Green Area Water & Sanitary Authority

Douglas County, Oregon

FIVE-YEAR CAPITAL IMPROVEMENT PLAN

NOVEMBER 2025

GREEN AREA WATER & SANITARY AUTHORITY

ROSEBURG, OREGON

The Dyer Partnership Engineers & Planners, Inc.

Project No. 216.02

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Five-Year Capital Improvement Plan

November 2025

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EXPIRES: 12-31-2027

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BACKGROUND

SECTION 1: **BACKGROUND**

1.1 Background

Purpose

The Green Area Water & Sanitary Authority (GAWSA or Authority) owns and operates water and wastewater infrastructure. The Authority provides sewer service to the Green District. Water is supplied to a service area bounded on the north by the City of Roseburg, on the west by the South Umpqua River, on the south by Roberts Mountain, and on the east by Roberts Creek. The water system's service area covers approximately 6,003 acres. The wastewater system covers approximately 2,356 acres. Figure 1.1.1 on the following page illustrates the service areas for the water and wastewater system. A five-year Capital Improvement Plan (CIP) is required to ensure long term system reliability, regulatory compliance, and financial sustainability.

The Authority's water system consists of a raw water diversion system on the South Umpqua River, Water Treatment Plant (WTP), distribution system consisting of 54 miles of piping, three (3) pump stations, two (2) concrete storage reservoirs, and one welded steel storage reservoir. The Authority's wastewater system consists of approximately 35.4 miles of total system piping with 2.55 miles of force main piping, 763 manholes, three (3) pump stations, and four (4) Septic Tank Effluent Pumping System – STEP Systems. The Authority has partnered with the City of Winston for ownership and operational responsibility of the Winston-Green Regional Wastewater Treatment Facility (WWTF).

GAWSA's most recent Water System Master Plan was developed immediately following the installation of GAWSA's membrane facility in 2015, by MAP Engineering. The 2015 Water System Master Plan is ten years old, has limited information on the Authority's water infrastructure, and does not provide sufficient information to use as a basis for capital improvement planning purposes.

The Authority's Wastewater Collection System Master Plan (WWCSMP) was developed in 2006 by SHN Consulting Engineers and Geologists, Inc. This plan is outdated and also does not provide sufficient information to use as a basis for a comprehensive and current capital improvement plan.

This Capital Improvement Plan (CIP) will identify, define, and prioritize capital improvement projects and develop cost estimates for projects the Authority intends to implement in the next five years.

Project Authorization

The Authority authorized The Dyer Partnership to proceed with development of a five-year CIP on July 16, 2025. A CIP Project kick-off meeting was held at the Authority's office on August 6, 2025. Site visits were conducted for the wastewater and water systems on August 19th and 20th, respectively. An additional site visit was conducted on September 30, 2025 with Camp Creek Electric.

Scope of Work

The major elements of this five-year CIP are listed below.

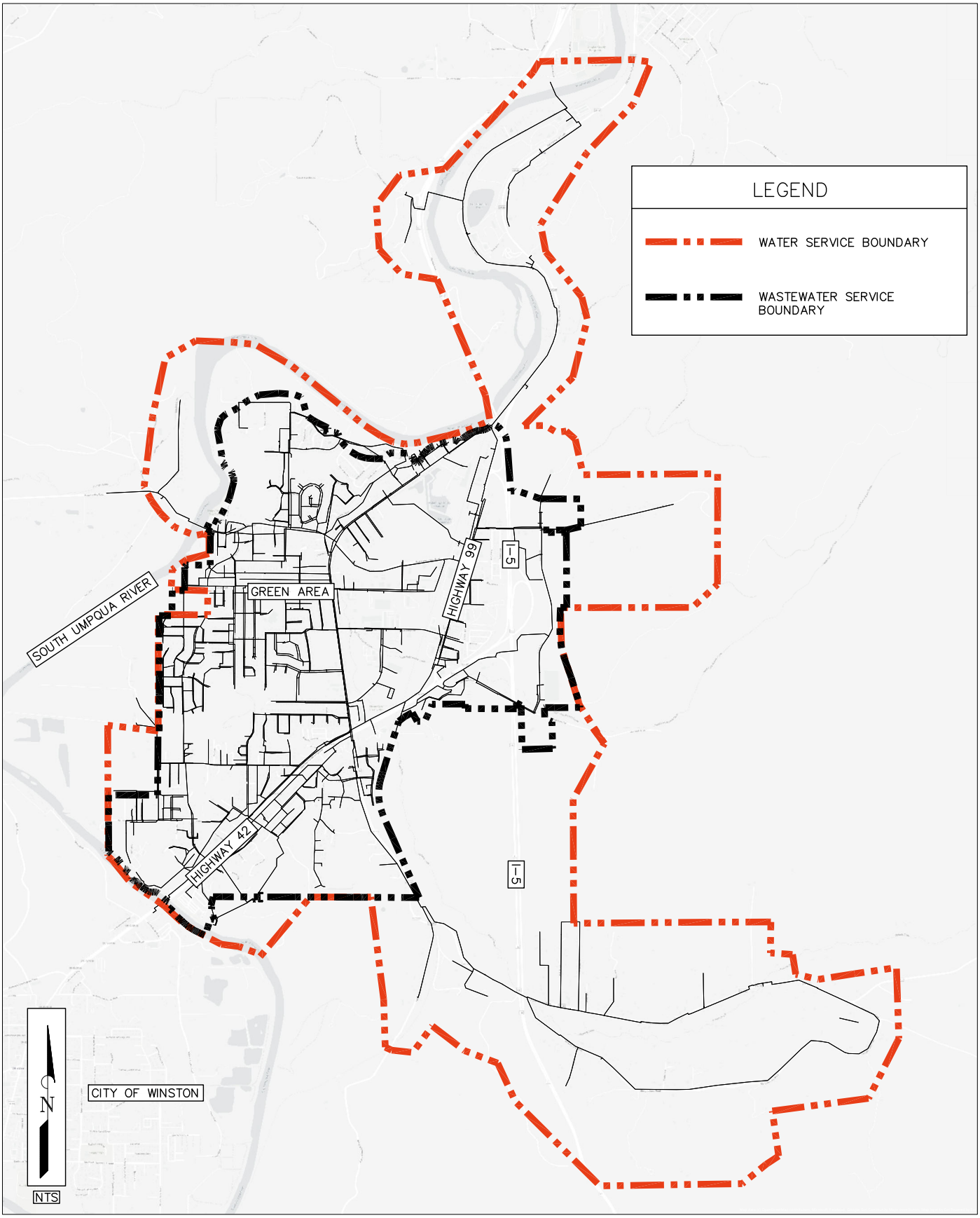
- Strategic Goals and Objectives
- Overview of Water and Wastewater Systems and Condition Assessment

- Development of Prioritized Capital Improvement Project List
- Development of Cost Estimates

CIP Strategic Goals and Objectives

The strategic goals and objectives of the five-year CIP are as follows:

- Improve System Reliability and Reduce Risk
- Improve System Performance
- Regulatory Compliance
- Financial Sustainability



THE DYER PARTNERSHIP ENGINEERS & PLANNERS, INC.	***GREEN AREA WATER & SANITARY AUTHORITY CAPITAL IMPROVEMENT PLAN***	FIGURE NO. ***1.1.1***
DATE: OCT. 2025	***SERVICE AREAS***	
PROJECT NO.: 216.02		

1.2 Overview of Existing Water System

The Authority's existing water system consists of a raw water diversion on the South Umpqua River, a membrane filtration WTP, a distribution system consisting of 54 miles of piping with three (3) storage reservoirs, and three (3) pump stations.

Water Rights

The Authority currently holds six (6) water right certificates, one (1) permit, and leases an additional two (2) certificates on the South Umpqua River. Three of the eight certificates have a point of diversion located at the WTP for the use of municipal purposes totaling 3.11 Million Gallons per Day (MGD). The Authority's water right certificates are summarized in Table 1.2.1 and are included in Appendix A.

TABLE 1.2.1
WATER RIGHTS SUMMARY

Certificate No.	Permit No.	Quantity (MGD)	Priority Year	Location
Treatment Plant 24522	S 18537	0.433	1948	NE¼ of the SW¼ of Sec 15, T28S R6W
Treatment Plant 79549	S 21867	0.093	1952	NE¼ of the SW¼ of Sec 15, T28S R6W
Treatment Plant 64885	S 40697	2.585	1973	NE¼ of the SW¼ of Sec 15, T28S R6W
Farm 34866	S 28784	0.181	1963	NE¼ of the NE¼ of Sec 16, T28S, R6W
Lease 20540	S 19353	0.125	N/A	N/A
Lease 27631	S 20951	0.336	N/A	N/A
Ranch 22257	S 23920	0.827	1956	SW¼ of the SE¼ of Section 9, T28S, R6W
Intertie N/A	S 41514	1.939	N/A	NW¼ of the NE¼ of Sec 25, T26S, R6W
Treatment Plant Irrigation 27776	S 23574	0.110	1955	SW¼ of the NW¼ of Sec 15, T28S, R6W

The Points of Diversion (POD) for Certificate No. 34866 (Farm), 22257 (Ranch), and the two instream leases 20540 and 27631 are not located at the Authority's WTP. In order for the Authority to utilize these water rights for the purposes of diverting, treating, and distributing it for municipal use, three (3) changes to each certificate are needed. The PODs need to be updated, as well as the place of use, and the character of use.

Raw Water Intake System

The Authority's raw water diversion is located in the South Umpqua River near the Authority's water treatment plant. The raw water diversion system consists of a screened intake, and a wet well with three (3) submersible pumps with guide rails and jib crane for equipment removal. The screened intake features an air scour system for in place cleaning of the screen.

The raw water pump station was installed in 1994 and underwent upgrades around 2000. The system's Variable Frequency Drives (VFDs) and force main piping were recently replaced. The raw water pumps are operating near the end of their service life and are planned for complete replacement between 2028 and 2030.

Water Treatment Plant

The Authority's original Water Treatment Plant (WTP) was constructed in 1949. In 1973, the original plant was abandoned, and a new 2.5 MGD plant was constructed adjacent to the original plant with plans for phased improvements. In 1994, the WTP underwent additional upgrades. The WTP was recently upgraded in 2013 with a submerged membrane system. The current membrane system has four cells and currently only two of the cells are in operation. Each cell has a rated capacity of 2 MGD.

The membrane system is preceded by a settling basin and pre-filtration system; for solids removal prior to the submerged membrane units. Permeate is conveyed to a disinfection system consisting of an Ultra-Violet (UV) system and onsite sodium hypochlorite disinfection system following membrane treatment.

The Authority reported the following projects for the five-year CIP: 1) New turbidimeters, 2) New standby generator, and 3) New raw water pumps.

The existing process turbidimeters (raw water and three permeate) require replacement with new units. The existing units (Hach, 1720E) are obsolete and the Authority is unable to reasonably acquire replacement parts for reliable and continued operation.

The existing WTP does not have a standby generator. The Authority has the ability to meet water demand during limited power outages with the current treated water storage systems. The Authority's five-year objective is to upgrade the WTP to install a new standby power system in order to provide more resilient water service during extended power outages.

The Authority currently uses three (3) Flygt 3171.180 raw water pumps, 30 Horsepower (Hp) each. These pumps were installed in 1994 and then rebuilt in the last ten years. The raw water pumps are nearing the end of their service life and are scheduled for complete replacement between the years 2028 to 2030.

Water Distribution System

The distribution system consists of several materials (steel, Asbestos Cement (AC), PVC, and Ductile Iron (DI)), with diameters ranging from one to sixteen inches. Table 1.2.2 summarizes the water distribution system piping.

TABLE 1.2.2
WATER LINE SUMMARY

Size (in)	Steel (ft)	AC (ft)	PVC (ft)	DI (ft)	Total (ft)
1	1,251	0	0	0	1,251
2	3,474	0	2,055	0	5,529
3	0	0	999	0	999
4	3,852	3,054	4,489	0	11,395
6	2,900	16,193	47,400	0	66,493
8	152	46,274	57,012	1,299	104,737
10	0	19,670	9,578	1,518	30,766
12	0	8,888	42,924	9,313	61,125
14	0	1,238	0	0	1,238
16	0	0	0	1,531	1,531
Totals	11,629	95,317	164,457	13,661	285,064

The major water distribution system deficiencies which are listed hereafter are used as the basis of the five-year CIP.

Automatic Meter Read

The Authority currently contracts with Meter Readers, LLC to physically read its water meters on a monthly basis. Contracting with Meter Readers, LLC has a number of downsides, including data inconsistencies (human error), costs, and long delays in readings. Meter Readers, LLC also recently increased their fees from $0.80 per meter to $1.05 per meter. The increase to $1.05 per meter results in an annual fee of approximately $40,000 per year. A $10,000 increase from prior years. Improvements to the Authority's meter read equipment and processes are recommended to address the downsides associated with their current arrangement.

Isolation Valves

Several segments of the Authority's distribution system lack isolation valves, limiting the ability to isolate water lines for maintenance, repair, or replacement activities. In the event of a line failure or break within these areas, service disruptions would extend to a broader customer base due to the need to close more distant isolation points, resulting in larger portions of the system being taken offline.

Highway 99 Bore and Loop and Speedway Tie-In

The Highway 99 Bore and Loop and Speedway Tie-In project is a multi-phase (three) project to address redundancy and fire flow objectives at the northern extent of the Green Area District. Currently, a single water line runs parallel along Highway 99 at the north end of the service area. This serves as the sole conduit for potable water and fire flow for the area. A failure or a major break in the existing main would cause significant service disruptions to the northern end of the service area and compromise fire flow. If the break occurs along the railroad corridor, repair efforts are further complicated by the need to coordinate with the rail company. Work within the railway's right-of-way requires formal submittal of repair drawings and a detailed execution plan for review and approval; significantly delaying response times and restoration efforts.

Storage Reservoirs

The Authority owns and operates three finished water reservoirs (Main Tank, Roberts Creek Tank, and Speedway Tank). The tanks provide a total of 3.67 Million Gallons (MG) of total storage. The Main Tank is a concrete tank and has a capacity of 2.0 MG. The Roberts Creek Tank is a welded steel tank and has a capacity of 0.17 MG. The Speedway Tank is a concrete tank and has a capacity of 1.5 MG. Table 1.2.3 summarizes the Authority's storage reservoirs.

TABLE 1.2.3
STORAGE TANK SUMMARY

Tank Name	Material	Capacity (MG)	Diameter (ft)	Height (ft)	Overflow Elev. (ft)
Main Tank	Concrete	2.0	103	32	811
Roberts Creek Tank	Welded Steel	0.17	30	32	815
Speedway Tank	Concrete	1.5	103	23	811

Main Tank

The Main Tank is a 2 MG concrete tank constructed in 1974. The hydraulics of the distribution system would benefit from a control valve, mainly to improve turn-over with the Speedway and Roberts Creek Tanks. The existing shut-off valve for the Main Tank has failed in the open position and is inoperable. The Authority is currently unable to shut-off or isolate the tank for maintenance or other purposes.

The tank was recoated in 1990. External coatings are not strictly required, and are generally applied for aesthetic purposes. American Water Works Association (AWWA) standards for concrete tanks (D110, D115) do not specifically mandate interior coatings. Interior coatings can provide practical benefits, primarily related to structural and asset protection.

The Main Tank currently has telemetry capabilities powered by a 24-volt DC power supply using solar power. However, due to the age of the instrumentation the telemetry has become unreliable and in need of replacement and integration into an updated system wide telemetry system.

Roberts Creek Tank

The Roberts Creek Tank is a welded steel tank constructed in the 1960s. The tank was last inspected by LiquiVision Technology in May 2024. Recommendations included to perform regular cleaning and replacing the liquid level indicator board or removing if not needed.

The water in the tank is not well mixed due to a lack of turnover leading to reduced water quality. Mixers were identified as a need in the 2015 Water System Master Plan to improve water quality.

Steel tanks are particularly prone to corrosion unless a coating is applied and maintained. The tank was sand blasted and recoated in 2005. Minor corrosion is observed both on the exterior and interior of the tank. Both the exterior and interior coatings for this tank are recommended.

The tank does not currently include a telemetry system. It is recommended for a telemetry system to be installed and integrated into the plant Supervisory Control and Data Acquisition (SCADA) system.

Speedway Tank

The Speedway Tank is a concrete tank constructed in 2001. The tank was last inspected by LiquiVision Technology in May 2024 and was noted to be in good condition. The only recommendation was to perform regular cleaning of the tank to maintain water quality.

Repairs to the exterior shotcrete are recommended. The Speedway Tank has significant cracking and delamination of the exterior shotcrete on the tank walls at the top of the wall. The shotcrete failure is present for approximately half the tank's circumference.

The water in the tank is not well mixed due to a lack of turnover leading to reduced water quality. Mixers were identified as a need in the 2015 Water System Master Plan to improve water quality. Recoating of both the interior and exterior of the tank is also recommended.

The tank does not currently feature a telemetry system offering no real time level visibility to the authority. It is recommended a telemetry system be installed and integrated into the plant SCADA system for tracking water level and turnover rates.

Town Tank

As part of Phase 3 of the Highway 99 Bore and Loop and Speedway Tie-In project, a new water storage tank (Town Tank) is proposed for installation on the hillside near the Shady Oaks Motel. The purpose of this project is to address redundancy and address fire flow issues at the northern end of the service area. Previously, the Authority had a tank at this site for service of the area. The original tank was subsequently demolished at the end of its design life. Currently the tank site includes a building pad with no other infrastructure improvements.

Booster Pump Stations

The Authority owns and operates three (3) booster pump stations (Glengary Loop, Highlands, and Tipton Road Intertie). The Glengary Loop Pump Station was constructed based on recommendations made in the 1999 Roberts Creek Water District WMP, but it is not currently in operation. Its booster pumps were relocated to the later constructed Highlands Pump Station, leaving only a fire pump at the Glengary station. The Highlands Pump Station has two 5 Hp pumps originally intended for Glengary as well as a 50 Hp fire pump. The Highlands Pump Station acts as a booster station for about approximately thirty (30) single family residences located above the Authority's main service elevation.

The booster pump stations are not currently equipped with telemetry capabilities and offer no real time data visibility. It is recommended for the Highlands Pump Station be upgraded with a telemetry system.

1.3 Overview of Existing Wastewater System

The Authority's wastewater system currently consists of three (3) major pump stations (G-4, Briarwood, and Oak Creek), 35.5 miles of gravity sewer lines, approximately 763 manholes, and 2.55 miles of force main. The Authority also maintains four (4) Septic Tank Effluent Pumping (STEP) systems. The Authority's sewer system serves approximately 2,667 residential and commercial connections.

Collection System

The wastewater collection system consists of 4- to 21-inch diameter sewer lines, with the majority of the system being 8-inch diameter pipe. The service area is comprised of 18 subbasins. Wastewater from the service area is conveyed to the jointly owned Winston-Green Regional Wastewater Treatment Facility.

The wastewater collection system is primarily comprised of PVC and AC pipe materials. Approximately one-third of the collection system is AC sewer pipe, most of which was installed in the 1960s and 1970s. An inventory of the collection system is summarized in Table 1.3.1, as derived from the 2006 WWCSMP. Following the 2006 WWCSMP, additional sewer infrastructure has been constructed, increasing the total system length from approximately 32 miles to 35.4 miles. These newer segments have not yet been categorized or incorporated into the tabulated inventory below.

TABLE 1.3.1
COLLECTION SYSTEM INVENTORY (2006 WWCSMP)

Size (in)	AC (ft)	PVC (ft)	Other (ft)	Unknown (ft)	Total (ft)
4	0	1,242	0	-	1,242
6	2,487	5,077	317	-	7,881
8	61,445	76,003	1,002	-	138,449
10	4,537	946	0	-	5,483
12	997	0	238	-	1,235
15	5,298	2,804	0	-	8,102
18	404	2,563	0	-	2,967
21	0	1,930	172	-	2,102
Unknown	-	-	-	37,614	37,614
Totals	75,168	90,565	1,729	37,614	205,075

Continuous upgrades to the collection system are necessary to address capacity limitations and to replace or repair aging infrastructure. The Authority identified and developed a list of deficiencies and associated improvement projects based on several sources of information including: physical condition of the sewer lines, capacity constraints, sewage overflows, smoke testing, Closed-Circuit Television (CCTV) inspections, master plans, Inflow and Infiltration (I&I) reports, and various other sources of information. The Authority's 2006 WWCSMP also identified various capital improvement projects, including uncompleted projects.

The following is a listing of the major collection system deficiencies used as the basis of the five-year CIP.

MH P-27 to MH P-14

Hydraulic modeling from the 2006 WWCSMP identified the existing 10-inch AC gravity sewer between Manholes (MH) P-27 and P-14 as undersized. Originally installed in 1962, the pipeline lacks sufficient capacity to meet current and projected flow demands. A CCTV inspection conducted on June 24, 2022 revealed multiple structural deficiencies along this segment, including lining failures characterized by bulging and wrinkling. The pipeline will be upsized to a 15-inch diameter to address both hydraulic and structural concerns. The upsize will result in a capacity increase of more than fifty (50) percent.

MH I-7 to MH I-6 and MH I-3 to MH I-1

The 2006 WWCSMP recommended upgrades to two sewer segments due to substandard slopes that fall below minimum design criteria for gravity flow. The sewer segments are between MH I-7 and MH I-6, and between MH I-3 and MH I-1.

A CCTV inspection conducted April 18, 2023 for the 8-inch PVC sewer line between MH I-7 and MH I-6 indicate localized depressions (sag) in 13 areas along the 319-feet of pipe inspected. These sags indicate localized depressions where the pipe has settled below design grade, causing stagnant wastewater. These sags reduce flow efficiency and increase the risk of solids accumulation and blockages. Standing wastewater promotes odor, corrosion, and potential root intrusion.

The proposed improvements would route flow through an 8-inch pipe, transition to a 10-inch pipe, and then return to 8-inch pipe at two locations. While this configuration is not hydraulically ideal, the 2006 WWCSMP concluded that a fully optimized solution would require a major capital investment with a low cost-benefit ratio. Replacing these sections of pipe and setting them at the proper slope will promote flow efficiency and reduce solids accumulation, Therefore, replacement of the two deficient segments was recommended in the 2006 WWCSMP.

MH P-2 to MH P-5

The sewer line extending from MH P-2 to MH P-5 is hydraulically undersized and susceptible to surcharging under peak flow conditions, posing a risk of sewage overflows. To address both capacity and structural concerns, the existing pipe segments will be upsized from 8 to 10 inches to 15 inches in diameter. The CCTV inspections conducted along the corridor support a high-priority replacement recommendation for the segments between MH P-3 and MH P-5.

Located beneath the sidewalk at 135 River Place, the sewer segment from MH P-2 to MH P-3 was found to be in good condition. The inspection revealed no cracks, joint failures, root intrusion, or deformation. The 49-feet of 10-inch PVC pipe is structurally sound although undersized and may be retained or upsized in coordination with adjacent improvements.

Located beneath a parking lot at 3582 Carnes Road the 8-inch diameter AC sewer line between MH P-3 to P-4 contains multiple deficiencies including cracks, sags, alignment shifts, and infiltration runners. Root intrusion and defective taps increase the risk of backups and require ongoing maintenance. The 165-feet of line is a high priority candidate for complete replacement.

Located beneath a parking lot at 3616 Carnes Road the inspection of the 8-inch AC sewer line between MH P-4 to MH P-5 reveals extensive surface wall loss and visible voids. O-rings are visible at two of the joints, 4-inch lateral taps are defective, surface damage is noted at six locations, and voids are visible at the taps were also found. The 267-feet of aged, brittle AC sewer line is operating in a fragile condition and is a high priority candidate for immediate replacement.

MH Q-25 to MH Q-28 Facility and Highway Crossing

The sewer corridor spanning MH Q-25 to MH Q-28 crosses beneath Highway 42 and exhibits a combination of hydraulic inefficiencies and structural issues. CCTV inspections reveal sagging, infiltration, root intrusion, and joint misalignments. These deficiencies compromise flow and increase risk of solids buildup. The line between MH Q-27 and MH Q-28 has wide spread root intrusion and voids.

The 115-foot segment of 8-inch PVC sewer line between MH Q-25 to MH Q-26 is structurally in poor condition. Joints between the segments of pipe are separating, factory taps are defective, sags are present, and a ball of roots is obstructing 85 percent of the cross-sectional area of the pipe near MH Q-26.

The 88-foot segment of 12-inch non-reinforced concrete pipe between MH Q-26 and MH Q-27 appears structurally intact with no observable cracks or root intrusion but does have sags.

The 32-foot segment of 8-inch, PVC sewer piping between MH Q-27 and MH Q-28 presents multiple structural and hydraulic deficiencies. CCTV findings include grease deposits, a visible soil void, active infiltration, joint offsets, and misalignments, and sagging.

Manhole Replacement and Repairs

Approximately half of the Authority's manholes were installed in the 1960s and 1970s and are in poor condition. Development of an annual manhole repair or replacement program is recommended to address Inflow and Infiltration (I&I) and other deficiencies with the existing manholes. There are 87 manholes which require a ring and cover repair, 162 require general repairs, five (5) require extensive repairs, one (1) requires complete replacement.

Pump Stations

G-4 Pump Station

The G-4 Pump Station is the main pump station for the Authority. The G-4 Pump Station collects wastewater from Basins E through Q representing 66 percent of the total flow through the WWTP. The G-4 Pump Station was constructed when the Winston-Green Wastewater Treatment Plant was built in 1974 to convey flows from the old lagoon facility to the new regional WWTF. Construction of the G-4 Pump Station included a new 12-inch diameter force main to route flows from the G-4 Pump Station to the new regional facility. In 1999, the Authority's G-4 Pump Station was modified to improve control systems.

The G-4 Pump Station is a three-level dry pit and/or wet pit configuration with vertical shafted centrifugal pumps equipped with VFDs. Three pumps, two duty and one standby, are located on the base floor of the facility, motors are located on the intermediate floor, and the controls, power system, and back-up power supply are located on the top floor. The duty pumps are 125 Hp and 100 Hp, respectively. The standby pump is 100 Hp. The wet well is a two-bay configuration. The gates and Operators allow for the wet well sumps to function independently or together. A gate is also located on the inlet sewer which allows isolation of the wet well. Design data for the G-4 Pump Station is summarized in Appendix A.

The existing flow meter installation consists of an 8-inch diameter Fischer-Porter magnetic meter, with its sensing element mounted on a 12-inch vertical discharge pipe and the transmitter installed to the adjacent wall. This unit is currently inoperable and scheduled for replacement. A temporary Seirra strap on style flow meter is currently installed; however, it is unreliable and maintenance intensive.

The VFDs manufactured by Siemens were installed in 2015 as part of prior electrical upgrades including upgrading the majority of the electrical components within the existing Motor Control Center (MCC). A 350 to 475 kilowatts (kW) standby generator was installed at the site in 2015. However, the existing MCC still features various electrical components and appurtenances from the original 1979 install such as the original circuit breakers, starters, busses, and conductors all of which are operating beyond their current design life and pose an increased risk of failure.

The existing Automation Direct Programmable Logic Controller (PLC) and VFDs are programmed such that when a VFD faults it can only be manually reset in-person. In some situations, this requires an immediate Operator response. The Operator must travel to the facility which delays response time. The proposed project will upgrade the PLC to eliminate manual reset requirements.

The Authority houses a number of spare parts at the facility including a spare VFD. The VFDs must be energized and their capacitors charged at least annually to ensure long term storage of the unit. Currently the recharging is not practiced and the spare VFD has not been charged recently; posing an increasing risk of damage to the unit.

Briarwood Pump Station

The Briarwood Pump Station is a duplex submersible pump station located in the Briarwood subdivision. The pump station was originally constructed in 1998 and consists of a duplex 3-HP, 240/60/3-phase submersible wastewater pumping system. The pumps are Flygt Model CP3085-438. Design data for the Briarwood Pump Station is summarized in Appendix A.

The existing electrical components at the Briarwood Pump Station are currently housed within the wet well, exposing them to moisture and corrosive conditions Photographs are provided in Appendix C. Telemetry capabilities are also limited to a single high-level alarm with cellular callout, offering minimal remote visibility and no real-time operational data.

The Briarwood Pump Station currently lacks a Manual Transfer Switch (MTS), preventing the Authority from connecting a portable generator during extended power outages. Operations rely on mobilizing a vacuum truck to draw down the wet well and discharge the raw wastewater to a nearby manhole during a power outage. This approach is labor-intensive, costly, and increases the risk of wastewater overflows if not executed promptly. To mitigate these risks and improve emergency response capabilities, installation of an MTS is recommended. Additionally, minor electrical modifications are required for the Authority's portable generator. The generator is currently staged at the Oak Creek Pump Station in order to ensure compatibility with the Briarwood station's power configuration.

Old River Crossing Pump Station

The Old River Crossing Pump Station, located on private property, has been decommissioned for an extended period but remains partially connected to the active distribution system via an overflow line. The existing wet well and pump pit continue to receive intermittent flow although wastewater bypasses the station. The facility is in a state of advanced corrosion and deterioration, posing significant environmental and public health risks. The site has been designated for demolition and complete disconnection from the system based on the previously listed safety concerns.

SECTION 2:

CAPITAL IMPROVEMENTS PROJECTS

SECTION 2: **CAPITAL IMPROVEMENT PROJECTS**

2.1 Basis for Cost Estimates

The cost estimates presented in this Capital Improvement Plan (CIP) will include the following major cost components: construction, engineering, contingency, legal & administrative, environmental review, and permitting. Some of the projects defined in this CIP will not require engineering, legal & administrative, environmental, permitting, and/or construction costs. Each project was analyzed individually to estimate the elements necessary for each cost estimate, and only include anticipated cost allocations. The estimates presented herein are preliminary and are based on the level and detail of planning presented in this CIP. As projects proceed and as site specific information becomes available, the estimates will require updating.

The costs within the CIP were developed based on the Association of Cost Engineering International (AACEI) criteria for a Class 4 Estimate. A Class 4 Estimate is a conceptual-level estimate. Class 4 Estimates are used to prepare planning-level cost scopes, evaluate alternatives, or develop long-term CIPs. Expected accuracy of Class 4 Estimates typically range from -30 percent to +50 percent, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination.

Construction Costs

The estimated construction costs in this CIP are based on actual construction bidding results from similar work, published cost guides, other construction cost experience, and material and equipment quotations. Reference was made to the as-built drawings and system maps of the existing facilities to determine construction quantities, elevations of the process areas and major components, and locations of sewer and water lines. Estimates are based on preliminary layouts of the proposed improvements, where required.

Future changes in the cost of labor, equipment, and materials may justify comparable changes in the cost estimates presented herein. For this reason, common engineering practices usually tie the cost estimates to an index that varies in proportion to long-term changes in the national economy. The Engineering News Record (ENR) Construction Cost Index is commonly used. This index is based on the value of 100 for the year 1913. Average yearly values for the past ten years are summarized in Table 2.1.1.

TABLE 2.1.1
ENR CONSTRUCTION COST INDEX (2015 – 2025)

Year	Index	% Change
2015	10035	2.3%
2016	10338	3.0%
2017	10737	3.9%
2018	11062	3.0%
2019	11281	2.0%
2020	11466	1.6%
2021	12133	5.8%
2022	13007	7.2%
2023	13358	2.7%
2024	13571	1.6%
2025	13928	2.6%
Average Annual		**3.3%**

Construction cost estimates presented in this CIP are projected at a minimum increase of 3.3 percent per year. Future annual ENR Indexes can be used to calculate the construction cost of projects for their construction year based on the annual growth in the ENR Index.

Contingencies

A planning level contingency factor equal to approximately ten (10%) to twenty percent (20%) of the estimated construction costs has been incorporated into the cost estimates. The cost estimates presented are based on conceptual planning; therefore, allowances must be made for variations in final quantities, bidding market conditions, adverse construction conditions, unanticipated specialized investigation and studies, and other difficulties which cannot be foreseen at this time but may tend to increase final costs.

Engineering

The cost of engineering services for major projects typically includes special investigations, a predesign report, surveying, geotechnical exploration, preparation of contract drawings and specifications, bidding services, construction management, construction staking, construction observation, start-up services, and the preparation of Operation and Maintenance (O&M) manuals. Not all projects will require engineering.

Depending on the size and type of project, engineering costs may range from 15 to 25 percent of the contract cost when all of the above services are provided. The lower percentage applies to large projects without complicated mechanical systems. The higher percentage applies to small, complicated projects. Typically, in this plan engineering costs are established at twenty percent (20%) of construction costs. Additional engineering services may be required for specialized projects. This could include geotechnical evaluations, structural evaluations, and other specialized consulting activities.

Legal & Administrative

An allowance of three percent of construction costs has been added for legal & administrative services. This allowance is intended to include internal project planning and budgeting, grant administration, liaison, interest on interim loan financing, legal services, review fees, legal advertising, and other related expenses associated with the project.

Environmental Review

In order for a project to be eligible for federal and/or state grants and loans, a review of anticipated environmental impacts of the proposed improvements is required. The primary goal of the environmental review is to help public officials make decisions based on an understanding and consideration of the environmental consequences, and to take actions to protect, restore, and enhance the environment. To accomplish these tasks, the National Environmental Policy Act (NEPA) was promulgated. The NEPA requires federal agencies, or monies originating from federal programs, to either prepare or have prepared written assessments or statements which describe the: 1) affected environment and environmental consequences of a proposed project, 2) reasonable or practicable alternatives to the proposed project, and 3) any mitigation measures necessary to avoid or minimize adverse environmental effects.

The environmental review will include one of the following four levels in the order of increasing complexity.

- Determination of categorical exclusion without an environmental impact or assessment report.
- Determination of categorical exclusion with an environmental impact or assessment report.

- Preparation of an environmental impact or assessment report.

- Preparation of an environmental impact statement.

The cost for performing the anticipated environmental review within this CIP was estimated based on the projects being financed with publicly financed grants and loans. The cost for the environmental review will be based on previous experience in preparing the required documents. If funding is obtained from a public funding agency, then the Authority may be required to submit one of the previous levels of environmental report which examines the potential impact of the proposed improvements on local habitat and species. Review and approval by the affected agencies could take up to twelve (12) months or more, depending on the specific project.

Permitting

Permitting is important because many activities associated with constructing and maintaining the water and wastewater systems require permits to comply with state and federal requirements for work within wetland areas or waterways. Typically, Oregon Division of State Lands (DSL) and US Corps of Engineers (USACE) have required permitting for water and wastewater projects. Compliance with storm water, erosion control, flood plain, and other various environmental requirements are often involved with the construction of transmission and/or collection lines, raw water intakes, discharge facilities, raw and finished water reservoirs, and other items. Permits with various road system agencies may be necessary to install water and/or sewer lines within a road right-of-way. The General Contractor is expected to be responsible for the cost of permitting for the water and sewer line cost estimates prepared in this CIP. However, permitting costs are included in the cost estimate for the railroad for the Highway 99 bore due to the proximity of the construction project to the railroad.

2.2 Water System Capital Improvement Projects

Water Treatment Plant

Backup Generator

The Water Treatment Plant (WTP) does not currently have a backup generator onsite. This project will install a new, permanently mounted 600 kilowatt (kW) standby generator for the WTP. Sizing of the proposed standby generator system was based on a load analysis prepared by LizTek Consulting Engineers in 2021.

The standby generator will be 3-phase, 277/480 Volt (V), 60 Hertz (Hz) rated with a sub-base 24-hour fuel tank. The diesel generator would be 1,000 gallons with double containment. The installation of the new generator will require an Automatic Transfer Switch (ATS) sized at 2,000 Ampere (A). The ATS allows the power source to be transferred between the primary utility power and the standby generator sources.

Installation of a standby generator system will require modifications to the existing plant's main electrical distribution system, and minor Supervisory Control and Data Acquisition (SCADA) upgrades. The project would include a reinforced concrete slab. The preliminary location of the standby generator is to the east of the existing WTP.

A cost estimate for the backup generator is provided in Table 2.2.1. Engineering and legal & administrative costs are tentatively included, but are preliminary and subject to changes based on how the project is executed.

Figure 2.2.1 illustrates the proposed location of the new standby generator system. This project is scheduled for completion in the 2026 to 2027 fiscal year.

TABLE 2.2.1
BACKUP GENERATOR
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 107,700	$ 107,000
2	Site Preparation	LS	1	$ 107,700	$ 53,900
3	Removable Bollards	EA	2	$ 1,200	$ 2,400
4	Standby Generator Package	LS	1	$ 702,500	$ 702,500
	Standby Generator (600 kW)			$ -	$ -
	Electrical			$ -	$ -
	ATS			$ -	$ -
	Reinforced Concrete Pad			$ -	$ -
	Aggregate Base			$ -	$ -
5	ATS Signals to SCADA	LS	1	$ 15,000	$ 15,000
	Install Signal To PLC			$ -	$ -
	Interface Hardware at PLC			$ -	$ -
	Programming of SCADA			$ -	$ -
				Subtotal	**$ 881,500**
				Contingency @ 10%	**$ 88,150**
				Engineering @ 20%	**$ 176,300**
				Legal & Administrative @ 3%	**$ 26,500**
				Total (2026)	**$ 1,153,950**
				Total (2027)	**$ 1,192,100**
Assumptions and Exclusions					
1	*Contingency reduced to 10%.*				

THE DYER PARTNERSHIP ENGINEERS & PLANNERS, INC.	**GREEN AREA WATER AND SANITARY AUTHORITY NEW STANDBY GENERATOR LOCATION**	FIGURE NO. **2.2.1**
DATE: SEPTEMBER 2025 PROJECT NO.: 216.02	**NEW STANDBY GENERATOR**	

Raw Water Pumps

The original raw water pumps from the 1994 WTP improvement project were upgraded approximately 25 years ago to the current submersible Flygt pumps. The existing pumps were reportedly rebuilt in the last ten years and are approaching the end of their service life.

This project consists of complete replacement of the three existing Flygt raw water pumps. in order to avoid performance and reliability issues. The Authority would perform the installation. This capital improvement project excludes engineering and legal & administrative costs.

The contingency cost was set at ten percent based on the limited project scope. The proposed pumps are considered an in-kind replacement with Flygt model 3171.180, 30 Hp, 480V, three phase pumps. An analysis of the capacity of the pumps was not performed as part of this CIP project.

A cost estimate for the new pumps is provided in Table 2.2.2. The project is scheduled for completion in the 2029 to 2030 fiscal year.

TABLE 2.2.2
RAW WATER PUMPS
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Site Preparation	LS	1	$ 3,300	$ 3,300
2	Pumps (Flygt)	EA	3	$ 44,000	$ 132,000
				Subtotal	**$ 135,300**
				Contingency @ 10%	**$ 13,530**
				Engineering @ 20%	**$ -**
				Legal & Administrative @ 3%	**$ -**
				Total (2026)	**$ 149,000**
				Total (2030)	**$ 169,700**

Assumptions and Exclusions

1	*Engineering excluded.*
2	*Legal & Administrative are not anticipated.*
3	*Contingency reduced to 10%.*
4	*GAWSA to perform installation.*
5	*Pump price based on in-kind replacement.*

Turbidimeters

Four (4) Hach 1720E turbidimeters are used in the existing system: one (1) for raw water and three (3) for permeate. The Hach 1720E is an outdated model. This project would install four new turbidimeters. New Hach turbidimeters (TU 5400 sc with controllers) were used as a basis for the cost estimate.

The Authority would perform the installation. Engineering and legal & administrative costs were omitted from the cost estimate, and the contingency allocation was reduced to ten percent. The Authority is advised to evaluate the various manufacturers and turbidimeters prior to entering into an equipment purchase agreement based on the advancement of instrumentation technologies.

A cost estimate for the new turbidimeters is provided in Table 2.2.3. The project is scheduled for completion in the 2029 to 2030 fiscal year.

TABLE 2.2.3
TURBIDIMETERS
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Turbidimeters	EA	4	$ 7,500	$ 30,000
2	Electrical	LS	1	$ 2,500	$ 2,500
				Subtotal	**$ 32,500**
				Contingency @ 10%	**$ 3,250**
				Engineering @ 20%	**$ -**
				Legal & Administrative @ 3%	**$ -**
				Total (2026)	**$ 35,750**
				Total (2030)	**$ 40,800**
Assumptions and Exclusions					
1	*Engineering not anticipated.*				
2	*Legal & Administrative are not anticipated.*				
3	*Contingency reduced to 10%.*				
4	*Construct Facilities & Temporary Controls not anticipated.*				
5	*Site Preparation not anticipated.*				
6	*GAWSA to perform installation.*				

Distribution System

Isolation Valves

Several areas of the existing water distribution system are not equipped with isolation valves making maintenance difficult. The cost estimate excludes engineering and legal & administrative costs. The contingency was set at ten percent based on the limited project scope. The cost assumes the valves will be installed by the Authority during a planned shutdown.

Installation of the valves are planned for the 2025 to 2026 fiscal year. A cost estimate for the new valves is provided in Table 2.2.4.

TABLE 2.2.4
ISOLATION VALVE INSTALLATION
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 3,200	$ 3,200
2	Site Preparation	LS	1	$ 1,600	$ 1,600
3	12-inch Gate Valve	EA	3	$ 2,220	$ 6,660
4	10-inch Gate Valve	EA	1	$ 1,700	$ 1,700
5	8-inch Gate Valve	EA	3	$ 1,300	$ 3,900
6	6-inch Gate Valve	EA	12	$ 700	$ 8,400
7	4-inch Gate Valve	EA	1	$ 600	$ 600
				Subtotal	**$ 26,060**
				Contingency @ 10%	**$ 2,610**
				Engineering @ 20%	**$ -**
				Legal & Administrative @ 3%	**$ -**
				Total (2026)	**$ 28,670**
Assumptions and Exclusions					
1	*Engineering not anticipated.*				
2	*Legal & Administrative are not anticipated.*				
3	*Contingency reduced to 10%.*				
4	*GAWSA to perform potholing of utilities.*				
5	*GAWSA to perform installation of all valves and appurtenances.*				
6	*GAWSA to perform installation during a planned shutdown.*				

Remote Metering

Existing System

The Authority currently owns and operates approximately 3,228 meters of which 57 percent are 15 years of age or older. As mechanical meters age their accuracy decreases and the meter becomes unreliable and prone to failure. Meters are generally recommended for replacement at or around 15 years of age.

The Authority currently utilizes and contracts with Meter Readers, LLC for approximately $40,000 annually to provide meter reading services. Data inconsistencies, cost, and other disadvantages associated

with the Authority's current contract with Meter Readers, LLC warrants the evaluation of new meters options with AMR or AMI Systems.

AMR System

The Automatic Meter Reading (AMR) System consists of existing meters being replaced with new meters containing a data transmitter used to communicate with a mobile data collector. A mobile data collector is then used to collect data from the meters based on proximity. This allows the Operator to drive past the remote meters while the mobile data collector collects the meter readings. Data is then available in real time allowing the Operator to view consumption graphs and address potential leaks or customer complaints.

Implementation of an AMR System can occur in several ways. All meters can be upgraded at one time requiring a greater up-front capital investment or the meter adjustments may be phased in as the existing meters age and new AMR meters replace the outdated infrastructure. The monthly fees associated with manual meter readings will decrease as the AMR System replacement is implemented.

AMI System

The Advanced Metering Infrastructure (AMI) System involves placing gateways across the service area to automatically collect the meter data and transmit the data through a cellular network to specialized software for analysis. An AMR System can eventually be phased into an AMI System. However, monthly fees are paid for the software and cellular network connections in the range of $12,000 to $15,000 annually.

Recommended Solution

The AMR System is recommended for implementation utilizing a phased approach by replacing old mechanical meters annually with ultrasonic meters compatible with an AMR System. However, the cost estimate below reflects the total cost of transitioning to an AMR System.

A cost estimate for the AMR System is provided in Table 2.2.5 and was obtained through Consolidated Supply Company. The cost estimate assumes the installation of ultrasonic meters compatible with an AMR System is performed by the Authority. Engineering and legal & administrative costs are excluded and the contingency is set at ten percent. The new AMR System is scheduled for completion in the 2029 to2030 fiscal year.

TABLE 2.2.5
REMOTE METERING SYSTEM
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Remote Metering System (AMR)	LS	1	$ 692,000	$ 692,000
				Subtotal	**$ 692,000**
				Contingency @ 10%	**$ 69,200**
				Engineering @ 20%	**$ -**
				Legal & Administrative @ 3%	**$ -**
				Total (2026)	**$ 761,200**
				Total (2030)	**$ 866,800**
Assumptions and Exclusions					
1	*Contingency reduced to 10%.*				
2	*Quote assumes ultrasonic meters.*				
3	*Mobile kit, software, and one day of training.*				
4	*Meter installation prices not included.*				

Highway 99 Bore and Loop and Speedway Tie-In

The Highway 99 Bore and Loop and Speedway Tie-In project is planned to be completed in three phases and consists of installing new 12-inch diameter main lines and a new storage reservoir (Town Tank) towards the north end of the Authority to provide redundancy and improve fire flow objectives for the area. Reference Figure 2.2.2 for the proposed improvements. Phases 1 and 2 will are planned to occur within the next five (5) years and are included within the scope of this CIP. Phase 3 was initially included in the scope of this CIP; however, after developing the cost estimate for Phase 3 it was determined to remove it from the scope of this five-year CIP.

Phase 1

Phase 1 of the Highway 99 Bore and Loop consists of installation of approximately 3,900 feet of new 12-inch diameter water main line looped into the current system to meet redundancy objectives in the event the existing main line on the west of Highway 99 near the railroad tracks experiences a failure. The line will tie into the existing 12-inch Ductile Iron (DI) main line on the east side of Highway 99 near Oregon Coach Crafter's RV to the north and will tie into the existing 10-inch Asbestos Cement (AC) main line on the west of Highway 99 near the Shady Oaks Motel by boring under the highway. A cross with valves and blind flanges will be installed at the southern end of the new pipe line in preparation of Phases 2 and 3. The associated costs for boring under Highway 99 are included along with permitting required by the rail road company. Phase 1 is scheduled to be completed in the 2027 to 2028 fiscal year.

A cost estimate for Phase 1 is provided in Table 2.2.6. Given the unknowns related to geotechnical considerations and the need for rock excavation the contingency allocation is twenty percent.

TABLE 2.2.6
HIGHWAY 99 BORE AND LOOP AND SPEEDWAY TIE-IN PHASE 1
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 190,000	$ 190,000
2	Site Preparation	LS	1	$ 95,000	$ 95,000
3	12" Dia Water Line (Class B Backfill)	LF	3,900	$ 200	$ 780,000
4	12" Dia Water Line - Bore	LS	110	$ 500	$ 55,000
5	Rock Excavation	CY	1,000	$ 350	$ 350,000
6	Fittings	EA	18	$ 500	$ 9,000
7	Isolation Valve	EA	4	$ 3,200	$ 12,800
8	Air Release Valve	EA	2	$ 5,000	$ 10,000
9	Fire Hydrants	EA	4	$ 6,800	$ 27,200
10	Gate Valve	EA	7	$ 3,200	$ 22,400
				Subtotal	**$ 1,551,400**
				Contingency @ 20%	**$ 310,280**
				Engineering @ 20%	**$ 310,280**
				Structural	**$ 25,000**
				Geotechnical	**$ 35,000**
				Legal & Administrative @ 3%	**$ 46,540**
				Rail Road Permitting	**$ 50,000**
				Total (2026)	**$ 2,278,500**
				Total (2028)	**$ 2,431,400**
Assumptions and Exclusions					
1	*Assumes water line alignment follows Highway 99.*				
2	*Rock excavation methods assumed opposed to drilling and/or boring.*				
3	*Number of water line fittings and valves approximated and subject to change during design.*				
3	*Structural shoring plans and geotechnical report may be required for boring under Hwy 99.*				
4	*Contingency set to 20% due to the need for geotechnical investigation and rock excavation.*				

Phase 2

Phase 2 will build off of Phase 1 and continue the 12-inch diameter water line south along Highway 99 and tie into the existing water main near the intersection of Speedway Road and Highway 99. This section of water line is approximately 5,000-feet long and will tie in the Speedway Tank into the Phase 1 line allowing for increased fire flows and operational flexibility.

Phase 2 is scheduled to be completed in the 2029 to 2030 fiscal year. A cost estimate for Phase 2 is provided in Table 2.2.7. Given the unknowns related to geotechnical considerations and the need for rock excavation the contingency allocation is twenty percent.

TABLE 2.2.7
HIGHWAY 99 BORE AND LOOP AND SPEEDWAY TIE-IN PHASE 2
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 228,000	$ 228,000
2	Site Preparation	LS	1	$ 114,000	$ 114,000
3	AC Removal & Replacement	LS	1	$ 3,500	$ 3,500
3	12" Dia Water Line (Class B Backfill)	LF	5,000	$ 200	$ 1,000,000
4	Rock Excavation	CY	1,250	$ 350	$ 437,500
5	Isolation Valve	EA	5	$ 3,200	$ 16,000
6	Air Release Valve	EA	3	$ 5,000	$ 15,000
7	Fire Hydrants	EA	2	$ 6,800	$ 13,600
8	Fittings	EA	20	$ 500	$ 10,000
9	Gate Valve	EA	7	$ 3,200	$ 22,400
				Subtotal	**$ 1,860,000**
				Contingency @ 20%	**$ 372,000**
				Engineering @ 20%	**$ 372,000**
				Legal & Administrative @ 3%	**$ 55,800**
				Total (2026)	**$ 2,659,800**
				Total (2030)	**$ 3,028,700**
Assumptions and Exclusions					
1	*Assumes water line alignment follows Highway 99 to Speedway Rd.*				
2	*Rock excavation methods assumed opposed to drilling and/or boring.*				
3	*Number of water line fittings and valves approximated and subject to change during design.*				
4	*Contingency set to 20% due to the need for geotechnical investigation and rock excavation.*				

Phase 3

Phase 3 of the project consists of constructing a new reservoir (Town Tank) near Shady Oaks Motel, and installing approximately 1,600-feet of 8-inch diameter water line to tie in the new tank to the Phase 1 water line. The Town Tank site is existing, but the tank was demolished due to structural problems. The project adds a new glass-fused-to-steel tank with a capacity of 500,000 gallons. The proposed volume is as calculated in the 2015 Water System Master Plan (MAP Engineering, 2015).

Phase 3 of the project would include a glass-fused-to-steel tank, concrete foundation, yard piping (overflow, drain, inlet and/or outlet piping), valving, telemetry system, mixing system, liquid level sensor, sampling station, fencing, site gravel, and associated appurtenances. Costs for geotechnical engineering are included.

A cost estimate for the new Town Tank is provided in Table 2.2.8. Phase 3 of the project was initially included in this CIP; however, upon developing the cost estimate it was determined to remove Phase 3 from this five-year CIP. The cost estimate is provided herein for future reference and is presented in 2025 currency and may be updated to the appropriate planning year when the Authority determines to complete Phase 3 of the project. The cost for this project will not be reflected in the overall cost estimate summary.

TABLE 2.2.8
HIGHWAY 99 BORE AND LOOP AND SPEEDWAY TIE-IN PHASE 3 (TOWN TANK)
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 264,200	$ 264,200
2	Site Preparation	LS	1	$ 132,100	$ 132,100
3	500,000 Gallon Reservoir (Glass-Fused to Steel)	LS	1	$ 1,125,000	$ 1,125,000
	Mobilization			$ -	$ -
	Installation			$ -	$ -
	Galvanized Bolts, Washers, Nuts, etc.			$ -	$ -
	30" Diam Manway			$ -	$ -
	Aluminum Exterior Ladder			$ -	$ -
	FRP Interior Ladder			$ -	$ -
	Liquid Level Guage Board			$ -	$ -
	Ring Wall Foundation			$ -	$ -
	Penetrations And Interior Piping			$ -	$ -
	Passive Cathodic Protection System			$ -	$ -
	Filling And Leak Testing			$ -	$ -
4	Excavation	CY	400	$ 35	$ 14,000
5	Structural Backfill	CY	75	$ 65	$ 4,875
6	Aggregate Base	CY	90	$ 35	$ 3,150
7	Gravel Surfacing	CY	140	$ 24	$ 3,360
8	Sand	CY	30	$ 59	$ 1,770
9	Yard Piping	LS	1	$ 40,000	$ 40,000
10	8" Diam Water Line (Class B Backfill)	LF	1,600	$ 150	$ 240,000
11	Fittings	EA	8	$ 500	$ 4,000
12	Hydraulic Mixing System	LS	1	$ 150,000	$ 150,000
13	Fence & Gate	LF	320	$ 60	$ 19,200
14	Coatings	LS	1	$ 10,000	$ 10,000
15	Sampling Station	LS	1	$ 1,500	$ 1,500
16	Removable Bollards	LS	4	$ 1,200	$ 4,800
17	Control Valve	LS	1	$ 49,600	$ 49,600
18	Electrical	LS	1	$ 50,000	$ 50,000
19	SCADA & Integration	LS	1	$ 30,000	$ 30,000
20	Landscaping	LS	1	$ 10,000	$ 10,000
				Subtotal	**$ 2,157,555**
				Contingency @ 20%	**$ 431,510**
				Engineering @ 20%	**$ 431,510**
				Geotechnical Report	**$ 35,000**
				Legal & Administrative @ 3%	**$ 64,730**
				Total	**$ 3,120,305**

Assumptions and Exclusions

1	*Seismic fittings and valve not included.*
2	*Assumes water line alignment follows the existing easement to the tank site.*
3	*Rock Excavation methods assumed opposed to drilling and/or boring.*
4	*Number of water line fittings and valves approximated and subject to change during design.*
5	*Utility power excluded.*
6	*Access road improvements excluded.*

LEGEND

WATER TANK

PHASE 1: 2027/2028

PHASE 2: 2029/2030

PHASE 3: FUTURE CIP

WATER SYSTEM IMPROVEMENTS FISCAL YEAR 2027/2028

1. HIGHWAY 99 BORE & LOOP AND SPEEDWAY TIE-IN PHASE 1: THIS PHASE CONSISTS OF INSTALLING APPROXIMATELY 3,900 FEET OF NEW 12-INCH DIAMETER WATER MAIN TO MEET REDUNDANCY OBJECTIVES.

WATER SYSTEM IMPROVEMENTS FISCAL YEAR 2029/2030

2. HIGHWAY 99 BORE & LOOP AND SPEEDWAY TIE-IN PHASE 2: THIS PHASE CONSISTS OF INSTALLING APPROXIMATELY 5,000 FEET OF NEW 12-INCH DIAMETER WATER MAIN AND WILL TIE THE SPEEDWAY TANK INTO THE PHASE 1 LINE.

FUTURE CIP

3. HIGHWAY 99 BORE & LOOP AND SPEEDWAY TIE-IN PHASE 3: PHASE 3 OF THE PROJECT CONSISTS OF BUILDING A NEW STORAGE RESERVOIR (TOWN TANK) AND INSTALLING APPROXIMATELY 1,600 FEET OF 8-INCH DIAMETER WATER LINE TO TIE IN THE NEW TANK TO THE PHASE 1 WATER LINE.

HIGHWAY 99

I-5

HIGHWAY 99

1

3

NEW GLASS-FUSED TO STEEL TANK (TOWN TANK)

3

2

SOUTH UMPQUA RIVER

SPEEDWAY TANK 1.50 MG

I-5

SPEEDWAY RD.

N

1"= 1000'

FIGURE NO. 2.2.2

GREEN AREA WATER AND SANITARY AUTHORITY CAPITAL IMPROVEMENT PLAN

HIGHWAY 99 BORE & LOOP

THE DYER PARTNERSHIP ENGINEERS & PLANNERS, INC.

DATE: OCT. 2025

PROJECT NO.: 216.02

Reservoirs

This section defines various improvement projects to the Authority's reservoirs including: recoating of the reservoirs, installation of mixing systems, installation of a control valve and appurtenances at the Main Tank, and utility power and telemetry system upgrades.

Roberts Creek Tank Recoating

The steel Roberts Creek Tank has mild corrosion across much of the exterior. Recoating of the tank would include taking the tank off-line, sandblasting to remove the existing coatings, and application of a new NSF-61 approved coating system.

Lead paint testing was not performed to determine if the existing tank coatings contain lead. The Authority reported lead paint does not exist at this reservoir. The scope of improvements does not include lead paint removal and disposal. It is recommended for lead paint testing be performed during design of the upgrades to determine lead paint abatement requirements, if required. Lead paint abatement can be a costly when recoating existing steel reservoirs.

The new coatings are planned for the 2027 to 2028 fiscal year. A cost estimate for the recoating of the Roberts Creek Tank is provided in Table 2.2.9.

TABLE 2.2.9
ROBERTS CREEK TANK RECOATING
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 22,000	$ 22,000
2	Site Preparation	LS	1	$ 11,000	$ 11,000
3	Rigging, Set Up, Door Sheet, SP-1	LS	1	$ 58,000	$ 58,000
4	Floor Abrasive Blast	LS	1	$ 8,000	$ 8,000
5	Floor Prime Coat	LS	1	$ 2,500	$ 2,500
6	Floor Intermediate Coat	LS	1	$ 2,500	$ 2,500
7	Floor Finish Coat	LS	1	$ 2,500	$ 2,500
8	Ceiling Abrasive Blast	LS	1	$ 14,000	$ 14,000
9	Ceiling Prime Coat	LS	1	$ 4,000	$ 4,000
10	Ceiling Intermediate Coat	LS	1	$ 4,000	$ 4,000
11	Ceiling Finish Coat	LS	1	$ 4,000	$ 4,000
12	Shell Abrasive Blast	LS	1	$ 8,500	$ 8,500
13	Shell Prime Coat	LS	1	$ 2,800	$ 2,800
14	Shell Intermediate Coat	LS	1	$ 2,800	$ 2,800
15	Shell Finish Coat	LS	1	$ 2,800	$ 2,800
16	Door Sheet Installation	LS	1	$ 17,000	$ 17,000
17	Disinfection and Testing	LS	1	$ 7,000	$ 7,000
18	Waste Disposal	LS	1	$ 4,500	$ 4,500
				Subtotal	**$ 177,900**
				Contingency @ 20%	**$ 35,580**
				Engineering @ 20%	**$ 35,580**
				Legal & Administrative @ 3%	**$ 5,340**
				Total (2026)	**$ 254,400**
				Total (2028)	**$ 271,500**
Assumptions and Exclusions					
1	*Lead Paint Removal and Disp. excluded.*	*LS*	*1*	$ *40,000*	$ *40,000*
2	*Roof Inspection and Blast excluded.*	*LS*	*1*	$ *14,000*	$ *14,000*
3	*Vent and Hatch Replacement excluded.*	*LS*	*1*	$ *35,500*	$ *35,500*
4	*Structural Welding and Repair excluded.*	*HR*	*40*	$ *250*	$ *10,000*
5	*Lead paint abatement and disposal not included.*				
6	*Roof inspection and blast not included.*				
7	*Vent and hatch replacements not included.*				
8	*Structural welding and repair not included.*				

Main Tank Recoating

It is recommended for the Main Tank to receive an exterior coating to provide surface protection. The Authority reported lead paint does not exist at the Main Tank. It is recommended for the Authority perform lead paint testing prior to coating of the tank. The new coatings are planned for the 2029 to 2030 fiscal year. A cost estimate for the recoating of the Main Tank is provided in Table 2.2.10.

TABLE 2.2.10
MAIN TANK RECOATING
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 71,000	$ 71,000
2	Site Preparation	LS	1	$ 36,000	$ 36,000
3	Exterior Recoating	LS	1	$ 468,000	$ 468,000
4	*Walls*			$ -	$ -
5	*Roof*			$ -	$ -
				Subtotal	**$ 575,000**
				Contingency @ 20%	**$ 115,000**
				Engineering @ 20%	**$ 115,000**
				Legal & Administrative @ 3%	**$ 17,250**
				Total (2026)	**$ 822,250**
				Total (2030)	**$ 936,300**
Assumptions and Exclusions					
1	*Lead paint abatement and disposal not included.*				
2	*Price includes surface preparation, media blasting, and cleaning.*				

Speedway Tank Repair and Recoating

Repairs to the failed shotcrete are recommend to mitigate continued degradation. Repairs would preliminarily consist of removing areas of shotcrete where separation has occurred from the substrate, and then doweling in structural shotcrete mix design to re-establish the original condition of the tank. Recoating of the exterior of the tank is recommended to provide surface protection.

A cost estimate for an exterior coating and exterior shotcrete repairs for the Speedway Tank are provided in Table 2.2.11. Lead paint testing was not performed, but is recommend prior to recoating of the new tank. The repairs and new coating are planned for the 2029 to 2030 fiscal year.

TABLE 2.2.11
SPEEDWAY TANK REPAIR AND RECOATING
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 66,000	$ 66,000
2	Site Preparation	LS	1	$ 33,000	$ 33,000
3	Exterior Recoating	LS	1	$ 402,000	$ 402,000
4	*Walls*			$ -	$ -
5	*Roof*			$ -	$ -
6	Shotcrete Repair	LS	1	$ 34,000	$ 34,000
	Shallow Drill / Dowel			$ -	$ -
	Rebar Placement			$ -	$ -
	Shotcrete Placement			$ -	$ -
				Subtotal	**$ 535,000**
				Contingency @ 10%	**$ 53,500**
				Engineering @ 20%	**$ 107,000**
				Legal & Administrative @ 3%	**$ 16,050**
				Total (2026)	**$ 711,550**
				Total (2030)	**$ 810,300**
Assumptions and Exclusions					
1	*Lead paint abatement and disposal not included.*				
2	*Recoating prices include surface preparation, media blasting, and cleaning.*				
3	*Shotcrete repair to match existing nozzle finish.*				

Reservoir Telemetry Upgrades

This project would install new solar power and level transmitter systems to the Main, Speedway, and Roberts Creek Tanks and integrate all three reservoirs into an upgraded telemetry system.

The new telemetry system would consist of a cellular or radio component, allowing communication with the pump station as well as the main SCADA system at the WTP. The scope would also include solar power systems.

A cost estimate for the telemetry upgrades for all three reservoirs is provided in Table 2.2.12. The solar power and telemetry upgrades for the reservoirs are planned for the 2026 to 2027 fiscal year.

TABLE 2.2.12
RESERVOIR TELEMETRY UPGRADES
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 15,600	$ 15,600
2	Site Preparation	LS	1	$ 7,800	$ 7,800
3	Level Transmitter System			$ -	$ -
	Mission or Radio Equipment	LS	3	$ 2,000	$ 6,000
	SCADA Programming & Integration	LS	1	$ 10,000	$ 10,000
	Base Unit Installation of Mission or Radio	LS	3	$ 2,333	$ 7,000
	Solar Power Systems	LS	3	$ 15,000	$ 45,000
	Level Sensors & Telemetry Panel	LS	3	$ 12,000	$ 36,000
				Subtotal	**$ 127,400**
				Contingency @ 10%	**$ 12,740**
				Engineering @ 20%	**$ 25,480**
				Legal & Administrative @ 3%	**$ 3,820**
				Total (2026)	**$ 169,440**
				Total (2027)	**$ 175,100**
Assumptions and Exclusions					
1	*Contingency reduced to 10%.*				

Main Tank Control Valve Upgrades

The hydraulics of the Authority's distribution and finished water storage systems is negatively impacting water quality during certain time periods since the turnover at the Speedway and Roberts Creek Tanks is limited. To address turnover deficiencies, upgrades to the Main Tank are proposed to benefit the system hydraulics relative to the Speedway and Roberts Creek Tanks. The proposed upgrades to the Main Tank include installation of a new isolation valve, check valve, solenoid control valve and vault, and appurtenances.

The Main Tank's shut-off valve is also inoperable, thereby preventing the Authority from isolating the tank. The proposed upgrades to the Main Tank would include a new Insta-Valve (Hydra-Stop) to serve as a tank isolation and/or shut-off valve. The new isolation valve would be installed without taking the tank off-line and/or draining the tank.

The new solenoid control valve would allow the Authority to shut-off flow to the tank based on an Operator adjustable liquid level set points, thereby forcing water to be used from the other tanks (Roberts Creek and Speedway).

A new check valve would be installed on the existing 12-inch diameter AC water line along the access road. Appendix A includes a preliminary layout of the proposed Main Tank control valve improvements along with an updated quote for a control valve. With the proposed upgrades, the Authority would use the Speedway Tank as the tank to control the finished water pump operation.

A cost estimate for the upgrades is provided in Table 2.2.13. The Authority has already purchased the solenoid control valve and vault and therefore the cost estimate excludes these items. The proposed upgrades are planned for the 2027 to 2028 fiscal year.

TABLE 2.2.13
MAIN TANK CONTROL VALVE UPGRADES
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 15,863	$ 15,863
2	Site Preparation	LS	1	$ 7,931	$ 7,931
3	8" Dia Swing Check Valve	EA	1	$ 5,000	$ 5,000
4	14" Diam DI Pipe	LF	10	$ 250	$ 2,500
5	Couplers	EA	4	$ 500	$ 2,000
6	14" Dia Solenoid Control Valve	EA	1	$ 71,250	$ 71,250
7	Valve Vault (Pre-Cast)	EA	1	$ 25,000	$ 25,000
8	14" Diam Insertion Valve	EA	1	$ 49,600	$ 49,600
9	Controls	LS	1	$ 5,000	$ 5,000
10	Programming & SCADA	LS	1	$ 5,000	$ 5,000
11	Disinfection / Sampling	LS	1	$ 5,000	$ 3,000
				Subtotal	**$ 192,144**
				Contingency @ 10%	**$ 19,210**
				Engineering @ 20%	**$ 38,429**
				Legal & Administrative @ 3%	**$ 5,760**
				Total (2026)	**$ 255,543**
				Total (2028)	**$ 272,687**
Assumptions and Exclusions					
1	*Contingency reduced to 10%.*				
2	*Utility power already installed.*				

Tank Mixing Systems and Utility Power

The existing tanks are not equipped with mixing systems. The improvement project includes the installation of mixing systems in the Main Tank, Speedway Tank, and Roberts Creek Tank to help turn over water and improve water quality. Mixing systems help prevent stagnation, mitigate stratification, and reduces disinfection byproducts. This upgrade project would also include installing permanent utility power at each tank site in order to run the mixers.

Water in the Speedway and Roberts Creek Tanks has limited turnover reducing water quality within the current system. The Authority plans to install mixing systems for all three existing tanks to mitigate storage water quality issues. Options to further reduce disinfection byproducts, such as Trihalomethanes (THMs), would include headspace ventilation systems in combination with tank mixers. Ventilation systems were not included as part of the cost estimate.

A cost estimate for mixers for the three reservoirs is provided in Table 2.2.14. The mixer installation is planned for the 2029 to 2030 fiscal year. Cost estimates are based on utilization of submersible in tank mixers as the most cost-effective method. Tank mixers would require 120 Voltage Alternating Current (VAC) power and have the option for SCADA integration. Other tank mixers considered were passive mixing systems and side mounted mixers. Both types required retrofitting of existing tanks and were therefore not considered.

TABLE 2.2.14
TANK MIXING SYSTEMS AND UTILITY POWER
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 9,825	$ 9,825
2	Site Preparation	LS	1	$ 4,913	$ 4,913
3	Main Tank Mixers	LS	1	$ 25,000	$ 25,000
4	Main Tank Utility Power	LS	1	$ 13,500	$ 13,500
5	Roberts Creek Tank Mixers	LS	1	$ 25,000	$ 25,000
6	Roberts Creek Tank Utility Power	LS	1	$ 13,500	$ 13,500
7	Speedway Tank Mixers	LS	1	$ 25,000	$ 25,000
8	Speedway Tank Utility Power	LS	1	$ 13,500	$ 13,500
9	Controls and SCADA	LS	3	$ 9,000	$ 27,000
				Subtotal	**$ 157,238**
				Contingency @ 20%	**$ 31,450**
				Engineering @ 20%	**$ 31,450**
				Legal & Administrative @ 3%	**$ 4,720**
				Total (2026)	**$ 224,858**
				Total (2030)	**$ 256,100**
Assumptions and Exclusions					
1	*Utility power estimate doesn't include associated utility fees*				

Pump Stations

Telemetry

This project includes installation of new radio telemetry systems for the Authority's Highlands Booster Pump Station.

A cost estimate for the telemetry upgrades is provided in Table 2.2.15. The telemetry upgrades for the drinking water pump station are planned for the 2026 to 2027 fiscal year.

TABLE 2.2.15
PUMP STATION TELEMETRY UPGRADES
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 3,900	$ 3,900
2	Site Preparation	LS	1	$ 1,950	$ 1,950
3	Electrical	LS	1	$ 10,000	$ 10,000
4	Telemetry Panel	LS	1	$ 12,000	$ 12,000
5	Programming & SCADA	LS	1	$ 4,000	$ 4,000
				Subtotal	**$ 31,850**
				Contingency @ 20%	**$ 6,370**
				Engineering @ 20%	**$ 6,370**
				Legal & Administrative @ 3%	**$ 960**
				Total (2026)	**$ 45,550**
				Total (2027)	**$ 47,100**

Water Rights

The Authority currently holds six water rights certificates and leases an additional two on the South Umpqua River, three of which have point of diversions located at the WTP. This project summarizes the steps necessary, and a preliminary cost, for making the necessary changes to four of the water rights in order for them to be used by the WTP including moving the Point of Diversion (POD), changing the character of use, and changing to Place of Use (POU).

Making changes to a water right is a formal legal process as changes often affect other water users. In this case, three changes are required for all four water rights in order for them to be used by the WTP. The changes include updating the POD, POU, and character of use. The general framework for making these changes consists of the following major steps: submittal of a transfer application, Oregon Water Resources Department (OWRD) review of application including public notice and comment period, issuance of a transfer order, design and construction of any required improvements, make use of the water, submit transfer claim, OWRD review and approval of claim, and issuance of new water rights certificate.

A cost estimate for making changes to the water rights is provided in Table 2.2.16. This project is planned for the 2025 to 2026 fiscal year.

TABLE 2.2.16
WATER RIGHTS
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	CWRE Preparation of Transfer Application[1]	LS	1	$ 30,000	$ 30,000
2	OWRD Transfer Application Fee[1, 2]	LS	1	$ 10,000	$ 10,000
3	CWRE Preparation of Final Proof Surveys[1, 3, 4]	LS	1	$ 15,000	$ 15,000
4	OWRD Claim Application Fee[1, 4]	EA	4	$ 345	$ 1,380
				Subtotal	**$ 56,380**
				Contingency @ 20%	**$ 11,280**
				Engineering @ 20%	**NA[5]**
				Legal & Administrative @ 3%	**$ 1,690**
				Total (2026)[4,5]	**$ 69,350**

Assumptions and Exclusions

1	*Assuming the transfer of three items (Place of Diversion, Place of Use, Character of Use) for each of four water rights (Certificates 34866, 22257, 27631, and 20540)*
2	*Dyer cannot guarantee approval of the transfer application. Water right transfers are subject to a public comment period and review by state agencies (OWRD, ODFW, etc.). To approve a transfer application, OWRD must determine that the proposed change will not enlarge the water right and will not injure other existing water rights. The OWRD may impose conditions of approval.*
3	*Assuming no significant changes from the application materials. Assuming that common system information and/or conditions of approval across all four rights will provide for efficient creation of final claim materials. If claims have significant differences from the application or from each other, then additional time and cost will apply.*
4	*Presented in 2025 dollars. Actual cost will be subject to the consulting rates and state application fee schedules in effect at the time of each application.*
5	*Assuming no capital improvements are required by conditions of approval. If any improvements are required, a separate cost estimate for design and construction will be prepared.*

Water System Upgrades

Figure 2.2.3 summarizes the proposed water system upgrade projects that are included in the five-year Capital Improvement Plan.

LEGEND

- WATER TANK
- PUMP STATION
- WATER TREATMENT PLANT
- NEW ISOLATION VALVES

TIPTON PUMP STATION
SCALE: 1" = 1500'
1
2.2.3

WATER SYSTEM IMPROVEMENTS FISCAL YEAR 2025/2026

1. ISOLATION VALVE INSTALLATION: INSTALLATION OF THE VALVES IS PLANNED FOR THE 2025/2026 FISCAL YEAR.
2. WATER RIGHTS: CHANGE POINT OF DIVERSION TO WATER TREATMENT PLANT.

WATER SYSTEM IMPROVEMENTS FISCAL YEAR 2026/2027

3. BACKUP GENERATOR: THIS PROJECT WILL INSTALL A NEW PERMANENTLY MOUNTED 600 KW STANDBY GENERATOR FOR THE WTP.
4. RESERVOIR TELEMETRY UPGRADES: THIS PROJECT WOULD INSTALL A NEW TELEMETRY SYSTEM TO ALL OF THE RESERVOIRS.
5. PUMP STATION TELEMETRY UPGRADES: THIS PROJECT INCLUDES INSTALLATION OF NEW CELL/RADIO TELEMETRY SYSTEMS FOR THE AUTHORITY'S BOOSTER PUMP STATIONS.

WATER SYSTEM IMPROVEMENTS FISCAL YEAR 2027/2028

6. ROBERTS CREEK TANK RECOATING: RECOATING OF THE TANK WOULD INCLUDE TAKING THE TANK OFF-LINE, SANDBLASTING TO REMOVE THE EXISTING COATINGS, AND APPLICATION OF A NEW NSF-61 APPROVED COATING SYSTEM.
7. MAIN TANK CONTROL VALVE UPGRADES: THE PROPOSED UPGRADES TO THE MAIN TANK INCLUDE INSTALLATION OF A NEW ISOLATION VALVE, CHECK VALVE, SOLENOID CONTROL VALVE AND VAULT, AND APPURTENANCES.

WATER SYSTEM IMPROVEMENTS FISCAL YEAR 2029/2030

8. RAW WATER PUMPS: THIS PROJECT CONSISTS OF COMPLETE REPLACEMENT OF THE THREE EXISTING FLYGT RAW WATER PUMPS.
9. TURBIDIMETERS: THIS PROJECT WILL INSTALL FOUR NEW TURBIDIMETERS.
10. TANK MIXING SYSTEMS: THIS IMPROVEMENT PROJECT INCLUDES THE INSTALLATION OF MIXING SYSTEMS IN THE MAIN TANK, SPEEDWAY TANK, AND ROBERTS CREEK TANK.
11. MAIN TANK RECOATING: THIS PROJECT CONSISTS OF AN EXTERIOR COATING.
12. SPEEDWAY TANK RECOATING: THIS PROJECT CONSISTS OF AN EXTERIOR COATING.

NOTES:

1. REFER TO FIGURE 2.2.2 FOR HIGHWAY 99 BORE & LOOP AND SPEEDWAY TIE-IN PROJECTS.
2. REMOTE METERING (AMR) NOT SHOWN FOR CLARITY. SEE DISTRIBUTION SYSTEM IMPROVEMENTS SECTION FOR ADDITIONAL INFORMATION.

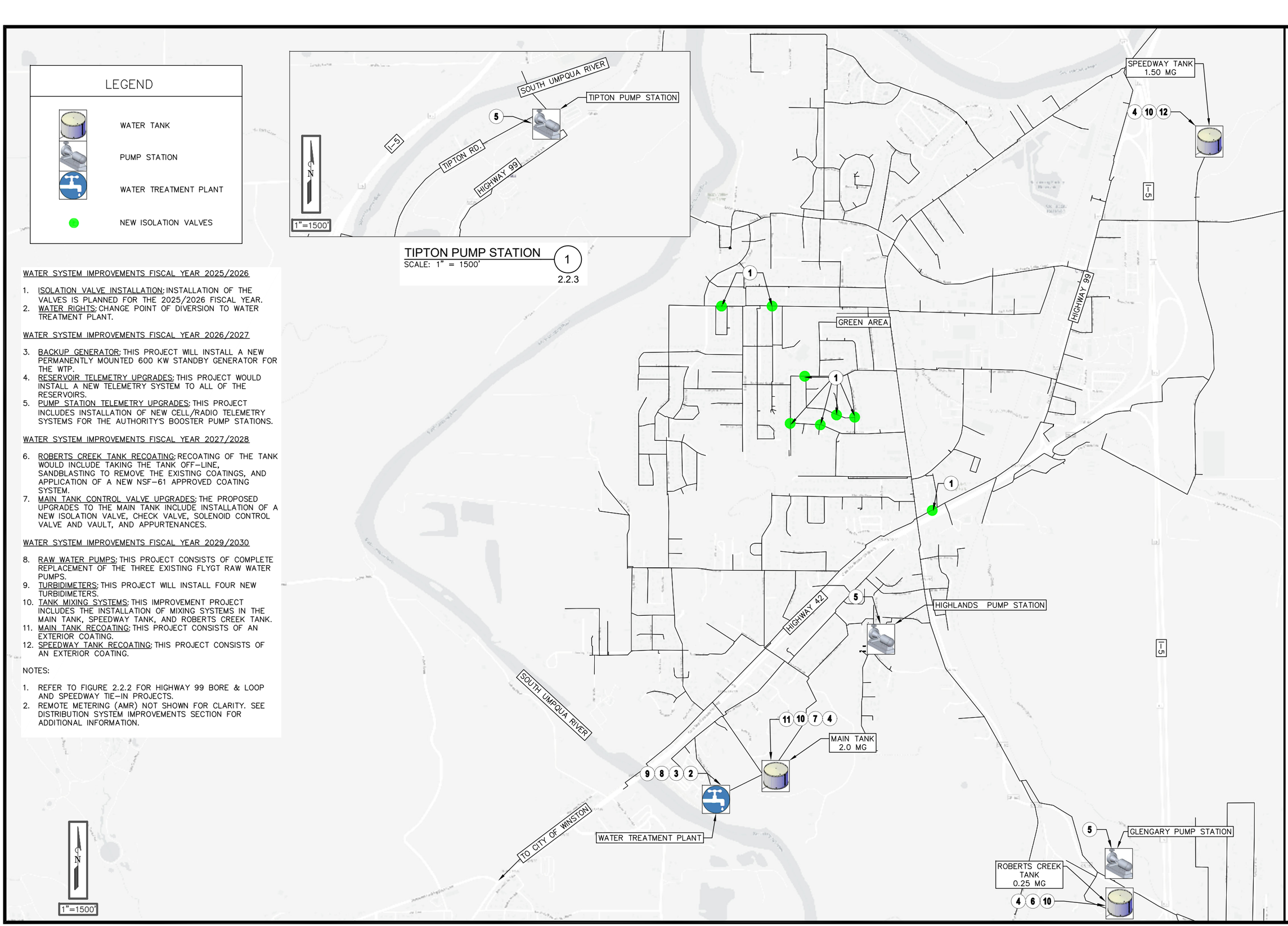


FIGURE NO. 2.2.3

GREEN AREA WATER AND SANITARY AUTHORITY CAPITAL IMPROVEMENT PLAN

WATER SYSTEM IMPROVEMENTS

THE DYER PARTNERSHIP
ENGINEERS & PLANNERS, INC.

DATE: OCT. 2025
PROJECT NO.: 216.02

2.3 Wastewater System Capital Improvement Projects

Pump Stations

G-4 Pump Station

Flow Meter Upgrades

The proposed upgrade includes a new 12-inch diameter magnetic flow meter and associated appurtenances, manufactured by Endress+Hauser. The selected model features a 0-DN design, eliminating the need for upstream or downstream straight pipe runs, thereby simplifying installation by eliminating the need for set-back distances before and after the meter.

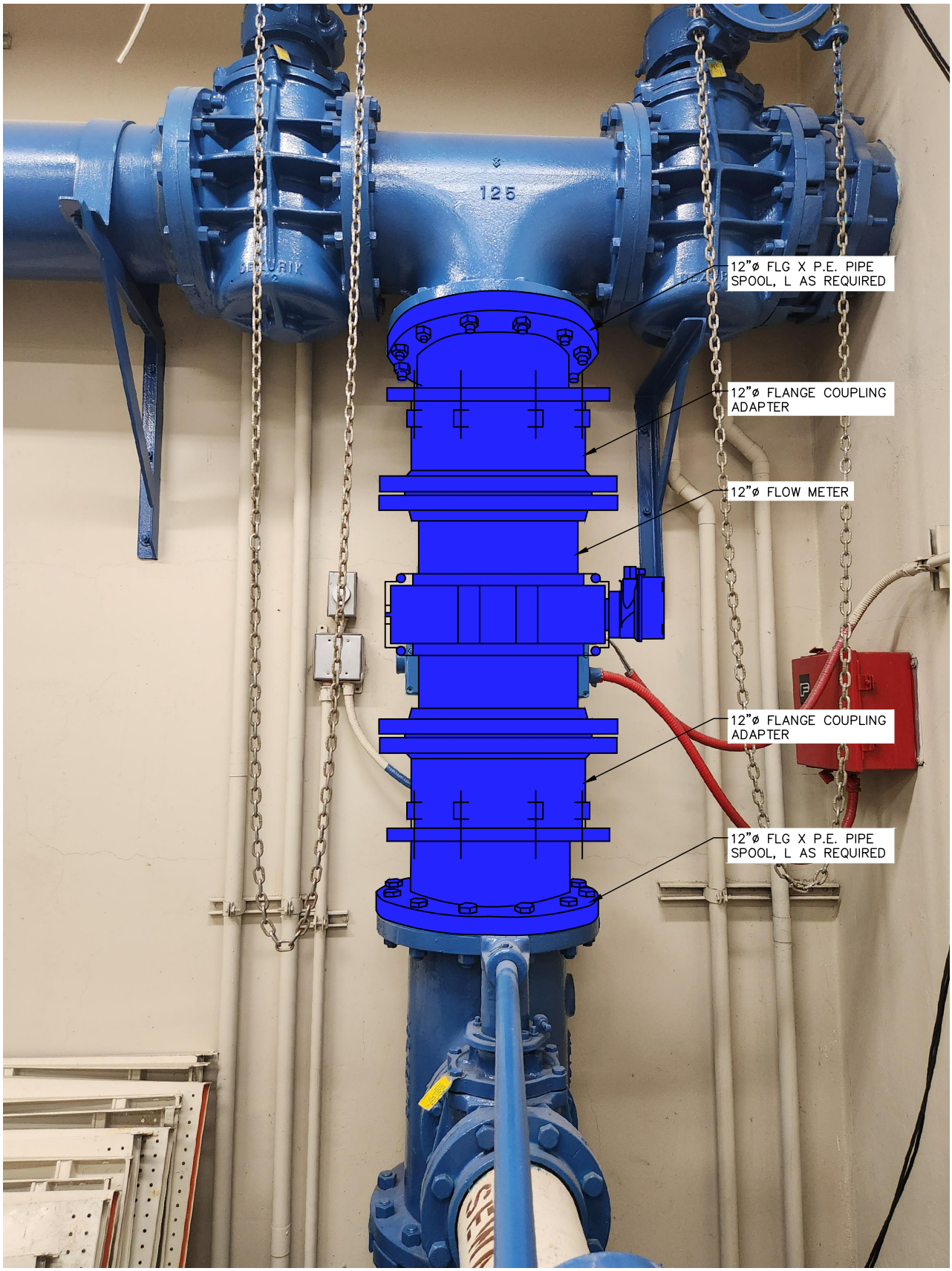
Figure 2.3.1 illustrates the proposed location of the new flow meter within the discharge piping configuration. The new unit will be integrated into the existing control panel to maintain compatibility with current instrumentation. The installation will require spacers based on the new reducers and dimensions of the new flow meter.

Implementation of the flow meter upgrade is planned for the 2025 to 2026 fiscal year. A cost estimate is provided in Table 2.3.1. The cost estimate assumes no engineering, no legal & administrative, and the Authority will perform the installation of the flow meter. The Authority has already purchased the flow meter; therefore, procurement of the flow meter is not included in the cost estimate.

Bypass pumping is not anticipated. The anticipated down-time is less than two hours. The Authority plans creating a mock-up the configuration prior to demolition. The swapping out of the equipment is expected to occur in less than two hours.

TABLE 2.3.1
G-4 PUMP STATION FLOW METER UPGRADE
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	12" Dia FCA	EA	2	$ 1,700	$ 3,400
2	12" Dia Pipe	LF	5	$ 328	$ 1,640
3	Programming & SCADA	LS	1	$ 4,000	$ 4,000
				Subtotal	**$ 9,040**
				Contingency @ 5%	**$ 450**
				Engineering @ 20%	**$ -**
				Legal & Administrative @ 3%	**$ -**
				Total (2026)	**$ 9,490**
Assumptions and Exclusions					
1	*Magnetic flow meter procured by the Authority and therefore not included in the cost estimate.*				
2	*Estimated prices do not include labor for installation. It is assumed the Authority will install the upgrades.*				
3	*No engineering or legal & administrative services required.*				



THE DYER PARTNERSHIP ENGINEERS & PLANNERS, INC.	**GREEN AREA AND SANITARY AUTHORITY CAPITAL IMPROVEMENT PLAN**	**FIGURE NO. 2.3.1**
DATE: SEPTEMBER 2025	**FLOW METER LOCATION**	
PROJECT NO.: 216.02		

Electrical Improvements

Camp Creek Electric and Camtronics were retained to propose a solution to allow for remote control of the Variable Frequency Drive (VFDs), inspect the electrical components at the G-4 Pump Station, and develop recommendations for improvements. The following improvements are recommended: reset control through Input / Output (I/O) interface, hardwire I/O as needed to allow for Operator remote control over the VFDs, and to recondition the spare VFD to ensure proper storage.

The proposed electrical upgrades are scheduled for implementation during the 2025 to 2026 fiscal year. A detailed cost estimate is provided in Table 2.3.2.

TABLE 2.3.2
G-4 PUMP STATION ELECTRICAL IMPROVEMENTS
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 2,025	$ 2,025
2	Site Preparation	LS	1	$ 1,013	$ 1,013
3	Programming HMI & Revise PLC	LS	1	$ 3,000	$ 3,000
4	Wiring Equipment, Relays, PLC Interface	LS	1	$ 2,000	$ 2,000
5	Electrical Upgrades	LS	1	$ 8,500	$ 8,500
	Reset Control Through I/O Interface			$ -	$ -
	Hardwire I/O			$ -	$ -
	Energize Spare VFD			$ -	$ -
				Subtotal	**$ 16,536**
				Contingency @ 10%	**$ 1,650**
				Engineering @ 20%	**$ 3,310**
				Legal & Administrative @ 3%	**$ 500**
				Total (2026)	**$ 21,998**
Assumptions and Exclusions					
1	*No engineering costs associated with this project.*				

Briarwood Pump Station

Electrical and Telemetry System Upgrades

The proposed upgrades to the Briarwood Pump Station include telemetry upgrades and electrical system improvements to improve safety, accessibility, and equipment longevity. A new Manual Transfer Switch (MTS) will be installed at the pump station to facilitate the emergency connection of a portable standby generator currently located at the Oak Creek Pump Station. The obsolete Flygt MT2PC Multitrode will be replaced with a new Flygt Multistart duplex controller. The electrical components and wiring within the wet well will be demolished changed to an above ground junction box complete with a Meltric receptacle to accommodate the portable generator. The generator's cable will be replaced by a 208V, 4-pole, five wire, 30-foot cable.

The pump station's telemetry will be upgraded with a Mission cloud-based SCADA system, enabling remote monitoring, alarm notification, and data transmission to the Authority.

These improvements are scheduled for implementation during the 2025 to 2026 fiscal year, with a detailed cost estimate provided in Table 2.3.3.

TABLE 2.3.3
BRIARWOOD PUMP STATION ELECTRICAL AND TELEMETRY UPGRADES
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 5,475	$ 5,475
2	Site Preparation	LS	1	$ 2,735	$ 2,735
3	Pressure Transducer Assembly with SCADA	LS	1	$ 13,000	$ 13,000
4	Electrical Upgrades	LS	1	$ 16,900	$ 16,900
	Flygt Duplex Controller			$ -	$ -
	Install Air Gap with Equipment Stand			$ -	$ -
	Install Junction Box			$ -	$ -
	Install Meltric Plug Receptacle			$ -	$ -
	Remove Existing Wiring In Wet Well			$ -	$ -
5	New Cable and Meltric Plug for Generator	LS	1	$ 3,600	$ 3,600
6	Mission RTU Cellular Control	LS	1	$ 3,000	$ 3,000
				Subtotal	**$ 44,713**
				Contingency @ 20%	**$ 8,940**
				Engineering @ 20%	**$ 8,940**
				Legal & Administrative @ 3%	**$ 1,340**
				Total (2026)	**$ 63,933**

Collection System

MH Q-25 to MH Q-28 Facility and Highway Crossing

This project consists of construction of a new 15-inch diameter sewer pipe between Manhole (MH) Q-25 and MH Q-28, incorporating six manhole tie-ins and one lateral connection. Due to the corridor's location beneath Highway 42, multiple construction alternatives were evaluated to minimize impacts to the transportation infrastructure.

Pipe bursting was considered; however, this method is typically limited to diameter increases of one to two pipe sizes and is not feasible for upsizing from 8-inch to 15-inch diameter pipe without specialized equipment, possible soil heave, and risk to surrounding infrastructure.

A jack and bore construction technique is recommended for the Highway crossing. This trenchless technique allows for the installation of larger-diameter pipe. Open trench construction could be used outside of the crossing to minimize construction costs.

A cost estimate for the sewer replacement project is provided in Table 2.3.4. Construction is scheduled for completion in fiscal year 2026 to 2027.

TABLE 2.3.4
MH Q-25 TO MH Q-28 FACILITY & HIGHWAY CROSSING
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 79,000	$ 79,000
2	Site Preparation	LS	1	$ 40,000	$ 40,000
3	Bypass Pumping	LS	1	$ 10,000	$ 10,000
4	30" Dia Jack and Bore	LF	260	$ 1,700	$ 442,000
5	15" Dia 45 Elbow	EA	1	$ 1,500	$ 1,500
6	Manhole Connections	EA	8	$ 2,300	$ 18,400
7	Remove and Replace Manhole	EA	4	$ 15,000	$ 60,000
8	Lateral Tie-in	EA	1	$ 4,500	$ 4,500
				Subtotal	**$ 655,400**
				Contingency @ 20%	**$ 131,080**
				Engineering @ 20%	**$ 131,080**
				Legal & Administrative @ 3%	**$ 19,660**
				Total (2026)	**$ 937,220**
				Total (2027)	**$ 968,200**
Assumptions and Exclusions					
1	*Modification to alignment necessary to bore under highway.*				

MH P-2 to MH P-5

The segment between MH P-4 and MH P-5 traverses beneath a private carport and adjacent block wall, restricting access for conventional open-trench replacement. Pipe bursting was evaluated as a potential alternative due to site constraints; however, its applicability in this area is limited by several technical and logistical challenges. These challenges include the need for a geotechnical investigation to assess soil suitability, potential for soil heave, risk to nearby structures and foundations, excavation requirements for

lateral reconnections, groundwater table interference, and the substantial clearance needed for launching and receiving pits. A preliminary cost estimate has been developed using a conservative unit rate for pipe bursting and includes a 25 percent contingency to reflect the associated uncertainties. Alternative construction methods are recommended to be thoroughly evaluated during the design phase to determine the most feasible and least disruptive approach for this segment. Furthermore, the cost estimate assumes the maximum diameter for pipe bursting is limited to one to two pipe sizes beyond the existing pipe's outer diameter. Therefore a 12-inch diameter pipe provided is considered in the cost estimate and will not to meet the recommended 15-inch diameter pipe size as identified in the Wastewater Collection System Master Plan (WWCSMP) (SHN Consulting Engineers and Geologists, Inc., 2006).

A detailed cost estimate is provided in Table 2.3.5. Construction is scheduled for completion in fiscal year 2028 to 2029.

TABLE 2.3.5
MH P-2 TO MH P-5
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 93,000	$ 93,000
2	Site Preparation	LS	1	$ 47,000	$ 47,000
3	Bypass Pumping	LS	1	$ 10,000	$ 10,000
4	12" Dia Sewer	LF	440	$ 1,200	$ 528,000
5	12" Pipe Bursting	LF	200	$ 700	$ 140,000
6	12" Dia 90 Elbow	EA	1	$ 900	$ 900
7	Remove and Replace Manhole	EA	4	$ 15,000	$ 60,000
8	Manhole Connections	EA	9	$ 2,300	$ 20,700
9	Lateral Tie-ins	EA	11	$ 4,500	49,500
10	Roadway Patch AC	LS	1	$ 3,500	$ 2,000
11	Curb & Gutter R&R	LF	30	$ 70	$ 2,100
12	Sidewalk R&R	LS	1	$ 2,000	$ 2,000
13	Landscaping	LS	1	$ 10,000	$ 10,000
				Subtotal	**$ 1,010,200**
				Contingency @ 25%	**$ 252,500**
				Engineering @ 20%	**$ 202,040**
				Geotechnical	**$ 35,000**
				Legal & Administrative @ 3%	**$ 30,310**
				Total (2026)	**$ 1,530,100**
				Total (2029)	**$ 1,686,640**

Assumptions and Exclusions

1	*Geotechnical investigation required for pipe bursting.*
2	*Pipe bursting feasibility dependent on many factors including soil characteristics, ground water table elevation, risk of soil heave, damage to surrounding structures, pipe material type and fittings, size of bursting pit required for Contractor's bursting equipment, and many other factors.*
3	*Service laterals require excavation for install after pipe bursting occurs.*
4	*Contingency increased to 25% to account for unknowns.*

MH P-27 to MH P-14

The existing 10-inch diameter sewer line from MH P-27 to MH P-14 will be upsized to 15-inch diameter to increase the capacity and reduce the potential for overflows. A cost estimate for replacing the sewer line from MH P-27 to MH P-14 is provided in Table 2.3.6. This project is scheduled for completion in fiscal year 2029 to 2030.

TABLE 2.3.6
MH P-27 TO MH P-14
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 23,000	$ 23,000
2	Site Preparation	LS	1	$ 12,000	$ 12,000
3	Bypass Pumping	LS	1	$ 10,000	$ 10,000
4	Remove and Replace Manhole	EA	2	$ 15,000	$ 30,000
5	15" Dia Sewer	LF	100	$ 1,300	$ 130,000
6	Roadway AC Patch	LS	1	$ 3,000	$ 3,000
7	Manhole Connections	EA	6	$ 2,300	$ 13,800
8	Pavement Markings	LS	1	$ 3,000	$ 3,000
9	Landscaping	LS	1	$ 2,500	$ 2,500
				Subtotal	**$ 224,800**
				Contingency @ 20%	**$ 44,960**
				Engineering @ 20%	**$ 44,960**
				Legal & Administrative @ 3%	**$ 6,760**
				Total (2026)	**$ 321,460**
				Total (2030)	**$ 366,040**

MH I-7 to MH I-6 and MH I-3 to MH I-1

This improvement project will replace the existing 8-inch diameter PVC for MH I-7 to MH I-6 and MH I-3 to MH I-1 with 10-inch diameter PVC to eliminate the existing slope issues. A cost estimate for replacing the sewer lines from MH I-7 to MH I-6 and from MH I-3 to MH I-1 is provided in Table 2.3.7. This project is scheduled for completion in fiscal year 2029 to 2030.

TABLE 2.3.7
MH I-7 TO MH I-6 AND MH I-3 TO MH I-1
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 46,000	$ 46,000
2	Site Preparation	LS	1	$ 23,000	$ 23,000
3	Bypass Pumping	LS	1	$ 10,000	$ 10,000
4	Remove and Replace Manhole	EA	4	$ 15,000	$ 60,000
5	10" Dia Sewer	LF	560	$ 425	$ 238,000
6	Roadway AC Patch	LS	1	$ 3,500	$ 3,500
7	Curb & Gutter R&R	LF	50	$ 70	$ 3,500
8	Manhole Connections	EA	12	$ 2,300	$ 27,600
9	Lateral Tie-ins	EA	4	$ 4,500	$ 18,000
10	Landscaping	LS	1	$ 10,000	$ 10,000
				Subtotal	**$ 439,600**
				Contingency @ 20%	**$ 87,920**
				Engineering @ 20%	**$ 87,920**
				Legal & Administrative @ 3%	**$ 13,190**
				Total (2026)	**$ 628,630**
				Total (2030)	**$ 715,808**

Manhole Replacement and Repairs

Approximately half of the existing manholes were installed in the 1960s and 1970s. Improvements to the manholes are necessary to address deficiencies which negatively impact system performance.

There are 87 manholes which require a ring and cover repair, 162 require general repairs, five require extensive repairs, one requires complete replacement, and six exhibit grease deposits that require removal. The projects will be completed by either General Contractors or the Authority as shown in Table 2.3.8.

A cost estimate for the manhole repair and replacement projects (all projects) is included in Table 2.3.8. The total cost to repair and/or replace the manholes exceeds the Authority's financial limits. The Authority is therefore planning to repair and/or replace manholes annually; budgeting $75,000 per year for the next five (5) years. The budgeted amount allows the Authority to repair and replace only the highest priority manholes over the CIP planning phase. A table listing the manholes and noting repairs required, is included in Appendix B.

TABLE 2.3.8
MANHOLE REPAIRS AND REPLACEMENTS
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 84,804	$ 84,804
2	Site Preparation	LS	1	$ 42,402	$ 42,402
3	Manhole Ring & Cover Repair (Authority)	EA	87	$ 2,530	$ 220,110
	Frame & Cover			$ -	$ -
	Grade Adjustment Ring			$ -	$ -
	Grout			$ -	$ -
	Rebar			$ -	$ -
	Concrete			$ -	$ -
4	Manhole Repairs (Authority)	EA	162	$ 1,500	$ 243,000
	Remove Roots / Clean			$ -	$ -
	Chemical Grout			$ -	$ -
	Epoxy Liner			$ -	$ -
5	Manhole Repairs	EA	5	$ 17,000	$ 85,000
	Clean and Prepare Structure			$ -	$ -
	Remove liner and Corroded Concrete			$ -	$ -
	Rebuild Channel			$ -	$ -
	Spray-In Liner			$ -	$ -
6	Manhole Replacements	EA	1	$ 17,250	$ 17,250
				Subtotal	**$ 565,360**
				Contingency @ 10%	**$ 56,536**
				Engineering @ 20%	**$ 113,072**
				Legal & Administrative @ 3%	**$ 16,961**
				Total (2026)	**$ 751,929**
Assumptions and Exclusions					
1	*No engineering, or legal & administrative services included.*				
2	*Included temporary controls and site preparation in each to account for traffic control and bypass pumping operations.*				
3	*Items 1 and 2 assumed to be performed by GAWSA.*				
4	*Items 3 and 4 assumed to be contracted by a General Contractor.*				

Old River Crossing Demolition

This project involves the demolition of an abandoned pump station located on private property, consisting of a wet well and an adjacent pump structure. The pump dry-pit is an eight-foot diameter, sixteen-foot-tall vertical chamber with a metal hatch.

Demolition would consist of cutting the wet well and dry pit three feet below grade, drilling holes in the bottom of each structure for drainage, and then backfilling with compacted aggregate. Miscellaneous site restoration would also be required. Both structures contain standing water and other debris to be removed by the Authority prior to demolition. The site is accessible from an existing easement. The project would alleviate safety and liability concerns in regards to managing the abandoned infrastructure on private property.

A cost estimate for the demolition is provided in Table 2.3.9, and the work is scheduled for completion during the 2025 to 2026 fiscal year.

TABLE 2.3.9
OLD RIVER CROSSING DEMOLITION
COST ESTIMATE

Item	Description	Unit	Quantity	Unit Price	Total
1	Construction Facilities & Temp. Controls	LS	1	$ 2,850	$ 2,850
2	Structure Demolition and Disposal	LS	1	$ 8,000	$ 8,000
3	Fill	TON	200	$ 55	$ 11,000
				Subtotal	**$ 21,850**
				Contingency @ 20%	**$ 4,370**
				Engineering @ 20%	**$ 4,370**
				Legal & Administrative @ 3%	**$ 660**
				Total (2026)	**$ 31,250**
Assumptions and Exclusions					
1	*Cost estimate assumes that GAWSA will perform removal and disposal of wastewater within the structures.*				

Wastewater System Upgrades

Figure 2.3.2 summarizes the proposed wastewater system upgrade projects that are included in the five-year Capital Improvement Plan.

GREEN AREA WATER AND SANITARY AUTHORITY CAPITAL IMPROVEMENT PLAN

WASTEWATER SYSTEM IMPROVEMENTS

FIGURE NO. 2.3.2

LEGEND

- 2025/2026 FISCAL YEAR
- 2026/2027 FISCAL YEAR
- 2028/2029 FISCAL YEAR
- 2029/2030 FISCAL YEAR
- PUMP STATION

WASTEWATER SYSTEM IMPROVEMENTS FISCAL YEAR 2025/2026

1. G4 PUMP STATION IMPROVEMENTS: THE PROPOSED UPGRADE INCLUDES A NEW 12–INCH DIAMETER MAGNETIC FLOW METER AND ASSOCIATED APPURTENANCES.
2. OLD RIVER CROSSING DEMOLITION: THIS PROJECT INVOLVES THE DEMOLITION OF ABANDONED STRUCTURES.
3. BRIARWOOD AND OAK CREEK PUMP STATION ELECTRICAL UPGRADES: THE PROPOSED UPGRADES INCLUDE TELEMETRY UPGRADES AND ELECTRICAL SYSTEM IMPROVEMENTS.

WASTEWATER SYSTEM IMPROVEMENTS FISCAL YEAR 2026/2027

4. MH Q–25 TO MH Q–28 FACILITY/HIGHWAY CROSSING: THIS PROJECT CONSISTS OF CONSTRUCTION OF A NEW 15–INCH DIAMETER SEWER PIPE BETWEEN MH Q–25 AND MH Q–28.

WASTEWATER SYSTEM IMPROVEMENTS FISCAL YEAR 2028/2029

5. MH P–2 TO MH P–5: THE SEWER WILL BE UPSIZED TO FIFTEEN INCHES IN DIAMETER TO MATCH THE DOWNSTREAM 15–INCH LINES.

WASTEWATER SYSTEM IMPROVEMENTS FISCAL YEAR 2029/2030

6. MH P–27 TO MH P–14: THE EXISTING 10–INCH DIAMETER SEWER LINE FROM MH P–27 TO MH P–14 WILL BE UPSIZED TO 15–INCH DIAMETER.
7. I–7 TO MH I–6 AND MH I–3 TO MH I–1: THIS IMPROVEMENT WILL REPLACE THE EXISTING 8–INCH DIAMETER PVC IN THESE TWO RUNS WITH 10–INCH DIAMETER PVC TO ELIMINATE THE EXISTING SLOPE ISSUES. THIS (UNFORTUNATELY) MEANS THAT FLOW WILL PASS FROM 8–INCH PIPE THROUGH 10–INCH PIPE AND BACK TO 8–INCH PIPE IN TWO LOCATIONS.

NOTES:

8. MANHOLE UPGRADE LOCATIONS NOT SHOWN, REFER TO APPENDIX FOR LOCATIONS.

SOUTH UMPQUA RIVER

GREEN AREA

HIGHWAY 99

I–5

OAK CREEK PUMP STATION

HIGHWAY 42

TO CITY OF WINSTON

N

1"=1000'

THE DYER PARTNERSHIP ENGINEERS & PLANNERS, INC.

DATE: OCT. 2025

PROJECT NO.: 216.02

2.4 Capital Improvement Projects Summary

Tables 2.4.1 and 2.4.2 on the following pages summarize the proposed capital improvement projects for the water and wastewater systems.

TABLE 2.4.1
WATER SYSTEM CIP

Green Area Water & Sanitary Authority Capital Improvement Plan
Capital Improvement Plan Cost Estimate Summary - Water Systems

Project Name	Description	Fiscal Year 2025/2026	2026/2027	2027/2028	2028/2029	2029/2030
Water Treatment Plant Improvements						
Backup Generator	New permanently mounted back-up generator.		$1,192,100.00			
Raw Water Pumps	New raw water pumps.					$169,700.00
Turbidity Meters	New turbidimeters (raw, permeate).					$40,800.00
Distribution System Improvements						
Isolation Valves	Multiple water line distribution valves.	$28,670.00				
Remote Metering (AMR)	Remote meter reading system.					$866,800.00
Highway 99 Bore & Loop Phase 1	Water line installation.			$2,431,400.00		
Highway 99 Bore & Loop Phase 2 - Speedway Tie-In	Water line installation.					$3,028,700.00
Reservoir Improvements						
Roberts Creek Recoating	New coatings.			$271,500.00		
Main Tank Recoating	New exterior coatings.					$936,300.00
Speedway Tank Recoating	New exterior coatings.					$810,300.00
Reservoir Telemetry Systems	New telemetry systems for reservoirs.		$175,100.00			
Main Tank Control Valve	New tank control valve and appurtenances.			$272,686.00		
Reservoir Mixers and Utility Power	New mixers and utility power for reservoirs.					$256,100.00
Pump Station Improvements						
Telemetry Upgrades	New telemetry system for Highlands Pump Station.		$47,100.00			
Water Rights						
Water Right Point of Diversion Changes	Move POD for water rights to WTP.	$69,350.00				
	Total	**$98,020.00**	**$1,414,300.00**	**$2,975,586.00**	**$0.00**	**$6,108,700.00**

TABLE 2.4.2
WASTEWATER SYSTEM CIP

Green Area Water & Sanitary Authority Capital Improvement Plan
Capital Improvement Plan Cost Estimate Summary - Wastewater Systems

Project Name	Description	Fiscal Year 2025/2026	2026/2027	2027/2028	2028/2029	2029/2030
Wastewater Pump Station Improvements						
G4 Flow Meter	New magnetic flow meter.	$9,490.00				
Old River Crossing Demolition	Demolition of abandoned structures.	$31,250.00				
Briarwood and Oak Creek Electrical Upgrades	New MTS, generator upgrades, and misc. electrical.	$63,932.50				
G4 Electrical Upgrades	Misc. electrical upgrades at pump station.	$21,997.50				
Collection System Improvements						
Q25-Q28 Improvements	Collection system upgrade.		$968,200.00			
P2-P5 Improvements	Collection system upgrade.				$1,686,633.72	
P27-P14 Improvements	Collection system upgrade.					$366,039.73
I7-I6, I3-I1 Improvements	Collection system upgrade.					$715,807.74
Manhole Upgrades	Misc. upgrades to manholes. Approximate annual allocation.		$75,000.00	$75,000.00	$75,000.00	$75,000.00
	Total	**$126,670.00**	**$1,043,200.00**	**$75,000.00**	**$1,761,633.72**	**$1,156,847.47**

APPENDICES

APPENDIX A: WATER DOCUMENTS

Water Rights

Main Tank Control Valve

STATE OF OREGON

COUNTY OF DOUGLAS

CERTIFICATE OF WATER RIGHT

This Is To Certify, That ROBERTS CREEK WATER DISTRICT

of Rt. 1, Box 1160, Roseburg, State of Oregon, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of South Umpqua River a tributary of Umpqua River for the purpose of Municipal use under Permit No. 18537 of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from November 5, 1948;

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 0.67 cubic foot per second,

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the NE¼ SW¼, Section 15, Township 28 South, Range 6 West, W.M.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to _ _ _ _ _ _ _ _ of one cubic foot per second per acre,

and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

SW¼
Section 25
SE¼ SE¼
Section 26
E½ NE¼
Section 35
NW¼ NW¼
S½ NW¼
NE¼ SW¼
S½ SW¼
Section 36
Township 27 South, Range 6 West, W.M.
N½ NW¼
Section 1
NE¼
SE¼ NW¼
S½
Section 2
W½
Section 3
E½ NE¼
NW¼ NE¼
NE¼ NW¼

SE¼ SW¼
SW¼ SE¼
E½ SE¼
Section 10
NE¼ NE¼
W½ NE¼
W½ SW¼
W½ SE¼
Section 11
W½ NW¼
S½
Section 13
N½
NE¼ SW¼
SE¼
Section 14
SE¼ NW¼
NE¼
Section 15
NE¼ NE¼
Section 23
All
Section 24
Township 28 South, Range 6 West, W.M.
W½ SW¼
SE¼ SW¼
Section 18
W½
Section 19
Township 28 South, Range 5 West, W.M.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed

this 17th *day of* March , *19* 59.

~~LEWIS A. STANLEY~~
State Engineer

Recorded in State Record of Water Right Cerilificates, Volume 17 , *page* 24522

(SEE INSERT AT RIGHT.)

UMPQUA RIVER

T. 27 S.
T. 28 S.

WM. HAGEN

A.E. & A.B. RICE

SOUTH PLAT "H"

TRACTS

ORCHARD

VALLEY ORCHARD TR.

GREEN

Umpqua Plywood

BOGG'S ORCHARD TRACTS

U.S. 99

6"

WATTS ACRES

ROBT K. GREEN

Associated Plywood

GREEN SCHOOL

S

Elev. 500

H.A. WINSTON

M.B. & ZELLA MAY GREEN

HOME

ROSEBURG

6"

H.J. CHANDLER

S.E. MULKEY

Planing Mill

R.R.

WATT'S ACRES PLAT 2

Pacific Hwy.

FISKS FRUIT FARMS

KELLYS CORNER

ENGLE & WERTH

Pacific Hwy.

DIST. BDRY.

8"

Elev. 525

10" PIPE

PROPOSED RESERVOIR

El. 800

SOUTH UMPQUA

CARTER

PROPOSED INTAKE & FILTER PLANT

M.L.W. El. 468.5

L. H. HAMILTON ET AL

SOUTH UMPQUA

BLOCK A

UNO. & OLIVA CARNES

GLENGARRY FRUIT LANDS

GLENGARRY SCHOOL

S

F.I. BETTS

Boundary of District

T. 28 S. R. 6 W.
T. 28 S. R. 5 W.

(INSERT)

T. 27 S.
T. 28 S.

SOUTH UMPQUA RIVER

TO ROSEBURG 0.5 MILE

LEILA V. WEBER

FRANK ELLISON

FRENCH

ROBERTS CR. SCHOOL

S

S.H. DODSON

DEDRICK

J.H. THOMAS ET AL

L.C. KRUSE

S.H. DODSON

FRENCH

NICOLS

B.F. MC LAUGHLIN

ANN MELTON

J.E. PINKERTON

O.E.C.

MAP OF
ROBERTS CREEK WATER DISTRICT
DOUGLAS COUNTY, OREGON.

SHOWING PLANS OF DISTRIBUTION SYSTEM

1000' 500' 0 1000' 2000'

TO ACCOMPANY PROJECT NOV. 1948

H.L. GILBERT, ENGINEER.
306 GOVERNOR BLDG., PORTLAND, 4, ORE.

Application No. 28515
Permit No. 18577

STATE OF OREGON

COUNTY OF DOUGLAS

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

ROBERTS CREEK WATER DISTRICT
4336 OLD HIGHWAY 99 SOUTH
ROSEBURG, OREGON 97470

confirms the right to use the waters of the SOUTH UMPQUA RIVER, a tributary of the UMPQUA RIVER, for the purpose of MUNICIPAL USES.

The right has been perfected under Permit 40697. The date of priority is JANUARY 26, 1973. The right is limited to not more than 4.0 CUBIC FEET PER SECOND or its equivalent in case of rotation, measured at the point of diversion from the source.

The point of diversion is located as follows:

NE 1/4 SW 1/4, SECTION 15, T 28 S, R 6 W, W.M.; 1056.8 FEET SOUTH AND 2664.5 FEET WEST FROM THE E 1/4 CORNER OF SECTION 15.

The right shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right, and to which such right is appurtenant, is as follows:

SW 1/4
SECTION 25

SE 1/4 SE 1/4
SECTION 26

S 1/2 SE 1/4
SECTION 34

NE 1/4
SW 1/4 SW 1/4
SECTION 35

W 1/2
W 1/2 SE 1/4
SECTION 36
TOWNSHIP 27 SOUTH, RANGE 6 WEST, W.M.

SEE NEXT PAGE

NW 1/4
S 1/2
SECTION 1

ALL
SECTIONS 2, 3, 11, AND 24

NE 1/4
E 1/2 NW 1/4
S 1/2
SECTION 10

NW 1/4
S 1/2
SECTION 13

N 1/2
NE 1/4 SW 1/4
SE 1/4
SECTION 14

N 1/2
N 1/2 SW 1/4
NW 1/4 SE 1/4
SECTION 15

NE 1/4 NE 1/4
SECTION 23
TOWNSHIP 28 SOUTH, RANGE 6 WEST, W.M.

W 1/2 SW 1/4
SE 1/4 SW 1/4
SECTION 18

NW 1/4
W 1/2 SW 1/4
SECTION 19
TOWNSHIP 28 SOUTH, RANGE 5 WEST, W.M.

The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described. The right is subject to minimum flows established by the Water Resources Commission with an effective date prior to this right.

WITNESS the signature of the Water Resources Director, affixed this date OCTOBER 29, 1990.

/s/ WILLIAM H. YOUNG
Water Resources Director

Recorded in State Record of Water Right Certificates numbered 64885

50006.TES

Application No. 50006
Permit No. 40697

500,000 GAL.
STORAGE RESERVOIR

T. 27S, R. 6W

T. 28S, R. 6W | T. 28S, R. 5W

T. 27S, R. 6W

T. 28S, R. 6W

T. 28S, R. 5W

SCALE IN FEET

LEGEND
DISTRICT BOUNDARY
EXISTING WATERLINES
NEW WATERLINES

2,000,000 GAL.
STORAGE RESERVOIR

WATER TREATMENT
PLANT & Diversion

250,000 GAL.
STORAGE RESERVOIR

STATE OF OREGON

COUNTY OF DOUGLAS

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

ROBERTS CREEK WATER DISTRICT
4336 OLD HIGHWAY 99 SOUTH
ROSEBURG, OR 97470

confirms the right to use the waters of SOUTH UMPQUA RIVER, a tributary of UMPQUA RIVER, for MUNICIPAL USE.

This right was perfected under Permit 21867. The date of priority is OCTOBER 27, 1952. The amount of water to which this right is entitled is limited to an amount actually beneficially used and shall not exceed 0.144 CUBIC FOOT PER SECOND (IF AVAILABLE AT THE ORIGINAL POINT OF DIVERSION DESCRIBED AS BEING WITHIN THE NW 1/4 SE 1/4, SECTION 22, TOWNSHIP 28 SOUTH, RANGE 6 WEST W.M.), or its equivalent in case of rotation, measured at the point of diversion from the source. The period of use under this right is limited to June 15 through September 22 of each year.

The point of diversion is located as follows:

NE 1/4 SW 1/4, SECTION 15, TOWNSHIP 28 SOUTH, RANGE 6 WEST, W.M.; 1056.8 FEET SOUTH AND 2664.5 FEET WEST FROM THE EAST 1/4 CORNER OF SECTION 15.

The use shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use to which this right is appurtenant is as follows:

SW¼
SECTION 25

SE¼ SE¼
SECTION 26

S 1/2 SE¼
SECTION 34
TOWNSHIP 27 SOUTH, RANGE 6 WEST, W.M.

This is a final order in other than contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review of the order must be filed within the 60 days of the date of service.

T-8123A.SB

Certificate Number 79549

SW¼ SW¼
NE¼
SECTION 35

W 1/2
NW¼ SE¼
SW¼ SE¼
SECTION 36
TOWNSHIP 27 SOUTH, RANGE 6 WEST, W.M.

NW¼ SW¼
SW¼ SW¼
SE¼ SW¼
SECTION 18

NW¼
NW¼ SW¼
SW¼ SW¼
SECTION 19
TOWNSHIP 28 SOUTH, RANGE 5 WEST, W.M.

NW¼
SW¼
SE¼
SECTION 1

ALL
SECTIONS 2 AND 3

NE¼
NE¼ NW¼
SE¼ NW¼
SW¼
SE¼
SECTION 10

ALL
SECTION 11

NW¼
SW¼
SE¼
SECTION 13

N 1/2
NE¼ SW¼
SE¼
SECTION 14
TOWNSHIP 28 SOUTH, RANGE 6 WEST, W.M.

N 1/2
NE¼ SW¼
NW¼ SW¼
NW¼ SE¼
SECTION 15

NE¼ NE¼
SECTION 23

ALL
SECTION 24
TOWNSHIP 28 SOUTH, RANGE 6 WEST, W.M.

When required by the Department, the water user shall install and maintain a headgate, an in-line flow meter, weir, or other suitable device for measuring and recording the quantity of water diverted. The type and plans of the headgate and measuring device must be approved by the Department prior to beginning construction and shall be installed under the general supervision of the Department.

The water user shall install and maintain a fish screen or fish by-pass device. The type and plans of the screen or by-pass device shall be approved by the Oregon Department of Fish and Wildlife and be installed under the supervision of the Department of Fish and Wildlife.

This certificate is issued to confirm a change in CHARACTER OF USE, PLACE OF USE AND POINT OF DIVERSION, approved by an order of the Water Resources Director entered MAY 11, 2001, and together with Certificates 76628 and 79550, supersedes Certificate 22386, State Record of Water Right Certificates.

The issuance of this superseding certificate does not confirm the status of the water right in regard to the provisions of ORS 540.610 pertaining to forfeiture or abandonment.

The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described. The use confirmed herein may be made only at times when sufficient water is available to satisfy all prior rights, including rights for maintaining instream flows.

WITNESS the signature of the Water Resources Director, affixed January 10, 2003.

Paul R. Cleary

Recorded in State Record of Water Right Certificates Number 79549.
T-8123A.SB

FINAL PROOF SURVEY MAP
T.27S. R.6W,WM
T.28S. R.5W & 6W,WM
SCALE 1" = 4000'
DOUGLAS COUNTY

T-8123
SHEET 1 OF 2

FINAL PROOF SURVEY

UNDER

Transfer No. T-8123 Perfected Under Permit No. 21867

IN NAME OF

ROBERTS CREEK WATER DISTRICT

Surveyed June 15, 2001 by M E Farr

THIS IS A LOCATION MAP FOR A FINAL PROOF SURVEY BY ROBERTS CREEK WATER DISTRICT. THIS MAP IS FOR THE PURPOSE OF IDENTIFYING THE LOCATION OF THE WATER RIGHT ONLY AND IS NOT INTENDED TO PROVIDE LEGAL DIMENSIONS OR LOCATIONS OF PROPERTY OWNERSHIP LINES.

MAP PREPARED FOR:
ROBERTS CREEK WATER DISTRICT
4336 OLD HWY 99 SOUTH
ROSEBURG, OR 97470

MAP PREPARED BY:
MAURICE E FARR
CERTIFIED WATER RIGHT EXAMINER
395 NE KIRBY AVENUE
ROSEBURG, OR 97470

Certified Water Right Examiner
#046 WRE
Maurice E Farr
Maurice E. Farr
Nov. 19, 1987
STATE OF OREGON

EXPIRES 12-31-01

ROBERTS CREEK WATER DISTRICT BOUNDARY

RCWD Water Treatment Plant

Access Driveway

E 1/4 Cor

NEW POD

Authorized Location of Irrigation (This former place of use shall no longer be irrigated as a part of this water right)

S 1/4

Authorized POD

AUTHORIZED POD IS 2250 FT N AND 1140 FT E FROM S 1/4 COR SEC 22
NEW POD IS 1056.8 FT S AND 2664.5 FT W FROM E 1/4 COR SEC 15

RECEIVED
JUL 3 1 2001
WATER RESOURCES DEPT.
SALEM, OREGON

STATE OF OREGON

COUNTY OF DOUGLAS

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* FLOYD & JUNE EMMITT

of 5744 SW Harmony Lane, Roseburg *, State of* Oregon *, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of* South Umpqua River

a tributary of Umpqua River *for the purpose of* irrigation of 22.0 acres

under Permit No. 28784 *of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from* April 30, 1963

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 0.28 cubic foot per second

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the NE¼ NE¼, Section 16, T. 28 S., R. 6 W., W. M. Diversion point located 1060 feet South and 460 feet West from NE Corner, Section 16.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to one-eightieth *of one cubic foot per second per acre,* or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 2½ acre feet per acre for each acre irrigated during the irrigation season of each year; provided further that the right to use of water is limited to the period when the flow of the South Umpqua River is more than 60 c.f.s. at its mouth;

and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

22.0 acres NE¼ NE¼
Section 16
T. 28 S., R. 6 W., W. M.

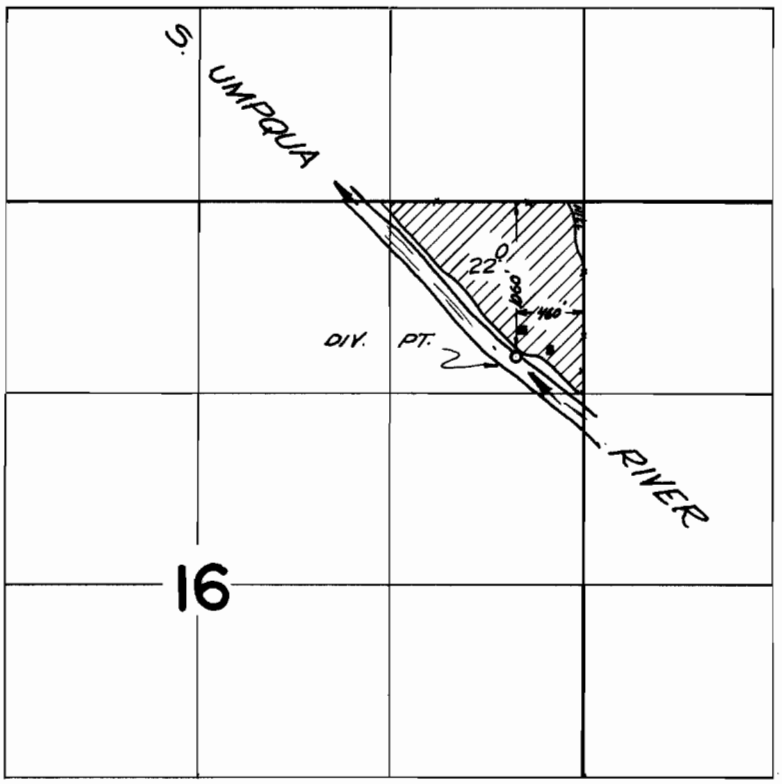
The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this date. May 27, 1968

CHRIS L. WHEELER
State Engineer

Recorded in State Record of Water Right Certificates, Volume 26 *, page* 34866

T. 28 S. R. 6 W. W.M.



FINAL PROOF SURVEY
UNDER

Application No. 38690 Permit No. 28784
IN NAME OF

FLOYD and JUNE EMMITT

Surveyed April 25 19 67, by V. Garner

1967-B

BEFORE THE WATER RESOURCES DEPARTMENT
OF THE
STATE OF OREGON

In the Matter of Instream Lease Application IL-122, Douglas County	))	DETERMINATION and FINAL ORDER ON PROPOSED INSTREAM LEASE

Authority
Oregon Revised Statute (ORS) 537.348 establishes the process in which a water right holder may submit a request to lease an existing water right for instream purposes. Oregon Administrative Rule (OAR) Chapter 690, Division 077 implements the statutes and provides the Department's procedures and criteria for evaluating instream lease applications.

Lessor
Green Area Water & Sanitary Authority
Attention: Alan Paulson
4336 Old Hwy 99 S
Roseburg, OR. 97471
alan@gawsa.or.org

Findings of Fact

1. On April 18, 2025, Alan Paulson of Green Area Water & Sanitary Authority filed an application to renew instream lease IL-122, involving a portion of Certificates 20540 and 27631.

2. The portion of the first right to be leased is as follows:

Certificate: 20540 in the name of John WM. And Grace Robertson (perfected under Permit S-19353)
Use: Irrigation of 32.12 acres
Priority Date: March 14, 1950
Quantity: **Rate:** 0.193 Cubic Foot per Second (CFS)
Volume: 80.3 Acre-Feet (AF)
Limit: One-eightieth CFS per acre, not to exceed 2.5 AF per acre per year
Source: South Umpqua River, tributary to Umpqua River

Authorized Point of Diversion (POD):

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
28 S	6 W	WM	9	SW NE	Not described

This is a final order in other than contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

Authorized Place of Use:

Twp	Rng	Mer	Sec	Q-Q	Acres
28 S	6 W	WM	9	SW NE	8.10
28 S	6 W	WM	9	SE NE	24.02
				Total Acres	32.12

3. Certificate 20540 does not provide measured distances for the location of the point of diversion. Based upon additional information provided by Department records, for purposes of this instream lease, the point of diversion is described as follows:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
28 S	6 W	WM	9	SW NE	660 FEET NORTH AND 500 FEET WEST FROM THE CENTER OF THE NENE 1/4 OF SECTION 9

4. The portion of the second right to be leased is as follows:

Certificate: 27631 in the name of Frank B. Cooper (perfected under Permit S-20951)
Use: Irrigation of 41.81 acres
Priority Date: February 1, 1952 for 0.26 CFS, March 4, 1952 for 0.26 CFS
Quantity: **Rate:** 0.52 Cubic Foot per Second (CFS)
Volume: 104.53 Acre-Feet (AF)
Limit: One-eightieth CFS per acre, not to exceed 2.5 AF per acre per year
Source: South Umpqua River, tributary to Umpqua River

Authorized Point of Diversion (POD):

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
28 S	6 W	WM	9	SW NE	Not described

Authorized Place of Use:

Twp	Rng	Mer	Sec	Q-Q	Acres
28 S	6 W	WM	9	SW NE	2.80
28 S	6 W	WM	9	SE NE	1.74
28 S	6 W	WM	9	NE SW	0.50
28 S	6 W	WM	9	NE SE	17.57
28 S	6 W	WM	9	NW SE	19.20
				Total Acres	41.81

5. Certificate 20540 does not provide measured distances for the location of the point of diversion. Based upon additional information provided by Department records, for purposes of this instream lease, the point of diversion is described as follows:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
28 S	6 W	WM	9	SW NE	2840 FEET NORTH AND 2250 FEET WEST FROM THE SE CORNER OF SECTION 9

6. Certificates 20540 and 27631 do not specify the irrigation season; nor is an irrigation season specified by Basin Program or Decree. For the purposes of instream leasing, an irrigation season of March 1 through October 31, consistent with OAR 690-250, shall be used to establish when water may be protected instream.

7. The lease application includes the information required under OAR 690-077-0076(3). The Department provided notice of the lease application pursuant to OAR 690-077-0077(1). No comments were received.

8. The instream use is as follows:
   South Umpqua River, tributary to Umpqua River

   Instream Reach: From the POD's (as described in Finding of Facts No. 3 and No. 5) to the mouth of the South Umpqua River

Certificate	Priority Date	Instream Rate (CFS)	Instream Volume (AF)	Period Protected Instream
20540	3/14/1950	0.193	80.30	April 6 through October 31
27631	2/1/1952	0.260	104.53	July 23 through October 31
	3/4/1952	0.260		
	Totals	0.713	184.83	

9. The amount and timing of the proposed instream flow is allowable within the limits and use of the original water rights.

10. The protection of flows within the proposed reach is appropriate, considering:

    a. The instream water use begins at the recorded point of diversion;

    b. The location of confluences with other streams downstream of the point of diversion.

    c. There are no known areas of natural loss of streamflow to the river bed downstream from the point of diversion; and

    d. Any return flows resulting from the exercise of the existing water right would re-enter the river downstream of the reach of the instream water right.

11. The total monthly quantities of water to be protected under the existing and proposed instream rights in the reach will provide for a beneficial purpose.

12. The total monthly quantities of water to be protected instream under existing and proposed instream rights in the reach do not exceed the estimated average natural flow.

13. If approved, this instream lease is not reasonably expected to significantly affect land use as prescribed by ORS 197.180, OAR Chapter 660, Divisions 30 and 31, and OAR Chapter 690, Division 5.

14. Based upon review of the application, information provided by the Department's Watermaster, and other available information, the Department finds that the lease will not result in injury or enlargement. The order approving this instream lease may be modified or revoked under OAR 690-077-0077 if the Department later finds that the lease is causing injury to any existing water right or enlargement of the original right.

15. If a right which has been leased is later proposed to be leased again, transferred and/or reviewed under an allocation of conserved water, a new injury review shall be required. For example, instream transfers will be subject to a full and complete review to determine consistency with the requirements of OAR Chapter 690, Division 380 and Division 077. Approval of this lease does not establish a precedent for approval of any future transactions.

16. The Lessor has requested that the lease terminate on December 31, 2030, however, OAR 690-077-0076 limits the period of time to five years. The lease may commence on March 1, 2025, being the first day of the irrigation season and will terminate October 31, 2029.

17. The Lessor has requested the option of terminating the lease early with written notice to the Department.

Conclusions of Law

The Department concludes that the lease will not result in injury or enlargement, OAR 690-077-0077. The lease conforms to the applicable provisions of OAR 690-077-0015.

Now, therefore it is ORDERED:

1. The Lease as described herein is APPROVED.

2. During each year of the term of the lease, the former place of use will no longer receive water as part of these rights, any supplemental rights, or any other layered irrigation water rights, including ground water registrations and permits.

3. The term of the lease will commence upon approval of the instream lease and terminate on October 31, 2029. For multiyear leases, the lessor *shall* have the option of terminating the lease any time each year with written notice to the Department. However, if the termination request is received less than 30-days prior to the instream use period (April through October) or after the water rights' original period of allowed use has begun, the Department may issue an order terminating the lease but use of water may not be allowed until the following calendar year, unless the Director determines that enlargement would not occur.

Dated at Salem, Oregon this day May 23, 2025.

Lisa J. Jaramillo, Transfer and Conservation Section Manager, for
Ivan Gall, Director
Oregon Water Resources Department

Mailing date: May 27, 2025

This document was prepared by Sarah Henderson. If you have any questions, please call 503-979-9872.

Permit A-2—1M—8-53

STATE OF OREGON

COUNTY OF DOUGLAS

CERTIFICATE OF WATER RIGHT

This Is To Certify, *That* JOHN WM. AND GRACE ROBERTSON

of C.V. Star Route, Roseburg *, State of* Oregon *, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of* South Umpqua River *a tributary of* Umpqua River *for the purpose of* irrigation *under Permit No.* 19353 *of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from* March 14, 1950 ;

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 0.264 cubic foot per second,

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the SW¼ NE¼, Section 9, Township 28 South, Range 6 West, W. M.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to one-eightieth *of one cubic foot per second per acre,* or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 2½ acre feet per acre for each acre irrigated during the irrigation season of each year,

and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

8.1 acres in SW¼ NE¼
30.6 acres in SE¼ NE¼
Section 9
5.3 acres in SW¼ NW¼
Section 10
Township 28 South, Range 6 West, W. M.

Land on which water is to be used is a part of that more explicitly described by appropriator as follows:
Beginning at a one inch by three feet iron pipe, from which the section corner common to Sections 9, 10, 15 and 16 in Township 28 South, Range 6 West of the Willamette Meridian bears South 39.7 chains and West 20.00 chains; thence North 87 degrees 28 minutes West 54.20 chains to a one inch by five feet iron pipe on the right bank of the South Umpqua River, and from which a 12 inch cedar marked CSBT bears North 17 degrees West 34 links thence North 49 degrees 47 minutes East 17.75 chains downstream along the right bank of the South Umpqua River; thence north 48 degrees 07 minutes East 5.25 chains downstream along the right bank of the South Umpqua River to a one inch by five feet iron pipe, from which an eight inch black oak, marked CSBT bears North 34 degrees 31 links; thence East 36.69 chains to a one inch by three feet iron pipe on the East property line; thence South 17.36 chains along the East property line to the place of beginning, containing 74.33 acres, more or less, subject to rights-of-way for road as the same exist over and across said premises, and including all rights, privileges, easements and rights-of-way to said premises or appurtenant thereto.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed

this 30th *day of* June , 1954 .

CHAS. B. STRICKLIN

State Engineer

Recorded in State Record of Water Right Certificates, Volume 15 , *page* 20540.

24504

T. 28 S., R. 6 W., W. M.

FINAL PROOF SURVEY

UNDER

Application No. 24504 Permit No. 19353

IN NAME OF

JOHN WM. & GRACE ROBERTSON

Surveyed May 11 1953, by H. L. Coffman

DB-HW-18-65

Permit A—4M—3-59 State Printing—1959

STATE OF OREGON

COUNTY OF DOUGLAS

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* FRANK B. COOPER

of 4610 S.W. Holgate, Roseburg, *State of* Oregon, *has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of* South Umpqua River *a tributary of* Umpqua River *for the purpose of* irrigation of 54.1 acres

under Permit No. 20951 *of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from* February 1, 1952 for 0.35 cubic foot per second, and March 4, 1952 for 0.32 cubic foot per second,

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 0.67 cubic foot per second

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the SW¼ NE¼, Section 9, T. 28 S., R. 6 W., W.M.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to one-eightieth *of one cubic foot per second per acre,* or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 2½ acre feet per acre for each acre irrigated during the irrigation season of each year,

and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

2.8 acres SW¼ NE¼
2.0 acres SE¼ NE¼
0.5 acre NE¼ SW¼
22.7 acres NE¼ SE¼
19.2 acres NW¼ SE¼
Section 9
0.1 acre SW¼ NW¼
6.8 acres NW¼ SW¼
Section 10
T. 28 S., R. 6 W., W.M.

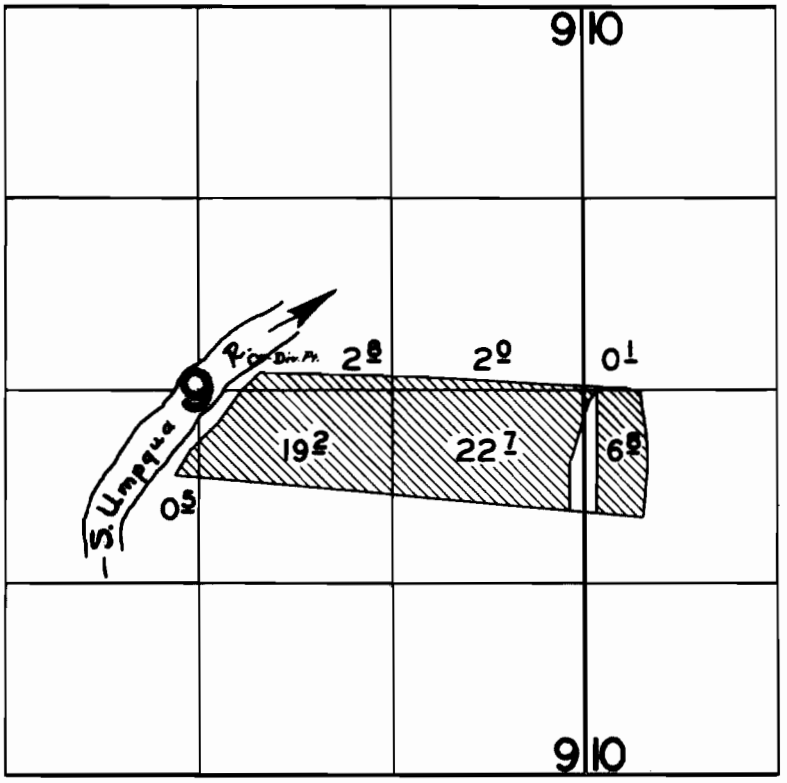
The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this date. OCTOBER 21 1960

LEWIS A. STANLEY
State Engineer

Recorded in State Record of Water Right Certificates, Volume 19 *, page* 27631

T. 28S. R. 6W. W.M.



FINAL PROOF SURVEY
UNDER

Application No. 26829 Permit No. 20951
IN NAME OF

FRANK B. COOPER

Surveyed JUN. 24 1959, by M. BISH

1959 C

Permit A-1—1500—8-56 State Printing 9210

STATE OF OREGON

COUNTY OF DOUGLAS

CERTIFICATE OF WATER RIGHT

This Is to Certify, That E. P. & ORAN STANDLEY

of Camas Valley, State of Oregon, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of South Umpqua River a tributary of for the purpose of irrigation under Permit No. 23920 of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from January 16, 1956;

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 1.28 cubic foot per second

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the SW¼SE¼, Section 9, Township 28 South, Range 6 West, W. M.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to one-eightieth of one cubic foot per second per acre, or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 2½ acre feet per acre for each acre irrigated during the irrigation season of each year,

and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

40.0 acres in the SE¼SE¼
16.2 acres in the NE¼SE¼
20.0 acres in the NW¼SE¼
25.4 acres in the SW¼SE¼
0.8 acres in the SE¼SW¼
Section 9
Township 28 South, Range 6 West, W. M.

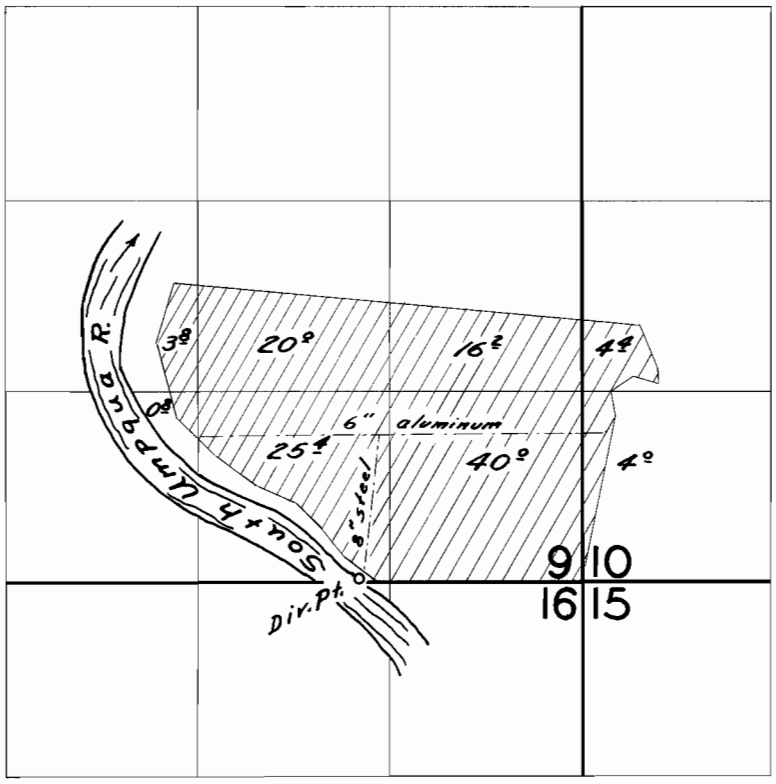
The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this 7th day of March, 19 57.

LEWIS A. STANLEY
State Engineer

Recorded in State Record of Water Right Certificates, Volume 16, page 22257.

T.28S. R.6W.W.M.



FINAL PROOF SURVEY

UNDER

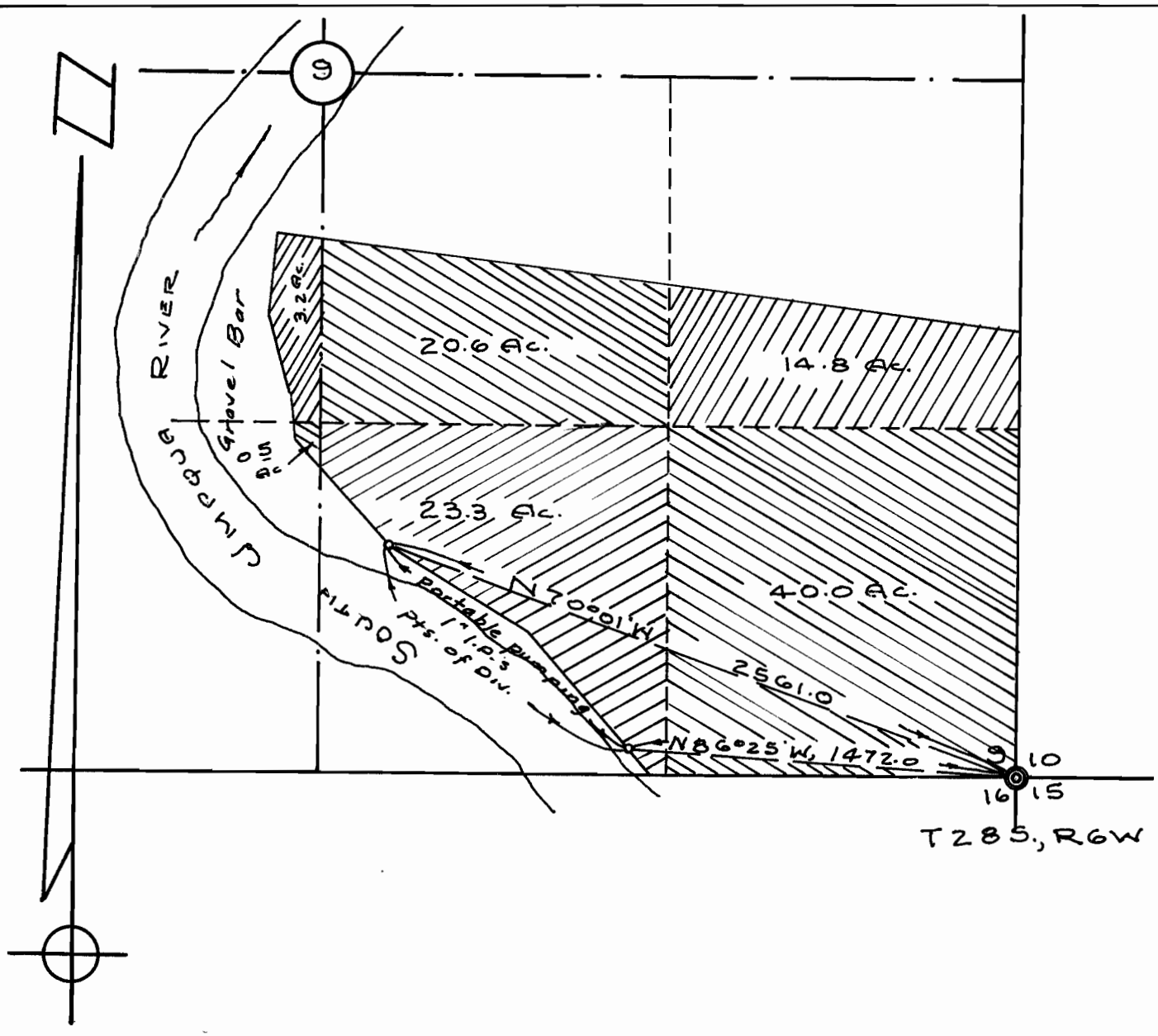
Application No. 28367 Permit No. 23920

IN NAME OF

E. P. & Oran Standley

Surveyed Aug. 5 1956, by C. O. Bartels

1956-B



Scale, 1" = 600'

Certificate of Engineer

I, Arthur R. Evans, of Roseburg, Ore, do hereby certify that this map was made from notes taken during an actual survey made by me on Feb 25, 1952, that the monuments shown on this map consisting of 2 1" Iron Pipes, are; N 86°25' W, 1472.0 ft., & N 70°01' W, 2561.0 ft from the cor. of Secs. 9-10-15-16, T 28 S., R 6 W. W.M.

Arthur R. Evans
Arthur R. Evans
Reg. Prof. Eng'r.

Application No. 28367
Permit No.

WATER RIGHT
FOR
ELMER LANDERS
SEC. 9, T 28 S., R 6 W., W.M.

Grant & Evans, Engineers
Roseburg, Oregon

RECEIVED
APR 29 1953
STATE ENGINEER
SALEM, OREGON

Permit A—4M—3-59 State Printing 18985

STATE OF OREGON

COUNTY OF DOUGLAS

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* HENRY L. & MARIE F. LANDER

of 5248 S.W. Harmony Drive, Roseburg *, State of* Oregon *, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of* South Umpqua River

a tributary of Umpqua River *for the purpose of* irrigation of 13.4 acres

under Permit No. 23574 *of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from* March 7, 1955 .

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 0.17 cubic foot per second

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the SW¼ NW¼, Section 15, T. 28 S., R. 6 W., W.M.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to one-eightieth *of one cubic foot per second per acre,* or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 2½ acre feet per acre for each acre irrigated during the irrigation season of each year,

and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

7.0 acres NW¼ NW¼
6.4 acres SW¼ NW¼
Section 15
T. 28 S., R. 6 W., W.M.

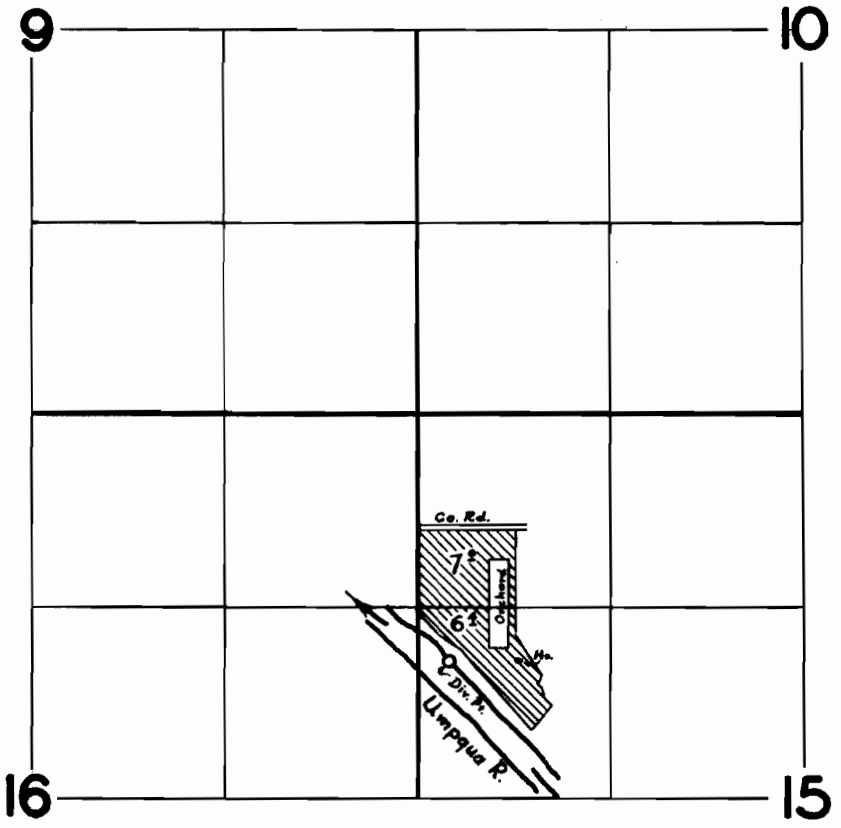
The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this date. NOVEMBER 22 1960

LEWIS A. STANLEY
State Engineer

Recorded in State Record of Water Right Certificates, Volume 20 *, page* 27776

T. 28S. R. 6W. W.M.



FINAL PROOF SURVEY
UNDER

Application No. 29773 Permit No. 23574
IN NAME OF

HENRY L. & MARIE F. LANDER

Surveyed JUN. 24 1959, by M. BISH

1959 C

Application No. 55991 Permit No. 41514

STATE OF OREGON WATER RESOURCES DEPARTMENT

Application for Permit to Appropriate Surface Water

I, Douglas County Public Works
(Name of Applicant)

of Room 103, Justice Building (Mailing Address), Roseburg (City)

State of Oregon, 97470 (Zip Code) Phone No. 672-3311 ext. 260 do hereby

make application for a permit to appropriate the following described waters of the State of Oregon:

1. The source of the proposed appropriation is North Umpqua River

, a tributary of Umpqua River

2. The point of diversion is to be located 4064 ft. N. (N. or S.) and 979 ft. E. (E. or W.)

from the S¼ corner of Section 25
(Public Land Survey Corner)

(If there is more than one point of diversion, each must be described)

being within the NW ¼ of the NE ¼ of

Sec. 25 Tp. 26S. (N. or S.) R. 6W. (E. or W.), W. M., in the county of Douglas

3. Location of area to be irrigated, or place of use if other than irrigation.

Township	Range	Section	List ¼ ¼ of Section	List use and/or number of acres to be irrigated
	SEE ATTACHED SHEETS			

Form 690-1-0-1-77

10814

RECORDED See Misc. Rec., Vol. 7 Page 2857

4. *The amount of water which the applicant intends to apply to beneficial use is*

cubic feet per second 3.00 c.f.s.

(If water is to be used from more than one source, give quantity from each)

5. *The use to which the water is to be applied is* Supplemental municipal 2.00 cfs. (Winston-Dillard) and Supplemental municipal 1.00 c.f.s. (Roberts Creek)

6. *DESCRIPTION OF WORKS*

Include dimensions and type of construction of diversion dam and headgate, length and dimensions of supply ditch or pipeline, size and type of pump and motor, type of irrigation system to adequately describe the proposed distribution system.

Water to be pumped via Oregon Water Corporation's system to the central Umpqua Valley Water system intertie, to the named communities.

If for domestic use state number of families to be supplied

7. *Construction work will begin on or before* July 1, 1977

8. *Construction work will be completed on or before* October 1, 1978

9. *The water will be completely applied to the proposed use on or before* October 1, 1979

Application No. 55991 *Permit No.* 11514

DESCRIPTION OF LAND TO BE IRRIGATED OR PLACE OF USE

Twp.	Range	Sec.	NE¼				NW¼				SW¼				SE¼			
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼
28S	6W	15							x		x	x	x	x	x	x	x	x
		16		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		17	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		18	All less DLC 40 and DLC 53															
		19	x	x		x	x	x										
		20	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		21	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		22	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		27	x	x	(W. of River)		x	x	(W. of river)									
28S	6W	28	x	x	x	x	x	x	x	x								
		29	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		32	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		33					x	x	x	x	x	x	x	x	x	x	x	x
		35											x	x				
29S	6W	2					x	x	x	x								
		3			x	x	x	x	x	x	x	x	x	x				
		4	x	x	x	x	x	x	x	x	x	x	x	x				
		8				x					x	x	x	x	x	x	x	x
		9	x			x	x	x	x	x	x	x	x	x	x			x
		10					x	x	x	x	x	x	x	x				
		17	x	x	x	x	x	x	x	x								

(S. of Highway)

(S. of river)

Application No. 55991

Permit No. 41514

DESCRIPTION OF LAND TO BE IRRIGATED OR PLACE OF USE

Twp	Range	Sec.	NE¼				NW¼				SW¼				SE¼			
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼
27 S	6 W	25									X	X	X	X				
		34															X	X
		35	X	X	X	X							X					
		36						X	X	X	X	X	X	X		X	X	
28 S	6 W		ALL OF SECTIONS . . . 2, 3, 11, & 24.															
		13					X	X	X	X	X	X	X	X	X	X	X	X
		10	X	X	X	X	X			X	X	X	X	X	X	X	X	X
		14	X	X	X	X	X	X	X	X	X				X	X	X	X
		15	X	X	X	X	X	X	X	X	X	X			X	X	X	X
28 S	6 W	23	X															
28 S	5 W	18										X	X	X				
		19					X	X	X	X		X	X					
27 S	6 W	26																X

Application No. 35991
Permit No. 11514

Remarks: Maps of area to be served filed under Application No. 45720 and Application No. 50006.

The intertie is to be used when the South Umpqua River supply is not sufficient to satisfy existing demands. Water delivered to the intertie will be only that amount not utilized within the Oregon Water Corporation's greater Roseburg delivery area.

George E. Smith
Signature of Applicant
Director of Public Works
County of Douglas.

This is to certify that I have examined the foregoing application, together with the accompanying maps and data, and return the same for.....

In order to retain its priority, this application must be returned to the Water Resources Director with corrections on or before ....., 19.....

WITNESS my hand this ..... *day of*....., 19.....

.....*Water Resources Director*

By .....

This instrument was first received in the office of the Water Resources Director at Salem, Oregon, on the 31st *day of* May, 19 77, *at* 8 *o'clock* A *M.*

Application No. 55991 *Permit No.* 11514

Application No. 55991 Permit No. 41514

Permit to Appropriate the Public Waters of the State of Oregon

This is to certify that I have examined the foregoing application and do hereby grant the same SUBJECT TO EXISTING RIGHTS INCLUDING THE EXISTING FLOW POLICIES ESTABLISHED BY THE WATER POLICY REVIEW BOARD and the following limitations and conditions:

The right herein granted is limited to the amount of water which can be applied to beneficial use and shall not exceed 3.0 *cubic feet per second measured at the point of diversion from the stream, or its equivalent in case of rotation with other water users, from* North Umpqua River

The use to which this water is to be applied is Municipal

If for irrigation, this appropriation shall be limited to ..... of one cubic foot per second or its equivalent for each acre irrigated

and shall be subject to such reasonable rotation system as may be ordered by the proper state officer.

The priority date of this permit is May 31, 1977

Actual construction work shall begin on or before June 27, 1978 *and shall thereafter be prosecuted with reasonable diligence and be completed on or before October 1, 19*79

Extended to October 1, 1988 Extended to October 1, 1993

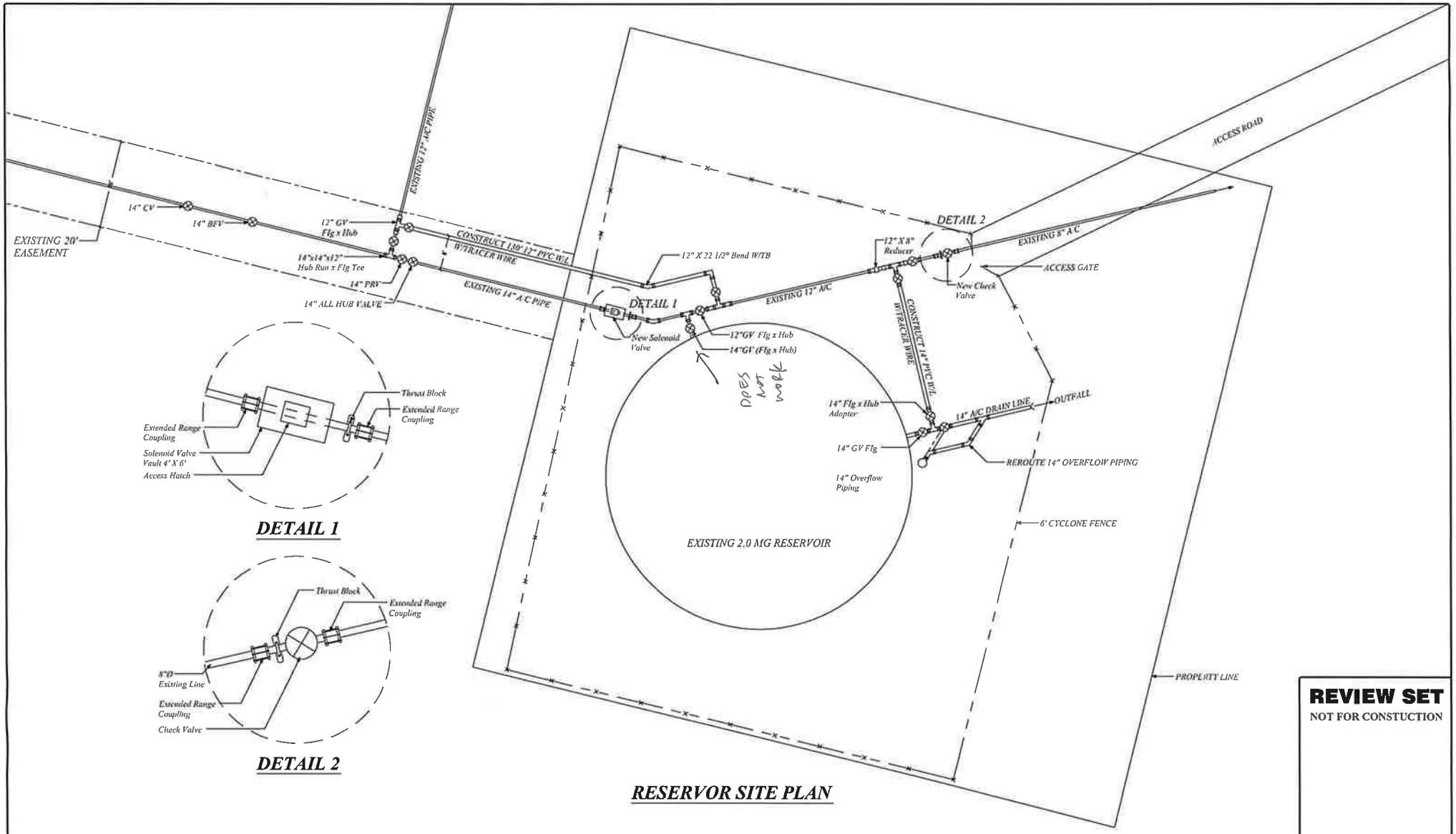
*Complete application of the water to the proposed use shall be made on or before October 1, 19*80

Extended to October 1, 1988 Extended to October 1, 1993

WITNESS my hand this 27th *day of* June, *19*77

B+C to 10-1-98

James E. Sexton
Water Resources Director



REVIEW SET
NOT FOR CONSTUCTION

Designed:	NTB
Drawn:	DSM
Date Approved:	--/--/--

REV #	DESCRIPTION	BY	DATE

MAP Engineering Inc.
950 SE Oak St.
Roseburg, OR 97470
tristianb@mapengineeringinc.com

Roberts Creek Water
4336 Old Hwy 99 S Roseburg, OR 97471

Cover Sheet

Scale:	N.T.S.
Sheet:	01 of 01
Rev:	1.0
Date:	11/23/15

CLA-VAL™

MODEL 136-03

Solenoid Control Valve

- **Fast Acting Solenoid Control**
- **Drip Tight Shut-Off**
- **Simple Design, Proven Reliable**
- **Optional Check Feature**
- **Easy Installation & Maintenance**

The Cla-Val Model 136-03 Solenoid Control Valve is an on-off control valve which either opens fully or closes drip-tight upon receiving an electrical signal to the solenoid pilot control. This valve consists of a Hytrol main valve, a three way solenoid and a high capacity three-way pilot valve. The solenoid control operates the three-way valve which alternately applies pressure to or relieves pressure from the diaphragm chamber of the main valve. It is furnished either normally open (de-energize solenoid to open) or normally closed (energize solenoid to open).

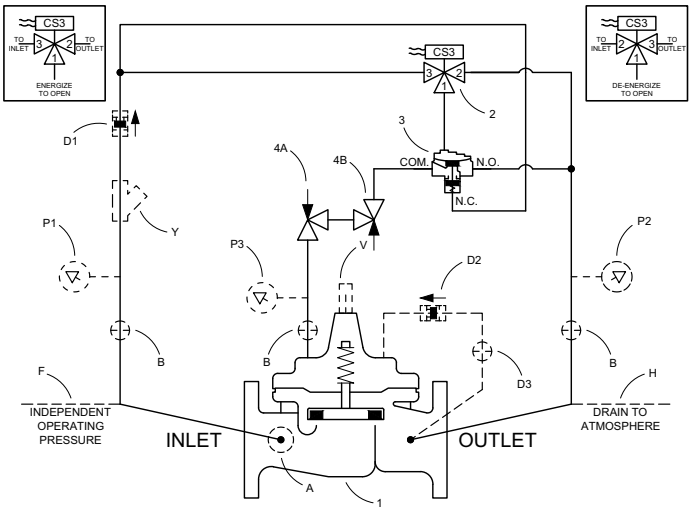
If the check feature option is added and a pressure reversal occurs, the downstream pressure is admitted into the main valve cover chamber and the valve closes to prevent return flow.

Schematic Diagram

Item	Description
1	100-01 Hytrol Main Valve
2	CS3 Solenoid Control
3	102E Three-Way Valve
4	CV Flow Control

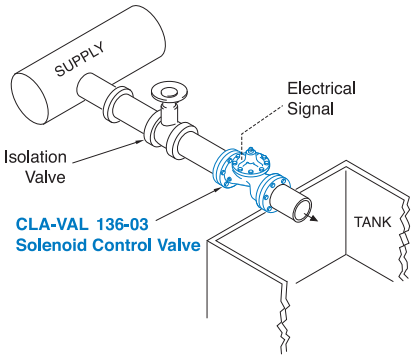
Optional Features

Item	Description
A	X46 Flow Clean Strainer
B	CK2 (Isolation Valve)
D	Check Valves With Isolation Valve
F	Independent Operating Pressure
H	Atmospheric Drain
P	X141 Pressure Gauge
V	X101 Valve Position Indicator
Y	X43 "Y" Strainer

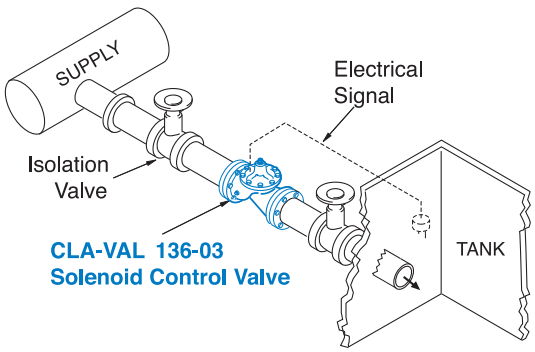


Valves 6" and larger with a "D" check feature must be installed with the main valve stem in a vertical position

Typical Applications



Industrial uses for the solenoid control valve are many and include accurate control of process water for batching, mixing, washing, blending or other on-off type uses.



Liquid level control can be provided by using a float switch or electrode probe which sends an electrical signal to open or close the valve as needed.

Model 136-03 (Uses Hytrol Main Valve Model 100-01)

Pressure Ratings (Recommended Maximum Pressure - psi)

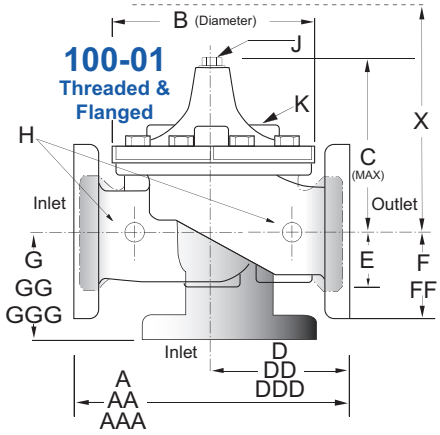
Valve Body & Cover		Pressure Class				
		Flanged			Grooved	Threaded
Grade	Material	ANSI Standards*	150 Class	300 Class	300 Class	End‡ Details
ASTM A536	Ductile Iron	B16.42	250	400	400	400
ASTM A216-WCB	Cast Steel	B16.5	285	400	400	400
UNS 87850	Bronze	B16.24	225	400	400	400

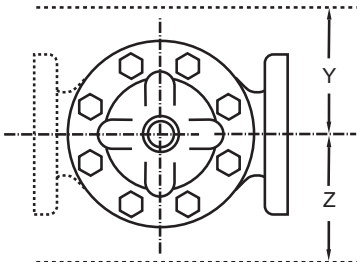
Note: * ANSI standards are for flange dimensions only.
Flanged valves are available faced but not drilled.
‡ End Details machined to ANSI B2.1 specifications.
Valves for higher pressure are available; consult factory for details

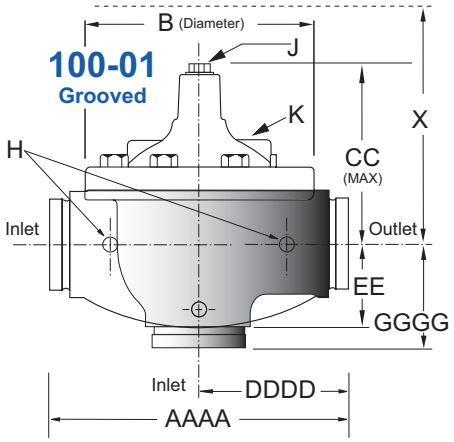
Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	4" - 36" 100 - 900mm	4" - 16" 100 - 400mm	4" - 16" 100 - 400mm
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		

For material options not listed, consult factory.
Cla-Val manufactures valves in more than 50 different alloys.



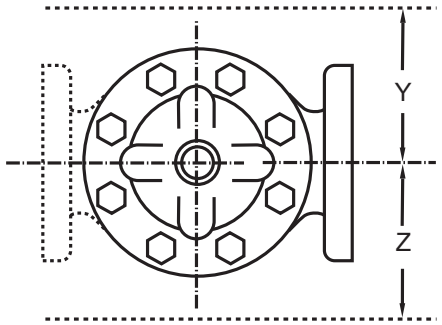


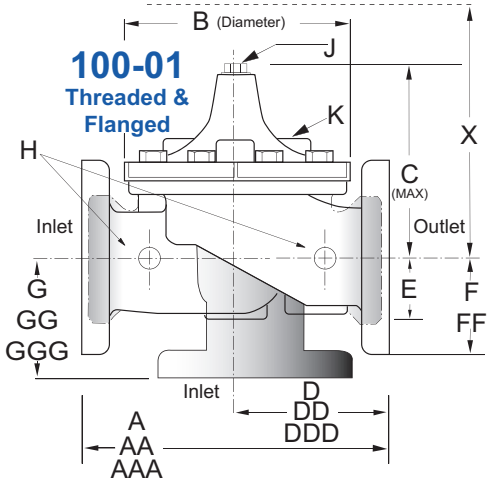


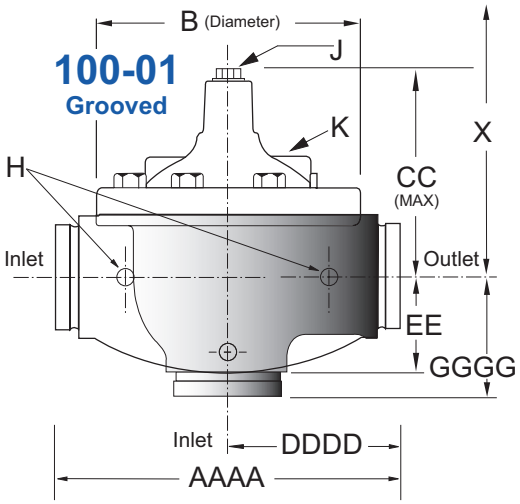
Model 136-03 Dimensions (inches)

Valve Size (Inches)	4	6	8	10	12	14	16	18	20	24	30	36
A Threaded	—	—	—	—	—	—	—	—	—	—	—	—
AA 150 ANSI	15.00	20.00	25.38	29.75	34.00	39.00	41.38	46.00	52.00	61.50	63.00	72.75
AAA 300 ANSI	15.62	21.00	26.38	31.12	35.50	40.50	43.50	47.64	53.62	63.24	64.50	74.75
AAAA Grooved End	15.00	20.00	25.38	—	—	—	—	—	—	—	—	—
B Diameter	11.50	15.75	20.00	23.62	28.00	32.75	35.50	41.50	45.00	53.16	56.00	66.00
C Maximum	10.62	13.38	16.00	17.12	20.88	24.19	25.00	39.06	41.90	43.93	54.60	59.00
CC Maximum Grooved End	9.31	12.12	14.62	—	—	—	—	—	—	—	—	—
D Threaded	—	—	—	—	—	—	—	—	—	—	—	—
DD 150 ANSI	7.50	10.00	12.69	14.88	17.00	19.50	20.81	—	—	30.75	—	—
DDD 300 ANSI	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—	—	31.62	—	—
DDDD Grooved End	7.50	—	—	—	—	—	—	—	—	—	—	—
E	3.19	4.31	5.31	9.25	10.75	12.62	15.50	12.95	15.00	17.75	21.31	24.56
EE Grooved End	4.25	6.00	7.56	—	—	—	—	—	—	—	—	—
F 150 ANSI	4.50	5.50	6.75	8.00	9.50	10.50	11.75	15.00	16.50	19.25	22.50	28.50
FF 300 ANSI	5.00	6.25	7.50	8.75	10.25	11.50	12.75	15.00	16.50	19.25	24.00	30.00
G Threaded	—	—	—	—	—	—	—	—	—	—	—	—
GG 150 ANSI	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—	—	22.06	—	—
GGG 300 ANSI	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—	—	22.90	—	—
GGGG Grooved End	5.00	—	—	—	—	—	—	—	—	—	—	—
H NPT Body Tapping	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
J NPT Cover Center Plug	0.75	0.75	1.00	1.00	1.25	1.50	2.00	1.00	1.00	1.00	2.00	2.00
K NPT Cover Tapping	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
Stem Travel	1.10	1.70	2.30	2.80	3.40	4.00	4.50	5.10	5.63	6.75	7.50	8.50
Approx. Ship Weight (lbs)	140	285	500	780	1165	1600	2265	2982	3900	6200	7703	11720
Approx. **X** Pilot System	17	29	31	33	36	40	40	43	47	68	79	85
Approx. **Y** Pilot System	12	20	22	24	26	29	30	32	34	39	40	45
Approx. **Z** Pilot System	12	20	22	24	26	29	30	32	34	39	42	47

Model 136-03 Metric Dimensions (Uses 100-01 Hytrol Main Valve)







Model 136-03 Dimensions (mm)

Valve Size (mm)	**100**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**600**	**750**	**900**
A Threaded	—	—	—	—	—	—	—	—	—	—	—	—
AA 150 ANSI	381	508	645	756	864	991	1051	1168	1321	1562	1600	1848
AAA 300 ANSI	397	533	670	790	902	1029	1105	1210	1326	1606	1638	1899
AAAA Grooved End	381	508	645	—	—	—	—	—	—	—	—	—
B Diameter	292	400	508	600	711	832	902	1054	1143	1350	1422	1676
C Maximum	270	340	406	435	530	614	635	992	1064	1116	1387	1499
CC Maximum Grooved End	236	308	371	—	—	—	—	—	—	—	—	—
D Threaded	—	—	—	—	—	—	—	—	—	—	—	—
DD 150 ANSI	191	254	322	378	432	495	528	—	—	781	—	—
DDD 300 ANSI	200	267	337	395	451	514	549	—	—	803	—	—
DDDD Grooved End	191	—	—	—	—	—	—	—	—	—	—	—
E	81	110	135	235	273	321	394	329	381	451	541	624
EE Grooved End	108	152	192	—	—	—	—	—	—	—	—	—
F 150 ANSI	114	140	171	203	241	267	298	381	419	489	572	724
FF 300 ANSI	127	159	191	222	260	292	324	381	419	489	610	762
G Threaded	—	—	—	—	—	—	—	—	—	—	—	—
GG 150 ANSI	127	152	203	219	349	378	399	—	—	560	—	—
GGG 300 ANSI	135	165	216	236	368	397	419	—	—	582	—	—
GGGG Grooved End	127	—	—	—	—	—	—	—	—	—	—	—
H NPT Body Tapping	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
J NPT Cover Center Plug	0.75	0.75	1.00	1.00	1.25	1.50	2.00	1.00	1.00	1.00	2.00	2.00
K NPT Cover Tapping	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
Stem Travel	28	43	58	71	86	102	114	130	143	171	190	216
Approx. Ship Weight (kgs)	64	129	227	354	528	726	1027	1353	1769	2812	3494	5316
Approx. **X** Pilot System	432	737	788	839	915	1016	1016	1093	1194	1728	2007	2159
Approx. **Y** Pilot System	305	508	559	610	661	737	762	813	864	991	1016	1143
Approx. **Z** Pilot System	305	508	559	610	661	737	762	813	864	991	1067	1194

136-03 Valve Selection	100-01 Pattern: Globe (G), Angle (A), End Connections: Threaded (T), Grooved (GR), Flanged (F) Indicate Available Sizes												
	Inches	4	6	8	10	12	14	16	18	20	24	30	36
	mm	100	150	200	250	300	350	400	450	500	600	750	900
Main Valve 100-01	Pattern	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G	G	G, A	G	G
	End Detail	F, Gr	F, Gr*	F, Gr*	F	F	F	F	F	F	F	F	F
Suggested Flow (gpm)	Maximum	800	1800	3100	4900	7000	8400	11000	14000	17000	25000	42000	50000
	Maximum Intermittent	990	2250	3900	6150	8720	10540	13700	17500	21700	31300	48000	62500
Suggested Flow (Liters/Sec)	Maximum	50	113	195	309	442	530	694	883	1073	1577	2650	3150
	Maximum Intermittent	62	142	246	387	549	664	863	1104	1369	1972	3028	3940

100-01 Series is the full internal port Hytrol. *Globe Grooved Only

Pilot System Specifications

Temperature Range

Water: to 180°F/82°C

Fluids

Air, water, light oils

Solenoid Control

Body:

Brass ASTM B283

Rubber Parts:

Buna-N® Synthetic Rubber

Enclosure:

NEMA Type 1,2,3,3S,4,4X general purpose watertight*

NEMA Type 6,6P,7,9 watertight Explosion Proof available.

Voltages:

110, 220 - 50Hz AC

24, 120, 240, 480 - 60Hz AC

6, 12, 24, 120, 240 - DC

Others available at additional cost

Max. operating pressure differential:

200 psi*

Coil:

Insulation molded Class	F
Watts AC	6
AC Volt Amps Inrush	30
AC Volt Amps Holding	16
Watts DC	10.6

Manual operator available at additional cost.

*Supplied unless otherwise specified

Note: Flowing Pressure Differential: 5 psi minimum

When Ordering, Specify

1. Catalog No. 136-03
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Threaded or Flanged
6. Materials Desired
7. Energized or de-energized to open Main Valve
8. Solenoid Enclosure, Voltage & Hertz, Coil Insulation, and Max. Operating Pressure Differential
9. Desired Options
10. When Vertically Installed

Valve Options

X141 Pressure Gauge

X101AR Valve Position Indicator with Air Release

X101 Valve Position Indicator

X144 e-FlowMeter

X43H Strainer

Stainless Steel Pilot

APPENDIX B: WASTEWATER DOCUMENTS

Manhole Repair List

Pump Station Design Data

C=Contractor
I&I=Inflow & Infiltration
IH=In House
MH=Manhole
R&C=Ring&Cover
R=Repair
RP=Replace
RT=Roots
NC=New Channel
V=Vector

MH/R&C/R			
BASIN	MH#	PRIORITY	NOTE
A	13		
A	15		
B	6		RT
B	9		RT
C	45		
D	2		
D	3		
D	12		
D	13	X	
D	15		RT
E	2		
E	18		
E	27		
E	28		
E	31		
E	33		
E	39		
F	10		
F	11		
F	12		
F	16		
F	25		
F	26		
F	36		?
F	39		?
F	70		?
G	9		
G	11		
G	33	5	
H	6		
J	7		RT

J	19		?
J	26		
K	15.1		
K	15.2		
K	21		
K	23		?
K	30	X	
L	1		
L	5		
L	9		V
L	11		
L	20		
L	35		
L	36		RT
M	0	5	V
M	3	5	
M	7	5	
M	9	5	
M	11.1		
M	14		?
M	21		
M	26		
M	35		
M	36		
M	55		
NC=New C	6		
O	4		
O	5	5	
O	8		?
O	9		
O	10		
O	12		
O	13		?
O	16		
O	17		
O	18		
P	18		
P	20		
P	22		
P	29		RT
P	38		
P	49		
Q	3.1		
PVT	6.1		

Q	12		
Q	14		
Q	15		
Q	26		
Q	28		
Q	29		
Q	30		
Q	38		
Q	42		
Q	43		
Q	44		
Q	45		

MH/R/			
BASIN	MH#	PRIORITY	NOTE
A	13	3	I&I
B	3	3	I&I, RT
B	6	3	I&I, RT
B	9	4	I&I
B	14	4	I&I
B	17	2	I&I, RT
B	20	4	I&I
C	33	2	I&I
C	34	3	I&I
D	1	3	NC
D	2	3	I&I
D	3	2	I&I
D	4	2	I&I
D	4.1	2	I&I
D	6	3	I&I
D	7	3	I&I
D	8	3	I&I
D	9	3	I&I
D	11	2	I&I
D	13	2	I&I
D	13.1	2	I&I
D	14	3	I&I
D	15	2	I&I
D	16	2	I&I
D	44	2	I&I
D	49	2	I&I
E	1	3	I&I
E	7	2	I&I, RT
E	8	2	I&I
E	9	2	I&I
E	10	2	I&I
E	12	2	I&I
E	13	2	I&I
E	14	2	I&I
E	17	2	I&I
E	18	4	I&I
E	19	2	I&I
E	26	3	I&I
E	29	1	I&I
E	35	2	I&I
E	38	3	I&I
E	39	2	I&I

E	50	2	I&I
E	51	2	I&I
F	10	2	I&I
F	16	2	I&I
F	24	2-3	I&I
F	30	4	I&I
F	32	3	I&I
G	21	4	I&I
G	31	2	I&I
G	33	5	I&I, IH, R&C
H	1	3	RT
H	4	2	I&I
H	10	2	I&I
H	15	3	RT
H	18	3	I&I
H	20	3	I&I
H	22	2	I&I
H	24	2	I&I
H	29	3	I&I
H	30	5	ACCESS, IH
I	1	3	I&I
I	6	3	I&I
I	10	3	I&I
I	11	2	I&I
I	12	4	I&I
I	19	3	I&I
J	2	3	I&I
J	7	3	I&I
J	12	2	I&I
J	19	3	I&I
J	22	3	I&I
J	23	3	I&I
J	24	2	I&I
J	28	2	I&I
K	3	3	I&I
K	5	4	I&I
K	7	2	I&I, RT
K	9	3	I&I, RT
K	10	2	I&I
K	15	2	I&I
K	36	2	I&I
L	4	2	I&I
L	7	2	I&I
L	9	2	V

L	17	3	I&I
L	19	3	I&I
L	20	2	I&I
L	25	3	I&I
L	27	3	I&I
L	34	2	I&I, RT
L	36	3	I&I, RT
M	4	3	I&I, RT
M	7	3	I&I, RT
M	9	3	I&I, RT
M	18	2	I&I
M	19.1	2	I&I
M	20	3	I&I, RT
M	22	3	I&I
M	49.1	2	I&I
M	54	2	I&I
M	55	3	I&I
N	2	2	I&I
N	12	2	I&I
N	14	3	I&I
N	16	3	I&I
N	17	3	I&I
N	22	2	I&I
N	25	2	I&I, RT
O	1	4	I&I
O	5	3	I&I, RT
O	6	5	I&I
O	14	2	I&I
O	20	3	I&I
O	21	2	I&I
O	24	2	I&I
P	5	4	I&I, RT
P	6.1	2	I&I
P	6.2	2	I&I
P	7	4	I&I, RT
P	8	4	I&I
P	9	3	I&I
P	10	3	I&I, RT
P	11	3	I&I, RT
P	13	2	I&I
P	15	3	I&I
P	23	2	I&I
P	28	3	I&I
P	29	3	I&I, RT

P	30	3	I&I
P	31	3	I&I
P	33	2	I&I
P	35	3	I&I
P	38	X	I&I
P	40	2	I&I
P	46	3	I&I, RT
P	47	3	I&I
P	48	3	I&I
P	54.1	2	I&I
Q	2	3	I&I
Q	3.1	3	I&I
Q	5	4	I&I
PVT	6.1	4	I&I
Q	7	2	I&I
Q	10	3	I&I
Q	14	4	I&I
Q	16	4	I&I
QAB	17	3	I&I
Q	20	3	I&I
Q	21	2	I&I
Q	21.1	2	I&I
Q	23	2	I&I
Q	25	3	I&I
Q	26	3	I&I
Q	28	2	I&I
Q	29	3	I&I, RT
Q	29.1	3	I&I
Q	30	3	I&I
Q	32	4	I&I
Q	46	3	I&I, NC?
R	18	3	I&I

MH/R/C			
BASIN	MH#	PRIORITY	NOTE
M	9	3	
O	1	4	
Q	25	3	
Q	29	3	
Q	32	4	

MH/RP/C			
BASIN	MH#	PRIORITY	NOTE
P	18.1	4	BUS BARN

MH/GREASE			
BASIN	MH#	PRIORITY	NOTE
E	4		
E	30		
F	9		
F	11		
F	12		
Q	21.1		

G-4 PUMP STATION DESIGN DATA

Parameter	Value/Description
Station	**G-4**
Piping:	12-inch
Type:	Ductile iron
Pump Type (Duplex)	Shaft driven self-priming variable speed centrifugal.
Brand:	Worthington Model 4MF-15
Motors:	100HP @ 1750rpm: 1/60/480V (three phase)
Drive:	Direct
Impeller Diameter	Unknown
Level Control:	Ultra sonic level sensor with float switch backup
Overflow Point:	Manholes northwest of Carnes Road
Auxiliary Power Type:	None
Alarm Type:	Float Switch, visible alarm
EPA Reliability Class I:	Yes
Tributary Flow Contributions	
ADF	4,158 gpd
$PDAF_5$	1.3 MGD
Wet Well Diameter:	Rectangular Structure 30 deep x 400 square feet plan view
Wet Well Volume:	90,000 gallons
$PDAF_5$	1.3 MGD gpd
Time to Overflow PDAF	100 minutes
Force Main	
Length:	10,249 LF
Diameter:	12"
Detention Time @ ADF	36 minutes
Material:	DI
Profile:	1960 LF Ascending, 760 LF Descending, 6800 LF Ascending
Blow-off Valve	Roberts Creek Crossing (low point)
Vacuum Release Valves:	350-ft north of intersection Doris Street and Carnes Road
Sulfide Control System:	None
Discharge	
Location:	MH C-27 Intersection of Landers Ave. and US Hwy 99/42
Condition:	Fair (Rehab channel 7 MH downstream)
Firm Capacity:	1560 gpm

BRIARWOOD PUMP STATION DESIGN DATA

Parameter	Value/Description
Station	**Briarwood**
Piping:	4-inch
Type:	DI
Pump Type (Duplex)	Submersible
Manufacturer:	Flygt Model CP3085-438
Draw down Pump # 1 at 85 % speed	244 gpm
Draw down Pump #2	159 gpm
Motors:	3HP @ 1700rpm: 3/60/230V (three phase)
Drive:	Direct
Impeller Diameter	Unknown
Level Control:	Float Switches
Overflow Point:	Manholes northwest of Carnes Road

Parameter	Value/Description
Auxiliary Power Type:	None
Alarm Type:	Float Switch, visible alarm
EPA Reliability Class I:	No
Tributary Flow Contributions	
ADF	15,960 gpd
$PDAF_5$	39,600 gpd
Wet Well Diameter:	5-foot
Wet Well Volume:	93.5 gallons per vertical foot
$PDAF_5$	39,900 gpd
Time to Overflow PDAF	46 minutes
Force Main	
Length:	60 LF
Diameter:	4"
Detention Time @ ADF	1 minutes
Material:	DI
Profile:	Ascending
Blow-off Valve	None
Vacuum Release Valves:	None
Sulfide Control System:	None
Discharge	
Location:	MH E-6
Condition:	Good
Firm Capacity:	159 gpm

The existing electrical components at the Briarwood pump station are currently housed within the wet well, exposing them to moisture and corrosive conditions (see photographs in Appendix C). Telemetry capabilities are also limited to a single high-level alarm with cellular callout, offering minimal remote visibility and no real-time operational data.

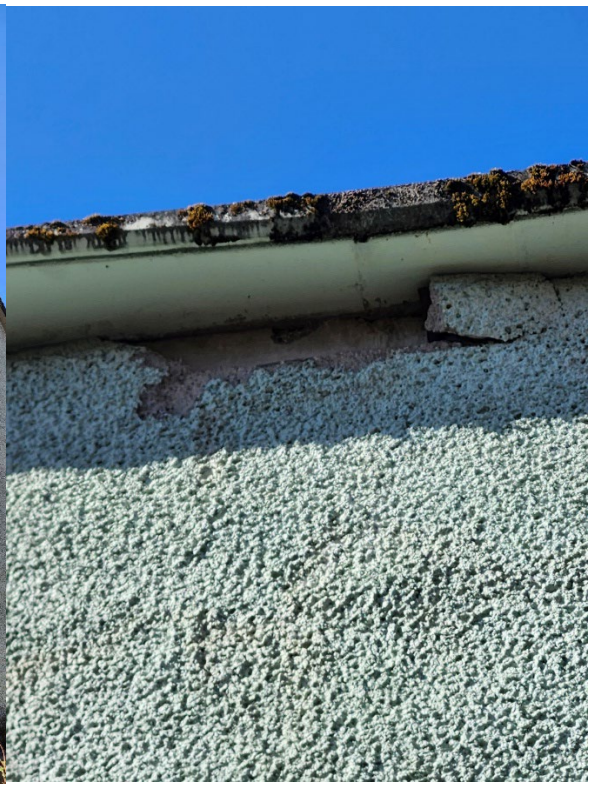
The Briarwood Pump Station currently lacks a Manual Transfer Switch (MTS), preventing the Authority from connecting a portable generator during extended power outages. In such events, operations rely on mobilizing a vacuum truck to draw down the wet well and discharge the raw wastewater to a nearby manhole. This approach is labor-intensive, costly, and increases the risk of wastewater overflows if not executed promptly. To mitigate these risks and improve emergency response capabilities, installation of an MTS is recommended. Additionally, minor electrical modifications are required to the Authority's portable generator—currently staged at the Oak Creek Pump Station—to ensure compatibility with the Briarwood station's power configuration. These upgrades may include adjustments to voltage settings, plug configurations, and load-handling capacity to meet site-specific operational requirements.… Camp Creek proposal

Old River Crossing

The Old River Crossing Pump Station, located on private property, has been decommissioned for an extended period but remains partially connected to the active distribution system via an overflow line. Although wastewater bypasses the station, the existing wet well and pump pit continue to receive intermittent flow. The facility is in a state of advanced corrosion and deterioration, posing significant environmental and public health risks. Due to these safety concerns, the site has been designated for demolition and complete disconnection from the system.

APPENDIX C: PHOTOS

SPEEDWAY TANK



HIGHLAND PUMP STATION

MAIN TANK

ROBERTS CREEK PUMP STATION

RAW WATER INTAKE

RAW WATER PUMP STATION

BACKWASH PONDS

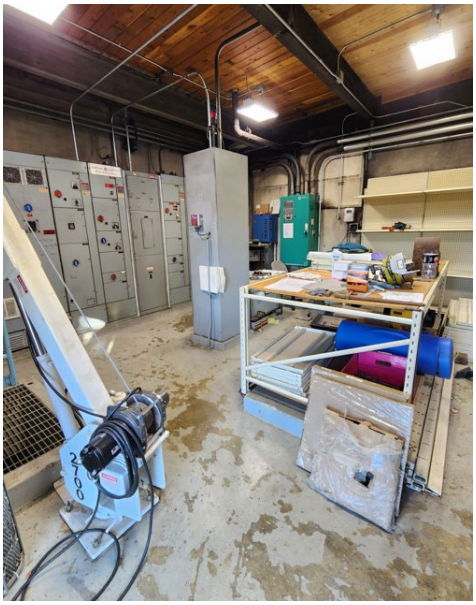
ONSITE GENERATION SYSTEM

TURBIDIMETERS

TREATED WATER PUMPS

G4 PUMP STATION (FLOW METER LOCATION)

G4 PUMP STATION



G4 PUMP STATION

BRIARWOOD PUMP STATION

OLD RIVER CROSSING

OAK CREEK PUMP STATION

MH C22

MH P2-P5

MH Q25