backflow preventer, etc.) when the customer fails to comply with PWS's CCC requirements.

Part 5: Backflow Incidents, Risk Factors, and Indicators During Report Year:______

Complete only one column for each row. Check "Data Not Available" if PWS doesn't track such data.

	Backflow Incidents, Risk Factors, and Indicators	Number (Enter 0 if none)	Check if Data Not Available
Backflow Incidents			
1	Backflow incidents that contaminated the PWS.[5]		☐
2	Backflow incidents that contaminated the customer's drinking water system ***only***.[5]		☐
Risk Factors for Backflow			
3	Distribution main breaks per 100 miles of pipe.		☐
4	Low-pressure events (<20 psi in PWS distribution system).		☐
5	Water outage events.		☐
Indicators of Possible Backflow			
6	Total health-related complaints received by PWS.[6]		☐
7	Received during BWA or PN events.[7]		☐
8	Received during low pressure or water outage events.		☐
9	Total aesthetic complaints (color, taste, odor, air in lines, etc.).		☐
10	Received during BWA or PN events.[7]		☐
11	Received during low pressure or water outage events.		☐

[5] Purveyors must submit a completed DOH Backflow Incident Report form for each backflow incident known to contaminate the public water system. DOH is also interested in receiving information on backflow incidents that contaminated the customer's drinking water system only. The DOH Incident Report form, Form #331-243, is available on the Office of Drinking Water (ODW) website at http://www.doh.wa.gov/Portals/1/Documents/Pubs/331-457-F.pdf or from ODW on request.

[6] Such as stomachache, headache, vomiting, diarrhea, skin rashes, etc.

[7] "**BWA**" means ***Boil Water Advisory*** and **"PN"** means ***Public Notification*** for water quality reasons.

Part 6: Comments and Clarifications

Enter comments or clarifications to any of the information included in this report. ***Please date the comment.***

Part No.	Comment	Date

Part 7: Report Completion Information

Enter dates in MM/DD/YYYY format.

I certify that the information provided in this CCC Activities Report is complete and accurate to the best of my knowledge.			
CCC Program Mgr. Name (print) [1]:			Title:
Signature:			Date:
Phone: (___) ___-____	E-mail: ________________________@________________________		
I have reviewed this report and certify that the information provided is complete and accurate to the best of my knowledge.			
PWS Mgr./Owner Name (print) [2]:			Title:
Signature:		Op. Cert. No.:	Date:

[1] CCC Program Manager is generally the CCS responsible for developing and implementing the PWS's CCC Program.

[2] The person that the CCC Program Manager reports to or other manager having direct responsibility and/or oversight of the CCC program. This person doesn't need to be in charge of the entire water system.

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

Cross-Connection Control Program
Annual Summary Report

Describe the PWS's CCC Program plan, policies, or procedures at the end of the reporting year _____.

Part 1: Public Water System (PWS) Identification

PWS ID:	PWS Name:	County:

Part 2: Cross-Connection Control (CCC) Program Characteristics

A. Type of Program Currently Implemented

Type of Program	Check One
Premises isolation only.	☐
Combination program: reliance on both premises isolation and in-premises protection.	☐
In transition from a combination program to a premises isolation-only program.	☐

B. Coordination with Authority Having Jurisdiction (AHJ) on Cross-Connection Issues

Indicate the status of coordination with AHJs in your service area. The AHJ is the entity that enforces the Uniform Plumbing Code. ***Check one box in each of last three columns for each AHJ in your service area.***

AHJ No.	Name of AHJ (e.g., the City or County Building Department)	PWS currently:		If Not Coordinating, did AHJ Decline to Coordinate?
		Coordinates with AHJ	**Has Written Agreement with AHJ**	
1		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐
2		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐
3		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐
4		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐
5		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐

[1] If more than 5 AHJs, attach separate sheet providing the above information.

C. Corrective or Enforcement Actions Available to the Purveyor

Type of Corrective Action	Indicate Whether Available	Most Often Used (check one)
Denial or discontinuance of water service.	Y ☐ N ☐	☐
Purveyor installs backflow preventer and bills customer.	Y ☐ N ☐	☐
Assessment of fines (in addition to elimination or control of cross connection).	Y ☐ N ☐	☐
Other corrective actions (describe):	Y ☐ N ☐	☐
	Y ☐ N ☐	☐

D. CCC Program Responsibilities

Do not include enforcement action-related procedures or circumstances.

CCC Program Activity	Responsible Party (Check one per row)	
	Customer	Purveyor
Hazard Evaluation by DOH-certified CCS	☐	☐
Backflow preventer (BP) ownership	☐	☐
BP installation	☐	☐
BP ***initial*** inspection (for proper installation – all BPs)	☐	☐
BP ***initial*** test (for testable assemblies)	☐	☐
BP ***annual*** inspection (Air Gaps and AVBs)	☐	☐
BP ***annual*** test (for testable assemblies)	☐	☐
BP maintenance and repair	☐	☐

E. Backflow Protection for Fire Protection Systems

Please remember to enter number of days allowed if you require retrofitting.

PWS coordinates with ***AHJ*** on CCC issues for fire protection systems (FPS).	Y ☐ N ☐ N/A ☐
PWS coordinates with ***local Fire Marshal*** on CCC issues for FPS.	Y ☐ N ☐ N/A ☐
PWS ensures backflow prevention is installed before serving ***new*** connections with FPS.	Y ☐ N ☐
PWS requires retrofits to ***high***-hazard FPS.	Y ☐ (No. of days allowed: ______) N ☐ N/A ☐
PWS requires retrofits to ***low***-hazard FPS.	Y ☐ (No. of days allowed: ______) N ☐ N/A ☐

F. Backflow Protection for Irrigation Systems

Minimum level of backflow prevention required on irrigation systems ***without*** chemical addition.	Not Addressed ☐ AVB ☐ PV/SVBA ☐ DCVA ☐ RPBA ☐
PWS currently inspects AVBs upon ***initial*** installation.	Y ☐ N ☐ N/A ☐
PWS currently inspects AVBs upon repair, reinstallation, or relocation.	Y ☐ N ☐ N/A ☐

G. Used Water

PWS prohibits, by ordinance, rule, policy, or agreement, the intentional return of used water (e.g., for heating or cooling) into the distribution system.		Y ☐ N ☐
If not prohibited at present, date plan to prohibit.	Date (mm/dd/yyyy):	N/A ☐
Current number of service connections returning used water to distribution system.		

H. Backflow Protection for Unapproved Auxiliary Water Supplies1 NOT Interconnected with PWS

Show the **minimum** backflow preventer and type of protection required for service connections with unapproved auxiliary water supplies *NOT interconnected with the PWS.* Check only one box per row.

Existing service connections.	None ☐	DCVA ☐	RPBA ☐	AG ☐
Type of protection required.	None ☐	In-premises protection ☐		Premises isolation ☐
New service connections.	None ☐	DCVA ☐	RPBA ☐	AG ☐
Type of protection required.	None ☐	In-premises protection ☐		Premises isolation ☐

[1] An auxiliary water supply is any water supply on or available to the customer's premises in addition to the purveyor's potable water supply.

I. Backflow Protection for Tanker Trucks and Temporary Water Connections

Minimum level of backflow protection (installed on or associated with the truck) required for tanker trucks taking water from PWS.	AG ☐ DCVA ☐ RPBA ☐ Not specified ☐ Tanker trucks not allowed ☐
PWS requires tanker trucks to obtain water at designated filling sites each equipped with permanently installed backflow preventer(s).	Y ☐ (Min. site protection: DCVA ☐ RPBA ☐) N ☐ N/A ☐ No sites provided ☐
PWS currently accepts tanker trucks approved by other PWSs without further inspection or testing.	Y ☐ N ☐ N/A ☐
Minimum level of backflow protection required for temporary water connections (e.g., for construction sites).	AG ☐ DCVA ☐ RPBA ☐ Not specified ☐ Temp. connections not allowed ☐
PWS requires testing each time the temporary connection backflow preventer is relocated.	Y ☐ N ☐ N/A ☐ (Temp. connections not allowed)
PWS provides approved backflow preventer for temporary connections.	Y ☐ N ☐ N/A ☐ (Temp. connections not allowed)

J. Backflow Protection for Non-Residential Connections

For each category shown, indicate whether PWS has non-residential connections of that type and the **minimum** level of ***premises isolation*** backflow protection required (whether or not PWS currently has that type of customer).

Type of Connection	PWS has Customers of This Type	Minimum Premises Isolation Backflow Protection Required
Commercial	Y ☐ N ☐	Not required ☐ DCVA ☐ RPBA ☐
Industrial	Y ☐ N ☐	Not required ☐ DCVA ☐ RPBA ☐
Institutional	Y ☐ N ☐	Not required ☐ DCVA ☐ RPBA ☐
Other (specify): __________	Y ☐ N ☐	Not required ☐ DCVA ☐ RPBA ☐
Other (specify): __________	Y ☐ N ☐	Not required ☐ DCVA ☐ RPBA ☐

K. Backflow Protection for Wholesale Customers

Indicate whether the PWS requires backflow protection at interties with wholesale customers (other PWSs).

Type of Intertie	PWS has (plans to have) Customers of This Type	Backflow Protection Required (If protection is required, indicate minimum level)
Existing	Y ☐ N ☐	Not specified/not required ☐ Always required ☐ Required only if purchaser's CCC program is inadequate ☐ Minimum required (if applicable): DCVA ☐ RPBA ☐
New	Y ☐ N ☐	Not specified/not required ☐ Always required ☐ Required only if purchaser's CCC program is inadequate ☐ Minimum required (if applicable): DCVA ☐ RPBA ☐

L. Exceptions to Mandatory Premises Isolation

PWS's written CCC Program Plan *allows* system to grant Exceptions to mandatory premises isolation per WAC 246-290-490(4)(b)(iii).	Yes ☐ No ☐ Doesn't Address ☐

PWS currently grants **new** Exceptions.	Yes ☐	No ☐
PWS granted Exceptions in previous reporting years.	Yes ☐	No ☐

Part 3: CCC Program Record-Keeping and Inventory

Indicate the type or name of the computer software used by the PWS to track CCC records.

Cross-Track (BMI) ☐	BPMS ☐	XC2 (Engsoft) ☐	Tokay ☐
Other commercial CCC software ☐ (specify): ____________		Custom developed for or by PWS[1] ☐	
[1]Other non-CCC software (e.g., Excel) ☐		None Used ☐	

[1] Do not include commercial CCC software customized for PWS. If PWS uses customized commercial software, check the box for the appropriate commercial software name.

Part 4: Comments and Clarifications

Enter comments or clarifications to any of the information in this report. ***Please date your comment.***

Part No.	Comment	Date

Part 5: CCC Program Summary Completion Information

Enter dates in MM/DD/YYYY format.

I certify that the information provided in this CCC Program Summary is complete and accurate to the best of my knowledge.		
CCC Program Mgr. Name (Print)[2]:		Title:
Signature:		Date:
Phone: (___) ___-____	E-mail: ____________@______________________	
I certify that the information provided in this report accurately represents the status and description of this water system's CCC Program.		
PWS Mgr./Owner Name (Print)[3]:		Title:
Signature:	Op. Cert No:	Date:

[2] The CCC Program Manager is generally the CCS responsible for developing and implementing the PWS's CCC program.

[3] The person that the CCC Program Manager reports to or other manager having direct responsibility and/or oversight of the CCC program. This person doesn't need to be in charge of the entire water system.

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For Tester or Water System Use	# Backflow Preventer Inspection and Field Test Report	For Tester or Water System Use

PWS ID	**Water System Name**	**File #**	
Facility Name		☐ **Non-Residential** ☐ **Residential**	
Service Address	**City**	**Zip**	
Contact Person	**Phone**	**Email**	
Hazard Type (if known)	☐ **DCVA** ☐ **RPBA** ☐ **PVBA** ☐ **AG** ☐**Other**		
Preventer Physical Location			
☐ **New** ☐ **Existing** ☐ **Replacement: Old Ser. #**	**Confined Space** Yes ☐ No ☐		
Assembly Make	**Model**	**Serial #**	**Size** ”
USC-Approved Yes ☐ No ☐	**Proper Install** Yes ☐ No ☐	**Proper Orientation** Yes ☐ No ☐	

	DCVA	**RPBA**	**PVBA/SVBA**
Initial Test **Passed** ☐ **Failed** ☐	**Check Valve 1** Leaked ☐ ___ psid **Check Valve 2** Leaked ☐ ___ psid	**Relief Valve** Opened ___ psid/ Not Open☐ **Check Valve 2** Closed Tight ☐ Leaked ☐ **Check Valve 1** ___ psid **Approved Air Gap** Yes☐ No☐	**Air Inlet Valve** Opened at ___ psid Did Not Open ☐ Opened Fully Yes ☐ No☐ **Check Valve** ___ psid Leaked ☐
Cleaning, Repairs, & Parts	**Cleaned** ☐ **Repaired** ☐ ☐Disc ☐O-Ring(s) ☐Spring ☐Module ☐Guide ☐Rubber Kit ☐Seat ☐	**Cleaned** ☐ **Repaired** ☐ ☐Disc ☐O-Ring(s) ☐Spring ☐Module ☐Diaphragm ☐Rubber Kit/Guide ☐Seat ☐	**Cleaned** ☐ **Repaired** ☐ ☐Air Inlet Disc ☐Float ☐Air Inlet Spring ☐Diaphragm ☐Check Disc ☐Rubber Kit ☐Check Spring ☐
Final Test **Passed** ☐ **Failed** ☐	**Check Valve 1** Leaked ☐ ___ psid **Check Valve 2** Leaked ☐ ___ psid	**Relief Valve** Opened at ___ psid **Check Valve 2** Closed Tight ☐ **Check Valve 1** ___ psid	**Air Inlet Valve** Opened at ___ psid Opened Fully Yes ☐ No☐ **Check Valve** ___ psid

Air Gap Inspection Pass ☐ Fail ☐	**Supply Pipe Diameter** ”	**Air Gap Separation** ”
Line Pressure psi	**Detector Meter** Gals☐ CuFt ☐	**Service Restored** Yes ☐ No☐
Remarks*		
Test Kit Make & Model	**Serial #**	**Ver./Cal Date****

By this signature, I certify:	1. **I personally inspected and field-tested the backflow assembly using field test procedures meeting WAC 246-290-490 and test equipment meeting WAC 246-292-034; or I personally inspected the air gap or AVB.** 2. **The information in this report is true, complete, and accurate.**

BAT Signature (initial test)	**Cert. #**	**Date/Time**
BAT Name (print)	**BAT Phone #**	
Repaired By		**Date/Time**
BAT Signature (after repair)	**Cert. #**	**Date/Time**
BAT Name (print)	**BAT Phone #**	
BAT Company Name	**Address**	

Note unapproved backflow preventer, missing/defective components, repairs made, or conditions that may adversely affect assembly.
*****The date of the most recent field test kit verification of accuracy or calibration whichever is most recent.***

APPENDIX C9

Distribution System Analysis Data

Cedar Creek Corrections Center

Cedar Creek

Hydraulic Analysis

Node	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	822	0	877.92	24
J-3	823	0	877.89	24
J-4	816	0	877.91	27
J-6	746	0	877.88	57
J-7	750	0	877.88	55
J-8	733	0	877.85	63
J-9	815	0	877.9	27
J-10	742	0	877.89	59
J-11	750	0	877.88	55
J-13	719	0	877.87	69
J-15	719	0	877.87	69
J-16	719	0	877.87	69
J-19	721	0	877.87	68
J-20	718	0	877.87	69
J-21	712	0	877.87	72
J-22	700	0	877.87	77
J-23	722	0	877.87	67
J-24	723	0	877.87	67
J-26	703	0	877.87	76
J-27	724	0	877.87	67
J-28	819	0	877.88	25
J-30	819	0	877.89	25
J-31	783	0	877.9	41
J-32	751	0	877.89	55
J-33	755	0	877.88	53
J-34	728	0	877.88	65
J-35	723	0	877.87	67
J-39	717	38	877.86	70
J-43	728	38	877.73	65
J-45	794	0	877.91	36
J-46	744	0	877.91	58
J-47	727	0	877.91	65
J-48	725	0	877.91	66
H-1	740	0	877.88	60
H-2	720	38	877.87	68
H-3	716	0	877.78	70

H-4	712	38	877.55	72
H-5	723	0	877.85	67
H-6	730	0	877.85	64
H-7	717	0	877.87	70
H-8	723	0	877.87	67
H-9	721	0	877.87	68
H-10	720	0	877.87	68
H-11	720	0	877.87	68
H-12	716	0	877.86	70
H-13	717	0	877.86	70
H-14	731	0	877.78	64
H-15	726	0	877.73	66

Cedar Creek

Fire Flow Analysis

Node	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Residual Pressure Lower Limit (psi)	Residual Pressure (psi)	Node w/ Minimum Pressure
H-1	FALSE	1810	1505	20	55	J-3
H-10	FALSE	1810	1411	20	63	J-3
H-11	FALSE	1810	1428	20	63	J-3
H-12	FALSE	1810	1428	20	58	J-3
H-13	FALSE	1810	1428	20	59	J-3
H-14	FALSE	1810	1402	20	20	J-3
H-15	FALSE	1810	873	20	20	J-3
H-2	FALSE	1810	1460	20	63	J-3
H-3	FALSE	1810	1259	20	36	J-3
H-4	FALSE	1810	857	20	20	J-3
H-5	FALSE	1810	1260	20	55	J-3
H-6	FALSE	1810	1259	20	31	J-3
H-7	FALSE	1810	1261	20	64	J-3
H-8	FALSE	1810	1369	20	62	J-3
H-9	FALSE	1810	1384	20	62	J-3
J-1		1810	1737	20	20	J-3
J-3		1810	1092	20	20	J-30
J-4		1810	1635	20	23	J-3
J-6		1810	219	20	41	J-9
J-7		1810	1531	20	50	J-3
J-8		1810	1531	20	44	J-3
J-9		1810	81	20	20	J-3
J-10		1810	157	20	44	J-9
J-11		1810	1531	20	51	J-3
J-13		1810	1445	20	63	J-3
J-15		1810	1406	20	63	J-3
J-16		1810	1400	20	63	J-3
J-19		1810	1351	20	62	J-3
J-20		1810	1340	20	64	J-3
J-21		1810	1324	20	66	J-3
J-22		1810	1296	20	72	J-3
J-23		1810	1261	20	63	J-3
J-24		1810	1261	20	62	J-3

J-26		1810	1261	20	27	J-3
J-27		1810	1249	20	62	J-3
J-28		1810	1152	20	21	J-3
J-30		1810	1123	20	21	J-3
J-31		1810	1531	20	26	J-3
J-32		1810	1443	20	38	J-3
J-33		1810	1401	20	38	J-3
J-34		1810	1357	20	53	J-3
J-35		1810	1259	20	62	J-3
J-39		1810	1428	20	61	J-3
J-43		1810	1169	20	20	H-15
J-45		1810	1563	20	24	J-3
J-46		1810	410	20	20	J-3
J-47		1810	357	20	20	J-48
J-48		1810	289	20	20	J-3

Larch Corrections Center

Larch

Hydraulic Analysis

Node	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	1292	0	1363.42	31
J-2	1274	0	1363.36	39
J-3	1263	0	1363.34	43
J-4	1266	0	1363.3	42
J-5	1262	0	1363.27	44
J-6	1261	87	1363.26	44
J-7	1258	0	1363.26	46
J-8	1266	0	1363.26	42
J-9	1268	0	1363.26	41
J-10	1273	0	1363.26	39
J-11	1276	0	1363.27	38
J-13	1282	0	1363.32	35
J-14	1270	0	1363.26	40
J-15	1268	0	1363.28	41
J-16	1267	0	1363.29	42
H-1	1268	0	1363.34	41
H-2	1274	87	1363.26	39
H-3	1277	87	1363.28	37
H-4	1265	0	1363.29	43

Larch

Fire Flow Analysis

Node	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Residual Pressure Lower Limit (psi)	Residual Pressure (psi)	Node w/ Minimum Pressure
H-1	TRUE	1000	1755	20	27	J-1
H-2	TRUE	1000	1755	20	23	J-1
H-3	TRUE	1000	1755	20	23	J-1
H-4	TRUE	1000	1755	20	25	J-1
J-1		1000	1755	20	20	J-13
J-2		1000	1755	20	25	J-1
J-3		1000	1755	20	29	J-1
J-4		1000	1755	20	27	J-1
J-5		1000	1755	20	28	J-1
J-6		1000	1755	20	28	J-1
J-7		1000	1755	20	29	J-1
J-8		1000	1755	20	26	J-1
J-9		1000	1755	20	25	J-1
J-10		1000	1755	20	24	J-1
J-11		1000	1755	20	23	J-1
J-13		1000	1755	20	22	J-1
J-14		1000	1755	20	25	J-1
J-15		1000	1755	20	22	J-1
J-16		1000	1755	20	23	J-1

Maple Lane Corrections Center

Maple Lane

Hydraulic Analysis

Node	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	159	0	313.86	67
J-2	162	0	313.86	66
J-3	162	0	313.86	66
J-4	161	0	313.86	66
J-5	164	0	313.82	65
J-6	163	0	313.81	65
J-7	165	0	313.79	64
J-8	163	0	313.78	65
J-9	163	0	313.78	65
J-10	163	23.25	313.78	65
J-11	162	0	313.83	66
J-12	160	0	313.85	67
J-13	164	0	313.79	65
J-14	166	0	313.79	64
J-15	166	0	313.79	64
J-16	164	0	313.79	65
J-18	162	0	313.78	66
J-19	164	0	313.79	65
J-20	162	0	313.86	66
J-21	162	0	313.86	66
H-1	163	0	313.78	65
H-2	163	0	313.78	65
H-3	164	0	313.79	65
H-4	164	0	313.79	65
H-5	166	0	313.79	64
H-6	163	23.25	313.78	65
H-7	161	0	313.78	66
H-8	166	0	313.79	64
H-9	164	0	313.79	65
H-10	160	23.25	313.86	67
H-11	159	0	313.86	67
H-12	163	0	313.79	65
H-13	162	0	313.82	66
H-14	162	0	313.84	66
H-15	162	0	313.86	66

H-16	161	0	313.86	66
H-17	163	23.25	313.8	65
H-18	163	0	313.78	65
H-19	164	0	313.78	65

Maple Lane

Fire Flow Analysis

Node	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)
J-1		1500	1079	20	23
J-2		1500	1077	20	20
J-3		1500	1074	20	20
J-4		1500	1073	20	20
J-5		1500	1037	20	20
J-6		1500	1019	20	20
J-7		1500	960	20	20
J-8		1500	993	20	20
J-9		1500	996	20	20
J-10		1500	998	20	20
J-11		1500	1042	20	20
J-12		1500	1063	20	22
J-13		1500	965	20	20
J-14		1500	965	20	20
J-15		1500	984	20	20
J-16		1500	982	20	20
J-18		1500	929	20	21
J-19		1500	962	20	20
J-20		1500	1078	20	20
J-21		1500	1077	20	22
H-1	FALSE	1500	995	20	20
H-2	FALSE	1500	993	20	20
H-3	FALSE	1500	935	20	20
H-4	FALSE	1500	966	20	20
H-5	FALSE	1500	958	20	20
H-6	FALSE	1500	993	20	20
H-7	FALSE	1500	979	20	20
H-8	FALSE	1500	984	20	20
H-9	FALSE	1500	932	20	20
H-10	FALSE	1500	1079	20	21
H-11	FALSE	1500	1079	20	23
H-12	FALSE	1500	999	20	20
H-13	FALSE	1500	1027	20	20
H-14	FALSE	1500	1048	20	20

H-15	FALSE	1500	1077	20	20
H-16	FALSE	1500	1077	20	20
H-17	FALSE	1500	963	20	20
H-18	FALSE	1500	888	20	20
H-19	FALSE	1500	888	20	20

McNeil Island Corrections Center

McNeil Island

Hydraulic Analysis

Node	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	188.2	0	308.66	52
J-3	116	0	308.59	83
J-5	144	0	308.43	71
J-6	196	0	307.83	48
J-7	182	0	304.38	53
J-8	195	0	304.1	47
J-9	179.5	0	303.94	54
J-10	28.5	0	302.29	118
J-11	141	0	301.34	69
J-12	190	0	308.68	51
J-14	177	0	308.16	57
J-15	82	0	307.64	98
J-16	79	0	307.32	99
J-17	79	0	307.04	99
J-18	82	0	306.85	97
J-19	107	0	306.58	86
J-20	64	0	306.17	105
J-21	52	0	305.96	110
J-23	197	0	305.13	47
J-24	198	0	305.01	46
J-25	194	0	304.92	48
J-26	68	0	304.14	102
J-27	80.5	0	303.89	97
J-28	23	0	303.52	121
J-29	28	0	196.97	73
J-30	50	475	187.97	60
J-31	56	0	187.97	57
J-32	25	0	196.98	74
J-33	28	0	197.01	73
J-34	54	0	197.88	62
J-35	26.5	0	197.45	74
J-36	48	0	197.8	65
J-37	16.5	0	197.45	78
J-38	36.5	0	303.51	116
J-39	36.4	50	303.45	116

J-40	20	0	197.01	77
J-41	103	0	303.51	87
J-42	184.5	0	308.67	54
H-1	180	0	308.67	56
H-2	190	0	308.67	51
H-3	40	0	305.83	115
H-4	18	0	305.56	124
H-5	30.5	0	305.43	119
H-6	83	0	305.33	96
H-7	145	0	305.22	69
H-8	196	0	304.86	47
H-9	165.5	0	304.72	60
H-10	124.5	0	304.54	78
H-11	140.5	0	304.42	71
H-12	37	0	304.02	116
H-13	22	0	303.64	122
H-14	25	0	303.48	120
H-15	169.5	0	300.98	57
H-16	92.5	0	301.6	90
H-17	45.5	0	302.11	111
H-18	27	0	302.78	119
H-19	65.5	0	303.51	103
H-20	0	0	303.51	131
H-21	28	0	198	74
H-22	30	0	197.46	72
H-23	29	0	196.97	73
H-24	56	0	187.97	57
H-25	27	0	196.97	74
H-26	17	0	196.98	78
H-27	24	0	196.98	75
H-28	16	0	197	78
H-29	21.5	0	197.1	76
H-30	28.5	0	197.22	73
H-31	16.5	0	197.45	78
H-32	22	0	197	76

McNeil Island

Fire Flow Analysis

Node	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Residual Pressure Lower Limit (psi)	Residual Pressure (psi)
J-1		2750	10000	20	46
J-3		2750	9065	20	55
J-5		2750	5319	20	42
J-6		2750	2774	20	20
J-7		2750	1164	20	26
J-8		2750	1125	20	20
J-9		2750	1133	20	26
J-10		2750	1189	20	81
J-11		2750	1109	20	32
J-12		2750	10000	20	49
J-14		2750	3574	20	29
J-15		2750	2470	20	70
J-16		2750	2144	20	71
J-17		2750	1943	20	71
J-18		2750	1840	20	70
J-19		2750	1712	20	59
J-20		2750	1558	20	78
J-21		2750	1495	20	83
J-23		2750	1303	20	20
J-24		2750	1279	20	20
J-25		2750	1285	20	21
J-26		2750	1316	20	70
J-27		2750	1328	20	63
J-28		2750	1345	20	85
J-29		2750	1632	20	48
J-30		2750	1045	20	23
J-31		2750	1003	20	20
J-32		2750	1633	20	49
J-33		2750	1634	20	45
J-34		2750	1636	20	37
J-35		2750	1634	20	34
J-36		2750	1636	20	34
J-37		2750	1635	20	22
J-38		2750	1347	20	79
J-39		2750	1357	20	77

J-40		2750	1634	20	49
J-41		2750	1348	20	23
J-42		2750	10000	20	46
H-1	TRUE	2750	10000	20	42
H-2	TRUE	2750	10000	20	45
H-3	TRUE	1000	1460	20	88
H-4	TRUE	1000	1392	20	98
H-5	FALSE	2750	1362	20	92
H-6	FALSE	2750	1341	20	70
H-7	TRUE	1000	1320	20	43
H-8	TRUE	1000	1280	20	20
H-9	TRUE	1000	1288	20	32
H-10	TRUE	1000	1296	20	49
H-11	TRUE	1000	1302	20	41
H-12	TRUE	1000	1322	20	83
H-13	FALSE	2000	1340	20	86
H-14	FALSE	2000	1352	20	83
H-15	TRUE	1000	1082	20	20
H-16	TRUE	1000	1129	20	53
H-17	TRUE	1000	1174	20	74
H-18	FALSE	2750	1181	20	84
H-19	FALSE	2000	1348	20	65
H-20	FALSE	2000	1348	20	78
H-21	FALSE	2750	1514	20	72
H-22	FALSE	2750	1602	20	57
H-23	FALSE	2750	1632	20	48
H-24	FALSE	2750	990	20	20
H-25	FALSE	2750	1633	20	48
H-26	FALSE	2750	1633	20	49
H-27	FALSE	2750	1633	20	48
H-28	FALSE	2750	1633	20	51
H-29	FALSE	2750	1634	20	43
H-30	FALSE	2750	1635	20	35
H-31	FALSE	2750	1634	20	33
H-32	FALSE	2750	1633	20	43

Mission Creek Corrections Center for Women

Mission Creek

Hydraulic Analysis

Node	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-2	465	0	701.23	102
J-4	455	0	701.22	107
J-5	449	0	701.22	109
J-7	444	22	701.22	111
J-8	448	0	701.22	110
J-9	455	0	701.23	107
J-12	462	22	701.19	103
J-14	456	0	701.23	106
J-16	466	0	701.23	102
J-17	455	22	701.21	107
J-19	466	0	701.24	102
H-1	475	0	701.22	98
H-2	461	0	701.22	104
H-3	450	0	701.22	109
H-4	456	0	701.23	106
H-5	457	0	701.23	106
H-6	464	0	701.23	103
H-7	461	0	701.19	104

Mission Creek

Fire Flow Analysis

Node	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Residual Pressure Lower Limit (psi)	Residual Pressure (psi)
H-1	FALSE	1810	165	20	20
H-2	FALSE	1810	165	20	26
H-3	FALSE	1810	165	20	31
H-4	FALSE	1810	165	20	28
H-5	FALSE	1810	165	20	28
H-6	FALSE	1810	165	20	25
H-7	FALSE	1810	165	20	25
J-2		1810	165	20	24
J-4		1810	165	20	29
J-5		1810	165	20	31
J-7		1810	165	20	33
J-8		1810	165	20	32
J-9		1810	165	20	29
J-12		1810	165	20	25
J-14		1810	165	20	28
J-16		1810	165	20	24
J-17		1810	165	20	28
J-19		1810	165	20	24

Olympic Corrections Center

Olympic

Hydraulic Analysis

Node	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	773	0	953.87	78
J-2	733	0	953.85	96
J-3	731	0	953.84	96
J-7	726	0	953.84	99
J-9	705	0	953.84	108
J-11	724	0	953.84	99
J-12	732	0	953.85	96
J-14	737	0	953.85	94
J-17	768	39	862.45	41
J-19	763	0	862.45	43
J-22	759	0	862.45	45
J-25	757	0	862.45	46
J-27	793	0	953.92	70
H-1	763	0	862.45	43
H-2	769	0	862.45	40
H-3	756	0	862.45	46
H-4	765	0	862.45	42
H-5	763	0	862.45	43
H-6	760	0	862.45	44
H-7	755	0	862.45	46
H-8	715	39	953.83	103
H-9	727	39	953.84	98
H-10	713	0	953.84	104
H-11	708	0	953.84	106
H-12	731	0	953.84	96
H-13	730	0	953.84	97

Olympic

Fire Flow Analysis

Node	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Residual Pressure Lower Limit (psi)	Residual Pressure (psi)
H-1	FALSE	3500	1810	20	20
H-2	FALSE	3500	2454	20	20
H-3	FALSE	3500	3204	20	20
H-4	TRUE	3500	5000	20	27
H-5	FALSE	3500	1992	20	20
H-6	FALSE	3500	2146	20	20
H-7	FALSE	3500	2017	20	20
H-8	TRUE	3500	3612	20	20
H-9	TRUE	3500	3815	20	22
H-10	TRUE	3500	3673	20	21
H-11	TRUE	3500	3508	20	24
H-12	FALSE	3500	3473	20	20
H-13	FALSE	3500	3376	20	20
J-1		3500	3981	20	20
J-2		3500	3981	20	23
J-3		3500	3947	20	20
J-7		3500	3407	20	20
J-9		3500	3570	20	24
J-11		3500	3779	20	20
J-12		3500	3973	20	22
J-14		3500	1439	20	20
J-17		3500	5000	20	29
J-19		3500	2276	20	20
J-22		3500	2388	20	22
J-25		3500	4807	20	23
J-27		3500	5000	20	30

Washington Corrections Center

WCC

Hydraulic Analysis

Node	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-3	295	2	455.93	70
J-4	295	0	455.92	70
J-6	296	1	455.9	69
J-7	296	0	455.89	69
J-8	297	3	455.84	69
J-10	301	0	455.7	67
J-11	302	80	455.63	66
J-12	302	0	455.6	66
J-13	302	36	455.58	66
J-15	302	35	455.56	66
J-16	302	4	455.55	66
J-17	302	29	455.55	66
J-19	304	17	455.54	66
J-22	301	0	455.5	67
J-23	296	45	455.47	69
J-24	276	55	455.47	78
J-25	275	0	455.47	78
J-27	279	34	455.47	76
J-29	293	0	455.5	70
J-31	277	0	455.54	77
J-32	297	41	455.55	69
J-38	295	0	455.59	69
J-41	303	0	455.58	66
J-42	302	0	455.58	66
J-44	304	0	455.56	66
J-48	299	36	455.57	68
J-53	304	0	455.5	66
J-54	304	6	455.19	65
J-55	273	0	455.55	79
J-56	303	0	455.53	66
J-57	303	0	455.53	66
J-58	272	0	455.54	79
H-1	295	0	455.92	70
H-2	295	0	455.91	70
H-3	301	2	455.75	67

H-4	301	0	455.68	67
H-5	302	0	455.56	66
H-6	295	0	455.59	69
H-7	304	0	455.55	66
H-8	304	1	455.53	66
H-9	303	0	455.51	66
H-10	304	0	455.5	66
H-11	299	0	455.47	68
H-12	282	0	455.47	75
H-13	281	0	455.49	75
H-14	279	0	455.52	76
H-15	275	0	455.56	78
H-17	295	0	455.61	69
H-18	304	0	455.53	66
H-19	303	0	455.53	66
H-20	305	0	455.53	65
H-21	296	0	455.58	69
H-22	302	0	455.57	66
H-23	302	1	455.54	66
H-24	294	0	455.98	70
H-25	304	22	455.56	66

WCC

Fire Flow Analysis

Node	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Residual Pressure Lower Limit (psi)	Residual Pressure (psi)
H-1	TRUE	3750	4668	20	20
H-2	TRUE	3750	5000	20	66
H-3	TRUE	3750	5000	20	56
H-4	TRUE	3750	5000	20	48
H-5	TRUE	3750	5000	20	41
H-6	FALSE	3750	3073	20	20
H-7	FALSE	3750	3438	20	20
H-8	TRUE	3750	5000	20	32
H-9	TRUE	3750	5000	20	23
H-10	FALSE	3750	1546	20	20
H-11	FALSE	3750	1978	20	20
H-12	TRUE	3750	4108	20	23
H-13	TRUE	3750	3997	20	25
H-14	TRUE	3750	4236	20	27
H-15	TRUE	3750	5000	20	31
H-17	TRUE	3750	5000	20	33
H-18	TRUE	3750	3855	20	20
H-19	FALSE	3750	1840	20	21
H-20	FALSE	3750	1228	20	20
H-21	FALSE	3750	2817	20	20
H-22	FALSE	3750	2503	20	20
H-23	TRUE	3750	5000	20	36
H-24	TRUE	3750	5000	20	69
H-25	FALSE	3750	1878	20	20
J-3		3750	5000	20	67
J-4		3750	5000	20	66
J-6		3750	5000	20	65
J-7		3750	5000	20	64
J-8		3750	5000	20	62
J-10		3750	5000	20	54
J-11		3750	5000	20	49
J-12		3750	5000	20	45
J-13		3750	5000	20	43
J-15		3750	5000	20	40

J-16		3750	5000	20	38
J-17		3750	5000	20	37
J-19		3750	5000	20	34
J-22		3750	4883	20	21
J-23		3750	4576	20	21
J-24		3750	4651	20	26
J-25		3750	4673	20	20
J-27		3750	3759	20	31
J-29		3750	3858	20	25
J-31		3750	4823	20	23
J-32		3750	4969	20	20
J-38		3750	4585	20	20
J-41		3750	2532	20	20
J-42		3750	1460	20	20
J-44		3750	2492	20	20
J-48		3750	5000	20	25
J-53		3750	166	20	20
J-54		3750	146	20	20
J-55		3750	2156	20	20
J-56		3750	5000	20	30
J-57		3750	5000	20	29
J-58		3750	2168	20	20

Washington Corrections Center for Women

WCCW

Hydraulic Analysis

Node	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-3	327	0	474.18	64
J-4	332	0	474.17	62
J-5	333	0	474.17	61
J-6	334	0	474.16	61
J-9	334	0	474.14	61
J-11	335	0	474.12	60
J-12	334	0	474.11	61
J-13	333	0	474.11	61
J-14	333	0	474.11	61
J-16	333	0	474.1	61
J-17	334	0	474.1	61
J-18	336	0	474.1	60
J-19	337	0	474.11	59
J-22	336	0	474.14	60
J-23	337	0	474.12	59
J-24	337	0	474.11	59
J-25	337	0	474.11	59
J-26	336	22	474.1	60
J-27	340	22	474.1	58
J-28	344	22	474.1	56
J-29	348	22	474.1	55
J-31	344	0	474.12	56
J-32	342	0	474.13	57
J-33	339	0	474.14	58
J-34	342	22	474.11	57
J-35	339	0	474.11	58
J-36	338	0	474.14	59
J-37	342	22	474.12	57
J-38	334	0	474.17	61
J-39	333	0	474.17	61
J-40	334	0	474.17	61
J-41	336	0	474.11	60
J-42	334	22	474.03	61
J-46	333.67	0	474.11	61
H-1	334	0	474.16	61

H-2	334	0	474.14	61
H-3	334	22	474.12	61
H-4	335	0	474.12	60
H-5	334	0	474.11	61
H-6	335	0	474.11	60
H-7	333	22	474.1	61
H-8	337	0	474.11	59
H-9	346	0	474.11	55
H-10	347.72	0	474.1	55
H-11	341.42	0	474.1	57

WCCW

Fire Flow Analysis

Node	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Residual Pressure Lower Limit (psi)	Residual Pressure (psi)
H-1	TRUE	1500	1720	20	24
H-2	TRUE	1500	1715	20	23
H-3	TRUE	1500	1709	20	23
H-4	TRUE	1500	1698	20	20
J-46	TRUE	1500	1700	20	24
H-5	TRUE	1500	1698	20	23
H-6	TRUE	1500	1698	20	22
H-7	TRUE	1500	1692	20	25
H-8	TRUE	1500	1647	20	20
H-9	TRUE	1500	1671	20	20
H-10	TRUE	1500	1642	20	20
H-11	TRUE	1500	1656	20	22
J-3		1500	1733	20	29
J-4		1500	1727	20	26
J-5		1500	1726	20	25
J-6		1500	1722	20	24
J-9		1500	1713	20	23
J-11		1500	1706	20	23
J-12		1500	1702	20	23
J-13		1500	1698	20	24
J-14		1500	1697	20	24
J-16		1500	1689	20	25
J-17		1500	1689	20	24
J-18		1500	1689	20	22
J-19		1500	1688	20	22
J-22		1500	1708	20	25
J-23		1500	1696	20	24
J-24		1500	1690	20	24
J-25		1500	1688	20	24
J-26		1500	1679	20	25
J-27		1500	1660	20	23
J-28		1500	1649	20	21
J-29		1500	1638	20	20
J-31		1500	1684	20	21
J-32		1500	1697	20	22

J-33		1500	1704	20	24
J-34		1500	1686	20	21
J-35		1500	1688	20	23
J-36		1500	464	20	20
J-37		1500	1547	20	20
J-38		1500	937	20	20
J-39		1500	237	20	21
J-40		1500	185	20	20
J-41		1500	892	20	20
J-42		1500	973	20	20

APPENDIX C10

Fire Authority Correspondence

612 Woodland Square Loop SE, Suite 100 Lacey, WA 98503 360.292.7230 kpff.com

July 10, 2023

Mr. Dan Young
Clark County Fire Marshal
505 NW 17th Street
Ridgefield, WA 98642

Subject: Request for Confirmation of Fire Flow Requirements and Approval of Nesting Washington State Department of Corrections Water System Plan Update

Dear Mr. Dan Young,

The Washington State Department of Corrections (DOC) is updating its Water System Plan. As a part of this update, we are analyzing Larch Corrections Center's water system and its ability to meet fire flow requirements. We are requesting confirmation of the fire flow requirements for this water system. Details regarding the system are included below.

Larch Corrections Center currently has a storage volume of 517,000 gallons. Total required storage for the facility includes fire suppression storage, operational storage, equalizing storage, and standby storage. The fire flow requirements that have been used in the past are a flow of 1,000 gallons per minute for 2 hours. This equals a total fire suppression storage requirement of 120,000 gallons. Operational storage is the storage that supplies the system when the source pumps are not in use. Equalizing storage is the storage required to meet daily fluctuations in water demand. Standby storage is the amount of storage needed to meet demand in the event of failure of the largest water supply source.

In summary, the storage required for Larch is:

Operational	10,721	gallons
Equalizing	11,208	gallons
Fire Suppression	120,000	gallons
Standby	96,000	gallons
Total	237,929	gallons

Larch currently has a storage volume of 517,000 gallons, which is sufficient to meet storage requirements and to allow for facility expansion. Please confirm that these fire flow requirements are still valid. Please respond by letter, which will then be included in the water system plan update. Thank you for your consideration.

Sincerely,

Ben Enfield, P.E.
Project Engineer

612 Woodland Square Loop SE, Suite 100 Lacey, WA 98503 360.292.7230 kpff.com

July 10, 2023

Mr. Josh Peters
Jefferson County Fire Marshal and Director of Community Development
Department of Community Development
621 Sheridan Street
Port Townsend, WA 98368

Subject: Request for Confirmation of Fire Flow Requirements and Approval of Nesting Washington State Department of Corrections Water System Plan Update

Dear Mr. Josh Peters,

The Washington State Department of Corrections (DOC) is updating its Water System Plan. As a part of this update, we are analyzing Olympic Corrections Center (OCC) water system and its ability to meet fire flow requirements. We are requesting confirmation of the fire flow requirements for this water system. We are also requesting approval of nesting standby storage with fire suppression storage. Details regarding the system are included below.

OCC has a storage volume of 675,000 gallons. Total required storage for the facility includes fire suppression storage, operational storage, equalizing storage, and standby storage. The fire flow requirements that have been used in the past are a flow of 3,500 gallons per minute for 3 hours. This equals a total fire suppression storage requirement of 630,000 gallons. Operational storage is the storage that supplies the system when the source pumps are not in use. Equalizing storage is the storage required to meet daily fluctuations in water demand. Standby storage is the amount of storage needed to meet demand in the event of failure of the largest water supply source. Please confirm that these requirements are still valid.

In summary, the storage required for OCC is:

Operational	7,936	gallons
Equalizing	3,357	gallons
Fire Suppression	630,000	gallons
Standby	76,000	gallons
Total	717,293	gallons

OCC currently has a storage volume of 675,000 gallons, which is not sufficient to meet storage requirements and does not allow for future population growth. We are requesting an allowance to enable nesting of standby and fire suppression storage. This would reduce the required storage by including standby storage volume in the fire suppression volume, allowing the standby volume to be drawn from the fire suppression volume. This is allowed by Washington Administrative Code (WAC) 246-290-235(4), which states: “Standby and fire suppression storage volumes may be nested with the larger of the two volumes being the minimum available, provided the local fire protection authority does not require them to be additive.”

If nesting is allowed at Olympic Corrections Center, the available storage is sufficient to meet storage requirements. We are therefore requesting approval of nesting in this situation. Please respond by letter, which will then be included in the water system plan update. Thank you for your consideration.

Sincerely,

Ben Enfield, P.E.
Project Engineer

612 Woodland Square Loop SE, Suite 100 Lacey, WA 98503 360.292.7230 kpff.com

July 10, 2023

Mr. Randy Collins
Mason County Fire Marshal
Community Development
615 W Alder Street
Shelton, WA 98584

Subject: Request for Confirmation of Fire Flow Requirements and Approval of Nesting Washington State Department of Corrections Water System Plan Update

Dear Mr. Randy Collins,

The Washington State Department of Corrections (DOC) is updating its Water System Plan. This process includes updating the water system plans for Mission Creek Corrections Center for Women (MCCCW) and Washington Corrections Center (WCC). As a part of this update, we are analyzing both water systems and their ability to meet fire flow requirements. We are requesting confirmation of the fire flow requirements for these water systems. We are also requesting approval of nesting standby storage with fire suppression storage. Details regarding the system are included below.

MCCCW has a storage volume of 225,000 gallons. Total required storage for the facility includes fire suppression storage, operational storage, equalizing storage, and standby storage. The fire flow requirements that have been used in the past are a flow of 1,800 gallons per minute for 2 hours. This equals a total fire suppression storage requirement of 216,000 gallons. Operational storage is the storage that supplies the system when the source pumps are not in use. Equalizing storage is the storage required to meet daily fluctuations in water demand. Standby storage is the amount of storage needed to meet demand in the event of failure of the largest water supply source. Please confirm that these requirements are still valid.

In summary, the storage required for Mission Creek is:

Operational	3,922	gallons
Equalizing	1,423	gallons
Fire Suppression	216,000	gallons
Standby	37,800	gallons
Total	259,145	gallons

WCC has a storage volume of 800,000 gallons. The fire flow requirements have historically been a flow of 3,750 gallons per minute for 3 hours. Based on this, the fire storage requirement is 675,000 gallons. Please confirm that these requirements are still valid.

In summary, the storage required for WCC is:

Operational	37,793	gallons
Equalizing	17,931	gallons
Fire Suppression	675,000	gallons
Standby	360,000	gallons
Total	1,090,724	gallons

MCCCW currently has a storage volume of 225,000 gallons and WCC has a storage volume of 800,000 gallons, both of which are not sufficient to meet current storage requirements and do not allow for future population growth. We are requesting an allowance to enable nesting of standby and fire suppression storage. This would reduce the required storage by including standby storage volume in the fire suppression volume, allowing the standby volume to be drawn from the fire suppression volume. This is allowed by Washington Administrative Code (WAC) 246-290-235(4), which states: “Standby and fire suppression storage volumes may be nested with the larger of the two volumes being the minimum available, provided the local fire protection authority does not require them to be additive.”

If nesting is allowed at Mission Creek Corrections Center for Women and Washington Corrections Center, the available storage at each facility is sufficient to meet storage requirements. We are therefore requesting approval of nesting at both facilities. Please respond by letter, which will then be included in the water system plan update. Thank you for your consideration.

Sincerely,

Ben Enfield, P.E.
Project Engineer

612 Woodland Square Loop SE, Suite 100 Lacey, WA 98503 360.292.7230 kpff.com

July 10, 2023

Mr. Ken Rice
Pierce County Fire Marshal
Pierce County Fire Prevention Bureau
2401 S 35th Street
Tacoma, WA 98409

Subject: Request for Confirmation of Fire Flow Requirements and Approval of Nesting Washington State Department of Corrections Water System Plan Update

Dear Mr. Ken Rice,

The Washington State Department of Corrections (DOC) is updating its Water System Plan. This process includes updating the water system plans for McNeil Island Corrections Center (MICC) and Washington Corrections Center for Women (WCCW). As a part of this update, we are analyzing both water systems and their ability to meet fire flow requirements. We are requesting confirmation of the fire flow requirements for these water systems. We are also requesting approval of nesting standby storage with fire suppression storage. Details regarding the system are included below.

MICC has a storage volume of 1,500,000 gallons. Total required storage for the facility includes fire suppression storage, operational storage, equalizing storage, and standby storage. The fire flow requirements that have been used in the past are a flow of 2,750 gallons per minute for 3 hours. This equals a total fire suppression storage requirement of 495,000 gallons. Operational storage is the storage that supplies the system when the source pumps are not in use. Equalizing storage is the storage required to meet daily fluctuations in water demand. Standby storage is the amount of storage needed to meet demand in the event of failure of the largest water supply source. Please confirm that these requirements are still valid.

In summary, the storage required for McNeil Island is:

Operational	10,891	gallons
Equalizing	54,712	gallons
Fire Suppression	495,000	gallons
Standby	54,200	gallons
Total	614,803	gallons

WCCW has a storage volume of 300,000 gallons. The fire flow requirements have historically been a flow of 1,500 gallons per minute for 1.5 hours. Based on this, the fire storage requirement is 135,000 gallons. Please confirm that these requirements are still valid.

In summary, the storage required for WCCW is:

Operational	17,632	gallons
Equalizing	16,317	gallons
Fire Suppression	135,000	gallons
Standby	160,000	gallons
Total	328,849	gallons

MICC currently has a storage volume of 1,500,000 gallons, which is sufficient to meet storage requirements. WCCW has a storage volume of 300,000 gallons, which is not sufficient to meet current storage requirements and does not allow for future population growth. We are requesting an allowance to enable nesting of standby and fire suppression storage. This would reduce the required storage by including standby storage volume in the fire suppression volume, allowing the standby volume to be drawn from the fire suppression volume. This is allowed by Washington Administrative Code (WAC) 246-290-235(4), which states: “Standby and fire suppression storage volumes may be nested with the larger of the two volumes being the minimum available, provided the local fire protection authority does not require them to be additive.”

If nesting is allowed at Washington Corrections Center for Women, the available storage is sufficient to meet storage requirements. We are therefore requesting approval of nesting in this situation. Please respond by letter, which will then be included in the water system plan update. Thank you for your consideration.

Sincerely,

Ben Enfield, P.E.
Project Engineer

612 Woodland Square Loop SE, Suite 100 Lacey, WA 98503 360.292.7230 kpff.com

July 10, 2023

Mr. Bobby May
Thurston County Fire Marshal
Building Development Center
3000 Pacific Ave SE, Suite 100
Olympia, WA 98501

Subject: Request for Confirmation of Fire Flow Requirements and Approval of Nesting Washington State Department of Corrections Water System Plan Update

Dear Mr. Bobby May,

The Washington State Department of Corrections (DOC) is updating its Water System Plan. This process includes updating the water system plans for Cedar Creek Corrections Center (CCCC) and Maple Lane Corrections Center (MLCC). As a part of this update, we are analyzing both water systems and their ability to meet fire flow requirements. We are requesting confirmation of the fire flow requirements for the two water systems. We are also requesting approval of nesting standby storage with fire suppression storage. Details regarding the systems are included below.

CCCC has a storage volume of 173,000 gallons. Total required storage for the facility includes fire suppression storage, operational storage, equalizing storage, and standby storage. The fire flow requirements that have been used in the past are a flow of 1,810 gallons per minute for 1 hour. This equals a total fire suppression storage requirement of 108,600 gallons. Operational storage is the storage that supplies the system when the source pumps are not in use. Equalizing storage is the storage required to meet daily fluctuations in water demand. Standby storage is the amount of storage needed to meet demand in the event of failure of the largest water supply source. Please confirm that these requirements are still valid.

In summary, the storage required for Cedar Creek is:

Operational	10,051	gallons
Equalizing	4,508	gallons
Fire Suppression	108,600	gallons
Standby	96,000	gallons
Total	219,159	gallons

MLCC has a storage volume of 130,000 gallons. The fire flow requirements have historically been a flow of 1,5000 gallons per minute for 1 hour. Based on this, the fire storage requirement is 90,000 gallons. Please confirm that these requirements are still valid.

In summary, the storage required for Maple Lane is:

Operational	780	gallons
Equalizing	1,802	gallons
Fire Suppression	90,000	gallons
Standby	6,000	gallons
Total	98,582	gallons

Cedar Creek currently has a storage volume of 173,000 gallons, which is not sufficient to meet storage requirements. Maple Lane has a storage volume of 130,000 gallons, which is sufficient to meet current storage requirements, but does not allow for anticipated growth at the facility. We are requesting an allowance to enable nesting of standby and fire suppression storage. This would reduce the required storage by including standby storage volume in the fire suppression volume, allowing the standby volume to be drawn from the fire suppression volume. This is allowed by Washington Administrative Code (WAC) 246-290-235(4), which states: “Standby and fire suppression storage volumes may be nested with the larger of the two volumes being the minimum available, provided the local fire protection authority does not require them to be additive.”

If nesting is allowed at Cedar Creek Corrections Center and at Maple Lane Corrections Center, the available storage is sufficient to meet current storage requirements and accommodate future population growth. We are therefore requesting approval of nesting at both facilities. Please respond by letter, which will then be included in the water system plan update. Thank you for your consideration.

Sincerely,

Ben Enfield, P.E.
Project Engineer

APPENDIX C11

DOH Public Health Advisory Material

Questions & Answers

Aug. 2013
DOH 331-179
Revised

Public Health Advisory
Coliform

Why must I boil my water?

Recent tests show that your water system is contaminated with organisms that can cause illness.

Who can be affected? Can I become ill?

Anyone who drinks contaminated water may become ill. Infants, young children, the elderly, and people with severely compromised immune systems are more at risk of illness.

Who are people with compromised immune systems?

People who are on chemotherapy, organ or bone marrow recipients, those with HIV or AIDS, malnourished children, infants, and some of the elderly have compromised or weakened immune systems. An infection from a disease-causing organism may lead to very serious health problems for these people.

Can these diseases be spread in ways other than drinking the water?

Yes. Many of these disease-causing organisms are shed in the feces of infected people. In fact, some infected people do not have any symptoms but still shed these organisms. Childcare workers, young children who attend childcare, and caregivers for people who are sick and shedding these organisms are at the greatest risk of becoming ill. Washing hands with soap and water after using the toilet and before preparing food prevents the spread of diseases to others.

What are the symptoms to watch for? What should I do if I think I have a waterborne illness?

Disease-causing organisms in water can cause diarrhea, stomach cramps, bloating, gas, fatigue, weight loss, nausea, vomiting, and/or fever. Symptoms may appear as early as a few hours to several days after infection and may last more than two weeks. If you are ill with these symptoms, contact your health care provider.

How can I make the water safe?

Boiling is the best way to ensure water is free of illness-causing organisms. Bring the water to a rolling boil for one minute. When it cools, refrigerate the water in clean covered containers.

If you don't want to boil your water, you can disinfect the water using household bleach. Do not use bleach that contains perfume, dyes, or other additives. Use 1/4-teaspoon bleach per gallon of water, mix thoroughly, and then let stand for 60 minutes before using.

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

Can I use bottled water?

You can use purchased bottled water. If you choose to use bottled water, Department of Health recommends water that is:

- Reverse-osmosis treated.
- Distilled.
- Filtered through an "absolute" one-micron or smaller filter.

Carbonated water in cans or bottles is usually filtered or heated to remove illness-causing organisms.

During a health advisory, can I use tap water for...?

Drinking	No	Coffee or tea	No
Ice cubes	No	Showers/Baths	Yes
Brushing teeth	No	Washing clothes	Yes
Baby's formula	No	Baby's bath	See below
Washing vegetables/fruits	No	Washing dishes	See below
Preparing food	No	Pet's water bowl	Contact Veterinarian

Can I bathe my baby or child using tap water?

Yes, as long as they do not drink any of the water. Don't let babies suck on a washcloth, as they will be ingesting some of the water.

Can I wash dishes?

You can use your dishwasher if you use the sanitizing/heat cycle and commercial dishwashing detergent. You can hand wash dishes, rinse them in a diluted bleach solution—one teaspoon household bleach to one gallon of water—and then let dishes air dry.

What must be done to fix the problem?

Fixing the problem could be different in each situation depending on whether the problem is at the water source or in the water lines. Usually, in every case the water lines will need to be flushed and the whole system will need to be disinfected using chlorine. The water will then be tested to make sure it is free of coliform bacteria.

How long will this health advisory be in effect?

This health advisory will remain in effect until the water is tested and results show that it meets public health drinking water standards. Your water system will notify you when that occurs.

For more information:

Personal medical questions: Contact your health care provider (physician, nurse consultant, etc.)

Call your local health jurisdiction with general questions about infectious disease, communicable disease transmission, symptoms, causes and prevention of waterborne disease.

PUBLIC HEALTH
ALWAYS WORKING FOR A SAFER AND HEALTHIER WASHINGTON

Fact Sheet

Emergency water supply guidelines for food service

Restaurants – Food Stores – Schools
Institutions – Convenience Stores

April 2014
DOH 331-182
(Revised)

These guidelines are for establishments that provide food service to the public. State regulation requires food service establishment (FSE) owners to ensure that their water supply is from an approved public drinking water system (WAC 246-215-05100). The state Department of Health regulates public water systems (WAC 246-290).

Procedures required during a boil water advisory

When a water system issues a boil water advisory, food service establishments must close unless the local health agency authorizes them stay open. If the local health agency does authorize an FSE to operate during a boil water advisory, it must follow the minimum requirements below until the health advisory is lifted. *The local health agency may impose additional requirements to protect against health hazards during the boil water advisory, such as modifying food preparation steps or prohibiting some menu items.*

Minimum Requirements

Shut off:

- Ice machines
- Drinking fountains
- Produce misters
- Bottled water refill machines
- Pop dispensers connected to water supply
- Running water dipper wells
- Coffee pots

Discard:

- Ice made with contaminated water
- Beverages made with contaminated water

Ice: Use packaged ice from an approved source

Use boiled or bottled water for:

- Drinking
- Cooking
- Food preparation
- Washing produce

Hand washing:

- Wash with antibacterial soap and water.
- Recommended: Use hand sanitizer after rinsing and drying.

Dishwashing options: Follow normal procedures.

- Mechanical dishwasher with high temperature or chemical sanitizer (verify correct operation).
- Three-compartment sink
  1. Wash in hot water with detergent.
  2. Rinse in warm water.
  3. Sanitize in cool-water chemical sanitizer solution (1 teaspoon bleach per 1 gallon water) or hot water (150 degrees) for one minute.
  4. Air dry.

Employee Information:

- Post signs or copies of the water system's health advisory.
- Develop a plan to notify and educate employees about emergency procedures.

When the health advisory is lifted, consult the owner's manual to find out how to sanitize appliances.

Follow these procedures until notified by the local health agency or the state Department of Health.

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).

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

HELPING TO ENSURE SAFE AND RELIABLE DRINKING WATER

How the After-Hours Emergency Hotline Works

Office of Drinking Water staff are available around the clock to troubleshoot drinking water emergencies and help protect the health of your customers. Call it Murphy's Law or whatever – emergencies don't just happen during business hours.

Imagine. . .

- *A midnight landslide damages your distribution system.*
- *You are notified on Friday evening before a three-day weekend that your repeat samples were E. Coli positive.*
- *A nearby stream floods, leaving your wellhead underwater on the day after Thanksgiving.*

This service is intended for water system operators, local health officials, laboratory operators, and others who need immediate technical, engineering or public health advice from state drinking water experts during emergencies.

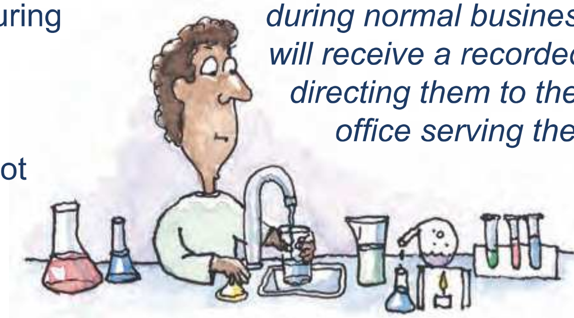
While citizen concerns will be addressed if they call, this is not a public emergency hotline.

Individuals with concerns about their drinking water should call their water utility, their local health department or 911.

This hotline is intended for after-hours emergencies only, not for problems that arise during business hours, and not for routine business.

Here's how the system works:

- *After-hour calls will be evaluated to determine the nature of the emergency.*
- *Callers clearly seeking routine business assistance will be asked to contact their regional office during business hours.*
- *The Office of Drinking Water staff person on call will return the call within 30 minutes.*
- *Callers using the emergency number during normal business hours will receive a recorded message directing them to the regional office serving their area.*



Drinking Water After-Hours Emergency Hotline

Toll Free 1-877-481-4901 After-Hours Troubleshooting for Drinking Water Emergencies

Call this number after-hours if a drinking water emergency:

- ***Threatens the health of your customers.***
- ***Threatens the integrity of your system.***
- ***Can't wait until the next business day.***

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

ODW Headquarters	**360-236-3100**
Toll-free within Washington	**1-800-521-0323**
Northwest Regional Office	**253-395-6750**
Southwest Regional Office	**360-236-3030**
Eastern Regional Office	**509-329-2100**
After-Hours Emergency	**1-877-481-4901**

February 2013
(Updated)
DOH 331-133

If you need this publication in an alternate format, call 800-525-0127.
For TTY/TDD, call 800-833-6388.

WARNING:
Do not drink tap water without boiling it first!

☐ **Fecal coliform**
☐ **E. coli bacteria**
☐ **Other: ______________________________**

were detected in the water supply on:
(date) ___________________.

Boiling kills bacteria and other organisms in the water:

- **Bring water to a rolling boil for one minute**
- **Let water cool before using**

To avoid possible illness: use boiled or purchased bottled water for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice.

Contact your doctor, if you experience one or more of these symptoms: nausea, cramps, diarrhea, jaundice, headache and/or fatigue. People with chronic illnesses, infants and the elderly may be at higher risk and should seek medical advice.

Water System: _________________________
I.D.: ________________________________
County: ______________________________
Contact: _____________________________
Telephone: ___________________________
Date notice distributed: ________________

What is fecal coliform and E. coli?

Fecal coliform and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these waters can cause short-term effects, such as diarrhea, cramps, nausea, headaches or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

How long will this warning be in effect?

We will consult with the Washington State Department of Health about this incident. We will notify you when you no longer need to boil the water.

Vea al reverso para la versión en Español.

WARNING:
Do not drink tap water without boiling it first!

☐ **Fecal coliform**
☐ **E. coli bacteria**
☐ **Other: ______________________________**

were detected in the water supply on:
(date) ___________________.

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I.D.: ________________________________
County: ______________________________
Contact: _____________________________
Telephone: ___________________________
Date notice distributed: ________________

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How long will this warning be in effect?

We will consult with the Washington State Department of Health about this incident. We will notify you when you no longer need to boil the water.

Vea al reverso para la versión en Español.

October 2008

ADVERTENCIA:
¡No tome el agua de la llave sin antes hervirla!

☐ **Bacteria coliforme fecal**
☐ **Bacteria E. coli**
☐ **Otra:** ______________________________

fueron encontradas en su sistema de agua:
(el día)___________________.

Hervir el agua mata a las bacterias y otros organismos en el agua:

- **Ponga el agua en la estufa hasta que hierva y deje hervir el agua por un minuto**
- **Deje enfriar el agua antes de usarla**

Para evitar posibles enfermedades y hasta nuevo aviso: use agua hervida o agua potable embotellada para tomar, hacer hielo, limpiarse los dientes, lavar los platos y para preparar comidas.

Hable con su doctor si usted tiene uno o más de los siguientes síntomas: náusea, dolor estomacal, diarrea, ictericia, dolores de cabeza y/o cansancio. La gente con enfermedades crónicas, bebés y personas mayores de edad, pueden estar en situación de alto riesgo y deben consultar con su médico o proveedores de servicios médicos.

Sistema de agua: ______________________
I.D.: __________________________________
Condado: _____________________________
Contacto: _____________________________
Teléfono: _____________________________
Fecha de notificación: __________________

¿Qué son las bacterias coliforme fecal y E. coli?

Coliformes fecales o E. coli son bacterias cuya presencia indica que el agua esta contaminada con desechos humanos o de animales. Microbios de esos desechos pueden causar diarrea, dolor estomacal, náusea, dolores de cabeza u otros síntomas. Pueden representar un peligro para la salud de bebés, niños y niñas de corta edad y personas con sistemas inmunológicos en alto riesgo.

¿Por cuánto tiempo va a estar en efecto esta advertencia?

Vamos a consultar con el Departamento de Salud del estado de Washington acerca de este incidente. Le vamos a notificar cuando ya no sea necesario hervir el agua.

See reverse side for English version.

ADVERTENCIA:
¡No tome el agua de la llave sin antes hervirla!

☐ **Bacteria coliforme fecal**
☐ **Bacteria E. coli**
☐ **Otra:** ______________________________

fueron encontradas en su sistema de agua:
(el día)___________________.

Hervir el agua mata a las bacterias y otros organismos en el agua:

- **Ponga el agua en la estufa hasta que hierva y deje hervir el agua por un minuto**
- **Deje enfriar el agua antes de usarla**

Para evitar posibles enfermedades y hasta nuevo aviso: use agua hervida o agua potable embotellada para tomar, hacer hielo, limpiarse los dientes, lavar los platos y para preparar comidas.

Hable con su doctor si usted tiene uno o más de los siguientes síntomas: náusea, dolor estomacal, diarrea, ictericia, dolores de cabeza y/o cansancio. La gente con enfermedades crónicas, bebés y personas mayores de edad, pueden estar en situación de alto riesgo y deben consultar con su médico o proveedores de servicios médicos.

Sistema de agua: ______________________
I.D.: __________________________________
Condado: _____________________________
Contacto: _____________________________
Teléfono: _____________________________
Fecha de notificación: __________________

¿Qué son las bacterias coliforme fecal y E. coli?

Coliformes fecales o E. coli son bacterias cuya presencia indica que el agua esta contaminada con desechos humanos o de animales. Microbios de esos desechos pueden causar diarrea, dolor estomacal, náusea, dolores de cabeza u otros síntomas. Pueden representar un peligro para la salud de bebés, niños y niñas de corta edad y personas con sistemas inmunológicos en alto riesgo.

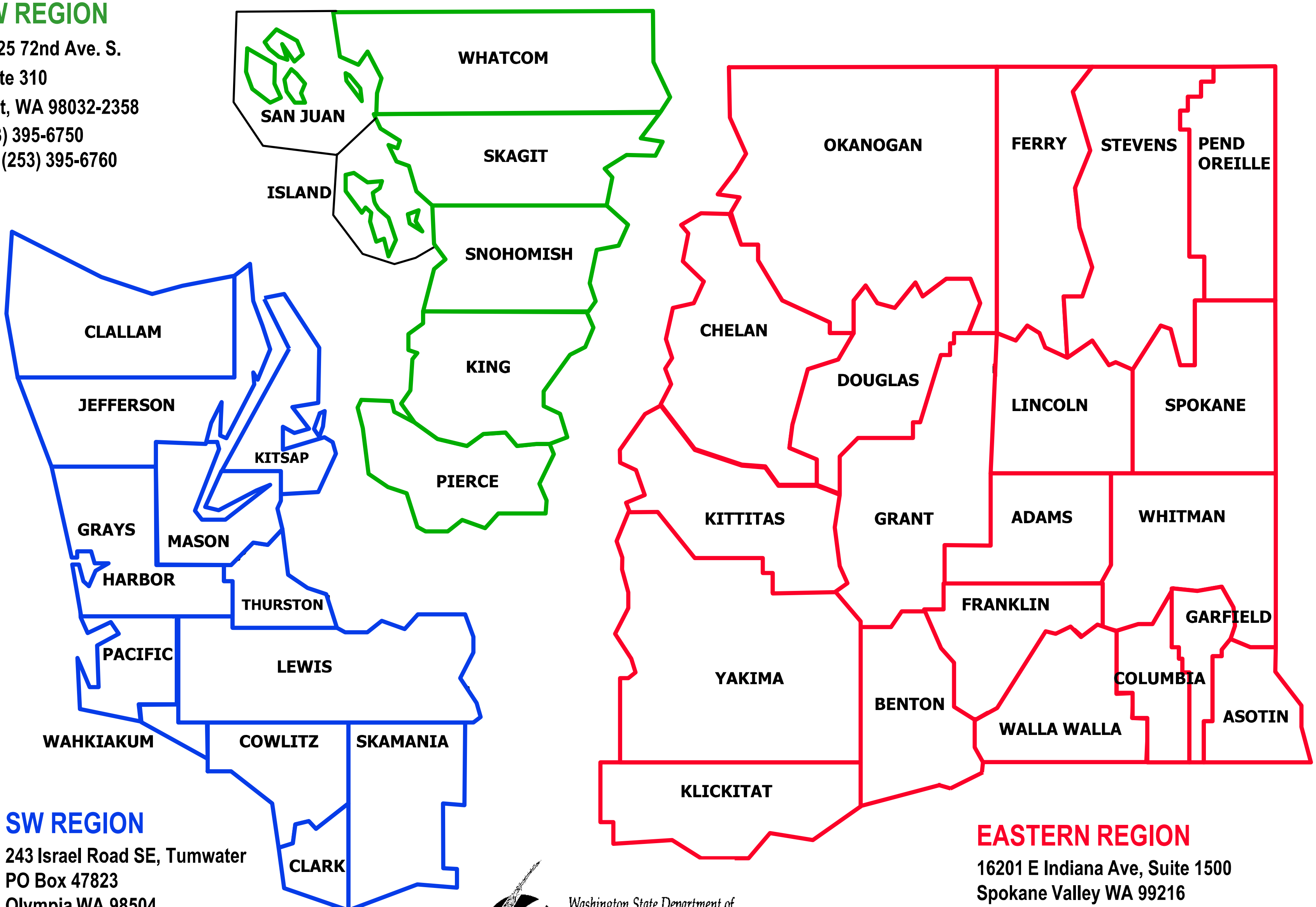
¿Por cuánto tiempo va a estar en efecto esta advertencia?

Vamos a consultar con el Departamento de Salud del estado de Washington acerca de este incidente. Le vamos a notificar cuando ya no sea necesario hervir el agua.

See reverse side for English version.

NW REGION

20425 72nd Ave. S.
Suite 310
Kent, WA 98032-2358
(253) 395-6750
Fax (253) 395-6760



SW REGION

243 Israel Road SE, Tumwater
PO Box 47823
Olympia WA 98504

(360) 236-3030
Fax (360) 664-8058

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

EASTERN REGION

16201 E Indiana Ave, Suite 1500
Spokane Valley WA 99216

(509) 329-2100
Fax (509) 329-2104

6/7/10

NOTICE TO WATER SYSTEM USERS

COLIFORM MAJOR MONITORING VIOLATION

We, ______________________ Water System, I.D. ________, located in ____________ County are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During the month of _____________ we did not monitor or test for coliform bacteria, and therefore cannot be sure of the quality of your drinking water during that time.

At this time:

☐ No action is required by the users.

☐ Our routine coliform sample required for the month of ___________ has been collected and was found to show no presence of coliform bacteria.

☐ Samples will be collected in the future as required.

☐ Other information for customers:

For more information, contact _____________________ at (   )_________ or at _____________________.
(owner or operator) (phone number) (address)

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses.) You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is sent to you by _____________________________________ Water System on ____/____/____

Coliform Major Monitoring Public Notice Certification Form
The purpose of this form (below) is to provide documentation to the department that public notice was distributed. Please check the appropriate box and fill in the date that the notice was distributed:

☐ Notice was mailed to all water customers on ____ / ____/____.

☐ Notice was hand delivered to all water customers on ___ / ___ /___.

☐ Notice was posted (*with department approval*) at:
__________________________________ on ___ / ___ /____.

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

__________________________________ ____________________ ____________________

Signature of owner or operator | Position | Date

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD call (800) 833-6388.

Send copy of completed notification and certification to:

☐ Northwest Drinking Water	☐ Southwest Drinking Water	☐ Eastern Drinking Water
Department of Health	Department of Health	*Department of Health*
20425 72nd Ave S, Suite 310	*PO Box 47823*	16201 E Indiana Ave, Suite 1500
Kent, WA 98032-2358	Olympia, WA 98504-7823	Spokane Valley, WA 99216
Phone: (253) 395-6750	Phone: (360) 236-3030	Phone: (509) 329-2100
Fax: (253) 395-6760	Fax: (360) 664-8058	Fax: (509) 329-2104

DRINKING WATER WARNING

The ______________________ Water System, ID______, located in ___________County is contaminated with E. coli bacteria.

E. coli bacteria were detected in the water supply on ________. These bacteria can make you sick and are a particular concern for people with weakened immune systems.

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a rolling boil for one minute. Let it cool before using. Boiled or purchased bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice. Boiling kills bacteria and other organisms in the water.

Fecal coliform and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care provider.

What happened? What is the suspected or known source of contamination?

The following is being done to correct the problem:

We will notify you when you no longer need to boil the water. We anticipate resolving the problem by

______________________.

For more information, please contact _______________ at (   ) ___-_____ or at ____________________(email).

Please share this notice with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments and businesses). You can do this by posting this notice in a public place or distribution copies by hand or mail.

This notice is sent to you by ____________________ Water System on ___/___/____

Your logo or
company name here.

News Release

For Immediate Release: <DATE>
Contact: Water purveyor/system contact name and telephone number

<Water System> announces boil water advisory for all customers in <area>

CITY NAME — The <SYSTEM NAME> is advising all water customers to boil their drinking water after recent samples showed the presence of <fecal coliform, E. coli, total coliform>. The Washington State Department of Health (DOH) has been notified and <SYSTEM NAME> is working closely with the Office of Drinking Water to find the source of contamination and fix the problem, which may include disinfecting the system. The boil water advisory will remain in effect until further notice.

<System spokesperson quote> (e.g. “We are doing all we can to eliminate the bacteria from the water system. Safe and reliable drinking water is critical to good health and responding to this kind of emergency is our highest priority,” said system spokesperson.)

<NUMBER or NO> illnesses related to the community’s drinking water have been reported. To correct the problem <WHAT IS BEING DONE> (e.g. Chlorine was applied to the entire system on DATE.)

The boil water advisory includes several precautionary steps that customers should take. These include using purchased treated bottled water or boiled water for any water that might be consumed: drinking, brushing teeth, dishwashing, preparing food and making ice. Water should come to a rolling boil for one minute, then allowed to cool before using.

The advisory will remain in effect until <SYSTEM NAME> and DOH are confident there is no longer a threat of illness to their customers. Once satisfactory results are reported, customers will be notified that the advisory has been lifted.

If you have any questions, please call us at <TELEPHONE NUMBER>.

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06-22-11

Washington State Department of Health
Division of Drinking Water
PO Box 47828
Olympia, WA 98504-7828

Treatment of Drinking Water for Emergency Use

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

DOH Pub. #331-115 (Revised October 2001)

When Do You Need To Treat Drinking Water?

Normally your water is safe to drink, but it may need to be treated if your usual water supply is interrupted or becomes unsafe for drinking. Conditions that may require treatment of drinking water include:

- Disasters such as floods, earthquakes and power outages that interrupt your water supply;
- Water supply system disruption or loss of pressure because of line breaks or repairs;
- Special conditions under which your water system, local health department, or the State Department of Health informs you that the water should be boiled or treated before drinking.

Preparing For Emergencies

The best way to ensure a safe supply of drinking water is to routinely **store enough water to last through an emergency.** Although most emergencies are unexpected, you may be able to anticipate situations by watching or listening to weather reports. You should also pay attention to notices from your water system about planned water disruptions or other conditions that could signal a problem with your water supply.

Whether or not you store supplies of water, keep on hand the following items used to treat water during an emergency:

- Fresh supply of liquid household bleach and kitchen measuring spoons or a medicine dropper (medicine droppers with both teaspoon and milliliter markings are available at drug stores),
- Equipment (propane or gas stoves, outdoor barbeque grills, etc.) needed to boil water (remember that your usual source of energy may not be available during an emergency).

Storing Drinking Water For Emergencies

To be prepared for a drinking water emergency, the American Red Cross recommends storing **one gallon of water per person per day** (two quarts for drinking, two quarts for each person in your household for food preparation/ sanitation). Keep at least a three-day supply of water per person. Extremely warm temperatures and intense physical activity can double that amount; children, nursing mothers, and ill people will need more.

- **Collect the water from a safe supply.** If you are connected to a state-approved public water system, your water should be considered safe unless you have been notified otherwise. If you have your own supply, contact your local health department about how to have it tested.
- **Use proper storage containers.** Store the water in containers that are made for water storage, or glass and plastic jugs previously used for juice, milk, pop or bottled water. Clean containers thoroughly before using and make sure that the container has a tight fitting cap. ***Never use containers that were previously used for pesticides, chemicals, solvents, anti-freeze, oils, etc.***
- **Add liquid bleach** to the water according to the tables provided at the end of this publication in order to keep it safe for drinking.
- **Store in a cool place, safe from flooding, freezing and earthquakes.** It is recommended that you use or discard the stored water and replace it with a fresh supply every two months.

Treating Water In Emergencies: Boil Or Add Bleach

If a safe supply of water is not available, it should be treated before being used for drinking, cooking or brushing teeth.

There are two primary ways of treating water: **boiling or adding bleach**. If the supply has been made unsafe because of untreated surface water (from floods, streams or lakes), boiling is the better treatment.

If the water is cloudy, it should be filtered before boiling or adding bleach. Filters designed for use when camping, coffee filters, towels (paper or cotton), cheesecloth, or a cotton plug in a funnel are effective ways to filter cloudy water.

Boiling

Boiling is the best way to purify water that is unsafe because of the presence of protozoan parasites or bacteria. Boiling should not be used when toxic metals, chemicals (pesticides, solvents, etc.), or nitrates have contaminated the water.

- Place the water in a clean metal or glass container and bring to a rolling boil for one minute.

(revised Oct. 2008)

- Boiled water should be kept covered while cooling and should then be stored in the manner previously described under "Storing Drinking Water For Emergencies."

Purifying By Adding Liquid Chlorine Bleach

If boiling is not possible, water can be made safe for drinking by treating with liquid household chlorine bleach, such as Clorox, Purex, etc. Household bleach is typically between 5% and 6% chlorine. Avoid using bleaches that contain perfumes, dyes or other additives. Be sure to read the label.

- Place the water (filtered if necessary) in a clean container. Add the amount of bleach according to the tables at the end of this advisory. Mix thoroughly and allow to stand for at least 30 minutes before using (60 minutes if the water is cloudy, or very cold).
- Purifying tablets or chemicals designed for use when camping or backpacking can also be an effective way to treat water. Always follow the directions on the package.

Note:

Chlorine and other chemicals will not kill oocysts of the parasite *Cryptosporidium* ("Crypto"), which may be present in water supplies affected by untreated surface water. *Cryptosporidium* is an organism that can cause severe illness and even death in persons who have been weakened because of health problems. Boiling is the best water treatment if there is the possibility of contamination by Crypto.

Caution

The treatments described above work only in situations where the water is unsafe because of the presence of bacteria. If you suspect the water is unsafe because of chemicals, oils, poisonous substances, sewage, etc., do not use the water for drinking.

For additional copies or more information call 1-800-521-0323.
The Department of Health is an equal opportunity agency.
If you need this publication in an alternative format, please call 1-800-525-0127 (voice) or 1-800-833-6388 (TDD relay service).
www.doh.wa.gov/ehp/dw/

Treating Water With a 5-6% Liquid Chlorine Bleach Solution

(Allow treated CLEAR water to stand 30 minutes before using; treated CLOUDY water should stand for 60 minutes)

Volume of Water To Be Treated	Treating Clear Water Bleach Solution To Add	Treating Cloudy, Very Cold or Surface Water Bleach Solution To Add
1 quart/1 liter	3 drops	5 drops
1/2 gallon/2 quarts/2 liters	5 drops	10 drops OR 1/8 tsp
1 gallon	10 drops OR 1/8 tsp	20 drops OR 1/4 tsp
5 gallons	50 drops OR 2.5 mL OR 1/2 tsp	5 mL OR 1 tsp
10 gallons	5 mL OR 1 tsp	10 mL OR 2 tsp

tsp = teaspoon; Tbsp = tablespoon; mL = milliliter

Treating Small Quantities of Water

For treating small amounts of water, you may find it easier to use a 1% bleach solution.

- Mix one part of 5-6% household bleach and four parts clean water by volume to yield a 1% bleach solution. For example, add **one cup of bleach to four cups water** to yield five cups of 1% bleach solution.
- Keep the bleach solution in a tightly capped container labeled as 1% bleach solution. Store in a cool place. Discard and make a fresh solution every two months.

Treating Water With a 1% Liquid Chlorine Bleach Solution

(Allow treated CLEAR water to stand 30 minutes before using; treated CLOUDY water should stand for 60 minutes)

Volume of Water To Be Treated	Treating Clear Water Bleach Solution To Add	Treating Cloudy, Very Cold or Surface Water Bleach Solution To Add
1 quart/1 liter	10 drops OR 1/8 tsp	20 drops OR 1/4 tsp
1/2 gallon/2 quarts/2 liters	20 drops OR 1/4 tsp	40 drops OR 2.5 mL OR 1/2 tsp
1 gallon	40 drops OR 2.5 mL OR 1/2 tsp	5 mL OR 1 tsp
5 gallons	12.5 mL OR 2.5 tsp	25 mL OR 5 tsp
10 gallons	25 mL OR 5 tsp	50 mL OR 10 tsp OR 3 Tbsp

tsp = teaspoon; Tbsp = tablespoon; mL = milliliter

APPENDIX C12

DOH Trucked Water Guidelines

Disinfection of trucked water

All trucked water must maintain a free chlorine residual of at least 0.5 ppm. To accomplish this, the hauler must add 5 to 6 tablespoons (2.5 to 3 ounces) of common household bleach to each 1,000 gallons of water that does not have a free chlorine residual. The bleach must be 5.25 to 6 percent strength, unscented and without additives. Add the bleach in proportion to the quantity of water at the beginning of each haul during filling to ensure uniform distribution.

For more information

If you have questions, call our nearest regional office:

Eastern Region:	Spokane Valley (509) 329-2100
Northwest Region:	Kent (253) 395-6750
Southwest Region:	Tumwater (360) 236-3030

Office of Drinking Water publications are online at https://fortress.wa.gov/doh/eh/dw/publications/publications.cfm

PUBLIC HEALTH
ALWAYS WORKING FOR A SAFER AND HEALTHIER WASHINGTON

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD, call (800) 833-6388.

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Truck Transportation

Emergency water supply for public use

October 2012
DOH 331-063
Revised

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

Public water systems that truck or receive potable water for the public during emergencies must follow drinking water standards (WAC 246-290-451(2)).

The Washington State Department of Health doesn't allow trucked water as a long-term source of drinking water. We do recognize that it may be the only option as a temporary source in some emergencies.

Before a water system can truck or receive potable water for the public during an emergency, it must get the current requirements and approval from one of the following:

- Our nearest regional office
- The local health department
- The state emergency management agency
- The local emergency management agency

To protect public health, water systems thinking about receiving trucked water must consider the following:

- The source and quality of the water
- Personnel
- Documentation
- Recordkeeping
- The truck container, including disinfection and condition
- The receiving container

Source and quality of water

Trucked emergency water must come from an approved public water system. If there is no other option, *and* there is a formal written agreement between the receiving water system and the state or local health department, hauled water may be from an unapproved source.

The water system must prove to the health agency that the intended unapproved source is safe to use when treated to the minimal levels described in "Disinfection of trucked water," on page 7.

The water system must confirm that the:

- Truck hauler is familiar with proper handling procedures at the supply source and during transport.
- Delivered trucked water contains a free chlorine residual of at least 0.5 ppm.

The water system must reject the water if it believes the hauler failed to take the steps necessary to ensure the water remains potable.

Personnel

The water system must have the certified operator coordinate the receiving process, collect documentation, and keep records. These procedures must be in the water system's emergency response program (WAC 246-290-415(2)(d)).

Documentation

The water system must document and keep proper records of the trucked water operation. This includes:

- The hauler's name and contact information.
- The amount of water delivered per trip.
- The name of the approved water source or water system.
- Date and time of delivery.

Recordkeeping

The water system must keep the following records for at least one year after the emergency water hauling operation ends.

- Documents to show proper disinfection of the water for each trip.
- Confirmation of initial tanker disinfection method and follow-up coliform monitoring results.
- The free chlorine residual in the container at the start of the haul.
- The free chlorine residual of the water at point of delivery.
- Any conditions observed about the receiving tank.

Records must be available on request for review by health agencies, haulers, or the supplying water system.

Containers designed and used only for potable water service

Properly designed and maintained truck containers dedicated to hauling only potable water may be used without initial tanker cleaning, disinfection, and testing for bacteria.

The truck container must be contaminant-free and maintained to prevent potential water contamination.

The hauler must fill and empty all truck containers through an air gap or other approved method. All containers must be completely enclosed and tightly sealed with lockable lids or hatches. Containers open to the atmosphere during hauling cannot be used.

Bulk water hauling may be acceptable as a *temporary* solution to a water shortage.

It is not an acceptable *long-term* solution for system infrastructure deficiencies such as inadequate water supply sources.

Truck container

Truck containers used for hauling petroleum products, surfactants, or other non-food grade products may not be used for hauling potable water.

Trucks used for hauling food-grade products other than potable water must be evaluated on an individual basis. At minimum, a truck container used to haul a food-grade product other than potable water must be disinfected as directed in "Initial tanker disinfection," below.

Initial testing must show absence of coliform bacteria before using the truck to haul water. We may require additional water quality analysis depending on a truck's prior use.

After emergency hauling begins and safety measures are in place to prevent contamination, any health authority can require repeat testing at any time. An extended water-hauling emergency warrants additional water quality monitoring, including chlorine residuals.

Initial tanker disinfection

Truck containers used to transport food-grade products other than potable water must be cleaned and disinfected before potable water hauling operations begin.

1 Rinse and flush all water-hauling containers, hoses, truck-mounted pumps, and other equipment until they are free of rust, sediment, and other matter.

2 Use water with chlorine levels of at least 50 to 60 parts per million (ppm) to completely fill the tank, pumps, hoses, and other hauling equipment that will contact potable water.

About one gallon of liquid bleach is required in every 1,000 gallons of water to produce 50 to 60 ppm. Bleach must be 5.25 to 6 percent hypochlorite with no scent, cleaning enhancer, or other additives. Add the bleach to the water while filling the tank to ensure uniform distribution.

All surfaces that will contact potable water must be disinfected with the chlorine solution for at least 4 hours.

All equipment used to collect, transport, and deliver drinking water must be designed to handle potable water and endure disinfection.

3 After 4 hours, flush the chlorine solution from the tank and all pieces of equipment. *Do not discharge directly into a stream because the chlorine in the water can kill fish and plants*. To dechlorinate the water, treat it with citric acid or thiosulfate before discharging it.

4 When the tank, hoses, pipes, and pumps are empty, refill them with potable water and test for coliform bacteria. If coliform are present, repeat the disinfection steps. If coliform is still present after a second attempt to disinfect, the tanker cannot be used to haul potable water.

Handling

All hoses and other handling equipment used in the operation must always be stored off the ground. Hoses must be capped at each end when not in use.

All surfaces that contact potable water, including fill-point equipment, containers, caps, valves, filters, fittings, and other plumbing attachments, must be inspected regularly and disinfected or replaced as needed.

Receiving container

Inspect the water system's receiving tanks to confirm water quality during filling and later distribution to consumers. Clean and disinfect receiving tanks using the disinfection steps in "Initial tanker disinfection," at left.

Secure and protect the receiving tanks from contamination throughout the emergency response process. Keep written records of any comments about the receiving tanks.

The water system must inspect each water delivery for appearance or odor problems, check the chlorine residual, and fill water through an air gap or other approved method.

APPENDIX C13

Water Meter Data

Cedar Creek Corrections Center

April-22	CURRENT READING	PREVIOUS READING	MONTHLY TOTAL
ADMINISTRATION	2,597,300	2,595,100	2,200
ALPINE	2,242,890	2,239,330	3,560
BUILDING MAINTENANCE	491,890	487,110	4,780
CASCADE A&C TIER	22,864,900	22,687,200	177,700
CASCADE B TIER	18,027,100	17,901,000	126,100
COMPOST	310,920	308,280	2,640
DNR AUTO & CLOTHING	806,700	793,300	13,400
DNR BLACKHILLS & GREENHOUSE	1,611,850	1,608,830	3,020
DNR WHITE HOUSE & BUNK HOUSE	578,600	569,200	9,400
DNR CARPENTRY SHOP	81,520	79,830	1,690
EFV UNITS	395,400	395,400	-
GYM	2,900,100	2,841,100	59,000
KITCHEN	9,560,000	9,476,500	83,500
LAUNDRY 1	9,125,100	9,043,400	81,700
MAINTENANCE SHOP	520,500	516,440	4,060
MEDICAL	156,700	155,600	1,100
OLYMPIC UNIT	46,484,700	46,029,900	454,800
PCO	388,600	384,800	3,800
TIMBERLINE	675,400	673,800	1,600
WWTP	1,161,800	1,122,730	39,070
FIRE HYDRANT USAGE 2			-
MONTHLY WELLS TOTAL	1,330,565	DIFF IN GAL=	257,445
MONTHLY METERS TOTAL	1,073,120	% DIFF =	19.3%

1. laundry total is minus DNR auto & clothing total 2

May-22	***CURRENT READING***	***PREVIOUS READING***	***MONTHLY TOTAL***
ADMINISTRATION	**2,612,200**	**2,597,300**	**14,900**
ALPINE	**2,264,270**	**2,242,890**	**21,380**
BUILDING MAINTENANCE	**495,500**	**491,890**	**3,610**
CASCADE A&C TIER	**23,033,700**	**22,864,900**	**168,800**
CASCADE B TIER	**18,158,000**	**18,027,100**	**130,900**
COMPOST	**315,750**	**310,920**	**4,830**
DNR AUTO & CLOTHING	**813,200**	**806,700**	**6,500**
DNR BLACKHILLS & GREENHOUSE	**1,619,420**	**1,611,850**	**7,570**
DNR WHITE HOUSE & BUNK HOUSE	**594,000**	**578,600**	**15,400**
DNR CARPENTRY SHOP	**82,080**	**81,520**	**560**
EFV UNITS	**396,400**	**395,400**	**1,000**
GYM	**2,958,300**	**2,900,100**	**58,200**
KITCHEN	**9,649,800**	**9,560,000**	**89,800**
LAUNDRY [1]	**9,206,000**	**9,125,100**	**80,900**
MAINTENANCE SHOP	**525,680**	**520,500**	**5,180**
MEDICAL	**157,400**	**156,700**	**700**
OLYMPIC UNIT	**46,925,000**	**46,484,700**	**440,300**
PCO	**392,400**	**388,600**	**3,800**
TIMBERLINE	**676,300**	**675,400**	**900**
WWTP	**1,204,690**	**1,161,800**	**42,890**
FIRE HYDRANT USAGE [2]			**-**
MONTHLY WELLS TOTAL	**1,374,119**	DIFF IN GAL=	275,999
MONTHLY METERS TOTAL	**1,098,120**	% DIFF =	20.1%

1. laundry total is minus DNR auto & clothing total **2**

June-22	CURRENT READING	PREVIOUS READING	MONTHLY TOTAL
ADMINISTRATION	2,696,900	2,612,200	84,700
ALPINE	2,300,860	2,264,270	36,590
BUILDING MAINTENANCE	499,900	495,500	4,400
CASCADE A&C TIER	23,216,200	23,033,700	182,500
CASCADE B TIER	18,265,700	18,158,000	107,700
COMPOST	322,970	315,750	7,220
DNR AUTO & CLOTHING	822,600	813,200	9,400
DNR BLACKHILLS & GREENHOUSE	1,625,870	1,619,420	6,450
DNR WHITE HOUSE & BUNK HOUSE	599,000	594,000	5,000
DNR CARPENTRY SHOP	82,710	82,080	630
EFV UNITS	396,600	396,400	200
GYM	3,016,400	2,958,300	58,100
KITCHEN	9,741,800	9,649,800	92,000
LAUNDRY 1	9,293,700	9,206,000	87,700
MAINTENANCE SHOP	530,950	525,680	5,270
MEDICAL	161,100	157,400	3,700
OLYMPIC UNIT	47,324,100	46,925,000	399,100
PCO	395,900	392,400	3,500
TIMBERLINE	677,600	676,300	1,300
WWTP	1,248,150	1,204,690	43,460
FIRE HYDRANT USAGE 2			-
MONTHLY WELLS TOTAL	1,437,327	DIFF IN GAL=	298,407
MONTHLY METERS TOTAL	1,138,920	% DIFF =	20.8%

1. laundry total is minus DNR auto & clothing total 2

July-22	*CURRENT READING*	*PREVIOUS READING*	*MONTHLY TOTAL*
ADMINISTRATION	2,832,700	2,696,900	135,800
ALPINE	2,344,330	2,300,860	43,470
BUILDING MAINTENANCE	503,930	499,900	4,030
CASCADE A&C TIER	23,415,700	23,216,200	199,500
CASCADE B TIER	18,318,400	18,265,700	52,700
COMPOST	325,020	322,970	2,050
DNR AUTO & CLOTHING	830,600	822,600	8,000
DNR BLACKHILLS & GREENHOUSE	1,636,870	1,625,870	11,000
DNR WHITE HOUSE & BUNK HOUSE	604,100	599,000	5,100
DNR CARPENTRY SHOP	83,100	82,710	390
EFV UNITS	398,500	396,600	1,900
GYM	3,076,300	3,016,400	59,900
KITCHEN	9,840,500	9,741,800	98,700
LAUNDRY 1	9,373,600	9,293,700	79,900
MAINTENANCE SHOP	551,900	530,950	20,950
MEDICAL	165,100	161,100	4,000
OLYMPIC UNIT	47,845,200	47,324,100	521,100
PCO	399,000	395,900	3,100
TIMBERLINE	678,600	677,600	1,000
WWTP	1,298,650	1,248,150	50,500
FIRE HYDRANT USAGE 2			-
MONTHLY WELLS TOTAL	1,637,365	DIFF IN GAL=	334,275
MONTHLY METERS TOTAL	1,303,090	% DIFF =	20.4%

1. laundry total is minus DNR auto & clothing total 2

August-22	CURRENT READING	PREVIOUS READING	MONTHLY TOTAL
ADMINISTRATION	2,885,200	2,832,700	52,500
ALPINE	2,419,780	2,344,330	75,450
BUILDING MAINTENANCE	504,150	503,930	220
CASCADE A&C TIER	23,630,100	23,415,700	214,400
CASCADE B TIER	18,329,800	18,318,400	11,400
COMPOST	326,080	325,020	1,060
DNR AUTO & CLOTHING	851,000	830,600	20,400
DNR BLACKHILLS & GREENHOUSE	1,663,770	1,636,870	26,900
DNR WHITE HOUSE & BUNK HOUSE	608,900	604,100	4,800
DNR CARPENTRY SHOP	83,640	83,100	540
EFV UNITS	398,600	398,500	100
GYM	3,151,000	3,076,300	74,700
KITCHEN	9,915,100	9,840,500	74,600
LAUNDRY 1	9,465,700	9,373,600	92,100
MAINTENANCE SHOP	565,230	551,900	13,330
MEDICAL	169,300	165,100	4,200
OLYMPIC UNIT	48,163,400	47,845,200	318,200
PCO	403,500	399,000	4,500
TIMBERLINE	687,300	678,600	8,700
WWTP	1,347,390	1,298,650	48,740
FIRE HYDRANT USAGE 2			-
MONTHLY WELLS TOTAL	1,477,328	DIFF IN GAL=	430,488
MONTHLY METERS TOTAL	1,046,840	% DIFF =	29.1%

1. laundry total is minus DNR auto & clothing total 2

September-22	CURRENT READING	PREVIOUS READING	MONTHLY TOTAL
ADMINISTRATION	3,039,500	2,885,200	154,300
ALPINE	2,458,400	2,419,780	38,620
BUILDING MAINTENANCE	505,550	504,150	1,400
CASCADE A&C TIER	23,816,400	23,630,100	186,300
CASCADE B TIER	18,341,700	18,329,800	11,900
COMPOST	327,720	326,080	1,640
DNR AUTO & CLOTHING	855,500	851,000	4,500
DNR BLACKHILLS & GREENHOUSE	1,673,200	1,663,770	9,430
DNR WHITE HOUSE & BUNK HOUSE	610,800	608,900	1,900
DNR CARPENTRY SHOP	84,730	83,640	1,090
EFV UNITS	399,200	398,600	600
GYM	3,227,500	3,151,000	76,500
KITCHEN	9,996,600	9,915,100	81,500
LAUNDRY 1	9,539,800	9,465,700	74,100
MAINTENANCE SHOP	575,850	565,230	10,620
MEDICAL	172,900	169,300	3,600
OLYMPIC UNIT	48,464,400	48,163,400	301,000
PCO	407,200	403,500	3,700
TIMBERLINE	688,400	687,300	1,100
WWTP	1,401,620	1,347,390	54,230
FIRE HYDRANT USAGE 2			-
MONTHLY WELLS TOTAL	1,455,328	DIFF IN GAL=	437,298
MONTHLY METERS TOTAL	1,018,030	% DIFF =	30.0%

1. laundry total is minus DNR auto & clothing total 2

October-22	CURRENT READING	PREVIOUS READING	MONTHLY TOTAL
ADMINISTRATION	3,147,200	3,039,500	107,700
ALPINE	2,474,530	2,458,400	16,130
BUILDING MAINTENANCE	508,360	505,550	2,810
CASCADE A&C TIER	24,027,700	23,816,400	211,300
CASCADE B TIER	18,351,500	18,341,700	9,800
COMPOST	329,320	327,720	1,600
DNR AUTO & CLOTHING	861,900	855,500	6,400
DNR BLACKHILLS & GREENHOUSE	1,681,700	1,673,200	8,500
DNR WHITE HOUSE & BUNK HOUSE	613,500	610,800	2,700
DNR CARPENTRY SHOP	85,410	84,730	680
EFV UNITS	401,900	399,200	2,700
GYM	3,307,100	3,227,500	79,600
KITCHEN	10,087,500	9,996,600	90,900
LAUNDRY 1	9,634,800	9,539,800	95,000
MAINTENANCE SHOP	584,920	575,850	9,070
MEDICAL	176,100	172,900	3,200
OLYMPIC UNIT	48,835,100	48,464,400	370,700
PCO	410,800	407,200	3,600
TIMBERLINE	689,100	688,400	700
WWTP	1,461,950	1,401,620	60,330
FIRE HYDRANT USAGE 2			-
MONTHLY WELLS TOTAL	1,445,212	DIFF IN GAL=	361,792
MONTHLY METERS TOTAL	1,083,420	% DIFF =	25.0%

1. laundry total is minus DNR auto & clothing total 2

Larch Corrections Center

Date	Admin	Auto Shop	Boiler Room	Boot Room	Campbell	Control	DNR Equipment	DNR Shop	EFV
1/31/2020									
2/29/2020	620	4,290	251,800	8,000	3,900	2,710	5,700	5,920	3,620
3/31/2020	720	5,000	572,800	10,330	1,100	1,220	10,530	6,420	4,720
4/30/2020	540	4,589	530,900	9,720	8,900	1,150	9,880	5,130	3,550
5/31/2020	910	5,521	125,000	2,940	20,000	3,030	(140)	7,049	11,770
6/30/2020	500	4,530	277,900	4,690	16,200	820	4,110	6,271	7,030
7/31/2020	430	6,520	288,300	5,760	200	1,590	7,160	4,990	220
8/31/2020	490	5,750	293,200	6,720	100	1,280	5,190	4,490	430
9/30/2020	420	5,040	272,200	6,080	100	520	3,610	4,640	270
10/31/2020	390	5,450	277,500	4,870	1,800	800	4,890	5,730	200
11/30/2020	420	4,240	274,300	3,710	600	940	2,260	5,770	80
12/31/2020	440	4,120	292,600	5,920	600	1,020	5,980	6,700	90
1/31/2021	500	3,150	280,600	1,020	15,500	1,510	16,030	7,670	160
2/28/2021	450	5,090	240,500	3,880	500	950	20,450	7,640	100
3/31/2021	530	5,160	243,700	5,080	700	1,290	25,460	8,180	180
4/30/2021	410	5,390	227,200	8,010	500	1,960	20,440	7,580	100
5/31/2021	430	4,250	226,900	2,920	500	1,490	27,390	7,050	100
6/30/2021	1,850	4,210	391,700	4,300	600	2,370	9,130	5,790	150
7/31/2021	530	4,770	257,700	4,350	500	2,500	4,180	4,880	1,990
8/31/2021	490	7,120	133,600	2,320	800	1,120	1,780	4,840	1,250
9/30/2021	560	6,680	94,800	4,850	600	940	3,480	6,090	3,070
10/31/2021	550	4,450	95,500	3,910	1,800	630	21,630	7,760	2,570
11/30/2021	500	6,000	73,200	3,520	1,000	600	26,490	9,030	1,700
12/31/2021	460	6,330	82,200	4,140	700	360	2,790	9,300	3,890
1/31/2022	500	6,130	82,100	5,260	300	890	1,140	10,180	150
2/28/2022	480	5,070	50,500	2,360	300	1,700	8,200	10,190	6,100
3/31/2022	500	6,160	70,800	4,770	700	1,560	1,740	10,700	7,840
4/30/2022	390	7,240	68,600	5,510	1,300	960	3,230	10,840	2,000
5/31/2022	440	5,080	82,800	5,960	1,100	2,330	4,500	11,770	2,230
6/30/2022	420	5,080	75,600	5,860	1,200	750	4,890	10,050	2,790
7/31/2022	390	4,640	56,700	160	400	1,750	750	8,030	2,560
8/31/2022	370	8,320	78,500	7,150	900	3,160	3,270	13,510	2,670
9/30/2022	380	6,400	89,800	8,060	800	4,080	7,560	9,230	1,380

Date	Elkhorn	Kitchen	Laundry	Program Building	Rec.	Recycling	Silver Star	Warehouse
1/31/2020								
2/29/2020	369,400	90,300	35,510	20,100	1,060	823,330	402,400	1,570
3/31/2020	681,200	92,100	36,230	12,260	780	222,690	726,500	1,550
4/30/2020	490,150	81,450	34,150	11,420	590	120,150	723,200	950
5/31/2020	510,650	97,850	31,650	2,770	470	343,570	397,854	1,180
6/30/2020	442,200	109,900	31,520	11,520	490	428,150	291,746	2,610
7/31/2020	385,300	124,800	33,360	12,690	1,290	198,160	455,000	1,380
8/31/2020	376,000	145,100	40,790	7,850	1,240	322,460	428,700	1,180
9/30/2020	363,300	111,900	29,620	7,120	1,230	164,530	396,600	1,170
10/31/2020	381,100	124,000	27,310	7,350	1,390	287,790	447,000	1,240
11/30/2020	384,500	132,600	24,640	6,590	1,120	362,530	424,800	940
12/31/2020	379,300	108,000	25,400	4,890	550	470,060	395,100	1,180
1/31/2021	344,000	100,800	19,750	1,830	80	122,060	504,700	650
2/28/2021	341,200	73,600	18,150	4,000	400	109,340	320,600	640
3/31/2021	394,800	94,500	26,980	4,170	460	141,660	392,800	760
4/30/2021	383,900	68,300	22,230	4,970	400	188,800	335,000	630
5/31/2021	371,500	163,100	20,180	6,030	680	199,860	383,200	550
6/30/2021	328,400	346,700	19,830	5,730	700	388,230	413,800	690
7/31/2021	308,500	286,700	18,640	11,970	820	242,420	331,900	700
8/31/2021	313,900	47,000	24,340	10,430	490	431,530	287,600	850
9/30/2021	327,100	42,400	23,900	6,400	450	655,800	298,800	530
10/31/2021	125,600	53,800	24,810	7,400	570	650,160	525,200	620
11/30/2021	4,300	43,700	23,240	8,610	830	211,040	666,200	450
12/31/2021	2,600	28,700	20,550	31,590	720	143,130	652,700	620
1/31/2022	36,700	48,500	20,370	45,190	720	148,270	594,600	720
2/28/2022	149,800	18,800	14,980	31,000	310	63,430	416,300	450
3/31/2022	52,000	32,500	20,570	29,550	420	165,710	518,900	650
4/30/2022	4,700	31,500	23,580	37,250	690	161,470	589,800	650
5/31/2022	9,000	36,300	26,310	38,740	600	251,910	684,100	700
6/30/2022	3,900	38,300	23,800	29,370	570	220,490	614,300	790
7/31/2022	42,700	24,400	20,430	32,780	1,980	302,800	645,300	370
8/31/2022	31,000	35,700	23,800	25,550	980	206,270	569,300	580
9/30/2022	12,900	40,200	29,030	30,340	700	132,870	588,100	790

Date	WWTP	Hydrant 1	Hydrant 2	Hydrant 3	Hydrant 4	Hydrant 5	Total Usage (gal)	Total Produced (gal)
1/31/2020								
2/29/2020	294,710	-	-	-	8,252	-	2,333,192	2,051,872
3/31/2020	172,200	-	-	-	3,948	-	2,562,298	2,297,884
4/30/2020	170,100	-	-	-	3,560	-	2,210,079	1,998,213
5/31/2020	123,180	-	-	-	17,806	-	1,703,060	1,902,187
6/30/2020	132,540	-	-	-	10,886	-	1,783,613	1,781,022
7/31/2020	145,960	-	18,470	10,589	4,802	-	1,706,971	1,817,357
8/31/2020	179,010	-	18,655	8,300	-	-	1,846,935	1,819,736
9/30/2020	107,490	-	11,745	6,860	-	-	1,494,445	2,117,704
10/31/2020	102,560	-	-	2,240	-	-	1,683,610	1,677,209
11/30/2020	97,290	-	-	7,200	-	-	1,734,530	1,729,262
12/31/2020	210,150	-	-	6,300	900	-	1,919,300	2,003,826
1/31/2021	115,100	-	-	1,800	10,700	-	1,547,610	1,795,757
2/28/2021	167,640	-	-	-	22,300	-	1,337,430	1,424,646
3/31/2021	142,870	-	-	-	21,700	-	1,510,980	1,694,747
4/30/2021	100,080	-	-	-	10,900	-	1,386,800	1,530,028
5/31/2021	248,620	-	-	-	3,900	-	1,668,650	1,684,445
6/30/2021	99,190	-	2,100	-	20,500	-	2,045,970	2,024,165
7/31/2021	92,750	-	-	4,000	29,200	-	1,609,000	1,725,156
8/31/2021	81,700	-	-	-	23,100	-	1,374,260	1,343,961
9/30/2021	257,540	-	-	-	24,200	-	1,758,190	1,319,734
10/31/2021	1,694,350	-	-	600	38,500	-	3,260,410	1,578,419
11/30/2021	142,050	-	-	-	18,500	-	1,240,960	1,401,915
12/31/2021	74,000	-	-	-	17,300	-	1,082,080	1,368,368
1/31/2022	145,960	-	-	-	18,600	-	1,166,280	1,375,198
2/28/2022	91,060	-	-	-	12,900	-	883,930	1,152,460
3/31/2022	98,970	-	-	-	47,400	-	1,071,440	1,300,686
4/30/2022	111,860	-	-	-	39,400	-	1,100,970	1,260,752
5/31/2022	107,460	-	-	-	40,000	-	1,311,330	1,444,619
6/30/2022	106,340	-	-	-	32,300	-	1,176,800	1,328,183
7/31/2022	103,410	-	-	-	41,100	-	1,290,650	1,415,472
8/31/2022	96,880	-	-	-	29,500	-	1,137,410	1,286,752
9/30/2022	123,880	-	-	1,100	75,100	-	1,162,700	1,351,950

Date	Loss (gal)	Monthly % Loss
1/31/2020		
2/29/2020	(281,320)	-14%
3/31/2020	(264,414)	-12%
4/30/2020	(211,866)	-11%
5/31/2020	199,127	10%
6/30/2020	(2,591)	0%
7/31/2020	110,386	6%
8/31/2020	(27,199)	-1%
9/30/2020	623,259	29%
10/31/2020	(6,401)	0%
11/30/2020	(5,268)	0%
12/31/2020	84,526	4%
1/31/2021	248,147	14%
2/28/2021	87,216	6%
3/31/2021	183,767	11%
4/30/2021	143,228	9%
5/31/2021	15,795	1%
6/30/2021	(21,805)	-1%
7/31/2021	116,156	7%
8/31/2021	(30,299)	-2%
9/30/2021	(438,456)	-33%
10/31/2021	(1,681,991)	-107%
11/30/2021	160,955	11%
12/31/2021	286,288	21%
1/31/2022	208,918	15%
2/28/2022	268,530	23%
3/31/2022	229,246	18%
4/30/2022	159,782	13%
5/31/2022	133,289	9%
6/30/2022	151,383	11%
7/31/2022	124,822	9%
8/31/2022	149,342	12%
9/30/2022	189,250	14%

Maple Lane Corrections Center

Date	Reading (100 gallons)	Total (HG)	Usage Monthly Total (Gal)
1/1/2020			
1/2/2020	656462		
1/3/2020	656513	51	
1/6/2020	656725	212	
1/7/2020	656780	55	
1/8/2020	656889	109	
1/9/2020	656946	57	
1/10/2020	657046	100	
1/13/2020	657155	109	
1/14/2020	657312	157	
1/15/2020	657367	55	
1/16/2020	657473	106	
1/17/2020	657526	53	
1/20/2020	657710	184	
1/21/2020	657792	82	
1/22/2020	657851	59	
1/23/2020	657954	103	
1/24/2020	658073	119	
1/27/2020	658295	222	
1/28/2020	658382	87	
1/29/2020	658471	89	
1/30/2020	658549	78	
1/31/2020	658661	112	219,900
2/3/2020	658752	91	
2/4/2020	658843	91	
2/5/2020	658938	95	
2/6/2020	658997	59	
2/7/2020	659094	97	
2/10/2020	659298	204	
2/11/2020	659354	56	
2/12/2020	659459	105	
2/13/2020	659514	55	
2/14/2020	659562	48	
2/17/2020	659817	255	
2/18/2020	659883	66	
2/19/2020	659937	54	
2/20/2020	659990	53	
2/21/2020	660042	52	
2/24/2020	660314	272	
2/25/2020	660365	51	
2/26/2020	660459	94	
2/27/2020	660516	57	
2/28/2020	660577	61	191,600
3/2/2020	660954	377	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
3/4/2022	661160	206	
3/5/2022	661223	63	
3/6/2022	661275	52	
3/9/2020	661487	212	
3/10/2020	661549	62	
3/11/2020	661668	119	
3/12/2020	661761	93	
3/13/2020	661871	110	
3/14/2020	661924	53	
3/15/2020	661976	52	
3/16/2020	662023	47	
3/17/2020	662142	119	
3/18/2020	662246	104	
3/19/2020	662376	130	
3/20/2020	662439	63	
3/23/2020	662724	285	
3/24/2020	662830	106	
3/25/2020	662882	52	
3/26/2020	662997	115	
3/27/2020	663100	103	
3/30/2020	663370	270	
3/31/2020	663422	52	284,500
4/3/2020	663532	110	
4/4/2020	663584	52	
4/5/2020	663637	53	
4/8/2020	663854	217	
4/9/2020	663963	109	
4/10/2020	664015	52	
4/11/2020	664125	110	
4/12/2020	664240	115	
4/15/2020	664396	156	
4/16/2020	664506	110	
4/17/2020	664616	110	
4/18/2020	664668	52	
4/19/2020	664722	54	
4/22/2020	664941	219	
4/23/2020	665048	107	
4/24/2020	665102	54	
4/25/2020	665212	110	
4/26/2020	665267	55	
4/29/2020	665539	272	
4/30/2020	665655	116	223,300
5/1/2020	665709	54	
5/2/2020	665817	108	
5/3/2020	665869	52	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
5/6/2020	666085	216	
5/7/2020	666197	112	
5/8/2020	666252	55	
5/9/2020	666305	53	
5/10/2020	666359	54	
5/13/2020	666659	300	
5/14/2020	666632	-27	
5/15/2020	666685	53	
5/16/2020	666738	53	
5/17/2020	666792	54	
5/20/2020	666953	161	
5/21/2020	667006	53	
5/22/2020	667058	52	
5/23/2020	667112	54	
5/24/2020	667164	52	
5/27/2020	667348	184	
5/28/2020	667402	54	
5/29/2020	667456	54	180,100
6/1/2020	667563	107	
6/2/2020	667670	107	
6/3/2020	667725	55	
6/4/2020	667769	44	
6/5/2020	667824	55	
6/8/2020	667889	65	
6/9/2020	667951	62	
6/10/2020	668017	66	
6/11/2020	668069	52	
6/12/2020	668125	56	
6/15/2020	668227	102	
6/16/2020	668279	52	
6/17/2020	668333	54	
6/18/2020	668386	53	
6/19/2020	668386	0	
6/22/2020	668493	107	
6/23/2020	668550	57	
6/24/2020	668604	54	
6/25/2020	668665	61	
6/26/2020	668711	46	
6/29/2020	668818	107	
6/30/2020	668873	55	141,700
7/1/2020	668926	53	
7/2/2020	668926	0	
7/3/2020	668926	0	
7/6/2020	668926	0	
7/7/2020	668926	0	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
7/8/2020	669200	274	
7/9/2020	669200	0	
7/10/2020	669255	55	
7/13/2020	669367	112	
7/14/2020	669416	49	
7/15/2020	669470	54	
7/16/2020	669470	0	
7/17/2020	669578	108	
7/20/2020	669686	108	
7/21/2020	669741	55	
7/22/2020	669793	52	
7/23/2020	669793	0	
7/24/2020	669900	107	
7/27/2020	670011	111	
7/28/2020	670066	55	
7/29/2020	670066	0	
7/30/2020	670120	54	
7/31/2020	670178	58	130,500
8/3/2020	670670	492	
8/4/2020	670844	174	
8/5/2020	671017	173	
8/6/2020	671132	115	
8/7/2020	671250	118	
8/10/2020	671535	285	
8/11/2020	671637	102	
8/12/2020	671752	115	
8/13/2020	671871	119	
8/14/2020	671985	114	
8/17/2020	672284	299	
8/18/2020	672466	182	
8/19/2020	672638	172	
8/20/2020	672692	54	
8/21/2020	672751	59	
8/24/2020	673025	274	
8/25/2020	673137	112	
8/26/2020	673247	110	
8/27/2020	673418	171	
8/28/2020	673588	170	
8/31/2020	673939	351	376,100
9/1/2020	674232	293	
9/2/2020	674358	126	
9/3/2020	674530	172	
9/4/2020	674703	173	
9/8/2020	675230	527	
9/9/2020	675451	221	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
9/10/2020	675655	204	
9/11/2020	675823	168	
9/14/2020	676108	285	
9/15/2020	676218	110	
9/16/2020	676272	54	
9/17/2020	676384	112	
9/18/2020	676491	107	
9/21/2020	676720	229	
9/22/2020	676830	110	
9/23/2020	676890	60	
9/24/2020	677002	112	
9/25/2020	677110	108	
9/28/2020	677334	224	
9/29/2020	677442	108	
9/30/2020	677557	115	361,800
10/1/2020	677670	113	
10/2/2020	677734	64	
10/5/2020	677829	95	
10/6/2020	677829	0	
10/7/2020	677883	54	
10/8/2020	677937	54	
10/9/2020	677993	56	
10/12/2020	678207	214	
10/13/2020	678262	55	
10/14/2020	678314	52	
10/15/2020	678376	62	
10/16/2020	678437	61	
10/19/2020	678537	100	
10/20/2020	678645	108	
10/21/2020	678645	0	
10/22/2020	678698	53	
10/23/2020	678752	54	
10/26/2020	678809	57	
10/27/2020	678962	153	
10/28/2020	679013	51	
10/29/2020	679075	62	
10/30/2020	679119	44	156,200
12/1/2020	680814	1695	
12/2/2020	680866	52	
12/3/2020	680918	52	
12/4/2020	680971	53	
12/6/2020	681021	50	
12/7/2020	681074	53	
12/8/2020	681126	52	
12/9/2020	681179	53	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
12/10/2020	681230	51	
12/13/2020	681334	104	
12/15/2020	681437	103	
12/16/2020	681490	53	
12/17/2020	681546	56	
12/18/2020	681598	52	
12/20/2020	681703	105	
12/21/2020	681703	0	
12/22/2020	681755	52	
12/23/2020	681808	53	
12/24/2020	681860	52	
12/27/2020	682023	163	
12/28/2020	682075	52	
12/29/2020	682126	51	
12/30/2020	682178	52	
12/31/2020	682230	52	311,100
1/3/2021	682331	101	
1/4/2021	682436	105	
1/5/2021	682491	55	
1/6/2021	682540	49	
1/7/2021	682594	54	
1/10/2021	682748	154	
1/11/2021	682801	53	
1/12/2021	682853	52	
1/13/2021	682917	64	
1/14/2021	682978	61	
1/17/2021	683100	122	
1/18/2021	683169	69	
1/19/2021	683169	0	
1/20/2021	683234	65	
1/21/2021	683287	53	
1/24/2021	683430	143	
1/25/2021	683482	52	
1/26/2021	683539	57	
1/27/2021	683586	47	
1/28/2021	683697	111	
1/29/2021	683749	52	
1/31/2021	683850	101	162,000
2/1/2021	683915	65	
2/2/2021	683967	52	
2/3/2021	683967	0	
2/4/2021	684019	52	
2/5/2021	684085	66	
2/7/2021	684177	92	
2/8/2021	684235	58	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
2/9/2021	684281	46	
2/10/2021	684333	52	
2/11/2021	684387	54	
2/12/2021	684387	0	
2/14/2021	684441	54	
2/16/2021	684590	149	
2/17/2021	684697	107	
2/18/2021	684751	54	
2/19/2021	684751	0	
2/22/2021	684847	96	
2/23/2021	684901	54	
2/24/2021	685012	111	
2/25/2021	685064	52	
2/26/2021	685118	54	
2/28/2021	685225	107	137,500
3/1/2021	685332	107	
3/2/2021	685385	53	
3/3/2021	685440	55	
3/4/2021	685494	54	
3/5/2021	685547	53	
3/8/2021	685645	98	
3/9/2021	685698	53	
3/10/2021	685807	109	
3/11/2021	685859	52	
3/14/2021	685966	107	
3/15/2021	686070	104	
3/16/2021	686070	0	
3/17/2021	686124	54	
3/18/2021	686181	57	
3/21/2021	686331	150	
3/22/2021	686387	56	
3/23/2021	686493	106	
3/24/2021	686493	0	
3/25/2021	686547	54	
3/26/2021	686602	55	
3/29/2021	686784	182	
3/30/2021	686878	94	
3/31/2021	686926	48	170,100
4/1/2021	686991	65	
4/2/2021	687044	53	
4/4/2021	687148	104	
4/5/2021	687200	52	
4/6/2021	687255	55	
4/7/2021	687307	52	
4/8/2021	687364	57	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
4/11/2021	687465	101	
4/12/2021	687528	63	
4/13/2021	687579	51	
4/14/2021	687633	54	
4/15/2021	687689	56	
4/18/2021	687796	107	
4/19/2021	687847	51	
4/20/2021	687944	97	
4/21/2021	687995	51	
4/22/2021	688057	62	
4/25/2021	688174	117	
4/26/2021	688230	56	
4/27/2021	688286	56	
4/28/2021	688337	51	
4/29/2021	688390	53	146,400
5/3/2021	688784	394	
5/4/2021	688876	92	
5/5/2021	688997	121	
5/6/2021	689112	115	
5/7/2021	689224	112	
5/9/2021	689380	156	
5/10/2021	689484	104	
5/11/2021	689600	116	
5/12/2021	689716	116	
5/13/2021	689882	166	
5/16/2021	690218	336	
5/17/2021	690321	103	
5/18/2021	690430	109	
5/19/2021	690537	107	
5/20/2021	690652	115	
5/23/2021	690915	263	
5/24/2021	691052	137	
5/25/2021	691192	140	
5/26/2021	691309	117	
5/27/2021	691413	104	
5/30/2021	691685	272	
5/31/2021	691823	138	343,300
6/2/2021	691959	136	
6/3/2021	692104	145	
6/4/2021	692180	76	
6/7/2021	692520	340	
6/8/2021	692599	79	
6/9/2021	692735	136	
6/10/2021	692890	155	
6/11/2021	692955	65	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
6/14/2021	693228	273	
6/15/2021	693340	112	
6/16/2021	693449	109	
6/17/2021	693560	111	
6/18/2021	693669	109	
6/21/2021	694059	390	
6/22/2021	694180	121	
6/23/2021	694296	116	
6/24/2021	694405	109	
6/25/2021	694571	166	
6/28/2021	694906	335	
6/29/2021	695004	98	
6/30/2021	695116	112	329,300
7/1/2021	695658	542	
7/2/2021	695972	314	
7/6/2021	697300	1328	
7/7/2021	697614	314	
7/8/2021	697911	297	
7/9/2021	698226	315	
7/12/2021	699194	968	
7/13/2021	699533	339	
7/14/2021	699818	285	
7/15/2021	700140	322	
7/16/2021	700358	218	
7/19/2021	701373	1015	
7/20/2021	701757	384	
7/21/2021	702233	476	
7/22/2021	702461	228	
7/23/2021	702714	253	
7/26/2021	703499	785	
7/27/2021	704120	621	
7/28/2021	704405	285	
7/29/2021	704705	300	
7/30/2021	704953	248	983,700
8/2/2021	705730	777	
8/3/2021	706050	320	
8/4/2021	706271	221	
8/5/2021	706582	311	
8/6/2021	706891	309	
8/9/2021	707671	780	
8/10/2021	707994	323	
8/11/2021	708305	311	
8/12/2021	708566	261	
8/13/2021	708898	332	
8/16/2021	709635	737	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
8/17/2021	709990	355	
8/18/2021	710112	122	
8/19/2021	710216	104	
8/20/2021	710326	110	
8/23/2021	710599	273	
8/24/2021	710710	111	
8/25/2021	710899	189	
8/26/2021	710973	74	
8/27/2021	711045	72	
8/30/2021	711294	249	
8/31/2021	711365	71	641,200
9/1/2021	711476	111	
9/2/2021	711540	64	
9/3/2021	711602	62	
9/8/2021	711925	323	
9/9/2021	711987	62	
9/10/2021	712055	68	
9/13/2021	712283	228	
9/14/2021	712347	64	
9/15/2021	712414	67	
9/16/2021	712485	71	
9/17/2021	712547	62	
9/20/2021	712810	263	
9/21/2021	712810	0	
9/24/2021	713137	327	
9/27/2021	713333	196	
9/28/2021	713397	64	
9/29/2021	713459	62	
9/30/2021	713524	65	215,900
10/1/2021	713585	61	
10/3/2021	713078	-507	
10/4/2021	713196	118	
10/5/2021	713313	117	
10/6/2021	713428	115	
10/7/2021	713532	104	
10/8/2021	713640	108	
10/11/2021	714004	364	
10/12/2021	714106	102	
10/13/2021	714202	96	
10/14/2021	714314	112	
10/15/2021	714429	115	
10/18/2021	714593	164	
10/19/2021	714596	3	
10/20/2021	714818	222	
10/21/2021	714986	168	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
10/22/2021	715205	219	
10/25/2021	715734	529	
10/26/2021	715836	102	
10/27/2021	715940	104	
10/28/2021	716036	96	
10/29/2021	716109	73	258,500
11/1/2021	716272	163	
11/2/2021	716326	54	
11/3/2021	716379	53	
11/4/2021	716436	57	
11/5/2021	716490	54	
11/8/2021	716653	163	
11/9/2021	716759	106	
11/10/2021	716813	54	
11/11/2021	716869	56	
11/12/2021	716967	98	
11/15/2021	717129	162	
11/16/2021	717182	53	
11/17/2021	717234	52	
11/18/2021	717290	56	
11/19/2021	717345	55	
11/22/2021	717501	156	
11/23/2021	717554	53	
11/24/2021	717605	51	
11/25/2021	717710	105	
11/26/2021	717814	104	
11/29/2021	718063	249	
11/30/2021	718116	53	200,700
12/1/2021	718168	52	
12/2/2021	718296	128	
12/3/2021	718352	56	
12/7/2021	718599	247	
12/8/2021	718651	52	
12/9/2021	718708	57	
12/10/2021	718813	105	
12/13/2021	718972	159	
12/14/2021	719080	108	
12/15/2021	719192	112	
12/16/2021	719296	104	
12/17/2021	719404	108	
12/20/2021	719727	323	
12/21/2021	719785	58	
12/22/2021	719890	105	
12/27/2021	720207	317	
12/28/2021	720259	52	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
12/29/2021	720363	104	
12/30/2021	720417	54	230,100
1/3/2022	720615	198	
1/4/2022	720734	119	
1/5/2022	720843	109	
1/6/2022	721003	160	
1/7/2022	721158	155	
1/10/2022	722708	1550	
1/11/2022	722812	104	
1/12/2022	723221	409	
1/13/2022	723580	359	
1/14/2022	723892	312	
1/18/2022	724389	497	
1/19/2022	724591	202	
1/20/2022	725189	598	
1/21/2022	725531	342	
1/24/2022	726047	516	
1/25/2022	726139	92	
1/26/2022	726154	15	
1/27/2022	726261	107	
1/28/2022	726366	105	
1/31/2022	726593	227	617,600
2/1/2022	727144	551	
2/2/2022	727564	420	
2/3/2022	727901	337	
2/4/2022	728008	107	
2/7/2022	728663	655	
2/8/2022	728727	64	
2/9/2022	728799	72	
2/10/2022	729006	207	
2/11/2022	729071	65	
2/14/2022	729276	205	
2/15/2022	729381	105	
2/16/2022	729447	66	
2/17/2022	729551	104	
2/18/2022	729658	107	
2/22/2022	729924	266	
2/23/2022	729995	71	
2/24/2022	731046	1051	
2/25/2022	731139	93	
2/28/2022	731208	69	461,500
3/1/2022	731316	108	
3/2/2022	731377	61	
3/3/2022	731422	45	
3/4/2022	731473	51	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
3/7/2022	731632	159	
3/8/2022	731664	32	
3/9/2022	731737	73	
3/10/2022	731813	76	
3/11/2022	731898	85	
3/14/2022	732296	398	
3/16/2022	732608	312	
3/17/2022	732608	0	
3/18/2022	732713	105	
3/21/2022	732911	198	
3/22/2022	732931	20	
3/23/2022	733033	102	
3/24/2022	733088	55	
3/28/2022	733362	274	
3/29/2022	733415	53	
3/30/2022	733468	53	
3/31/2022	733523	55	231,500
4/4/2022	733793	270	
4/5/2022	733847	54	
4/6/2022	733904	57	
4/7/2022	733961	57	
4/8/2022	734038	77	
4/11/2022	734251	213	
4/12/2022	734302	51	
4/13/2022	734361	59	
4/14/2022	734412	51	
4/15/2022	734466	54	
4/18/2022	734661	195	
4/19/2022	734737	76	
4/20/2022	734792	55	
4/21/2022	734848	56	
4/22/2022	734955	107	
4/25/2022	735114	159	
4/26/2022	735168	54	
4/27/2022	735227	59	
4/28/2022	735330	103	
4/29/2022	735439	109	191,600
5/2/2022	735591	152	
5/3/2022	735652	61	
5/4/2022	735706	54	
5/5/2022	735815	109	
5/6/2022	735920	105	
5/9/2022	736081	161	
5/10/2022	736124	43	
5/11/2022	736247	123	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
5/12/2022	736362	115	
5/13/2022	736479	117	
5/16/2022	736517	38	
5/17/2022	736568	51	
5/18/2022	736622	54	
5/19/2022	736680	58	
5/20/2022	736737	57	
5/23/2022	736942	205	
5/24/2022	736993	51	
5/25/2022	737049	56	
5/26/2022	737104	55	
5/27/2022	737151	47	
5/31/2022	737371	220	193,200
6/1/2022	737425	54	
6/2/2022	737466	41	
6/3/2022	737522	56	
6/6/2022	737694	172	
6/7/2022	737748	54	
6/8/2022	737797	49	
6/9/2022	737856	59	
6/10/2022	737892	36	
6/13/2022	738021	129	
6/14/2022	738105	84	
6/15/2022	738232	127	
6/16/2022	738278	46	
6/17/2022	738335	57	
6/21/2022	738501	166	
6/22/2022	738544	43	
6/23/2022	738590	46	
6/24/2022	738672	82	
6/27/2022	738869	197	
6/28/2022	738942	73	
6/29/2022	738996	54	
6/30/2022	739048	52	167,700
7/1/2022	739191	143	
7/5/2022	739376	185	
7/6/2022	739417	41	
7/7/2022	739499	82	
7/8/2022	739595	96	
7/11/2022	739812	217	
7/12/2022	739908	96	
7/13/2022	739986	78	
7/14/2022	740043	57	
7/15/2022	740141	98	
7/18/2022	740430	289	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
7/19/2022	740538	108	
7/20/2022	740642	104	
7/21/2022	740754	112	
7/22/2022	740856	102	
7/25/2022	741158	302	
7/26/2022	741271	113	
7/27/2022	741396	125	
7/28/2022	741497	101	
7/29/2022	741619	122	257,100
8/1/2022	742079	460	
8/2/2022	742131	52	
8/3/2022	742227	96	
8/4/2022	742352	125	
8/5/2022	742464	112	
8/6/2022	742988	524	
8/7/2022	743165	177	
8/8/2022	743262	97	
8/9/2022	743389	127	
8/10/2022	743504	115	
8/11/2022	743859	355	
8/12/2022	743999	140	
8/13/2022	744186	187	
8/14/2022	744310	124	
8/15/2022	743859	-451	
8/16/2022	743999	140	
8/17/2022	744186	187	
8/18/2022	744310	124	
8/19/2022	744427	117	
8/22/2022	744803	376	
8/23/2022	744908	105	
8/24/2022	745030	122	
8/25/2022	745141	111	
8/26/2022	745270	129	
8/29/2022	745533	263	
8/30/2022	745647	114	
8/31/2022	745755	108	413,600
9/1/2022	745935	180	
9/2/2022	746101	166	
9/6/2022	746675	574	
9/7/2022	746799	124	
9/8/2022	746916	117	
9/9/2022	747096	180	
9/12/2022	748055	959	
9/13/2022	748219	164	
9/14/2022	748371	152	

Date	Reading (100 gallons)	Total (HG)	Monthly Total (Gal)
9/15/2022	748510	139	
9/16/2022	748662	152	
9/19/2022	749117	455	
9/20/2022	749257	140	
9/21/2022	749372	115	
9/22/2022	749523	151	
9/23/2022	749687	164	
9/26/2022	750171	484	
9/27/2022	750307	136	
9/28/2022	750542	235	
9/29/2022	750712	170	
9/30/2022	750833	121	507,800

McNeil Island Corrections Center

Date	Raw Water Reading	Raw Water Total (100 cubic feet)	Finished Reading	Chlorine Residual	Backwash Reading	Total	Reservoir Monthly Total (gallons)	Well Meter Reading	Total (gallons)	Monthly total (gallons)
1/1/2021	172,132	413	308,924	7.9	120,249	0				
1/2/2021	172,545	175	130,900	3.2	120,249	0				
1/3/2021	172,720	214	160,072	4.0	120,249	10				
1/4/2021	172,934	255	190,740	3.2	120,259	0				
1/5/2021	173,189	118	88,264	3.8	120,259	0				
1/6/2021	173,307	226	169,048	4.0	120,259	13				
1/7/2021	173,533	179	133,892	3.5	120,272	0				
1/10/2021	173,712	438	327,624	7.8	120,272	0				
1/11/2021	174,150	276	206,448	5.2	120,272	0				
1/12/2021	174,426	225	168,300	4.0	120,272	0				
1/15/2021	174,651	165	123,420	3.0	120,272	0				
1/16/2021	174,816	216	161,568	4.0	120,272	0				
1/17/2021	175,032	410	306,680	7.6	120,272	9				
1/18/2021	175,442	216	161,568	3.9	120,281	0				
1/19/2021	175,658	225	168,300	4.3	120,281	0				
1/20/2021	175,883	175	130,900	3.1	120,281	0				
1/21/2021	176,058	226	169,048	4.0	120,281	0				
1/22/2021	176,284	215	160,820	3.9	120,281	0				
1/23/2021	176,499	204	152,592	3.4	120,281	0				
1/24/2021	176,703	173	129,404	3.1	120,281	0				
1/26/2021	176,876	368	275,264	7.0	120,281	16				
1/27/2021	177,244	192	143,616	3.5	120,297	0				
1/28/2021	177,436	210	157,080	3.8	120,297	0				
1/29/2021	177,646	319	238,612	5.8	120,297	25				
1/30/2021	177,965	181	135,388	3.3	120,322	0				
1/31/2021	178,146	196	146,608	3.5	120,322	0	4,499,073			
2/1/2021	178,342	193	144,364	3.6	120,322	0				
2/2/2021	178,535	192	143,616	3.5	120,322	10				
2/3/2021	178,727	183	136,884	3.5	120,332	0				
2/4/2021	178,910	207	154,836	3.7	120,332	0				
2/5/2021	179,117	250	187,000	4.5	120,332	0				
2/7/2021	179,367	263	196,724	4.8	120,332	0				
2/8/2021	179,630	165	123,420	3.1	120,332	0				
2/10/2021	179,795	294	219,912	5.3	120,332	0				
2/11/2021	180,089	403	301,444	7.2	120,332	26				
2/12/2021	180,492	198	148,104	3.5	120,358	0				
2/14/2021	180,690	270	201,960	5.1	120,358	0				
2/15/2021	180,960	193	144,364	3.5	120,358	0				
2/16/2021	181,153	211	157,828	4.1	120,358	0				
2/17/2021	181,364	186	139,128	3.4	120,358	0				
2/18/2021	181,550	199	148,852	3.5	120,358	0				
2/19/2021	181,749	285	213,180	5.1	120,358	14				
2/20/2021	182,034	168	125,664	3.0	120,372	0				
2/21/2021	182,202	729	172,040	4.0	120,372	0				
2/25/2021	182,931	266	198,968	4.9	120,372	0				
2/26/2021	183,197	570	426,360	9.0	120,372	24				
2/27/2021	183,767	340	254,320	7.5	120,396	0				
2/28/2021	184,107	279	208,692	5.3	120,396	0	4,312,797			
3/1/2021	184,386	159	118,932	2.9	120,396	0				

Date	Raw Water Reading	Raw Water Total (100 cubic feet)	Finished Reading	Chlorine Residual	Backwash Reading	Total	Reservoir Monthly Total (gallons)	Well Meter Reading	Total (gallons)	Monthly total (gallons)
3/2/2021	184,545	209	156,332	3.9	120,396	13				
3/3/2021	184,754	113	84,524	2.0	120,409	0				
3/4/2021	184,867	252	188,496	5.0	120,409	0				
3/5/2021	185,119	202	151,096	3.6	120,409	0				
3/6/2021	185,321	174	130,152	3.2	120,409	0				
3/7/2021	185,495	219	163,812	4.0	120,409	0				
3/8/2021	185,714	174	130,152	3.3	120,409	0				
3/9/2021	185,888	206	154,088	3.8	120,409	9				
3/10/2021	186,094	141	105,468	2.7	120,418	0				
3/11/2021	186,235	212	158,574	3.8	120,418	0				
3/12/2021	186,447	194	145,112	3.5	120,418	0				
3/13/2021	186,641	202	151,096	3.7	120,418	0				
3/14/2021	186,843	241	180,268	4.4	120,418	0				
3/15/2021	187,084	182	136,136	3.5	120,418	0				
3/16/2021	187,266	172	128,656	3.1	120,418	12				
3/17/2021	187,438	230	172,040	4.1	120,430	0				
3/18/2021	187,668	207	154,836	3.8	120,430	0				
3/19/2021	187,875	190	142,120	3.4	120,430	0				
3/20/2021	188,065	214	160,072	3.9	120,430	0				
3/22/2021	188,279	319	238,612	5.8	120,430	0				
3/23/2021	188,598	242	181,016	4.3	120,430	12				
3/24/2021	188,840	226	169,048	4.1	120,442	0				
3/25/2021	189,066	391	187,000	4.4	120,442	0				
3/26/2021	189,457	199	126,412	3.2	120,442	0				
3/27/2021	189,656	245	207,760	4.4	120,442	0				
3/28/2021	189,901	563	234,121	5.4	120,442	12				
3/30/2021	190,464	178	133,144	5.7	120,454	0				
3/31/2021	190,642	199	148,852	3.5	120,454	0	4,680,114			
4/1/2021	190,841	201	150,348	3.7	120,454	0				
4/2/2021	191,042	209	156,332	3.7	120,454	0				
4/3/2021	191,251	248	185,504	4.5	120,454	24				
4/4/2021	191,499	192	143,616	3.5	120,478	0				
4/5/2021	191,691	226	169,048	4.2	120,478	0				
4/6/2021	191,917	229	171,292	4.1	120,478	0				
4/7/2021	192,146	220	142,120	4.0	120,478	0				
4/8/2021	192,366	216	161,568	3.7	120,478	0				
4/9/2021	192,582	170	127,160	3.4	120,478	0				
4/10/2021	192,752	261	195,228	4.6	120,478	14				
4/11/2021	193,013	259	193,732	4.9	120,492	0				
4/13/2021	193,272	402	300,696	7.2	120,492	0				
4/14/2021	193,674	132	98,736	2.5	120,492	0				
4/15/2021	193,806	233	741,284	4.2	120,492	11				
4/16/2021	194,039	204	152,592	3.9	120,503	0				
4/18/2021	194,243	151	262,548	6.2	120,503	0				
4/19/2021	194,394	492	218,416	5.4	120,503	0				
4/20/2021	194,886	210	157,080	3.7	120,503	0				
4/21/2021	195,096	172	128,656	3.2	120,503	0				
4/22/2021	195,268	238	178,024	4.1	120,503	19				
4/23/2021	195,506	220	164,560	4.0	120,522	0				

Date	Raw Water Reading	Raw Water Total (100 cubic feet)	Finished Reading	Chlorine Residual	Backwash Reading	Total	Reservoir Monthly Total (gallons)	Well Meter Reading	Total (gallons)	Monthly total (gallons)
4/24/2021	195,726	179	133,892	3.1	120,522	0				
4/25/2021	195,905	232	174,284	4.3	120,522	0				
4/26/2021	196,137	203	151,844	3.5	120,522	0				
4/28/2021	196,340	289	216,172	5.4	120,522	19				
4/29/2021	196,629	240	179,520	4.2	120,541	0				
4/30/2021	196,869	262	195,974	4.7	120,541	0	4,509,547			
5/1/2021	197,131	301	225,148	5.2	120,541	0				
5/2/2021	197,432	163	121,924	3.0	120,541	0				
5/4/2021	197,595	349	261,052	6.0	120,541	0				
5/5/2021	197,944	130	97,240	2.4	120,541	0				
5/6/2021	198,074	196	152,592	3.6	120,541	13				
5/7/2021	198,270	185	138,380	3.3	120,554	0				
5/8/2021	198,455	187	139,876	3.3	120,554	0				
5/9/2021	198,642	208	155,584	3.7	120,554	0				
5/10/2021	198,850	219	163,812	3.7	120,554	0				
5/11/2021	199,069	217	162,316	4.0	120,554	10				
5/12/2021	199,286	121	90,508		120,564	0				
5/13/2021	199,407	307	229,636	5.5	120,564	0				
5/14/2021	199,714	228	170,544	4.0	120,564	0				
5/15/2021	199,942	210	157,080	3.9	120,564	0				
5/16/2021	200,152	263	196,724	4.6	120,564	0				
5/17/2021	200,415	191	142,868	3.4	120,564	0				
5/18/2021	200,606	195	145,860	3.5	120,564	0				
5/19/2021	200,801	222	166,056	5.8	120,564	0				
5/20/2021	201,023	329	246,092	5.8	120,564	0				
5/21/2021	201,352	262	195,976	4.8	120,564	0				
5/22/2021	201,614	180	134,640	3.3	120,564	0				
5/23/2021	201,794	230	172,040	4.2	120,564	0				
5/24/2021	202,024	183	136,884	3.1	120,564	31				
5/25/2021	202,207	123	84,524	2.3	120,595	0				
5/26/2021	202,330	341	86,020	1.6	120,595	0				
5/28/2021	202,671	498	372,504	9.0	120,595	0				
5/29/2021	203,169	299	223,652	5.1	120,595	0				
5/30/2021	203,468	178	133,144	3.3	120,595	0				
5/31/2021	203,646	141	105,468	2.6	120,595	0	4,873,872			
6/1/2021	203,787	198	148,104	3.3	120,595	0				
6/2/2021	203,985	308	230,384	5.4	120,595	6				
6/3/2021	204,293	276	206,448	5.0	120,601	0				
6/4/2021	204,569	255	192,236	4.5	120,601	15				
6/5/2021	204,824	180	133,144	3.2	120,616	0				
6/6/2021	205,004	225	168,300	4.0	120,616	0				
6/7/2021	205,229	193	144,364	3.5	120,616	0				
6/8/2021	205,422	191	142,868	3.3	120,616	0				
6/9/2021	205,613	250	187,000	4.5	120,616	0				
6/10/2021	205,863	241	181,764	4.1	120,616	0				
6/11/2021	206,104	253	187,748	4.5	120,616	0				
6/12/2021	206,357	244	182,512	4.2	120,616	0				
6/13/2021	206,601	227	169,796	4.2	120,616	0				
6/14/2021	206,828	224	167,552	3.9	120,616					

Date	Raw Water Reading	Raw Water Total (100 cubic feet)	Finished Reading	Chlorine Residual	Backwash Reading	Total	Reservoir Monthly Total (gallons)	Well Meter Reading	Total (gallons)	Monthly total (gallons)
6/16/2021	207,052	272	203,456	4.0	120,616	0				
6/17/2021	207,324	319	238,612	4.5	120,616	0				
6/18/2021	207,643	341	255,068	6.3	120,616	24				
6/19/2021	207,984	219	163,812	3.8	120,640	0				
6/20/2021	208,203	228	170,544	4.1	120,640	0				
6/21/2021	208,431	225	168,300	3.5	120,640	0				
6/22/2021	208,656	189	141,372	3.8	120,640	0				
6/23/2021	208,845	294	219,912	5.1	120,640	0				
6/24/2021	209,139	222	166,056	4.0	120,640	16				
6/25/2021	209,361	370	276,760	6.3	120,656	0				
6/26/2021	209,731	264	197,472	4.8	120,656	0				
6/27/2021	209,995	291	217,668	5.0	120,656	0				
6/28/2021	210,286	320	239,360	5.5	120,656	15				
6/29/2021	210,606	404	302,192	7.0	120,671	0				
6/30/2021	211,010	255	190,740	4.6	120,671	0	5,403,526			
7/1/2021	211,265	174	130,152	3.0	120,671	0				
7/2/2021	211,439	225	148,300	4.1	120,671	0				
7/3/2021	211,664	211	157,828	3.7	120,671	0				
7/4/2021	211,875	258	192,984	4.7	120,671	0				
7/5/2021	212,133	228	170,544	4.0	120,671	0				
7/6/2021	212,361	226	169,048	4.1	120,671	0				
7/7/2021	212,587	286	213,928	5.0	120,671	0				
7/8/2021	212,873	188	140,624	3.5	120,671	15				
7/9/2021	213,061	214	160,072	3.7	120,686					
7/11/2021	213,275	442	330,616	8.1	120,686	0				
7/12/2021	213,717	349	261,052	6.0	120,686	0				
7/13/2021	214,066	218	163,064	4.0	120,686	0				
7/14/2021	214,284	239	178,772	4.1	120,686	0				
7/15/2021	214,523	225	168,300	4.1	120,686	12				
7/16/2021	214,748	229	171,292	4.0	120,698	0				
7/17/2021	214,977	205	153,340	3.8	120,698	0				
7/18/2021	215,182	259	193,732	4.5	120,698	0				
7/19/2021	215,441	212	158,576	3.9	120,698	0				
7/20/2021	215,653	353	264,044	6.1	120,698	7				
7/21/2021	216,006	188	140,624	3.5	120,705	0				
7/22/2021	216,194	187	139,876	3.2	120,705	0				
7/23/2021	216,381	222	166,056	4.1	120,705	0				
7/24/2021	216,603	189	141,372	3.3	120,705	0				
7/25/2021	216,792	404	302,192	7.5	120,705	0				
7/26/2021	217,196	313	234,124	5.5	120,705	0				
7/27/2021	217,509	237	177,276	4.2	120,705	0				
7/28/2021	217,746	353	264,044	6.0	120,705	0				
7/29/2021	218,099	240	129,520	3.5	120,705	13				
7/30/2021	218,339	185	138,380	3.2	120,718	0				
7/31/2021	218,524	176	131,648	3.3	120,718	0	5,430,458			
8/1/2021	218,700	240	179,520	4.1	120,718	0				
8/2/2021	218,940	226	169,048	4.1	120,718	0				
8/3/2021	219,166	211	157,828	3.7	120,718	0				
8/4/2021	219,377	205	153,340	3.8	120,718	0				

Date	Raw Water Reading	Raw Water Total (100 cubic feet)	Finished Reading	Chlorine Residual	Backwash Reading	Total	Reservoir Monthly Total (gallons)	Well Meter Reading	Total (gallons)	Monthly total (gallons)
8/5/2021	219,582	236	176,528	4.1	120,718	0				
8/6/2021	219,818	203	151,844	4.2	120,718	8				
8/7/2021	220,021	225	168,300	3.5	120,726	0				
8/8/2021	220,246	228	170,544	4.0	120,726	0				
8/9/2021	220,474	257	192,236	4.7	120,726	0				
8/10/2021	220,731	199	148,852	3.5	120,726	0				
8/11/2021	220,930	261	195,228	4.8	120,726	0				
8/12/2021	221,191	474	354,552	8.2	120,726	12				
8/13/2021	221,665	395	295,460	7.1	120,738	0				
8/15/2021	222,060	242	181,016	4.2	120,738	0				
8/16/2021	222,302	365	273,020	6.7	120,738	0				
8/17/2021	222,667	101	75,548	1.8	120,738	0				
8/18/2021	222,768	247	184,756	4.5	120,738	0				
8/19/2021	223,015	389	290,972	6.6	120,738	0				
8/20/2021	223,404	264	197,472	5.0	120,738	10				
8/22/2021	223,668	223	166,804	3.9	120,748	0				
8/23/2021	223,891	217	162,316	4.0	120,748	0				
8/24/2021	224,108	421	314,908	7.4	120,748	0				
8/25/2021	224,529	177	132,396	3.2	120,748	0				
8/26/2021	224,706	280	209,440	4.9	120,748	0				
8/27/2021	224,986	289	216,172	5.3	120,748	10				
8/30/2021	225,275	402	300,696	7.0	120,758	0				
8/31/2021	225,677	367	274,516	6.7	120,758	0	5,219,494			
9/1/2021	226,044	227	169,796	4.0	120,758	0				
9/2/2021	226,271	269	201,212	5.0	120,758	0				
9/3/2021	226,540	270	201,960	4.7	120,758	14				
9/6/2021	226,810	398	297,704	7.4	120,772	0				
9/7/2021	227,208	362	270,776	6.3	120,772	0				
9/8/2021	227,570	357	267,036	6.5	120,772	0				
9/10/2021	227,927	129	96,492	3.4	120,772	0				
9/12/2021	228,056	292	218,416	5.1	120,772	0				
9/13/2021	228,348	427	319,396	7.7	120,772	0				
9/14/2021	228,775	494	369,512	9.1	120,772	10				
9/15/2021	229,269	305	228,140	5.4	120,782	0				
9/16/2021	229,574	194	145,112	4.4	120,782	0				
9/17/2021	229,768	186	139,128	3.5	120,782	0				
9/20/2021	229,954	394	294,712	7.3	120,782	0				
9/21/2021	230,348	286	213,928	5.0	120,782	215				
9/22/2021	230,634	278	207,944	5.1	120,997	0				
9/23/2021	230,912	279	208,692	5.1	120,997	0				
9/24/2021	231,191	287	214,676	5.0	120,997	0				
9/27/2021	231,478	444	332,112	7.9	120,997	809				
9/28/2021	231,922	337	252,076	6.2	121,806	0				
9/29/2021	232,259	282			121,806	0				
9/30/2021	232,541	273	204,204	5.0	121,806	0	4,860,406			
10/1/2021	232,814	415	310,420	7.4	121,806	0				
10/4/2021	233,229	466	350,812	8.5	121,806	17				
10/5/2021	233,695	186	139,128	3.5	121,823	0				
10/6/2021	233,881	183	136,884	3.5	121,823	0				

Date	Raw Water Reading	Raw Water Total (100 cubic feet)	Finished Reading	Chlorine Residual	Backwash Reading	Total	Reservoir Monthly Total (gallons)	Well Meter Reading	Total (gallons)	Monthly total (gallons)
10/7/2021	234,064	281	210,188	5.4	121,823	0				
10/8/2021	234,345	396	296,208	7.2	121,823	0				
10/10/2021	234,741	198	148,104	3.5	121,823	0				
10/11/2021	234,939	385	287,980	7.1	121,823	0				
10/13/2021	235,324	436	326,128	7.6	121,823	10				
10/14/2021	235,760	223	166,804	4.1	121,833	0				
10/15/2021	235,983	288	215,425	5.0	121,833	0				
10/18/2021	236,271	362	270,776	6.7	121,833	0				
10/19/2021	236,633	203	151,844	3.7	121,833	0				
10/20/2021	236,836	410	306,680	7.6	121,833	0				
10/21/2021	237,246	224	167,552	4.2	121,833	14				
10/22/2021	237,470	252	188,496	4.4	121,847	0				
10/24/2021	237,722	226	169,048	4.2	121,847	0				
10/26/2021	237,948	280	209,440	4.9	121,847	0				
10/27/2021	238,228	405	302,940	7.4	121,847	12				
10/29/2021	238,633	438	327,624	7.6	121,859	0				
10/30/2021	239,071	190	142,120	3.5	121,859	0				
10/31/2021	239,261	250	187,000	4.4	121,859	-1000	4,823,001			
11/1/2021	239,511	182	136,136	3.4	120,859	0				
11/2/2021	239,693	230	172,040	4.0	120,859	0				
11/3/2021	239,923	391	292,468	7.2	120,859	0				
11/4/2021	240,314	216	161,568	3.9	120,859	0				
11/5/2021	240,530	241	180,268	4.4	120,859	13				
11/7/2021	240,771	301	225,148	5.3	120,872	0				
11/8/2021	241072	290	216,920	5.2	120,872	0				
11/10/2021	241,362	346	258,808	6.0	120,872	0				
11/11/2021	241,708	196	146,608	3.6	120,872	0				
11/14/2021	241,904	439	328,372	7.1	120,872	0				
11/15/2021	242,343	298	222,904	6.0	120,872	8				
11/16/2021	242,641	224	167,552	3.6	120,880	0				
11/17/2021	242,865	545	319,396	7.4	120,880	0				
11/20/2021	243,410	152	113,696	2.6	120,880	0				
11/21/2021	243,562	455	340,340	8.4	120,880	0				
11/22/2021	244,017	624	132,396	3.1	120,880	7				
11/23/2021	244,641	-	334,356	8.2	120,887	0				
11/24/2021	244,641	406	303,688	7.0	120,887	0				
11/25/2021	245,047	187	139,867	3.5	120,887	0				
11/26/2021	245,234	186	139,128	3.4	120,887	0				
11/28/2021	245,420	256	191,488	5.7	120,887	0				
11/29/2021	245,676	233	174,284	4.1	120,887	0				
11/30/2021	245,909	222	166,056	3.8	120,887	0	4,786,344			
12/1/2021	246,131	290	216,920	5.1	120,887	12				
12/2/2021	246,421	235	175,780	4.3	120,899	0				
12/3/2021	246,656	298	222,904	5.2	120,899	0				
12/4/2021	246,954	220	164,560	4.0	120,899	0				
12/5/2021	247,174	219	163,812	3.9	120,899	0				
12/6/2021	247,393	175	130,900	3.3	120,899	0				
12/8/2021	247,568	310	231,880	5.5	120,899	15				
12/9/2021	247,878	292	218,416	5.4	120,914	0				

Date	Raw Water Reading	Raw Water Total (100 cubic feet)	Finished Reading	Chlorine Residual	Backwash Reading	Total	Reservoir Monthly Total (gallons)	Well Meter Reading	Total (gallons)	Monthly total (gallons)
12/10/2021	248,170	291	217,668	5.0	120,914	0				
12/13/2021	248,461	350	261,800	6.5	120,914	0				
12/14/2021	248,811	455	340,340	8.0	120,914	0				
12/15/2021	249,266	392	293,216	7.2	120,914	14				
12/16/2021	249,658	284	212,432	4.7	120,928	0				
12/20/2021	249,942	464	347,072	8.1	120,928	0				
12/21/2021	250,406	459	343,332	8.3	120,928	0				
12/22/2021	250,865	321	240,108	7.8	120,928	0				
12/24/2021	251,186	303	226,644	5.5	120,928	0				
12/25/2021	251,489	257	192,236	4.6	120,928	11				
12/26/2021	251,746	435	325,380	8.0	120,939	0				
12/27/2021	252,181	426	318,648	7.5	120,939	0				
12/28/2021	252,607	404	302,192	7.5	120,939	0				
12/29/2021	253,011	341	255,068	6.2	120,939	8				
12/30/2021	253,352	280	209,440	5.0	120,947	0				
12/31/2021	253,632	318	237,864	5.5	120,947	0	5,611,498			
1/1/2022	253,950	340	254,320	6.1	120,947	0				
1/2/2022	254,290	454	339,592	8.0	120,947	0				
1/3/2022	254,744	369	276,012	7.3	120,947	8				
1/4/2022	255,113	538	402,424	8.8	120,955	0				
1/5/2022	255,651	542	365,024	9.8	120,955	0				
1/6/2022	256,193	383	286,484	6.6	120,955	0				
1/7/2022	256,576	209	156,332	3.8	120,955	0				
1/8/2022	256,785	288	215,425	5.0	120,955	39				
1/9/2022	257,073	474	354,552	8.5	120,994	0				
1/10/2022	257,547	308	230,384	5.3	120,994	0				
1/11/2022	257,855	327	244,596	5.9	120,994	0				
1/12/2022	258,182	272	203,456	4.7	120,994	0				
1/13/2022	258,454	177	132,396	3.3	120,994	15				
1/14/2022	258,631	308	230,384	5.3	121,009	0				
1/16/2022	258,939	364	272,272	6.6	121,009	0				
1/17/2022	259,303	200	149,600	3.6	121,009	0				
1/18/2022	259,503	285	213,180	5.4	121,009	0				
1/19/2022	259,788	469	346,324	8.0	121,009	6				
1/20/2022	260,257	300	228,888	5.5	121,015	0				
1/21/2022	260,557	276	206,448	5.0	121,015	0				
1/22/2022	260,833	291	217,668	5.5	121,015	0				
1/23/2022	261,124	242	181,016	4.4	121,015	0				
1/24/2022	261,366	283	211,684	5.4	121,015	0				
1/26/2022	261,649	326	243,848	5.9	121,015	0				
1/27/2022	261,975	262	195,976	4.9	121,015	16				
1/28/2022	262,237	388	290,224	7.0	121,031	0				
1/29/2022	262,625	268	200,464	5.0	121,031	0				
1/30/2022	262,893	255	190,740	4.5	121,031	0	6,690,258			
2/1/2022	263,148	354	264,792	6.6	121,031	0				
2/2/2022	263,502	326	184,008	5.9	121,031	11				
2/4/2022	263,828	314	234,872	5.8	121,042	0				
2/6/2022	264,142	235	175,780	4.3	121,042	0				
2/7/2022	264,377	409	305,932	7.7	121,042	0				

Date	Raw Water Reading	Raw Water Total (100 cubic feet)	Finished Reading	Chlorine Residual	Backwash Reading	Total	Reservoir Monthly Total (gallons)	Well Meter Reading	Total (gallons)	Monthly total (gallons)
2/8/2022	264,786	226	169,048	4.0	121,042	0				
2/9/2022	265,012	425	317,900	7.9	121,042	9				
2/10/2022	265,437	338	252,824	5.9	121,051	0				
2/11/2022	265,775	224	167,552	4.1	121,051	0				
2/12/2022	265,999	280	212,240	5.0	121,051	0				
2/13/2022	266,279	227	169,796	4.1	121,051	0				
2/15/2022	266,506	404	302,192	7.1	121,051	0				
2/16/2022	266,910	280	210,188	5.2	121,051	0				
2/17/2022	267,190	207	154,836	3.8	121,051	0				
2/18/2022	267,397	313	234,124	5.5	121,051	14				
2/19/2022	267,710	325	243,100	6.0	121,065	0				
2/20/2022	268,035	183	136,884	3.3	121,065	0				
2/23/2022	268,218	291	217,668	5.5	121,065	0				
2/24/2022	268,509	392	293,216	7.0	121,065	12				
2/25/2022	268,901	454	339,592	8.4	121,077	0				
2/26/2022	269,355	338	252,824	6.0	121,077	0				
2/27/2022	269,693	165	123,420	3.0	121,077	0				
2/28/2022	269,858	237	177,276	4.5	121,077	0	5,019,751			
3/2/2022	270,095	410	306,680	7.3	121,077	0				
3/3/2022	270,505	174	130,152	3.1	121,077	0				
3/4/2022	270,679	463	346,324	8.0	121,077	15				
3/5/2022	271,142	353	264,044	6.5	121,092	0				
3/7/2022	271,495	381	284,988	6.8	121,092	0				
3/9/2022	271,876	369	276,012	6.9	121,092	0				
3/10/2022	272,245	352	263,296	6.5	121,092	0				
3/11/2022	272,597	431	322,388	8.0	121,092	14				
3/12/2022	273,028	246	184,008	4.5	121,106	0				
3/14/2022	273,274	264	197,472	5.0	121,106	0				
3/15/2022	273,538	173	129,404	3.1	121,106	0				
3/16/2022	273,711	482	360,536	9.0	121,106	16				
3/17/2022	274,193	391	292,468	7.3	121,122	0				
3/18/2022	274,584	513	383,724	9.2	121,122	0				
3/19/2022	275,097	406	303,688	7.5	121,122	0				
3/20/2022	275,503	427	319,396	8.0	121,122	8				
3/21/2022	275,930	257	192,236	4.8	121,130	0				
3/23/2022	276,187	407	304,436	7.6	121,130	0				
3/24/2022	276,594	355	265,540	6.5	121,130	0				
3/27/2022	276,949	446	333,608	8.4	121,130	0				
3/28/2022	277,395	408	305,184	7.5	121,130	0				
3/29/2022	277,803	241	180,268	4.4	121,130	11				
3/30/2022	278,044	428	320,144	7.6	121,141	0				
3/31/2022	278,472	198	148,104	3.5	121,141	0	6,266,834			
4/1/2022	278,670	217	162,316	4.1	121,141	0				
4/3/2022	278,887	296	221,408	5.5	121,141	0				
4/4/2022	279,183	227	169,796	4.0	121,141	11				
4/5/2022	279,410	201	150,348	3.8	121,152	0				
4/6/2022	279,611	294	219,912	5.4	121,152	0				
4/7/2022	279,905	310	231,880	6.0	121,152	0				
4/8/2022	280,215	242	181,016	4.4	121,152	0				

Date	Raw Water Reading	Raw Water Total (100 cubic feet)	Finished Reading	Chlorine Residual	Backwash Reading	Total	Reservoir Monthly Total (gallons)	Well Meter Reading	Total (gallons)	Monthly total (gallons)
4/10/2022	280,457	293	219,164	4.7	121,152	0				
4/11/2022	280,750	206	154,088	4.4	121,152	0				
4/12/2022	280,956	214	160,072	4.5	121,152	11				
4/13/2022	281,170	326	243,848	6.0	121,163	0				
4/14/2022	281,496	300	224,400	5.5	121,163	0				
4/15/2022	281,796	248	185,504	4.5	121,163	0				
4/18/2022	282,044	499	373,252	9.7	121,163	0				
4/19/2022	282,543	289	216,172	5.4	121,163	0				
4/21/2022	282,832	362	270,776	7.0	121,163	13				
4/22/2022	283,194	516	385,968	9.5	121,176	0				
4/23/2022	283,710	499	373,252	9.5	121,176	0				
4/24/2022	284,209	521	389,708	9.4	121,176	11				
4/25/2022	284,730	404	302,192	7.7	121,187	0				
4/26/2022	285,134	414	309,672	7.5	121,187	0				
4/27/2022	285,548	519	388,212	9.9	121,187	0				
4/28/2022	286,067	493	368,764	8.7	121,187	13				
4/29/2022	286,560	439	328,372	8.5	121,200	0	5,902,509			
5/1/2022	286,999	443	331,364	8.1	121,200	0				
5/2/2022	287,442	256	191,488	5.0	121,200	0				
5/3/2022	287,698	231	172,788	4.2	121,200	8				
5/4/2022	287,929	422	315,656	7.0	121,208	0				
5/6/2022	288,351	332	248,336	6.1	121,208	0				
5/7/2022	288,683	513	283,724	9.3	121,208	0				
5/8/2022	289,196	487	364,276	9.3	121,208	11				
5/9/2022	289,683	359	268,532	6.9	121,219	0				
5/10/2022	290,042	282	210,936	5.1	121,219	0				
5/11/2022	290,324	382	285,736	7.3	121,219	0				
5/12/2022	290,706	386	288,728	7.1	121,219	0				
5/13/2022	291,092	360	269,280	6.9	121,219	21				
5/15/2022	291,452	322	240,856	5.9	121,240	0				
5/16/2022	291,774	316	236,368	6.1	121,240	0				
5/17/2022	292,090	222	166,056	4.1	121,240	0				
5/19/2022	292,312	185	138,380	3.5	121,240	0				
5/20/2022	292,497	432	323,136	9.1	121,240	12				
5/22/2022	292,929	522	390,456	9.0	121,252	0				
5/23/2022	293,451	326	243,848	6.0	121,252	0				
5/24/2022	293,777	233	174,284	4.5	121,252	0				
5/25/2022	294,010	359	268,532	6.5	121,252	0				
5/26/2022	294,369	399	298,452	7.3	121,252	15				
5/27/2022	294,768	283	211,684	5.4	121,267	0				
5/29/2022	295,051	340	254,320	6.3	121,267	0				
5/30/2022	295,391	246	184,008	4.7	121,267	0				
5/31/2022	295,637	267	199,716	4.7	121,267	0	6,462,088			
6/1/2022	295,904	310	231,880	6.0	121,267	0				
6/2/2022	296,214	371	277,508	6.7	121,267	14				
6/3/2022	296,585	273	204,204	5.2	121,281	0				
6/5/2022	296,858	226	169,048	4.1	121,281	0				
6/6/2022	297,084	259	193,732	4.0	121,281	0				
6/8/2022	297343	252	188,496	4.6	121,281	0				

Date	Raw Water Reading	Raw Water Total (100 cubic feet)	Finished Reading	Chlorine Residual	Backwash Reading	Total	Reservoir Monthly Total (gallons)	Well Meter Reading	Total (gallons)	Monthly total (gallons)
6/9/2022	297,595	287	214,676	5.5	121,281	12				
6/10/2022	297,882	465	347,820	8.5	121,293	0				
6/12/2022	298,347	247	184,756	4.7	121,293	0				
6/13/2022	298,594	237	177,276	4.3	121,293	0				
6/14/2022	298,831	217	162,316	4.1	121,293	0				
6/15/2022	299,048	335	250,580	6.4	121,293	0				
6/16/2022	299,383	295	220,660	5.4	121,293	10				
6/17/2022	299,678	290	216,920	5.5	121,303	0				
6/19/2022	299,968	315	235,620	5.8	121,303	0				
6/21/2022	300,283	404	302,192	7.6	121,303	0				
6/23/2022	300,687	515	385,220	9.4	121,303	0				
6/24/2022	301,202	399	298,452	7.5	121,303	16				
6/25/2022	301,601	458	342,584	8.0	121,319	0				
6/26/2022	302,059	390	291,720	7.6	121,319	0				
6/27/2022	302,449	501	374,748	9.0	121,319	0				
6/28/2022	302,950	232	173,536	4.3	121,319	14				
6/29/2022	303,182	301	225,148		121,333	0				
6/30/2022	303,483	193	144,364	3.8	121,333	0	5,669,850			
7/1/2022	303,676	192	143,616	3.5	121,333	-				
7/5/2022	303,868	287	214,676	5.5	121,333	0				
7/6/2022	304,155	190	142,120	3.5	121,333	0				
7/8/2022	304,345	330	246,840	6.3	121,333	0				
7/11/2022	304,675	295	220,660	5.5	121,333	0				
7/12/2022	304,970	273	204,204	5.3	121,333	11				
7/13/2022	305,243	288	215,424	5.5	121,344	0				
7/14/2022	305,531	224	167,552	4.3	121,344	0				
7/15/2022	305,755	261	195,228	5.0	121,344	0				
7/18/2022	306,016	289	216,172	5.6	121,344	0				
7/19/2022	306,305	372	278,256	7.0	121,344	14				
7/20/2022	306,677	475	355,300	9.0	121,358	0				
7/21/2022	307,152	280	209,440	5.3	121,358	0				
7/22/2022	307,432	278	207,944	5.3	121,358	0				
7/25/2022	307,710	343	256,564	6.5	121,358	0				
7/26/2022	308,053	169	126,412	3.0	121,358	0				
7/28/2022	308,222	375	280,500	7.1	121,358	11				
7/29/2022	308,597	293	219,164	5.5	121,369	0	3,681,400			
8/1/2022	308,890	222	166,056	4.2	121,369	0				
8/2/2022	309,112	169	126,412	3.2	121,369	0				
8/3/2022	309,281	385	287,980	7.3	121,369	0				
8/4/2022	309,666	187	139,876	3.5	121,369	0				
8/5/2022	309,853	278	207,944	5.3	121,369	13				
8/8/2022	310,131	287	214,676	5.5	121,382	0				
8/9/2022	310,418	232	173,536	4.4	121,382	0				
8/10/2022	310,650	326	243,848	6.2	121,382	0				
8/11/2022	310,976	311	232,628	5.9	121,382	0				
8/12/2022	311,287	170	127,160	3.3	121,382	0				
8/14/2022	311,457	355	265,540	6.2	121,382	15				
8/17/2022	311,812	386	288,728	7.2	121,397	0				
8/18/2022	312,198	385	287,980	7.1	121,397	0				

Date	Raw Water Reading	Raw Water Total (100 cubic feet)	Finished Reading	Chlorine Residual	Backwash Reading	Total	Reservoir Monthly Total (gallons)	Well Meter Reading	Total (gallons)	Monthly total (gallons)
8/19/2022	312,583	224	167,552	4.5	121,397	0				
8/22/2022	312,807	283	211,684	5.0	121,397	0				
8/23/2022	313,090	197	147,356	3.8	121,397	14				
8/24/2022	313,287	409	305,932	7.5	121,411	0				
8/25/2022	313,696	331	247,588	6.3	121,411	0				
8/26/2022	314,027	401	299,948	7.5	121,411	0				
8/28/2022	314,428	516	385,968	9.3	121,411	0				
8/30/2022	314,944	390	291,720	7.4	121,411	12				
8/31/2022	315,334	498	372,504	8.9	121,423	0	4,820,756			
9/1/2022	315,832	241	180,268	4.5	121,423	0				
9/3/2022	316,073	367	274,516	6.6	121,423	0				
9/4/2022	316,440	276	206,448	5.4	121,423	12				
9/7/2022	316,716	313	234,124	6.1	121,435	0				
9/8/2022	317,029	411	307,428	7.8	121,435	0				
9/9/2022	317,440	190	142,120	3.6	121,435	0				
9/10/2022	317,630	221	165,308	4.2	121,435	0				
9/14/2022	317,851	368	275,264	7.0	121,435	0				
9/15/2022	318,219	164	122,672	3.1	121,435	11				
9/16/2022	318,383	233	174,284	4.7	121,446	0				
9/17/2022	318,616	177	132,396	3.3	121,446	0				
9/22/2022	318,793	420	314,160	7.5	121,446	0				
9/23/2022	319,213	291	217,668	5.5	121,446	0				
9/24/2022	319,504	220	164,560	4.0	121,446	0				
9/28/2022	319,724	239	178,772	4.4	121,446	0				
9/29/2022	319,963	227	169,796	4.4	121,446	13				
9/30/2022	320,190	321	240,108	7.0	121,459	0	3,260,220			
10/3/2022	320,511	379	283,492	5.5	121,459	0				
10/6/2022	320,890	278	207,944	5.1	121,459	0				
10/7/2022	321,168	312	233,376	6.0	121,459	0				
10/8/2022	321,480	65	48,620	1.1	121,459	0				
10/10/2022	321,545	334	249,832	6.0	121,459	30				
10/12/2022	321,879	230	172,040	4.3	121,489	0				
10/13/2022	322,109	181	135,388	3.3	121,489	0				
10/14/2022	322,290	125			121,489	0				
10/18/2022	322,415	270			121,489	0				
10/19/2022	322,685	373	279,004	6.9	121,489	0				
10/20/2022	323,058	226	169,048	4.4	121,489	0				
10/21/2022	323,284	381	284,988	7.1	121,489	0				
10/22/2022	323,665	291	217,668	2.8	121,489	10				
10/26/2022	323,956	292	218,416	5.5	121,499	0				
10/28/2022	324,248	312	233,376	5.7	121,499	0	2,795,650			
11/2/2022	324560	292	218,416	5.6	121499	0				
11/3/2022	324852	313	204,952	5.7	121499	0				
11/7/2022	325165	212	158,576	4.2	121499	0				
11/9/2022	325377	302	225,896	5.6	121499	0				
11/10/2022	325679	359	268,532	6.5	121499	7				
11/12/2022	326038	276	206,448	5.1	121506					
11/15/2022	326314						1,312,167			

Date	Raw Water Reading	Raw Water Total (100 cubic feet)	Finished Reading	Chlorine Residual	Backwash Reading	Total	Reservoir Monthly Total (gallons)	Well Meter Reading	Total (gallons)	Monthly total (gallons)
Date								Well Meter Reading	Total (gallons)	Monthly total (gallons)
11/19/2022								5,374,287	177,958	
11/20/2022								5,552,245	155,940	
11/21/2022								5,708,185	96,559	
11/22/2022								5,804,744	82,406	
11/23/2022								5,887,150	150,792	
11/25/2022								6,037,942	158,628	
11/26/2022								6,196,570	127,187	
11/27/2022								6,323,757	268,584	
11/29/2022								6,592,341	108,375	
11/30/2022								6,700,716	116,623	1,326,429
12/1/2022								6,817,339	86,159	
12/2/2022								6,903,498	105,966	
12/3/2022								7,009,464	92,511	
12/4/2022								7,101,975	111,485	
12/5/2022								7,213,460	113,448	
12/6/2022								7,326,908	133,448	
12/7/2022								7,460,356	98,781	
12/8/2022								7,559,137	89,535	
12/9/2022								7,648,672	102,852	
12/10/2022								7,751,524	95,869	
12/11/2022								7,847,393	86,737	
12/12/2022								7,934,130	95,550	
12/13/2022								8,029,680	153,549	
12/14/2022								8,183,229	-	
12/15/2022								8,183,229	29,221	
12/16/2022								8,212,450	50,375	
12/17/2022								8,262,825	71,940	
12/18/2022								8,334,765	49,662	
12/20/2022								8,384,427	157,608	
12/21/2022								8,542,035	148,208	
12/22/2022								8,690,243	286,562	
12/24/2022								8,976,805	140,220	
12/25/2022								9,117,025	155,885	
12/26/2022								9,272,910	220,780	
12/27/2022								9,493,690	158,622	
12/28/2022								9,652,312	140,981	
12/29/2022								9,793,293	160,486	
12/30/2022								9,953,779	-	
12/31/2022								9,953,779		3,136,440

Mission Creek Corrections Center for Women

Date	Well Meter Readings (gal)
12/31/2020	
1/31/2021	317,600
2/28/2021	417,350
3/31/2021	494,800
4/30/2021	419,800
5/31/2021	434,700
6/30/2021	434,700
7/31/2021	548,100
8/31/2021	454,800
9/30/2021	454,800
10/31/2021	-
11/30/2021	429,000
12/31/2021	544,300
1/31/2022	342,800
2/28/2022	465,600
3/31/2022	493,500
4/30/2022	294,200
5/31/2022	521,000
6/30/2022	348,200
7/31/2022	364,400
8/31/2022	397,200
9/30/2022	321,000
10/31/2022	267,600
11/30/2022	372,200
12/31/2022	429,000

Olympic Corrections Center

Date	Admin.	Total	Clearwater	Total	DNR Admin	Total	DNR Shop	Total	DNR Train.	Total	EFV	Total	GYM
12/26/2018	45450		2439000		7580		72190		200940		19420		53280
1/2/2019	45580	972	2448630	72032	7583	22	73090	6732	200975	262	19670	1870	53600
1/9/2019	45760	1346	2458470	73603	7616	247	74020	6956	200993	135	19750	598	53910
1/16/2019	45960	1496	2468180	72631	7656	299	74970	7106	201205	1586	19860	823	54280
1/23/2019	46120	1197	2477760	71658	7690	254	75950	7330	201392	1399	19970	823	54580
1/30/2019	46300	1346	2486170	62907	7731	307	76880	6956	201522	972	20070	748	54860
2/7/2019	46490	1421	2495010	66123	7764	247	77820	7031	201662	1047	20180	823	55120
2/13/2019	46680	1421	2504070	67769	7800	269	78800	7330	201757	711	20360	1346	55370
2/20/2019	46840	1197	2514140	75324	7827	202	79790	7405	201955	1481	20570	1571	55640
2/27/2019	47070	1720	2524640	78540	7868	307	80780	7405	202095	1047	20800	1720	56240
3/6/2019	47270	1496	2534730	75473	7896	209	81760	7330	202450	2655	21010	1571	56660
3/13/2019	47470	1496	2545280	78914	7912	120	82720	7181	202711	1952	21240	1720	56960
3/20/2019	47650	1346	2555460	76146	7946	254	83720	7480	202923	1586	21550	2319	57270
3/27/2019	47810	1197	2565550	75473	7978	239	84670	7106	203031	808	21730	1346	57600
4/3/2019	48000	1421	2575620	75324	8022	329	85550	6582	203146	860	21950	1646	57880
4/10/2019	48210	1571	2585730	75623	8091	516	86400	6358	203256	823	22190	1795	58210
4/24/2019	48620	3067	2606170	152891	8130	292	88130	12940	204029	5782	22720	3964	58870
5/1/2019	48840	1646	2615830	72257	8162	239	88940	6059	204278	1863	22990	2020	59150
5/8/2019	49040	1496	2626660	81008	8210	359	89740	5984	204631	2640	23220	1720	59420
5/15/2019	49250	1571	2642050	115117	8260	374	90490	5610	205021	2917	23410	1421	59670
5/22/2019	49430	1346	2651510	70761	8300	299	91260	5760	205453	3231	23620	1571	59950
5/29/2019	49630	1496	2662790	84374	8328	209	92110	6358	205712	1937	23750	972	60210
6/5/2019	49850	1646	2676630	103523	8355	202	92980	6508	206090	2827	24000	1870	60390
6/12/2019	50050	1496	2686740	75623	8389	254	93880	6732	206458	2753	24240	1795	60610
6/19/2019	50280	1720	2697810	82804	8424	262	94810	6956	206863	3029	24400	1197	60830
6/26/2019	50460	1346	2707160	69938	8437	97	95730	6882	206978	860	24500	748	61000
7/3/2019	50650	1421	2715580	62982	8454	127	96770	7779	207329	2625	24610	823	61200
7/10/2019	50800	1122	2725640	75249	8474	150	97930	8677	207649	2394	24810	1496	61440
7/17/2019	50980	1346	2735680	75099	8505	232	99240	9799	208086	3269	24910	748	61660
7/24/2019	51220	1795	2744870	68741	8544	292	100670	10696	208927	6291	25170	1945	61860
7/31/2019	51410	1421	2754490	71958	8579	262	103540	21468	209769	6298	25520	2618	62080
8/7/2019	51590	1346	2763990	71060	8610	232	103780	1795	210522	5632	25750	1720	62310
8/14/2019	51800	1571	2772300	62159	8649	292	103790	75	211367	6321	25900	1122	62510
8/21/2019	51960	1197	2780810	63655	8684	262	103800	75	211970	4510	26250	2618	62690
8/28/2019	52160	1496	2788680	58868	8716	239	103800	0	212666	5206	26510	1945	62920

Date	Admin.	Total	Clearwater	Total	DNR Admin	Total	DNR Shop	Total	DNR Train.	Total	EFV	Total	GYM
9/4/2019	52310	1122	2796390	57671	8737	157	103810	75	213125	3433	26700	1421	63160
9/11/2019	52500	1421	2804830	63131	8782	337	103820	75	213755	4712	26830	972	63370
9/18/2019	52710	1571	2812970	60887	8819	277	103820	0	214474	5378	26920	673	63600
9/25/2019	52910	1496	2820440	55876	8850	232	103830	75	215327	6380	27140	1646	63800
10/2/2019	53100	1421	2828100	57297	8875	187	103840	75	216229	6747	27280	1047	64010
10/9/2019	53300	1496	2835570	55876	8949	554	103850	75	217712	11093	27410	972	64200
10/16/2019	53490	1421	2842740	53632	8979	224	103850	0	218945	9223	27530	898	64400
10/23/2019	53660	1272	2849990	54230	9000	157	103870	150	220417	11011	27670	1047	64580
10/30/2019	53850	1421	2857060	52884	9035	262	103880	75	221558	8535	27830	1197	64780
11/6/2019	54030	1346	2864860	58344	9072	277	103890	75	222619	7936	28010	1346	65000
11/20/2019	54380	2618	2880990	120652	9123	381	103910	150	224867	16815	28280	2020	65440
11/27/2019	54600	1646	2889760	65600	9154	232	103930	150	225714	6336	28470	1421	65680
12/4/2019	54760	1197	2899470	72631	9170	120	103940	75	226473	5677	28710	1795	65940
12/11/2019	54960	1496	2908390	66722	9214	329	103950	75	228076	11990	28850	1047	66170
12/18/2019	55130	1272	2917820	70536	9249	262	103950	0	229320	9305	28960	823	66380
12/24/2019	55270	1047	2926200	62682	9268	142	103950	0	230142	6149	29080	898	66630
12/31/2019	55410	1047	2936780	79138	9278	75	103950	0	231126	7360	29140	449	66880
1/8/2020	55610	1496	2946750	74576	9321	322	103970	150	232093	7233	29310	1272	67220
1/15/2020	55800	1421	2955720	67096	9352	232	103980	75	233200	8280	29360	374	67430
1/22/2020	55990	1421	2966250	78764	9380	209	103980	0	235278	15543	29450	673	67690
1/29/2020	56210	1646	2975750	71060	9417	277	103990	75	236626	10083	29630	1346	67960
2/5/2020	56450	1795	2985370	71958	9464	352	104020	224	238084	10906	29750	898	68230
2/12/2020	56680	1720	2994740	70088	9502	284	104040	150	239114	7704	29920	1272	68480
2/19/2020	56860	1346	3004430	72481	9545	322	104050	75	239583	3508	30040	898	68730
2/26/2020	57070	1571	3014590	75997	9574	217	104070	150	240096	3837	30200	1197	69030
3/4/2020	57510	3291	3024960	77568	9613	292	104090	150	240408	2334	30420	1646	69280
3/11/2020	57730	1646	3035310	77418	9642	217	104110	150	240579	1279	30590	1272	69540
3/18/2020	57960	1720	3044940	72032	9693	381	104110	0	241157	4323	30620	224	69740
3/25/2020	58170	1571	3054200	69265	9735	314	104140	224	241830	5034	30640	150	69870
4/8/2020	58550	2842	3073250	142494	9822	651	104150	75	243775	14549	30670	224	70120
4/15/2020	58770	1646	3082710	70761	9853	232	104150	0	244206	3224	30810	1047	70220
4/22/2020	58990	1646	3091880	68592	9897	329	104150	0	244418	1586	31330	3890	70330
4/29/2020	59190	1496	3099700	58494	9940	322	104150	0	244585	1249	31500	1272	70440
5/6/2020	59390	1496	3107540	58643	9975	262	104150	0	244741	1167	31510	75	70530
5/13/2020	59600	1571	3115270	57820	9993	135	104160	75	244920	1339	31520	75	70610

Date	Admin.	Total	Clearwater	Total	DNR Admin	Total	DNR Shop	Total	DNR Train.	Total	EFV	Total	GYM
5/20/2020	59810	1571	3124460	68741	10018	187	104160	0	245092	1287	31530	75	70680
5/27/2020	59990	1346	3132790	62308	10071	396	104160	0	245200	808	31540	75	70770
6/3/2020	60160	1272	3141020	61560	10238	1249	104180	150	245379	1339	31550	75	70850
6/10/2020	60360	1496	3149130	60663	10412	1302	104180	0	245578	1489	31560	75	70940
6/17/2020	60560	1496	3156520	55277	10440	209	104190	75	245701	920	31570	75	71050
6/24/2020	60770	1571	3164740	61486	10465	187	104190	0	245962	1952	31570	0	71150
7/1/2020	60930	1197	3173040	62084	10481	120	104190	0	246190	1705	31570	0	71210
7/8/2020	61080	1122	3181000	59541	10492	82	104190	0	246311	905	31580	75	71290
7/15/2020	61270	1421	3189830	66048	10516	180	104190	0	246600	2162	31590	75	71360
7/22/2020	61420	1122	3197490	57297	10534	135	104200	75	246766	1242	31590	0	71420
7/29/2020	61680	1945	3204810	54754	10555	157	104200	0	246972	1541	31590	0	71480
8/5/2020	61870	1421	3214430	71958	10583	209	104220	150	247403	3224	31600	75	71540
8/12/2020	62050	1346	3221280	51238	10600	127	104230	75	247662	1937	31600	0	71630
8/19/2020	62240	1421	3228800	56250	10613	97	104240	75	248820	8662	31600	0	71680
8/26/2020	62420	1346	3236510	57671	10625	90	104250	75	250581	13172	31600	0	71730
9/2/2020	62600	1346	3245510	67320	10675	374	104250	0	252197	12088	31600	0	71790
9/9/2020	62800	1496	3254770	69265	10755	598	104260	75	253816	12110	31610	75	71840
9/16/2020	63050	1870	3262390	56998	10772	127	104260	0	255217	10479	31610	0	71900
9/23/2020	63240	1421	3278220	118408	10818	344	104270	75	256964	13068	31610	0	71960
9/30/2020	63420	1346	3286780	64029	10837	142	104280	75	257699	5498	31610	0	72040
10/7/2020	63640	1646	3297460	79886	10886	367	104280	0	258141	3306	31620	75	72080
10/14/2020	63790	1122	3305620	61037	10929	322	104290	75	258696	4151	31620	0	72160
10/21/2020	63940	1122	3314210	64253	10948	142	104300	75	259465	5752	31620	0	72210
10/28/2020	64090	1122	3323810	71808	10985	277	104320	150	260158	5184	31650	224	72270
11/4/2020	64240	1122	3331790	59690	11072	651	104340	150	260679	3897	31680	224	72340
11/10/2020	64360	898	3339110	54754	11105	247	104350	75	260783	778	31690	75	72410
11/18/2020	64500	1047	3348210	68068	11206	755	104370	150	260908	935	31690	0	72480
11/25/2020	64660	1197	3355950	57895	11221	112	104370	0	261037	965	31690	0	72580
12/2/2020	64790	972	3364480	63804	11231	75	104370	0	261119	613	31700	75	72670
12/9/2020	64960	1272	3372560	60438	11246	112	104370	0	261376	1922	31710	75	72760
12/16/2020	65120	1197	3380350	58269	11265	142	104380	75	261583	1548	31730	150	72840
12/23/2020	65290	1272	3391770	85422	11282	127	104400	150	261806	1668	31740	75	72920
12/30/2020	65430	1047	3412690	156482	11294	90	104420	150	261930	928	31740	0	73010
1/6/2021	65630	1496	3422320	72032	11307	97	104420	0	262047	875	31750	75	73110
1/13/2021	65840	1571	3440880	138829	11324	127	104420	0	262080	247	31760	75	73200

Date	Admin.	Total	Clearwater	Total	DNR Admin	Total	DNR Shop	Total	DNR Train.	Total	EFV	Total	GYM
1/20/2021	65990	1122	3450510	72032	11339	112	104430	75	262096	120	31790	224	73260
1/27/2021	66180	1421	3467610	127908	11360	157	104430	0	262146	374	31810	150	73350
2/3/2021	66340	1197	3477570	74501	11380	150	104430	0	262174	209	31810	0	73430
2/10/2021	66530	1421	3490030	93201	11397	127	104440	75	262213	292	31820	75	73540
2/17/2021	66690	1197	3499830	73304	11410	97	104450	75	262262	367	31830	75	73620
2/24/2021	66910	1646	3507820	59765	11475	486	104450	0	262339	576	31860	224	73760
3/3/2021	67090	1346	3516090	61860	11492	127	104460	75	262419	598	31880	150	73900
3/10/2021	67250	1197	3529140	97614	11508	120	104470	75	262505	643	31900	150	74020
3/17/2021	67390	1047	3537960	65974	11546	284	104470	0	262585	598	31930	224	74130
3/24/2021	67520	972	3547980	74950	11583	277	104470	0	262648	471	31950	150	74250
3/31/2021	67690	1272	3555540	56549	11605	165	104480	75	262692	329	31960	75	74360
4/7/2021	67860	1272	3564640	68068	11622	127	104480	0	262846	1152	31970	75	74490
4/14/2021	68000	1047	3574840	76296	11638	120	104480	0	262959	845	31980	75	74620
4/21/2021	68190	1421	3581320	48470	11692	404	104500	150	263175	1616	31990	75	74750
4/28/2021	68350	1197	3588260	51911	11752	449	104520	150	263307	987	31990	0	74880
5/5/2021	68510	1197	3596720	63281	11908	1167	104520	0	263466	1189	32000	75	74990
5/12/2021	68680	1272	3604930	61411	11950	314	104540	150	263652	1391	32000	0	75160
5/19/2021	68850	1272	3611820	51537	11963	97	104540	0	263816	1227	32020	150	75340
5/26/2021	69020	1272	3618630	50939	11978	112	104540	0	263928	838	32030	75	75490
6/2/2021	69170	1122	3625850	54006	11988	75	104550	75	264038	823	32050	150	75670
6/9/2021	69350	1346	3634060	61411	12005	127	104560	75	264241	1518	32060	75	75920
6/16/2021	69560	1571	3641160	53108	12020	112	104560	0	264400	1189	32060	0	76050
6/23/2021	69780	1646	3648240	52958	12028	60	104560	0	264475	561	32070	75	76200
6/30/2021	70000	1646	3657680	70611	12047	142	104560	0	264642	1249	32070	0	76370
7/7/2021	70170	1272	3664330	49742	12058	82	104570	75	264810	1257	32070	0	76540
7/14/2021	70390	1646	3671550	54006	12070	90	104570	0	264905	711	32070	0	76710
7/21/2021	70560	1272	3682400	81158	12584	3845	104580	75	265042	1025	32080	75	76890
7/28/2021	70790	1720	3688920	48770	12687	770	104580	0	265152	823	32080	0	77070
8/4/2021	70960	1272	3696740	58494	12705	135	104580	0	265239	651	32080	0	77200
8/11/2021	71120	1197	3700490	28050	12773	509	104580	0	265316	576	32080	0	77340
8/18/2021	71280	1197	3700640	1122	12818	337	104580	0	265574	1930	32090	75	77520
8/25/2021	71430	1122	3700660	150	12840	165	104580	0	265756	1361	32090	0	77680
9/1/2021	71540	823	3700670	75	12858	135	104580	0	265857	755	32090	0	77840
9/8/2021	71670	972	3700690	150	12865	52	104580	0	265936	591	32090	0	78030
9/15/2021	71810	1047	3700750	449	12888	172	104580	0	265997	456	32170	598	78210

Date	Admin.	Total	Clearwater	Total	DNR Admin	Total	DNR Shop	Total	DNR Train.	Total	EFV	Total	GYM
9/22/2021	71950	1047	3700780	224	12962	554	104580	0	266129	987	32270	748	78380
9/29/2021	72090	1047	3700800	150	13039	576	104590	75	266335	1541	32310	299	78680
10/6/2021	72220	972	3700830	224	13059	150	104600	75	266497	1212	32310	0	78810
10/13/2021	72350	972	3700880	374	13148	666	104610	75	266558	456	32370	449	79020
10/20/2021	72490	1047	3700930	374	13365	1623	104630	150	266596	284	32410	299	79240
10/27/2021	72630	1047	3700990	449	13378	97	104640	75	266639	322	32420	75	79500
11/3/2021	72790	1197	3701050	449	13395	127	104640	0	266694	411	32420	0	79860
11/10/2021	72920	972	3701160	823	13412	127	104640	0	266731	277	32420	0	80090
11/17/2021	73020	748	3701640	3590	13427	112	104640	0	266748	127	32460	299	80360
11/24/2021	73150	972	3701670	224	13441	105	104640	0	266814	494	32510	374	80630
12/1/2021	73240	673	3701740	524	13453	90	104640	0	266842	209	32510	0	80880
12/8/2021	73360	898	3704820	23038	13473	150	104670	224	266941	741	32650	1047	81080
12/15/2021	73490	972	3704840	150	13493	150	104690	150	267003	464	32660	75	81310
12/22/2021	73610	898	3704840	0	13519	194	104700	75	267080	576	32690	224	81560
12/29/2021	73720	823	3704850	75	13526	52	104700	0	267136	419	32750	449	81770
1/5/2022	73810	673	3705480	4712	13543	127	104700	0	267136	0	32800	374	81990
1/12/2022	73910	748	3711310	43608	13580	277	104700	0	267136	0	32850	374	82140
1/19/2022	74020	823	3718580	54380	13599	142	104710	75	267136	0	32910	449	82280
1/26/2022	74130	823	3727760	68666	13615	120	104710	0	267136	0	32990	598	82460
2/2/2022	74260	972	3736360	64328	13632	127	104710	0	267136	0	33040	374	82650
2/9/2022	74390	972	3737820	10921	13647	112	104710	0	267174	284	33080	299	82860
2/16/2022	74520	972	3737940	898	13667	150	104720	75	267187	97	33110	224	83110
2/23/2022	74640	898	3738050	823	13692	187	104720	0	267224	277	33170	449	83350
3/2/2022	74750	823	3738190	1047	13742	374	104720	0	267303	591	33260	673	83590
3/9/2022	74890	1047	3738370	1346	13772	224	104720	0	267411	808	33340	598	83810
3/16/2022	75030	1047	3738540	1272	13797	187	104720	0	267469	434	33410	524	84020
3/23/2022	75150	898	3738690	1122	13830	247	104720	0	267516	352	33480	524	84240
3/30/2022	75280	972	3738870	1346	13847	127	104720	0	267593	576	33530	374	84450
4/7/2022	75440	1197	3739030	1197	13905	434	104720	0	267730	1025	33600	524	84700
4/13/2022	75550	823	3739060	224	13939	254	104720	0	267777	352	33630	224	84860
4/20/2022	75710	1197	3739120	449	13972	247	104720	0	267863	643	33710	598	85050
4/27/2022	75850	1047	3739180	449	14024	389	104720	0	267946	621	33760	374	85270
5/4/2022	75990	1047	3739240	449	14103	591	104720	0	268018	539	33870	823	85440
5/11/2022	76150	1197	3739290	374	14144	307	104720	0	268116	733	34000	972	85610
5/18/2022	76280	972	3739330	299	14198	404	104720	0	268204	658	34120	898	85760

Date	Admin.	Total	Clearwater	Total	DNR Admin	Total	DNR Shop	Total	DNR Train.	Total	EFV	Total	GYM
5/25/2022	76450	1272	3739390	449	14221	172	104720	0	268318	853	34320	1496	85930
6/1/2022	76560	823	3739420	224	14228	52	104720	0	268381	471	34530	1571	86070
6/8/2022	76690	972	3739460	299	14249	157	104720	0	268499	883	34880	2618	86210
6/15/2022	76810	898	3739600	1047	14271	165	104730	75	268711	1586	35100	1646	86350
6/22/2022	76930	898	3739750	1122	14288	127	104730	0	268789	583	35190	673	86510
6/29/2022	77050	898	3739870	898	14319	232	104730	0	268895	793	35270	598	86630
7/6/2022	77190	1047	3740020	1122	14326	52	104730	0	268945	374	35400	972	86770
7/13/2022	77320	972	3740170	1122	14348	165	104730	0	269043	733	35490	673	86910
7/20/2022	77560	1795	3740610	3291	14387	292	104730	0	269120	576	35600	823	87040
7/27/2022	77700	1047	3740750	1047	14449	464	104730	0	269147	202	35670	524	87180
8/3/2022	77880	1346	3740870	898	14473	180	104730	0	269282	1010	35750	598	87340
8/10/2022	78030	1122	3740950	598	14485	90	104730	0	269376	703	35790	299	87480
8/17/2022	78190	1197	3741000	374	14504	142	104730	0	269488	838	35870	598	87620
8/24/2022	78340	1122	3741060	449	14521	127	104740	75	269660	1287	36100	1720	87750
8/31/2022	78470	972	3741180	898	14537	120	104740	0	269800	1047	36300	1496	87910
9/7/2022	78590	898	3741310	972	14553	120	104740	0	269897	726	36490	1421	88060
9/14/2022	78800	1571	3741460	1122	14577	180	104740	0	270163	1990	36790	2244	88190
9/21/2022	78950	1122	3741620	1197	14602	187	104740	0	270266	770	37210	3142	88300
9/28/2022	79080	972	3741740	898	14612	75	104740	0	270338	539	37450	1795	88430
10/5/2022	79210	972	3741860	898	14628	120	104740	0	270519	1354	37840	2917	88540

Date	Total	Hoh	Total	Kitchen	Total	Maint.	Total	Medical	Total	Ozette	Total	Plant Mgr	Total
12/26/2018		2678480		801800		69111		128470		2505860		10554	
1/2/2019	2394	2689440	81981	803800	14960	69340	1713	128570	748	2516550	79961	10559	37
1/9/2019	2319	2700430	82205	805820	15110	69634	2199	128830	1945	2526350	73304	10569	75
1/16/2019	2768	2711570	83327	807860	15259	69944	2319	129140	2319	2536740	77717	10595	194
1/23/2019	2244	2722490	81682	810120	16905	70271	2446	129420	2094	2547700	81981	10614	142
1/30/2019	2094	2733340	81158	812210	15633	70524	1892	129750	2468	2557920	76446	10631	127
2/7/2019	1945	2743870	78764	814340	15932	70773	1863	130060	2319	2568780	81233	10642	82
2/13/2019	1870	2754640	80560	816660	17354	71088	2356	130290	1720	2580370	86693	10651	67
2/20/2019	2020	2765500	81233	819170	18775	71242	1152	130530	1795	2592630	91705	10658	52
2/27/2019	4488	2776220	80186	821490	17354	71405	1219	130800	2020	2604400	88040	10666	60
3/6/2019	3142	2786390	76072	823840	17578	71561	1167	131170	2768	2615320	81682	10680	105
3/13/2019	2244	2796740	77418	826370	18924	71792	1728	131540	2768	2626590	84300	10709	217
3/20/2019	2319	2807430	79961	829100	20420	71948	1167	131700	1197	2638060	85796	10719	75
3/27/2019	2468	2817900	78316	832280	23786	72157	1563	131780	598	2648840	80634	10730	82
4/3/2019	2094	2829060	83477	836700	33062	72353	1466	132000	1646	2660020	83626	10742	90
4/10/2019	2468	2840360	84524	840620	29322	72506	1144	132340	2543	2671020	82280	10751	67
4/24/2019	4937	2861970	161643	850280	72257	73012	3785	132950	4563	2694540	175930	10780	217
5/1/2019	2094	2872120	75922	854070	28349	73209	1474	133270	2394	2705930	85197	10797	127
5/8/2019	2020	2882960	81083	857070	22440	73471	1960	133650	2842	2717740	88339	10811	105
5/15/2019	1870	2893930	82056	859820	20570	73657	1391	134060	3067	2729240	86020	10820	67
5/22/2019	2094	2905030	83028	862860	22739	73853	1466	134310	1870	2740990	87890	10883	471
5/29/2019	1945	2916140	83103	865790	21916	74001	1107	134530	1646	2752350	84973	10899	120
6/5/2019	1346	2928040	89012	868410	19598	74197	1466	134820	2169	2763730	85122	10906	52
6/12/2019	1646	2939120	82878	871700	24609	74378	1354	135000	1346	2774930	83776	10918	90
6/19/2019	1646	2951130	89835	874810	23263	74548	1272	135100	748	2787620	94921	10928	75
6/26/2019	1272	2961480	77418	877720	21767	74705	1174	135180	598	2799480	88713	10939	82
7/3/2019	1496	2971830	77418	880760	22739	74874	1264	135280	748	2811440	89461	10950	82
7/10/2019	1795	2983260	85496	883810	22814	74991	875	135450	1272	2823460	89910	10956	45
7/17/2019	1646	2993710	78166	886910	23188	75148	1174	135670	1646	2835330	88788	10968	90
7/24/2019	1496	3004090	77642	889900	22365	75353	1533	135950	2094	2846520	83701	10987	142
7/31/2019	1646	3014980	81457	892840	21991	75574	1653	136200	1870	2857710	83701	11004	127
8/7/2019	1720	3026330	84898	896790	29546	75823	1863	136440	1795	2870190	93350	11023	142
8/14/2019	1496	3036950	79438	899880	23113	75989	1242	136720	2094	2881960	88040	11042	142
8/21/2019	1346	3047380	78016	902980	23188	76110	905	136930	1571	2893760	88264	11054	90
8/28/2019	1720	3058130	80410	905780	20944	76334	1676	137200	2020	2906480	95146	11068	105

Date	Total	Hoh	Total	Kitchen	Total	Maint.	Total	Medical	Total	Ozette	Total	Plant Mgr	Total
9/4/2019	1795	3069130	82280	908640	21393	76502	1257	137400	1496	2918630	90882	11084	120
9/11/2019	1571	3080580	85646	914790	46002	76786	2124	137620	1646	2931160	93724	11110	194
9/18/2019	1720	3090800	76446	918800	29995	77133	2596	137780	1197	2942450	84449	11141	232
9/25/2019	1496	3102050	84150	922520	27826	77468	2506	137870	673	2954020	86544	11168	202
10/2/2019	1571	3111820	73080	926730	31491	77636	1257	138020	1122	2965480	85721	11186	135
10/9/2019	1421	3122460	79587	930180	25806	77880	1825	138340	2394	2977360	88862	11216	224
10/16/2019	1496	3133160	80036	933890	27751	78147	1997	138660	2394	2988020	79737	11246	224
10/23/2019	1346	3144180	82430	936590	20196	78333	1391	138870	1571	2999280	84225	11274	209
10/30/2019	1496	3155440	84225	939050	18401	78576	1818	139130	1945	3010730	85646	11298	180
11/6/2019	1646	3166520	82878	942960	29247	78770	1451	139410	2094	3021790	82729	11325	202
11/20/2019	3291	3187540	157230	948520	41589	79105	2506	140050	4787	3042630	155883	11366	307
11/27/2019	1795	3197710	76072	951330	21019	79226	905	140330	2094	3053090	78241	11379	97
12/4/2019	1945	3208650	81831	955270	29471	79391	1234	140640	2319	3063900	80859	11393	105
12/11/2019	1720	3219240	79213	959280	29995	79637	1840	141030	2917	3074800	81532	11432	292
12/18/2019	1571	3229720	78390	962840	26629	79860	1668	141130	748	3086070	84300	11460	209
12/24/2019	1870	3238530	65899	965830	22365	80018	1182	141210	598	3095150	67918	11471	82
12/31/2019	1870	3250520	89685	969680	28798	80134	868	141240	224	3106570	85422	11475	30
1/8/2020	2543	3263000	93350	973620	29471	80345	1578	141340	748	3119320	95370	11504	217
1/15/2020	1571	3272680	72406	976820	23936	80573	1705	141570	1720	3130040	80186	11523	142
1/22/2020	1945	3282720	75099	979730	21767	80712	1040	141740	1272	3141030	82205	11544	157
1/29/2020	2020	3292520	73304	983890	31117	80940	1705	141930	1421	3151820	80709	11561	127
2/5/2020	2020	3302050	71284	987170	24534	81249	2311	142280	2618	3163000	83626	11579	135
2/12/2020	1870	3311450	70312	990780	27003	81561	2334	142590	2319	3175790	95669	11604	187
2/19/2020	1870	3320910	70761	994120	24983	81735	1302	142770	1346	3186340	78914	11616	90
2/26/2020	2244	3330660	72930	997560	25731	81948	1593	143120	2618	3196950	79363	11629	97
3/4/2020	1870	3340770	75623	1001020	25881	82177	1713	143480	2693	3207880	81756	11646	127
3/11/2020	1945	3351380	79363	1004410	25357	82415	1780	143720	1795	3219170	84449	11661	112
3/18/2020	1496	3362720	84823	1008640	31640	82766	2625	143880	1197	3230080	81607	11781	898
3/25/2020	972	3373100	77642	1012780	30967	83019	1892	143960	598	3241310	84000	11798	127
4/8/2020	1870	3392960	148553	1019350	49144	83584	4226	144100	1047	3263530	166206	11859	456
4/15/2020	748	3401840	66422	1023640	32089	83839	1907	144220	898	3274720	83701	11882	172
4/22/2020	823	3409420	56698	1027440	28424	84098	1937	144310	673	3284880	75997	11935	396
4/29/2020	823	3416630	53931	1030700	24385	84314	1616	144390	598	3295120	76595	11979	329
5/6/2020	673	3424090	55801	1033940	24235	84596	2109	144470	598	3305230	75623	11995	120
5/13/2020	598	3431580	56025	1037250	24759	84832	1765	144550	598	3314930	72556	12024	217

Date	Total	Hoh	Total	Kitchen	Total	Maint.	Total	Medical	Total	Ozette	Total	Plant Mgr	Total
5/20/2020	524	3439100	56250	1040550	24684	85155	2416	144640	673	3324570	72107	12054	224
5/27/2020	673	3445310	46451	1045030	33510	85337	1361	144700	449	3334080	71135	12065	82
6/3/2020	598	3452210	51612	1048650	27078	85618	2102	144780	598	3344430	77418	12104	292
6/10/2020	673	3459390	53706	1052160	26255	85843	1683	144890	823	3355130	80036	12124	150
6/17/2020	823	3466120	50340	1056990	36128	86077	1750	144970	598	3365940	80859	12149	187
6/24/2020	748	3472500	47722	1062390	40392	86363	2139	145040	524	3377440	86020	12185	269
7/1/2020	449	3478670	46152	1067910	41290	86589	1690	145100	449	3387850	77867	12209	180
7/8/2020	598	3484830	46077	1073920	44955	86760	1279	145230	972	3398360	78615	12222	97
7/15/2020	524	3490830	44880	1081680	58045	86980	1646	145350	898	3408030	72332	12239	127
7/22/2020	449	3497680	51238	1092160	78390	87181	1503	145490	1047	3418040	74875	12265	194
7/29/2020	449	3505200	56250	1095640	26030	87409	1705	145640	1122	3428600	78989	12300	262
8/5/2020	449	3512640	55651	1099170	26404	87597	1406	145790	1122	3439420	80934	12345	337
8/12/2020	673	3519530	51537	1103650	33510	87875	2079	145950	1197	3449670	76670	12406	456
8/19/2020	374	3529650	75698	1107640	29845	88149	2050	146150	1496	3459180	71135	12470	479
8/26/2020	374	3538340	65001	1111240	26928	88369	1646	146340	1421	3469230	75174	12505	262
9/2/2020	449	3548060	72706	1114120	21542	88627	1930	146440	748	3478640	70387	12575	524
9/9/2020	374	3559660	86768	1118120	29920	88799	1287	146510	524	3488710	75324	12598	172
9/16/2020	449	3566800	53407	1121000	21542	88964	1234	146570	449	3497920	68891	12642	329
9/23/2020	449	3574660	58793	1126990	44805	89218	1900	146630	449	3508230	77119	12736	703
9/30/2020	598	3582710	60214	1140970	104570	89460	1810	146700	524	3517900	72332	12817	606
10/7/2020	299	3591080	62608	1148670	57596	89756	2214	146880	1346	3528230	77268	12929	838
10/14/2020	598	3598880	58344	1154080	40467	89982	1690	147050	1272	3538280	75174	13005	568
10/21/2020	374	3606740	58793	1158100	30070	90198	1616	147190	1047	3548580	77044	13064	441
10/28/2020	449	3614380	57147	1162910	35979	90494	2214	147330	1047	3558210	72032	13186	913
11/4/2020	524	3622890	63655	1167450	33959	90734	1795	147420	673	3568530	77194	13228	314
11/10/2020	524	3629420	48844	1171980	33884	90907	1294	147550	972	3576900	62608	13251	172
11/18/2020	524	3638460	67619	1176740	35605	91112	1533	147680	972	3586940	75099	13290	292
11/25/2020	748	3646100	57147	1181320	34258	91294	1361	147840	1197	3595330	62757	13328	284
12/2/2020	673	3653970	58868	1185430	30743	91367	546	147940	748	3604940	71883	13332	30
12/9/2020	673	3660780	50939	1188610	23786	91570	1518	148120	1346	3614240	69564	13344	90
12/16/2020	598	3667850	52884	1190780	16232	91770	1496	148230	823	3623090	66198	13384	299
12/23/2020	598	3674530	49966	1194040	24385	92034	1975	148300	524	3630830	57895	13442	434
12/30/2020	673	3681980	55726	1197920	29022	92250	1616	148360	449	3638680	58718	13512	524
1/6/2021	748	3689450	55876	1201050	23412	92428	1331	148430	524	3646590	59167	13546	254
1/13/2021	673	3697090	57147	1204180	23412	92653	1683	148550	898	3656250	72257	13587	307

Date	Total	Hoh	Total	Kitchen	Total	Maint.	Total	Medical	Total	Ozette	Total	Plant Mgr	Total
1/20/2021	449	3704230	53407	1206990	21019	92824	1279	148670	898	3665180	66796	13626	292
1/27/2021	673	3711140	51687	1210100	23263	93057	1743	148790	898	3674590	70387	13682	419
2/3/2021	598	3717860	50266	1212910	21019	93303	1840	148930	1047	3683290	65076	13753	531
2/10/2021	823	3725080	54006	1216390	26030	93536	1743	149070	1047	3692060	65600	13787	254
2/17/2021	598	3732330	54230	1219280	21617	93654	883	149150	598	3700000	59391	13809	165
2/24/2021	1047	3739610	54454	1222430	23562	93953	2237	149260	823	3709990	74725	13936	950
3/3/2021	1047	3747230	56998	1225560	23412	94288	2506	149370	823	3718100	60663	14063	950
3/10/2021	898	3754760	56324	1228920	25133	94556	2005	149480	823	3727090	67245	14099	269
3/17/2021	823	3761860	53108	1232310	25357	94810	1900	149580	748	3734250	53557	14124	187
3/24/2021	898	3768830	52136	1235580	24460	95140	2468	149650	524	3742050	58344	14192	509
3/31/2021	823	3775970	53407	1238750	23712	95496	2663	149700	374	3749150	53108	14330	1032
4/7/2021	972	3783100	53332	1242520	28200	95847	2625	149780	598	3756470	54754	14462	987
4/14/2021	972	3789630	48844	1245670	23562	96054	1548	149870	673	3763480	52435	14500	284
4/21/2021	972	3796380	50490	1248800	23412	96342	2154	149980	823	3771180	57596	14529	217
4/28/2021	972	3803860	55950	1253420	34558	96623	2102	150140	1197	3779100	59242	14563	254
5/5/2021	823	3810880	52510	1258560	38447	96962	2536	150280	1047	3787030	59316	14770	1548
5/12/2021	1272	3817880	52360	1261940	25282	97352	2917	150420	1047	3795540	63655	14820	374
5/19/2021	1346	3824680	50864	1265310	25208	97640	2154	150570	1122	3803660	60738	14889	516
5/26/2021	1122	3831170	48545	1269190	29022	97891	1877	150730	1197	3811210	56474	14916	202
6/2/2021	1346	3838260	53033	1272000	21019	98243	2633	150890	1197	3819140	59316	15139	1668
6/9/2021	1870	3844920	49817	1275500	26180	98638	2955	151130	1795	3827240	60588	15301	1212
6/16/2021	972	3852060	53407	1278920	25582	98909	2027	151300	1272	3835140	59092	15384	621
6/23/2021	1122	3858600	48919	1282910	29845	99435	3934	151440	1047	3842730	56773	15680	2214
6/30/2021	1272	3868310	72631	1286580	27452	99989	4144	151570	972	3853310	79138	15891	1578
7/7/2021	1272	3876040	57820	1289600	22590	100328	2536	151740	1272	3860580	54380	16029	1032
7/14/2021	1272	3883960	59242	1292600	22440	100657	2461	151970	1720	3867870	54529	16093	479
7/21/2021	1346	3894100	75847	1294800	16456	101097	3291	152270	2244	3875170	54604	16348	1907
7/28/2021	1346	3903430	69788	1296970	16232	101450	2640	152620	2618	3882440	54380	16486	1032
8/4/2021	972	3916360	96716	1299220	16830	101893	3314	153020	2992	3890010	56624	16769	2117
8/11/2021	1047	3923810	55726	1302340	23338	102226	2491	153390	2768	3899760	72930	16948	1339
8/18/2021	1346	3933390	71658	1305130	20869	102574	2603	153730	2543	3910530	80560	17086	1032
8/25/2021	1197	3940660	54380	1307130	14960	102930	2663	154270	4039	3921240	80111	17179	696
9/1/2021	1197	3947720	52809	1309180	15334	103135	1533	154900	4712	3931470	76520	17204	187
9/8/2021	1421	3954230	48695	1310800	12118	103380	1833	155560	4937	3941610	75847	17254	374
9/15/2021	1346	3962460	61560	1312760	14661	103606	1690	156170	4563	3952600	82205	17290	269

Date	Total	Hoh	Total	Kitchen	Total	Maint.	Total	Medical	Total	Ozette	Total	Plant Mgr	Total
9/22/2021	1272	3971240	65674	1314410	12342	104223	4615	156770	4488	3963010	77867	17642	2633
9/29/2021	2244	3980700	70761	1315800	10397	104310	651	157360	4413	3973270	76745	17646	30
10/6/2021	972	3989340	64627	1317010	9051	104337	202	157930	4264	3983820	78914	17648	15
10/13/2021	1571	3998260	66722	1319050	15259	104637	2244	158580	4862	3994610	80709	17666	135
10/20/2021	1646	4007060	65824	1321310	16905	104917	2094	159220	4787	4005430	80934	17686	150
10/27/2021	1945	4016740	72406	1323720	18027	105230	2341	159840	4638	4016260	81008	17708	165
11/3/2021	2693	4029220	93350	1326050	17428	105453	1668	160480	4787	4027780	86170	17726	135
11/10/2021	1720	4038720	71060	1328120	15484	105753	2244	161080	4488	4039130	84898	17745	142
11/17/2021	2020	4048140	70462	1330360	16755	105934	1354	161600	3890	4050650	86170	17758	97
11/24/2021	2020	4058650	78615	1332700	17503	106209	2057	162140	4039	4061900	84150	17777	142
12/1/2021	1870	4069150	78540	1334830	15932	106428	1638	162680	4039	4073340	85571	17787	75
12/8/2021	1496	4077890	65375	1336370	11519	106732	2274	163210	3964	4082240	66572	17804	127
12/15/2021	1720	4085980	60513	1338080	12791	107043	2326	163720	3815	4091060	65974	17823	142
12/22/2021	1870	4098150	91032	1340160	15558	107199	1167	164250	3964	4101450	77717	17836	97
12/29/2021	1571	4105900	57970	1342370	16531	107362	1219	164760	3815	4112810	84973	17849	97
1/5/2022	1646	4113830	59316	1343630	9425	107462	748	165330	4264	4123070	76745	17853	30
1/12/2022	1122	4121000	53632	1343710	598	107491	217	165880	4114	4130500	55576	17856	22
1/19/2022	1047	4134130	98212	1343790	598	107519	209	166400	3890	4133120	19598	17859	22
1/26/2022	1346	4139560	40616	1344970	8826	107703	1376	166950	4114	4136610	26105	17871	90
2/2/2022	1421	4143220	27377	1346710	13015	107941	1780	167550	4488	4141730	38298	17892	157
2/9/2022	1571	4148570	40018	1348570	13913	108157	1616	168170	4638	4150990	69265	17908	120
2/16/2022	1870	4155980	55427	1350560	14885	108395	1780	168800	4712	4160980	74725	17931	172
2/23/2022	1795	4163820	58643	1352280	12866	108632	1773	169420	4638	4170960	74650	17945	105
3/2/2022	1795	4172570	65450	1353960	12566	108855	1668	170200	5834	4181180	76446	17959	105
3/9/2022	1646	4180080	56175	1355520	11669	109114	1937	170920	5386	4191760	79138	17970	82
3/16/2022	1571	4187270	53781	1357480	14661	109389	2057	171700	5834	4201690	74276	17983	97
3/23/2022	1646	4193990	50266	1359290	13539	109607	1631	172450	5610	4211160	70836	17995	90
3/30/2022	1571	4200950	52061	1361100	13539	109889	2109	173200	5610	4220150	67245	18011	120
4/7/2022	1870	4208680	57820	1362850	13090	110219	2468	174060	6433	4229840	72481	18031	150
4/13/2022	1197	4214460	43234	1364300	10846	110457	1780	174700	4787	4237010	53632	18046	112
4/20/2022	1421	4221440	52210	1366250	14586	110678	1653	175520	6134	4245250	61635	18064	135
4/27/2022	1646	4227840	47872	1367960	12791	110930	1885	176390	6508	4252860	56923	18088	180
5/4/2022	1272	4234080	46675	1369560	11968	111178	1855	177230	6283	4260450	56773	18110	165
5/11/2022	1272	4243450	70088	1370920	10173	111418	1795	178100	6508	4268150	57596	18129	142
5/18/2022	1122	4249080	42112	1372580	12417	111609	1429	178960	6433	4275390	54155	18146	127

Date	Total	Hoh	Total	Kitchen	Total	Maint.	Total	Medical	Total	Ozette	Total	Plant Mgr	Total
5/25/2022	1272	4254890	43459	1374150	11744	111838	1713	179920	7181	4283720	62308	18172	194
6/1/2022	1047	4259250	32613	1375320	8752	111936	733	180600	5086	4290280	49069	18178	45
6/8/2022	1047	4264050	35904	1376840	11370	112067	980	181420	6134	4297820	56399	18192	105
6/15/2022	1047	4269120	37924	1378390	11594	112204	1025	182200	5834	4305050	54080	18210	135
6/22/2022	1197	4274250	38372	1379770	10322	112416	1586	182990	5909	4312450	55352	18279	516
6/29/2022	898	4279850	41888	1381070	9724	112613	1474	183830	6283	4320300	58718	18307	209
7/6/2022	1047	4285740	44057	1382460	10397	112738	935	184640	6059	4328180	58942	18321	105
7/13/2022	1047	4291490	43010	1383580	8378	113009	2027	185490	6358	4336750	64104	18348	202
7/20/2022	972	4296990	41140	1385030	10846	113244	1758	186290	5984	4344490	57895	18375	202
7/27/2022	1047	4302530	41439	1386500	10996	113452	1556	187150	6433	4353640	68442	18385	75
8/3/2022	1197	4309560	52584	1388050	11594	113683	1728	188060	6807	4362130	63505	18412	202
8/10/2022	1047	4313570	29995	1389290	9275	113848	1234	189150	8153	4370650	63730	18431	142
8/17/2022	1047	4318710	38447	1390510	9126	114036	1406	190340	8901	4378940	62009	18442	82
8/24/2022	972	4325310	49368	1391930	10622	114246	1571	191520	8826	4387240	62084	18467	187
8/31/2022	1197	4332410	53108	1393360	10696	114514	2005	192750	9200	4394730	56025	18501	254
9/7/2022	1122	4339520	53183	1394470	8303	114683	1264	193970	9126	4402730	59840	18518	127
9/14/2022	972	4345800	46974	1395860	10397	115066	2865	195370	10472	4410880	60962	18609	681
9/21/2022	823	4351410	41963	1397130	9500	115226	1197	196810	10771	4418260	55202	18619	75
9/28/2022	972	4356580	38672	1398480	10098	115469	1818	198170	10173	4425440	53706	18671	389
10/5/2022	823	4360920	32463	1399670	8901	115692	1668	198250	598	4432690	54230	18682	82

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12/26/2018	131540		77690		9702		782530		589599		0
1/2/2019	131880	2543	77850	1197	9717	112	784680	16082	592338	20488	304107
1/9/2019	132120	1795	78070	1646	9800	621	787620	21991	593995	12394	298489
1/16/2019	132300	1346	78220	1122	9870	524	790470	21318	595335	10023	302177
1/23/2019	132460	1197	78360	1047	9935	486	793060	19373	596675	10023	302282
1/30/2019	132680	1646	78540	1346	9979	329	795850	20869	597994	9866	287112
2/7/2019	132910	1720	78680	1047	10037	434	798590	20495	599539	11557	294084
2/13/2019	133150	1795	78770	673	10095	434	801650	22889	601226	12619	307877
2/20/2019	133520	2768	78890	898	10137	314	803950	17204	603208	14825	319920
2/27/2019	133690	1272	79080	1421	10205	509	806430	18550	604877	12484	318341
3/6/2019	133980	2169	79300	1646	10260	411	809010	19298	607105	16665	311437
3/13/2019	134270	2169	79490	1421	10306	344	811440	18176	608767	12432	313524
3/20/2019	134690	3142	79690	1496	10336	224	814460	22590	610380	12065	319583
3/27/2019	135090	2992	79860	1272	10374	284	817160	20196	611587	9028	307391
4/3/2019	135520	3216	80070	1571	10410	269	819870	20271	612927	10023	326973
4/10/2019	135870	2618	80290	1646	10442	239	822640	20720	614478	11601	325859
4/24/2019	136680	6059	80810	3890	10513	531	827930	39569	616956	18535	670851
5/1/2019	137210	3964	81390	4338	10537	180	830420	18625	618132	8796	315544
5/8/2019	137730	3890	82000	4563	10564	202	834860	33211	619246	8333	342195
5/15/2019	138360	4712	82440	3291	10653	666	839920	37849	620390	8557	377127
5/22/2019	138930	4264	82670	1720	10701	359	842100	16306	621585	8939	314115
5/29/2019	139690	5685	83000	2468	10729	209	845530	25656	623060	11033	335209
6/5/2019	140580	6657	83520	3890	10762	247	849300	28200	624969	14279	368614
6/12/2019	141200	4638	83970	3366	10798	269	852910	27003	626606	12245	331873
6/19/2019	142660	10921	84690	5386	10820	165	856580	27452	628949	17526	369175
6/26/2019	143420	5685	85280	4413	10842	165	861040	33361	630376	10674	325193
7/3/2019	143820	2992	85770	3665	10882	299	864990	29546	631792	10592	316060
7/10/2019	144270	3366	86190	3142	10904	165	868420	25656	632995	8998	332621
7/17/2019	144790	3890	86490	2244	10922	135	872200	28274	634474	11063	330796
7/24/2019	145270	3590	86980	3665	10947	187	875850	27302	635806	9963	323443
7/31/2019	145830	4189	87470	3665	10971	180	879640	28349	637126	9874	342726
8/7/2019	146620	5909	87810	2543	11002	232	884270	34632	638320	8931	347349
8/14/2019	147130	3815	87960	1122	11127	935	887520	24310	639576	9395	306680
8/21/2019	147790	4937	88120	1197	11155	209	891100	26778	640904	9933	308752
8/28/2019	148290	3740	88370	1870	11190	262	894720	27078	642476	11759	314482

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9/4/2019	148640	2618	88520	1122	11214	180	899360	34707	643602	8422	310151
9/11/2019	148920	2094	88700	1346	11240	194	902610	24310	645271	12484	341986
9/18/2019	149080	1197	88880	1346	11281	307	906720	30743	646824	11616	310629
9/25/2019	149280	1496	89410	3964	11304	172	909840	23338	648063	9268	307338
10/2/2019	149440	1197	89510	748	11348	329	912710	21468	649588	11407	296298
10/9/2019	149790	2618	89650	1047	11372	180	920000	54529	650830	9290	337849
10/16/2019	150190	2992	89800	1122	11417	337	923210	24011	652338	11280	298774
10/23/2019	150410	1646	89950	1122	11454	277	926170	22141	653517	8819	293238
10/30/2019	150580	1272	90120	1272	11512	434	929110	21991	654870	10120	293171
11/6/2019	150810	1720	90250	972	11533	157	932090	22290	657366	18670	313382
11/20/2019	151060	1870	90480	1720	11581	359	938170	45478	660764	25417	583073
11/27/2019	151210	1122	90610	972	11604	172	941210	22739	662230	10966	291578
12/4/2019	151350	1047	90740	972	11646	314	943880	19972	663874	12297	313861
12/11/2019	151650	2244	90910	1272	11710	479	947810	29396	665618	13045	325604
12/18/2019	151990	2543	91060	1122	11748	284	950620	21019	667147	11437	312118
12/24/2019	152150	1197	91200	1047	11773	187	952980	17653	668456	9791	260708
12/31/2019	152270	898	91310	823	11788	112	955360	17802	669791	9986	324587
1/8/2020	152450	1346	91490	1346	11834	344	958680	24834	671699	14272	350468
1/15/2020	152630	1346	91640	1122	11882	359	961550	21468	673763	15439	298878
1/22/2020	152780	1122	91770	972	11924	314	964040	18625	676222	18393	319523
1/29/2020	152960	1346	91910	1047	12005	606	967220	23786	677554	9963	311639
2/5/2020	153260	2244	92070	1197	12050	337	969830	19523	679163	12035	307996
2/12/2020	153540	2094	92220	1122	12124	554	973120	24609	680660	11198	320488
2/19/2020	153830	2169	92360	1047	12221	726	976180	22889	682163	11242	295969
2/26/2020	154170	2543	92560	1496	12261	299	979500	24834	684062	14205	310921
3/4/2020	154620	3366	92730	1272	12322	456	983040	26479	685801	13008	319523
3/11/2020	155300	5086	93180	3366	12383	456	986100	22889	687549	13075	321655
3/18/2020	155550	1870	93290	823	12415	239	989630	26404	689344	13427	325732
3/25/2020	155740	1421	93370	598	12453	284	993020	25357	690758	10577	310996
4/8/2020	156050	2319	93530	1197	12513	449	999250	46600	693262	18730	601631
4/15/2020	156250	1496	94070	4039	12570	426	1002180	21916	694892	12192	302918
4/22/2020	156460	1571	95750	12566	12616	344	1004850	19972	696278	10367	285811
4/29/2020	156680	1646	97180	10696	12653	277	1007350	18700	697532	9380	261807
5/6/2020	156890	1571	98460	9574	12679	194	1009950	19448	699333	13471	265061
5/13/2020	157260	2768	99490	7704	12713	254	1012750	20944	700473	8527	257731

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5/20/2020	157590	2468	101730	16755	12717	30	1016230	26030	701693	9126	283148
5/27/2020	157860	2020	102750	7630	12776	441	1018640	18027	702888	8939	255651
6/3/2020	158280	3142	103570	6134	12808	239	1021860	24086	704968	15558	274501
6/10/2020	158560	2094	104340	5760	12857	367	1024840	22290	706124	8647	267507
6/17/2020	158780	1646	105110	5760	12884	202	1027350	18775	707349	9163	264283
6/24/2020	159090	2319	105810	5236	12915	232	1030120	20720	708827	11055	282572
7/1/2020	159290	1496	106480	5012	12937	165	1032620	18700	711174	17556	276109
7/8/2020	159540	1870	107020	4039	12967	224	1034840	16606	712414	9275	266333
7/15/2020	159930	2917	107550	3964	12994	202	1037870	22664	714162	13075	291159
7/22/2020	160440	3815	108100	4114	13026	239	1041080	24011	715804	12282	312028
7/29/2020	161070	4712	108710	4563	13044	135	1044200	23338	717709	14249	270200
8/5/2020	161870	5984	109670	7181	13076	239	1047060	21393	719723	15065	293201
8/12/2020	163050	8826	110590	6882	13108	239	1049980	21842	721624	14219	272855
8/19/2020	164480	10696	111440	6358	13143	262	1053370	25357	723358	12970	303224
8/26/2020	164820	2543	112100	4937	13179	269	1056230	21393	724917	11661	283963
9/2/2020	165280	3441	113010	6807	13213	254	1059200	22216	726697	13314	295445
9/9/2020	166030	5610	113670	4937	13247	254	1061750	19074	728501	13494	321356
9/16/2020	166290	1945	114400	5460	13269	165	1064300	19074	729894	10420	252839
9/23/2020	166560	2020	114820	3142	13293	180	1066930	19672	731487	11916	354462
9/30/2020	166780	1646	115640	6134	13326	247	1069210	17054	733525	15244	352069
10/7/2020	167120	2543	116420	5834	13348	165	1071440	16680	735037	11310	323981
10/14/2020	167310	1421	117310	6657	13382	254	1073470	15184	736807	13240	281577
10/21/2020	167510	1496	118010	5236	13407	187	1075940	18476	738569	13180	279303
10/28/2020	167670	1197	118810	5984	13429	165	1078230	17129	740560	14893	287913
11/4/2020	167860	1421	119840	7704	13461	239	1080540	17279	742783	16628	287120
11/10/2020	168000	1047	120260	3142	13487	194	1082500	14661	744695	14302	238470
11/18/2020	168140	1047	121240	7330	13529	314	1084900	17952	747059	17683	296926
11/25/2020	168250	823	122120	6582	13555	194	1087000	15708	749228	16224	257454
12/2/2020	168420	1272	122940	6134	13582	202	1088890	14137	751250	15125	265899
12/9/2020	168590	1272	123740	5984	13618	269	1090850	14661	753423	16254	250176
12/16/2020	168840	1870	124560	6134	13652	254	1092840	14885	755523	15708	238762
12/23/2020	169230	2917	125390	6208	13690	284	1094910	15484	757839	17324	266707
12/30/2020	169510	2094	126250	6433	13717	202	1096680	13240	760466	19650	347042
1/6/2021	169620	823	126930	5086	13741	180	1098090	10547	762933	18453	250976
1/13/2021	170290	5012	127150	1646	13791	374	1100530	18251	765310	17780	340288

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1/20/2021	170950	4937	127330	1346	13832	307	1102090	11669	767481	16239	252323
1/27/2021	171300	2618	127440	823	13874	314	1104630	18999	770020	18992	320825
2/3/2021	171700	2992	127480	299	13917	322	1106400	13240	772408	17862	251148
2/10/2021	171980	2094	127530	374	13954	277	1110260	28873	775044	19717	296028
2/17/2021	172110	972	127700	1272	13981	202	1112020	13165	778043	22433	250640
2/24/2021	172500	2917	127800	748	14020	292	1115040	22590	781101	22874	269916
3/3/2021	172680	1346	127890	673	14058	284	1117640	19448	785304	31438	263745
3/10/2021	172840	1197	127940	374	14090	239	1120720	23038	787991	20099	297442
3/17/2021	173020	1346	128600	4937	14122	239	1123510	20869	790602	19530	250730
3/24/2021	173220	1496	129010	3067	14154	239	1126480	22216	793724	23353	266527
3/31/2021	173370	1122	129100	673	14184	224	1130000	26330	796683	22133	244065
4/7/2021	173620	1870	129170	524	14223	292	1134540	33959	799727	22769	271576
4/14/2021	173840	1646	129930	5685	14263	299	1139110	34184	802743	22560	271075
4/21/2021	174700	6433	130820	6657	14298	262	1142150	22739	806041	24669	248560
4/28/2021	174840	1047	131530	5311	14378	598	1145400	24310	809659	27063	267298
5/5/2021	174990	1122	132310	5834	14466	658	1147420	15110	812665	22485	268345
5/12/2021	175170	1346	132490	1346	14563	726	1150100	20046	816509	28753	263663
5/19/2021	176580	10547	132590	748	14685	913	1152410	17279	820167	27362	253078
5/26/2021	176910	2468	132790	1496	14782	726	1154520	15783	824184	30047	242195
6/2/2021	177290	2842	132930	1047	14898	868	1156380	13913	827870	27571	242704
6/9/2021	178230	7031	134040	8303	15142	1825	1159090	20271	831752	29037	275436
6/16/2021	178360	972	134210	1272	15274	987	1161230	16007	835427	27489	245681
6/23/2021	180350	14885	134400	1421	15400	942	1163890	19897	838539	23278	259578
6/30/2021	184020	27452	135350	7106	15560	1197	1167540	27302	842423	29052	352944
7/7/2021	184480	3441	135840	3665	15768	1556	1169800	16905	845355	21931	240826
7/14/2021	184730	1870	136060	1646	16016	1855	1172460	19897	848490	23450	247311
7/21/2021	185900	8752	136900	6283	16338	2409	1175170	20271	851948	25866	306725
7/28/2021	188170	16980	137020	898	16691	2640	1178610	25731	855539	26861	273229
8/4/2021	190240	15484	137240	1646	17060	2760	1182020	25507	859918	32755	318267
8/11/2021	191240	7480	137670	3216	17417	2670	1185460	25731	863581	27399	256467
8/18/2021	194060	21094	140410	20495	17769	2633	1187880	18102	866966	25320	272915
8/25/2021	196150	15633	144270	28873	18315	4084	1189970	15633	870741	28237	253303
9/1/2021	196950	5984	144460	1421	18959	4817	1192080	15783	874324	26801	208886
9/8/2021	197860	6807	144520	449	19631	5027	1194270	16381	877900	26748	202401
9/15/2021	199060	8976	144570	374	20302	5019	1196570	17204	881558	27362	227953

Date	SEG	Total	TC	Total	Training	Total	Whse	Total	WWTP	Total	Total usage
9/22/2021	199180	898	144630	449	20966	4967	1198420	13838	885428	28948	221550
9/29/2021	200020	6283	144670	299	21624	4922	1200300	14062	889424	29890	224385
10/6/2021	200880	6433	144720	374	22258	4742	1202240	14511	893636	31506	218244
10/13/2021	201100	1646	144780	449	22949	5169	1204720	18550	897559	29344	229651
10/20/2021	201240	1047	144840	449	23641	5176	1207250	18924	901483	29352	231065
10/27/2021	201340	748	144890	374	24323	5101	1209350	15708	905786	32186	236712
11/3/2021	201540	1496	144950	449	24981	4922	1211850	18700	909938	31057	265039
11/10/2021	201720	1346	145000	374	25612	4720	1214270	18102	914179	31723	238500
11/17/2021	201860	1047	145040	299	26153	4047	1216400	15932	918334	31079	238029
11/24/2021	202010	1122	145100	449	26713	4189	1219000	19448	923045	35238	251141
12/1/2021	202150	1047	145140	299	27262	4107	1221450	18326	927149	30698	243639
12/8/2021	203570	10622	145520	2842	27806	4069	1223820	17728	931385	31685	244372
12/15/2021	203760	1421	146240	5386	28343	4017	1225690	13988	935850	33398	207450
12/22/2021	203990	1720	146300	449	28907	4219	1227600	14287	940965	38260	252308
12/29/2021	204140	1122	146340	299	29480	4286	1229770	16232	946102	38425	228357
1/5/2022	204380	1795	146380	299	30116	4757	1231030	9425	951628	41334	215671
1/12/2022	204640	1945	146430	374	30742	4682	1232190	8677	956245	34535	210502
1/19/2022	204910	2020	146490	449	31338	4458	1233580	10397	960837	34348	231117
1/26/2022	205140	1720	146550	449	31943	4525	1235160	11818	968966	60805	232000
2/2/2022	205350	1571	146600	374	32594	4869	1236840	12566	974221	39307	211026
2/9/2022	205520	1272	147140	4039	33250	4907	1238690	13838	978923	35171	202955
2/16/2022	205920	2992	147260	898	33927	5064	1241100	18027	983578	34819	217788
2/23/2022	206150	1720	147300	299	34586	4929	1244100	22440	988765	38799	225290
3/2/2022	206370	1646	147360	449	35358	5775	1247240	23487	996187	55517	254245
3/9/2022	206630	1945	147430	524	36098	5535	1249960	20346	848	34864	223270
3/16/2022	207150	3890	147500	524	36906	6044	1253070	23263	5974	38342	227803
3/23/2022	207940	5909	147570	524	37713	6036	1255950	21542	11064	38073	218842
3/30/2022	208540	4488	147650	598	38505	5924	1258310	17653	15945	36510	210824
4/7/2022	209100	4189	147740	673	39417	6822	1262150	28723	21593	42247	241342
4/13/2022	209510	3067	147790	374	40103	5131	1264760	19523	26084	33593	179153
4/20/2022	210000	3665	147850	449	40970	6485	1267700	21991	31293	38963	212462
4/27/2022	210790	5909	147920	524	41835	6470	1270490	20869	36227	36906	201362
5/4/2022	211460	5012	148010	673	42690	6395	1272900	18027	40995	35665	194211
5/11/2022	211990	3964	148070	449	43584	6687	1275400	18700	45918	36824	217780
5/18/2022	212550	4189	148120	374	44449	6470	1277320	14362	50677	35597	182018

Date	SEG	Total	TC	Total	Training	Total	Whse	Total	WWTP	Total	Total usage
5/25/2022	213050	3740	148180	449	45431	7345	1279900	19298	56161	41020	203965
6/1/2022	213420	2768	148240	449	46166	5498	1281700	13464	60327	31162	153826
6/8/2022	213890	3516	148290	374	47015	6351	1284130	18176	65202	36465	181749
6/15/2022	214370	3590	148350	449	47818	6006	1286130	14960	70241	37692	179752
6/22/2022	215140	5760	148410	449	48672	6388	1288900	20720	75371	38372	188346
6/29/2022	215880	5535	148480	524	49558	6627	1294080	38746	80468	38126	212170
7/6/2022	216330	3366	148520	299	50432	6538	1297620	26479	85369	36659	198452
7/13/2022	217160	6208	148560	299	51307	6545	1302280	34857	90836	40893	217593
7/20/2022	217770	4563	148630	524	52177	6508	1306020	27975	95983	38500	203643
7/27/2022	219030	9425	148680	374	53069	6672	1309870	28798	101354	40175	218715
8/3/2022	220790	13165	148780	748	54014	7069	1313400	26404	108034	49966	239001
8/10/2022	221920	8452	149130	2618	55152	8512	1320500	53108	113038	37430	226509
8/17/2022	222970	7854	151120	14885	56371	9118	1324130	27152	118269	39128	222306
8/24/2022	223930	7181	152760	12267	57585	9081	1327550	25582	123004	35418	227938
8/31/2022	224540	4563	155430	19972	58830	9313	1331940	32837	123726	5401	209103
9/7/2022	225070	3964	157390	14661	60087	9402	1335350	25507	124580	6388	197023
9/14/2022	225380	2319	159080	12641	61476	10390	1340120	35680	125625	7817	209275
9/21/2022	225610	1720	159180	748	62913	10749	1343000	21542	126689	7959	168667
9/28/2022	225930	2394	159480	2244	64288	10285	1349340	47423	127574	6620	189072
10/5/2022	226390	3441	159560	598	64335	352	1353100	28125	128389	6096	143638

Washington Corrections Center

	#1 Treatme	#2 A Bldg.	#3 B Bldg	#4 C Bldg	#5 D Bldg	#6 E Bldg	#7 G Bldg	#8 Greenhou	#9 Cedar	#10 Evergre	#11 IMU	#12 Range	#13 TW 1
1/31/2017	33790	3300	20200	17900	52200	17600	1115900	14990	526800	294200	203800	12670	2120
2/29/2017	30420	3000	17600	18600	44900	18900	1375900	12910	462600	567400	180300	12750	1780
3/31/2017	31680	3900	20500	22800	52100	24200	1203300	15840	512000	635000	194700	13600	2120
4/28/2017	35870	3500	20200	19800	48600	21300	1106600	15030	471000	522300	190600	10750	2180
5/31/2017	40370	16600	85200	24200	53600	25700	1321700	35290	594800	663500	230000	10210	2270
6/30/2017	39390	10600	35100	24200	53600	25800	1199200	53730	556300	656500	205700	11400	2180
7/31/2017	43280	3000	18600	18400	84300	19200	1197700	86020	685500	701500	211200	10780	2430
8/31/2017	70310	3200	19000	21800	51900	29500	1192400	98580	588300	638100	223900	2640	2600
9/29/2017	70210	3000	17100	19500	52300	29100	1347400	40860	500700	563400	212400	23540	2590
10/31/2017	75910	3600	20300	20800	62600	27900	1225600	18200	525700	591300	222200	1640	2680
11/30/2017	69190	3200	17900	18400	51700	25100	1186000	11340	499700	542700	215400	320	2230
12/29/2017	78490	33500	19300	16100	60800	19900	1115100	8210	513300	549900	215300	25450	2140
1/31/2018	82450	10100	22200	17800	333300	21800	1173400	8680	579100	608900	134100	420	2600
2/29/2018	67930	4400	20500	16800	329300	21100	1072400	10900	488200	522200	235500	350	2370
3/31/2018	72920	5700	21800	18900	327300	22300	1164700	12700	504800	602800	256000	12980	2490
4/28/2018	66120	4200	25500	19600	217200	22000	1094800	22260	569400	609600	247700	43670	2330
5/31/2018	73880	8600	19500	21300	194300	22500	1161700	79420	620400	684900	235500	16050	2450
6/30/2018	69620	6700	24600	21800	95100	23100	1113900	43350	728400	640200	241500	510	2800
7/31/2018	62900	5400	17100	14200	57400	16500	1062200	63840	770300	578500	216700	12020	2550
8/31/2018	81710	6900	21300	17400	65600	17600	1136100	100770	747500	625100	250100	11910	2890
9/29/2018	63690	12300	18200	14600	65600	13300	1020900	55160	481100	506600	212300	18760	2780
10/31/2018	69480	8600	20300	16600	63100	16800	1126400	20300	559400	548300	226600	620	2960
11/30/2018	78260	6000	17700	13400	47600	15500	1149900	13140	524100	514300	196300	13920	2810
12/29/2018	88310	6000	20000	15400	55600	18400	1147500	8080	517100	556300	217900	1380	2410
1/31/2019	90210	5500	18700	16700	52200	18300	1095400	9870	498500	516300	224100	560	2770
2/28/2019	71130	5100	13600	15000	47900	16200	995600	6920	462400	495000	212700	660	2340
3/29/2019	84160	7300	15700	19100	62700	22900	1327600	12350	552400	599200	251300	2180	2710
4/30/2019	68020	6200	14600	16100	57100	21900	1208200	11250	492900	508500	233200	950	2420
5/31/2019	85250	7000	14600	19000	59600	34800	1343500	61690	674000	535700	312300	1340	3130
6/28/2019	32480	7500	15400	17600	69000	23600	1242300	66000	796700	591200	464400	4840	2940
7/31/2019	56080	6300	43000	15300	70100	27200	1131800	108290	739300	538500	201100	3820	2880
8/30/2019	56440	7200	15700	16300	71700	24400	1175000	51910	798000	611800	188500	3690	2730
9/30/2019	52240	6100	16000	14800	57900	19300	1182600	40050	798400	575100	197500	10360	3550
10/31/2019	47220	7000	15200	16200	48100	23400	1022400	14330	726800	508400	212700	13530	2670
11/27/2019	55540	6000	15900	26100	57400	20300	1057600	9620	788200	545200	368500	26080	2890
12/31/2019	57080	6500	14900	15500	53200	21600	1071200	8800	759400	517700	133100	40590	2670

	#1 Treatme	#2 A Bldg.	#3 B Bldg	#4 C Bldg	#5 D Bldg	#6 E Bldg	#7 G Bldg	#8 Greenho	#9 Cedar	#10 Evergre	#11 IMU	#12 Range	#13 TW 1
1/31/2020	56580	6000	14000	17100	50800	19200	971100	7710	694700	479000	206400	28350	2610
2/28/2020	39100	6700	14500	15600	48500	17700	1006000	8080	656700	477200	164100	13320	2110
3/31/2020	35140	6100	13200	16200	54500	14000	1097800	9910	769000	576200	178700	9200	2820
4/30/2020	34400	5600	11400	13200	48200	8200	1003800	33460	754700	557400	152900	5590	2580
5/29/2020	35400	4400	9900	12300	62400	9100	998000	29800	820300	506300	213900	260	2380
6/30/2020	56430	4000	9500	13000	45200	11600	988600	72540	743700	587100	199700	370	2510
7/31/2020	73890	3300	9400	15200	53800	12800	1165700	66030	883300	699100	233600	76010	2130
8/31/2020	73900	4100	9700	12700	52100	13800	1008700	66660	822300	710800	244100	240	2590
9/30/2020	66380	4100	10300	13400	48800	14000	1045000	38440	750800	638600	223200	38070	2460
10/30/2020	61160	3300	10200	14600	58300	14800	1065600	13050	722300	601400	184600	840	2380
11/30/2020	64530	3000	8100	10000	45300	12500	951000	5060	738300	615500	215200	270	2440
12/31/2020	69300	3100	7000	8300	51000	7800	950400	2870	718700	488600	242600	290	2480
1/31/2021	65670	3600	7200	9700	45700	9700	1036500	4920	772700	596100	279300	350	2510
2/28/2021	56700	3600	7000	9700	38000	10700	968800	13660	627300	603800	235500	490	2170
3/31/2021	47940	6200	7600	11700	45900	12600	906100	11630	658900	631600	220700	990	2500
4/30/2021	41110	5000	7800	13000	45600	11700	854500	20410	670800	642700	219500	2000	2490
5/29/2021	37430	3800	9600	12300	49100	13000	838900	36620	602800	555200	189400	3280	2330
6/30/2021	48390	3900	11300	14200	47900	41600	978200	106320	776900	710100	175400	19950	2380
7/31/2021	60660	5100	11700	14000	49900	13900	1246300	77630	897100	909600	198800	38120	2820
8/31/2021	49020	3700	8300	10900	61400	10800	837000	44530	845300	612100	167900	580	2230
9/30/2021	49120	3900	8400	11300	70500	8800	1155800	21140	876700	630600	221800	910	2400
10/30/2021	65690	4900	10400	14100	62400	9800	2472800	14430	698600	701900	244000	510	2600
11/30/2021	64865	4150	10500	12650	56250	10050	2193200	10375	755450	779200	233100	775	2055
12/31/2021	64865	4150	10500	12650	56250	10050	2193200	10375	755450	779200	233100	775	2055
1/31/2022	48860	3566	9200	10866	55933	6066	825133	9483	747066	606400	252800	377	1540
2/28/2022	48860	3566	9200	10866	55933	6066	825133	9483	747066	606400	252800	377	1540
3/31/2022	48860	3566	9200	10866	55933	6066	825133	9483	747066	606400	252800	377	1540
4/29/2022	53250	4000	10800	13400	54200	3000	1080500	24370	829000	734200	289000	2820	2080
5/31/2022	47570	3800	9300	12100	51600	3300	2084300	86480	739600	674700	288100	1720	2090
6/30/2022	51820	3300	9900	13000	54400	8800	1601500	27330	806800	744600	256700	730	1800
7/29/2022	58000	6700	10300	13100	67800	9200	1203600	71740	861400	1132900	304800	22240	2090
8/31/2022	44060	3700	9700	15300	66700	9100	1247000	136530	388500	1206300	208900	23700	1730
9/30/2022	62100	5000	11600	13800	80100	10500	1195900	66260	210300	1221100	218200	23740	2240
10/31/2022													
11/30/2022													
12/31/2022													

	#14 TW 2	#15 TW3	#16 TW4	#17 TW6	#18 TW7	#19 It/Roste	#20 Training	#21 90 Day	#23 CI-WH	#25 Steam F	#27 R-Unit C	#28 Compos	#29 Garden
1/31/2017	470	1740	6060	1700	1040	930	5000	8000	11800	140700	12000	20700	0
2/29/2017	330	1590	6640	450	980	890	5200	6300	11400	65000	10300	17700	0
3/31/2017	460	1650	6750	510	1080	990	2400	9000	12900	138900	14900	22200	0
4/28/2017	420	1280	6200	400	980	630	2000	18400	10600	101500	8400	23100	400
5/31/2017	540	1930	13460	480	1360	790	1600	37400	20200	110500	9600	70900	50400
6/30/2017	540	1750	31960	420	1200	590	3300	38000	28000	55900	9500	143500	142000
7/31/2017	460	1920	33760	460	930	420	3000	14500	33100	108600	11300	153300	276600
8/31/2017	490	1850	30860	480	940	680	4400	12800	38800	58500	10500	153700	246400
9/29/2017	1890	1770	15570	480	870	680	1600	8700	21300	90000	9800	144400	53300
10/31/2017	1000	1920	9910	650	1060	550	1800	7400	15600	73500	10600	160400	2700
11/30/2017	830	1840	8100	870	990	600	1700	14800	12800	111800	8000	165600	200
12/29/2017	600	1780	8790	830	970	560	1900	6900	14300	65900	8500	206200	600
1/31/2018	650	1920	9940	860	1150	670	2200	6900	16100	130100	7600	241100	100
2/29/2018	480	1450	8730	670	1000	870	1700	6600	15800	70400	7400	207200	500
3/31/2018	480	910	7980	560	940	940	2300	6600	17800	99200	6400	222600	1000
4/28/2018	520	1730	11320	520	1060	700	4900	5300	15600	52300	6200	232600	5100
5/31/2018	510	1880	10590	540	1260	900	3000	6100	25200	49000	5600	230800	51500
6/30/2018	470	1710	15570	640	1140	740	3200	5800	31400	13000	6400	243300	116700
7/31/2018	380	1370	15890	580	1180	530	1500	5000	24800	31200	5700	221000	126100
8/31/2018	490	1700	32940	440	1140	770	1800	5400	28000	49500	6200	258100	113500
9/29/2018	490	1510	30690	460	1020	660	660	3800	16300	93900	5900	240200	53400
10/31/2018	650	1630	35670	600	1330	960	2000	5700	18600	97300	5400	274400	2900
11/30/2018	550	1350	29740	460	1360	780	2100	3500	13500	118300	4900	244400	0
12/29/2018	550	1430	25280	470	1360	660	1700	4400	14200	87700	5800	257700	100
1/31/2019	660	1350	9810	480	1100	680	1900	4200	17300	140200	5600	257300	0
2/28/2019	530	1190	8520	380	1060	510	2200	3800	12800	117400	3800	237200	0
3/29/2019	590	1390	11410	460	1120	770	1900	4800	16900	58400	4900	268100	3400
4/30/2019	520	1060	10300	580	1340	800	1900	4000	16100	10300	3600	154500	13600
5/31/2019	670	1440	28450	700	1440	850	3200	6200	21500	38700	4300	170100	57100
6/28/2019	560	1550	36180	650	1410	760	2000	5800	30000	18200	4100	175000	107000
7/31/2019	390	1040	32000	570	1150	0	2000	4800	25800	99200	3900	158600	157200
8/30/2019	370	1020	32300	580	1130	10	2900	5100	26300	58400	3900	166600	80500
9/30/2019	490	1330	31380	570	1160	790	4900	4500	20000	128500	4000	170800	28900
10/31/2019	480	1120	10770	530	1170	780	2700	5500	19800	70000	4300	155300	700
11/27/2019	500	1240	10700	1000	1040	440	1900	4200	18200	136300	4700	163200	0
12/31/2019	430	1150	10550	1260	1100	480	2300	3300	19900	68300	4300	160700	200

	#14 TW 2	#15 TW3	#16 TW4	#17 TW6	#18 TW7	#19 It/Roste	#20 Training	#21 90 Day '	#23 CI-WH	#25 Steam F	#27 R-Unit (	#28 Compos	#29 Garden
1/31/2020	440	1100	8500	1170	900	630	1700	3600	19800	141300	3900	151100	0
2/28/2020	430	1270	9380	1120	910	620	2200	4500	21800	53300	3300	222100	100
3/31/2020	410	1470	6200	1250	960	720	2300	4600	27900	112700	4000	225900	200
4/30/2020	470	640	4850	1210	1090	940	2600	4300	41000	75500	4500	280600	11000
5/29/2020	480	1070	18970	930	1180	1010	2300	4200	33800	102100	5300	350300	24300
6/30/2020	470	1410	25560	730	1020	990	2200	3800	35500	48500	5000	317100	24400
7/31/2020	650	920	26870	850	1000	820	2200	4200	42600	125400	6000	346000	156900
8/31/2020	410	250	28000	990	840	910	2100	3800	41400	68500	6000	343200	125200
9/30/2020	510	350	27480	900	840	640	3800	5200	33300	139800	6100	317000	64900
10/30/2020	470	1070	9770	880	970	600	2400	4800	31200	43600	6100	226400	10400
11/30/2020	450	950	3630	750	900	710	1900	3400	22800	121600	4800	351400	500
12/31/2020	280	650	3970	790	870	780	1800	2900	6100	72100	5000	349200	6300
1/31/2021	480	1110	4090	740	1170	700	2400	3700	24800	192800	28900	357600	5300
2/28/2021	660	1040	3840	570	1170	650	2200	5600	24300	141900	51200	314300	700
3/31/2021	580	1200	3650	630	770	930	3500	6700	28200	114600	8500	336500	600
4/30/2021	440	1190	3680	570	1090	610	2200	4300	29800	98700	3125	340700	15700
5/29/2021	640	1160	10280	530	980	640	1700	4400	32200	54400	3125	260200	40100
6/30/2021	670	3800	25150	620	1110	650	1300	7700	38000	78100	2200	301200	42900
7/31/2021	580	760	27540	640	1060	650	1800	4900	36500	114800	2700	327400	229100
8/31/2021	330	1720	20990	570	920	630	1200	4700	24700	25200	1900	277200	150900
9/30/2021	510	3460	22780	610	1040	250	1800	3800	23700	55400	10400	332200	54400
10/30/2021	790	3800	28260	610	1150	40	1800	2900	23500	34600	2300	352700	11700
11/30/2021	615	4790	8980	1165	765	610	1250	2700	21800	14850	5325	366400	150
12/31/2021	615	4790	8980	1165	765	610	1250	2700	21800	14850	5325	366400	150
1/31/2022	527	5150	7913	1287	713	517	1433	4167	15367	24400	5325	297733	13233
2/28/2022	527	5150	7913	1287	713	517	1433	4167	15367	24400	5325	297733	13233
3/31/2022	527	5150	7913	1287	713	517	1433	4167	15367	24400	5325	297733	13233
4/29/2022	550	6010	7640	1400	880	800	1400	7400	25200	55800	7325	349800	1900
5/31/2022	480	5980	9900	1580	870	630	1600	4300	24800	14000	2900	313200	8900
6/30/2022	370	6740	11790	1310	1030	230	1700	5900	29100	11300	7200	312900	29700
7/29/2022	470	6510	31850	3070	930	490	1400	5200	41900	15500	7900	355200	229400
8/31/2022	440	1710	29000	1400	800	670	1400	6500	33800	14200	3200	323900	339600
9/30/2022	580	1240	26360	1180	870	510	1200	7100	27100	19700	8500	323400	200400
10/31/2022													
11/30/2022													
12/31/2022													

	#34 R-1	#35 R-2	#36 R-3	#37 R-4	#38 R-5	#39 R-6	#40 Strip Irrigation W	#41 Strip Irrigation E	Total Usage (gal)	Total Residential (gal)
1/31/2017	435200	564700	527500	595900	633200	554000			5836110	5836110
2/29/2017	415700	250000	488400	595700	640100	577700			5841440	5841440
3/31/2017	477700	500	533700	599900	703200	539700			5798180	5798180
4/28/2017	430500	318500	487500	549200	684200	554600			5666540	5666540
5/31/2017	512500	579500	579500	732900	823300	662700			7313000	7313000
6/30/2017	486500	517000	568900	704500	966400	692700			7266360	7266360
7/31/2017	493600	496700	520100	689600	845600	691200			7457060	7457060
8/31/2017	479900	525100	508700	828000	898200	719200			7461730	7461730
9/29/2017	453500	475900	512400	882800	1076800	702500			7336360	7336360
10/31/2017	504300	534900	591500	903700	989800	795200			7404920	7404920
11/30/2017	491100	496400	512400	832900	859400	696700			6860210	6860210
12/29/2017	457200	516800	480200	742000	810500	674000			6656020	6656020
1/31/2018	522300	549400	491900	622600	835400	729700			7165440	7165440
2/29/2018	444200	488500	440500	697800	864200	638300			6688250	6688250
3/31/2018	490000	524800	457200	874200	1013200	805800			7558300	7558300
4/28/2018	505200	502300	452100	934200	1128500	865700			7670230	7670230
5/31/2018	494400	484300	505000	862400	992400	819000	0	0	7684880	7684880
6/30/2018	524500	490200	498300	770700	861200	708200	780	545	7306075	7304750
7/31/2018	459100	451400	432400	722500	763700	650900	19820	28555	6843215	6794840
8/31/2018	464400	504800	462500	672900	796100	677800	53600	72100	7289060	7163360
9/29/2018	432500	447200	399100	563100	742700	612400	20900	27700	6179880	6131280
10/31/2018	528400	536800	285400	775100	934500	755800	0	0	6942600	6942600
11/30/2018	438900	468700	526900	676200	879300	647800	0	0	6651670	6651670
12/29/2018	479700	500700	549400	758100	962200	706000	0	0	7011830	7011830
1/31/2019	498600	510300	497100	671900	874200	735800	0	0	6777590	6777590
2/28/2019	415900	456600	440600	655900	870500	602500	0	0	6175940	6175940
3/29/2019	502700	539000	609300	872700	1148000	781200	0	0	7786640	7786640
4/30/2019	455600	452700	471700	858700	997200	707300	0	0	6803140	6803140
5/31/2019	470600	525800	528900	926600	1051200	750200	39000	47500	7826360	7739860
6/28/2019	471800	531300	578100	882500	970100	784400	48300	67000	8050670	7935370
7/31/2019	406800	515600	482900	846300	931400	732200	42200	62700	7450420	7345520
8/30/2019	424300	517200	486800	726200	845700	692700	45300	58500	7199180	7095380
9/30/2019	428000	496500	511800	571200	753300	646000	31900	41300	6851220	6778020
10/31/2019	385200	456300	457700	585100	672500	615700	0	100	6103700	6103600
11/27/2019	373700	545600	513500	708900	856300	658250	0	0	6979000	6979000
12/31/2019	349900	637300	547300	698600	885700	658250	0	0	6753260	6753260

	#34 R-1	#35 R-2	#36 R-3	#37 R-4	#38 R-5	#39 R-6	#40 Strip Irrigation W	#41 Strip Irrigation E	Total Usage (gal)	Total Residential (gal)
1/31/2020	326800	600000	511600	615300	729200	597100	0	0	6267690	6267690
2/28/2020	304000	563600	498000	590400	726700	597300	0	0	6070640	6070640
3/31/2020	347300	677800	544900	833300	888800	688100	0	0	7151580	7151580
4/30/2020	333700	620200	428500	851100	727000	711000	700	800	6731630	6730130
5/29/2020	344600	632800	402600	794600	573700	735000	41200	40900	6815780	6733680
6/30/2020	316600	634900	367000	796300	545100	752600	49600	55900	6718930	6613430
7/31/2020	339300	673100	401600	995800	578300	949700	50800	52500	8049770	7946470
8/31/2020	342400	562500	364100	981900	727500	962500	45900	59700	7689790	7584190
9/30/2020	280200	592600	400100	815200	535300	812500	44400	56400	7031070	6930270
10/30/2020	280100	510900	420600	704700	527300	800200	13000	16600	6364590	6334990
11/30/2020	279300	657700	487500	797500	581000	768500	0	0	6756490	6756490
12/31/2020	281500	741300	620000	979100	825900	806400	0	0	7257380	7257380
1/31/2021	265200	697000	457100	879100	817200	745200	0	0	7318540	7318540
2/28/2021	177000	653800	443800	762400	623000	804900	0	0	6590450	6590450
3/31/2021	257200	534700	284300	668300	652000	698800	0	0	6166020	6166020
4/30/2021	223300	420000	269000	605800	570800	403700	59200	27300	5531315	5444815
5/29/2021	231200	301800	325800	527000	424300	480000	1100	36500	5091815	5054215
6/30/2021	303700	312000	366600	552200	511800	749900	51500	57500	6345140	6236140
7/31/2021	505800	241100	357900	584500	531600	993600	60400	81000	7629960	7488560
8/31/2021	449500	474400	261800	463200	617700	729500	46900	62400	6270120	6160820
9/30/2021	531800	497900	475300	481400	664600	649100	28200	39300	6939320	6871820
10/30/2021	563200	494000	580500	604200	499700	613200	0	0	8121080	8121080
11/30/2021	554650	538650	607700	720100	517800	426100	0	0	7927020	7927020
12/31/2021	554650	538650	607700	720100	517800	426100	0	0	7927020	7927020
1/31/2022	468567	481333	494000	522700	453000	570567	0	0	5945222	5945222
2/28/2022	468567	481333	494000	522700	453000	570567	0	0	5945222	5945222
3/31/2022	468567	481333	494000	522700	453000	570567	0	0	5945222	5945222
4/29/2022	618900	548500	641200	564900	633900	220200	0	0	6794325	6794325
5/31/2022	550700	546600	543800	571100	528300	329800	0	0	7464100	7464100
6/30/2022	424500	493000	530400	692300	503900	493200	1768	1579	7140597	7137250
7/29/2022	343900	591000	600900	544400	669200	613300	8212	12640	7847242	7826390
8/31/2022	353000	580900	601900	545300	789600	591300	6741	15921	7602502	7579840
9/30/2022	308000	534500	560700	424200	1069800	614600	4937	8431	7264148	7250780
10/31/2022									7349790	7349790
11/30/2022									6957040	6957040
12/31/2022									6353985	6353985

	Total Irrigation (gal)	#26 SO1	#30 SO2	#31 SO3	#32 SO4	Total Produced (gal)
1/31/2017	0	0	2626000	1124000	2807000	6557000
2/29/2017	0	0	2611000	1099000	2800000	6510000
3/31/2017	0	0	3509000	741000	2425000	6675000
4/28/2017	0	0	2882000	127000	3182000	6191000
5/31/2017	0	0	4809000	140000	2674000	7623000
6/30/2017	0	0	4410000	146000	3123000	7679000
7/31/2017	0	0	4467000	121000	3483000	8071000
8/31/2017	0	0	4783000	100000	3375000	8258000
9/29/2017	0	0	4452000	134000	2814000	7400000
10/31/2017	0	0	4131000	93000	3604000	7828000
11/30/2017	0	0	3762000	101000	3205000	7068000
12/29/2017	0	0	3194000	133000	3523000	6850000
1/31/2018	0	0	5665000	122000	2031000	7818000
2/29/2018	0	770	4335100	96200	2549000	6981070
3/31/2018	0	0	4758900	66800	3095000	7920700
4/28/2018	0	0	5236000	165000	2595000	7996000
5/31/2018	0	0	5587000	102000	2611000	8300000
6/30/2018	1325	0	5559000	115000	2114000	7788000
7/31/2018	48375	0	3831000	82000	3516000	7429000
8/31/2018	125700	0	4719000	138000	2985000	7842000
9/29/2018	48600	0	4029000	82000	2412000	6523000
10/31/2018	0	0	5622000	64000	1600000	7286000
11/30/2018	0	0	3997000	65000	2971000	7033000
12/29/2018	0	0	4098000	87000	2966000	7151000
1/31/2019	0	0	4935000	48000	2636000	7619000
2/28/2019	0	0	3087100	55900	3361000	6504000
3/29/2019	0	0	4640100	74100	3677000	8391200
4/30/2019	0	0	4804300	54000	2444000	7302300
5/31/2019	86500	0	4348700	68000	3691000	8107700
6/28/2019	115300	0	4655000	152000	3807000	8614000
7/31/2019	104900	0	3265000	1235000	3419000	7919000
8/30/2019	103800	2000	2815000	1239000	3609000	7663000
9/30/2019	73200	0	2371000	1043000	3768000	7182000
10/31/2019	100	0	2140000	941000	3323000	6404000
11/27/2019	0	0	2810000	1227000	3204000	7241000
12/31/2019	0		2104000	919000	4013000	7036000

	Total Irrigation (gal)	#26 SO1	#30 SO2	#31 SO3	#32 SO4	Total Produced (gal)
1/31/2020	0	0	2367300	949000	3380000	6696300
2/28/2020	0	0	2440700	1097000	2864000	6401700
3/31/2020	0	0	2897000	1230000	3416000	7543000
4/30/2020	1500	0	2728000	1168000	3192000	7088000
5/29/2020	82100	0	2831000	1211000	3204000	7246000
6/30/2020	105500	0	2870000	1230000	3018000	7118000
7/31/2020	103300	0	3517000	1521100	3676000	8714100
8/31/2020	105600	0	3224000	1393900	3608000	8225900
9/30/2020	100800	0	2804000	1211000	3261000	7276000
10/30/2020	29600	0	2372000	1000000	3411000	6783000
11/30/2020	0	0	2556000	1104000	3400000	7060000
12/31/2020	0	0	2799000	1200000	3578000	7577000
1/31/2021	0	0	3348000	1101000	3140000	7589000
2/28/2021	0	0	2514000	1059000	3299000	6872000
3/31/2021	0	0	2450000	1036000	2994000	6480000
4/30/2021	86500	0	2270000	963500	2656000	5889500
5/29/2021	37600	0	2157000	921500	2437000	5515500
6/30/2021	109000	0	2802000	1094000	3498000	7394000
7/31/2021	141400	0	2916000	1280000	3988000	8184000
8/31/2021	109300	0	2608000	1126000	3007000	6741000
9/30/2021	67500	0	2589000	1121000	3611000	7321000
10/30/2021	0	0	3107000	1349000	4042000	8498000
11/30/2021	0	0	3067000	1302500	3922000	8291500
12/31/2021	0	0	3067000	1302500	3922000	8291500
1/31/2022	0	0	2511667	1019667	2781667	6313001
2/28/2022	0	0	2511667	1019667	2781667	6313001
3/31/2022	0	0	2511667	1019667	2781667	6313001
4/29/2022	0	0	2745000	1157000	3264000	7166000
5/31/2022	0	0	2829000	1180000	3806000	7815000
6/30/2022	3347	0	5707000	2405000	0	8112000
7/29/2022	20852	0	5985000	2530000	604000	9119000
8/31/2022	22662	0	4762000	2016000	2510000	9288000
9/30/2022	13368	0	2855000	1216000	4235000	8306000
10/31/2022						
11/30/2022						
12/31/2022						

Washington Corrections Center for Women

Date	Account ID: Irrigation 1		Account ID: Admin R 1		Account ID: Armory Y 1		Account ID: Chapel V 1		Account ID: Chemical Depend W 1	
	Meter # 44731227		Meter # 47731212		Meter # 47731235		Meter # 47731225		Meter # 47731224	
	Present Read	Monthly Total	Present Read	Monthly Total	Present Read	Monthly Total	Present Read	Monthly Total	Present Read	Monthly Total
1/16/2020	2036020		655600		12754		409480		2097660	
2/13/2020	2036020	0	665300	9700	13144	390	413790	4310	2110610	12950
3/25/2020	2051980	15960	678050	12750	13608	464	418560	4770	2123800	13190
4/15/2020	2073970	21990	683240	5190	13679	71	419180	620	2152280	28480
5/13/2020	2103040	29070	691430	8190	13752	73	420580	1400	2186650	34370
6/17/2020	2151260	48220	702250	10820	13896	144	422640	2060	2234330	47680
7/16/2020	2262420	111160	711500	9250	14128	232	425910	3270	2275410	41080
8/17/2020	2444120	181700	727050	15550	14151	23	428800	2890	2327460	52050
1/15/2021	2692260	248140	769540	42490	14623	472	459230	30430	2607150	279690
2/26/2021	2692260	0	780060	10520	14685	62	468010	8780	2685300	78150
3/18/2021	2692260	0	784970	4910	14813	128	472990	4980	2720220	34920
4/16/2021	2692560	300	791550	6580	15402	589	478250	5260	2779750	59530
5/14/2021	2692560	0	798350	6800	15830	428	488100	9850	2833960	54210
6/18/2021	2867500	174940	809500	11150	16213	383	496680	8580	2893160	59200
7/16/2021	2998540	131040	817170	7670	16343	130	501370	4690	2932300	39140
8/18/2021	3170870	172330	826100	8930	16795	452	504580	3210	2933340	1040
9/15/2021	3304960	134090	832890	6790	16982	187	506340	1760	2933960	620
10/22/2021	3444260	139300	842700	9810	17207	225	506940	600	2934760	800
11/19/2021	3444260	0	849950	7250	17345	138	507130	190	2935980	1220
12/17/2021	3444820	560	856860	6910	17533	188	507190	60	2939550	3570
1/13/2022	3444820	0	862290	5430	17712	179	511990	4800	2944020	4470
2/28/2022	3444820	0	873640	11350	17867	155	518330	6340	2971530	27510
3/29/2022	3444820	0	880200	6560	17913	46	518330	0	2975730	4200
4/18/2022	3444820	0	885140	4940	18101	188	518330	0	2981500	5770
5/16/2022	3444820	0	891980	6840	18275	174	523000	4670	2990310	8810
6/7/2022	3444820	0	897210	5230	18336	61	527340	4340	2996780	6470
7/11/2022	3444820	0	905480	8270	18489	153	527700	360	3012530	15750
8/10/2022	3444820	0	915010	9530	18567	78	527880	180	3022260	9730
9/7/2022	3444820	0	921720	6710	18768	201	529270	1390	3042620	20360
10/3/2022	3444820	0	928130	6410	19077	309	532240	2970	3054990	12370

Date	Account ID: Clinic AA 1 Meter # 47731218		Account ID: Close Custody C1 Meter # 47731208		Account ID: Crew P 1 Meter # 47731205		Account ID: Dining D 1 Meter # 47731231		Account ID: Dining N1 Meter # 47731214	
	Present Read	Monthly Total	Present Read	Monthly Total	Present Read	Monthly Total	Present Read	Monthly Total	Present Read	Monthly Total
1/16/2020	1177340		21850960		709800		6933500		2008280	
2/13/2020	1196880	19540	22213980	363020	716330	6530	7015510	82010	2029740	21460
3/25/2020	1225270	28390	22791760	577780	722970	6640	7142690	127180	2160590	130850
4/15/2020	1237310	12040	23077350	285590	724930	1960	7209980	67290	2075510	-85080
5/13/2020	1254800	17490	23436360	359010	728350	3420	7289170	79190	2100650	25140
6/17/2020	1284390	29590	23904440	468080	734660	6310	7391080	101910	2141120	40470
7/16/2020	1303150	18760	24273480	369040	738660	4000	7477800	86720	2172100	30980
8/17/2020	1325710	22560	24681180	407700	743570	4910	7575570	97770	2204870	32770
1/15/2021	1419780	94070	26358200	1677020	764100	20530	8058320	482750	2326570	121700
2/26/2021	1443710	23930	26841380	483180	769780	5680	8197850	139530	2355190	28620
3/18/2021	1457970	14260	27103000	261620	772350	2570	8254830	56980	2365580	10390
4/16/2021	1474990	17020	27441660	338660	776740	4390	8310600	55770	2398010	32430
5/14/2021	1493470	18480	27743990	302330	781880	5140	8362020	51420	2409490	11480
6/18/2021	1515220	21750	28081830	337840	787860	5980	8423710	61690	2424670	15180
7/16/2021	1532820	17600	28360400	278570	791320	3460	8473810	50100	2434580	9910
8/18/2021	1552180	19360	28686870	326470	794130	2810	8545010	71200	2454910	20330
9/15/2021	1567520	15340	28951850	264980	798320	4190	8603250	58240	2458990	4080
10/22/2021	1588830	21310	29272530	320680	806770	8450	8677770	74520	2471310	12320
11/19/2021	1601200	12370	29504010	231480	813150	6380	8721990	44220	2477920	6610
12/17/2021	1615380	14180	29716780	212770	816400	3250	8777960	55970	2484730	6810
1/13/2022	1629580	14200	29900050	183270	817630	1230	8829900	51940	2488460	3730
2/28/2022	1659350	29770	30184230	284180	819190	1560	8895100	65200	2501010	12550
3/29/2022	1678280	18930	30415280	231050	819620	430	8942480	47380	2506920	5910
4/18/2022	1688840	10560	30573330	158050	820010	390	8976110	33630	2508850	1930
5/16/2022	1703840	15000	30801290	227960	820890	880	9023200	47090	2511860	3010
6/7/2022	1718800	14960	30976190	174900	821560	670	9062560	39360	2514100	2240
7/11/2022	1740970	22170	31237550	261360	822920	1360	9124390	61830	2521400	7300
8/10/2022	1759500	18530	31474700	237150	823100	180	9173550	49160	2533620	12220
9/7/2022	1776300	16800	31690200	215500	823870	770	9222710	49160	2545060	11440
10/3/2022	1793950	17650	31888640	198440	824880	1010	9273910	51200	2557410	12350

Date	Account ID: Education C1 Meter # 47731210		Account ID: Education O 1 Meter # 47731215		Account ID: Greenhouse AD 1 Meter #		Account ID: Greenhouse South 1 Meter # 47731222		Account ID: Gym U 1 Meter # 47731221	
	Present Read	Monthly Total	Present Read	Monthly Total	Present Read	Monthly Total	Present Read	Monthly Total	Present Read	Monthly Total
1/16/2020	1148630		301770		472090		1822980		1030330	
2/13/2020	1172900	24270	305630	3860	474390	2300	1823150	170	1041860	11530
3/25/2020	1197820	24920	311840	6210	484880	10490	1824680	1530	1059200	17340
4/15/2020	1202040	4220	313790	1950	492550	7670	1824680	0	1068610	9410
5/13/2020	1208740	6700	319650	5860	507650	15100	1824680	0	1082360	13750
6/17/2020	1218290	9550	323950	4300	530860	23210	1824680	0	1101190	18830
7/16/2020	1228260	9970	344750	20800	552230	21370	1824680	0	1118730	17540
8/17/2020	1241150	12890	391530	46780	567830	15600	1824680	0	1137650	18920
1/15/2021	1303620	62470	424240	32710	607500	39670	1824680	0	1186140	48490
2/26/2021	1323240	19620	426770	2530	614290	6790	1824680	0	1196530	10390
3/18/2021	1333370	10130	427930	1160	618380	4090	1824680	0	1202070	5540
4/16/2021	1338740	5370	429840	1910	627040	8660	1824680	0	1210600	8530
5/14/2021	1347020	8280	435140	5300	644290	17250	1824700	20	1219290	8690
6/18/2021	1358140	11120	444570	9430	659470	15180	1824700	0	1230980	11690
7/16/2021	1365540	7400	452970	8400	679650	20180	1824700	0	1243160	12180
8/18/2021	1385140	19600	486590	33620	697840	18190	1825480	780	1258470	15310
9/15/2021	1392940	7800	488600	2010	708070	10230	1844080	18600	1266510	8040
10/22/2021	1403000	10060	492630	4030	715880	7810	1847670	3590	1276960	10450
11/19/2021	1414190	11190	495290	2660	715880	0	1848040	370	1284440	7480
12/17/2021	1424860	10670	497480	2190	721420	5540	1848210	170	1289870	5430
1/13/2022	1438350	13490	498520	1040	723190	1770	1848210	0	1300850	10980
2/28/2022	1471960	33610	499530	1010	723190	0	1848210	0	1326860	26010
3/29/2022	1490230	18270	500580	1050	730710	7520	1848260	50	1330360	3500
4/18/2022	1504670	14440	501250	670	735400	4690	1848710	450	1332150	1790
5/16/2022	1526410	21740	502180	930	742840	7440	1850910	2200	1333370	1220
6/7/2022	1548770	22360	502690	510	751540	8700	1852920	2010	1334750	1380
7/11/2022	1573340	24570	503990	1300	762990	11450	1862340	9420	1341080	6330
8/10/2022	1575070	1730	507750	3760	782280	19290	1885580	23240	1367180	26100
9/7/2022	1578820	3750	512570	4820	805850	23570	1897420	11840	1380680	13500
10/3/2022	1583230	4410	517480	4910	805850	0	1905110	7690	1389180	8500

Date	Account ID: Health Care B1		Account ID: Housing J		Account ID: Housing K		Account ID: Housing L		Account ID: Housing Mech X		Account ID: Housing X	
	Meter # 47731209		Meter # 47731213		Meter # 47731217		Meter # 47731216		Meter # 47731207		Meter # 47731207	
	Present Read	Monthly Tota	Present Read	Monthly Tota	Present Read	Monthly Tota	Present Read	Monthly Tota	Present Read	Monthly Tota	Present Read	Monthly Tota
1/16/2020	354990		7725920		13703970		12364500		53499530		1125270	
2/13/2020	361860	6870	7825830	99910	13932400	228430	12503860	139360	54377120	877590	1125270	0
3/25/2020	371990	10130	7984370	158540	14273150	340750	12708130	204270	55550510	1173390	1125270	0
4/15/2020	371990	0	8079260	94890	14443090	169940	12819260	111130	56198530	648020	1125270	0
5/13/2020	382500	10510	8208540	129280	14637030	193940	12971210	151950	57066610	868080	1125760	490
6/17/2020	389640	7140	8357310	148770	14861960	224930	13146780	175570	58138070	1071460	1130090	4330
7/16/2020	389640	0	8493610	136300	15033920	171960	13323250	176470	59058960	920890	1158370	28280
8/17/2020	389640	0	8657560	163950	15242730	208810	13539880	216630	60030840	971880	1158370	0
1/15/2021	428850	39210	9278940	621380	16050430	807700	14324960	785080	64516890	4486050	1339230	180860
2/26/2021	437440	8590	9427040	148100	16234110	183680	14499220	174260	65738360	1221470	1339230	0
3/18/2021	441400	3960	9499500	72460	16316800	82690	14582540	83320	66341280	602920	1339230	0
4/16/2021	447020	5620	9604190	104690	16435350	118550	14705460	122920	67242850	901570	1339230	0
5/14/2021	447020	0	9703880	99690	16544200	108850	14824590	119130	68125610	882760	1339230	0
6/18/2021	462370	15350	9852250	148370	16664530	120330	14974400	149810	69244920	1119310	1390840	51610
7/16/2021	468510	6140	9953930	101680	16770180	105650	15110030	135630	70152050	907130	1435290	44450
8/18/2021	476630	8120	10076730	122800	16981890	211710	15156290	46260	71171910	1019860	1575360	140070
9/15/2021	482390	5760	10177070	100340	17117740	135850	15160220	3930	72032780	860870	1590910	15550
10/22/2021	490030	7640	10325440	148370	17304900	187160	15160710	490	73116940	1084160	1639760	48850
11/19/2021	490030	0	10441750	116310	17483200	178300	15160930	220	73876390	759450	1639760	0
12/17/2021	501070	11040	10553800	112050	17649820	166620	15161090	160	74661440	785050	1640150	390
1/13/2022	501070	0	10659430	105630	17649820	0	15162990	1900	75378800	717360	1640150	0
2/28/2022	501070	0	10794080	134650	18023070	373250	15206830	43840	76585200	1206400	1640150	0
3/29/2022	501070	0	10866950	72870	18167910	144840	15206990	160	77349180	763980	1640150	0
4/18/2022	501070	0	10922770	55820	18280530	112620	15207300	310	77877900	528720	1640150	0
5/16/2022	501070	0	10995280	72510	18452580	172050	15207380	80	78642870	764970	1640150	0
6/7/2022	501070	0	11057860	62580	18573310	120730	15207470	90	79244860	601990	1640150	0
7/11/2022	501070	0	11092280	34420	18802450	229140	15212010	4540	80136540	891680	1640150	0
8/10/2022	501070	0	11121610	29330	19039350	236900	15218960	6950	80941230	804690	1640150	0
9/7/2022	501070	0	11157160	35550	19236590	197240	15235810	16850	81706950	765720	1640150	0
10/3/2022	501070	0	11235910	78750	19377530	140940	15256390	20580	82442090	735140	1640150	0

Date	Account ID: Industries I		Account ID: Kennel AC		Account ID: Maintenance AE		Account ID: Mental Health H		Account ID: Offices M		Account ID: Plant Services	
	Meter # 47731232		Meter # 47731219		Meter # 47731240		Meter # 47731233		Meter # 47731223		Meter # 47731206	
	Present Read	Monthly Tota	Present Read	Monthly Tota	Present Read	Monthly Tota	Present Read	Monthly Tota	Present Read	Monthly Tota	Present Read	Monthly Tota
1/16/2020	580560		1599859		80385		244640		365910		215350	
2/13/2020	589770	9210	1622112	22253	92208	11823	247860	3220	366880	970	217580	2230
3/25/2020	601850	12080	1648803	26691	110882	18674	252180	4320	369200	2320	220910	3330
4/15/2020	608770	6920	1650840	2037	122010	11128	254590	2410	370460	1260	222590	1680
5/13/2020	619400	10630	1653276	2436	131851	9841	257810	3220	374750	4290	225150	2560
6/17/2020	634550	15150	1655348	2072	144987	13136	261410	3600	379700	4950	227970	2820
7/16/2020	646370	11820	1656556	1208	158672	13685	265410	4000	392300	12600	230050	2080
8/17/2020	654990	8620	1659023	2467	168635	9963	283500	18090	407110	14810	232150	2100
1/15/2021	698910	43920	1659023	0	227136	58501	304270	20770	432120	25010	242560	10410
2/26/2021	710820	11910	1674093	15070	235220	8084	308710	4440	434080	1960	245230	2670
3/18/2021	718630	7810	1675863	1770	239109	3889	310610	1900	435380	1300	246780	1550
4/16/2021	730340	11710	1678357	2494	242655	3546	314020	3410	437150	1770	248870	2090
5/14/2021	741680	11340	1680652	2295	246674	4019	317190	3170	440640	3490	251220	2350
6/18/2021	754680	13000	1681293	641	251791	5117	320930	3740	446350	5710	253660	2440
7/16/2021	761930	7250	1681745	452	257305	5514	323970	3040	486870	40520	256590	2930
8/18/2021	769610	7680	1682266	521	266941	9636	328020	4050	499820	12950	258910	2320
9/15/2021	774220	4610	1682708	442	270942	4001	330280	2260	502740	2920	260760	1850
10/22/2021	783590	9370	1683277	569	277855	6913	334000	3720	504360	1620	263570	2810
11/19/2021	790340	6750	1684103	826	280739	2884	336260	2260	505290	930	265180	1610
12/17/2021	796750	6410	1686347	2244	283071	2332	338380	2120	506150	860	266740	1560
1/13/2022	799030	2280	1692267	5920	286112	3041	339750	1370	506900	750	267870	1130
2/28/2022	799710	680	1698342	6075	290643	4531	341850	2100	508140	1240	270810	2940
3/29/2022	804550	4840	1708513	10171	292548	1905	343500	1650	508790	650	272730	1920
4/18/2022	808160	3610	1717427	8914	295494	2946	344630	1130	509400	610	274070	1340
5/16/2022	814230	6070	1727895	10468	300221	4727	346600	1970	510180	780	275930	1860
6/7/2022	818020	3790	1738540	10645	302544	2323	348330	1730	510830	650	277250	1320
7/11/2022	826830	8810	1759077	20537	306157	3613	350400	2070	514800	3970	279520	2270
8/10/2022	828310	1480	1780540	21463	308150	1993	352380	1980	525420	10620	281660	2140
9/7/2022	836520	8210	1814431	33891	312968	4818	354020	1640	528810	3390	284540	2880
10/3/2022	841600	5080	1841724	27293	315052	2084	356240	2220	534590	5780	287240	2700

Date	Account ID: Programs AE Meter # 47731220		Account ID: R - Irrigation Meter #		Account ID: Rec Yard Meter # 47731230		Account ID: Sally Port T Meter # 47731238		Account ID: Special Needs Z Meter # 47731211		Account ID: Visit Center A Meter # 47731226	
	Present Read	Monthly Tota	Present Read	Monthly Total	Present Read	Monthly Tota	Present Read	Monthly Tota	Present Read	Monthly Tota	Present Read	Monthly Tota
1/16/2020	191066		817220		529260		15760		20214730		747100	
2/13/2020	191708	642	817220	0	529260	0	16126	366	20573010	358280	756640	9540
3/25/2020	192188	480	817220	0	529260	0	16698	572	21110710	537700	768870	12230
4/15/2020	192357	169	817220	0	529260	0	16935	237	21380010	269300	772720	3850
5/13/2020	192685	328	817220	0	529260	0	17234	299	21650680	270670	778010	5290
6/17/2020	193119	434	817220	0	529260	0	17717	483	21989730	339050	794230	16220
7/16/2020	193558	439	817220	0	529260	0	18085	368	22246490	256760	800970	6740
8/17/2020	194211	653	817220	0	571430	42170	18493	408	22537050	290560	809340	8370
1/15/2021	199313	5102	817220	0	689340	117910	20726	2233	23963740	1426690	836070	26730
2/26/2021	204372	5059	817220	0	689340	0	21258	532	24380270	416530	840880	4810
3/18/2021	204895	523	817220	0	689340	0	21530	272	24536420	156150	844250	3370
4/16/2021	205679	784	817220	0	689340	0	21908	378	24745680	209260	849160	4910
5/14/2021	205679	0	817220	0	689340	0	22282	374	24957720	212040	854500	5340
6/18/2021	207431	1752	817220	0	689340	0	22728	446	25217000	259280	859990	5490
7/16/2021	208256	825	817220	0	689340	0	23047	319	25420690	203690	865690	5700
8/18/2021	209176	920	817220	0	711990	22650	23451	404	25686950	266260	872860	7170
9/15/2021	216396	7220	817220	0	767390	55400	23714	263	25912670	225720	878450	5590
10/22/2021	217518	1122	817220	0	810380	42990	24156	442	26208500	295830	885210	6760
11/19/2021	217518	0	817220	0	810380	0	24429	273	26399290	190790	889330	4120
12/17/2021	219746	2228	817240	20	810380	0	24702	273	26595840	196550	893410	4080
1/13/2022	219746	0	817240	0	810380	0	25036	334	26798200	202360	896420	3010
2/28/2022	219746	0	817240	0	810380	0	25681	645	27162010	363810	900370	3950
3/29/2022	220581	835	817240	0	810380	0	25933	252	27342680	180670	903580	3210
4/18/2022	220581	0	817240	0	810380	0	26146	213	27502570	159890	905770	2190
5/16/2022	220581	0	817240	0	810380	0	26438	292	27722790	220220	908680	2910
6/7/2022	220581	0	817240	0	810380	0	26637	199	27899350	176560	912480	3800
7/11/2022	220581	0	817240	0	810380	0	27007	370	28145280	245930	916310	3830
8/10/2022	220581	0	817240	0	810380	0	27301	294	28373960	228680	919530	3220
9/7/2022	220581	0	817240	0	810380	0	27599	298	28590020	216060	923460	3930
10/3/2022	220581	0	817240	0	810380	0	27957	358	28797650	207630	926800	3340

Date	Account ID: Visiting 02 Meter # 47731236		Account ID: Warehouse S Meter # 47731234		Account ID: Well House Gate Meter # 47731229		Total Usage (gallons)	Total Residential (gallons)
	Present Read	Monthly Tota	Present Read	Monthly Tota	Present Read	Monthly Total		
1/16/2020	253696		102600		20313200			
2/13/2020	257010	3314	104240	1640	20619700	306500	2,644,188	2,644,188
3/25/2020	261774	4764	106460	2220	21077720	458020	3,948,945	3,932,985
4/15/2020	263072	1298	107750	1290	21316200	238480	1,925,440	1,903,450
5/13/2020	264660	1588	109310	1560	21636090	319890	2,585,615	2,556,545
6/17/2020	266486	1826	110910	1600	22048110	412020	3,256,735	3,208,515
7/16/2020	268058	1572	112330	1420	22369260	321150	2,811,914	2,700,754
8/17/2020	269912	1854	113900	1570	22756200	386940	3,261,958	3,080,258
1/15/2021	276978	7066	122150	8250	24684070	1927870	13,781,374	13,533,234
2/26/2021	278183	1205	124660	2510	25237290	553220	3,581,882	3,581,882
3/18/2021	278838	655	125870	1210	25503050	265760	1,703,187	1,703,187
4/16/2021	280209	1371	127800	1930	25890020	386970	2,428,972	2,428,672
5/14/2021	281487	1278	129590	1790	26274660	384640	2,342,234	2,342,234
6/18/2021	282966	1479	131740	2150	26736830	462170	3,112,308	2,937,368
7/16/2021	284160	1194	133680	1940	27107920	371090	2,535,614	2,404,574
8/18/2021	285306	1146	135460	1780	27546220	438300	3,038,239	2,865,909
9/15/2021	288536	3230	136920	1460	27907130	360910	2,335,133	2,201,043
10/22/2021	292719	4183	138900	1980	28357440	450310	2,929,244	2,789,944
11/19/2021	295275	2556	140300	1400	28699360	341920	1,942,157	1,942,157
12/17/2021	298767	3492	141650	1350	29060410	361050	1,988,147	1,987,567
1/13/2022	301193	2426	142770	1120	29392460	332050	1,677,210	1,677,210
2/28/2022	304117	2924	145360	2590	29991130	598670	3,247,540	3,247,540
3/29/2022	305738	1621	147070	1710	30321540	330410	1,866,590	1,866,590
4/18/2022	306901	1163	148890	1820	30557970	236430	1,355,224	1,355,224
5/16/2022	310517	3616	150690	1800	30883150	325180	1,937,467	1,937,467
6/7/2022	313035	2518	151820	1130	31144590	261440	1,534,686	1,534,686
7/11/2022	316759	3724	153420	1600	31539360	394770	2,282,897	2,282,897
8/10/2022	318452	1693	155100	1680	31850800	311440	2,075,431	2,075,431
9/7/2022	319945	1493	156560	1460	32172120	321320	1,994,561	1,994,561
10/3/2022	323543	3598	158130	1570	32473330	301210	1,866,492	1,866,492

APPENDIX C14

Water Use Efficiency Reports

Cedar Creek Corrections Center

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

Date Submitted: 5/26/2023

Water Use Efficiency
Annual Performance Report - 2022

WS Name: CEDAR CREEK CORRECTIONS CENTER

Water System ID# : 11882 WS County: THURSTON

Report submitted by: *Valeria Huested*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2022* To *12/31/2022*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*16,671,014* gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*13,579,826* gallons	
Distribution System Leakage – Annual Volume TP – AC	*3,091,188* gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*18.5 %*	
3-year annual average - %	*18.0 %*	*2020, 2021, 2022*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *12/17/2008*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Goals established in 2004 were to reduce water consumption by 20 percent in the year 2011.

Customer (Demand Side) Goal Progress:

Darin M. Klein, DOC Environmental Planner 5, brought consultants to inspect water system and suggest upgrades and process changes. I am still waiting for further direction.

Additional Information Regarding Supply and Demand Side WUE Efforts

We have been repairing leaks during 2021. In 2022 we continued to monitor and take appropriate actions to remedy any issues regarding our water system. We are also supplementing some of our lawn and garden watering with rain catchment.

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

We are supplementing some of our lawn and garden watering with rain catchment.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January	01/16/2022	184.9	
February	02/08/2022	180.7	
March	03/05/2022	181.6	
April	04/01/2022	179.1	
May	05/20/2022	178.8	
June	06/02/2022	177.4	
July	07/02/2022	174.5	
August	08/15/2022	172.1	
September	09/11/2022	170.0	
October	10/06/2022	169.8	
November	11/25/2022	172.9	
December	12/24/2022	177.4	

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number: No Tag, SO2, Well #2

Well depth: 200.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft) 0.01

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…) ?

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft) ?

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface) Transducer is 70 ft. above well bottom and 130 ft. from the ground level

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? 107,417

Month	Volume of Water Produced in gallons
January	1,241,839
February	1,188,373
March	1,320,376
April	1,330,565
May	1,374,119
June	1,437,327
July	1,637,365
August	1,477,328
September	1,455,328
October	1,445,212
November	1,393,209
December	1,369,973

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- [ ] Yes
- [ ] No
- [x] There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- [ ] Advisory Conservation
- [ ] Voluntary Conservation
- [ ] Mandatory Conservation
- [ ] Rationing
- [ ] Other

What factors caused your water shortage the previous year?

- [ ] Drought
- [ ] Fire
- [ ] Landslides
- [ ] Earthquakes
- [ ] Flooding
- [ ] Water Supply Limitations
- [ ] Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 5/24/2022

Water Use Efficiency
Annual Performance Report - 2021

WS Name: CEDAR CREEK CORRECTIONS CENTER

Water System ID# : 11882 WS County: THURSTON

Report submitted by: *Larry Vene*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2021* To *12/31/2021*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons *16,878,721* gallons

Authorized Consumption (AC) – Annual Volume in gallons *13,686,438* gallons

Distribution System Leakage – Annual Volume TP – AC *3,192,283* gallons

Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 % *18.9 %*

3-year annual average - % *16.3 %* *2019, 2020, 2021*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *12/17/2008*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Goals established in 2004 were to reduce water consumption by 20 percent in the year 2011.

Customer (Demand Side) Goal Progress:

The most recent information I have is public forum details and procedures were being discussed between Mark Maseski (DOH), Julie Vaneste (DOC), and/or Eric Heinitz (DOC). I am still waiting for direction.

Additional Information Regarding Supply and Demand Side WUE Efforts

We have been repairing leaks during 2021. We will continue to take appropriate action to remedy any issues regarding our water system. We are also supplementing some of our lawn and garden watering with rain catchment.

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

We are supplementing some of our watering needs with rain catchment.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January	01/16/2021	183.4	
February	02/24/2021	172.7	
March	03/06/2021	172.4	
April	04/07/2021	180.3	
May	05/01/2021	176.8	
June	06/23/2021	175.2	
July	07/11/2021	173.9	
August	08/01/2021	171.8	
September	09/01/2021	170.5	
October	10/31/2021	171.1	
November	11/25/2021	180.7	
December	12/29/2021	185.4	

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number: No Tag, SO2, Well #2

Well depth: 200.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft) 0.01 ft.

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…) ?

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft) ?

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface) Transducer is 70 ft. above well bottom and 130 ft. from ground level

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? 85,975

Month	Volume of Water Produced in gallons
January	1,387,349
February	1,161,636
March	1,373,346
April	1,362,211
May	1,439,840
June	1,575,741
July	1,476,786
August	1,460,904
September	1,375,347
October	1,561,819
November	1,271,122
December	1,432,620

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- [ ] Yes
- [ ] No
- [x] There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- [ ] Advisory Conservation
- [ ] Voluntary Conservation
- [ ] Mandatory Conservation
- [ ] Rationing
- [ ] Other

What factors caused your water shortage the previous year?

- [ ] Drought
- [ ] Fire
- [ ] Landslides
- [ ] Earthquakes
- [ ] Flooding
- [ ] Water Supply Limitations
- [ ] Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 3/16/2021

Water Use Efficiency
Annual Performance Report - 2020

WS Name: CEDAR CREEK CORRECTIONS CENTER

Water System ID# : 11882 WS County: THURSTON

Report submitted by: *Larry Vene*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2020* To *12/31/2020*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*18,821,887* gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*15,678,725* gallons	
Distribution System Leakage – Annual Volume TP – AC	*3,143,162* gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*16.7 %*	
3-year annual average - %	*16.0 %*	*2018, 2019, 2020*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *12/17/2008*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Goals established in 2004 were to reduce water consumption by 20 percent in the year 2011.

Customer (Demand Side) Goal Progress:

The most recent information I have is public forum details and procedures were being discussed between Mark Maseski (DOH) and Julie Vaneste (DOC) and/or Eric Heinitz (DOC). I am still waiting for direction.

Additional Information Regarding Supply and Demand Side WUE Efforts

We have been repairing leaks during 2020. We will continue to take appropriate action to remedy any issues regarding our water system. We are also supplementing some of our lawn and garden watering with rain catchment.

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January	03/19/2021	177.8	
February	02/13/2020	180.1	
March	03/02/2020	177.2	
April	04/04/2020	175.8	
May	05/23/2020	178.9	
June	06/24/2020	173.3	
July	07/02/2020	173.1	
August	08/23/2020	169.9	
September	09/20/2020	169.3	
October	10/24/2020	172.1	
November	11/28/2020	177.9	
December	12/26/2020	180.6	

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number: No Tag. Well #2

Well depth: 200.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft) 0.01 ft.

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…) ?

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft) ?

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface) Transducer is 70 ft. above well bottom or 130 ft. from ground level

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? 95,352

Month	Volume of Water Produced in gallons
January	1,815,557
February	1,580,189
March	1,665,811
April	1,603,952
May	1,674,014
June	1,534,009
July	1,661,618
August	1,492,565
September	1,404,120
October	1,441,710
November	1,507,977
December	1,440,365

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- ☐ Yes
- ☑ No
- ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- ☐ Advisory Conservation
- ☐ Voluntary Conservation
- ☐ Mandatory Conservation
- ☐ Rationing
- ☐ Other

What factors caused your water shortage the previous year?

- ☐ Drought
- ☐ Fire
- ☐ Landslides
- ☐ Earthquakes
- ☐ Flooding
- ☐ Water Supply Limitations
- ☐ Other

Do not mail, fax, or email this report to DOH

Larch Corrections Center

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

Date Submitted: 6/26/2023

Water Use Efficiency
Annual Performance Report - 2022

WS Name: LARCH CORRECTIONS CENTER

Water System ID# : 06461 WS County: CLARK

Report submitted by: *Steven Blahut*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2021* To *01/01/2022*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*16,048,532* gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*14,548,450* gallons	
Distribution System Leakage – Annual Volume TP – AC	*1,500,082* gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*9.3 %*	
3-year annual average - %	*4.7 %*	*2018, 2021, 2022*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *06/20/2018*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Replace feeder lines to new boiler.

Customer (Demand Side) Goal Progress:

1. Identify any WUE measures you are currently implementing: Replaced boiler feed lines
2. Estimate how much water you have saved: unknown
3. Report progress toward meeting goals within your established timeframe: Unknown.
4. If you established a goal to maintain a historic level: Consumption did not exceed historic leves.

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? 52,085

Month	Volume of Water Produced in gallons
January	1,375,198
February	1,152,460
March	1,300,686
April	1,260,752
May	1,444,619
June	1,328,183
July	1,286,752
August	1,286,752
September	1,351,950
October	1,252,309
November	1,394,222
December	1,614,649

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☐ No ☑ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 8/26/2022

Water Use Efficiency
Annual Performance Report - 2021

WS Name: LARCH CORRECTIONS CENTER

Water System ID# : 06461 WS County: CLARK

Report submitted by: *Valeria Huested*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2021* To *12/31/2021*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*19,048,483* gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*18,390,957* gallons	
Distribution System Leakage – Annual Volume TP – AC	*657,526* gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*3.5 %*	
3-year annual average - %	*1.7 %*	*2017, 2018, 2021*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *06/20/2018*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Replace feeder lines to new boiler.

Customer (Demand Side) Goal Progress:

New boiler installation and construction of feeder lines was completed

Additional Information Regarding Supply and Demand Side WUE Efforts

2021 water losses were driven by construction and subsequent failures of new meets older line installations. The system was monitored and failures chased and repaired. As usual, the system will remain under close observation and anymore leaks will be noted and fixed.

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

2021 water losses were driven by construction and subsequent failures of new meets older line installations. The system was monitored and failures chased and repaired. As usual, the system will remain under close observation and anymore leaks will be noted and fixed.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	**Volume of Water Produced in gallons**
January	1,795,757
February	1,424,646
March	1,694,747
April	1,530,028
May	1,684,445
June	2,024,165
July	1,725,156
August	1,343,961
September	1,564,092
October	1,578,419
November	1,401,915
December	1,368,368

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- [ ] Yes
- [x] No
- [ ] There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- [ ] Advisory Conservation
- [ ] Voluntary Conservation
- [ ] Mandatory Conservation
- [ ] Rationing
- [ ] Other

What factors caused your water shortage the previous year?

- [ ] Drought
- [ ] Fire
- [ ] Landslides
- [ ] Earthquakes
- [ ] Flooding
- [ ] Water Supply Limitations
- [ ] Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 6/17/2020

Water Use Efficiency
Annual Performance Report - 2019

WS Name: LARCH CORRECTIONS CENTER

Water System ID# : 06461 WS County: CLARK

Report submitted by: *John Alderman*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2019* To *12/31/2019*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*24,867,102* gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*25,314,049* gallons	
Distribution System Leakage – Annual Volume TP – AC	*-446,947* gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*-1.8 %*	
3-year annual average - %	*3.8 %*	*2016, 2017, 2018*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *06/20/2018*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Within 3 years replace water line supplying the boiler system.

Customer (Demand Side) Goal Progress:

The boilers hot water supply and return piping is being reviewed by DOC engineers. Replacement of the existing boilers is also being reviewed. These replacements will lower the gallons per day per person by greatly reducing the amount of water loss.

Additional Information Regarding Supply and Demand Side WUE Efforts

Replacement of the hot water boilers and piping will reduce water loss and the gallons per day per person. Water loss should drop significantly. The existing piping has numerous leaks and adversely affects the water totals.

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? ____________

Month	**Volume of Water Produced in gallons**
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- ☐ Yes
- ☐ No
- ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- ☐ Advisory Conservation
- ☐ Voluntary Conservation
- ☐ Mandatory Conservation
- ☐ Rationing
- ☐ Other

What factors caused your water shortage the previous year?

- ☐ Drought
- ☐ Fire
- ☐ Landslides
- ☐ Earthquakes
- ☐ Flooding
- ☐ Water Supply Limitations
- ☐ Other

Do not mail, fax, or email this report to DOH

Maple Lane Corrections Center

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

Date Submitted: 7/26/2022

Water Use Efficiency
Annual Performance Report - 2021

WS Name: Maple Lane Corrections Center

Water System ID# : 51195 WS County: THURSTON

Report submitted by: *Cory Postma*

Meter Installation Information:

Estimate the percentage of metered connections: *Less Than 50%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

The Department of Corrections is waiting on finding for the installation of meters

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2021* To *12/31/2021*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons *3,828,400* gallons

Authorized Consumption (AC) – Annual Volume in gallons *3,828,400* gallons

Distribution System Leakage – Annual Volume TP – AC gallons

Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 % *0.0 %*

3-year annual average - % *0.0 %* *2019, 2020, 2021*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: __________

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Funding has been requested to comply with the Municipal Water Law and will start when funding becomes available. FY2021 funding was allocated but the amount was no longer sufficient and the timeline required was inadequate for contractor negotiation.

Customer (Demand Side) Goal Progress:

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
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September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	
February	
March	
April	
May	
June	
July	
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September	
October	
November	
December	

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☐ No ☑ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 9/2/2021

Water Use Efficiency
Annual Performance Report - 2020

WS Name: Maple Lane Corrections Center

Water System ID# : 51195 WS County: THURSTON

Report submitted by: *Cory Postma*

Meter Installation Information:

Estimate the percentage of metered connections: *Less Than 50%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Awaiting funding for the project.

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2020* To *12/31/2020*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*2,576,800* gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*2,576,800* gallons	
Distribution System Leakage – Annual Volume TP – AC	gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*0.0 %*	
3-year annual average - %	*0.0 %*	*2018, 2019, 2020*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: __________

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Funding has been requested to comply with the Municipal Water Law and will start when funding becomes available.

Customer (Demand Side) Goal Progress:

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☐ No ☑ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 6/2/2020

Water Use Efficiency
Annual Performance Report - 2019

WS Name: Maple Lane Corrections Center

Water System ID# : 51195 WS County: THURSTON

Report submitted by: *Cory Postma*

Meter Installation Information:

Estimate the percentage of metered connections: *Less Than 50%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

The Department of Corrections is still waiting on funding for the installation of meters

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/02/2019* To *12/31/2019*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*3,989,600*	gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*3,989,600*	gallons	
Distribution System Leakage – Annual Volume TP – AC		gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*0.0 %*		
3-year annual average - %	*0.0 %*		*2017, 2018, 2019*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: __________

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Funding has been requested to comply with the Municipal Water Law and will start when funding becomes available.

Customer (Demand Side) Goal Progress:

The Department of Corrections, Department of Social & Health Services, and Department of Health are all currently utilizing parts of the facility. DOC's long range plans for the facility are solidifying, As of this date, funding has not been approved.

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? ____________

Month	Volume of Water Produced in gallons
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- [ ] Yes
- [ ] No
- [ ] There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- [ ] Advisory Conservation
- [ ] Voluntary Conservation
- [ ] Mandatory Conservation
- [ ] Rationing
- [ ] Other

What factors caused your water shortage the previous year?

- [ ] Drought
- [ ] Fire
- [ ] Landslides
- [ ] Earthquakes
- [ ] Flooding
- [ ] Water Supply Limitations
- [ ] Other

Do not mail, fax, or email this report to DOH

McNeil Island Corrections Center

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

Date Submitted: 6/28/2021

Water Use Efficiency
Annual Performance Report - 2020

WS Name: MCNEIL ISLAND WATER

Water System ID# : 52900 WS County: PIERCE

Report submitted by: *Eric Heinitz*

Meter Installation Information:

Estimate the percentage of metered connections: *Less Than 50%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

McNeil Island is in the process of switching from a surface water system to well water. Part of that project is to repair, replace or eliminate much of the water infrastructure on the island. Once the well installation is complete (estimate is October 2021) and the existing system is shut down, DOC will begin looking at the infrastructure to eliminate much of the system which is no longer needed. It is our intent to install water meters on the infrastructure which will remain in use.

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2020* To *12/31/2020*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*54,700,000* gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*54,700,000* gallons	
Distribution System Leakage – Annual Volume TP – AC	gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*0.0 %*	
3-year annual average - %	*0.0 %*	*2017, 2018, 2020*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: ___________

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

By 2022, get new water system on line and eliminate leaks in infrastructure.

Customer (Demand Side) Goal Progress:

The well has been completed and the well house and treatment system is under construction.

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
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July			
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September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	**Volume of Water Produced in gallons**
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☐ No ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 7/22/2019

Water Use Efficiency
Annual Performance Report - 2018

WS Name: MCNEIL ISLAND WATER

Water System ID# : 52900 WS County: PIERCE

Report submitted by: *Eric Heinitz*

Meter Installation Information:

Estimate the percentage of metered connections: *Less Than 50%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Currently, there are no meters being installed at McNeil Island. In 2010, the Legislature shut down
the prison and are only funding necessary maintenance. However, we are currently installing a new
water system utilizing well water rather than surface water and the distribution system will be inspected and updated as part of this project. If funding is available, we may install meters as part of this project. Expected completion date for the new water system is December 2019.

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2018* To *12/31/2018*

Incomplete or missing data for the year? *Yes*

If yes, explain:

Due to lack of metering, we are unable to obtain data indication use other than total water production and distribution.

Total Water Produced & Purchased (TP) – Annual volume gallons	*53,400,000*	gallons
Authorized Consumption (AC) – Annual Volume in gallons		gallons
Distribution System Leakage – Annual Volume TP – AC	*53,400,000*	gallons
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*0.0 %*	
3-year annual average - %	*0.0 %*	*2016, 2017, 2018*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: __________

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Customer (Demand Side) Goal Progress:

The current goal for McNeil Island water system is to replace the current water system with a new
system supplied with groundwater. It is also the intent to replace most of the old distribution piping with new piping and cut off all parts of the island where water is no longer needed.

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? ____________

Month	**Volume of Water Produced in gallons**
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☐ No ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 10/30/2018

Water Use Efficiency
Annual Performance Report - 2017

WS Name: MCNEIL ISLAND WATER

Water System ID# : 52900 WS County: PIERCE

Report submitted by: *Eric Heinitz*

Meter Installation Information:

Estimate the percentage of metered connections: *Less Than 50%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

> *Currently, there are no meters being installed at McNeil Island. In 2010, the Legislature shut down the prison and are only funding necessary maintenance. However, we are currently installing a new water system utilizing well water rather than surface water and the distribution system will be inspected and updated as part of this project. If funding is available, we may install meters as part of this project.*

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2017* To *12/31/2017*

Incomplete or missing data for the year? *Yes*

If yes, explain:

> *Due to lack of metering, we are unable to obtain data indication use other than total water production and distribution.*

Total Water Produced & Purchased (TP) – Annual volume gallons	*50,500,000*	gallons	
Authorized Consumption (AC) – Annual Volume in gallons		gallons	
Distribution System Leakage – Annual Volume TP – AC	*50,500,000*	gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*0.0 %*		
3-year annual average - %	*0.0 %*		*2009, 2016, 2017*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: __________

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Customer (Demand Side) Goal Progress:

The current goal for McNeil Island water system is to replace the current water system with a new system supplied with groundwater. It is also the intent to replace most of the old distribution piping with new piping and cut off all parts of the island where water is no longer needed.

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? ____________

Month	Volume of Water Produced in gallons
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☐ No ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

Mission Creek Corrections Center for Women

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

Date Submitted: 6/22/2023

Water Use Efficiency
Annual Performance Report - 2022

WS Name: Mission Creek Corrections Center

Water System ID# : 55325 WS County: MASON

Report submitted by: *Jonathan Rice*

Meter Installation Information:

Estimate the percentage of metered connections: *Less Than 50%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Mission Creek Corrections Center for Women is a correctional facility supplying water to facility only.

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *03/01/2022* To *05/31/2023*

Incomplete or missing data for the year? *Yes*

If yes, explain:

No meters installed.

Total Water Produced & Purchased (TP) – Annual volume gallons	*4,324,000* gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*4,324,000* gallons	
Distribution System Leakage – Annual Volume TP – AC	gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*0.0 %*	
3-year annual average - %	*0.0 %*	*2020, 2021, 2022*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: ___________

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Due to reduction of Incarcerated Individuals due to Covid-19 and Social Distancing needs our usage has dropped significantly. Continued effort to conserve water and fix leaks in a timely manner

Customer (Demand Side) Goal Progress:

Repairs made as needed.

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	**Volume of Water Produced in gallons**
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- [ ] Yes
- [ ] No
- [x] There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- [ ] Advisory Conservation
- [ ] Voluntary Conservation
- [ ] Mandatory Conservation
- [ ] Rationing
- [ ] Other

What factors caused your water shortage the previous year?

- [ ] Drought
- [ ] Fire
- [ ] Landslides
- [ ] Earthquakes
- [ ] Flooding
- [ ] Water Supply Limitations
- [ ] Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 3/15/2022

Water Use Efficiency
Annual Performance Report - 2021

WS Name: Mission Creek Corrections Center

Water System ID# : 55325 WS County: MASON

Report submitted by: *gordon sprague*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *02/28/2021* To *03/01/2021*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*4,324,000*	gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*4,324,000*	gallons	
Distribution System Leakage – Annual Volume TP – AC		gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*0.0 %*		
3-year annual average - %	*5.6 %*		*2019, 2020, 2021*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: __________

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Due to reduction of Incarcerated Individuals due to Covid-19 and Social Distancing needs our usage has dropped significantly. Continued effort to conserve water and fix leaks in a timely manner

Customer (Demand Side) Goal Progress:

Good progress still at low Incarcerated Individual levels and practicing water conservation

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- ☐ Yes
- ☐ No
- ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- ☐ Advisory Conservation
- ☐ Voluntary Conservation
- ☐ Mandatory Conservation
- ☐ Rationing
- ☐ Other

What factors caused your water shortage the previous year?

- ☐ Drought
- ☐ Fire
- ☐ Landslides
- ☐ Earthquakes
- ☐ Flooding
- ☐ Water Supply Limitations
- ☐ Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 3/15/2022

Water Use Efficiency
Annual Performance Report - 2020

WS Name: Mission Creek Corrections Center

Water System ID# : 55325 WS County: MASON

Report submitted by: *gordon sprague*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *07/01/2020* To *06/30/2021*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*5,416,700*	gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*5,416,700*	gallons	
Distribution System Leakage – Annual Volume TP – AC		gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*0.0 %*		
3-year annual average - %	*11.5 %*		*2018, 2019, 2020*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: __________

Has goal been changed since last performance report? *Yes*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Due to reduction of Incarcerated Individuals due to Covid-19 and Social Distancing needs our usage has dropped significantly. Continued effort to conserve water and fix leaks in a timely manner

Customer (Demand Side) Goal Progress:

Good progress lower consumption and no leakage

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth:

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☐ No ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

Olympic Corrections Center

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

Date Submitted: 6/1/2023

Water Use Efficiency
Annual Performance Report - 2022

WS Name: OLYMPIC CORRECTIONS CENTER

Water System ID# : 13560 WS County: JEFFERSON

Report submitted by: *Mike Henry*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2022* To *12/31/2022*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*13,671,400* gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*9,966,569* gallons	
Distribution System Leakage – Annual Volume TP – AC	*3,704,831* gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*27.1 %*	
3-year annual average - %	*28.3 %*	*2020, 2021, 2022*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: __________

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Reduce per person use by 5 gallons per day in 5 years.

Customer (Demand Side) Goal Progress:

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January		39.0	49.0
February		42.0	51.5
March		42.0	52.0
April		42.0	52.0
May		42.0	52.5
June		42.5	53.0
July		44.0	54.5
August		45.5	56.0
September		46.0	56.5
October		45.0	57.5
November		44.5	55.5
December		45.0	54.0

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth: 67.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft) .5 ft

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface) depth below measuring point

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7) 2 ft

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	1,067,050
February	1,422,190
March	1,013,140
April	901,250
May	945,770
June	968,240
July	1,206,290
August	1,696,460
September	1,260,880
October	1,276,020
November	978,770
December	935,340

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☐ No ☑ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 6/2/2022

Water Use Efficiency
Annual Performance Report - 2021

WS Name: OLYMPIC CORRECTIONS CENTER

Water System ID# : 13560 WS County: JEFFERSON

Report submitted by: *Mike Henry*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2021* To *12/31/2021*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*18,464,300*	gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*13,702,552*	gallons	
Distribution System Leakage – Annual Volume TP – AC	*4,761,748*	gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*25.8 %*		
3-year annual average - %	*26.8 %*		*2019, 2020, 2021*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: __________

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Reduce per person use by 5 gallons per day in 5 years.

Customer (Demand Side) Goal Progress:

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January		38.0	48.0
February		45.0	51.5
March		43.0	50.0
April		42.0	52.0
May		47.5	54.0
June		45.0	55.0
July		49.0	55.0
August		49.5	56.0
September		50.0	57.0
October		46.5	55.0
November		44.0	51.0
December		39.0	49.0

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth: 67.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft) .5 ft

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface) depth below measuring point

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7) 2 ft

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	2,242,980
February	2,263,760
March	1,540,930
April	1,183,460
May	1,684,380
June	1,584,460
July	1,433,720
August	1,728,480
September	1,078,220
October	1,098,420
November	1,508,570
December	1,116,920

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☐ No ☑ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 6/2/2021

Water Use Efficiency
Annual Performance Report - 2020

WS Name: OLYMPIC CORRECTIONS CENTER

Water System ID# : 13560 WS County: JEFFERSON

Report submitted by: *Mike Henry*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2020* To *12/31/2020*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*22,267,490* gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*15,162,985* gallons	
Distribution System Leakage – Annual Volume TP – AC	*7,104,505* gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*31.9 %*	
3-year annual average - %	*28.0 %*	*2018, 2019, 2020*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: __________

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Reduce per person use by 5 gallons per day in 5 years.

Customer (Demand Side) Goal Progress:

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January		33.0	44.0
February		34.5	44.0
March		35.0	46.5
April		39.0	48.0
May		40.0	47.5
June		40.0	49.0
July		38.0	49.0
August		39.0	49.5
September		40.0	50.0
October		39.0	47.0
November		37.5	47.5
December		37.5	46.0

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth: 75.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft) .5 ft

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface) depth below measuring point

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7) 2 ft

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	1,931,140
February	1,956,910
March	2,315,470
April	1,567,800
May	2,006,570
June	1,658,420
July	1,594,690
August	2,039,930
September	1,541,320
October	1,415,710
November	2,242,020
December	1,997,510

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☐ No ☑ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

Washington Corrections Center

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

Date Submitted: 6/20/2023

Water Use Efficiency
Annual Performance Report - 2022

WS Name: WASHINGTON CORRECTIONS CENTER

Water System ID# : 93063 WS County: MASON

Report submitted by: *Matt Murphy-Dickson*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2022* To *12/31/2022*

Incomplete or missing data for the year? *Yes*

If yes, explain:

October 24 leak detected in blue water tower. Estimate 1 gpm. or 1440 gallons per day.

Jan-Mar readings are averaged. Meter reader was out of commission.

Total Water Produced & Purchased (TP) – Annual volume gallons	*92,350,003*	gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*82,609,395*	gallons	
Distribution System Leakage – Annual Volume TP – AC	*9,740,608*	gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*10.5 %*		
3-year annual average - %	*7.1 %*		*2020, 2021, 2022*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: ___________

Has goal been changed since last performance report? *Yes*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Since DOC is unique in how we run our facilities and provide water to our "customers", DOH has agreed to allow us to forgo the Public Forum and establish our goals through a consultation with the facilities.
1. Agency Goal; Reduce the average water usage in gallons per day per incarcerated individual to below 130
2. WCC Goal; Reduce the average water usage in gallons per day per incarcerated individual to below 120 within the next 3 years.
3. Reduce seasonal outdoor water use by 10% within 3 years.
4. Reclaimed water project for outdoor use in gardens, general facility maintenance, laundry, and boilers completed end of 2022.

Customer (Demand Side) Goal Progress:

WCC's water use was the same of 137 gallons per incarcerated individual/day in 2021 to 137 gallons per incarcerated individual/day in 2022. This is higher than our agency goal of 130 gallons per incarcerated individual day, and higher than our facility goal of 120 gallons per incarcerated individual/day. This is due in part to unit lock downs from Covid-19, that increased the Kitchen and laundries water consumption. We will continue to strive to reach the facility established goal, but it will be difficult for our facility to do with an aging underground infrastructure and additional demand put on our institution to expand garden, additional horticulture space in support of the agencies Sustainable Prisons Project and the fact that we were required to do laundry from 2 other institutions adding 1,440,000 gallons of water usage a year to our consumption.

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January		139.0	
February		15.0	
March		146.0	
April		1511.0	
May		165.0	
June		175.0	
July		189.0	
August		201.0	
September		216.0	
October		221.0	
November		215.0	
December		178.0	

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number: Well#1=ALH044, Well#2=ABR

Well depth: 11782463184456.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Well#1=47° 14' 10.86" N x 123° 11' 23.9994" W Well#2=47° 14' 17.376" N x 123° 12' 4.0896" W Well#3=47° 14' 10.86" N x 123° 11' 23.9994" W Well#4=47° 14' 19.4058" N x 123° 12' 8.8992" W

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Well#1=? Well#2=73.7’, Well#3=73.7’, Well#4=74.7’

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	5,945,222
February	5,945,222
March	5,945,222
April	6,794,325
May	7,464,100
June	7,140,597
July	7,847,242
August	7,602,502
September	7,264,148
October	7,349,790
November	6,957,040
December	6,353,985

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☑ No ☐ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 6/9/2022

Water Use Efficiency
Annual Performance Report - 2021

WS Name: WASHINGTON CORRECTIONS CENTER

Water System ID# : 93063 WS County: MASON

Report submitted by: *Matt Murphy-Dickson*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2021* To *12/31/2021*

Incomplete or missing data for the year? *Yes*

If yes, explain:

On 6/3/21 had to drain white water tank for repairs and fill 6/18/21 to hyper-chlorinate then drain again total loss 600,000 gallons of water.

Total Water Produced & Purchased (TP) – Annual volume gallons	*87,067,000*	gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*82,457,800*	gallons	
Distribution System Leakage – Annual Volume TP – AC	*4,609,200*	gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*5.3 %*		
3-year annual average - %	*5.4 %*		*2019, 2020, 2021*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: ___________

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Since DOC is unique in how we run our facilities and provide water to our "customers", DOH has agreed to allow us to forgo the Public Forum and establish our goals through a consultation with the facilities.
1.Agency Goal; Reduce the average water usage in gallons per day per incarcerated individual to below 130.
2.WCC Goal; Reduce the average water usage in gallons per day per incarcerated individual to below 115 within the next 3 years.
3.Reduce seasonal outdoor water use by 10% within 3 years.
4.Reclaimed water project for outdoor use in gardens, general facility maintenance, laundry, and boilers started end of 2021.

Customer (Demand Side) Goal Progress:

WCC's water use was up from 129.5 gallons per incarcerated individual/day in 2020 to 136.9 gallons per incarcerated individual/day in 2021. This is higher than our agency goal of 130 gallons per incarcerated individual day, and higher than our facility goal of 115 gallons per incarcerated individual/day. This is due in part to unit lock downs from Covid-19, that increased the Kitchen and laundries water consumption. We will continue to strive to reach the facility established goal, but it will be difficult for our facility to do with an aging underground infrastructure and additional demand put on our institution to expand garden, additional horticulture space in support of the agencies Sustainable Prisons Project and the fact that we were required to do laundry from 2 other institutions adding 1,440,000 gallons of water usage a year to our consumption.

Additional Information Regarding Supply and Demand Side WUE Efforts

We have installed a control system for two of our living units that limits the number of flushes permitted in a cell to 2 in ten minutes. We estimate this will save an additional 150,000 gallons per month. We have also been funded to install a reclaimed water line from the city of Shelton, installation started end of 2021. This will service our laundry, compost, boilers, and garden areas.

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January		14.1	
February		13.8	
March		15.3	
April		16.9	
May		18.5	
June		19.5	
July		20.6	
August		20.0	
September		22.5	
October		20.7	
November		16.5	
December		14.6	

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number: Well#1=ALH044, Well#2=ABR

Well depth: 1784618456.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Well#1=47° 14' 10.86" N x 123° 11' 23.9994" W Well#2=47° 14' 17.376" N x 123° 12' 4.0896" W Well#3=47° 14' 10.86" N x 123° 11' 23.9994" W Well#4=47° 14' 19.4058" N x 123° 12' 8.8992" W

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Well#1=? Well#2=73.7', Well#3=73.7', Well#4=74.7'

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	7,318,540
February	6,590,450
March	6,166,020
April	5,531,315
May	5,091,815
June	6,345,140
July	7,629,960
August	6,270,120
September	6,939,320
October	8,121,080
November	7,927,020
December	7,927,020

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☐ No ☑ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 5/7/2021

Water Use Efficiency
Annual Performance Report - 2020

WS Name: WASHINGTON CORRECTIONS CENTER

Water System ID# : 93063 WS County: MASON

Report submitted by: *Dennis Shelton*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2020* To *12/31/2020*

Incomplete or missing data for the year? *Yes*

If yes, explain:

On 10/24-25/19 our water tower overflowed with an estimated 82,500-gallon loss and our annual fire hydrant flushing that accounted for an additional 144,000 gallons loss.

Total Water Produced & Purchased (TP) – Annual volume gallons	*87,729,000*	gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*82,905,340*	gallons	
Distribution System Leakage – Annual Volume TP – AC	*4,823,660*	gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*5.5 %*		
3-year annual average - %	*5.5 %*		*2018, 2019, 2020*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *06/10/2015*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Agency Goal: 1. For facilities not currently metered, or which have not installed meters at all required service locations, install the water meters at all sources and all service connections by 2017. 2. Reduce the average water usage in gallons per day per offender to below 130 within the next 5 years. 3. Reduce seasonal outdoor water use by 10% within five years 4. If this option exists for your facility, switch to reclaimed water for outdoor use in gardens and general facility maintenance by 2020.

Customer (Demand Side) Goal Progress:

WCC's water use was up from 126.97 gallons per offender/day in 2019 to 129.5 gallons per Offender/day in 2020. This is lower than our agency goal of 130 gallons per offender/day, and higher than our facility goal of 115 gallons per offender/day. This is due in part to our annual fire hydrant flushing that accounted for 144,000 gallons and one of our towers overflowed an estimated 82,500 gallons of water. We will continue to strive to reach the facility established goal but it will be difficult for our facility to do with an aging underground infrastructure and additional demand put on our institution to expand garden, additional horticulture space in support of the agencies Sustainable Prisons Project and the fact that we were required to do laundry from 2 other institutions adding 1,440,000 gallons of water usage a year to our consumption.

Additional Information Regarding Supply and Demand Side WUE Efforts

We have installed a control system for one of our living units that limits the amount of flushes permitted in a cell to 2 in ten minutes and have purchased the same for another living unit. We estimate this will save an additional 150,000 gallons per month when completed. We have also been funded to install a reclaimed water line from the city of Shelton with an installation date of 2021. This will service our laundry, compost and garden areas.

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

WCC's water use was up from 126.97 gallons per offender/day in 2019 to 129.5 gallons per Offender/day in 2020. This is lower than our agency goal of 130 gallons per offender/day, and higher than our facility goal of 115 gallons per offender/day. This is due in part to our annual fire hydrant flushing that accounted for 144,000 gallons and one of our towers overflowed an estimated 82,500 gallons of water. We will continue to strive to reach the facility established goal but it will be difficult for our facility to do with an aging underground infrastructure and additional demand put on our institution to expand garden, additional horticulture space in support of the agencies Sustainable Prisons Project and the fact that we were required to do laundry from 2 other institutions adding 1,440,000 gallons of water usage a year to our consumption.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January	01/01/2020	13.5	
February	02/28/2020	14.9	
March	03/31/2020	16.5	
April	04/30/2020	17.2	
May	06/01/2020	18.8	
June	06/30/2020	19.2	
July	07/31/2020	21.1	
August	08/31/2020	22.4	
September	09/30/2020	23.2	
October	10/31/2020	23.4	
November	11/30/2020	19.8	
December	12/31/2020	17.2	

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number: Well#1=ALH044, Well#2=ABR

Well depth: 1784618456.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface) depth below top of casing

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	6,696,300
February	6,401,700
March	7,543,000
April	7,088,000
May	7,246,000
June	7,118,000
July	8,714,100
August	8,225,900
September	7,276,000
October	6,783,000
November	7,060,000
December	7,577,000

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- [ ] Yes
- [ ] No
- [x] There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- [ ] Advisory Conservation
- [ ] Voluntary Conservation
- [ ] Mandatory Conservation
- [ ] Rationing
- [ ] Other

What factors caused your water shortage the previous year?

- [ ] Drought
- [ ] Fire
- [ ] Landslides
- [ ] Earthquakes
- [ ] Flooding
- [ ] Water Supply Limitations
- [ ] Other

Do not mail, fax, or email this report to DOH

Washington Corrections Center for Women

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

Date Submitted: 1/24/2023

Water Use Efficiency
Annual Performance Report - 2022

WS Name: WASHINGTON STATE CORRECTIONS-WOMEN

Water System ID# : 69945 WS County: PIERCE

Report submitted by: *Joshua Baese*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation? 12/31/2015 12:00:00 AM

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2022* To *12/31/2022*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*22,027,689*	gallons
Authorized Consumption (AC) – Annual Volume in gallons	*21,966,146*	gallons
Distribution System Leakage – Annual Volume TP – AC	*61,543*	gallons
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*0.3 %*	
3-year annual average - %	*0.2 %*	*2020, 2021, 2022*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *01/03/2017*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Reduce use by 10%

Customer (Demand Side) Goal Progress:

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January	01/03/2022		79.1
February	02/01/2022		75.1
March	03/01/2022		77.4
April	04/01/2022		79.5
May	05/02/2022		80.3
June	06/01/2022		79.0
July	07/01/2022		79.8
August	08/01/2022		95.0
September	09/01/2022		83.4
October	10/03/2022		91.4
November	11/02/2022		93.1
December	12/01/2022		97.8

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth: 351.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)

Cased 8" diam from +1' to 339 ' , No perforations, Stainless Johnson Screen

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)

Lat; 47.347066 Long; 122.611575

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)? 65,000

Month	Volume of Water Produced in gallons
January	354,345
February	332,323
March	367,382
April	316,826
May	384,902
June	339,187
July	321,595
August	345,149
September	334,315
October	284,643
November	301,156
December	323,881

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☐ No ☑ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 2/1/2022

Water Use Efficiency
Annual Performance Report - 2021

WS Name: WASHINGTON STATE CORRECTIONS-WOMEN

Water System ID# : 69945 WS County: PIERCE

Report submitted by: *Joshua Baese*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation? 12/31/2015 12:00:00 AM

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2021* To *12/31/2021*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*21,393,450* gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*21,320,510* gallons	
Distribution System Leakage – Annual Volume TP – AC	*72,940* gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*0.3 %*	
3-year annual average - %	*0.2 %*	*2019, 2020, 2021*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *01/03/2017*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Reduce use by 10%

Customer (Demand Side) Goal Progress:

Substantial population reduction, water reducing fixtures, decreased irrigation.

Additional Information Regarding Supply and Demand Side WUE Efforts

Accomplished a 30% reduction in overall consumption with the major cause being population reduction.

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January	01/04/2021		81.2
February	02/01/2021		60.9
March	03/01/2021		68.4
April	04/01/2021		56.6
May	05/03/2021		72.4
June	06/01/2021		72.6
July	07/01/2021		64.8
August	08/02/2021		63.5
September	09/01/2021		63.3
October	10/01/2021		66.3
November	11/02/2021		71.2
December	12/01/2021		67.9

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number:

Well depth: 351.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…)	Cased 8" diam from +1' to 339 ' , No perforations, Stainless Johnson Screen
Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft)	Lat; 47.347066 Long; 122.611575
Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)	
Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)	

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	357,260
February	371,433
March	357,705
April	392,610
May	432,360
June	393,207
July	383,909
August	432,446
September	378,829
October	373,520
November	372,728
December	384,122

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

- [ ] Yes
- [ ] No
- [x] There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

- [ ] Advisory Conservation
- [ ] Voluntary Conservation
- [ ] Mandatory Conservation
- [ ] Rationing
- [ ] Other

What factors caused your water shortage the previous year?

- [ ] Drought
- [ ] Fire
- [ ] Landslides
- [ ] Earthquakes
- [ ] Flooding
- [ ] Water Supply Limitations
- [ ] Other

Do not mail, fax, or email this report to DOH

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

Date Submitted: 3/30/2021

Water Use Efficiency
Annual Performance Report - 2020

WS Name: WASHINGTON STATE CORRECTIONS-WOMEN

Water System ID# : 69945 WS County: PIERCE

Report submitted by: *Joshua Baese*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2020* To *12/31/2020*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*30,767,397*	gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*30,767,397*	gallons	
Distribution System Leakage – Annual Volume TP – AC		gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*0.0 %*		
3-year annual average - %	*0.1 %*		*2018, 2019, 2020*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *01/03/2017*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

Reduce use by 10%

Customer (Demand Side) Goal Progress:

Additional Information Regarding Supply and Demand Side WUE Efforts

Describe Progress in Reaching Goals:

- Estimate how much water you saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.

The following questions will help DOH better understand water usage, water resources management and drought response. The data will be used to provide technical assistance, not for regulatory purposes.

All questions are voluntary

Month	Date of Measurement	Static Water Level (feet below measuring point)	Dynamic Water Level (feet below measuring point)
January	01/02/2020	18.2	
February	02/03/2020	19.6	
March	03/02/2020	22.1	
April	04/01/2020	15.9	
May	05/01/2020	18.0	
June	06/01/2020	16.9	
July	07/02/2020	20.6	
August	08/03/2020	24.7	
September	09/01/2020	21.8	
October	10/01/2020	29.7	
November	11/06/2020	33.8	
December	12/01/2020	43.6	

Water level data:

Please provide the following information (if known) to help us better utilize the water level data.

Well tag Id number: N/A

Well depth: 351.0

Water level accuracy (within 0.01 ft < 1 ft ~ 1 ft)

Completion type (e.g., cased open interval, cased open-ended, cased open-ended with perforations, etc…) Cased 8" diam from +1' to 339 ' , No perforations, Stainless Johnson Screen

Location coordinates (latitude, longitude) and accuracy of the coordinates (< 1ft, ~1ft, >1000ft) Lat; 47.347066 Long; 122.611575

Water level parameter name (e.g. depth below measuring point, depth below top of casing, depth below ground surface)

Elevation of top of casing OR elevation of measuring point if different than top of casing (as specified in question 7)

Monthly/Seasonal Water Usage:

What was your maximum daily water demand for the previous year (in gallons per day)?

Month	Volume of Water Produced in gallons
January	315,000
February	310,162
March	359,886
April	344,340
May	359,779
June	348,402
July	339,153
August	336,478
September	330,000
October	330,000
November	330,000
December	330,000

Water shortage response:

Did you activate any level of water shortage response plan the previous year?

☐ Yes ☐ No ☑ There was no need to

If you activated a water shortage response plan the previous year, what level did you activate? (Check all that apply)

☐ Advisory Conservation ☐ Voluntary Conservation

☐ Mandatory Conservation ☐ Rationing ☐ Other

What factors caused your water shortage the previous year?

☐ Drought ☐ Fire ☐ Landslides ☐ Earthquakes

☐ Flooding ☐ Water Supply Limitations ☐ Other

Do not mail, fax, or email this report to DOH

APPENDIX C15

Water Facilities Inventories

Cedar Creek Corrections Center

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: 05/10/2021

Printed: 6/7/2022
WFI Printed For: On-Demand
Submission Reason: No Change

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
11882 7	CEDAR CREEK CORRECTIONS CENTER	THURSTON	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS	7. OWNER NAME & MAILING ADDRESS
LARRY J. VENE [OPERATOR] PO BOX 37 LITTLE ROCK, WA 98556	CEDAR CREEK CORRECTIONS CENTER ALFRED SMACK P.O. BOX 37 LITTLEROCK, WA 98556 SUPERINTENDENT
STREET ADDRESS IF DIFFERENT FROM ABOVE	**STREET ADDRESS IF DIFFERENT FROM ABOVE**
ATTN	ATTN
ADDRESS 12200 BORDEAUX RD. SW.	ADDRESS 12200 BORDEAUX RD
CITY LITTLE ROCK STATE WA ZIP 98556	CITY LITTLEROCK STATE WA ZIP 98556-0037

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone:	(360) 664-0718	Owner Daytime Phone:	(360) 359-4100
Primary Contact Mobile/Cell Phone:	(360) 490-9866	Owner Mobile/Cell Phone:	
Primary Contact Evening Phone:	(xxx)-xxx-xxxx	Owner Evening Phone:	
Fax:	E-mail: xxxxxxxxxxxxxxxxxxxx	Fax:	E-mail: xxxxxxxxxxxxxxxxxxxx

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

13. WATER SYSTEM OWNERSHIP (mark only one)

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

14. STORAGE CAPACITY (gallons)

173,000

15	16 SOURCE NAME	17 INTERTIE	18 SOURCE CATEGORY										19 USE			20	21 TREATMENT						22 DEPTH	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 #1 ABS216		X												X	Y		X					200	50	NE SE	11	16N	04W
S02	WELL #2 No Tag		X										X					X					200	55	NE SE	11	16N	04W
S03	InAct 07/17/2007 WF (1 & 2)			X									X					X						105	NE SE	11	16N	04W
S04	WELL #3 APP651		X										X			Y		X					178	35	NE SE	11	16N	04W

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
11882 7	CEDAR CREEK CORRECTIONS CENTER	THURSTON	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?)		160	271
A. Full Time Single Family Residences (Occupied 180 days or more per year)	160		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	0		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	48	48	0
28. TOTAL SERVICE CONNECTIONS		208	271

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 480

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

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?	700	700	700	700	700	700	700	700	700	700	700	700
B. How many days per month is water accessible to the public?	16	16	16	16	16	16	16	16	16	16	16	16

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?	115	115	115	115	115	115	115	115	115	115	115	115
B. How many days per month are they present?	30	30	30	30	30	30	30	30	30	30	30	30

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	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: Benjamin E. Enfield **DATE:** 7/10/2023

PRINT NAME: BENJAMIN ENFIELD **TITLE:** ENGINEER - KPFF

Total WFI Printed: 1

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

Water Facilities Inventory (WFI)

Report Create Date:	6/7/2022		
Water System Id(s):	118827		
Print Data on Distribution Page:	ALL		
Print Copies For:	DOH Copy		
Water System Name:	ALL		
County:	-- Any --		
Region:	ALL		
Group:	ALL		
Type:	ALL		
Permit Renewal Quarter:	ALL		
Water System Is New:	ALL		
Water System Status:	ALL		
Water Status Date From:	ALL	To	ALL
Water System Update Date	ALL	To	ALL
Owner Number:	ALL		
SMA Number:	ALL		
SMA Name:	ALL		
Active Connection Count From:	ALL	To:	ALL
Approved Connection Count	ALL	To:	ALL
Full-Time Population From:	ALL	To:	ALL
Water System Expanding	ALL		
Source Type:	ALL		
Source Use:	ALL		
WFI Printed For:	On-Demand		

Larch Corrections Center

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: 07/01/2020
Printed: 6/7/2022
WFI Printed For: On-Demand
Submission Reason: No Change

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
06461 Y	LARCH CORRECTIONS CENTER	CLARK	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS	7. OWNER NAME & MAILING ADDRESS
JOHN L. ALDERMAN [MANAGER] 15314 NE DOLE VALLEY RD YACOLT, WA 98675	LARCH CORRECTIONS CENTER LISA FLYNN 15314 NE DOLE VALLEY RD YACOLT, WA 98675 SUPERINTENDENT
STREET ADDRESS IF DIFFERENT FROM ABOVE	**STREET ADDRESS IF DIFFERENT FROM ABOVE**
ATTN	ATTN
ADDRESS	ADDRESS
CITY STATE ZIP	CITY STATE ZIP

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone:	(360) 667-3730	Owner Daytime Phone:	(360) 260-6300 x291
Primary Contact Mobile/Cell Phone:	(360) 772-4620	Owner Mobile/Cell Phone:	(360) 260-6300 x200
Primary Contact Evening Phone:	(xxx)-xxx-xxxx	Owner Evening Phone:	
Fax:	E-mail: xxxxxxxxxxxxxxxxxxxx	Fax:	E-mail: xxxxxxxxxxxxxxxxxxxx

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
- [ ] 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
- [ ] Lodging
- [ ] Recreational / RV Park
- [x] Residential
- [ ] School
- [ ] Temporary Farm Worker
- [x] Other (church, fire station, etc.): ______________________

13. WATER SYSTEM OWNERSHIP (mark only one)

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

14. STORAGE CAPACITY (gallons)

526,000
~~468,000~~

15 Source Number	16 SOURCE NAME 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	17 INTERTIE INTERTIE SYSTEM ID NUMBER	18 SOURCE CATEGORY WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	19 USE PERMANENT	SEASONAL	EMERGENCY	20 SOURCE METERED	21 TREATMENT NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	22 DEPTH DEPTH TO FIRST OPEN INTERVAL IN FEET	23 CAPACITY (GALLONS PER MINUTE)	24 SOURCE LOCATION 1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S03	WELL #3 AFP634		X										X			Y		X					200	65	SW NE	20	03N	04E
S04	WELL #4 AGP432		X										X			Y		X					170	100	SW NE	20	00N	04E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
06461 Y	LARCH CORRECTIONS CENTER	CLARK	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?)		480	496
A. Full Time Single Family Residences (Occupied 180 days or more per year)	0		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	2		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	480		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	16	16	0
28. TOTAL SERVICE CONNECTIONS		496	496

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 480

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

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?	800	800	800	800	800	800	800	800	800	800	800	800
B. How many days per month is water accessible to the public?	8	8	8	8	8	8	8	8	8	8	8	8

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?	125	125	125	125	125	125	125	125	125	125	125	125
B. How many days per month are they present?	30	30	30	30	30	30	30	30	30	30	30	30

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	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: Benjamin E. Enfield **DATE:** 7/10/2023

PRINT NAME: BENJAMIN ENFIELD **TITLE:** ENGINEER - KPFF

WS ID **WS Name**

06461 LARCH CORRECTIONS CENTER

Total WFI Printed: 1

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

Water Facilities Inventory (WFI)

Report Create Date:	6/7/2022		
Water System Id(s):	06461Y		
Print Data on Distribution Page:	ALL		
Print Copies For:	DOH Copy		
Water System Name:	ALL		
County:	-- Any --		
Region:	ALL		
Group:	ALL		
Type:	ALL		
Permit Renewal Quarter:	ALL		
Water System Is New:	ALL		
Water System Status:	ALL		
Water Status Date From:	ALL	**To**	ALL
Water System Update Date	ALL	**To**	ALL
Owner Number:	ALL		
SMA Number:	ALL		
SMA Name:	ALL		
Active Connection Count From:	ALL	**To:**	ALL
Approved Connection Count	ALL	**To:**	ALL
Full-Time Population From:	ALL	**To:**	ALL
Water System Expanding	ALL		
Source Type:	ALL		
Source Use:	ALL		
WFI Printed For:	On-Demand		

Maple Lane Corrections Center

WATER FACILITIES INVENTORY (WFI) FORM

Quarter: 2
Updated: 04/20/2022
Printed: 11/10/2022
WFI Printed For: On-Demand
Submission Reason: Contact Update

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

ONE FORM PER SYSTEM

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
51195 8	MAPLE LANE CORRECTIONS CENTER	THURSTON	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS	7. OWNER NAME & MAILING ADDRESS
CORY POSTMA [PE / OPERATOR] 20311 OLD HWY 9 SW CENTRALIA, WA 98531	MAPLE LANE CORRECTIONS CENTER CORY POSTMA 20311 OLD HWY 9 SW CENTRALIA, WA 98531 ENGINEER
STREET ADDRESS IF DIFFERENT FROM ABOVE	**STREET ADDRESS IF DIFFERENT FROM ABOVE**
ATTN ADDRESS CITY STATE ZIP	ATTN ADDRESS CITY STATE ZIP

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone:	(360) 489-5357	Owner Daytime Phone:	(360) 664-3383
Primary Contact Mobile/Cell Phone:	(360) 549-6938	Owner Mobile/Cell Phone:	(360) 489-5357
Primary Contact Evening Phone:	(xxx)-xxx-xxxx	Owner Evening Phone:	(xxx)-xxx-xxxx
Fax:	E-mail: cxxxxxxa@doc1.wa.gov	Fax:	E-mail: cxxxxxxa@doc1.wa.gov

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

13. WATER SYSTEM OWNERSHIP (mark only one)

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

14. STORAGE CAPACITY (gallons): 130,000

15 Source Number	16 SOURCE NAME — 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	17 INTERTIE — INTERTIE SYSTEM ID NUMBER	18 SOURCE CATEGORY: WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	19 USE: PERMANENT	SEASONAL	EMERGENCY	20 SOURCE METERED	21 TREATMENT: NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	22 DEPTH: DEPTH TO FIRST OPEN TERVAL IN FEET	23 CAPACITY (GALLONS PER MINUTE)	24 SOURCE LOCATION: 1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	WELL #1 WW NO TAG				X								X			N	X						73	260	NW NW	14	15N	03W
S02	WELL #2 WW AAF164				X								X			N	X						57	340	NW NW	14	15N	03W
S03	WF (SO1 & SO2)			X									X			Y		X				X	57	600	NW NW	14	15N	03W

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
51195 8	MAPLE LANE CORRECTIONS CENTER	THURSTON	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?)		30	0
A. Full Time Single Family Residences (Occupied 180 days or more per year)	0		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	1		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	30		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	20	20	200
28. TOTAL SERVICE CONNECTIONS		50	200

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? ~~30~~ 100

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

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?	750	750	750	750	750	750	750	750	750	750	750	750
B. How many days per month is water accessible to the public?	30	30	30	30	30	30	30	30	30	30	30	30

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population?	101	101	101	101	101	101	101	101	101	101	101	101
B. How many days per month are they present?	30	30	30	30	30	30	30	30	30	30	30	30

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	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: Benjamin E. Enfield DATE: 7/10/2023

PRINT NAME: BENJAMIN ENFIELD TITLE: ENGINEER - KPFF

WS ID	WS Name
51195	Maple Lane Corrections Center

Total WFI Printed: 1

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

Water Facilities Inventory (WFI)

Report Create Date:	11/10/2022		
Water System Id(s):	ALL		
Print Data on Distribution Page:	Yes		
Print Copies For:	DOH Copy		
Water System Name:	Maple Lane		
County:	THURSTON		
Region:	ALL		
Group:	A		
Type:	ALL		
Permit Renewal Quarter:	ALL		
Water System Is New:	ALL		
Water System Status:	ALL		
Water Status Date From:	ALL	**To**	ALL
Water System Update Date	ALL	**To**	ALL
Owner Number:	ALL		
SMA Number:	ALL		
SMA Name:	ALL		
Active Connection Count From:	ALL	**To:**	ALL
Approved Connection Count	ALL	**To:**	ALL
Full-Time Population From:	ALL	**To:**	ALL
Water System Expanding	ALL		
Source Type:	ALL		
Source Use:	ALL		
WFI Printed For:	On-Demand		

McNeil Island Corrections Center

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: 03/10/2021
Printed: 6/7/2022
WFI Printed For: On-Demand
Submission Reason: Contact 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
52900 E	MCNEIL ISLAND WATER	PIERCE	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS

DARIN KLEIN
~~ERIC F. HEINITZ~~ [ENVIRONMENTAL MGR]
DEPARTMENT OF CORRECTIONS
PO BOX 41112
TUMWATER, WA 98501

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN DEPARTMENT OF CORRECTIONS
ADDRESS 7345 LINDERSON WAY SW
CITY TUMWATER STATE WA ZIP 98501

7. OWNER NAME & MAILING ADDRESS

DEPARTMENT OF CORRECTIONS COMPLIANCE MGR
~~ERIC F. HEINITZ~~ DARIN KLEIN
CAPITAL PROGRAMS, ADMIN SERVICES
PO BOX 41112
TUMWATER, WA 98501

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN CAPITAL PROGRAMS, ADMIN SERVICES
ADDRESS 7345 LINDERSON WAY SW
CITY TUMWATER STATE WA ZIP 98501

9. 24 HOUR PRIMARY CONTACT INFORMATION	10. OWNER CONTACT INFORMATION
Primary Contact Daytime Phone: ~~(360) 725-8397~~ (360) 764-3093	Owner Daytime Phone: ~~(360) 725-8397~~ (360) 764-3093
Primary Contact Mobile/Cell Phone: ~~(360) 790-9341~~	Owner Mobile/Cell Phone: ~~(360) 790-9341~~
Primary Contact Evening Phone:	Owner Evening Phone:
Fax: (360) 586-8723 E-mail: xxxxxxxxxxxxxxxxxxxx	Fax: (360) 586-8723 E-mail: xxxxxxxxxxxxxxxxxxxx

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

13. WATER SYSTEM OWNERSHIP (mark only one)

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

14. STORAGE CAPACITY (gallons)

1,000,000
~~2,230,000~~

15 Source Number	16 SOURCE NAME: 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	17 INTERTIE: INTERTIE SYSTEM ID NUMBER	18 SOURCE CATEGORY: WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	19 USE: PERMANENT	SEASONAL	EMERGENCY	20 SOURCE METERED	21 TREATMENT: NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	22 DEPTH: DEPTH TO FIRST OPEN INTERVAL IN FEET	23 CAPACITY (GALLONS PER MINUTE)	24 SOURCE LOCATION: 1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	Eden Creek Lake									X					X			X	X			X		700	SE SE	20	20N	01E
S02	Butterworth Lake									X			X					X	X			X		700	SE SE	20	20N	01E
S03	Pre-Active 07/31/2020 Well #1 BLN215		X										X			Y		X	X				639	251	SW SW	16	20N	01E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
52900 E	MCNEIL ISLAND WATER	PIERCE	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?)		271	1883
A. Full Time Single Family Residences (Occupied 180 days or more per year)	271		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	0		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	0	0	0
28. TOTAL SERVICE CONNECTIONS		271	1883

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 271

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

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

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population?	421	421	421	421	421	421	421	421	421	421	421	421
B. How many days per month are they present?	31	28	31	30	31	30	31	31	30	31	30	31

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: Benjamin E. Enfield **DATE:** 7/10/2023

PRINT NAME: BENJAMIN ENFIELD **TITLE:** ENGINEER - KPFF

WS ID	WS Name
52900	MCNEIL ISLAND WATER

Total WFI Printed: 1

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

Water Facilities Inventory (WFI)

Report Create Date:	6/7/2022		
Water System Id(s):	52900E		
Print Data on Distribution Page:	ALL		
Print Copies For:	DOH Copy		
Water System Name:	ALL		
County:	-- Any --		
Region:	ALL		
Group:	ALL		
Type:	ALL		
Permit Renewal Quarter:	ALL		
Water System Is New:	ALL		
Water System Status:	ALL		
Water Status Date From:	ALL	To	ALL
Water System Update Date	ALL	To	ALL
Owner Number:	ALL		
SMA Number:	ALL		
SMA Name:	ALL		
Active Connection Count From:	ALL	To:	ALL
Approved Connection Count	ALL	To:	ALL
Full-Time Population From:	ALL	To:	ALL
Water System Expanding	ALL		
Source Type:	ALL		
Source Use:	ALL		
WFI Printed For:	On-Demand		

Mission Creek Corrections Center for Women

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: 01/02/2020
Printed: 6/7/2022
WFI Printed For: On-Demand
Submission Reason: No Change

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
55325 Y	MISSION CREEK CORRECTIONS CENTER	MASON	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS	7. OWNER NAME & MAILING ADDRESS
JONATHAN RICE ~~GORDON L. SPRAGUE [MANAGER]~~ 3420 NE SANDHILL RD BELFAIR, WA 98528	MISSION CREEK CORRECTIONS CENTER MANAGER ~~GORDON L. SPRAGUE~~ JONATHAN RICE 3420 NE SAND HILL RD BELFAIR, WA 98528
STREET ADDRESS IF DIFFERENT FROM ABOVE	**STREET ADDRESS IF DIFFERENT FROM ABOVE**
ATTN ADDRESS CITY STATE ZIP	ATTN ADDRESS CITY STATE ZIP

9. 24 HOUR PRIMARY CONTACT INFORMATION	10. OWNER CONTACT INFORMATION
Primary Contact Daytime Phone: (360) 277-2483	Owner Daytime Phone: (360) 277-2400
Primary Contact Mobile/Cell Phone: ~~(360) 509-6629~~	Owner Mobile/Cell Phone:
Primary Contact Evening Phone: (xxx)-xxx-xxxx	Owner Evening Phone:
Fax: E-mail: xxxxxxxxxxxxxxxxxxxx	Fax: (360) 277-2454 E-mail: xxxxxxxxxxxxxxxxxxxx

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
- [ ] 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
- [ ] Lodging
- [ ] Recreational / RV Park
- [x] Residential
- [ ] School
- [ ] Temporary Farm Worker
- [x] Other (church, fire station, etc.):

13. WATER SYSTEM OWNERSHIP (mark only one)

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

14. STORAGE CAPACITY (gallons)

225,000

15 Source Number	16 SOURCE NAME 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	17 INTERTIE INTERTIE SYSTEM ID NUMBER	18 SOURCE CATEGORY WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	19 USE PERMANENT	SEASONAL	EMERGENCY	20 SOURCE METERED	21 TREATMENT NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	22 DEPTH DEPTH TO FIRST OPEN INTERVAL IN FEET	23 CAPACITY (GALLONS PER MINUTE)	24 SOURCE LOCATION 1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	Well #1 AHA915		X										X				X						160	100	NE SE	13	23N	02W
S03	Well #3 BCA385		X										X			N	X						168	125	SE NE	13	23N	02W

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
55325 Y	MISSION CREEK CORRECTIONS CENTER	MASON	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?)		0	137
A. Full Time Single Family Residences (Occupied 180 days or more per year)	0		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	0		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	7	7	0
28. TOTAL SERVICE CONNECTIONS		7	137

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? ~~189~~ 120

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

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

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population?	40	40	40	40	40	40	40	40	40	40	40	40
B. How many days per month are they present?	30	30	30	30	30	30	30	30	30	30	30	30

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	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: Benjamin E. Enfield DATE: 7/10/2023

PRINT NAME: BENJAMIN ENFIELD TITLE: ENGINEER - KPFF

WS ID	WS Name
55325	Mission Creek Corrections Center

Total WFI Printed: 1

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

Water Facilities Inventory (WFI)

Report Create Date:	6/7/2022		
Water System Id(s):	55325Y		
Print Data on Distribution Page:	ALL		
Print Copies For:	DOH Copy		
Water System Name:	ALL		
County:	-- Any --		
Region:	ALL		
Group:	ALL		
Type:	ALL		
Permit Renewal Quarter:	ALL		
Water System Is New:	ALL		
Water System Status:	ALL		
Water Status Date From:	ALL	**To**	ALL
Water System Update Date	ALL	**To**	ALL
Owner Number:	ALL		
SMA Number:	ALL		
SMA Name:	ALL		
Active Connection Count From:	ALL	**To:**	ALL
Approved Connection Count	ALL	**To:**	ALL
Full-Time Population From:	ALL	**To:**	ALL
Water System Expanding	ALL		
Source Type:	ALL		
Source Use:	ALL		
WFI Printed For:	On-Demand		

Olympic Corrections Center

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

WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 4
Updated: 10/28/2020
Printed: 6/7/2022
WFI Printed For: On-Demand
Submission Reason: Contact 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
13560 D	OLYMPIC CORRECTIONS CENTER	JEFFERSON	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS	7. OWNER NAME & MAILING ADDRESS
HOWARD "MIKE" M. HENRY [MANAGER] 11235 HOH MAINLINE FORKS, WA 98331-9422	OLYMPIC CORRECTIONS CENTER SUPERINTENDENT JASON M. BENNETT 11235 HOH MAINLINE FORKS, WA 98331-9492
STREET ADDRESS IF DIFFERENT FROM ABOVE	**STREET ADDRESS IF DIFFERENT FROM ABOVE**
ATTN ADDRESS CITY STATE ZIP	ATTN ADDRESS CITY STATE ZIP

9. 24 HOUR PRIMARY CONTACT INFORMATION	10. OWNER CONTACT INFORMATION
Primary Contact Daytime Phone: (360) 374-7111	Owner Daytime Phone: (360) 374-7001
Primary Contact Mobile/Cell Phone: (360) 640-2191	Owner Mobile/Cell Phone: (360) 640-4184
Primary Contact Evening Phone: (xxx)-xxx-xxxx	Owner Evening Phone: (xxx)-xxx-xxxx
Fax: (360) 374-7107 E-mail: xxxxxxxxxxxxxxxxxxxx	Fax: (360) 374-7038 E-mail: xxxxxxxxxxxxxxxxxxxx

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

13. WATER SYSTEM OWNERSHIP (mark only one)

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

14. STORAGE CAPACITY (gallons): 675,000

15 Source Number	16 SOURCE NAME: 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	17 INTERTIE: INTERTIE SYSTEM ID NUMBER	18 SOURCE CATEGORY: WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	19 USE: PERMANENT	SEASONAL	EMERGENCY	20 SOURCE METERED	21 TREATMENT: NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	22 DEPTH: DEPTH TO FIRST OPEN INTERVAL IN FEET	23 CAPACITY (GALLONS PER MINUTE)	24 SOURCE LOCATION: 1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	WELL C #1 ACM523 WW				X								X					X					67	120	SW SW	28	26N	11W
S02	WELL D #2 WW ACM549				X								X					X					65	120	SE SE	29	26N	11W
S03	WELL F #3 WW ACM548				X										X			X					60	120	NE SE	29	26N	11W
S04	WF (S01, 2 & 3)			X									X			N		X					60	360	SE SE	29	26N	11W

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
13560 D	OLYMPIC CORRECTIONS CENTER	JEFFERSON	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?)		0	582
A. Full Time Single Family Residences (Occupied 180 days or more per year)	0		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	0		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	19	19	0
28. TOTAL SERVICE CONNECTIONS		19	582

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 380

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

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

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population?	120	120	120	120	120	120	120	120	120	120	120	120
B. How many days per month are they present?	30	28	30	30	30	30	30	30	30	30	30	30

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	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: Benjamin E. Enfield DATE: 7/10/2023

PRINT NAME: BENJAMIN ENFIELD TITLE: ENGINEER - KPFF

WS ID	WS Name
13560	OLYMPIC CORRECTIONS CENTER

Total WFI Printed: 1

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

Water Facilities Inventory (WFI)

Report Create Date:	6/7/2022		
Water System Id(s):	13560D		
Print Data on Distribution Page:	ALL		
Print Copies For:	DOH Copy		
Water System Name:	ALL		
County:	-- Any --		
Region:	ALL		
Group:	ALL		
Type:	ALL		
Permit Renewal Quarter:	ALL		
Water System Is New:	ALL		
Water System Status:	ALL		
Water Status Date From:	ALL	**To**	ALL
Water System Update Date	ALL	**To**	ALL
Owner Number:	ALL		
SMA Number:	ALL		
SMA Name:	ALL		
Active Connection Count From:	ALL	**To:**	ALL
Approved Connection Count	ALL	**To:**	ALL
Full-Time Population From:	ALL	**To:**	ALL
Water System Expanding	ALL		
Source Type:	ALL		
Source Use:	ALL		
WFI Printed For:	On-Demand		

Washington Corrections Center

WATER FACILITIES INVENTORY (WFI) FORM

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

ONE FORM PER SYSTEM

Quarter: 4
Updated: 10/27/2020
Printed: 6/7/2022
WFI Printed For: On-Demand
Submission Reason: No Change

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
93063 K	WASHINGTON CORRECTIONS CENTER	MASON	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS

MATTHEW MURPHY-DICKSON
~~DWIGHT M. JOHNSON [WDM2, CCS]~~
P.O. BOX 900
SHELTON, WA 98584

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN WASHINGTON CORRECTIONS CENTER
ADDRESS 2321 DAYTON AIRPORT RD
CITY SHELTON STATE WA ZIP 98584

7. OWNER NAME & MAILING ADDRESS

WASHINGTON CORRECTIONS CENTER
DANIEL W. WHITE
P.O. BOX 900
SHELTON, WA 98584

SUPERINTENDENT

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS 2321 WEST DAYTON AIRPORT ROAD
CITY SHELTON STATE WA ZIP 98584

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone:	~~(360) 432-1508~~	Owner Daytime Phone:	~~(360) 427-4696~~
Primary Contact Mobile/Cell Phone:	~~(360) 490-4441~~	Owner Mobile/Cell Phone:	~~(360) 310-0046~~
Primary Contact Evening Phone:	(xxx)-xxx-xxxx	Owner Evening Phone:	(xxx)-xxx-xxxx
Fax:	E-mail: xxxxxxxxxxxxxxxxxxxx	Fax:	E-mail: xxxxxxxxxxxxxxxxxxxx

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
- [ ] 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
- [ ] Lodging
- [ ] Recreational / RV Park
- [x] Residential
- [ ] School
- [ ] Temporary Farm Worker
- [x] Other (church, fire station, etc.): ______

13. WATER SYSTEM OWNERSHIP (mark only one)

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

14. STORAGE CAPACITY (gallons)

800,000

- 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
93063 K	WASHINGTON CORRECTIONS CENTER	MASON	A	Comm

15	16 SOURCE NAME	17 INTERTIE	18 SOURCE CATEGORY										19 USE			20	21 TREATMENT						22 DEPTH	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	InAct 01/01/1970 WELL #1 ALH044		X											X		Y	X						178	179	SW NW	09	20N	04W
S02	WELL #2 ABR115 WW				X								X			Y		X				X	46	320	SW NW	09	20N	04W
S03	WELL #3 ALH045		X										X			Y		X				X	184	144	SW NW	09	20N	04W
S04	WELL #4 AFK562 WW				X								X			Y		X				X	27	640	SE NW	09	20N	04W
S05	WF (S02, S04)			X									X			Y		X				X	27	960	SW NW	09	20N	04W
S06	InAct 09/22/2000 FAILED WELL - CAPPE		X										X				X						0	0		20	00N	00E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
93063 K	WASHINGTON CORRECTIONS CENTER	MASON	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?)		0	1040
A. Full Time Single Family Residences (Occupied 180 days or more per year)	0		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	0		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	749	749	0
28. TOTAL SERVICE CONNECTIONS		749	1040

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 1800

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

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?	700	700	700	700	700	700	700	700	700	700	700	700
B. How many days per month is water accessible to the public?	30	30	30	30	30	30	30	30	30	30	30	30

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population?	400	400	400	400	400	400	400	400	400	400	400	400
B. How many days per month are they present?	30	30	30	30	30	30	30	30	30	30	30	30

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	2	2	2	2	2	2	2	2	2	2	2	2

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: Benjamin E. Enfield DATE: 7/10/2023

PRINT NAME: BENJAMIN ENFIELD TITLE: ENGINEER - KPFF

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

Water Facilities Inventory (WFI)

Report Create Date:	6/7/2022		
Water System Id(s):	93063K		
Print Data on Distribution Page:	ALL		
Print Copies For:	DOH Copy		
Water System Name:	ALL		
County:	-- Any --		
Region:	ALL		
Group:	ALL		
Type:	ALL		
Permit Renewal Quarter:	ALL		
Water System Is New:	ALL		
Water System Status:	ALL		
Water Status Date From:	ALL	**To**	ALL
Water System Update Date	ALL	**To**	ALL
Owner Number:	ALL		
SMA Number:	ALL		
SMA Name:	ALL		
Active Connection Count From:	ALL	**To:**	ALL
Approved Connection Count	ALL	**To:**	ALL
Full-Time Population From:	ALL	**To:**	ALL
Water System Expanding	ALL		
Source Type:	ALL		
Source Use:	ALL		
WFI Printed For:	On-Demand		

Washington Corrections Center for Women

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: 04/01/2022
Printed: 6/7/2022
WFI Printed For: On-Demand
Submission Reason: No Change

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
69945 J	WASHINGTON STATE CORRECTIONS-WOMEN	PIERCE	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS	7. OWNER NAME & MAILING ADDRESS
JOSHUA BAESE ~~ROD COBERLY~~ [MANAGER] 9601 BUJACICH RD GIG HARBOR, WA 98332	WASHINGTON CORRECTION CNTR (WOMEN) ~~ENV. DIRECTOR~~ ~~ROD COBERLY~~ JOSHUA BAESE WCCW FACILITIES MANAGER 9601 BUJACICH RD GIG HARBOR, WA 98332-8300
STREET ADDRESS IF DIFFERENT FROM ABOVE	**STREET ADDRESS IF DIFFERENT FROM ABOVE**
ATTN	ATTN
ADDRESS	ADDRESS
CITY STATE ZIP	CITY STATE ZIP

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone:	~~(253) 858-4234~~ (253) 858-4200	Owner Daytime Phone:	~~(253) 858-4234~~ (253) 858-4200
Primary Contact Mobile/Cell Phone:	~~(253) 509-3622~~	Owner Mobile/Cell Phone:	~~(253) 509-3622~~
Primary Contact Evening Phone:	(xxx)-xxx-xxxx	Owner Evening Phone:	
Fax: (253) 858-4681	E-mail: xxxxxxxxxxxxxxxxxxxx	Fax:	E-mail: xxxxxxxxxxxxxxxxxxxx

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
- [ ] 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
- [ ] Lodging
- [ ] Recreational / RV Park
- [x] Residential
- [ ] School
- [ ] Temporary Farm Worker
- [ ] Other (church, fire station, etc.): ____________

13. WATER SYSTEM OWNERSHIP (mark only one)

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

14. STORAGE CAPACITY (gallons): 300,000

15 Source Number	16 SOURCE NAME: 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	17 INTERTIE: INTERTIE SYSTEM ID NUMBER	18 SOURCE CATEGORY: WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	19 USE: PERMANENT	SEASONAL	EMERGENCY	20 SOURCE METERED	21 TREATMENT: NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	22 DEPTH: DEPTH TO FIRST OPEN INTERVAL IN FEET	23 CAPACITY (GALLONS PER MINUTE)	24 SOURCE LOCATION: 1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	WELL #1		X										X			Y		X					341	18	SE SE	36	22N	01E
S04	CITY OF GIG HARBOR (ID#27600)	27600 9											X			Y	X							0			00N	00E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
69945 J	WASHINGTON STATE CORRECTIONS-WOMEN	PIERCE	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?)		392	543
A. Full Time Single Family Residences (Occupied 180 days or more per year)	392		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	0		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	0	0	0
28. TOTAL SERVICE CONNECTIONS		392	543

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 800

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

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?	150	150	150	150	150	150	150	150	150	150	150	150
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?	400	400	400	400	400	400	400	400	400	400	400	400
B. How many days per month are they present?	20	20	20	20	20	20	20	20	20	20	20	20

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	2	2	2	2	2	2	2	2	2	2	2	2

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:** 7/10/2023

PRINT NAME: BENJAMIN ENFIELD **TITLE:** ENGINEER - KPFF

WS ID	WS Name
69945	WASHINGTON STATE CORRECTIONS-WOMEN

Total WFI Printed: 1

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

Water Facilities Inventory (WFI)

Report Create Date:	6/7/2022		
Water System Id(s):	69945J		
Print Data on Distribution Page:	ALL		
Print Copies For:	DOH Copy		
Water System Name:	ALL		
County:	-- Any --		
Region:	ALL		
Group:	ALL		
Type:	ALL		
Permit Renewal Quarter:	ALL		
Water System Is New:	ALL		
Water System Status:	ALL		
Water Status Date From:	ALL	**To**	ALL
Water System Update Date	ALL	**To**	ALL
Owner Number:	ALL		
SMA Number:	ALL		
SMA Name:	ALL		
Active Connection Count From:	ALL	**To:**	ALL
Approved Connection Count	ALL	**To:**	ALL
Full-Time Population From:	ALL	**To:**	ALL
Water System Expanding	ALL		
Source Type:	ALL		
Source Use:	ALL		
WFI Printed For:	On-Demand		

APPENDIX C16

Draft Water System Plan Comments and Responses

Department of Health, Office of Drinking Water
Southwest Drinking Water Operations
Regional Planner (RP) and Regional Engineering Staff (RES) Review Checklist

Water System: **Department of Corrections**

Pre-Plan Date: 1/5/2023

Water System and Consultant Attendees: Klein, Darin M. (DOC); Kellen Miller; Ben Enfield

Regional Planner: Fern Schultz, Deborah Johnson, Jennifer Kropak

Regional Engineering Staff: Candida Granillo-Dodds, Scott Pollock, Carol Stuckey, Regina Grimm

---

WATER SYSTEM PLAN FORMAT:

The following sections refer to information that needs to be included in the WSP.
Please review DOH's Water System Planning Guidebook for additional information at;
https://www.doh.wa.gov/Portals/1/Documents/Pubs/331-068.pdf.

RP = Regional Planner
RES = Regional Engineering Staff
Coli = Coliform Program Manager

Water System Plan (WSP) Checklist

Part A/ Part B	*Required by WAC √*	*Content Description*	*WSP Page #*	*RP RES Coli*
Chapter 1		**Description of Water System**		
C	(√)	Updated WFI, signed and dated.	Appendix C15	RP
A	(√)	Ownership and management.	Part A, Section 1	RP
B	(√)	System history and background.	Part B, Section 1.2	RP
A	(√)	Discussion about related plans:-CWSP, groundwater management plan, WRIA and City/County land use plans & zoning.	Part B, Section 1.3	RP
B	(√)	Service Area Map/s: • Service area – where your water rights place of use is • Retail service area -where you have duty to serve • Future service area (as per the most recent CWSP if there is one)	Part B, Section 1.4	RP
A	(√)	Policies: Service area, SMA, conditions of service, annexation, etc. • *Please see Publication DOH 331-438.*	Part A, Section 1.5	RP
A	(√)	Duty to serve requirement: procedures, conditions, appeals. • *Please see Publication DOH 331-366*.	Part A, Section 1.5.4	RP
C	(√)	Local Government Consistency statement signed by planning department. • *Please see Publication 331-568*	Appendix C2	RP
Chapter 2		**Planning Data**		
B	(√)	Demand analysis based on water use.	Part B, Section 2.6	RES

Part A/ Part B	*Required by WAC √*	*Content Description*	*WSP Page #*	*RP RES Coli*
B	(√)	Analysis of population, service connections & ERUs.	Part B, Section 2.1	RES
B	(√)	Source and service meter data (preferably three or more, typically 6 years). Provide monthly and annual production and consumption totals.	Part B, Section 2.2 Appendix C13	RES
B	(√)	Usage by customer class. Analyze industrial and commercial demands separate from the residential demand and multifamily structures separate from the single-family residences.	N/A	RES
B	(√)	Define ERU. – based on single-family full-time residence, exclude part time usage • Provide data and assumptions (including DSL) for calculating MDD, PHD and ADD. • Demand analysis per pressure zone and the whole system. • Consider also water supplied to other systems. • If >1000, also include seasonal variations in consumption by customer class.	Part B, Section 3.4.4 Section 2.7 Click to Enter Click to Enter	RES
B	(√)	10 & 20-year projections for population, service connections, & ERUs. • The approval period will only be as long as the projections. Consider developing 13 to 15 years of projected growth.	Part B, Section 2.6	RP RES
B		10 (13 to *15*) & 20-year projections for demand forecasts with and without expected water use efficiency savings.	N/A	RES
B	(√)	Requested length of the approval period, up to 10 years • Regional engineering staff will base whether the capacity analysis and limiting factor support the requested length and their approval language will be based off this determination.	Part B, Section 2.6, 3.4	RES
B	(√)	Interties – discussion of all existing and proposed interties and copies of agreements.	Part B, Section 1.3 Appendix C3	RP RES
B	(√)	Provide 10 & 20-year projections for land use and zoning.	N/A	RP
B	(√)	Distribution System Leakage percentage and volume expressed in ERUs.	Part B, Section 2.3	RES
Chapter 3		**System Analysis**		
A B A	(√)	Provide assumptions and basis of analysis. • System design standards. • Policies on operations and expected level of service (such as standby storage, pumping restrictions and emergency back-up power). • Fire flow requirements and if nesting is allowed. This needs to be confirmed by the local fire authority.	Part A, Section 2.2 Section 1.5 Part B, Section 3.4	RES

Part A/ Part B	*Required by WAC √*	*Content Description*	*WSP Page #*	*RP RES Coli*
B	(√)	System inventory and description. (Asset Management) • This should include a 1) full list of assets, including 2) install date (age if asset), 3) life expectancy and 4) replacement costs in today dollars and at end of life dollars. Include analysis of 5) criticality and 6) level of service. • Please review Chapter 3 of the Water System Planning Guidebook DOH PUB #331-068 • Link to Guidebook https://www.doh.wa.gov/Portals/1/Documents/Pubs/331-068.pdf • Provide map showing pipe and street locations of distribution system	Part B, Section 3.1	RP RES
B	(√)	Capacity analysis (legal and physical capacity). Analyze each component of your system. Summarize in table form • Limiting factor analysis (WSDM worksheet 4-1) *Please see Publication DOH 331-123.* • Include the results of the limiting factor analysis in a table format. • Show source, pumping, water rights, treatment, storage, and distribution capacities. • Analysis per pressure zone and the whole system. • Water rights analysis • Copies of water rights certificate(s) • Water rights self-assessment form for existing, 10 & 20-year projections.	Part B, Section 3.4 Appendix C4	RES
A	(√)	Hydraulic analysis of distribution system. • Describe the model used. • Evaluate the system based on PHD and MDD + Fire flow. • Evaluate the current conditions, and 10- and 20-year planning periods. • Check minimum pressures and maximum velocities. • Include assumptions of model, pressure zone boundary conditions, and a summary of model input information. Storage assumptions should be based on minimum reservoir levels. • Include verification and calibration methods and results. • Summary of system deficiencies	Part B, Section 3.4 Part B, Section 3.5	RES
	(√)	Analysis of possible improvement projects.	Part B, Section 7	RES
Chapter 4		**Water Use Efficiency Program**		
A	(√)	Water Use Efficiency (WUE) Program per WAC 246-290-810. • Describe the current WUE program.	Part B, Section 4	RP

<table>
<tr><th>Part A/ Part B</th><th>Required by WAC √</th><th>Content Description</th><th>WSP Page #</th><th>RP RES Coli</th></tr>
<tr><td></td><td></td><td>
Describe WUE goal & document public adoption process. Please see Publication DOH 331-402.
Describe yearly consumer education.
Evaluate OR implement WUE measures based off connection count. Use categories of indoor residential, outdoor, and industrial/commercial/institutional

Describe measures that will be implemented to achieve the goal & include schedule & costs in the budget.
Estimate projected water savings from selected measures.
If evaluating

≤ 1000 Connections describe process used to evaluate the WUE measures you did not implement.
≥ 1000 Connections

Estimate water saved from efficiency measures since the last plan
Quantitative evaluation of measures to determine if they are cost-effective, include marginal costs of water production.
Evaluate measures for cost-effectiveness if shared with other systems.
Quantitative or qualitative evaluation of measures to determine if they are cost-effective from the societal perspective.

Describe process that will be used to determine effectiveness of the program
Evaluate water distribution system leakage
</td><td>Part B, Section 4</td><td></td></tr>
<tr><td>B</td><td>(√)</td><td>Source & Service Meters
Replacement schedule</td><td>Part B, Section 4.1</td><td>RP</td></tr>
<tr><td>B</td><td>(√)</td><td>Water Loss Control Action Plan WAC 246-290-820, if distribution system leakage is greater than 10%.</td><td>Section 4.2</td><td>RP</td></tr>
<tr><td>B</td><td>(√)</td><td>Water supply characteristics, description & discussion on effect of water use.</td><td>Section 2.4</td><td>RP</td></tr>
<tr><td rowspan="2">B</td><td>(√)</td><td>Source of supply analysis and evaluation of supply alternatives.</td><td>Section 2.4</td><td>RES</td></tr>
<tr><td>(√)</td><td>≥1,000 connections explore reclaimed water opportunities.</td><td>N/A</td><td>RP</td></tr>
</table>

Part A/ Part B	*Required by WAC √*	*Content Description*	*WSP Page #*	*RP RES Coli*
Chapter 5		**Source Water Protection**		

B	(√)	Wellhead protection program.
		• 2-year update
		  • Map
		  • Inventory of potential contaminant sites (names and addresses). If septic systems drain fields are utilized, these are potential sources of contaminants.
		  • Letters Documentation of notification letters to:
		    ○ Owners and operators of potential contaminant sites (*include properties with septic systems*).
		    ○ Regulatory agencies
		    ○ Local emergency responders.
		• Susceptibility assessments to determine how susceptible the source(s) are to contamination.
		• Delineation of 6-month, 1-year, 5-year, and 10-year time of travel zones that show the land area contributing water (and potential contamination) to the source.
		• Contingency plan that makes provisions in case of a drinking water emergency.
			Part B, Section 5	RP

B	(√)	Analysis and discussion of Water Quality.	Part B, Section 3.2	RES
B	(√)	Watershed control program (See WAC 246-290-135(4)) Shall include: • Watershed description and inventory, including location, hydrology, land ownership, and activities that could adversely affect drinking water quality. • Inventory of all potential surface water contamination sites and activities located within the watershed. • Watershed control measures (such as land ownership, relevant written agreements, monitoring and documentation of activities and water quality trends). • System operations, including emergency provisions.	N/A	RP/ RES
Chapter 6		**Operation and Maintenance Program**		
A OR B	(√)	Water system management and personnel.	Part A, Section 5.1 Part B, Section 6.1	RP
A OR B	(√)	Operator certification. • *List the operators' name, certification numbers and expiration dates.*	Part B, Section 6.1	RP
A OR B	(√)	Routine operating procedures and preventive maintenance. • Standard Operating Procedures (SOP Manual-Surface Water Treatment Plant).	Part A, Section 5.2	RES RES

Part A/ Part B	***Required by WAC √***	***Content Description***	***WSP Page #***	***RP RES Coli***
B	(√)	Water quality sampling procedures & program *See new WQMS information at:* *https://fortress.wa.gov/doh/eh/portal/odw/si/Intro.aspx*	Part B, Section 3.2	RES
B	(√)	Coliform monitoring plan , including maps (and triggered source monitoring plan). • Update to be consistent with Revised Total Coliform Rule	Appendix C6	*Coli*
B	(√)	Lead and Copper Monitoring Plan and Map. – new requirement, to get systems ready for the new rule. Document how the sites are using are selected properly and meets correct criteria • *Please see publication 331-111*.	Appendix C6	RES
A and/or B	(√)	Emergency Response Plan • We have a fill in the blank template at: http://www.doh.wa.gov/Portals/1/Documents/Pubs/331-211.pdf. • Water system contacts. • Vendor Contacts (Equipment replacement, water haulers, etc.). • Example notices (water outages, BWA, coliform MCL, emergency conservation). • Emergency government officials contact info for Office of Drinking Water (ODW - please list 360-236-3030 for Regional Engineer), County Health Dept., State and County Emergency Operations Centers. • List of emergency sources and interties. • Emergency response planning activities to ensure preparedness.	Part A, Section 5.3	RP/ RES
A or B	(√)	Water shortage response plan and service reliability. (See WAC 246-290-420).	Part A, Section 5.3	RP/ RES
A and/or B	(√)	Cross-connection control program (See WAC 246-290-490). • Who is the CCC Specialist? • CCC ordinance/resolution providing authority to implement program and shut off water. • Provide copy of the CCC Program containing all 10 Elements of the program (WAC 246-290-490). ▪ This includes an inventory of all devices relied upon to protect the public water system, which include the assessed degree of hazard, assembly location and history of inspections. • Provide status of implementing Cross Connection Control Program. • Provide a copy of most recent year's annual summary report	Part A, Section 6	RP/ RES
A	(√)	Recordkeeping, reporting, and customer complaint program	Part A, Section 5.4	RP

Part A/ Part B	*Required by WAC √*	*Content Description*	*WSP Page #*	*RP RES Coli*
A and/or B	(√)	Summary of O&M deficiencies	Part B, Section 6.4	RP/ RES
Chapter 7		**Distribution Facilities Design and Construction Standards**		
A	(√)	Standard construction specification for distribution mains if the water system wants to be exempted from submitting projects for new water main installation. See WAC 246-290-125 for details.	Appendix C1	RES
Chapter 8		**Capital Improvement Program**		
A and/or B	(√)	Capital improvement schedule for 10 (13 to 15) and 20 years. Prioritize and rank projects that • Address public health • Address DOH enforcement • Asset management • Integrated capital planning • Full-street rehabilitation • Developer-financing • Growth – clearly define if growth is used as a scheduling tool	Part A, Section 7	RP/ RES
Chapter 9		**Financial Program**		
A and/or B	(√)	A summary of past income and expenses • Include past 2 to 3 years data at a minimum	N/A	RP
A and/or B	(√)	A balanced operational budget • For approval period 10 years (13 to 15)	Part A, Section 7	RP
A and/or B	(√)	A plan for collecting the revenue necessary to maintain cash flow stability and to fund the capital improvement program and emergency improvements. This isn't accurate for DOC. How are you going to ensure the maintenance, operations and funding of CIP and reserves without rates. • *Existing and future loan payments need to be included in the budget. For example, if part of the CIP will be paid by loan, those payments should be included in budget.*	Part A, Section 7	RP
	(√)	Analysis of connection fees • Include costs of additional infrastructure required to serve those additional connections and buy-in to the existing infrastructure costs.	N/A	RP
Chapter 10		**Miscellaneous Documents**		
A and B	(√)	Adoption by the governing body We discussed how it won't be the governing body but someone with authority at DOC • Provide minutes and agenda	Click to Enter	RP
A and B	(√)	Meeting of the consumers Still deciding how this is going to occur. Present plan and suggestions	Click to Enter	RP

Part A/ Part B	***Required by WAC √***	***Content Description***	***WSP Page #***	***RP RES Coli***
A or B	(√)	• Water System plan must be presented at a meeting of the consumers. • Provide minutes and agenda Water Use Efficiency public goal setting forum • Proof of proper Public Notice that specifically states that the Water Use Efficiency Goals will be discussed. ○ Notice may be posted on DOH website in order to meet this requirement • Provide copy of goal setting minutes	Click to Enter	RP
A and B	(√)	Proof of adjacent utility correspondence • Provide a copy of WSP to adjacent water utilities	Click to Enter	RP
A and B	(√)	State Environmental Policy Act (SEPA) • Provide copy of the SEPA Environmental Checklist, SEPA Determination and the notice in paper and on the Ecology SEPA Registry.	N/A	RP
	(√)	Agreements: franchise, wheeling, mutual aid, inter-local and other agreements (if any exist).	Appendix C3	RP