

CITY OF HERMISTON, OREGON

PFAS Mitigation Feasibility Study

Draft - July 2026

Prepared by

anderson perry

PFAS MITIGATION FEASIBILITY STUDY

FOR

CITY OF HERMISTON, OREGON

2026



ANDERSON PERRY & ASSOCIATES, INC.

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Table of Contents

Executive Summary **ES-1**
Introduction ES-1
Background Information ES-1
Previous Efforts ES-2
Summary of Existing Water System ES-2
Design Criteria ES-2
Mitigation Alternatives ES-3
Alternative 1 - PFAS Treatment ES-3
Alternative 2 - Existing Regional Water Treatment Plant Utilization ES-3
Alternative 3 - New Regional Water System Potable Water Source ES-3
Alternative 4 - Aquifer Storage and Recovery ES-4
Alternative 5 - Dedicated Irrigation System ES-4
Recommendations ES-5
Funding ES-5
Implementation Plan ES-6

Chapter 1 - Introduction **1-1**
Introduction 1-1
Background 1-1
Regulatory Requirements 1-1
Proposed PFAS Regulation Rule Change 1-3
Previous Efforts 1-4
Draft PFAS Water Treatment Feasibility Study 1-4
Cursory PFAS Mitigation Evaluation Summary 1-4
Objectives 1-5

Chapter 2 - Design Criteria **2-1**
Introduction 2-1
Water Demand 2-1
Historical Average Water Use 2-1
Per Capita Water Use 2-6
Average Daily Demands 2-6
Peak Daily Demands 2-7
Large Irrigation Users 2-7
Fire Demand 2-8
Water Supply 2-9
Well No. 1 2-9
Well No. 2 2-9
Well No. 3 2-9
Well No. 4 2-10
Well No. 5 2-10
Well No. 6 2-10
Regional Water System 2-11
Minnehaha Springs 2-12
Water Storage 2-12

Butte Reservoir 2-12
South Hill Reservoir....2-12
Well No. 4 Reservoir 2-12
Well No. 6 Reservoir 2-12
Walmart Reservoir....2-13
North Hermiston Reservoir 2-13
Storage Recommendations 2-13
Operating Storage 2-13
Equalization Storage 2-14
Fire Reserve....2-14
Emergency Reserve 2-14
Design Criteria....2-14

Chapter 3 - Alternative 1 - PFAS Treatment 3-1
Introduction....3-1
PFAS Treatment Criteria 3-1
Per- and Polyfluoroalkyl Substances Treatment Technology Options 3-2
Ion Exchange 3-3
FLUORO-SORB®....3-3
PFAS Treatment Evaluation 3-4
Water Quality....3-4
Filter Size....3-6
Media Availability 3-6
Regulatory Approval 3-6
Media Life 3-7
Media Disposal 3-7
Supply Capacity....3-8
Life Cycle Cost Analysis 3-8
Capital Costs....3-8
Operation, Maintenance, and Replacement Costs 3-9
20-Year Present Worth 3-10
Summary....3-11

Chapter 4 - Alternative 2 - Existing Regional Water Treatment Plant Utilization 4-1
Introduction....4-1
Existing Regional Water Treatment Plant Infrastructure 4-1
Regional Water Treatment Plant Criteria 4-2
Alternative Evaluation 4-2
Water Allocations....4-2
Water Quality....4-3
Supply Capacity....4-3
Treatment Plant Improvements....4-3
Life Cycle Cost Analysis 4-4
Capital Costs....4-4
Operation, Maintenance, and Replacement Costs 4-4
20-Year Present Worth 4-4
Summary....4-5

Chapter 5 - Alternative 3 - New Regional Water System Potable Water Source.....5-1
Introduction.....5-1
Water Supply Options.....5-1
New Water Treatment Plant.....5-1
Enhanced Clarification and Media Filtration.....5-2
Ultrafiltration.....5-2
Collector Well.....5-2
Well No. 5 Blending.....5-3
New Water Supply Criteria.....5-4
New Supply Option Evaluation.....5-4
New Regional Water System Treatment Technology Evaluation.....5-4
Water Quality.....5-5
System Flushing and Backwash.....5-7
Additional Cleaning Requirements.....5-8
Collector Well.....5-8
Well No. 5 Blending.....5-9
Supply Capacity.....5-9
Life Cycle Cost Analysis.....5-10
Capital Costs.....5-11
Operation, Maintenance, and Replacement Costs.....5-12
20-Year Present Worth.....5-13
Summary of Treatment Technologies.....5-14

Chapter 6 - Alternative 4 - Aquifer Storage and Recovery.....6-1
Introduction.....6-1
Existing and Proposed Infrastructure.....6-1
Aquifer Storage and Recovery Supply Criteria.....6-2
Evaluation.....6-2
Life Cycle Cost Analysis.....6-3
Capital Costs.....6-3
Operation, Maintenance, and Replacement Costs.....6-3
20-Year Present Worth.....6-4
Summary.....6-4

Chapter 7 - Dedicated Irrigation System.....7-1
Introduction.....7-1
Dedicated Irrigation System Options.....7-1
Irrigation Supply Criteria.....7-1
Evaluation.....7-2
Large Irrigation Users.....7-2
Proximity.....7-3
Dedicated Irrigation System Improvements.....7-4
Life Cycle Cost Analysis.....7-4
Capital Cost.....7-4
Operation, Maintenance, and Replacement Costs.....7-4
20-Year Present Worth.....7-5
Summary.....7-5

Chapter 8 - Summary and Recommendation 8-1
Introduction 8-1
Summary of Mitigation Alternatives 8-1
Alternative 1 - PFAS Treatment 8-1
Alternative 2 - Existing Regional Water Treatment Plant Utilization 8-1
Alternative 3 - New Regional Water System Potable Water Source 8-1
Alternative 4 - Aquifer Storage and Recovery 8-2
Alternative 5 - Dedicated Irrigation System 8-2
Mitigation Alternatives Cost Comparison 8-2
Recommendations 8-4
Water Storage 8-6
Conclusion 8-7

Chapter 9 - Funding Opportunities and Implementation 9-1
Introduction 9-1
Summary of Potential Funding Programs 9-1
Conventional Safe Drinking Water Revolving Loan Fund 9-1
Safe Drinking Water Revolving Loan Funding for Emerging Contaminants 9-1
Water/Wastewater Financing Program 9-2
For Business Oregon Programs - Contact Regional Coordinator 9-2
Project Development Action Items and Implementation Plan 9-3
Project Development Action Items 9-3
Implementation Plan 9-3

CHARTS

Chart 2-1 Well No. 2 Monthly Production 2-2
Chart 2-2 Well No. 4 Monthly Production 2-2
Chart 2-3 Well No. 5 Monthly Production 2-3
Chart 2-4 Well No. 6 Monthly Production 2-3
Chart 2-5 Regional Water Treatment Plant Monthly Production 2-4
Chart 2-6 Combined Monthly Production 2-4
Chart 2-7 Total Annual Production 2-5

TABLES

Table ES-1 U.S. Environmental Protection Agency PFAS Regulation Maximum Contaminant Levels Summary ES-1
Table ES-2 Existing and Projected System Water System Demands ES-3
Table ES-3 Mitigation Alternative Cost Summary ES-4
Table ES-4 Mitigation Alternative Cost Per Gallon Comparison ES-5
Table ES-5 Mitigation Implementation Plan ES-6
Table 1-1 U.S. Environmental Protection Agency PFAS Regulation Maximum Contaminant Levels Summary 1-2
Table 1-2 U.S. Environmental Protection Agency PFAS Regulations Initial Monitoring Summary 1-3
Table 1-3 U.S. Environmental Protection Agency PFAS Regulations Ongoing Compliance Monitoring Summary 1-3
Table 2-1 Average Daily Demand 2-6
Table 2-2 Peak Daily Demand 2-7

Table 2-3 Average and Peak Daily Demand without Large Irrigation Users (Nine Users).....2-8
Table 2-4 Insurance Services Office, Inc., recommended Residential Fire Flows.....2-8
Table 3-1 PFAS Treatment Criteria Summary.....3-2
Table 3-2 Summary of Water Quality Concerns.....3-5
Table 3-3 Wells No. 2, 4, and 5 Water Quality Summary[1].....3-5
Table 3-4 Projected Media Life.....3-7
Table 3-5 Alternative 1 - PFAS Treatment Options Total Present Worth Comparison.....3-11
Table 5-1 Regional Water System Water Quality Summary.....5-5
Table 5-2 New Water Treatment Plant Supply Capacity.....5-9
Table 5-3 Well No. 5 Blending Estimated Capacity.....5-10
Table 5-4 Alternative 3 - New Regional Water System Potable Water Source.....5-14
Table 7-1 Large Irrigation User Flow Criteria.....7-1
Table 7-2 Identified Large Irrigation Users.....7-2
Table 7-3 Selected Large Irrigation Users.....7-4
Table 8-1 Mitigation Alternative Cost Summary.....8-3
Table 8-2 Mitigation Alternative Cost Per Gallon Comparison.....8-4
Table 8-3 System Demands and Supply with Alternative 2.....8-5
Table 9-1 Mitigation Implementation Plan.....9-4

FIGURES

Figure 1-1 Existing Water Supply and Storage Reservoir Locations
Figure 2-1 Summary of Design Criteria with Existing Water Sources
Figure 2-2 Summary of Design Criteria Excluding PFAS-contaminated Sources and Associated Reservoir
Figure 3-1 PFAS Treatment Process Schematic
Figure 3-2 Well No. 2 PFAS Treatment Preliminary Site Plan
Figure 3-3 Well No. 4 PFAS Treatment Preliminary Site Plan
Figure 3-4 Well No. 5 PFAS Treatment Preliminary Site Plan
Figure 3-5A Alternative 1 - Ion Exchange Treatment System Option Preliminary Cost Estimate
Figure 3-5B Alternative 1 - Ion Exchange Treatment System Option OM&R and Present Worth Analysis Cost Estimate
Figure 3-6A Alternative 1 - Fluoro-Sorb® Treatment System Option Preliminary Cost Estimate
Figure 3-6B Alternative 1 - Fluoro-Sorb® Treatment System Option OM&R and Present Worth Analysis Cost Estimate
Figure 4-1 Regional Water Treatment Plant Process Schematic
Figure 4-2 Regional Water System
Figure 4-3 Existing Regional Water Treatment Plant Site Plan
Figure 4-4 Alternative 2 - Existing Regional Water Treatment Plant Utilization Preliminary Cost Estimate
Figure 5-1 New Regional Water System Treatment Plant Preliminary Site Plan
Figure 5-2 New Enhanced Clarification and Media Filtration Plant and Well No. 5 Blending Process Schematic
Figure 5-3 New Ultrafiltration Treatment Plant and Well No. 5 Blending Process Schematic
Figure 5-4 Collector Well Preliminary Site Plan
Figure 5-5 New Collector Well and Well No. 5 Blending Process Schematic
Figure 5-6 Alternative 3 - New Regional Water System Potable Water Source Enhanced Clarification and Media Filter Treatment Option Preliminary Cost Estimate

Figure 5-7 Alternative 3 - New Regional Water System Potable Water Source Ultrafiltration Treatment Option Preliminary Cost Estimate
Figure 5-8 Alternative 3 - New Regional Water System Potable Water Source Collector Well Option Preliminary Cost Estimate
Figure 6-1 Aquifer Storage and Recovery Process Schematic
Figure 6-2 Aquifer Storage and Recovery Preliminary Site Plan
Figure 6-3 Alternative 4 - Aquifer Storage and Recovery Preliminary Cost Estimate
Figure 7-1 Identified Large Irrigation Users Meter Locations
Figure 7-2 Dedicated Irrigation System Well No. 5 Site Plan I
Figure 7-3 Dedicated Irrigation System Well No. 5 Site Plan II
Figure 7-4 Dedicated Irrigation System Well No. 2 Site Plan
Figure 7-5 Dedicated Irrigation System Well No. 4 Site Plan
Figure 7-6 Alternative 5 - Dedicated Irrigation System Preliminary Cost Estimate
Figure 8-1 Updated Design Criteria with Recommended Improvements
Figure 8-2 Recommended Improvements
Figure 8-3 Recommended Improvements Preliminary Cost Estimate

APPENDICES

Appendix A Draft PFAS Water Treatment Feasibility Study
Appendix B Cursory PFAS Mitigation Evaluation Summary
Appendix C Water Quality Data
Appendix D WesTech Engineering, LLC, Proposal

Executive Summary

Introduction

This Executive Summary summarizes the results of the PFAS Mitigation Feasibility Study prepared by Anderson Perry & Associates Inc. (AP) for the City of Hermiston, Oregon. The focus of this Study is to evaluate the feasibility of several alternatives for the mitigation of per- and polyfluoroalkyl substances (PFAS) in the City's potable water supply and determine the most feasible alternative or combination of alternatives for the City. This Study includes an overview of the City's potable water system, regulatory requirements, system design criteria, available alternatives to mitigate PFAS levels, capital and operational cost estimates for each option, and potential funding options for the City to pursue. For more detailed information, refer to the individual chapters of this Study.

Background Information

The U.S. Environmental Protection Agency (EPA) announced new regulations in April 2024 aimed at reducing concentrations of PFAS in drinking water. The regulations set limits on the maximum contaminant levels (MCLs) of several PFAS, set monitoring and testing requirements, and established a timeline by which treatment solutions must be implemented in affected areas. As part of the initial monitoring phase of the compliance schedule, the City has detected levels of PFAS exceeding the EPA's MCLs in three of the City's water supply wells: Wells No. 2, 4, and 5. For the City to meet its current water demands, efforts will need to be undertaken to mitigate PFAS levels in the water supply. This Study is intended to assist the City in selecting alternatives for mitigating PFAS concentrations in its water supply. Table ES-1 summarizes the 2024 EPA regulations associated with PFAS.

TABLE ES-1
U.S. ENVIRONMENTAL PROTECTION AGENCY PFAS
REGULATION MAXIMUM CONTAMINANT LEVELS SUMMARY

Compound	EPA MCL
PFOA	4.0 ppt
PFOS	4.0 ppt
PFHxS	10 ppt
PFNA	10 ppt
HFPO-DA (Also known as GenX)	10 ppt
Hazard Index[1]	1 (unitless)

[1] The Hazard Index is a weighted calculation based on levels of PFHxS, GenX chemicals, PFNA, and PFBS in the drinking water.
HFPO-DA = hexafluoropropylene oxide dimer acid
PFBS = perfluorobutanesulfonic acid
PFHxS = perfluorohexanesulfonic acid
PFNA = perfluorononanoic acid
PFOA = perfluorooctanoic acid
PFOS = perfluorooctane sulfonate
ppt = parts per trillion

In May 2025, the EPA announced proposed changes to the 2024 PFAS Regulations. In May 2026, the draft of the proposed rule was released and opened for public comment. The proposed rule change maintains the current MCLs for PFOA and PFOS, while rescinding and reconsidering MCLs for PFHxS, PFNA, and HFPO-DA (GenX), along with the Hazard Index mixtures of PFHS, PFNA, HFPO-DA, and PFBS. Additionally, the proposed rule would also allow public water systems to seek a federal exemption for two additional years to allow additional time to comply with the MCL regulations for PFOA and PFOS.

Previous Efforts

The City has completed previous evaluations and studies to address the PFAS levels in the existing water supply sources, leading up to this Study. These include the draft PFAS Water Treatment Feasibility Study (Treatment Study) and the Cursory PFAS Mitigation Evaluation Summary (Summary). The draft Treatment Study (Treatment Study) was completed in February 2026 by AP for the City. The draft Treatment Study focused on available treatment technologies for removing PFAS from the City's three contaminated wells. The draft Treatment Study was not finalized due to the significant construction and annual operation, maintenance, and replacement (OM&R) costs associated with developing PFAS treatment at the City's existing well sites, which tested positive for PFAS. The draft Treatment Study recommended the City complete an additional evaluation for mitigating PFAS before implementing treatment of PFAS from the well sites, which tested positive for PFAS.

The Summary provided an overview of available alternatives for mitigating PFAS from the City's potable water system, in addition to the treatment options outlined in the draft Treatment Study. The Summary provided the results of a cursory evaluation of identified alternatives for the City's consideration. The intent of the Summary was to provide a focused set of alternatives to evaluate in detail in this Study.

Summary of Existing Water System

The City has five water supply sources. The primary water supply source consists of four groundwater wells located throughout the City. Additionally, the City's water system is connected to the Regional Water System (RWS), which is capable of providing the City with treated water from the Columbia River. The City uses the RWS as a backup water supply source in times of emergency or high water demands.

Design Criteria

As part of this Study, the water system design criteria were updated, which included reviewing historical City water demands over the last three years, then using the historical data along with population projections to estimate projected 20-year water system demands. Water storage requirements were also evaluated and updated. Both the existing and projected 20-year water system demands and potential water storage needs were utilized in developing recommended improvement project(s) to mitigate the PFAS in the City's water system. Table ES-2 provides an overview of the current and projected water system demands.

TABLE ES-2
EXISTING AND PROJECTED SYSTEM WATER SYSTEM DEMANDS

Year	Population	ADD (200 gpcd)		PDD (501 gpcd)	
		gpd	gpm	gpd	gpm
2026	20,492	4.098.000	2.850	10.267.000	7.130
2046	24,837	4.966.000	3.450	12.443.000	8.640

ADD = average daily demand
gpcd = gallons per day per capita
gpd = gallons per day
gpm = gallons per minute
PDD = peak daily demand

Mitigation Alternatives

Various mitigation alternatives were identified that would effectively reduce the concentrations of PFAS in the City's potable water supply below EPA's MCLs. Based on the results of the draft Treatment Study, the Summary, and input from the City, five PFAS mitigation alternatives were developed for evaluation in this Study. The following provides a brief overview of the alternatives included in this Study.

Alternative 1 - PFAS Treatment

Alternative 1 would utilize PFAS treatment to remove PFAS from the City's Wells No. 2, 4, and 5, enabling the continued use of existing water supply sources. Two PFAS treatment options were evaluated in this Study. The first treatment option would utilize an ion exchange (IX) treatment system for removing PFAS. The second option would utilize FLUORO-SORB® for PFAS removal. The evaluation included the construction of a new water treatment plant (WTP) at each well site.

Alternative 2 - Existing Regional Water Treatment Plant Utilization

Alternative 2 would utilize the existing Regional Water Treatment Plant (RWTP) to its full capacity to provide the City with additional water from the RWS. Utilizing the RWTP would allow the City to begin providing PFAS-free water quickly with minimal initial investment. However, the existing package treatment system will likely need replaced within the next decade.

Alternative 3 - New Regional Water System Potable Water Source

Alternative 3 includes development of a new water supply source using Columbia River water through the RWS. Three options were considered for the new water supply source. The first option involves the construction of a new WTP using enhanced clarification and media filtration (ECMF) technology to treat non-potable water and supply it to the City. The second option would construct a new WTP utilizing ultrafiltration (UF) technology. Lastly, the third option would utilize a collector well and transmission line to deliver water from the Columbia River to the City's distribution system. Blending of Well No. 5 water with the supply sources was also considered. Blending would allow the City to utilize an existing PFAS-contaminated source

without extensive treatment equipment. However, blending carries risks associated with the potential for variations in PFAS concentrations.

Alternative 4 - Aquifer Storage and Recovery

Alternative 4 would involve the construction of a new aquifer storage and recovery (ASR) well to assist in accessing water stored by the City's existing ASR-3 well. A new ASR well would allow the City to make better use of its existing ASR infrastructure by allowing recovery to occur independently from the ASR-3 well infrastructure, which is anticipated to primarily be used to serve a specific user. A new ASR well would assist the City in periods of high demand with a lower capital cost than the other alternatives.

Alternative 5 - Dedicated Irrigation System

Alternative 5 would include the construction of a dedicated irrigation system utilizing PFAS-contaminated sources. Water from Wells No. 2, 4, and 5 would be delivered to several large customers for irrigation use only. Moving some of the high irrigation demands from the City's current potable water system to a dedicated irrigation system would help reduce the potable water PDD in summer months.

Table ES-3 provides a summary of the estimated capital improvement costs; annual OM&R costs; and a 20-year present worth cost for each alternative evaluated. Table ES-4 provides a summary of the estimated supply capacity for each alternative evaluated along with the estimated cost per million gallons of water produced.

TABLE ES-3
MITIGATION ALTERNATIVE COST SUMMARY

Mitigation Alternative	Total Estimated Improvements Cost[1]	Annual OM&R	Total 20-year Present Worth
Alternative 1 - PFAS Treatment, IX Option[2]	$18,767,000	$1,704,000	$39,960,000
Alternative 1 - PFAS Treatment, FLUORO-SORB® Option[2]	$16,478,000	$1,430,000	$34,308,000
Alternative 2 - Existing RWTP Utilization	TBD[3]	$1,225,000	TBD+ $15,270,000[3]
Alternative 3 - New RWS Potable Water Source, ECMF Treatment Option[4]	$27,360,000	$1,377,000	$44,530,000
Alternative 3 - New RWS Potable Water Source, UF Treatment Option[4]	$29,088,000	$1,424,000	$46,838,000
Alternative 3 - New RWS Potable Water Source, Collector Well Option[4]	$46,800,000	$534,000	$53,460,000
Alternative 4 - ASR	$7,200,000	$268,000	$10,540,000
Alternative 5 - Dedicated Irrigation System	$2,232,000	$160,000	$4,232,000

[1] All costs are in 2026 dollars.
[2] Alternative 1 options include treatment at Wells No. 2. 4, and 5.
[3] The total estimated improvements cost for Alternative 2 includes the acquisition of water allocations, the cost of which is currently unknown.
[4] Costs for Alternative 3 options include Well No. 5 water blending.
TBD = To be determined

TABLE ES-4
MITIGATION ALTERNATIVE COST PER GALLON COMPARISON

Alternative	Estimated Annual Supply Capacity (MG)[1]	Estimated Cost Per MG[2]
Alternative 1 - PFAS Treatment, IX Option[3]	1,676.24	$23,800
Alternative 1 - PFAS Treatment, FLUORO-SORB® Option[3]	1,676.24	$20,500
Alternative 2 - Existing RWTP Utilization	1,036.26	$14,700
Alternative 3 - New RWS Potable Water Source, ECMF Treatment Option[4]	1,646.51	$27,000
Alternative 3 - New RWS Potable Water Source, UF Treatment Option[4]	1,632.89	$28,700
Alternative 3 - New RWS Potable Water Source, Collector Well Option[4]	1,688.50	$31,700
Alternative 4 - ASR	250.00	$42,200
Alternative 5 - Dedicated Irrigation System	73.58	$57,500

[1] Supply capacities assume that the alternative is the primary supply source other than Well No. 6.

[2] All costs are in 2026 dollars.

[3] Alternative 1 options include PFAS treatment at Wells No. 2, 4 and 5.

[4] Costs for Alternative 3 options include Well No. 5 water blending.

MG = million gallons

Recommendations

To meet the EPA's National Primary Drinking Water Regulation on PFAS, it was recommended that the City implement Alternatives 1 - PFAS Treatment, 2 - Existing RWTP Utilization, and 4 - ASR along with the construction of a new reservoir. Alternative 1 - PFAS Treatment is recommended to be implemented for Well No. 5 while, Wells No. 2 and 4 would no longer be utilized in the municipal water system. Alternative 2 - Existing RWTP Utilization would involve utilizing the existing RWTP to its full capacity while budgeting for the eventual replacement of the treatment equipment. Alternative 4 - ASR would consist of constructing a new ASR well to assist in periods of high demands and serve as a "buffer" to provide additional backup capacity beyond the RWTP, and Wells No. 5 and 6. Lastly, a new 2 MG reservoir is recommended to address anticipated storage needs due to the loss in storage resulting from removal of Well No. 4 from the municipal water system, and the recommended increase in the City's storage capacity. Combined, these improvements are anticipated to allow the City to meet EPA's PFAS regulations effectively and efficiently with the use of existing infrastructure, and the combination of low cost per gallon and low initial capital costs.

Funding

If the City chooses to implement the recommended improvements or other mitigation alternative(s), outside funding is likely to be needed to cover the costs associated with implementing PFAS mitigation improvements. Project financing is anticipated to include a combination of low-interest loans, potential grant funding, and some level of contribution by the City. The City's median household income levels, population, and lack of job creation associated

with the project limit external funding options primarily to Business Oregon programs. Based on this, it is recommended that the City submit an application for the Safe Drinking Water Revolving Loan Fund (SDWRLF) Emerging Contaminants (EC) Program to assist with funding the implementation of the preferred mitigation strategy. This program, funded by the Bipartisan Infrastructure Law, provides grants and low-interest loans to help public water systems address contaminants like PFAS. The next application deadline for the SDWRLF - EC Program is August 15, 2026. Other potential funding sources may be available and are discussed in Chapter 9 of this Study.

Implementation Plan

With City concurrence on the mitigation/treatment option to pursue to reduce PFAS concentrations in the City's water, the City will need to follow the proposed implementation steps to ensure mitigation of PFAS is completed before EPA deadlines. The steps outlined are general in nature and include the major steps that need to be undertaken.

Should the City decide to proceed with the recommendations discussed herein, the implementation plan shown on Table ES-5 outlines the key steps and timelines that the City could anticipate for project development. The mitigation implementation plan below is for the development of the recommended PFAS mitigation alternatives.

TABLE ES-5
MITIGATION IMPLEMENTATION PLAN

	Item	Completion Date
1.	City Selection of Preferred Alternative(s)	July/August 2026
2.	Finalize PFAS Mitigation Feasibility Study	August 2026
3.	Submit Funding Application(s) for Preferred Alternative(s)	August 2026
4.	Complete pilot testing or RSSCT, if needed	Winter 2026 to Spring 2027
5.	Develop a project pre-design report	Winter 2026 to Summer 2027
6.	Design improvements and develop environmental and/or cultural resource reports	Summer 2027 to Spring 2028
7.	Advertise, bid, and award the project	Spring 2028
8.	Construct the project	Summer 2028 to Fall 2029
9.	Close out the project	Winter 2029

RSSCT = Rapid Small-Scale Column Testing

This is an optimistic schedule seeking to meet the current EPA deadline for project completion by the end of 2029. All identified tasks would need to be completed in the time frames noted and any outside funding agency delays, extended approvals by regulatory agencies, or other unforeseen factors could cause project completion to be delayed.

Chapter 1 - Introduction

Introduction

This chapter presents background information related to the City of Hermiston, Oregon's water system and the need for this PFAS Mitigation Feasibility Study. The general objectives of this Study are also outlined.

Background

The City provides drinking water to customers within its service area, which includes the city limits and urban growth boundary. The City has several water supply sources. These sources include three deep groundwater wells from basalt aquifers (Wells No. 2, 4, and 6), one shallow groundwater well from an alluvial aquifer (Well No. 5), and one surface water source that pulls water from the Columbia River utilizing the Regional Water System (RWS) that is then treated at the Regional Water Treatment Plant (RWTP). These water supply sources serve seven pressure zones throughout the City, utilizing water storage reservoirs, booster pump stations, and pressure reducing valves. The water supply sources and other major water system components are shown on Figure 1-1.

In April 2024, the U.S. Environmental Protection Agency (EPA) finalized the per- and polyfluoroalkyl substances (PFAS) National Primary Drinking Water Regulation, which identifies acceptable limits of PFAS in drinking water, as well as testing and implementation requirements. PFAS are a group of industrial chemicals, commonly known as "forever chemicals," that are highly resistant to degradation and can persist in the environment for extended periods of time. PFAS can pose serious health risks like cancers, liver/kidney damage, and developmental issues. Sources of PFAS include industrial sites, firefighting foams, non-stick coatings on pans, landfills, and other sources.

Based on the EPA's PFAS regulations, the City recently completed the required initial monitoring of all water supply sources for PFAS. Of the five water supply sources, results from three of the supply sources had levels of PFAS that exceeded the maximum contaminant levels (MCLs) established by the EPA. The water supply sources that tested positive for PFAS were Wells No. 2, 4, and 5. Combined, these sources represent the majority of the City's drinking water production. Consequently, the City must undertake efforts to address PFAS concentrations in the drinking water by either replacing the PFAS-contaminated sources and/or providing treatment of the contaminated sources to remove PFAS.

Regulatory Requirements

The April 2024 EPA PFAS regulations established individual MCLs for six PFAS: perfluoroocanoic acid (PFOA), perfluorooctane sulfonate (PFOS), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), and hexafluroropropylene oxide dimer acid (HFPO-DA), also known as GenX, as contaminants with individual MCLs, and a Hazard Index established for mixtures containing two or more variations of PFAS. In addition to the MCLs, the EPA established more conservative, non-enforceable maximum contaminant level goals (MCLG) for each regulated PFAS. Table 1-1 summarizes the PFAS MCLG and MCLs. In addition to setting the MCLs, EPA regulations

require that community water systems complete monitoring. Monitoring requirements are split between initial monitoring and ongoing compliance monitoring. The initial monitoring must be completed within three years after the date of the final rule, or April 2027. The number and frequency of the sampling is dependent on the source type (i.e., surface water versus groundwater) and system size. A summary of the initial monitoring requirements is included on Table 1-2. Following the completion of the initial monitoring, ongoing compliance monitoring is required. The frequency of the ongoing compliance monitoring is first dependent on the results of the initial monitoring, then on the results of the ongoing compliance monitoring. Primacy (i.e., state) agencies have the authority to reduce the ongoing compliance monitoring if results are below trigger levels for all regulated PFAS. Trigger levels are set at one-half the MCLs for regulated PFAS and one-half the Hazard Index. Table 1-3 provides a summary of the ongoing compliance monitoring frequency based on previous sampling results. Following the April 2027 deadline for initial monitoring, public water systems must disclose all detected concentrations of regulated PFAS within their annual Consumer Confidence Report delivered to their customers (even if the levels are below the MCLs). This requirement includes publishing results of the initial monitoring and continuing through the ongoing compliance monitoring. During ongoing compliance monitoring, if a PFAS level is determined to exceed an MCL, a Tier 2 public notice requirement is triggered. When a Tier 2 public notice requirement is triggered it requires issuing a standalone, explicit public notification to all consumers as soon as practicable, but no later than 30 days after learning of the violation.

Should the initial monitoring PFAS concentrations exceed the MCLs, public water systems are required to comply with the regulations within a five-year period ending in 2029. See Proposed PFAS Regulation Rule Change section for additional information. Any public water system testing above regulation requirements after the initial monitoring is required to take steps to reduce PFAS levels and notify the public of the violation.

TABLE 1-1
U.S. ENVIRONMENTAL PROTECTION AGENCY PFAS
REGULATION MAXIMUM CONTAMINANT LEVELS SUMMARY

Compound	EPA MCLG	EPA MCL
PFOA	0	4.0 ppt
PFOS	0	4.0 ppt
PFHxS	10 ppt	10 ppt
PFNA	10 ppt	10 ppt
HFPO-DA (GenX)	10 ppt	10 ppt
Hazard Index[1]	1 (unitless)	1 (unitless)

[1] *The Hazard Index is a weighted calculation based on levels of PFHxS, GenX chemicals, PFNA, and PFBS in the drinking water.*

PFBS = perfluorobutanesulfonic acid

ppt = parts per trillion

TABLE 1-2
U.S. ENVIRONMENTAL PROTECTION AGENCY
PFAS REGULATIONS INITIAL MONITORING SUMMARY

Source Type	System Size	Monitoring Frequency
Surface Water	All	Quarterly within a 12-month period; samples are collected two to four months apart.
Groundwater	More than 10,000 customers	Quarterly within a 12-month period; samples are collected two to four months apart.
Groundwater	Less than 10,000 customers	Twice within a 12-month period; samples are collected five to seven months apart.

TABLE 1-3
U.S. ENVIRONMENTAL PROTECTION AGENCY
PFAS REGULATIONS ONGOING COMPLIANCE MONITORING SUMMARY

Monitoring Event	Previous Results	Ongoing Compliance Monitoring Frequence
Initial Monitoring	Any sample greater than or equal to trigger levels	Quarterly monitoring
	All samples less than the trigger levels	Triennial monitoring
Ongoing Compliance Monitoring	Any sample greater than or equal to an MCL	Quarterly monitoring
	Four consecutive quarterly samples less than the MCLs	Annual monitoring
	Three consecutive annual samples less than the trigger levels	Triennial monitoring

Per the EPA's PFAS regulations, the Oregon Health Authority - Drinking Water Services (DWS) had up to two years from the finalization of the EPA's regulations to develop and/or adopt PFAS regulations. The adopted DWS's regulations must be at least as stringent as the EPA regulations. The DWS has yet to officially adopt a PFAS regulation but has deferred to the EPA's regulation for the initial monitoring and ongoing compliance monitoring. Once the DWS adopts a complete PFAS regulation, which includes the MCLs of the regulated PFAS, the DWS has the option to adopt more restrictive standards than the EPA, which could result in additional treatment considerations being needed.

Proposed PFAS Regulation Rule Change

In May 2025, the EPA announced a new rulemaking process that proposes changes to the 2024 PFAS Regulations. In May 2026, the draft of the proposed rule was opened for public comment, with the comment period closing on July 20, 2026. The proposed rule change maintains the current MCLs for PFOA and PFOS, while rescinding and reconsidering the MCLs for PFHxS, PFNA, and HFPO-DA (GenX), along with the Hazard Index mixtures of PFHS, PFNA, HFPO-DA, and PFBS. The proposed rule would also allow public water systems to seek a federal exemption for two additional years to allow additional time to comply with the MCL regulations for PFOA and PFOS. The extension would result in a compliance date of April 26, 2031, rather

than the current date of April 26, 2029. This is not a "blanket" two-year extension for all public water systems. A public water system must request the extension from the EPA and/or primacy agency (i.e., State) depending on if primacy has been established. Public water systems with PFOA or PFOS concentrations greater than 12 ppt would be required to implement two out of six interim control measures identified in the proposed rule during the extension period.

As outlined in Chapter 2 of this Study, PFOS levels in the City's three contaminated water supply sources exceeded the MCL. Based on that, the proposed rule change does not affect the City's compliance status. However, if the City would like to explore the compliance date extension, it is suggested that the City engage early and often with the DWS. It is also recommended that the City continue moving forward with implementing PFAS mitigation.

Previous Efforts

The City has completed previous efforts to address the PFAS levels in the existing water supply sources, leading up to this Study. The following provides a brief overview of the previous efforts.

Draft PFAS Water Treatment Feasibility Study

A draft PFAS Water Treatment Feasibility Study (Treatment Study) was completed in February 2026 by Anderson Perry & Associates, Inc. (AP) for the City. The draft Treatment Study focused on available treatment technologies for removing PFAS from the City's three contaminated wells. The draft Treatment Study identified and evaluated four PFAS treatment alternatives: granular activated carbon (GAC), ion exchange (IX), FLUORO-SORB®, and reverse osmosis (RO). Due to the high capital and operational cost of RO, the draft Treatment Study primarily focused on GAC, IX, and FLUORO-SORB®. The draft Treatment Study was not finalized due to the significant construction and annual operation, maintenance, and replacement costs associated with incorporating PFAS treatment for all of the City's contaminated wells. The draft Treatment Study recommended the City complete an additional evaluation for mitigating PFAS before implementing treatment of PFAS from the contaminated sources. For more information, refer to the draft Treatment Study included in Appendix A.

Cursory PFAS Mitigation Evaluation Summary

In addition to the treatment options outlined in the draft Treatment Study, the Cursory PFAS Mitigation Evaluation Summary (Summary) provides an overview of available alternatives for mitigating PFAS from the City's potable water system. The Summary provides the results of a cursory evaluation of identified alternatives for the City's consideration. The intent of the Summary was to provide a focused set of alternatives to evaluate in detail. The following are the alternatives included in the Summary.

- Alternative 1 - Well No. 1 Reactivation
- Alternative 2 - Well No. 3 Reactivation
- Alternative 3 - Well No. 6 Utilization and Expansion
- Alternative 4 - Wells No. 2 and 4 Consolidation
- Alternative 5 - Minnehaha Springs Development

- Alternative 6 - Existing RWTP Expansion/Replacement
- Alternative 7 - New RWS Treatment Plant
- Alternative 8 - Reverse Osmosis/Microfiltration PFAS Treatment
- Alternative 9 - DEXSORB® PFAS Treatment
- Alternative 10 - Aquifer Storage and Recovery (ASR)

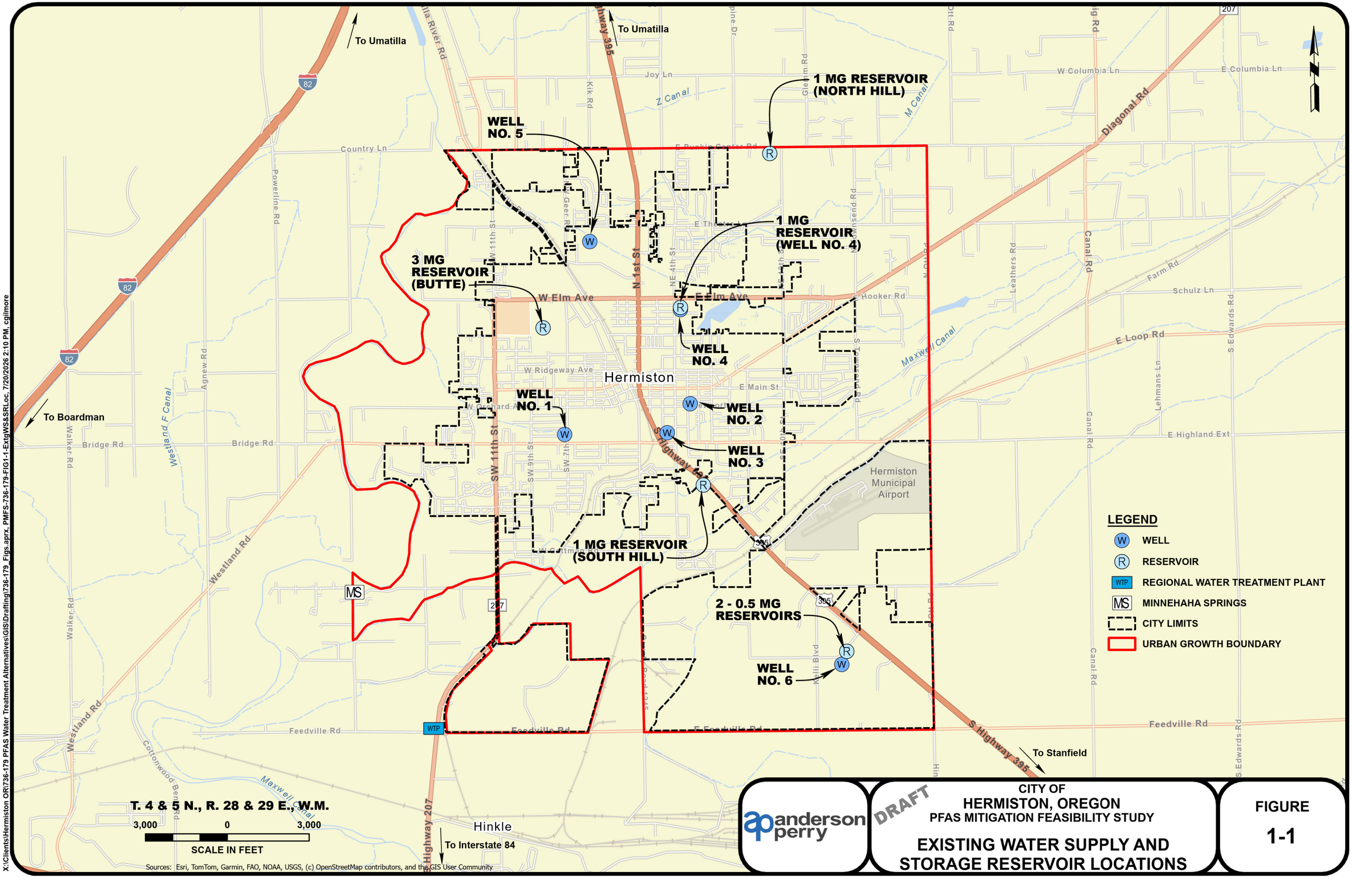
Following a meeting held with City and AP staff on June 8, 2026, the following alternatives were selected to be evaluated in detail.

- **Alternative 6 - Existing RWTP Expansion** - Evaluate the ability of the City to obtain access to the full capacity (2,800 gallons per minute [gpm]) of the existing RWTP. Additionally, the evaluation will include options to retrofit the existing treatment system in the future, as the existing system is approximately 30 years old.
- **Alternative 7 - New RWS Treatment Plant** - Evaluate the construction of a new water treatment plant on the RWS utilizing the City's remaining RWS undeveloped water allocation (4,700 gpm). In addition to the treatment of the RWS water, a transmission line and infrastructure to convey water from Well No. 5 to the new water treatment plant (WTP) site for blending treated surface water and Well No. 5 water will be included. An alternative to constructing a new WTP that evaluates the use of a new collector well to provide potable water to the City will be included.
- **Alternative 10 - ASR** - Evaluate the use of ASR recovery to meet peak demands. This alternative will utilize the existing RWTP for ASR injection while looking at using existing ASR recovery infrastructure, if possible, and new infrastructure as required.

The detailed evaluation of the above selected alternatives is included in this Study. For additional information related to the cursory evaluation of alternatives, see the Summary in Appendix B.

Objectives

The objective of this Study is to develop updated water system supply and storage design criteria, evaluate the available options to mitigate PFAS concentrations in the City's drinking water, provide a 20-year present worth analysis for viable alternatives, and provide the City with direction for the next steps in the planning, procurement, and implementation of the preferred alternative for mitigating PFAS in the existing water supply sources.



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anderson perry

DRAFT

CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

EXISTING WATER SUPPLY AND STORAGE RESERVOIR LOCATIONS

FIGURE
1-1

Chapter 2 - Design Criteria

Introduction

To determine the amount of water that needs to be treated and/or mitigated, the City of Hermiston's water system demands were evaluated to determine current and projected future design criteria. Historical water production data from the previous three years (2023, 2024, and 2025) were analyzed. Using the historical data, projected 20-year (2046) planning criteria was developed. The projected 2046 criteria can then be utilized to evaluate alternatives for anticipated future system needs. Additionally the City's current water storage reservoirs are outlined along with projected water storage needs.

Water Demand

Future water demands can be estimated from past water use data and population projections. Water use data are usually expressed in terms of various rates of water used for various periods of time. This allows components of the water system and water treatment system to be sized for the maximum demands that will be placed on them. The rates of water use that are important in evaluation of a water supply system are the average daily demand (ADD), which is the total amount of water used during a one-year period divided by 365 days; and the peak daily demand (PDD), which is the maximum total amount of water used during any 24-hour period.

Water supply facilities are normally designed to provide enough capacity to meet the PDD. However, not all water supply facilities are capable or recommended to operate continuously for 24 hours. As a general rule, a groundwater well source would be sized to supply the needed water during the PDD with a maximum of 18 hours of operation per day. Limiting groundwater well sources to 18 hours of operation per day is standard practice to protect both the aquifer recovery and mechanical equipment. Surface water treatment facilities are capable of continuous 24-hour operation; however, depending on the treatment type, water is not always being produced. Many surface water treatment facilities require a portion of the system to be taken offline regularly for cleaning/backwashing. The frequency of the cleaning/backwashing can be reduced if supply is depending on the treatment facility. If existing supply sources have the capacity to meet the water usage during high demand summer months, but require well pumps to operate 18 hours or more per day or a treatment facility operate without cleaning/backwashing to keep up with the PDD, the situation may warrant the addition of another water supply source to provide some backup capability to avoid over-stressing the supply sources and pumping equipment.

Historical Average Water Use

To determine current water demands, production records for the City's water supply system were reviewed from 2023 through 2025. Population data for the same time frame was also utilized. Charts 2-1 through 2-5 present the total monthly production for each of the City's supply sources. It is important to note that the volume scale depicted on the left side of the charts has been adjusted based on the volume supplied by each source.

CHART 2-1
WELL NO. 2 MONTHLY PRODUCTION

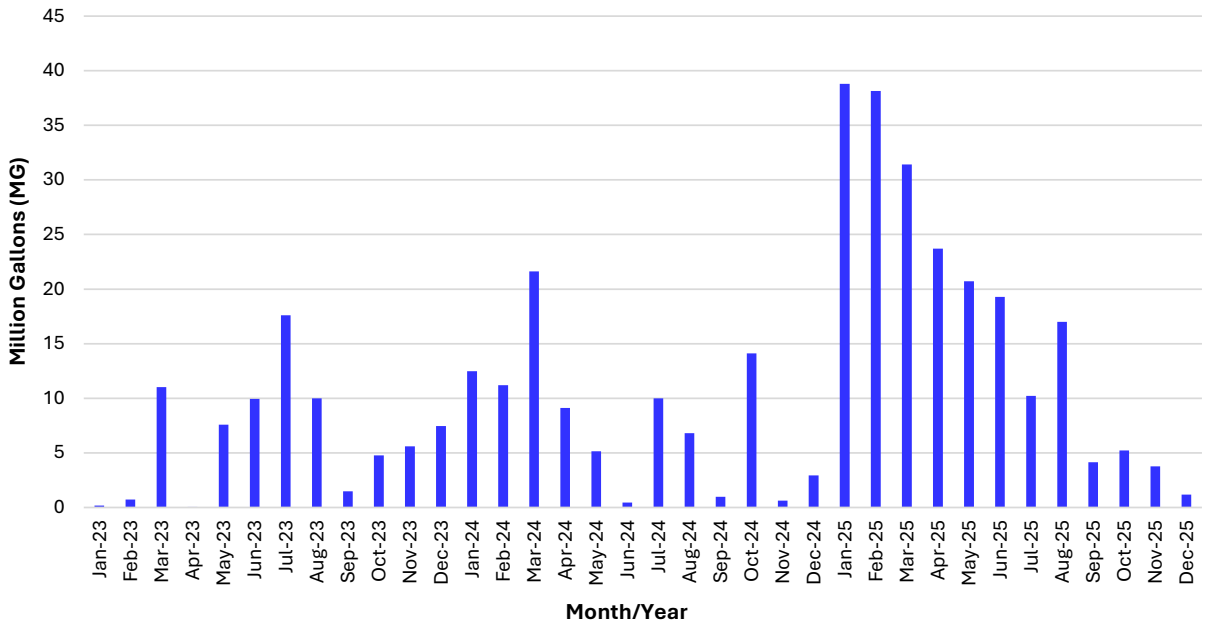


CHART 2-2
WELL NO. 4 MONTHLY PRODUCTION

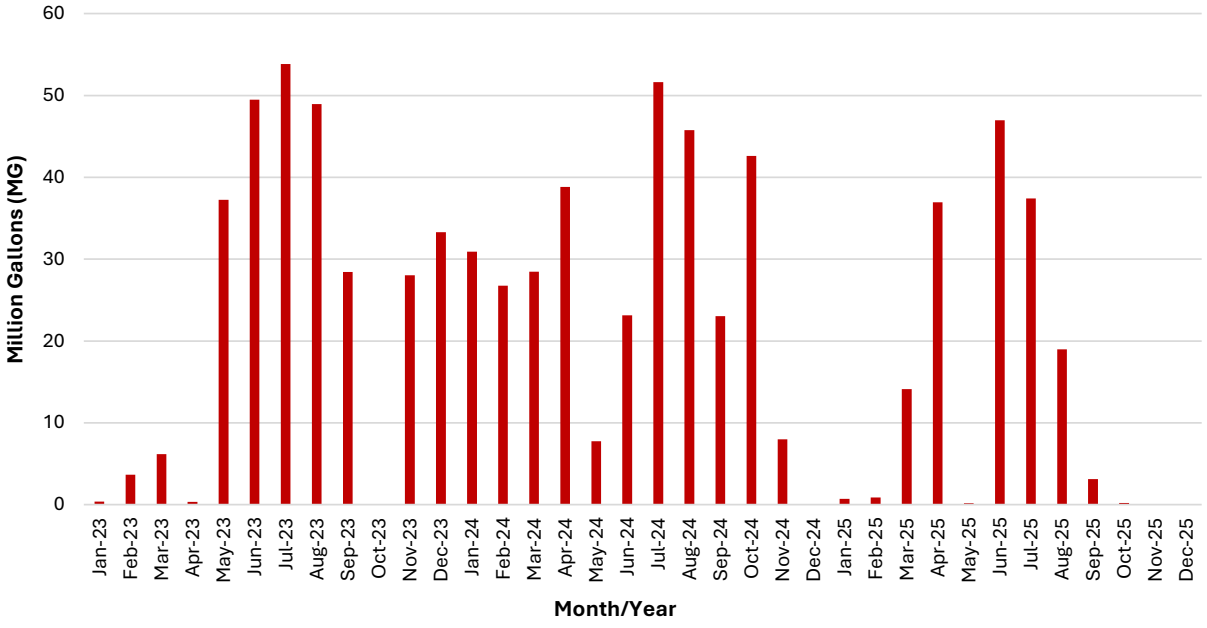


CHART 2-3
WELL NO. 5 MONTHLY PRODUCTION

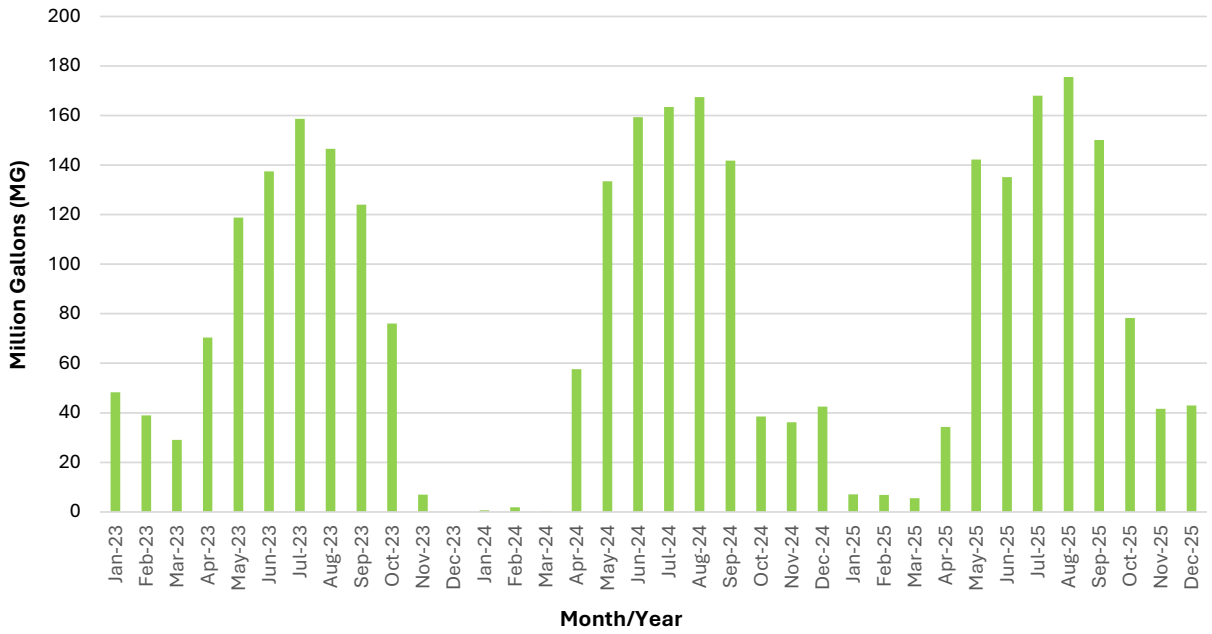


CHART 2-4
WELL NO. 6 MONTHLY PRODUCTION

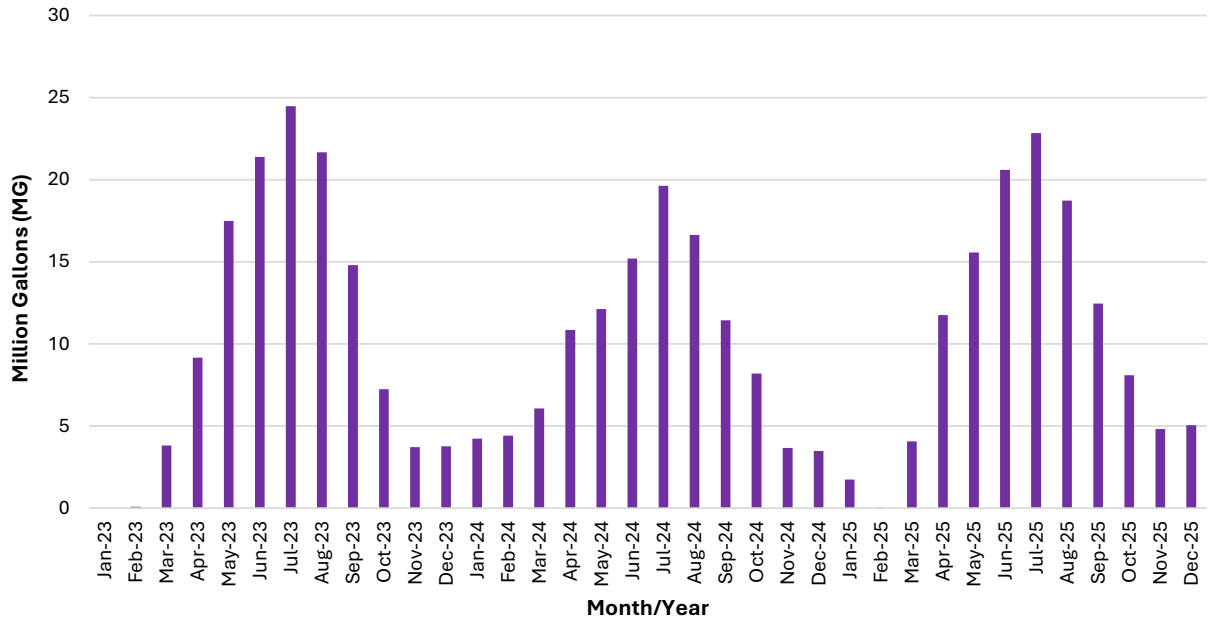
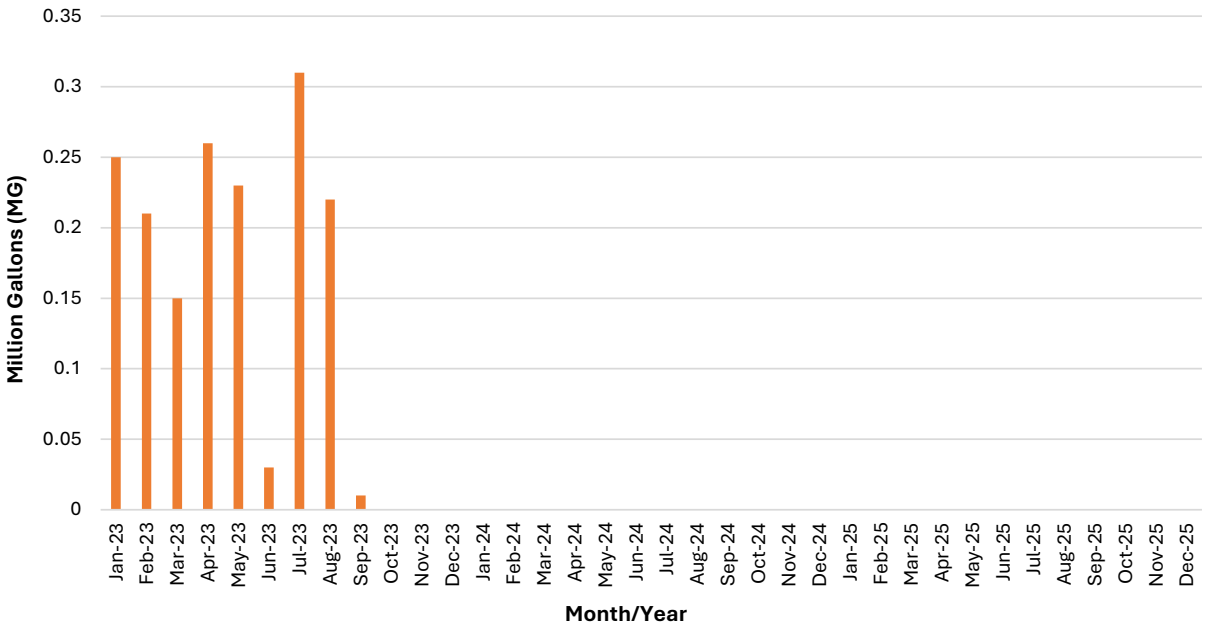


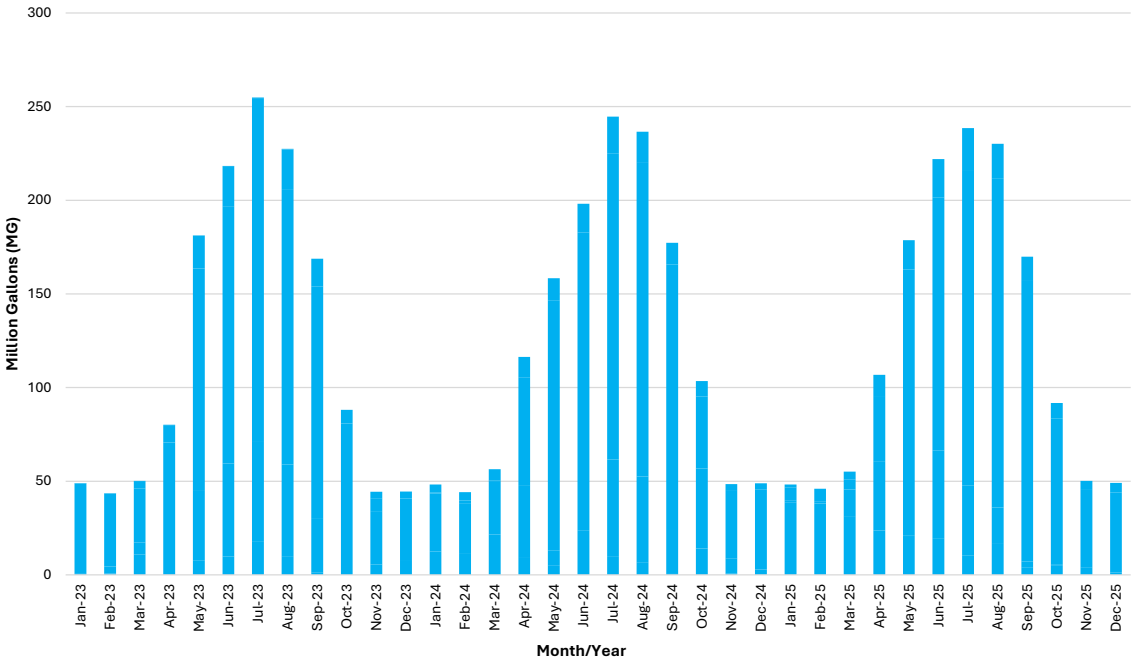
CHART 2-5
REGIONAL WATER TREATMENT PLANT MONTHLY PRODUCTION



As shown on Chart 2-5, the Regional Water Treatment Plant's (RWTP) usage has been minimal. The City only utilizes the RWTP when it is necessary. Within the study period, the treatment plant was only utilized during an improvements project to Well No. 5.

The combined monthly production from the City's supply sources is shown on Chart 2-6.

CHART 2-6
COMBINED MONTHLY PRODUCTION

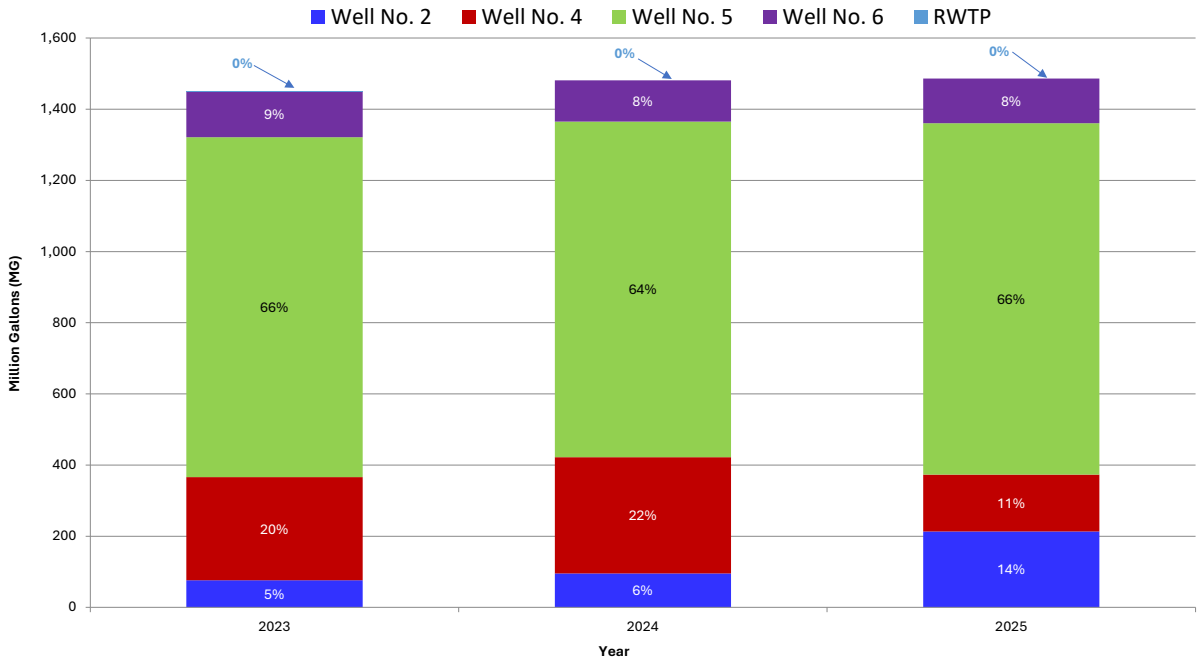


The production records show typical patterns of high summer demand and low fall, winter, and spring demands. However, the data depicted on Chart 2-6 show summer demand can be five to six times higher than winter demand due to warmer weather and irrigation needs. This is a higher winter to summer increase than normally seen in other eastern Oregon communities.

The highest water production month, from January 2023 through December 2025, occurred in July 2023 with 254.87 MG, or an average production rate of 8.22 million gallons per day (MGD). The lowest water production month occurred in February 2023 with 43.60 MG produced, or an average production rate of 1.56 MGD. The average monthly water production equaled 122.73 MG, or an average production rate of 4.03 MGD.

The total annual production from all sources was further divided into a percentage supplied by each source compared to the total annual volume produced from January 2023 through December 2025, as shown on Chart 2-7. The production from the RWTP was included but the volume supplied compared to the total annual volume was less than 1 percent and so it is not visible.

CHART 2-7
TOTAL ANNUAL PRODUCTION



As shown on Chart 2-7, the average total annual production for the last three years is approximately 1,500 MG. The following annual production trends were noted:

The annual production of Well No. 2 increased from 2023 to 2025 with a peak annual production in 2025 of 213.58 MG, or approximately 14 percent of total production. While Well No. 2 increased production, Well No. 4 decreased production from 2023 to 2025 with a minimum production of 159.59 MG in 2025.

The annual production from Well No. 5 has remained steady at approximately 950 MG annually from 2023 to 2025. The annual production for Well No. 5 accounts for approximately 65 percent of the total production for the City's supply sources. Well No. 5 has been the City's largest production source since 2007, primarily because it is a shallow alluvial well and does not tax the deep basalt aquifer. All other City wells draw water from the deep basalt aquifer, which has a limited capacity. The City's utilization of Well No. 5 has helped minimize pumping costs by drawing water from a shallower aquifer into the system compared to the other City deep basalt wells.

Annual production at Well No. 6 remained relatively constant, ranging between 8 and 9 percent of the total production for the City's supply sources from 2023 to 2025.

Per Capita Water Use

To be utilized for projecting future water demands, past water use data must be converted to a per capita (per person) rate of use. This is done by dividing the average daily and peak daily water demand rates by the number of people being served by the water system. These water demand rates are expressed as gallons per capita day (gpcd). These values multiplied by a population projected for some future year can provide estimated total demand rates for that year.

Average Daily Demands

The ADD is a measure of the overall annual average rate of production. It is derived, in general, by dividing the total water produced during the year by 365 days. For planning purposes, ADD is also divided by the population for that year to provide an average per capita daily flow. The ADD for years 2023 to 2025 is shown on Table 2-1, and stated in various units for comparison purposes.

TABLE 2-1
AVERAGE DAILY DEMAND

Year	Population	Annual Water Production (MG)	ADD		
			gpd	gpm	gpcd
2023	20,057	1,450.59	3,974,220	2,760	198
2024	20,182	1,481.10	4,057,809	2,818	201
2025	20,296	1,486.51	4,072,631	2,828	201

gpd = gallon per day

gpm = gallons per minute

The ADD for the years 2023 through 2025 was determined utilizing flow data reported by the City. Based on the data presented on Table 2-1, the City's ADD has been consistent at approximately 200 gpcd over the last three years. The ADD utilized for the purposes of this PFAS Mitigation Feasibility Study is 200 gpcd, which is the average of the three values shown.

Peak Daily Demands

The PDD values presented on Table 2-2 represent the one day of the year with the highest daily production. PDDs usually occur during a particular day from June through September, which is when water use is normally at its greatest due to warmer weather and irrigation needs. Peak daily flows can occur in other months but normally occur during the hottest period of the year. Records of peak daily flows and the associated total production from January 2023 through December 2025 were obtained from the City. The highest PDD for the time period from January 2023 through December 2025 occurred on July 15, 2025, and was 10.06 MGD. Peak daily flows also occurred in July during 2023 and 2024, as shown on Table 2-2.

TABLE 2-2
PEAK DAILY DEMAND

Year	Population	Day of Peak Flow	PDD		
			MGD	gpm	gpcd
2023	20,057	July 30, 2023	10.05	6,979	501
2024	20,182	July 20, 2024	9.91	6,882	491
2025	20,296	July 15, 2025	10.06	6,986	496

Although the single day peak over the last three years occurred in 2025, the peak on a per capita basis occurred in 2023. As shown on Table 2-2, the PDD in 2023 was 10.05 MG, which is just slightly lower than the 10.06 MG in 2025. The relatively larger population growth from 20,057 in 2023 to 20,296 in 2025 results in the higher 501 gpcd in 2023 versus 496 gpcd in 2025. For the purposes of this Study, a PDD of 501 gpcd will be utilized for projecting future system demands.

Large Irrigation Users

As shown by the significant summer peak water demands, the City has multiple large irrigation users who utilize the City's water system for irrigation during the summer months. Irrigation water is not required to meet potable water standards. If a portion of the larger irrigation users could be removed from the City's water system, it is anticipated that the peak demands would be lowered and the required water supply needed would be reduced. The City identified eight irrigation services located in the same general area on the west side of the City, along with one irrigation service on the south side of the City to evaluate as part of this Study. A separate, dedicated irrigation system could potentially be constructed for the eight services identified on the west side of the City. The City is already in the process of switching the one service located on the south side of the City over to the Stanfield Irrigation District. See Chapter 7 for additional discussion on removing the irrigation demands from the City's water system.

To account for the removal of the irrigation demands from the City's water system, historical use data was provided by the City for the nine services. This water use data was then used to provide a second set of ADD and PDD values for the system with reduced irrigation demand. On average, the removal of these nine services reduced the annual demand by 73.58 MG or 201,582 gpd. The removal of the irrigation use also changed the date and demand of the PDD. With the removal of the irrigation use, the day with the highest demand occurred on

July 15, 2025, with a total demand of 9.63 MG, as well as the highest per capita demand of 474 gpcd. Table 2-3 provides a summary of the ADD and PDD with the nine larger irrigation users removed.

TABLE 2-3
AVERAGE AND PEAK DAILY DEMAND WITHOUT LARGE IRRIGATION USERS (NINE USERS)

	Year 2025		
	gpd	gpm	gpcd
ADD	3,871,048	2,688	191
PDD	9,628,605	6,687	474

Removing the nine large irrigation users reduced the ADD by approximately 4.5 percent and the PDD by approximately 5.5 percent.

Fire Demand

Insurance Services Office, Inc. (ISO) recommends fire flows for various conditions in both residential and commercial settings. Needed fire flows for residential areas are set forth in the 2012 ISO Fire Suppression Rating Schedule and shown on Table 2-4, below.

TABLE 2-4
INSURANCE SERVICES OFFICE, INC., RECOMMENDED RESIDENTIAL FIRE FLOWS

Distance Between Buildings	Required Fire Flows
Over 100 feet	500 gpm
31 to 100 feet	750 gpm
11 to 30 feet	1,000 gpm
10 feet or less	1,500 gpm

Recommended fire flows for commercial buildings are based on many factors including building size, construction materials used, and what is housed in the building.

The Oregon Fire Code requires a minimum flow of 1,000 gpm in residential areas and a minimum of 1,500 gpm for a minimum of two hours in all other occupancies. These requirements increase with square footage of the building and can be quite large for commercial and institutional buildings (i.e., schools). These fire flows must be maintained with system-wide minimum of 20 pounds per square inch residual pressure.

ISO recommends the needed fire flow protection rates for both residential and commercial districts to receive full credit ratings. ISO does not consider needed fire flows over 3,500 gpm in determining the public protection classification for cities. The fire flow design criterion for industrial and high density commercial areas used for this Study is based on the typical maximum fire flow recommended by ISO, which is 3,500 gpm for a two-hour duration. This maximum fire flow is typically recommended for school areas, industrial areas, and other high-density development.

Water Supply

This section includes a description of the City's current water supply and treatment system and a discussion of its capacity. Currently, the City acquires water from several sources. The sources include three deep groundwater wells from basalt aquifers, one shallow groundwater well from a shallow alluvial aquifer, and one surface water source (the Columbia River, which supplies water to the Regional Water System [RWS]). The City also has other supply sources that are not being used including a spring source and two other deep groundwater wells. A brief description of each water supply source and the treatment process used for each source is discussed below.

Well No. 1

Well No. 1 is located in the southwest corner of the W. Pine Avenue and S.W. 7th Street intersection. The well was constructed in 1924 to a depth of 450 feet. When drilled, this well was a flowing well with artesian flow encountered at 375 feet below ground surface (BGS). The well has a certificated water right with an allocation of 449 gpm. However, a water right transfer was completed adding Well No. 6 as a point of appropriation for this water right. Since the transfer of the water right, the pump station has been disassembled and Well No. 1 is no longer in service.

Well No. 2

Well No. 2 is located at the northeast corner of the Newport Avenue and S.E. 5th Street intersection. Since 2023, Well No. 2 has provided 5 to 14 percent of the City's annual water production.

The well was constructed in 1992 to a depth of 1,206 feet. The well is cased to 521 feet BGS (24-inch casing to 45 feet BGS; 20-inch casing to 521 BGS) and is open hole for the remainder of the well. A cement seal was placed between the casing and borehole to 152 feet BGS and a split seal was installed from 470 to 521 feet BGS. The casing seal is considered adequate. The well is screened from 190 to 200 feet BGS and from 260 to 270 feet BGS, for a total of 20 feet of screen.

In 2005, a new line shaft (LS) turbine pump and motor with a capacity of 1,000 gpm to match the certificated water right allocation was installed with the pump bowls 220 feet lower in the well to address decreasing water levels. Water from the well is conveyed to a 100,000-gallon chlorine contact chamber where a chlorine solution, generated via 150-pound cylinders, is injected into the water between the well and chlorine contact chamber. A single horizontal centrifugal booster pump (1,000 gpm, 172 feet total dynamic head [TDH]) then conveys the water to the distribution system.

Well No. 3

Well No. 3 is located in the southeast corner of the E. Pine Avenue and S.E. 3rd Street intersection. The well was constructed in 1954 to a depth of 962 feet. A 20-inch casing was installed to a depth of 45 feet BGS, with 16-inch casing set to 96 feet BGS. The well has an open hole below 96 feet BGS. The well is equipped with a 40 horsepower (Hp) LS turbine pump. Similar to Well No. 1, the Well No. 3 certificated water right was transferred to Well No. 6 with

an allocation of 1,001 gpm. Following the water rights transfer, Well No. 3 was maintained as an emergency fire flow supply with some operational adjustments and modifications. However, the well has not been operated in many years and needs some maintenance before it can be an operational emergency source.

Well No. 4

Well No. 4 is located on N.E. 4th Street next to the N.E. 4th Street Reservoir and provides 11 to 20 percent of the City's annual water production (2023 to 2025).

The well was constructed in 1968 to a depth of 1,041 feet. There is no borehole record. A 24-inch casing was installed to a depth of 78 feet BGS, with a 20-inch casing set to 310 feet BGS. The rest of the well below 310 feet BGS is open hole. Since there is no record of a casing seal, the Oregon Department of Environmental Quality (DEQ) has indicated this well may be susceptible to contamination. However, the well has not had any poor water quality test results other than per- and polyfluoroalkyl substances (PFAS) as noted previously.

This well features a LS turbine pump with a pumping capacity of 2,000 gpm matching the certificated water right allocation. Water from the well is injected with chlorine solution on its way to an aeration chamber above the 1 MG N.E. 4th Street Reservoir to remove hydrogen sulfide. From the aeration chamber, the water discharges into the reservoir. Chlorination is provided via 150-pound cylinders located on site. The water is delivered from the ground-level reservoir to the main water distribution system via two booster pumps (60 Hp and 100 Hp) with a total pumping capacity of 1,500 to 2,000 gpm, respectively.

Well No. 5

Well No. 5 is located in the northwestern part of the City, between County Road 1242 (Harper Road) and County Road 1244 (W. Theater Lane). This well has been the City's main water supply well providing 64 to 66 percent of the City's annual water production since 2023. Currently, Well No. 5 produces approximately 4,000 gpm during the summer months. The well has a permitted water right with an allocation of 5,000 gpm.

The well was constructed in 1977 to a depth of 103 feet with a 36-inch borehole. A 24-inch casing and screen were installed surrounded by a gravel filter back from 25 to 103 feet BGS. The screen is 0.25 slot and is from approximately 26 to 33 feet BGS, 38 to 43 feet BGS, and 79 to 90 feet BGS, for a total of 23 feet of screen. A cement grout casing seal was installed to a depth of 25 feet BGS and is considered adequate by the DEQ.

Water is pumped from the well, chlorinated, and then conveyed to a 200,000-gallon chlorine contact tank for disinfection. The well pump is a 75 Hp LS turbine pump. From the chlorine contact chamber, the water is pumped into the City's distribution system using a three-pump system.

Well No. 6

Well No. 6 is located near the southeast corner of the city limits, just off U.S. Highway 395. This well typically provides 8 to 9 percent of the City's annual water production (2023 to 2025).

The well was constructed in 1990 using several different sized boreholes including a 24-inch diameter borehole to 228 feet BGS, a 19-inch diameter borehole to 650 feet BGS, a 15-inch diameter borehole to 1,085 feet BGS, and a 10-inch diameter borehole to the final depth of 1,500 feet BGS. A 16-inch diameter casing was installed to a depth of 650 feet BGS. The remainder of the well is open hole. A cement seal was placed between the casing and borehole to 650 feet BGS and is considered adequate by the DWS and DEQ.

A LS turbine pump is utilized at the well with a pumping capacity of 1,781 gpm matching the certificated water right for Well No. 6 allocation of 332 gpm and the water right transfers from Wells No. 1 and 3 of 449 gpm and 1,000 gpm, respectively. Water from the well is injected with chlorine solution on its way to an aeration chamber above the 500,000-gallon ground-level Well No. 6 Reservoir to remove hydrogen sulfide. From the aeration chamber, the water is discharged to the reservoir. Chlorination is provided via 150-pound cylinders located on site. From the reservoir, three booster pumps (50 Hp) rated at 800 gpm each at 190 feet TDH distribute water to the system. One of the three booster pumps utilizes a variable frequency drive.

Regional Water System

The City was one of the lead agencies in the development of the Port of Umatilla's (Port) RWS. This system diverts water from the Columbia River upstream from McNary Dam on the Oregon side of the Columbia River. The river water is pumped by a series of raw water pumps to either a non-potable distribution system serving industrial customers or the RWTP to produce potable water. The conveyance system utilizes a river intake and pump station at the Port. The pump station is followed by a 49,000-foot long, 42-inch diameter raw water transmission pipe located west of U.S. Highway 395 and running south through the City to the RWTP located near the intersection of Highway 207 (Butter Creek Road) and Feedville Road (County Road 1000).

At the RWTP, two packaged water treatment units are used to treat the river water using a combination of coagulation, clarification, and filtration treatment processes to produce potable water. Each unit operates independently to allow maximum flexibility in matching the production of potable water to varying demand. The treatment facility currently has a capacity of 2,800 gpm. Of this capacity, the City currently has a developed allocation of 1,527 gpm. The day-to-day operational duties of the RWTP are performed by City staff.

The treated water is pumped from the RWTP into the RWS potable water distribution system. The RWS potable water distribution system conveys water to the City through a control valve and 12-inch diameter transmission main. The connection of the transmission line to the City's distribution system is located on Highway 207 at its intersection with Sunland Avenue.

The City has historically utilized the RWTP as a backup water source due to its reliable water production and the relatively high cost of treated water from this source. The reliable water production is an asset, as the City can request and receive up to 1,527 gpm of water in the event of one of its other water sources is out of service or if the City experiences a period of unusually high system demands. However, with the new high demand users near the RWTP and the City's aquifer storage and recovery project currently underway, it is anticipated that the RWTP will be utilized more moving forward.

Minnehaha Springs

The City has a surface water right for Minnehaha Springs with an allocation of 3,141 gpm. However, Minnehaha Springs has not been developed and is not currently connected to the City's water system. Development of Minnehaha Springs is anticipated to require a treatment plant to provide potable water to the City along with a transmission line to connect the treatment plant to the City's water system. It is also unknown how much of the allocated 3,141 gpm can be collected consistently. Flow data was collected on the Minnehaha Springs throughout the 1980s with estimated flows varying from a low of 1,122 gpm to a high of 3,500 gpm. Water quality testing has also indicated high nitrate levels. Refer to the Cursory PFAS Mitigation Evaluation Summary in Appendix B for additional information on the Minnehaha Springs.

Water Storage

This section includes a description of the City's current water storage system and a discussion of capacity. The City's water storage consists of six storage reservoirs, all of which are actively used, with a total available storage volume of 7 MG. The following section summarizes operational characteristics of each of the existing storage reservoirs.

Butte Reservoir

The Butte Reservoir is a 3 MG belowground concrete storage reservoir constructed in 1998. This reservoir is centrally located on the Hermiston Butte. The Butte Reservoir is approximately 36 feet tall and 120 feet in diameter and conveys water to the majority of the City Center and associated distribution system by gravity.

South Hill Reservoir

The South Hill Reservoir is a 1 MG ground-level welded steel storage reservoir constructed in 1955. This reservoir is located in the southern portion of Hermiston adjacent to U.S. Highway 395. The reservoir was recently recoated in 2016. The South Hill Reservoir is approximately 60 feet tall and 53.5 feet in diameter and serves the distribution system by gravity.

Well No. 4 Reservoir

The Well No. 4 Reservoir is a 1 MG ground-level welded steel storage reservoir constructed in 1967. This reservoir is located next to Well No. 4 on N.E. 4th Street. Well No. 4 provides water supply to the reservoir. The Well No. 4 Reservoir is approximately 35 feet tall and 74 feet in diameter and conveys water to the distribution system through booster pumps.

Well No. 6 Reservoir

The Well No. 6 Reservoir is a 500,000-gallon ground-level welded steel storage reservoir constructed in 1991. This reservoir is located in the southeast corner of city limits just off of U.S. Highway 395 and adjacent to the Walmart Distribution Center. Well No. 6, which is located nearby, provides water supply to the reservoir. The Well No. 6 Reservoir is approximately

24 feet tall and 60 feet in diameter and conveys water to the surrounding commercial/industrial area by a booster pump station.

Walmart Reservoir

The Walmart Reservoir is also a 500,000-gallon ground-level welded steel storage reservoir. This reservoir was constructed in 1997 to serve the Walmart Distribution Center, which was constructed in the late 1990s. This reservoir is located adjacent to the Well No. 6 Reservoir. Both reservoirs draw water from the nearby Well No. 6 and utilize the same booster pump station. The Walmart Reservoir is approximately 24 feet tall and 60 feet in diameter, and 300,000 of the 500,000 gallons are reserved to provide fire protection and supply to the Walmart Distribution Center. Any remaining storage serves the surrounding commercial/ industrial area.

North Hermiston Reservoir

The North Hermiston Reservoir is a 1 MG standpipe welded steel storage reservoir. This reservoir was constructed in 2019 to serve the Alora Heights service area, as well as surrounding services. The North Hermiston Reservoir is located in the northwest portion of the City, adjacent to E. Punkin Center Road. The North Hermiston Reservoir is approximately 120 feet tall and 38 feet in diameter.

Storage Recommendations

Water storage is usually provided for several purposes. Various methods are used to calculate the volumes of each type of storage component required. Most involve a rational approach to estimating the volume of each storage component consisting of operation, equalization, fire reserve, and emergency. The decision can then be made as to which component controls and storage volumes will actually be necessary. For example, the decision may be made to provide storage for operation, equalization, and fire reserve only, assuming any emergency storage would be available from the fire reserve. If this option were selected, there may not be adequate fire storage available if there is a sustained power outage or if a well pump is out of service. For this reason, it is recommended that all four of the storage components listed below be considered when evaluating the City's potential storage needs.

Operating Storage

Operating storage is generally provided to facilitate operation of well or booster pumps in a water system. For example, when water system demands result in the water level lowering in a reservoir, the water level will reach a certain point that can be used to trigger activation of well pumps or booster pumps to refill the reservoir. Upon reaching a set high water level, the well pumps or booster pumps would then shut off. The storage needed between activating the water supply sources and shutting them off is typically referred to as operating storage. This zone of operation can be set as desired but is often set to help ensure circulation occurs during each pump run cycle, allowing water to cycle through the reservoir to help maintain water quality while keeping the reservoir as full as possible. The City's reservoirs are operationally set to lower 4 feet from the full level before well and

booster pumps are called to operate. This corresponds to a total operational storage of approximately 738,000 gallons.

Equalization Storage

Equalization storage must be provided to balance the difference between peak hourly demand and water supply capacity during a PDD period. An empirical method for estimating the required equalization storage uses the difference between the peak hourly flow (PHF) and the water supply availability for a specific number of peak hours per day. Based on providing the current estimated PHF of 17,825 gpm for 2.5 hours and using the current peak daily flow of 7,130 gpm available, equalization storage of approximately 1,128,000 gallons is currently required. Based on the year 2046 estimated PHF of approximately 21,600 gpm for 2.5 hours, the City's year 2046 equalization storage needs are anticipated to be approximately 1,694,000 gallons with current supply sources in operation. If the water supply capacity to the system is increased, the needed equalization storage may be decreased.

Fire Reserve

Reserve storage for fire suppression is usually determined from either ISO-recommended fire flow or the fire flow recommended by the City's fire chief. Based on the typical maximum fire flow recommended by ISO, a 3,500 gpm fire flow with a two-hour duration has been set as the design fire flow for the City. A total of 420,000 gallons of fire reserve storage is needed to sustain a fire flow of 3,500 gpm for a two-hour duration.

Emergency Reserve

Emergency storage is usually provided for a minimum of one to three days' supply in the event of a power outage, mechanical problems, or other problems that would interrupt the reliable supply of water. In most cases, this would be the minimum amount of time to repair or replace a well pump, booster pump, or other equipment. One day was utilized due to the City's close proximity to larger cities with qualified repair personnel. To serve the City for one day at the ADD, approximately 4,098,000 gallons are needed for existing emergency reserve and approximately 4,966,000 gallons would be needed for the year 2046 design criteria.

Design Criteria

Figure 2-1 presents a summary of the water system design criteria based on the water usage from 2023 through 2025 along with the current active water supply sources and water storage. A second set of design criteria is also presented with reduced irrigation demand from the removal of the nine large irrigation users. These design criteria can be utilized for evaluating the existing water system and developing potential improvement options. The design criteria is based on the estimated 2026 service population and estimated ADD and PDD presented herein. Design criteria was then projected to year 2046 based on a projected service population. Storage volumes are also summarized.

Figure 2-1 assumes that all current water supply sources and storage facilities are in operation. However, as noted previously in this Study, Wells No. 2, 4 and 5 have tested positive for PFAS levels

exceeding the maximum contaminant level (MCL). Without treatment, these supply sources cannot be utilized following the PFAS regulation implementation deadline. Additionally, the Well No. 4 Reservoir is filled from Well No. 4; therefore, if Well No. 4 is no longer active then the Well No. 4 Reservoir will not be active. Figure 2-2 presents a summary of the water system design criteria with the removal of the PFAS-contaminated sources and associated reservoir. Water system demands included on Figure 2-2 match those of Figure 2-1, with only the only differences being related to the available water supply and storage. Similar to Figure 2-1, Figure 2-2 includes current year 2026 and projected year 2046 design criteria along with a second set of design criteria with a reduced irrigation demand.

As outlined on Figure 2-1 with existing system demands, the total recommended supply is 10,267,000 gpd, which matches the estimated 2026 PDD. With a total existing supply available of 11,681,000 gpd, it appears that no additional water supply would be needed. However, in year 2046 the projected total recommended supply (i.e., PDD) increases to 12,443,000 gpd, which exceeds the total existing supply available by 762,000 gpd. Similarly for water storage, the year 2026 recommended storage is less than the existing storage resulting in no additional storage needed. The projected increased demands in 2046 result in increases to the equalization storage and emergency reserve storage and result in an estimated storage need of 818,000 gallons. With the reduction in irrigation demand, the potential supply and storage needs for 2046 are reduced; however, there is still a potential need of 92,000 gpd and 424,000 gallons, respectively.

With the removal of the PFAS-contaminated sources and associated storage reservoir on Figure 2-2, the potential supply and storage needs significantly increase. The existing system demands result in a year 2026 estimated water supply need of 6,146,000 gpd and 1,305,000 gallons of storage. In year 2046, the existing system estimated supply need increases to 8,322,000 gpd with a storage amount of 2,739,000 gallons. The removal of the large irrigation users does reduce the demand but still results in a significant supply and storage need. The estimated year 2026 water supply need with reduced irrigation is 5,593,000 gpd with a storage amount of 979,000 gallons. The potential increase in 2046 for the reduced irrigation system to 7,652,000 gpd of water supply and 2,345,000 gallons of storage.

For the purposes of this Study, the design criteria presented on Figure 2-2 that exclude the PFAS-contaminated sources and associated storage will be utilized. The mitigation alternatives presented in later chapters of this Study will be evaluated to provide the estimated water supply needs. Water storage needs will vary based on the PFAS mitigation alternatives chosen.

SUMMARY OF DESIGN CRITERIA WITH EXISTING WATER SOURCES

	Existing System		Existing System Excluding Selected Large Irrigation Users[1]	
	Year 2026	Year 2046	Year 2026	Year 2046
Design Population	20,492	24,837	20,492	24,837
Supply				
ADD (gpcd)	200	200	190	192
Average Daily Flow (gpd)	4,098,000	4,966,000	3,896,000	4,764,000
Average Daily Flow (gpm)	2,850	3,450	2,710	3,310
PDD[2] (gpcd)	501	501	480	484
Peak Daily Flow[2] (gpd)	10,267,000	12,443,000	9,836,000	12,012,000
Peak Daily Flow (gpm)	7,130	8,640	6,830	8,340
PHF[3] (gpm)	17,825	21,600	17,075	20,850
Estimated Supply Flow Available[4] (gpm)	10,307	10,307	10,307	10,307
Total Recommended Supply[5] (gpd)	**10,267,000**	**12,443,000**	**9,836,000**	**12,012,000**
Total Existing Supply[6] (gpd)	**11,681,000**	**11,681,000**	**11,681,000**	**11,681,000**
Potential Supply Need (gpd)	**0**	**762,000**	**0**	**331,000**
Storage				
Operating Storage[7] (gal)	738,000	738,000	738,000	738,000
Equalization Storage[8] (gal)	1,128,000	1,694,000	1,016,000	1,582,000
Fire Reserve[9] (gal)	420,000	420,000	420,000	420,000
Emergency Reserve[10] (gal)	4,098,000	4,966,000	3,896,000	4,764,000
Total Recommended Storage (gal)	**6,384,000**	**7,818,000**	**6,070,000**	**7,504,000**
Total Existing Storage[11] (gal)	**7,000,000**	**7,000,000**	**7,000,000**	**7,000,000**
Potential Storage Need (gal)	**0**	**818,000**	**0**	**504,000**

[1] Large irrigation users identified represent an average demand of 201,582 gpd and a peak demand of 431,395 gpd.

[2] Peak day use obtained from City water use reports from 2023 through 2025. The peak occurred in July 2025.

[3] 2.5 times peak daily flow.

[4] Water supply capacities for Wells No. 2, 4, 5, 6, and the RWTP are 1,000, 2,000, 4,000, 1,781, and 1,526 gpm, respectively.

[5] It is recommended that the supply system be sized to supply the PDD.

[6] Total existing supply capacity when operating well sources at a maximum of 18 hours per day and operating the RWTP supply at 24 hours per day.

[7] Operating storage based on 4 feet of operating height in the reservoirs.

[8] Difference between PHF and available supply for a 2.5-hour period.

[9] 3,500 gpm flow for two-hour duration, assuming only storage is used.

[10] One-day supply at ADD, assuming only storage is used.

[11] Available existing storage is approximately 7 MG (3 MG Butte Reservoir, 1 MG South Hill Reservoir, 1 MG Well No. 4 Reservoir, 1 MG North Hermiston Reservoir, 500,000-gal Well No. 6 Reservoir, 500,000-gal Walmart Reservoir).

ADD = average daily demand
gal = gallons
gpcd = gallons per capita per day
gpd = gallons per day
gpm = gallons per minute
MG = million gallons
PDD = peak daily demand
PHF = peak hourly flow
RWTP = Regional Water Treatment Plant

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SUMMARY OF DESIGN CRITERIA WITH EXISTING WATER SOURCES

FIGURE
2-1

SUMMARY OF DESIGN CRITERIA EXCLUDING PFAS-CONTAMINATED SOURCES AND ASSOCIATED RESERVOIR

	Existing System		Existing System Excluding Selected Large Irrigation Users[1]	
	Year 2026	Year 2046	Year 2026	Year 2046
Design Population	20,492	24,837	20,492	24,837
Supply				
ADD (gpcd)	200	200	190	192
Average Daily Flow (gpd)	4,098,000	4,966,000	3,896,000	4,764,000
Average Daily Flow (gpm)	2,850	3,450	2,710	3,310
PDD[2] (gpcd)	501	501	480	484
Peak Daily Flow[2] (gpd)	10,267,000	12,443,000	9,836,000	12,012,000
Peak Daily Flow (gpm)	7,130	8,640	6,830	8,340
PHF[3] (gpm)	17,825	21,600	17,075	20,850
Estimated Supply Flow Available[4] (gpm)	3,307	3,307	3,307	3,307
Total Recommended Supply[5] (gpd)	**10,267,000**	**12,443,000**	**9,836,000**	**12,012,000**
Total Existing Supply[6] (gpd)	**4,121,000**	**4,121,000**	**4,121,000**	**4,121,000**
Potential Supply Need (gpd)	**6,146,000**	**8,322,000**	**5,715,000**	**7,891,000**
Storage				
Operating Storage[7] (gal)	609,000	609,000	609,000	609,000
Equalization Storage[8] (gal)	2,178,000	2,744,000	2,066,000	2,632,000
Fire Reserve[9] (gal)	420,000	420,000	420,000	420,000
Emergency Reserve[10] (gal)	4,098,000	4,966,000	3,896,000	4,764,000
Total Recommended Storage (gal)	**7,305,000**	**8,739,000**	**6,991,000**	**8,425,000**
Total Existing Storage[11] (gal)	**6,000,000**	**6,000,000**	**6,000,000**	**6,000,000**
Potential Storage Need (gal)	**1,305,000**	**2,739,000**	**991,000**	**2,425,000**

[1] Large irrigation users identified represent an average demand of 201,582 gpd and a peak demand of 431,395 gpd.

[2] Peak day use obtained from City water use reports from 2023 through 2025. The peak occurred in July 2025.

[3] 2.5 times peak daily flow.

[4] Water supply capacities for Well No. 6 and the RWS are 1,781 and 1,526 gpm, respectively.

[5] It is recommended that the supply system be sized to supply the PDD.

[6] Total existing supply capacity when only operating well pumps at a maximum of 18 hours per day and operating the RWS supply at 24 hours per day.

[7] Operating storage based on 4 feet of operating height in the reservoirs.

[8] Difference between PHF and available supply for a 2.5-hour period.

[9] 3,500 gpm flow for two-hour duration, assuming only storage is used.

[10] One-day supply at ADD, assuming only storage is used.

[11] Available existing storage is approximately 6 MG (3 MG Butte Reservoir, 1 MG South Hill Reservoir, 1 MG North Hermiston Reservoir, 500,000-gal Well No. 6 Reservoir, 500,000-gal Walmart Reservoir).

ADD = average daily demand
gal = gallons
gpcd = gallons per capita per day
gpd = gallons per day
gpm = gallons per minute
MG = million gallons
PDD = peak daily demand
PHF = peak hourly flow
RWS = Regional Water System

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PFAS MITIGATION FEASIBILITY STUDY
SUMMARY OF DESIGN CRITERIA EXCLUDING PFAS-CONTAMINATED SOURCES AND ASSOCIATED RESERVOIR

FIGURE
2-2

Chapter 3 - Alternative 1 - PFAS Treatment

Introduction

The City of Hermiston's Wells No. 2, 4, and 5 have historically provided the majority of the City's water supply. With recent test results indicating per- and polyfluoroalkyl substances (PFAS) levels exceeding the maximum contaminant level (MCL), one alternative to address the PFAS-contaminated supply sources is treatment to remove the PFAS to comply with U.S. Environmental Protection Agency (EPA) regulations.

The February 2026 draft PFAS Water Treatment Feasibility Study (Treatment Study) prepared by Anderson Perry & Associates, Inc., evaluated options for treating PFAS in the City's Wells No. 2, 4, and 5. The draft Treatment Study focused on three treatment technologies: granular activated carbon (GAC), ion exchange (IX), and FLUORO-SORB®. The draft Treatment Study determined that GAC was the least feasible of the treatment technologies evaluated. GAC is a carbon-based adsorbent using granular media in which PFAS adheres to the surface of the media allowing for its removal. Effective removal of PFAS using GAC requires a lengthy period of contact between the contaminated water and the media when compared to the other alternatives evaluated resulting in a larger media volume. Furthermore, for the City's water quality conditions, GAC exhibits shorter media life, leading to more frequent media replacement. Preliminary cost estimates place the capital; operation, maintenance, and replacement (OM&R); and 20-year present worth costs for GAC are significantly higher than for IX and FLUORO-SORB®. For these reasons, GAC will not be further evaluated in this PFAS Mitigation Feasibility Study. For more information on GAC, refer to the draft Treatment Study included in Appendix A.

This chapter outlines and evaluates the potential PFAS treatment technologies for the City. A summary of the alternative-specific criteria, treatment technologies, estimated costs of the improvements, and a 20-year present worth analysis is provided, along with an evaluation of the treatment technologies.

PFAS Treatment Criteria

To develop and evaluate treatment technologies for the removal of PFAS from the City's water supply sources, criteria for treating each supply source must first be determined for use in the analysis. The primary criterion required is the flow capacity of each of the wells. The treatment system selected will need to be capable of treating all available flow from the supply sources. For this Study, the maximum flow rate presented is the maximum rate allowed by the source water right. Additionally, the regulated PFAS levels in the supply source raw water will be required to determine the level of treatment needed. The raw water PFAS levels presented herein are based on testing completed by the City. Sampling test results completed by the City for PFAS are included in Appendix C. Table 3-1 provides a summary of the PFAS treatment criteria utilized in this Study for analyzing the PFAS treatment technologies.

TABLE 3-1
PFAS TREATMENT CRITERIA SUMMARY

	Well No. 2	Well No. 4	Well No. 5
Flow rate	1,000 gpm	2,000 gpm	5,000 gpm
Raw Water PFOA[1]	<MRL	<MRL	<MRL
Raw Water PFOS[1]	12 ppt[2]	6 ppt[2]	9.06 ppt[2]
Raw Water PFHxS[1]	12 ppt[2]	8 ppt	9.32 ppt
Raw Water PFNA	<MRL	<MRL	<MRL
Raw Water HFPO-DA (also known as GenX)	<MRL	<MRL	<MRL
Raw Water Hazard Index[3]	1.2[2]	0.8	0.94

[1] The PFAS concentrations shown are the highest test result for each PFAS.
[2] Value exceeds the MCL for that PFAS.
[3] The Hazard Index is a weighted calculation based on levels of PFHxS, GenX chemicals, PFNA, and PFBS in the potable water.
gpm = gallons per minute
HFPO-DA = hexaflurorpropylene oxide dimer acid, also known as GenX
PFBS = perfluorobutanesulfonic acid
PFHxS = perfluorohexanesulfonic acid
PFNA = perfluorononanoic acid
PFOA = perfluoroocanoic acid
PFOS = perfluorooctane sulfonate
ppt = parts per trillion
<MRL = Less than the minimum reporting level

The treatment technology must be capable of reducing the finished water PFAS levels below the EPA MCLs. The PFAS level in drinking water will be dependent on how the treatment system is operated and is further discussed below.

Per- and Polyfluoroalkyl Substances Treatment Technology Options

As discussed previously, the City has three well supply sources that tested above the MCL for PFAS. The three well supply sources are located throughout the City. An option for the construction of a centralized water treatment plant (WTP) was considered. However, due to the distance between the wells and associated conveyance piping required between the well sites, it was determined that a centralized WTP was not feasible. The cost of constructing transmission lines to connect the sources, as well as potential land acquisition needs would outweigh the potential savings of constructing a single, centralized WTP. Therefore, construction of a new PFAS WTP at each of the wells (Wells No. 2, 4, and 5) was determined to be a feasible option.

Most conventional treatment technologies are not effective against PFAS. PFAS are highly resistant to most chemical, physical, and biological processes, which limits treatment feasible options. Since PFAS has a high resistance to degradation, removal is the only feasible method of treatment. The treatment technologies evaluated in this analysis are IX and FLUORO-SORB®. The following is a brief summary of these treatment technologies.

Ion Exchange

IX is a treatment process that uses a resin to remove charged molecules. Negatively charged PFAS molecules are attracted and bind to treatment sites on the positively charged resin material. The PFAS molecules occupy the place of counterions, similarly charged molecules located on the resin. These counterions are then released into the solution. The resin material consists of many small beads, typically not larger than 1 millimeter in diameter. The counterions are often chlorine or sodium; although, hydroxide or hydrogen may be used. Multiple resin types are available depending on treatment goals with quaternary ammonium and dimethyl ethanol ammonium typically used for PFAS treatment. The effectiveness of IX can be significantly reduced by certain co-contaminants especially sulfides, nitrates, chlorides, chromates, total organic carbons (TOCs), and dissolved organic carbons. IX effectiveness also decreases as more treatment sites become exhausted on the resin.

FLUORO-SORB®

FLUORO-SORB® is a form of adsorption treatment using a clay-based media. The media is composed of many small thin layers of plates stacked together. These plates cause the media to have a high surface area. Contaminants diffuse through the media and adhere to the surface of the media particles, which allows them to be removed. The plates expand as they adsorb PFAS, increasing the surface area further, which contributes to a long media life. FLUORO-SORB® is designed specifically for treating PFAS, which limits its ability to remove other contaminants. This typically results in an extended media lifespan by preventing adsorption spaces from being taken up by contaminants other than PFAS.

Using the design criteria, two treatment options were developed for evaluation. Each option includes the construction of a WTP at each well testing positive for PFAS. The first option would utilize IX for PFAS removal and the second option would utilize FLUORO-SORB® for PFAS removal. To help with the evaluation, manufacturers were contacted to provide preliminary proposals for the treatment options. Proposals were received from ATEC Water Systems, LLC, and AqueoUS Vets®.

Both treatment options feature the same general configuration. Each option would utilize treatment units of pressure vessel(s) in a lead-lag configuration. Each treatment unit would consist of one or multiple pressure vessels. The number and size of the pressure vessels in each treatment unit is dependent on the system flow rate and media utilized. Higher flow rates required larger and/or more pressure vessels. To create the lead-lag configuration, the two treatment units would be arranged in series. Water would be treated primarily with the lead treatment unit, then continue to flow through the lag treatment unit. Piping and valving would be provided to allow the lead and lag treatment unit to be reversed.

The PFAS level in the finished water will depend on how the lead-lag treatment units are operated. Typical operation includes primary treatment through the lead treatment unit until the PFAS breakthrough level(s) reaches the MCL. When this occurs, the lead-lag treatment units are switched so the lag treatment unit becomes the lead and provides primary treatment. This allows treatment to continue through the new lead unit while the media in the new lag treatment unit is replaced. Once the media has been replaced, the lag treatment unit is placed into service. This helps ensure that PFAS levels in the finished water are minimal and below the MCLs and that water can be treated continuously with minimal downtime. The system will operate in this configuration

until the breakthrough of the lead treatment unit again reaches the MCL, then the process is repeated. However, operating the system with lead treatment unit breakthrough levels higher than the MCL for long durations can result in the lag vessel potentially having breakthrough and not adequately removing PFAS.

Currently, all wells have the same general configuration with the water pumped from the well into an adjacent storage tank/reservoir and chlorine being injected prior to the storage tank/reservoir. After the water is disinfected in the storage tank/reservoir, the water passes through booster pumps before entering the distribution system. Both Wells No. 2 and 4 are equipped with an aerator located between the well and storage tank/reservoir. Well No. 5 currently discharges directly to a clearwell.

The treatment system for either the IX or FLUORO-SORB® options are proposed to be installed between the well pump and the storage tank/reservoir prior to chlorine injection. Figure 3-1 shows a general process schematic for the PFAS treatment alternatives at the contaminated wells. Due to headloss caused by the treatment system, replacement of each well pump to provide sufficient flow and head is anticipated and included in each option. Should replacing the well pumps prove unfeasible, booster pumps may be added between the well and the treatment system to offset the headloss. All options would include a pre-filter system placed before the treatment system. The pre-filter system may consist of cartridge or bag filters and would be used to help remove particles that could cause contamination of the treatment system media and help prolong treatment media life. Figures 3-2, 3-3, and 3-4 show preliminary site plans for a PFAS treatment addition at Wells No. 2, 4, and 5, respectively. These site plans are typical for both PFAS treatment options discussed above.

PFAS Treatment Evaluation

Water Quality

One of the primary factors in determining the feasibility of each treatment option is water quality. Poor water quality has the potential to increase the frequency in which media replacement is required. Higher rates of media replacement could result in much higher operation and maintenance (O&M) costs over the span of the treatment system's life. Therefore, selection of a technology compatible with existing water conditions is necessary.

Media selectivity refers to the ability to remove only certain contaminants by the treatment technology. Unless additional water quality concerns are present, higher selectivity is an advantage, allowing more of the preferred contaminant to be treated by the treatment media. The technology option being evaluated with the highest selectivity for PFAS is FLUORO-SORB®. FLUORO-SORB® is designed specifically for treating PFAS. Consequently, it is comparatively unaffected by other contaminants, thus, media replacement intervals are determined mostly by PFAS concentrations. This results in a longer media life than other options and a low sensitivity to other potential water quality components impacting treatment effectiveness.

The selectivity of IX is lower than that of FLUORO-SORB®. Consequently, the effectiveness of IX may be limited by the presence of several contaminants, namely sulfates, nitrates, chlorides, perchlorate, and alkalinity. These compounds can cause fouling, reducing the efficiency of the treatment process and reducing the media life. Chromatographic peaking also can occur in IX

resins. This process can result when preferential compounds take the place of PFAS on the resin. This could potentially result in the release of PFAS into the water supply if water quality issues are not addressed. Table 3-2 summarizes the major contaminants that are concerns for media life for each technology.

TABLE 3-2
SUMMARY OF WATER QUALITY CONCERNS

Media Type	Fouling Contaminants
IX	Sulfate, nitrate, chloride, perchlorate, and alkalinity
FLUORO-SORB®	No major contaminants of concern

As part of the draft Treatment Study, the City completed sampling and testing of the water supplied by Wells No. 2, 4, and 5 to help evaluate the effectiveness of the treatment options. Table 3-3 summarizes the results of the water quality sampling completed. Sampling test results completed by the City are included in Appendix C.

TABLE 3-3
WELLS NO. 2, 4, AND 5 WATER QUALITY SUMMARY[1]

Constituent	Well No. 2	Well No. 4	Well No. 5
Sulfate	50.4	51.8	54.9
Nitrate	ND	ND	6.6
Alkalinity	160	159	275
Chloride	25.3	25	43.8
Fluoride	1.2	1.2	ND
Arsenic	ND	ND	0.006
Uranium	ND	ND	0.0075
Calcium	8	13.9	81.5
Magnesium	0.9	2.3	23.8
Sodium	99.2	89.9	49.5
Potassium	14.6	16.3	8.6
Iron	0.026	0.036	ND
TDS	313	308	459
TOC	ND	ND	1.4
TOTAL VOC	0.04	0.051	0.026

[1] *Concentrations in milligrams per liter.*

ND = not detected

TDS = total dissolved solids

VOC = volatile organic compounds

As indicated by the test results, the water from Wells No. 2, 4, and 5 is relatively clean. There are no constituents present in the sampling that has been completed that would suggest excessive fouling will occur with either of the treatment technology options included in this Study.

Filter Size

Filter size is a significant driver of project capital and OM&R costs. Not only does a larger filter size result in higher costs for the treatment equipment, but it also results in larger buildings to house the equipment. Larger filters also result in more media that must be replaced once the PFAS breakthrough begins to occur. The most important metric to determine filter sizing is empty bed contact time (EBCT). EBCT refers to the length of time water must be in contact with a given media for the desired treatment goals to be accomplished. For a given flow rate, higher EBCTs require a larger volume of media. IX and FLUORO-SORB® have EBCTs of two minutes each. While media volume is determined by EBCT, the required media surface area is determined by the hydraulic loading rate (HLR). Each media type exhibits the most favorable performance within a specified range of HLRs. For IX and FLUORO-SORB®, the preferred HLR is between approximately 6 and 18 gpm per square foot. Vessel sizing is typically specific to the media being used, with diameters being sized to ensure optimal loading rates.

Given that IX and FLUORO-SORB® have the same EBCT and similar HLR requirements, the tankage requirements for the treatment media are the same for each option, which means an IX treatment system could be converted to FLUORO-SORB® and vice versa without additional improvements. Treating Wells No. 2, 4, and 5 for PFAS is anticipated to require an approximate tankage of 4,278 cubic feet for either IX or FLUORO-SORB®.

Media Availability

IX resin is widely available and produced by a range of manufacturers. However, many suppliers are located outside the United States. Should the City use external funding, Build America, Buy America (BABA) compliance may be challenging with IX resin. While IX resins are available from a wide range of suppliers, FLUORO-SORB® clay adsorbent is a proprietary product only available through Minerals Technologies. The clay, which forms the basis of the media, is domestically sourced exclusively from Wyoming and is fully BABA-compliant. Although FLUORO-SORB® is currently readily available, the current single supply source could result in future supply issues or elevated costs. However, this disadvantage is partially mitigated by the ability to change the media to IX without the need to make improvements to the system. Should FLUORO-SORB® media become unavailable, the media could be changed to IX until a reliable supply of FLUORO-SORB® media is secured.

Regulatory Approval

IX is included on the EPA list of best available technologies for PFAS treatment and is a proven and widely studied technology approved for PFAS treatment in Oregon. However, FLUORO-SORB® is not currently included on the EPA list of best available technologies and thus has not been approved for use in Oregon. FLUORO-SORB® is a new technology compared to IX, with far fewer installations utilizing the media. Should the City decide to use FLUORO-SORB® for PFAS removal, obtaining regulatory approval would be necessary. Generally, obtaining regulatory approval would involve conducting a pilot test in accordance with Oregon Administrative Rules 333-061-0050 to demonstrate the media is capable of adequate performance. The Oregon Health Authority - Drinking Water Services (DWS) may require other steps be taken to prove the treatment efficacy. However, pilot testing, while not a requirement for an IX system to obtain regulatory approval, would still be recommended. There are alternatives to pilot testing, such

as Rapid Small-Scale Column Testing (RSSCT). However, RSSCT is typically less reliable than pilot testing at determining media life and PFAS removal effectiveness. Costs for both pilot testing and RSSCT vary based on the manufacturer and laboratory. Pilot testing does typically require more of the City's operator time but can be used to test multiple media types at once and provide the information needed to move a project into full scale design.

Media Life

Media life is one of the most important considerations in selecting a PFAS treatment technology. Media replacement is the largest OM&R cost associated with PFAS treatment. Therefore, selecting a media type with longer life can significantly decrease costs. As previously mentioned, IX and FLUORO-SORB® are relatively selective towards PFAS. However, IX is more susceptible to water quality problems than FLUORO-SORB® with certain contaminants causing fouling and reducing media life. Due to this higher susceptibility, IX generally has shorter media life than FLUORO-SORB® which removes primarily PFAS and is comparatively unaffected by other contaminants. Table 3-4 lists the projected media life for each well site for IX and FLUORO-SORB®. In locations with fewer fouling contaminants, IX can perform comparably to FLUORO-SORB®. However, if fouling contaminants are present in greater numbers, media life can be significantly reduced. This is the case with Well No. 5 where the projected life for IX is approximately half of FLUORO-SORB®.

TABLE 3-4
PROJECTED MEDIA LIFE

Media Type	Projected Media Life (days)		
	Well No. 2	Well No. 4	Well No. 5
IX	853	1,573	467
FLUORO-SORB®	943	1,500	1,050

Media Disposal

The EPA recommends disposal of spent PFAS treatment media in a hazardous waste landfill or with thermal treatment (i.e., incineration). Landfills that accept PFAS waste must be hazardous waste landfills that provide containment with leachate and gas collection systems. The hazardous waste classification typically results in higher dumping fees when compared to other landfills. Incineration uses high temperatures to destroy the media and is the only method of disposal that destroys PFAS entirely. Due to the City's proximity to Chemical Waste Management of the Northwest in Arlington, Oregon, it was assumed all spent PFAS treatment media would be transported and disposed of at this location. Transportation costs are low and landfill disposal is a cost-effective method of media disposal. Incineration requires the procurement of equipment to incinerate the media, which can be costly, or paying a facility with the equipment to complete the incineration. Additionally, once the equipment is procured, it requires significant energy to incinerate the media. Currently, there are no known facilities capable of incinerating PFAS located near the City. For these reasons, it is considered preferable to consider landfill disposal at this time for the City.

Supply Capacity

Alternative 1 - PFAS Treatment could allow for the full utilization of each of the City's active water supply sources currently testing positive for PFAS. This would minimize the need to pursue alternative sources. Additionally, Alternative 1 may allow for increases to the capacity of Well No. 5. Currently, Well No. 5 does not utilize its full water right. Improvements to the well would be completed along with Alternative 1, which would allow the full water right to be utilized. Treating Wells No. 2, 4, and 5 could provide up to 8,000 gpm of water provided the wells' full water rights were utilized. If the wells were operating at the maximum recommended length of 18 hours each day, this could result in a total up to 8,640,000 gallons per day (gpd) being available to the City, which includes 1,080,000 gpd from Well No. 2; 2,160,000 gpd from Well No. 4; and 5,400,000 gpd from Well No. 5.

Life Cycle Cost Analysis

To help determine the most economical PFAS mitigation approach for the City, a cost analysis was developed for each option of the PFAS treatment alternative. For this evaluation, the total capital cost and 20-year total present worth were evaluated under each option. The total capital cost includes the estimated procurement and installation of proposed equipment and any additional ancillary facilities needed to provide the City with a fully functional treatment system. The costs include, but are not limited to, treatment equipment, buildings, and ancillary equipment and components.

The total present worth includes the total project cost, as well as projected annual OM&R costs over a 20-year life cycle. These include, but are not limited to, labor, utilities, parts, sampling and testing, media replacement, and equipment replacement. The values presented are preliminary based on manufacturer-provided best estimates for each treatment system. Further details as to the primary considerations that affect costs with the various treatment systems are detailed below.

Capital Costs

Capital cost estimates were developed for each treatment option. Each estimate includes the cost to construct a new WTP at each affected well, including treatment equipment, a building to house treatment facilities, and associated equipment and pump upgrades. The cost estimates were based on preliminary proposals from ATEC Water Systems, LLC, and AqueoUS Vets®. The cost differences between the treatment systems are similar due to the tankage requirements being equal for both IX and FLUORO-SORB®. The cost differences are primarily attributable to the initial media costs with IX media having a higher unit cost than FLUORO-SORB®. Any equipment and ancillary facilities are equal in cost between the two options.

Building costs are a significant factor. The spatial requirements and the building costs for IX and FLUORO-SORB® are equal given the equal tankage requirements. This evaluation assumes the building's housing treatment equipment would be concrete masonry unit (CMU) structures on concrete foundations with concrete floors. CMU construction was selected to match the existing CMU structures at the well sites. The WTP buildings must be of sufficient size to house the pre-filter systems, treatment equipment, instrumentation and controls, as well as any additional space the City deems necessary for operations. Estimated building footprints were developed based on treatment system proposals provided by ATEC Water Systems, LLC, and

AqueoUS Vets®. This generally includes the footprint of the equipment, spacing between skid units, inlet and outlet piping, and space on all sides for O&M access.

Upgrades to the City's existing pumps would be required to address increases in headloss through the new treatment systems. The cost estimates include a new well pump for each water source. The headloss and associated cost of the pump improvements is affected by the media type and HLR. Higher HLRs and smaller media size both result in increased headloss. IX and FLUORO-SORB® have a similar high HLR. However, smaller sized IX media results in IX having higher headloss than FLUORO-SORB®.

Additional costs include site work; a pre-filtration system; mechanical piping, fittings, and valves; electrical; controls and instrumentation; and building heating, cooling, and ventilation. These costs are equal for each option.

The estimated project costs for the IX treatment system and the FLUORO-SORB® treatment system are shown on Figures 3-5A and 3-6A, respectively.

Operation, Maintenance, and Replacement Costs

OM&R cost estimates were developed for both treatment options. The estimates include existing OM&R costs at each site in addition to costs created by the implementation of each PFAS water treatment option.

The DWS classifies community water treatment systems based on the size and complexity of the water system facility. For water treatment, a points system based on the size and complexity of the water system is used with levels ranging from 1 to 4. The communities must then have an operator with a minimum water treatment certification matching the rating of the water system. Currently, the City has 51 points associated with its water treatment system. A copy of the Water System Treatment and Distribution Classification Worksheet from the DWS is included as an attachment to the draft Treatment Study in Appendix A. This ranking places the City's existing water treatment system at a Water Treatment Level 2 (31 to 55 points). In coordinating with DWS staff, the addition of a treatment system for PFAS removal is anticipated to add ten points to the City's system classification, resulting in a total of 61 points. The increase in the City's system classification is anticipated to result in the City's operator certification requirements increasing from a Water Treatment Level 2 to a Water Treatment Level 3. Operator salary costs associated with the increase in water treatment level classification are included in the OM&R costs. Additionally, labor costs were included in the annual OM&R for the removal and replacement of the PFAS treatment media. There is potential to reduce labor costs slightly by utilizing larger vessels. Larger vessels for the same media volume would result in less vessels, which could reduce the labor required to remove and replace the media. Media life has a significant impact on labor costs, with shorter media life leading to more frequent replacements.

Utility costs were considered in the OM&R estimates for each option. The primary driver of the additional utility costs is the increase in pumping power required to offset the pressure loss caused by the treatment systems. Costs for supplies, parts, maintenance, repairs, and testing were estimated and included. The cost of the minimum quarterly testing of PFAS for each well site was also included. Media replacement and disposal are the maintenance requirements

with the highest cost. Most other maintenance would be minimal and be related to gaskets or other mechanical components, which would depend primarily on the number and size of vessels present in the treatment system. Capital outlay costs were included for each well site for maintaining and upgrading the building addition required to house the treatment system.

The treatment equipment, including the pre-filtration and PFAS treatment systems, would require regular maintenance. The pre-filtration system cartridge filters or bags would need to be replaced periodically with replacement intervals based on water quality. PFAS treatment system media disposal and replacement costs were based on anticipated media life for each treatment option. Table 3-4 summarizes the projected PFAS treatment media life provided by ATEC Water Systems, LLC, and AqueoUS Vets®, for each well site based on the well site water quality test results. Media disposal costs consist primarily of landfill costs and transportation costs. Transportation costs are relatively low due to the City's location near an appropriate disposal facility. Consequently, landfill costs are more significant than transportation costs and are typically assigned based on the mass of media in tons. While not as significant as the landfill costs, transportation costs can increase greatly with the volume of media that must be disposed of, requiring more trips for disposal. PFAS treatment media unit costs were provided by ATEC Water Systems, LLC, and AqueoUS Vets®. The pre-filter replacement, PFAS treatment media disposal, and PFAS treatment media replacement costs presented in the OM&R costs are projected average annual costs as all equipment and options do not require annual replacement. Projected equipment replacement costs were also included in the annual OM&R costs.

The estimated OM&R costs for the IX and FLUORO-SORB® treatment systems are shown on Figures 3-5B and 3-6B, respectively.

The most significant OM&R costs are media and equipment replacements. Pre-filter replacement and labor are typically the next most significant expenses with the anticipated salary increase for a Water Treatment Level 3 operator accounting for the majority of the labor cost.

IX has higher OM&R costs compared to the FLUORO-SORB®. However, the IX OM&R costs are comparable to those of FLUORO-SORB® in most categories, except for media replacement. The lower media replacement cost of FLUORO-SORB® is due to the longer media life.

20-Year Present Worth

To help determine the most economical treatment option over an extended period of time, a 20-year present worth cost estimate was developed for each option. The total present worth cost includes the total project cost, as well as annual OM&R costs, as outlined above, over a 20-year life cycle. The values presented are preliminary based on manufacturer-provided best estimates for each treatment system. For better accuracy, the media life may be verified with a RSSCT or pilot test program.

The estimated 20-year present worth costs for the IX and FLUORO-SORB® treatment systems, are shown on Figures 3-5B, and 3-6B, respectively.

As indicated on Figure 3-5B and Table 3-5, IX would have the highest costs for all categories, driven primarily by the lower PFAS treatment media life and higher media cost. FLUORO-SORB® would have the lowest costs in all categories as a result of the lower cost of FLUORO-SORB® media, annual OM&R, and total present worth. The PFAS treatment volume of both the IX and FLUORO-SORB® are similar but the longer anticipated PFAS treatment media life would result in the lower annual OM&R costs for FLUORO-SORB®.

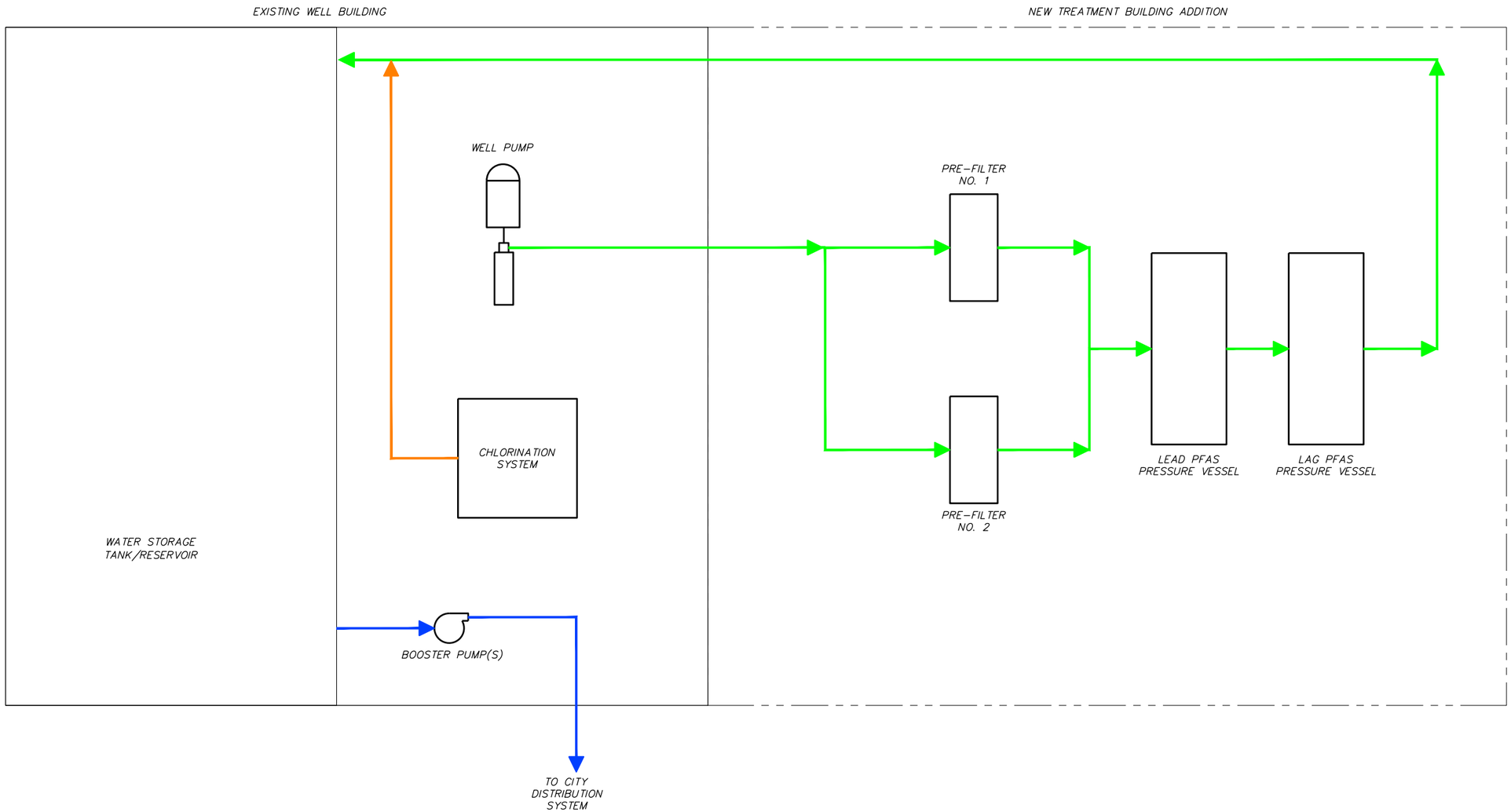
TABLE 3-5
ALTERNATIVE 1 - PFAS TREATMENT OPTIONS TOTAL PRESENT WORTH COMPARISON

Option	Total Estimated Project Cost[1]	Total Annual OM&R	Total Present Worth
IX	$18,767,000	$1,704,000	$39,960,000
FLUORO-SORB®	$16,478,000	$1,430,000	$34,308,000

[1] All costs are in 2026 dollars.

Summary

Alternative 1 - PFAS Treatment utilizing an IX or FLUORO-SORB® treatment system has been proven to remove PFAS efficiently and effectively from drinking water when water quality allows. Based on the water quality sampling completed by the City in January 2026, it appears that IX and FLUORO-SORB® are anticipated to remove PFAS from the City's water sources and provide a relatively long media life. Should the City decide to proceed with PFAS treatment as part of its mitigation efforts, it is recommended that the City conduct a pilot test as the next step in implementing the alternative. The pilot test would evaluate the performance of IX and FLUORO-SORB® to accurately determine which media type would perform most effectively for the City and result in the longest media life. Unless otherwise demonstrated by pilot testing, FLUORO-SORB® is currently the preferred PFAS treatment option due to its higher performance and lower costs. While FLUORO-SORB® currently lacks regulatory approval, this is not anticipated to be problematic. Obtaining approval would likely involve a pilot test, which would be recommended regardless of the media type selected. Therefore, implementing an FLUORO-SORB® treatment system is not likely to result in significant difficulties when compared to an IX treatment system.



NOTES

1. THE PROCESS SCHEMATIC IS TYPICAL FOR ALL WELLS. WELL NO. 2 AND WELL NO. 4 ARE EQUIPPED WITH AN AERATOR LOCATED BETWEEN THE WELL AND THE STORAGE TANK/RESERVOIR. WELL NO. 5 DOES NOT HAVE AN AERATOR.
2. ALL PFAS TREATMENT OPTIONS ARE ANTICIPATED TO HAVE A SIMILAR CONFIGURATION. THE NUMBER OF PRE-FILTER SYSTEM VESSELS AND PFAS PRESSURE VESSELS WILL VARY BASED ON THE SYSTEM CAPACITY.
3. THE PRE-FILTER SYSTEM OPERATES IN A DUTY/STANDBY CONFIGURATION TO PROVIDE REDUNDANCY WHILE THE PFAS PRESSURE VESSELS WILL OPERATE IN A LEAD-LAG CONFIGURATION TO PROVIDE REDUNDANCY.
4. ONLY PRIMARY FLOW PATHS AND PROCESS EQUIPMENT IS SHOWN. ADDITIONAL EQUIPMENT, PIPING, VALVING, ETC., WILL BE REQUIRED FROM WHAT IS SHOWN HERE FOR A COMPLETE AND OPERATING SYSTEM.

LEGEND

- RAW WATER
- FINISHED WATER
- CHLORINE SOLUTION

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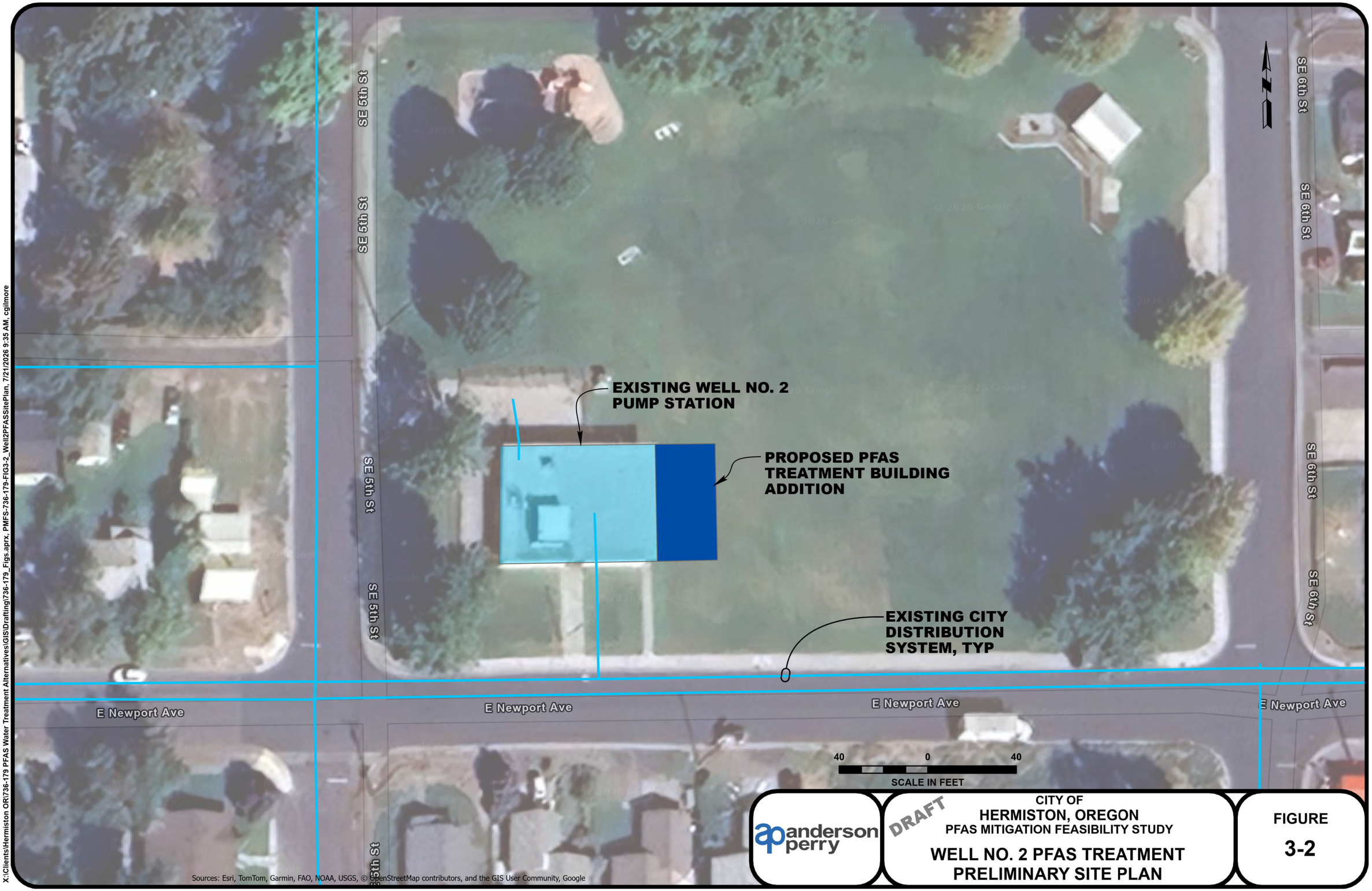
DRAFT

CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

PFAS TREATMENT PROCESS SCHEMATIC

FIGURE
3-1

X:\Clients\Hermiston OR\736-179 PFAS Water Treatment Alternatives\CAD\PMFS-736-179-FIG3-1_Schematic.dwg, Layout1, 7/13/2026 10:54 AM, smagner



X:\Clients\Hermiston OR\736-179 PFAS Water Treatment Alternatives\GIS\Drafting\736-179_Figs.aprx, PMFS-736-179-FIG3-2_Well2PFASSitePlan, 7/21/2026 9:35 AM, cgilmore

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CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

WELL NO. 2 PFAS TREATMENT PRELIMINARY SITE PLAN

FIGURE
3-2

EXISTING 1 MG RESERVOIR

EXISTING WELL NO. 4 PUMP STATION

PROPOSED PFAS TREATMENT BUILDING ADDITION

EXISTING CITY DISTRIBUTION SYSTEM, TYP

NE 4th St

NE Willow Ct

40 0 40

SCALE IN FEET

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Google

X:\Clients\Hermiston OR\736-179 PFAS Water Treatment Alternatives\GIS\Drafting\736-179_Figs.aprx, PMFS-736-179-FIG3-3_Well4PFASSitePlan, 7/21/2026 9:38 AM, cgilmore

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HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

WELL NO. 4 PFAS TREATMENT PRELIMINARY SITE PLAN

FIGURE
3-3

PROPOSED PFAS TREATMENT BUILDING ADDITION

EXISTING WELL NO. 5 PUMP STATION

EXISTING CITY DISTRIBUTION SYSTEM, TYP

Hermiston Ditch

Hermiston Ditch

Hermiston Ditch

NW 6th Ave

50 0 50

SCALE IN FEET

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Google

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CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

WELL NO. 5 PFAS TREATMENT PRELIMINARY SITE PLAN

FIGURE
3-4

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CITY OF HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 1 - ION EXCHANGE TREATMENT SYSTEM OPTION
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization (Approximately 5%)	LS	$ 651,000	All Req'd	$ 651,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	30,000	All Req'd	30,000
Well No. 2					
3	Site Work	LS	$ 30,000	All Req'd	$ 30,000
4	Concrete Masonry Unit (CMU) Building Addition[1]	LS	375,000	All Req'd	375,000
5	Pre-filter System	LS	200,000	All Req'd	200,000
6	Ion Exchange (IX) Treatment System[2]	LS	942,000	All Req'd	942,000
7	Well Pump Improvements	LS	305,000	All Req'd	305,000
8	Mechanical Piping, Fittings, and Valves	LS	75,000	All Req'd	75,000
9	Electrical Work[3]	LS	100,000	All Req'd	100,000
10	Controls and Instrumentation	LS	75,000	All Req'd	75,000
		Subtotal Well No. 2 Construction Cost			**$ 2,102,000**
Well No. 4					
11	Site Work	LS	$ 30,000	All Req'd	$ 30,000
12	CMU Building Addition	LS	647,000	All Req'd	647,000
13	Pre-filter System	LS	280,000	All Req'd	280,000
14	IX Treatment System[2]	LS	1,870,000	All Req'd	1,870,000
15	Well Pump Improvements	LS	315,000	All Req'd	315,000
16	Mechanical Piping, Fittings, and Valves	LS	80,000	All Req'd	80,000
17	Electrical Work[3]	LS	100,000	All Req'd	100,000
18	Controls and Instrumentation	LS	75,000	All Req'd	75,000
		Subtotal Well No. 4 Construction Cost			**$ 3,397,000**

CITY OF HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 1 - ION EXCHANGE TREATMENT SYSTEM OPTION
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
Well No. 5					
19	Site Work	LS	$ 30,000	All Req'd	$ 30,000
20	CMU Building Addition	LS	1,107,000	All Req'd	1,107,000
21	Pre-filter System	LS	450,000	All Req'd	450,000
22	IX Treatment System[2]	LS	4,700,000	All Req'd	4,700,000
23	Well Pump Improvements	LS	290,000	All Req'd	290,000
24	Mechanical Piping, Fittings, and Valves	LS	100,000	All Req'd	100,000
25	Electrical Work[3]	LS	100,000	All Req'd	100,000
26	Controls and Instrumentation	LS	75,000	All Req'd	75,000
				Subtotal Well No. 5 Construction Cost	**$ 6,852,000**
				Subtotal Construction Cost	**$ 13,032,000**
				Construction Contingency (Approximately 20%)	2,607,000
				Total Estimated Construction Cost	**$ 15,639,000**
				Preliminary and Design Engineering (Approximately 10%)	1,564,000
				Construction Engineering (Approximately 10%)	1,564,000
				TOTAL ESTIMATED PROJECT COST (2026 DOLLARS)[4]	**$ 18,767,000**

Notes:

[1] A CMU building was selected to match the existing structures.

[2] Treatment system is based on ATEC Water System, LLC, and AqueoUS Vets®, systems.

[3] The electrical work costs assume the existing electrical service is sufficiently sized to accommodate the additional load from the building addition and pump improvements.

[4] The total estimated improvements cost does not include typical "Other Estimated Project Costs," such as legal, environmental, cultural, permitting, additional material cost for domestic preference, etc.

CITY OF HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 1 - ION EXCHANGE TREATMENT SYSTEM OPTION
OM&R AND PRESENT WORTH ANALYSIS COST ESTIMATE
(YEAR 2026 COSTS)

NO.	DESCRIPTION		ANNUAL COST
ADDITIONAL ANNUAL OPERATION, MAINTENANCE, AND REPLACEMENT (OM&R)			
Well No. 2			
1	Labor (including Benefits)	$	68,000
2	Utilities		94,000
3	Supplies, Parts, Maintenance, Repairs, and Testing		9,000
4	Capital Outlay		10,000
5	Pre-filter Replacement[1]		10,000
6	PFAS Treatment Media Disposal[2]		1,000
7	PFAS Treatment Media Replacement[3]		35,000
8	Chemicals		17,000
9	Equipment Replacement		62,000
	Subtotal Well No. 2	**$**	**306,000**
Well No. 4			
1	Labor (including Benefits)	$	70,000
2	Utilities		147,000
3	Supplies, Parts, Maintenance, Repairs, and Testing		12,000
4	Capital Outlay		15,000
5	Pre-filter Replacement[1]		30,000
6	PFAS Treatment Media Disposal[2]		1,000
7	PFAS Treatment Media Replacement[3]		38,000
8	Chemicals		31,000
9	Equipment Replacement		99,000
	Subtotal Well No. 4	**$**	**443,000**
Well No. 5			
1	Labor (including Benefits)	$	95,000
2	Utilities		158,000
3	Supplies, Parts, Maintenance, Repairs, and Testing		16,000
4	Capital Outlay		20,000
5	Pre-filter Replacement[1]		88,000
6	PFAS Treatment Media Disposal[2]		8,000
7	PFAS Treatment Media Replacement[3]		314,000
8	Chemicals		55,000
9	Equipment Replacement		201,000
	Subtotal Well No. 5	**$**	**955,000**
	Total OM&R[4]	**$**	**1,704,000**
	Present Worth OM&R Cost (5%, 20 years)		21,240,000
	Total Present Worth (2026 Dollars)[5]	**$**	**39,960,000**

Notes:

[1] The pre-filter replacement cost assumes cartridge filters/bags are replaced annually.

[2] Media disposal costs assume all media is hauled to and disposed of at the Chemical Waste Management of the Northwest facility in Arlington, Oregon.

[3] PFAS treatment media replacement costs are based on average yearly cost for ion exchange media life of 853 days

[4] OM&R costs presented are for the PFAS treatment system and would be in addition to existing well site OM&R costs.

[5] Total Present Worth is equal to the sum of the Total Estimated Project Cost from Figure 3-5A and the Present Worth OM&R Cost.

PFAS = per- and polyfluoroalkyl substances

anderson perry

CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 1 - ION EXCHANGE TREATMENT SYSTEM OPTION OM&R AND PRESENT WORTH ANALYSIS COST ESTIMATE

FIGURE
3-5B

CITY OF HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 1 - FLUORO-SORB® TREATMENT SYSTEM OPTION
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization (Approximately 5%)	LS	$ 572,000	All Req'd	$ 572,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	30,000	All Req'd	30,000
Well No. 2					
3	Site Work	LS	$ 30,000	All Req'd	$ 30,000
4	Concrete Masonry Unit (CMU) Building Addition[1]	LS	375,000	All Req'd	375,000
5	Pre-filter System	LS	200,000	All Req'd	200,000
6	FLUORO-SORB® Treatment System[2]	LS	782,000	All Req'd	782,000
7	Well Pump Improvements	LS	305,000	All Req'd	305,000
8	Mechanical Piping, Fittings, and Valves	LS	75,000	All Req'd	75,000
9	Electrical Work[3]	LS	100,000	All Req'd	100,000
10	Controls and Instrumentation	LS	75,000	All Req'd	75,000
		Subtotal Well No. 2 Construction Cost			**$ 1,942,000**
Well No. 4					
11	Site Work	LS	$ 30,000	All Req'd	$ 30,000
12	CMU Building Addition	LS	647,000	All Req'd	647,000
13	Pre-filter System	LS	280,000	All Req'd	280,000
14	FLUORO-SORB® Treatment System[2]	LS	1,550,000	All Req'd	1,550,000
15	Well Pump Improvements	LS	315,000	All Req'd	315,000
16	Mechanical Piping, Fittings, and Valves	LS	80,000	All Req'd	80,000
17	Electrical Work[3]	LS	100,000	All Req'd	100,000
18	Controls and Instrumentation	LS	75,000	All Req'd	75,000
		Subtotal Well No. 4 Construction Cost			**$ 3,077,000**

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PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 1 - FLUORO-SORB TREATMENT SYSTEM OPTION PRELIMINARY COST ESTIMATE

FIGURE
3-6A

CITY OF HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 1 - FLUORO-SORB® TREATMENT SYSTEM OPTION
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
Well No. 5					
19	Site Work	LS	$ 30,000	All Req'd	$ 30,000
20	CMU Building Addition	LS	1,107,000	All Req'd	1,107,000
21	Pre-filter System	LS	450,000	All Req'd	450,000
22	FS Treatment System[2]	LS	3,670,000	All Req'd	3,670,000
23	Well Pump Improvements	LS	290,000	All Req'd	290,000
24	Mechanical Piping, Fittings, and Valves	LS	100,000	All Req'd	100,000
25	Electrical Work[3]	LS	100,000	All Req'd	100,000
26	Controls and Instrumentation	LS	75,000	All Req'd	75,000
				Subtotal Well No. 5 Construction Cost	**$ 5,822,000**
				Subtotal Construction Cost	**$ 11,443,000**
				Construction Contingency (Approximately 20%)	2,289,000
				Total Estimated Construction Cost	**$ 13,732,000**
				Preliminary and Design Engineering (Approximately 10%)	1,373,000
				Construction Engineering (Approximately 10%)	1,373,000
				TOTAL ESTIMATED PROJECT COST (2026 DOLLARS)[4]	**$ 16,478,000**

Notes:

[1] A CMU building was selected to match the existing structures.

[2] Treatment system is based on ATEC Water System, LLC, and AqueoUS Vets®, systems.

[3] The electrical work costs assume the existing electrical service is sufficiently sized to accommodate the additional load from the building addition and pump improvements.

[4] The total estimated improvements cost does not include typical "Other Estimated Project Costs," such as legal, environmental, cultural, permitting, additional material cost for domestic preference, etc.

CITY OF HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 1 - FLUORO-SORB® TREATMENT SYSTEM OPTION
OM&R AND PRESENT WORTH ANALYSIS COST ESTIMATE
(YEAR 2026 COSTS)

NO.	DESCRIPTION		ANNUAL COST
ADDITIONAL ANNUAL OPERATION, MAINTENANCE, AND REPLACEMENT (OM&R)			
Well No. 2			
1	Labor (including Benefits)	$	67,000
2	Utilities		94,000
3	Supplies, Parts, Maintenance, Repairs, and Testing		9,000
4	Capital Outlay		10,000
5	Pre-filter Replacement[1]		10,000
6	PFAS Treatment Media Disposal[2]		1,000
7	PFAS Treatment Media Replacement[3]		27,000
8	Chemicals		17,000
9	Equipment Replacement		57,000
	Subtotal Well No. 2	**$**	**292,000**
Well No. 4			
1	Labor (including Benefits)	$	71,000
2	Utilities		147,000
3	Supplies, Parts, Maintenance, Repairs, and Testing		12,000
4	Capital Outlay		15,000
5	Pre-filter Replacement[1]		30,000
6	PFAS Treatment Media Disposal[2]		1,000
7	PFAS Treatment Media Replacement[3]		34,000
8	Chemicals		31,000
9	Equipment Replacement		88,000
	Subtotal Well No. 4	**$**	**429,000**
Well No. 5			
1	Labor (including Benefits)	$	80,000
2	Utilities		158,000
3	Supplies, Parts, Maintenance, Repairs, and Testing		16,000
4	Capital Outlay		20,000
5	Pre-filter Replacement[1]		88,000
6	PFAS Treatment Media Disposal[2]		3,000
7	PFAS Treatment Media Replacement[3]		119,000
8	Chemicals		55,000
9	Equipment Replacement		167,000
	Subtotal Well No. 5	**$**	**706,000**
	Total OM&R[4]	**$**	**1,430,000**
	Present Worth OM&R Cost (5%, 20 years)		17,820,000
	Total Present Worth (2026 Dollars)[5]	**$**	**34,308,000**

Notes:

[1] The filter media cost assumes filters are replaced annually.

[2] Media disposal costs assume all media is hauled to and disposed of at Chemical Waste Management of the Northwest in Arlington, Oregon.

[3] PFAS treatment media replacement costs are based on average yearly cost for FLUORO-SORB® media life of 943 days for Well No. 2, 1,500 days for Well No. 4, and 1,050 days for Well No. 5.

[4] OM&R costs presented are for the PFAS treatment system and would be in addition to existing well site OM&R costs.

[5] Total Present Worth is equal to the sum of the Total Estimated Project Cost from Figure 3-6A and the Present Worth OM&R Cost.

PFAS = per- and polyfluoroalkyl substances

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PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 1 - FLUORO-SORB TREATMENT SYSTEM OPTION OM&R AND PRESENT WORTH ANALYSIS COST ESTIMATE

FIGURE
3-6B

Chapter 4 - Alternative 2 - Existing Regional Water Treatment Plant Utilization

Introduction

Currently, the Regional Water System (RWS) provides the City of Hermiston and other users with potable and non-potable water (NPW) from the Columbia River. The water is drawn from the Columbia River by the Intake Pump Station (IPS) located at the Port of Umatilla on a pier 2,000 feet upstream of McNary Dam. Water is drawn through intake screens into four vertical turbine pumps and transmitted through a 42-inch transmission main to non-potable pump station No. 2 (NPPS-2), then the Regional Water Treatment Plant (RWTP), which contains the non-potable pump station No. 1 (NPPS-1). The transmission main discharges into the raw water wetwell, where the NPPS-1 is located along with the feed pumps for the RWTP. The RWTP draws NPW from NPPS-1, treats, then delivers potable water via the potable water pump station to RWS potable water users and the City's distribution system. Water quality testing indicates that water from the RWS has per- and polyfluoroalkyl substances (PFAS) concentrations below the U.S. Environmental Protection Agency's maximum contaminant levels.

Existing Regional Water Treatment Plant Infrastructure

The RWTP was constructed in 1994 and generally consists of a raw water wetwell filtration system including applicable chemical systems, a clearwell, sludge handline facilities, and pumping systems for treating the Columbia River water for RWS potable water users. At the RWTP, City staff operate two packaged water treatment units with a capacity of 2,800 gallons per minute (gpm) for treating the Columbia River water. The packaged treatment units use a combination of coagulation, clarification, and filtration treatment processes to produce potable water. The treatment of water involves the addition of chemicals (coagulants) to the raw water supply followed by mixing to allow particles to collide and stick together into increasingly larger and heavier elements called "floc." These floc particles are then removed by clarification to remove the majority of the heavy solids. Filtration follows as the final barrier to capture the remaining particles completing the treatment process. The City uses aluminum chloralhydrate as the primary coagulant with a supplemental dose of polymer. Chlorine and soda ash are injected upstream of the treatment units for disinfection and pH adjustment respectively. Each packaged treatment unit operates independently to allow flexibility in matching the production of potable water to varying demands.

After treatment, the water is collected and temporarily stored in a clearwell prior to being pumped into the potable water distribution system. The clearwell helps to provide chlorine contact time, as well as the infrastructure to pump the potable water to users. The clearwell has a maximum operating volume of 473,000 gallons. The RWTP pumps potable water into the potable water distribution system using three pumps, each with a capacity of 1,500 gpm at 215 feet of total dynamic head. A 16-inch water main along Feedville Road and a 12-inch diameter transmission main along Highway 207 are used to convey potable water to users. Figure 4-1 shows a process

flow diagram for the RWTP. Figures 4-2 and 4-3 show the RWS layout and RWTP site plan, respectively.

Improvements to NPPS-2 were made in 2025 along with the construction of a 30-inch NPW main in Feedville Road. As part of the improvements, the existing 16-inch main in Feedville Road was converted from non-potable to potable water and now supplies water to RWS potable water users.

Currently, the City is working on an aquifer storage and recovery (ASR) project. The project includes the construction of an ASR well for the injection and recovery of water from the aquifer, along with water storage reservoirs and a booster pump station to provide potable water to users. Potable water from the RWTP is to be used as the injection water for the City's ASR system. The RWTP is anticipated to provide 1,350 gpm of water to the ASR well from October 1 through March 31 annually. This would result in nearly 354 million gallons of water from the RWTP being stored in the ASR system.

Regional Water Treatment Plant Criteria

To develop and evaluate options for utilizing the City's RWTP allocation, criteria must first be determined for use in the analysis. The primary criterion required is the flow capacity of the treatment system and capacity available for City use. Currently, the RWTP has a capacity of 2,800 gpm or 4 million gallons per day (MGD). The Intergovernmental Regional Water System Agreement dated May 9, 1995, limits the developed potable water system capacity to the City to 1,527 gpm or 2.2 MGD. Of the remaining 1,273 gpm, 255 gpm is allocated to another user that is no longer in operation and 1,018 gpm is unallocated. Therefore, it would be necessary to obtain access to these remaining allocations to utilize the full capacity of the RWTP. The City could access 1,018 gpm unallocated portion by converting an equal portion of its undeveloped NPW allocation to a potable water allocation. Obtaining access to the remaining 255 gpm would require the purchase or lease of the other user's allocation. Given that this portion is currently owned by another user, obtaining access to it would not affect the City's undeveloped allocation. The full 2,800 gpm capacity of the RWTP will be utilized in the evaluation of this alternative.

Alternative Evaluation

Two options for the utilization of the existing RWTP were considered. The first option includes no significant improvements to the system and involves utilizing the existing RWTP's full capacity of 2,800 gpm. The second option would involve replacing the existing 30-year old treatment units and associated equipment with new enhanced clarification and filtration treatment units and associated equipment sized to match the existing 2,800 gpm capacity. As with the first option, changes to existing infrastructure are to be minimized and involve only those necessary due to age and failure of equipment, along with what is needed to retrofit the new treatment units. Both options would require the City to obtain access to the remaining 1,273 gpm RWTP allocation.

Water Allocations

The RWS has a total Columbia River allocation of 27,000 gpm with approximately 19,432 gpm currently developed. The existing system is limited to 22,000 gpm of the 27,000 gpm due to headloss associated with the existing transmission line between the IPS and the existing RWTP. Of the total allocation of 27,000 gpm, only 2,800 gpm can be treated to potable water

standards due to the capacity of the RWTP. Currently, the City holds a total RWS allocation of 7,000 gpm. Of this allocation, 1,527 gpm is developed potable water and 780 gpm is developed NPW. The remaining 4,720 gpm of the City's allocation is undeveloped.

Approximately 2,658 gpm of the remaining RWS water allocation could be developed based on the current system limit of 22,000 gpm before improvements to the transmission line and/or the supply system would be required. Refer to the 2026 RWS Master Plan (RWSMP) by Anderson Perry and Associates Inc., for the various improvement alternatives to increase system capacity beyond the current capacity of 22,000 gpm.

Improvements to the RWS supply system are not anticipated to be necessary to utilize the full capacity of the RWTP. Given the City's developed potable water allocation of 1,527 gpm and the other 255 gpm potable water allocation, the RWTP has 1,018 gpm of undeveloped capacity. Increasing the developed capacity of the RWS by this amount would result in a total developed capacity of 20,450 gpm, which is below the 22,000 gpm threshold after which improvements to the RWS transmission line or supply system would be required.

Water Quality

The treatment plant has encountered some difficulties with treating water due to water quality. Water quality parameters with the biggest effect on the treatment system are periods of high turbidity and low temperatures. Turbidity in the Columbia River is consistent for most of the year, except during the spring when turbidity levels can spike due to runoff. Levels may reach 30 nephelometric turbidity units (NTUs) during these periods compared to the average 4 NTUs, which has resulted in the RWTP being unable to operate at full capacity. The increased turbidity results in lower flow rates along with more frequent flushing and backwashing. Low temperatures have also proven problematic for the City. The existing treatment plant has encountered difficulties with achieving coagulation during periods of low temperatures, which has temporarily reduced the capacity of the plant.

Supply Capacity

The existing RWTP has a capacity of 2,800 gpm. However, only 1,527 gpm can currently be utilized by the City leaving 1,273 gpm of capacity potentially available. If the RWTP were operating 24 hours per day, it could potentially provide approximately 4,000,000 gallons per day (gpd). However, a portion is utilized for flushing and backwashing of the RWTP. Approximately 5 percent of water production is assumed to be lost to flushing and backwashing, which leaves approximately 3,800,000 gpd available. From October 1 through March 31 of each year, it is anticipated that 1,350 gpm or 1,944,000 gpd of the RWTP will be used with the City's ASR system to recharge the aquifer. If the City were able to obtain the remaining water allocation of the RWTP, the RWTP would be able to provide the City with approximately 1,656,000 gpd from October 1 through March 31 and the full 3,600,000 gpd from April 1 through September 30.

Treatment Plant Improvements

As previously mentioned, the existing RWTP contains outdated equipment and, at over 30 years old, is nearing the end of its life. Additionally, the control system is obsolete. However, the

existing RWTP is still operating and appears that it is able to be utilized in its current state for the near future. However, the current system does have several deficiencies. These include reduced capacity during high turbidity events, such as during spring runoff and during cold weather events caused by reduced coagulant effectiveness. Due to its age and these deficiencies, it is recommended that the City begin budgeting for the replacement of the existing package treatment units. The existing units would be replaced with new similar units capable of matching the existing 2,800 gpm capacity along with any ancillary equipment reaching the end of its life. This PFAS Mitigation Feasibility Study does not include a full evaluation of the existing RWTP. For further information, see the RWSMP.

Life Cycle Cost Analysis

To determine the most economical PFAS mitigation approach for the City, a cost analysis was developed for the alternatives. For this evaluation the capital cost and total 20-year present worth were evaluated. The total capital cost consists primarily of the cost to acquire the remaining RWTP water allocations.

The total present worth cost includes the projected annual operation, maintenance, and replacement (OM&R) costs over a 20-year life cycle. These include, but are not limited to, labor, utilities, parts, and equipment replacement. Further details as to the primary considerations affecting the costs are detailed below. The estimated project costs for Alternative 2 are shown on Figure 4-4.

Capital Costs

Total capital costs for Alternative 2 are limited and primarily consist of the cost to acquire the remaining RWTP allocations. Alternative 2 does not include the construction of any new equipment as the existing system is operational.

Operation, Maintenance, and Replacement Costs

The estimated OM&R costs are based on historical operation and maintenance costs per gallon of treated water for the RWTP extrapolated to the projected water production of 2,800 gpm. These costs include, but are not limited to, labor, utilities, parts, and chemicals. Additionally, the OM&R estimate includes the cost of replacing the existing package treatment system over ten years. The cost of replacing the existing package treatment system was based on a preliminary proposal from WesTech Engineering, LLC, for a comparable package treatment system. The year 2026 estimated treatment system replacement cost is $6,650,000, which includes treatment equipment purchase and installation along with anticipated improvements to the existing chemical systems, piping, electrical, and controls and instrumentation, along with 20 percent contingency and estimated engineering fees.

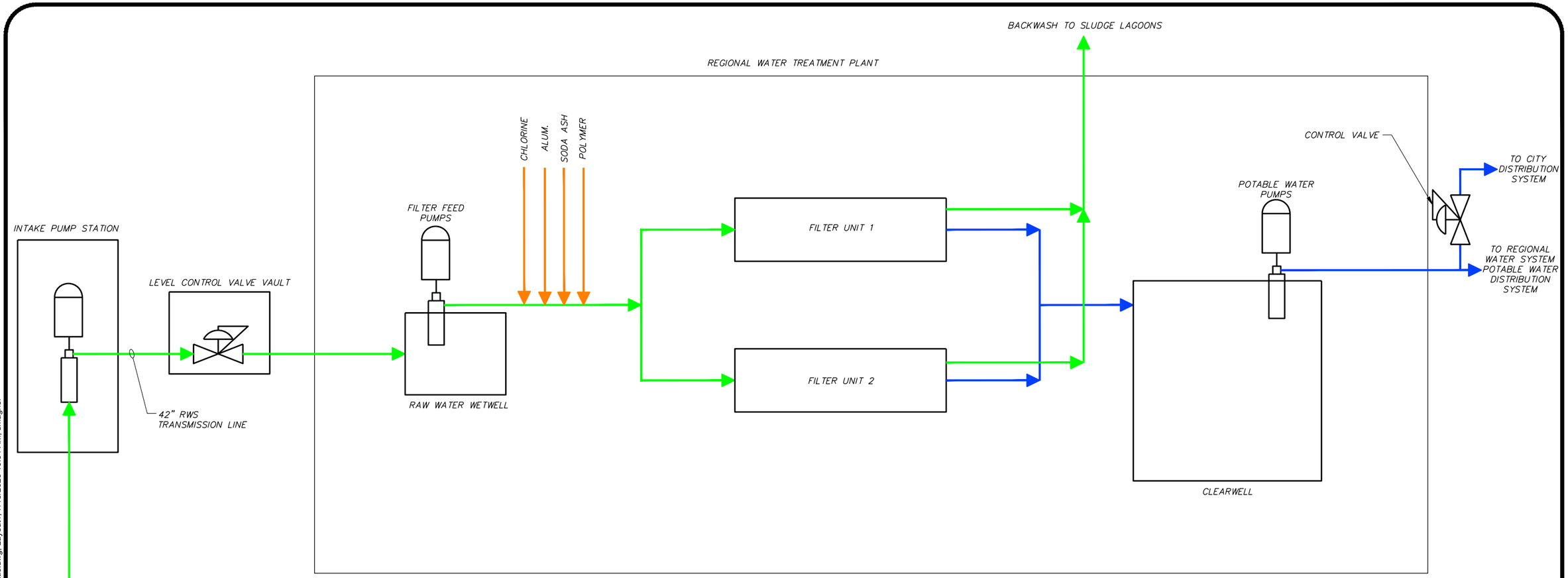
20-Year Present Worth

To determine the most economical alternative over an extended period of time, a 20-year present worth cost analysis was developed for Alternative 2. The total present worth cost includes the total project costs and the annual OM&R costs, as outlined above, over a 20-year

life cycle. The values presented are based on estimates and historical operational data, thus are preliminary.

Summary

Alternative 2 would involve the City obtaining the full water allocation of the existing RWTP to be able to utilize the full capacity of the RWTP for the City. No immediate capital improvements projects are anticipated as the current RWTP appears to be operating adequately. However, obtaining the remaining available water allocation for the RWTP is anticipated to be costly. The OM&R costs would increase due to the increased operation of the plant along with recommended budgeting for replacing the existing packaged treatment units. Alternative 2 has the shortest implementation timeline as all infrastructure is in place and has the least capital cost.



NOTES

1. THE BACKWASH SYSTEM, SLUDGE LAGOONS, AND DECANT PUMP STATION ARE NOT SHOWN.
2. ONLY PRIMARY FLOW PATHS AND PROCESS EQUIPMENT ARE SHOWN. ADDITIONAL EQUIPMENT, PIPING, VALVING, ETC IS CURRENTLY INSTALLED AND REQUIRED FOR A COMPLETE SYSTEM.

LEGEND

- RAW WATER
- FINISHED WATER
- TREATMENT SOLUTION

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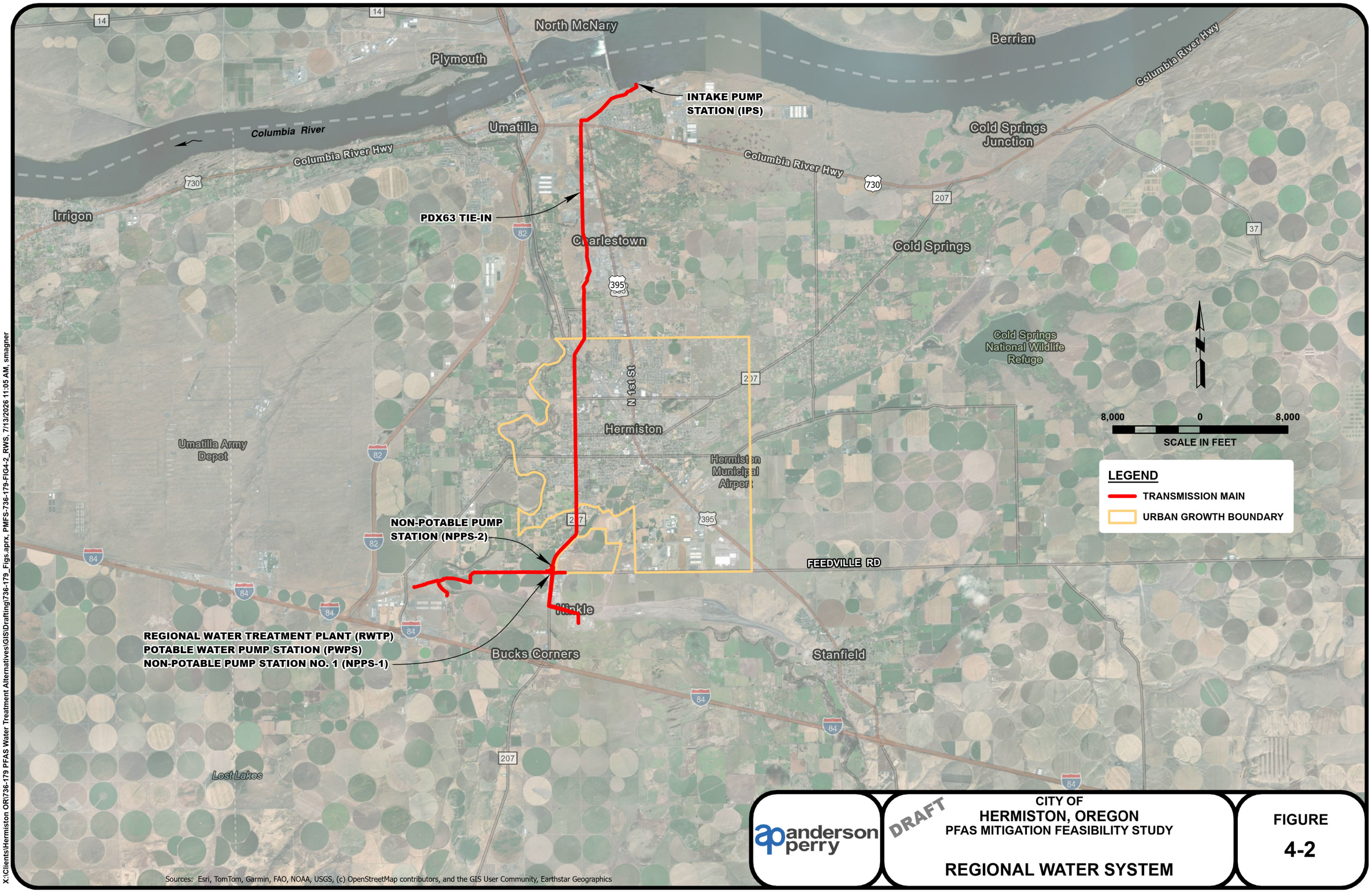
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CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

REGIONAL WATER TREATMENT PLANT PROCESS SCHEMATIC

FIGURE
4-1

X:\Clients\Hermiston OR\736-179 PFAS Water Treatment Alternatives\CAD\PMFS-736-179-FIG4-1_RWTPSchematic.dwg, Layout1, 7/13/2026 10:54 AM, smagner



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PFAS MITIGATION FEASIBILITY STUDY

REGIONAL WATER SYSTEM

FIGURE
4-2

LEGEND

- CONTROL VALVE
- HYDRANT
- SYSTEM VALVE
- POTABLE WATER
- NON-POTABLE WATER
- TAX LOT
- CITY LIMITS

NPPS-2

24" DIP

30" DIP

24" DIP

42" PCCP

207

SLUDGE LAGOONS

RWTP & NPPS-1

6" DIP

24" HDPE

FEEDVILLE RD

8" PVC

30" DIP

FEEDVILLE RD

16" DIP

207

CITY OF HERMISTON DISTRICTION SYSTEM

RWS POTABLE WATER DISTRIBUTION SYSTEM

100 0 100

SCALE IN FEET

Source: Esri, Vantor, Earthstar Geographics, IGN, and the GIS User Community, Microsoft, Vantor

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PFAS MITIGATION FEASIBILITY STUDY

EXISTING REGIONAL WATER TREATMENT PLANT SITE PLAN

FIGURE
4-3

X:\Clients\Hermiston OR\736-179 PFAS Water Treatment Alternatives\GIS\Drafting\736-179_Figs.aprx, PMFS-736-179-FIG4-3_RWTPSitePlan, 7/20/2026 2:51 PM, cgilmore

CITY OF HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 2 - EXISTING REGIONAL WATER TREATMENT PLANT UTILIZATION
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

Procurement of Regional Water System (RWS) Water Allocation	**TBD**
TOTAL ESTIMATED PROJECT COST (2026 DOLLARS)	**$ -**

PRESENT WORTH ANALYSIS (2026 DOLLARS)

NO.	DESCRIPTION	ANNUAL COST
	ADDITIONAL ANNUAL OPERATION, MAINTENANCE, AND REPLACEMENT (OM&R)	
1	RWS Costs[1]	$ 305,000
2	Labor (including Benefits)	90,000
3	Utilities	100,000
4	Supplies, Parts, Maintenance, Repairs, and Testing	20,000
5	Capital Outlay	10,000
6	Chemicals	35,000
7	Treatment System Replacement[2, 3]	665,000
	Total OM&R[4]	**$ 1,225,000**
	Present Worth OM&R Cost (5%, 20 years)	15,270,000
	Total Present Worth (2026 Dollars)	**$ 15,270,000**

Notes:

[1] RWS costs are based on historical RWS data and includes River Intake Pump Station costs and general maintenance costs.

[2] Treatment System Replacement cost includes package treatment equipment, improvements to the chemical systems, piping, valving, electrical, instrumentation and controls, etc., along with a 20 percent contingency and anticipated engineering costs. The total estimated cost is $6,650,000.

[3] Annual cost for Treatment System Replacement is based on 2026 dollars with replacement anticipated in 2036.

[4] OM&R costs presented are anticipated to be in addition to current maintenance costs expended by the City.

Chapter 5 - Alternative 3 - New Regional Water System Potable Water Source

Introduction

As noted in Chapter 4, the Regional Water System (RWS) provides the City of Hermiston and other users with potable and non-potable water (NPW) from the Columbia River. The water is drawn from the Columbia River by the Intake Pump Station (IPS) located at the Port of Umatilla (Port) on a pier 2,000 feet upstream of McNary Dam. Water is drawn through intake screens into four vertical turbine pumps and transmitted through a 42-inch transmission main to non-potable pump station No. 2 (NPPS-2), then the Regional Water Treatment Plant (RWTP), which contains non-potable pump station No. 1 (NPPS-1). The RWTP provides potable water to users on the RWS, while NPPS-1 and NPPS-2 provide NPW to RWS users. The RWS has a total water allocation of 27,000 gallons per minute (gpm) with approximately 19,432 gpm currently developed and being utilized.

Water Supply Options

A variety of options are available for utilizing the RWS or Columbia River as a water supply source for the City. Two primary options available to the City are the construction of a new surface water treatment plant (WTP) connected to the existing RWS and the construction of a collector well. Within the new WTP option, several treatment technologies and locations are available. Additionally, per- and polyfluoroalkyl substances (PFAS)-contaminated water from Well No. 5 could be blended with potable water from either a new WTP or a collector well depending on the location. The blending of the Well No. 5 water with the potable water from a new WTP or collector well must be at a ratio to produce PFAS concentrations of the blended water below the maximum contaminant level (MCL). The following is a brief summary of these options.

New Water Treatment Plant

The first supply option for Alternative 3 involves the construction of a new WTP. The new WTP would consist of expansion of the existing RWTP, construction at the existing RWTP site, or construction at a new site. These options were outlined and discussed as part of the Cursory PFAS Mitigation Evaluation Summary (Summary). As noted in the Summary, it was decided to further evaluate construction of a new WTP at a new City-owned property colloquially known as the “green” property, near the existing Hermiston Recycled Water Treatment Plant. The “green” property is directly adjacent to both the 42-inch RWS transmission main and City’s distribution system. This location allows for easy access to the RWS and City’s distribution systems without the requirement for significant conveyance infrastructure. The location is also within the City’s Main Pressure Zone where the majority of the potable water demand occurs and which has had the biggest impact from the supply sources that are contaminated with PFAS. The new WTP would connect to the 42-inch RWS transmission line and treat the water with a package water treatment system. The is a summary of the package water treatment technologies evaluated for the new WTP option. Figure 5-1 shows a preliminary site plan for a new regional water system treatment plant with associated infrastructure improvements and Well No. 5 blending transmission piping.

Enhanced Clarification and Media Filtration

Enhanced clarification and media filtration (ECMF) is a two-stage treatment process consisting of clarification, and filtration. In the first stage, a coagulant and polymer are added upstream of the treatment units. These chemicals cause contaminant particles to group together into floc. The floc enters the clarifier where most of the floc is removed. In the final stage, any solids remaining after the first stage are removed through a mixed media filter generally consisting of layers of anthracite, silica sand, and garnet. Following treatment, the water can be disinfected and delivered to the City's distribution system. Figure 5-2 shows an example process schematic for the ECMF option with Well No. 5 blending. Both the preliminary site layout on Figure 5-1 and the process schematic on Figure 5-2 include an evaporation pond for solids handling. The ECMF system requires regular flushing of the clarifier and backwashing of the media to remove contaminants removed from the water. The flushing and backwash water would be conveyed to the evaporation pond for further processing and disposal.

Ultrafiltration

Ultrafiltration (UF) is a treatment process involving the use of a semi-permeable membrane to remove contaminants from water. The membranes used in UF have very small pores, approximately 0.01 micron in diameter, which can remove many contaminants from the water including turbidity, giardia, cryptosporidium, and approximately 90 percent of viruses, although disinfection is still required. The method by which UF removes contaminants is size exclusion. Water pressure is used to force the supply water through the membrane. At the membrane, the supply water is split into two flow streams: permeate and concentrate. The permeate is the treated water that passes through the UF membrane. The concentrate is the portion of the supply water that cannot pass through the membrane and retains the rejected contaminants, resulting in the concentrate having high levels of contaminants. The recovery rate is the percentage of supply water that becomes part of the permeate. The recovery rate of a UF system can exceed 95 percent. Therefore, the quantity of concentrate waste generated can be 5 percent or less of the incoming flow rate. Figure 5-3 shows an example process schematic for the UF treatment option with Well No. 5 blending. Similar to the ECMF, an evaporation pond is needed to handle the concentrate. UF systems backwash regularly to remove concentrate, which then must be conveyed to an evaporation pond for further processing and disposal.

Collector Well

Collector wells are a type of well that are used to collect water from aquifers directly connected to bodies of surface water. Collector wells consist of large vertical concrete caissons sunk into the ground to bedrock. Horizontal lateral screens are then pushed from inside the caisson into the alluvial aquifer below a body of surface water. A mixture of surface water and groundwater is filtered by the alluvial deposits in the riverbed and infiltrates through the horizontal laterals and into the caisson. Well pumps then pull water from inside the caisson after which it can be disinfected and sent to a distribution system. Collector wells use surface water rights but the water withdrawn from the well can have groundwater level water quality. Collector wells offer an efficient and practical solution for producing large volumes of potable water and may require only disinfection to meet treatment standards. Therefore, they may have

lower operating costs than a surface WTP, while being able to utilize the same water rights. However, there is a possibility for a collector well to test positive for PFAS. Therefore, thorough water quality testing prior to developing a collector well is recommended.

The collector well option consists of the construction of a collector well to utilize Columbia River water allocations. In addition to the well, the option requires the construction of a new well pump station and transmission line to convey water from the well to the City's distribution system. The well would be located next to the Columbia River and withdraw water from beneath the riverbed. The water would be disinfected at the site of the well and pumped through a new transmission line to the City's distribution system. Figure 5-4 shows the proposed well and pump station location along with the proposed transmission line route, which terminates at Well No. 5 to allow for blending.

Well No. 5 Blending

Blending is the process of mixing water containing elevated levels of a contaminant with contaminant-free water to reduce the concentration below regulatory limits. As mentioned previously, Well No. 5 has tested positive for PFAS at levels above the U.S. Environmental Protection Agency's (EPA) maximum contaminant level (MCL). It may be possible to continue utilizing Well No. 5 without treatment by blending the PFAS-contaminated Well No. 5 water with a PFAS-free potable water from the Columbia River. The blending ratio of the two sources would result in a finished water with PFAS concentrations below a predetermined threshold. This threshold would likely be set no greater than the EPA trigger levels, which is half of the MCL. Blending may allow the City to utilize a portion of the Well No. 5 capacity at a lower cost than constructing a PFAS treatment system at Well No. 5.

Blending of Well No. 5 water could be implemented with any another supply source with non-detectable or very low PFAS levels. The primary criteria for determining the feasibility of blending Well No. 5 water with another source is the location of the source relative to Well No. 5. Blending must occur prior to the blended water entering the distribution system. This requires the Well No. 5 water being conveyed to another water supply source or the other supply source being conveyed to Well No. 5. The farther the two sources are apart, the more costly the construction of a transmission line will be. For this reason, blending of Well No. 5 water has only been considered with the new WTP at the "green" property option, as well as the collector well option due to their proposed construction/distribution system connection location relative to Well No. 5.

For blending with the new WTP at the "green" property, a new transmission line would need to be constructed to convey Well No. 5 water to the new WTP. Once at the new WTP, the blending configuration would be dependent on the treatment technology chosen. If a ECMF or UF system is utilized, a clearwell is anticipated to be required and blending could be completed within the clearwell. Control valves, flowmeters, and controls would be utilized to adjust the Well No. 5 flow rate based on the flow rate leaving the WTP to provide the desired blending ratio.

If a collector well is constructed, the transmission line would be routed directly to Well No. 5 where a blending station could be constructed. The collector well piping will be under pressure and could be connected directly to the existing Well No. 5 piping with some modification.

Control valves, flowmeters, and controls would be provided to adjust the ratio of blended water. Figure 5-5 shows an example process schematic for blending Well No. 5 water with water supplied from a collector well.

New Water Supply Criteria

To develop and evaluate options for utilizing the City's RWS allocation, design criteria must be determined for use in the analysis. The primary criterion required is the flow capacity available for the sizing of the treatment system. As noted previously, the existing system is limited to approximately 22,000 gpm of the 27,000 gpm due to headloss associated with the existing transmission line between the IPS and the existing RWTP. Currently, the City holds a total RWS allocation of 7,000 gpm. Of this allocation, 1,527 gpm is developed potable water and 780 gpm is developed NPW. This remaining 4,720 gpm of the City's allocation is undeveloped. This undeveloped portion of the City's RWS allocation could be utilized to mitigate PFAS from the City's contaminated water sources. For the purposes of this PFAS Mitigation Feasibility Study, a treatment capacity of 4,720 gpm will be used. The City could also work on obtaining additional water allocation from the RWS to increase the proposed treatment capacity.

An alternative option to treatment of the Columbia River water is the construction of a collector well. Collector wells are used to serve several Oregon cities along the Columbia River to provide potable water. Collector wells in this area generally provide up to 6,000 gpm while maintaining potable water quality standards. Collector wells utilize alluvial deposits (riverbank filtration) to provide treatment. Flows in excess of 6,000 gpm tend to increase velocities and pull additional particles through the system resulting in the water not complying with potable water quality standards. The collector well option is anticipated to be tied to the RWS. However, water allocations are anticipated to be utilized. The Port of Umatilla (Port), which holds the water rights associated with the RWS, has additional water rights for the Columbia River that have the potential to be utilized for a collector well. For the purposes of this Study, it was assumed that the City would be able to obtain additional water allocation from the Port, which is not currently allocated to the existing RWS; thus, the City would not be limited to undeveloped 4,720 gpm allocation.

New Supply Option Evaluation

Two options were developed for the development of a new supply source utilizing the Columbia River as the source. The first option would involve the construction of a new WTP utilizing the City's current undeveloped RWS water allocation. Within this option, there are two treatment technologies, ECMF or UF, that could be utilized. The second option would involve the construction of a collector well at the Columbia River to provide potable water. For either of these supply options, it is anticipated that the blending of Well No. 5 water could also be completed to utilize existing infrastructure/water supply source and increase overall system supply capacity.

New Regional Water System Treatment Technology Evaluation

To assist in the evaluation of treatment technologies to be incorporated at a new WTP, WesTech Engineering, LLC, was contacted to provide a preliminary proposal for new surface water treatment equipment. The proposal provided included ECMF and UF treatment systems sized to treat the City's undeveloped RWS allocation. ECMF and UF were selected as they

appear to be capable of effectively treating the RWS water and addressing turbidity levels in the water without the need for additional pretreatment. The proposals are included in Appendix D.

Water Quality

Water quality is one of the most important factors in determining the feasibility of a treatment system. Water quality will dictate the treatment requirements, required chemicals, and backwash volume and frequency, as applicable. The level of treatment required for the associated water quality can affect capital and operation, maintenance, and replacement (OM&R) costs and if not selected appropriately, reduce the quality of the finished water. As part of this Study, historical water quality data was compiled and some additional testing was completed on the RWS to help determine and evaluate the effectiveness of the treatment technologies. Table 5-1 summarizes the water quality and the data set is available in Appendix C.

TABLE 5-1
REGIONAL WATER SYSTEM WATER QUALITY SUMMARY

Constituent	Result	Units
Average Turbidity	5	NTU
Maximum Turbidity	30	NTU
Temperature	4-21	°C
pH	7.15	N/A
Alkalinity	60.85	mg/L
TOC	1.38	mg/L
Calcium	16.6	mg/L
Iron	0.185	mg/L
Magnesium	4.39	mg/L
Manganese	0.012	mg/L
Hardness	59.5	mg/L

C = Celsius
mg/L = milligrams per liter
N/A = not applicable
NTU = nephelometric turbidity units
TOC = total organic carbon

Turbidity

Turbidity is one of the most important water quality parameters to consider when evaluating treatment plant performance. Lower turbidity water (less cloudy) is generally easier to treat and usually requires lower chemical doses for optimum coagulation, settling, and filtration. Unfortunately, the turbidity of the Columbia River varies during the year, depending on the season.

Two years of monthly measurements at the Columbia River in Lake Wallula near the IPS from October 11, 2016, to September 11, 2018, were reviewed and indicate the surface

water turbidity averaged 4.08 NTU, with a minimum of 1.17 NTU and a maximum of 11.49 NTU. However, readings as high as 30 NTU have been detected. The highest turbidities typically occur in the spring and are related to spring runoff. Both the ECMF and UF systems are reported to be able to provide treatment with turbidity in these ranges. UF is capable of treating up to approximately 100 NTU for short durations, while the ECMF system can generally accommodate up to 400 NTU.

Temperature

Temperature plays an important role in water treatment as it can affect filter performance and needed chlorine contact time. Columbia River water temperature varies by season. For ECMF systems, temperature affects the rate of chemical reactions, floc, and settling with higher water temperatures typically requiring lower chemical doses and offering better floc formation and settling. Therefore, higher water temperature can enhance filter performance. UF is generally less sensitive to temperature given the lack of coagulation and floc in the treatment process. However, the temperature of the water can affect the flux rate (i.e., rate at which water passes through the membrane). As water gets colder it becomes more viscous and reduces the flux rate for a given membrane.

Water Temperature Trends in the Columbia River Basin, U.S. Army Corps of Engineers, January 2021 states that near the McNary Lock and Dam from 2003 to 2018, the minimum wintertime temperature was 33.6° Fahrenheit (F) and the summertime high temperature was 72.6°F. The median annual temperature was 53.7°F.

pH and Alkalinity

pH is important to water treatment because of its impact on coagulation performance, the corrosive characteristics of the water supply, and needed chlorine contact time. A pH range of 6.5 to 7.0 is typically considered optimum for treatment processes using alum coagulation, such as the ECMF system. pH values of more than 7.0 are considered optimum for overall corrosion control. UF is less sensitive to pH given the lack of a coagulation stage and can operate under a wider range of pH conditions. However, suboptimal pH may reduce the effectiveness of a UF system by causing membrane fouling and requiring more frequent chemical wash cycles. pH may also react with the cleaning chemicals used with a UF system and affect their performance. The average daily pH of the RWS typically varies between 8.0 and 8.4, with occasional extremes between 7.1 to 9.0.

Alkalinity is important in water treatment because of its impact on pH stability, which then affects coagulation performance and water corrosivity. Based on samples taken between 2001 and 2024 at the RWTP, alkalinity in the raw water ranges from 34.5 to 95.1 mg/L as calcium carbonate, with an average of 62.1 mg/L. These levels should be adequate for the alum coagulation and offer improved pH stability in the distribution system. As with pH, UF is less sensitive to changes in alkalinity and can be expected to perform adequately in the range of measured alkalinity. However, high alkalinity levels can lead to increased mineral scaling. This has the potential to increase chemical wash frequency and intensity and may require more durable membranes.

Total Organic Carbon

TOC is a general measure of the total dissolved and free organic matter present in the raw water. High TOC levels can lead to the formation of trihalomethane and haloacetic acid in the disinfection process. As a result, this can lead to issues with meeting Disinfectants and Disinfection Byproduct Rule (D/DBPR) requirements. The EPA generally recommends TOC levels be reduced to below 2.0 mg/L prior to chlorination to meet D/DBPR requirements. For UF, consistently high TOC levels may require a specialized disk pre-filter in place of the standard strainer upstream of the membranes to remove TOC before it reaches the membranes. For ECMF, high TOC levels can increase backwash frequency and affect coagulation performance. Very high TOC levels may require pre-treatment. Data from the City indicate low TOC levels in the RWS water. TOC levels above the 2.0 mg/L recommendation are infrequent are limited in duration.

The Columbia River surface water supply has the potential for algae blooms that would result in high TOC and cause taste and odor problems if not adequately treated. Algae blooms can also significantly reduce the effectiveness of ECMF and UF water treatment due to the high TOC levels. Algae blooms have not historically been a problem for the RWS. However, the potential exists for algae blooms to cause elevated TOC levels, making it an important consideration.

System Flushing and Backwash

Backwashing is a process where water is used to remove contaminants from a filter system. Backwashing is part of the standard operation of many water treatment systems, including the ECMF and UF systems. Backwashing is an important operational consideration as systems can produce a significant amount of backwash water and it may become concentrated with high levels of contaminants, requiring special management practices. Management of the backwash is typically dependent on the volume/frequency of backwashes and potential contaminants. The two most common ways to manage backwash water is by discharging to a wastewater treatment facility (WWTF) or evaporation ponds.

The ECMF system backwashes at intervals ranging between every 14 to every 40 hours depending on the supply water quality. Cleaner water results in longer filter runs between backwashing, while less clean water requires more frequent backwashing. In addition to backwashing, the clarifier of the ECMF requires flushing between backwash cycles. The clarifier will need to be flushed two to five times between each backwash cycle depending on the water quality. Clean water typically requires two to three adsorption clarifier flushes between backwash cycles, while less clean water could require four to five flushes between backwash cycles. Total backwash and flushing volumes are anticipated to vary from a low around 77,000 gallons every 40 hours to 105,000 gallons every 14 hours.

UF treatment requires more frequent backwashing than ECMF treatment at intervals of approximately 30 minutes. Since the UF system is a physical barrier, the membranes catch all suspended solids, bacteria, and other contaminants that exceed the membrane size. The contaminants build up on the membrane and the system must be stopped and

backwashed to remove the material. A UF system with an average flow rate of 4,720 gpm operating 24 hours per day is estimated to produce nearly 272,000 gallons per day (gpd) of backwash water. This backwash volume includes water used for rinsing and draining the system as part of the backwash operation.

Due to the total volume of potential backwash produced by either the ECMF or UF systems, an evaporation pond would need to be constructed to manage the backwash water. The City could potentially discharge backwash from the UF system to the City's wastewater system with lower volumes on a more frequent basis. However, the total volume that would be sent to the wastewater system would significantly reduce existing capacity of the City's system. The large volumes of backwash produced by the ECMF system result in more of a challenge for handling of the backwash water through the wastewater system. There is potential that the anticipated peak flows from a ECMF system backwashing could exceed the current capacity of the existing wastewater system or significantly reduce the available capacity.

Additional Cleaning Requirements

UF treatment requires two chemical wash procedures: Chemically enhanced backwashes (CEB) and a Clean-in-Place (CIP) procedure. The CEB procedure involves backwashing with a sodium chloride solution to improve membrane permeability. Typically, the CEB procedure is performed daily to weekly depending on water quality. The CIP process uses either an acid or sodium hypochlorite cleaning solution and is a more thorough cleaning process than the CEB. The CIP procedure requires the unit to be taken offline temporarily. Therefore, UF systems typically use an N+1 configuration consisting of the required number of units (N) to meet the design flow with one additional unit for redundancy. The redundant unit ensures that the system can function at the design capacity during the CIP procedures. The CIP process is designed to occur at intervals of approximately once per month. After the CIP and CEB procedures, the waste cleaning solution can be sent to a neutralization unit where the chemical concentration is decreased and the pH is raised before being sent to a WWTF.

Collector Well

Collector wells require minimal maintenance compared to a WTP. Collector wells utilize the alluvial deposits to filter a mixture of surface water and groundwater to provide a potable water source that only requires chlorine disinfection treatment. The collector well includes a pump station to convey the water from the collector well to the City's distribution system. Due to the distance from the proposed collector well to the City's distribution system, pumps producing relatively high pressures would be required. Other than normal maintenance of the pumping and disinfection systems, collector wells require relatively minimal ongoing maintenance. However, the static and dynamic (pumping) levels of the water in the collector well should be monitored regularly. Laterals can become clogged with silt, mineral scale, etc. Monitoring the water levels within the collector well will provide the best indicator of the lateral condition. If laterals do become clogged, specialized high-pressure water jetting or chemical treatment is typically required for cleaning.

Well No. 5 Blending

Blending of the City's Well No. 5 water with another source without PFAS could allow the City to continue to use the existing source without adding PFAS treatment. However, depending on the capacity of the PFAS-free source, the capacity of Well No. 5 that is usable may be significantly reduced. See the Supply Capacity section below for a discussion on the anticipated flow that could be expected from Well No. 5 when blending.

While blending would require relatively minimal improvements, it is not without operational considerations. Careful monitoring of the incoming Well No. 5 water and blended finished water quality would be necessary to help ensure that mixing is carried out in the correct proportions to produce PFAS concentrations in the blended finished water below the MCLs. The extent to which PFAS levels in Well No. 5 fluctuate throughout the year is currently unknown, which poses a potential risk with blending. To verify that blending is a viable option, it is recommended additional PFAS testing be conducted at intervals no less frequent than monthly for a period of at least one year before implementing blending of Well No. 5 water. Blending may carry a higher public health risk than the other options given the potential risk of fluctuations in PFAS in the Well No. 5 water that could unknowingly peak and result in a blended finished water PFAS level exceeding the MCLs. Therefore, it is recommended to establish a threshold maximum blended finished water PFAS level that is no higher than the EPA's trigger levels (i.e., half the MCLs) based on the seasonal maximum PFAS test result. Using the trigger level and the maximum PFAS levels from Well No. 5 testing would help mitigate the risk associated with sending blended finished water with PFAS levels exceeding the MCLs into the distribution system.

Supply Capacity

The supply capacity of a new WTP is primarily dependent on the water allocation and projected backwash volume. As noted previously, the City currently has an undeveloped RWS water allocation of 4,720 gpm. For the purposes of this Study, this flow rate was used as the maximum instantaneous flow for a new WTP. Backwash volumes vary based on treatment technology and for certain treatment technologies, the water quality. Table 5-2 includes estimated maximum daily supply capacities and backwash volumes.

TABLE 5-2
NEW WATER TREATMENT PLANT SUPPLY CAPACITY

Option	Total System Water Production[1]	Estimated Backwash Volume[2]	New Water Supply
UF Treatment Plant	6,796,800 gpd	271,872 gpd	6,524,928 gpd
ECMF Treatment Plant - Clean Water	6,796,800 gpd	46,200 gpd	6,750,600 gpd
ECMF Treatment Plant - Dirty Water	6,796,800 gpd	180,000 gpd	6,616,800 gpd

[1] Total system water production assumes a flow rate of 4,720 gpm operating 24 hours per day.
[2] Backwash values are estimated volumes averaged over a 24 hour period. Depending on treatment technology, backwash frequency could be multiple times per day or less than a day.

The collector well supply capacity, similar to the new WTP is based on available water allocation along with lateral entrance velocities. Based on other collector wells along the

Columbia River, a collector well is anticipated to produce 6,000 gpm at reasonable lateral entrance velocities. As discussed earlier, the Port has Columbia River water rights that exceed 6,000 gpm that could potentially be allocated to the City. Collector wells, unlike groundwater wells, do not require as much rest to avoid over-taxing the aquifer. Collector wells can operate 24 hours per day. However, it is recommended that some rest be provided. For the purposes of this Study, it was assumed the collector well would operate 20 hours per day for a total water production of 7,200,000 gpd.

The allowed flow rate of Well No. 5 when blending is dependent on the other supply source's flow rate and PFAS concentration, and the desired blended finished water PFAS concentration. As noted previously, the trigger level is recommended to be used for the desired finished water PFAS concentration. From the testing completed on Well No. 5, only perfluorooctane sulfonate has been shown to exceed the MCL with a maximum tested value of 9.06 parts per trillion. Using this information along with the capacities of the other potential supply sources, potential flow rates and production volumes were estimated when blending Well No. 5 water. Table 5-3 summarizes the estimated Well No. 5 and other source(s) flow rates and production volumes.

TABLE 5-3
WELL NO. 5 BLENDING ESTIMATED CAPACITY

Option	Instantaneous Flow Rate	Well No. 5 Flow Rate	New Water Supply[1]
UF Treatment Plant	4,720 gpm	1,337 gpm	7,969,007 gpd
ECMF Treatment Plant - Clean Water	4,720 gpm	1,337 gpm	8,194,679 gpd
ECMF Treatment Plant - Dirty Water	4,720 gpm	1,337 gpm	8,060,879 gpd
Collector Well	6,000 gpm	1,700 gpm	9,035,694 gpd

[1] New water supply assumes Well No. 5 operates 18 hours per day and accounts for the loss of backwash water from the new WTP options.

Life Cycle Cost Analysis

To help determine the most economical PFAS mitigation approach for the City, a cost analysis was developed for each option associated with the Regional Water System Potable Water Source alternative. For this evaluation, the total capital cost and 20-year total present worth were evaluated under each option. The total capital cost includes the estimated procurement and installation of the proposed equipment and any ancillary facilities needed to provide the City with a fully functioning potable water source. The costs include, but are not limited to, treatment equipment, buildings, and ancillary equipment and components.

The total present worth includes the total project cost, as well as projected annual OM&R costs over a 20-year life cycle. These include, but are not limited to, labor, utilities, parts, and equipment replacement. The values provided are preliminary and based on manufacturer-provided best estimates, where applicable. Further details as to the primary considerations that affect costs with the various treatment systems are detailed below.

Capital Costs

Capital cost estimates were developed for each RWS potable water source option. Each estimate includes the cost to construct the necessary equipment to furnish a potable water source utilizing the RWS. These costs include any necessary treatment equipment, buildings to house treatment facilities, ancillary equipment, and any necessary infrastructure to transport the finished water to the City's distribution system. Additionally, the cost of including blending of Well No. 5 water with RWS water were included in the estimates for each option.

The cost estimates for ECMF and UF treatment equipment were based on preliminary proposals from WesTech Engineering, LLC. The cost differences between the treatment options are primarily due to the differences in treatment equipment as UF has higher equipment costs. Building costs and other ancillary components and equipment are similar between the two treatment systems. Equipment costs for the collector well option include pumps and chlorination equipment along with a standby generator.

ECMF and UF treatments both require the construction of a large building to house treatment equipment and associated pumping, chemical, and electrical and controls equipment. Building footprints for ECMF and UF were developed based on treatment system proposals provided by WesTech Engineering, LLC. The buildings include the footprint of the equipment, spacing between treatment units, and space on all sides for operation and maintenance (O&M) access. Additionally space for chemical and electrical and controls rooms were included. ECMF and UF have similar spatial requirements and, therefore, similar building costs. The collector well building must be sized to include space for chlorination equipment, pumps, and electrical and controls equipment. The required footprint and associated building costs are anticipated to be lower for the collector well compared to ECMF and UF as additional space is not likely to be required for treatment equipment.

Pumping equipment is also required. The ECMF and UF treatment options are proposed to receive water directly from the RWS line and discharge treated water to a clearwell. A clearwell is anticipated for both options to provide the required chlorine contact time. A pump station will be required to pump water from the clearwell into the City's distribution system. Costs for the pumping equipment were included in the capital cost estimates. The collector well option has significant pumping equipment costs. A pump station is required to transport the water to the City's distribution system from the collector well. Due to the distance and elevation difference between the Columbia River and the City's distribution system, pumps capable of producing relatively high pressures are required. This increases pumping equipment costs compared to the other options.

A significant cost common for each option is the construction of new conveyance infrastructure to transport water from the RWS into the City's distribution system. The proposed location of the ECMF and UF treatment systems is located near a City-owned distribution line. However, the City's distribution system is not of a sufficient size to transport the anticipated WTP supply capacity. Therefore, new transmission piping and upsizing of distribution system piping is needed to help convey the WTP finished water throughout the City's water system. The piping costs for a collector well are significantly higher than for the other options as it would require the construction of a new transmission main to connect the collector well to the City's distribution system. The transmission line would also require

highway, railroad, and canal crossings thus, increasing costs. Additional capital costs common to all alternatives include mechanical piping, fittings, and valves; electrical; and controls and instrumentation.

The cost of including Well No. 5 blending varies between the options. Blending Well No. 5 water with treated water from an ECMF or UF treatment plant would create significant additional capital costs. The most significant cost associated with blending is the construction of a new transmission line to connect Well No. 5 with the new WTP. The transmission line would be required to cross a railroad and a canal, adding to the cost. Additionally, it would likely be necessary to acquire an easement to avoid a circuitous piping route. The addition of blending to the collector well option is anticipated to have a minimal cost impact. It is proposed that the collector well transmission line connect to the City's distribution system at the Well No. 5 site, requiring minimal piping modifications at Well No. 5. If blending is not implemented with the collector option, the transmission line would likely need to terminate in the same general area where there is sufficient distribution system piping to convey the anticipated flows. Blending Well No. 5 water capital costs beyond piping are similar between the options and consist primarily of flowmeters, control valves, and any other necessary mechanical components. Additionally, improvements to the Well No. 5 control system would be necessary.

The estimated costs for the ECMF treatment system, UF treatment system, and collector well are shown on Figures 5-6, 5-7, and 5-8, respectively. The collector well has the highest capital costs due to the required transmission line distance. ECMF and UF have the lowest capital costs; however, the equipment costs for these options are significantly higher than the collector well.

Operation, Maintenance, and Replacement Costs

OM&R costs were developed for each alternative. The OM&R costs include, but are not limited to, labor, utilities, chemical costs, and equipment replacement costs. The OM&R cost estimates for the ECMF and UF treatment systems are based on information provided by WesTech Engineering, LLC.

Labor costs were estimated for each alternative based on expected maintenance needs and operator requirements. As noted in Chapter 3, the Oregon Health Authority - Drinking Water Services classifies water treatment systems on the size and complexity of the system in a point-based system. The addition of a ECMF or UF treatment system would increase the water treatment classification from a Water Treatment Level 2 to a Water Treatment Level 3. The collector well option is not anticipated to increase the operational classification as it uses technologies currently utilized by the City. Operator salary costs associated with the increase in water treatment level classification are included in the OM&R cost estimate for the UF option. The addition of a new ECMF or UF treatment system is expected to increase labor requirements sufficiently to require the addition of another full-time operator. The salary costs associated with the addition of a an additional operator are included in the cost estimates for ECMF and UF. Labor requirements for a collector well are not anticipated to be as extensive as the other options due to the lack of specialized treatment equipment. Labor is expected to consist primarily of maintaining the disinfection system and pumping equipment. Labor costs were calculated including general upkeep and maintenance, sampling, and occasional in-depth maintenance work.

Utility costs are significant for each option. The utility costs are generally driven by pumping requirements and power requirements for any ancillary components; building heating, air conditioning, and ventilation; etc. The option with the highest utility costs is the collector well. The high utility costs largely result from the significant power requirements associated with pumping water from the Columbia River to the City. The utility costs for ECMF and UF include the power required to run a booster pump station downstream of the treatment systems and backwash pumps. ECMF utility costs also include a blower and chemical pumps, while UF utilizes an air compressor along with chemical pumps.

In addition to the utility costs, user costs associated with the RWS and River Intake Pump Station (RIPS) were included in the OM&R estimates for the ECMF and UF options. These costs cover expenses related to the upkeep of the RIPS including general maintenance, parts, and most significantly, power costs. Due to high power costs associated with the RIPS pumping water from the Columbia River, RWS costs make up a significant portion of the OM&R costs for the ECMF and UF options.

Chemical costs were included in the OM&R estimates for each option. Each option includes estimated chlorine costs, which is anticipated to be the most significant chemical cost. Additional chemical costs were included in the estimates for UF to account for required chemical cleaning procedures. This estimate was based on information provided by WesTech Engineering, LLC. The chemical costs for ECMF include additional chemicals required by the treatment process for coagulation and pH stabilization. The collector well has the lowest chemical cost out of the options due to its higher water quality requiring less chlorine to disinfect and lack of additional chemicals required for treatment and equipment cleaning.

Equipment replacement costs were included in the estimates. These include the cost to replace the treatment equipment at an interval of 30 years and the cost to replace the mechanical equipment, such as the pumps, chemical equipment, etc., along with the controls at an interval of 20 years. Other OM&R costs factored in the estimates include, but are not limited to, supplies, parts, repairs, and testing.

The estimated OM&R costs for ECMF, UF, and the collector well are shown on Figures 5-6, 5-7, and 5-8, respectively. The ECMF and UF systems have the highest OM&R costs, followed by the collector well. The higher OM&R costs are the result of higher utility and equipment replacement costs compared to the collector well option.

20-Year Present Worth

To help determine the most economical treatment option over an extended period of time, a 20-year present worth cost estimate was developed for each option. The total present worth cost includes the total project cost, as well as annual OM&R costs, as outlined above, over a 20-year life cycle. The values presented are preliminary. The estimated 20-year present worth costs for the ECMF treatment system, the UF treatment system, and the collector well are shown on Figures 5-6, 5-7, and 5-8, respectively.

The collector well has the highest present worth cost, largely due to its high capital costs rather than OM&R costs. ECMF and UF have lower total present worth but significantly higher OM&R costs. If the present worth evaluation were to be extended further into the future, the collector

well option may become more competitive compared to the treatment options. Table 5-4 summarizes the total estimated project cost, annual OM&R, and present worth of the Alternative 3 options.

TABLE 5-4
ALTERNATIVE 3 - NEW REGIONAL WATER SYSTEM POTABLE WATER SOURCE

Option	Total Estimated Project Cost[1]	Total Annual OM&R	Total Present Worth
ECMF	$27,360,000	$1,377,000	$44,530,000
UF	$29,088,000	$1,424,000	$46,838,000
Collector Well	$46,800,000	$534,000	$53,460,000

[1] *All costs are in 2026 dollars.*

Summary of Treatment Technologies

Alternative 3 would utilize the RWS to provide a new potable water source for the City either through a new WTP or a collector well and use blending with Well No. 5 to supplement this capacity. Based on water quality sampling, it appears that the RWS can provide the City with a large volume of water with PFAS concentrations below detectable levels. ECMF or UF treatment would allow the City to utilize its undeveloped RWS allocation at a relatively low capital cost compared to a collector well, but with higher O&M requirements. Should the City decide to implement Alternative 3 with blending as part of its mitigation efforts, it is recommended the City conduct additional PFAS testing of Well No. 5 at monthly intervals to determine how PFAS levels fluctuate throughout the year. This information can be used to provide a more accurate estimate regarding the additional supply capacity available through blending and help ensure EPA MCLs are not exceeded due to potential spikes in PFAS levels. As part of the implementation of an ECMF or UF treatment facility, pilot testing may also need to be conducted to provide a more accurate determination of the system's effectiveness at treating RWS water. When evaluating over a 20-year period, the collector well option is not preferred. While it has the lowest OM&R costs, this advantage is offset by its high capital costs and total present worth. If a the evaluation was extend past 20-years, the collect well option may become the preferred options compared to the ECMF and UF treatment options due to the lower OM&R costs. UF is the preferred treatment technology over ECMF, as it is a physical treatment process that utilizes size exclusion for treatment of the water. This results in more consistent operation with changing water quality conditions, specifically turbidity. ECMF has marginally lower costs; however, it is unlikely to perform as well as UF in periods of high turbidity, a scenario that has caused difficulties for the City at its existing RWTP.

PROPOSED EVAPORATION POND

PROPOSED WATER TREATMENT PLANT

CONNECT TO EXISTING 12" WATER LINE

CONNECT TO EXISTING 42" REGIONAL WATER SYSTEM TRANSMISSION LINE

PROPOSED 24" WATER LINE

PROPOSED 12" WELL NO. 5 TRANSMISSION LINE

PROPOSED 20" WATER LINE

CONNECT TO EXISTING 12" WATER LINES

EXISTING WELL NO. 5

McConnell Ln

W Nelson Ln

Hermiston Ditch

Umatilla River Rd

NW Geer Rd

NW 6th St

NW Emerald Dr

W Theater Ln

NW 4th Ave

NW Academy Ln

Smith Ln

NW Sjoren Ln

W Elm Ave

W Hooper Rd

N 1st Pl

State Police

The Hor Depot

LEGEND

- BACKWASH WATER
- FINISHED WATER
- RAW WATER
- EXISTING CITY DISTRIBUTION SYSTEM
- EXISTING REGIONAL WATER SYSTEM TRANSMISSION LINE

400 0 400

SCALE IN FEET

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Google

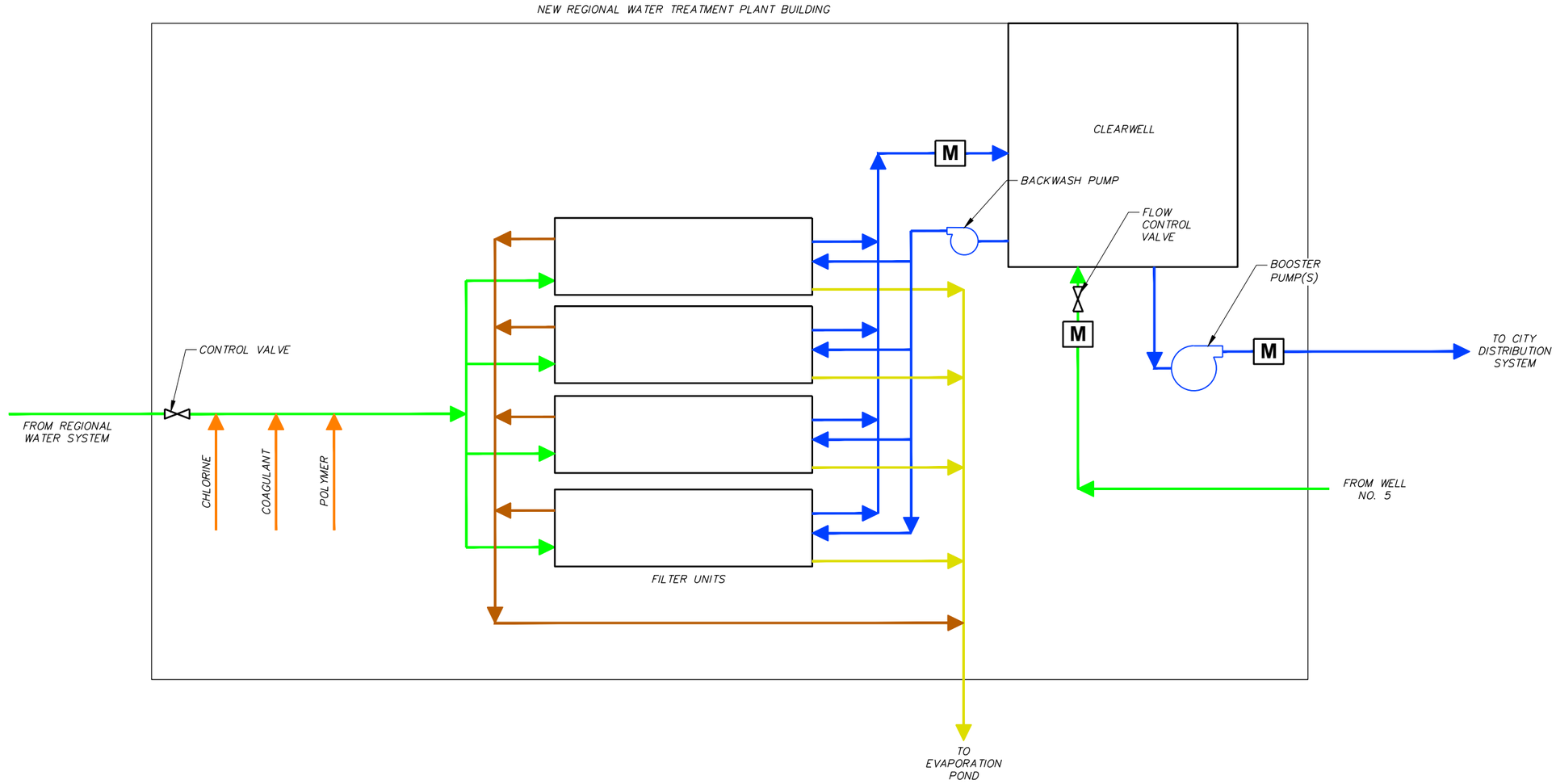
anderson perry

DRAFT

CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
NEW REGIONAL WATER SYSTEM TREATMENT PLANT PRELIMINARY SITE PLAN

FIGURE
5-1

X:\Clients\Hermiston OR\736-179 PFAS Water Treatment Alternatives\GIS\Drafting\736-179_Figs.aprx, PMFS-736-179-FIG5-1_NewTreatmentSitePlan, 7/21/2026 9:43 AM, cgilmore



NOTES

1. THE SLUDGE LAGOONS, AND CHEMICAL SYSTEMS ARE NOT SHOWN.
2. ONLY PRIMARY FLOW PATHS AND PROCESS EQUIPMENT ARE SHOWN. ADDITIONAL EQUIPMENT, PIPING, VALVING, ETC IS CURRENTLY INSTALLED AND REQUIRED FOR A COMPLETE SYSTEM.

LEGEND

- CONTROL VALVE
- M — FLOWMETER
- RAW WATER
- BACKWASH WATER
- SLUDGE WASTE
- FINISHED WATER
- TREATMENT SOLUTION

anderson perry

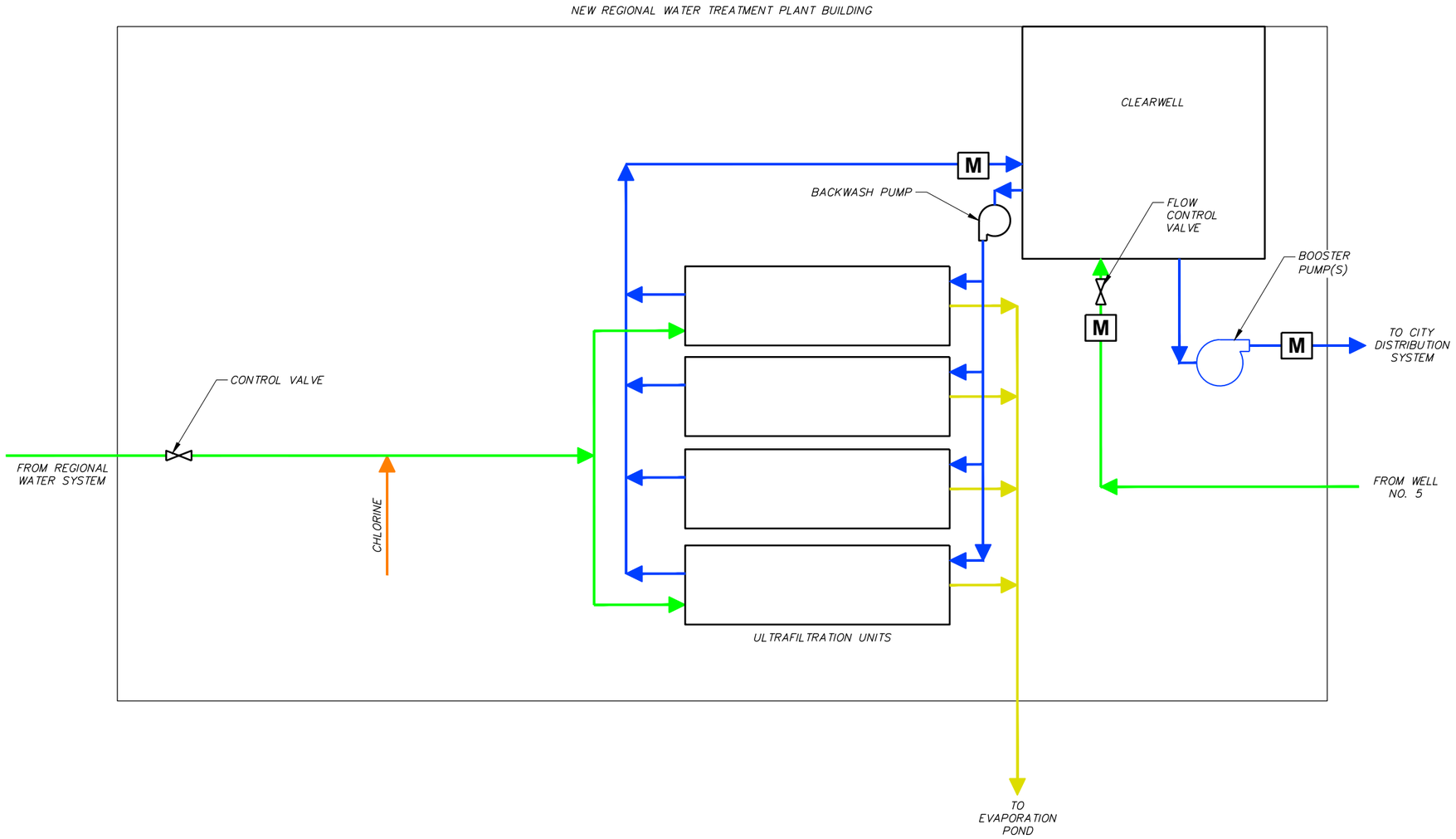
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CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

NEW ENHANCED CLARIFICATION AND MEDIA FILTRATION PLANT AND WELL NO. 5 BLENDING PROCESS SCHEMATIC

FIGURE
5-2

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NOTES

1. THE SLUDGE LAGOONS, AND CHEMICAL CLEANING SYSTEMS ARE NOT SHOWN.
2. ONLY PRIMARY FLOW PATHS AND PROCESS EQUIPMENT ARE SHOWN. ADDITIONAL EQUIPMENT, PIPING, VALVING, ETC IS CURRENTLY INSTALLED AND REQUIRED FOR A COMPLETE SYSTEM.

LEGEND

- CONTROL VALVE
- M — FLOWMETER
- RAW WATER
- BACKWASH WATER
- FINISHED WATER
- TREATMENT SOLUTION

anderson perry

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CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

NEW ULTRAFILTRATION TREATMENT PLANT AND WELL NO. 5 BLENDING PROCESS SCHEMATIC

FIGURE
5-3

X:\Clients\Hermiston OR\736-179 PFAS Water Treatment Alternatives\CAD\PMFS-736-179-FIG5-3_NUTPSchematic.dwg, Layout1, 7/21/2026 9:57 AM, cgilmore

Columbia River

PROPOSED
COLLECTOR WELL
AND PUMP STATION

McNary

Umatilla

3,000 0 3,000
SCALE IN FEET

LEGEND
CITY LIMITS
URBAN GROWTH BOUNDARY

82

PROPOSED 24"
TRANSMISSION LINE

395

PROPOSED
COLLECTOR WELL/
WELL NO. 5 BLENDING
STATION AT WELL NO. 5

Hermiston

Earthstar Geographics

X:\Clients\Hermiston OR\736-179 PFAS Water Treatment Alternatives\GIS\Drafting\736-179_Figs.aprx, PMFS-736-179-FIG5-4_CollectorWellSitePlan, 7/13/2026 11:07 AM, smagner

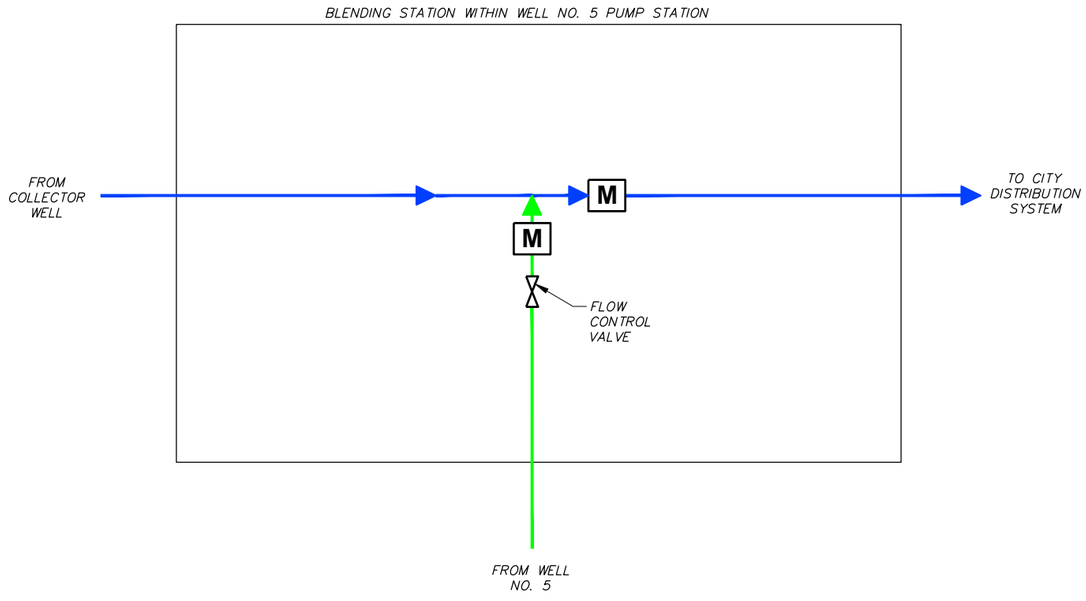
anderson perry

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CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

COLLECTOR WELL
PRELIMINARY SITE PLAN

FIGURE
5-4



LEGEND

M	FLOWMETER
	RAW WATER
	FINISHED WATER

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CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

NEW COLLECTOR WELL AND WELL NO. 5 BLENDING PROCESS SCHEMATIC

FIGURE
5-5

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CITY OF HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 3 - NEW REGIONAL WATER SYSTEM POTABLE WATER SOURCE
ENHANCED CLARIFICATION AND MEDIA FILTER TREATMENT OPTION
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization (Approximately 5%)	LS	$ 920,000	All Req'd	$ 920,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	200,000	All Req'd	200,000
Treatment Plant					
3	Site Work	LS	750,000	All Req'd	750,000
4	Connection to Existing Regional Water System (RWS) Transmission Line	LS	100,000	All Req'd	100,000
5	Yard Piping	LS	500,000	All Req'd	500,000
6	Concrete Clearwell	LS	150,000	All Req'd	150,000
7	Enhanced Clarifier Media Filter Treatment System	LS	6,220,000	All Req'd	6,220,000
8	Chemical Systems	LS	500,000	All Req'd	500,000
9	Building	LS	2,160,000	All Req'd	2,160,000
10	Mechanical Piping, Fittings, and Valves	LS	1,250,000	All Req'd	1,250,000
11	Finished Water Pumps	LS	750,000	All Req'd	750,000
12	Electrical Work	LS	1,500,000	All Req'd	1,500,000
13	Controls and Instrumentation	LS	500,000	All Req'd	500,000
14	Standby Generator	LS	350,000	All Req'd	350,000
15	Infiltration Pond	LS	300,000	All Req'd	300,000
16	Distribution System Improvements	LS	1,500,000	All Req'd	1,500,000
17	Asphalt Surface Restoration	LS	180,000	All Req'd	180,000
Blending Station					
18	Well No. 5 Modifications	LS	100,000	All Req'd	100,000
19	Mechanical Piping, Fittings, and Valves	LS	100,000	All Req'd	100,000
20	12-inch Transmission Line	LS	400,000	All Req'd	400,000
21	Asphalt Surface Restoration	LS	150,000	All Req'd	150,000
22	Gravel Surface Restoration	LS	20,000	All Req'd	20,000
23	Railroad Crossing	LS	300,000	All Req'd	300,000
24	Canal Crossing	LS	50,000	All Req'd	50,000
25	Easement Acquisition	LS	50,000	All Req'd	50,000
				Subtotal Construction Cost	**$ 19,000,000**
				Construction Contingency (Approximately 20%)	3,800,000
				Total Estimated Construction Cost	**$ 22,800,000**
				Preliminary and Design Engineering (Approximately 10%)	2,280,000
				Construction Engineering (Approximately 10%)	2,280,000
				TOTAL ESTIMATED PROJECT COST (2026 DOLLARS)	**$ 27,360,000**

CITY OF HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 3 - NEW REGIONAL WATER SYSTEM POTABLE WATER SOURCE
ENHANCED CLARIFICATION AND MEDIA FILTER TREATMENT OPTION
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

PRESENT WORTH ANALYSIS (2026 DOLLARS)

NO.	DESCRIPTION	ANNUAL COST
	ADDITIONAL ANNUAL OPERATION, MAINTENANCE, AND REPLACEMENT (OM&R)	
1	RWS Costs[1]	$ 590,000
2	Labor (including Benefits)	200,000
3	Utilities	155,000
4	Supplies, Parts, Maintenance, Repairs, and Testing	25,000
5	Capital Outlay	15,000
6	Chemicals	87,000
7	Media Replacement	10,000
8	Equipment Replacement	295,000
	Total OM&R[2]	**$ 1,377,000**
	Present Worth OM&R Cost (5%, 20 years)	17,170,000
	Total Present Worth (2026 Dollars)	**$ 44,530,000**

Notes:

[1] RWS costs are estimated increased costs due to the treatment plant addition and based on historical RWS data and includes River Intake Pump Station costs and general maintenance costs.

[2] OM&R costs presented are anticipated to be in addition to current maintenance costs expended by the City.

CITY OF HERMISTON, OREGON
PFAS WATER TREATMENT ALTERNATIVE ANALYSIS
ALTERNATIVE 3 - NEW REGIONAL WATER SYSTEM POTABLE WATER SOURCE
ULTRAFILTRATION TREATMENT OPTION
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	$ 1,010,000	All Req'd	$ 1,010,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	200,000	All Req'd	200,000
Treatment Plant					
3	Site Work	LS	750,000	All Req'd	750,000
4	Connection to Existing Regional Water System (RWS) Transmission Line	LS	100,000	All Req'd	100,000
5	Yard Piping	LS	500,000	All Req'd	500,000
6	Concrete Clearwell	LS	150,000	All Req'd	150,000
7	Ultrafiltration Treatment System (includes Pumping Systems)	LS	7,170,000	All Req'd	7,170,000
8	Chemical Systems	LS	500,000	All Req'd	500,000
9	Building	LS	2,370,000	All Req'd	2,370,000
10	Mechanical Piping, Fittings, and Valves	LS	2,000,000	All Req'd	2,000,000
11	Electrical Work	LS	1,500,000	All Req'd	1,500,000
12	Controls and Instrumentation	LS	500,000	All Req'd	500,000
13	Standby Generator	LS	350,000	All Req'd	350,000
14	Infiltration Pond	LS	250,000	All Req'd	250,000
15	Distribution System Upgrades	LS	1,500,000	All Req'd	1,500,000
16	Asphalt Surface Restoration	LS	180,000	All Req'd	180,000
Blending Station					
17	Well No. 5 Modifications	LS	100,000	All Req'd	100,000
18	Mechanical Piping, Fittings, and Valves	LS	100,000	All Req'd	100,000
19	12-inch Transmission Line	LS	400,000	All Req'd	400,000
20	Asphalt Surface Restoration	LS	150,000	All Req'd	150,000
21	Gravel Surface Restoration	LS	20,000	All Req'd	20,000
22	Railroad Crossing	LS	300,000	All Req'd	300,000
23	Canal Crossing	LS	50,000	All Req'd	50,000
24	Easement Acquisition	LS	50,000	All Req'd	50,000
				Subtotal Construction Cost	**$ 20,200,000**
				Construction Contingency (Approximately 20%)	4,040,000
				Total Estimated Construction Cost	**$ 24,240,000**
				Preliminary and Design Engineering (Approximately 10%)	2,424,000
				Construction Engineering (Approximately 10%)	2,424,000
				TOTAL ESTIMATED PROJECT COST (2026 DOLLARS)	**$ 29,088,000**

anderson perry

CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 3 - NEW REGIONAL WATER SYSTEM POTABLE WATER SOURCE ULTRAFILTRATION TREATMENT OPTION PRELIMINARY COST ESTIMATE

FIGURE
5-7

CITY OF HERMISTON, OREGON
PFAS WATER TREATMENT ALTERNATIVE ANALYSIS
ALTERNATIVE 3 - NEW REGIONAL WATER SYSTEM POTABLE WATER SOURCE
ULTRAFILTRATION TREATMENT OPTION
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

PRESENT WORTH ANALYSIS (2026 DOLLARS)

NO.	DESCRIPTION		ANNUAL COST
ADDITIONAL ANNUAL OPERATION, MAINTENANCE, AND REPLACEMENT (OM&R)			
1	RWS Costs[1]	$	590,000
2	Labor (including Benefits)		200,000
3	Utilities		155,000
4	Supplies, Parts, Maintenance, Repairs, and Testing		40,000
5	Capital Outlay		15,000
6	Chemicals		87,000
7	Equipment Replacement		337,000
	Total OM&R[2]	**$**	**1,424,000**
	Present Worth OM&R Cost (5%, 20 years)		17,750,000
	Total Present Worth (2026 Dollars)	**$**	**46,838,000**

Notes:

[1] RWS costs are estimated increased costs due to the treatment plant addition and based on historical RWS data and includes River Intake Pump Station costs and general maintenance costs.

[2] OM&R costs presented are anticipated to be in addition to current maintenance costs expended by the City.

CITY OF HERMISTON, OREGON
REGIONAL WATER SYSTEM MASTER PLAN
ALTERNATIVE 3 - NEW REGIONAL WATER SYSTEM POTABLE WATER SOURCE
COLLECTOR WELL OPTION
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	$ 1,626,000	All Req'd	$ 1,626,000
2	Temporary Protection and Direction of Traffic/Project Safety	LS	550,000	All Req'd	550,000
Collector Well					
3	24-inch Water Line	LF	460	38,000	17,480,000
4	24-inch Valve	EA	42,000	7	294,000
5	Air Release/Vacuum Breaker Valves	EA	15,000	10	150,000
6	Site Work	LS	1,000,000	All Req'd	1,000,000
7	Collector Well	LS	4,300,000	All Req'd	4,300,000
8	Collector Well Pump Station Building	LS	1,500,000	All Req'd	1,500,000
9	Pumps	LS	1,000,000	All Req'd	1,000,000
10	Electrical Work	LS	750,000	All Req'd	750,000
11	Controls and Instrumentation	LS	400,000	All Req'd	400,000
12	Standby Generator with Automatic Transfer Switch	LS	500,000	All Req'd	500,000
13	Chlorination System	LS	250,000	All Req'd	250,000
14	Highway Crossing	EA	270,000	2	540,000
15	Canal Crossing	EA	50,000	3	150,000
16	Union Pacific Railroad Crossing	EA	300,000	1	300,000
17	Asphalt Surface Restoration	LS	750,000	All Req'd	750,000
18	Gravel Surface Restoration	LF	20	23,000	460,000
19	Test Well and Pump Tests	LS	100,000	All Req'd	100,000
Blending Station					
20	Well No. 5 Modifications	LS	100,000	All Req'd	100,000
21	Mechanical Piping, Fittings, and Valves	LS	200,000	All Req'd	200,000
22	Yard Piping	LS	100,000	All Req'd	100,000
				Subtotal Construction Cost	**$ 32,500,000**
				Construction Contingency (Approximately 20%)	6,500,000
				Total Estimated Construction Cost	**$ 39,000,000**
				Preliminary and Design Engineering (Approximately 10%)	3,900,000
				Construction Engineering (Approximately 10%)	3,900,000
				TOTAL ESTIMATED PROJECT COST (2026 DOLLARS)	**$ 46,800,000**

anderson perry

CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 3 - NEW REGIONAL WATER SYSTEM
POTABLE WATER SOURCE COLLECTOR WELL OPTION
PRELIMINARY COST ESTIMATE

FIGURE
5-8

CITY OF HERMISTON, OREGON
REGIONAL WATER SYSTEM MASTER PLAN
ALTERNATIVE 3 - NEW REGIONAL WATER SYSTEM POTABLE WATER SOURCE
COLLECTOR WELL OPTION
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

PRESENT WORTH ANALYSIS (2026 DOLLARS)

NO.	DESCRIPTION		ANNUAL COST
ADDITIONAL ANNUAL OPERATION, MAINTENANCE, AND REPLACEMENT (OM&R)			
1	Labor (including Benefits)	$	67,000
2	Utilities		315,000
4	Supplies, Parts, Maintenance, Repairs, and Testing		10,000
5	Capital Outlay		10,000
6	Chemicals		69,000
7	Equipment Replacement		63,000
	Total OM&R	**$**	**534,000**
	Present Worth OM&R Cost (5%, 20 years)		6,660,000
	Total Present Worth (2026 Dollars)	**$**	**53,460,000**

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CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 3 - NEW REGIONAL WATER SYSTEM POTABLE WATER SOURCE COLLECTOR WELL OPTION PRELIMINARY COST ESTIMATE

FIGURE
5-8
CONT'D

Chapter 6 - Alternative 4 - Aquifer Storage and Recovery

Introduction

Aquifer storage and recovery (ASR) is the injection of water into an aquifer for future use. ASR allows excess capacity from other sources to be injected during periods of low demand and stored in a natural aquifer to be withdrawn during periods of high demand. The City of Hermiston's water system experiences significant differences between its peak daily demand (PDD) in the summer and its reduced demands throughout the remainder of the year. Meeting the PDD could require significant investment in supply sources that may see limited usage outside of the summer months. ASR may allow the City to meet a portion of the additional demand during the summer months without expanding water supply or treatment capacity to the extent that would otherwise be required.

Existing and Proposed Infrastructure

Currently, the City is in the process of constructing an ASR well, ASR-3. The well will be used for injecting potable water from the Regional Water Treatment Plant (RWTP) into the aquifer along with recovering the water for City use during high demand periods. The ASR well is anticipated to have an injection capacity of approximately 1,350 gallons per minute (gpm), which is approximately 350 million gallons (MG) over the injection period from October 1 to March 31 annually. The recovery rate of the well is anticipated to be approximately 2,000 gpm. Two water storage reservoirs and a booster pump station will also be constructed to convey the recovered water to the City's distribution system. Currently, the City is under contract to provide water to a user with high demands in the summer. Due to the location of the user with respect to the ASR-3 well and high summer demands, the City is anticipating it will primarily utilize the ASR recovery capacity, storage reservoirs, and booster pump station currently being constructed to meet the user's demand. This user is anticipated to utilize 100 MG of water each year and, assuming the water provided is ASR water, that leaves approximately 250 MG available for City use from April 1 through September 30 each year. Only the injection infrastructure associated with the ASR-3 well is anticipated to serve other City demands, not the ASR-3 well itself. To serve other City demands, a new recovery well and associated infrastructure, as applicable, will likely be needed.

ASR water injected into an aquifer results in the formation of an area of water known as a "bubble" around the injection well. Recovery of the ASR water must be from within the "bubble." Based on this requirement and the need for the City to construct a new well for recovering the water in excess of the 100 MG being allocated to the previously specified user, a new recovery well could be developed near the ASR-3 well. The ASR-3 well is being constructed in the southeast corner of a City-owned property at the intersection of Feedville Road and S.E. 9th Street. It appears there is sufficient space for the completion of the current ASR-3 project on the east side of the property while also constructing a new recovery well on the west side of the property. This would also ensure that the new ASR well is within the injection "bubble" of the ASR-3 well. An existing 16-inch Regional Water System (RWS) potable water line is also located in Feedville Road. The proposed ASR recovery well could discharge directly into this existing 16-inch RWS potable water line. From that line, water can be conveyed into the City's distribution system through the existing control

valve and 12-inch water main located in Highway 207. The 12-inch water main connects directly to the City's Main Pressure Zone where the majority of the City's water demand occurs. Figure 6-1 shows an example process schematic for ASR utilizing water from the RWTP. Figure 6-2 shows a proposed site plan for a new recovery well on the City-owned property at the intersection of Feedville Road and S.E. 9th Street.

This proposed configuration has some inefficiencies. Water recovered from the City's new ASR recovery well would be pumped to a higher pressure required for the RWS potable water system before the pressure is reduced through the control valve into the City's distribution system. However, the cost to construct a dedicated low pressure transmission line from the proposed ASR recovery well to the City's distribution system far outweigh the additional pumping costs. Other sites were also investigated for the construction of a recovery well or an injection/recovery well. However, based on the preliminary investigation, few other City-owned properties or vacant properties appeared to provide a benefit. Most, if not all other sites investigated would require significant piping improvements to provide RWTP water to the injection well or to convey the recovered water from the well to the City's distribution system or RWS potable water lines.

Aquifer Storage and Recovery Supply Criteria

The recovery rate of an ASR system is generally dependent on the available storage volume and well construction. As noted earlier, the City anticipates it could have 250 MG of stored water available for its use from April 1 through September 30 annually. This results in an average recovery volume of 1,373,626 gallons per day or an average flow rate of approximately 1,275 gpm when restricting the well to operate no more than 18 hours per day from April 1 to September 30. As outlined in Chapter 2, water system demand peaks in June, July, and August. To account for this, it is recommended that a new recovery well be sized to provide more flow than the average allowed. The ASR-3 well has been pump tested and has produced flow rates exceeding 2,500 gpm with a design flow rate of 2,000 gpm. The theoretical maximum flow rate of the well was calculated at more than 12,000 gpm. Based on these pump test flow rates, design flow rate, and theoretical maximum flow rate of the ASR-3 well, it is assumed that another recovery well in the same area as the ASR-3 well could also produce flow rates of approximately 2,000 gpm, which will be the assumed flow production rate utilized for this PFAS Mitigation Feasibility Study.

Evaluation

Water used for ASR purposes has stringent regulations on contaminants and must not degrade the existing aquifer. The City has already completed various studies related to the current ASR project and received regulatory approval. It has been determined that water from the RWTP can be used for injecting into the ASR-3 well. Given the available anticipated excess ASR storage volume, there are no concerns with water quality as the City would be using the same source/supply as the current ASR system.

As noted previously, the City sees significant fluctuations in system demands from the winter to the summer months. Utilizing an ASR system would allow the City to better utilize its existing water supply capacity. Depending on the alternatives selected, the use of certain supply sources could be eliminated or capacities could be significantly reduced in the winter months. During the peak summer demands, it is anticipated that water supply sources could be at full capacity and any issues or reduction in capacity could result in water system demands not being met. With ASR, the

RWTP can be operated during the winter months at a higher rate to be stored through ASR. During the peak summer months, ASR recovery could then be used to help provide redundancy and additional water supply.

The proposed ASR recovery well is anticipated to pump from the well directly into the RWS potable water system. No additional water storage is anticipated to be required in the RWS potable water system pressure zone. This is based on the assumption that the majority of the ASR water will be utilized in the City's Main Pressure Zone. Additional storage would be more beneficial in the Main Pressure Zone where the majority of the City's water demand occurs.

Life Cycle Cost Analysis

To help determine the most economical per- and polyfluoroalkyl substances mitigation approach for the City, a cost analysis was performed for the ASR alternative. For this evaluation, the total capital cost and 20-year present worth were evaluated. The total capital cost includes the estimated cost of drilling a new recovery well along with any necessary equipment and ancillary components.

The total present worth includes the total project cost and projected annual operation, maintenance, and replacement (OM&R) costs over a 20-year life cycle. These include, but are not limited to, labor, utilities, parts, and equipment replacement. The values presented are preliminary. Further details as to the primary considerations that affect costs are detailed below.

Capital Costs

Capital cost estimates were developed for Alternative 4. The estimate includes the cost to construct a new recovery well on the same City-owned property as the existing ASR-3 well, a new well building, piping to connect the well to the RWS potable water line, and any necessary ancillary equipment and components.

The most significant capital cost is the recovery well construction. This evaluation assumes the recovery well would be drilled to the same depth and size as the ASR-3 well. Well construction costs include the cost of drilling the well, installing the well casing and screen, and testing procedures. Well pumping equipment is also a significant cost. Additional costs include a well pump station building along with electrical and controls and instrumentation work. Mechanical piping, fittings, and valves; a chlorination system; standby generator; and yard piping are included in the capital costs. The costs presented assume the construction of a concrete masonry unit building to match the surrounding structures and sized to fit the well pump equipment and chlorination facilities. The estimated project costs for Alternative 4 are shown on Figure 6-3.

Operation, Maintenance, and Replacement Costs

The OM&R cost estimate includes the additional costs associated with implementing a new recovery well and does not include existing OM&R costs associated with the injection well. Labor costs were calculated for the alternative. The labor cost includes general daily operation and maintenance in addition to sampling and monthly in-depth maintenance.

The most significant OM&R cost for Alternative 4 is utilities. Utility costs are primarily driven by the pumping required to recover water from the well. Required pumping power is high due to the depth of the aquifer relative to the elevation of the well site. Utility costs were calculated assuming a recovery period of six months annually with a daily run time of 18 hours.

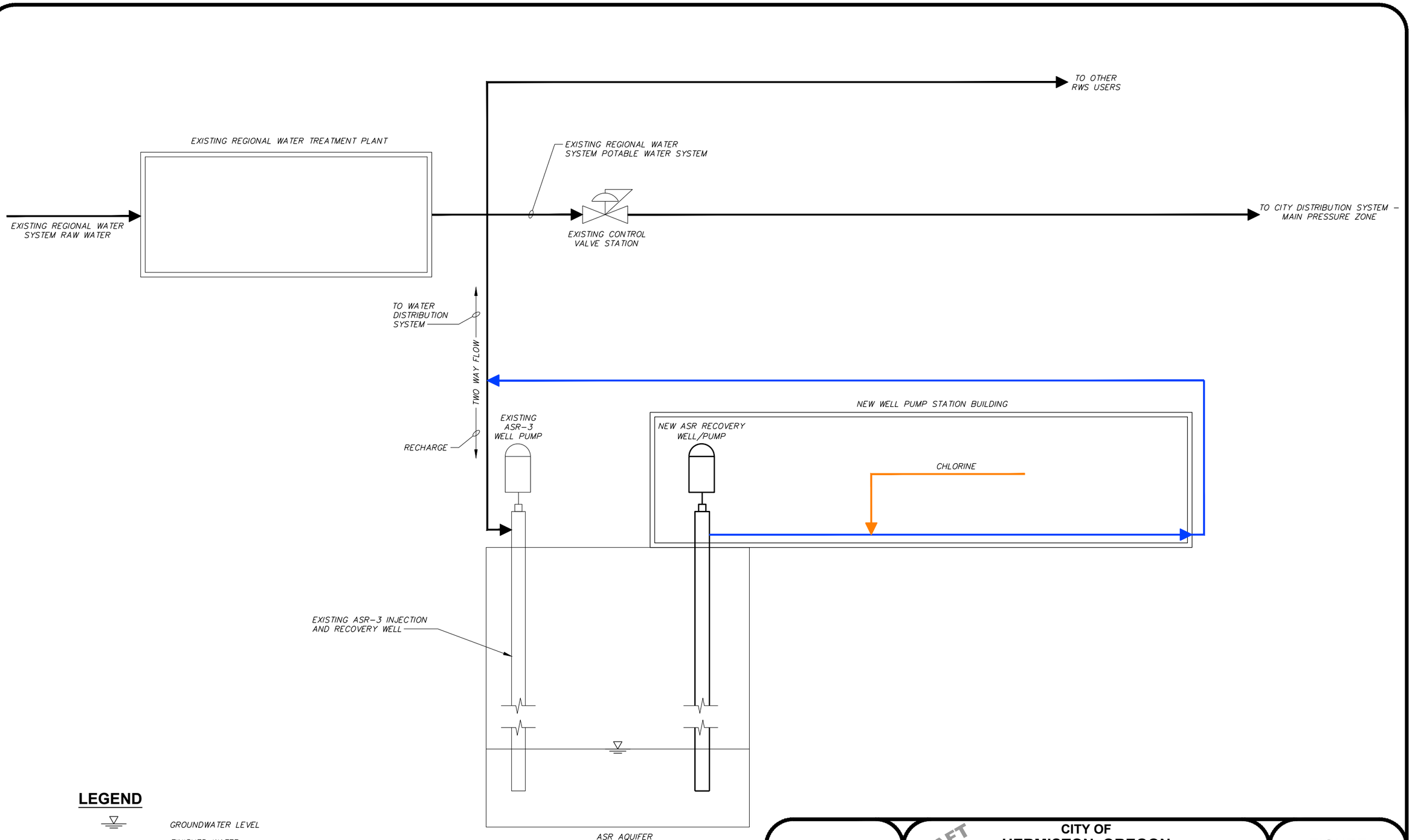
Equipment replacement is also a significant OM&R cost and includes the cost required to replace the well pump, chlorine system, and associated mechanical equipment at an interval of 20 years. Other costs considered include, but are not limited to, chemicals for disinfection, supplies, parts, maintenance, and testing. The estimated OM&R costs are also included on Figure 6-3.

20-Year Present Worth

To help determine the most economical mitigation approach over an extended period of time, a 20-year present worth cost estimate was developed for the ASR alternative. The total present worth cost includes the total project cost, as well as annual the OM&R costs over a 20-year life cycle as outlined above. The values presented are preliminary. The estimated 20-year present worth costs for Alternative 4 are shown on Figure 6-3.

Summary

Alternative 4 would consist of a new recovery well to utilize water stored via injection at the ASR-3 well. Water from the RWTP will be injected at the ASR-3 well from October 1 through March 31 of each year. The proposed new ASR recovery well would allow for recovery of surplus stored water for the City's use. Recovered water is proposed to be sent to the City's distribution system through the RWS potable water line adjacent to the proposed ASR recovery well site, then through the existing control valve and 12-inch transmission line to the City's distribution system. This would provide the City with up to 2,000 gpm of water to supplement its other sources from April 1 through September 30 of each year, when additional water supply is most needed. Should the City decide to implement a new ASR recovery well as part of its mitigation efforts, it is recommended that the services of a hydrogeologist be retained to assist in updating the City's existing ASR limited license, as required.



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CITY OF
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PFAS MITIGATION FEASIBILITY STUDY

AQUIFER STORAGE AND RECOVERY PROCESS SCHEMATIC

FIGURE
6-1

X:\Clients\Hermiston OR\736-179 PFAS Water Treatment Alternatives\CAD\PMFS-736-179-FIG6-1_AS&RSchematic.dwg, Layout1, 7/20/2026 3:22 PM, cgilmore

EXISTING CONTROL VALVE

EXISTING REGIONAL WATER TREATMENT PLANT

PROPOSED ASR RECOVERY WELL AND PUMP STATION

CONNECT TO EXISTING RWS POTABLE WATER LINE

EXISTING ASR-3 WELL

LEGEND

- PROPOSED WELL
- EXISTING WELL
- CONTROL VALVE
- EXISTING CITY DISTRIBUTION SYSTEM
- EXISTING REGIONAL WATER SYSTEM PIPING

1,000 0 1,000

SCALE IN FEET

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CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

AQUIFER STORAGE AND RECOVERY PRELIMINARY SITE PLAN

FIGURE
6-2

X:\Clients\Hermiston OR\736-179 PFAS Water Treatment Alternatives\GIS\Drafting\736-179_Figs.aprx, PMFS-736-179-FIG6-2_AS&RSitePlan, 7/21/2026 9:51 AM, cgilmore

CITY OF HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 4 - AQUIFER STORAGE AND RECOVERY
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	$ 240,000	All Req'd	$ 240,000.00
2	Project Safety, Security, Traffic Control, and Quality Control	LS	20,000	All Req'd	20,000
3	Well Drilling, Construction, Development, and Testing	LS	2,500,000	All Req'd	2,500,000
4	Well Pump Equipment	LS	1,000,000	All Req'd	1,000,000
5	Site Work	LS	25,000	All Req'd	25,000
6	Concrete Masonry Unit Well Building	LS	400,000	All Req'd	400,000
7	Mechanical Piping, Fittings, and Valves	LS	150,000	All Req'd	150,000
8	Chlorination System	LS	150,000	All Req'd	150,000
9	Yard Piping	LS	100,000	All Req'd	100,000
10	Connection to Existing 16-inch Water Line	LS	15,000	All Req'd	15,000
11	Controls and Instrumentation	LS	400,000	All Req'd	400,000
12	Electrical	LS	400,000	All Req'd	400,000
13	Standby Generator	LS	150,000	All Req'd	150,000
				Subtotal Construction Cost	**$ 5,000,000**
				Construction Contingency (Approximately 20%)	1,000,000
				Total Estimated Construction Cost	**$ 6,000,000**
				Preliminary and Design Engineering (Approximately 10%)	600,000
				Construction Engineering (Approximately 10%)	600,000
				TOTAL ESTIMATED PROJECT COST (2026 DOLLARS)	**$ 7,200,000**

PRESENT WORTH ANALYSIS (2026 DOLLARS)

NO.	DESCRIPTION	ANNUAL COST
	ADDITIONAL ANNUAL OPERATION, MAINTENANCE, AND REPLACEMENT (OM&R)	
1	Labor (including Benefits)	$ 45,000
2	Utilities	110,000
3	Supplies, Parts, Maintenance, Repairs, and Testing	10,000
4	Capital Outlay	10,000
5	Chemicals	15,000
6	Equipment Replacement	78,000
	Total OM&R	**$ 268,000**
	Present Worth OM&R Cost (5%, 20 years)	3,340,000
	Total Present Worth (2026 Dollars)	**$ 10,540,000**

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CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 4 - AQUIFER STORAGE AND RECOVERY PRELIMINARY COST ESTIMATE

FIGURE
6-3

Chapter 7 - Dedicated Irrigation System

Introduction

The City of Hermiston has multiple users within its water system that consume large volumes of potable water for the purpose of irrigation. These users account for a portion of the large flow demands that the City experiences during the summer months. However, the water consumed by the large irrigation users is not required to meet potable water standards. Without the need to meet potable standards, a new dedicated irrigation system could be developed to deliver non-potable water (NPW) to these users. The dedicated irrigation system would reduce the demand on the City's potable water system thus, reducing the amount of water that would need to be treated for per- and polyfluoroalkyl substances (PFAS) or produced from an alternative source.

Dedicated Irrigation System Options

Implementation of a dedicated irrigation system in the City would consist of utilizing existing water supply infrastructure currently utilized by the potable water system along with the construction of a new distribution system. The dedicated irrigation system would most likely connect to existing supply sources with PFAS levels exceeding the maximum contaminant levels (MCLs) within the City prior to the water being treated. The new dedicated irrigation distribution system would convey the PFAS-contaminated water to the irrigation users. The existing water meters and service lines would also be utilized within the dedicated irrigation system for existing users. The City could also consider developing new wells to supply NPW to irrigation users who are not part of the dedicated irrigation system outlined herein due to their proximity to existing sources.

Irrigation Supply Criteria

Flow data provided by the City for the largest irrigation users was analyzed to determine the impact of a dedicated irrigation system on the City's potable water system. Chapter 2 provides a discussion on the analysis of the large irrigation users historical flow data. Figures 2-1 and 2-2 in Chapter 2 include design criteria for a water system with current irrigation demands along with a system with reduced irrigation demands. A summary of the City's large irrigation user demands is provided on Table 7-1.

TABLE 7-1
LARGE IRRIGATION USER FLOW CRITERIA

Description	Value
ADD (gpd)	201,582
ADD (gpm)	140
PDD (gpd)	431,395
PDD (gpm)	300

ADD = average daily demand

gpd = gallons per day

gpm = gallons per minute

PDD = peak daily demand

Evaluation

In development of the proposed dedicated irrigation system, the users to be included in the system, their demands, and how the system layout would look were considered. Below is an evaluation of how the users were selected and how the project layout was developed.

Large Irrigation Users

Irrigation users were selected based on two sets of criteria, initially on the volume of water the user has historically acquired from the City and used for irrigation and, secondly, the proximity of the user to the water sources with PFAS levels exceeding the MCLs. Table 7-2 provides a list of the large potential irrigation users identified by the City and later refined as part of this PFAS Mitigation Feasibility Study to be included in the proposed dedicated irrigation system. Table 7-2 also includes the total yearly water volume consumed by each user considered. The users listed on Table 7-2 are also shown on Figure 7-1.

TABLE 7-2
IDENTIFIED LARGE IRRIGATION USERS

Irrigation User	Meter ID	Total Yearly Usage (gal)
Good Shepherd Hospital No. 1	17075295H	20,122,639
EOTEC	17075300	18,735,830
Loma Vista Elementary School	21040036H	18,509,327
Spraypark No.1	17073290H	15,718,821
Theater Sports Park	17073334H	12,261,354
Butte Park Soccer Field No. 1	17073342H	9,275,922
Victory Square Park	17073303H	6,314,517
McKenzie Park	190745887	5,403,994
Good Shepherd Hospital No. 2	17075288L	4,420,389
Legacy Park	18209759H	4,185,663
Highland Summit Park	190745885	4,168,339
Riverfront Park	190745886	3,818,709
Belt Park	17073234H	3,412,763
Newport Park	190745884	3,072,563
Senior Center	49586567	2,450,470
Harrison Park	17073232H	2,390,366
Butte Park Soccer Field No. 2	17073323L	2,108,394
Sunset Park	17075221H	1,948,081
Theater Sports Park	17073315L	1,632,285
Hodge Park	17073241H	1,543,424
Spraypark No. 2	17073115	1,243,556
Spraypark No. 3	17075198L	1,112,469
11th Stormwater Basin	17074573	802,681
EOTEC Drinking	17075251L	730,865

Irrigation User	Meter ID	Total Yearly Usage (gal)
Harrison Park Lift Station	17073183L	686,254
Teen Adventure Park	191695720	466,486

EOTEC = Eastern Oregon Trade and Event Center

gal = gallons

Proximity

Various irrigation users located throughout the City were considered to be potential customers to utilize the dedicated irrigation system as outlined on Table 7-1. In the selection of the users to be included in the dedicated irrigation system, the primary consideration was proximity of the users to existing City-owned supply sources with PFAS levels exceeding the MCLs, while the secondary consideration was proximity to other irrigation users. Many of the irrigation users in the City are not located near a supply source that tested exceeded the MCLs for PFAS or near other irrigation users. As such, these users were not included in the proposed dedicated irrigation system due to the high costs associated with construction of a new irrigation distribution system.

Figures 7-2 and 7-3 outline the proposed dedicated irrigation system utilizing Well No. 5 as the supply source. This dedicated irrigation system groups some of the largest irrigation users together to remove them from the City's potable water system. Figures 7-4 and 7-5 outline proposed dedicated irrigation systems at Wells No. 2 and 4, respectively. These systems would allow the ability to connect the adjacent park meters to the wells with high PFAS levels due to the proximity of the service connections to the wells.

Meters included on Table 7-2 and shown on Figure 7-1 (but not identified on Figures 7-2 through 7-5) were considered too far away from a contaminated source to be feasibly connected to an irrigation system. Additionally, five services were initially identified by the City near the City's Spraypark. However, after further discussion, it was determined infeasible to convert the three Spraypark meters to the irrigation system. The EOTEC service is also not shown on Figures 7-2 through 7-5. However, EOTEC is in the process of connecting its irrigation system to an irrigation district that will reduce the demand on the City's community water system.

Table 7-3 summarizes the irrigation users that have been included in the proposed dedicated irrigation system or are in process of removing their irrigation demands from the City's water system by other means.

TABLE 7-3
SELECTED LARGE IRRIGATION USERS

Irrigation User	Meter ID	Total Yearly Usage (gal)
Good Shepherd Hospital No. 1	17075295H	20,122,639
EOTEC	17075300	18,735,830
Theater Sports Park	17073334H	12,261,354
Butte Park Soccer Field No. 1	17073342H	9,275,922
Good Shepherd Hospital No. 2	17075288L	4,420,389
Newport Park	190745884	3,072,563
Butte Park Soccer Field No. 2	17073323L	2,108,394
Sunset Park	17075221H	1,948,081
Theater Sports Park	17073315L	1,632,285

Dedicated Irrigation System Improvements

After consideration of proximity and flow volumes, a dedicated irrigation system improvements project was developed. Figure 7-2 identifies a potential piping network that could be implemented for the dedicated irrigation system. The development of the project assumes that existing wells, meters, and service lines will be utilized. Other irrigation users could be added to the dedicated irrigation system with the development of irrigation only wells or extensions of transmission lines. If it is determined that contaminated wells will no longer be utilized for potable water, then the dedicated irrigation system will need to be further evaluated prior to implementation.

Life Cycle Cost Analysis

The life cycle cost analysis includes the capital cost and anticipated operation, maintenance and replacement (OM&R) costs, which are projected to a 20-year present worth as shown on Figure 7-6. The following is a review of each component of the cost analysis.

Capital Cost

The capital cost estimates were developed for the design and construction of the dedicated irrigation system, which include the Well No. 5 irrigation system, the Well No. 4 irrigation system, and the Well No. 2 irrigation system. The capital costs generally include modifications needed at the existing supply sources, construction of a new irrigation distribution system, and connections to existing irrigation user services. Also included is a 20 percent construction contingency due to the preliminary nature of the estimate and variability of construction costs over time.

Operation, Maintenance, and Replacement Costs

OM&R costs include any labor and materials required to keep the dedicated irrigation system operational. Because it has been assumed that the dedicated irrigation system will operate off the existing PFAS-contaminated wells OM&R costs are minimal. OM&R required would include

labor required to maintain the dedicated irrigation system, utilities required to operate the well pumps, equipment replacement, and capital outlay. It should be noted that OM&R costs can vary largely due to unforeseen circumstances that may require additional expenditure. It is recommended that, if constructed, the City set aside capital for the purpose of OM&R of the dedicated irrigation system.

20-Year Present Worth

The 20-year present worth value is the total estimated improvements cost plus the annual OM&R cost, which has been converted into a present worth value using a 20-year period. It should be noted that the value may vary depending on assumptions made, so if the City decides to pursue a dedicated irrigation system, an updated 20-year present worth estimate should be completed.

Summary

The City could construct dedicated irrigation systems that would utilize NPW for the use of irrigation. These systems would serve some of the largest irrigation users on the City's current potable water system and help reduce the demand on the City's potable water system. This would reduce the amount of treatment needed or the capacity that may need to be developed from other sources. In the future, the City could also consider connecting other irrigation users to the proposed system. These users could be other smaller irrigation users along the route, along with extending the proposed distribution system to other large and small irrigation users who are located farther from the supply sources. Additional improvements to the dedicated irrigation system would further reduce the demand on the City's potable water system, which would reduce the amount of water treatment necessary or capacity that would need to be developed from other sources.

METER #18209759
METER #17073334
METER #17073315
WELL NO. 5
METER #17075295
METER #17073323
METER #17075221
WELL NO. 4
METER #21040036
METER #17075288
METER #17075198
METER #17073342
METER #17073290
METER #17073115
METER #17073183
METER #17073232
METER #17073303
METER #190745887
METER #17073234
METER #17073241
WELL NO. 2
METER #190745885
METER #19045884
METER #17075300
METER #17075251

Hermiston
Hermiston Municipal Airport
Good Shepherd Health Care System

Country Ln
Bellinger Rd
Powerline Rd
Westland Rd
Quick Rd
Doherty Rd
Echols Rd
Lloyd Rd
Cox Ln
Reed Rd
Baxter Rd
Leathers Rd
Canal Rd
Springhill Ln
Melody Ln
E Loop Rd
Diagonal Rd
Diagonal Blvd
E Punkin Center Rd
W Punkin Center Rd
E Theatre Ln
W Theatre Ln
E Theater Ln
E Elm Ave
W Elm Ave
E Hooker Rd
E Jennie Ave
W Ridgeway Ave
NE Gladys Dr
E Main St
W Hermiston Ave
W Orchard Ave
W Highland Ave
E Highland Ave
E Highland Ext
W Moore Ave
W Gettman Rd
SE Airport Rd
Shannon Way
Newport Ave
N 1st St
NE 1st St
E 4th St
NE 4th St
NE 8th St
NE 10th St
N Townsend Rd
N Ott Rd
NE Moe Ln
NW 11th St
NW 12th St
NW 13th St
SW 11th St
W 11th St
W 10th St
SW 10th St
SW 9th St
SW 44th St
S 1st St
S 10th St
SE 9th St
S Highway 395
S Highway 207
NW Gart Rd
NW Gart Rd
207

LEGEND
LARGE IRRIGATION USER METER
CITY LIMITS
URBAN GROWTH BOUNDARY
2,000 0 2,000
SCALE IN FEET

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Google

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CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

IDENTIFIED LARGE IRRIGATION USERS METER LOCATIONS

FIGURE
7-1

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EXISTING 16" WATER LINE TO BE CONVERTED TO AN IRRIGATION DISTRIBUTION LINE

EXISTING 12" WATER LINE

DISCONNECT EXISTING 12" WATER LINE

EXISTING WELL NO. 5

METER #17073334

METER #17073315

EXISTING SERVICE LINE TO BE REUSED

PROPOSED 8" IRRIGATION DISTRIBUTION LINE

DISCONNECT EXISTING 16" WATER LINE

EXISTING 16" WATER LINE

SEE FIGURE 7-3 FOR CONTINUATION

Pacific Railroad
River Rd
Umatilla River Rd
Union Pacific Railroad
NW Geer Rd
NW 6th Ave
Hermiston Ditch
W Harper Rd
The Home Depot
N 1st Pl

LEGEND

- PROPOSED NEW IRRIGATION DISTRIBUTION LINE
- CONVERTED IRRIGATION DISTRIBUTION LINE
- EXISTING WATER LINE TO REMAIN

150 0 150

SCALE IN FEET

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Google

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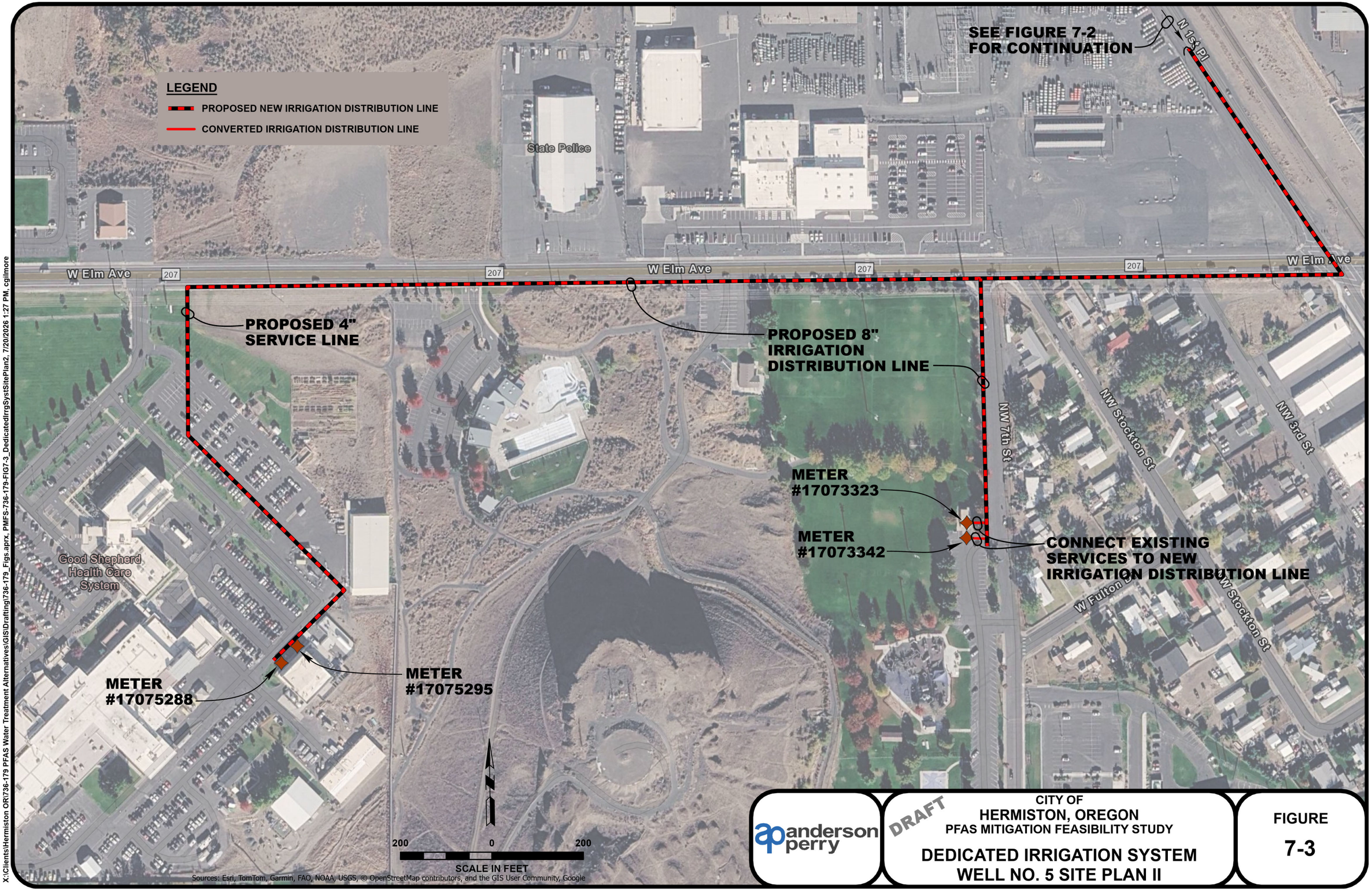
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CITY OF
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PFAS MITIGATION FEASIBILITY STUDY

DEDICATED IRRIGATION SYSTEM
WELL NO. 5 SITE PLAN I

FIGURE
7-2

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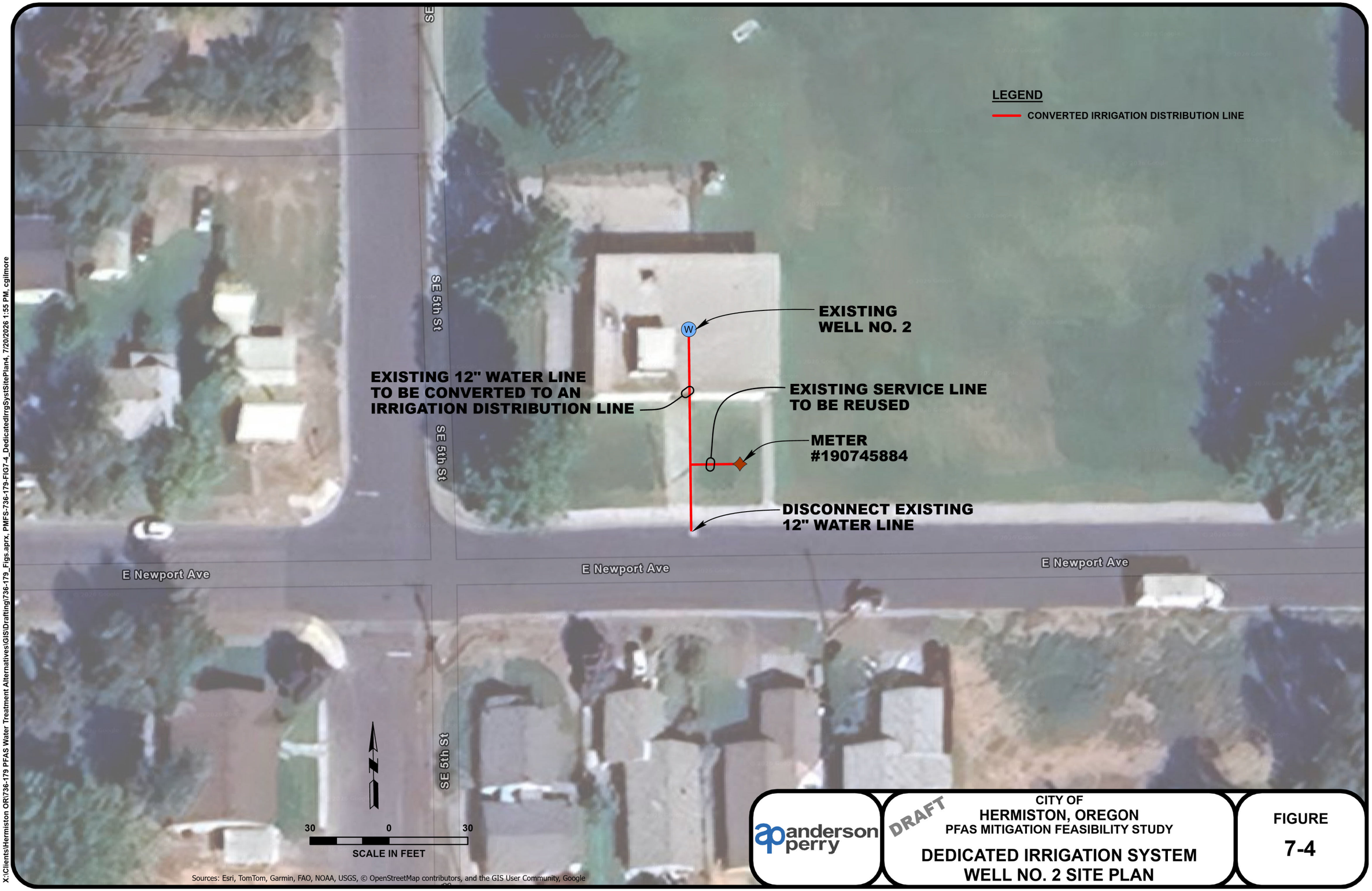
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CITY OF
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PFAS MITIGATION FEASIBILITY STUDY

DEDICATED IRRIGATION SYSTEM WELL NO. 5 SITE PLAN II

FIGURE
7-3



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CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

DEDICATED IRRIGATION SYSTEM
WELL NO. 2 SITE PLAN

FIGURE
7-4

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CITY OF
HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY

DEDICATED IRRIGATION SYSTEM WELL NO. 4 SITE PLAN

FIGURE
7-5

CITY OF HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 5 - DEDICATED IRRIGATION SYSTEM
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization (Approximately 5%)	LS	$ 109,000	All Req'd	$ 109,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	100,000	All Req'd	100,000
Well No. 5 Irrigation System					
3	Well No. 5 Improvements	LS	75,000	All Req'd	75,000
4	8-inch Polyvinyl Chloride (PVC) Irrigation Line with Valves	LF	85	5,500	467,500
5	4-inch PVC Service Line	LF	60	1,100	66,000
6	Connection to Existing Water Main	EA	4,000	1	4,000
7	Water Service Line Connection to Water Main	EA	2,000	6	12,000
8	New Water Service Line Connection to Existing Water Service Line	EA	1,000	6	6,000
9	Railroad Crossing	EA	160,000	1	160,000
10	Highway Crossing	EA	120,000	1	120,000
11	Asphalt Surface Restoration	LS	300,000	All Req'd	300,000
12	Landscape Surface Restoration	LS	12,000	All Req'd	12,000
Well No. 4 Irrigation System					
13	Well No. 4 Improvements	LS	50,000	All Req'd	50,000
14	2-inch PVC Service Line with Valves	LF	50	50	2,500
15	Connection to Existing Water Line	EA	4,000	1	4,000
16	Disconnect Existing Water Line	EA	5,000	1	5,000
17	New Water Service Line Connection to Existing Water Service Line	EA	1,000	1	1,000
18	Landscape Surface Restoration	LF	20	50	1,000
Well No. 2 Irrigation System					
19	Well No. 2 Improvements	LS	50,000	All Req'd	50,000
20	Disconnect Existing Water Line	EA	5,000	1	5,000
				Subtotal Construction Cost[1]	**$ 1,550,000**
				Construction Contingency (Approximately 20%)	310,000
				Total Estimated Construction Cost	**$ 1,860,000**
				Preliminary and Design Engineering (Approximately 10%)	186,000
				Construction Engineering (Approximately 10%)	186,000
				TOTAL ESTIMATED PROJECT COST (2026 DOLLARS)[2]	**$ 2,232,000**

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CITY OF
HERMISTON,,OREGON
PFPFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 5 - DEDICATED IRRIGATION SYSTEM PRELIMINARY COST ESTIMATE

FIGURE
7-6

CITY OF HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
ALTERNATIVE 5 - DEDICATED IRRIGATION SYSTEM
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

PRESENT WORTH ANALYSIS (2026 DOLLARS)

Item	Description		Annual Cost
ADDITIONAL ANNUAL OPERATION, MAINTENANCE, AND REPLACEMENT (OM&R)			
1	Labor (including Benefits)	$	25,000
2	Utilities		100,000
3	Maintenance, Repairs, and Testing		10,000
4	Capital Outlay		20,000
5	Chemicals[3]		5,000
	Total OM&R[4]	**$**	**160,000**
	Present Worth OM&R Cost (5%, 20 years)		2,000,000
	Total Present Worth (2026 Dollars)	**$**	**4,232,000**

Notes:

[1] Construction cost assumes that the well sites are not being used for potable water production, costs would increase if water was being treated and used for drinking water.

[2] The total estimated project cost does not include typical "Other Estimated Project Costs," such as legal, environmental, cultural, permitting, additional material cost for domestic preference, etc.

[3] Chemical costs assume chlorine is used to help mitigate bio-growth in distribution system only, not disinfection.

[4] OM&R costs assume that the well sites are not being used for potable water production and are only for irrigation, costs would increase for the site if the remaining water capacity of the site was being treated and used for drinking water.

Chapter 8 - Summary and Recommendation

Introduction

This chapter summarizes the alternatives for mitigating per- and polyfluoroalkyl substances (PFAS) in the City of Hermiston's water system, summarizes the estimated costs and potential supply capacity of each, and identifies recommended alternatives. All alternatives presented herein appear to be capable of mitigating the PFAS-contaminated sources and meeting anticipated future demands. The information presented in previous chapters and summarized herein is provided to determine the most effective mitigation alternative for the City.

Summary of Mitigation Alternatives

The following provides a brief summary of the mitigation alternatives along with any applicable options.

Alternative 1 - PFAS Treatment

Alternative 1 would utilize PFAS treatment to remove PFAS from the City's potable water supply, enabling the continued use of the existing water supply sources. The first option would utilize an ion exchange (IX) treatment system, which can remove PFAS efficiently and effectively when water quality allows. The second option would utilize FLUORO-SORB®, which has been shown to remove PFAS more efficiently and with lower capital; operation, maintenance, and replacement (OM&R); and present worth costs than IX. Based on water quality sampling completed by the City in January 2026, it appears that both IX and FLUORO-SORB® can remove PFAS from the City's supply sources and provide a relatively long media life.

Alternative 2 - Existing Regional Water Treatment Plant Utilization

Alternative 2 would utilize the existing Regional Water Treatment Plant (RWTP) to its full capacity to provide the City with additional water from the Regional Water System (RWS). Utilizing the RWTP would allow the City to begin providing PFAS-free water quickly with minimal initial investment. The City would need to obtain water allocation from the RWS to fully utilize the RWTP. The RWTP does have high operating costs and the existing package treatment system would likely need replaced within the next decade.

Alternative 3 - New Regional Water System Potable Water Source

Alternative 3 includes the development of a new water supply source using Columbia River water. The first option would construct a new water treatment plant (WTP) fed by the RWS utilizing enhanced clarification and media filtration (ECMF) technology. ECMF is a proven technology and is similar to the existing package treatment plant operated by the City at the RWTP. However, its reliance on coagulation may result in a decrease in efficiency during turbidity spikes.

The second option involves the construction of a new WTP also fed from the RWS utilizing ultrafiltration (UF) technology to treat water and supply it to the City. Preliminary water quality data indicate that UF is likely to be capable of treating RWS water effectively. However, capital and OM&R costs of the UF option are higher than with the ECMF option. Both the UF and ECMF options would be connected directly to the existing RWS and could use the City's 4,720 gallons per minute (gpm) undeveloped water allocation.

The third option would utilize a collector well and transmission line to deliver potable water to the City's distribution system. As the collector well is not directly connected to the RWS, it is anticipated that the City could utilize other Columbia River water allocations, separate from the RWS. Due to the extensive conveyance infrastructure required, the collector well option has significantly higher capital costs than the other two treatment options. Furthermore, utility costs are higher due to pumping requirements. However, the total OM&R costs for the collector well option is lower than each of the other two treatment options.

Each of these options may be combined with blending of Well No. 5 water. Blending of Well No. 5 water with the treatment options would require a transmission line to be constructed between Well No. 5 and the new WTP. For the collector well option, the transmission line from the collector well would terminate at Well No. 5 to allow for blending, then conveyance to the City's distribution system. Blending would allow the City to utilize an existing PFAS-contaminated source without extensive treatment equipment. However, blending carries risks associated with the potential for seasonal variations in PFAS concentrations in Well No. 5.

Alternative 4 - Aquifer Storage and Recovery

Alternative 4 would involve the construction of a new aquifer storage and recovery (ASR) well to assist in accessing water from the "bubble" produced by the existing ASR-3 well. A new ASR well would allow the City to make better use of its existing ASR infrastructure by allowing recovery to occur independently from the ASR-3 well infrastructure, which is anticipated to be primarily used to serve a specific user. A new ASR well would assist the City in periods of high demand with a lower capital cost than the other alternatives.

Alternative 5 - Dedicated Irrigation System

Alternative 5 would include the construction of a dedicated irrigation system utilizing PFAS-contaminated sources. Water from Wells No. 2, 4, and 5 would be delivered to several large irrigation customers for irrigation use only. Moving some of the high irrigation demands from the City's current potable water system to a dedicated irrigation system would help reduce the potable water peak day demand in summer months.

Mitigation Alternatives Cost Comparison

Table 8-1 includes a summary of the estimated improvements costs (construction, contingency, design and construction engineering), annual OM&R cost, and present worth of each alternative.

TABLE 8-1
MITIGATION ALTERNATIVE COST SUMMARY

Mitigation Alternative	Total Estimated Improvements Cost[1]	Annual OM&R	Total 20-year Present Worth
Alternative 1 - PFAS Treatment, IX Option[2]	$18,767,000	$1,704,000	$39,960,000
Alternative 1 - PFAS Treatment, FLUORO-SORB® Option[2]	$16,478,000	$1,430,000	$34,308,000
Alternative 2 - Existing RWTP Utilization	TBD[3]	$1,225,000	TBD+ $15,270,000[3]
Alternative 3 - New RWS Potable Water Source, ECMF Treatment Option[4]	$27,360,000	$1,377,000	$44,530,000
Alternative 3 - New RWS Potable Water Source, UF Treatment Option[4]	$29,088,000	$1,424,000	$46,838,000
Alternative 3 - New RWS Potable Water Source, Collector Well Option[4]	$46,800,000	$534,000	$53,460,000
Alternative 4 - ASR	$7,200,000	$268,000	$10,540,000
Alternative 5 - Dedicated Irrigation System	$2,232,000	$160,000	$4,232,000

[1]All costs are in 2026 dollars.

[2] Alternative 1 options include treatment at Wells No. 2. 4, and 5.

[3]The total estimated improvements cost for Alternative 2 includes the acquisition of water allocations, the cost of which is currently unknown.

[4]Costs for Alternative 3 options include Well No. 5 water blending.

As shown on Table 8-1, the least expensive alternative considered is Alternative 5 - Dedicated Irrigation System with Alternative 3 - New RWS Potable Water Source, Collector Well Option being the most expensive. However, the water production capacity between these two alternatives and other alternatives considered varies greatly.

To assist in determining the most efficient mitigation alternative for the City, the cost per gallon of water supply capacity was estimated for each alternative and presented on Table 8-2. The total 20-year present worth cost was utilized for this evaluation. Annual water supplied in millions of gallons was also used for reference purposes.

To determine the water supplied for Alternatives 1 through 4, historical monthly system demands were utilized, then historical monthly supply from Well No. 6 was removed to determine the estimated monthly supply deficiency. Each alternative was then assumed to be the primary source to address the estimated deficiency. In months when the alternative supply capacity exceeded the demand, it was assumed only the demand was produced. However, when the demand exceeded the alternative supply capacity, it was assumed that the alternative provided the maximum capacity for that month. For Alternative 5, the water supply was based on historical water use for the irrigation users identified to be served by the proposed dedicated irrigation system.

TABLE 8-2
MITIGATION ALTERNATIVE COST PER GALLON COMPARISON

Alternative	Estimated Annual Supply Capacity (MG)[1]	Estimated Cost Per MG[2]
Alternative 1 - PFAS Treatment, IX Option[3]	1,676.24	$23,800
Alternative 1 - PFAS Treatment, FLUORO-SORB® Option[3]	1,676.24	$20,500
Alternative 2 - Existing RWTP Utilization	1,036.26	$14,700
Alternative 3 - New RWS Potable Water Source, ECMF Treatment Option [4]	1,646.51	$27,000
Alternative 3 - New RWS Potable Water Source, UF Treatment Option [4]	1,632.89	$28,700
Alternative 3 - New RWS Potable Water Source, Collector Well Option [4]	1,688.50	$31,700
Alternative 4 - ASR	250.00	$42,200
Alternative 5 - Dedicated Irrigation System	73.58	$57,500

[1]Supply capacities assume that the alternative is the primary supply source other than Well No. 6.[2]All costs are in 2026 dollars.

[3]Alternative 1 options include PFAS treatment at Wells No. 2, 4 and 5.

[4]Costs for Alternative 3 options include Well No. 5 water blending.

MG = million gallons

As shown on Table 8-2, Alternative 2 - Existing RWTP Utilization appears to be the most cost-effective mitigation alternative. Both treatment options for Alternative 1 - PFAS Treatment are the next most cost-effective, with the FLUORO-SORB® option having a slightly lower cost than the IX option. The ECMF and UF treatment options and collector well option included in Alternative 3 - New RWS Potable Water Source are all similar in cost. The most expensive alternative is Alternative 5 - Dedicated Irrigation System.

Recommendations

Based on the data presented within this PFAS Mitigation Feasibility Study, it is recommended that the City take steps to make implementation of Alternative 2 - Existing RWTP Utilization a priority. Assuming that the City can gain access to the remaining capacity of the RWTP, this alternative appears to provide the City with an efficient mitigation measure to address the PFAS-contaminated sources. The annual OM&R costs for Alternative 2 exceed other alternatives; however, the minimal initial improvements costs help outweigh the OM&R. The high OM&R costs are partially due to the existing treatment units most likely needing to be replaced in the next ten years. However, Alternative 2 is not anticipated to meet the projected demands unaided. Table 8-3 outlines the projected year 2046 demands and supply from Well No. 6 and Alternative 2 along with the estimated remaining deficiency.

TABLE 8-3
SYSTEM DEMANDS AND SUPPLY WITH ALTERNATIVE 2

Month	Projected 2046 Demand (MG)	Average Well No. 6 Supply (MG)[1]	Estimated Alternative 2 Supply (MG)[2]	Remaining Supply Deficit (MG)
January	59.73	1.99	57.74	0
February	54.24	1.5	52.74	0
March	66.35	4.65	58.48	3.22
April	124.37	10.60	13.78	0
May	212.73	15.06	118.74	78.92
June	261.92	19.07	114.91	127.94
July	302.88	22.33	118.74	161.81
August	284.83	9.02	118.74	147.07
September	211.63	2.90	114.91	83.81
October	116.24	7.84	58.48	49.92
November	58.68	4.07	54.61	0
December	58.49	4.10	54.39	0
TOTAL	**1,812.08**	**123.13**	**1,036.26**	**652.69**

[1] *Well No. 6 supply data is based on historic data obtained from the Oregon Water Resources Department's website. The supply could potentially be increased in the non-peak months from what is included herein.*

[2] *Alternative 2 supply assumes the RWTP is operating at a capacity of 2,800 gpm 24 hours per day with a 5 percent backwash loss. The supply presented does not include 1,350 gpm being allocated to the ASR from October 1 through March 31.*

Due to the remaining supply deficit after the implementation of Alternative 2, an additional alternative will also need to be implemented. After Alternative 2, it appears that Alternative 1 - PFAS Treatment is the next most cost effective. The costs and production supply presented in this PFAS Mitigation Feasibility Study for Alternative 1 include treatment at all three PFAS-contaminated wells. However, it appears that if a PFAS treatment facility were constructed at Well No. 5 only, it would be sufficient to meet the remaining supply deficit as outlined on Table 8-2.

However, the estimated supply capacity in July from a Well No. 5 PFAS treatment facility operating at 5,000 gpm for 18 hours per day is 167.40 MG. Excess flow provided by this alternative is low during the times of peak demand. If any of the supply sources are out of operation, have reduced capacity, or the projected demands are higher than anticipated, the City may not be able to meet them. Based on that, it is recommended that a third alternative be implemented to help provide redundancy and system resiliency.

Although it comes at a higher cost per MG, it is recommended that the City also implement Alternative 4 - ASR. As discussed previously, there is a significant difference between the City's winter demands and summer demands. If implemented as recommended herein, it is anticipated that Well No. 6, the existing RWTP, nor the Well No. 5 PFAS treatment facility will be required to run at capacity during the winter months. The addition of another year-round supply would result in

more facilities sitting idle or running at a reduced capacity during the winter months. ASR is intended to store water from the RWTP during the winter months when the supply capacity is not needed so that it can then be used during the summer months when demands increase. Additionally, the City already has an existing ASR program that will result in stored water that without another recovery well, may not be usable.

Water Storage

As outlined on Figures 2-1 and 2-2 in Chapter 2, with the current system capacity or the current system without the PFAS-contaminated supply sources, it is anticipated that with the removal of the PFAS-contaminated Well No. 4 reservoir, or by 2046, additional storage will be needed. With the recommendations of implementing Alternatives 2, 1, and 4, the estimated supply flow available/total existing supply will change from what was presented in Chapter 2. With this change in supply, the recommended storage will also change due to a change to the equalization storage.

Figure 8-1 provides a summary of the supply and storage design criteria with Alternatives 2, 1, and 4 implemented and the Well No. 4 reservoir offline. As shown on Figure 8-1, it is estimated that 193,000 gallons of water storage is currently needed and 1,627,000 gallons of water storage will be needed by 2046. The potential storage needs include emergency storage for a single day at average daily demand (ADD). With the change from the City's existing system to the system recommended herein, the City will be much more reliant on two of the supply sources, the RWTP and Well No. 5. If either of those supply sources were to be offline during times of peak demand, the City may not be able to meet demands and may have to curtail water usage.

It is recommended that the proposed reservoir be directly connected to the City's Main Pressure Zone where the majority of the demand occurs. It is also recommended that the reservoir be located at an elevation where it can provide pressure to the system via gravity without becoming a standpipe type reservoir. The ideal location would be along Highway 207 below the control valve on the transmission line from the RWTP to the City's distribution system at an elevation between approximately 550 and 580 feet mean sea level. This elevation would result in a reservoir between approximately 55 and 25 feet tall, respectively. Some vacant properties meet this criteria; however, all properties appear to be privately owned. It is recommended that the City investigate potential property acquisition for a water storage reservoir in the vicinity noted.

Reservoirs are often designed with a longer lifespan than the planning period. Therefore, the City may want to consider construction of a larger reservoir to help meet potential future needs or provide additional fire and/or emergency storage. However, with larger water storage reservoirs comes the potential for stagnant water and degraded water quality. With the proposed reservoir location, continuous flow from the RWTP would help to mitigate these concerns.

Figure 8-2 shows the locations of the recommended alternatives and a proposed location for the storage reservoir. Preliminary combined capital and OM&R cost estimates were developed for the recommended alternatives. The estimated combined capital costs for implementing the recommended alternatives are shown on Figure 8-3.

Conclusion

To meet system demands and the U.S. Environmental Protection Agency's (EPA) National Primary Drinking Water Regulation on PFAS, the City must make changes to its current potable water system. Based on water quality testing results and the mitigation alternatives evaluated in the draft PFAS Water Treatment Feasibility Study, the Cursory PFAS Mitigation Evaluation Summary, and this Study, it is recommended that the City implement Alternative 2 - Existing RWTP Utilization, Alternative 1 - PFAS Treatment at Well No. 5, and Alternative 4 - ASR, along with the construction of a new 2 MG reservoir to meet anticipated storage needs as well as provide system resiliency. The combined supply from a Well No. 5 PFAS treatment facility along with the full utilization of the RWTP and the continued use of Well No. 6 is anticipated to meet the projected demands. Constructing a new ASR recovery well will help the City utilize water that will already be stored and provide some system redundancy and excess capacity during peak demands. Lastly, the new 2 MG reservoir is recommended to increase the City's emergency storage capacity and offset the loss in storage resulting from the inactivation of Well No. 4. Combined, these improvements are anticipated to allow the City to meet the EPA's PFAS regulations efficiently with a relatively low cost per gallon, low initial capital costs, and usage of existing infrastructure.

UPDATED DESIGN CRITERIA WITH RECOMMENDED IMPROVEMENTS

	Recommended System	
	Year 2026	Year 2046
Design Population	20,492	24,837
Supply		
ADD (gpcd)	200	200
Average Daily Flow (gpd)	4,098,000	4,966,000
Average Daily Flow (gpm)	2,850	3,450
PDD[1] (gpcd)	501	501
Peak Daily Flow[1] (gpd)	10,267,000	12,443,000
Peak Daily Flow (gpm)	7,130	8,640
PHF[2] (gpm)	17,825	21,600
Estimated Supply Flow Available[3] (gpm)	11,581	11,581
Total Recommended Supply[4] (gpd)	**10,267,000**	**12,443,000**
Total Proposed Supply[3,5] (gpd)	**13,313,880**	**13,313,880**
Potential Supply Need (gpd)	**0**	**0**
Storage		
Operating Storage[6] (gal)	738,000	738,000
Equalization Storage[7] (gal)	937,000	1,503,000
Fire Reserve[8] (gal)	420,000	420,000
Emergency Reserve[9] (gal)	4,098,000	4,966,000
Total Recommended Storage (gal)	**6,193,000**	**7,627,000**
Total Existing Storage[10] (gal)	**6,000,000**	**6,000,000**
Potential Storage Need (gal)	**193,000**	**1,627,000**
Proposed Storage (gal)	**2,000,000**	**2,000,000**

[1] Peak day use obtained from City water use reports from 2023 through 2025. The peak occurred in July 2025.

[2] 2.5 times peak daily flow.

[3] Available water supply capacities for Well No. 5, Well No. 6, the RWTP, and ASR are assumed to be 5,000, 1,781, 2,800, and 2,000 gpm, respectively.

[4] It is recommended that the supply system be sized to supply the PDD.

[5] Total proposed supply capacity when operating well sources at a maximum of 18 hours per day and operating the RWTP supply at 24 hours per day while accounting for backwash cycles.

[6] Operating storage based on 4 feet of operating height in the reservoirs.

[7] Difference between PHF and available supply for a 2.5-hour period.

[8] 3,500 gpm flow for two-hour duration, assuming only storage is used.

[9] One-day supply at average daily demand, assuming only storage is used.

[10] Available existing storage is approximately 6 MG (3 MG Butte Reservoir, 1 MG South Hill Reservoir, 1 MG North Hermiston Reservoir, 500,000-gal Well No. 6 Reservoir, 500,000-gal MG Walmart Reservoir). Assumes that the 1 MG Well No. 4 Reservoir will no longer be utilized due to the PFAS contamination.

ADD = average daily demand
ASR = aquifer storage and recovery
gal = gallons
gpcd = gallons per capita per day
gpd = gallons per day
gpm = gallons per minute
MG = million gallons
PDD = peak daily demand
PHF = peak hourly flow
RWTP = Regional Water Treatment Plant

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CITY OF
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PFAS MITIGATION FEASIBILITY STUDY
UPDATED DESIGN CRITERIA WITH RECOMMENDED IMPROVEMENTS

FIGURE
8-1

ALTERNATIVE 1 - PFAS TREATMENT OF WELL NO. 5

PROPOSED WATER TREATMENT PLANT

1 MG RESERVOIR (NORTH HILL)

WELL NO. 4 AND 1 MG RESERVOIR (WELL NO. 4) TO BE MOTHBALLED

3 MG RESERVOIR (BUTTE)

WELL NO. 1

WELL NO. 3

WELL NO. 2 TO BE MOTHBALLED

1 MG RESERVOIR (SOUTH HILL)

PROPOSED 4 MG RESERVOIR LOCATION

2 - 0.5 MG RESERVOIRS

WELL NO. 6

ALTERNATIVE 4 - AQUIFER STORAGE AND RECOVERY - PROPOSED RECOVERY WELL LOCATION

ALTERNATIVE 2 - EXISTING REGIONAL WATER TREATMENT PLANT UTILIZATION

Hermiston

Hermiston Municipal Airport

Good Shepherd Health Care System

Country Ln

Bellinger Rd

Agnew Rd

Powerline Rd

Knight Rd

Bridge Rd

Westland Rd

Quick Rd

Doherty Rd

Echols Rd

Maxwell Ln

Feedville Rd

Lloyd Rd

S Highway 207

W Punkin Center Rd

E Punkin Center Rd

N 1st St

NE 4th St

S 4th St

S 1st St

NE 10th St

W Theatre Ln

E Theatre Ln

Theater Ln

NW 11th St

W Harper Rd

Townsend

W Elm Ave

E Elm Ave

NW 7th St

NW 3rd St

E Jennie Ave

NE Moe Ln

Diagonal Blvd

Diagonal Rd

Reed Rd

Banks Ln

Baxter Rd

Leathers Rd

Canal Rd

Farm Rd

Schulz Ln

Springhill Ln

E Loop Rd

Lehmans Ln

E Main St

S Feerrell Rd

NW 13th St

NW 12th St

NW 11th Pl

W Orchard Ave

W Highland Ave

E Highland Ave

E Highland Ext

Melody Ln

SW 13th St

SW 11th St

SW 10th St

W Moore Ave

W Gettman Rd

S 1st St

S Highway 395

NE 10th St

SE 10th St

N Main Rd

S Main Rd

SE Airport Rd

Shannon Way

Kelli Blvd

S Edwards Rd

Feedville Rd

S Highway 207

W Newport Ave

E Newport Ave

E Feedville Rd

SE Feedville Rd

S Highway 395

LEGEND

- WTP — PROPOSED WATER TREATMENT PLANT
- R — PROPOSED RESERVOIR
- W — PROPOSED WELL
- W — EXISTING WELL
- R — EXISTING RESERVIOR
- WTP — EXISTING WATER TREATMENT PLANT
- CITY LIMITS
- URBAN GROWTH BOUNDARY

2,500 0 2,500

SCALE IN FEET

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Google

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PFAS MITIGATION FEASIBILITY STUDY

RECOMMENDED IMPROVEMENTS

FIGURE
8-2

X:\Clients\Hermiston OR\736-179 PFAS Water Treatment Alternatives\GIS\Drafting\736-179_Figs.aprx, PMFS-736-179-FIG8-2_RecommendImps, 7/20/2026 4:03 PM, cgilmore

CITY OF HERMISTON, OREGON
PFAS MITIGATION FEASIBILITY STUDY
RECOMMENDED IMPROVEMENTS
PRELIMINARY COST ESTIMATE
(YEAR 2026 COSTS)

Estimated Construction Costs (as Presented in Chapters 3, 4, and 6)		
Alternative 1 - PFAS Treatment at Well No. 5	$	6,200,000
Alternative 2 - Existing Regional Water Treatment Plant Utilization	$	-
Alternative 4 - ASR	$	5,000,000
New 2 MG Reservoir	$	5,100,000
Subtotal Estimated Construction Cost	**$**	**16,300,000**
Construction Contingency (Approximately 20%)		3,260,000
Domestic Preference Material Cost Contingency (Approximately 3%)[1]		500,000
Total Estimated Construction Cost	**$**	**20,060,000**
Preliminary and Design Engineering (Approximately 10%)		2,006,000
Construction Engineering (Approximately 10%)		2,006,000
Total Estimated Recommended Improvements Cost (2026 Dollars)	**$**	**24,072,000**
Other Estimated Project Costs[2,3]		
Legal	$	15,000
Land Acquisition		300,000
Procurement of Regional Water System Water Allocation		TBD
Environmental Report		40,000
Cultural Resource Evaluation, and Report		40,000
Cultural Resource Monitoring		150,000
Funding Assistance		20,000
Domestic Material Preference Administration		40,000
ASR Limited License Update		40,000
Permitting		40,000
Regulatory Agency Reporting, Review, and Testing Fees		20,000
Operation and Maintenance Manual		50,000
Record Drawings		25,000
Pilot Testing[4]		80,000
Subtotal Other Estimated Construction Costs	**$**	**860,000**
TOTAL ESTIMATED PROJECT COST (2026 DOLLARS)	**$**	**24,932,000**
TOTAL ESTIMATED PROJECT COST (2028 DOLLARS)[5]	**$**	**27,488,000**

Notes:

[1] Depending on the City's selected funding source, the improvements may need to follow rules related to domestic preference of materials (i.e., American Iron and Steel and/or Build America, Buy America). To account for this, a 3 percent domestic preference material cost contingency has been included where appropriate. This may or may not be adequate to cover additional costs related to domestic preference materials.

[2] Other project costs will vary depending on the City's funding source. Items such as the environmental report, cultural resources evaluation and report, cultural resource monitoring, domestic material preference administration, and interim financing may not be applicable depending on the City's funding source.

[3] "Other Estimated Project Costs," such as legal, environmental, cultural, permitting, etc., are only included in the Recommended PFAS Treatment Alternative cost estimate summary as they are typical for all alternatives.

[4] Assumes pilot testing for both ion exchange and FLUORO-SORB® to be completed at Well No. 5 site.

[5] Assumes a 5 percent annual project cost inflation. To be adjusted based on actual inflation rates and anticipated time of construction.

ASR = aquifer storage and recovery
MG = million gallons
PFAS = per- and polyfluoroalkyl substances
TBD = to be determined

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CITY OF
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PFAS MITIGATION FEASIBILITY STUDY
RECOMMENDED IMPROVEMENTS
PRELIMINARY COST ESTIMATE

FIGURE
8-3

Chapter 9 - Funding Opportunities and Implementation

Introduction

This chapter outlines funding alternatives for the City of Hermiston's per- and polyfluoroalkyl substances (PFAS) mitigation needs. Given both the high cost of the improvements needed to mitigate PFAS and the increased operational costs, the City has determined that outside funding will most likely be needed to help cover the costs associated with implementing PFAS mitigation in its potable water system. Project financing is anticipated to include a combination of low-interest loans, potential grant funding, and some level of contribution by the City. The City's median household income (MHI), population, and lack of project-associated job creation limit external funding options primarily to Business Oregon.

Summary of Potential Funding Programs

The following section briefly summarizes the primary funding programs available to assist the City with water treatment improvements.

Conventional Safe Drinking Water Revolving Loan Fund

The Safe Drinking Water Revolving Loan Fund (SDWRLF) is jointly administered by Oregon Health Authority - Drinking Water Services (DWS) and Business Oregon. The program uses federal funds to provide low-interest loans aimed at ensuring drinking water safety. This program is primarily focused on assisting with the construction and/or improvement of public and private water systems to address regulatory compliance issues. This is primarily accomplished through the SDWRLF for water supply, treatment, distribution, and related water system infrastructure. Communities may apply for up to $10 million under the conventional SDWRLF program. Loan amounts greater than $3 million may be approved by the Business Oregon - Infrastructure Finance Authority Board. Loan amounts of $6 million and above must be approved by the DWS's Drinking Water Advisory Committee. The standard SDWRLF loan term is up to 30 years or the useful life of project assets, whichever is less. This program offers subsidized interest rates for all successful projects. Interest rates for a standard loan start at 80 percent of the state/local bond rate. Interest rates for loans to disadvantaged communities are based on a sliding scale between the interest rate for a standard loan and 1 percent. Communities may be eligible for some of the principal on their SDWRLF loan to be "forgiven." This forgivable loan feature is similar to a grant and is offered to disadvantaged communities. Special consideration, including partial principal forgiveness, is provided to projects qualifying for or having Green Project Reserve components. Funding through this program may be available to the City to implement the selected improvements.

Safe Drinking Water Revolving Loan Funding for Emerging Contaminants

Within the funding offered under the SDWRLF, a separate allocation of funds is reserved for communities working to address emerging contaminants (EC) (as identified by the U.S. Environmental Protection Agency [EPA]) in potable water. The primary purpose of the EC

program is to address and/or mitigate exposure to confirmed EC in potable water. Public water systems must provide documentation to the DWS confirming the detection of the EC identified in the submitted funding application.

The EC program is intended specifically to address PFAS treatment utilizing funding from five annual allotments of the Bipartisan Infrastructure Law (BIL). The BIL authorizes states to award 100 percent forgivable loan funding (i.e., principal forgiveness or subsidy) to address EC in potable water with a focus on PFAS. Funding for the program is dependent on the availability of two separate sources of funding from the EPA that the state will apply annually for through 2026 to award to community water systems.

A condition of this funding opportunity that may benefit the City is that at least 25 percent of the funds allocated to the EC program are to be used to assist disadvantaged communities or public water systems serving less than 25,000 people. The EC funding opportunity appears to offer the most potential benefit to the City to fund PFAS-related improvements.

Water/Wastewater Financing Program

The Water/Wastewater Financing Program is a loan and grant program that provides for the design and construction of public infrastructure when needed to ensure compliance with the Safe Drinking Water Act (SDWA) or the Clean Water Act (CWA). To be eligible, a system must have received, or is likely to soon receive, a notice of non-compliance by the appropriate regulatory agency associated with the SDWA or the CWA.

While primarily a loan program, grants are available for municipalities that meet eligibility criteria. The loan/grant amounts are determined by a financial analysis of the applicant's ability to afford a loan (debt capacity, repayment sources, current and projected utility rates, and other factors). The maximum loan term is 30 years, or the useful life of the infrastructure financed, whichever is less. The maximum loan amount is $10 million per project and is determined by financial review; however, typical award amounts are capped at $2 million. An award may be offered through a combination of direct and/or bond-funded loans. Loans are generally repaid with utility revenues or voter-approved bonds. A limited tax general obligation pledge may also be required. Creditworthy applicants may be funded through the sale of state revenue bonds.

The maximum grant is $750,000 per project based on a financial analysis. An applicant is not eligible for grant funds if the applicant's annual MHI is equal to or greater than 100 percent of the state average MHI for the same year.

For Business Oregon Programs - Contact Regional Coordinator

Since program eligibility and funds availability may change from year to year, potential applicants are encouraged to contact their respective Business Oregon Regional Coordinator to obtain the most accurate and up-to-date information for each program.

Project Development Action Items and Implementation Plan

The following project development action items and proposed implementation steps will need to be taken by the City to ensure PFAS mitigation is completed before the EPA deadlines. The steps outlined are general in nature and include the major steps that need to be undertaken.

Project Development Action Items

1. Determine the preferred PFAS mitigation alternative(s) for implementation.
2. Submit a funding application for SDWRLF EC funding in August 2026.
3. Submit other funding applications as may be required.
4. If treatment of PFAS-contaminated sources is selected, complete a pilot test or Rapid Small-Scale Column Test (RSSCT), as applicable, to verify the selected treatment technology reliably removes PFAS from City water in combination with operation and maintenance activities that are acceptable to the City.
5. Finalize an agreement with the preferred funding source(s) for the City's preferred system improvements.
6. Develop a project pre-design report refining concepts and costs presented in the PFAS Mitigation Feasibility Study and testing, as required, to further define the City's improvements project.
7. Design an improvements project that includes the system improvements selected by the City and develop any required environmental and/or cultural resource reports.
8. Advertise, bid, and award the project.
9. Construct the project.
10. Close out the project.

Implementation Plan

Should the City desire to proceed with the recommended mitigation alternatives discussed herein, the mitigation implementation plan on Table 9-1 outlines the key steps and timelines that the City could anticipate with project development. The mitigation implementation plan below is for the development of the recommended alternatives. It is important to note that it may take three to four years from the date the City decides to proceed with a capital improvements project until the project is completed and serving the community.

TABLE 9-1
MITIGATION IMPLEMENTATION PLAN

Item		Completion Date
1.	City Selection of Preferred Alternative(s)	July/August 2026
2.	Finalize PFAS Mitigation Feasibility Study	August 2026
3.	Submit Funding Application(s) for Preferred Alternative(s)	August 2026
4.	Complete pilot testing or RSSCT, if needed	Winter 2026 to Spring 2027
5.	Develop a project pre-design report	Winter 2026 to Summer 2027
6.	Design improvements and develop environmental and/or cultural resource reports	Summer 2027 to Spring 2028
7.	Advertise, bid, and award the project	Spring 2028
8.	Construct the project	Summer 2028 to Fall 2029
9.	Close out the project	Winter 2029

This is an optimistic schedule seeking to meet the current EPA deadline for project completion by the end of 2029. All identified tasks would need to be completed in the time frames noted and any outside funding agency delays, extended approvals by regulatory agencies, or other unforeseen factors could cause project completion to be delayed.

Appendices Table of Contents

Appendix A Draft PFAS Water Treatment Feasibility Study

Appendix B Cursory PFAS Mitigation Evaluation Summary

Appendix C Water Quality Data

Appendix D WesTech Engineering, LLC, Proposal

APPENDIX A
Draft PFAS Water Treatment Feasibility Study

PFAS WATER TREATMENT FEASIBILITY STUDY

February 2026

Prepared for the
City of Hermiston, Oregon

anderson perry

1901 N. Fir Street, La Grande, Oregon
214 E. Birch Street, Walla Walla, Washington
3818 S.W. 21st Street, Suite 302, Redmond, Oregon
243 E. Main Street, Suite C, Hermiston, Oregon
103 Highway 82, Suite F, Enterprise, Oregon

PFAS WATER TREATMENT FEASIBILITY STUDY

FOR

CITY OF HERMISTON, OREGON

FEBRUARY 2026



ANDERSON PERRY & ASSOCIATES, INC.

La Grande, Redmond, Hermiston, and Enterprise, Oregon
Walla Walla, Washington

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Table of Contents

Executive Summary **ES-1**
Introduction ES-1
Background Information ES-1
Summary of Existing Water System ES-1
Design Criteria ES-2
Treatment Alternatives ES-2
Recommendations ES-3
Project Funding ES-4
Implementation Plan ES-4
Chapter 1 - Background Information, Objectives, and Design Criteria **1-1**
Introduction 1-1
Background 1-1
Regulatory Requirements 1-1
Objectives 1-3
Preliminary Design Criteria 1-3
Chapter 2 - Water Treatment Technology Analysis **2-1**
Introduction 2-1
Water Treatment Technologies 2-1
Granular Activated Carbon 2-1
Ion Exchange 2-1
FLUORO-SORB® 2-2
Reverse Osmosis 2-2
Treatment Alternatives and Evaluation 2-2
Water Quality 2-4
Filter Size 2-5
Media Availability 2-6
Regulatory Approval 2-6
Life Cycle Cost Analysis 2-7
Capital Costs 2-7
Operation, Maintenance, and Replacement Costs 2-8
20-Year Present Worth 2-10
Summary of Treatment Technologies 2-10
Recommended Approach 2-11
Chapter 3 - Funding Opportunities and Implementation **3-1**
Introduction 3-1
Summary of Potential Funding Programs 3-1
Conventional Safe Drinking Water Revolving Loan Fund 3-1
Safe Drinking Water Revolving Loan Funding for Emerging Contaminants 3-2
Water/Wastewater Financing Program 3-2
For Business Oregon Programs - Contact Regional Coordinator 3-3
Project Development Action Items and Implementation Plan 3-3
Project Development Action Items 3-3
Implementation Plan 3-4

TABLES

Table ES-1 U.S. Environmental Protection Agency PFAS Regulation Maximum Contaminant Levels Summary ES-1
Table ES-2 Preliminary Design Criteria ES-2
Table ES-3 Treatment Technology Total Present Worth Comparison ES-3
Table ES-4 Feasibility Implementation Plan ES-4
Table 1-1 U.S. Environmental Protection Agency PFAS Regulation Maximum Contaminant Levels Summary 1-2
Table 1-2 U.S. Environmental Protection Agency PFAS Regulations Initial Monitoring Summary 1-2
Table 1-3 Design Criteria Summary 1-3
Table 2-1 Summary of Water Quality Concerns 2-4
Table 2-2 Wells No. 2, 4, and 5 Water Quality Summary[1] 2-5
Table 2-3 Media Tankage Requirements 2-6
Table 2-4 Projected Media Life 2-9
Table 2-5 Treatment Technology Total Present Worth Comparison 2-10
Table 3-1 Feasibility Implementation Plan 3-4

FIGURES

Figure 1-1 Existing Water Supply and Storage Reservoir Locations
Figure 2-1 PFAS Treatment Process Schematic
Figure 2-2 Alternative A - Granular Activated Carbon Treatment System Preliminary Cost Estimate
Figure 2-3 Alternative B - Ion Exchange Treatment System Preliminary Cost Estimate
Figure 2-4 Alternative C - FLUORO-SORB® Preliminary Cost Estimate
Figure 2-5 Alternative A - Granular Activated Carbon Operation, Maintenance, and Replacement and Present Worth Cost Estimate
Figure 2-6 Alternative B - Ion Exchange Operation, Maintenance, and Replacement and Present Worth Cost Estimate
Figure 2-7 Alternative C - FLUORO-SORB® Operation, Maintenance, and Replacement and Present Worth Cost Estimate

APPENDICES

Appendix A Water Quality Test Results
Appendix B ATEC Water Systems, LLC, Equipment Proposal
Appendix C AqueoUS Vets, Inc., Equipment Proposal
Appendix D Operator Classification Worksheet

Executive Summary

Introduction

This Executive Summary summarizes the results of the PFAS Water Treatment Feasibility Study prepared by Anderson Perry & Associates, Inc., for the City of Hermiston, Oregon. The focus of this Study is to evaluate the feasibility of several per- and polyfluoroalkyl substances (PFAS) treatment technologies and determine the most feasible alternative for the City. This Study includes an overview of the City's water system, regulatory requirements, available treatment technologies, cost estimates for each option, and potential funding options for the City to pursue. For more detailed information, refer to the individual chapters of this Study.

Background Information

The U.S. Environmental Protection Agency (EPA) announced new regulations in 2024 aimed at reducing concentrations of PFAS in drinking water. The regulations set limits on the maximum contaminant levels (MCL) of several PFAS, set monitoring and testing requirements, and established a timeline by which treatment solutions must be implemented in affected areas. As part of the initial monitoring phase of the compliance schedule, the City has detected levels of PFAS exceeding the EPA MCLs in three of the City's water supply wells: Wells No. 2, 4, and 5. If the City plans to continue utilizing these water supply sources, PFAS treatment will be required. This Study is intended to assist the City in selecting a treatment technology for removing PFAS from its water supply sources. Table ES-1 summarizes the 2024 proposed EPA regulations associated with PFAS.

TABLE ES-1
U.S. ENVIRONMENTAL PROTECTION AGENCY PFAS
REGULATION MAXIMUM CONTAMINANT LEVELS SUMMARY

Compound	EPA MCL
PFOA	4.0 ppt
PFOS	4.0 ppt
PFHxS	10 ppt
PFNA	10 ppt
HFPO-DA (Also known as GenX)	10 ppt
Hazard Index[1]	1 (unitless)

[1] The Hazard Index is a weighted calculation based on levels of PFHxS, GenX chemicals, PFNA, and PFBS in the drinking water.

HFPO-DA = hexafluoropropylene oxide dimer acid

PFBS = perfluorobutanesulfonic acid

PFHxS = perfluorohexanesulfonic acid

PFNA = perfluorononanoic acid

PFOA = perfluorooctanoic acid

PFOS = perfluorooctane sulfonate

ppt = parts per trillion

Summary of Existing Water System

The City has five water supply sources. The primary water supply source consists of four groundwater wells located throughout the City. Additionally, the City's water system is connected to the Regional Water System (RWS), which provides treated water from the Columbia River. The City uses the RWS as a backup water supply source in times of emergency or high water demands.

Design Criteria

Preliminary design criteria were developed to determine the proper sizing of the treatment system. The primary design criterion used was the projected maximum flow rate of the wells based on available water rights, along with the PFAS levels in the raw water. The PFAS levels presented on Table ES-2 are based on sampling completed by the City. Additionally, the treatment system must be capable of reducing finished water PFAS levels to below the EPA's MCL. A summary of the preliminary design criteria is provided on Table ES-2.

TABLE ES-2
PRELIMINARY DESIGN CRITERIA

	Well No. 2	Well No. 4	Well No. 5
Projected Maximum Flow Rate	1,000 gpm	2,000 gpm	5,000 gpm
Raw Water PFOA	<MRL	<MRL	<MRL
Raw Water PFOS	12 ppt	6 ppt	4.5 ppt
Raw Water PFHxS	12 ppt	8 ppt	7.5 ppt
Raw Water PFNA	<MRL	<MRL	<MRL
Raw Water HFPO-DA (also known as GenX)	<MRL	<MRL	<MRL
Raw Water Hazard Index[1]	1.2	0.8	0.8

[1] The Hazard Index is a weighted calculation based on levels of PFHxS, GenX chemicals, PFNA, and PFBS in the drinking water.
gpm = gallons per minute
<MRL = less than the minimum reporting level

Treatment Alternatives

Various treatment technologies have been identified that would efficiently remove PFAS from drinking water. Based on a review of the available treatment technologies, three treatment technology alternatives were developed for evaluation. An alternative for constructing a single, centralized water treatment facility (WTF) was considered. However, the costs of conveyance piping to connect the sources and possible land acquisition needs would exceed the potential savings of constructing a single centralized WTF. Therefore, this alternative was not pursued, and each alternative includes the construction of a WTF at Wells No. 2, 4, and 5. Alternative A would utilize a granular activated carbon (GAC) treatment system, Alternative B would utilize an ion exchange (IX) treatment system, and Alternative C would utilize a FLUORO-SORB® (FS) treatment system for removing PFAS.

Alternative A would utilize a GAC treatment system, which is a proven technology for removing PFAS and other constituents from drinking water. However, the tankage requirement for the GAC

treatment system is approximately five times that of IX and FS. Further details are discussed in Chapter 2.

Alternative B would utilize an IX treatment system, which is proven to efficiently and effectively remove PFAS from drinking water. Based on the water quality sampling completed by the City in January 2026, it appears that the IX treatment system is capable of treating the water with a relatively long media life.

Alternative C would utilize an FS treatment system, which has been proven to be one of the most efficient treatment technologies for removing PFAS from drinking water. However, FS treatment technology lacks regulatory approval in Oregon, which would result in additional work and costs before the treatment system could be utilized.

Table ES-3 provides a summary of the capital improvement costs; annual operation, maintenance, and replacement (OM&R) costs; and a 20-year present worth cost for each alternative evaluated.

TABLE ES-3
TREATMENT TECHNOLOGY TOTAL PRESENT WORTH COMPARISON

Alternative	Total Estimated Construction Cost[1]	Total Annual OM&R	Total Present Worth
A (GAC)	$23,460,000	$1,572,000	$43,060,000
B (IX)	$15,639,000	$1,033,000	$28,519,000
C (FS)	$13,732,000	$750,000	$23,082,000

[1]All costs are 2026 dollars.

Recommendations

Due to the significant construction and annual OM&R costs associated with incorporating PFAS treatment with the City's Wells No. 2, 4, and 5, it is recommended that the City complete an additional PFAS Mitigation Feasibility Study evaluation. This additional evaluation would evaluate the mitigation of PFAS in drinking water and not just treatment of PFAS-contaminated sources as evaluated herein. The City has two other water supply sources (Well No. 6 and the RWS) that are currently being utilized that have not tested for PFAS exceeding the EPA's MCL. It is recommended that expanding the capacity of these sources be further evaluated as an option to mitigate the potential loss of capacity from existing wells with PFAS. The City also has water supply sources that are not currently being utilized. These sources include Wells No. 1 and 3 and the Minnehaha Springs. It is recommended that these water supply sources be evaluated to determine if they have PFAS levels exceeding the EPA's MCLs and if not, evaluate if the water supply sources could be brought back online to serve the City. The City could also evaluate other alternatives such as aquifer storage and recovery to provide additional system capacity. The results of the additional evaluation would be used to assist in the selection of a preferred PFAS treatment and/or mitigation alternative. It is recommended that the additional evaluation commence immediately to help the City meet the implementation schedule outlined by the EPA for removing PFAS from drinking water.

Following completion of the PFAS Mitigation Feasibility Study, it is anticipated that the City will need to pursue an improvements project. This improvements project would likely include expansion of an existing water supply source, bringing an abandoned source back online, or treating all or a combination of Wells No. 2, 4, and 5 for PFAS as outlined in this Study. If treatment

of PFAS from a water supply source is selected, it is recommended that the City complete additional testing either through a rapid small-scale column test or pilot testing to verify treatment prior to moving into design. If another alternative is chosen that does not require treatment of PFAS or after the additional testing, the recommended next step for implementation would be to apply for funding as applicable.

Project Funding

Due to the high cost of equipment and facilities needed to treat or mitigate for PFAS, as well as the increased operation costs, the City may consider other opportunities to expand water supply from existing City sources that have not tested positive for PFAS. Regardless of whether implementing PFAS treatment or further developing existing City water sources is chosen, outside funding will likely be needed to cover the costs associated with implementing a PFAS treatment and/or mitigation system. Project financing is anticipated to include a combination of low interest loans, potential grant funding, and some level of contribution by the City. The City's median household income levels, population, and lack of job creation associated with the project limit external funding options primarily to Business Oregon programs. Based on that, it is recommended that the City submit an application for the Safe Drinking Water Revolving Loan Fund Emerging Contaminants Program to assist with both further development of a PFAS mitigation strategy and a preferred alternative once one is selected. This program, funded by the Bipartisan Infrastructure Law, provides grants and low-interest loans to help public water systems address contaminants like PFAS. Other potential funding sources may be available and are discussed in Chapter 3 of this Study.

Implementation Plan

The City will need to take the following proposed implementation steps to ensure treatment and/or mitigation of PFAS is completed before EPA deadlines, as noted in Chapter 1 of this Study. The steps outlined are general in nature and include the major steps that need to be undertaken.

Should the City decide to proceed with the recommendations discussed herein, the implementation plan shown on Table ES-4 outlines the key steps and timelines that the City could anticipate for project development. The implementation plan below is for the development of the PFAS Mitigation Feasibility Study. Following the completion of the PFAS Mitigation Feasibility Study, it is important to note that it may take three to four years from the date the City decides to proceed with a capital improvements project until the project is completed and serving the community.

TABLE ES-4
FEASIBILITY IMPLEMENTATION PLAN

	Item	Completion Date
1.	PFAS Mitigation Feasibility Study Kickoff	February 2026
2.	Draft PFAS Mitigation Feasibility Study	June 2026
3.	City Selection of Preferred Alternative	July 2026
4.	Finalize PFAS Mitigation Feasibility Study	August 2026
5.	Submit Funding Application(s) for Preferred Alternative	August 2026

Chapter 1 - Background Information, Objectives, and Design Criteria

Introduction

This chapter presents background information related to the City of Hermiston, Oregon's water system, the need for this PFAS Water Treatment Feasibility Study, and the design criteria used for this Study. The general objectives of this Study are also outlined.

Background

The City provides drinking water to residents within its service area, which includes the city limits and urban growth boundary. The City has several water supply sources. The sources include three deep groundwater wells from basalt aquifers (Wells No. 2, 4, and 6), one shallow groundwater well from an alluvial aquifer (Well No. 5), and one surface water source that pulls water from the Columbia River that is treated through the Regional Water System. These water supply sources serve seven pressure zones throughout the City, utilizing water storage reservoirs, booster pump stations, and pressure reducing valves. The water supply sources and other major water system components are shown on Figure 1-1.

In April 2024, the U.S. Environmental Protection Agency (EPA) finalized the per- and polyfluoroalkyl substances (PFAS) National Primary Drinking Water Regulation, which identifies acceptable limits of PFAS in drinking water. PFAS are a group of industrial chemicals, commonly known as "forever chemicals," that are highly resistant to degradation and can persist in the environment for extended periods of time. PFAS have been found in drinking water in all 50 states. Studies have shown that PFAS can pose serious health risks like cancers, liver/kidney damage, and developmental issues. Sources of PFAS include industrial sites, firefighting foams, non-stick coatings on pans, landfills, and other sources.

Based on the EPA's PFAS regulations, the City recently completed testing of all water supply sources for PFAS. Of the five water supply sources, results from three of the supply sources had levels of PFAS that exceeded the maximum contaminant levels (MCL) established by the EPA. The water supply sources that tested positive for PFAS were Wells No. 2, 4, and 5.

Regulatory Requirements

The April 2024 EPA PFAS regulations established individual MCLs for six PFAS: perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), and hexafluoropropylene oxide dimer acid (HFPO-DA), also known as GenX, as contaminants with individual MCLs, and a hazard index was established for mixtures containing two or more variations of PFAS. In addition to the MCLs, the EPA established more conservative, non-enforceable maximum contaminant level goals (MCLG) for each regulated PFAS. Table 1-1 summarizes the PFAS MCLG and MCLs. Compliance with EPA regulations will be determined by taking regular samples from water supply sources. In addition to setting the MCLs, EPA regulations require that community water systems complete monitoring. Monitoring requirements are split between initial monitoring and ongoing compliance monitoring. The initial

monitoring must be completed within three years after the date of the final rule, or April 2027. The number and frequency of the sampling is dependent on the source type (i.e., surface water versus groundwater) and system size. A summary of the initial monitoring requirements is included on Table 1-2. Following the completion of the initial monitoring, ongoing compliance monitoring will be required, and test results must be made available to the public. Generally, ongoing compliance monitoring is required quarterly following the April 2027 deadline for initial monitoring to be complete. Primacy (i.e., state) agencies have the authority to reduce the ongoing compliance monitoring to once every three years if the initial monitoring results are below trigger levels for all regulated PFAS. Trigger levels are set at one-half the MCLs for regulated PFAS and one-half the hazard index.

Should PFAS concentrations exceed the MCLs, public water systems are required to comply with the regulations within a five-year period ending in 2029. Any public water system that has test results with PFAS levels above regulation requirements after the initial monitoring will be required to take steps to reduce concentrations and notify the public of the violation.

TABLE 1-1
U.S. ENVIRONMENTAL PROTECTION AGENCY PFAS
REGULATION MAXIMUM CONTAMINANT LEVELS SUMMARY

Compound	EPA MCLG	EPA MCL
PFOA	0	4.0 ppt
PFOS	0	4.0 ppt
PFHxS	10 ppt	10 ppt
PFNA	10 ppt	10 ppt
HFPO-DA (Also known as GenX)	10 ppt	10 ppt
Hazard Index[1]	1 (unitless)	1 (unitless)

[1] The Hazard Index is a weighted calculation based on levels of PFHxS, GenX chemicals, PFNA, and PFBS in the drinking water.

PFBS = Perfluorobutanesulfonic acid

ppt = parts per trillion

TABLE 1-2
U.S. ENVIRONMENTAL PROTECTION AGENCY
PFAS REGULATIONS INITIAL MONITORING SUMMARY

Source Type	System Size	Sampling Frequency
Surface Water	All	Quarterly within a 12-month period; samples are collected two to four months apart.
Groundwater	More than 10,000 customers	Quarterly within a 12-month period; samples are collected two to four months apart.
Groundwater	Less than 10,000 customers	Twice within a 12-month period; samples are collected five to seven months apart.

Although the EPA finalized PFAS regulations in April 2024, the Oregon Health Authority - Drinking Water Services (DWS) has yet to adopt PFAS regulations. Per the EPA's PFAS regulations, DWS has up to two years from the finalization of the EPA's regulations to develop and/or adopt PFAS regulations, and DWS's regulations must be at least as stringent as the EPA regulations. If DWS

adopts more restrictive standards than the EPA, additional treatment considerations may be needed.

Additionally, in May 2025, the EPA announced that it intends to rescind the regulations finalized in 2024 and reconsider the regulatory determinations of some of the PFAS compounds. Per the press release, the EPA intends to keep the MCLs for PFOA and PFOS while also extending the deadlines for compliance with the regulations. The other compounds included in the 2024 final regulation are anticipated to be rescinded.

At the time this Study was prepared, DWS has not adopted any PFAS regulations, and there has been no official update on the revisions to the EPA's regulations. Based on this, the 2024 EPA PFAS regulations were utilized for this Study.

Objectives

The objective of this Study is to evaluate the available treatment technologies commonly used to remove PFAS from drinking water, provide a 20-year present worth analysis for viable alternatives, and provide the City with direction for the next steps in the planning, procurement, and implementation of the preferred alternative for treating and/or mitigating PFAS in the existing water supply sources.

Preliminary Design Criteria

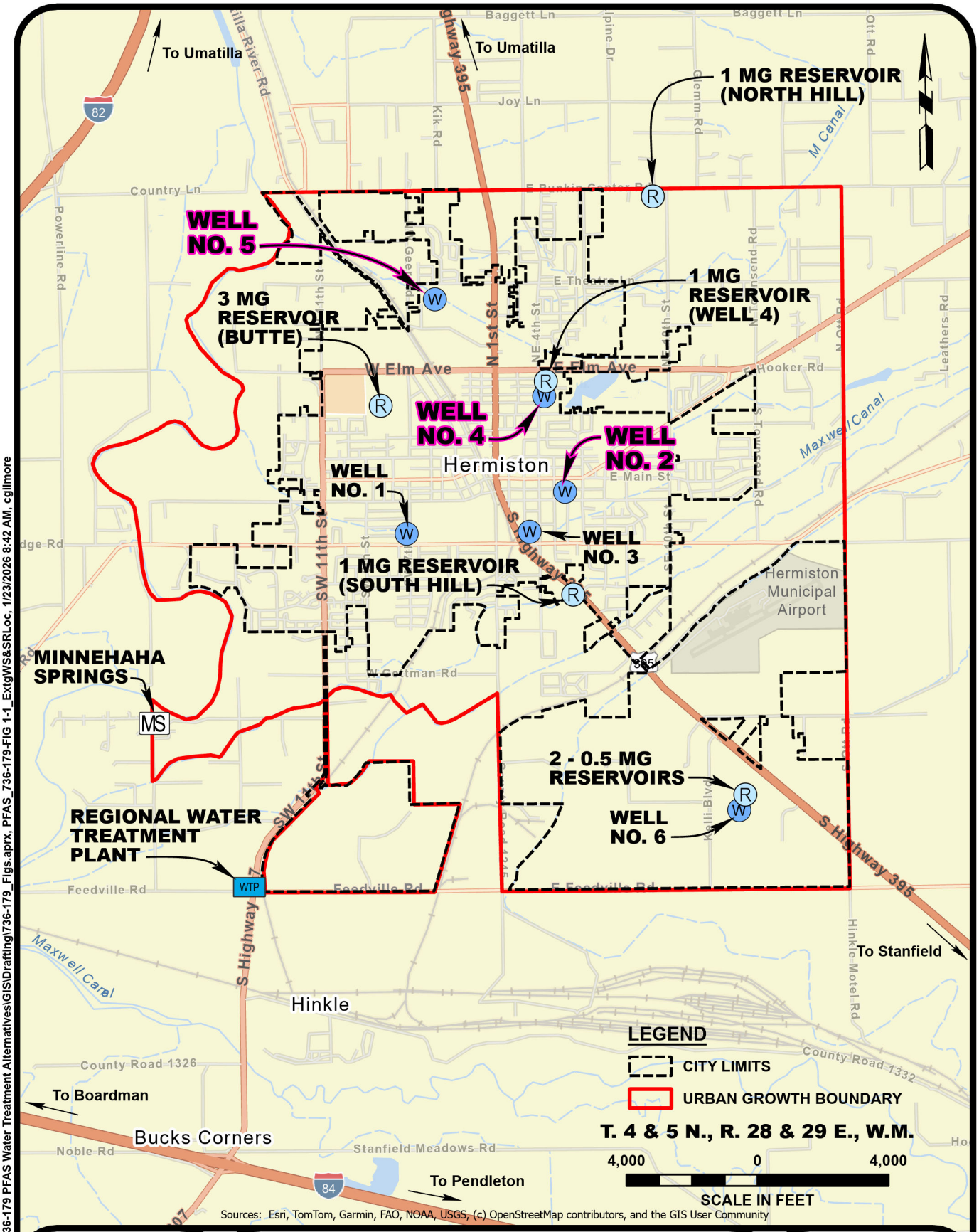
To develop and evaluate treatment technologies for the removal of PFAS from the City's water supply sources, design criteria must first be set to be used in the analysis. The primary criterion required is the flow capacity of each of the wells. The treatment system selected will need to be capable of treating all available flow from the supply sources. For this Study, the maximum flow rate presented in the source water rights was used. Additionally, the raw water PFAS levels will be required to determine the level of treatment needed. The raw water PFAS levels presented herein are based on the testing that has been completed by the City. Sampling test results completed by the City for PFAS are included in Appendix A. Table 1-3 provides a summary of the design criteria utilized in this Study for analyzing the PFAS treatment technologies.

TABLE 1-3
DESIGN CRITERIA SUMMARY

	Well No. 2	Well No. 4	Well No. 5
Flow rate	1,000 gpm	2,000 gpm	5,000 gpm
Raw Water PFOA	<MRL	<MRL	<MRL
Raw Water PFOS	12 ppt	6 ppt	4.5 ppt
Raw Water PFHxS	12 ppt	8 ppt	7.5 ppt
Raw Water PFNA	<MRL	<MRL	<MRL
Raw Water HFPO-DA (also known as GenX)	<MRL	<MRL	<MRL
Raw Water Hazard Index[1]	1.2	0.8	0.8

[1] *The Hazard Index is a weighted calculation based on levels of PFHxS, GenX chemicals, PFNA, and PFBS in the drinking water.*
<MRL = Less than the minimum reporting level
gpm = gallons per minute

The treatment technology must be capable of reducing the finished water PFAS levels below the EPA MCLs. The PFAS level in drinking water will be dependent on how the treatment system is operated and is further discussed in Chapter 2.



LEGEND

CITY LIMITS

URBAN GROWTH BOUNDARY

T. 4 & 5 N., R. 28 & 29 E., W.M.

4,000 0 4,000

SCALE IN FEET

CITY OF
HERMISTON, OREGON
PFAS WATER TREATMENT ALTERNATIVES ANALYSIS

EXISTING WATER SUPPLY AND STORAGE RESERVOIR LOCATIONS

FIGURE 1-1

anderson perry

X:\Clients\Hermiston OR\736-179 PFAS Water Treatment Alternatives\GIS\Drafting\736-179_Figs.aprx, PFAS_736-179-FIG 1-1_ExtgWS&SRLoc, 1/23/2026 8:42 AM, cgilmore

Chapter 2 - Water Treatment Technology Analysis

Introduction

This chapter outlines the proposed per- and polyfluoroalkyl substances (PFAS) treatment alternatives for the City of Hermiston, Oregon. A summary of the estimated costs of the improvements and a 20-year present worth analysis is included. An overview of each technology is provided, along with an evaluation of the benefits and disadvantages of each.

Water Treatment Technologies

Most conventional treatment technologies are not effective against PFAS. PFAS are highly resistant to most chemical, physical, and biological processes, which limits feasible alternatives. Given PFAS's high resistance to degradation, removal is the only feasible method of treatment. Most methods of PFAS removal fall into three main categories: adsorption, ion exchange (IX), and nanofiltration/reverse osmosis (RO). The following is a brief summary of the available treatment technologies.

Granular Activated Carbon

Granular activated carbon (GAC) treatment is a form of carbon adsorption that uses a granular carbon media ranging from 1.2 to 1.6 millimeters (mm) in diameter. Adsorption is a process by which substances present in a liquid adhere to the surface of a solid media, which can then be removed from the liquid along with the substances of concern. GAC uses carbonaceous material for the media, typically derived from charcoal, coal, or similar substances. The media has a complex surface with many small pores, resulting in a high surface area. The PFAS contaminants diffuse through the pores and onto the surface of the granules, allowing removal. Given the need for the contaminants to diffuse through the granules, treatment effectiveness is limited by the contact time between the water and the media. As more space on the granules is taken by contaminants, the contact time must increase to achieve the same level of treatment. In addition to removing PFAS, GAC removes many other contaminants, such as taste and odor compounds, organics, and chlorine. The propensity of GAC to affect such a wide variety of substances can lead to a phenomenon known as chromatographic peaking. When this occurs, competing compounds occupy the space of previously removed PFAS on the media surface, causing the contaminants to be released back into the water. The ability of GAC to remove chlorine can also affect chlorine residuals, potentially necessitating adjustments to existing disinfection processes.

Ion Exchange

IX is a treatment process that uses a resin to remove charged molecules. Negatively charged PFAS molecules are attracted and bind to treatment sites on the positively charged resin material. The PFAS molecules occupy the place of counterions, similarly charged molecules located on the resin. These counterions are then released into the solution. The resin material

consists of many small beads, typically not larger than 1 mm in diameter. The counterions are often chlorine or sodium, with hydroxide and hydrogen also used. Multiple resin types are available depending on treatment goals, with quaternary ammonium and dimethyl ethanol ammonium typically used for PFAS treatment. The effectiveness of IX can be significantly reduced by certain co-contaminants, especially sulfides, nitrates, chlorides, chromates, total organic carbons (TOCs), and dissolved organic carbons. Its effectiveness is also decreased as more treatment sites become exhausted on the resin.

FLUORO-SORB®

FLUORO-SORB® (FS) is a form of adsorption using a clay-based media. The media is composed of many small thin layers of plates stacked together. These plates cause the media to have a high surface area. The plates expand as they adsorb PFAS, increasing the surface area further and allowing for a long media life. FS's method of operation is broadly similar to GAC. Contaminants diffuse through the media and are adsorbed onto the surface of the media particles. FS is designed to be selective toward PFAS, which limits its ability to remove other contaminants. This typically results in an extended media lifespan by preventing adsorption spaces from being taken up by contaminants other than PFAS.

Reverse Osmosis

RO is a treatment process involving the use of a semi-permeable membrane to remove contaminants from water. The membranes used in RO have very small pores, which can remove most contaminants from the water, including PFAS, organics, iron, and manganese. RO may also eliminate the need to disinfect the water, as it can remove viruses and bacteria. The primary method by which RO removes PFAS is size exclusion. Pumps are used to force water through the membrane at high pressure. The water downstream of the membrane is known as the permeate, and the upstream water is called the concentrate. Treatment results in the concentrate having very high levels of contaminants. The recovery rate is the percentage of incoming untreated water that becomes part of the concentrate. Depending on the incoming water quality, recovery rates can range from as low as 40 percent for seawater to 95 percent for high-quality groundwater.

Handling and disposing of the concentrate are the primary maintenance concerns of RO. Several options are available, such as evaporation ponds, discharge to sewer, or a dedicated concentrate water treatment facility (WTF). Membranes must be replaced at regular intervals. Despite high levels of maintenance, RO is effective at treating very high concentrations of contaminants. This can result in less frequent maintenance intervals when contamination is severe compared to other treatment options. Unlike the other options, the membranes retain most of their effectiveness throughout their lifetime. However, in most cases, these advantages are outweighed by the complexity of the equipment and the logistical challenges involved in disposing of the concentrate. Because of these drawbacks, RO is impractical for the City and are not considered further in this Study.

Treatment Alternatives and Evaluation

As discussed previously, the City has three well supply sources that tested above the maximum contaminant level (MCL) for PFAS. The three well supply sources are located throughout the City.

An alternative for the construction of a centralized WTF was considered. However, due to the distance between the wells and associated conveyance piping between the well sites, it was determined that a centralized WTF was not feasible. The cost of constructing transmission lines to connect the sources, as well as potential land acquisition needs, would outweigh the potential savings of constructing a single centralized WTF. Therefore, construction of a new PFAS WTF at Wells No. 2, 4, and 5 was determined to be the most feasible option.

Using the design criteria, three alternatives were then developed for evaluation. Each alternative would include the construction of a WTF at each well testing positive for PFAS. Alternative A would utilize GAC for removing PFAS, Alternative B would utilize IX for PFAS removal, and Alternative C would utilize FS for PFAS removal. To help with the evaluation, manufacturers were contacted to provide preliminary proposals for the treatment alternatives. Proposals were received from ATEC Water Systems, LLC, and AqueoUS Vet, Inc., which are included in Appendices B and C, respectively.

Several features are applicable to each alternative. Each alternative would utilize trains(s) of pressure vessels in a lead and lag configuration. Each train would consist of two pressure vessels in series. The pressure vessels would contain the media utilized for the water treatment. Water would be treated primarily with the lead pressure vessel and would then continue to flow through the lag pressure vessel. When a breakthrough occurs (i.e., PFAS is detected following the lead pressure vessel), the lag pressure vessel would already be in place for the removal of any breakthrough PFAS. The lag pressure vessel could continue to be used for primary treatment while the media in the lead pressure vessel is replaced. This would ensure that the water can be treated continuously with minimal downtime. The size of the pressure vessel and media type utilized would limit the flow rate through each train. To accommodate higher flow rates, additional trains would be utilized. Trains would be installed parallel to each other to allow flow to be split between each train.

The PFAS level in the finished water will depend on how the lead and lag vessels are operated. Typical operation includes primary treatment through the lead vessel until the breakthrough PFAS level(s) reach the MCL. Once the PFAS level(s) reach the MCL, the lead and lag vessels are switched so the lag vessel becomes the lead and provides primary treatment. Once in the lead, this vessel stays in the lead. The new lag vessel media is replaced and then continues to operate in the lag role. This helps ensure that PFAS levels in the finished water are minimal. The system will operate in this configuration until the breakthrough of the lead vessel reaches the MCL and the process is repeated. However, operating the system with lead vessel breakthrough levels higher than the MCL for long durations can result in the lag vessel potentially having breakthrough and not adequately removing PFAS.

Currently, all wells have the same general configuration, with the water pumped from the well into an adjacent storage tank/reservoir and chlorine being injected prior to the storage tank/reservoir. After the water is disinfected in the storage tank/reservoir, the water passes through booster pumps before entering the distribution system. Both Wells No. 2 and 4 are equipped with an aerator located between the well and storage tank/reservoir. Well No. 5 currently discharges directly to a clearwell.

All treatment system alternatives are proposed to be installed between the well pump and the water storage tank/reservoir prior to chlorine injection. Due to headloss caused by the treatment

system, replacement of each well pump to provide sufficient flow and head is anticipated and included in each alternative. Should replacing the well pumps prove unfeasible, booster pumps may be added between the well and the treatment system to make up for the headloss. All alternatives would include a pre-filter system placed before the treatment system. The pre-filter system may consist of cartridge or bag filters and would be used to help remove particles that could cause contamination of the treatment system media. Pre-filter costs are included in the alternatives analysis. Figure 2-1 shows a process flow diagram of the proposed treatment alternatives that is typical for each well site.

Water Quality

One of the primary factors in determining the feasibility of each alternative is water quality. Poor water quality has the potential to increase the frequency in which media replacement is required. Higher rates of media replacement could result in much higher operation and maintenance (O&M) costs over the span of the treatment system's life. Therefore, selection of a technology compatible with existing water conditions is necessary.

Media selectivity refers to the ability to remove only certain contaminants by the treatment technology. Unless additional water quality concerns are present, higher selectivity is an advantage, allowing more of the preferred contaminant to be treated by the treatment media. The technology with the highest selectivity for PFAS is FS. FS is designed specifically for treating PFAS. Consequently, it is comparatively unaffected by other contaminants, with media replacement intervals being determined mostly by PFAS concentrations. This results in longer media life than the other alternatives and a low sensitivity to other potential water quality components impacting treatment effectiveness.

The least selective media option is GAC. It can remove a wide range of contaminants, including many organics in addition to taste and odor compounds. Because GAC removes these additional compounds, the media can be exhausted more quickly if they are present, increasing the frequency at which the GAC media must be replaced.

The selectivity of IX is between that of GAC and FS. If water quality issues are limited , IX may have a much longer media life than GAC. However, the effectiveness of IX is limited by the presence of several contaminants, namely sulfates, nitrates, chlorides, and alkalinity. These compounds can cause fouling, reducing the efficiency of the treatment process and reducing the media life. Chromatographic peaking also can occur in IX resins, potentially resulting in the release of PFAS into the water supply if water quality issues are not addressed. Table 2-1 summarizes the major contaminants that are concerns for media life for each technology.

TABLE 2-1
SUMMARY OF WATER QUALITY CONCERNS

Media Type	Fouling Contaminants
GAC	TOCs, VOCs
IX	Sulfate, nitrate, chloride, perchlorate, and alkalinity
FS	No major contaminants of concern

VOCs = volatile organic compounds

As part of this PFAS Water Treatment Feasibility Study, the City completed sampling and testing of the water from Wells No. 2, 4, and 5 to help evaluate the effectiveness of the treatment alternatives. Table 2-2 summarizes the results of the water quality sampling completed as part of this Study. Additionally, Appendix A includes the test results.

TABLE 2-2
WELLS NO. 2, 4, AND 5 WATER QUALITY SUMMARY[1]

Constituent	Well No. 2	Well No. 4	Well No. 5
Sulfate	50.4	51.8	54.9
Nitrate	ND	ND	6.6
Alkalinity	160	159	275
Chloride	25.3	25	43.8
Fluoride	1.2	1.2	ND
Arsenic	ND	ND	0.006
Uranium	ND	ND	0.0075
Calcium	8	13.9	81.5
Magnesium	0.9	2.3	23.8
Sodium	99.2	89.9	49.5
Potassium	14.6	16.3	8.6
Iron	0.026	0.036	ND
TDS	313	308	459
TOC	ND	ND	1.4
Total VOC	0.04	0.051	0.026

[1]*Concentrations in milligrams per liter.*

ND = not detected

TDS = total dissolved solids

As outlined on the table above, the water from Wells No. 2, 4, and 5 is relatively clean. There are no constituents present in the sampling that has been completed that would result in excessive fouling of any of the treatment technology alternatives included in this Study.

Filter Size

Filter size is a significant driver of project capital and O&M costs. Not only does a larger filter size result in higher costs for the treatment equipment, but it also results in larger buildings to house the equipment. Larger filters also result in more media that must be replaced once the PFAS breakthrough begins to occur. The most important metric to determine filter sizing is empty bed contact time (EBCT). EBCT refers to the length of time water must be in contact with a given media for the desired treatment goals to be accomplished. For a given flow rate, higher EBCTs require a larger volume of media. GAC has an EBCT of ten minutes. This means that water must remain in contact with the media for at least ten minutes for the required level of PFAS to be removed. IX and FS have shorter EBCTs of two minutes each. EBCT and media volume are directly proportional; therefore, GAC requires approximately five times the volume of IX and FS.

While media volume is determined by EBCT, the required media surface area is determined by the hydraulic loading rate (HLR). Each media type exhibits the most favorable performance within a specified range of HLRs. For IX and FS, the HLR is between approximately 6 and 18

gallons per minute (gpm) per square foot. For the GAC treatment system, the ideal HLR is lower, typically ranging between 2 and 10 gpm per square foot, which results in less water being treated per square foot. Vessel sizing is typically specific to the media being used, with diameters being sized to ensure optimal loading rates.

Table 2-3 provides a summary of the EBCT and approximate tankage of each alternative. As indicated on the table, GAC has the highest tankage requirements by a factor of approximately five. IX and FS have the same tankage requirements. Consequently, an IX treatment system could be converted to FS and vice versa without additional improvements. Similarly, a GAC treatment system could be converted to either IX or FS. However, an IX or FS treatment system cannot be converted to a GAC treatment system without installing additional filter tankage.

TABLE 2-3
MEDIA TANKAGE REQUIREMENTS

Media Type	Approximate Tankage[1] (cubic feet)	Minimum EBCT (minutes)
GAC	21,390	10
IX	4,278	2
FS	4,278	2

[1]Required tankage is for Wells No. 2, 4, and 5 and includes both lead and lag trains. Tankage volume shown is based on the ATEC Water Systems, LLC, proposal and would be similar for other manufacturers.

Media Availability

GAC is the most widely available media for PFAS treatment. GAC is composed of carbon-based matter and can be manufactured from a variety of sources, including bituminous coal, lignite, charcoal, and coconut shells. GAC is also the least expensive medium on a per unit basis. IX is also widely available and produced by a range of manufacturers. However, many suppliers are located outside the U.S. Should the City use external funding, Build America, Buy America (BABA) compliance may be more challenging with IX compared to GAC or FS. While GAC and IX resins are available from a wide range of suppliers, FS clay adsorbent is a proprietary product only available through Minerals Technologies. The clay, which forms the basis of the media, is domestically sourced exclusively from Wyoming and is fully BABA compliant. Although FS is currently readily available, the current single supply source could result in future supply issues.

Regulatory Approval

GAC is the most widely studied method of PFAS removal and has regulatory approval in the state of Oregon for PFAS removal. IX is also approved for PFAS treatment and widely studied. However, FS is not currently approved for use in Oregon. It is a new technology compared to the other alternatives, with far fewer installations utilizing the media. Should the City decide to use FS for PFAS removal, obtaining regulatory approval would be necessary. At a minimum, this would involve conducting a pilot test in accordance with Oregon Administrative Rules 333-061-0050 to demonstrate the media is capable of adequate performance. The Oregon Health Authority - Drinking Water Services (DWS) may require other steps be taken to prove the treatment efficacy.

Life Cycle Cost Analysis

To determine the most economical water treatment approach for the City, a cost analysis was developed for each alternative. For this evaluation, the total capital cost and 20-year total present worth were evaluated under each alternative. The total capital cost includes the estimated procurement and installation of proposed equipment, and any additional ancillary facilities needed to provide the City with a fully functional treatment system. The costs include, but are not limited to, treatment equipment, buildings, and ancillary equipment and components.

The total present worth includes the total project cost as well as projected annual operation, maintenance, and replacement (OM&R) costs over a 20-year life cycle. These include, but are not limited to, labor, utilities, parts, sampling and testing, media replacement, and equipment replacement. The values presented are preliminary, based on manufacturer-provided best estimates for each treatment system. Further details as to the primary considerations that affect costs with the various treatment systems are detailed below.

Capital Costs

Capital cost estimates were developed for each alternative. Each estimate includes the cost to construct a new WTF at each affected well, including treatment equipment, a building to house treatment facilities, and associated equipment and pump upgrades. The cost estimates were based on preliminary proposals from ATEC Water Systems, LLC, and AqueoUS Vets, Inc. Based on the proposals received, there may be potential to reduce treatment equipment costs by using fewer vessels with larger volumes to achieve the same media volume and hydraulic loading rates compared to skid-mounted treatment systems. This would apply to treatment technologies with higher empty bed contact time/larger media volume, primarily applying to GAC. For the alternatives with lower empty bed contact time (IX and FS), there appears to be less difference in the cost of treatment systems with small diameter vessels compared to larger diameter vessels at the capacities evaluated in this Study. The cost differences between the alternative treatment systems are primarily attributable to the number of filter vessels required, which is a direct result of the volume of media required to remove PFAS. GAC requires more media volume than IX and FS. This increases tankage requirements and raises costs.

Building costs are a significant factor, with the spatial requirements varying between each alternative. This evaluation assumes the building's housing treatment equipment will be concrete masonry unit (CMU) structures on concrete foundations with concrete floors. CMU construction was selected to match the existing CMU structures at the well sites. The WTF buildings must be of sufficient size to house the pre-filter systems, treatment equipment, instrumentation and controls, as well as any additional space the City deems necessary for operations. Estimated building footprints were developed based on proposals provided by ATEC Water Systems, LLC, and AqueoUS Vets, Inc. This generally includes the footprint of the equipment, spacing between skid units, inlet and outlet piping, plus space on all sides for O&M access. Of the alternatives, GAC has the highest associated building costs due to the high tankage requirements.

Upgrades to the City's existing pumps will be required to address increases in headloss through the new treatment systems. The cost estimates include a new well pump for each water source. The headloss and associated cost of the pump improvements is affected by the

media type and HLR. Higher HLRs and smaller media size both result in increased headloss. IX and FS have a similar high HLR. However, the smaller size of the IX media results in IX having higher headloss than FS. The relatively low HLR of the GAC results in less headloss compared to the IX and FS. Due to the high headloss, IX is the more expensive alternative in terms of pump upgrades.

Costs common to all alternatives include site work, a pre-filtration system, mechanical piping fittings and valves, electrical, controls and instrumentation, and building heating, cooling, and ventilation. These costs apply to each alternative, with adjustments made accordingly based on the scope of improvements to be completed.

The estimated project costs for Alternative A, the GAC treatment system; Alternative B, the IX treatment system; and Alternative C, the FS treatment system, are shown on Figures 2-2, 2-3, and 2-4, respectively.

Operation, Maintenance, and Replacement Costs

OM&R cost estimates were developed for each alternative. The estimates include only the additional costs created by the implementation of each PFAS water treatment alternative. Existing OM&R costs present at each site were not considered.

DWS classifies community water treatment systems based on the size and complexity of the water system facility. For water treatment, a point system based on the size and complexity of the system is used to classify the system as requiring water treatment levels 1, 2, 3, or 4. The communities must then have an operator with a minimum water treatment certification matching the rating of the water system. Currently, the City has 51 points associated with its water treatment system. A copy of the Water System Treatment and Distribution Classification Worksheet from DWS is included in Appendix D. This puts the City's water system at a Water Treatment Level 2 (31 to 55 points). In coordinating with DWS staff, the addition of a treatment system for PFAS removal is anticipated to add ten points to the City's system classification, resulting in a total of 61 points. The increase in the City's system classification is anticipated to result in the City's operator certification requirements increasing from a Water Treatment Level 2 to a Water Treatment Level 3. Operator salary costs associated with the increase from a Water Treatment Level 2 to a Water Treatment Level 3 are included in the OM&R costs. Additional labor costs included in the annual OM&R are for the removal and replacement of the PFAS treatment media. The additional labor costs vary between alternatives. Larger tankage requirements can lead to increased labor costs, due both to the higher quantity of media that must be replaced and the higher number of vessels to maintain. However, there is potential to reduce labor costs slightly by utilizing larger vessels, decreasing the number of vessels needed while maintaining required media volumes. Media life also has a significant impact on labor costs, with shorter media life leading to more frequent replacements.

Utility costs were considered in the OM&R estimates for each alternative. The primary driver of the additional utility costs is the increase in pumping power required to offset the pressure loss caused by the treatment systems. Costs for supplies, parts, maintenance, repairs, and testing were estimated and included. The cost of the minimum quarterly testing of PFAS for each well site was included. Maintenance requirements for the treatment systems in addition to media replacement are minimal. Most maintenance would be related to gaskets or other mechanical

components and depend primarily on the number and size of vessels present in the treatment system. Capital outlay costs were included for each well site for maintaining and upgrading the building addition required to house the treatment system.

The treatment equipment, including the pre-filtration system and PFAS treatment system, will require regular maintenance. The pre-filtration system cartridge filters or bags will be required to be replaced periodically based on water quality. PFAS treatment system media disposal and replacement costs were based on anticipated media life for each treatment alternative. Table 2-4 summarizes the projected PFAS treatment media life provided by ATEC Water Systems, LLC, and AqueoUS Vets, Inc., for each well site based on the well site water quality test results. The total cost of media disposal is composed of both transportation costs and landfill costs associated with disposing of the used filter media. Landfill costs are the most significant of the expenses and are typically assigned based on the mass of media in tons. The U.S. Environmental Protection Agency (EPA) recommends disposal of spent PFAS treatment media in a hazardous waste landfill, which raises costs compared to standard landfill disposal. For this PFAS Water Treatment Feasibility Study, it was assumed all spent PFAS treatment media would be transported and disposed of at the Chemical Waste Management of the Northwest facility in Arlington, Oregon. While not as significant as the landfill costs, transportation costs can increase greatly with the volume of media that must be disposed of, requiring more trips for disposal. PFAS treatment media replacement costs were based on the projected media life presented on Table 2-4 below and media unit costs provided by ATEC Water Systems, LLC, and AqueoUS Vets, Inc. The pre-filter replacement, PFAS treatment media disposal, and PFAS treatment media replacement costs presented in the OM&R costs are average annual costs as all equipment and alternatives do not require annual replacement. Treatment equipment replacement costs were also included in the annual OM&R costs. Replacement of well pumps was not included as replacement of the existing well pumps is already included in the capital cost estimates.

TABLE 2-4
PROJECTED MEDIA LIFE

	Projected Media Life (days)		
Media Type	**Well No. 2**	**Well No. 4**	**Well No. 5**
GAC	375	529	454
IX	853	1,573	467
FS	943	1,500	1,050

The estimated OM&R costs for Alternative A, GAC treatment system; Alternative B, IX treatment system; and Alternative C, FS treatment system, are shown on Figures 2-5, 2-6, and 2-7, respectively.

The most significant OM&R costs are media replacement and equipment replacement. For large installations with low media life, media replacement costs are more significant than equipment replacement. However, for smaller installations with longer media life, equipment replacement is typically the most significant cost. Pre-filter replacement and labor are typically the next most significant expenses, with the anticipated salary increase for a Water Treatment Level 3 operator being the majority of the labor cost.

Alternative A has the highest OM&R costs, driven primarily by its high tankage requirements and low media life. Alternative C has the lowest OM&R costs due to the long media life. Alternative B has comparable OM&R costs to Alternative C in most categories except for media replacement.

20-Year Present Worth

To determine the most economical alternative over an extended period of time, a 20-year present worth cost estimate was developed for each alternative. The total present worth cost includes the total project cost as well as annual OM&R costs, as outlined above, over a 20-year life cycle. The values presented are preliminary, based on manufacturer-provided best estimates for each treatment system. For better accuracy, the media life may be verified with a rapid small-scale column test (RSSCT) or pilot test program.

The estimated 20-year present worth costs for Alternative A, GAC treatment system; Alternative B, IX treatment system; and Alternative C, FS treatment system, are shown on Figures 2-5, 2-6, and 2-7, respectively.

As indicated on Figure 2-5 and Table 2-5, GAC would have the highest costs for all categories, driven by lower PFAS treatment media life and large media volume requirements. IX would be the next most expensive, with the anticipated PFAS treatment media life being the primary difference from the FS. FS would have the lowest total estimated construction cost, annual OM&R, and total present worth. The PFAS treatment volume of both the IX and FS are similar but the longer anticipated PFAS treatment media life would result in the lower annual OM&R costs for FS.

TABLE 2-5
TREATMENT TECHNOLOGY TOTAL PRESENT WORTH COMPARISON

Alternative	Total Estimated Construction Cost[1]	Total Annual OM&R	Total Present Worth
A (GAC)	$23,460,000	$1,572,000	$43,060,000
B (IX)	$15,639,000	$1,033,000	$28,519,000
C (FS)	$13,732,000	$750,000	$23,052,000

[1]All costs are 2026 dollars.

Summary of Treatment Technologies

Alternative A would utilize a GAC treatment system, which is one of the most proven technologies for PFAS removal. However, the tankage requirement for GAC is approximately five times that of IX or FS. This would increase costs across the project, including the treatment system tankage and building. For this reason, GAC is generally only cost-effective if pre-existing water quality issues are present that can also be treated by using GAC. Due to the additional tankage required and short media life, GAC is typically not a feasible solution for treating only PFAS.

Alternative B would utilize an IX treatment system, which has been proven to efficiently and effectively remove PFAS from drinking water when water quality allows. Based on the water quality sampling completed by the City in January 2026, it appears that IX can remove PFAS from the City's water sources and provide a relatively long media life.

Alternative C would utilize FS, which has been shown to perform PFAS removal efficiently with lower capital and 20-year present worth costs than IX. However, the lack of regulatory approval for FS would result in additional expenses that would likely offset the lower construction and OM&R costs of the technology in the near future. FS also has one supplier of the media, which could cause delivery issues. Therefore, FS is less feasible than IX for the City.

Recommended Approach

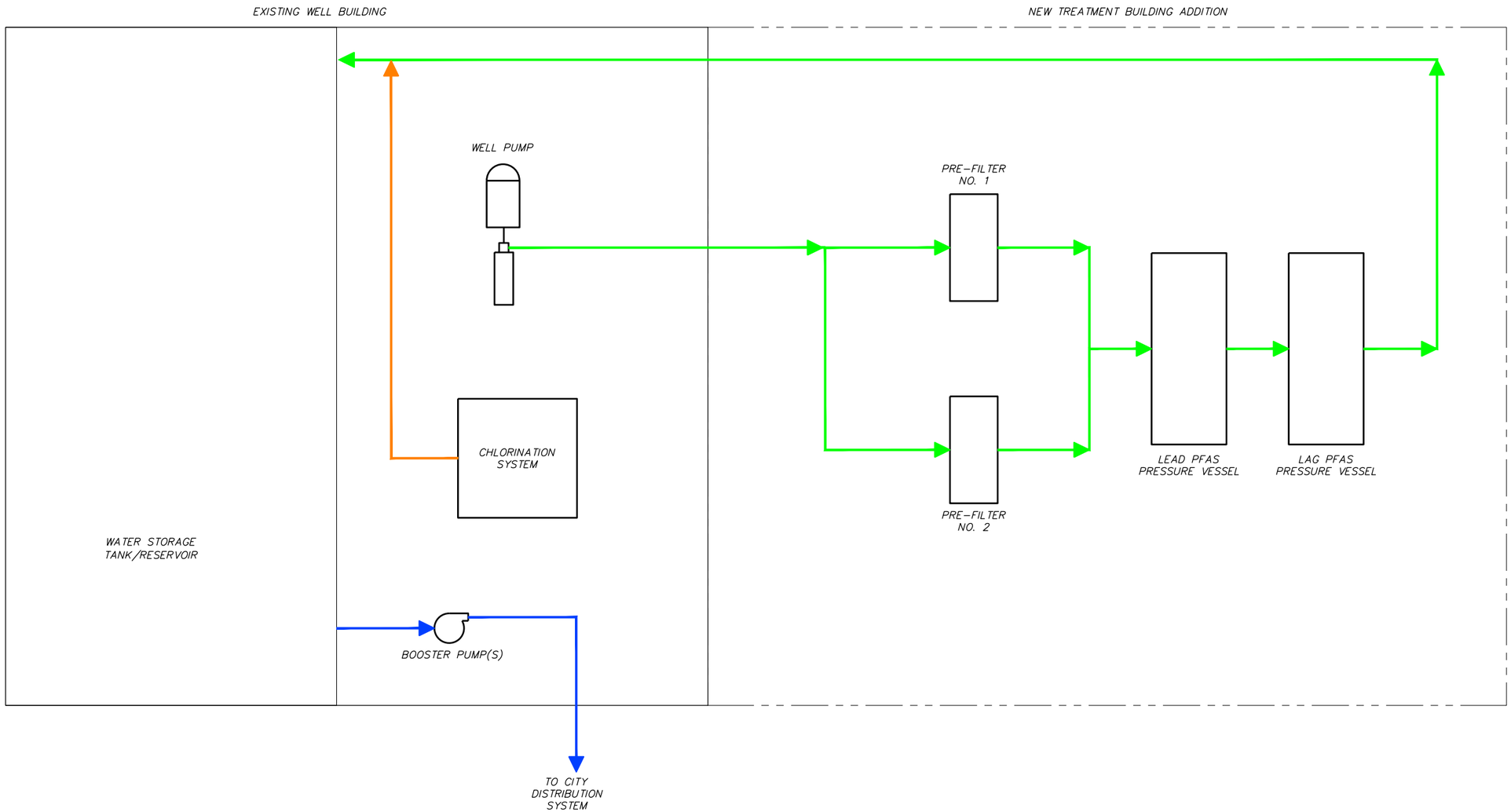
Due to the significant construction and annual OM&R costs associated with incorporating PFAS treatment with the City's Wells No. 2, 4, and 5, it is recommended that the City complete an additional PFAS Mitigation Feasibility Study to evaluate options to mitigate PFAS in the drinking water and not just treat PFAS-contaminated sources. The City has two other water supply sources currently in operation that have been tested for PFAS with results below the EPA's MCL that could potentially be expanded. The City also has three other water supply sources that are not currently being utilized but could potentially be brought back online to help mitigate PFAS in the City's drinking water.

Currently, Wells No. 2 and 4 are utilized predominately in the summer months to provide additional capacity. Given that these wells are not the primary sources of water for the City, there is potential to decommission these wells and utilize alternative sources to supply additional capacity. This would reduce the number of sites requiring PFAS treatment and could potentially decrease both capital and annual OM&R costs. Well No. 5 is the primary source for the City and will likely be more difficult to remove from the system. However, there may be other options that would allow a reduction in supply capacity of Well No. 5 that could reduce construction and OM&R costs from what is presented herein.

Well No. 6 and the Regional Water System, which are currently being utilized by the City, have not tested positive for PFAS exceeding the EPA's MCL. It is recommended that the expansion of these PFAS-free sources be evaluated as an alternative to the treatment of PFAS at Wells No. 2, 4, and/or 5. The City also has two wells (Wells No. 1 and 3) that have been decommissioned and are not currently being utilized that could be evaluated and potentially brought back online. The water rights from Wells No. 1 and 3 were transferred to Well No. 6 and, thus, believed to be in the same aquifer. Based on this, it is anticipated that PFAS levels in Wells No. 1 and 3 are likely below the EPA's MCL. The City has one other surface water source, the Minnehaha Springs, that is currently undeveloped. However, the City's water rights for the source are 5,000 gpm, giving it the capacity needed to potentially replace Well No. 5. It is recommended that the City conduct PFAS and water quality testing for these sources to determine their suitability to serve as alternatives to the sources testing positive for PFAS. Should the testing return favorable results, it is recommended that the feasibility of developing these sources be evaluated.

It is recommended that the City proceed with developing a PFAS Mitigation Feasibility Study as soon as practicable to better position the City to meet the EPA implementation schedule for the removal of PFAS from its drinking water system. After completion of the additional PFAS Mitigation Feasibility Study, it is anticipated that the City will be required to pursue an improvement project. The improvement project may include expansion of existing water sources, reactivating abandoned sources, and/or constructing new treatment facilities for PFAS-contaminated sources as outlined herein. Should the City elect to pursue the construction of PFAS treatment facilities, it is recommended that the City conduct additional testing in the form of an RSSCT or a pilot test. Data

from the preliminary RSSCT or pilot test can be used to further define the improvements project. Should an alternative be selected that does not require PFAS treatment or following the additional testing via RSSCT or pilot test, the City should consider applying for outside funding for completing the preferred PFAS mitigation alternative.



NOTES

1. THE PROCESS SCHEMATIC IS TYPICAL FOR ALL WELLS. WELL NO. 2 AND WELL NO. 4 ARE EQUIPPED WITH AN AERATOR LOCATED BETWEEN THE WELL AND THE STORAGE TANK/RESERVOIR. WELL NO. 5 DOES NOT HAVE AN AERATOR.
2. ALL TREATMENT ALTERNATIVES ARE ANTICIPATED TO HAVE A SIMILAR CONFIGURATION. THE NUMBER OF PRE-FILTER SYSTEM VESSELS AND PFAS PRESSURE VESSELS WILL VARY BASED ON THE TREATMENT TECHNOLOGY AND WELL CAPACITY.
3. THE PRE-FILTER SYSTEM OPERATES IN A DUTY/STANDBY CONFIGURATION TO PROVIDE REDUNDANCY WHILE THE PFAS PRESSURE VESSELS WILL OPERATE IN A LEAD-LAG CONFIGURATION TO PROVIDE REDUNDANCY.
4. ONLY PRIMARY FLOW PATHS AND PROCESS EQUIPMENT IS SHOWN. ADDITIONAL EQUIPMENT, PIPING, VALVING, ETC., WILL BE REQUIRED FROM WHAT IS SHOWN HERE FOR A COMPLETE AND OPERATING SYSTEM.

LEGEND

- RAW WATER
- FINISHED WATER
- CHLORINE SOLUTION

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CITY OF
HERMISTON, OREGON
PFAS WATER TREATMENT ALTERNATIVES ANALYSIS

PFAS TREATMENT PROCESS SCHEMATIC

FIGURE 2-1

X:\Clients\Hermiston OR\736-179 PFAS Water Treatment Alternatives\CAD\PFAS-736-179-FIG2-1_Schematic.dwg, Layout1, 2/12/2026 8:42 AM, smagner

CITY OF HERMISTON, OREGON
PFAS WATER TREATMENT ALTERNATIVE ANALYSIS
ALTERNATIVE A - GRANULAR ACTIVATED CARBON TREATMENT SYSTEM
PRELIMINARY COST ESTIMATE
(Year 2026 Costs)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization (Approximately 5%)	LS	$ 977,000	All Req'd	$ 977,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	50,000	All Req'd	50,000
Well No. 2					
3	Site Work	LS	30,000	All Req'd	30,000
4	Concrete Masonry Unit (CMU) Building Addition[1]	LS	829,000	All Req'd	829,000
5	Pre-filter System	LS	200,000	All Req'd	200,000
6	Granular Activated Carbon (GAC) Treatment System[2]	LS	1,650,000	All Req'd	1,650,000
7	Well Pump Improvements	LS	305,000	All Req'd	305,000
8	Mechanical Piping, Fittings, and Valves	LS	100,000	All Req'd	100,000
9	Electrical Work[3]	LS	100,000	All Req'd	100,000
10	Controls and Instrumentation	LS	75,000	All Req'd	75,000
			Subtotal Well No. 2 Construction Cost		**$ 3,289,000**
Well No. 4					
11	Site Work	LS	30,000	All Req'd	30,000
12	CMU Building Addition[1]	LS	1,525,000	All Req'd	1,525,000
13	Pre-filter System	LS	280,000	All Req'd	280,000
14	GAC Treatment System[2]	LS	2,805,000	All Req'd	2,805,000
15	Well Pump Improvements	LS	315,000	All Req'd	315,000
16	Mechanical Piping, Fittings, and Valves	LS	120,000	All Req'd	120,000
17	Electrical Work[3]	LS	100,000	All Req'd	100,000
18	Controls and Instrumentation	LS	75,000	All Req'd	75,000
			Subtotal Well No. 4 Construction Cost		**$ 5,250,000**
Well No. 5					
19	Site Work	LS	50,000	All Req'd	50,000
20	CMU Building Addition[1]	LS	2,671,000	All Req'd	2,671,000
21	Pre-filter System	LS	450,000	All Req'd	450,000
22	GAC Treatment System[2]	LS	6,188,000	All Req'd	6,188,000
23	Well Pump Improvements	LS	280,000	All Req'd	280,000
24	Mechanical Piping, Fittings, and Valves	LS	170,000	All Req'd	170,000
25	Electrical Work[3]	LS	100,000	All Req'd	100,000
26	Controls and Instrumentation	LS	75,000	All Req'd	75,000
			Subtotal Well No. 5 Construction Cost		**$ 9,984,000**
				Subtotal Construction Cost	**$ 19,550,000**
				Construction Contingency (Approximately 20%)	3,910,000
				Total Estimated Construction Cost	**$ 23,460,000**
				Preliminary and Design Engineering (Approximately 10%)	2,346,000
				Construction Engineering (Approximately 10%)	2,346,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2026 DOLLARS) [4]	**$ 28,152,000**

Notes:
[1]A CMU building was selected to match the existing structures.
[2]Treatment system is based on the AqueoUS Vets, Inc., system.
[3]The electrical work costs assume the existing electrical service is sufficiently sized to accommodate the additional load from the building addition and pump improvements.
[4]The total estimated improvements cost does not include typical "Other Estimated Project Costs" such as legal, environmental, cultural, permitting, additional material cost to domestic preference, etc.

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CITY OF HERMISTON, OREGON
PFAS WATER TREATMENT ALTERNATIVE ANALYSIS
ALTERNATIVE A - GRANULAR ACTIVATED CARBON TREATMENT SYSTEM PRELIMINARY COST ESTIMATE

FIGURE 2-2

CITY OF HERMISTON, OREGON
PFAS WATER TREATMENT ALTERNATIVE ANALYSIS
ALTERNATIVE B - ION EXCHANGE TREATMENT SYSTEM
PRELIMINARY COST ESTIMATE
(Year 2026 Costs)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization (Approximately 5%)	LS	$ 651,000	All Req'd	$ 651,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	30,000	All Req'd	30,000
Well No. 2					
3	Site Work	LS	30,000	All Req'd	30,000
4	Concrete Masonry Unit (CMU) Building Addition[1]	LS	375,000	All Req'd	375,000
5	Pre-filter System	LS	200,000	All Req'd	200,000
6	Ion Exchange (IX) Treatment System[2]	LS	942,000	All Req'd	942,000
7	Well Pump Improvements	LS	305,000	All Req'd	305,000
8	Mechanical Piping, Fittings, and Valves	LS	75,000	All Req'd	75,000
9	Electrical Work[3]	LS	100,000	All Req'd	100,000
10	Controls and Instrumentation	LS	75,000	All Req'd	75,000
		Subtotal Well No. 2 Construction Cost			**$ 2,102,000**
Well No. 4					
11	Site Work	LS	30,000	All Req'd	30,000
12	CMU Building Addition	LS	647,000	All Req'd	647,000
13	Pre-filter System	LS	280,000	All Req'd	280,000
14	IX Treatment System[2]	LS	1,870,000	All Req'd	1,870,000
15	Well Pump Improvements	LS	315,000	All Req'd	315,000
16	Mechanical Piping, Fittings, and Valves	LS	80,000	All Req'd	80,000
17	Electrical Work[3]	LS	100,000	All Req'd	100,000
18	Controls and Instrumentation	LS	75,000	All Req'd	75,000
		Subtotal Well No. 4 Construction Cost			**$ 3,397,000**
Well No. 5					
19	Site Work	LS	30,000	All Req'd	30,000
20	CMU Building Addition	LS	1,107,000	All Req'd	1,107,000
21	Pre-filter System	LS	450,000	All Req'd	450,000
22	IX Treatment System[2]	LS	4,700,000	All Req'd	4,700,000
23	Well Pump Improvements	LS	290,000	All Req'd	290,000
24	Mechanical Piping, Fittings, and Valves	LS	100,000	All Req'd	100,000
25	Electrical Work[3]	LS	100,000	All Req'd	100,000
26	Controls and Instrumentation	LS	75,000	All Req'd	75,000
		Subtotal Well No. 5 Construction Cost			**$ 6,852,000**
				Subtotal Construction Cost	**$ 13,032,000**
				Construction Contingency (Approximately 20%)	2,607,000
				Total Estimated Construction Cost	**$ 15,639,000**
				Preliminary and Design Engineering (Approximately 10%)	1,564,000
				Construction Engineering (Approximately 10%)	1,564,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2026 DOLLARS) [4]	**$ 18,767,000**

Notes:

[1]A CMU building was selected to match the existing structures.

[2]Treatment system is based on ATEC Water System, LLC, and AqueoUS Vets, Inc., systems.

[3]The electrical work costs assume the existing electrical service is sufficiently sized to accommodate the additional load from the building addition and pump improvements.

[4]The total estimated improvements cost does not include typical "Other Estimated Project Costs" such as legal, environmental, cultural, permitting, additional material cost to domestic preference, etc.

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CITY OF
HERMISTON, OREGON
PFAS WATER TREATMENT ALTERNATIVE ANALYSIS

ALTERNATIVE B - ION EXCHANGE TREATMENT SYSTEM PRELIMINARY COST ESTIMATE

FIGURE

2-3

CITY OF HERMISTON, OREGON
PFAS WATER TREATMENT ALTERNATIVE ANALYSIS
ALTERNATIVE C - FLUORO-SORB®
PRELIMINARY COST ESTIMATE
(Year 2026 Costs)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization (Approximately 5%)	LS	572,000.00	All Req'd	$ 572,000
2	Temporary Protection and Direction of Traffic/Project Safety/Quality Control	LS	30,000	All Req'd	30,000
Well No. 2					
3	Site Work	LS	30,000	All Req'd	30,000
4	Concrete Masonry Unit (CMU) Building Addition[1]	LS	375,000	All Req'd	375,000
5	Pre-filter System	LS	200,000	All Req'd	200,000
6	FLUORO-SORB (FS) Treatment System[2]	LS	782,000	All Req'd	782,000
7	Well Pump Improvements	LS	305,000	All Req'd	305,000
8	Mechanical Piping, Fittings, and Valves	LS	75,000	All Req'd	75,000
9	Electrical Work[3]	LS	100,000	All Req'd	100,000
10	Controls and Instrumentation	LS	75,000	All Req'd	75,000
			Subtotal Well No. 2 Construction Cost		**$ 1,942,000**
Well No. 4					
11	Site Work	LS	30,000	All Req'd	30,000
12	CMU Building Addition	LS	647,000	All Req'd	647,000
13	Pre-filter System	LS	280,000	All Req'd	280,000
14	FS Treatment System[2]	LS	1,550,000	All Req'd	1,550,000
15	Well Pump Improvements	LS	315,000	All Req'd	315,000
16	Mechanical Piping, Fittings, and Valves	LS	80,000	All Req'd	80,000
17	Electrical Work[3]	LS	100,000	All Req'd	100,000
18	Controls and Instrumentation	LS	75,000	All Req'd	75,000
			Subtotal Well No. 4 Construction Cost		**$ 3,077,000**
Well No. 5					
19	Site Work	LS	30,000	All Req'd	30,000
20	CMU Building Addition	LS	1,107,000	All Req'd	1,107,000
21	Pre-filter System	LS	450,000	All Req'd	450,000
22	FS Treatment System[2]	LS	3,670,000	All Req'd	3,670,000
23	Well Pump Improvements	LS	290,000	All Req'd	290,000
24	Mechanical Piping, Fittings, and Valves	LS	100,000	All Req'd	100,000
25	Electrical Work[3]	LS	100,000	All Req'd	100,000
26	Controls and Instrumentation	LS	75,000	All Req'd	75,000
			Subtotal Well No. 5 Construction Cost		**$ 5,822,000**
				Subtotal Construction Cost	**$ 11,443,000**
				Construction Contingency (Approximately 20%)	2,289,000
				Total Estimated Construction Cost	**$ 13,732,000**
				Preliminary and Design Engineering (Approximately 10%)	1,373,000
				Construction Engineering (Approximately 10%)	1,373,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2026 DOLLARS) [4]	**$ 16,478,000**

Notes:
[1]A CMU building was selected to match the existing structures.
[2]Treatment system is based on ATEC Water System, LLC, and AqueoUS Vets, Inc., systems.
[3]The electrical work costs assume the existing electrical service is sufficiently sized to accommodate the additional load from the building addition and pump improvements.
[4]The total estimated improvements cost does not include typical "Other Estimated Project Costs" such as legal, environmental, cultural, permitting, additional material cost to domestic preference, etc.

anderson perry

CITY OF
HERMISTON, OREGON
PFAS WATER TREATMENT ALTERNATIVE ANALYSIS

ALTERNATIVE C - FLUORO-SORB®
PRELIMINARY COST ESTIMATE

FIGURE
2-4

CITY OF HERMISTON, OREGON
PFAS WATER TREATMENT FEASIBILITY STUDY
ALTERNATIVE A - GRANULAR ACTIVATED CARBON
OPERATION, MAINTENANCE, AND REPLACEMENT AND
PRESENT WORTH COST ESTIMATE
(YEAR 2026 COSTS)

PRESENT WORTH ANALYSIS (2026 DOLLARS)

NO.	DESCRIPTION		ANNUAL COST
ADDITIONAL ANNUAL OPERATION, MAINTENANCE, AND REPLACEMENT (OM&R)			
Well No. 2			
1	Labor (including Benefits)	$	37,000
2	Utilities		3,700
3	Supplies, Parts, Maintenance, Repairs, and Testing		9,000
4	Capital Outlay		10,000
5	Pre-Filter Replacement[1]		9,900
6	PFAS Treatment Media Disposal[2]		5,400
7	PFAS Treatment Media Replacement[3]		117,300
8	Equipment Replacement		61,700
	Subtotal Well No. 2	**$**	**254,000**
Well No. 4			
1	Labor (including Benefits)	$	41,900
2	Utilities		3,500
3	Supplies, Parts, Maintenance, Repairs, and Testing		12,000
4	Capital Outlay		10,000
5	Pre-filter Replacement[1]		30,000
6	PFAS Treatment Media Disposal[2]		7,300
7	PFAS Treatment Media Replacement[3]		166,300
8	Equipment Replacement		103,000
	Subtotal Well No. 4	**$**	**374,000**
Well No. 5			
1	Labor (including Benefits)	$	74,300
2	Utilities		16,000
3	Supplies, Parts, Maintenance, Repairs, and Testing		24,000
4	Capital Outlay		15,000
5	Pre-filter Replacement[1]		88,000
6	PFAS Treatment Media Disposal[2]		21,100
7	PFAS Treatment Media Replacement[3]		484,100
8	Equipment Replacement		221,500
	Subtotal Well No. 5	**$**	**944,000**
	Total OM&R[4]	**$**	**1,572,000**
	Present Worth OM&R Cost (5%, 20 years)		19,600,000
	Total Present Worth (2026 Dollars)[5]	**$**	**43,060,000**

Notes:

[1] The pre-filter replacement cost assumes cartridge filters/bags are replaced yearly.

[2] Media disposal costs assume all media is hauled to and disposed of at the Chemical Waste Management of the Northwest facility in Arlington, Oregon.

[3] PFAS treatment media replacement costs are based on average yearly cost for a granular activated carbon media life of 375 days for Well No. 2, 529 days for Well No. 4, and 454 days for Well No. 5.

[4] OM&R costs presented are for the PFAS treatment system and would be in addition to existing well site OM&R costs.

[5] Total Present Worth is equal to the sum of the Total Estimated Construction Cost from Figure 2-2 and the Present Worth OM&R Cost.

anderson perry

CITY OF
HERMISTON, OREGON
PFAS WATER TREATMENT FEASIBILITY STUDY
ALTERNATIVE A - GRANULAR ACTIVATED CARBON
OPERATION, MAINTENANCE, AND REPLACEMENT AND
PRESENT WORTH COST ESTIMATE

FIGURE
2-5

CITY OF HERMISTON, OREGON
PFAS WATER TREATMENT FEASIBILITY STUDY
ALTERNATIVE B - ION EXCHANGE
OM&R ANDPRESENT WORTH COST ESTIMATE
(YEAR 2026 COSTS)

PRESENT WORTH ANALYSIS (2026 DOLLARS)

NO.	DESCRIPTION		ANNUAL COST
ADDITIONAL ANNUAL OPERATION, MAINTENANCE, AND REPLACEMENT (OM&R)			
Well No. 2			
1	Labor (including Benefits)	$	30,300
2	Utilities		7,400
3	Supplies, Parts, Maintenance, Repairs, and Testing		9,000
4	Capital Outlay		10,000
5	Pre-filter Replacement[1]		9,800
6	PFAS Treatment Media Disposal[2]		900
7	PFAS Treatment Media Replacement[3]		34,500
8	Equipment Replacement		38,100
	Subtotal Well No. 2	**$**	**140,000**
Well No. 4			
1	Labor (including Benefits)	$	30,700
2	Utilities		7,000
3	Supplies, Parts, Maintenance, Repairs, and Testing		12,000
4	Capital Outlay		10,000
5	Pre-filter Replacement[1]		30,000
6	PFAS Treatment Media Disposal[2]		1,000
7	PFAS Treatment Media Replacement[3]		37,600
8	Equipment Replacement		71,700
	Subtotal Well No. 4	**$**	**200,000**
Well No. 5			
1	Labor (including Benefits)	$	53,700
2	Utilities		32,600
3	Supplies, Parts, Maintenance, Repairs, and Testing		16,000
4	Capital Outlay		10,000
5	Pre-filter Replacement[1]		87,900
6	PFAS Treatment Media Disposal[2]		7,300
7	PFAS Treatment Media Replacement[3]		313,800
8	Equipment Replacement		171,700
	Subtotal Well No. 5	**$**	**693,000**
	Total OM&R[4]	**$**	**1,033,000**
	Present Worth OM&R Cost (5%, 20 years)		12,880,000
	Total Present Worth (2026 Dollars)[5]	**$**	**28,519,000**

Notes:

[1] The pre-filter replacement cost assumes cartridge filters/bags are replaced yearly.

[2] Media disposal costs assume all media is hauled to and disposed of at the Chemical Waste Management of the Northwest facility in Arlington, Oregon.

[3] PFAS treatment media replacement costs are based on average yearly cost for ion exchange media life of 853 days for Well No. 2, 1,573 days for Well No. 4, and 467 days for Well No. 5.

[4] OM&R costs presented are for the PFAS treatment system and would be in addition to existing well site OM&R costs.

[5] Total Present Worth is equal to the sum of the Total Estimated Construction Cost from Figure 2-3 and the Present Worth OM&R Cost.

anderson perry

CITY OF HERMISTON, OREGON
PFAS WATER TREATMENT FEASIBILITY STUDY

ALTERNATIVE B - ION EXCHANGE OPERATION, MAINTENANCE, AND REPLACEMENT AND PRESENT WORTH COST ESTIMATE

FIGURE 2-6

CITY OF HERMISTON, OREGON
PFAS WATER TREATMENT ANALYSIS
ALTERNATIVE C - FLUORO-SORB
OM&R AND PRESENT WORTH COST ESTIMATE
(YEAR 2026 COSTS)

PRESENT WORTH ANALYSIS (2022 DOLLARS)

NO.	DESCRIPTION		ANNUAL COST
ADDITIONAL ANNUAL OPERATION, MAINTENANCE, AND REPLACEMENT (OM&R)			
Well No. 2			
1	Labor (including Benefits)	$	29,800
2	Utilities		6,100
3	Supplies, Parts, Maintenance, Repairs, and Testing		9,000
4	Capital Outlay		10,000
5	Pre-filter Replacement[1]		9,800
6	PFAS Treatment Media Disposal[2]		900
7	PFAS Treatment Media Replacement[3]		26,600
8	Equipment Replacement		32,800
	Subtotal Well No. 2	**$**	**125,000**
Well No. 4			
1	Labor (including Benefits)	$	31,000
2	Utilities		5,500
3	Supplies, Parts, Maintenance, Repairs, and Testing		12,000
4	Capital Outlay		10,000
5	Pre-filter Replacement[1]		30,000
6	PFAS Treatment Media Disposal[2]		1,000
7	PFAS Treatment Media Replacement[3]		33,500
8	Equipment Replacement		61,000
	Subtotal Well No. 4	**$**	**184,000**
Well No. 5			
1	Labor (including Benefits)	$	37,800
2	Utilities		25,000
3	Supplies, Parts, Maintenance, Repairs, and Testing		16,000
4	Capital Outlay		10,000
5	Pre-filter Replacement[1]		88,000
6	PFAS Treatment Media Disposal[2]		2,900
7	PFAS Treatment Media Replacement[3]		118,900
8	Equipment Replacement		137,400
	Subtotal Well No. 5	**$**	**436,000**
	Total OM&R[4]	**$**	**750,000**
	Present Worth OM&R Cost (5%, 20 years)		9,350,000
	Total Present Worth (2026 Dollars)[5]	**$**	**23,082,000**

Notes:

[1] The filter media cost assumes filters are replaced yearly.

[2] Media disposal costs assume all media is hauled to and disposed of at Chemical Waste Management of the Northwest in Arlington, Oregon.

[3] PFAS treatment media replacement costs are based on average yearly cost for FLUORO-SORB media life of 943 days for Well No. 2, 1,500 days for Well No. 4, and 1,050 days for Well No. 5.

[4] OM&R costs presented are for the PFAS treatment system and would be in addition to existing well site OM&R costs.

[5] Total Present Worth is equal to the sum of the Total Estimated Construction Cost from Figure 2-4 and the Present Worth OM&R Cost.

anderson perry

CITY OF HERMISTON, OREGON
PFAS WATER TREATMENT ALTERNATIVE FEASIBILITY STUDY
ALTERNATIVE C- FLUORO-SORB OPERATION, MAINTENANCE, AND REPLACEMENT AND PRESENT WORTH COST ESTIMATE

FIGURE 2-7

Chapter 3 - Funding Opportunities and Implementation

Introduction

This chapter outlines funding alternatives for the City of Hermiston's per- and polyfluoroalkyl substances (PFAS) mitigation needs. Given both the high cost of the equipment needed to treat and/or mitigate PFAS and the increased operational costs, the City has determined that outside funding will likely be needed to cover the costs associated with implementing PFAS mitigation in its water systems. Project financing is anticipated to include a combination of low interest loans, potential grant funding, and some level of contribution by the City. The City's median household income (MHI), population, and lack of project-associated job creation limit external funding options primarily to Business Oregon.

Summary of Potential Funding Programs

The following section briefly summarizes the primary funding programs available to assist the City with water treatment improvements.

Conventional Safe Drinking Water Revolving Loan Fund

The Safe Drinking Water Revolving Loan Fund (SDWRLF) is jointly administered by Oregon Health Authority - Drinking Water Services (DWS) and Business Oregon. The program uses federal funds to provide low interest loans aimed at ensuring drinking water safety. This program is primarily focused on assisting with the construction and/or improvement of public and private water systems to address regulatory compliance issues. This is primarily accomplished through the SDWRLF for water supply, treatment, distribution, and related water system infrastructure. The SDWRLF program normally lends up to $6 million per project. Loan amounts greater than $3 million may be approved by the Business Oregon - Infrastructure Finance Authority Board. Loan amounts of $6 million and above must be approved by the DWS's Drinking Water Advisory Committee. Communities may apply for up to $10 million under the conventional SDWRLF program. The standard SDWRLF loan term is up to 30 years or the useful life of project assets, whichever is less. This program offers subsidized interest rates for all successful projects. Interest rates for a standard loan start at 80 percent of the state/local bond rate. Interest rates for loans to disadvantaged communities are based on a sliding scale between the interest rate for a standard loan and 1 percent. Communities may be eligible for some of the principal on their SDWRLF loan to be "forgiven." This forgivable loan feature is similar to a grant and is offered to disadvantaged communities. Special consideration, including partial principal forgiveness, is provided to projects qualifying for or having Green Project Reserve components. Funding through this program may be available to the City to implement the selected improvements.

Safe Drinking Water Revolving Loan Funding for Emerging Contaminants

Within the funding offered under the SDWRLF, a separate allocation of funds is reserved for communities that are working to address emerging contaminants (EC) (as identified by the U.S. Environmental Protection Agency [EPA]) in drinking water. The primary purpose of the EC program is to address and/or mitigate people's exposure to confirmed EC in drinking water. Public water systems must provide documentation to DWS confirming the detection of the EC identified in the submitted funding application.

The EC program is intended specifically to address PFAS treatment utilizing funding from five annual allotments of the Bipartisan Infrastructure Law (BIL). The BIL authorizes states to award 100 percent forgivable loan funding (i.e., principal forgiveness or subsidy) to address EC in drinking water with a focus on PFAS. Funding for the program is dependent on the availability of two separate sources of funding from the EPA that the state will apply annually for through 2026 to award to water systems.

A condition of this funding opportunity that may benefit the City is that at least 25 percent of the funds allocated to the EC program are to be used to assist disadvantaged communities or public water systems serving less than 25,000 people. The EC funding opportunity appears to offer the most potential benefit to the City to fund PFAS-related improvements.

Water/Wastewater Financing Program

The Water/Wastewater Financing Program is a loan and grant program that provides for the design and construction of public infrastructure when needed to ensure compliance with the Safe Drinking Water Act (SDWA) or the Clean Water Act (CWA). To be eligible, a system must have received, or is likely to soon receive, a notice of non-compliance by the appropriate regulatory agency associated with the SDWA or the CWA.

While primarily a loan program, grants are available for municipalities that meet eligibility criteria. The loan/grant amounts are determined by a financial analysis of the applicant's ability to afford a loan (debt capacity, repayment sources, current and projected utility rates, and other factors). The maximum loan term is 30 years, or the useful life of the infrastructure financed, whichever is less. The maximum loan amount is $10 million per project and is determined by financial review; however, typical award amounts are capped at $2 million. It may be offered through a combination of direct and/or bond-funded loans. Loans are generally repaid with utility revenues or voter-approved bond issues. A limited tax general obligation pledge may also be required. Creditworthy applicants may be funded through the sale of state revenue bonds.

The maximum grant is $750,000 per project based on a financial analysis. An applicant is not eligible for grant funds if the applicant's annual MHI is equal to or greater than 100 percent of the state average MHI for the same year.

For Business Oregon Programs - Contact Regional Coordinator

Since program eligibility and funds availability may change from year to year, potential applicants are encouraged to contact their respective Business Oregon Regional Coordinator to obtain the most accurate and up-to-date information for each program.

Project Development Action Items and Implementation Plan

The following project development action items and proposed implementation steps will need to be taken by the City to ensure PFAS mitigation is completed before the EPA deadlines, as noted in Chapter 1 of this PFAS Water Treatment Feasibility Study. The steps outlined are general in nature and include the major steps that need to be undertaken.

Project Development Action Items

1. Review this Study and the recommended approach to develop a larger scale PFAS Mitigation Feasibility Study.
2. Submit a funding application for SDWRLF EC funding for the recommended PFAS Mitigation Feasibility Study in February 2026.
3. Complete additional feasibility evaluation.
4. Determine the preferred PFAS mitigation alternative for implementation.
5. Submit a funding application for SDWRLF EC funding in August 2026.
6. Submit other funding applications as may be required.
7. If treatment of PFAS-contaminated sources is selected, complete a rapid small-scale column test or pilot test, as applicable, to verify the selected treatment technology reliably removes PFAS from City water with operation and maintenance activities that are acceptable to the City.
8. If alternative water supply sources that do not test positive for PFAS and are financially feasible to develop are identified, identify costs and next steps needed to develop these sources.
9. Finalize an agreement with the preferred funding source(s) for the City's preferred system improvements.
10. Develop a project pre-design report refining concepts and costs presented in the PFAS Mitigation Feasibility Study and testing, as required, to define the City's improvement project.
11. Design an improvements project that includes the system improvements selected by the City and develop any required environmental and/or cultural resources reports.
12. Advertise, bid, and award improvements project.
13. Construct improvements project.
14. Close out project.

Implementation Plan

Should the City desire to proceed with the recommended additional feasibility evaluation discussed herein, the implementation plan on Table 3-1 outlines the key steps and timelines that the City could anticipate with project development. The implementation plan below is for the development of the PFAS Mitigation Feasibility Study. Following the completion of the PFAS Mitigation Feasibility Study, it is important to note that it may take three to four years from the date the City decides to proceed with a capital improvements project until the project is completed and serving the community.

TABLE 3-1
FEASIBILITY IMPLEMENTATION PLAN

	Item	Completion Date
1.	PFAS Mitigation Feasibility Study Kickoff	February 2026
2.	Draft PFAS Mitigation Feasibility Study	June 2026
3.	City Selection of Preferred Alternative	July 2026
4.	Finalize PFAS Mitigation Feasibility Study	August 2026
5.	Submit Funding Application(s) for Preferred Alternative	August 2026

Appendices Table of Contents

Appendix A Water Quality Test Results

Appendix B ATEC Water Systems, LLC, Equipment Proposal

Appendix C AqueoUS Vets, Inc., Equipment Proposal

Appendix D Operator Classification Worksheet

APPENDIX A
Water Quality Test Results

PWS Analytic Search Results | SDWARS

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006 w.T.P	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	200.7	lithium	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	11Cl-PF3OUdS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	4:2 FTS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	6:2 FTS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	8:2 FTS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	9Cl-PF3ONS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	ADONA	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	HFPO-DA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	NFDHA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFBA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFBS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFDA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFDoA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFEESA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFHpA	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFHpS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFHxA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFHxS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFMBA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFMPA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFNA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFOA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFOS	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFPeA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFPeS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFUnA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	537.1	NEtFOSAA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	537.1	NMeFOSAA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	537.1	PFTA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	537.1	PFTrDA	< MRL	PWS Approved

PWS Analytic Search Results | SDWARS

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006 d.T.P.	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	200.7	lithium	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	ADONA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFBS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFDoA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFHpA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFHxA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFHxS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFOA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFOS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFPeA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	537.1	PFTrDA	< MRL	PWS Auto-Approved

PWS Analytic Search Results | SDWARS

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	11Cl-PF3OUdS	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	4:2 FTS	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	6:2 FTS	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	8:2 FTS	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	9Cl-PF3ONS	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	ADONA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	HFPO-DA	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	NFDHA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFBA	< MRL	PWS Approved
OR4100372	00001	00001 well #2	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFBS	0.0044	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFDA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFDoA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFEESA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFHpA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFHpS	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFHxA	< MRL	PWS Approved
OR4100372	00001	00001 well #2	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFHxS	0.012	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFMBA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFMPA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFNA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFOA	< MRL	PWS Approved
OR4100372	00001	00001 well #2	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFOS	0.012	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFPeA	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFPeS	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFUnA	< MRL	PWS Approved
OR4100372	00006	00006 u.T.f	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	11Cl-PF3OUdS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	4:2 FTS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	6:2 FTS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	8:2 FTS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	9Cl-PF3ONS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	ADONA	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	HFPO-DA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	NFDHA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFBA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFBS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFDA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFDoA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFEESA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFHpA	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFHpS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFHxA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFHxS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFMBA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFMPA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFNA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFOA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFOS	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFPeA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFPeS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFUnA	< MRL	PWS Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	ADONA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00003	00003 well #5	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFBS	0.0075	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFDoA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFEESA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFHpA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFHxA	< MRL	PWS Auto-Approved
OR4100372	00003	00003 well #4	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFHxS	0.0075	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFOA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFOS	0.0045	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFPeA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00002	00002 well #4	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	200.7	lithium	32	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	6:2 FTS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	ADONA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFDoA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFHpA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFHxA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFOA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFPeA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	537.1	PFTrDA	< MRL	PWS Auto-Approved
OR4100372	00004 well #6	00004	SE2	Weck Laboratories, Inc.	3L15038-03	12/13/23	200.7	lithium	24	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00004	00004	SE2	Weck Laboratories, Inc.	3L15038-03	12/13/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE2	Weck Laboratories, Inc.	3L15038-03	12/13/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE2	Weck Laboratories, Inc.	3L15038-03	12/13/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE2	Weck Laboratories, Inc.	3L15038-03	12/13/23	537.1	PFTrDA	< MRL	PWS Auto-Approved
OR4100372	00006	00006 w.T.P	SE2	Weck Laboratories, Inc.	3I12035-01	9/11/23	200.7	lithium	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	3I12035-01	9/11/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	3I12035-01	9/11/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	3I12035-01	9/11/23	537.1	PFTA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	3I12035-01	9/11/23	537.1	PFTrDA	< MRL	PWS Auto-Approved

PWS Analytic Search Results | SDWARS

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001 Unit #2	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	ADONA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	HFPO-DA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00001	00001 well #2	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFBS	0.003 3 ppt	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFDoA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFHpA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFHpS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFHxA	< MRL	PWS Auto-Approved
OR4100372	00001	00001 unit #2	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFHxS	0.0073 7.3 ppt	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFOA	< MRL	PWS Auto-Approved
OR4100372	00001	00001 unit #2	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFOS	0.0052 5.2 ppt	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFPeA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00001	00001 Well #2	SE1	Weck Laboratories, Inc.	3F21082-01	6/20/23	200.7	lithium	29	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3F21082-01	6/20/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3F21082-01	6/20/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3F21082-01	6/20/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3F21082-01	6/20/23	537.1	PFTrDA	< MRL	PWS Auto-Approved
OR4100372	00002	00002 Well #4	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	200.7	lithium	32	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002 ug/l #4	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	ADONA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	NFDHA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00002	00002 WTP#4	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFBS	0.0034 3.4 ppt	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFDoA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFHpA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFHxA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002	00002 well #4	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFHxS	0.008 6 ppt	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFOA	< MRL	PWS Auto-Approved
OR4100372	00002	00002 well #4	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFOS	0.006 6 ppt	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFPeA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFPeS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	537.1	PFTrDA	< MRL	PWS Auto-Approved
OR4100372	00003	00003 well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	200.7	lithium	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	4:2 FTS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003 well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	ADONA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00003	00003 well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFBS	0.01 10 ppt	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFDoA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFHpA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00003	00003 Well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFHxA	0.0039 3.9 ppt	PWS Auto-Approved
OR4100372	00003	00003 Well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFHxS	0.0084 8.4 ppt	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFMBA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFOA	< MRL	PWS Auto-Approved
OR4100372	00003	00003 well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFOS	0.0078 7.8 ppt	PWS Auto-Approved
OR4100372	00003	00003 well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFPeA	0.0042 4.2 ppt	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	537.1	PFTrDA	< MRL	PWS Auto-Approved
OR4100372	00004	00004 WH6	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	200.7	lithium	23	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	8:2 FTS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00004	00004 U11#6	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	ADONA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFBS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFDoA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFHpA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFHxA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFHxS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFNA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFOA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFOS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFPeA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	537.1	PFTA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	537.1	PFTrDA	< MRL	PWS Auto-Approved
OR4100372	00006	00006 W.TP	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	200.7	lithium	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	ADONA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFBS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFDoA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFHpA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFHxA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFHxS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFOA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFOS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFPeA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	537.1	PFTrDA	< MRL	PWS Auto-Approved

UMPQUA Research Company
626 NE Division St. - P.O. Box 609
Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:50
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #5 | URC Sample #: 6010818-01 | Matrix: Drinking Water

Inorganics

Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Alkalinity (‡)	SM 2320B		**275**	mg/L	3.00		01/09/26	01/09/26	MSW	
Chloride (‡)	USEPA 300.0		43.8	mg/L	5.0	250	01/08/26	01/08/26	SAM	
Fluoride (‡)	USEPA 300.0	1025	ND	mg/L	1.00	4	01/08/26	01/08/26	SAM	
Nitrate as N (‡)	USEPA 300.0	1040	6.59	mg/L	1.00	10	01/08/26 14:38	01/08/26	SAM	
Perchlorate	USEPA 314.0		ND	mg/L	0.00500		01/12/26	01/12/26	SAM	
Sulfate (‡)	USEPA 300.0	1055	54.9	mg/L	10.0	250	01/08/26	01/08/26	SAM	
TDS	SM 2540C		459	mg/L	37.5	500	01/09/26	01/12/26	ZHT	
TOC (‡)	SM 5310C		**1.38**	mg/L	0.50		01/08/26	01/09/26	JRM	

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Dan Phillips, Laboratory Manager

UMPQUA Research Company
626 NE Division St. - P.O. Box 609
Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:50
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #5

URC Sample #: 6010818-01

Matrix: Drinking Water

Metals

Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Calcium	USEPA 200.7		**81.5**	mg/L	2.00		01/21/26	01/21/26	DST	
Iron (‡)	USEPA 200.7		ND	mg/L	0.020	0.3	01/21/26	01/21/26	DST	
Magnesium	USEPA 200.7		**23.8**	mg/L	0.200		01/21/26	01/21/26	DST	
Manganese (‡)	USEPA 200.7		ND	mg/L	0.010	0.05	01/21/26	01/21/26	DST	
Potassium	USEPA 200.7		**8.60**	mg/L	0.200		01/21/26	01/21/26	DST	
Sodium	USEPA 200.7		**49.5**	mg/L	5.00		01/21/26	01/21/26	DST	

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Myrtle Creek, Oregon 97457
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E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
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ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:50
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #5

URC Sample #: 6010818-01

Matrix: Drinking Water

Volatile Organics

Regulated Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
1,1,1-Trichloroethane (‡)	EPA 524.2	2981	ND	mg/L	0.0005	0.2	01/14/26	01/14/26	MGC	
1,1,2-Trichloroethane (‡)	EPA 524.2	2985	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,1-Dichloroethylene (‡)	EPA 524.2	2977	ND	mg/L	0.0005	0.007	01/14/26	01/14/26	MGC	
1,2,4-Trichlorobenzene (‡)	EPA 524.2	2378	ND	mg/L	0.0005	0.07	01/14/26	01/14/26	MGC	
1,2-Dichlorobenzene (‡)	EPA 524.2	2968	ND	mg/L	0.0005	0.6	01/14/26	01/14/26	MGC	
1,2-Dichloroethane (‡)	EPA 524.2	2980	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,2-Dichloropropane (‡)	EPA 524.2	2983	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,4-Dichlorobenzene (‡)	EPA 524.2	2969	ND	mg/L	0.0005	0.075	01/14/26	01/14/26	MGC	
Benzene (‡)	EPA 524.2	2990	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Carbon Tetrachloride (‡)	EPA 524.2	2982	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Chlorobenzene (‡)	EPA 524.2	2989	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
cis-1,2-Dichloroethylene (‡)	EPA 524.2	2380	ND	mg/L	0.0005	0.07	01/14/26	01/14/26	MGC	
Ethyl Benzene (‡)	EPA 524.2	2992	ND	mg/L	0.0005	0.7	01/14/26	01/14/26	MGC	
Methylene Chloride (‡)	EPA 524.2	2964	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
m-Xylene/p-Xylene (‡)	EPA 524.2		ND	mg/L	0.0010	10	01/14/26	01/14/26	MGC	
o-Xylene (‡)	EPA 524.2		ND	mg/L	0.0005	10	01/14/26	01/14/26	MGC	
Styrene (‡)	EPA 524.2	2996	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
Tetrachloroethylene (‡)	EPA 524.2	2987	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Toluene (‡)	EPA 524.2	2991	ND	mg/L	0.0005	1	01/14/26	01/14/26	MGC	
Total Xylenes (‡)	EPA 524.2	2955	ND	mg/L	0.0015	10	01/14/26	01/14/26	MGC	
trans-1,2-Dichloroethylene (‡)	EPA 524.2	2979	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
Trichloroethylene (‡)	EPA 524.2	2984	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Vinyl chloride (‡)	EPA 524.2	2976	ND	mg/L	0.0005	0.002	01/14/26	01/14/26	MGC	

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Dan Phillips, Laboratory Manager

UMPQUA Research Company
626 NE Division St. - P.O. Box 609
Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:50
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #5

URC Sample #: 6010818-01

Matrix: Drinking Water

Volatile Organics

Unregulated Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
1,1,1,2-Tetrachloroethane (‡)	EPA 524.2	2986	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1,2,2-Tetrachloroethane (‡)	EPA 524.2	2988	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1-Dichloroethane (‡)	EPA 524.2	2978	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1-Dichloropropene (‡)	EPA 524.2	2410	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,2,3-Trichloropropane (‡)	EPA 524.2	2414	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,3-Dichlorobenzene (‡)	EPA 524.2	2967	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,3-Dichloropropane (‡)	EPA 524.2	2412	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
2,2-Dichloropropane (‡)	EPA 524.2	2416	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
2-Chlorotoluene (‡)	EPA 524.2	2965	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
4-Chlorotoluene (‡)	EPA 524.2	2966	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromobenzene (‡)	EPA 524.2	2993	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromodichloromethane (‡)	EPA 524.2	2943	**0.0069**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromoform (‡)	EPA 524.2	2942	**0.0049**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromomethane (‡)	EPA 524.2	2214	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloroethane (‡)	EPA 524.2	2216	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloroform (‡)	EPA 524.2	2941	**0.0025**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloromethane (‡)	EPA 524.2	2210	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
cis-1,3-Dichloropropene (‡)	EPA 524.2	2413	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Dibromochloromethane (‡)	EPA 524.2	2944	**0.0116**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Dibromomethane (‡)	EPA 524.2	2408	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
trans-1,3-Dichloropropene (‡)	EPA 524.2	2224	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	

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Dan Phillips, Laboratory Manager

UMPQUA Research Company
626 NE Division St. - P.O. Box 609
Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:10
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #4 | URC Sample #: 6010818-02 | Matrix: Drinking Water

Inorganics

Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Alkalinity (‡)	SM 2320B		**159**	mg/L	3.00		01/09/26	01/09/26	MSW	
Chloride (‡)	USEPA 300.0		25.0	mg/L	0.5	250	01/08/26	01/08/26	SAM	
Fluoride (‡)	USEPA 300.0	1025	1.22	mg/L	0.10	4	01/08/26	01/08/26	SAM	
Nitrate as N (‡)	USEPA 300.0	1040	ND	mg/L	0.10	10	01/08/26 14:38	01/08/26	SAM	
Perchlorate	USEPA 314.0		ND	mg/L	0.00500		01/12/26	01/13/26	SAM	
Sulfate (‡)	USEPA 300.0	1055	51.8	mg/L	1.00	250	01/08/26	01/08/26	SAM	
TDS	SM 2540C		308	mg/L	37.5	500	01/09/26	01/12/26	ZHT	
TOC (‡)	SM 5310C		**ND**	mg/L	0.50		01/08/26	01/09/26	JRM	

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Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:10
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #4

URC Sample #: 6010818-02

Matrix: Drinking Water

Metals

Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Calcium	USEPA 200.7		**13.9**	mg/L	0.200		01/21/26	01/21/26	DST	
Iron (‡)	USEPA 200.7		0.036	mg/L	0.020	0.3	01/21/26	01/21/26	DST	
Magnesium	USEPA 200.7		**2.33**	mg/L	0.020		01/21/26	01/21/26	DST	
Manganese (‡)	USEPA 200.7		ND	mg/L	0.010	0.05	01/21/26	01/21/26	DST	
Potassium	USEPA 200.7		**16.3**	mg/L	2.00		01/21/26	01/21/26	DST	
Sodium	USEPA 200.7		**89.9**	mg/L	5.00		01/21/26	01/21/26	DST	

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E-mail: Lab@URCmail.net
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ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:10
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #4

URC Sample #: 6010818-02

Matrix: Drinking Water

Volatile Organics

Regulated Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
1,1,1-Trichloroethane (‡)	EPA 524.2	2981	ND	mg/L	0.0005	0.2	01/14/26	01/14/26	MGC	
1,1,2-Trichloroethane (‡)	EPA 524.2	2985	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,1-Dichloroethylene (‡)	EPA 524.2	2977	ND	mg/L	0.0005	0.007	01/14/26	01/14/26	MGC	
1,2,4-Trichlorobenzene (‡)	EPA 524.2	2378	ND	mg/L	0.0005	0.07	01/14/26	01/14/26	MGC	
1,2-Dichlorobenzene (‡)	EPA 524.2	2968	ND	mg/L	0.0005	0.6	01/14/26	01/14/26	MGC	
1,2-Dichloroethane (‡)	EPA 524.2	2980	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,2-Dichloropropane (‡)	EPA 524.2	2983	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,4-Dichlorobenzene (‡)	EPA 524.2	2969	ND	mg/L	0.0005	0.075	01/14/26	01/14/26	MGC	
Benzene (‡)	EPA 524.2	2990	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Carbon Tetrachloride (‡)	EPA 524.2	2982	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Chlorobenzene (‡)	EPA 524.2	2989	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
cis-1,2-Dichloroethylene (‡)	EPA 524.2	2380	ND	mg/L	0.0005	0.07	01/14/26	01/14/26	MGC	
Ethyl Benzene (‡)	EPA 524.2	2992	ND	mg/L	0.0005	0.7	01/14/26	01/14/26	MGC	
Methylene Chloride (‡)	EPA 524.2	2964	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
m-Xylene/p-Xylene (‡)	EPA 524.2		ND	mg/L	0.0010	10	01/14/26	01/14/26	MGC	
o-Xylene (‡)	EPA 524.2		ND	mg/L	0.0005	10	01/14/26	01/14/26	MGC	
Styrene (‡)	EPA 524.2	2996	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
Tetrachloroethylene (‡)	EPA 524.2	2987	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Toluene (‡)	EPA 524.2	2991	ND	mg/L	0.0005	1	01/14/26	01/14/26	MGC	
Total Xylenes (‡)	EPA 524.2	2955	ND	mg/L	0.0015	10	01/14/26	01/14/26	MGC	
trans-1,2-Dichloroethylene (‡)	EPA 524.2	2979	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
Trichloroethylene (‡)	EPA 524.2	2984	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Vinyl chloride (‡)	EPA 524.2	2976	ND	mg/L	0.0005	0.002	01/14/26	01/14/26	MGC	

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Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:10
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #4 URC Sample #: 6010818-02 Matrix: Drinking Water

Volatile Organics

Unregulated Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
1,1,1,2-Tetrachloroethane (‡)	EPA 524.2	2986	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1,2,2-Tetrachloroethane (‡)	EPA 524.2	2988	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1-Dichloroethane (‡)	EPA 524.2	2978	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1-Dichloropropene (‡)	EPA 524.2	2410	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,2,3-Trichloropropane (‡)	EPA 524.2	2414	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,3-Dichlorobenzene (‡)	EPA 524.2	2967	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,3-Dichloropropane (‡)	EPA 524.2	2412	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
2,2-Dichloropropane (‡)	EPA 524.2	2416	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
2-Chlorotoluene (‡)	EPA 524.2	2965	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
4-Chlorotoluene (‡)	EPA 524.2	2966	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromobenzene (‡)	EPA 524.2	2993	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromodichloromethane (‡)	EPA 524.2	2943	**0.0094**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromoform (‡)	EPA 524.2	2942	**0.0184**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromomethane (‡)	EPA 524.2	2214	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloroethane (‡)	EPA 524.2	2216	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloroform (‡)	EPA 524.2	2941	**0.0036**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloromethane (‡)	EPA 524.2	2210	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
cis-1,3-Dichloropropene (‡)	EPA 524.2	2413	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Dibromochloromethane (‡)	EPA 524.2	2944	**0.0195**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Dibromomethane (‡)	EPA 524.2	2408	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
trans-1,3-Dichloropropene (‡)	EPA 524.2	2224	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	

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Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
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ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 09:55
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #2 | URC Sample #: 6010818-03 | Matrix: Drinking Water

Inorganics

Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Alkalinity (‡)	SM 2320B		**160**	mg/L	3.00		01/09/26	01/09/26	MSW	
Chloride (‡)	USEPA 300.0		25.3	mg/L	0.5	250	01/08/26	01/08/26	SAM	
Fluoride (‡)	USEPA 300.0	1025	1.21	mg/L	0.10	4	01/08/26	01/08/26	SAM	
Nitrate as N (‡)	USEPA 300.0	1040	ND	mg/L	0.10	10	01/08/26 14:38	01/08/26	SAM	
Perchlorate	USEPA 314.0		ND	mg/L	0.00500		01/12/26	01/13/26	SAM	
Sulfate (‡)	USEPA 300.0	1055	50.4	mg/L	1.00	250	01/08/26	01/08/26	SAM	
TDS	SM 2540C		313	mg/L	37.5	500	01/09/26	01/12/26	ZHT	
TOC (‡)	SM 5310C		**ND**	mg/L	0.50		01/08/26	01/10/26	JRM	

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Dan Phillips, Laboratory Manager

UMPQUA Research Company
626 NE Division St. - P.O. Box 609
Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 09:55
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #2

URC Sample #: 6010818-03

Matrix: Drinking Water

Metals

Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Calcium	USEPA 200.7		**8.00**	mg/L	0.200		01/21/26	01/21/26	DST	
Iron (‡)	USEPA 200.7		0.026	mg/L	0.020	0.3	01/21/26	01/21/26	DST	
Magnesium	USEPA 200.7		**0.882**	mg/L	0.020		01/21/26	01/21/26	DST	
Manganese (‡)	USEPA 200.7		ND	mg/L	0.010	0.05	01/21/26	01/21/26	DST	
Potassium	USEPA 200.7		**14.6**	mg/L	0.200		01/21/26	01/21/26	DST	
Sodium	USEPA 200.7		**99.2**	mg/L	5.00		01/21/26	01/21/26	DST	

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ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 09:55
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #2

URC Sample #: 6010818-03

Matrix: Drinking Water

Volatile Organics

Regulated Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
1,1,1-Trichloroethane (‡)	EPA 524.2	2981	ND	mg/L	0.0005	0.2	01/14/26	01/14/26	MGC	
1,1,2-Trichloroethane (‡)	EPA 524.2	2985	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,1-Dichloroethylene (‡)	EPA 524.2	2977	ND	mg/L	0.0005	0.007	01/14/26	01/14/26	MGC	
1,2,4-Trichlorobenzene (‡)	EPA 524.2	2378	ND	mg/L	0.0005	0.07	01/14/26	01/14/26	MGC	
1,2-Dichlorobenzene (‡)	EPA 524.2	2968	ND	mg/L	0.0005	0.6	01/14/26	01/14/26	MGC	
1,2-Dichloroethane (‡)	EPA 524.2	2980	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,2-Dichloropropane (‡)	EPA 524.2	2983	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,4-Dichlorobenzene (‡)	EPA 524.2	2969	ND	mg/L	0.0005	0.075	01/14/26	01/14/26	MGC	
Benzene (‡)	EPA 524.2	2990	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Carbon Tetrachloride (‡)	EPA 524.2	2982	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Chlorobenzene (‡)	EPA 524.2	2989	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
cis-1,2-Dichloroethylene (‡)	EPA 524.2	2380	ND	mg/L	0.0005	0.07	01/14/26	01/14/26	MGC	
Ethyl Benzene (‡)	EPA 524.2	2992	ND	mg/L	0.0005	0.7	01/14/26	01/14/26	MGC	
Methylene Chloride (‡)	EPA 524.2	2964	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
m-Xylene/p-Xylene (‡)	EPA 524.2		ND	mg/L	0.0010	10	01/14/26	01/14/26	MGC	
o-Xylene (‡)	EPA 524.2		ND	mg/L	0.0005	10	01/14/26	01/14/26	MGC	
Styrene (‡)	EPA 524.2	2996	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
Tetrachloroethylene (‡)	EPA 524.2	2987	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Toluene (‡)	EPA 524.2	2991	ND	mg/L	0.0005	1	01/14/26	01/14/26	MGC	
Total Xylenes (‡)	EPA 524.2	2955	ND	mg/L	0.0015	10	01/14/26	01/14/26	MGC	
trans-1,2-Dichloroethylene (‡)	EPA 524.2	2979	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
Trichloroethylene (‡)	EPA 524.2	2984	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Vinyl chloride (‡)	EPA 524.2	2976	ND	mg/L	0.0005	0.002	01/14/26	01/14/26	MGC	

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626 NE Division St. - P.O. Box 609
Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 09:55
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #2 | URC Sample #: 6010818-03 | Matrix: Drinking Water

Volatile Organics

Unregulated Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
1,1,1,2-Tetrachloroethane (‡)	EPA 524.2	2986	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1,2,2-Tetrachloroethane (‡)	EPA 524.2	2988	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1-Dichloroethane (‡)	EPA 524.2	2978	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1-Dichloropropene (‡)	EPA 524.2	2410	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,2,3-Trichloropropane (‡)	EPA 524.2	2414	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,3-Dichlorobenzene (‡)	EPA 524.2	2967	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,3-Dichloropropane (‡)	EPA 524.2	2412	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
2,2-Dichloropropane (‡)	EPA 524.2	2416	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
2-Chlorotoluene (‡)	EPA 524.2	2965	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
4-Chlorotoluene (‡)	EPA 524.2	2966	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromobenzene (‡)	EPA 524.2	2993	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromodichloromethane (‡)	EPA 524.2	2943	**0.0055**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromoform (‡)	EPA 524.2	2942	**0.0172**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromomethane (‡)	EPA 524.2	2214	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloroethane (‡)	EPA 524.2	2216	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloroform (‡)	EPA 524.2	2941	**0.0017**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloromethane (‡)	EPA 524.2	2210	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
cis-1,3-Dichloropropene (‡)	EPA 524.2	2413	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Dibromochloromethane (‡)	EPA 524.2	2944	**0.0154**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Dibromomethane (‡)	EPA 524.2	2408	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
trans-1,3-Dichloropropene (‡)	EPA 524.2	2224	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	

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Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Qualifiers and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the MRL (minimum reporting limit)
NA	Not Applicable
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MRL	Minimum Reporting Limit
MDL	Minimum Detection Limit
MCL	Maximum Contamination Level
(‡)	ORELAP Accredited Analyte
(~)	Due to rounding of individual analytes, the "total" may vary slightly from the sum of the individual analyte values.

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Dan Phillips, Laboratory Manager

1ST Resample

ANATEK LABS

Analytical Results Report For:

City of Hermiston

Project:

UCMR5 - 00372

Anatek Work Order:

MGA0244

Anatek Moscow - 1282 Alturas Drive - Moscow, ID 83843 - 208-883-2839 - moscow@anateklabs.com - FL NELAP E87893
Anatek Spokane - 504 E Sprague Ste. D - Spokane, WA 99202 - 509-838-3999 - spokane@anateklabs.com - FL NELAP E871099
Anatek Yakima - 4802 Tieton Drive - Yakima, WA 98908 - 509-225-9404 - yakima@anateklabs.com - FL NELAP E871190
Anatek Wenatchee - 3019 Gs Center Rd - Wenatchee, WA 98801 - 509-701-8362

Anatek Labs, Inc.

1282 Alturas Drive - Moscow, ID 83843 - (208) 883-2839 - email moscow@anateklabs.com
504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - email spokane@anateklabs.com

Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

PWS Name:	**City of Hermiston**	Lab/Sample Number:	**MGA0244-01**
Date Received:	**01/13/2026**	Date Reported by Lab:	**02/02/2026**
PWS#:	**Well #2**	PWS Facility ID:	**00372**
Collect Date:	**01/12/2026**	Collection Time:	**8:30**
Sampling Point ID:	**EP-A**	Sample Point/ Location:	**Well #2 (EP-A)**
Sampling Event:	**SE1**	Sample Type:	**FS**
Lab Federal ID#:	**ID00013**		

Metals Analysis Report:

Analyte	Result	Units	MRL	Analyzed	Analyst	Method
Lithium	0.0220	mg/L	0.00100	1/21/26 11:14	BSM	EPA 200.8

SVOC Analysis Report:

Analyte	Result	Units	MRL	Analyzed	Analyst	Method
11Cl-PF3OUdS	ND	ng/L	5.00	1/17/26 1:44	JJ	EPA 533
4:2FTS	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
6:2FTS	ND	ng/L	5.00	1/17/26 1:44	JJ	EPA 533
8:2FTS	ND	ng/L	5.00	1/17/26 1:44	JJ	EPA 533
9Cl-PF3ONS	ND	ng/L	2.00	1/17/26 1:44	JJ	EPA 533
ADONA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
HFPO-DA	ND	ng/L	5.00	1/17/26 1:44	JJ	EPA 533
NFDHA	ND	ng/L	20.0	1/17/26 1:44	JJ	EPA 533
PFBA	ND	ng/L	5.00	1/17/26 1:44	JJ	EPA 533
PFBS	4.25	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFDA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFDoA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFEESA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFHpA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFHpS	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFHxA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFHxS	11.6	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFMBA	ND	ng/L	4.00	1/17/26 1:44	JJ	EPA 533
PFMPA	ND	ng/L	4.00	1/17/26 1:44	JJ	EPA 533
PFNA	ND	ng/L	4.00	1/17/26 1:44	JJ	EPA 533
PFOA	ND	ng/L	4.00	1/17/26 1:44	JJ	EPA 533
PFOS	11.5	ng/L	4.00	1/17/26 1:44	JJ	EPA 533
PFPeA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFPeS	ND	ng/L	4.00	1/17/26 1:44	JJ	EPA 533
PFUnA	ND	ng/L	2.00	1/17/26 1:44	JJ	EPA 533
N-EtFOSSA	ND	ng/L	8.00	1/19/26 23:04	JJ	EPA 537.1
N-MeFOSAA	ND	ng/L	7.00	1/19/26 23:04	JJ	EPA 537.1
PFTeDA	ND	ng/L	5.00	1/19/26 23:04	JJ	EPA 537.1
PFTrDA	ND	ng/L	6.00	1/19/26 23:04	JJ	EPA 537.1

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1282 Alturas Drive - Moscow, ID 83843 - (208) 883-2839 - email moscow@anateklabs.com
504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - email spokane@anateklabs.com

Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

PWS Name:	**City of Hermiston**	Lab/Sample Number:	**MGA0244-01**
Date Received:	**01/13/2026**	Date Reported by Lab:	**02/02/2026**
PWS#:	**Well #2**	PWS Facility ID:	**00372**
Collect Date:	**01/12/2026**	Collection Time:	**8:30**
Sampling Point ID:	**EP-A**	Sample Point/ Location:	**Well #2 (EP-A)**
Sampling Event:	**SE1**	Sample Type:	**FS**
Lab Federal ID#:	**ID00013**		

SVOC Analysis Report:

Analyte	Recovery	Recovery Limits	Analyzed	Analyst	Method
Surrogate: 13C2-4:2FTS IDA	*104%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C2-6:2FTS IDA	*107%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C2-8:2FTS IDA	*106%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C2-PFDoA IDA	*84%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C3-HFPO-DA IDA	*92%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C3-PFBS IDA	*108%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C3-PFHxS IDA	*112%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C4-PFBA IDA	*104%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C4-PFHpA IDA	*96%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C5-PFHxA IDA	*93%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C5-PFPeA IDA	*103%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C6-PFDA IDA	*92%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C7-PFUnA IDA	*87%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C8-PFOA IDA	*94%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C8-PFOS IDA	*107%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C9-PFNA IDA	*95%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C2-PFDA NIS	*108%*	*70-130*	*1/19/26 23:04*	*JJ*	*EPA 537.1*
Surrogate: 13C2-PFHxA	*108%*	*70-130*	*1/19/26 23:04*	*JJ*	*EPA 537.1*
Surrogate: 13C3-HFPO-DA IDA	*105%*	*70-130*	*1/19/26 23:04*	*JJ*	*EPA 537.1*
Surrogate: d5-N-EtFOSAA	*99%*	*70-130*	*1/19/26 23:04*	*JJ*	*EPA 537.1*

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504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - email spokane@anateklabs.com

Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

PWS Name:	**City of Hermiston**	Lab/Sample Number:	**MGA0244-02**
Date Received:	**01/13/2026**	Date Reported by Lab:	**02/02/2026**
PWS#:	**Well #4**	PWS Facility ID:	**00372**
Collect Date:	**01/12/2026**	Collection Time:	**9:11**
Sampling Point ID:	**EP-B**	Sample Point/ Location:	**Well #4 (EP-B)**
Sampling Event:	**SE1**	Sample Type:	**FS**
Lab Federal ID#:	**ID00013**		

Metals Analysis Report:

Analyte	Result	Units	MRL	Analyzed	Analyst	Method
Lithium	0.0246	mg/L	0.00100	1/21/26 11:20	BSM	EPA 200.8

SVOC Analysis Report:

Analyte	Result	Units	MRL	Analyzed	Analyst	Method
11Cl-PF3OUdS	ND	ng/L	5.00	1/20/26 23:30	JJ	EPA 533
4:2FTS	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
6:2FTS	ND	ng/L	5.00	1/20/26 23:30	JJ	EPA 533
8:2FTS	ND	ng/L	5.00	1/20/26 23:30	JJ	EPA 533
9Cl-PF3ONS	ND	ng/L	2.00	1/20/26 23:30	JJ	EPA 533
ADONA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
HFPO-DA	ND	ng/L	5.00	1/20/26 23:30	JJ	EPA 533
NFDHA	ND	ng/L	20.0	1/20/26 23:30	JJ	EPA 533
PFBA	ND	ng/L	5.00	1/20/26 23:30	JJ	EPA 533
PFBS	3.41	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFDA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFDoA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFEESA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFHpA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFHpS	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFHxA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFHxS	6.98	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFMBA	ND	ng/L	4.00	1/20/26 23:30	JJ	EPA 533
PFMPA	ND	ng/L	4.00	1/20/26 23:30	JJ	EPA 533
PFNA	ND	ng/L	4.00	1/20/26 23:30	JJ	EPA 533
PFOA	ND	ng/L	4.00	1/20/26 23:30	JJ	EPA 533
PFOS	5.61	ng/L	4.00	1/20/26 23:30	JJ	EPA 533
PFPeA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFPeS	ND	ng/L	4.00	1/20/26 23:30	JJ	EPA 533
PFUnA	ND	ng/L	2.00	1/20/26 23:30	JJ	EPA 533
N-EtFOSSA	ND	ng/L	8.00	1/19/26 23:28	JJ	EPA 537.1
N-MeFOSAA	ND	ng/L	7.00	1/19/26 23:28	JJ	EPA 537.1
PFTeDA	ND	ng/L	5.00	1/19/26 23:28	JJ	EPA 537.1
PFTrDA	ND	ng/L	6.00	1/19/26 23:28	JJ	EPA 537.1

Anatek Labs, Inc.

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504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - email spokane@anateklabs.com

Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

PWS Name:	**City of Hermiston**	Lab/Sample Number:	**MGA0244-02**
Date Received:	**01/13/2026**	Date Reported by Lab:	**02/02/2026**
PWS#:	**Well #4**	PWS Facility ID:	**00372**
Collect Date:	**01/12/2026**	Collection Time:	**9:11**
Sampling Point ID:	**EP-B**	Sample Point/ Location:	**Well #4 (EP-B)**
Sampling Event:	**SE1**	Sample Type:	**FS**
Lab Federal ID#:	**ID00013**		

SVOC Analysis Report:

Analyte	Recovery	Recovery Limits	Analyzed	Analyst	Method
Surrogate: 13C2-4:2FTS IDA	*91%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C2-6:2FTS IDA	*100%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C2-8:2FTS IDA	*86%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C2-PFDoA IDA	*70%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C3-HFPO-DA IDA	*83%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C3-PFBS IDA	*92%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C3-PFHxS IDA	*93%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C4-PFBA IDA	*90%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C4-PFHpA IDA	*80%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C5-PFHxA IDA	*81%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C5-PFPeA IDA	*86%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C6-PFDA IDA	*72%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C7-PFUnA IDA	*71%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C8-PFOA IDA	*78%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C8-PFOS IDA	*89%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C9-PFNA IDA	*67%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C2-PFDA NIS	*109%*	*70-130*	*1/19/26 23:28*	*JJ*	*EPA 537.1*
Surrogate: 13C2-PFHxA	*114%*	*70-130*	*1/19/26 23:28*	*JJ*	*EPA 537.1*
Surrogate: 13C3-HFPO-DA IDA	*112%*	*70-130*	*1/19/26 23:28*	*JJ*	*EPA 537.1*
Surrogate: d5-N-EtFOSAA	*99%*	*70-130*	*1/19/26 23:28*	*JJ*	*EPA 537.1*

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504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - email spokane@anateklabs.com

Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

PWS Name:	**City of Hermiston**	Lab/Sample Number:	**MGA0244-03**
Date Received:	**01/13/2026**	Date Reported by Lab:	**02/02/2026**
PWS#:	**Well #5**	PWS Facility ID:	**00372**
Collect Date:	**01/12/2026**	Collection Time:	**11:31**
Sampling Point ID:	**EP-C**	Sample Point/ Location:	**Well #5 (EP-C)**
Sampling Event:	**SE1**	Sample Type:	**FS**
Lab Federal ID#:	**ID00013**		

Metals Analysis Report:

Analyte	Result	Units	MRL	Analyzed	Analyst	Method
Lithium	0.0105	mg/L	0.00100	1/21/26 11:25	BSM	EPA 200.8

SVOC Analysis Report:

Analyte	Result	Units	MRL	Analyzed	Analyst	Method
11Cl-PF3OUdS	ND	ng/L	5.00	1/17/26 2:35	JJ	EPA 533
4:2FTS	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
6:2FTS	ND	ng/L	5.00	1/17/26 2:35	JJ	EPA 533
8:2FTS	ND	ng/L	5.00	1/17/26 2:35	JJ	EPA 533
9Cl-PF3ONS	ND	ng/L	2.00	1/17/26 2:35	JJ	EPA 533
ADONA	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
HFPO-DA	ND	ng/L	5.00	1/17/26 2:35	JJ	EPA 533
NFDHA	ND	ng/L	20.0	1/17/26 2:35	JJ	EPA 533
PFBA	ND	ng/L	5.00	1/17/26 2:35	JJ	EPA 533
PFBS	10.8	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFDA	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFDoA	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFEESA	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFHpA	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFHpS	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFHxA	4.03	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFHxS	9.32	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFMBA	ND	ng/L	4.00	1/17/26 2:35	JJ	EPA 533
PFMPA	ND	ng/L	4.00	1/17/26 2:35	JJ	EPA 533
PFNA	ND	ng/L	4.00	1/17/26 2:35	JJ	EPA 533
PFOA	ND	ng/L	4.00	1/17/26 2:35	JJ	EPA 533
PFOS	9.06	ng/L	4.00	1/17/26 2:35	JJ	EPA 533
PFPeA	3.91	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFPeS	ND	ng/L	4.00	1/17/26 2:35	JJ	EPA 533
PFUnA	ND	ng/L	2.00	1/17/26 2:35	JJ	EPA 533
N-EtFOSSA	ND	ng/L	8.00	1/19/26 23:52	JJ	EPA 537.1
N-MeFOSAA	ND	ng/L	7.00	1/19/26 23:52	JJ	EPA 537.1
PFTeDA	ND	ng/L	5.00	1/19/26 23:52	JJ	EPA 537.1
PFTrDA	ND	ng/L	6.00	1/19/26 23:52	JJ	EPA 537.1

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Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

PWS Name:	**City of Hermiston**	Lab/Sample Number:	**MGA0244-03**
Date Received:	**01/13/2026**	Date Reported by Lab:	**02/02/2026**
PWS#:	**Well #5**	PWS Facility ID:	**00372**
Collect Date:	**01/12/2026**	Collection Time:	**11:31**
Sampling Point ID:	**EP-C**	Sample Point/ Location:	**Well #5 (EP-C)**
Sampling Event:	**SE1**	Sample Type:	**FS**
Lab Federal ID#:	**ID00013**		

SVOC Analysis Report:

Analyte	Recovery	Recovery Limits	Analyzed	Analyst	Method
Surrogate: 13C2-4:2FTS IDA	*96%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C2-6:2FTS IDA	*108%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C2-8:2FTS IDA	*110%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C2-PFDoA IDA	*85%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C3-HFPO-DA IDA	*98%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C3-PFBS IDA	*106%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C3-PFHxS IDA	*113%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C4-PFBA IDA	*106%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C4-PFHpA IDA	*90%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C5-PFHxA IDA	*99%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C5-PFPeA IDA	*111%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C6-PFDA IDA	*96%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C7-PFUnA IDA	*90%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C8-PFOA IDA	*99%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C8-PFOS IDA	*106%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C9-PFNA IDA	*89%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C2-PFDA NIS	*105%*	*70-130*	*1/19/26 23:52*	*JJ*	*EPA 537.1*
Surrogate: 13C2-PFHxA	*111%*	*70-130*	*1/19/26 23:52*	*JJ*	*EPA 537.1*
Surrogate: 13C3-HFPO-DA IDA	*109%*	*70-130*	*1/19/26 23:52*	*JJ*	*EPA 537.1*
Surrogate: d5-N-EtFOSAA	*102%*	*70-130*	*1/19/26 23:52*	*JJ*	*EPA 537.1*

Authorized Signature,



Justin Doty For Todd Taruscio, Laboratory Manager

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504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - email spokane@anateklabs.com

Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

M1	Matrix spike recovery was high; the associated blank spike recovery was acceptable. Potential matrix effect
PQL	Practical Quantitation Limit
ND	Not Detected
MCL	EPA's Maximum Contaminant Level
Dry	Sample results reported on a dry weight basis
*	Not a state-certified analyte
RPD	Relative Percent Difference
%REC	Percent Recovery
Source	Sample that was spiked or duplicated.

This report shall not be reproduced except in full, without the written approval of the laboratory
The results reported related only to the samples indicated.

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☐ 504 E Sprague Ste D, Spokane WA 99202 (509)838-3999 - EPA# WA001

MGA0244

Due: 01/27/26

UCMR5 Chain of Custody

WATER SYSTEM	city OF Heemiston	Water System #	41-00372
SEND REPORT TO	Alex McCann	Phone Number	541-567-5521
ADDRESS	180 N. E. 2nd ST	Email	fcervantes@Heemiston.gov
CITY STATE ZIP	Heemiston OR 97838	County	Umatilla

PWS FACILITY NAME (e.g., Treatment Plant)
Well # 2 EP-A

PWS FACILITY ID (5-digits)
00372

SAMPLING POINT ID (from inventory)
EP-A

Sampling Point Type Code
☒ Entry point to the distribution system

Water Source Type Code
☒ GW-Ground Water ☐ SW-Surface Water ☐ GU-Ground Water under influence of SW ☐ MX-Mixed Water

SAMPLING EVENT (circle one)
(SE 1) - SE 2 - SE 3 - SE 4

Date and Time Collected	1-12-26 8:30 AM	Sampler Name	Fernando Cervantes
		Sampler Signature	

Check Desired Analyses

UCMR5 PFAS
- ☑ EPA 533
  - ☑ EPA 533 Field Reagent Blank transferred from Bottle A to Bottle B
- ☑ EPA 537.1
  - ☑ EPA 537.1 Field Reagent Blank transferred from Bottle A to Bottle B

UCMR5 Lithium
- ☑ EPA 200.7 (lithium)

Customer Signature		Received By	
Shipping/Delivery Date	1-12-26	Date/Time Received	1/13/26 0951

Form COC20.01 - Eff 9 Feb 2023 - Page 1 of 1

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☐ 504 E Sprague Ste D, Spokane WA 99202 (509)838-3999 - EPA# WA00169

UCMR5 Chain of Custody

WATER SYSTEM	City of Hermiston	Water System #	41-00372
SEND REPORT TO	Alex McCann	Phone Number	541-567-5521
ADDRESS	180 N.E. 2nd ST	Email	fcervantes@Hermiston.gov
CITY STATE ZIP	Hermiston Oregon 97838	County	Umatilla

PWS FACILITY NAME (e.g., Treatment Plant)	Well #4 EP-B
PWS FACILITY ID (5-digits)	00372
SAMPLING POINT ID (from inventory)	EP-B
Sampling Point Type Code	☒ Entry point to the distribution system
Water Source Type Code	X GW-Ground Water ___ SW-Surface Water ___ GU-Ground Water under influence of SW ___ MX-Mixed Water
Date and Time Collected	1-12-26 9:11 AM
Sampler Name	Fernando Cervantes
Sampler Signature	

SAMPLING EVENT (circle one): (SE 1) - SE 2 - SE 3 - SE 4

Check Desired Analyses

UCMR5 PFAS

- ☑ EPA 533
  - ☑ EPA 533 Field Reagent Blank transferred from Bottle A to Bottle B
- ☑ EPA 537.1
  - ☑ EPA 537.1 Field Reagent Blank transferred from Bottle A to Bottle B

UCMR5 Lithium

- ☑ EPA 200.7 (lithium)

MS/MSD

Customer Signature		Received By	
Shipping/Delivery Date	1-12-26	Date/Time Received	1/13/26 0951

Form COC20.01 - Eff 9 Feb 2023 - Page 1 of 1

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☐ 504 E Sprague Ste D, Spokane WA 99202 (509)838-3999 - EPA# WA00169

UCMR5 Chain of Custody

WATER SYSTEM	City OF Hermiston	Water System #	41-00372
SEND REPORT TO	Alex McCann	Phone Number	541-567-5521
ADDRESS	180 N.E. 2nd ST	Email	fcervantes@hermiston.gov
CITY STATE ZIP	Hermiston OR 97838	County	Umatilla

PWS FACILITY NAME (e.g., Treatment Plant)	Well #5 EP-C
PWS FACILITY ID (5-digits)	00372
SAMPLING POINT ID (from inventory)	EP-C
Sampling Point Type Code	☑ Entry point to the distribution system
Water Source Type Code	✓ GW-Ground Water ___ SW-Surface Water ___ GU-Ground Water under influence of SW ___ MX-Mixed Water
Date and Time Collected	1-12-26 11:31 AM
Sampler Name	Fernando Cervantes
Sampler Signature	

SAMPLING EVENT (circle one): (SE 1) - SE 2 - SE 3 - SE 4

Check Desired Analyses

UCMR5 PFAS

- ☑ EPA 533
  - ☑ EPA 533 Field Reagent Blank transferred from Bottle A to Bottle B
- ☑ EPA 537.1
  - ☑ EPA 537.1 Field Reagent Blank transferred from Bottle A to Bottle B

UCMR5 Lithium

- ☑ EPA 200.7 (lithium)

Customer Signature		Received By	
Shipping/Delivery Date	1-12-26	Date/Time Received	1/13/26 0951

Form COC20.01 - Eff 9 Feb 2023 - Page 1 of 1

ANATEK LABS

Sample Receipt and Preservation Form

Cooler Temperature	
Read (°C):	1.1
Corrected (°C):	—
Thermometer Used:	IR-4 (IR-6)

Client Name: C/O Hermiston

TAT: (Normal) RUSH: _____ days

Samples Received From: FedEx (UPS) USPS Hand Courier Huber Other: _____

Custody Seal on Cooler/Box: Yes (No) Custody Seals Intact: Yes No (N/A)

Number of Coolers/Boxes: 1 Type of Ice: (Wet Ice) (Ice Packs) None Other_____

Packing Material: Bubble Wrap (Bags) Foam/Peanuts Paper None Other: _____

				Comments
Samples Received Intact?	(Yes)	No		
Chain of Custody Present/Complete?	(Yes)	No		
Labels and Chains Agree?	(Yes)	No		
Samples Received Within Hold Time?	(Yes)	No		
Correct Containers Received?	(Yes)	No		
Anatek Bottles Used?	(Yes)	No	Unknown	
Samples Properly Preserved?	(Yes)	No	N/A	*If No, record preservation and pH*
				Initial pH: <2 or / pH Paper ID:
VOC Vials Free of Headspace (<6mm)?	Yes	No	(N/A)	
VOC Trip Blanks Present?	Yes	No	(N/A)	
Total Number of Sample Bottles Received: 25				

Record bottle types, preservatives, and lot numbers (if known) below. Please list bottles in descending order by size:

P250 NH4Ac (2533) 533 x 11 FB: 2531
P250 Triz (2421) 537 x 11 FB: 2534
P250 Li x 3

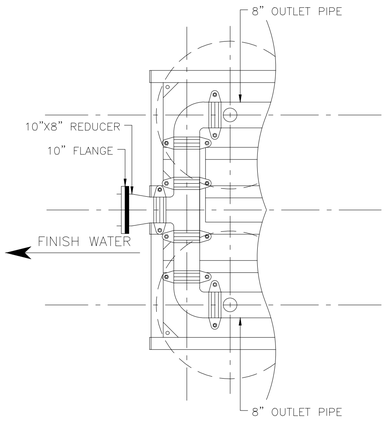
Notes, comments, etc. (also use this space if contacting the client - record names and date/time)

Received/Inspected By: [signature] Date/Time: 1/13/25 0951

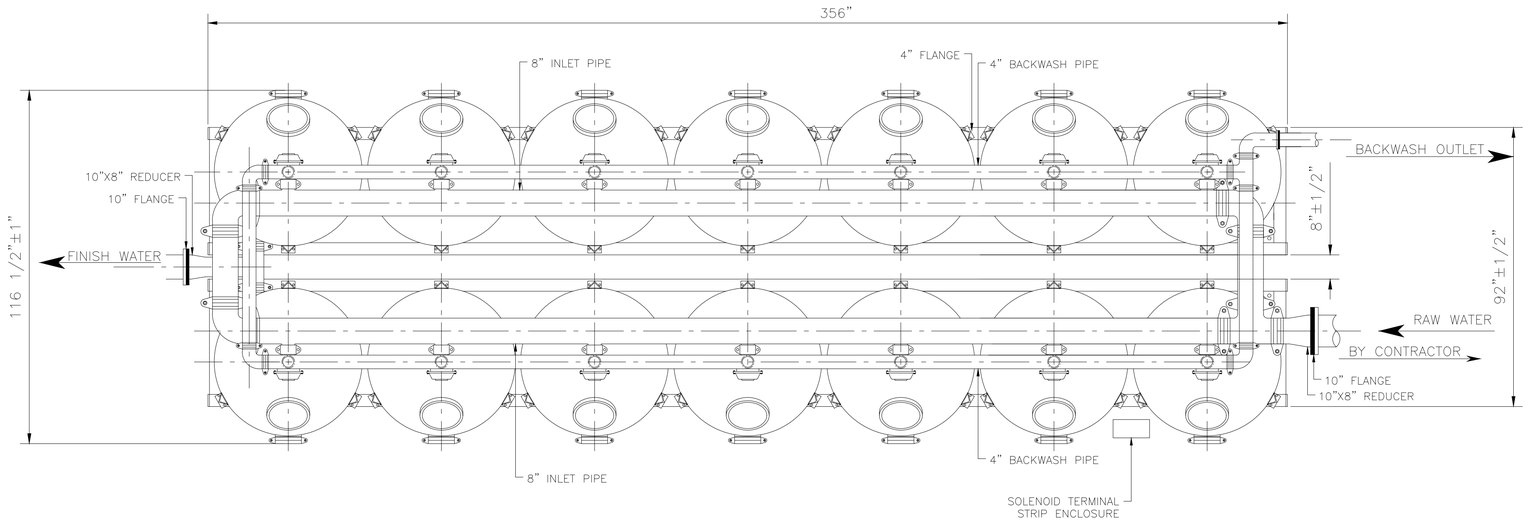
Form F19.03 - Eff 20 Oct 2025

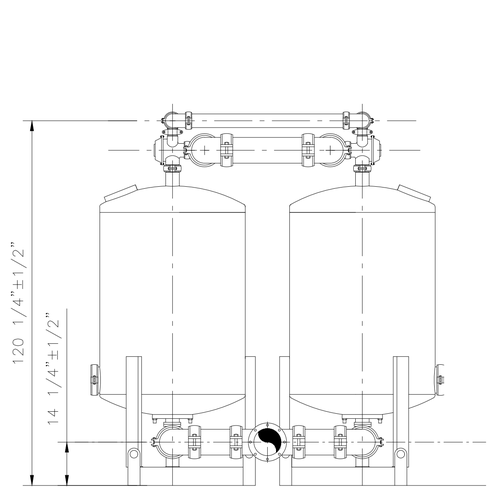
Page 1 of 1

APPENDIX B
ATEC Water Systems, LLC,
Equipment Proposal

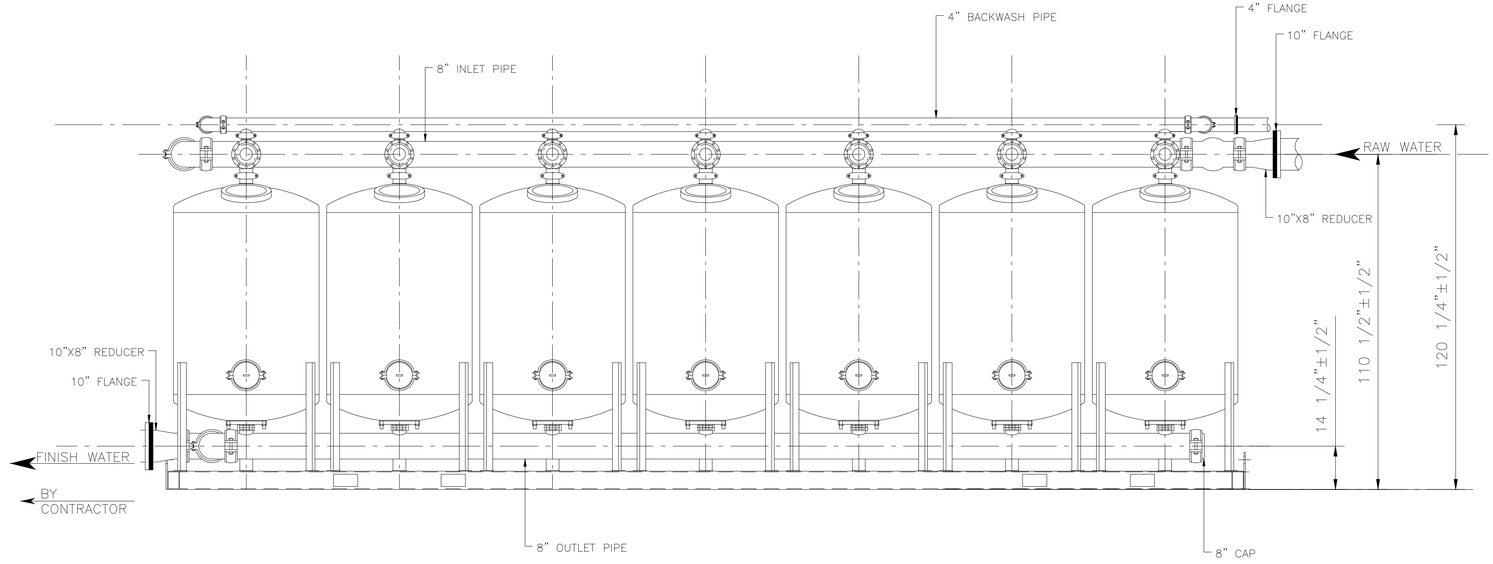


LEFT SIDE, FILTERS REMOVED





LEFT ELEVATION



NOTES:

[A] THE TEN (10) FILTER SYSTEM IS DELIVERED ON (2) 5 FILTER SKIDS.

[B] AIR RELIEF/VACUUM RELIEF VALVE WILL BE SUPPLIED FOR INSTALL ON 2" COUPLING ON INLET LINE.

[C] SHADED PIPING BY CONTRACTOR.

[D] FILTER PIPING CONNECTIONS WILL BE PROVIDED TO SUIT FIELD CONDITIONS.

ATEC
A Cadix Solution
ATEC WATER SYSTEMS, 1690 LANA WAY, BLDG A, HOLLISTER CA, 95203, PHONE (831) 637-9264, WWW.ATECWATER.COM

DESIGN BY:	.
DRAWN BY:	.
CHECKED BY:	.
APR'D BY:	.

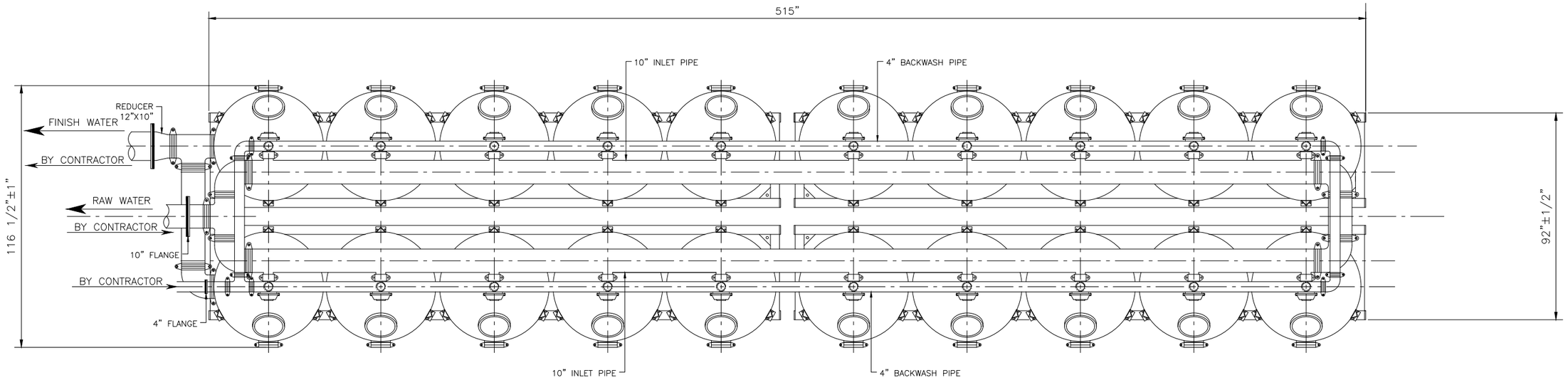
NO.	DATE		BY	APVD

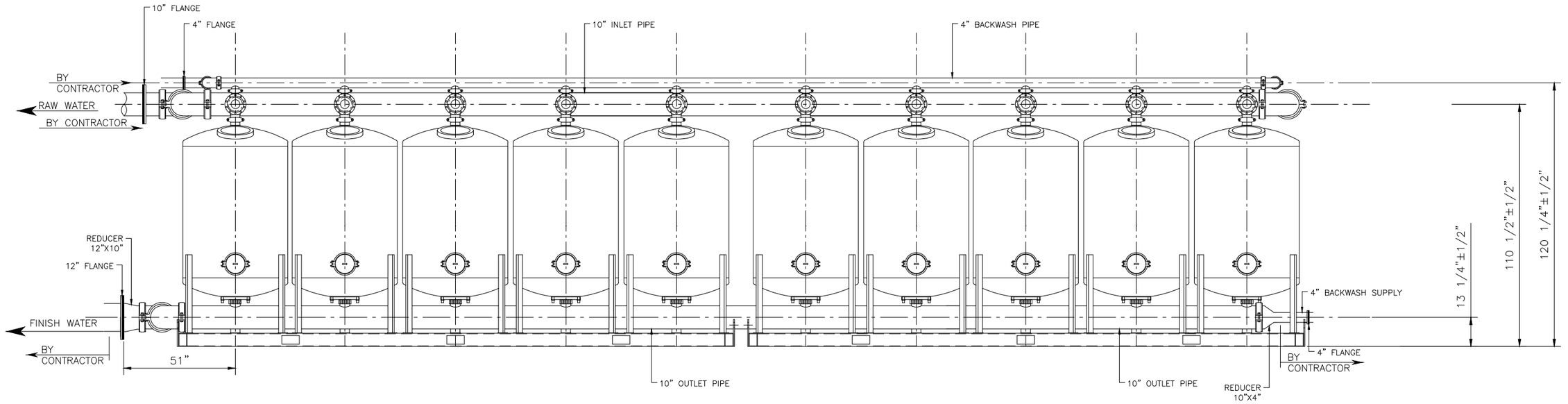
0 2 4
SCALE IN FEET
NOTE: CHECK SCALE
SCALEABLE IN 22x34 - 1/2" = 1'-0"
SCALEABLE IN 11x17 - 1/4" = 1'-0"

MODEL 10-60-48
48 - INCH DIA VESSELS
ATEC TREATMENT SYSTEM

FILTER PLAN AND PROFILES

SHEET NO. 1 of 2
DWG. NO.
DATE: 1-4-2013
FILE: Standard 14 Filter 48"





ATEC
A Cadiz Solution
ATEC WATER SYSTEMS, 1690 LANA WAY, BLDG A, HOLLISTER CA, 95203, PHONE (831) 637-9264, WWW.ATECWATER.COM

DESIGN BY:	.
DRAWN BY:	.
CHECKED BY:	.
APR'D BY:	.

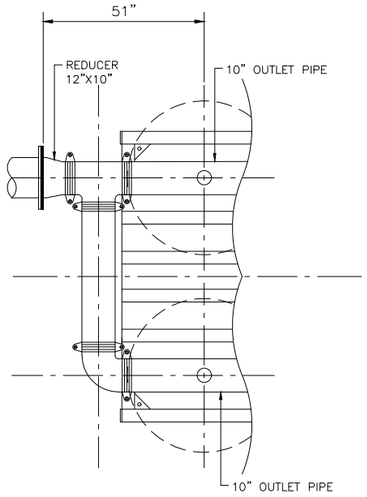
NO.	DATE		BY	APVD

0 2 4
SCALE IN FEET
NOTE: CHECK SCALE
SCALEABLE IN 22x34 - 1/2" = 1'-0"
SCALEABLE IN 11x17 - 1/4" = 1'-0"

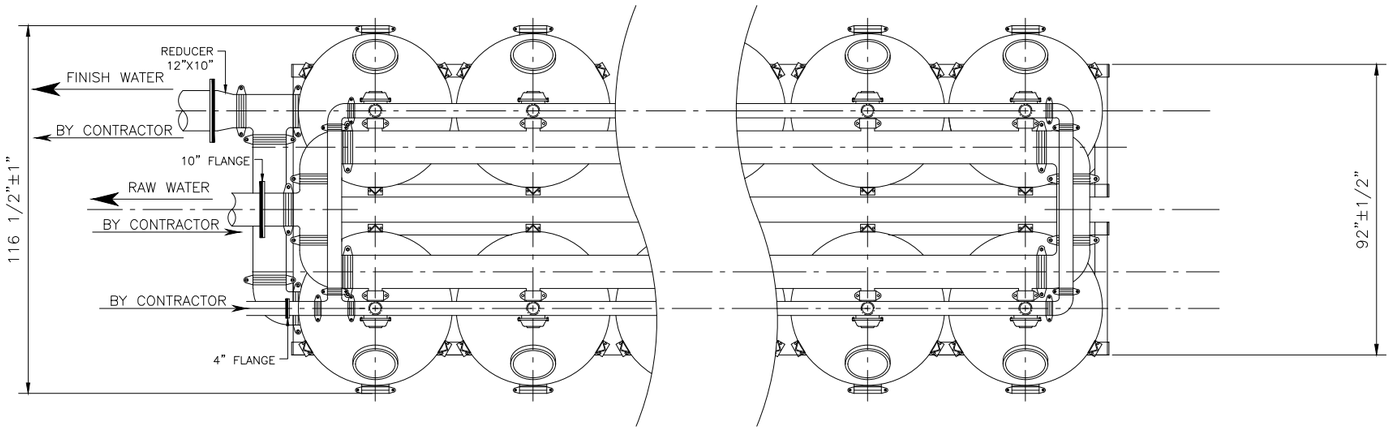
MODEL 20-60-48
48 - INCH DIA VESSELS
ATEC TREATMENT SYSTEM

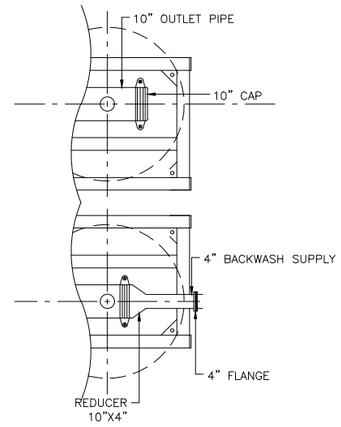
FILTER PLAN AND PROFILES

SHEET NO. 1 of 3
DWG. NO.
DATE: 14-03-2025
FILE: 20 Tank Backwash Filter 48"

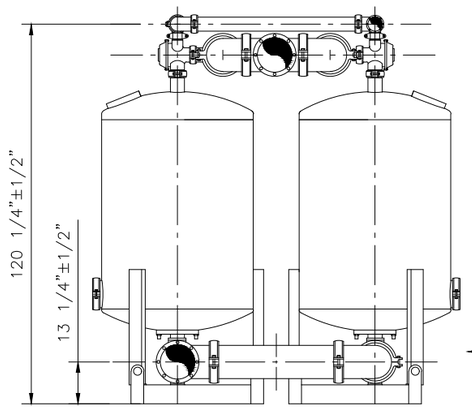


LEFT SIDE, FILTERS REMOVED

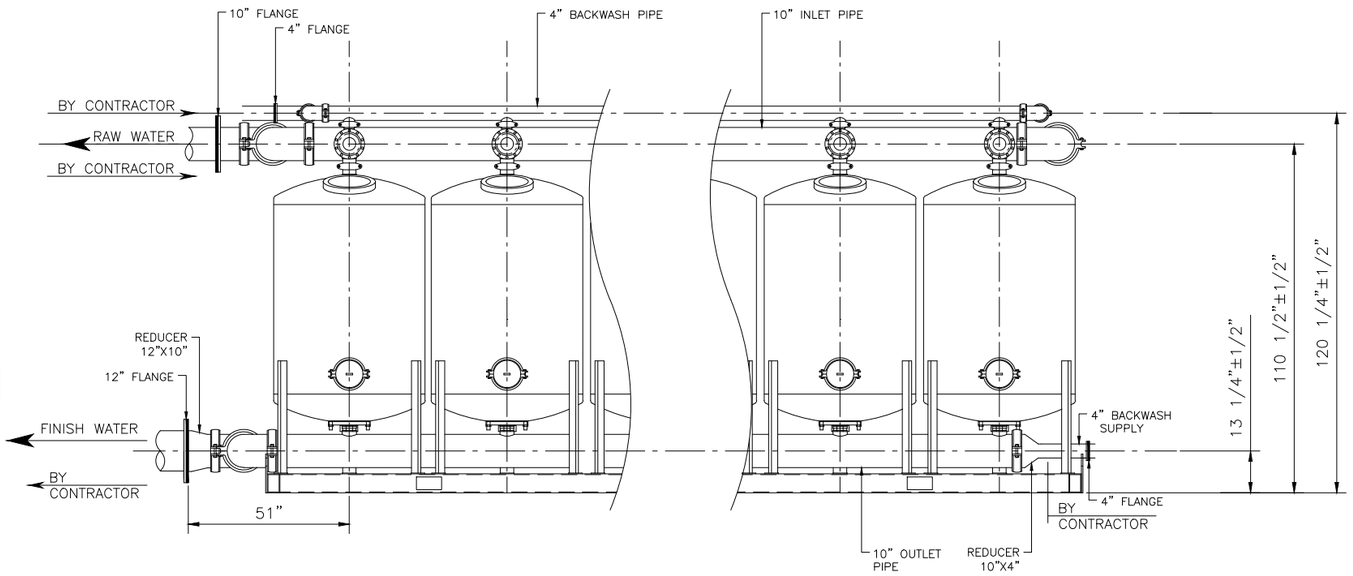


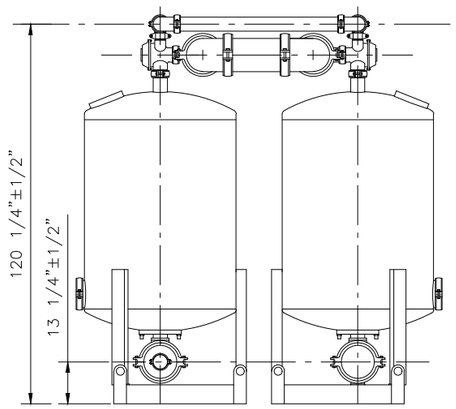


RIGHT SIDE, FILTERS REMOVED



LEFT ELEVATION





RIGHT ELEVATION

NOTES:

[A] THE TWENTY (20) FILTER SYSTEM IS DELIVERED ON (4) 5 FILTER SKIDS.

[B] SHADED PIPING BY CONTRACTOR.

[C] FILTER PIPING CONNECTIONS WILL BE PROVIDED TO SUIT FIELD CONDITIONS.

ATEC
A Cadiz Solution
ATEC WATER SYSTEMS, 1690 LANA WAY, BLDG A, HOLLISTER CA, 95203, PHONE (831) 637-9264, WWW.ATECWATER.COM

DESIGN BY:	.
DRAWN BY:	.
CHECKED BY:	.
APR'D BY:	.

NO.	DATE		BY	APVD

0 2 4
SCALE IN FEET
NOTE: CHECK SCALE
SCALEABLE IN 22x34 - 1/2" = 1'-0"
SCALEABLE IN 11x17 - 1/4" = 1'-0"

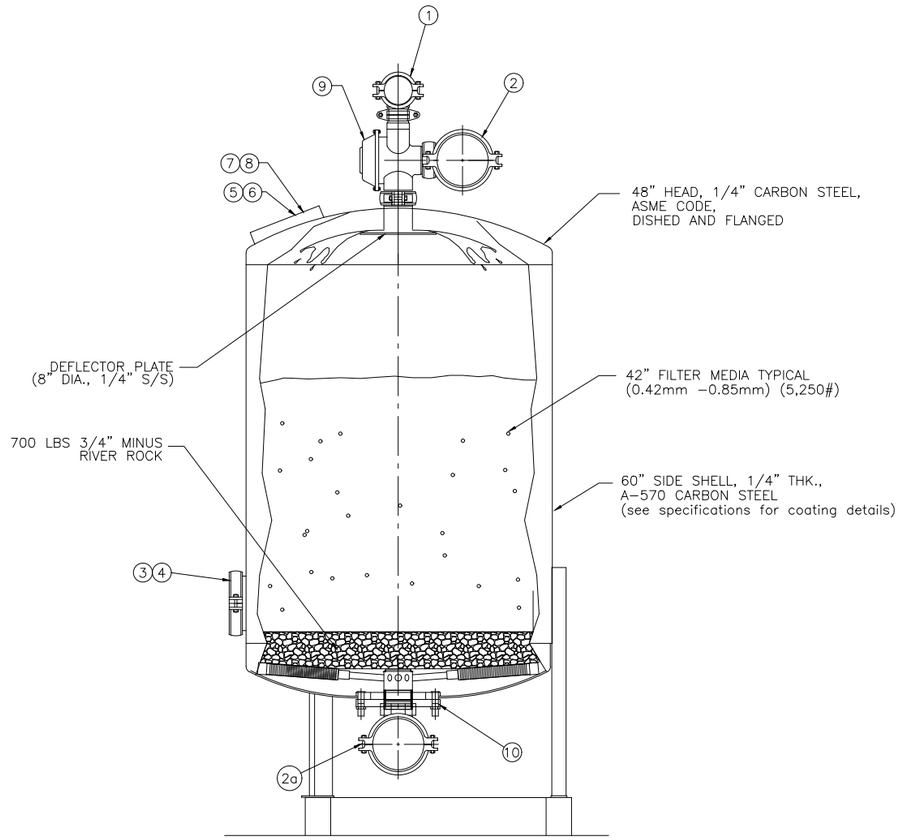
MODEL 20-60-48
48 - INCH DIA VESSELS
ATEC TREATMENT SYSTEM

FILTER PLAN AND PROFILES

SHEET NO. 2 of 3
DWG. NO.
DATE: 14-03-2025
FILE: 20 Tank Backwash Filter 48"

BILL OF MATERIAL			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	PFS–CPL03	4" GROOVED COUPLING, CAST IRON W/ BOLTS & GASKET
2	3	PFS–CPL04	6" GROOVED COUPLING, CAST IRON W/ BOLTS & GASKET
3	1	PFS–CAP08	8" GROOVED END CAP
4	1	PFS–CPL08	8" GROOVED COUPLING, CAST IRON W/ BOLTS & NUTS
5	1	PFS=HHP11	11"x15" HAND HOLE PLATE
6	1	PFS–HHG11	11"x15" HAND HOLE GASKET
7	1	PFS–HHGS11	11"x15" HAND HOLE BOLT SET
8	1	PFS–HHCR11	11"x15" HAND HOLE HOLD DOWN CRAB
9	1	V–BF4	4"x4"x3" SERIES 350 BERMAD BACKWASH VALVE
10	1	UA SS48	UNDER–DRAIN ASSEMBLY 316L SS W/ SCH 80 PVC CAP COMPLETE

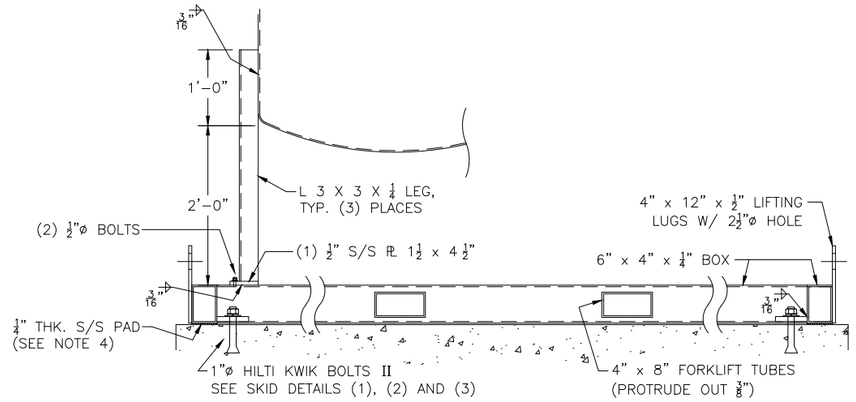
NOTE: QUANTITIES FOR ONE (1) TANK



TANK SECTION
SCALE 1" = 1'–0"

0 1 2

SCALE IN FEET
NOTE: CHECK SCALE
SCALEABLE IN 22x34 - 1" = 1'-0"
SCALEABLE IN 11x17 - 1/2" = 1'-0"



SECTION A–A (TYPICAL)
SCALE 1" = 1'–0"

0 1 2

SCALE IN FEET
NOTE: CHECK SCALE
SCALEABLE IN 22x34 - 1" = 1'-0"
SCALEABLE IN 11x17 - 1/2" = 1'-0"

ATEC
A Cadiz Solution
ATEC WATER SYSTEMS, 1690 LANA WAY, BLDG A,
HOLLISTER CA, 95203, PHONE (831) 637–9264,
WWW.ATECWATER.COM

DESIGN BY:	.
DRAWN BY:	.
CHECKED BY:	.
APR'D BY:	.

NO.	DATE		BY	APVD

SCALE
AS NOTED

48 - INCH DIA VESSELS
ATEC TREATMENT SYSTEM

FILTER PLAN AND PROFILES

SHEET NO. 3 of 3
DWG. NO.
DATE: 14-03-2025
FILE:
20 Tank Backwash Filter 48"

Daniel La Beau

From: Mitch Brandon <mitch.brandon@mineralstech.com>
Sent: Friday, January 23, 2026 12:45 PM
To: Aaron Gress; Steve Green
Cc: John Mendenhall
Subject: RE: [External] RE: Hermiston PFAS Treatment Follow Up-Questions

Hi Aaron/Steve,

Below are the estimates for the three wells in Hermiston, OR. Please let me know if you have any questions.

Scope Summary
Client: ATEC Water
Application: Drinking water
Location: Hermiston, OR
Design Rates:

1. Well No. 2 Newport Park – 1,000 gpm
2. Well No. 4 Public Works – 2,500 gpm
3. Well No. 5 Theater Sports Park – 4,700 gpm

System Designs:

1. Well No. 2 – 1 x 12’ diameter lead/lag vessels containing FLUORO-SORB 200® Adsorbent
2. Well No. 4 – 2 x 12’ diameter parallel lead/lag vessels containing FLUORO-SORB 200® Adsorbent
3. Well No. 5 – 4 x 12’ diameter parallel lead/lag vessels containing FLUORO-SORB 200® Adsorbent

Table 1: Lead Vessel – Well No. 2 Newport Park – 1,000 GPM

Influent PFAS	PFOS 12 ng/L PFHxS 12 ng/L PFBS 4.4 ng/L
Treatment Target	PFOA 2 ng/L PFOS 2 ng/L
Flow Rate	1,000 gpm
Vessel Configuration	Lead/Lag
Vessel Diameter	12 ft
Mass of Media	13,500 lbs
Volume of Media	272 ft^3
Bed Height	2.4 ft
Empty Bed Contact Time (EBCT)	2 min
Hydraulic Loading Rate	9 gpm/ft^2
Bed Life	943 days
Bed Volumes Treated	670,000
PFAS Expected to Break Through	PFOS

Table 2: Lead Vessel – Well No. 4 Public Works – 2,500 GPM

Influent PFAS	PFOS 6 ng/L PFHxS 8 ng/L PFBS 3.4 ng/L
Treatment Target	PFOA 2 ng/L PFOS 2 ng/L

Flow Rate	2,500 gpm (2 x 1,250 gpm in parallel)
Vessel Configuration	Two Parallel Lead/Lag
Vessel Diameter	12 ft
Mass of Media (per vessel)	16,800 lbs
Volume of Media (per vessel)	340 ft^3
Bed Height	3 ft
Empty Bed Contact Time (EBCT)	2 min
Hydraulic Loading Rate	11 gpm/ft^2
Bed Life	1,500 days
Bed Volumes Treated	1,100,000
PFAS Expected to Break Through	PFOS

Table 3: Lead Vessel – Well No. 5 Theater Sports Park – 4,700 GPM

Influent PFAS	PFOS 7.8 ng/L PFHxS 8.4 ng/L PFBS 10 ng/L
Treatment Target	PFOA 2 ng/L PFOS 2 ng/L
Flow Rate	4,700 gpm (4 x 1,175 gpm in parallel)
Vessel Configuration	Four Parallel Lead/Lag
Vessel Diameter	12 ft
Mass of Media (per vessel)	15,700 lbs
Volume of Media (per vessel)	317 ft^3
Bed Height	2.8 ft
Empty Bed Contact Time (EBCT)	2 min
Hydraulic Loading Rate	10.4 gpm/ft^2
Bed Life	1,050 days
Bed Volumes Treated	770,000
PFAS Expected to Break Through	PFOS

The time to breakthrough was calculated based on estimated adsorption capacities of FLUORO-SORB® 200 for each PFAS, based on testing in the field and at McGill University. Media vessels should be preceded by pre-treatment to remove any total suspended solids, including precipitated iron and manganese. The performance of a FLUORO-SORB® 200 filtration system for PFAS adsorption can be negatively affected by the following:

- Total Organic Carbon > 50 mg/L
- Total Dissolved Solids > 5000 mg/L
- Total Iron > 1 mg/L
- Total Manganese > 0.5 mg/L

Disclaimer

This proposal and associated communications are estimates based on a careful review of the data and technical information provided. Media usage estimates are based on PFAS adsorption capacities from university research with FLUORO-SORB® Adsorbent and FLUORO-SORB® Flex Adsorbent on PFAS-containing waters from contaminated sites. Since each contaminated water presents unique features, application of standard adsorption capacity values produces an estimate that may be affected by on-site conditions. Design, installation, and operation of treatment systems based on information provided must be conducted by qualified personnel to ensure treatment results are consistent with the estimate. The user is solely responsible for determining suitability for the intended and proper use, as well as disposal of the used product. CETCO makes no warranty of merchantability or suitability for any particular purpose in connection with any sale of its products described herein. CETCO reserves the right to update information without notice. All products are sold on the understanding that FLUORO-SORB® Adsorbent is a registered trademark of Minerals Technologies Inc. or its subsidiaries. cetco@mineralstech.com | cetco.com | 800.527.9948

Table 1
ATEC PFAS Adsorption System
Budgetary System Pricing & Design Details

Project Name:	**Hermiston, OR**
Engineering Consultant:	**Anderson Perry - Daniel La Beau**
Rep Company Details:	**Goble Sampson - John Simon**
Proposal Prepared by:	**Steve Green - Chief Commercial Officer**
Proposal Prepared on:	**January 26, 2026**

Equipment Design Criteria Summary

Design Scenario:									
Well Name or Number:	**#2 Newport Park**	**#2 Newport Park**	**#2 Newport Park**	**#4 Public Works**	**#4 Public Works**	**#4 Public Works**	**#5 Theater Sports Park**	**#5 Theater Sports Park**	**#5 Theater Sports Park**
Capacity, MGD	**1.4**	**1.4**	**1.4**	**2.9**	**2.9**	**2.9**	**7.2**	**7.2**	**7.2**
Plant Capacity (gpm)	1,000	1,000	1,000	2,000	2,000	2,000	5,000	5,000	5,000
PFAS Compounds (EPA Limit)									
PFOA (4 ppt)	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown
PFOS (4 ppt)	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown
PFHxS (10 ppt)	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown
PFNA (10 ppt)	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown
HFPO-DA (GenX) (10 ppt)	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown
Hazard Index (PFHX, PFNA, HFPO-DA, PFBS) (unitless)	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown
Lead Vessels - Media Type	**FluoroSorb**	**Ion Exchange**	**GAC**	**FluoroSorb**	**Ion Exchange**	**GAC**	**FluoroSorb**	**Ion Exchange**	**GAC**
Diameter of Vessels, in	48	48	48	48	48	48	48	48	48
Vessel Sideshell Height, in	72	72	72	72	72	72	72	72	72
Diameter of Vessels, ft	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Surface areas, per vessel, sq ft	12.6	12.6	12.57	12.6	12.6	12.57	12.6	12.6	12.57
Number of Vessels	5	5	12	10	10	16	12	12	20
Number of Filter Banks	1	1	2	1	1	3	2	2	6
Loading Rate, gpm/sq ft	15.9	15.9	3.3	15.9	15.9	3.3	16.6	16.6	3.3
Media type	FS	IX	GAC	FS	IX	GAC	FS	IX	GAC
Media Depth, in	52	52	53	52	52	53	54	54	53
Media, c.f.	272	272	1,332	545	545	2,664	1,357	1,357	6,660
EBCT, min	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0
Lag Vessels - Media Type	**FluoroSorb**	**Ion Exchange**	**GAC**	**FluoroSorb**	**Ion Exchange**	**GAC**	**FluoroSorb**	**Ion Exchange**	**GAC**
Diameter of Vessels, in	48	48	48	48	48	48	48	48	48
Vessel Sideshell Height, in	72	72	72	72	72	72	72	72	72
Diameter of Vessels, ft	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Surface areas, per vessel, sq ft	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6
Number of Vessels	5	5	12	10	10	16	12	12	20
Number of Filter Trains	1	1	2	1	1	3	2	2	6
Loading Rate, gpm/sq ft	15.9	15.9	3.3	15.9	15.9	3.3	16.6	16.6	3.3
Media type	FS	IX	GAC	FS	IX	GAC	FS	IX	GAC
Media Depth, in	52	52	53	52	52	53	54	54	53
Media, c.f.	272	272	1,332	545	545	2,664	1,357	1,357	6,660
EBCT, min	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0
Configuration & Pricing									
System Configuration	**2 x 5-72-48-FS52**	**2 x 5-72-48-IX52**	**4 x 12-72-48-GAC53**	**2 x 10-72-48-FS52**	**2 x 10-72-48-IX52**	**6 x 16-72-48-GAC53**	**4 x 12-72-48-FS54**	**4 x 12-72-48-IX54**	**12 x 20-72-48-GAC53**
Price per Filter Train	$ 252,679	$ 300,095	$ 543,000	$ 505,359	$ 600,191	$ 724,000	$ 674,740	$ 911,091	$ 905,000
Number of Filter Trains	2	2	4	2	2	6	4	4	12
Total System Price	$ 505,359	$ 600,191	$ 2,172,000	$ 1,010,718	$ 1,200,382	$ 4,344,000	$ 2,698,961	$ 3,644,364	$ 10,860,000
Shipping & Handling Fee	$ 20,000	$ 20,000	$ 40,000	$ 20,000	$ 20,000	$ 60,000	$ 40,000	$ 40,000	$ 120,000
Total	**$ 525,359**	**$ 620,191**	**$ 2,212,000**	**$ 1,030,718**	**$ 1,220,382**	**$ 4,404,000**	**$ 2,738,961**	**$ 3,684,364**	**$ 10,980,000**
System Description	Fully Skidded PFAS Adsorption System consisting of 1 lead banks followed by 1 lag banks of 5 pressure vessels of 48-inch diameter with 72-inch sidewalls including a 52-inch bed of FS media, controls, valves & header piping	Fully Skidded PFAS Adsorption System consisting of 1 lead banks followed by 1 lag banks of 5 pressure vessels of 48-inch diameter with 72-inch sidewalls including a 52-inch bed of IX media, controls, valves & header piping	Fully Skidded PFAS Adsorption System consisting of 2 lead banks followed by 2 lag banks of 12 pressure vessels of 48-inch diameter with 72-inch sidewalls including a 53-inch bed of GAC media, controls, valves & header piping	Fully Skidded PFAS Adsorption System consisting of 1 lead banks followed by 1 lag banks of 10 pressure vessels of 48-inch diameter with 72-inch sidewalls including a 52-inch bed of FS media, controls, valves & header piping	Fully Skidded PFAS Adsorption System consisting of 1 lead banks followed by 1 lag banks of 10 pressure vessels of 48-inch diameter with 72-inch sidewalls including a 52-inch bed of IX media, controls, valves & header piping	Fully Skidded PFAS Adsorption System consisting of 3 lead banks followed by 3 lag banks of 16 pressure vessels of 48-inch diameter with 72-inch sidewalls including a 53-inch bed of GAC media, controls, valves & header piping	Fully Skidded PFAS Adsorption System consisting of 2 lead banks followed by 2 lag banks of 12 pressure vessels of 48-inch diameter with 72-inch sidewalls including a 54-inch bed of FS media, controls, valves & header piping	Fully Skidded PFAS Adsorption System consisting of 2 lead banks followed by 2 lag banks of 12 pressure vessels of 48-inch diameter with 72-inch sidewalls including a 54-inch bed of IX media, controls, valves & header piping	Fully Skidded PFAS Adsorption System consisting of 6 lead banks followed by 6 lag banks of 20 pressure vessels of 48-inch diameter with 72-inch sidewalls including a 53-inch bed of GAC media, controls, valves & header piping

Table 2
ATEC PFAS Adsorption Pre-Filtration System
Budgetary System Pricing & Design Details

Project Name:	**Hermiston, OR**
Engineering Consultant:	**Anderson Perry - Daniel La Beau**
Rep Company Details:	**Goble Sampson - John Simon**
Proposal Prepared by:	**Steve Green - Chief Commercial Officer**
Proposal Prepared on:	**January 30, 2026**

Equipment Design Criteria Summary

Well Name or Number:	**#2 Newport Park**	**#4 Public Works**	**#5 Theater Sports Park**
Capacity, MGD	**1.4**	**2.9**	**7.2**
Plant Capacity (gpm)	1,000	2,000	5,000
Configuration & Pricing			
System Configuration	**Duty + Spare 1000gal Housing; 4 cartridge capacity**	**Duty + Spare 2000gal Housing; 7 cartridge capacity**	**Duty + Spare 4000gal Housing; 12 cartridge capacity**
Price per Housing	$ 55,240	$ 78,770	$ 130,820
Number of Filter Housings	2	2	2
Total System Price	$ 110,480	$ 157,540	$ 261,640
Shipping & Handling Fee	$ 10,000	$ 10,000	$ 10,000
Total	**$ 120,480**	**$ 167,540**	**$ 271,640**
Replacement Cartridge Fill Price	$ 2,440	$ 4,270	$ 7,320
System Description	304SS Horizontal Cartridge Filter System, NSF61 approved	304SS Horizontal Cartridge Filter System, NSF61 approved	304SS Horizontal Cartridge Filter System, NSF61 approved

APPENDIX C
AqueoUS Vets, Inc.,
Equipment Proposal

INNOVATIVE WATER and WASTEWATER SOLUTIONS



Hermiston PFAS Removal
Budgetary Proposal

AV Proposal No. P26-0015

February 04, 2026

AqueoUS VETS®

Experienced. Proven. Reliable.

February 04, 2026

Daniel La Beau
Anderson Perry & Associates

Subject: Treatment System for Treatment of PFAS

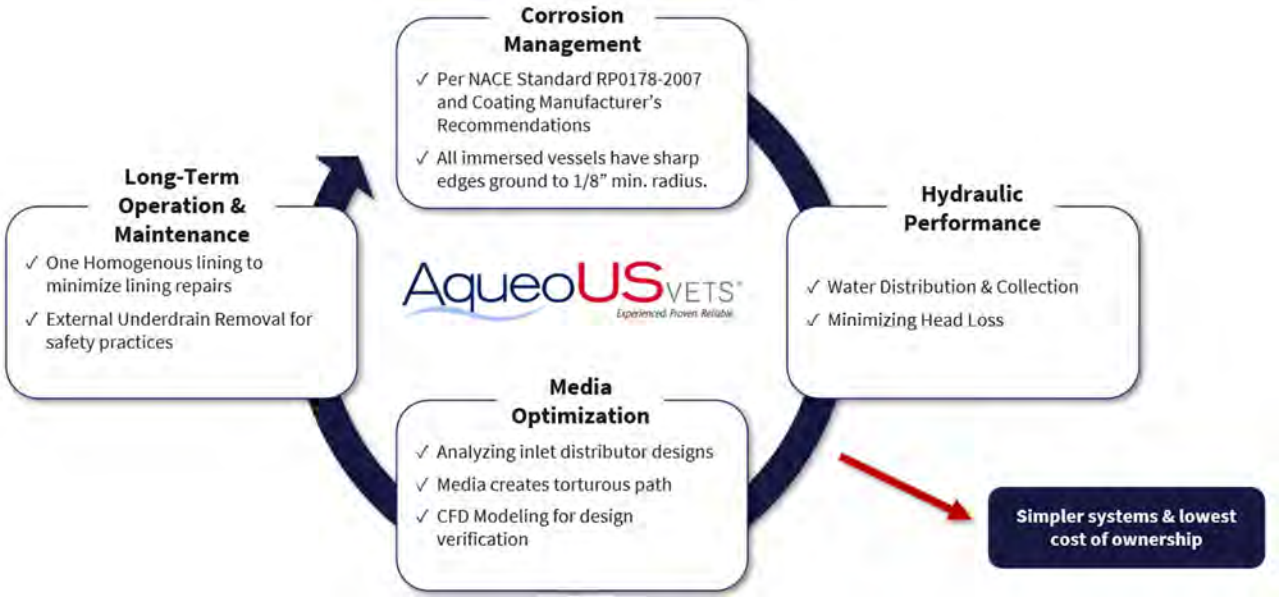
Dear Mr. La Beau,

Thank you for the opportunity to provide our Proposal for the equipment supply of Granular activated carbon systems, Ion exchange systems, Fluoro-sorb systems and media.

Aqueous Vets® (AV®) is positioned to successfully support your team for this critical Potable project. Our team offers the best in system design and supplies fill media that optimizes hydraulic performance, media usage, and overall operating costs.

It is important to consider the tenets of pressure vessel design when evaluating offered treatment systems. These tenets are critical to lower the overall cost of ownership. Evaluating mechanical designs is as important as evaluating media products and their impact to the operations and maintenance of the water treatment plant. We are happy to provide information on corrosion management, hydraulic performance, media optimization and long-term operation and maintenance.

Four Tenets of Pressure Vessel Design



CapEx + Opex (media and energy) + Long Term Maintenance = Total Cost of Ownership

AV is the only GAC and ion exchange system provider that has the experience to bridge the knowledge gap between system design, manufacturing, site construction, installation, and commissioning. These are the foundations driving lower cost of ownership compared to long incumbent providers, their design and approach. Specifically, our

innovation has led to advanced designs incorporating best corrosion management practices, optimal hydraulic performance and media utilization, and long-term operational reliability. The designs have changed the pressure vessel landscape. Click here for our video library of past installations (only 1-2 minute time lapses).

AV - Video Library - Click Here

We are confident that AV is the only manufacturer that has considered these variables to achieve your goals as well as the end-users. Our goal is to provide the lowest cost of ownership vessel, combined with the lowest cost of installation for you, so that together we can continue to build a world class reputation.

AV offers our proven combination of experience, quality of treatment systems, filtration media, and services. We look forward to working with you on this project. Please do not hesitate to contact us with any questions or requirements for additional information.

Sincerely,

Kelsey Beckwith
Business Development Engineer
Phone: (949) 531-0786
kbeckwith@aqvets.com

Technical Approach

Our proposal offers equipment and media in compliance with the design represented and supported by the decades of experience in AV's project team. Our system(s) will be manufactured to satisfy the effluent water quality and system design parameters identified. Each element of this design is critical to meet the project's water treatment goals and provide equipment longevity. See Attachment C to review AV's technical qualifications and the biographies of our project team members.

SUMMARY OF SYSTEM DESIGN – Main Well Site

Item Description	Unit	GAC * PF 12-1240 LowPro®	IX* PF 12-420 LowPro® HF	Fluro-sorb* PF 12-420 LowPro® HF
Number of Systems / Vessels Per System	-	5 / 2	3 / 2	3 / 2
Operating Configuration	-	Lead-lag	Lead-lag	Lead-lag
Design Flow Rate (Overall / per Vessel)	gpm	5,000 / 1,000	5,000 / 1,667	5,000 / 1,667
Media Type	-	Coal Carbon	IX Resin	Fluoro-sorb
Empty Bed Contact Time (per Vessel / per System)	minutes	10 / 20	2.1 / 4.2	2 / 4
Hydraulic Loading	gpm/ft^2	8.8	14.7	14.7
Media Capacity (Volume per Vessel)	ft^3	1,337	462**	457**
Vessel Diameter	ft	12	12	12
Vessel Side Shell	ft	12	4	4
Manifold Configuration	-	4-tier, 8-inch CS	3-tier, 10-inch CS	3-tier, 10-inch CS
Flow Velocity in Manifold Piping	ft/s	6.4	6.8	6.8
Underdrain	-	External Ring Header	External Ring Header	External Ring Header

*Please see Attachment A for more detail. **Media was rounded to nearest supersacks.

SUMMARY OF SYSTEM DESIGN – Well 1 Site

Item Description	Unit	Option 1* PF 12-1240 LowPro®	Option 2* PF 10-410 LowPro®	Option 2* PF 10-410 LowPro®
Number of Systems / Vessels Per System	-	1 / 2	1 / 2	1 / 2
Operating Configuration	-	Lead-lag	Lead-lag	Lead-lag
Design Flow Rate (Overall / per Vessel)	gpm	1,000 / 1,000	1,000 / 1,000	1,000 / 1,000
Media Type	-	Coal Carbon	IX Resin	Fluoro-sorb
Empty Bed Contact Time (per Vessel / per System)	minutes	10 / 20	2.2 / 4.4	2.1 / 4.2

Item Description	Unit	Option 1* PF 12-1240 LowPro®	Option 2* PF 10-410 LowPro®	Option 2* PF 10-410 LowPro®
Hydraulic Loading	gpm/ft^2	8.8	12.7	12.7
Media Capacity (Volume per Vessel)	ft^3	1,337	294**	283**
Vessel Diameter	ft	12	12	12
Vessel Side Shell	ft	12	4	4
Manifold Configuration	-	4-tier, 8-inch CS	3-tier, 8-inch CS	3-tier, 8-inch CS
Flow Velocity in Manifold Piping	ft/s	6.4	6.4	6.4
Underdrain	-	External Ring Header	External Ring Header	External Ring Header

*Please see Attachment A for more detail. **Media has been rounded to meet bed depth requirements and/or the nearest supersack.

SUMMARY OF SYSTEM DESIGN – Well 2 Site

Item Description	Unit	GAC * PF 12-1240 LowPro®	IX Resin Option 1* PF 10-410 LowPro®	IX Resin Option 2* PF 12-420 LowPro® HF	Fluoro-sorb* PF 10-410 LowPro®
Number of Systems / Vessels Per System	-	2 / 2	2 / 2	1 / 2	2 / 2
Operating Configuration	-	Lead-lag	Lead-lag	Lead-lag	Lead-lag
Design Flow Rate (Overall / per Vessel)	gpm	2,000 / 1,000	2,000 / 1,000	2,000 / 2,000	2,000 / 1,000
Media Type	-	Coal Carbon	IX Resin	IX Resin	Fluoro-sorb
Empty Bed Contact Time (per Vessel / per System)	minutes	10 / 20	2.2 / 4.4	2 / 4	2.1 / 4.2
Hydraulic Loading	gpm/ft^2	8.8	12.7	17.7	12.7
Media Capacity (Volume per Vessel)	ft^3	1,337	294**	546**	283**
Vessel Diameter	ft	12	10	12	10
Vessel Side Shell	ft	12	4	4	4
Manifold Configuration	-	4-tier, 8-inch CS	3-tier, 8-inch CS	3-tier, 10-inch CS	3-tier, 8-inch CS
Flow Velocity in Manifold Piping	ft/s	6.4	6.4	4.1	6.4
Underdrain	-	External Ring Header	External Ring Header	External Ring Header	External Ring Header

*Please see Attachment A for more detail. **Media has been rounded to meet bed depth requirements and/or the nearest supersack.

MEDIA ANALYSIS

IX RESIN MEDIA ANALYSIS

An empty bed contact time (EBCT) of 2 minutes has been proven effective for resin to treat both perchlorate and PFAS. Due to perchlorate MCLs in place for decades in California, there are hundreds of installations that have been successfully treating perchlorate for up to 20 years with a 2-minute EBCT per vessel. Results have shown that perchlorate selective resins can effectively treat PFAS as well with the same contact times. While a 3-minute EBCT, suggested by some, will increase the bed life between change-outs, because 50% more media is added to the vessel the head loss will increase by 50%. Over a 25-year life cycle, the system will have used the same amount of media, however, the increased head loss will significantly increase the energy costs. A list of current installations can be provided upon request. Please note slightly longer EBCTs may be shown for the IX options here due to minimum bed depth requirements of the resin or rounding to supersack values.

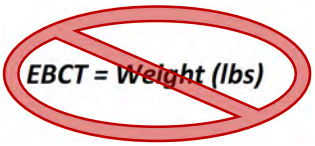
FLUORO-SORB MEDIA ANALYSIS

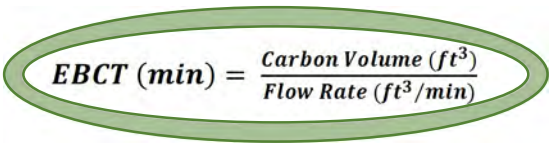
An empty bed contact time (EBCT) of 2 minutes has been proven effective for resin to treat both perchlorate and PFAS. It is recommended to use the same EBCT for Fluoro-sorb.

CARBON MEDIA ANALYSIS

The table below illustrates the impact of apparent densities of different GAC materials as identified for standard manufacturers. The below table also provides the volume of GAC required in each vessel to meet the required Empty Bed Contact Time (EBCT).

GAC Material	Size	Iodine Number	Approx. Apparent Density (g/cc)	Approx. Backwashed & Drained Density (lbs/ft³)	GAC for 10 min Vessel EBCT (ft³)	Required GAC Weight per Vessel (lbs)
Calgon F400	12x40	1,000	0.57	30.2	**1,337**	**40,377**
AV EcoCarb 1240 BA	12x40	1,000	0.42	22.3	**1,337**	**29,815**





$$\textbf{Flow Rate } (ft^3/min) = \frac{\textbf{Flow Rate } (gal/min)}{7.48\ gal/ft^3}$$

Carbon Volume (ft³) = EBCT (min) x Flow Rate (ft³/min) = 10 x 1,000 / 7.48 = 1,337 ft³

Plug flow rate of a water column through a carbon bed is designed to maximize the adsorption kinetics and allow enough time for the migration of contaminant compounds to the adsorption surface area within the carbon granules. While the above carbons are comparable, a significant difference in EBCT can occur on an equivalent

weight basis among the selected carbons. If the weights of these carbons were equivalent in each vessel, differences in EBCT would occur.

If cost and EBCT are both a consideration, carbons that meet the specifications with a reduced density may offer a more cost-effective alternative.

GAC AND IX RESIN SYSTEM MECHANICAL DIFFERENCES

Granular Activated Carbon (GAC) and Ion Exchange (IX) Treatment systems work in a similar manner. Untreated water flows through a bed of media to allow the removal of contaminants. However, there are several mechanical differences required to improve the systems' performance. These differences are driven by the physical characteristics of each media type and optimizing the utilization of each.

The mechanical differences are as follows:

- Inlet header piping
  - IX resins allow more hydraulic loading across their beds. They will permit up to 2,000 gpm of flow vs. 1,100 gpm. To address this increased velocity, the inlet header piping is upsized from 8" to 10". Please note piping size can be adjusted based on process design requirements.
- Inlet distributor design
  - Due to the characteristics of GAC media combined with a limitation on design flow rates of 1,100 gpm, the inlet distributor widely used in the industry is a single point distributor with many slots. GAC beds are very good at distribution of flow due to both density and tendency for the granules to interlock.
  - IX resins consist of beads which are very susceptible to movement. This movement can cause issues resulting in channeling. Prevention requires a design incorporating an inlet distribution header to redirect incoming flows more evenly across the resin bed and minimize bed disruption and subsequent channeling at higher velocities.
- Underdrain nozzle (septa) size
  - When increasing the flow from 1,100 gpm to 2,000 gpm, underdrain collectors must also be designed to accommodate this difference. To address these flow velocities and the potential pressure differential, the nozzles (septa) are increased in size. This increase allows sufficient open screen area to accommodate the flows while keeping pressure differentials to a minimum.
- *Manifold piping size*
  - *All interconnecting piping, such as the manifold is adjusted from 8" to 10" for the same reason as the inlet piping, to allow for increased flow across the system.*

PRE-ASSEMBLED VESSELS

AV's vessels are pre-assembled at our manufacturing plant prior to shipment. "As built" drawings are provided for rapid field installation. These are costs that other vessel suppliers pass to the contractor. AV's vessels ship to the site with the following items **installed** on the vessel:

- 2" Washdown Line
- 1" Air Vac Release Line
- 4" Media Slurry Inlet line
- 4" Media Outlet Line



Additionally, the inlet lines and manifold are pre-assembled and built to fit at our factory which oftentimes eliminates the need for expansion joints. **This allows for installation times of 3-4 hours per system.**

All of the manifold and associated back piping ships pre-assembled to the greatest extent including gaskets, fasteners and pipe stands. All pipe is stacked, racked and finish painted to further reduce field installation time and costs.

Commonly other system providers ship bare vessels and leave the General Contractor with the responsibility to field assembly. This strategic approach transfers the assembly cost from the supplier to the general contractor increasing field labor and crane/support equipment time to fully assemble the treatment system.

LOWEST OVERALL HEIGHT – COST SAVINGS

Since these treatment systems may operate within a building, a lower overall system height will offer a significant reduction in overall project costs. Each additional cubic foot of building height comes at a considerable charge that should be included as a part of the treatment system evaluation.

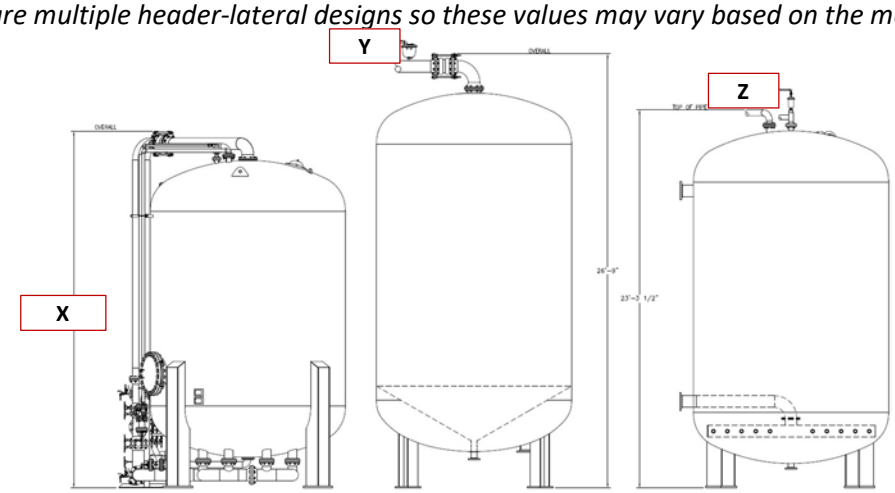
Potential Project Costs Impacted if AV Design Selected	Cost Savings ($)
Capital Cost Considerations of Lowered Building Height	
Installation of Building	
HVAC (Lower CF of Building Space)	
Reduced Pump & VFD Sizes	
Reduced Insulation	
Reduced Electrical Runs	
Cost Considerations for Reduction in Energy Use	
Reduced Pumping Costs due to lower head loss	
Reduced Annual Heating/Cooling costs	
Total Cost Savings:	

AV has offered our patented low-profile system, which lowers the overall height of the treatment system by 6'-0" ft as shown below. This design reduces the height of the treatment system without sacrificing vessel volume due to our LowPro® external ring header underdrain (see System Underdrain Analysis below for more details on the ring header underdrain). It is a proven design that has been installed to remove contaminants of concern at water treatment plants nationwide (CA, AZ, FL, SC, NJ, PA). In fact, AV's design was installed at Yorba Linda Water District 31 MGD plant. This new plant was part of Orange County Water District's PFAS initiative program (Please see reference list in Attachment D).

AV LowPro® vs. Competitor Designs

	AV External Ring Header System (X)	*Cone Underdrain (Y)*	*Header-Lateral Underdrain (Z)**
Overall Height w/ ARV	*PF 12-1240 LowPro® :21' - 6"*	*12-ft 40k: 27'-6" to top of ARV*	*12-ft 40k: 24'-7" to top of ARV*
Height Savings	-	6' – 0"	3' – 1"

**There are multiple header-lateral designs so these values may vary based on the manufacturer.*



System Underdrain Designs

A project is comprised of three phases: project (equipment) design, construction, and operation. It is understood that the operational life of pressure vessel systems is likely to exceed twenty-five years and could be operating for as long as fifty years. Since these projects have extended operating periods, many factors must be considered as part of the capital purchase evaluation and vendor selection. Although the three underdrain types listed below will all achieve the desired contaminant removal, each of the underdrains are inherently different as it relates to the four tenets of design.

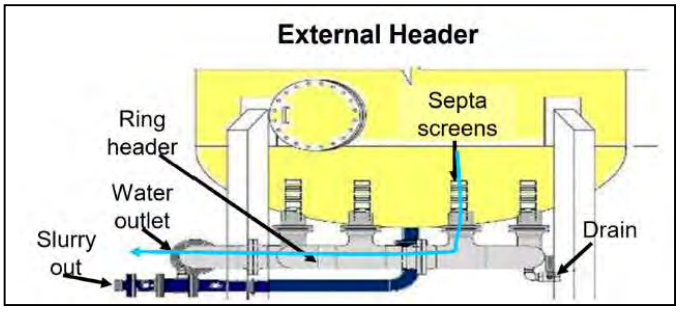
The opportunity cost of lower-priced capital equipment can be outweighed in the long run by a significant increase in operational costs over the life cycle of the equipment. Further benefits are listed below.

Description	External Ring Header	Internal Cone	Header Lateral
NACE Standard #RP0178-2007 Compliant	✓	X	✓
Design Mitigates Risk of Corrosion	✓	X	✓
One Homogenous Lining	✓	X	✓
Underdrain Fully Pressure Rated to the Vessel	✓	X	✓
Media Optimized Design Volume Beneath Top Nozzle	✓	X	X
Optimizes Pressure Drop & Pumping Costs	✓	X	X
Prevents Confined Space entry	✓	X	X

EXTERNAL RING HEADER UNDERDRAIN DESIGN

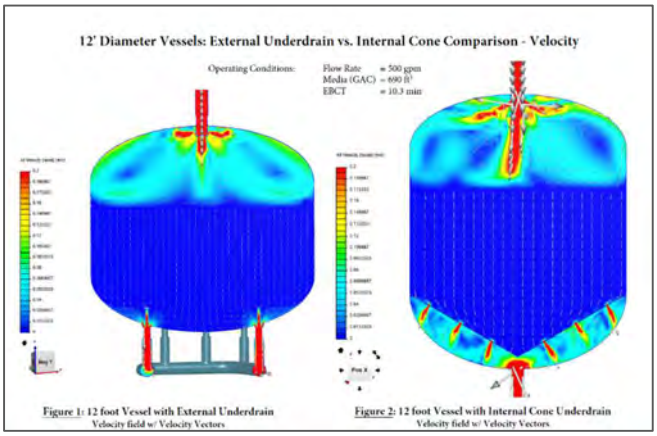
An external ring header design provides the following advantages:

- **Corrosion Management**
  - One homogenous internal vessel lining/coating to prevent short- and long-term corrosion
  - Compliance with NACE Standard #RP0178-2007, requiring that all immersed vessels have sharp edges ground to 1/8" minimum radius so they can be adequately lined and coated per manufacturers' recommendations
  - Limited to no dissimilar metal corrosion.



- **Hydraulic Performance**
  - Eight (8) septa nozzles with a cross sectional area nearly two times the area of other underdrain designs to reduce pressure drop during operations. When awarded the project our detailed submittal package will include pressure drop calculations for the system including the media (see Attachment B for estimated energy/pumping costs).
  - The vessel and the underdrain are both fully rated to the ASME pressure rating requirements of the project.

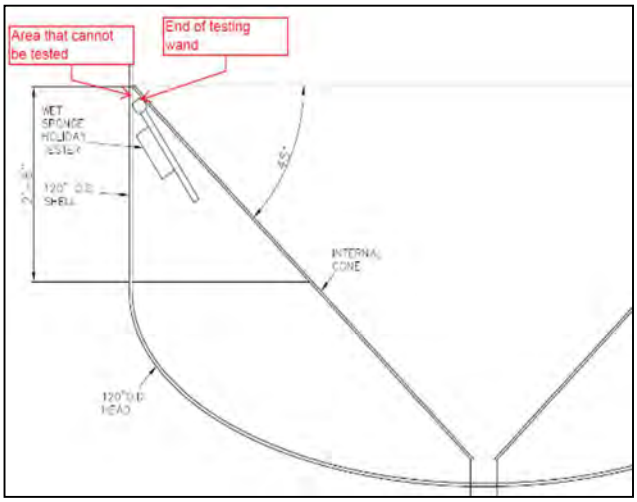
- **Media Optimization**
    - Greater utilization of the carbon/resin bed. The volume of media beneath the top screen area of a nozzle is half the volume of the internal cone underdrain, which is where you will see initial breakthrough triggering a change out.
    - AV has performed CFD modeling that shows good water distribution down through the underdrain and no concerns for media underutilization. Please refer to Attachment B for a more technical explanation.



- **Long-Term Operation & Maintenance**
    - Decreased overall vessel height de to entire vessel being utilized for media and backwash expansion capacity, whereas the bottom 1/3 of the internal cone vessel is the underdrain and access area to access the area beneath the cone section for lining and underdrain maintenance.
    - Ability to perform vessel maintenance on underdrain and all internal appurtenances from the exterior of the vessel. Media removal and confined space entry are NOT required.
    - A simple design makes it easier to inspect the entire vessel including underdrain nozzles during media change outs.

INTERNAL CONE UNDERDRAIN DESIGN

- **Corrosion Management**
    - The internal cone design typically allows for a two-lining system to be used:
        - In the media section, above the cone, it is typical to see an NSF 61 approved vinyl ester coating such as Plasite 4110 applied with a 35-45 mil thickness
        - Below the cone is an NSF 61 epoxy applied at 12-15 mils



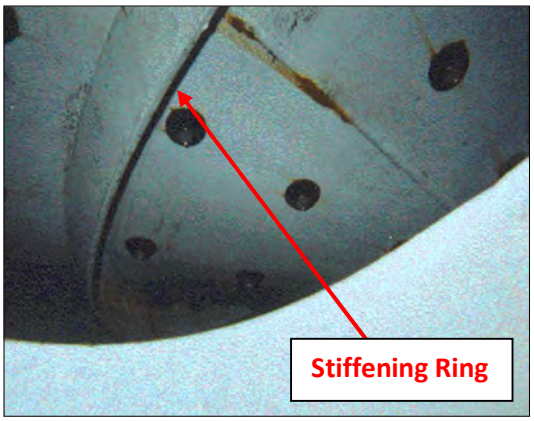
    - For Plasite or any other lining material manufacturer to provide a warranty, all sharp edges must be ground to a 1/8-inch minimum radius to ensure proper coating adhesion which is very difficult to achieve on the internal cone underdrain because of the limited accessibility through the shell plate/cone and underneath the cone.
    - The Internal Cone design tends to exhibit corrosion in three specific locations due to lack of accessibility, adequate blasting, and surface preparation:



- The underside of the cone where the cone shell plate intersects the side shell at 30° or 45° degrees. This area under the cone is virtually inaccessible to grind smooth the welds and remove slag and/or sharp edges. As well as remove oil grease and soluble salts that can cause blistering.
- Weld seams along the shell plate that make up the cone.
- Corrosion can also occur at each of the hydrosphere screens where lining is sparsely applied through the depth of the cone shell which comes into contact with stainless steel, dissimilar metal corrosion often occurs at these locations.

  - Due to corrosion that often occurs from the underside of the cone, the hydrosphere screens can become clogged with surface corrosion/rust that lifts off the corroded areas during backwash. This surface rust then gets caught up in the hydrosphere screens. This results in clogging the inside of the hydrosphere screens, reducing flow surface area, and increasing operating pressure during the backwash procedure.

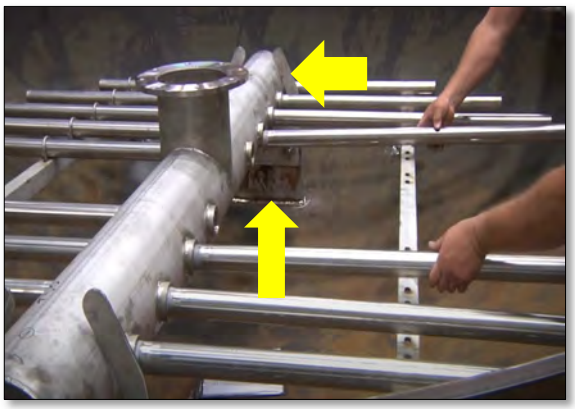
- **Hydraulic Performance**
  - The need for so many nozzles requires a smaller nozzle diameter, resulting in a smaller cross-sectional area for the water to filter through each nozzle. This creates higher velocities and in turn head loss (see Attachment B for estimated energy/pumping costs).
  - ASME certifies the pressure rating of a vessel to the outer most limits of the vessel, typically at 125 psi. However, the actual allowable pressure differential across the internal cone in downflow is limited to 50 psi and in upflow/backwash is rated to 20 psi. The backwash rating can be increased to 40 psi by the use of a stiffening ring – see picture to the right. The differential pressure ratings represent the cone at failure. These limitations significantly reduce the differential operating pressure of an internal cone system, whereas the external ring header system is designed to operate at the ASME pressure rating of the vessel.



- **Media Optimization**
  - Less utilization of the carbon/resin bed because of the shape of the underdrain and pattern of the nozzles. The nozzles at the upper limits of the internal cone are further into the media bed creating a larger volume of media below the nozzles that is underutilized.
- **Long-Term Operation & Maintenance**
  - CANNOT perform vessel maintenance on underdrain and appurtenances from the exterior of the vessel. Media removal and confined space entry are required.
  - The lining can be difficult to repair in the field. Ensuring that proper surface preparation, lining, and third-party testing is conducted during the manufacturing process prevents future maintenance at early stages of the vessel life.

HEADER-LATERAL UNDERDRAIN DESIGN

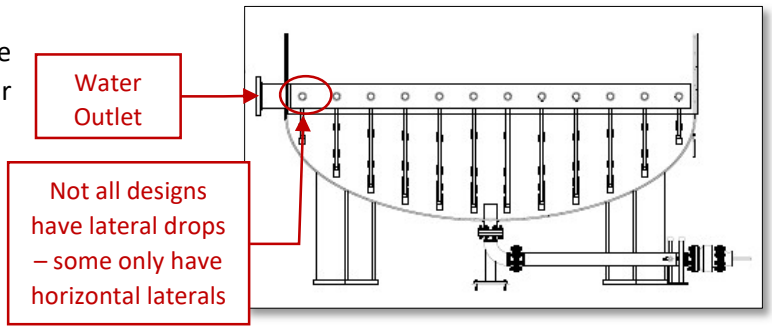
- **Corrosion Management**
  - While there is one homogenous internal vessel lining/coating to prevent short- and long-term corrosion, the internal structure causes lining challenges. The header pipe must be supported/secured with clip-in brackets welded to the vessel and the laterals are supported with a bracket welded internally to the vessel. These supports create localized areas for corrosion to persist.



  - Stainless steel (cathodic) connected to carbon steel (anodic) in the presence of an electrolyte will cause corrosion to the carbon steel. If holidays are present in the lining system protecting the anodic area, this can result in a severely accelerated attack of corrosion.
  - Stainless steel can have localized pitting corrosion in the presences of halides.
- **Hydraulic Performance**
  - This type of underdrain can be configured in two different designs – a simple header pipe with lateral lengths or a header with laterals with small, dropped nozzles off the laterals. Like the internal cone, these two designs create more head loss through the smaller diameter laterals and, if used, lateral drops down to the bottom of the vessels (see Attachment B for estimated energy/pumping costs).



  - The vessel and the underdrain are both fully rated to the ASME pressure rating requirements of the project.
- **Media Optimization**
  - Some header lateral designs utilize lateral drops, which are critical for gathering water in the bottom head of the vessel. Even with the lateral drops, there is less media utilization in a header-lateral vessel than both the internal cone and external ring header underdrain designs.



- **Long-Term Operation & Maintenance**
  - CANNOT perform vessel maintenance on underdrain and appurtenances from the exterior of the vessel. Media removal and confined space entry are required.
  - The lining can be difficult to repair in the field. Ensuring that proper surface preparation, lining, and third-party testing is conducted during the manufacturing process prevents future maintenance at early stages of the vessel life.

Scope of Work – GAC/IX Systems & Site Assembly

Date Prepared: February 5, 2026
Project Name: Hermiston PFAS Removal
AV Proposal No.: P26-0015
AV Contact: Kelsey Hakes-Beckwith

Prepared For: Anderson Perry & Associates
Project Location: Hermiston, OR
Prepared By: Clairissa Baker
Contact Info: kbeckwith@aqvets.com (949) 531-0786

GRANULAR ACTIVATED CARBON & ION EXCHANGE RESIN SYSTEMS

Main Site

Main Well GAC - 5,000 GPM TOTAL / 1,000 GPM PER SYS

No.	Description	Qty	Unit Price	Total Price
1	PF 12-1240 LowPro® GAC System	5	$700,000	$3,500,000
2	AV EcoCarb™ 1240 BA (1337 ft³/vessel; 2674 ft³/system)	5	Included	Included
Freight to Project Site				Included
			Total Price	**$3,500,000**

Main Well IX - 5,000 GPM TOTAL / 1,667 GPM PER SYS

No.	Description	Qty	Unit Price	Total Price
1	PF 12-420 LowPro® HF IX System	3	$850,000	$2,550,000
2	Purolite™ Purofine™ PFA694E (462 ft³/vessel; 924 ft³/system)	3	Included	Included
Freight to Project Site				Included
			Total Price	**$2,550,000**

MAIN WELL FS - 5,000 GPM TOTAL / 1,667 GPM PER SYS

No.	Description	Qty	Unit Price	Total Price
1	PF 12-420 LowPro® HF FS System	3	$720,000	$2,160,000
2	Fluoro-sorb 200 (457 ft³/vessel; 914 ft³/system)	3	Included	Included
Freight to Project Site				Included
			Total Price	**$2,160,000**

Site 1

WELL 1 GAC - 1,000 GPM TOTAL / 1,000 GPM PER SYS

No.	Description	Qty	Unit Price	Total Price
1	PF 12-1240 LowPro® GAC System	1	$700,000	$700,000
2	AV EcoCarb™ 1240 BA (1337 ft³/vessel; 2674 ft³/system)	1	Included	Included
Freight to Project Site				Included
			Total Price	**$700,000**

WELL 1 IX - 1,000 GPM TOTAL / 1,000 GPM PER SYS

No.	Description	Qty	Unit Price	Total Price
1	PF 10-410 LowPro® IX System	1	$670,000	$670,000
2	Purolite™ Purofine™ PFA694E (294 ft³/vessel; 588 ft³/system)	1	Included	Included
Freight to Project Site				Included
			Total Price	**$670,000**

Scope of Work – GAC/IX Systems & Site Assembly

WELL 1 FS - 1,000 GPM TOTAL / 1,000 GPM PER SYS

No.	Description	Qty	Unit Price	Total Price
1	PF 10-410 LowPro® FS System	1	$570,000	$570,000
2	Fluoro-sorb 200 (283 ft³/vessel; 566 ft³/system)	1	Included	Included
Freight to Project Site				Included
			Total Price	**$570,000**

Site 2

WELL 2 GAC - 2,000 GPM TOTAL / 1,000 GPM PER SYS

No.	Description	Qty	Unit Price	Total Price
1	PF 12-1240 LowPro® GAC System	1	$700,000	$700,000
2	AV EcoCarb™ 1240 BA (1337 ft³/vessel; 2674 ft³/system)	1	Included	Included
Freight to Project Site				Included
			Total Price	**$700,000**

WELL 2 IX - 2,000 GPM TOTAL / 1,000 GPM PER SYS

No.	Description	Qty	Unit Price	Total Price
1	PF 10-410 LowPro® IX System	2	$670,000	$1,340,000
2	Purolite™ Purofine™ PFA694E (294 ft³/vessel; 588 ft³/system)	2	Included	Included
Freight to Project Site				Included
			Total Price	**$1,340,000**

WELL 2 IX - 2,000 GPM TOTAL / 2,000 GPM PER SYS

No.	Description	Qty	Unit Price	Total Price
1	PF 12-420 LowPro® HF IX System	1	$950,000	$950,000
2	Purolite™ Purofine™ PFA694E (546 ft³/vessel; 1092 ft³/system)	1	Included	Included
Freight to Project Site				Included
			Total Price	**$950,000**

WELL 2 FS - 2,000 GPM TOTAL / 1,000 GPM PER SYS

No.	Description	Qty	Unit Price	Total Price
1	PF 10-410 LowPro® FS System	2	$570,000	$1,140,000
2	Fluoro-sorb 200 (283 ft³/vessel; 566 ft³/system)	2	Included	Included
Freight to Project Site				Included
			Total Price	**$1,140,000**

- Each system is comprised of two (2) 125 PSI ASME code adsorbers with interconnecting pipe.
- Systems are designed for operations in parallel and/or series (lead/lag) configurations with dedicated backwash supply and return lines as part of the four-tier manifold on GAC systems. IX and FS systems have a three-tier manifold.
- Vessel volume with a carbon expansion capacity of 25% based on backwashed and drained media volume listed above.
- Seismic Criteria based on Site Class = D and Importance Factor = 1.5.
- Two graphite rupture disks per system for pressure relief.
- 8-inch carbon steel ring header and 8-inch carbon steel manifold on the GAC systems and 10FT IX and FS systems. 10-in manifolds on the 12FT IX and FS systems.
- Eleven (11) wafer-style butterfly valves with cast iron body and nylon coated ductile iron disc on the GAC systems. Nine (9) butterfly valves on the IX and FS systems.

Scope of Work – GAC/IX Systems & Site Assembly

- One (1) 316SS inlet diffuser is included on each GAC adsorber. One (1) 316SS multi-point distributor is included in each IX
- All internal underdrain and overdrain components within the vessel will be 316 SS materials.
- All nuts, bolts, and washers will be hot dipped galvanized.
- Vessels will be lined with Plasite 4110 (35-45 mils). Vessels will be coated with Carboguard 60 (4-6 mils) and Carbothane 134 VOC topcoat (2-3 mils). Per manufacturer's recommendations.
- Process pipe will be lined with NSF approved epoxy lining. Process pipe will be coated with Sherwin Williams Epoxy Powder primer (8-12 mils) and Sherwin Williams Superdurable Polyester TGIC Powder topcoat (2-3 mils). Per manufacturer's
- Media slurry lines will be epoxy lined and coated.
- Vent and utility piping will be SCH40 galvanized steel.
- Pricing includes media loading and startup assistance of offered systems.
- The above pricing for systems and media is based on the purchase of the entire offer. Any change in scope may result in pricing adjustments.

OPTIONAL OFFLOADING, SETTING & SITE ASSEMBLY

AV proposes the following services as part of our offering. We are experienced in site assembly and our services allow for the system to be assembled quickly upon arrival at the site.

No.	Description	Qty	Unit Price	Total Price
1	Offloading, Setting, and Site Assembly for GAC/IX Systems at One Well	1	$25,000	$25,000
			Total Price	**$25,000**

- Pricing is based on one well site location and assembly of all offered systems in a single site visit.
- Offloading and assembly of all offered systems in each respective option at the project site. Estimated time is 3 days for AV's fabrication team. This will allow the general contractor to immediately pressure test and make necessary tie-ins at system manifold. Additional time on site will be billed at a rate of $5,000/day.
- Pricing assumes clear shots for crane to place systems onto the pad.
- Crane and operator are not included.
- System anchoring and grouting by others.

Site Assembly - Since AV's systems are preassembled at our manufacturing facility, it makes sense for our fabricators to set and assemble the systems on site. Our familiarity with the systems allows our staff to more efficiently and cost effectively assemble the systems on site when compared to conventional General Contractors. This provides our customers the opportunity to install our systems at a significant cost savings. See site assembly videos for similar projects here:
https://aqueousvets.com/video-library

- **California Contractor's License Number: 1089449**
- **Department of Industrial Relations (DIR) Number: 1000957029**

Scope of Work – GAC/IX Systems & Site Assembly

SCOPE BY OTHERS

- All building and regulatory permits.
- Site design and related plans for construction.
- Pad suitable for selected systems (level and flat).
- Crane and operator. An 80-100 ton crane will be required. Final crane requirement will be determined based on crane proximity to concrete pad.
- Anchor bolts and anchoring and grouting of systems and pipe stands.
- Anchor bolt templates. Systems are assumed to be installed via Hilti-epoxy methods unless otherwise specified. If cast-in-place anchoring is desired, anchor templates will need to be added to the scope at a cost of $2,950 each.
- Final tie-ins at termination of AV's scope.
- Water source at 60 psi to fill media trailer prior to slurry loading.
- Hydrostatic and disinfection testing of provided system.
- Start-up services and any required acceptance tests not stated in AV scope above.
- Any other items not specifically identified by Aqueous Vets.

PROFESSIONAL and COMMERCIAL TERMS

VALIDITY:	**Pricing is budgetary only.**
STORAGE:	**Buyer must accept delivery of system equipment at the later of: 30 days after completion of fabrication, or the original scheduled system delivery date. In the event the buyer cannot accept such timely delivery, a storage fee of $1,000/month per system will be incurred in full on the first day of each 30-day storage period (billed on a quarterly basis).** **Buyer must accept delivery of media at the later of: 60 days after completion of fabrication, or the original scheduled media delivery date. In the event the buyer cannot accept such timely delivery, a storage fee of $150 per pallet per month will be incurred in full on the first day of each 30-day storage period (billed on a quarterly basis). Buyer may, at its option, complete all milestone payments to Seller without taking physical delivery of media, in which case title of the media shall transfer to buyer, any delivery of media milestone shall be deemed satisfied and paid, and the storage fee will reduce to $50 per pallet per month until delivery is accepted.**
PAYMENT TERMS:	**Schedule of payment, based on total contract value, will be as follows, Net 30 days.** **1) 30% raw material deposit on contract execution.** **2) 25% on receipt of approved submittals, by site.** **3) 30% on receipt of materials at AV shop.** **4) 10% on equipment ready to ship, by site.** **5) 5% on delivery of equipment, by site.**
SHIPPING TERMS:	**FOB shipping point, with full freight allowed to jobsite.**
TAXES & FEES:	**The purchase price does not include any sales or similar taxes unless otherwise noted. Aqueous Vets shall not be responsible for any additional fees, tariffs, duties, or increases enacted by governmental agencies.**

DUE TO INDUSTRY VOLATILITY FOR ALL MATERIALS, THE PRICING OFFERED IN THIS QUOTATION IS SUBJECT TO REVIEW AT THE TIME OF ORDER PLACEMENT. MATERIAL PRICING WILL BE SUBJECT TO ADJUSTMENT BASED UPON INCREASES OCCURRING BETWEEN THE DATE OF QUOTATION AND TIME MATERIAL IS RELEASED FOR PURCHASE. WE REGRET THE NECESSITY OF THIS ACTION AND WILL DISCONTINUE THIS PRACTICE AS SOON AS MARKET CONDITIONS PERMIT.

This Proposal is subject to the Terms and Conditions at https://aqueousvets.com/terms-conditions , which form an integral part of this Proposal. Such Terms and Conditions will govern any transaction resulting from this Proposal. Any contract resulting from this Proposal is made subject to prior acceptance by Aqueous Vets. All orders are subject to prior credit approval.

Buyer's Signature indicates acceptance of this Proposal and Seller's Terms and Conditions referred to above.

Signature | Print Name | Date

Thank you for your business!

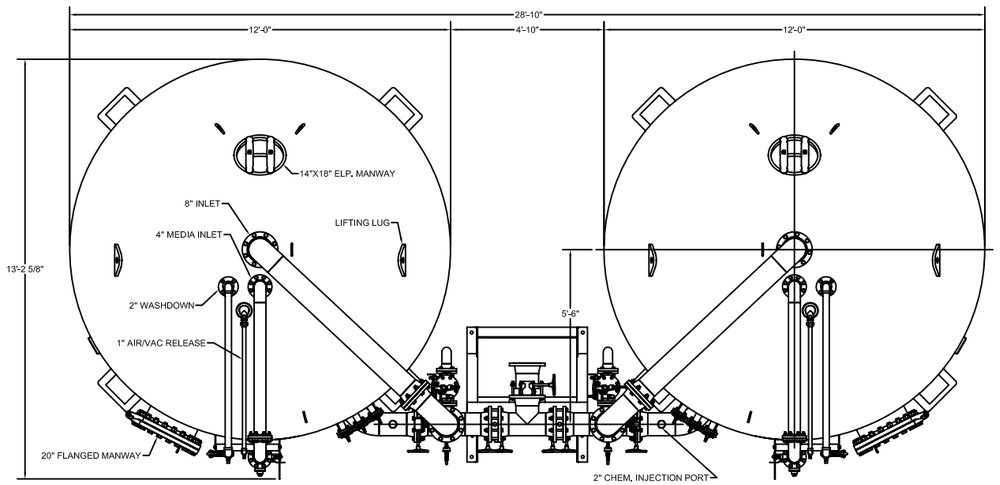
16761 Clear Creek Road, Redding, CA, 96001

Tel: (925) 331-0573 Fax: (925) 886-4352 E-mail: info@aqueousvets.com Web: www.aqueousvets.com

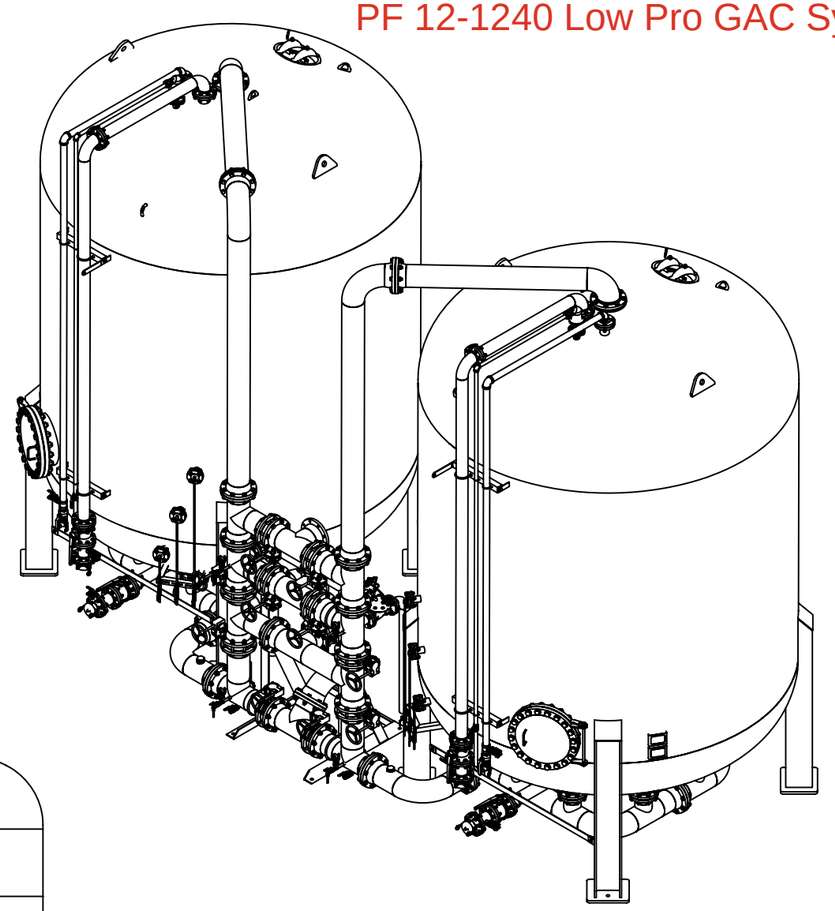
Attachment A

- System Drawing
- Specification Summary
- System P&ID
- Media Cut Sheet

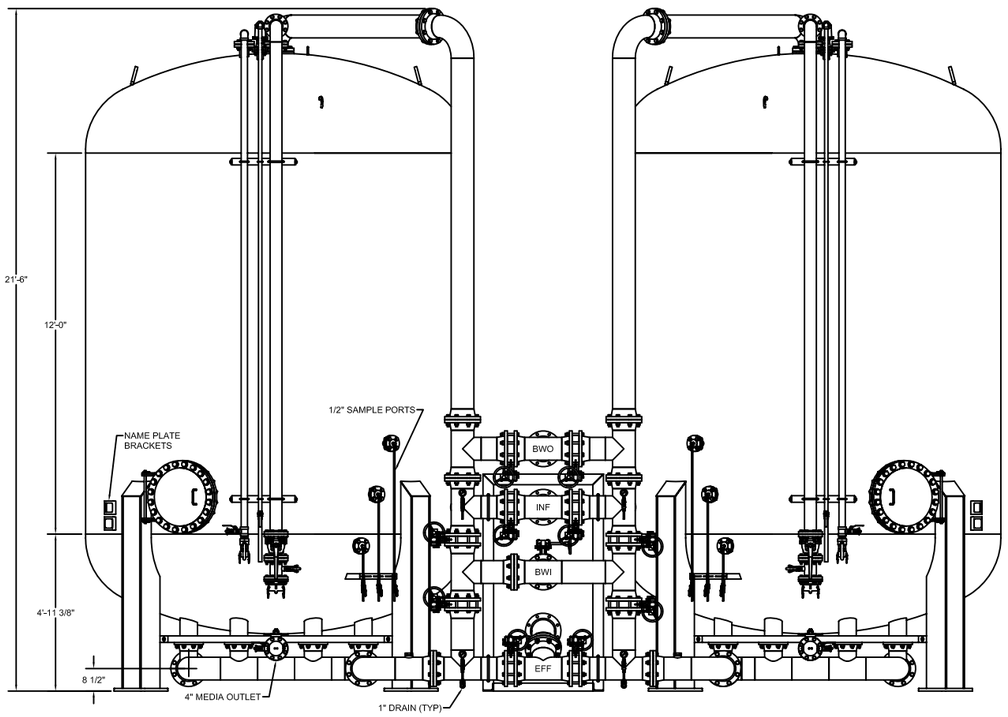
PF 12-1240 Low Pro GAC System



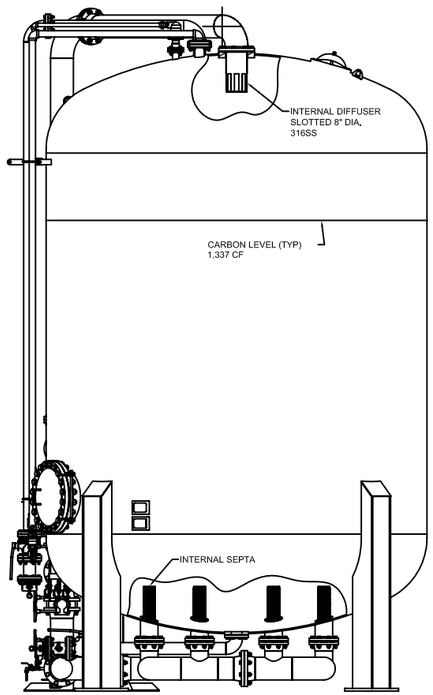
TOP VIEW



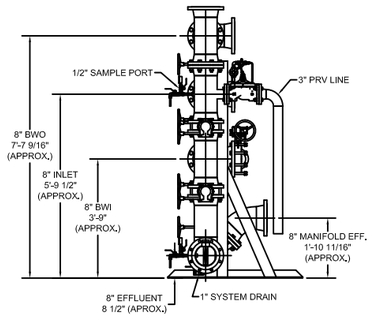
Note: This drawing illustrates a PRV. Included in this proposal are burst discs.



ELEVATION VIEW



RIGHT SIDE VIEW



MANIFOLD ELEVATIONS

NOTES:
1. THIS DRAWING IS TO SHOW PIPING AND EQUIPMENT FOR CUSTOMER APPROVAL.
2. VESSELS SHALL BE 125 PSI, ASME CODE.
3. PIPING MATERIALS SHALL MEET: CS PIPE ASTM A-53 GRADE B (ERW); CS FITTINGS SA-234, ASME B16.9; SS THREADED FITTINGS ASTM A-351; SS PIPE ASTM A-312; SS BW FITTINGS ASTM A-403; MI THREADED FITTINGS ASME B-16.3
4. SURFACE PREPERATION: VESSEL: SSPC-SP5 INTERIOR & SSPC-SP6 EXTERIOR. SYSTEM PIPING: SSPC-SP10 INTERIOR & SSPC-SP6 EXTERIOR.
5. FINISH VESSEL INTERIOR WITH 35-45 MILS OF PLASITE 4110, PREPARE AND APPLY STRICTLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS TO MEET NSF STD 61 REQUIREMENTS. LINING TO BE CONTINUOUS TO OD OF THE RAISED FACE ON ALL NOZZLE FLANGES.
6. FINISH EXTERIOR WITH 2-3 MILS OF CARBOTHANE 134VOC URETHANE, COLOR TO BE 9225 CASHEW, OVER 4-6 MILS OF CARBOGUARD 60 RUST PREVENTATIVE EPOXY PRIMER, APPLIED PER MANUFACTURERS RECOMMENDATIONS.
7. CS SLURRY/PROCESS PIPE 3" AND LARGER TO BE INTERNALLY LINED WITH 16MILS (MIN.) OF 3M SCOTCHKOTE 134 FUSION BONDED EPOXY.
8. GROUTING AND ANCHORING BY OTHERS IF REQUIRED.
9. ± 1" TOLERANCE ON CONNECTION DIMENSIONS.

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DESIGNER: AJA	DATE 8/23/2021	TITLE: PF 12-1240 LOWPRO™ 125PSI SYS 4 TIER CS MANIFOLD W/ PRV GENERAL ASSEMBLY SALES DRAWING
CHECKER: RM	DATE 8/23/2021	CLIENT
ENGINEER: JT	DATE 8/23/2021	AqueoUS VETS® 16761 CLEAR CREEK ROAD, REDDING, CA 96001, 925-331-0573
MANAGER:	DATE	
SCALE: 1/2" = 1'		PROJECT / CODE / DRAWING NUMBER: PF 12-1240LP 4T PRV SYS Sales / SHEET: 1 OF 1 / REV: 0

PF 12-1240 LowPro® GAC SYSTEM SPECIFICATION

PF 12-1240 LowPro® Liquid Phase Adsorption Systems are designed to treat a wide range of contaminated process streams. All piping and valves are configured for series, parallel, or vessel isolation flows. System includes media inlet and outlet piping, and backwash capabilities. The system consists of two (2) adsorbers, with piping, valves, and gauges assembled operation. Each adsorber is equipped with an underdrain capable of maximum flow rate of 1,100 gpm.

EACH VESSEL:

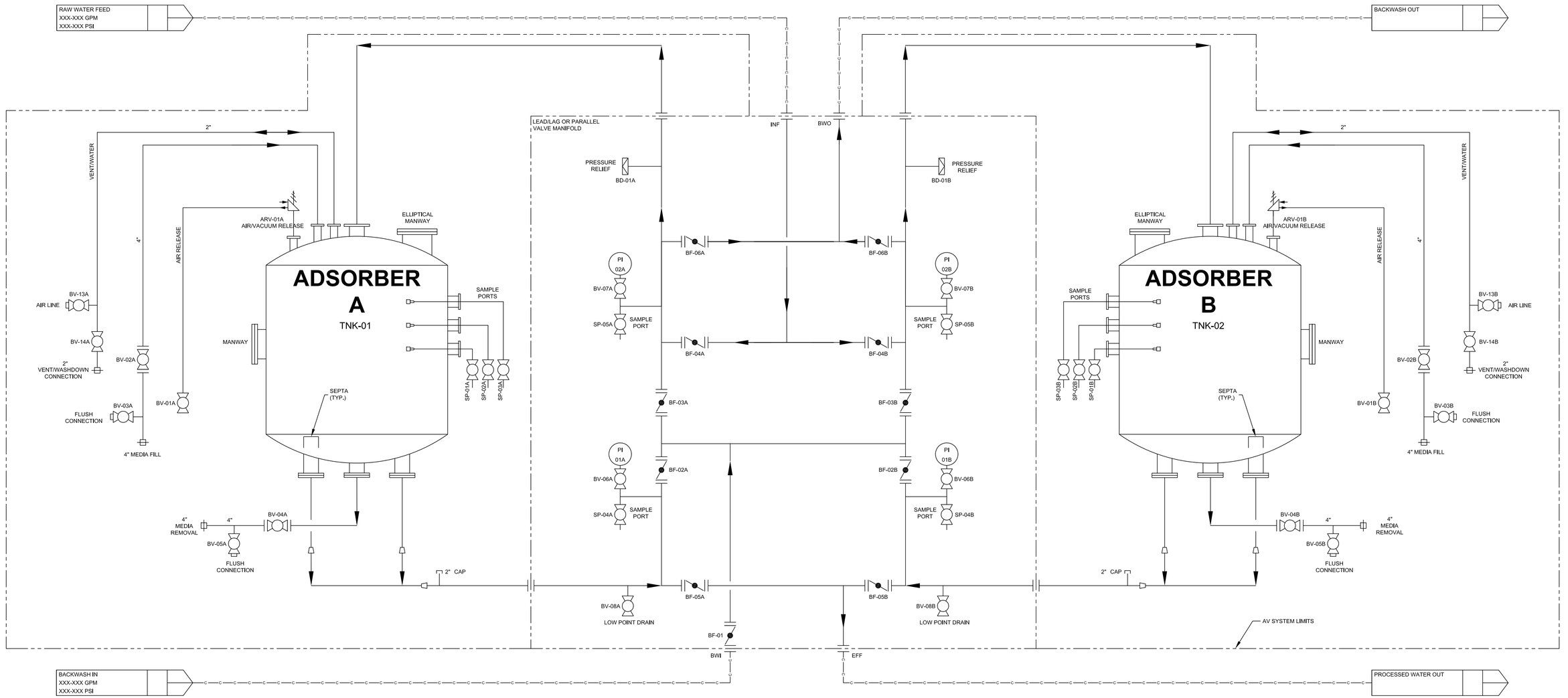
- Vessel Diameter ..... 144”
- Side Shell Height ..... 144”
- Overall Height (Approx.) ..... 21’-6”
- Working Pressure ..... 125 psi @ 150 °F
- Manway:
  - Flanged at side shell ..... 20”
  - Elliptical type at head ..... 14”x18”
- Vessel Volume ..... 1,800 ft^3
- Maximum Flow Rate (Typical) ..... 1,000 gpm
- Design Criteria ..... ASME
- Code Stamping ..... Yes
- Material ..... Carbon Steel
- Supports (4 per vessel) ..... Legs
- Lifting (2 per vessel) ..... Lifting Lugs
- Seismic ..... Site Class D, Importance Factor 1.5
- Interior Surface Prep SSPC-SP5
- Interior Surface Coating ..... Plasite 4110, 35 – 45 mil dft
- Exterior Surface Primer ..... Epoxy, 4 – 6 mil dft
- Exterior Surface Coating ..... Urethane, 2 – 3 mil dft
- Standard Color ..... Tan (Carboline 9225 Cashew) w/custom colors available

UNDERDRAINS/OVERDRAINS:

- Underdrain:
  - External ring header ..... 8” Sch. 40 Carbon Steel
  - Septa Screens (8 per vessel) ..... 316L Stainless Steel V-Wire Screens 4 ½” Dia x 12” eff.
- Overdrain ..... 316SS Diffuser

VALVE ASSEMBLY AND PIPING:

- Piping:
- Process Piping ..... 8” Sch 40 Carbon Steel
  - Media Transfer Piping ..... 4” Sch 40 Lined Carbon Steel
- Valves:
- Process ..... 8” Butterfly, Cast Iron Body, DI Disc, Gear Operator
  - Media Transfer ..... 4” Flanged 316 Stainless Steel Full Port Ball Valve
  - Vent/Wash ..... 2” Lead-Free Brass/Bronze Ball Valve
  - Sample Ports (4) ..... 1/2” Lead-Free Brass/Bronze Ball Valve
- Connection Hardware ..... Hot-Dip Galvanized



REV	DESCRIPTION	DATE	DWN	CHK	APPD	ECN
A	SALES P&ID - NFC	12/9/25	TDI	RP	RP	

REVISION HISTORY

CONFIDENTIAL AQUEOUS VETS INFORMATION

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DESIGNER:	DATE	
CHECKER:	DATE	
ENGINEER:	DATE	
MANAGER:	DATE	
SCALE:		

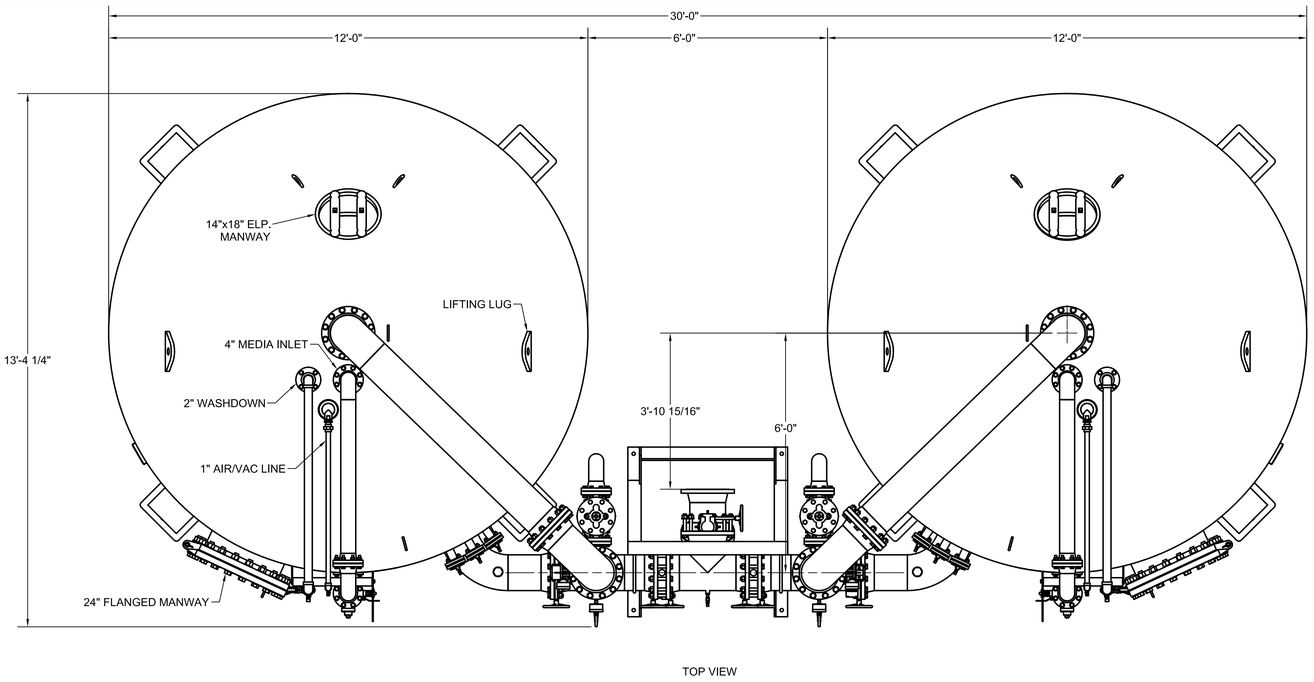
TITLE
TWO (2) VESSEL LAYOUT
PF-P&ID-2S-4RPGXXXXXXX-CSTM

CLIENT
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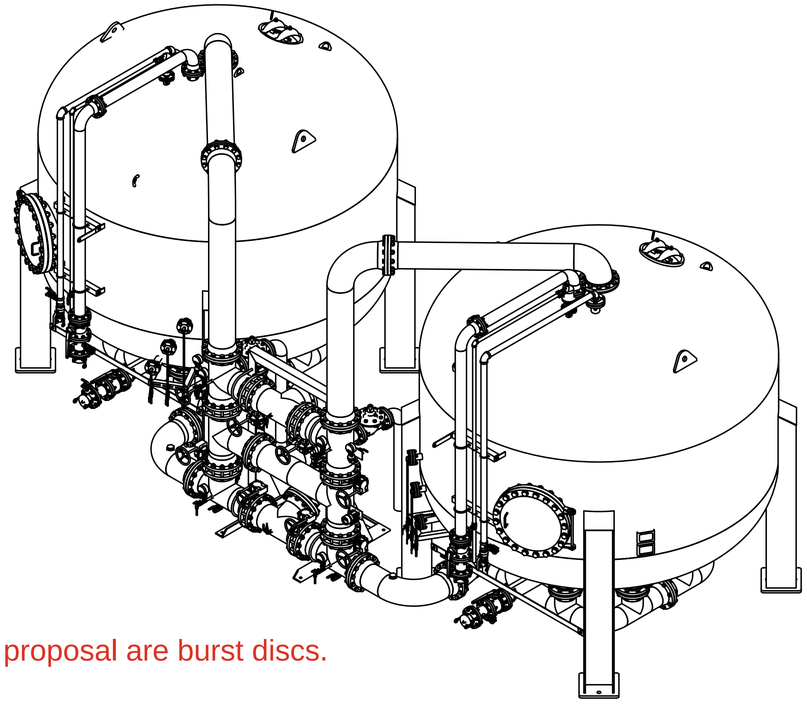
AqueoUS VETS®
16761 CLEAR CREEK ROAD
REDDING, CA 96001
925-331-0573

PROJECT	CODE	DRAWING NUMBER	SHEET	REV
GENERIC PF	.	2S-4RPGXXXXXXX-CSTM	1 OF 1	A

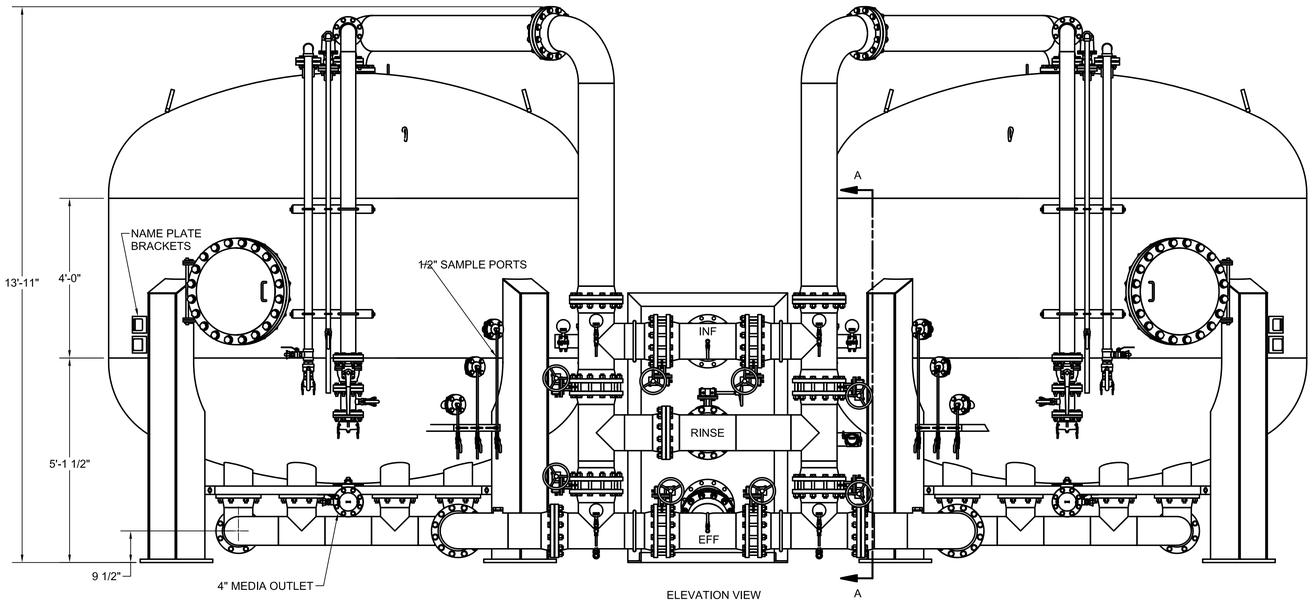
PF 12-420 LowPro HF IX and FS System



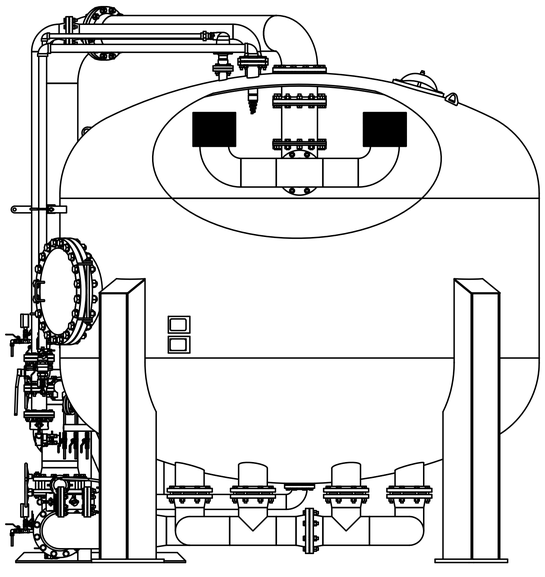
TOP VIEW



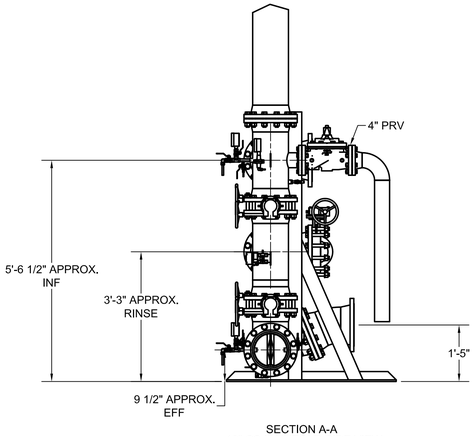
Note: This drawing illustrates pressure relief valves. Included in this proposal are burst discs.



ELEVATION VIEW



RIGHT SIDE VIEW



SECTION A-A
10" CS MANIFOLD SIDE VIEW

NOTES:
1. THIS SALES DRAWING SHOWS OUR STANDARD SYSTEM. PROJECT-SPECIFIC DRAWINGS WILL BE PROVIDED WITH THE ENGINEERING SUBMITTAL. REFER TO OUR SCOPE OF WORK FOR VALVING AND INSTRUMENTATION DETAILS.
2. VESSELS SHALL BE 125 PSI, ASME CODE.
3. PIPING MATERIALS SHALL MEET: CS PIPE ASTM A-53 GRADE B (ERW); CS FITTINGS SA-234, ASME B16.9; SS THREADED FITTINGS ASTM A-351; SS PIPE ASTM A-312; SS BW FITTINGS ASTM A-403; MI THREADED FITTINGS ASME B-16.3
4. SURFACE PREPERATION: VESSEL: SSPC-SP5 INTERIOR & SSPC-SP6 EXTERIOR. SYSTEM PIPING: SSPC-SP10 INTERIOR & SSPC-SP6 EXTERIOR.
5. FINISH VESSEL INTERIOR WITH 35-45 MILS OF PLASITE 4110, PREPARE AND APPLY STRICTLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS TO MEET NSF STD 61 REQUIREMENTS. LINING TO BE CONTINUOUS TO OD OF THE RAISED FACE ON ALL NOZZLE FLANGES.
6. FINISH EXTERIOR WITH 2-3 MILS OF CARBOTHANE 134VOC URETHANE, COLOR TO BE 9225 CASHEW, OVER 4-6 MILS OF CARBOGUARD 60 RUST PREVENTATIVE EPOXY PRIMER, APPLIED PER MANUFACTURERS RECOMMENDATIONS.
7. CS SLURRY/PROCESS PIPE 3" AND LARGER TO BE INTERNALLY LINED WITH 16MILS (MIN.) OF 3M SCOTCHKOTE 134 FUSION BONDED EPOXY.
8. SYSTEM ESTIMATED SHIPPING WEIGHT: 37,500 LBS.
9. GROUTING AND ANCHORING BY OTHERS, IF REQUIRED.
10. ± 1" TOLERANCE ON CONNECTION DIMENSIONS.

COMPANY CONFIDENTIAL
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DESIGNER: AMN	DATE 9/9/2022	TITLE: PF 12-420 LOWPRO® IX HF 125PSI SYS 3 T MANIFOLD W/ 4" PRV SALES DRAWING
CHECKER: AJA	DATE 9/9/2022	CLIENT
ENGINEER: JT	DATE 9/9/2022	
MANAGER:	DATE	
SCALE: 3/8" = 1'		PROJECT

AqueoUSVETS®
16761 CLEAR CREEK ROAD
REDDING, CA 96001
925-331-0573

CODE	DRAWING NUMBER	SHEET	REV
	PF 12-420LP 3T PRV SYS-SALES	1 OF 1	0

PF 12-420 LowPro® HF SYSTEM SPECIFICATION

PF 12-420 LowPro® HF Liquid Phase Adsorption Systems are designed to treat a wide range of contaminated process streams. All piping and valves are configured for series, parallel, or vessel isolation flows. System includes media inlet and outlet piping, and backwash capabilities. The system consists of two (2) adsorbers, with piping, valves, and gauges assembled operation. Each adsorber is equipped with an underdrain capable of maximum flow rate of 2,000 gpm for IX and 1,500 gpm for FS.

EACH VESSEL:

Vessel Diameter ..... 144 ”
Side Shell Height ..... 48”
Overall Height (Approx.) ..... 13’-11”
3Working Pressure ..... 125 psi @ 150 °F
Manway:
Flanged at side shell ..... 24”
Elliptical type at head ..... 14”x18”
Vessel Volume ..... 910 ft^3
Design Criteria ..... ASME
Code Stamping ..... Yes
Material ..... Carbon Steel
Supports (4 per vessel) ..... Legs
Lifting (2 per vessel) ..... Lifting Lugs
Seismic ..... Site Class D, Importance Factor 1.5
Interior Surface Prep SSPC-SP5
Interior Surface Coating ..... Plasite 4110, 35 – 45 mil dft
Exterior Surface Primer ..... Epoxy, 4 – 6 mil dft
Exterior Surface Coating ..... Urethane, 2 – 3 mil dft
Standard Color ..... Tan (Carboline 9225 Cashew) w/custom colors available

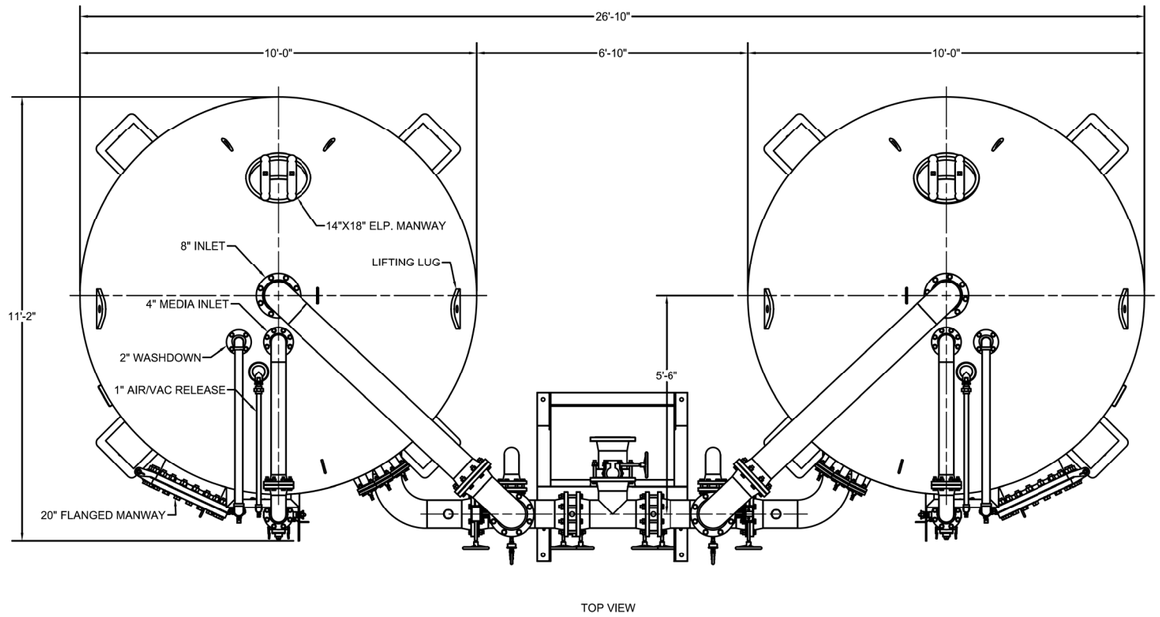
UNDERDRAINS/OVERDRAINS:

Underdrain:
External ring header ..... 8” Sch. 40 Carbon Steel
Septa Screens (8 per vessel) ..... 316L Stainless Steel V-Wire Screens 4 ½” Dia x 12” eff.
Overdrain ..... 316SS Multi-Point Distributor for IX
..... 316SS Inlet Diffuser for FS

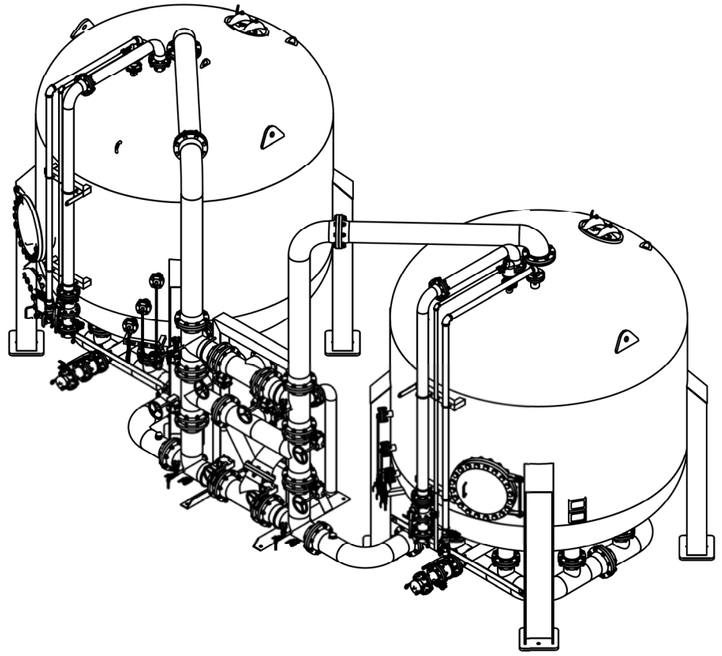
VALVE ASSEMBLY AND PIPING:

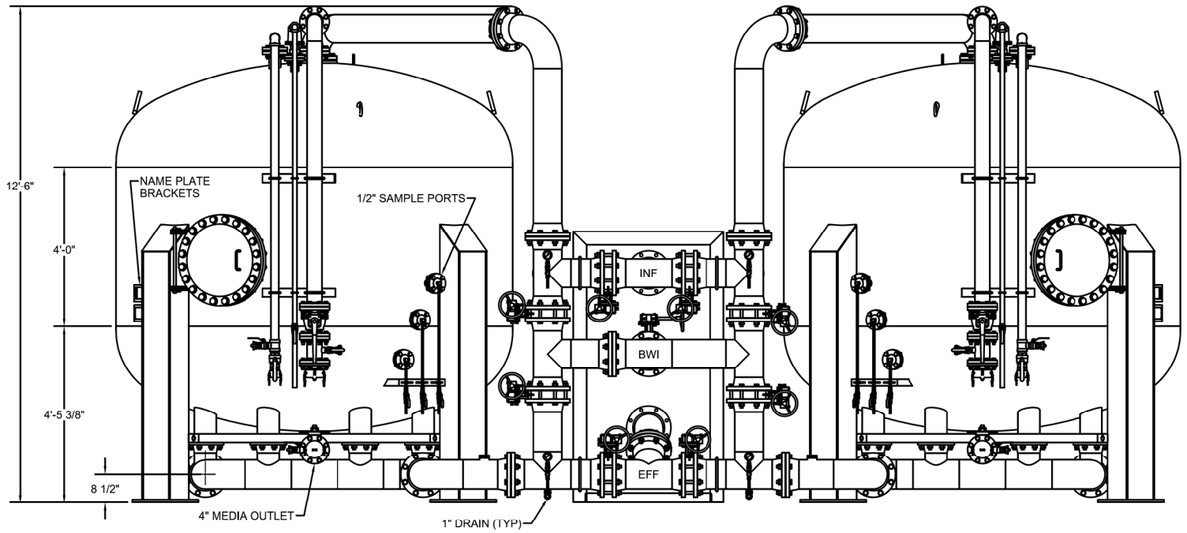
Piping:
Process Piping ..... 10” Sch 40 Carbon Steel
Media Transfer Piping ..... 4” Sch 40 Lined Carbon Steel
Valves:
Process ..... 10” Butterfly, Cast Iron Body, DI Disc, Gear Operator
Media Transfer ..... 4” Flanged 316 Stainless Steel Full Port Ball Valve
Vent/Wash ..... 2” Lead-Free Brass/Bronze Ball Valve
Sample Ports (4) ..... 1/2” Lead-Free Brass/Bronze Ball Valve
Connection Hardware ..... Hot-Dip Galvanized

PF 10-410 Low Pro System

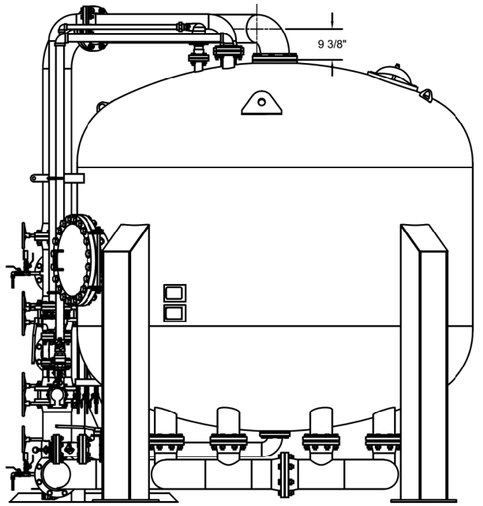


TOP VIEW

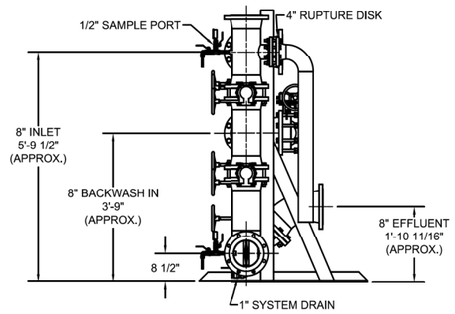




ELEVATION VIEW



RIGHT SIDE VIEW



MANIFOLD ELEVATIONS

NOTES:
1. THIS DRAWING IS TO SHOW PIPING AND EQUIPMENT FOR CUSTOMER APPROVAL.
2. VESSELS SHALL BE 125 PSI, ASME CODE.
3. PIPING MATERIALS SHALL MEET: CS PIPE ASTM A-53 GRADE B (ERW); CS FITTINGS SA-234, ASME B16.9; SS THREADED FITTINGS ASTM A-351; SS PIPE ASTM A-312; SS BW FITTINGS ASTM A-403; MI THREADED FITTINGS ASME B-16.3
4. SURFACE PREPERATION: VESSEL: SSPC-SP5 INTERIOR & SSPC-SP6 EXTERIOR. SYSTEM PIPING: SSPC-SP10 INTERIOR & SSPC-SP6 EXTERIOR.
5. FINISH VESSEL INTERIOR WITH 35-45 MILS OF PLASITE 4110, PREPARE AND APPLY STRICTLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS TO MEET NSF STD 61 REQUIREMENTS. LINING TO BE CONTINUOUS TO OD OF THE RAISED FACE ON ALL NOZZLE FLANGES.
6. FINISH EXTERIOR WITH 2-3 MILS OF CARBOTHANE 134VOC URETHANE, COLOR TO BE 9225 CASHEW, OVER 4-6 MILS OF CARBOGUARD 60 RUST PREVENTATIVE EPOXY PRIMER, APPLIED PER MANUFACTURERS RECOMMENDATIONS.
7. CS SLURRY/PROCESS PIPE 3" AND LARGER TO BE INTERNALLY LINED WITH 16MILS (MIN.) OF 3M SCOTCHKOTE 134 FUSION BONDED EPOXY.
8. SYSTEM ESTIMATED SHIPPING WEIGHT: 28,000 LBS.
9. GROUTING AND ANCHORING BY OTHERS IF REQUIRED.
10. ± 1" TOLERANCE ON CONNECTION DIMENSIONS.

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DESIGNER: FA	DATE: 1/24/2023	TITLE: PF 10-410 LOW PRO™ 125PSI SYS 3 TIER CS MANIFOLD W/ RD GENERAL ASSEMBLY SALES DRAWING
CHECKER:	DATE:	CLIENT
ENGINEER:	DATE:	
MANAGER:	DATE:	AqueoUS VETS® 16761 CLEAR CREEK ROAD REDDING, CA 96001 925-331-0573
SCALE: 1/2" = 1'	PROJECT	CODE / DRAWING NUMBER: PF 10-410LP 3T RD SYS Sales / SHEET: 1 OF 1 / REV: 0

PF 10-410 LowPro® SYSTEM SPECIFICATION

PF 10-410 LowPro® Liquid Phase Adsorption Systems are designed to treat a wide range of contaminated process streams. All piping and valves are configured for series, parallel, or vessel isolation flows. System includes media inlet and outlet piping, and backwash capabilities. The system consists of two (2) adsorbers, with piping, valves, and gauges assembled operation. Each adsorber is equipped with an underdrain capable of maximum flow rate of 1,100 GPM.

EACH VESSEL:

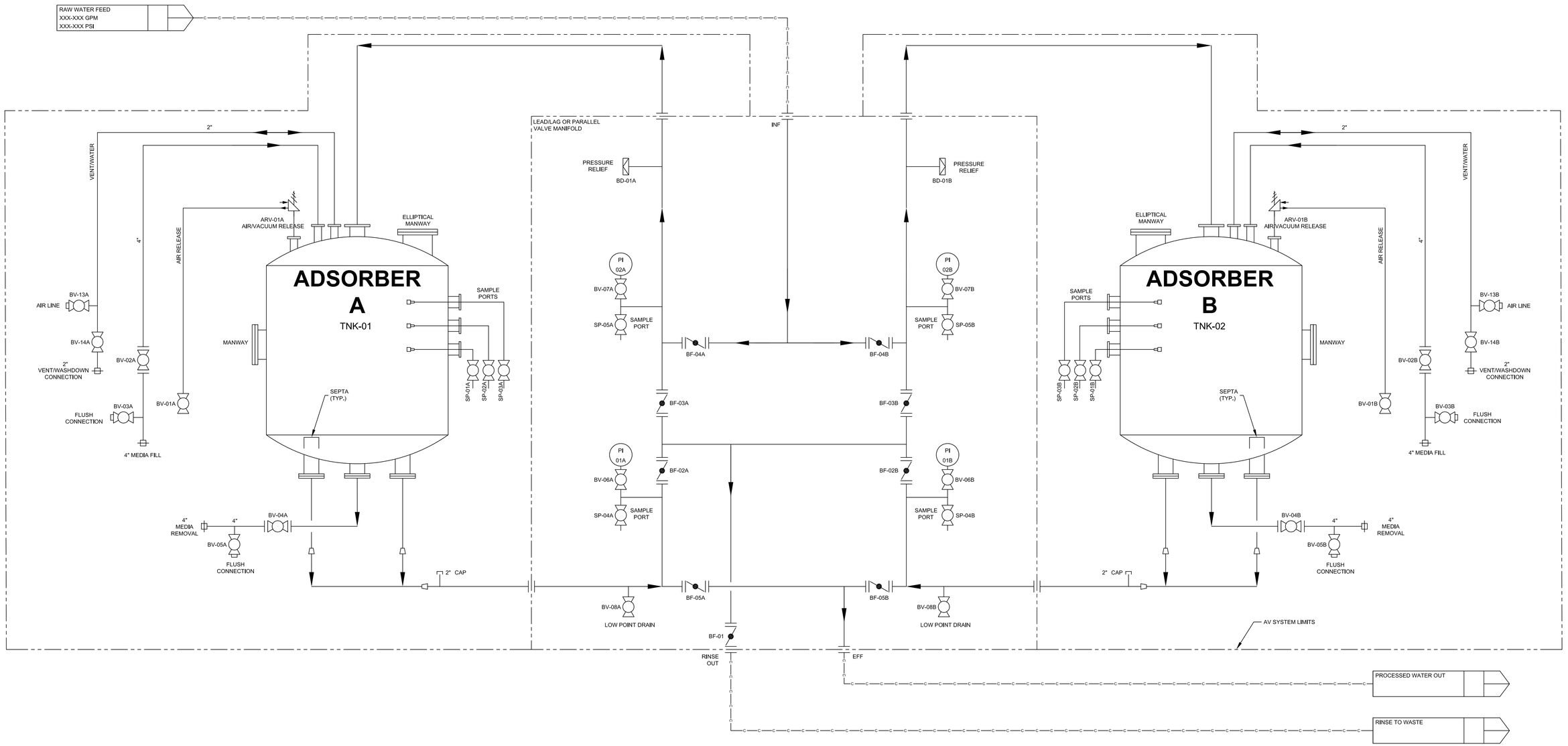
Vessel Diameter ..... 120”
Side Shell Height ..... 48 ”
Overall Height (Approx.) ..... 12’-6”
Working Pressure ..... 125 psi @ 150 °F
Manway:
Flanged at side shell ..... 24”
Elliptical type at head ..... 14”x18”
Vessel Volume ..... 580 ft^3
Design Criteria ..... ASME
Code Stamping ..... Yes
Material ..... Carbon Steel
Supports (4 per vessel) ..... Legs
Lifting (2 per vessel) ..... Lifting Lugs
Seismic ..... Site Class D, Importance Factor 1.5
Interior Surface Prep SSPC-SP5
Interior Surface Coating ..... Plasite 4110, 35 – 45 mil dft
Exterior Surface Primer ..... Epoxy, 4 – 6 mil dft
Exterior Surface Coating ..... Urethane, 2 – 3 mil dft
Standard Color ..... Tan (Carboline 9225 Cashew) w/custom colors available

UNDERDRAINS/OVERDRAINS:

Underdrain:
External ring header ..... 8” Sch. 40 Carbon Steel
Septa Screens (8 per vessel) ..... 316L Stainless Steel V-Wire Screens 4 ½” Dia x 12” eff.
Overdrain ..... 316SS Multi-point Distributor for IX
..... 316SS Inlet Diffuser for FS

VALVE ASSEMBLY AND PIPING:

Piping:
Process Piping ..... 8” Sch 40 Carbon Steel
Media Transfer Piping ..... 4” Sch 40 Lined Carbon Steel
Valves:
Process ..... 8” Butterfly, Cast Iron Body, DI Disc, Gear Operator
Media Transfer ..... 4” Flanged 316 Stainless Steel Full Port Ball Valve
Vent/Wash ..... 2” Lead-Free Brass/Bronze Ball Valve
Sample Ports (4) ..... 1/2” Lead-Free Brass/Bronze Ball Valve
Connection Hardware ..... Hot-Dip Galvanized



REV	DESCRIPTION	DATE	DWN	CHK	APPD	ECN
A	SALES P&ID - NFC	11/17/25	TDI	RP	RP	

REVISION HISTORY

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DESIGNER:	.	DATE .
CHECKER:	.	DATE .
ENGINEER:	.	DATE .
MANAGER:	.	DATE .
SCALE:		

TITLE
TWO (2) VESSEL LAYOUT
PF-P&ID-2S-3RPGXXXXXXX-CSTM

CLIENT
. .

AqueoUS VETS®
16761 CLEAR CREEK ROAD
REDDING, CA 96001
925-331-0573

PROJECT	CODE	DRAWING NUMBER	SHEET	REV
GENERIC PF	.	2S-3RPGXXXXXXX-CSTM	1 OF 1	A

Phone: (925) 331-0573
Email: sales@aqvets.com
Website: www.aqueousvets.com

AV EcoCarb™ 1240 BA
Agglomerated Bituminous Granular Activated Carbon

Application:

This product is produced from US domestic bituminous coal that has gone through a multi-stage washing process to significantly reduce impurities and ash from the feedstock. The washed coal is agglomerated and shaped into a uniform spherical structure before activated at high temperature under a steam to create the optimal internal pore structure. The resulting product is designed for applications including PFAS, taste and odor, organic compounds including pesticides and herbicides, and reduction of trihalomethane formation potential in drinking water.

Specification:

		Test Methods
Mesh Size	12x40 Larger than #12, 5% max mesh Smaller than #40, 4% max mesh	ASTM D2862-16(2022)
Effective Size	0.5-1.0 mm	ASTM D2862-16(2022)
Uniformity Coefficient	1.9 max	ASTM D2862-16(2022)
Moisture Content	2% max (as packed)	ASTM D2867-17
Abrasion Number	75 min	AWWA B604-18
Iodine No.	1000 mg/gm	ASTM D4607-14(2021)
Density	0.42-0.54 g/cc	ASTM D2854-09(2019)

Typical Properties:

		Test Methods
Apparent Density	0.42 g/cc	ASTM D2854

Packaging:

Standard Packaging: 28- or 55-lb polypropylene bags, 200-lb fiber drums, and 1000-lb super sacks are available.

Safety Notice:

Wet Activated Carbon depletes Oxygen and creates a severe safety hazard for people working in confined spaces such as inside filters.

Certifications:

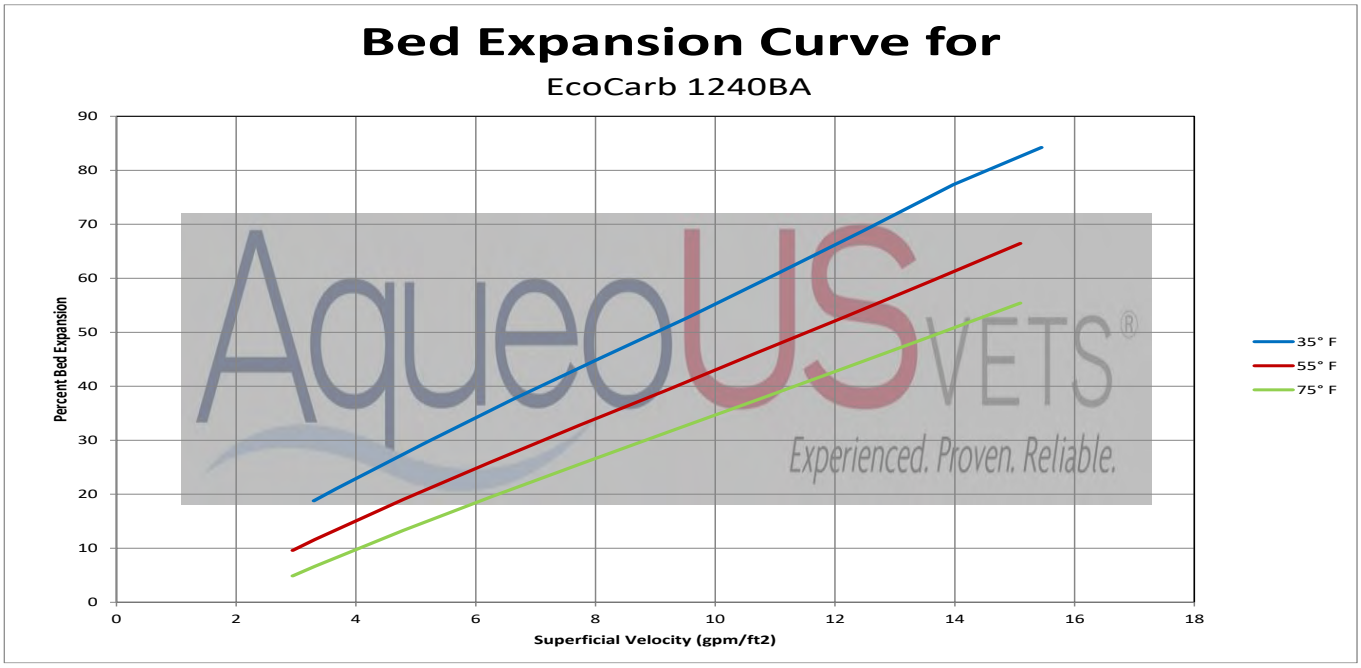
NSF/ANSI/CAN 61®

All information presented herein is believed reliable and in accordance with accepted engineering practices. AV makes no warranties as to the completeness of this information. Users are responsible for evaluating individual product suitability for specific applications. AV assumes no liability whatsoever for any special, indirect or consequential damages arising from the sale, resale or misuse of its products.

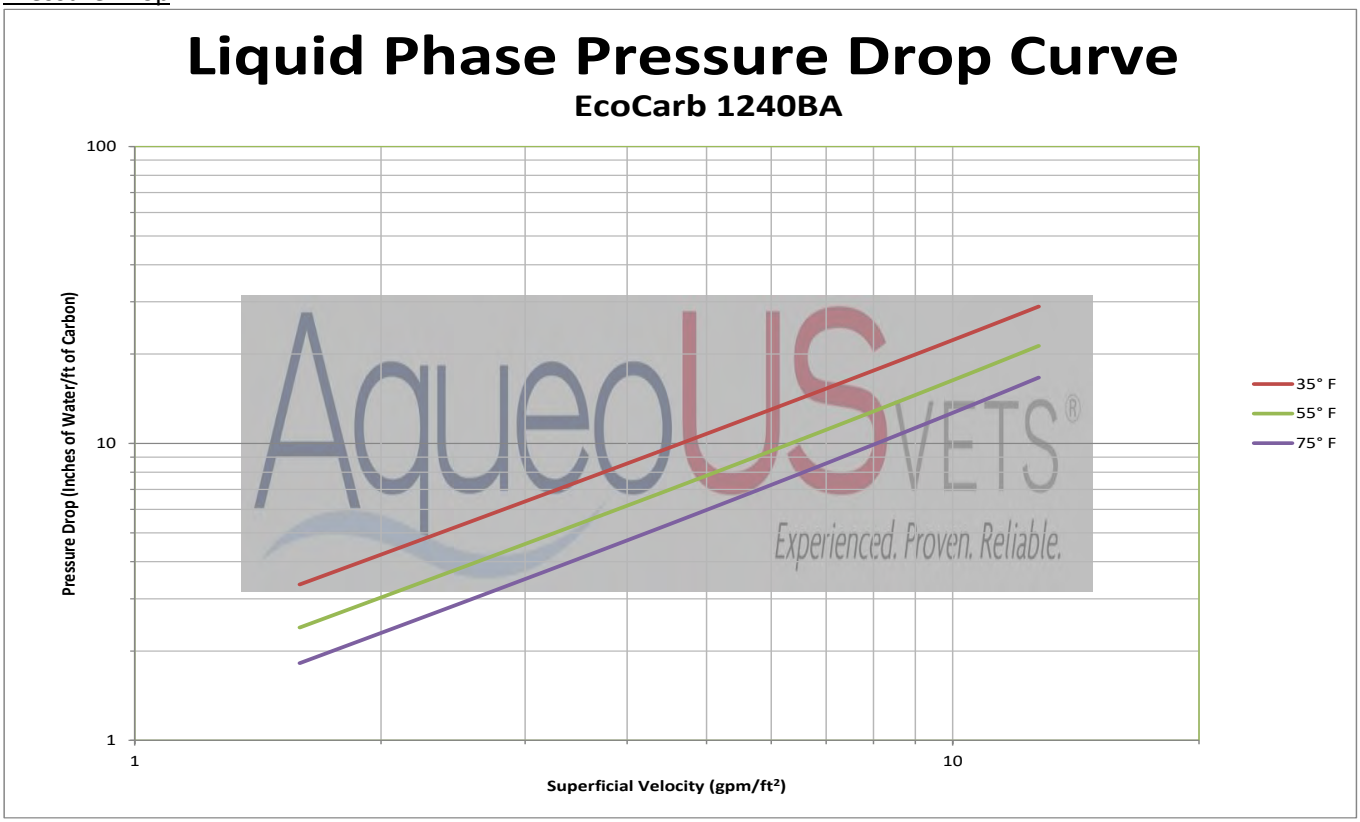
AV EcoCarb™ 1240 BA

Phone: (925) 331-0573
Email: sales@aqvets.com
Website: www.aqueousvets.com

Bed Expansion



Pressure Drop



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FLUORO-SORB® ADSORBENT

100, 200, AND 400 VARIATIONS

DESCRIPTION

FLUORO-SORB adsorbent is a proprietary adsorption media that is proven to effectively treat a wide range of perfluoroalkyl and polyfluoroalkyl substances (PFAS). FLUORO-SORB 100 adsorbent is finely graded media that is best suited for in-situ stabilization and water pre-treatment (DAF/clarifier) processes. FLUORO- SORB 200 adsorbent and FLUORO-SORB 400 adsorbent feature a larger grain size distribution making them ideal for deployment in flow-through water filtration processes, permeable reactive barriers, and REACTIVE CORE MAT® composite geotextile mats.

FLUORO-SORB adsorbent is NSF/ANSI 61 certified for use in municipal water treatment facilities. Customized blends are also available for project-specific optimization. For technical inquiries and project-specific questions, please contact your local CETCO sales representative.



FLUORO-SORB® 100



FLUORO-SORB® 200



FLUORO-SORB® 400

TESTING DATA

PHYSICAL PROPERTIES

MATERIAL PROPERTY	TEST METHOD	FLUORO-SORB 100	FLUORO-SORB 200	FLUORO-SORB 400
Specific Gravity	ASTM C604	1.73	1.76	1.78
Pour Bulk Density	ACC Procedure TP-3031	49.9 lb/ft^3	46.2 lb/ft^3	49.9 lb/ft^3
Tapped Bulk Density	MTI Standard Work SWI-HELAB-019	60.9 lb/ft^3	52.1 lb/ft^3	56.0 lb/ft^3
Permeability	ASTM D2434	2.2 x 10^{-3} cm/s	2.1 x 10^{-3} cm/s	8.5 x 10^{-2} cm/s
% Passing, No. 18 (1.0 mm) Sieve	ASTM C136	96.2%	91.2%	45.7%
% Passing, No. 40 (0.42 mm) Sieve	ASTM C136	43.9%	11.9%	3.1%
Applications		In-situ Soil Stabilization DAF/Clarifier Treatment	Water Treatment Permeable Reactive Barrier	Water Treatment Permeable Reactive Barrier

cetco.com | cetco@mineralstech.com | 800.527.9948

March 2021

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PRODUCT DATA SHEET

Purolite™ Purofine™ PFA694E

Polystyrenic Gel, Potable Water Grade

PRINCIPAL APPLICATIONS

- Removal of perfluoroalkyl substances
- Removal of polyfluoroalkyl substances

ADVANTAGES

- Very high operating capacity
- Excellent kinetics
- Reduces PFAS to non-detect levels ranging from 1 – 5 parts per trillion

SYSTEMS

- Point of Use Systems (POU)
- Point of Entry Systems (POE)
- Municipal

REGULATORY APPROVALS

- Certified by the WQA to NSF/ANSI-61 Standard

TYPICAL PACKAGING

- 1 ft³ Sack
- 25 L Sack
- 5 ft³ Drum (Fiber)
- 1 m³ Supersack
- 42 ft³ Supersack

** Reduces PFAS to non-detect levels ranging from 1 – 5 parts per trillion*

TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS:

Polymer Structure	Polystyrene crosslinked with divinylbenzene
Appearance	Spherical Beads
Functional Group	Complex Amino
Mean Diameter	675 ± 75 µm
Uniformity Coefficient (max.)	1.3
Specific Gravity	1.05
Shipping Weight (approx.)	650 - 700 g/L (40.6 - 43.8 lb/ft³)
Temperature Limit	100 °C (212.0 °F) (Cl^- form)
Temperature Limit	60 °C (140.0 °F) (OH^- form)

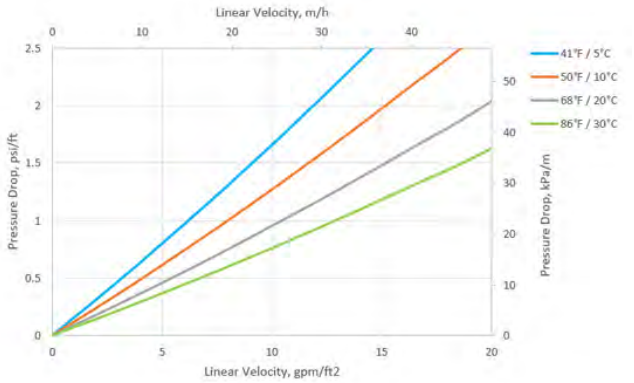
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Hydraulic Characteristics

PRESSURE DROP

The pressure drop across a bed of ion exchange resin depends on the particle size distribution, bed depth, and voids volume of the exchange material, as well as on the flow rate and viscosity of the influent solution. Factors affecting any of these parameters—such as the presence of particulate matter filtered out by the bed, abnormal compressibility of the resin, or the incomplete classification of the bed—will have an adverse effect, and result in an increased head loss. Depending on the quality of the influent water, the application and the design of the plant, service flow rates may vary from 10 to 40 BV/h.

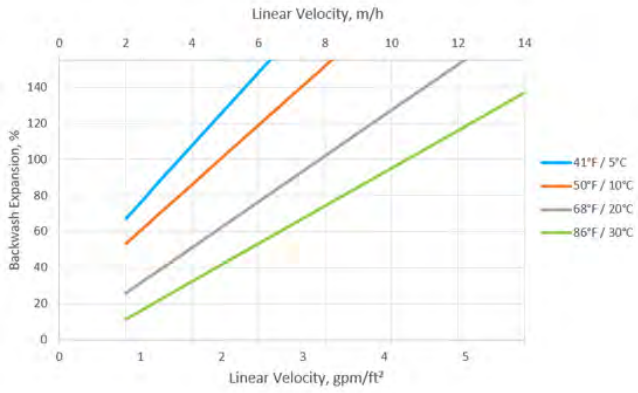
PRESSURE DROP ACROSS RESIN BED



BACKWASH

A 20 BV downflow rinse is required before the vessel is put into service. This rinse can be done onsite or offsite pre-installation. Once the resin is put into service, backwashing is not permitted as this will lead to shortened bed life.This is a uniform grade resin with beads of similar size and will not require backwashing for classification / stratification before use. If it is determined, before startup, that air bubbles or particulate matter are trapped within the bed, then backwashing can be done. In that case, the resin bed should be expanded by 50-70% for 10-15 minutes. Please note that bed expansion increases with higher flow rate and lower water temperature. Avoid loss of resin through the top of the vessel by over expansion of the bed.

BACKWASH EXPANSION OF RESIN BED



Ecolab is a global developer, manufacturer, and supplier of Purolite™ Resins including ion exchange, catalyst adsorbent and advanced polymers that make the world cleaner and healthier.

www.puroliteresins.com



We're ready to solve your process challenges.

For further information on products and services, visit www.puroliteresins.com or complete a Contact Us form via PuroliteResins.com/contact-us or use the QR code.

Contact Us Form:

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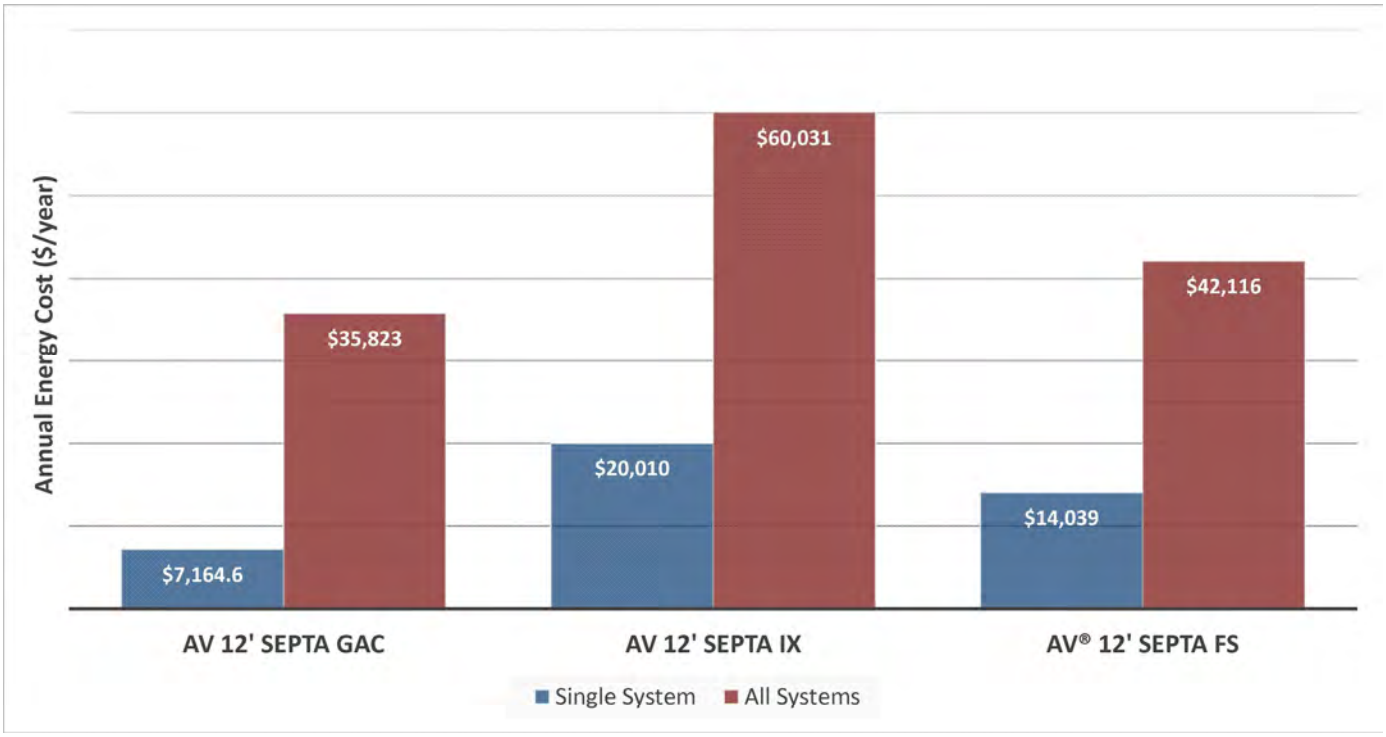
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AqueoUS VETS®

Attachment B

- Pressure Drop Energy Analysis
- Pressure Drop Comparison and Curves for Industry Systems
- Analysis of Underdrain Designs

Main Well - Pressure Drop Energy Analysis



					Single System		*All Systems*		
System Description	**System Pressure Drop (psi)**	**System Head Loss (ft of H_2O)**	**Power Required (HP)**	**Energy Use (KWH/mo)**	**Annual Energy Cost ($/yr)**	**Energy Cost Delta ($/yr)**	**No. of Systems**	**Annual Energy Cost ($/yr)**	**Energy Cost Delta ($/yr)**
AV 12' Septa GAC	11.4	26	6.65	4,827	$7,164.6	-	5	$35,823	-
AV 12' Septa IX	19.1	44	19	13,481	$20,010	$12,846	3	$60,031	$24,208
AV® 12' Septa FS	13.4	31	13	9,458	$14,039	$6,874	3	$42,116	$6,293

Assumptions:

1. Flow rate of 1,000 gpm for the GAC system and 1,667 gpm for the IX and FS systems.
2. Pump motor efficiency of 75%
3. Energy cost of $0.11/KWH.
4. Demand cost of $10/KW per month.
5. Pump operating time of 24 hours per day.
6. The annual energy costs shown are based on head loss only, and do not reflect actual pumping costs.
7. Water temperature for GAC is 75 degrees F. Water temperature is 68 degrees F for IX and 82 degrees F for Fluoro-sorb media.

Note: This analysis is for comparison purposes only - the engineer and/or owner should perform their own analysis for the purposes of final engineering designs and bid submittals.

Life Cycle Cost Comparison

	AV 12' Septa GAC	AV 12' Septa IX	AV® 12' Septa FS
System Type	GAC	IX	FS
No. of Systems Required	5	3	3
Single System Annual Energy Cost ($/yr)	$7,165	$20,010	$14,039
Single System Annual Energy Differential ($/yr)	-	**$12,846**	**$6,874**
Life Cycle Cost @ 25 year Life	**$341,947**	**$955,042**	**$670,030**
Life Cycle Cost Differential	-	***$613,096***	***$328,083***
All Systems Annual Energy Cost ($/yr)	$35,823	$60,031	$42,116
All Systems Annual Energy Differential ($/yr)	-	**$24,208**	**$6,293**
Life Cycle Cost @ 25 year Life	**$1,709,734**	**$2,865,127**	**$2,010,089**
Life Cycle Cost Differential	-	***$1,155,393***	***$300,355***

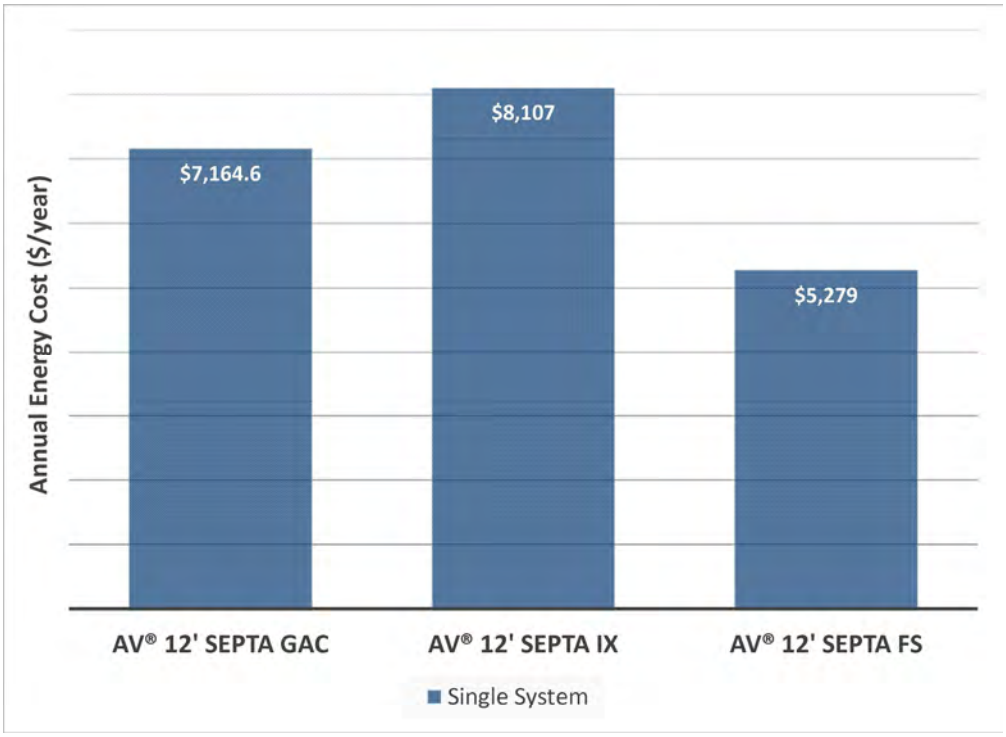
Assumptions:

1. Life cycle cost based on 5% annual escalation in energy rates.

2. Energy savings based on 25 year system life.

3. Pump capable of operating at required power level.

Site 1 - Pressure Drop Energy Analysis



					Single System	
System Description	**System Pressure Drop (psi)**	**System Head Loss (ft of H_2O)**	**Power Required (HP)**	**Energy Use (KWH/mo)**	**Annual Energy Cost ($/yr)**	**Energy Cost Delta ($/yr)**
AV® 12' Septa GAC	11.4	26	6.65	4,827	$7,164.6	-
AV® 12' Septa IX	12.9	30	8	5,462	$8,107	$943
AV® 12' Septa FS	8.4	19	5	3,556	$5,279	-$1,885

^edit values here based on pressure drop curves

Assumptions:

1. Flow rate of 1,000 gpm.
2. Pump motor efficiency of 75%
3. Energy cost of $0.11/KWH.
4. Demand cost of $10/KW per month.
5. Pump operating time of 24 hours per day.
6. The annual energy costs shown are based on head loss only, and do not reflect actual pumping costs.
7. Water temperature for GAC media is 75 degrees F. Water temperature for IX media is 68 degrees F, and 82 degrees F for Fluoro-sorb media.

Note: This analysis is for comparison purposes only - the engineer and/or owner should perform their own analysis for the purposes of final engineering designs and bid submittals.

Life Cycle Cost Comparison

	AV® 12' Septa GAC	AV® 12' Septa IX	AV® 12' Septa FS
System Type	GAC	IX	FS
No. of Systems Required	1	1	1
Single System Annual Energy Cost ($/yr)	$7,165	$8,107	$5,279
Single System Annual Energy Differential ($/yr)	-	**$943**	**-$1,885**
Life Cycle Cost @ 25 year Life	**$341,947**	**$386,940**	**$251,961**
Life Cycle Cost Differential	-	***$44,993***	***-$89,986***
All Systems Annual Energy Cost ($/yr)	$7,165	$8,107	$5,279
All Systems Annual Energy Differential ($/yr)	-	**$943**	**-$1,885**
Life Cycle Cost @ 25 year Life	**$341,947**	**$386,940**	**$251,961**
Life Cycle Cost Differential	-	***$44,993***	***-$89,986***

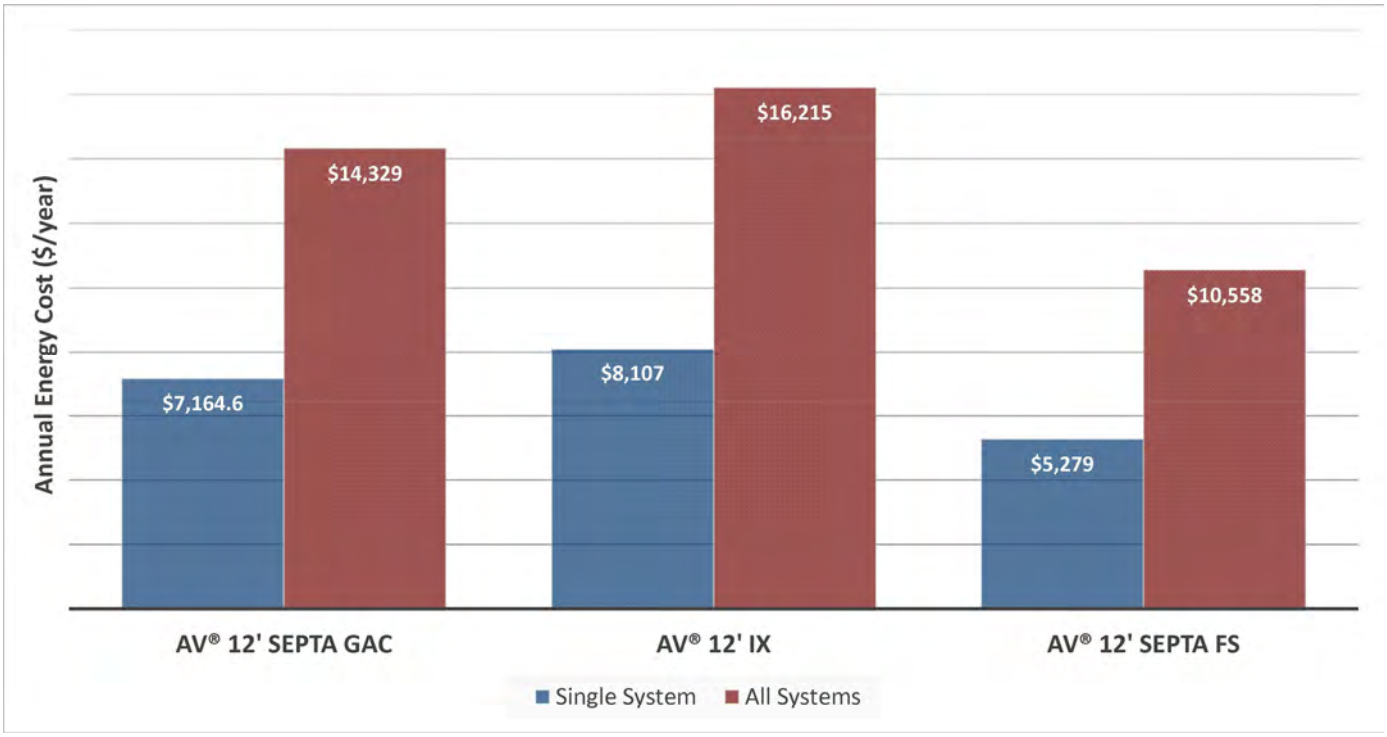
Assumptions:

1. Life cycle cost based on 5% annual escalation in energy rates.

2. Energy savings based on 25 year system life.

3. Pump capable of operating at required power level.

Site 2 - Pressure Drop Energy Analysis



					Single System		*All Systems*		
System Description	**System Pressure Drop (psi)**	**System Head Loss (ft of H_2O)**	**Power Required (HP)**	**Energy Use (KWH/mo)**	**Annual Energy Cost ($/yr)**	**Energy Cost Delta ($/yr)**	**No. of Systems**	**Annual Energy Cost ($/yr)**	**Energy Cost Delta ($/yr)**
AV® 12' Septa GAC	11.4	26	6.65	4,827	$7,164.6	-	2	$14,329	-
AV® 12' IX	12.9	30	8	5,462	$8,107	$943	2	$16,215	$1,885
AV® 12' Septa FS	8.4	19	5	3,556	$5,279	-$1,885	2	$10,558	-$3,771

Assumptions:

1. Flow rate of 1,000 gpm for the 12-foot systems.
2. Pump motor efficiency of 75%
3. Energy cost of $0.11/KWH.
4. Demand cost of $10/KW per month.
5. Pump operating time of 24 hours per day.
6. The annual energy costs shown are based on head loss only, and do not reflect actual pumping costs.
7. Water temperature for GAC media is 75 degrees F. Water temperature for IX medi is 68 degrees F, and Fluoro-sorb 200 is 82 degrees F.

Note: This analysis is for comparison purposes only - the engineer and/or owner should perform their own analysis for the purposes of final engineering designs and bid submittals.

Life Cycle Cost Comparison

	AV® 12' Septa GAC	AV® 12' IX	AV® 12' Septa FS
System Type	GAC	IX	FS
No. of Systems Required	2	2	2
Single System Annual Energy Cost ($/yr)	$7,165	$8,107	$5,279
Single System Annual Energy Differential ($/yr)	-	**$943**	**-$1,885**
Life Cycle Cost @ 25 year Life	**$341,947**	**$386,940**	**$251,961**
Life Cycle Cost Differential	-	***$44,993***	***-$89,986***
All Systems Annual Energy Cost ($/yr)	$14,329	$16,215	$10,558
All Systems Annual Energy Differential ($/yr)	-	**$1,885**	**-$3,771**
Life Cycle Cost @ 25 year Life	**$683,894**	**$773,880**	**$503,922**
Life Cycle Cost Differential	-	***$89,986***	***-$179,972***

Assumptions:

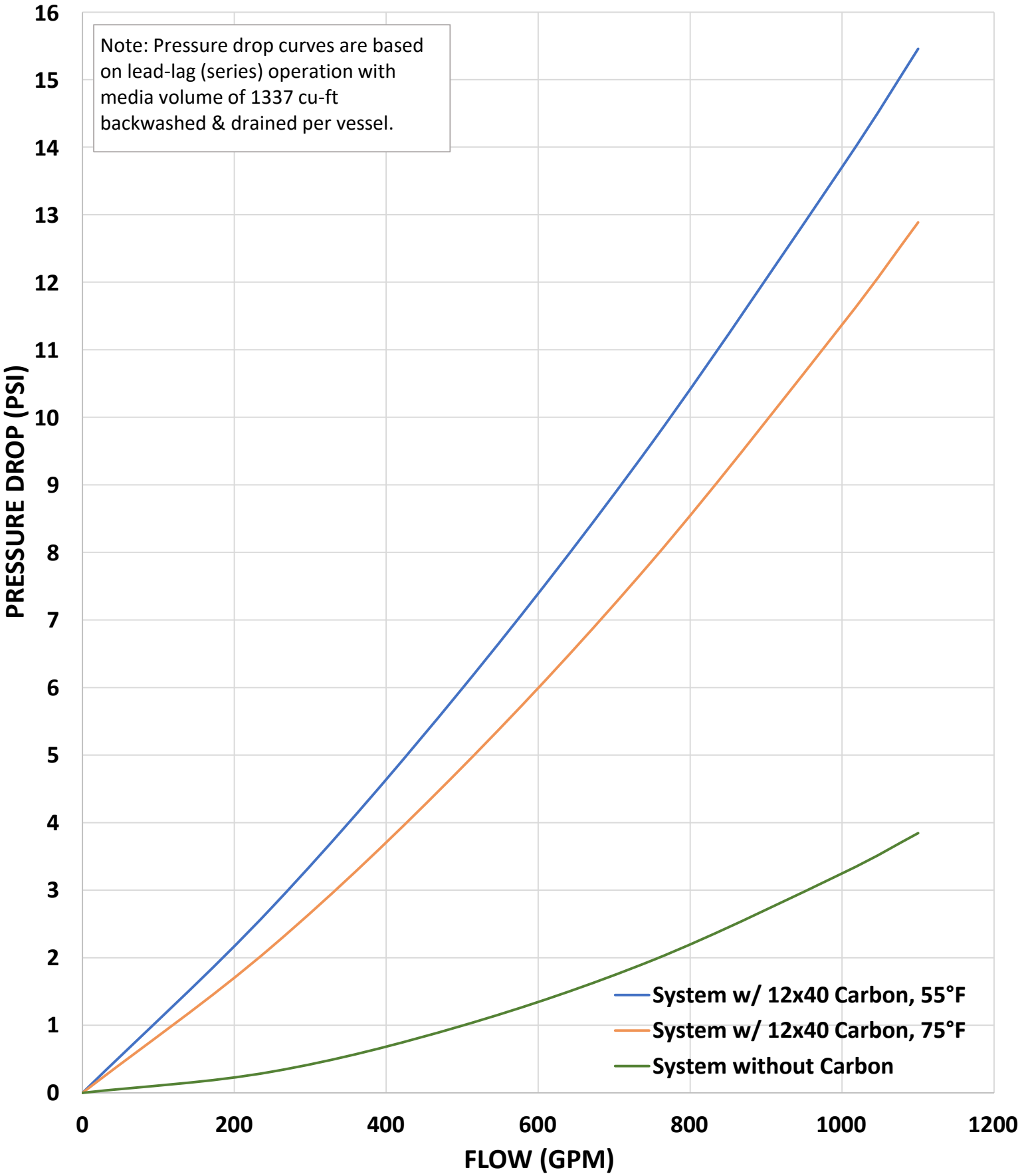
1. Life cycle cost based on 5% annual escalation in energy rates.

2. Energy savings based on 25 year system life.

3. Pump capable of operating at required power level.

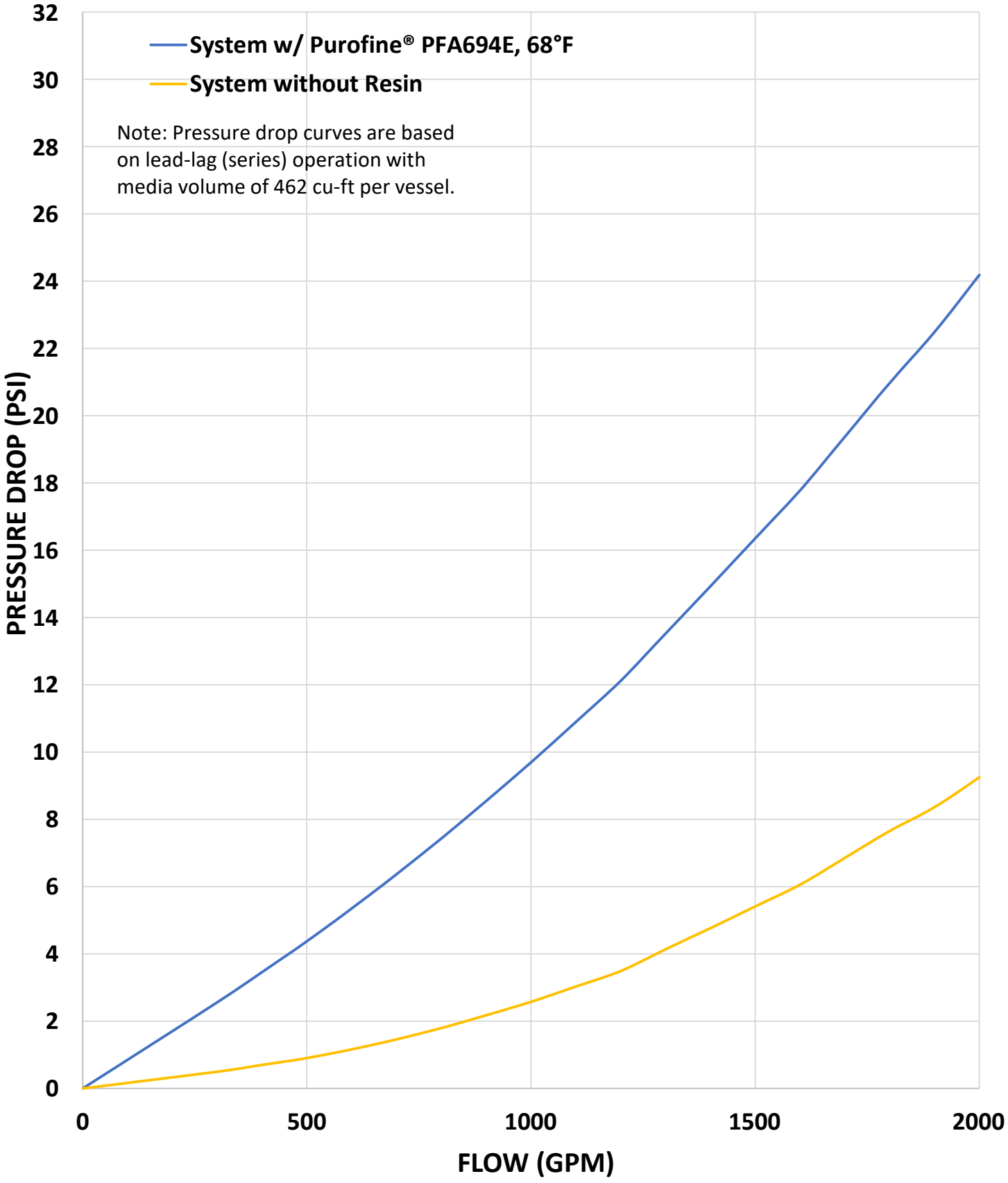
AqueoUS VETS®

PF 12-1240 SYSTEM PRESSURE DROP



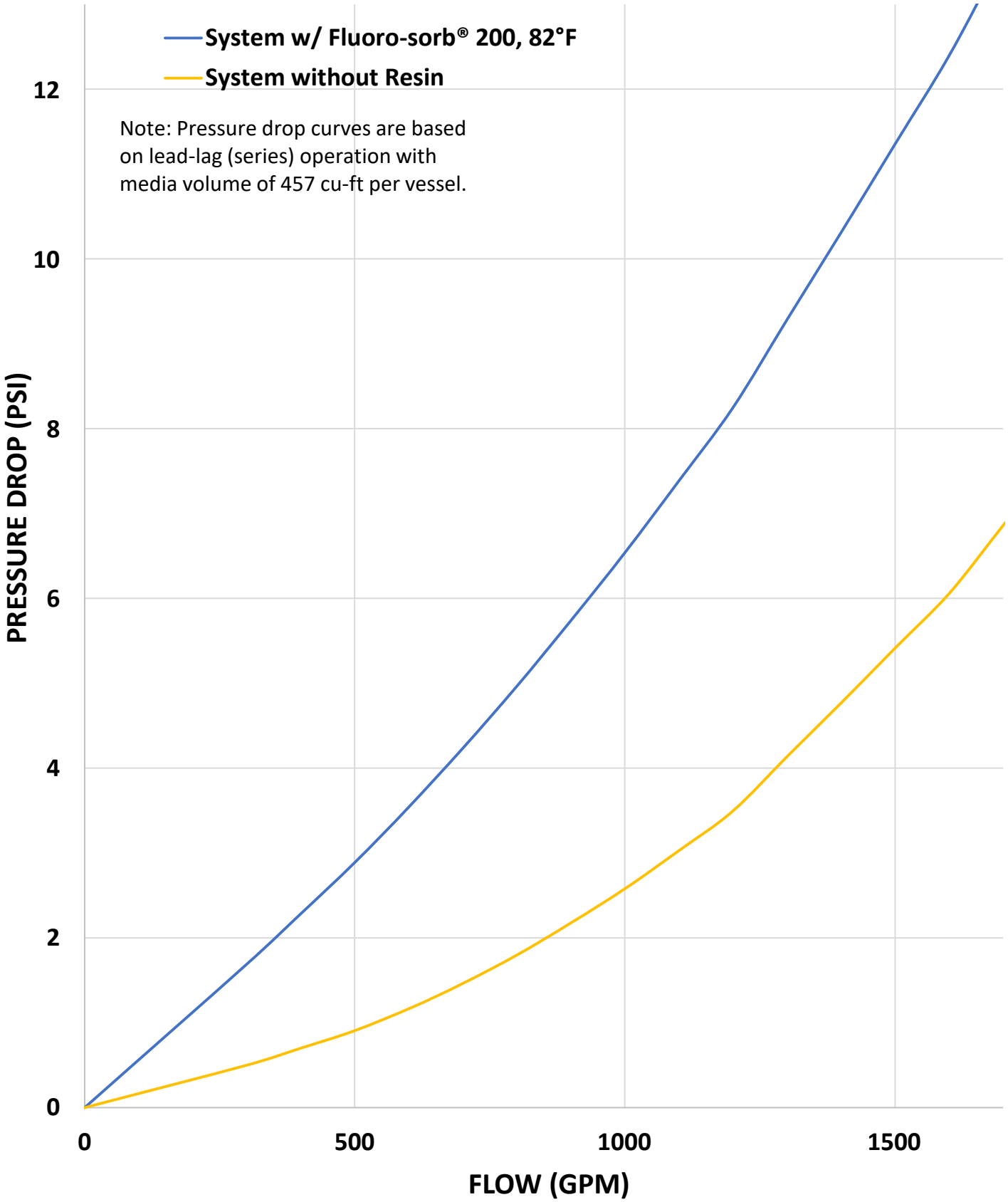
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PF 12-420 HF IX SYSTEM PRESSURE DROP

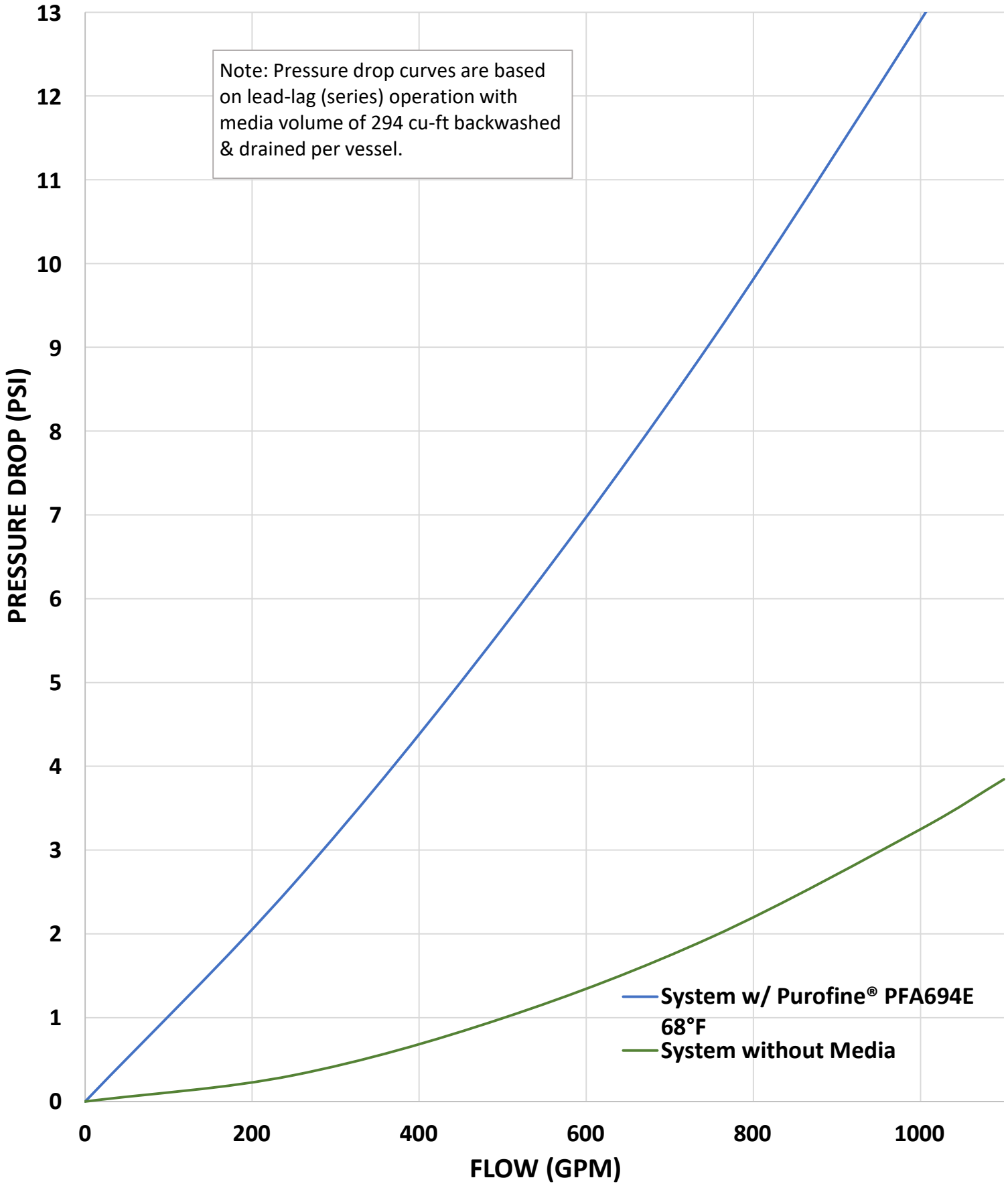


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PF 12-420 HF FS SYSTEM PRESSURE DROP

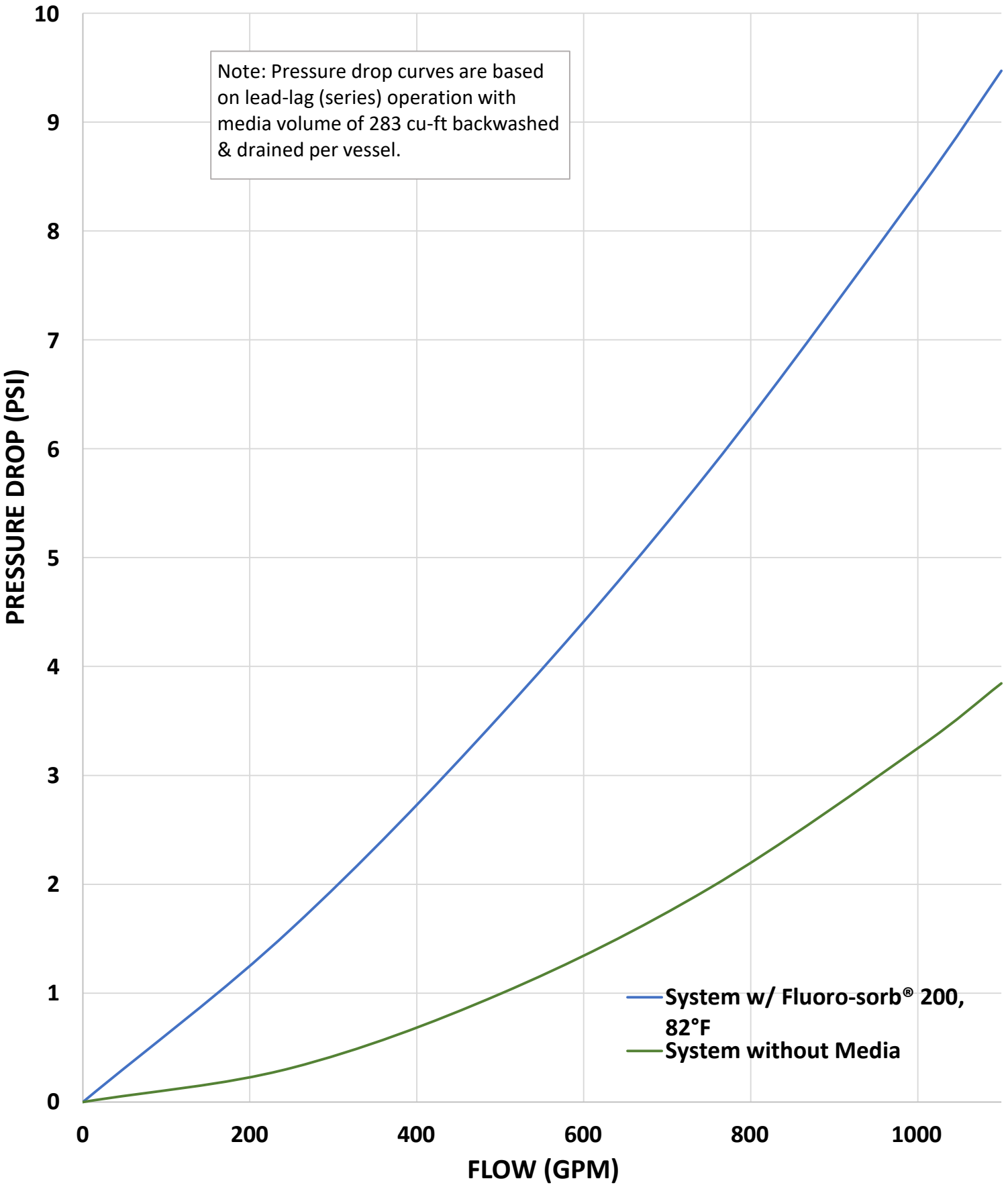


PF 10-410 IX SYSTEM PRESSURE DROP



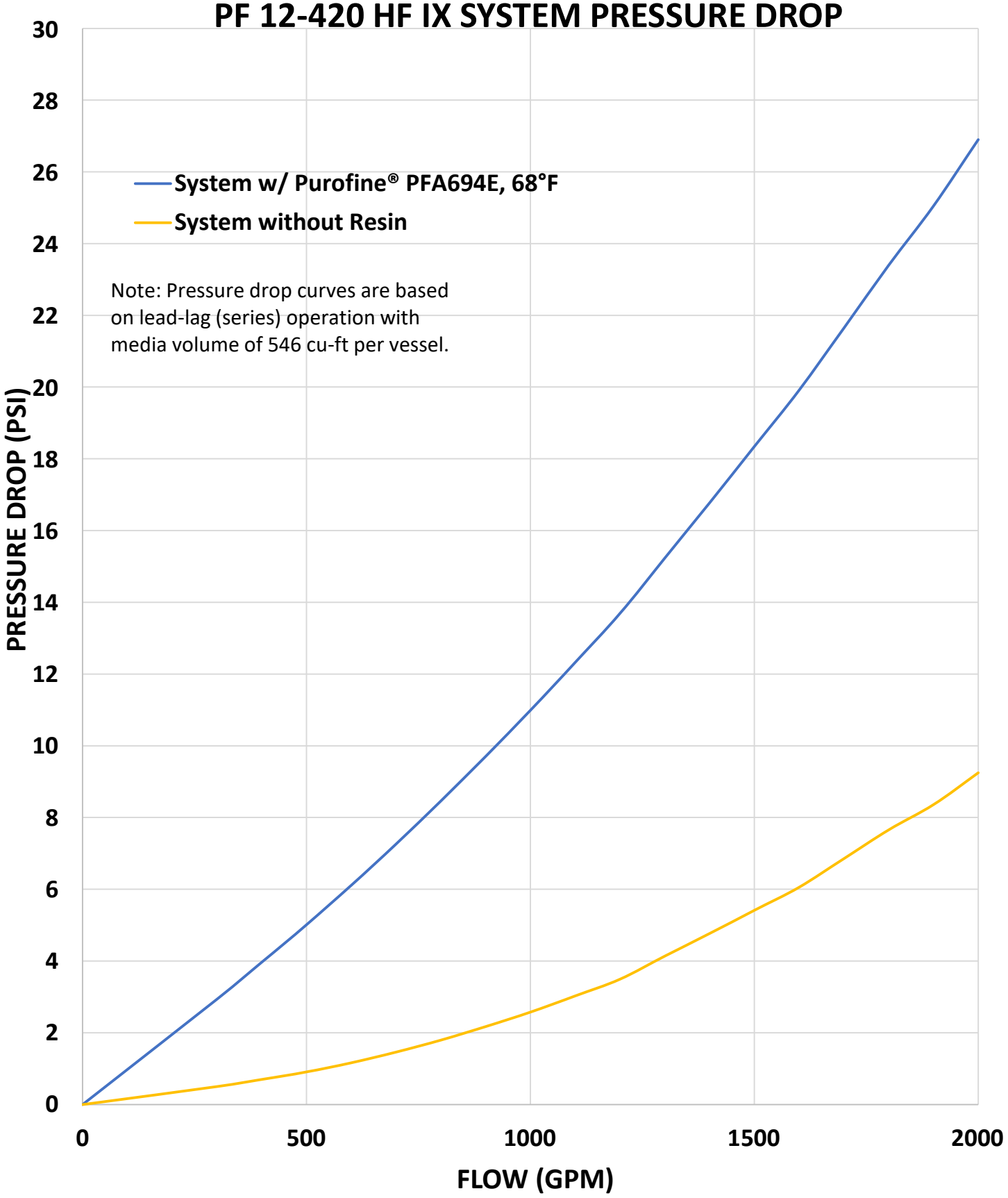
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PF 10-410 FS SYSTEM PRESSURE DROP



AqueoUS VETS®

WELL 2:
PF 12-420 HF IX SYSTEM PRESSURE DROP



Analysis of Underdrain Designs

CONSIDERATIONS

Accurate Representation of Design Elements

When using computational fluid dynamic (CFD) modeling to simulate design flows, it is crucial to ensure that the input parameters accurately reflect the actual design elements. Factors such as inlet distributor design, nozzle sizes/screen sizing, and nozzle placement/pattern can significantly influence flow paths. Variations in the elements can lead to different outcomes, emphasizing the importance of precise and detailed input specifications.

Realistic Velocity Units

Ensure that the velocity units used in the model represent full-scale flow conditions accurately. Avoid artificially low or high velocities, which do not reflect realistic design conditions and may cause misleading flow patterns and dead zones. Accurate velocity representation is vital for reliable simulation results and effective design validation.

Limitations in Media Representation

CFD modeling involves several assumptions, particularly in representing the media accurately. These assumptions can affect the reliability of the model. For instance, achieving a stratified bed in simulations requires careful consideration and validation against empirical data to ensure the assumptions hold in real-world conditions.

AQUEOUS VETS DESIGN OF GRANULAR ACTIVATED CARBON SYSTEM

IX Resin examples can be provided if requested

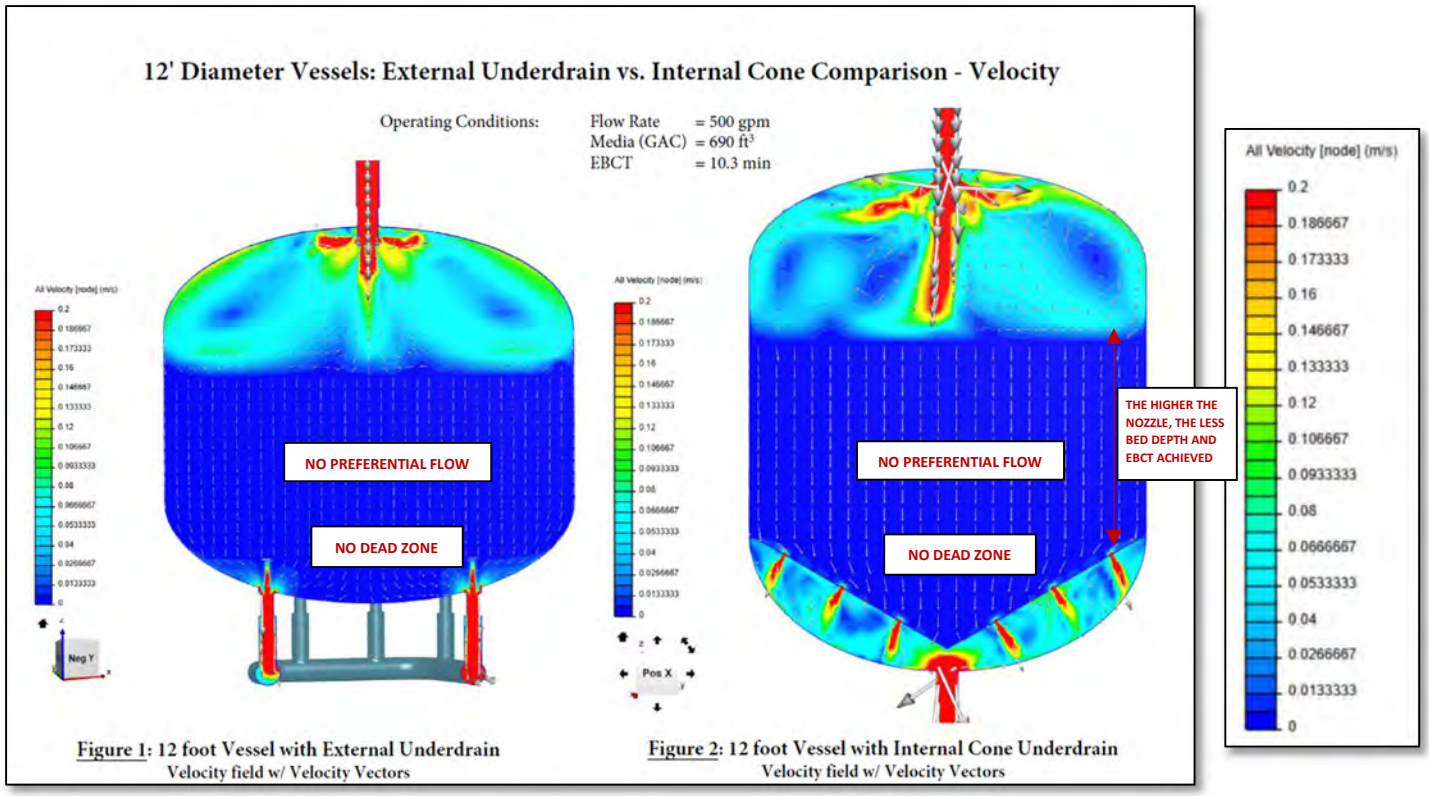
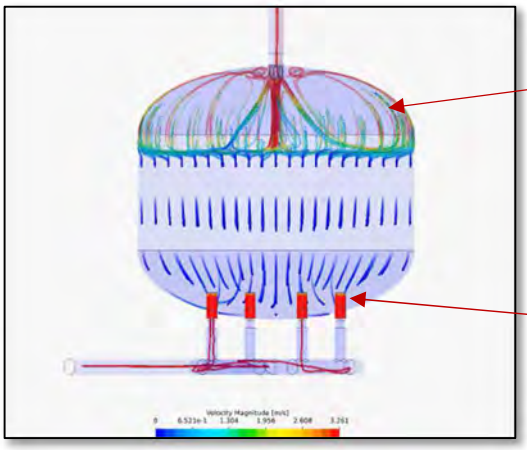


Figure 1: 12 foot Vessel with External Underdrain
Velocity field w/ Velocity Vectors

Figure 2: 12 foot Vessel with Internal Cone Underdrain
Velocity field w/ Velocity Vectors



At the inlet, good flow distribution to the outer edges of the vessel is critical to eliminating preferential flow.

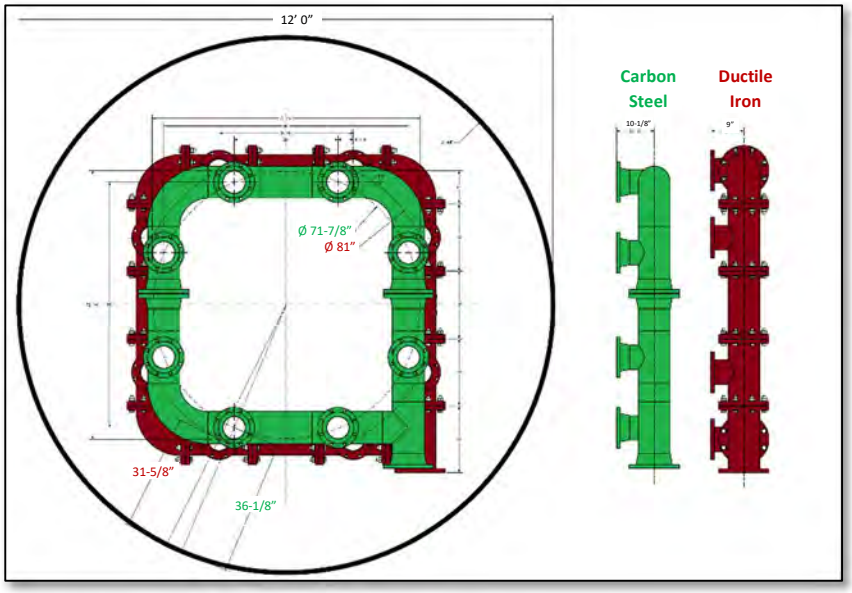
The screen runs down the side of the nozzle, allowing water to flow through the entire side of the nozzle. This facilitates water flow to all the way to the bottom head of the vessel.

DIFFERENCES IN MATERIAL SELECTION DRIVE HYDRAULIC EFFICIENCY

The Aqueous Vets external ring header design is a culmination of over 30 years of field practice. Carbon steel was recognized early on as the most efficient material due to its enhanced mechanical properties. The benefits of using carbon steel include its higher tensile strength, greater impact resistance, lighter weight, and increased corrosion resistance compared to other materials of construction. Its excellent weldability ensures reproducibility and repeatability in manufacturing. All these factors lead to a cost-effective design.

In addition, carbon steel ring headers have a smaller diameter due to the reduced number of flanged connections (only 2 compared to 16 on ductile/cast iron designs). The reduction in flanged connections decreases the diameter of the ring header in the bottom of the 2:1 elliptical head, resulting in septa that are 4.5 inches closer to the center of the vessel.

Positioning the outlet nozzles 4.5 inches closer to the center of the vessel optimizes flow distribution, ensuring a more uniform and efficient flow pattern throughout the vessel. It minimizes potential dead zones and enhances the overall performance by promoting even flow, which is particularly critical for processes that rely on consistent fluid dynamics for optimal operation. This fine-tuning can lead to better system efficiency and improved process outcomes.



EVALUATING MEDIA OPTIMIZATION

All three underdrain designs shown below meet the project's desired water quality goals. The external ring header design, however, optimizes media usage by reducing the underutilized media volume in the vessel. In scenarios where plug flow is achieved, media saturation occurs linearly down through the media bed. Consequently, media below the uppermost underdrain nozzles may not be fully utilized for adsorption. Vessel manufacturers of header-lateral designs often address this by offering a media underbed, which can complicate service logistics during media change-outs.

The external ring header design offers significant advantages, saving 46 ft^3 of media compared to the internal cone and 107 ft^3 compared to the head and lateral designs in 12-foot diameter vessels. The following example highlights the cost impact of underdrain design on media usage for 12-foot systems:

GAC	Ring Header	Internal Cone	Header-Lateral
Underutilized Media Volume (CF)	62	108	169
Underutilized Media Differential (% Increase)	-	74%	173%
Cost of Underutilized Media Per Vessel ($)*	$5,270	$9,180	$14,365
Cost of Underutilized Media for One 12-foot System	**$10,540**	**$18,360**	**$28,730**
Life Cycle Cost @ 25 year Life**	**$256,792**	**$447,315**	**$699,965**
Life Cycle Cost Differential per System***	**-**	***$190,523***	***$443,173***

*Example calculation based on a price of $85/CF for carbon in 2025.

**Life cycle cost based on 5% annual escalation in media costs and change-out of lead vessel each year.

***Life cycle costs should be multiplied by the number of systems on site.

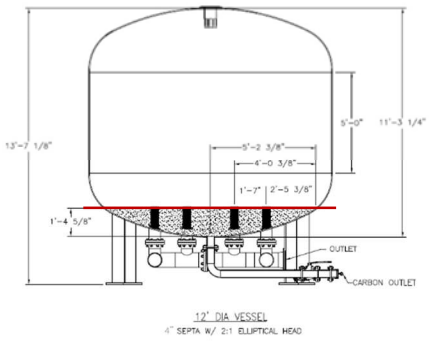
IX	Ring Header	Internal Cone	Header-Lateral
Underutilized Media Volume (CF)	62	108	169
Underutilized Media Differential (% Increase)	-	74%	173%
Cost of Underutilized Media Per Vessel ($)*	$24,800	$43,200	$67,600
Cost of Underutilized Media for One 12-foot System	**$49,600**	**$86,400**	**$135,200**
Life Cycle Cost @ 25 year Life**	**$643,148**	**$1,120,323**	**$1,753,097**
Life Cycle Cost Differential per System***	**-**	***$477,174***	***$1,109,949***

*Example calculation based on a price of $400/CF for resin in 2025.

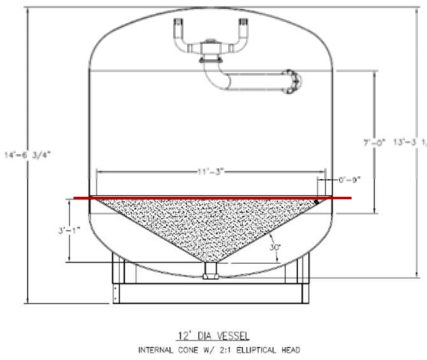
**Life cycle cost based on 5% annual escalation in media costs and change-out of lead vessel every 2 years.

***Life cycle costs should be multiplied by the number of systems on site.

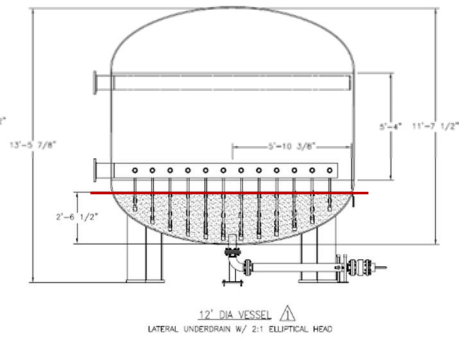
External Ring Header
Volume Beneath Nozzle:
62 ft^3



Internal Cone
Volume Beneath Nozzle:
108 ft^3



Header-Lateral
Volume Beneath Nozzle:
169 ft^3



Attachment C

Technical Qualifications & Project Team

Technical Qualifications

AV®'s Leadership and Project Management Teams' experience supplying large-sized LGAC and Ion Exchange (IX) systems for treatment of water using activated carbon and IX resin technology rivals that of any other large industry supplier. AV's project management and delivery team (previously key managers of US Filter, Siemens, and Evoqua) has more than 150 years of combined direct experience designing, fabricating and installing large field erected systems for the treatment of groundwater, process water and wastewater.

Our team members have been responsible for the design and installation of more than 500 Municipal well head systems over the course of 25 years and have introduced owners to leading vessel designs that have now become industry standards. **Our prior innovations are likely the basis of design for your project.**

- **California Manufactured —** Our dedicated facility in Redding, CA is **capable of fabricating and delivering the required pressure filter systems within the time frame required by our clients.** We also fabricate header pipe configurations for site-specific needs to reduce system installation time by lowering field costs to the general contractor.
- **Industry-Leading Systems —** Under the leadership of what was then US Filter, the best equipment and media designs were created, setting a precedent and becoming the industry standard in the last 15-20 years. That same team and experience is in place with AV and **we are ready to deliver the best in equipment design and innovation, production, installation and quality control in use today.**
- **California Class A General Engineering Contractor –** AV is a CA General Engineering Contractor (license number 1089449). Our clients can benefit from our design and fabrication capabilities while lowering installation costs by using our experienced field-service crews.

AV is a proven provider of high-quality bulk activated carbons and IX media applications, as well as offering turnkey media exchange services. Offering a wide range of products to address environmental purification needs, AV supplies filter media products and provided services meeting stringent industry standards (AWWA & NSF 61).

Michael Corbett, PE
Director of Engineering

Overview

Michael Corbett is an experienced, analytical engineering leader with engineering, technology management, product management, and project management experience. He has 30+ years using that experience to design, engineering, operate, and manage custom and standard water treatment equipment and systems for a variety of different technologies used in the industrial and high purity water markets. Mr. Corbett's in-depth product development, technical oversight, and management experience allow him to drive successfully drive product engineering activities. Mr. Corbett strives to consistently deliver high quality, reliable systems to meet the customer's specific treatment needs.

Education and Certifications

Mr. Corbett holds a BS in Mechanical Engineering from New Mexico State University.

Aqueous Vets® - Director of Engineering

- Mr. Corbett Leads the Project and Product Engineering teams responsible for delivery of products and systems for Aqueous Vets.
- Mr. Corbett manages engineering for tank fabrication and contaminate removal systems.

Relevant Past Experience

Global Technical Leader (Mechanical Engineering) – Xylem (Colorado Springs, Colorado)

- Responsible for the standardization of tools, processes, and training. Also performed as a technical consultant when troubleshooting the most technically challenging situations.

Product / Technology Manager – Evoqua Water Technologies (Colorado Springs, Colorado)

- Responsible for pilot testing of new technologies
- Responsible for product lifecycle management and engineering oversite of numerous products

Product Development Engineer – USFilter / Siemens Water Technologies (Colorado Springs, Colorado)

- Responsible for project management and mechanical engineering activities associated with development of new standard water treatment products for industrial waste, general industry, high purity, and pharmaceutical markets.

Systems Engineer – Allied Signal / Honeywell (NASA White Sands Test Facility, Las Cruces, New Mexico)

- Responsible for the management of 20 personnel performing operations and maintenance of the propulsion department facilities' water treatment systems, fuel/oxidizer systems, and much more.
- Responsible for the operation and maintenance of a variety of different fluid systems including water treatment and distribution systems.

Sarah Johnson
VP of Engineering

Overview

Ms. Johnson has 19 years of experience in the water treatment and infrastructure industry. She has held positions of responsibility encompassing group management, engineering, technical support, and project management. Her extensive knowledge base includes municipal and industrial water and wastewater treatment systems, water infrastructure, distribution systems, and environmental water issues as well as air treatment. As VP of Engineering, she oversees all aspects of Aqueous Vets® Product Development, Marketing, Applications Engineering, and Project Engineering functions.

Education

A graduate of Oregon State University, Ms. Johnson holds a BS in Chemical Engineering supplemented with course work in organizational management, project management, finance, regulatory compliance, safety, and human resources.

AqueoUS Vets® – Vice President of Engineering & Corporate Secretary

Aligning applications engineering, project engineering, product management, and marketing to deliver project execution that fuels strategic sales growth.

- Lead a cross-functional team of engineers and designers, overseeing both pre-sales applications engineering and post-sale project execution to ensure technical excellence and customer satisfaction.
- Guide marketing initiatives in alignment with sales strategy, including technical content development, product positioning, and go-to-market support.
- Champion continuous improvement across quoting, proposal generation, and project design workflows to boost efficiency and effectiveness.
- Develop and execute a strategic technology roadmap that aligns engineering capabilities with business objectives and market needs.
- Collaborate closely with Sales, Operations, and Finance to enhance internal coordination and deliver high-impact sales support.

Relevant Past Experience

Underground Solutions, Inc. – Director of Applications Engineering

- Directed Applications Engineering, Inside Sales, and Lead Generation departments.
- Managed and assigned all departmental teams for major project execution.
- Worked with Regional Sales Managers focusing on strong customer relationships.
- Developed and applied costing and design strategies; increasing project capture rates.
- Improved overall group efficiency through creation of new cross functional tools/procedures.
- Exercised oversight of customized CRM system.

Underground Solutions, Inc. – Senior Applications Engineer

- Chemical engineering lead for design of products for key project applications.
- Supported Regional Sales as primary technical contact during client development.
- Championed improved design strategies during early stages of project development to improve competitiveness and margins.
- Improved communication within and among work teams and direct reports to improve project execution.
- Developed and implemented companywide adoption of CRM, collaborative work tools, and internet presence.

Aaron Hart
Field Services Manager

Overview

An experienced service professional with 10 years in the municipal water, wastewater and environmental industries providing filter treatment technology services, Mr. Hart has held progressive responsibilities for the service side of the industry, from service technician to field service manager.

Mr. Hart has been in service roles, from technician to management for municipal and clean water applications for his entire career. He has been directly involved with all aspects of filter system equipment servicing, including media fills and change outs, disinfection, installation, and startups. As a manager, he oversaw schedule, inventory, safety, customer relations, fleet operations and personnel development for the Northern CA and NV markets.

Certifications

Mr. Hart is a licensed Class A driver with endorsements for T-Doubles-Triples, X-Combined Tank, and HAZ-MAT including current medical examiners certificate. He carries OSCA 20-Hr RSO, 40-Hr Hazwopr and Hazwopr supervisor, as well as TWIC cards.

Aqueous Vets® – Field Services Manager

Mr. Hart is the field services manager for Aqueous Vets and supports projects across the country. He is the technical lead for Aqueous Vets' service department, overseeing all aspects of field installation, media changeouts, and existing system rehabilitation activities.

Relevant Past Experience

Evoqua Water Technologies – Field Service Manager

- Schedule, manage and conduct all carbon slurry work Northern, CA and Pacific Northwest.
- Responsible for a safe working environment and culture, managing department budgets, day to day direction of fundamental tasks, personnel development, and inventory, fleet, and facilities management.
- Translate customer requirements into workforce plans and objectives.
- Financial contract and operations impact at a planning/strategic level.

Evoqua Water Technologies – Senior Field Service Technician

- Performed change out service on aqua and vapor carbon vessels.
- Performed installation and demobilization of customer remediation systems.

Siemens / Evoqua Water Technologies – Service Technician

- Transported hazardous materials while operating commercial vehicles.
- Operated equipment such as forklift, grade-all, scissor lift, man lift, and knuckle boom crane to offload materials and equipment.
- Maintained driver logs, manifests, bills of lading, and all necessary labels needed for the transfer and documentation of hazardous materials.
- Assisted on large slurry operations maintaining customer systems during both the removal and refill of carbon.

Gary Bruton
Field Superintendent

Overview

An experienced professional with close to 20 years in the municipal water, wastewater and environmental industries providing filter treatment technology services, Mr. Bruton has held progressive responsibilities for the service side of the industry, from field service technician to master field service technician to senior service manager.

Mr. Bruton has managed operations and field services during his career, including multiple branches and geographies. He has been directly involved with all aspects of filter system equipment servicing, including media fills and change outs, disinfection, installation, and startups. He supported and ensured compliance with safety and environmental policies within his areas of responsibility.

Education

Mr. Bruton is a military veteran having served 8 years in the US Coast Guard as a Petty Officer 2nd Class (E-5) receiving an honorable discharge upon completion of this service. Mr. Bruton is a technical college graduate with supplemental studies related to his Coast Guard career.

Aqueous Vets® – Field Superintendent

Mr. Bruton is the field superintendent for Aqueous Vets and is experienced with media changeouts, field installation, and rehabilitation of existing treatment systems. He is responsible for overseeing on-site activities, ensuring projects are completed safely, on schedule, within budget, and according to quality standards.

Relevant Past Experience

Evoqua Water Technologies – Sr. Service Manager

- Managed two service branches in the southwestern United States
- Coordinated all dispatching, scheduling, ordering, requisitions, job closings, payroll, technical support, and troubleshooting for client sites.
- Managed a $10M+ carbon and resin media inventory

Evoqua Water Technologies – Master Field Service Technician

- Regional field service technician covering Southern California.
- Provided field service-related tasks and job management including carbon and resin media fills, change outs, and service work.

Attachment D

References & Project Profiles

Project References

Project Name	Client	Scope of Work	Type of Media	Contract Vehicle	Flow Capacity	Constituents of Concern	Contact Information
DACE Benzene Treatment Plant	Golden State Water Company	Manufacture, deliver, and install three (2) PF 12-1240 LowPro® GAC systems with ~40,000 lbs of carbon per vessel.	Coal Carbon	Vessel Pre-Procurement	2.88 MGD	Benzene	Joe Farah, PE Golden State Water Capital Program Engineer Phone: 562-907-9200, x423 Cell: 310-579-7989 Email: Joe.Farah@gswater.com
Wells 11, 17, 34, 35, 37, 38 & 44: 1,2,3-TCP Removal	City of Tulare, CA	Design and Fabricate thirteen (13) 40,000-pound PF12-520 GAC Systems.	Coconut Carbon	Vessel Pre-Procurement	20.6 MGD	123-TCP	Eric Furtado City of Tulare Water and Wastewater Collections Utility Manager Phone: (559) 991-8479 Email: efurtado@tulare.ca.gov
Bremo Bluff Vessels for Enhanced Metals Removal	Ground/Water Treatment & Technology	Manufacture, deliver, and install three (3) PF 12-620 LowPro® GAC systems	Equipment-Only Project	Design Bid Build	4.8 MGD	Metals	Kevin Marchut Project Manager GWTT Phone: (800) 770-0901 Email: kmarchut@gwttllc.com
Veolia Emergency PFAS - Allendale, NJ	Veolia North America	Manufacture and deliver two (2) SF6-605 GAC system	Equipment-Only Project	Design Bid Build	0.7 MGD	PFAS	Hanna Giacomin Rose, PE Manager of Engineering VEOLIA North America Phone: (201) 250-5075 Email: hannah.giacomin@veolia.com
Anaheim Boysen Park Groundwater Treatment Plants	City of Anaheim	Manufacture, deliver, and install three (3) 12 ft. diameter vessel IX systems	Equipment-Only Project	Design Build	8.6 MGD	PFAS	Tom Visosky, PE CDM Smith Vice President Project Dev. - Construction Phone: (213) 457-2133 Cell: (213) 200-3903 visoskyta@cdmsmith.com
OCWD Yorba Linda PFAS Removal Centralized Treatment Plant	Yorba Linda Water District	Manufacture and deliver eleven (11) 12-foot diameter Ion Exchange Resin systems.	Equipment-Only Project	Vessel Pre-Procurement	25.0 MGD	PFAS	Chris Olsen Orange County Water District Director of Engineering Phone: (714) 378-3232 Email: colsen@ocwd.com
Wellhead Treatment: 1,2,3-TCP Remediation	Private CA Grower	Design, manufacture, and install thirteen (13) 40,000-pound GAC systems and all site piping.	Coconut Carbon	Design Bid Build	20.6 MGD	1,2,3-TCP	Kevin Berryhill Provost & Pritchard Owner's Rep & Project Manager Phone: (559) 449-2700 Email: kberryhill@ppeng.com
Per-Fluorinated Chemical Treatment System	City of Stuart, Florida	Design, fabricate, deliver, and install two (2) 12' diameter treatment systems with Ion Exchange resin for PFAS removal. Systems designed for 4 MGD plant when operating in series with expansion capacities of 8 MGD when operating in parallel.	Equipment-Only Project	Design Build	4 MGD	PFAS	Mark Miller Kimley Horn Project Manager & City Engineer Phone: (561) 840-0258 Email: Mark.Miller@kimley-horn.com

Project References

Project Name	Client	Scope of Work	Type of Media	Contract Vehicle	Flow Capacity	Constituents of Concern	Contact Information
Airline/Lambert & Picture Rocks WTP – Peroxide Quenching and PFAS Removal	Town of Marana, Arizona	Design, manufacture, and deliver four (4) 40,000-pound GAC systems	Coal Carbon	CMAR	6.3 MGD	PFAS and Peroxide Quenching	Paul Martinez Town of Marana Water Operations Manager Phone: (520) 382-2574 Email: pmartinez@MARANAAZ.GOV
1,2,3-TCP Mitigation Project	City of Reedley, CA	Design, manufacture, and deliver of five (5) 40,000-pound GAC Systems	Coconut Carbon	Design Bid Build	7.9 MGD	1,2,3-TCP	Russ Robertson City of Reedley Direct of Public Works Phone: (559) 637-4200 ext 213 Email: russ.robertson@reedley.ca.gov
Chino Basin VOC & 1,2,3-TCP Treatment Plant	City of Pomona, California	Design, fabricate, deliver and install four (4) 40,000-pound PF 12-520 systems, four (4) fabricated dual prefilter system assemblies, fabricate influent, effluent, backwash & bypass site header pipe, offloading and installation of LGAC equipment, prefilters assemblies, site header pipe, pressure testing, carbon installation, system start-up & commissioning and operator training. See installation video here: https://aqueousvets.com/video-library	Coal and Coconut Carbon	Design Build	6.3 MGD	1,2,3-TCP; VOC	Stephen Paz City of Pomona Water Production Supervisor Phone: (909) 802-7420 Email: stephen_paz@ci.pomona.ca.us
Nut Plains Well LGAC Treatment Plant	California American Water Company	Design, fabricate, deliver and install two (2) 40,000-pound PF 10-820 systems, fabricate influent, effluent, backwash site header pipe, offloading and installation of LGAC equipment, site header pipe, pressure testing, carbon installation, system start-up & commissioning, and operator training. See installation video here: https://aqueousvets.com/video-library	Coal Carbon	Design Build	2.2 MGD	PFAS	Walter E. Sadler, PE California American Water Manager, Engineering – Project Delivery Phone: (916) 568-4213 Email: Walter.Sadler@amwater.com
Camanche Reservoir TOC Removal Project	East Bay Municipal Utility District	Design, fabricate, and deliver 20,000-pound system for 1,000 GPM GAC system for TOC removal	Equipment-Only Project	Goods and Services	2.2 MGD	TOC	Andrew Enos East Bay Municipal Utility District Project Manager Phone: (510) 287-0273 Email: aenos@ebmud.com
Kernville TOC Removal Project	Cal Water	Design, Fabricate, Deliver and Commission one (1) 20,000-pound system for TOC removal	Coal Carbon	Design Bid Build	1.1 MGD	TOC	Jordan Dickson California Water Service Company Associate Engineer Phone: (661) 529-0548 Email: jdickson@calwater.com



TREATING UP TO 25 MILLION GALLONS PER DAY

OCWD Selects AV® to Build Nation's Largest Ion Exchange Treatment Plant for PFAS at YLWD

BACKGROUND

Established in 1933, the Orange County Water District (OCWD) is recognized globally as a leader in innovative water management, overseeing three of southern California's most critical water supplies: the Santa Ana River, Orange County Groundwater Basin, and the Groundwater Replenishment System. OCWD serves more than 2.5 million residents in north and central Orange County through 19 water agencies and is home to the Philip L. Anthony Water Quality Laboratory – the state's first public agency lab certified to analyze for per and polyfluoroalkyl substances (PFAS) in drinking water.

Following an adjustment to California's PFAS regulations in 2020, OCWD conducted a system-wide audit and found Perfluorooctanesulfonic acid (PFOA) and Perfluorooctanesulfonic sulfonate (PFOS) at levels exceeding advisory levels in the Orange County Groundwater Basin, which provides 77 percent of the total water supply throughout the district. OCWD moved swiftly to protect its residents and selected Aqueous Vets® (AV®) to build 27 LowPro® ion exchange (IX) resin systems for PFAS treatment.

Yorba Linda Water District (YLWD) in Placentia, CA received 11 of the 27 systems after detecting PFAS contamination in all 10 of its groundwater wells. Together with OCWD and Tetra Tech, AV provided design assistance, manufactured, and delivered a solution capable of treating up to 25 million gallons per day, making it the largest IX PFAS treatment plant in the nation.

PROJECT LOCATION
Yorba Linda, CA

PROJECT TIMEFRAME
June 2020 – July 2021

END USER
Yorba Linda Water District

DESIGN ENGINEER
Tetra Tech

PROJECT TYPE
Design, Manufacture, Supply

AV® SCOPE OF WORK
$3,850,000

GENERAL CONTRACTOR
Pacfic HydroTech Corporation

CONTACT AV SALES
sales@aqvets.com
(925) 331-0573

AqueoUS VETS®







KEY SYSTEM DESIGN & OPERATIONAL PARAMETERS	VALUE
Number of Systems/Vessels per System	11/2
Operating Configuration	Parallel/Lead-Lag
Media Capacity/Volume per Vessel	420 ft^3
Design Flow Rate (Per System/Total)	1,578 gpm/25 MGD
Hydraulic Loading	14.0 gpm/ft^2
Empty Bed Contact Time per Vessel	2.0 Minutes
Underdrain	Septa/External Ring Header
Overall System Height to Top of Pipe	14’-10”

AQUEOUS VETS® PROJECT SCOPE

AV designed, manufactured, and delivered eleven (11) PF12-520 LP® IX Resin Systems.

AqueoUSVETS®



TOWN OF MARANA PFAS REMOVAL TREATMENT PLANT

Airline/Lambert & Picture Rocks Campuses

BACKGROUND

In August of 2018, the Town of Marana Council voted unanimously to approve the design and construction of a water treatment facility at two sites in Marana Water found to contain the unregulated compounds PFAS and 1,4-dioxane. Although the EPA and state of Arizona do not currently apply a maximum contaminant level (MCL) for these compounds, the EPA does offer applicable health advisories. The project was carried out as a proactive measure to protect the community from adverse effects associated with chemical water contaminants.

PROJECT DETAILS

Carollo Engineers and Archer Western/Walsh Group began construction in January 2020, as part of a joint CMAR project to design and construct two water treatment facilities with UV/AOP and GAC treatment. Both plants, Picture Rocks and Airline/Lambert, reached operational status on March 12, 2021, staying largely on schedule despite supply challenges posed by the COVID-19 pandemic. Sampling results of the water introduced into the respective systems from both treatment facilities revealed successful removal of both of these non-regulated compounds.

The UV/AOP treatment removes 1,4-dioxane from the water and requires peroxide dosing to be successful. The GAC treatment removes the PFAS while acting as a post-treatment to the UV/AOP treatment to quench the peroxide.

PROJECT LOCATION
Marana, AZ

PROJECT TIMEFRAME
Dec. 2019 – March 2021

AV® SCOPE OF WORK
$1,500,000

GENERAL CONTRACTOR
Archer Western/Walsh Group

PROJECT TYPE
Design, Manufacture and Supply

PROJECT PHASE
Complete

END USER
Town of Marana

DESIGN ENGINEER
Carollo Engineers

CONTACT AV SALES
sales@aqvets.com
(925) 331-0573

AqueoUS VETS®





Airline Lambert Water Treatment Campus



Picture Rocks Water Treatment Campus

KEY GAC SYSTEM DESIGN & OPERATIONAL PARAMETERS	AIRLINE LAMBERT VALUE	PICTURE ROCKS VALUE
Number of Systems/Vessels per System	2/2	2/2
Operating Configuration	Parallel/Lead-Lag	Parallel/Lead-Lag
Carbon Capacity/Volume per Vessel	654 ft^3	654 ft^3
Media Type	Coal	Coal
Design Flow Rate per System	500 gpm	700 gpm
Hydraulic Loading	4.4 gpm/ft^2	6.2 gpm/ft^2
Empty Bed Contact Time per Vessel	9.8 Minutes	7.0 Minutes
Underdrain	Septa/External Ring Header	Septa/External Ring Header
Overall System Height to Top of Pipe	16′-0″	16′-0″

AQUEOUS VETS® PROJECT SCOPE

AV designed, manufactured and delivered four (4) PF12-520 GAC Systems (12-ft. diameter vessels GAC lead-lag pair for drinking water meeting NSF 61 standards).

AqueoUSVETS®

P26-0015 Hermiston Wells - 1,000-5,000 gpm - PFAS Treatment

Media Lifetime Estimates

AqueoUS VETS®
Experienced. Proven. Reliable.

29 January, 2026



AqueoUS Vets' Disclaimer

Media usage estimates are based on predictions for bulk diffusion, film diffusion, and pore diffusion based on field Rapid Small Scale Testing (RSSCT) data collected for the targeted contaminant and media combination. As each site presents unique water quality characteristics, the application of standard adsorption capacity values produces an estimate that may be affected by on-site conditions. For a more accurate representation of site-specific media lifetime, AqueoUS Vets' recommends conducting RSSCTs with site-specific water.

Input Data

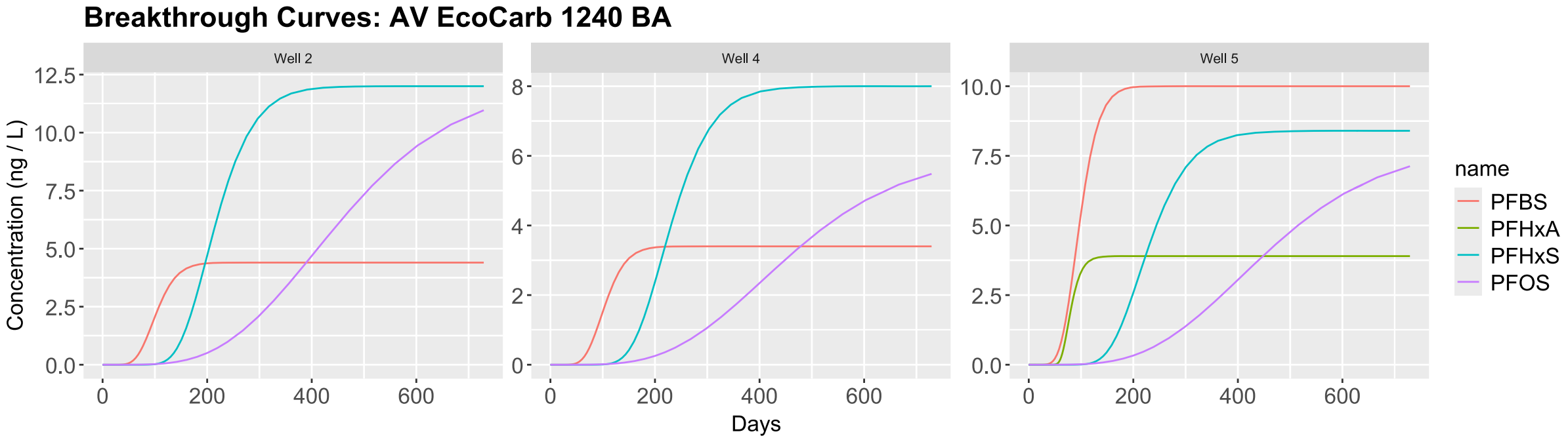
System Details

name	units	Well 2	Well 4	Well 5
# Systems	-	1	2	5
GAC volume (BW&D)	CF	1,337	1,337	1,337
length	ft	12	12	12
weight	lb	29797.45	29797.45	29797.45
flowrate	gpm	1000	1000	1000
diameter	ft	12	12	12

Influent Concentrations

compound	Well 2	Well 4	Well 5
PFBS	0.0044	0.0034	0.0100
PFHxS	0.0120	0.0080	0.0084
PFOS	0.0120	0.0060	0.0078
PFHxA	NA	NA	0.0039

Breakthrough Curves



Carbon Lifetime Estimates

Carbon lifetime estimates shown below represent the number of days it takes for the effluent from the lead vessel to reach 100% of the EPA's MCL for compound that first reaches such levels. These times assume virgin carbon, and 24 hours per day 7 days per week operation.

	Breakthrough Time (days)	Compound
Well 2	375	PFOS
Well 4	529	PFOS
Well 5	454	PFOS

Hi Kelsey,

Please see below design parameters based on the water quality for Well 5, Well 4, & Well 2.

Well 5 (5000 GPM System)

The following projections are based on the water quality in table 2 below. PFOS is the driver for throughput.

- We estimate a virgin lead bed will last 336,000 BV (which is approximately 1.3-years based on the design parameters below) when the lead bed hits 4ppt PFOS. See Table 1.

- The lag bed (assuming the lead bed has been in the lag position) will be at 492,000 BV (which is approximately 1.9-years based on the design parameters below) when the lag bed hits 3.9 ppt PFOS. See Table 1. This is repeatable throughput that can be expected (a virgin lead bed will last longer.)
    - It is more efficient to use resin at roughly 50% of the influent PFOS level as the endpoint criteria, so we have evaluated the vessel based on an effluent of 3.9 ppt PFOS on the lag bed.

Table 1: Design parameters for Well 5 (main well)

Design Parameters			
		Scenario 1 - Well #5	
		Virgin BV to break for Average Water quality ex a SINGLE vessel design	Repeatable BV to break for Average Water quality ex the LAG vessel of a lead-lag pair
Flow Rate	gpm	5,000	5,000
Number of Trains in Service		3	3
Vessel Diameter	feet	12	12
Flow per Vessel	gpm	1667	1667
Media Volume per vessel	cubic feet	446	446
Media Volume on site	cubic feet	2676	2676
Vessel Area	square feet	113.1	113.1
Bed Depth	feet	3.9	3.9
Linear Velocity	gpm/ft2	14.7	14.7
Specific Flow Rate	gpm/ft3	3.74	3.74
BV/h	BV/h	30.0	30.0
EBCT	minutes	2.0	2.0
Projected throughput for PFOS at	BV	336,000	492,000
Time at 24/7	days	467	683.90
Time at 24/7	years	1.3	1.9
Gallons treated		3,362,768,640	4,924,054,080

Table 2: Water quality for Well 5 (Main well)

Information Requested for PFAS Treatment					Ratings for BV based on resin volume in lead vessel with PFAS break as indicated below	
Customer	Aqueous Vets	Date rated:	28Jan2026AG			
Project: 632	Hermiston Well 5	Sample:				
Description			Influent Water		Contaminant Break measured ex LEAD Vessel at:	Contaminant Break measured ex LAG Vessel at:
PFA694E	Units		Average	<< Drop-Down List - Pick Avg. or Max.		
Operational Flow Rate	gpm		5000			
Operational Schedule	hour/day		18			
Daily Volume (average)	Gallons		5400000			
Sulfate	mg/L (ppm)		54.90			
Nitrate (as N)	mg/L as N		6.6			
Nitrate (as NO3)	mg/L as NO3					
Alkalinity (as CaCO3)	mg/L as CaCO3		275			
Chloride	mg/L (ppm)		44			
Fluoride	mg/L (ppm)		ND			
Perchlorate	µg/L (ppb)		ND			
Arsenate (As (V))	µg/L (ppb)		6			
Hexavalent chromium (chromate) Cr(VI)	µg/L (ppb)					
Uranium	µg/L (ppb)		7.5			
Calcium (as CaCO3)	mg/L as CaCO3		81.5			
Magnesium (as CaCO3)	mg/L as CaCO3		23.8			
Sodium	mg/L (ppm)		49.5			
Potassium	mg/L (ppm)		8.6			
Iron	mg/L (ppm)		ND			
Manganese	mg/L (ppm)		ND			
pH						
ORP						
TDS	mg/L (ppm)		459.0			
Suspended Solids	mg/L (ppm)		Assume ND			
Oil & Grease	mg/L (ppm)		Assume ND			
Total Organic Carbon TOC	mg/L (ppm)		1.38			
Perfluorobutanoic acid PFBA	ng/L (ppt)		ND			
Perfluoropentanoic acid PFPeA	ng/L (ppt)		ND			
Perfluorohexanoic acid PFHxA	ng/L (ppt)		3.9			
Perfluoroheptanoic acid PFHpA	ng/L (ppt)		ND			
Perfluorooctanoic acid PFOA	ng/L (ppt)		ND		4	4
Perfluorononanoic acid PFNA	ng/L (ppt)		ND			
Perfluorododecanoic acid PFDA	ng/L (ppt)		ND			
Perfluorotetradecanoic acid PFTeA	ng/L (ppt)		ND			
Perfluorobutanesulfonic acid PFBS	ng/L (ppt)		10			
Perfluorohexanesulfonic acid PFHxS	ng/L (ppt)		8.4			
Perfluoroheptanesulfonic acid PFHpS	ng/L (ppt)		ND			
Perfluorooctanesulfonic acid PFOS	ng/L (ppt)		7.8		4	4
4:2 FTS (fluorotelomer sulfonate) 4:2 FTS	ng/L (ppt)		ND			
6:2 FTS (fluorotelomer sulfonate) 6:2 FTS	ng/L (ppt)		ND			
8:2 FTS (fluorotelomer sulfonate) 8:2 FTS	ng/L (ppt)		ND			
GenX, C6H4F11NO3 GenX	ng/L (ppt)		ND			
VOC VOC	µg/L (ppb)		26			

Well 4 (2000 GPM System)

The following projections are based on the water quality in table 5 below. PFOS is the driver for throughput.

- We estimate a virgin lead bed will last 1132000 BV (which is approximately 4.3-years based on the design parameters below) when the lead bed hits 4ppt PFOS. See Table 3

- The lag bed (assuming the lead bed has been in the lag position) will be at 1103000 BV (which is approximately 4.2-years based on the design parameters below) when the lag bed hits 3.0 ppt PFOS. See Table 1. This is repeatable throughput that can be expected (a virgin lead bed will last longer.)
    - It is more efficient to use resin at roughly 50% of the influent PFOS level as the endpoint criteria, so we have evaluated the vessel based on an effluent of 3.0 ppt PFOS on the lag bed.

Table 3: Design parameters for Well 4 (2000 gpm system)

Design Parameters			
		Scenario 1 - Well #4	
		Virgin BV to break for Average Water quality ex a SINGLE vessel design	Repeatable BV to break for Average Water quality ex the LAG vessel of a lead-lag pair
Flow Rate	gpm	2,000	2,000
Number of Trains in Service		2	2
Vessel Diameter	feet	10	10
Flow per Vessel	gpm	1000	1000
Media Volume per vessel	cubic feet	268	268
Media Volume on site	cubic feet	1072	1072
Vessel Area	square feet	78.5	78.5
Bed Depth	feet	3.4	3.4
Linear Velocity	gpm/ft2	12.7	12.7
Specific Flow Rate	gpm/ft3	3.73	3.73
BV/h	BV/h	29.9	29.9
EBCT	minutes	2.0	2.0
Projected throughput for PFOS at	BV	1,132,000	1,103,000
Time at 24/7	days	1576	1535.50
Time at 24/7	years	4.3	4.2
Gallons treated		4,538,504,960	4,422,235,840

OR

The following projections are based on the water quality in table 5 below. PFOS is the driver for throughput.

- We estimate a virgin lead bed will last 1132000 BV (which is approximately 4.3-years based on the design parameters below) when the lead bed hits 4ppt PFOS. See Table 3

- The lag bed (assuming the lead bed has been in the lag position) will be at 1103000 BV (which is approximately 4.2-years based on the design parameters below) when the lag bed hits 3.0 ppt PFOS. See Table 1. This is repeatable throughput that can be expected (a virgin lead bed will last longer.)
    - It is more efficient to use resin at roughly 50% of the influent PFOS level as the endpoint criteria, so we have evaluated the vessel based on an effluent of 3.0 ppt PFOS on the lag bed.

Table 4: Design parameters for Well 4 (2000 gpm system)

Design Parameters			
		Scenario 2 - Well #4	
		Virgin BV to break for Average Water quality ex a SINGLE vessel design	Repeatable BV to break for Average Water quality ex the LAG vessel of a lead-lag pair
Flow Rate	gpm	2,000	2,000
Number of Trains in Service		1	1
Vessel Diameter	feet	12	12
Flow per Vessel	gpm	2000	2000
Media Volume per vessel	cubic feet	535	535
Media Volume on site	cubic feet	1070	1070
Vessel Area	square feet	113.1	113.1
Bed Depth	feet	4.7	4.7
Linear Velocity	gpm/ft2	17.7	17.7
Specific Flow Rate	gpm/ft3	3.74	3.74
BV/h	BV/h	30.0	30.0
EBCT	minutes	2.0	2.0
Projected throughput for PFOS at	BV	1,132,000	1,103,000
Time at 24/7	days	1573	1532.63
Time at 24/7	years	4.3	4.2
Gallons treated		4,530,037,600	4,413,985,400

Table 5: Water quality for Well 4 (2000 gpm System)

Description		Units	Influent Water		
			Min	Avg	Max
Operational Flow Rate		gpm	2000.0	2000.0	2000.0
Operational Schedule		hour/day	10.0	18.0	24.0
Daily Volume (average)		Gallons	1200000.0	2160000.0	2880000.0
Sulfate		mg/L		51.8	
Nitrate (as N)		mg/L as N		ND	
Nitrate (as NO3)		mg/L as NO3			
Alkalinity (as $CaCO_3$)		mg/L		159.0	
Chloride		mg/L		25.0	
Fluoride		mg/L		1.2	
Perchlorate		ppb		ND	
Arsenic		ppb		ND	
Hexavalent chromium		ppb			
Uranium		ppb		ND	
Calcium (as $CaCO_3$)		mg/L		13.9	
Magnesium (as $CaCO_3$)		mg/L		2.3	
Sodium		mg/L		89.9	
Potassium		mg/L		16.3	
Iron		mg/L		0.036	
Manganese		mg/L		ND	
pH					
ORP					
TDS		mg/L		308.0	
Suspended Solids		mg/L			
Oil & Grease		mg/L			
Total Organic Carbon	TOC	mg/L		ND	
Perfluorobutanoic acid	PFBA	ng/L (ppt)		ND	
Perfluoropentanoic acid	PFPeA	ng/L (ppt)		ND	
Perfluorohexanoic acid	PFHxA	ng/L (ppt)		ND	
Perfluoroheptanoic acid	PFHpA	ng/L (ppt)		ND	
Perfluorooctanoic acid	PFOA	ng/L (ppt)		ND	
Perfluorononanoic acid	PFNA	ng/L (ppt)		ND	
Perfluorododecanoic acid	PFDoDA	ng/L (ppt)		ND	
Perfluorotetradecanoic acid	PFTeA	ng/L (ppt)		ND	
Perfluorobutanesulfonic acid	PFBS	ng/L (ppt)		3	
Perfluorohexanesulfonic acid	PFHxS	ng/L (ppt)		8	
Perfluoroheptanesulfonic acid	PFHpS	ng/L (ppt)		ND	
Perfluorooctanesulfonic acid	PFOS	ng/L (ppt)		6	
4:2 FTS (fluorotelomer sulfonate)	4:2 FTS	ng/L (ppt)		ND	
6:2 FTS (fluorotelomer sulfonate)	6:2 FTS	ng/L (ppt)		ND	
8:2 FTS (fluorotelomer sulfonate)	8:2 FTS	ng/L (ppt)		ND	
GenX	GenX	ng/L (ppt)		ND	
VOC	VOC	ppb		51	

Well 2 (1000 GPM System)

The following projections are based on the water quality in table 7 below. PFOS is the driver for throughput.

- We estimate a virgin lead bed will last 613000 BV (which is approximately 2.3-years based on the design parameters below) when the lead bed hits 4ppt PFOS. See Table 6.

- The lag bed (assuming the lead bed has been in the lag position) will be at 920000 BV (which is approximately 3.5-years based on the design parameters below) when the lag bed hits 3.0 ppt PFOS. See Table 1. This is repeatable throughput that can be expected (a virgin lead bed will last longer.)
    - It is more efficient to use resin at roughly 50% of the influent PFOS level as the endpoint criteria, so we have evaluated the vessel based on an effluent of 4.0 ppt PFOS on the lag bed.

Table 6: Design parameters for Well 2 (1000 gpm system)

Design Parameters			
		Scenario 1 - Well #2	
		Virgin BV to break for Average Water quality ex a SINGLE vessel design	Repeatable BV to break for Average Water quality ex the LAG vessel of a lead-lag pair
Flow Rate	gpm	1,000	1,000
Number of Trains in Service		1	1
Vessel Diameter	feet	10	10
Flow per Vessel	gpm	1000	1000
Media Volume per vessel	cubic feet	268	268
Media Volume on site	cubic feet	536	536
Vessel Area	square feet	78.5	78.5
Bed Depth	feet	3.4	3.4
Linear Velocity	gpm/ft2	12.7	12.7
Specific Flow Rate	gpm/ft3	3.73	3.73
BV/h	BV/h	29.9	29.9
EBCT	minutes	2.0	2.0
Projected throughput for PFOS at	BV	613,000	920,000
Time at 24/7	days	853	1280.74
Time at 24/7	years	2.3	3.5
Gallons treated		1,228,844,320	1,844,268,800

Table 7: Water quality for Well 2 (1000 gpm System)

PFA694E		Units		Average
Operational Flow Rate		gpm		1000
Operational Schedule		hour/day		18
Daily Volume (average)		Gallons		1080000
Sulfate		mg/L (ppm)		50.40
Nitrate (as N)		mg/L as N		1.0
Nitrate (as NO3)		mg/L as NO3		
Alkalinity (as CaCO3)		mg/L as CaCO3		160
Chloride		mg/L (ppm)		25
Fluoride		mg/L (ppm)		1.2
Perchlorate		µg/L (ppb)		ND
Arsenate (As (V))		µg/L (ppb)		ND
Hexavalent chromium (chromate) Cr(VI)		µg/L (ppb)		
Uranium		µg/L (ppb)		ND
Calcium (as CaCO3)		mg/L as CaCO3		8
Magnesium (as CaCO3)		mg/L as CaCO3		0.882
Sodium		mg/L (ppm)		99.2
Potassium		mg/L (ppm)		14.6
Iron		mg/L (ppm)		0.0
Manganese		mg/L (ppm)		ND
pH				
ORP				
TDS		mg/L (ppm)		313.0
Suspended Solids		mg/L (ppm)		0
Oil & Grease		mg/L (ppm)		0
Total Organic Carbon	TOC	mg/L (ppm)		1.00
Perfluorobutanoic acid	PFBA	ng/L (ppt)		ND
Perfluoropentanoic acid	PFPeA	ng/L (ppt)		ND
Perfluorohexanoic acid	PFHxA	ng/L (ppt)		Nd
Perfluoroheptanoic acid	PFHpA	ng/L (ppt)		ND
Perfluorooctanoic acid	PFOA	ng/L (ppt)		ND
Perfluorononanoic acid	PFNA	ng/L (ppt)		ND
Perfluorododecanoic acid	PFDA	ng/L (ppt)		ND
Perfluorotetradecanoic acid	PFTeA	ng/L (ppt)		ND
Perfluorobutanesulfonic acid	PFBS	ng/L (ppt)		4.4
Perfluorohexanesulfonic acid	PFHxS	ng/L (ppt)		12
Perfluoroheptanesulfonic acid	PFHpS	ng/L (ppt)		ND
Perfluorooctanesulfonic acid	PFOS	ng/L (ppt)		12
4:2 FTS (fluorotelomer sulfonate)	4:2 FTS	ng/L (ppt)		ND
6:2 FTS (fluorotelomer sulfonate)	6:2 FTS	ng/L (ppt)		ND
8:2 FTS (fluorotelomer sulfonate)	8:2 FTS	ng/L (ppt)		ND
GenX, C6H4F11NO3	GenX	ng/L (ppt)		ND
VOC	VOC	µg/L (ppb)		40

APPENDIX D
Operator Classification Worksheet

Oregon Health Authority

Water System Treatment and Distribution Classification Worksheet

PWS Name: HERMISTON, CITY OF Date: 1/28/26

PWS ID#: 41 00372 PWS Type: C (C,NTNC,TNC,NP/SR)

WTP Name: REGIONAL WATER SYSTEM WTP ID: WTP-F DWP Staff: BILL GOSS

Classification: WT = 2 WD = 3 FE = YES

Item			Points	
Treatment system size (use population served or flow whichever is greater and round to lowest whole number)				
Population Srvd	1 pt per 10,000 (max 30), 1 if < 10,000	Pop = 20,000	*1 to 30*	
Avg Day Demand	1 pt per 1 mgd of flow (max 30), 1 if < 1 mgd	ADD = 5 MG	*1 to 30*	5
Treatment system water source				
Groundwater		GW	*3*	
Surface water or Groundwater Under the Influence of Surface Water		SW/GU	*5*	5
Chemical Treatment/Addition Process				
	Fluoridation		*5*	
	Disinfection:			
		Ultraviolet	*2*	
		UV with Chlorine Residual	*5*	
		Ammonia/Chloramination	*3*	
		Chlorine	*5*	5
		Mixed Oxidants	*7*	
		Ozonation (on-site generation)	*10*	
		Residual Maintenance	*N/A*	
pH Adjustment				
	Slaked-Quicklime (Calcium Oxide)		*5*	
	Hydrated Lime (Calcium Hydroxide)		*4*	
	All others (hydrochloric acid, sodium hydroxide, sulfuric acid, sodium carbonate)		*1*	
Coagulation & Flocculation Process				
	Chemical addition (1 point for each type of chemical coagulant or polymer added, maximum 5 points) ALUM, SUPERFLOC C357, US POLYMER 7700		*1 to 5*	3
Rapid Mix Units				
	Mechanical Mixers		*3*	
	Injection Mixers		*2*	
	In-line blender mixers (static mixers, etc.) STATIC INLINE MIXER		*2*	2
Flocculation Units				
	Hydraulic flocculators		*2*	
	Mechanical flocculators		*3*	
Clarification and Sedimentation Process				
	Adsorption clarifier		*10*	10
	Horizontal-flow (rectangular basins)		*5*	
	Horizontal-flow (round basins)		*7*	
	Up-flow solid contact sedimentation		*15*	
	Inclined-plate sedimentation		*10*	
	Tube sedimentation		*10*	
	Dissolved air flotation		*10*	
Filtration Process				
	Single media filtration		*3*	
	Dual or mixed media filtration		*5*	5
	Microscreens/Membrane filtration		*5*	
	Direct filtration		*5*	
	Diatomaceous earth filtration		*12*	
	Slow sand filtration		*5*	
	Cartridge/bag filters		*5*	
	Pressure or greensand filtration		*10*	

ADD = 250 gpcd x 29000 FROM 2019 MASTER PLAN

Oregon Health Authority

Water System Treatment and Distribution Classification Worksheet

PWS Name: HERMISTON, CITY OF

PWS ID#: 41 00372

WTP ID:

Item		Points	
Stability or Corrosion Control			
	Slaked-Quicklime (calcium oxide)	10	
	Hydrated Lime (calcium hydroxide)	8	
	Caustic soda (sodium hydroxide)	6	
	Orthophosphate	5	
	Soda ash (sodium carbonate)	4	
	Aeration: Packed tower, Diffusers	3	
	Calcite	2	
	Others: sodium bicarbonate, silicates	4	
Other Treatment Processes			
	Aeration - N/A - FOR TASTE/ODOR ONLY	3	
	Packed tower aeration	5	
*	Ion exchange/softening UNDER CONSIDERATION FOR PFAS	5	
	Lime-soda ash softening	20	
	Copper sulfate treatment	5	
*	Powdered activated carbon " " " "	5	
	Potassium permanganate	5	
	Special processes	15	
	Sequestering (polyphosphates)	3	
Residuals Disposal			
	Discharge to lagoons	5	
	Discharge to lagoons and then raw water source	8	8
	Discharge to raw water	10	
	Disposal to sanitary sewer	3	
	Mechanical dewatering	5	
	On-site disposal	5	
	Land application	5	
	Solids composting	5	
Facility Characteristics			
Instrumentation			
	The use of SCADA or similar instrumentation systems to provide data with no process control	1	
	The use of SCADA or similar instrumentation systems to provide data with partial process control	3	3
	The use of SCADA or similar instrumentation systems to provide data with complete process control	5	
Clearwell size less than average day design flow	**CW size (MG) =** 0.473 MG	5	5

L PEAK FLOW ~4 MGD, AVG DAY DESIGN FLOW ASSUMED TO BE >0.5 MGD

Total Points =>		51
Water Treatment Classification =>	WT-	2
Water Distribution Classification =>	WD-	3
Filtration Endorsement Required (Yes/No) =>	FE Req-	YES

Classification of water treatment plants and distribution systems:

Population =

WT Class	Points	WD Class	Population
Water Treatment 1	1 to 30	Water Distribution 1	1 to 1,500
Water Treatment 2	31 to 55	Water Distribution 2	1,501 to 15,000
Water Treatment 3	56 to 75	Water Distribution 3	15,001 to 50,000
Water Treatment 4	76 or more	Water Distribution 4	50,001 or more

Filtration Endorsement (FE) is an additional classification that applies when a water treatment plant is classified as a Water Treatment 2 (WT2) and uses conventional or direct filtration treatment to treat surface water or groundwater under the influence of surface water (i.e., FE endorsement required for WT2 operators, but not WT3 or higher).

Rev. 2/15/11 EH Rev. 8/24/16 to include FE changes - EH. Rev. 10/9/18 to add WTP ID, WTP Name, and CW size - EH.

APPENDIX B
Cursory PFAS Mitigation Evaluation Summary

CURSORY PFAS MITIGATION EVALUATION SUMMARY

FOR

CITY OF HERMISTON, OREGON

JUNE 2026

anderson perry

1901 N. Fir Street, La Grande, Oregon
214 E. Birch Street, Walla Walla, Washington
3818 S.W. 21st Street, Suite 302, Redmond, Oregon
243 E. Main Street, Suite C, Hermiston, Oregon
103 Highway 82, Suite F, Enterprise, Oregon

CURSORY PFAS MITIGATION EVALUATION SUMMARY

FOR

CITY OF HERMISTON, OREGON

2026



ANDERSON PERRY & ASSOCIATES, INC.

La Grande, Redmond, Hermiston, and Enterprise, Oregon
Walla Walla, Washington

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Table of Contents

Introduction **1**
Draft PFAS Water Treatment Feasibility Study **1**
Design Criteria **1**
Mitigation Alternatives **3**
Alternative 1 - Well No. 1 Reactivation 3
Advantages 4
Disadvantages 4
Capacity 4
Costs 4
Alternative 2 - Well No. 3 Reactivation 4
Advantages 5
Disadvantages 5
Capacity 5
Costs 6
Alternative 3 - Well No. 6 Utilization and Expansion 6
Advantages 7
Disadvantages 7
Capacity 7
Costs 8
Alternative 4 - Wells No. 2 and 4 Consolidation 8
Advantages 8
Disadvantages 8
Capacity 9
Costs 9
Alternative 5 - Minnehaha Springs Development 9
Advantages 10
Disadvantages 10
Capacity 10
Costs 10
Alternative 6 - Existing Regional Water Treatment Plant Expansion/Replacement 10
Advantages 11
Disadvantages 11
Capacity 12
Costs 12
Alternative 7 - New Regional Water System Treatment Plant 12
Advantages 13
Disadvantages 13
Capacity 13
Costs 13
Alternative 8 - Reverse Osmosis/Microfiltration PFAS Treatment 13
Advantage 14
Disadvantages 14
Capacity 14
Costs 14

Alternative 9 - DEXSORB® PFAS Treatment 14
Advantages 15
Disadvantages 15
Capacity 15
Costs 15
Alternative 10 - Aquifer Storage and Recovery 15
Advantages 16
Disadvantages 16
Capacity 17
Costs 17
Other Alternatives Considered 17
Conclusions 17

TABLES

Table 1 Summary of Design Criteria 2
Table 2 Alternatives Cost Summary 18

Introduction

This Cursory PFAS Mitigation Evaluation Summary provides an overview of available alternatives for mitigating per- and polyfluoroalkyl substances (PFAS) within the City of Hermiston, Oregon's drinking water supply in addition to the information presented in the draft 2026 PFAS Water Treatment Feasibility Study (Study) produced by Anderson Perry & Associates, Inc. (AP). As part of the initial monitoring phase of the U.S. Environmental Protection Agency's (EPA) PFAS compliance schedule, the City detected levels of PFAS exceeding the EPA's maximum contaminant levels (MCLs) in three of the City's water supply wells: Wells No. 2, 4, and 5. Combined, these sources represent the majority of the City's drinking water production. Consequently, the City must undertake efforts to address PFAS concentrations in the drinking water by either replacing the PFAS contaminated sources and/or providing treatment of the contaminated sources to remove PFAS. The draft Study evaluated the use of granular activated carbon (GAC), ion exchange (IX), and FLUORO-SORB® treatment systems for removing PFAS from the City's contaminated water supply sources. This Cursory PFAS Mitigation Evaluation Summary presents the results of a cursory evaluation of alternatives identified to mitigate the PFAS in the City's water system. Following this cursory evaluation, a detailed evaluation will be completed on the City-selected alternatives as part of the forthcoming PFAS Mitigation Feasibility Study and will include developing additional water sources along with the City-selected mitigation alternatives presented herein. Additionally, the PFAS Mitigation Feasibility Study will include alternative design criteria that utilize a dedicated irrigation system to reduce demands on the City's drinking water system.

Draft PFAS Water Treatment Feasibility Study

The draft Study evaluated the viability of several PFAS treatment technologies for removing PFAS from the City's three contaminated wells. The draft Study identified and evaluated four PFAS treatment alternatives: GAC, IX, FLUORO-SORB®, and reverse osmosis (RO). Due to the high capital and operational cost of RO, the draft Study primarily focused on GAC, IX, and FLUORO-SORB®. Also, due to the significant construction and annual operation, maintenance, and replacement (OM&R) costs associated with incorporating PFAS treatment with the City's contaminated wells, the draft Study recommended the City complete an additional evaluation for mitigating PFAS. This Cursory PFAS Mitigation Evaluation Summary is the first step in the additional evaluation. For more information regarding the PFAS water treatment alternatives, refer to the draft Study.

Design Criteria

The total water rights and production capacity of Wells No. 2, 4, and 5 (the City wells that tested positive for PFAS) constitute a significant proportion of the City's water supply. Together, the three wells have approximately 8,000 gallons per minute (gpm) of water rights, with a current pumping capacity of 6,700 gpm. The potential loss of this capacity due to PFAS contamination would be significant to the City. In addition to Wells No. 2, 4, and 5, the City's other water supply sources include Well No. 6 and the Regional Water Treatment Plant (RWTP), which is the potable water portion of the Regional Water System (RWS). Well No. 6 has a current water right and capacity of 1,781 gpm. The City has an allocation of 1,527 gpm of potable water from the RWTP. Historically, the City has used the RWTP as a backup supply source during times of high demands. Recently, the City began working on an aquifer storage and recovery (ASR) project that will utilize the RWTP for

the ASR recharge from October 1 to March 31 each year at a rate of 1,350 gpm. This essentially results in the City not having access to the RWTP source during this time period. If the City had all supply sources available, the total water supply pumping capacity would be just more than 10,000 gpm. With Wells No. 2, 4, and 5 unavailable due to PFAS contamination, the total water supply pumping capacity is just more than 3,300 gpm.

To determine the amount of water that needs to be treated and/or mitigated, the City's water system demands were evaluated to determine current and projected future design criteria. Historical water production data from the previous three years (2023, 2024, and 2025) were analyzed. The current 2026 and projected 20-year (2046) average day demands (ADD) and peak day demands (PDD) are presented on Table 1. A detailed summary of this evaluation will be presented in a forthcoming PFAS Mitigation Feasibility Study along with an evaluation of a dedicated irrigation system to offset peak demands.

TABLE 1
SUMMARY OF DESIGN CRITERIA

	Year 2026	Year 2046*
Population	20,492	24,837
ADD (gpcd)	200	200
ADD (gpd)	4,098,000	4,966,000
ADD (gpm)	2,850	3,450
PDD (gpcd)	665	665
PDD (gpd)	13,628,000	16,517,000
PDD (gpm)	9,460	11,470

gpcd = gallons per capita per day
gpd = gallons per day
** Assumes an average annual growth rate of 0.96 percent.*

Water supply systems are typically designed to meet the PDD. Based on Table 1, the City needs to have sufficient water supply capacity to provide 13,628,000 gpd in year 2026 and 16,517,000 gpd in year 2046. When utilizing pumps to supply water, it is recommended that the pumps are not operated more than 18 hours per day, resulting in additional capacity needed for the remaining six hours. Supply sources utilizing surface water can be operated for longer durations but typically require a treatment facility, which are also not recommended to be operated for more than 18 hours per day. Based on the recommended maximum 18 hours per day of operation, the City would need a total capacity of 12,620 gpm in year 2026 and 15,300 gpm in year 2046.

Currently, if the City utilized all of the water supply sources 24 hours per day for a total capacity of approximately 10,000 gpm, it still would not meet the estimated 2026 PDD needed supply capacity. The deficit increases as the supply sources are restricted to 18 hours per day operation and when the allocation of the RWS is removed. In the City's current state with Wells No. 2, 4, 5, and 6 in operation at a maximum of 18 hours per day, the City can provide an equivalent of approximately 6,360 gpm or 9,158,400 gpd. With the potential loss of Wells No. 2, 4, and 5 due to PFAS contamination, the only active potable water supply source available to the City is Well No. 6 at an equivalent flow of 1,335 gpm or 1,923,480 gpd. For the purposes of this Cursory PFAS Mitigation Evaluation Summary, when discussing capacity deficiency, the difference between the

estimated year 2046 requirement of 16,517,000 gpd and Well No. 6 capacity of 1,923,480 gpd (deficit of 14,593,520 gpd) will be utilized.

Mitigation Alternatives

The following presents a brief summary of the cursory evaluation of the PFAS mitigation alternatives identified for the City's water system. A description of each alternative; how it can be utilized to mitigate PFAS in the City's water system; a list of advantages and disadvantages; preliminary project improvements; OM&R; and 20-year present worth cost estimates, potential water supply capacity, and the potential percent improvement in pumping capacity are presented.

The potential water supply capacity presented is based on available water rights and/or water allocations, operating limitations, sharing of water rights, potential for development of water rights and/or allocations, etc. Where ranges of potential water supply capacity are provided herein, the intent is to provide the minimum and maximum potential supply based on the various limitations. The potential pumping improvement capacity percentage is based on the potential water pumping capacity of the alternative compared to the anticipated deficit outlined in the Design Criteria section above.

The preliminary cost estimates are presented as a range based on the information available. The cost estimates will likely change as the evaluation progresses. The estimated project improvements cost includes preliminary, design, and construction engineering at approximately 20 percent of the estimated construction costs. The 20-year present worth costs are presented in 2026 dollars and assume an increase of 5 percent annually for the OM&R costs.

Alternative 1 - Well No. 1 Reactivation

The City's existing Well No. 1 is a basalt well originally constructed in 1924 to a depth of 450 feet. The well draws from the same aquifer as Well No. 6, which has tested below the EPA's MCLs for PFAS. Therefore, it is possible that Well No. 1 also has PFAS levels below the MCL. The water right for Well No. 1 has a capacity of 448 gpm. However, this water right was modified in 1991 to include Well No. 6 as an additional Point of Appropriation (POA). Consequently, the 448 gpm limit is shared between the two wells. Wells No. 1 and 6 may be operated simultaneously or individually, provided their combined output does not exceed the 448 gpm threshold (not accounting for other water rights associated with Well No. 6). Well No. 1 is currently inactive and capped with concrete.

Reactivating Well No. 1 could potentially offer the City additional flexibility in managing its water supply. However, the increased capacity of the well is limited, both related to its original production capacity and the shared water right with Well No. 6. Well No. 1 is located in Pressure Zone No. 1 (Main Pressure Zone), which supplies the majority of the population and is where the PFAS contaminated wells are located. Well No. 6 is located in Pressure Zone No. 3 (Well No. 6) and is the only supply source in the pressure zone. Reactivating Well No. 1 could provide the City with a potentially PFAS-free water source within Pressure Zone No. 1 (Main Pressure Zone), offsetting 448 gpm of the PFAS contaminated supply sources.

The following provides advantages and disadvantages of the alternative along with the associated estimated capacity and costs.

Advantages

- Adds pumping capacity to the system by reactivating an additional POA.
- Anticipated to not require treatment other than chlorination.
- Potential to utilize existing infrastructure.

Disadvantages

- Unknown PFAS concentrations and water quality. This makes it difficult to determine what treatment may be required, if any.
- Difficult to determine water quality due to the existing well having been capped with concrete. Obtaining samples would require removing the concrete cap and installing a pump along with temporary power, at a minimum.
- Prior to collecting water quality samples, a pump test is recommended to be completed to flush the well.
- Unknown well condition. Rehabilitation or drilling a new well may be needed to supply the full capacity associated with Well No. 1.
- No increase in total system capacity. Well No. 6 is presently utilizing the water right associated with Well No. 1.
- Limited supply capacity.
- No existing reservoir to provide chlorine contact time.

Capacity

- Potential Water Supply: 161,280 gpd (assumes Well No. 6 utilizes the water right 18 hours per day)
- Potential Pumping Capacity Improvement: 1.1 percent (161,280 gpd/ 14,593,520 gpd)

Costs

- Estimated Project Improvements Cost: $1,300,000 to $2,000,000
- Estimated Annual OM&R Cost: $60,000 to $84,000
- Estimated 20-year Present Worth Cost: $2,000,000 to $3,000,000

Alternative 2 - Well No. 3 Reactivation

The City's existing Well No. 3 is an inactive 962 feet deep basalt well that was constructed in 1954. The well is located in the same aquifer as Well No. 6, which has tested below the EPA's MCLs for PFAS. It is anticipated that Well No. 3 may also have PFAS concentrations below the MCL. In 1991, a new POA was added to the water right for Well No. 3, allowing the rights to be utilized at Well No. 6. The water right associated with Well No. 3 has a capacity of 1,000 gpm. The addition of Well No. 6 as a POA to the Well No. 3 water right restricts the combined output

of both wells to the water right capacity to 1,000 gpm (not accounting for other water rights associated with Well No. 6). Well No. 3 is equipped with a 40 horsepower line shaft turbine pump, which has been partially disassembled and is currently nonoperational.

Reactivating Well No. 3 would provide the City with additional flexibility in managing its water supply. However, the increased capacity of the well is limited, both related to its original production capacity and the shared water right with Well No. 6. Well No. 3 is located in Pressure Zone No. 1 (Main Pressure Zone), which supplies the majority of the population and is where the PFAS contaminated wells are located. However, Well No. 6 is located in Pressure Zone No. 3 (Well No. 6) and is the primary supply source for the pressure zone. Reactivating Well No. 3 could provide the City with a potentially PFAS-free water source in Pressure Zone No. 1 (Main Pressure Zone), and offset up to 1,000 gpm of PFAS-contaminated supply sources.

The following provides advantages and disadvantages of the alternative along with the associated estimated capacity and costs.

Advantages

- Adds redundancy to system by reactivating an additional POA.
- Use of existing infrastructure.
- Anticipated to not require any treatment other than chlorination.

Disadvantages

- Unknown PFAS concentrations and water quality (located in an area of known PFAS groundwater contamination).
- Difficult to determine water quality due to the decommissioned state of the well. The well pump is missing components and would require electrical and mechanical repairs, at a minimum, before testing of the water quality could be completed.
- Prior to collecting water quality samples, a pump test is recommended to be completed to flush the well. Completing a pump test would be difficult as there is limited area to dispose of water from the pump test. An existing small tank at the Well No. 3 site could be used for testing; however, multiple rounds of filling and draining would be required to complete the pump test.
- No increase in total system capacity. Well No. 6 is presently utilizing the water rights associated with Well No. 3.

Capacity

- Potential Water Supply Capacity: 360,000 gpd (assumes Well No. 6 utilizes the water right 18 hours per day)
- Potential Pumping Capacity Improvement: 2.5 percent (360,000 gpd/ 14,593,520 gpd)

Costs

- Estimated Project Improvements Cost: $600,000 to $900,000
- Estimated Annual OM&R Cost: $67,000 to $100,000
- Estimated 20-year Present Worth Cost: $1,400,000 to $2,200,000

Alternative 3 - Well No. 6 Utilization and Expansion

The existing Well No. 6 is a basalt well currently utilized by the City as a drinking water source. The well was constructed in 1990 to a depth of 1,500 feet, and water quality testing indicates that PFAS concentrations are below the EPA's MCLs. The City has water rights for a total of 1,781 gpm. Of this total, 332 gpm are held in a water right exclusively for Well No. 6. The remaining 1,449 gpm is available through the Wells No. 1 and 3 water rights, from which Well No. 6 was added as a POA. Well No. 6 has been developed to utilize the full 1,781 gpm water right maximum flow allowance.

Well No. 6 production varies significantly throughout the year. Summer months frequently see the well operate for 12 hours daily while winter months see significantly lower usage. Well No. 6 typically serves users in Pressure Zone No. 3 (Well No. 6). However, water from Well No. 6 can be conveyed to Pressure Zone No. 1 (Main Pressure Zone) through an existing pressure reducing valve station to help mitigate the PFAS-contaminated water sources. Based on the recommended 18 hours per day usage and current operation of up to 12 hours per day, Well No. 6 could theoretically provide six hours of additional water supply. The additional water supply could be conveyed to Pressure Zone No. 1 (Main Pressure Zone) at 1,781 gpm or 641,160 gpd.

Well No. 6 increased water production capacity may also be possible by adding Well No. 6 as a new POA to other existing City water rights. Wells No. 2 and 4 are both basalt wells located near Well No. 6. If all three wells are confirmed by OWRD to be located in the same aquifer, Well No. 6 could be added as a new POA to the rights for Wells No. 2 and 4, similar to Wells No. 1 and 3. This could increase the available allocation at Well No. 6 by 3,000 gpm and allow the City to utilize the existing water rights for Wells No. 2 and 4 without requiring PFAS treatment. However, significant differences in static water level between all three of the wells may indicate that they are not located in the same aquifer. An in-depth assessment would be required to accurately determine if adding new POAs is possible. This would require a hydrogeologic investigation and, if it is determined that the wells are in the same aquifer, submitting a transfer application to the Oregon Water Resources Department (OWRD). Expanding Well No. 6 production could potentially allow the City to offset up to six hours per day of PFAS-contaminated supply sources without any mechanical improvements. Utilizing the water rights for Wells No. 2 and 4 at Well No. 6 could potentially allow the City to offset up to 3,000 gpm of PFAS-contaminated supply sources.

The following provides advantages and disadvantages of the alternative along with the associated estimated capacity and costs.

Advantages

- Groundwater source, anticipated to not require treatment beyond chlorination.
- Large increase in capacity of water with current PFAS concentrations below MCLs.
- Can immediately provide water with current PFAS concentrations below MCLs to Pressure Zone No. 1 (Main Pressure Zone).
- The City's current ASR project may raise aquifer water levels and improve the Well No. 6 production capacity.

Disadvantages

- Well No. 6 may not be physically capable of producing the increased capacity. If the City's current ASR project does improve the aquifer water levels, this capacity concern may be reduced.
- Would not increase total system capacity. Expansion would only increase the output of water with current facilities producing water below PFAS MCLs.
- Adding new POAs may not be possible if it is determined that the wells do not draw from the same aquifer.
- Loss in efficiency while supplying Pressure Zone No. 1 (Main Pressure Zone). Water pressure would be boosted into Pressure Zone No. 3 (Well No. 6), then reduced in pressure through the pressure reducing valve station into Pressure Zone No. 1 (Main Pressure Zone).
- Potential for increased PFAS concentrations in Well No. 6. The more production capacity is pulled from Well No. 6, the more potential there is for PFAS concentrations to increase in the well. With Wells No. 2 and 4 testing for PFAS at levels higher than the MCLs and their potential to be in the same aquifer as Well No. 6, there is potential for Well No. 6 to test for PFAS over the MCLs.
- Additional demand on Well No. 6 could result in a quicker decline in aquifer levels (if the City's ASR project does not raise aquifer static water levels).
- An additional well may need to be drilled near Well No. 6 to develop increased production capacity.

Capacity

- Potential Water Supply Capacity: 641,160 gpd (with existing water right) to 3,881,160 gpd (with potential water rights transfer and improved Well No. 6 capacity)
- Potential Pumping Capacity Improvement with Existing Water Right: 4.4 percent (641,160 gpd/14,593,520 gpd) (with existing water rights) to 26.6 percent (3,881,160 gpd/14,593,520 gpd) (with potential water rights transfers and improved Well No. 6 capacity)

Costs

- Estimated Project Improvements Cost: $1,000,000 to $1,500,000
- Estimated Annual OM&R Cost: $205,000 to $308,000
- Estimated 20-year Present Worth Cost: $3,500,000 to $5,300,000

Alternative 4 - Wells No. 2 and 4 Consolidation

The draft Study proposed individual water treatment plants for each well with PFAS levels exceeding the EPA's MCLs (Wells No. 2, 4, and 5). While consolidating treatment plants has the potential to reduce treatment equipment costs, this approach was not considered because the cost of constructing transmission lines to connect the well sites would be prohibitive. However, there is potential to consolidate the treatment plants proposed for Wells No. 2 and 4 without the need to construct a transmission line.

Wells No. 2 and 4 are both basalt wells located in close proximity to each other. If the wells are located in the same aquifer, Well No. 4 could be added as a new POA to the rights for Well No. 2. This new POA would allow Well No. 4 to draw an amount equal to the combined water rights of Wells No. 2 and 4, for a total of approximately 3,000 gpm. A single water treatment plant for PFAS removal could then be constructed at the site of Well No. 4. Alternatively, a new POA could be added to the Well No. 4 water right and a water treatment facility constructed at the site of Well No. 2. However, significant differences in static water levels between Wells No. 2 and 4 may indicate that they are not located in the same aquifer. An in-depth assessment would be required to accurately determine if adding new POAs are possible. This would require a hydrogeologic investigation and, if the wells are determined to be in the same aquifer, submitting a transfer application to OWRD. Consolidating the proposed water treatment plants for Wells No. 2 and 4 could allow for the existing capacity of the wells to be maintained within their existing pressure zone while simplifying maintenance and potentially reducing equipment costs.

The following provides advantages and disadvantages of the alternative along with the associated estimated capacity and costs.

Advantages

- Maintains existing capacity of Wells No. 2 and 4 within their existing pressure zone.
- Simplifies maintenance by consolidating equipment at a single site.

Disadvantages

- Requires PFAS treatment and handling and disposal of PFAS waste.
- Adding new POAs may not be possible if it is determined that the wells do not draw from the same aquifer.
- Neither Well No. 2 nor 4 may be physically capable of providing the increased capacity.

- Additional demand on a single well could result in a quicker decline in the aquifer level.
- The more production capacity is pulled from the wells, the potential for PFAS concentrations to rise in the wells increases.

Capacity

- Potential Water Supply Capacity: 3,240,000 gpd
- Potential Pumping Capacity Improvement: 22.2 percent (3,240,000 gpd/ 14,593,520 gpd)

Costs

- Estimated Project Improvements Cost: $6,100,000 to $9,100,000
- Estimated Annual OM&R Cost: $214,000 to $320,000
- Estimated 20-year Present Worth Cost: $8,700,000 to $13,100,000

Alternative 5 - Minnehaha Springs Development

The City has a surface water right permit for the undeveloped Minnehaha Springs located southwest of the City. The City has completed initial water quality testing on the springs and results show PFAS levels below detectable levels. Minnehaha Springs is a large potential water source with a water right allowance of 3,140 gpm. The undeveloped springs emerge from the ground on non-City owned property adjacent to City-owned property that the water flows across.

To utilize the water from Minnehaha Springs, the construction of a new water treatment plant would be required in addition to an approximately 1 mile long transmission line connecting the treatment plant to the City's distribution system. The City's water right permit classifies the springs as a surface water source. While this classification allows water to be collected underground, groundwater treatment standards would not be sufficient to satisfy regulatory requirements. To qualify as a groundwater source, the spring water must be collected at the point where it naturally emerges from the ground. Since the source emerges outside of City-owned property, this approach is not feasible. As a result, the source would require treatment to surface water standards. Preliminary water quality testing indicates high nitrate concentrations near the EPA MCL of 10 milligrams per liter. Before construction of a new water treatment plant, monitoring nitrate concentrations is recommended. If it is determined that there is a risk of nitrate concentrations exceeding the EPA MCL, treatment facilities capable of removing nitrate from the water supply would be required. Additionally, total coliform concentrations at Minnehaha Springs are high and will need to be addressed.

Data regarding the surface water flow of the springs is limited to measurements collected throughout the 1980s. These data indicate widely varying flow rates ranging from a low of 1,122 gpm to a high of 3,500 gpm. Flow rates exceeded the full 3,141 gpm water right only 20 percent of the time, with typical flow rates ranging between 1,122 and 2,693 gpm throughout the year. To reach the 3,141 gpm reliably, it would likely be necessary to construct an

underground collection system of perforated pipes. Utilizing water from Minnehaha Springs through the construction of a new water treatment plant could potentially allow the City to utilize the water right allowance up to 3,141 gpm to offset PFAS-contaminated supply sources.

The following provides advantages and disadvantages of the alternative along with the estimated capacity and costs associated with the alternative.

Advantages

- Existing permitted water right allocated to the City.
- Reduction in dependence on existing water rights without PFAS.
- Could offset a significant portion of PFAS-contaminated supply.

Disadvantages

- Available capacity may be unreliable.
- Remote location.
- New transmission line required to connect with City distribution system.
- May be susceptible to contamination from runoff.
- High susceptibility to drought conditions impacting production rate.
- High nitrate concentrations requiring treatment.
- High total coliform concentrations requiring treatment.

Capacity

- Potential Water Supply Capacity: 3,392,280 gpd
- Potential Pumping Capacity Improvement: 23.2 percent

Costs

- Estimated Project Improvements Cost: $11,700,000 to $17,600,000
- Estimated Annual OM&R Cost: $406,000 to $609,000
- Estimated 20-year Present Worth Cost: $16,800,000 to $25,200,000

Alternative 6 - Existing Regional Water Treatment Plant Expansion/Replacement

The RWS provides the City and other users with potable and non-potable water from the Columbia River. The RWS has a total Columbia River allocation of 27,000 gpm, with approximately 19,432 gpm currently developed. The existing system is limited to 22,000 gpm of the 27,000 gpm due to headloss associated with the existing transmission line between the River Intake Pump Station and the existing RWTP. Potable water is produced at the RWTP with a total capacity of 2,800 gpm. Currently, the City holds a total RWS allocation of 7,000 gpm. Of this allocation, 1,527 gpm is developed potable water and 780 gpm is developed non-potable

water. The remaining 4,720 gpm of the City's allocation is undeveloped. The City is currently in the process of constructing an ASR project that will utilize the majority of the City's RWTP allocation for recharge from October 1 to March 31 each year. Water quality testing indicates that water from the RWS has PFAS concentrations below the EPA's MCLs.

As noted, the total RWS allocation from the Columbia River is 27,000 gpm, with 19,432 gpm currently developed, and the City holding 4,720 gpm of the RWS undeveloped water allocations. Two upcoming in-stream lease terminations could allow for the total allocation to increase by nearly 36,906 gpm and create opportunities for the City to increase its allocation. Approximately 2,658 gpm could be developed based on the current system capacity of 22,000 gpm before improvements to the transmission line and/or the supply system would be required. Refer to the draft 2026 RWS Master Plan (RWSMP) for the various improvement alternatives to increase system capacity beyond the current capacity of 22,000 gpm.

The existing RWTP has a capacity of 2,800 gpm but only the City's allocation of 1,527 gpm is being utilized. This leaves 1,273 gpm of capacity potentially available. However, this available capacity is currently allocated to other users and the City would have to work with the Port of Umatilla to obtain additional allocations for the City's utilization. There are also concerns related to the capacity of the existing treatment system. Any increase above the design capacity of 2,800 gpm would require expansion or replacement of the existing RWTP. As outlined in the draft RWSMP, due primarily to the age of the system, if the capacity of the RWTP is expanded, it is recommended that the existing system be replaced with an entirely new treatment system. The City could work with the Port of Umatilla to develop the City's undeveloped allocation and/or secure additional water allocation. The City could then work with other users on the RWS to complete improvements to the supply/transmission line and potable water system to replace the RWTP with a new water treatment system capable of meeting the City's and other users' needs.

The following provides advantages and disadvantages of this alternative along with the associated estimated capacity and costs.

Advantages

- Known water quality.
- Could significantly increase total system capacity.
- Potential to utilize existing infrastructure with minimal improvements for small increase in supply (i.e., utilize full capacity of existing RWTP).

Disadvantages

- Likely requires improvements to the supply/transmission line system and construction of a new water treatment system.
- Requires authorization from the Port of Umatilla for allocation of water.

Capacity

- Potential Water Supply Capacity: 1,374,840 gpd (utilizing full capacity of existing RWTP) to 8,173,440 gpd (development of remaining 27,000 gpm allocation)
- Potential Pumping Capacity Improvement: 9.4 percent (1,374,840 gpd/ 14,593,520 gpm) (utilizing full capacity of existing RWTP) to 56.0 percent (8,173,440 gpd/14,593,520 gpm) (development of remaining 27,000 gpm allocation)

Costs

- Estimated Project Improvements Cost: $16,400,000 to $24,500,000
- Estimated Annual OM&R Cost: $534,000 to $800,000
- Estimated 20-year Present Worth Cost: $23,000,000 to $34,500,000

Alternative 7 - New Regional Water System Treatment Plant

As described in Alternative 6, the RWS provides the City and other users with potable and non-potable water from the Columbia River. The total RWS allocation across all users is 27,000 gpm, with 19,432 gpm currently developed. The existing system is limited to 22,000 gpm of the 27,000 gpm due to headloss associated with the existing transmission line between the River Intake Pump Station and the existing RWTP. Potable water is produced at the RWTP with a total capacity of 2,800 gpm. Currently, the City holds a total RWS allocation of 7,000 gpm. Of this allocation, 1,527 gpm is developed potable water and 780 gpm is developed non-potable water. The remaining 4,720 gpm of the City's allocation is undeveloped. Currently, the City is in the process of constructing an ASR project that will utilize approximately 1,350 gpm of the City's 1,527 gpm RWTP allocation for recharge from October 1 to March 31 each year. Two upcoming in-stream lease terminations could allow for the total allocation to increase by nearly 35,906 gpm and provide opportunities for the City to increase its allocation. Water quality testing indicates that water from the RWS has PFAS concentrations below the EPA's MCLs.

With the City's undeveloped allocation of 4,700 gpm, there is an option for constructing a new water treatment plant separate from the existing RWTP. This new water treatment plant could be constructed on City-owned property located south of the Hermiston Recycled Water Treatment Plant. This property is adjacent to the RWS transmission line and a 12-inch ductile iron City water main. The new water treatment plant could tap into the RWS transmission line, treat the water, and supply water directly to the City distribution system without requiring extensive new transmission lines. The 22,000 gpm capacity limit of the RWS transmission line would cause some challenges when trying to increase the RWS capacity. However, by locating a new water treatment plant "upstream" of the existing RWTP, it is anticipated that the capacity of the RWS transmission line could be slightly increased above the 22,000 gpm limit.

The following provides advantages and disadvantages of the alternative along with the associated estimated capacity and costs.

Advantages

- Known water quality.
- Could significantly increase total system capacity.
- Provides water supply source utilizing existing RWS transmission infrastructure capacity.
- Potential proximity and utilization of existing City water distribution system.
- Operational efficiencies with proximity to existing City facilities.

Disadvantages

- Likely requires improvements to the supply/transmission line system to produce the City's undeveloped allocation of 4,700 gpm.
- Would only serve the City, and the City would be responsible for all improvement and operational costs.

Capacity

- Potential Water Supply Capacity: 5,076,000 gpd (utilizing City's undeveloped 4,700 gpm allocation) to 8,173,440 gpd (development of remaining 27,000 gpm allocation)
- Potential Pumping Capacity Improvement: 34.8 percent (5,076,000 gpd/ 14,593,520 gpm) (utilizing City's undeveloped 4,700 gpm allocation) to 56.0 percent (8,173,440 gpd/14,593,520 gpm) (development of remaining 27,000 gpm allocation)

Costs

- Estimated Project Improvements Cost: $16,600,000 to $24,800,000
- Estimated Annual OM&R Cost: $586,000 to $878,000
- Estimated 20-year Present Worth Cost: $23,900,000 to $35,800,000

Alternative 8 - Reverse Osmosis/Microfiltration PFAS Treatment

Reverse osmosis (RO) and microfiltration (MF) are treatment processes involving the use of a semi-permeable membrane to remove contaminants from water. RO and MF function similarly with the primary difference being membrane size. RO features smaller pores than MF and has higher utility and equipment costs due to the high pressures required to force water through the membrane. MF can reach similar levels of PFAS removal to RO; however, has lower OM&R and capital costs due to differences in membrane designs and pumping requirements. RO was briefly investigated as a possible treatment alternative in the PFAS Water Treatment Feasibility Study. It was eliminated early in the research process due to its high capital costs and operational complexity. However, given the high OM&R costs associated with the other alternatives outlined in the draft PFAS Water Treatment Feasibility Study, RO and MF were investigated further to determine if the OM&R costs are competitive with the other alternatives.

RO or MF treatment plant facilities could be constructed at any combination of the PFAS-contaminated well sites. However, due to the high capital costs and complexity, it may be more cost-effective to construct a single facility at Well No. 5 and use alternative sources to adjust for the loss of capacity from Wells No. 2 and 4.

Both RO or MF produce waste concentrate. With an estimated recovery rate of 85 percent, over 1.7 million gallons per day of waste concentrate could be generated during PDDs. Disposal of the waste concentrate could create operational difficulties. Discharge to a wastewater treatment plant is typically an acceptable method of disposal. However, this could impact wastewater treatment operation and any future wastewater restrictions on PFAS may render this approach unfeasible. Other disposal methods of the PFAS waste concentrate require additional treatment processes. These additional treatment processes would drive capital and OM&R costs higher and increase operational complexity to an already complex system.

The following provides advantages and disadvantages of the alternative along with the associated estimated capacity and costs associated with the alternative.

Advantage

- No media replacement required.

Disadvantages

- High utility costs.
- PFAS rich concentrate management difficulties. Any potential savings on media replacement may be outweighed by concentrate treatment costs.

Capacity

- Potential Water Supply Capacity: 5,400,000 gpd (treating Well No. 5 only) to 8,640,000 gpd (treating Well No. 2, Well No. 4, and Well No. 5)
- Potential Pumping Capacity Improvement: 37.0 percent (5,400,000 gpd/ 14,593,520 gpm) (treating Well No. 5 only) to 59.2 percent (8,640,000 gpd/ 14,593,520 gpm) (treating Wells No. 2, 4, and 5)

Costs

- Estimated Project Improvements Cost: $17,400,000 to $26,100,000
- Estimated Annual OM&R Cost: $857,000 to $1,286,000
- Estimated 20-year Present Worth Cost: $28,100,000 to $42,100,000

Alternative 9 - DEXSORB® PFAS Treatment

DEXSORB® is a novel PFAS treatment technology using a pressure filter system with a corn-based adsorbent media. PFAS is adsorbed into the surface of the media particles and is removed with occasional removal/replacement of filter media. DEXSORB's primary advantages

are low sensitivity to co-contaminants and the ability to regenerate the media. However, the regenerated media is exclusively used for non-drinking water uses. Additionally, the regeneration of the media must be completed off site and the cost associated with the transportation and regeneration of the media, and destruction of the PFAS is included in the media purchase price

DEXSORB® treatment uses a standard pressure filtration system. DEXSORB® has an empty bed contact time (EBCT) that ranges from two to four minutes. This EBCT is similar to other PFAS treatment technologies that are more selective of PFAS, which results in less tankage when compared to less selective PFAS treatment technologies utilizing a pressure filtration system. Treatment facilities could be constructed at any combination of the PFAS-contaminated wells. Due to high capital costs it may be more cost-effective to construct a single facility at Well No. 5 and use alternative sources to adjust for the loss of capacity from Well No. 2 and Well No. 4.

The following provides advantages and disadvantages of the alternative along with the associated estimated capacity and costs.

Advantages

- Media manufacturer handles destruction of PFAS.
- System infrastructure is compatible with IX and FLUORO-SORB® media.

Disadvantages

- Logistically complex media replacement/disposal.
- High cost of media recycling.

Capacity

- Potential Water Supply Capacity: 5,400,000 gpd (treating Well No. 5 only) to 8,640,000 gpd (treating Wells No. 2, 4, and 5)
- Potential Pumping Capacity Improvement: 37.0 percent (5,400,000 gpd/ 14,593,520 gpm) (treating Well No. 5 only) to 59.2 percent (8,640,000 gpd/ 14,593,520 gpm) (treating Wells No. 2, 4, and 5)

Costs

- Estimated Project Improvements Cost: $28,700,000 to $43,000,000
- Estimated Annual OM&R Cost: $1,180,000 to $1,770,000
- Estimated 20-year Present Worth Cost: $43,400,000 to $65,100,000

Alternative 10 - Aquifer Storage and Recovery

ASR is the injection of water into an aquifer for future use. Currently, the City is in the process of constructing an ASR well for accepting potable water from the RWS. The ASR well is anticipated

to have a recharge capacity of approximately 1,350 gpm, which is approximately 350 million gallons(MG) over the recharge period from October 1 to March 31 each year. The City is currently under contract to provide water to a user and is anticipating primarily utilizing the ASR infrastructure being constructed to meet the user's demand. It is anticipated that this user will utilize 100 MG of water and, assuming that it is ASR water, that leaves approximately 250 MG available for City use. The City may be able to develop additional ASR recovery capacity with the proposed infrastructure and/or develop additional ASR wells to utilize the approximately 250 MG available to the City.

Water used for ASR purposes has stringent regulations on contaminants, and any new ASR wells would likely need to be supplied with treated water that does not degrade existing water quality in the aquifer. Additional ASR wells may provide the City with increased flexibility in managing its water supply.

With the expansion/construction of additional water treatment, ASR may allow the City to fully utilize its RWS allocations throughout the year. Water could be treated at the maximum allowed rate throughout the year with excess supply being stored in an ASR well. This ASR water could then be used to supplement the supply from the water treatment plant during periods of high demand. This may allow for a smaller treatment plant to be constructed.

The following provides advantages and disadvantages of the alternative along with the associated estimated capacity and costs.

Advantages

- Would provide the city with additional flexibility in managing water resources.
- Anticipated increase in well production capacity could offset needed treatment capacity.
- Use of treated surface water during low demand periods allows higher withdrawal rates of water during peak demand periods.

Disadvantages

- Generally, only 90 percent of the water treated and injected into an ASR well can be recovered.
- Surface water treatment is required.
- Water right permitting complexity/monitoring.
- Limited ability to provide excess water supply capacity based on existing well construction.

Capacity

- Potential Water Supply Capacity: To be determined. ASR capacity is dependent on available water supply capacity, water system demands, and the ASR well.
- Potential Pumping Capacity Improvement: To be determined.

Costs

- Estimated Project Improvements Cost: $10,800,000 to $16,100,000
- Estimated Annual OM&R Cost: $306,000 to $458,000
- Estimated 20-year Present Worth Cost: $14,600,000 to $21,900,000

Other Alternatives Considered

During the development of this Summary, other potential alternatives were considered and given a preliminary review. However, after preliminary review none of the other potential alternatives appeared to be viable. The following outlines the other alternatives considered.

The AquaPRS™ PFAS Removal System is a water treatment system produced by Aqua-Aerobic Systems, Inc. The AquaPRS™ utilizes both a sorbent media suspension and ceramic membrane micro filter for the removal of PFAS from drinking water. The system results in significantly less waste volume when compared to traditional PFAS removal systems (i.e., GAC, IX, etc.). However, the combination of media and filtration typically only becomes viable when there are water quality concerns in addition to PFAS. With the generally good water quality in the City, the preliminary evaluation showed that the capital and operation and maintenance costs along with the complexity of operation of the AquaPRS™ PFAS Removal System exceeded that of the other PFAS treatment alternatives previously evaluated.

Thermal treatment was also investigated as a method of PFAS waste disposal. Thermal treatment uses very high temperatures to destroy PFAS in spent media. Given the proximity of the City to the Columbia Ridge Commercial Landfill in Arlington, Oregon, it was determined that thermal treatment would likely not be cost effective compared to landfill disposal. However, any future regulations on landfill disposal of PFAS may make thermal destruction more viable.

Conclusions

The City has multiple alternatives available to help with the mitigation and/or treatment of PFAS in its water system. It is likely that a combination of alternatives will be required to provide drinking water meeting regulatory requirements and anticipated demand for the next 20 years to users. Table 2 provides a summary of the capacities and costs for all alternatives presented above.

TABLE 2
ALTERNATIVES COST SUMMARY

Mitigation Alternative		Potential Water Supply (gpd)	Potential Pumping Capacity Improvement (Percent)	Estimated Project Improvements Cost	Estimated Annual OM&R Cost	Estimated 20-year Present Worth Cost
1	Well No. 1 Reactivation	161,280	1.1	$1,300,000 to $2,000,000	$60,000 to $84,000	$2,000,000, to $3,000,000
2	Well No. 3 Reactivation	360,000	2.5	$600,000 to $900,000	$67,000 to $100,000	$1,400,000 to $2,200,000
3	Well No. 6 Utilization and Expansion	641,160 to 3,881,160	4.4 to 26.6	$1,000,000 to $1,500,000	$205,000 to $308,000	$3,500,000 to $5,300,000
4	Wells No. 2 and 4 Consolidation	3,240,000	22.2	$6,100,000 to $9,100,000	$214,000 to $320,000	$8,700,000 to $13,100,000
5	Minnehaha Springs Development	3,392,280	23.2	$11,700,000 to $17,600,000	$406,000 to $609,000	$16,800,000 to $25,200,000
6	Existing RWTP Expansion/ Replacement	1,374,840 to 8,173,440	9.4 to 56.0	$16,400,000 to $24,500,000	$534,000 to $800,000	$23,000,000 to $34,500,000
7	New RWS Treatment Plant	5,076,000 to 8,173,440	34.8 to 56.0	$16,600,000 to $24,800,000	$586,000 to $878,000	$23,900,000 to $35,800,000
8	RO/MF PFAS Treatment	5,400,000 to 8,640,000	37.0 to 59.2	$17,400,000 to $26,100,000	$857,000 to $1,286,000	$28,100,000 to $42,100,000
9	DEXSORB® PFAS Treatment	5,400,000 to 8,640,000	37.0 to 59.2	$28,700,000 to $43,000,000	$1,180,000 to $1,770,000	$43,400,000 to $65,100,000
10	Aquifer Storage and Recovery	TBD	TBD	$10,800,000 to $16,100,000	$306,000 to $458,000	$14,600,000 to $21,900,000

TBD = To Be Determined

The PFAS treatment alternatives included in the draft PFAS Water Treatment Feasibility Study will be evaluated along with the City-selected mitigation alternatives in the forthcoming PFAS Mitigation Feasibility Study. Additionally, a dedicated irrigation system will be evaluated with the recommended alternative(s) to help reduce peak demands on the City's water system in the forthcoming PFAS Mitigation Feasibility Study.

A meeting was held on June 8, 2026, between the City and AP staff. Attendees of the meeting included Mark Morgan, Assistant City Manager, and Roy Bicknell, Water Superintendent with the City; and Dave Wildman, P.E., Joshua Lott, P.E., Lucas Stangel, P.E., and Daniel La Beau, E.I.T, from AP. Prior to the meeting, City staff completed a review of this Cursory PFAS Mitigation Evaluation Summary and provided their proposed selection of alternatives to evaluate in detail. The City staff's proposed selected alternatives included the following:

- Alternative 6 - Existing RWTP expansion/replacement with the intent to maximize the use of the existing system.

- A variation of Alternative 7 - New RWS treatment plant that would include construction of a transmission line from Well No. 5 to blend the treated RWS and Well No. 5 water.

- Alternative 10 - Aquifer Storage and Recovery.

The majority of the meeting included discussion on these alternatives, with limited discussion on other options. The meeting was concluded with a consensus that the following alternatives will be evaluated in detail as part of the forthcoming PFAS Mitigation Feasibility Study:

- Alternative 6 - Existing RWTP Expansion: the evaluation will focus on the City obtaining access to the full capacity (2,800 gpm) of the existing RWTP. Additionally, the evaluation will include options to retrofit the existing treatment system in the future, as the existing system is approximately 30 years old.

- Alternative 7 - New RWS Treatment Plant: evaluate the construction of a new water treatment plant on the RWS utilizing the City's remaining undeveloped water allocation (4,700 gpm). In addition to the treatment of the RWS water, a transmission line and infrastructure to convey water from Well No. 5 to the new treatment plant site for blending treated surface water and Well No. 5 water will be included. An alternative to constructing a new treatment plant that evaluates the use of a new collector well to provide potable water to the City will be included.

- Alternative 10 - Aquifer Storage and Recovery: evaluate the use of using ASR recovery to meet peak demands. This alternative will utilize the existing RWTP for ASR recharge while looking at using existing ASR recovery infrastructure, if possible, and new infrastructure as required.

APPENDIX C
Water Quality Data

PWS Analytic Search Results | SDWARS

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006 w.T.P	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	200.7	lithium	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	11Cl-PF3OUdS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	4:2 FTS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	6:2 FTS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	8:2 FTS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	9Cl-PF3ONS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	ADONA	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	HFPO-DA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	NFDHA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFBA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFBS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFDA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFDoA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFEESA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFHpA	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFHpS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFHxA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFHxS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFMBA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFMPA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFNA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFOA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFOS	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFPeA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFPeS	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	533	PFUnA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	537.1	NEtFOSAA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	537.1	NMeFOSAA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	537.1	PFTA	< MRL	PWS Approved
OR4100372	00006	00006	SE4	Weck Laboratories, Inc.	4C12029-01	3/11/24	537.1	PFTrDA	< MRL	PWS Approved

PWS Analytic Search Results | SDWARS

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006 d.T.P.	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	200.7	lithium	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	ADONA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFBS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFDoA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFHpA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFHxA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFHxS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFOA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFOS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFPeA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE3	Weck Laboratories, Inc.	3L15038-05	12/13/23	537.1	PFTrDA	< MRL	PWS Auto-Approved

PWS Analytic Search Results | SDWARS

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	11Cl-PF3OUdS	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	4:2 FTS	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	6:2 FTS	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	8:2 FTS	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	9Cl-PF3ONS	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	ADONA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	HFPO-DA	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	NFDHA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFBA	< MRL	PWS Approved
OR4100372	00001	00001 well #2	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFBS	0.0044	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFDA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFDoA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFEESA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFHpA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFHpS	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFHxA	< MRL	PWS Approved
OR4100372	00001	00001 well #2	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFHxS	0.012	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFMBA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFMPA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFNA	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFOA	< MRL	PWS Approved
OR4100372	00001	00001 well #2	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFOS	0.012	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFPeA	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFPeS	< MRL	PWS Approved
OR4100372	00001	00001	SE2	Weck Laboratories, Inc.	4F04002-01	6/10/24	533	PFUnA	< MRL	PWS Approved
OR4100372	00006	00006 u.T.f	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	11Cl-PF3OUdS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	4:2 FTS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	6:2 FTS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	8:2 FTS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	9Cl-PF3ONS	< MRL	PWS Approved
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PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
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OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	NFDHA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFBA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFBS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFDA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFDoA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFEESA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFHpA	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
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OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFHxA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFHxS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFMBA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFMPA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFNA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFOA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFOS	< MRL	PWS Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFPeA	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFPeS	< MRL	PWS Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	4F04002-03	6/10/24	533	PFUnA	< MRL	PWS Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	ADONA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00003	00003 well #5	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFBS	0.0075	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFDoA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFEESA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFHpA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFHxA	< MRL	PWS Auto-Approved
OR4100372	00003	00003 well #4	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFHxS	0.0075	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFOA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFOS	0.0045	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFPeA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE2	Weck Laboratories, Inc.	4B09011-01	2/20/24	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00002	00002 well #4	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	200.7	lithium	32	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	6:2 FTS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	ADONA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFDoA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFHpA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFHxA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFOA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFPeA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE2	Weck Laboratories, Inc.	3L15038-01	12/13/23	537.1	PFTrDA	< MRL	PWS Auto-Approved
OR4100372	00004 well #6	00004	SE2	Weck Laboratories, Inc.	3L15038-03	12/13/23	200.7	lithium	24	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00004	00004	SE2	Weck Laboratories, Inc.	3L15038-03	12/13/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE2	Weck Laboratories, Inc.	3L15038-03	12/13/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE2	Weck Laboratories, Inc.	3L15038-03	12/13/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE2	Weck Laboratories, Inc.	3L15038-03	12/13/23	537.1	PFTrDA	< MRL	PWS Auto-Approved
OR4100372	00006	00006 w.T.P	SE2	Weck Laboratories, Inc.	3I12035-01	9/11/23	200.7	lithium	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	3I12035-01	9/11/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	3I12035-01	9/11/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	3I12035-01	9/11/23	537.1	PFTA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE2	Weck Laboratories, Inc.	3I12035-01	9/11/23	537.1	PFTrDA	< MRL	PWS Auto-Approved

PWS Analytic Search Results | SDWARS

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001 Unit #2	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	ADONA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	HFPO-DA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00001	00001 well #2	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFBS	0.003 3 ppt	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFDoA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFHpA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFHpS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFHxA	< MRL	PWS Auto-Approved
OR4100372	00001	00001 unit #2	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFHxS	0.0073 7.3 ppt	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFOA	< MRL	PWS Auto-Approved
OR4100372	00001	00001 unit #2	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFOS	0.0052 5.2 ppt	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFPeA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3K22055-01	11/21/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00001	00001 Well #2	SE1	Weck Laboratories, Inc.	3F21082-01	6/20/23	200.7	lithium	29	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3F21082-01	6/20/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3F21082-01	6/20/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3F21082-01	6/20/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00001	00001	SE1	Weck Laboratories, Inc.	3F21082-01	6/20/23	537.1	PFTrDA	< MRL	PWS Auto-Approved
OR4100372	00002	00002 Well #4	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	200.7	lithium	32	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002 ug/l #4	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	ADONA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	NFDHA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00002	00002 WTP#4	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFBS	0.0034 3.4 ppt	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFDoA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFHpA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFHxA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002	00002 well #4	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFHxS	0.008 6 ppt	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFOA	< MRL	PWS Auto-Approved
OR4100372	00002	00002 well #4	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFOS	0.006 6 ppt	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFPeA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFPeS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00002	00002	SE1	Weck Laboratories, Inc.	3F21062-01	6/20/23	537.1	PFTrDA	< MRL	PWS Auto-Approved
OR4100372	00003	00003 well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	200.7	lithium	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	4:2 FTS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003 well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	ADONA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00003	00003 well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFBS	0.01 10 ppt	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFDoA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFHpA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00003	00003 Well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFHxA	0.0039 3.9 ppt	PWS Auto-Approved
OR4100372	00003	00003 Well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFHxS	0.0084 8.4 ppt	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFMBA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFOA	< MRL	PWS Auto-Approved
OR4100372	00003	00003 well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFOS	0.0078 7.8 ppt	PWS Auto-Approved
OR4100372	00003	00003 well #5	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFPeA	0.0042 4.2 ppt	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00003	00003	SE1	Weck Laboratories, Inc.	3F21082-07	6/20/23	537.1	PFTrDA	< MRL	PWS Auto-Approved
OR4100372	00004	00004 WH6	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	200.7	lithium	23	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	8:2 FTS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00004	00004 U11#6	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	ADONA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFBS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFDoA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFHpA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFHxA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFHxS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFNA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFOA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFOS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFPeA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	537.1	PFTA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00004	00004	SE1	Weck Laboratories, Inc.	3F21082-03	6/20/23	537.1	PFTrDA	< MRL	PWS Auto-Approved
OR4100372	00006	00006 W.TP	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	200.7	lithium	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	11Cl-PF3OUdS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	4:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	6:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	8:2 FTS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	9Cl-PF3ONS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	ADONA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	HFPO-DA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	NFDHA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFBA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFBS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFDA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFDoA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFEESA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFHpA	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFHpS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFHxA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFHxS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFMBA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFMPA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFNA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFOA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFOS	< MRL	PWS Auto-Approved

PWS ID	Facility	Sample Point	Sampling Event	Lab	Sample ID	Collection Date	Method	Analyte	Result (µg/L)	Status
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFPeA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFPeS	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	533	PFUnA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	537.1	NEtFOSAA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	537.1	NMeFOSAA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	537.1	PFTA	< MRL	PWS Auto-Approved
OR4100372	00006	00006	SE1	Weck Laboratories, Inc.	3F21082-05	6/20/23	537.1	PFTrDA	< MRL	PWS Auto-Approved

UMPQUA Research Company
626 NE Division St. - P.O. Box 609
Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:50
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #5 | URC Sample #: 6010818-01 | Matrix: Drinking Water

Inorganics

Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Alkalinity (‡)	SM 2320B		**275**	mg/L	3.00		01/09/26	01/09/26	MSW	
Chloride (‡)	USEPA 300.0		43.8	mg/L	5.0	250	01/08/26	01/08/26	SAM	
Fluoride (‡)	USEPA 300.0	1025	ND	mg/L	1.00	4	01/08/26	01/08/26	SAM	
Nitrate as N (‡)	USEPA 300.0	1040	6.59	mg/L	1.00	10	01/08/26 14:38	01/08/26	SAM	
Perchlorate	USEPA 314.0		ND	mg/L	0.00500		01/12/26	01/12/26	SAM	
Sulfate (‡)	USEPA 300.0	1055	54.9	mg/L	10.0	250	01/08/26	01/08/26	SAM	
TDS	SM 2540C		459	mg/L	37.5	500	01/09/26	01/12/26	ZHT	
TOC (‡)	SM 5310C		**1.38**	mg/L	0.50		01/08/26	01/09/26	JRM	

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Dan Phillips, Laboratory Manager

UMPQUA Research Company
626 NE Division St. - P.O. Box 609
Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
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ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:50
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #5

URC Sample #: 6010818-01

Matrix: Drinking Water

Metals

Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Calcium	USEPA 200.7		**81.5**	mg/L	2.00		01/21/26	01/21/26	DST	
Iron (‡)	USEPA 200.7		ND	mg/L	0.020	0.3	01/21/26	01/21/26	DST	
Magnesium	USEPA 200.7		**23.8**	mg/L	0.200		01/21/26	01/21/26	DST	
Manganese (‡)	USEPA 200.7		ND	mg/L	0.010	0.05	01/21/26	01/21/26	DST	
Potassium	USEPA 200.7		**8.60**	mg/L	0.200		01/21/26	01/21/26	DST	
Sodium	USEPA 200.7		**49.5**	mg/L	5.00		01/21/26	01/21/26	DST	

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(541) 863-5201 Fax: (541) 863-6199
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ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:50
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #5

URC Sample #: 6010818-01

Matrix: Drinking Water

Volatile Organics

Regulated Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
1,1,1-Trichloroethane (‡)	EPA 524.2	2981	ND	mg/L	0.0005	0.2	01/14/26	01/14/26	MGC	
1,1,2-Trichloroethane (‡)	EPA 524.2	2985	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,1-Dichloroethylene (‡)	EPA 524.2	2977	ND	mg/L	0.0005	0.007	01/14/26	01/14/26	MGC	
1,2,4-Trichlorobenzene (‡)	EPA 524.2	2378	ND	mg/L	0.0005	0.07	01/14/26	01/14/26	MGC	
1,2-Dichlorobenzene (‡)	EPA 524.2	2968	ND	mg/L	0.0005	0.6	01/14/26	01/14/26	MGC	
1,2-Dichloroethane (‡)	EPA 524.2	2980	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,2-Dichloropropane (‡)	EPA 524.2	2983	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,4-Dichlorobenzene (‡)	EPA 524.2	2969	ND	mg/L	0.0005	0.075	01/14/26	01/14/26	MGC	
Benzene (‡)	EPA 524.2	2990	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Carbon Tetrachloride (‡)	EPA 524.2	2982	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Chlorobenzene (‡)	EPA 524.2	2989	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
cis-1,2-Dichloroethylene (‡)	EPA 524.2	2380	ND	mg/L	0.0005	0.07	01/14/26	01/14/26	MGC	
Ethyl Benzene (‡)	EPA 524.2	2992	ND	mg/L	0.0005	0.7	01/14/26	01/14/26	MGC	
Methylene Chloride (‡)	EPA 524.2	2964	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
m-Xylene/p-Xylene (‡)	EPA 524.2		ND	mg/L	0.0010	10	01/14/26	01/14/26	MGC	
o-Xylene (‡)	EPA 524.2		ND	mg/L	0.0005	10	01/14/26	01/14/26	MGC	
Styrene (‡)	EPA 524.2	2996	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
Tetrachloroethylene (‡)	EPA 524.2	2987	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Toluene (‡)	EPA 524.2	2991	ND	mg/L	0.0005	1	01/14/26	01/14/26	MGC	
Total Xylenes (‡)	EPA 524.2	2955	ND	mg/L	0.0015	10	01/14/26	01/14/26	MGC	
trans-1,2-Dichloroethylene (‡)	EPA 524.2	2979	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
Trichloroethylene (‡)	EPA 524.2	2984	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Vinyl chloride (‡)	EPA 524.2	2976	ND	mg/L	0.0005	0.002	01/14/26	01/14/26	MGC	

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UMPQUA Research Company
626 NE Division St. - P.O. Box 609
Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
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ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:50
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #5

URC Sample #: 6010818-01

Matrix: Drinking Water

Volatile Organics

Unregulated Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
1,1,1,2-Tetrachloroethane (‡)	EPA 524.2	2986	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1,2,2-Tetrachloroethane (‡)	EPA 524.2	2988	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1-Dichloroethane (‡)	EPA 524.2	2978	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1-Dichloropropene (‡)	EPA 524.2	2410	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,2,3-Trichloropropane (‡)	EPA 524.2	2414	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,3-Dichlorobenzene (‡)	EPA 524.2	2967	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,3-Dichloropropane (‡)	EPA 524.2	2412	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
2,2-Dichloropropane (‡)	EPA 524.2	2416	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
2-Chlorotoluene (‡)	EPA 524.2	2965	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
4-Chlorotoluene (‡)	EPA 524.2	2966	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromobenzene (‡)	EPA 524.2	2993	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromodichloromethane (‡)	EPA 524.2	2943	**0.0069**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromoform (‡)	EPA 524.2	2942	**0.0049**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromomethane (‡)	EPA 524.2	2214	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloroethane (‡)	EPA 524.2	2216	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloroform (‡)	EPA 524.2	2941	**0.0025**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloromethane (‡)	EPA 524.2	2210	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
cis-1,3-Dichloropropene (‡)	EPA 524.2	2413	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Dibromochloromethane (‡)	EPA 524.2	2944	**0.0116**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Dibromomethane (‡)	EPA 524.2	2408	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
trans-1,3-Dichloropropene (‡)	EPA 524.2	2224	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	

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Dan Phillips, Laboratory Manager

UMPQUA Research Company
626 NE Division St. - P.O. Box 609
Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:10
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #4 | URC Sample #: 6010818-02 | Matrix: Drinking Water

Inorganics

Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Alkalinity (‡)	SM 2320B		**159**	mg/L	3.00		01/09/26	01/09/26	MSW	
Chloride (‡)	USEPA 300.0		25.0	mg/L	0.5	250	01/08/26	01/08/26	SAM	
Fluoride (‡)	USEPA 300.0	1025	1.22	mg/L	0.10	4	01/08/26	01/08/26	SAM	
Nitrate as N (‡)	USEPA 300.0	1040	ND	mg/L	0.10	10	01/08/26 14:38	01/08/26	SAM	
Perchlorate	USEPA 314.0		ND	mg/L	0.00500		01/12/26	01/13/26	SAM	
Sulfate (‡)	USEPA 300.0	1055	51.8	mg/L	1.00	250	01/08/26	01/08/26	SAM	
TDS	SM 2540C		308	mg/L	37.5	500	01/09/26	01/12/26	ZHT	
TOC (‡)	SM 5310C		**ND**	mg/L	0.50		01/08/26	01/09/26	JRM	

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ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:10
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #4

URC Sample #: 6010818-02

Matrix: Drinking Water

Metals

Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Calcium	USEPA 200.7		**13.9**	mg/L	0.200		01/21/26	01/21/26	DST	
Iron (‡)	USEPA 200.7		0.036	mg/L	0.020	0.3	01/21/26	01/21/26	DST	
Magnesium	USEPA 200.7		**2.33**	mg/L	0.020		01/21/26	01/21/26	DST	
Manganese (‡)	USEPA 200.7		ND	mg/L	0.010	0.05	01/21/26	01/21/26	DST	
Potassium	USEPA 200.7		**16.3**	mg/L	2.00		01/21/26	01/21/26	DST	
Sodium	USEPA 200.7		**89.9**	mg/L	5.00		01/21/26	01/21/26	DST	

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URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:10
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #4

URC Sample #: 6010818-02

Matrix: Drinking Water

Volatile Organics

Regulated Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
1,1,1-Trichloroethane (‡)	EPA 524.2	2981	ND	mg/L	0.0005	0.2	01/14/26	01/14/26	MGC	
1,1,2-Trichloroethane (‡)	EPA 524.2	2985	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,1-Dichloroethylene (‡)	EPA 524.2	2977	ND	mg/L	0.0005	0.007	01/14/26	01/14/26	MGC	
1,2,4-Trichlorobenzene (‡)	EPA 524.2	2378	ND	mg/L	0.0005	0.07	01/14/26	01/14/26	MGC	
1,2-Dichlorobenzene (‡)	EPA 524.2	2968	ND	mg/L	0.0005	0.6	01/14/26	01/14/26	MGC	
1,2-Dichloroethane (‡)	EPA 524.2	2980	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,2-Dichloropropane (‡)	EPA 524.2	2983	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,4-Dichlorobenzene (‡)	EPA 524.2	2969	ND	mg/L	0.0005	0.075	01/14/26	01/14/26	MGC	
Benzene (‡)	EPA 524.2	2990	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Carbon Tetrachloride (‡)	EPA 524.2	2982	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Chlorobenzene (‡)	EPA 524.2	2989	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
cis-1,2-Dichloroethylene (‡)	EPA 524.2	2380	ND	mg/L	0.0005	0.07	01/14/26	01/14/26	MGC	
Ethyl Benzene (‡)	EPA 524.2	2992	ND	mg/L	0.0005	0.7	01/14/26	01/14/26	MGC	
Methylene Chloride (‡)	EPA 524.2	2964	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
m-Xylene/p-Xylene (‡)	EPA 524.2		ND	mg/L	0.0010	10	01/14/26	01/14/26	MGC	
o-Xylene (‡)	EPA 524.2		ND	mg/L	0.0005	10	01/14/26	01/14/26	MGC	
Styrene (‡)	EPA 524.2	2996	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
Tetrachloroethylene (‡)	EPA 524.2	2987	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Toluene (‡)	EPA 524.2	2991	ND	mg/L	0.0005	1	01/14/26	01/14/26	MGC	
Total Xylenes (‡)	EPA 524.2	2955	ND	mg/L	0.0015	10	01/14/26	01/14/26	MGC	
trans-1,2-Dichloroethylene (‡)	EPA 524.2	2979	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
Trichloroethylene (‡)	EPA 524.2	2984	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Vinyl chloride (‡)	EPA 524.2	2976	ND	mg/L	0.0005	0.002	01/14/26	01/14/26	MGC	

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Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 08:10
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #4 URC Sample #: 6010818-02 Matrix: Drinking Water

Volatile Organics

Unregulated Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
1,1,1,2-Tetrachloroethane (‡)	EPA 524.2	2986	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1,2,2-Tetrachloroethane (‡)	EPA 524.2	2988	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1-Dichloroethane (‡)	EPA 524.2	2978	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1-Dichloropropene (‡)	EPA 524.2	2410	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,2,3-Trichloropropane (‡)	EPA 524.2	2414	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,3-Dichlorobenzene (‡)	EPA 524.2	2967	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,3-Dichloropropane (‡)	EPA 524.2	2412	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
2,2-Dichloropropane (‡)	EPA 524.2	2416	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
2-Chlorotoluene (‡)	EPA 524.2	2965	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
4-Chlorotoluene (‡)	EPA 524.2	2966	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromobenzene (‡)	EPA 524.2	2993	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromodichloromethane (‡)	EPA 524.2	2943	**0.0094**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromoform (‡)	EPA 524.2	2942	**0.0184**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromomethane (‡)	EPA 524.2	2214	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloroethane (‡)	EPA 524.2	2216	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloroform (‡)	EPA 524.2	2941	**0.0036**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloromethane (‡)	EPA 524.2	2210	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
cis-1,3-Dichloropropene (‡)	EPA 524.2	2413	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Dibromochloromethane (‡)	EPA 524.2	2944	**0.0195**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Dibromomethane (‡)	EPA 524.2	2408	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
trans-1,3-Dichloropropene (‡)	EPA 524.2	2224	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	

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Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 09:55
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #2 | URC Sample #: 6010818-03 | Matrix: Drinking Water

Inorganics

Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Alkalinity (‡)	SM 2320B		**160**	mg/L	3.00		01/09/26	01/09/26	MSW	
Chloride (‡)	USEPA 300.0		25.3	mg/L	0.5	250	01/08/26	01/08/26	SAM	
Fluoride (‡)	USEPA 300.0	1025	1.21	mg/L	0.10	4	01/08/26	01/08/26	SAM	
Nitrate as N (‡)	USEPA 300.0	1040	ND	mg/L	0.10	10	01/08/26 14:38	01/08/26	SAM	
Perchlorate	USEPA 314.0		ND	mg/L	0.00500		01/12/26	01/13/26	SAM	
Sulfate (‡)	USEPA 300.0	1055	50.4	mg/L	1.00	250	01/08/26	01/08/26	SAM	
TDS	SM 2540C		313	mg/L	37.5	500	01/09/26	01/12/26	ZHT	
TOC (‡)	SM 5310C		**ND**	mg/L	0.50		01/08/26	01/10/26	JRM	

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ANALYSIS REPORT
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Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 09:55
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #2

URC Sample #: 6010818-03

Matrix: Drinking Water

Metals

Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Calcium	USEPA 200.7		**8.00**	mg/L	0.200		01/21/26	01/21/26	DST	
Iron (‡)	USEPA 200.7		0.026	mg/L	0.020	0.3	01/21/26	01/21/26	DST	
Magnesium	USEPA 200.7		**0.882**	mg/L	0.020		01/21/26	01/21/26	DST	
Manganese (‡)	USEPA 200.7		ND	mg/L	0.010	0.05	01/21/26	01/21/26	DST	
Potassium	USEPA 200.7		**14.6**	mg/L	0.200		01/21/26	01/21/26	DST	
Sodium	USEPA 200.7		**99.2**	mg/L	5.00		01/21/26	01/21/26	DST	

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Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #2

URC Sample #: 6010818-03

Matrix: Drinking Water

Volatile Organics

Regulated Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
1,1,1-Trichloroethane (‡)	EPA 524.2	2981	ND	mg/L	0.0005	0.2	01/14/26	01/14/26	MGC	
1,1,2-Trichloroethane (‡)	EPA 524.2	2985	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,1-Dichloroethylene (‡)	EPA 524.2	2977	ND	mg/L	0.0005	0.007	01/14/26	01/14/26	MGC	
1,2,4-Trichlorobenzene (‡)	EPA 524.2	2378	ND	mg/L	0.0005	0.07	01/14/26	01/14/26	MGC	
1,2-Dichlorobenzene (‡)	EPA 524.2	2968	ND	mg/L	0.0005	0.6	01/14/26	01/14/26	MGC	
1,2-Dichloroethane (‡)	EPA 524.2	2980	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,2-Dichloropropane (‡)	EPA 524.2	2983	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
1,4-Dichlorobenzene (‡)	EPA 524.2	2969	ND	mg/L	0.0005	0.075	01/14/26	01/14/26	MGC	
Benzene (‡)	EPA 524.2	2990	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Carbon Tetrachloride (‡)	EPA 524.2	2982	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Chlorobenzene (‡)	EPA 524.2	2989	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
cis-1,2-Dichloroethylene (‡)	EPA 524.2	2380	ND	mg/L	0.0005	0.07	01/14/26	01/14/26	MGC	
Ethyl Benzene (‡)	EPA 524.2	2992	ND	mg/L	0.0005	0.7	01/14/26	01/14/26	MGC	
Methylene Chloride (‡)	EPA 524.2	2964	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
m-Xylene/p-Xylene (‡)	EPA 524.2		ND	mg/L	0.0010	10	01/14/26	01/14/26	MGC	
o-Xylene (‡)	EPA 524.2		ND	mg/L	0.0005	10	01/14/26	01/14/26	MGC	
Styrene (‡)	EPA 524.2	2996	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
Tetrachloroethylene (‡)	EPA 524.2	2987	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Toluene (‡)	EPA 524.2	2991	ND	mg/L	0.0005	1	01/14/26	01/14/26	MGC	
Total Xylenes (‡)	EPA 524.2	2955	ND	mg/L	0.0015	10	01/14/26	01/14/26	MGC	
trans-1,2-Dichloroethylene (‡)	EPA 524.2	2979	ND	mg/L	0.0005	0.1	01/14/26	01/14/26	MGC	
Trichloroethylene (‡)	EPA 524.2	2984	ND	mg/L	0.0005	0.005	01/14/26	01/14/26	MGC	
Vinyl chloride (‡)	EPA 524.2	2976	ND	mg/L	0.0005	0.002	01/14/26	01/14/26	MGC	

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ANALYSIS REPORT
URC # 6010818

Hermiston, City of	Project: General	Date Reported: 01/21/26
180 NE 2nd St	Project #: City of Hermiston - Anderson Perry	Date Sampled: 01/07/26 09:55
Hermiston, OR 97838		Date Received: 01/08/26 11:00
	Client Contact: Fernando Cervantes	Sampled By: Fernando
	PWSID#: 4100372	

Sample Location: Well #2 | URC Sample #: 6010818-03 | Matrix: Drinking Water

Volatile Organics

Unregulated Analyte	Method	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
1,1,1,2-Tetrachloroethane (‡)	EPA 524.2	2986	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1,2,2-Tetrachloroethane (‡)	EPA 524.2	2988	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1-Dichloroethane (‡)	EPA 524.2	2978	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,1-Dichloropropene (‡)	EPA 524.2	2410	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,2,3-Trichloropropane (‡)	EPA 524.2	2414	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,3-Dichlorobenzene (‡)	EPA 524.2	2967	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
1,3-Dichloropropane (‡)	EPA 524.2	2412	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
2,2-Dichloropropane (‡)	EPA 524.2	2416	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
2-Chlorotoluene (‡)	EPA 524.2	2965	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
4-Chlorotoluene (‡)	EPA 524.2	2966	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromobenzene (‡)	EPA 524.2	2993	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromodichloromethane (‡)	EPA 524.2	2943	**0.0055**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromoform (‡)	EPA 524.2	2942	**0.0172**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Bromomethane (‡)	EPA 524.2	2214	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloroethane (‡)	EPA 524.2	2216	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloroform (‡)	EPA 524.2	2941	**0.0017**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Chloromethane (‡)	EPA 524.2	2210	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
cis-1,3-Dichloropropene (‡)	EPA 524.2	2413	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
Dibromochloromethane (‡)	EPA 524.2	2944	**0.0154**	mg/L	0.0005		01/14/26	01/14/26	MGC	
Dibromomethane (‡)	EPA 524.2	2408	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	
trans-1,3-Dichloropropene (‡)	EPA 524.2	2224	ND	mg/L	0.0005		01/14/26	01/14/26	MGC	

UMPQUA Research Company/MC

The results in this report apply to the samples analyzed in accordance with the chain of custody document.
This analytical report must be reproduced in its entirety.

Dan Phillips, Laboratory Manager

UMPQUA Research Company
626 NE Division St. - P.O. Box 609
Myrtle Creek, Oregon 97457
(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 6010818

Qualifiers and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the MRL (minimum reporting limit)
NA	Not Applicable
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MRL	Minimum Reporting Limit
MDL	Minimum Detection Limit
MCL	Maximum Contamination Level
(‡)	ORELAP Accredited Analyte
(~)	Due to rounding of individual analytes, the "total" may vary slightly from the sum of the individual analyte values.

UMPQUA Research Company/MC

The results in this report apply to the samples analyzed in accordance with the chain of custody document.
This analytical report must be reproduced in its entirety.

Dan Phillips, Laboratory Manager

1 ST Resample

ANATEK LABS

Analytical Results Report For:

City of Hermiston

Project:

UCMR5 - 00372

Anatek Work Order:

MGA0244

Anatek Moscow - 1282 Alturas Drive - Moscow, ID 83843 - 208-883-2839 - moscow@anateklabs.com - FL NELAP E87893
Anatek Spokane - 504 E Sprague Ste. D - Spokane, WA 99202 - 509-838-3999 - spokane@anateklabs.com - FL NELAP E871099
Anatek Yakima - 4802 Tieton Drive - Yakima, WA 98908 - 509-225-9404 - yakima@anateklabs.com - FL NELAP E871190
Anatek Wenatchee - 3019 Gs Center Rd - Wenatchee, WA 98801 - 509-701-8362

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504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - email spokane@anateklabs.com

Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

PWS Name:	**City of Hermiston**	Lab/Sample Number:	**MGA0244-01**
Date Received:	**01/13/2026**	Date Reported by Lab:	**02/02/2026**
PWS#:	**Well #2**	PWS Facility ID:	**00372**
Collect Date:	**01/12/2026**	Collection Time:	**8:30**
Sampling Point ID:	**EP-A**	Sample Point/ Location:	**Well #2 (EP-A)**
Sampling Event:	**SE1**	Sample Type:	**FS**
Lab Federal ID#:	**ID00013**		

Metals Analysis Report:

Analyte	Result	Units	MRL	Analyzed	Analyst	Method
Lithium	0.0220	mg/L	0.00100	1/21/26 11:14	BSM	EPA 200.8

SVOC Analysis Report:

Analyte	Result	Units	MRL	Analyzed	Analyst	Method
11Cl-PF3OUdS	ND	ng/L	5.00	1/17/26 1:44	JJ	EPA 533
4:2FTS	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
6:2FTS	ND	ng/L	5.00	1/17/26 1:44	JJ	EPA 533
8:2FTS	ND	ng/L	5.00	1/17/26 1:44	JJ	EPA 533
9Cl-PF3ONS	ND	ng/L	2.00	1/17/26 1:44	JJ	EPA 533
ADONA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
HFPO-DA	ND	ng/L	5.00	1/17/26 1:44	JJ	EPA 533
NFDHA	ND	ng/L	20.0	1/17/26 1:44	JJ	EPA 533
PFBA	ND	ng/L	5.00	1/17/26 1:44	JJ	EPA 533
PFBS	4.25	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFDA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFDoA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFEESA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFHpA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFHpS	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFHxA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFHxS	11.6	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFMBA	ND	ng/L	4.00	1/17/26 1:44	JJ	EPA 533
PFMPA	ND	ng/L	4.00	1/17/26 1:44	JJ	EPA 533
PFNA	ND	ng/L	4.00	1/17/26 1:44	JJ	EPA 533
PFOA	ND	ng/L	4.00	1/17/26 1:44	JJ	EPA 533
PFOS	11.5	ng/L	4.00	1/17/26 1:44	JJ	EPA 533
PFPeA	ND	ng/L	3.00	1/17/26 1:44	JJ	EPA 533
PFPeS	ND	ng/L	4.00	1/17/26 1:44	JJ	EPA 533
PFUnA	ND	ng/L	2.00	1/17/26 1:44	JJ	EPA 533
N-EtFOSSA	ND	ng/L	8.00	1/19/26 23:04	JJ	EPA 537.1
N-MeFOSAA	ND	ng/L	7.00	1/19/26 23:04	JJ	EPA 537.1
PFTeDA	ND	ng/L	5.00	1/19/26 23:04	JJ	EPA 537.1
PFTrDA	ND	ng/L	6.00	1/19/26 23:04	JJ	EPA 537.1

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504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - email spokane@anateklabs.com

Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

PWS Name:	**City of Hermiston**	Lab/Sample Number:	**MGA0244-01**
Date Received:	**01/13/2026**	Date Reported by Lab:	**02/02/2026**
PWS#:	**Well #2**	PWS Facility ID:	**00372**
Collect Date:	**01/12/2026**	Collection Time:	**8:30**
Sampling Point ID:	**EP-A**	Sample Point/ Location:	**Well #2 (EP-A)**
Sampling Event:	**SE1**	Sample Type:	**FS**
Lab Federal ID#:	**ID00013**		

SVOC Analysis Report:

Analyte	Recovery	Recovery Limits	Analyzed	Analyst	Method
Surrogate: 13C2-4:2FTS IDA	*104%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C2-6:2FTS IDA	*107%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C2-8:2FTS IDA	*106%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C2-PFDoA IDA	*84%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C3-HFPO-DA IDA	*92%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C3-PFBS IDA	*108%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C3-PFHxS IDA	*112%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C4-PFBA IDA	*104%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C4-PFHpA IDA	*96%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C5-PFHxA IDA	*93%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C5-PFPeA IDA	*103%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C6-PFDA IDA	*92%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C7-PFUnA IDA	*87%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C8-PFOA IDA	*94%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C8-PFOS IDA	*107%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C9-PFNA IDA	*95%*	*50-200*	*1/17/26 1:44*	*JJ*	*EPA 533*
Surrogate: 13C2-PFDA NIS	*108%*	*70-130*	*1/19/26 23:04*	*JJ*	*EPA 537.1*
Surrogate: 13C2-PFHxA	*108%*	*70-130*	*1/19/26 23:04*	*JJ*	*EPA 537.1*
Surrogate: 13C3-HFPO-DA IDA	*105%*	*70-130*	*1/19/26 23:04*	*JJ*	*EPA 537.1*
Surrogate: d5-N-EtFOSAA	*99%*	*70-130*	*1/19/26 23:04*	*JJ*	*EPA 537.1*

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Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

PWS Name:	**City of Hermiston**	Lab/Sample Number:	**MGA0244-02**
Date Received:	**01/13/2026**	Date Reported by Lab:	**02/02/2026**
PWS#:	**Well #4**	PWS Facility ID:	**00372**
Collect Date:	**01/12/2026**	Collection Time:	**9:11**
Sampling Point ID:	**EP-B**	Sample Point/ Location:	**Well #4 (EP-B)**
Sampling Event:	**SE1**	Sample Type:	**FS**
Lab Federal ID#:	**ID00013**		

Metals Analysis Report:

Analyte	Result	Units	MRL	Analyzed	Analyst	Method
Lithium	0.0246	mg/L	0.00100	1/21/26 11:20	BSM	EPA 200.8

SVOC Analysis Report:

Analyte	Result	Units	MRL	Analyzed	Analyst	Method
11Cl-PF3OUdS	ND	ng/L	5.00	1/20/26 23:30	JJ	EPA 533
4:2FTS	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
6:2FTS	ND	ng/L	5.00	1/20/26 23:30	JJ	EPA 533
8:2FTS	ND	ng/L	5.00	1/20/26 23:30	JJ	EPA 533
9Cl-PF3ONS	ND	ng/L	2.00	1/20/26 23:30	JJ	EPA 533
ADONA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
HFPO-DA	ND	ng/L	5.00	1/20/26 23:30	JJ	EPA 533
NFDHA	ND	ng/L	20.0	1/20/26 23:30	JJ	EPA 533
PFBA	ND	ng/L	5.00	1/20/26 23:30	JJ	EPA 533
PFBS	3.41	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFDA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFDoA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFEESA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFHpA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFHpS	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFHxA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFHxS	6.98	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFMBA	ND	ng/L	4.00	1/20/26 23:30	JJ	EPA 533
PFMPA	ND	ng/L	4.00	1/20/26 23:30	JJ	EPA 533
PFNA	ND	ng/L	4.00	1/20/26 23:30	JJ	EPA 533
PFOA	ND	ng/L	4.00	1/20/26 23:30	JJ	EPA 533
PFOS	5.61	ng/L	4.00	1/20/26 23:30	JJ	EPA 533
PFPeA	ND	ng/L	3.00	1/20/26 23:30	JJ	EPA 533
PFPeS	ND	ng/L	4.00	1/20/26 23:30	JJ	EPA 533
PFUnA	ND	ng/L	2.00	1/20/26 23:30	JJ	EPA 533
N-EtFOSSA	ND	ng/L	8.00	1/19/26 23:28	JJ	EPA 537.1
N-MeFOSAA	ND	ng/L	7.00	1/19/26 23:28	JJ	EPA 537.1
PFTeDA	ND	ng/L	5.00	1/19/26 23:28	JJ	EPA 537.1
PFTrDA	ND	ng/L	6.00	1/19/26 23:28	JJ	EPA 537.1

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Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

PWS Name:	**City of Hermiston**	Lab/Sample Number:	**MGA0244-02**
Date Received:	**01/13/2026**	Date Reported by Lab:	**02/02/2026**
PWS#:	**Well #4**	PWS Facility ID:	**00372**
Collect Date:	**01/12/2026**	Collection Time:	**9:11**
Sampling Point ID:	**EP-B**	Sample Point/ Location:	**Well #4 (EP-B)**
Sampling Event:	**SE1**	Sample Type:	**FS**
Lab Federal ID#:	**ID00013**		

SVOC Analysis Report:

Analyte	Recovery	Recovery Limits	Analyzed	Analyst	Method
Surrogate: 13C2-4:2FTS IDA	*91%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C2-6:2FTS IDA	*100%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C2-8:2FTS IDA	*86%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C2-PFDoA IDA	*70%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C3-HFPO-DA IDA	*83%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C3-PFBS IDA	*92%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C3-PFHxS IDA	*93%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C4-PFBA IDA	*90%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C4-PFHpA IDA	*80%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C5-PFHxA IDA	*81%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C5-PFPeA IDA	*86%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C6-PFDA IDA	*72%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C7-PFUnA IDA	*71%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C8-PFOA IDA	*78%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C8-PFOS IDA	*89%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C9-PFNA IDA	*67%*	*50-200*	*1/20/26 23:30*	*JJ*	*EPA 533*
Surrogate: 13C2-PFDA NIS	*109%*	*70-130*	*1/19/26 23:28*	*JJ*	*EPA 537.1*
Surrogate: 13C2-PFHxA	*114%*	*70-130*	*1/19/26 23:28*	*JJ*	*EPA 537.1*
Surrogate: 13C3-HFPO-DA IDA	*112%*	*70-130*	*1/19/26 23:28*	*JJ*	*EPA 537.1*
Surrogate: d5-N-EtFOSAA	*99%*	*70-130*	*1/19/26 23:28*	*JJ*	*EPA 537.1*

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504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - email spokane@anateklabs.com

Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

PWS Name:	**City of Hermiston**	Lab/Sample Number:	**MGA0244-03**
Date Received:	**01/13/2026**	Date Reported by Lab:	**02/02/2026**
PWS#:	**Well #5**	PWS Facility ID:	**00372**
Collect Date:	**01/12/2026**	Collection Time:	**11:31**
Sampling Point ID:	**EP-C**	Sample Point/ Location:	**Well #5 (EP-C)**
Sampling Event:	**SE1**	Sample Type:	**FS**
Lab Federal ID#:	**ID00013**		

Metals Analysis Report:

Analyte	Result	Units	MRL	Analyzed	Analyst	Method
Lithium	0.0105	mg/L	0.00100	1/21/26 11:25	BSM	EPA 200.8

SVOC Analysis Report:

Analyte	Result	Units	MRL	Analyzed	Analyst	Method
11Cl-PF3OUdS	ND	ng/L	5.00	1/17/26 2:35	JJ	EPA 533
4:2FTS	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
6:2FTS	ND	ng/L	5.00	1/17/26 2:35	JJ	EPA 533
8:2FTS	ND	ng/L	5.00	1/17/26 2:35	JJ	EPA 533
9Cl-PF3ONS	ND	ng/L	2.00	1/17/26 2:35	JJ	EPA 533
ADONA	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
HFPO-DA	ND	ng/L	5.00	1/17/26 2:35	JJ	EPA 533
NFDHA	ND	ng/L	20.0	1/17/26 2:35	JJ	EPA 533
PFBA	ND	ng/L	5.00	1/17/26 2:35	JJ	EPA 533
PFBS	10.8	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFDA	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFDoA	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFEESA	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFHpA	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFHpS	ND	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFHxA	4.03	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFHxS	9.32	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFMBA	ND	ng/L	4.00	1/17/26 2:35	JJ	EPA 533
PFMPA	ND	ng/L	4.00	1/17/26 2:35	JJ	EPA 533
PFNA	ND	ng/L	4.00	1/17/26 2:35	JJ	EPA 533
PFOA	ND	ng/L	4.00	1/17/26 2:35	JJ	EPA 533
PFOS	9.06	ng/L	4.00	1/17/26 2:35	JJ	EPA 533
PFPeA	3.91	ng/L	3.00	1/17/26 2:35	JJ	EPA 533
PFPeS	ND	ng/L	4.00	1/17/26 2:35	JJ	EPA 533
PFUnA	ND	ng/L	2.00	1/17/26 2:35	JJ	EPA 533
N-EtFOSSA	ND	ng/L	8.00	1/19/26 23:52	JJ	EPA 537.1
N-MeFOSAA	ND	ng/L	7.00	1/19/26 23:52	JJ	EPA 537.1
PFTeDA	ND	ng/L	5.00	1/19/26 23:52	JJ	EPA 537.1
PFTrDA	ND	ng/L	6.00	1/19/26 23:52	JJ	EPA 537.1

Anatek Labs, Inc.

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504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - email spokane@anateklabs.com

Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

PWS Name:	**City of Hermiston**	Lab/Sample Number:	**MGA0244-03**
Date Received:	**01/13/2026**	Date Reported by Lab:	**02/02/2026**
PWS#:	**Well #5**	PWS Facility ID:	**00372**
Collect Date:	**01/12/2026**	Collection Time:	**11:31**
Sampling Point ID:	**EP-C**	Sample Point/ Location:	**Well #5 (EP-C)**
Sampling Event:	**SE1**	Sample Type:	**FS**
Lab Federal ID#:	**ID00013**		

SVOC Analysis Report:

Analyte	Recovery	Recovery Limits	Analyzed	Analyst	Method
Surrogate: 13C2-4:2FTS IDA	*96%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C2-6:2FTS IDA	*108%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C2-8:2FTS IDA	*110%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C2-PFDoA IDA	*85%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C3-HFPO-DA IDA	*98%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C3-PFBS IDA	*106%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C3-PFHxS IDA	*113%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C4-PFBA IDA	*106%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C4-PFHpA IDA	*90%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C5-PFHxA IDA	*99%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C5-PFPeA IDA	*111%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C6-PFDA IDA	*96%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C7-PFUnA IDA	*90%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C8-PFOA IDA	*99%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C8-PFOS IDA	*106%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C9-PFNA IDA	*89%*	*50-200*	*1/17/26 2:35*	*JJ*	*EPA 533*
Surrogate: 13C2-PFDA NIS	*105%*	*70-130*	*1/19/26 23:52*	*JJ*	*EPA 537.1*
Surrogate: 13C2-PFHxA	*111%*	*70-130*	*1/19/26 23:52*	*JJ*	*EPA 537.1*
Surrogate: 13C3-HFPO-DA IDA	*109%*	*70-130*	*1/19/26 23:52*	*JJ*	*EPA 537.1*
Surrogate: d5-N-EtFOSAA	*102%*	*70-130*	*1/19/26 23:52*	*JJ*	*EPA 537.1*

Authorized Signature,



Justin Doty For Todd Taruscio, Laboratory Manager

Anatek Labs, Inc.

1282 Alturas Drive - Moscow, ID 83843 - (208) 883-2839 - email moscow@anateklabs.com
504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - email spokane@anateklabs.com

Client:	City of Hermiston	Work Order:	MGA0244
Address:	180 N.E. 2nd St	Project:	UCMR5 - 00372
	Hermiston, OR 97838	Reported:	2/2/2026 10:18
Attn:	Alex McCann		

Public Drinking Water System UCMR5 Report

M1	Matrix spike recovery was high; the associated blank spike recovery was acceptable. Potential matrix effect
PQL	Practical Quantitation Limit
ND	Not Detected
MCL	EPA's Maximum Contaminant Level
Dry	Sample results reported on a dry weight basis
*	Not a state-certified analyte
RPD	Relative Percent Difference
%REC	Percent Recovery
Source	Sample that was spiked or duplicated.

This report shall not be reproduced except in full, without the written approval of the laboratory
The results reported related only to the samples indicated.

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☐ 1282 Alturas Drive,Moscow ID 83843 (208)883-2839 - EPA# ID00013
☐ 504 E Sprague Ste D, Spokane WA 99202 (509)838-3999 - EPA# WA001

MGA0244
Due: 01/27/26

UCMR5 Chain of Custody

WATER SYSTEM	city OF Heermiston	Water System #	41-00372
SEND REPORT TO	Alex McCann	Phone Number	541-567-5521
ADDRESS	180 N.E. 2nd ST	Email	fcervantes@Heermiston.gov
CITY STATE ZIP	Heermiston OR 97838	County	Umatilla

PWS FACILITY NAME (e.g., Treatment Plant)
Well # 2 EP-A

PWS FACILITY ID (5-digits)
00372

SAMPLING POINT ID (from inventory)
EP-A

Sampling Point Type Code
☒ Entry point to the distribution system

Water Source Type Code
X GW-Ground Water ___ SW-Surface Water ___ GU-Ground Water under influence of SW ___ MX-Mixed Water

SAMPLING EVENT (circle one)
(SE 1) - SE 2 - SE 3 - SE 4

Date and Time Collected	1-12-26 8:30 AM	**Sampler Name**	Fernando Cervantes
		Sampler Signature	

Check Desired Analyses

UCMR5 PFAS
- ☑ EPA 533
  - ☑ EPA 533 Field Reagent Blank transferred from Bottle A to Bottle B
- ☑ EPA 537.1
  - ☑ EPA 537.1 Field Reagent Blank transferred from Bottle A to Bottle B

UCMR5 Lithium
- ☑ EPA 200.7 (lithium)

Customer Signature		Received By	
Shipping/Delivery Date	1-12-26	Date/Time Received	1/13/26 0951

Form COC20.01 - Eff 9 Feb 2023 - Page 1 of 1

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☐ 504 E Sprague Ste D, Spokane WA 99202 (509)838-3999 - EPA# WA00169

UCMR5 Chain of Custody

WATER SYSTEM	City of Hermiston	Water System #	41-00372
SEND REPORT TO	Alex McCann	Phone Number	541-567-5521
ADDRESS	180 N.E. 2nd ST	Email	fcervantes@Hermiston.Gov
CITY STATE ZIP	Hermiston Oregon 97838	County	Umatilla

PWS FACILITY NAME (e.g., Treatment Plant)	Well #4 EP-B
PWS FACILITY ID (5-digits)	00372
SAMPLING POINT ID (from inventory)	EP-B
Sampling Point Type Code	☒ Entry point to the distribution system
Water Source Type Code	X GW-Ground Water ___ SW-Surface Water ___ GU-Ground Water under influence of SW ___ MX-Mixed Water
Date and Time Collected	1-12-26 9:11 AM
Sampler Name	Fernando Cervantes
Sampler Signature	

SAMPLING EVENT (circle one): (SE 1) - SE 2 - SE 3 - SE 4

Check Desired Analyses

UCMR5 PFAS

- ☑ EPA 533
  - ☑ EPA 533 Field Reagent Blank transferred from Bottle A to Bottle B
- ☑ EPA 537.1
  - ☑ EPA 537.1 Field Reagent Blank transferred from Bottle A to Bottle B

UCMR5 Lithium

- ☑ EPA 200.7 (lithium) MS/MSD

Customer Signature		Received By	
Shipping/Delivery Date	1-12-26	Date/Time Received	1/13/26 0951

Form COC20.01 - Eff 9 Feb 2023 - Page 1 of 1

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☐ 504 E Sprague Ste D, Spokane WA 99202 (509)838-3999 - EPA# WA00169

UCMR5 Chain of Custody

WATER SYSTEM	City OF Hermiston	Water System #	41-00372
SEND REPORT TO	Alex McCann	Phone Number	541-567-5521
ADDRESS	180 N.E. 2nd ST	Email	fcervantes@hermiston.gov
CITY STATE ZIP	Hermiston OR 97838	County	Umatilla

PWS FACILITY NAME (e.g., Treatment Plant)	Well #5 EP-C
PWS FACILITY ID (5-digits)	00372
SAMPLING POINT ID (from inventory)	EP-C
Sampling Point Type Code	☑ Entry point to the distribution system
Water Source Type Code	✓ GW-Ground Water ___ SW-Surface Water ___ GU-Ground Water under influence of SW ___ MX-Mixed Water
Date and Time Collected	1-12-26 11:31 AM
Sampler Name	Fernando Cervantes
Sampler Signature	

SAMPLING EVENT (circle one)
(SE 1) - SE 2 - SE 3 - SE 4

Check Desired Analyses

UCMR5 PFAS

- ☑ EPA 533
  - ☑ EPA 533 Field Reagent Blank transferred from Bottle A to Bottle B
- ☑ EPA 537.1
  - ☑ EPA 537.1 Field Reagent Blank transferred from Bottle A to Bottle B

UCMR5 Lithium

- ☑ EPA 200.7 (lithium)

Customer Signature		Received By	
Shipping/Delivery Date	1-12-26	Date/Time Received	1/13/26 0951

Form COC20.01 - Eff 9 Feb 2023 - Page 1 of 1

ANATEK LABS

Sample Receipt and Preservation Form

Cooler Temperature	
Read (°C):	1.1
Corrected (°C):	—
Thermometer Used:	IR-4 (IR-6)

Client Name: C/O Hermiston

TAT: (Normal) RUSH: _____ days

Samples Received From: FedEx (UPS) USPS Hand Courier Huber Other: _____

Custody Seal on Cooler/Box: Yes (No) Custody Seals Intact: Yes No (N/A)

Number of Coolers/Boxes: 1 Type of Ice: (Wet Ice) (Ice Packs) None Other_____

Packing Material: Bubble Wrap (Bags) Foam/Peanuts Paper None Other: _____

Samples Received Intact?	(Yes)	No	
Chain of Custody Present/Complete?	(Yes)	No	
Labels and Chains Agree?	(Yes)	No	
Samples Received Within Hold Time?	(Yes)	No	
Correct Containers Received?	(Yes)	No	
Anatek Bottles Used?	(Yes)	No	Unknown
Samples Properly Preserved?	(Yes)	No	N/A
VOC Vials Free of Headspace (<6mm)?	Yes	No	(N/A)
VOC Trip Blanks Present?	Yes	No	(N/A)
Total Number of Sample Bottles Received:	25		

Comments	
If No, record preservation and pH	
Initial pH: <2 or	pH Paper ID:

Record bottle types, preservatives, and lot numbers (if known) below. Please list bottles in descending order by size:

P250 NH4Ac (2533) 533 x 11 FB: 2531
P250 Triz (2421) 537 x 11 FB: 2534
P250 Li x 3

Notes, comments, etc. (also use this space if contacting the client - record names and date/time)

Received/Inspected By: TP Date/Time: 1/13/25 0951

Form F19.03 - Eff 20 Oct 2025

Page 1 of 1

Chemical Results

Columbia River water Before Treatment

Facility ID	Facility Name	Analyte Group	Analyte Name	SampleDate	Result	Units	AnalyteLevel Type	CurrentAnalyteLevel	AnalyteLevelUnits	ReceivedDate	Sample ID
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	4/21/2026	56.2	MG/L				5/5/2026	T6D2114-02-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/21/2026	1.45	MG/L				5/5/2026	T6D2114-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/20/2026	68.7	MG/L				1/27/2026	6012218-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/20/2026	1.19	MG/L				1/27/2026	6012218-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/21/2025	59.1	MG/L				11/4/2025	T5J2113-02-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/21/2025	1.33	MG/L				11/4/2025	T5J2113-02-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/15/2025	54.3	MG/L				7/29/2025	5071717-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/15/2025	1.7	MG/L				7/29/2025	5071717-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	5/15/2025	49.5	MG/L				5/28/2025	5051606-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	5/15/2025	1.69	MG/L				5/28/2025	5051606-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/21/2025	77.3	MG/L				2/3/2025	T5A2106-02-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/21/2025	0.92	MG/L				2/3/2025	T5A2106-02-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/15/2024	63.6	MG/L				11/4/2024	4101707-02-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/15/2024	1.02	MG/L				11/4/2024	4101707-02-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/10/2024	54.6	MG/L				9/11/2024	T4G1017-02-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/10/2024	1.55	MG/L				9/11/2024	T4G1017-02-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	5/1/2024	59.2	MG/L				5/16/2024	4050219-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	5/1/2024	1.64	MG/L				5/16/2024	4050219-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/23/2024	70.2	MG/L				2/2/2024	4012524-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/23/2024	1.40	MG/L				2/2/2024	4012524-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/17/2023	63.2	MG/L				11/1/2023	3101825-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/17/2023	1.68	MG/L				11/1/2023	3101825-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/18/2023	49.7	MG/L				8/7/2023	3071939-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/18/2023	1.95	MG/L				8/7/2023	3071939-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	4/18/2023	95.1	MG/L				5/9/2023	3041916-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/18/2023	1.68	MG/L				5/9/2023	3041916-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/18/2023	79.9	MG/L				2/6/2023	3011906-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/18/2023	0.69	MG/L				2/6/2023	3011906-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	11/16/2022	64.1	MG/L				12/9/2022	2111725-02-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	11/16/2022	0.71	MG/L				12/9/2022	2111725-02-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/11/2022	59.1	MG/L				11/3/2022	2101218-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/11/2022	0.93	MG/L				11/3/2022	2101218-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/20/2022	53.2	MG/L				8/2/2022	2072110-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/13/2022	1.33	MG/L				7/22/2022	2071428-01-
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	4/5/2022	71.8	MG/L				4/21/2022	204062201-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/5/2022	1.29	MG/L				4/21/2022	204062201-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/19/2022	34.5	MG/L				2/3/2022	201201601-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/19/2022	0.88	MG/L				2/3/2022	201201601-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/20/2021	68.1	MG/L				11/8/2021	110211701-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/20/2021	0.65	MG/L				11/8/2021	110211701-T

Facility ID	Facility Name	Analyte Group	Analyte Name	SampleDate	Result	Units	AnalyteLevel Type	CurrentAnalyteLevel	AnalyteLevelUnits	ReceivedDate	Sample ID
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/14/2021	55.0	MG/L				8/2/2021	107151801-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/14/2021	1.14	MG/L				8/2/2021	107151801-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	4/14/2021	71.5	MG/L				5/6/2021	104151101-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/14/2021	1.22	MG/L				5/6/2021	104151101-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/12/2021	71.1	MG/L				1/26/2021	101131601-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/12/2021	0.66	MG/L				1/26/2021	101131601-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/13/2020	65.5	MG/L				10/27/2020	010141701-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/13/2020	1.06	MG/L				10/27/2020	010141701-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/9/2020	52.0	MG/L				7/24/2020	007101801-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/9/2020	1.60	MG/L				7/24/2020	007101801-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	4/14/2020	81.8	MG/L				5/5/2020	004151201-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/14/2020	ND	MG/L				5/5/2020	004151201-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/14/2020	64.6	MG/L				2/9/2020	001170701-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/14/2020	1.51	MG/L				2/9/2020	001170701-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/9/2019	68.6	MG/L				11/8/2019	910100401-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/9/2019	1.11	MG/L				11/8/2019	910100401-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	9/25/2019	66.6	MG/L				10/9/2019	909261301-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	9/25/2019	1.42	MG/L				10/9/2019	909261301-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	4/11/2019	82.1	MG/L				4/30/2019	904120401-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/11/2019	2.43	MG/L				4/30/2019	904120401-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/9/2019	47.5	MG/L				1/16/2019	901100801-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/9/2019	ND	MG/L				1/16/2019	901100801-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/10/2018	64.0	MG/L				11/9/2018	1810110640(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/10/2018	1.27	MG/L				11/9/2018	1810110640(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/18/2018	56.0	MG/L				8/14/2018	1807190390(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/18/2018	1.55	MG/L				8/14/2018	1807190390(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	4/3/2018	66.00	MG/L				4/19/2018	18040311-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/3/2018	1.5	MG/L				4/19/2018	18040311-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/10/2018	76.00	MG/L				2/2/2018	1801110100(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/10/2018	1.26	MG/L				2/2/2018	1801110100(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/18/2017	67.1	MG/L				11/7/2017	171018G1-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/18/2017	1.39	MG/L				11/7/2017	171018G1-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/13/2017	49.9	MG/L				7/28/2017	170713E1-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/13/2017	1.74	MG/L				7/28/2017	170713E1-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	4/10/2017	55.1	MG/L				4/28/2017	170410F2-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/10/2017	3.25	MG/L				4/28/2017	170410F2-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/10/2017	70.1	MG/L				1/30/2017	170110C1-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/10/2017	1.53	MG/L				1/30/2017	170110C1-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/5/2016	53.2	MG/L				10/26/2016	161005P1-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/5/2016	1.30	MG/L				10/26/2016	161005P1-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	9/26/2016	54.00	MG/L				10/10/2016	160926A1-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	9/26/2016	1.44	MG/L				10/10/2016	160926A1-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	4/7/2016	66.2	MG/L				4/18/2016	1604080080(

Chemical Results

Facility ID	Facility Name	Analyte Group	Analyte Name	SampleDate	Result	Units	AnalyteLevel Type	CurrentAnalyteLevel	AnalyteLevelUnits	ReceivedDate	Sample ID
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/7/2016	1.91	MG/L				4/18/2016	1604080080(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/12/2016	74.4	MG/L				2/3/2016	1601140120(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/12/2016	1.20	MG/L				2/3/2016	1601140120(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/15/2015	61.4	MG/L				11/2/2015	1510160160(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/15/2015	1.20	MG/L				11/2/2015	1510160160(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/16/2015	55.9	MG/L				9/1/2015	1507200070(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/16/2015	1.52	MG/L				9/1/2015	1507200070(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	4/14/2015	58.4	MG/L				5/8/2015	1504160280(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/14/2015	1.78	MG/L				5/8/2015	1504160280(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/7/2015	70.6	MG/L				2/9/2015	15010711B-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/7/2015	2.88	MG/L				2/9/2015	15010711A-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/8/2014	60.5	MG/L				10/22/2014	1410090490(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/8/2014	1.31	MG/L				10/22/2014	1410090490(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/3/2014	44.9	MG/L				7/23/2014	1407100370(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/3/2014	1.59	MG/L				7/23/2014	1407100370(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	4/10/2014	61.7	MG/L				5/9/2014	1404110160(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/10/2014	2.40	MG/L				5/9/2014	1404110160(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/16/2014	62.8	MG/L				2/6/2014	1401170290(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/16/2014	1.65	MG/L				2/6/2014	1401170290(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/14/2013	60.4	MG/L				11/7/2013	1310180480(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/14/2013	1.44	MG/L				11/7/2013	1310180480(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/22/2013	49.7	MG/L				8/9/2013	1307260050(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/22/2013	1.43	MG/L				8/9/2013	1307260050(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	4/11/2013	67.1	MG/L				5/2/2013	1304120390(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/11/2013	2.26	MG/L				5/2/2013	1304120390(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/17/2013	65.7	MG/L				2/1/2013	1301180170(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/17/2013	1.54	MG/L				2/1/2013	1301180170(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/10/2012	57.8	MG/L				10/25/2012	1210110160(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/10/2012	1.34	MG/L				10/25/2012	1210110160(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	8/9/2012	49.3	MG/L				8/27/2012	1208100490(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	8/9/2012	1.52	MG/L				8/27/2012	1208100490(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	4/5/2012	70.4	MG/L				5/2/2012	1204060410(
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/5/2012	2.34	MG/L				5/2/2012	1204060410(
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	1/10/2012	78.00	MG/L				3/8/2012	1201124200'
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/10/2012	1.32	MG/L				3/8/2012	1201124200'
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/6/2011	62.00	MG/L				12/1/2011	1110090700'
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/6/2011	1.61	MG/L				12/1/2011	1110090700'
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/7/2011	36.00	MG/L				9/1/2011	1107180600'
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/7/2011	2.11	MG/L				9/1/2011	1107180600'
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	5/13/2011	1.92	MG/L				6/3/2011	1105239600'
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	3/9/2011	70.00	MG/L				3/24/2011	1103138000'
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	3/9/2011	1.73	MG/L				3/24/2011	1103138000'
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/13/2010	58.00	MG/L				12/16/2010	1010207800'

Facility ID	Facility Name	Analyte Group	Analyte Name	SampleDate	Result	Units	AnalyteLevel Type	CurrentAnalyteLevel	AnalyteLevelUnits	ReceivedDate	Sample ID
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/13/2010	1.53	MG/L				12/16/2010	1010207800
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/13/2010	42.00	MG/L				11/8/2010	1007299200
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/13/2010	1.83	MG/L				11/8/2010	1007299200
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	5/5/2010	64.00	MG/L				6/11/2010	100505O1-T
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	5/5/2010	1.71	MG/L				6/11/2010	100505O1-T
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	3/10/2010	72.8	UG/L				4/8/2010	1003110240
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	3/10/2010	1.24	MG/L				4/8/2010	1003110240
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/16/2009	52	MG/L				2/23/2010	090716H1A
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/16/2009	1.58	MG/L				1/8/2010	090716H1B
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	5/5/2009	68	MG/L				2/23/2010	090505Q1A
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	5/5/2009	1.75	MG/L				2/23/2010	090505Q1A
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	10/7/2008	61.2	MG/L				4/15/2009	081007V1E
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/7/2008	1.71	MG/L				4/15/2009	081007V1E
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	7/24/2008	46.2	MG/L				8/25/2008	807250402
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/10/2007	1.6	MG/L				11/9/2007	A71010Z1
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/10/2007	1.6	MG/L				8/3/2007	A70712AJ1
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	5/8/2007	1.6	MG/L				6/20/2007	A70508AR2
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	3/14/2007	1.4	MG/L				4/18/2007	A70314M2
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	10/4/2006	1.5	MG/L				10/31/2006	A6104AL2
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/12/2005	2.4	MG/L				8/1/2005	A50712AN-1
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	6/7/2005	1.5	MG/L				6/28/2005	A50607AT-2
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	5/9/2005	1.5	MG/L				6/2/2005	A50509J-2
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/6/2005	1.7	MG/L				4/18/2005	A50406AI-2
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	3/8/2005	1.5	MG/L				3/31/2005	A50308AF-2
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	2/10/2005	1.4	MG/L				3/7/2005	A50210L-1
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	12/8/2004	1.3	MG/L				1/7/2005	A41208CT-2
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	9/8/2004	1.4	MG/L				9/21/2004	A40908AY-2
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	8/10/2004	1.6	MG/L				9/8/2004	A40810V-2
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	7/13/2004	1.5	MG/L				8/3/2004	A40713AN-2
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	6/17/2004	1.7	MG/L				7/7/2004	A40617AA-2
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	5/11/2004	1.8	MG/L				5/24/2004	A40511P-1
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	4/13/2004	1.9	MG/L				4/29/2004	A40413O-1
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	2/10/2004	1.2	MG/L				3/4/2004	A40210U-2
CH-F	COMMON HEADER FOR WTP-F	WQ	TOTAL ORGANIC CARBON	1/14/2004	1.1	MG/L				2/4/2004	A40114AV-1
CH-F	COMMON HEADER FOR WTP-F	WQ	ALKALINITY, TOTAL	5/13/2001	62.00	MG/L				6/3/2011	1105239600

UMPQUA Research Company - Table Rock
422 SW 6th Street
Pendleton, Oregon 97801
(541) 863-5201 Fax: (541) 863-6199
E-mail: TRLab@URCmail.net
Internet: www.umpquaresearch.com
ORELAP ID# OR100061

ANALYSIS REPORT
URC # T6D0713

Hermiston, City of	Project: Waste Water	Date Reported: 04/15/26
180 NE 2nd St		Date Sampled: 04/07/26 11:00
Hermiston, OR 97838		Date Received: 04/07/26 11:40
	Client Contact: Bill Schmittle	Sampled By: Fernando

Sample Location: WTP Raw

URC Sample #: T6D0713-01

Matrix: Drinking Water

Metals

Analyte	Code	Result	Units	MRL	BML	Prepared	Analyzed	Analyst	Qualifier
USEPA 200.8									
*Calcium (‡)		**16.6**	mg/L	5.00		04/13/26	04/13/26	DST	
*Iron (‡)		0.185	mg/L	0.033	0.3	04/09/26	04/09/26	DST	
*Magnesium (‡)		**4.39**	mg/L	1.00		04/13/26	04/13/26	DST	
*Manganese (‡)		0.012	mg/L	0.011	0.05	04/09/26	04/09/26	DST	
[CALC]									
*Hardness, Calculated		**59.5**	mg/L	4.12		04/13/26	04/13/26	DST	

UMPQUA Research Company/TR

The results in this report apply to the samples analyzed in accordance with the chain of custody document.
This analytical report must be reproduced in its entirety.

Diane Verdin For Lacy McCamey

UMPQUA Research Company - Table Rock
422 SW 6th Street
Pendleton, Oregon 97801
(541) 863-5201 Fax: (541) 863-6199
E-mail: TRLab@URCmail.net
Internet: www.umpquaresearch.com
ORELAP ID# OR100061

ANALYSIS REPORT
URC # T6D0713

Qualifiers and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the MRL (minimum reporting limit)
NA	Not Applicable
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MRL	Minimum Reporting Limit
MDL	Minimum Detection Limit
BML	Benchmark Level
(‡)	ORELAP Accredited Analyte
(~)	Due to rounding of individual analytes, the "total" may vary slightly from the sum of the individual analyte values.

Analytes flagged with * were subcontracted to Umpqua Research Company/MC. ORELAP ID #: OR100031

UMPQUA Research Company/TR

The results in this report apply to the samples analyzed in accordance with the chain of custody document.
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Diane Verdin For Lacy McCamey

APPENDIX D
WesTech Engineering, LLC, Proposal

Proposal

Hermiston WTP

Oregon

Representative
John Simon
Goble Sampson & Associates
Issaquah, Washington
jsimon@goblesampson.com
(425) 392-0491

Engineer
Anderson Perry and Associates
Walla Walla, Washington
(509) 529-9260

Owner
Hermiston Water Department

Contact
Adrian Williams
awilliams@westechwater.com
(801) 290-6403

Elise Hotz
ehotz@westechwater.com
(801) 290-1472

Jorge Tito
jtito@westechwater.com
(515) 268-8543

Proposal: 2530382.B_Rev3
Friday, June 19, 2026

WesTech®

Swire Water

Table of Contents

Technical Proposal

Item A – VersaFilter™ Ultrafiltration System, Model UFT94B
Item B – Trident® Package System, Model 2TR-840A
Item C – Trident® Package System, Model TR-840A

Clarifications and Exceptions

Commercial Proposal

Bidder's Contact Information
Pricing
Payment Terms
Schedule
Freight

Warranty

Terms and Conditions

Supplemental Information

General Arrangement Drawings

Item A – VersaFilter™ Ultrafiltration System, Model UFT94B

Design Overview

Parameter	Unit	Value / Description
Proposed WesTech System	-	VersaFilter™ Ultrafiltration System, Model UFT94B
Redundancy and Unit Quantity	-	4 x 33%; N+1 Redundancy, (4) total units
Application	-	Municipal Drinking Water
Net Product Flow Rate	gpm	4,700
Membrane Module	-	Toray HFUG-2020AN
Number of Modules	Per Unit	72 installed, 72 capacity
Approximate Dimensions	Per Unit	35’-8 15/16” L x 8’-10 7/8” W x 14’-11 7/16” H

WesTech is a leader in innovative membrane filtration technology, including VersaFilter™ open-platform systems, AltaPac™ packaged systems, containerized systems, retrofit engineering solutions, intelligent controls, and performance analysis technology. Systems are skid-mounted and factory-tested for ease of installation, straightforward operation, and long-term reliability. Major equipment and valves are pre-configured for efficient commissioning. Controls are fully automated and completed by in-house electrical engineers and process automation experts.

WesTech is one of the only membrane system suppliers that offers pre- and post-treatment equipment for an integrated, complete process with consolidated equipment support. Notably, WesTech has more pretreatment equipment to UF/MF systems than any supplier. With more than 140 membrane systems throughout North America, this significant experience translates into reliable, time-tested equipment.



A WesTech Ultrafiltration System rated for 3 MGD capacity.

Basis of Design Information

Water Quality

WesTech UF systems will consistently produce high purity treated water even with variation in the feed source due to a small nominal pore size in an absolute barrier configuration.

Feed Water Quality

Parameter	Unit	Value / Description
Source	-	Columbia River
pH	-	7.15
Temperature	°C	4 – 21
Turbidity	NTU	5 average, < 30 maximum
Total Suspended Solids*	mg/L	< 5
Total Organic Carbon	mg/L	1.2, < 3 maximum
Iron	mg/L	0.185
Manganese	mg/L	0.012

*Values are assumed and should be verified. The use of charged polymeric flocculant aids increases risk of irreversible membrane fouling and should not be used without prior written approval. This risk is applicable to all polymeric MF/UF membrane manufacturers. The presence of oil and grease in the source water must be minimized and may void any applicable warranty.

Treated Water Quality

Parameter	Unit	Value / Description
Turbidity	NTU	≤ 0.10, 95% of the time ≤ 0.3 maximum
Total Suspended Solids	mg/L	< 1
Silt Density Index	-	≤ 3
Giardia Removal*	-	≥ 4 log (99.99%)
Cryptosporidium Removal*	-	≥ 4 log (99.99%)
Virus Removal*	-	≥ 1.0 log removal (90.00%)
Certification Standards		NSF/ANSI 61, NSF/ANSI 419, UL 508A Listed

*Challenge-testing certification is provided by independent evaluation through NSF/ANSI 419. Typical removal levels exceed the certification level and are often on the order of 6-log. Additionally, the UF membranes achieve 1.5 log removals of viruses, though virus removal certification is only recognized up to 1.0 log by CDDW for any membrane filter.

Process Description

The filtration process is an outside/in, pressure-driven process to remove suspended solids and turbidity, and to achieve 4-log reduction of pathogens like *Giardia* and *Cryptosporidium*. Ultrafiltration membranes can also achieve >1.5 log reduction of waterborne viruses. Raw water from the Columbia River is directly fed to the membrane system. VFD-controlled feed pumps (VFDs by others) the source water to a pre-filter for removal of larger debris.

Filtrate is sent to the backwash supply tank (by others). Backwashing is used to remove accumulated foulants by reversed inside/out flow at an interval of 20 - 60 minutes with air scour for increased agitation. A drain or filter-to-waste step is used to remove any additional accumulated material. Membrane integrity testing is conducted automatically once every 24 hours. The pressure decay test (PDT) is capable of detecting a single fiber break.

Maintenance cleans (MCs)/chemically-enhanced backwashes (CEBs) and clean-in-place (CIP) procedures are automated chemical cleaning processes used to recover membrane permeability. MCs/CEBs are typically performed with NaOCl once per day to once per week. The automated clean-in-place procedure is designed to occur no more frequently than once per month, is conducted with either NaOCl or acid and is initiated when membrane permeability decreases to a specified value.

Following chemical cleaning procedures, the membrane units are drained by gravity or a pressurized drain-to-waste, and waste is subsequently sent to the discharge location. A rinse step and backwashing are used to remove residual chemical prior to resuming production. If desired, chemical cleaning waste can be captured and neutralized prior to discharge.



Detailed Design Summary

Detailed Design Summary – One Unit Off

Parameter	AES	SI
Number of Units in Operation	3	
WesTech System Model	UFT94B, VersaFilter	
Installed Modules per Unit	72	
Total Module Capacity per Unit	72	
Module Model	Toray HFUG-2020AN	
Membrane Area per Module	969 ft²	90 m²
Membrane Area in Operation	209,304 ft²	19,440 m²
Design Temperature	41.0 °F	5.0 °C
Production Cycle Time	30 min	
Flux Rates		
Instantaneous Flux at Design Temp.	37.2 gfd	63.2 lmh
Normalized Flux (20°C) at Design Temp.	56.7 gfd	96.3 lmh
Flow Rates		
Instantaneous Flow Rate	5,411 gpm	1,229 m³/hr
Average Gross Flow Rate	4,898 gpm	1,113 m³/hr
Average Net Filtrate	4,700 gpm	1,067 m³/hr
Backwash Flow Rate	1,984 gpm	450 m³/hr
Approx. Net Filtrate Production per Day	6,767,980 gpd	25,620 m³/day
Backwash Waste Volume per Day	128,676 gpd	490 m³/day
Influent Used for Rinsing/Draining per Day	156,811 gpd	738 m³/day
Water Recovery	96.0 %	
Estimated Maintenance Clean Frequency	Daily to Weekly	
Estimated Clean-In-Place Frequency	30 days	

Scope of Supply

Scope of Supply – Ultrafiltration System

Item	Quantity	Description	Brand (or Equal)
Membrane Modules	72/unit 288/system	Hollow-fiber, outside-in UF, PVDF/TIPS, 0.01 µm	Toray HFUG-2020AN
Skid Frames	4 x 33%	Welded carbon steel, baked powder-coat	-
Manifold and Supply Piping	-	Schedule 80 PVC/HDPE 10” feed/filtrate connections	-
Feed Pump	4 x 33%	Shipped loose, vertical multi-stage, VFDs by others	Grundfos
Backwash Pump	2 x 100%	Shipped loose, vertical-multi-stage, VFDs by others	Grundfos
Pre-filter	4 x 33%	Shipped loose, 200-micron, automatic backwashing	Amiad
Compressed Air System	2 x 100%	Compressor, receiver, oil filter, and dryer	Quincy
Turbidimeter	1 common feed 1/unit filtrate 5 total	TU5300 sc TU5300 sc	Hach Hach
Flow Meters	1/unit 1 backwash 5 total	Bi-directional magnetic flow meter with transmitter	E+H
Pressure Instrumentation	-	Transmitters, gauges	Trerice
Pneumatic Valves / Actuators	-	Manual and actuated valves; polyurethane tubing	Bray 3L
Block and Bleed Assemblies	-	Cross-connection control on feed, backwash, and CIP lines	Bray 3L
Tanks	By Others	Feed, backwash	-
Bolts and Fasteners*	1 lot	Zinc plated carbon steel	-

*Anchor bolt supply and design, if required, is not by WesTech

Scope of Supply – Clean-in-Place System

Item	Quantity	Description	Brand (or Equal)
Skid Frames	1 x 100%	Welded carbon steel, baked powder-coat	-
Manifold and Supply Piping	-	Choose an item. 6" supply/return connections	-
Recirculation Pump	2 x 100%	End-suction centrifugal, skid-mounted, motor starter by others	Goulds
Heater	1	60 kW	Chromalox
Pre-strainer	1	Superleader	Arkal
Chemical Metering Pumps			
Sodium Hypochlorite	2 x 100%	CIP/MC process	ProMinent
Citric Acid	2 x 100%	CIP/MC process	ProMinent
Instrumentation			
pH Sensor/Transmitter	1	-	GF Signet
Temperature Transmitter	1	-	GF Signet
Flow Probe	1	-	IFM Efector
Pressure Instrumentation	-	Transmitters, gauges	Trerice
Valves / Actuators	-	Manual and actuated valves; polyurethane tubing	Bray
Tank	CIP	Off-skid, 1,500 Gallons HDPE with level measurement	Norwesco
Bolts and Fasteners*	1 lot	Zinc plated carbon steel	-

*Anchor bolt supply and design, if required, is not by WesTech

Control Panels

Scope of Supply – Controls*

Item	Quantity	Description	Brand
Master Control Panel	1 total	Shipped loose	
Enclosure		NEMA 4X, 304SS	Hoffman
PLC		CompactLogix	Allen-Bradley
HMI		Industrial Panel PC with FactoryTalkView ME	Advantech
Remote Connection**		Industrial VPN / firewall router	Tosibox
Local Panel	1/skid	Installed on CIP and UF skids	
Enclosure		NEMA 4X, 304SS	Hoffman
I/O		CompactLogix	Allen-Bradley

*Includes H/O/A switch, lights, emergency stop, alarm silence / reset, control relays and timers, as applicable.
**Allows a secure connection for WesTech to provide PLC and HMI support.

Programming

All programming is per WesTech standard practices which includes:

- System overview and set points
- Individual component operational status and instrument trend displays
- Alarm history, status, and indication

Additional services such as SCADA or DCS integration, push alarm notifications (SMS, email, etc.), data historian, and reporting can be added upon request.

Additional Services

On-Site Technical Assistance and Training

WesTech has included on-site technical assistance during construction, pre-commissioning and start-up to ensure the equipment is installed and commissioned per WesTech and sub-supplier requirements. All service visits will be completed by certified field technicians that are qualified and have experience working with WesTech equipment.

Any additional trips that the customer may request can be purchased at the standard WesTech daily rates plus travel and living expenses.

On-Site Technical Service

Service	Number of Trips	Number of Days*
Installation and Start-Up Commissioning Assistance, Operator Training	4	20
Total Included Service	**4**	**20**

*Including travel time

To supplement the above noted technical assistance, WesTech will provide the additional services.

- Technical support during WesTech office hours with a direct phone number to reach a qualified and involved project representative during the equipment warranty period.
- Access to a 24-hour on-call emergency support line.



Item B – Trident® Package System, Model 2TR-840A

Design Overview

Parameter	Unit	Value / Description
Proposed WesTech System	-	Trident® Package Water Treatment Plant, Model TR-840A (TR412A)
Redundancy and Unit Quantity	-	4 x 25%; N+0 Redundancy, (4) total units
Application	-	Surface Water
System Type		Field-Assembled (by others)
Overall Design Flow Rate	gpm	4,700
Filter Hydraulic Loading Rate	gpm/ft²	4.2
Filter Backwash Method	-	Air and water followed by water only
Approximate Dimensions	Per Unit	39'-10" L x 11'-11" W x 10'-1" H

The Trident® is a proprietary, pre-engineered system consisting of pretreatment and filtration within a single, shippable tank. The patented Adsorption Clarifier® (AC) system and mixed media filter deliver excellent, predictable finished water quality for a variety of treatment solutions. The required footprint is up to 60% smaller than conventional plants, leading to lower installation cost. Unit flow capacity ranges from 175 gpm to 1,400 gpm, with multiple units used to handle higher flows. The internal components and ancillaries are shipped loose for installation by the contractor.



Trident® system depicted may not entirely reflect unit quoted.

Basis of Design Information

Water Quality

The WesTech Trident system is designed based on the following feed water quality information.

Feed Water Quality*

Parameter	Unit	Value / Description
Source	-	Drinking Water
pH	-	6.5 – 8.5
Temperature	°C	15 – 25
Turbidity	NTU	< 5 continuous, up to 30 spike
Total Organic Carbon (TOC)	mg/L	1.2
Color	cu	Unknown
Iron	mg/L	0.185
Manganese	mg/L	0.012

*Values are assumed and should be verified. It is expected that the influent water will not contain any substances that would inhibit or damage the process / equipment including solvents, lubricants, preservatives, and oil. Upstream process adjustments are the responsibility of and must be made by the Owner / Contractor to provide sufficient particle size and strength for filterability.

Treated Water Quality*

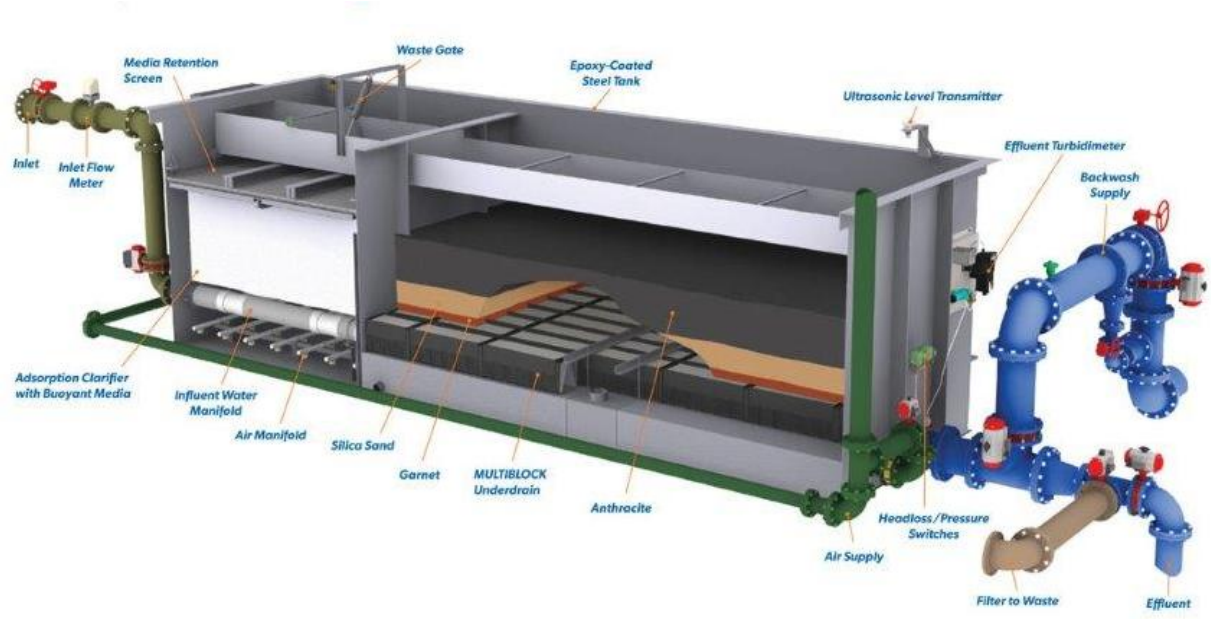
Parameter	Unit	Value / Description
Turbidity	NTU	< 0.10

*Treated water quality values are an estimate, not guaranteed values. Treated water quality may be dependent on appropriate type and concentration of chemical, as applicable, with dosing relevant to project water quality and constituent speciation. Determination and optimization of reaction chemistry is by others. WesTech can support bench- and pilot-scale testing, if desired.

Process / Design Description

The Trident treatment system utilizes a two-stage configuration consisting of an up-flow buoyant media Adsorption Clarifier® followed by a conventional down-flow mixed media filter. The system is effective in reducing many raw water constituents including (but not limited to) iron, manganese, turbidity, color, and arsenic (as co-precipitant). Chemically treated water is introduced into the bottom of the Adsorption Clarifier section, where flocculation and clarification take place to reduce turbidity 75% to 95%. Clarified water flows to the gravity filter to provide a final solids removal step to produce a high-quality water effluent. Cleaning of the Adsorption Clarifier media to remove collected solids is completed using influent water and air scour. The filter is backwashed using an air and water process. Multiple AC flushes take place between filter backwashes. Once the tube / backwash flush is complete, the unit will complete a filter-to-waste step then return to service.

The filter system includes the MULTIBLOCK® direct retention air/water backwash underdrain system. Other filter underdrain options are also available. Each system includes the Aquaritrol® PLC program for continuous effluent quality control.



Trident® system depicted may not entirely reflect unit quoted.

Detailed Design Summary

Detailed Design Summary

Parameter	AES
WesTech System Model	Trident® Package Water Treatment Plant, Model TR-840A (TR412A)
Number of Units in System	4
Number of Units in Operation	4
Time in Operation Per Day	24 hours
Flow Rates	
System Design Flow Rate	4,700 gpm
Daily Flow Based on Operation Time	6,768,000 gpd
Design Flow Rate, Unit	1,175 gpm
Weights	
Shipping Weight, Per Unit	34,000 lb.
Operating Weight, Per Unit	330,000 lb.
Adsorption Clarifier Section per Unit	
Area	140 ft^2
Hydraulic Loading Rate	8.4 gpm/ft^2
Flush Loading Rate – Water	10 gpm/ft^2
Flush Loading Rate – Air	3.4 $SCFM/ft^2$
Water Flush Rate – Water	1,400 gpm
Water Flush Rate – Air	475 SCFM
Filter Section per Unit	
Area	280 ft^2
Hydraulic Loading Rate	4.2 gpm/ft^2
Backwash Loading Rate – Water	5 gpm/ft^2
Backwash Loading Rate – Air	3 $SCFM/ft^2$
Backwash Flow Rate – Water	1,400 gpm
Backwash Flow Rate – Air	950 SCFM
Water Loading Rate (re-stratification)	15 gpm/ft^2
Water Flow Rate (re-stratification)	4,200 gpm
Filter Effluent Flow	Gravity discharge
Backwash Method	Air and water followed by water only
Backwash Water Source	External backwash supply

Scope of Supply

Scope of Supply – Trident System

Item	Quantity	Description	Material/Brand
Tank*	4 total	Field-assembled rectangular tank	Carbon steel
AC Internals			
AC Media	560 ft^3/unit	50/50 R&S, NSF 61 approved	HDPE
Collection Trough	1/unit	Rectangular trough with waste gate	Carbon steel
Inlet Distribution	1 lot/unit	Header-lateral system & supports	Sch 80 PVC
Air Distribution	1 lot/unit	Header-lateral system & supports	Sch 80 PVC
Media Retention	140 ft^2/unit	Screen mesh under grating with gaskets for installation	304 SS Mesh, Aluminum Grating
Filter Internals			
Underdrain	280 ft^2/unit	MULTIBLOCK®	304 SS
Washtrough	1/unit	Rectangular trough	Carbon steel
Air/Water Distribution	1 lot/unit	Plenum with air and water connections	304 SS
Filter Media	1 lot	See media table below	-
Valves	1 lot	See valve table below	Bray Series 30 with 70 actuator
Walkway & Access Stairs	-	Provided by others	-
Air Scour Blower System	2	Regenerative; 25 HP, 230/460 V, 60 Hz, 3 ph, TEFC motor	FPZ
Instrumentation			
Influent Flow Meter	1/unit	Dedicated, magnetic meter	Endress+Hauser
Level Transmitter	1/unit	Radar	Endress+Hauser
Pressure Transmitter	2/unit	Assembly, includes digital display	Rosemount
Pressure Switch	1/system	Air scour, assembly includes gauge	Ashcroft
Effluent Turbidimeter	1/unit	Dedicated assembly with controller	HACH
Chem Feed Equipment			
Coagulant Pump	1	Pos. displacement, diaphragm type	LMI
Polymer Pump	1/unit	Pos. displacement, diaphragm type	LMI
Polymer Tank	1	500 gallon, cover included	Chemtainer
Mixers	2	1/4 HP, 115/230 V, 60 Hz, 1 ph	MixMor
Hardware**	1 lot	Bolts and fasteners	304 SS

*Tank is shipped without internals. Internal components and ancillaries are shipped loose for installation by others.
**Anchor bolt design and supply is not by WesTech.

Media

Scope of Supply – Filter Media*

Type	Quantity	Depth	Effective Size	U.C.	Packaging
Anthracite	1,697 ft^3	18 in	1.0 - 1.1 mm	≤ 1.7	Bagged and palletized
Sand	882 ft^3	9 in	0.35 - 0.45 mm	≤ 1.4	Bagged and palletized
Garnet	294 ft^3	3 in	0.20 - 0.32 mm	≤ 1.7	Bagged and palletized

*Media quantities include sufficient volume for skimming. Media is shipped loose for installation by others.

Valves

Scope of Supply – Trident Valves*

Item	Quantity	NPS	Type	Operator Type
Influent	4	12"	Butterfly	Electric - Modulating
Backwash Inlet	4	16"	Butterfly	Electric - Open/Close
Backwash High Rate	1	16"	Butterfly	Electric - Open/Close
Effluent	4	12"	Butterfly	Electric - Modulating
Filter to Waste	4	12"	Butterfly	Electric - Modulating
AC Air Scour	4	6"	Butterfly	Electric - Open/Close
Filter Air Scour	4	8"	Butterfly	Electric - Open/Close
Waste Gate	4	N/A	Linear Cylinder	Electric - Open/Close
Backwash Low-Rate Set	1	8"	Butterfly	Manual – Handwheel
Backwash High-Rate Set	1	16"	Butterfly	Manual – Handwheel
Influent Isolation	4	12"	Butterfly	Manual – Handwheel
AC Air Check	4	6"	Check	Not Applicable
Filter Air Check	4	8"	Check	Not Applicable

*Valves are shipped loose for installation by others.

Connections

Connections

Parameter	NPS
Influent	12"
Filter Effluent / Backwash Supply	16"
Waste/Overflow	20"
Adsorption Clarifier Air	6"
Filter Air	8"

Surface Preparation and Coating

Surface Preparation and Coating*

Coating Area	Surface Preparation	Coating
Submerged (Tank)	**Ferrous Materials** NACE No. 2 / SSPC-SP 10	**Prime**: Tnemec Series 21, 5 – 7 mils DFT **Stripe**: Tnemec Series 21, brushed **Finish:** Tnemec Series 21, 5 – 7 mils DFT Total DFT: 10 – 14 mils Finish color "Off-white"
Non-Submerged (Tank)	**Ferrous Materials** NACE No. 2 / SSPC-SP 10	**Prime**: Tnemec Series 21, 5 – 7 mils DFT **Finish**: Field finish to be applied by others
Tank Base	N/A	Exterior bottom of tanks uncoated. Installing contractor to apply coal tar or asphaltic coating to equipment base pad prior to tank placement.

*All field surface preparation, field paint, touch-up, and repair to shop painted surfaces are not by WesTech. Some field touch-up and repair will be required.

Control Panel

Scope of Supply – Controls*

Item	Quantity	Description	Brand
Master Control Panel	1 total	Wall mounted / Shipped loose	
Enclosure		NEMA 12, coated steel	Hoffman
PLC		CompactLogix	Allen-Bradley
HMI		PanelView Plus with FactoryTalk View ME	Allen-Bradley
UPS		15-minute power for PLC and HMI only	-
Remote Connection**		Industrial VPN / firewall router	Tosibox

*Includes H/O/A switch, lights, emergency stop, alarm silence / reset, control relays and timers, as applicable. Connection of electrical wiring to terminals within WesTech's control panels to be provided by others.
**Allows a secure connection for WesTech to provide PLC and HMI support.

Programming

All programming shall be performed in accordance with WesTech standard practices, libraries, control routines, and HMI / SCADA faceplates. Programming includes full SCADA integration utilizing native EtherNet / IP communications.

The base scope is limited to standard, non-custom programming and includes the following:

- Standard system overview screens and operator control modes
- Predefined setpoint configuration
- Standard equipment operational status indication, alarms, and instrument trend displays
- Standard alarm status and indication
- Historical data logging with standard data export functionality
- Native EtherNet / IP communications for standard SCADA monitoring and control

Custom programming is expressly excluded from this scope. Additional services, including alarm notification services (push or email), may be provided upon request as an additional scope.

Additional Services

On-Site Technical Assistance and Training

WesTech has included on-site technical assistance during construction, pre-commissioning, and start-up to ensure the equipment is installed and commissioned per WesTech and sub-supplier requirements. All service visits will be completed by certified field technicians that are qualified and have experience working with WesTech equipment.

Any additional trips that the customer may request can be purchased at the standard WesTech daily rates plus travel and living expenses.

On-Site Technical Service

Service	Number of Trips	Number of Days*
Installation Inspection, Start-Up Commissioning Assistance, and Operator Training	7	21
Total Included Service	**7**	**21**

*Including travel time

To supplement the above noted technical assistance, WesTech will provide the additional services.

- Technical support during WesTech office hours with a direct phone number to reach a qualified and involved project representative during the equipment warranty period.
- Access to a 24-hour on-call emergency support line.

Item C – Trident® Package System, Model TR-840A

Design Overview

Parameter	Unit	Value / Description
Proposed WesTech System	-	Trident® Package Water Treatment Plant, Model TR-840A (TR412A)
Redundancy and Unit Quantity	-	2 x 50%; N+0 Redundancy, (2) total units
Application	-	Surface Water
System Type		Field-Assembled (by others)
Overall Design Flow Rate	gpm	2,800
Filter Hydraulic Loading Rate	gpm/ft²	5.0
Filter Backwash Method	-	Air and water followed by water only
Approximate Dimensions	Per Unit	39'-10" L x 11'-11" W x 10'-1" H

The Trident® is a proprietary, pre-engineered system consisting of pretreatment and filtration within a single, shippable tank. The patented Adsorption Clarifier® (AC) system and mixed media filter deliver excellent, predictable finished water quality for a variety of treatment solutions. The required footprint is up to 60% smaller than conventional plants, leading to lower installation cost. Unit flow capacity ranges from 175 gpm to 1,400 gpm, with multiple units used to handle higher flows. The internal components and ancillaries are shipped loose for installation by the contractor.



Trident® system depicted may not entirely reflect unit quoted.

Basis of Design Information

Water Quality

The WesTech Trident system is designed based on the following feed water quality information.

Feed Water Quality*

Parameter	Unit	Value / Description
Source	-	Drinking Water
pH	-	6.5 – 8.5
Temperature	°C	15 – 25
Turbidity	NTU	< 5 continuous, up to 30 spike
Total Organic Carbon (TOC)	mg/L	1.2
Color	cu	Unknown
Iron	mg/L	0.185
Manganese	mg/L	0.012

*Values are assumed and should be verified. It is expected that the influent water will not contain any substances that would inhibit or damage the process / equipment including solvents, lubricants, preservatives, and oil. Upstream process adjustments are the responsibility of and must be made by the Owner / Contractor to provide sufficient particle size and strength for filterability.

Treated Water Quality*

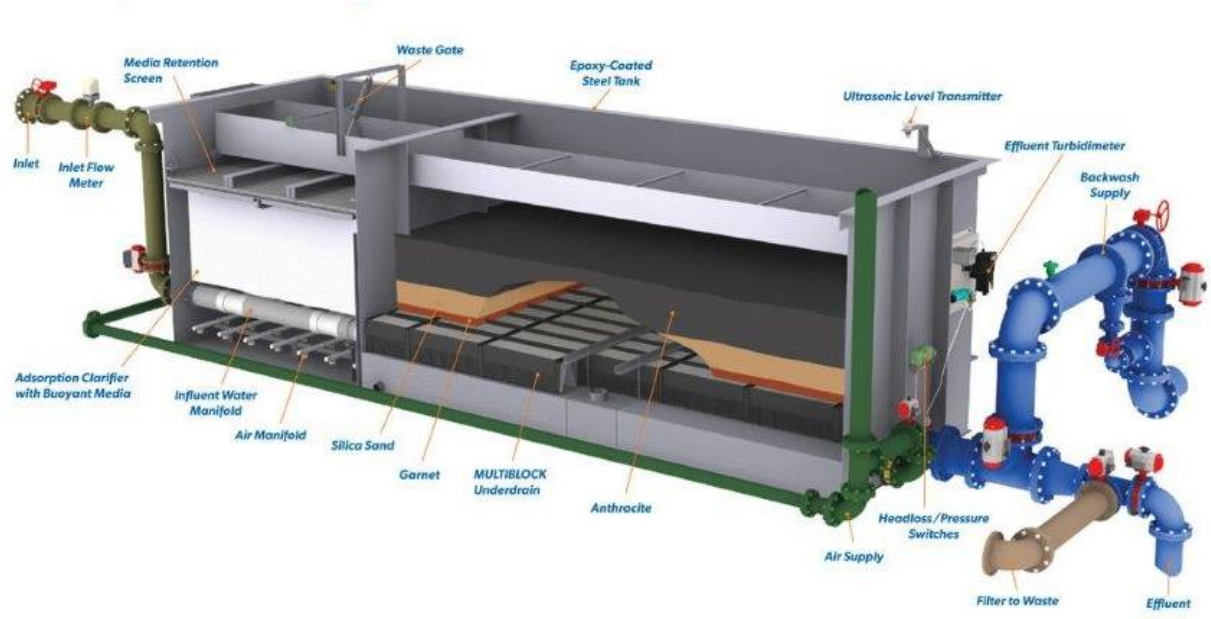
Parameter	Unit	Value / Description
Turbidity	NTU	< 0.10

*Treated water quality values are an estimate, not guaranteed values. Treated water quality may be dependent on appropriate type and concentration of chemical, as applicable, with dosing relevant to project water quality and constituent speciation. Determination and optimization of reaction chemistry is by others. WesTech can support bench- and pilot-scale testing, if desired.

Process / Design Description

The Trident treatment system utilizes a two-stage configuration consisting of an up-flow buoyant media Adsorption Clarifier® followed by a conventional down-flow mixed media filter. The system is effective in reducing many raw water constituents including (but not limited to) iron, manganese, turbidity, color, and arsenic (as co-precipitant). Chemically treated water is introduced into the bottom of the Adsorption Clarifier section, where flocculation and clarification take place to reduce turbidity 75% to 95%. Clarified water flows to the gravity filter to provide a final solids removal step to produce a high-quality water effluent. Cleaning of the Adsorption Clarifier media to remove collected solids is completed using influent water and air scour. The filter is backwashed using an air and water process. Multiple AC flushes take place between filter backwashes. Once the tube / backwash flush is complete, the unit will complete a filter-to-waste step then return to service.

The filter system includes the MULTIBLOCK® direct retention air/water backwash underdrain system. Other filter underdrain options are also available. Each system includes the Aquaritrol® PLC program for continuous effluent quality control.



Trident® system depicted may not entirely reflect unit quoted.

Detailed Design Summary

Detailed Design Summary

Parameter	AES
WesTech System Model	Trident® Package Water Treatment Plant, Model TR-840A (TR412A)
Number of Units in System	2
Number of Units in Operation	2
Time in Operation Per Day	24 hours
Flow Rates	
System Design Flow Rate	2,800 gpm
Daily Flow Based on Operation Time	4,032,000 gpd
Design Flow Rate, Unit	1,400 gpm
Weights	
Shipping Weight, Per Unit	34,000 lb
Operating Weight, Per Unit	330,000 lb
Adsorption Clarifier Section per Unit	
Area	140 ft^2
Hydraulic Loading Rate	10 gpm/ft^2
Flush Loading Rate – Water	10 gpm/ft^2
Flush Loading Rate – Air	3.4 $SCFM/ft^2$
Water Flush Rate – Water	1,400 gpm
Water Flush Rate – Air	475 SCFM
Filter Section per Unit	
Area	280 ft^2
Hydraulic Loading Rate	5 gpm/ft^2
Backwash Loading Rate – Water	5 gpm/ft^2
Backwash Loading Rate – Air	3 $SCFM/ft^2$
Backwash Flow Rate – Water	1,400 gpm
Backwash Flow Rate – Air	950 SCFM
Water Loading Rate (re-stratification)	15 gpm/ft^2
Water Flow Rate (re-stratification)	4,200 gpm
Filter Effluent Flow	Gravity discharge
Backwash Method	Air and water followed by water only
Backwash Water Source	External backwash supply

Scope of Supply

Scope of Supply – Trident System

Item	Quantity	Description	Material/Brand
Tank*	2 total	Field-assembled rectangular tank	Carbon steel
AC Internals			
AC Media	560 ft^3/unit	50/50 R&S, NSF 61 approved	HDPE
Collection Trough	1/unit	Rectangular trough with waste gate	Carbon steel
Inlet Distribution	1 lot/unit	Header-lateral system & supports	Sch 80 PVC
Air Distribution	1 lot/unit	Header-lateral system & supports	Sch 80 PVC
Media Retention	140 ft^2/unit	Screen mesh under grating with gaskets for installation	304 SS Mesh, Aluminum Grating
Filter Internals			
Underdrain	280 ft^2/unit	MULTIBLOCK®	304 SS
Washtrough	1/unit	Rectangular trough	Carbon steel
Air/Water Distribution	1 lot/unit	Plenum with air and water connections	304 SS
Filter Media	1 lot	See media table below	-
Valves	1 lot	See valve table below	Bray Series 30 with 70 actuator
Walkway & Access Stairs	-	Provided by others	-
Air Scour Blower System	2	Regenerative; 25 HP, 230/460 V, 60 Hz, 3 ph, TEFC motor	FPZ
Instrumentation			
Influent Flow Meter	1/unit	Dedicated, magnetic meter	Endress+Hauser
Level Transmitter	1/unit	Radar	Endress+Hauser
Pressure Transmitter	2/unit	Assembly, includes digital display	Rosemount
Pressure Switch	1/system	Air scour, assembly includes gauge	Ashcroft
Effluent Turbidimeter	1/unit	Dedicated assembly with controller	HACH
Chem Feed Equipment			
Coagulant Pump	1	Pos. displacement, diaphragm type	LMI
Polymer Pump	1/unit	Pos. displacement, diaphragm type	LMI
Polymer Tank	1	360 gallon, cover included	Chemtainer
Mixers	2	1/4 HP, 115/230 V, 60 Hz, 1 ph	MixMor
Hardware**	1 lot	Bolts and fasteners	304 SS

*Tank is shipped without internals. Internal components and ancillaries are shipped loose for installation by others.
**Anchor bolt design and supply is not by WesTech.

Media

Scope of Supply – Filter Media*

Type	Quantity	Depth	Effective Size	U.C.	Packaging
Anthracite	848 ft^3	18 in	1.0 - 1.1 mm	≤ 1.7	Bagged and palletized
Sand	441 ft^3	9 in	0.35 - 0.45 mm	≤ 1.4	Bagged and palletized
Garnet	147 ft^3	3 in	0.20 - 0.32 mm	≤ 1.7	Bagged and palletized

*Media quantities include sufficient volume for skimming. Media is shipped loose for installation by others.

Valves

Scope of Supply – Trident Valves*

Item	Quantity	NPS	Type	Operator Type
Influent	2	12"	Butterfly	Electric - Modulating
Backwash Inlet	2	16"	Butterfly	Electric - Open/Close
Backwash High Rate	1	16"	Butterfly	Electric - Open/Close
Effluent	2	12"	Butterfly	Electric - Modulating
Filter to Waste	2	12"	Butterfly	Electric - Modulating
AC Air Scour	2	6"	Butterfly	Electric - Open/Close
Filter Air Scour	2	8"	Butterfly	Electric - Open/Close
Waste Gate	2	N/A	Linear Cylinder	Electric - Open/Close
Backwash Low-Rate Set	1	8"	Butterfly	Manual – Handwheel
Backwash High-Rate Set	1	16"	Butterfly	Manual – Handwheel
Influent Isolation	2	12"	Butterfly	Manual – Handwheel
AC Air Check	2	6"	Check	Not Applicable
Filter Air Check	2	8"	Check	Not Applicable

*Valves are shipped loose for installation by others.

Connections

Connections

Parameter	NPS
Influent	12"
Filter Effluent / Backwash Supply	16"
Waste/Overflow	20"
Adsorption Clarifier Air	6"
Filter Air	8"

Surface Preparation and Coating

Surface Preparation and Coating*

Coating Area	Surface Preparation	Coating
Submerged (Tank)	**Ferrous Materials** NACE No. 2 / SSPC-SP 10	**Prime**: Tnemec Series 21, 5 – 7 mils DFT **Stripe**: Tnemec Series 21, brushed **Finish:** Tnemec Series 21, 5 – 7 mils DFT Total DFT: 10 – 14 mils Finish color "Off-white"
Non-Submerged (Tank)	**Ferrous Materials** NACE No. 2 / SSPC-SP 10	**Prime**: Tnemec Series 21, 5 – 7 mils DFT **Finish**: Field finish to be applied by others
Tank Base	N/A	Exterior bottom of tanks uncoated. Installing contractor to apply coal tar or asphaltic coating to equipment base pad prior to tank placement.

*All field surface preparation, field paint, touch-up, and repair to shop painted surfaces are not by WesTech. Some field touch-up and repair will be required.

Control Panel

Scope of Supply – Controls*

Item	Quantity	Description	Brand
Master Control Panel	1 total	Wall mounted / Shipped loose	
Enclosure		NEMA 12, coated steel	Hoffman
PLC		CompactLogix	Allen-Bradley
HMI		PanelView Plus with FactoryTalk View ME	Allen-Bradley
UPS		15-minute power for PLC and HMI only	-
Remote Connection**		Industrial VPN / firewall router	Tosibox

*Includes H/O/A switch, lights, emergency stop, alarm silence / reset, control relays and timers, as applicable. Connection of electrical wiring to terminals within WesTech's control panels to be provided by others.
**Allows a secure connection for WesTech to provide PLC and HMI support.

Programming

All programming shall be performed in accordance with WesTech standard practices, libraries, control routines, and HMI / SCADA faceplates. Programming includes full SCADA integration utilizing native EtherNet / IP communications.

The base scope is limited to standard, non-custom programming and includes the following:

- Standard system overview screens and operator control modes
- Predefined setpoint configuration
- Standard equipment operational status indication, alarms, and instrument trend displays
- Standard alarm status and indication
- Historical data logging with standard data export functionality
- Native EtherNet / IP communications for standard SCADA monitoring and control

Custom programming is expressly excluded from this scope. Additional services, including alarm notification services (push or email), may be provided upon request as an additional scope.

Additional Services

On-Site Technical Assistance and Training

WesTech has included on-site technical assistance during construction, pre-commissioning, and start-up to ensure the equipment is installed and commissioned per WesTech and sub-supplier requirements. All service visits will be completed by certified field technicians that are qualified and have experience working with WesTech equipment.

Any additional trips that the customer may request can be purchased at the standard WesTech daily rates plus travel and living expenses.

On-Site Technical Service

Service	Number of Trips	Number of Days*
Installation Inspection, Start-Up Commissioning Assistance, and Operator Training	7	20
Total Included Service	**7**	**20**

*Including travel time

To supplement the above noted technical assistance, WesTech will provide the additional services.

- Technical support during WesTech office hours with a direct phone number to reach a qualified and involved project representative during the equipment warranty period.
- Access to a 24-hour on-call emergency support line.

General Clarifications

Terms & Conditions: This proposal, including all terms and conditions contained herein, shall become part of any resulting contract or purchase order. Changes to any terms and conditions, including but not limited to submittal and shipment days, payment terms, and escalation clause shall be negotiated at order placement, otherwise the proposal terms and conditions contained herein shall apply.

Escalation: If between the proposal date and actual procurement and through no fault of the Seller, the relevant cost of labor, material, freight, tariffs, and other Seller costs combined relating to the contract, increase by greater than 2.5% of the overall contract price, then the contract price shall be subject to escalation and increased. Such increase shall be verified by documentation, and the amount of contract price escalation shall be calculated as either the actual increased cost to the Seller or, if agreed by the Parties, the equivalent increase of a relevant industry recognized third-party index, and in both cases without any additional profit or margin being added.

Build America, Buy America Act (BABAA) and Other Domestic Content Requirements: WesTech is U.S. based and proudly manufacturers many products available to meet various domestic procurement requirements. Due to variability in legislation, products, and project-based specifications, WesTech is unable to guarantee compliance with domestic content requirements unless stated otherwise in our official project proposal. For products where domestic sourcing is not currently available, WesTech can provide documentation to support application for relevant waivers (Non-Availability, De Minimis, or others).

USA Tariffs and Current Trade Laws: All prices are based on current USA and North America tariffs and trade laws/agreements at time of bid. Any changes in costs due to USA Tariffs and trade laws/ agreements will be passed through to the purchaser at cost.

Paint: Primer paints are designed to provide minimal protection. Finish coats shall be applied in accordance with the paint manufacturer's data sheet recoat requirements on all shop primed surfaces. WesTech recommends the supply of bare metal with surface preparation and coating performed in the field if recoat windows cannot be met or if additional field-welding is required. All field-based surface preparation, field painting, touch-up, and repair of shop-painted surfaces are by others.

Trident Clarifications

- The tank is shipped without internals. All internal components and ancillaries shall be shipped loose for installation by others.
- The filter is periodically backwashed using treated water. The Adsorption Clarifier is normally washed using influent water one or more times between filter backwashes. The waste holding system should be sized to handle a total of two complete flush / wash volumes from each compartment.
- The influent pumping system should provide a range of 20 – 30 feet head at tank inlet connection. The high-rate water only backwash of the filter shall be 15 – 18 gpm/ft^2 with an available head of 13 feet at the tank connection.
- A 50 percent duty cycle is recommended for the compressed air system.

Exceptions

Not applicable

Commercial Proposal

Proposal Name: Hermiston WTP
Proposal Number: 2530382
Friday, June 19, 2026

1. Bidder's Contact Information

Company Name	WesTech Engineering, LLC
Primary Contact Name	Adrian Williams
Phone	(801) 265-1000
Email	awilliams@westechwater.com
Address: Number/Street	3665 S West Temple
Address: City, State, Zip	Salt Lake City, UT 84115

2. Budget Pricing — Currency: USD

Scope of Supply

A	VersaFilter™ Ultrafiltration System, Model UFT94B	$4,346,000
B	Trident® Package Water Treatment Plant, Model 2TR-840A (TR412A)	$3,765,000
C	Trident® Package Water Treatment Plant, Model TR-840A (TR412A)	$1,895,000
	Estimated Tariffs, To Be Charged at Actual Cost	TBD
	Taxes (sales, use, VAT, IVA, IGV, duties, import fees, etc.)	Not Included

Prices are valid for a period not to exceed 30 days from date of proposal.

Additional Field Service

Daily Rate (Applicable Only to Field Service Not Included in Scope)	$1,350

Pricing does not include field service unless noted in scope of supply but is available at the daily rate plus expenses. The greater of a two week notice or visa procurement time is required prior to departure date. Our field service policy is subject to change and can be provided upon request.

3. Payment Terms

Purchase Order Acceptance and Contract Execution	10%
Submittals Provided by WesTech	15%
Release for Fabrication	35%
Notification of Ready to Ship	40%

All payments are net 30 days. Partial shipments are allowed. An approved Letter of Credit is required if Incoterms CIF, CFR, DAP, CIP, or CPT are applicable. Payment is required in full for all other Incoterms prior to international shipment. Other terms per WesTech proforma invoice. Please note that the advising bank must be named as: Wells Fargo Bank, International Department, 9000 Flair Drive, 3rd Floor, El Monte, California 91731, USA.

4. Schedule - Item A

Submittals, after Purchase Order Acceptance and Contract Execution	12 to 14 weeks
Ready to Ship, after Receipt of Final Submittal Approval	34 to 38 weeks
Estimated Weeks to Ready to Ship	**46 to 52 weeks***

Schedule – Item B

Submittals, after Purchase Order Acceptance and Contract Execution	12 to 14 weeks
Ready to Ship, after Receipt of Final Submittal Approval	26 to 30 weeks
Estimated Weeks to Ready to Ship	**38 to 44 weeks***

Schedule – Item C	
Submittals, after Purchase Order Acceptance and Contract Execution	10 to 12 weeks
Ready to Ship, after Receipt of Final Submittal Approval	22 to 24 weeks
Estimated Weeks to Ready to Ship	**32 to 36 weeks***

*Customer submittal approval is typically required to proceed with equipment fabrication and is not accounted for in the schedule above. Project schedule will be extended to account for time associated with receipt of customer submittal approval. Due to supply chain disruptions and volatility, delivery schedule is a best estimate only and may be improved or hampered based on date of contract execution, scope selection, and materials availability.

5. Freight

Domestic	FOB Shipping Point - Full Freight Allowed to Jobsite (FSP-FFA)	
From	**Final Destination**	**Number of Trucks / Containers**
WesTech Shops	Hermiston, OR	Item A – Approximately 5 Item B – Approximately 11-12 Item C – Approximately 6-7

One-Year Warranty

Equipment manufactured or sold by WesTech Engineering, LLC, once paid for in full, is backed by the following warranty:

Subject to the terms below, WesTech warrants all new equipment manufactured or sold by WesTech Engineering, LLC to be unencumbered and free from defects in material and workmanship, and WesTech will replace or repair, F.O.B. its factories or other location it chooses, any part or parts returned to WesTech which WesTech's examination and analysis determine have failed within the warranty period because of defects in material and workmanship. The warranty period is either, one calendar year immediately following start-up, or eighteen (18) months from when WesTech sent its ready-to-ship notification to the purchaser, whichever expires sooner. All repair or replacement parts qualifying under this warranty shall be free of charge. Purchaser will provide timely written notice to WesTech of any defects it believes should be repaired or replaced under this warranty. WesTech will reject as untimely any warranty defect claim that purchaser submits more than thirty (30) days after the possible warranty defect first occurred. Unless specifically stated otherwise, this warranty does not cover normal wear, consumables, or coatings. Purchasers are invited to inspect the equipment in the shop for proper surface preparation and coating application prior to shipment. This warranty is not transferable.

This warranty shall be void and shall not apply where the equipment or any part thereof

- has been dismantled, modified, repaired, or connected to other equipment, outside of a WesTech factory, or without WesTech's written approval, or
- has not been installed in complete adherence to all WesTech's or parts manufacturer's requirements, recommendations, and procedures, or
- has been subject to misuse, abuse, neglect, or accident, or has not at all times been operated and maintained in strict compliance with all of WesTech's requirements and recommendations therefor, including, but not limited to, the relevant WesTech Operations & Maintenance Manual and any other of WesTech's specified guidelines & procedures, or
- has been subject to force majeure events; use of chemicals not approved in writing by WesTech; electrical surges; overloading; significant power, water or feed supply fluctuations; or non-compliance with agreed feedwater or chemical volumes, specifications or procedures.

In any case where a part or component of equipment under this warranty is or may be faulty and the component or part is also covered under the warranty of a third party then the purchaser shall provide reasonable assistance to first pursue a claim under the third-party warranty before making a claim under this warranty from WesTech. WesTech Engineering, LLC gives no warranty with respect to parts, accessories, or components purchased other than through WesTech. The warranties which apply to such items are those offered by the respective manufacturers.

This warranty is expressly given by WesTech and accepted by purchaser in lieu of all other warranties whether written, oral, express, implied, statutory, or otherwise, including without limitation, warranties of merchantability and fitness for particular purpose. WesTech neither accepts nor authorizes any other person to assume for it any other liability with respect to its equipment. WesTech shall not be liable for normal wear and tear, corrosion, or any contingent, incidental, or consequential damage or expense due to partial or complete inoperability of its equipment for any reason whatsoever. The purchaser's exclusive and only remedy for breach of this warranty shall be the repair and or replacement of the defective part or parts within a reasonable time of WesTech's accepting the validity of a warranty claim made by the purchaser.

Terms and Conditions

Terms and Conditions appearing in any order based on this proposal which are inconsistent herewith shall not be binding on WesTech Engineering, LLC. The sale and purchase of equipment described herein shall be governed exclusively by the foregoing proposal and the following provisions:

1. SPECIFICATIONS: WesTech Engineering, LLC is furnishing its standard equipment as outlined in the proposal and as will be covered by final approved drawings. The equipment may not be in strict compliance with the Engineer's/Owner's plans, specifications, or addenda as there may be deviations. The equipment will, however, meet the general intention of the mechanical specifications of these documents.

2. ITEMS INCLUDED: This proposal includes only the equipment specified herein and does not include erection, installation, accessories, nor associated materials such as controls, piping, etc., unless specifically listed.

3. PARTIES TO CONTRACT: WesTech Engineering, LLC is not a party to or bound by the terms of any contract between WesTech Engineering, LLC's customer and any other party. WesTech Engineering, LLC's undertakings are limited to those defined in the contract between WesTech Engineering, LLC and its direct customers.

4. PRICE AND DELIVERY: All selling prices quoted are subject to change without notice after 30 days from the date of this proposal unless specified otherwise. Unless otherwise stated, all prices are F.O.B. WesTech Engineering, LLC or its supplier's shipping points. All claims for damage, delay or shortage arising from such equipment shall be made by Purchaser directly against the carrier. When shipments are quoted F.O.B. job site or other designation, Purchaser shall inspect the equipment shipped, notifying WesTech Engineering, LLC of any damage or shortage within forty-eight hours of receipt, and failure to so notify WesTech Engineering, LLC shall constitute acceptance by Purchaser, relieving WesTech Engineering, LLC of any liability for shipping damages or shortages.

5. PAYMENTS: All invoices are net 30 days. Delinquencies are subject to a 1.5 percent service charge per month or the maximum permitted by law, whichever is less on all past due accounts. Pro rata payments are due as shipments are made. If shipments are delayed by the Purchaser, invoices shall be sent on the date when WesTech Engineering, LLC is prepared to make shipment and payment shall become due under standard invoicing terms. If the work to be performed hereunder is delayed by the Purchaser, payments shall be based on the purchase price and percentage of completion. Products held for the Purchaser shall be at the risk and expense of the Purchaser. Unless specifically stated otherwise, prices quoted are for equipment only. These terms are independent of and not contingent upon the time and manner in which the Purchaser receives payment from the owner.

6. PAYMENT TERMS: Credit is subject to acceptance by WesTech Engineering, LLC's Credit Department. If the financial condition of the Purchaser at any time is such as to give WesTech Engineering, LLC, in its judgment, doubt concerning the Purchaser's ability to pay, WesTech Engineering, LLC may require full or partial payment in advance or may suspend any further deliveries or continuance of the work to be performed by the WesTech Engineering, LLC until such payment has been received.

7. ESCALATION: If between the proposal date and actual procurement and through no fault of the Seller, the relevant cost of labor, material, freight, tariffs, and other Seller costs combined relating to the contract, increase by greater than 2.5% of the overall contract price, then the contract price shall be subject to escalation and increased. Such increase shall be verified by documentation and the amount of contract price escalation shall be calculated as either the actual increased cost to the Seller or, if agreed by the Parties, the equivalent increase of a relevant industry recognized third-party index, and in both cases without any additional profit or margin being added.

8. APPROVAL: If approval of equipment submittals by Purchaser or others is required, a condition precedent to WesTech Engineering, LLC supplying any equipment shall be such complete approval.

9. INSTALLATION SUPERVISION: Prices quoted for equipment do not include installation supervision. WesTech Engineering, LLC recommends and will, upon request, make available, at WesTech Engineering, LLC's then current rate, an experienced installation supervisor to act as the Purchaser's employee and agent to supervise installation of the equipment. Purchaser shall at its sole expense furnish all necessary labor equipment, and materials needed for installation.

Responsibility for proper operation of equipment, if not installed by WesTech Engineering, LLC or installed in accordance with WesTech Engineering, LLC's instructions, and inspected and accepted in writing by WesTech Engineering, LLC, rests entirely with Purchaser; and any work performed by WesTech Engineering, LLC personnel in making adjustment or changes must be paid for at WesTech Engineering, LLC's then current per diem rates plus living and traveling expenses.

WesTech Engineering, LLC will supply the safety devices described in this proposal or shown in WesTech Engineering, LLC's drawings furnished as part of this order but excepting these, WesTech Engineering, LLC shall not be required to supply or install any safety devices whether required by law or otherwise. The Purchaser hereby agrees to indemnify and hold harmless WesTech Engineering, LLC from any claims or losses arising due to alleged or actual insufficiency or inadequacy of the safety devices offered or supplied hereunder, whether specified by WesTech Engineering, LLC or Purchaser, and from any damage resulting from the use of the equipment supplied hereunder.

10. ACCEPTANCE OF PRODUCTS: Products will be deemed accepted without any claim by Purchaser unless written notice of non-acceptance is received by WesTech Engineering, LLC within 30 days of delivery if shipped F.O.B. point of shipment, or 48 hours of delivery if shipped F.O.B. point of destination. Such written notice shall not be considered received by WesTech Engineering, LLC unless it is accompanied by all freight bills for said shipment, with Purchaser's notations as to damages, shortages and conditions of equipment, containers, and seals. Non-accepted products are subject to the return policy stated below.

11. TAXES: Any federal, state, or local sales, use or other taxes applicable to this transaction, unless specifically included in the price, shall be for Purchaser's account.

12. TITLE: The equipment specified herein, and any replacements or substitutes therefore shall, regardless of the manner in which affixed to or used in connection with realty, remain the sole and personal property of WesTech Engineering, LLC until the full purchase price has been paid. Purchaser agrees to do all things necessary to protect and maintain WesTech Engineering, LLC's title and interest in and to such equipment; and upon Purchaser's default, WesTech Engineering, LLC may retain as liquidated damages any and all partial payments made and shall be free to enter the premises where such

equipment is located and remove the same as its property without prejudice to any further claims on account of damages or loss which WesTech Engineering, LLC may suffer from any cause.

13. INSURANCE: From date of shipment until the invoice is paid in full, Purchaser agrees to provide and maintain at its expense, but for WesTech Engineering, LLC's benefit, adequate insurance including, but not limited to, builders risk insurance on the equipment against any loss of any nature whatsoever.

14. SHIPMENTS: Any shipment of delivery dates recited represent WesTech Engineering, LLC's best estimate but no liability, direct or indirect, is assumed by WesTech Engineering, LLC for failure to ship or deliver on such dates.

WesTech Engineering, LLC shall have the right to make partial shipments; and invoices covering the same shall be due and payable by Purchaser in accordance with the payment terms thereof. If Purchaser defaults in any payment when due hereunder, WesTech Engineering, LLC may, without incurring any liability therefore to Purchaser or Purchaser's customers, declare all payments immediately due and payable with maximum legal interest thereon from due date of said payment, and at its option, stop all further work and shipments until all past due payments have been made, and/or require that any further deliveries be paid for prior to shipment.

If Purchaser requests postponements of shipments, the purchase price shall be due and payable upon notice from WesTech Engineering, LLC that the equipment is ready for shipment; and thereafter any storage or other charge WesTech Engineering, LLC incurs on account of the equipment shall be for the Purchaser's account.

If delivery is specified at a point other than WesTech Engineering, LLC or its supplier's shipping points, and delivery is postponed or prevented by strike, accident, embargo, or other cause beyond WesTech Engineering, LLC's reasonable control and occurring at a location other than WesTech Engineering, LLC or its supplier's shipping points, WesTech Engineering, LLC assumes no liability in delivery delay. If Purchaser refuses such delivery, WesTech Engineering, LLC may store the equipment at Purchaser's expense. For all purposes of this agreement such tender of delivery or storage shall constitute delivery.

15. WARRANTY: WesTech Engineering, LLC warrants equipment it supplies only in accordance with the attached WesTech Warranty. This warranty is expressly given by WesTech and accepted by purchaser in lieu of all other warranties whether written, oral, express, implied, statutory or otherwise, including without limitation, warranties of merchantability and fitness for particular purpose. WesTech neither accepts nor authorizes any other person to assume for it any other liability with respect to its equipment. WesTech shall not be liable for normal wear and tear, corrosion, or any contingent, incidental, or consequential damage or expense due to partial or complete inoperability of its equipment for any reason whatsoever. The purchaser's exclusive and only remedy for breach of this warranty shall be the repair and or replacement of the defective part or parts within a reasonable time of WesTech's accepting the validity of a warranty claim made by the purchaser.

16. PATENTS: WesTech Engineering, LLC agrees that it will, at its own expense, defend all suits or proceedings instituted against Purchaser and pay any award of damages assessed against it in such suits or proceedings, so far as the same are based on any claim that the said equipment or any part thereof constitutes an infringement of any apparatus patent of the United States issued at the date of this Agreement, provided WesTech Engineering, LLC is given prompt notice in writing of the institution or threatened institution of any suit or proceeding and is given full control of the defense, settlement, or compromise of any such action; and Purchaser agrees to give WesTech Engineering, LLC needed information, assistance, and authority to enable WesTech Engineering, LLC so to do. In the event said equipment is held or conceded to infringe such a patent, WesTech Engineering, LLC shall have the right at its sole option and expense to a) modify the equipment to be non-infringing, b) obtain for Purchaser the license to continue using said equipment, or c) accept return of the equipment and refund to the Purchaser the purchase price thereof less a reasonable charge for the use thereof. WesTech Engineering, LLC will reimburse Purchaser for actual out-of-pocket expenses, exclusive of legal fees, incurred in preparing such information and rendering such assistance at WesTech Engineering, LLC's request. The foregoing states the entire liability of WesTech Engineering, LLC, with respect to patent infringement; and except as otherwise agreed to in writing, WesTech Engineering, LLC assumes no responsibility for process patent infringement.

17. SURFACE PREPARATION AND PAINTING: If furnished, shop primer paint is intended to serve only as minimal protective finish. WesTech Engineering, LLC will not be responsible for the condition of primed or finish painted surfaces after equipment leaves its shops. Purchasers are invited to inspect paint in shops for proper preparation and application prior to shipment. WesTech Engineering, LLC assumes no responsibility for field surface preparation or touch-up of shipping damage to paint. Painting of fasteners and other touch-up to painted surfaces will be by Purchaser's painting contractor after mechanism installation.

Motors, gear motors, and other components not manufactured by WesTech Engineering, LLC will be painted with that manufacturer's standard paint system. It is WesTech Engineering, LLC's intention to ship major steel components as soon as fabricated, often before drive, motors, and other manufactured components. Unless Purchaser can ensure that shop primed steel shall be field painted within thirty (30) days after arrival at the job site, WesTech Engineering, LLC encourages the Purchaser to order these components without primer.

WesTech Engineering, LLC's prices are based on paints and surface preparations as outlined in the main body of this proposal. In the event that an alternate paint system is selected, WesTech Engineering, LLC requests that Purchaser's order advise of the paint selection. WesTech Engineering, LLC will then either adjust the price as may be necessary to comply or ship the material unpainted if compliance is not possible due to application problems or environmental controls.

18. CANCELLATION, SUSPENSION, OR DELAY: After acceptance by WesTech Engineering, LLC, this proposal, or Purchaser's order based on this proposal, shall be a firm agreement and is not subject to cancellation, suspension, or delay except upon payment by Purchaser of appropriate charges which shall include all costs incurred by WesTech Engineering, LLC to date of cancellation, suspension, or delay plus a reasonable profit. Additionally, all charges related to storage and/or resumption of work, at WesTech Engineering, LLC's plant or elsewhere, shall be for Purchaser's sole account; and all risks incidental to storage shall be assumed by Purchaser.

19. FORCE MAJEURE: Neither party hereto shall be liable to the other for default or delay in delivery caused by extreme weather or other act of God, strike or other labor shortage or disturbance, fire, accident, war or civil disturbance, act of government, pandemic, delay of carriers, failure of normal

Terms and Conditions

sources of supply, complete or partial shutdown of plant by reason of inability to attain sufficient raw materials or power, and/or other similar contingency beyond the reasonable control of the respective parties. The time for delivery specified herein shall be extended during the continuance of such conditions, or any other cause beyond such party's reasonable control. Escalation resulting from a Force Majeure event shall be equitably adjusted per the escalation policy stated above.

20. RETURN OF PRODUCTS: No products may be returned to WesTech Engineering, LLC without WesTech Engineering, LLC's prior written permission. Said permission may be withheld by WesTech Engineering, LLC at its sole discretion.

21. BACKCHARGES: WesTech Engineering, LLC will not approve or accept backcharges for labor, materials, or other costs incurred by Purchaser or others in modification, adjustment, service, or repair of WesTech Engineering, LLC furnished materials unless such back charge has been authorized in advance in writing by a WesTech Engineering, LLC purchase order, or work requisition signed by WesTech Engineering, LLC.

22. INDEMNIFICATION: Purchaser agrees to indemnify WesTech Engineering, LLC from all costs incurred, including but not limited to court costs and reasonable attorney fees, from enforcing any provisions of this contract, including but not limited to breach of contract or costs incurred in collecting monies owed on this contract.

23. ENTIRE AGREEMENT: This proposal expresses the entire agreement between the parties hereto superseding any prior understandings, and is not subject to modification except by a writing signed by an authorized officer of each party.

24. MOTORS AND MOTOR DRIVES: In order to avoid shipment delays of WesTech Engineering, LLC equipment, motors and drives may be sent directly to the job site for installation by the equipment installer. Minor fit-up may be required.

25. EXTENDED STORAGE: Extended storage instructions will be part of information provided to shipment. If equipment installation and start-up is delayed more than 30 days, the provisions of the storage instructions must be followed to keep WARRANTY in force.

26. LIABILITY: Professional liability insurance, including but not limited to, errors and omissions insurance, is not included. In any event, liability for errors and omissions shall be limited to the lesser of $100,000 USD or the value of the particular piece of equipment (not the value of the entire order) supplied by WesTech Engineering, LLC against which a claim is sought.

27. ARBITRATION NEGOTIATION: Any controversy or claim arising out of or relating to the performance of any contract resulting from this proposal or contract issued, or the breach thereof, shall be settled by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator(s) may be entered to any court having jurisdiction.

ACCEPTED BY PURCHASER

Customer Name: _____

Customer Address: _____

_____

Contact Name: _____

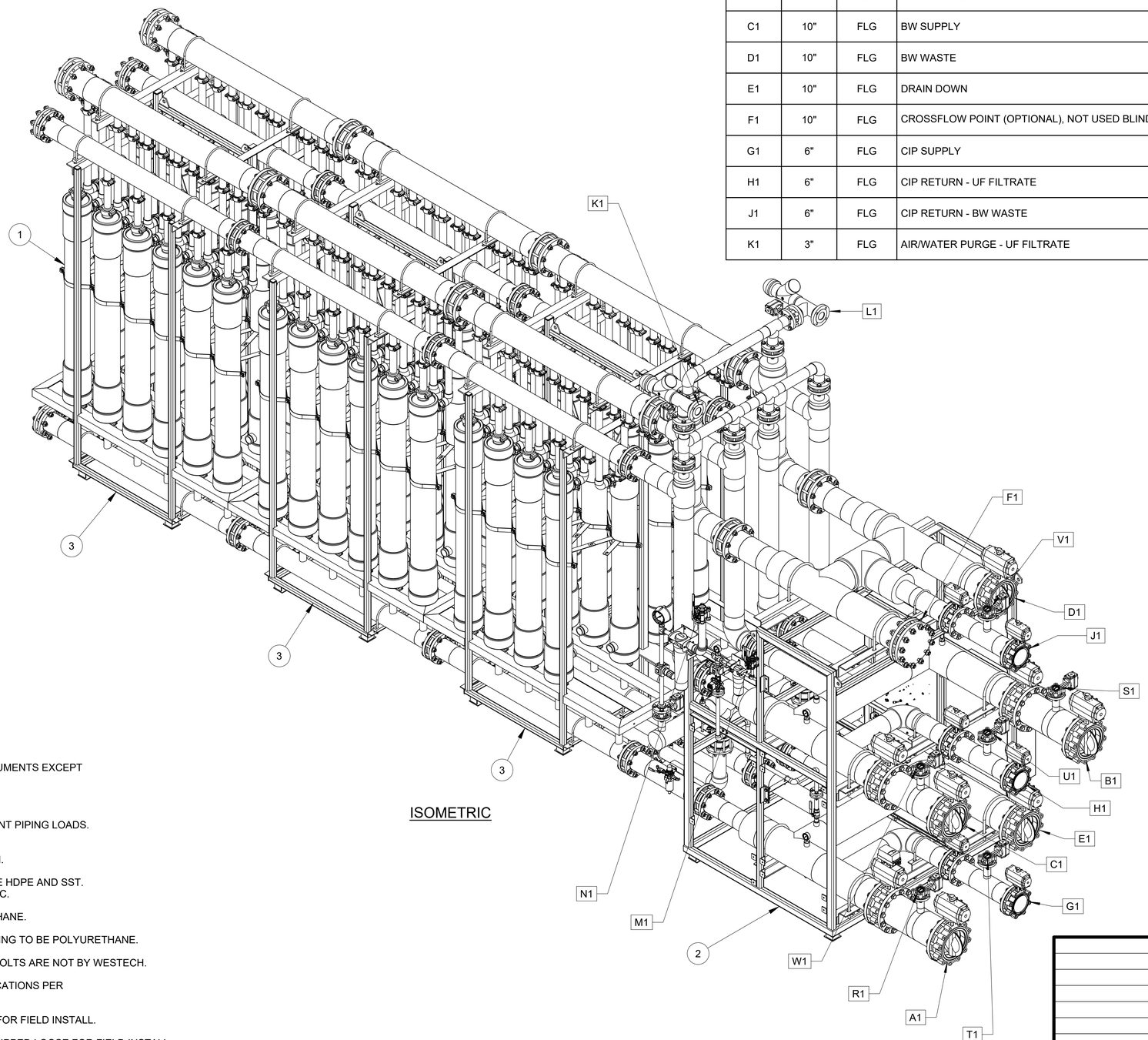
Contact Phone: _____ Contact Email: _____

Signature: _____ Printed Name: _____

Date: _____ Title: _____

General Arrangement Drawings

CONNECTION SUMMARY				CONNECTION SUMMARY			
NOZZLE	SIZE	TYPE	DESCRIPTION	NOZZLE	SIZE	TYPE	DESCRIPTION
A1	10"	FLG	UF FEED	L1	3"	FLG	AIR/WATER PURGE - BW WASTE
B1	10"	FLG	UF FILTRATE	M1	1"	FNPT	AIR SUPPLY - PDT AND INSTRUMENT AIR
C1	10"	FLG	BW SUPPLY	N1	1 1/2"	FNPT	AIR SUPPLY - AIR SCOUR
D1	10"	FLG	BW WASTE	P1	1"	BARB	DRAIN - SAMPLE SINK
E1	10"	FLG	DRAIN DOWN	R1	2"	FLG	BLEED - UF FEED
F1	10"	FLG	CROSSFLOW POINT (OPTIONAL), NOT USED BLINDED	S1	2"	FLG	BLEED - UF FILTRATE
G1	6"	FLG	CIP SUPPLY	T1	2"	FLG	BLEED - CIP SUPPLY
H1	6"	FLG	CIP RETURN - UF FILTRATE	U1	2"	FLG	BLEED - CIP RETURN - UF FILTRATE
J1	6"	FLG	CIP RETURN - BW WASTE	V1	2"	FLG	BLEED - CIP RETURN - BW WASTE
K1	3"	FLG	AIR/WATER PURGE - UF FILTRATE	W1	2"	FLG	BLEED - CIP RETURN - BW SUPPLY



ISOMETRIC

ITEM	EQUIPMENT DESCRIPTION	MAT'L
1	(66) INSTALLED UF MODULES, TORAY HFUG-2020AN, (6) EMPTY SLOTS	PVDF
2	(1) CONTROL SKID	STL
3	(3) MODULE SKID, 24 CAPACITY	STL
4	CONTROL PANEL	304

NOTES:

1. FOLLOW THE LISTED WESTECH REFERENCE DOCUMENTS EXCEPT AS NOTED ON THIS DRAWING.

3. ALL FLANGED CONNECTIONS TO BE 150#.

4. SKID CONNECTIONS NOT DESIGNED TO BEAR PLANT PIPING LOADS. PLANT PIPING MUST BE PROPERLY SUPPORTED.

5. EQUIPMENT MUST BE LEVEL AFTER INSTALLATION.

6. MODULE HEADERS TO BE HDPE. AIR PIPING TO BE HDPE AND SST. ALL OTHER SKID PIPING TO BE HDPE AND SCH 80 PVC.

7. ALL VALVE AIR SUPPLY TUBING TO BE POLYURETHANE.

8. MODULE AIR SUPPLY/ SAMPLE / INSTRUMENT TUBING TO BE POLYURETHANE.

9. ALL ERECTION FASTENERS TO BE 304. ANCHOR BOLTS ARE NOT BY WESTECH.

10. SURFACE PREPARATION AND PAINTING SPECIFICATIONS PER COATING AND SUBMITTAL DATA SHEET 0000650248.

11. MODULES AND PIPE LATERALS SHIPPED LOOSE FOR FIELD INSTALL.

13. BLOCK AND BLEED VALVE ASSEMBLIES TO BE SHIPPED LOOSE FOR FIELD INSTALL.

14. MODULE SKID UPPER HEADERS AND PIPING BETWEEN CONTROL SKID FRAME AND MODULE SKID TO BE SHIPPED LOOSE FOR FIELD INSTALL.

15. APPROXIMATE CONTROL SKID SHIPPING WEIGHT: 5,000 LBS
APPROXIMATE CONTROL SKID OPERATING WEIGHT: 7,500 LBS
APPROXIMATE MODULE SKID, 24 CAPACITY SHIPPING WEIGHT: 1,900 LBS
APPROXIMATE MODULE SKID, 24 CAPACITY OPERATING WEIGHT: 6,500 LBS

REV	REVISION DESCRIPTION	ECN	DESIGNER	APPROVER	DATE

REFERENCE DOCUMENTS
100092742-PID
0000650248
0000647822

PREPARED FOR

CUSTOMER

ENGINEER

CONTRACTOR

PO/CONTRACT NUMBER

WESTECH®

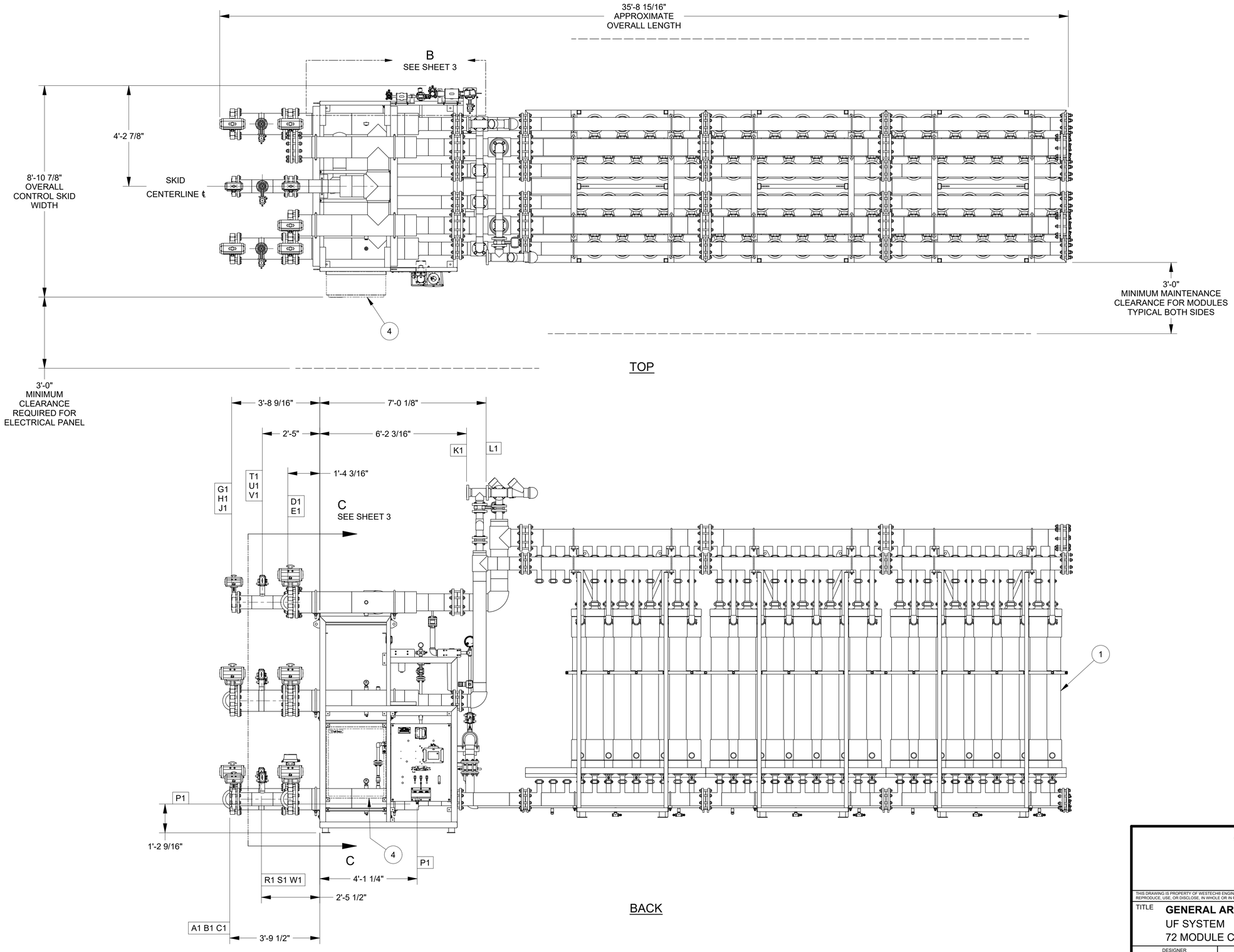
SWIRE WATER

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TITLE **GENERAL ARRANGEMENT, UF SKID**
UF SYSTEM
72 MODULE CAPACITY

DESIGNER	CHECKER	APPROVER	DATE
NPOPE			

JOB NUMBER	DOCUMENT NUMBER	SHEET	REV
	100129190-GA	1 OF 4	-



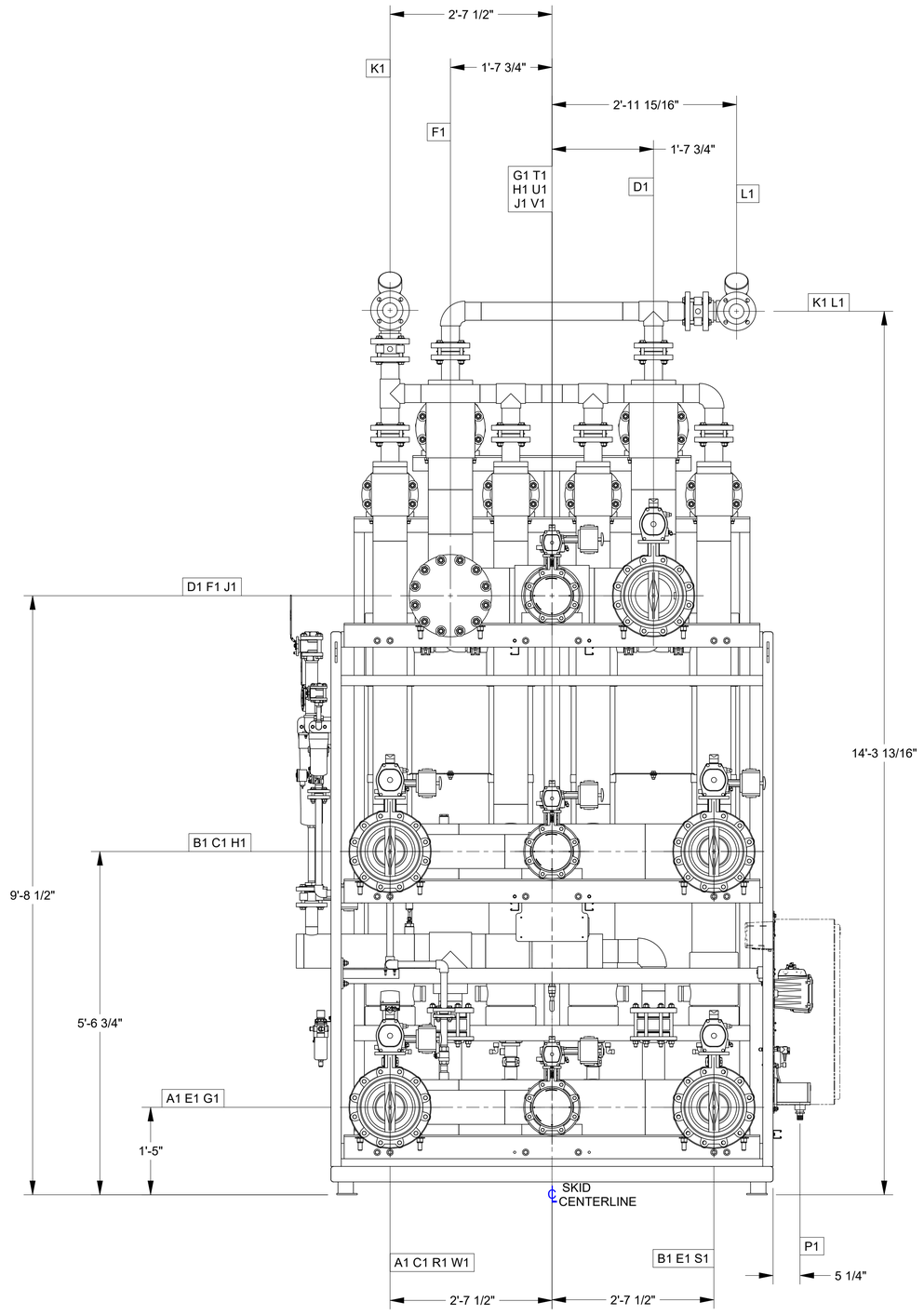
WESTECH®

SWIRE WATER

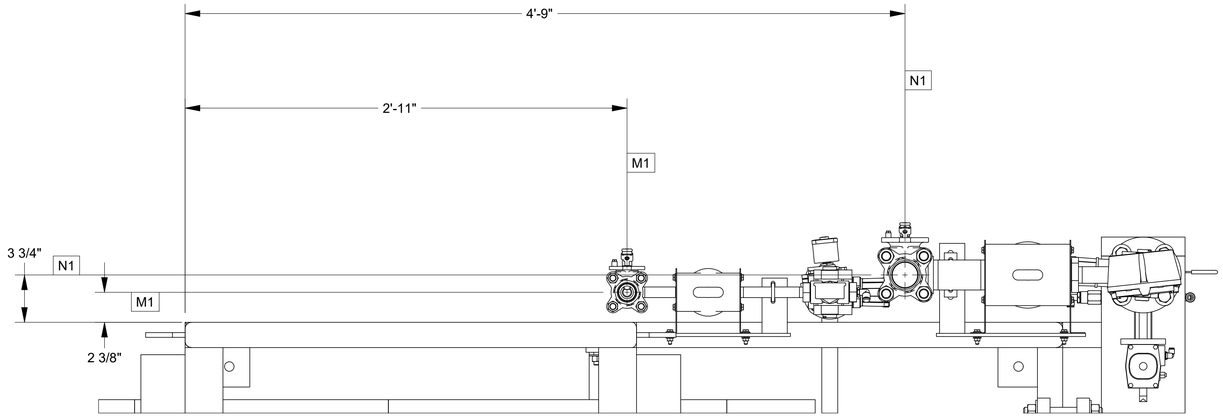
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TITLE **GENERAL ARRANGEMENT, UF SKID**
UF SYSTEM
72 MODULE CAPACITY

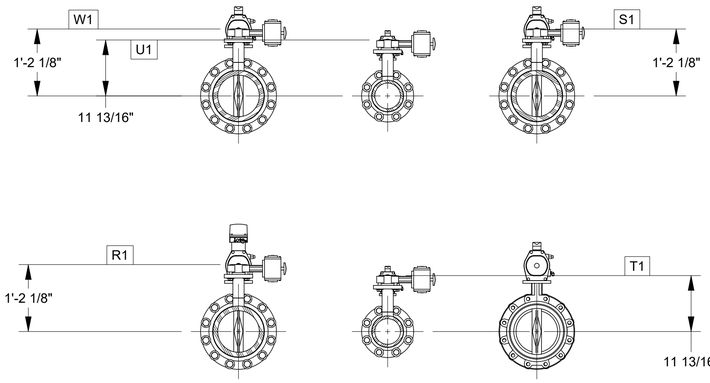
DESIGNER	CHECKER	APPROVER	DATE	
NPOPE				
JOB NUMBER	DOCUMENT NUMBER		SHEET	REV
	100129190-GA		2 OF 4	-



CONNECTION END



DETAIL B
FROM SHEET 2



SECTION C-C
FROM SHEET 2

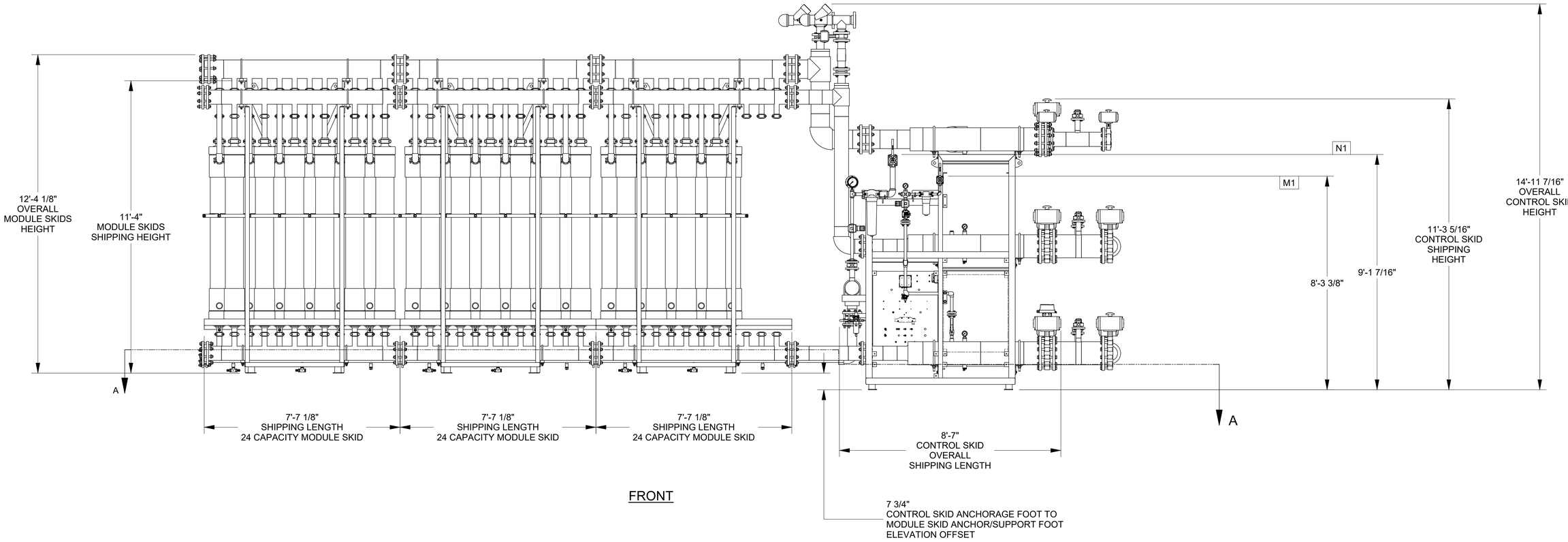
WesTech®
SWIRE WATER

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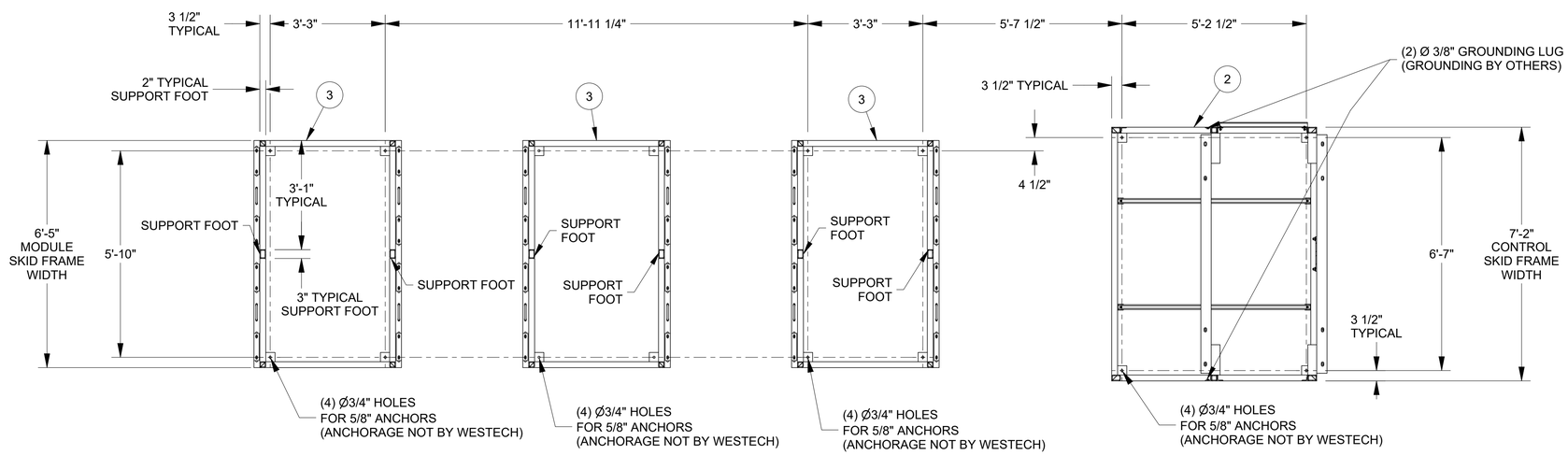
TITLE **GENERAL ARRANGEMENT, UF SKID**
UF SYSTEM
72 MODULE CAPACITY

DESIGNER	CHECKER	APPROVER	DATE
NPOPE			

JOB NUMBER	DOCUMENT NUMBER	SHEET	REV
	100129190-GA	3 OF 4	-



FRONT



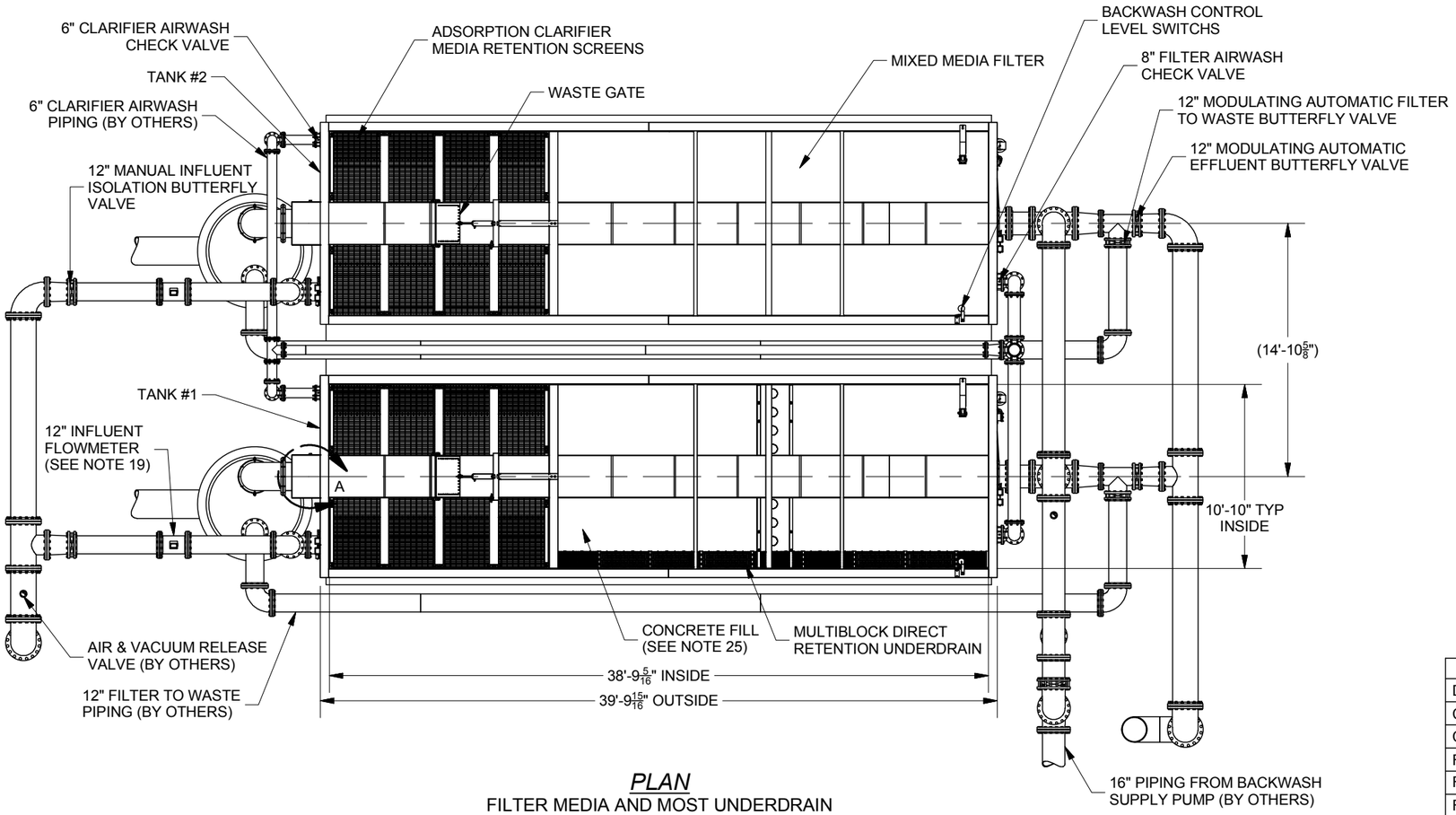
SECTION A-A
ANCHOR PLAN

WESTECH®
SWIRE WATER

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TITLE **GENERAL ARRANGEMENT, UF SKID**
UF SYSTEM
72 MODULE CAPACITY

DESIGNER	CHECKER	APPROVER	DATE	
NPOPE				
JOB NUMBER	DOCUMENT NUMBER		SHEET	REV
	100129190-GA		4 OF 4	-



PLAN

FILTER MEDIA AND MOST UNDERDRAIN LATERALS ARE REMOVED IN TANK #1

TRIDENT® PROCESS DESIGN INFORMATION		
DESIGN FLOW:	2,800	GPM
CLARIFIER LOADING RATE:	10	GPM/SQ FT
CLARIFIER AIR SCOUR FLOW:	475	SCFM
FILTER LOADING RATE:	5	GPM/SQ FT
FILTER BW FLOW, HIGH RATE:	4,200 @ 60	GPM @ °F
FILTER BW FLOW, LOW RATE:	1,400 @ 60	GPM @ °F
FILTER AIR SCOUR FLOW:	950	SCFM

PREPARED FOR

ENGINEER

CONTRACTOR

PO/CONTRACT NUMBER

REV	REVISION DESCRIPTION	ECN	DESIGNER	APPROVER	DATE

REFERENCE DOCUMENTS

WESTECH

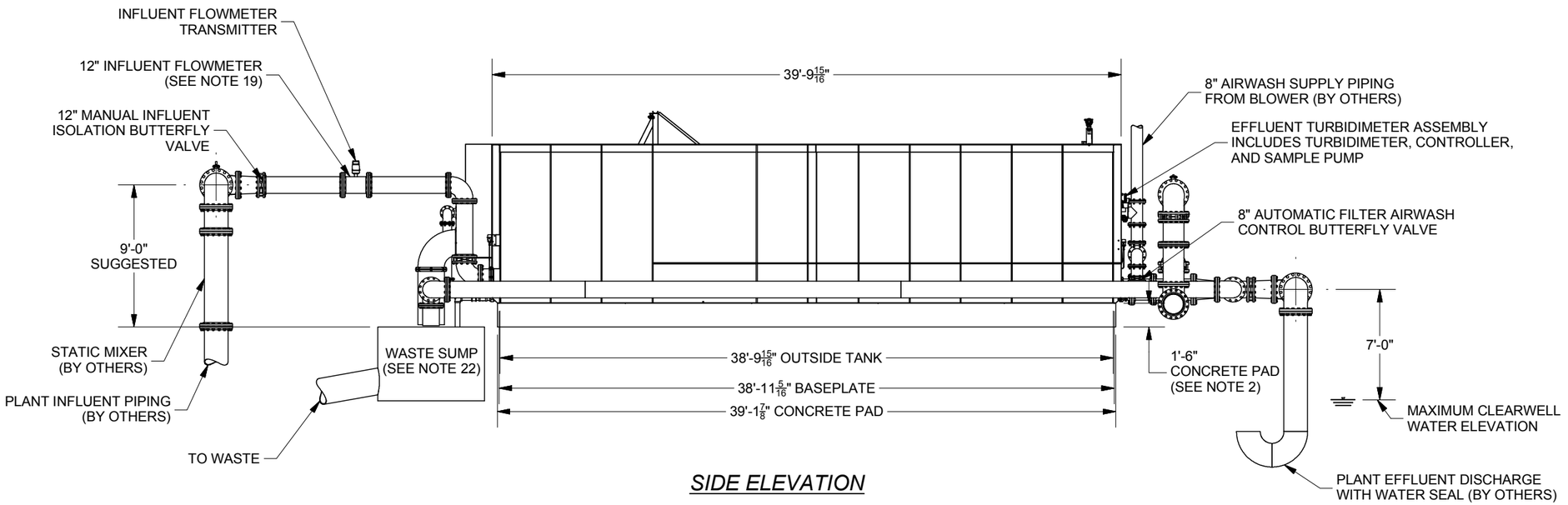
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TITLE **GENERAL ARRANGEMENT, TR-840A, AA**

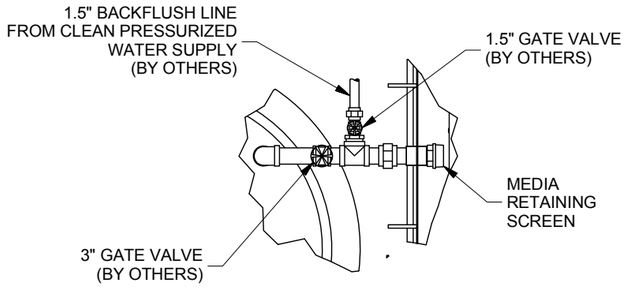
TRIDENT® TR-840A WATER TREATMENT SYSTEM

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SIDE ELEVATION



DETAIL A
AT CLARIFIER DRAIN LEVEL

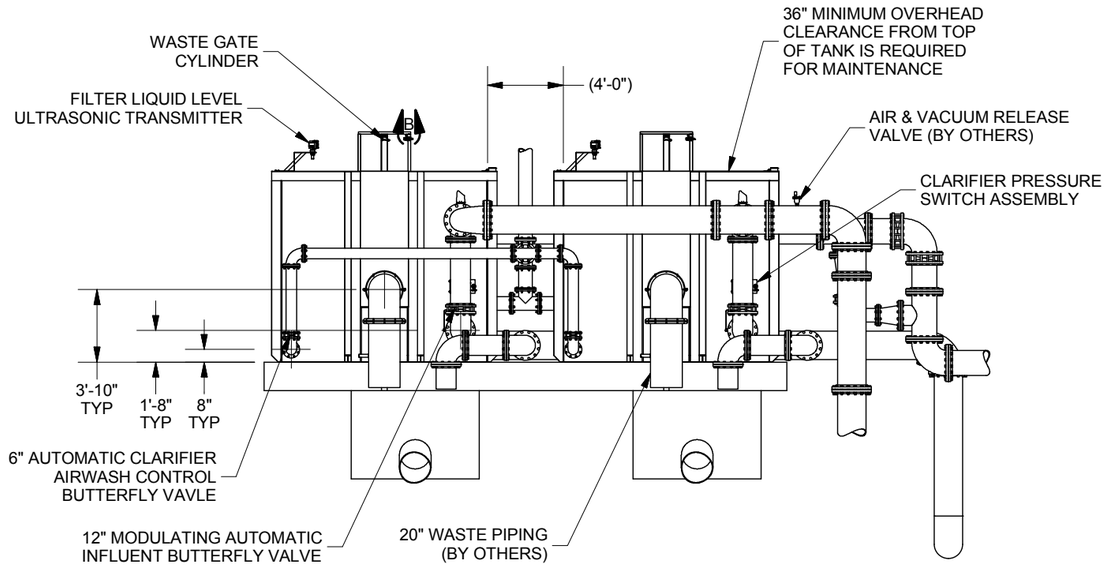
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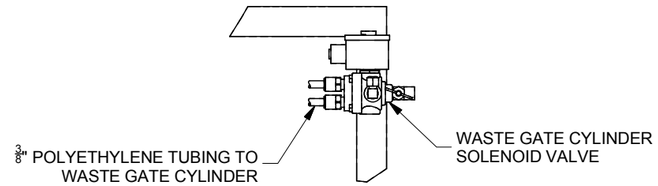
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9001114000			2 OF 4	-

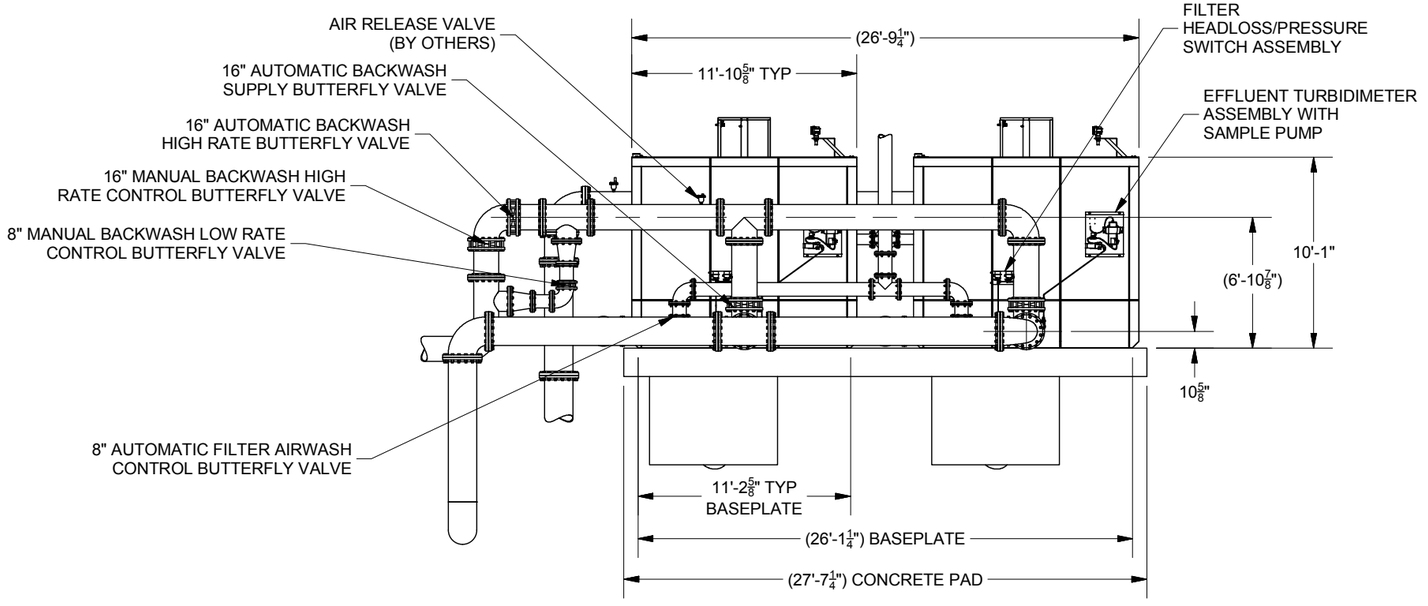
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INFLUENT END



DETAIL B



EFFLUENT END

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DOCUMENT NUMBER			SHEET	REV
9001114000			3 OF 4	-

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NOTES:

1.) EQUIPMENT FURNISHED BY WESTECH IS DESCRIBED IN A SEPARATE EQUIPMENT LIST. ADDITIONAL PIPING, PIPE SUPPORTS, AND CONNECTION FITTINGS ARE NOT INCLUDED WITH STANDARD UNIT. MAJOR EQUIPMENT AND COMPONENTS TO BE INSTALLED AT THE JOBSITE BY THE INSTALLING CONTRACTOR.

2.) EQUIPMENT CONCRETE PAD DESIGN IS THE RESPONSIBILITY OF THE CONSULTING ENGINEER.

3.) PIPE SUPPORTS ARE NOT SHOWN. SUPPORTS TO BE DESIGNED BY THE CONSULTING ENGINEER AND SUPPLIED BY THE INSTALLING CONTRACTOR. DO NOT SUPPORT PIPING OR OTHER STRUCTURES FROM THE TANK OR TANK PROJECTIONS.

4.) DESIGN AND APPLICATION FEATURES ARE DESCRIBED IN TYPICAL SPECIFICATION SHEETS, TECHNICAL DATA SHEET, FLOW SCHEMATIC, ELECTRICAL DIAGRAM AND ELECTRICAL SCHEMATIC. ARRANGEMENT SHOWN IS FOR BELOW-GRADE FINISHED WATER STORAGE.

5.) THE STANDARD DESIGN IS FOR INDOOR INSTALLATION.

6.) CHECK VALVES OR BACKFLOW PREVENTERS ARE REQUIRED IN BACKWASH LINES AND FURNISHED BY OTHERS (NOT SHOWN ON DRAWING).

7.) AUTOMATIC RATE OF FLOW CONTROL LOOPS ON EACH INFLUENT LINE MAINTAIN THE PRE-SET FLOW TO EACH UNIT. INFLUENT FLOW SET POINT MAY BE SET BY THE PLANT OPERATOR USING THE OIT. INFLUENT FLOW CONTROL IS INTERLOCKED WITH FLUSH AND BACKWASH CYCLES.

8.) FILTER LIQUID LEVEL CONTROLLERS OPERATE FILTER EFFLUENT AND FILTER-TO-WASTE MODULATING VALVES TO MAINTAIN CONSTANT FILTER LEVEL.

9.) CONTROL CIRCUITS PROVIDE FOR AUTOMATIC FLUSH AND BACKWASH CYCLE WITH RETURN TO OPERATING SERVICE, INITIATED BY TIME CLOCK, HIGH HEADLOSS, OR MANUAL PUSHBUTTON.

10.) THREE LEVEL SWITCHES WITH DRY CONTACTS SHOULD BE PROVIDED BY THE CUSTOMER AND INSTALLED IN THE FINISHED WATER STORAGE TANK FOR THE AUTOMATIC OPERATION OF THE TRIDENT UNITS. ONE HIGH LEVEL SWITCH WILL STOP THE UNITS, ONE MID LEVEL SWITCH WILL START THE UNITS AND ONE LOW LEVEL SWITCH WILL SERVE AS A MINIMUM LEVEL TO ENABLE THE BACKWASH PROCESS.

11.) THE HIGH LEVEL STOP AND THE MID LEVEL START SWITCHES SHOULD BE INSTALLED WITH SUFFICIENT VOLUME BETWEEN THEM TO PREVENT EXCESSIVE CYCLING OF THE TRIDENT UNITS.

12.) THE LOW LEVEL BACKWASH ENABLE SWITCH SHOULD BE INSTALLED WHERE THE MINIMUM VOLUME IN THE BACKWASH SUPPLY TANK IS ADEQUATE TO PROVIDE A BACKWASH WITHOUT PULLING AIR INTO THE BACKWASH SUPPLY PUMP. THE MAXIMUM WATER TEMPERATURE SHOULD BE CONSIDERED WHEN CALCULATING THE MINIMUM BACKWASH VOLUME OR LEVEL IN THE TANK.

13.) AIRWASH BLOWER (TWO PROVIDED BY WESTECH ENGINEERING) AND BACKWASH SUPPLY PUMP (BY OTHERS) ARE NOT SHOWN.

14.) AIR COMPRESSOR (BY OTHERS) FOR VALVE OPERATION IS NOT SHOWN.

15.) AN AIR RELEASE VALVE (BY OTHERS) IS REQUIRED AT HIGH POINTS OF THE BACKWASH SUPPLY LINE TO VENT ACCUMULATED AIR. THE VALVE(S) ARE TO BE SIZED TO ALLOW THE COMPLETE VOLUME OF THE BACKWASH LINE FROM SOURCE TO FILTER, TO BE VENTED IN 20 SECONDS WITH DIFFERENTIAL OF APPROXIMATELY 10 PSIG, AND BE CAPABLE OF CONTINUOUSLY VENTING ACCUMULATED AIR. FOR INSTALLATIONS UTILIZING VERTICAL TURBINE OR "CAN-TYPE" PUMPS, A SEPARATE "TURBINE AIR VALVE" IS REQUIRED TO VENT THE AIR CONTENTS OF THE PUMP COLUMN WITHOUT LETTING THE AIR INTO THE BACKWASH PIPING.

16.) TANKS ARE FURNISHED WITH FINISH COATING SUITABLE FOR POTABLE WATER APPLICATIONS ON INTERIOR; UNIVERSAL ZINC PRIMER ON EXTERIOR. TANK BOTTOM IS UNPAINTED FOR INSTALLATION ON COAL TAR OR ASPHALTIC TYPE BASE MASTIC COMPOUND (BY OTHERS). TANKS SHOULD BE LEVEL WITHIN ONE EIGHTH INCH AT TIME OF INSTALLATION.

17.) OPTIONAL EQUIPMENT TO SUIT PROJECT REQUIREMENTS IS AVAILABLE. TYPICAL PROCESS EQUIPMENT OPTIONS INCLUDE:
- A) ALTERNATE OR ADDITIONAL CHEMICAL FEED SYSTEMS.
- B) RAW WATER TURBIDITY MONITORING.
- C) INFLUENT IN-LINE STATIC MIXER.
- D) INFLUENT STREAMING CURRENT DETECTOR.
- E) pH MONITIOR.
- F) PLATFORM/WALKWAY CLIPS.
- G) AIR COMPRESSOR FOR VALVE OPERATION.

18.) CONSULT WESTECH ENGINEERING FOR OTHER INFLUENT FLOW CONTROL OPTIONS.

19.) LOCATION OF FLOW METERS ARE TO BE PER FLOWMETER MANUFACTURER'S WRITTEN RECOMMENDATIONS CONFIRMED BY THE CONSULTING ENGINEER.

20.) INFLUENT OPERATING PRESSURE REQUIRED FOR CONTROLLING INFLUENT FLOW MUST BE 20 FEET MINIMUM AT THE TANK CONNECTION. FOR INFLUENT PRESSURE OVER 35 FEET OF HEAD, CONTACT WESTECH ENGINEERING. OPTIONAL STATIC MIXER WILL REQUIRE ADDITIONAL PRESSURE.

21.) DRY, FILTERED COMPRESSED AIR, 1 SCFM PER TANK FREE AIR AT 80 PSIG MINIMUM DISCHARGE PRESSURE IS REQUIRED TO OPERATE PNEUMATIC INSTRUMENTATION AND AUTOMATIC CONTROL VALVES. AIR COMPRESSOR AND RESEVOIR (BY OTHERS) SHOULD BE SIZED TO PREVENT EXCESSIVE CYCLING.

22.) WASTE SUMP AND SUMP PIPING (BY CUSTOMER) MUST BE SIZED TO GIVE FREE DISCHARGE WITH AN AIRBREAK, FOR MAXIMUM WASTE FLOW.

23.) WASTE TROUGH LIP IS POSITIONED ABOVE THE NORMAL OPERATING WATER LEVEL AND BELOW THE TOP OF THE TANK. THIS ALLOWS IT TO ACT AS AN EMERGENCY OVERFLOW.

24.) TANK CONNECTIONS ARE FURNISHED GROOVED FOR GROOVED STYLE FLEXIBLE COUPLINGS, WITH THE EXCEPTION OF AIR CONNECTIONS. COUPLINGS AND/OR FLANGE ADAPTERS ARE BY OTHERS.

25.) TRIDENT MODEL TR-840A TANKS REQUIRE APPROXIMATELY 14.9 CUBIC YARDS OF FILL CONCRETE IN FILTER PLENUM AREA. FILL CONCRETE AND UNDERDRAIN GROUT ARE BY OTHERS.

26.) PLANT CONTROL PANEL AND CHEMICAL FEED ASSEMBLIES NOT SHOWN.

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