2023 Osoyoos Water System Infrastructure Plan

Town of Osoyoos

Osoyoos
Canada's warmest welcome ®*

July 2023

Project No. 302-2061

TRUE

ENGINEERING ■ PLANNING ■ URBAN DESIGN ■ LAND SURVEYING

201-2079 Falcon Rd | Kamloops BC | V2C 4J2 | www.true.bc.ca | tel 250.828.0881 | fax 250.828.0717| Permit to Practice #: 1000129

Distribution List

# of Hard Copies	PDF Required	Association / Company Name

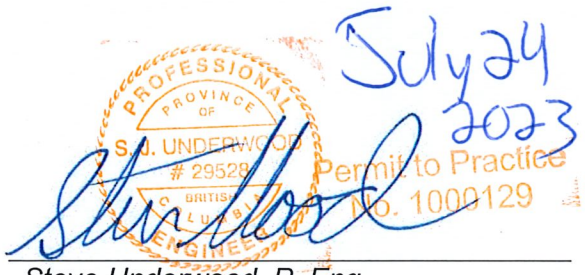
Revision Log

Revision #	Revised by	Date	Issue / Revision Description
	AM	July 24, 2023	Issued for Client

Report Submission

Report Prepared By:

Report Reviewed By:



Anthony Martins, EIT
Project Engineer

Steve Underwood, P. Eng.
Project Engineer

R:\Clients\300-399\302\302-2061\05 Reports\2022 Osoyoos Water System Capital and AM Plan\302-2061 Osoyoos Water System Infrastructure 20230724-FINAL.docx

Table of Contents

1.0 Town of Osoyoos Domestic Water System 1

1.1 Introduction 1

1.2 Background 2

1.2.1 Existing Water System 2

1.2.2 Supply Sources 5

1.3 Reservoirs 8

1.3.1 Domestic Reservoirs 8

1.3.2 Irrigation Reservoirs 9

1.4 Water Quality and Treatment 9

2.0 Domestic Water System Asset Management Plan 11

2.1 Expected Service Life 11

2.1.1 Risk-based Expected Service Life 11

2.2 Average Annual Investment and Asset Summary 13

2.3 Annual Total Replacement Costs 15

2.4 Reserve Balance Model 16

3.0 Domestic Water System Capital Plan 18

3.1 Water Demand and Performance Criteria 18

3.1.1 Historical Demand Data 19

3.1.2 Population Projections 21

3.1.3 Demand Forecasts 21

3.2 Fire Flow Requirements 24

3.3 Pressure Requirements 24

3.4 Reservoir Capacity Assessment 25

3.5 Hydraulic Model & Proposed Upgrades 27

3.5.1 Hydraulic Model 27

3.5.2 Hydraulic Model Results 28

3.5.3 Proposed System Upgrades Summary 41

4.0 Domestic Water System Implementation Pan 42

4.1 Work Forecast 42
4.1.1 Replacement Projects 50
4.2 Capital Projects Average Annual Investment 55
4.3 Pro-active Projects Average Annual Investment 57
4.4 Reserve Balance Model 59
4.4.1 Capital and Pro-active Projects Reserve Balance Update 59
4.4.2 Work Forecast Reserve Balance Update 60
4.5 Capital and Pro-active Project Financing Model 63
4.6 Monthly Service Fee Summary 65
5.0 Conclusions and Recommendations 66

APPENDICES

Appendix A – System Composite Drawings
Appendix B – Asset Inventories for Component Categories
Appendix C – Annual Replacement Cost for System Component Categories
Appendix D – Reserve Balance Forecast
Appendix E – Proposed Capital Project Sheets
Appendix F – Water Treatment Plant Distribution System Upgrades
Appendix G – Project Replacement Costs and Modified Assets
Appendix H – Project Layout Figure
Appendix I – Capital and Pro-active Projects Asset Management
Appendix J – Capital and Pro-active Financing Models

List of Tables

Table 1-1: Groundwater Well Specifications 6
Table 1-2: Domestic System Pump Rates and Well Yields 7
Table 1-3: Reservoir Summary 8
Table 1-4: Irrigation Reservoir Summary 9
Table 1-5: Health Canada Manganese Guidelines 10
Table 2-1: Risk Category and Total Pipe Quantity 12
Table 2-2: Risk based ESL Factor Summary 13
Table 2-3: Asset Summary, Expected Service Life, and Average Annual Investment 14
Table 3-1: Historical Census Population 19
Table 3-2: System 8 and 9 Twinning Additional Connections 19
Table 3-3: 2021 Total Serviced Population 19
Table 3-4: Average Consumption over last 5 years 21
Table 3-5: Population projections 21
Table 3-6: Forecasted Water Consumption with Metering 22
Table 3-7: Well Installation Dates with Water Conservation 22
Table 3-8: Well Installation Dates without Water Conservation 23
Table 3-9: Fire Flow Requirements Based on MMCD. 24
Table 3-10: System Pressure Guidelines 24
Table 3-11: Reservoir Sizing requirements 25
Table 3-12: Revised Required Reservoir Storage 26
Table 3-13: Hydraulic Model Constraints 28
Table 3-14: Source Water Well Strategy Summary 36
Table 3-15: Proposed System and Water Treatment Upgrades 41
Table 4-1: Existing Asset Replacement Projects 46
Table 4-2: Watermain Replacement Projects 47
Table 4-3: Capital Projects Summary 48
Table 4-4: Pro-Active Projects 49
Table 4-5: Engineering Projects 49
Table 4-6: AAI Summary for Proposed Capital Projects 56
Table 4-7 AAI Summary for Proposed Pro-active Projects 58
Table 4-8: Cumulative Monthly Service Fee Increase Comparison 62
Table 4-9: Recommended Incremental Monthly Service Fee Increase 65

List of Figures

Figure 1-1: Osoyoos Domestic Water System Pipe Inventory Summary 4
Figure 1-2: Groundwater Well Locations 6
Figure 1-3: Irrigation Source Water Intakes 8

Figure 2-1: Total Length of Pipe per Risk Category....12
Figure 2-2: Total Average Annual Investment Break Down....13
Figure 2-3: Annual Total Replacement Costs....16
Figure 2-4: Reserve Balance Model (UPDATE)....17
Figure 3-1: Historical Consumption Data....20
Figure 3-2: MDD Analysis with Water Conservation....22
Figure 3-3: MDD Analysis without Water Conservation....23
Figure 3-4: Scenario 1 Fire Flow Results....30
Figure 3-5: Scenario 2 Fire Flow Results....31
Figure 3-6: Scenario 3 Fire Flow Results....32
Figure 3-7: Scenario 4 Fire Flow Results....33
Figure 3-8: Scenario 5 Fire Flow Results....34
Figure 3-9: Scenario 6 Fire Flow Results....35
Figure 4-1: Replacement, Capital Work, Pro-Active and Engineering Project Forecast....45
Figure 4-2: Capital Replacement Cost and Cumulative AAI Forecast....57
Figure 4-3: Capital Projects Reserve Balance Forecast....60
Figure 4-4: Work Forecast Reserve Balance Model....62
Figure 4-5: Capital Financing Model....63
Figure 4-6: Pro-active Project Financing Model....64

List of Acronyms

AC	Asbestos Cement
ALR	Agricultural Land Reserve
DI	Ductile Iron
FF	Fire Flow
FRP	Fiberglass Reinforced Plastic
HDPE	High Density Polyethylene
MSF	Monthly Service Fee
PE	Population Equivalent
PHD	Peak Hour Demand
PRV	Pressure Reducing Valve
PS	Pump Station
PVC	Polyvinyl Chloride
OCP	Official Community Plan
ODSB	Osoyoos Development and Servicing Bylaw
OIB	Osoyoos Indian Band
SCADA	Supervisory Control and Data Acquisition
TRUE	TRUE Consulting
WTP	Water Treatment Plant

Units of Measure

ft	feet
Igpm	Imperial gallons per minute
km	kilometre
L/d	Litres per day
L/m	Litres per minute
L/s	Litres per second
lpcd	Litres per capita per day
m	metre
mg/L	milligrams per Litre
mm	millimetre
NTU	Nephelometric Turbidity Units
psi	pounds per square inch
USgpm	US gallons per minute

Referenced Reports

2021 WWTP Long Term Plan	Analysis of Osoyoos WWTP, "2021 WWTP Long Term Plan", April 2021
Guide to the Amortization of Tangible Capital Assets	Government of British Columbia – Local Government Infrastructure and Finance Division. Guide to the Amortization of Tangible Capital Assets, May 2008
Osoyoos Water Supply Options Assessments	Analysis of Long-term water supply options, "Osoyoos Water Supply Options Assessments", February 2020
Osoyoos Domestic Water System Asset Management Plan	TRUE, "Osoyoos Domestic Water System Asset Management Plan", 2023

1.0 Town of Osoyoos Domestic Water System

1.1 Introduction

TRUE Consulting (TRUE) has been retained by the Town of Osoyoos to perform an analysis of the existing domestic system to identify future system upgrades based on Asset Management (AM) and Capital Planning. The purpose of this report is to evaluate the domestic water network performance under existing and future conditions to develop a guide for staged system improvements and expansions.

The general scope of work has been completed for this project:

- An analysis on the Town's water demand profile.
- A review of the Town's treated water storage reservoirs.
- Design criteria utilized for water modelling purposes.
- A review of the performance of the existing water system.
- Proposed water system upgrades to address system deficiencies.
- Develop a system composite model with GIS software to create asset inventories based on:
    - Review of record drawings and survey data, and
    - Review of Official Community Plan (OCP) for future land use.
- Develop a domestic water system model using WaterCAD Software.
- Develop a reserve balance model considering average annual investment and monthly service fee (MSF).
- Develop a 20-year horizon work plan for capital and replacement projects.
- Preparation of a report to summarize the analysis and recommendations for replacement, rehabilitation, improvement, and implementation of infrastructure.

This report is separated into four (4) main sections which include the:

1. Town of Osoyoos Domestic Water System,
2. Domestic Water System Asset Management Plan,
3. Domestic Water System Capital Plan, and
4. Domestic Water System Implementation Plan.

The first section describes the current system and serves as the basis for developing a composite system model. The composite system model then serves as the basis for developing asset inventories and the hydraulic model. Asset inventories are used for asset management which is the focus of Section 2.0. This section provides a risk-based approach for system assets, average annual investment figures, and a reserve balance model. Section 3.0 analyzes the hydraulic model as the basis for capital works planning. Based on the system performance and identified deficiencies, proposed system upgrades are recommended and accompanied by

cost estimates. Lastly, Section 4.0 discusses the implementation of the recommendations as presented in Section 2.0 and Section 3.0. This section provides a work forecast including replacement and capital project for a 20-year horizon, updated reserve balance model to calculate incremental MSF increase, capital financing model and a proposed incremental MSF increase forecast.

1.2 Background

The Town of Osoyoos domestic water system consists of six (6) active wells, and four reservoirs. Additionally, the Town is proceeding with an extensive test well drilling program to ensure long-term viability of groundwater sources. The domestic water system serves approximately 3,500 connections with high volume consumers being monitored with water meters. The Town is currently working on implementing meters and an associated tiered user fee structure on all other users.

The Town of Osoyoos currently has two separate water systems. One system serves the domestic users throughout the year, and a second system supplements irrigation water to users throughout the irrigation season. Detailed system composite drawings are presented in Appendix A: Water System Composite Drawings.

The Town's irrigation water system operates during the high irrigation demand months. This system consists of two separate pipe networks known as System 8 and System 9, two lake intakes, and one reservoir. The system operation is based primarily on pressure switches in the pipe network. The reservoir serves as storage for pump control throughout the winter months and provides any irrigation system demands throughout the times when the lake intakes are not operational.

Since 2017, the Town has been working to twin Irrigation Systems 8 and 9. This will allow for both a domestic and irrigation service to be provided to users in those service areas. Recently, the System 8 and System 9 twinning projects have been completed and commissioned.

1.2.1 Existing Water System

1.2.1.1 Domestic Water System

The Town's domestic water system consists of approximately 77.6 km of conveyance pipe, 272 hydrants, 815 valves, one pressure reducing valve (PRV) station, two pump stations, six active source water wells and pump houses, four reservoirs and chlorination at each pump house. Groundwater is extracted and treated with hypochlorite at the well pumphouses and conveyed to the reservoirs via well pumps and pump stations (PS). Subsequently, treated water is gravity fed from the reservoirs to the domestic pipe network. The pipe network is separated into five zones corresponding to source reservoir or separate irrigation networks. These zones are as follows:

- 340 Pressure Zone,

- Industrial Park,
- Dividend Ridge,
- System 8,
- System 9.

All domestic connections provided by the Town of Osoyoos are sourced from groundwater wells that lie within the Town's municipal boundaries. Groundwater is pumped into the distribution system which conveys flow to the reservoirs during pumping. When the pumps are not running, the reservoir provides flows to the distribution system.

The water distribution system is owned and operated by the Town of Osoyoos with records showing the earliest pipe installation being completed in 1959. In general, asbestos cement (AC) pipe was predominantly installed prior to 1979 and polyvinyl chloride (PVC) pipe being predominantly installed post 1979. AC pipe within the system is concentrated in the older areas of town. These areas generally include the town core, and developments south of downtown and on the east side of the Osoyoos lake crossing. As the pipe network begins to expand outwards, PVC becomes the predominant pipe material. These areas generally include the tertiary areas of the town core, repairs on the AC pipes, Dividend Ridge, Industrial Park, System 8, System 9, and post 2000 developments east of Osoyoos Lake. Other pipes include ductile iron (DI) and high-density polyethylene (HDPE). DI pipe was installed in the late 1970s and 1980s at the lake crossings. Similarly, HDPE pipe was installed at the lake crossing in 2018 to 2021 by directional drilling to twin the lake crossing to increase capacity.

The existing water distribution network generally consists of the following components:

- Approximately 52.7 km of PVC watermain (sizes including 50 mm, 75 mm, 100 mm, 150 mm, 200 mm, 250 mm, 300 mm, 3500 mm and 400 mm)
- Approximately 23.7 km of AC watermain (sizes including 100 mm, 150 mm, 200 mm, 250 mm and 300 mm)
- Approximately 763 m of HDPE watermain (sizes including 50 mm, 350 mm DR11[1] and 450 mm DR11[1])
- Approximately 434 m of DI watermain (sizes include 250 mm and 300 mm)

A summary of the existing watermain by size, material, and age is presented in Figure 1-1, on the following page. This graph shows the distinct pivot from AC to PVC pipe installation in 1979. For this reason, any assumed pipe materials for pipes with known installation dates are assumed to be AC prior to 1979 and PVC post 1979. These assumptions will be discussed in greater detail in Section 3.5.

[1] DR11 assumed based on pressure requirements.

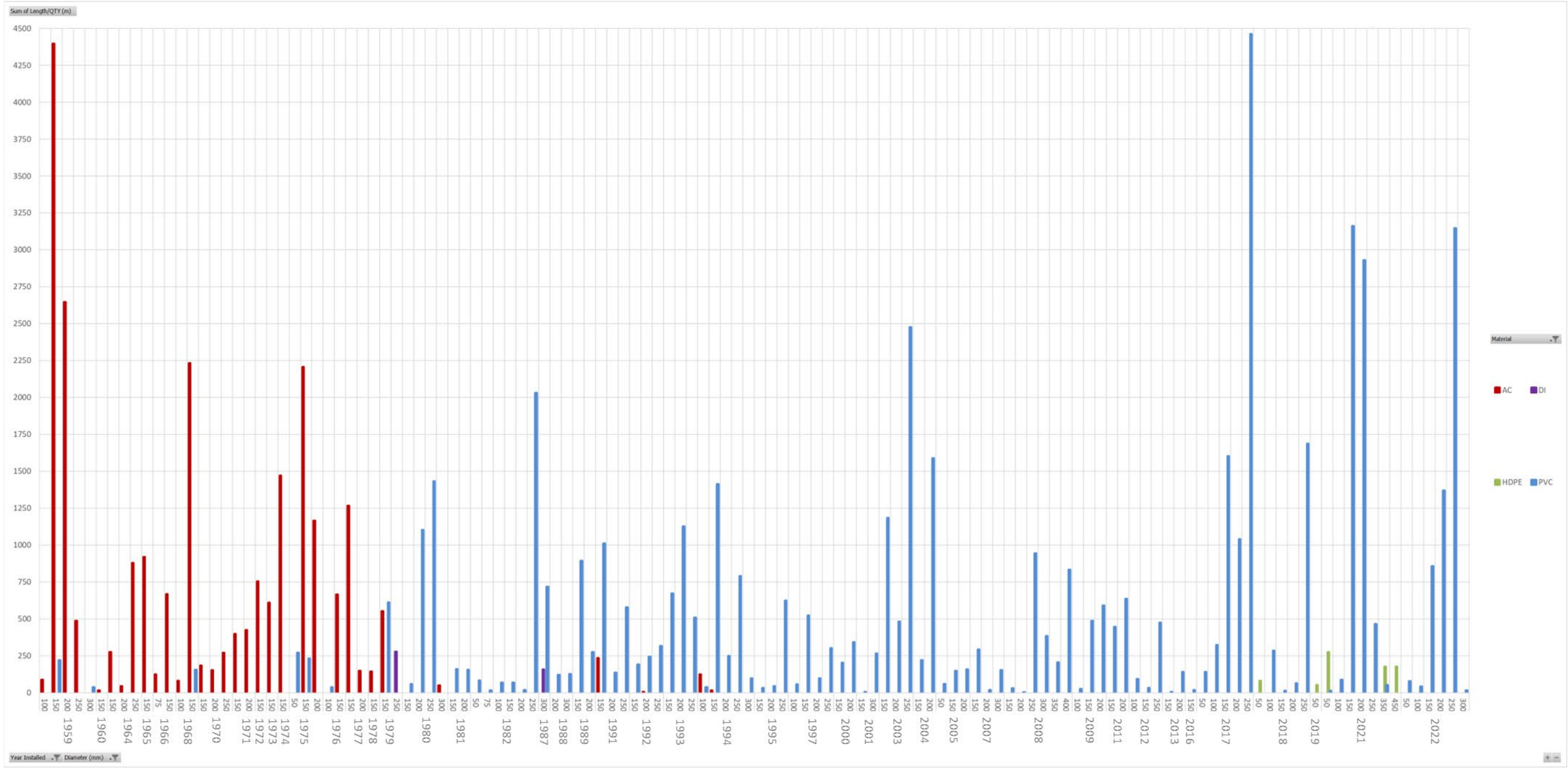


FIGURE 1-1: OSOYOOS DOMESTIC WATER SYSTEM PIPE INVENTORY SUMMARY

1.2.1.2 Irrigation Water System

Until 1990, the South Okanagan Lands Irrigation District (SOLID) owned and operated System 8 and 9 and provided its users with irrigation water via the lake intakes. In 1990, SOLID was dissolved, and the ownership/operation of the Systems was transferred to the Town of Osoyoos. These systems provide irrigation water to 610 hectares of agricultural land, and 500 domestic users prior to the recent System 8 and 9 twinning projects. This project consisted of extending the potable water system to allow for the domestic water and irrigation system to be independent.

Prior to twinning, System 8 and 9 were supplied by an inter-connection to the domestic water system during non-irrigation months. During the irrigation months (increased demand), these connections were isolated and both systems were supplied by lake intakes. This was the main cause for the twinning project to allow water from the domestic system to be supplied consistently throughout the year.

Currently, the irrigation system is still operated via pump stations to provide system pressure. Pressure monitors in each pumphouse start and stop the pumps as required to maintain operating pressure. Also, the existing concrete reservoir connected to the irrigation system is still in use and functions as balancing volume.

1.2.2 Supply Sources

1.2.2.1 Domestic Water System Supply

The Town's domestic water system is currently sourced from groundwater wells located throughout the municipality. There are six operational wells (#1, #3, #4, #5, #6, #8) and one additional groundwater source considered non-viable (Well #7). Well locations can be seen in Figure 1-2. Each operational well is accompanied by a pumphouse which houses the mechanical and electrical components of these systems. In general, these components include controls, electrical, hypochlorite injection system, piping, and the well pump. The well pumps provide treated water flows to the system, 340 reservoir or Fairway booster station.



FIGURE 1-2: GROUNDWATER WELL LOCATIONS

This system is analyzed using an 'n-1' approach to the capacity of the system. The 'n-1' approach assumes that there is always 1 well not in use. It is assumed that the well with the highest pump capacity is excluded which makes the result of the 'n-1' analysis conservative and allows for system redundancy. Based on the maximum supply flows summarized in Table 1-1, the 'n-1' system capacity is 191 L/s or 16.5 MLD. Although the 'n-1' analysis is considered the best practice for analyzing system capacity, it generally implies that the system is undersized by assuming system redundancy. However, it is common that existing water systems operate at full capacities. Furthermore, it is advised that the presented sustainable well yield in Table 1-1 may not reflect the total or actual capacity of each well because well degradation over its lifespan.

TABLE 1-1: GROUNDWATER WELL SPECIFICATIONS

	POWER (HP)	MAX SUPPLY (US GPM)	MAX SUPPLY (L/S)	DAILY SUPPLY (MLD)
WELL #1	50	400	25	2.2
WELL #3	75	600	38	3.3
WELL #4	75	750	47	4.1
WELL #5	100	1200	76	6.5
WELL #6	50	575	36	3.1
WELL #8	75	700	44	3.8
TOTAL		4225	267	23.0
'N-1' SYSTEM CAPACITY		**3025**	**191**	**16.5**

**Note: Well #7 was rejected by the Ministry of Health due to proximity of sewer infrastructure.*

The system capacity can also be assessed based on the available pump capacity in each well. TRUE conducted an analysis of the 2022 Scada data to assess pump capacities which are summarized in Table 1-2. These results are interpreted because periods of erroneous data are present in each data set. In general, average pump rates were determined based on periods of Scada data with consistent pump rates. These pump rates were also compared to the well pump curves to ensure that the interpreted pump rates were reasonably on the pump curve. Based on this analysis, the system capacity is limited by the pumping capacity. Thus, the total system capacity is approximately 19.8 MLD and the 'n-1' system capacity is 13.9 MLD.

	Max Supply (US GPM)	Daily Supply (MLD)
Pump #1	440	2.4
Pump #3	660	3.6
Pump #4	700	3.8
Pump #5	1080	5.9
Pump #6	200	1.1
Pump #8	550	3.0
Total	**3630**	**19.8**
'n-1' System Capacity	**2550**	**13.9**

Table 1-2: Domestic System Pump Rates and Well Yields

These pump rates were also compared against the historic records of sustainable well yields as presented in Table 1-1. This comparison is listed per well below.

- Well #1 and #3
  - These wells appear to be operating marginally above the available well capacity. This is likely due to lower system pressure during high demand events.
- Wells #4, #5 and #8
  - These wells are operating marginally below the well capacity. It is recommended that these pumps be re-sized when replaced.
- Wells #6
  - This pump capacity is undersized compared to the well capacity. It is unclear whether this is because of the pump sizing or if manganese fouling is impacting pump performance.

1.2.2.2 Future Groundwater Sources

The Town of Osoyoos has embarked on a test well drilling program to determine the viability of future groundwater sources within the municipal boundaries. This work is ongoing and initial results indicate that a viable groundwater source may be present in the vicinity of Cottonwood Drive and Maple Drive. The necessity for future groundwater sources will be discussed in further detail in Section 3.1.3.

1.2.2.3 Irrigation Water Sources

Irrigation water is supplied from surface water in Osoyoos lake at Intake #8 (North Basin) and Intake #9 (Central Basin). These locations are presented in Figure 2-2. These intakes are shallow and are at a high risk of poor water quality. Regardless, the surface water used for irrigation is chlorinated.



FIGURE 1-3: IRRIGATION SOURCE WATER INTAKES

1.3 Reservoirs

1.3.1 Domestic Reservoirs

The domestic water system comprises a total of three pressure zones. Each zone is serviced by one reservoir with the exception of the 340 Zone which has two reservoirs. These reservoirs are summarized below in Table 1-3. Each reservoir is located on the west bench in Osoyoos at different elevations.

TABLE 1-3: RESERVOIR SUMMARY

RESERVOIR	MATERIAL	YEAR OF CONSTRUCTION	VOLUME (M^3)
340 ZONE	CONCRETE	1965	1350
340 ZONE	CONCRETE	2012	2550
INDUSTRIAL PARK	CONCRETE	1980**	1,000
DIVIDEND RIDGE	CONCRETE	1993	1,100
		TOTAL	**6,000**

**Confirmed during site visit May 2023.*

***Date corresponds to legal survey from original site development.*

In 2012, the 340 Zone system was upgraded with an additional reservoir. The 340 reservoir and pressure zone services most of the domestic water system east of highway 97 and the twinned sections of System 8 and 9. The Industrial Park and Dividend Ridge pressure zones correspond to developments on the Osoyoos west bench at a greater elevation than the 340 reservoirs. As such reservoirs were installed to service these two developments. The Industrial Park reservoir services Industrial Park, the Secondary School, and Desert Park. The Dividend Ridge Reservoir services the Dividend Ridge neighborhood and the Golf Course Clubhouse.

Water is supplied to these reservoirs by pump stations. Flows from the 340 reservoirs are conveyed to the industrial park reservoir by a pump station located at the 340 reservoir site. Flows from the domestic water system are boosted to the dividend ridge reservoir by the Fairway Pump Station located SE of the Fairway Golf Course.

1.3.2 Irrigation Reservoirs

As mentioned in Section 2.1.2 the irrigation water system is mainly controlled by pipe system pressure during the irrigation season. Pressure monitors in each pumphouse start and stop supply pumps as required to maintain a set supply pressure. In the winter months, mid-October to mid-April annually, a reservoir located on the Osoyoos West Bench south and adjacent to the municipal 340 reservoirs is put into service. This reservoir has an operating capacity of 482,000 L (130,000 USgal). In the winter months, water is supplied by Well No. 6 which is controlled by reservoir level.

TABLE 1-4: IRRIGATION RESERVOIR SUMMARY

RESERVOIR	MATERIAL	VOLUME (M^3)
#9 RESERVOIR	CONCRETE	480
	TOTAL	**480**

1.4 Water Quality and Treatment

Manganese in the Town of Osoyoos water system is a historic and ongoing aesthetic and operational issue. When chlorine is added to water containing manganese, dissolved manganese precipitates which causes the treated water to have a translucent orange appearance. These solids will settle in reservoirs and foul pipe walls, creating an environment for bacterial growth. Currently, all reservoirs and watermains in Osoyoos are impacted by manganese deposits and fouling. The manganese precipitate is removed during routine reservoir cleaning and pipes are scoured from high velocity flows during high demand periods or flushing. However, historical maintenance practices have not been successful at addressing manganese impacts in the distribution system. Therefore, a manganese removal system is required alongside any chlorine treatment plants that are implemented as adding chlorine to the groundwater enhances manganese precipitation.

In 2019, Health Canada implemented guidelines around the acceptable concentrations of manganese in drinking water. These regulatory criteria can be viewed in Table 1-5, below.

TABLE 1-5: HEALTH CANADA MANGANESE GUIDELINES

	MAC (MG/L)	AO (MG/L)	HEALTH CONSIDERATIONS
Manganese	0.12	0.02	Effects on neurological development and behaviour; deficits in memory, attention, and motor skills.

MAC – Maximum Acceptable Concentration: is a level that has been established for certain substances that are known or suspected to cause adverse health effects.
AO – Aesthetic Objective: levels of substances or characteristics of water that can affect its acceptance by consumers, cause problems with water distribution systems and fixtures, or interfere with practices for supplying good quality water.

Osoyoos water historically has elevated manganese concentrations above 0.15 mg/L which consistently exceed the criteria in Table 1-5. Thus, the excessive manganese in the Osoyoos domestic water system must be treated as per the updated regulation. In a report titled *Osoyoos Water Supply Options Assessment* (TRUE 2020), three options were presented to address the current manganese concentrations in Osoyoos. The three options presented are as follows:

- Option 1 – Groundwater with Two Manganese Removal Plants
- Option 2 – Groundwater with Three Manganese Removal Plants
- Option 3 – Surface Water with Membrane Treatment

Option 1 includes two proposed manganese removal plants and is currently the favored option as it presents lower life cycle costs. This option includes the combination of a primary and secondary WTP. Two locations have been identified for the primary treatment plant. The first being located at the Kingfisher Plant in Jack Shaw Gardens, with the second located at Lot 1 EPP107350 near Cottonwood Park (Cottonwood). Each treatment facility contains a biological manganese removal system, with onsite chlorine generation and contact tanks. For both treatment plants to be supplied by all current source wells, an underground lake crossing is required to convey raw water from Wells 3, 4, and 5. The underground watermain was recently installed beneath the Osoyoos Narrows. Lastly, the secondary WTP for both scenarios is located at Well #6 at Spartan and 92nd.

For more details and Hydraulic Modelling results, see Section 3.5.2.3. Cost associated with the recommended manganese treatment system projects are discussed in further detail in Section 3.5.3.

2.0 Domestic Water System Asset Management Plan

The following sections analyzes the GIS system composite model from an asset management (AM) perspective. The GIS system composite was developed as a georeferenced data base to create asset inventories. To develop the GIS system composite model. An in-depth review of the Town's linear assets, hydrants, valves, PRV stations, pump stations, source water wells and pump houses, reservoirs and treatment system were required. Detailed system composite drawings are presented in Appendix A: Water System Composite Drawings. Complete asset inventory tables can be viewed in Appendix B.

Asset management analysis was completed with the asset inventory tables. Each asset was assigned a replacement cost and an expected service life (ESL). This information was then used to calculate the annual average annual investment (AAI). The AAI is calculated as the total replacement cost divided by the ESL. This represents the total value required to be placed in reserve to fund upcoming replacement costs for each asset. In addition to this, annual total replacement costs and a reserve balance model were developed to anticipate future cashflow.

2.1 Expected Service Life

The domestic water system components as described in Section 1.0 have been categorized for the purpose of assigning ESL values. The ESL was determined based on two separate methods for non-linear and linear assets. For non-linear assets, the ESL is typically referenced from the BC Government *Guide to the Amortization of Tangible Capital Assets (BCGATCA) 2008.* For linear assets, a risk-based method was implemented (as discussed in Section 2.1.1.). In practice, ESL estimates are based on best practices, and it is common that assets outlast their expected service life. For this reason, some of the service lives have been adjusted due to the extensive experience TRUE has with these materials. Specifically, AC pipe in Osoyoos has been assigned a service life of 65 years opposed to 50 as recommended by BCGATCA. The ESL for categorized system components are summarized in Table 2-3.

2.1.1 Risk-based Expected Service Life

A simple risk model was developed to identify and prioritize replacement projects. This model was based on the following risk equation:

$$Risk = Criticallity \times Probibility$$

Probability was determined based on remaining useful life which is a function of material and installation year. Criticality is based on the size of pipe, indicating the capacity to convey high flows. Once the risk was determined, the assets were classified into high, medium, and low risk categories. Table 2-1 provides a break-down of the risk categories with the total length of pipe and the percentage of the total system per category. This is also presented in Figure 2-1. This

graph shows the total length of pipe per diameter for each pipe material categorized by risk. It is observed that all high-risk pipe corresponds to 200 mm to 250 mm AC pipe. For these pipes, the probability of failure is high because the installation date ranges from 1959 to 1964. Considering low-risk pipe, PVC pipe is predominantly at low risk because it was installed post 1979. Specifically, the probability is low because it is not nearing its ESL (80 years). For asset specific probabilities and criticality ratings, see Table B1 in Appendix B. Furthermore, a system composite drawing showing color coded pipes by risk rating is present in Appendix A.

TABLE 2-1: RISK CATEGORY AND TOTAL PIPE QUANTITY

RISK	LENGTH (KM)	%
High	4.1	5.3%
Medium	8.6	11.0%
Low	64.9	83.7%

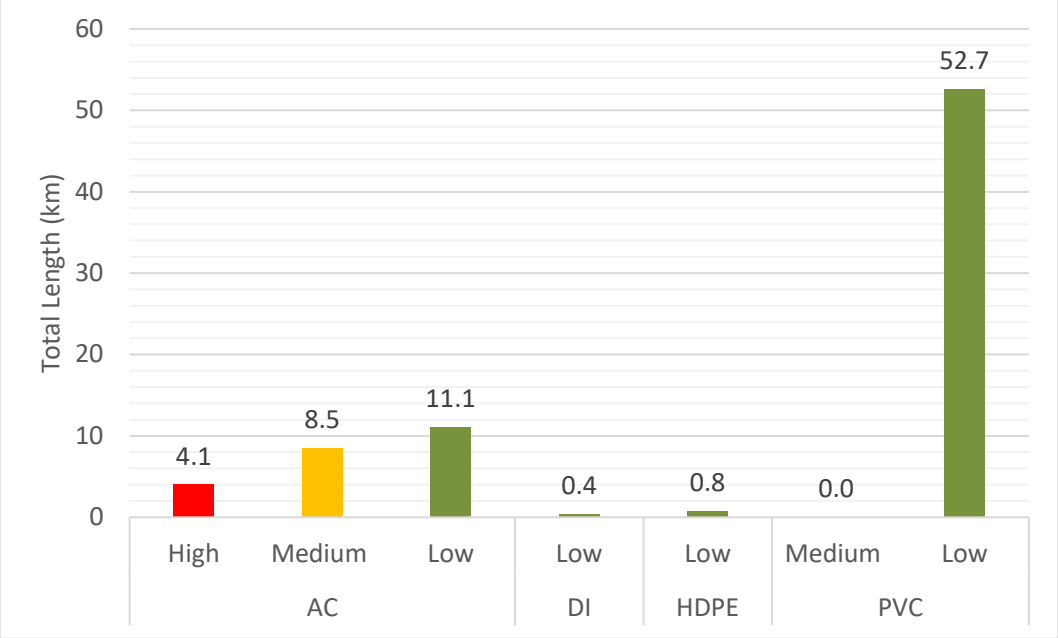


FIGURE 2-1: TOTAL LENGTH OF PIPE PER RISK CATEGORY

The risk-based method for determining ESL values is a practical tool to incorporate into system planning. This approach informs decision making for capital projects and assists with prioritization for replacement projects based on impacts to the system performance. Risk is also used to infer a linear asset's ESL value which can be reasonably modified to extend or decrease the ESL. For the purposes of this report, linear asset ESL values are calculated by multiplying the BCGATCA or experienced based ESL by a risk-based ESL factor. These factors are presented in Table 2-2 which show a decrease in ESL for high-risk assets and an increase in ESL value for low-risk assets.

TABLE 2-2: RISK BASED ESL FACTOR SUMMARY

RISK	ESL MULTIPLIER
High	0.8
Medium	1
Low	1.2

This is a more practical approach for considering system replacements because the majority of the system is at a low risk of impacting the system. Thus, the ESL on most pipes can be extended which reduces the AAI value. This provides a more manageable AAI goal for the Town.

2.2 Average Annual Investment and Asset Summary

The AAI was determined for each of the system components and presented in Figure 2-2. This value is calculated based on amortizing the replacement cost for each system component over the ESL of that system component. This method of calculating the AAI allows for continual replacement of system components. AAI values for each component category are presented in Table 2-3 and visually shown in Figure 2-2. In summary the total system AAI is calculated as approximately $1,475,300. These values are intended for general use and updates to the anticipated AAI should be made based on actual system maintenance and upgrades.

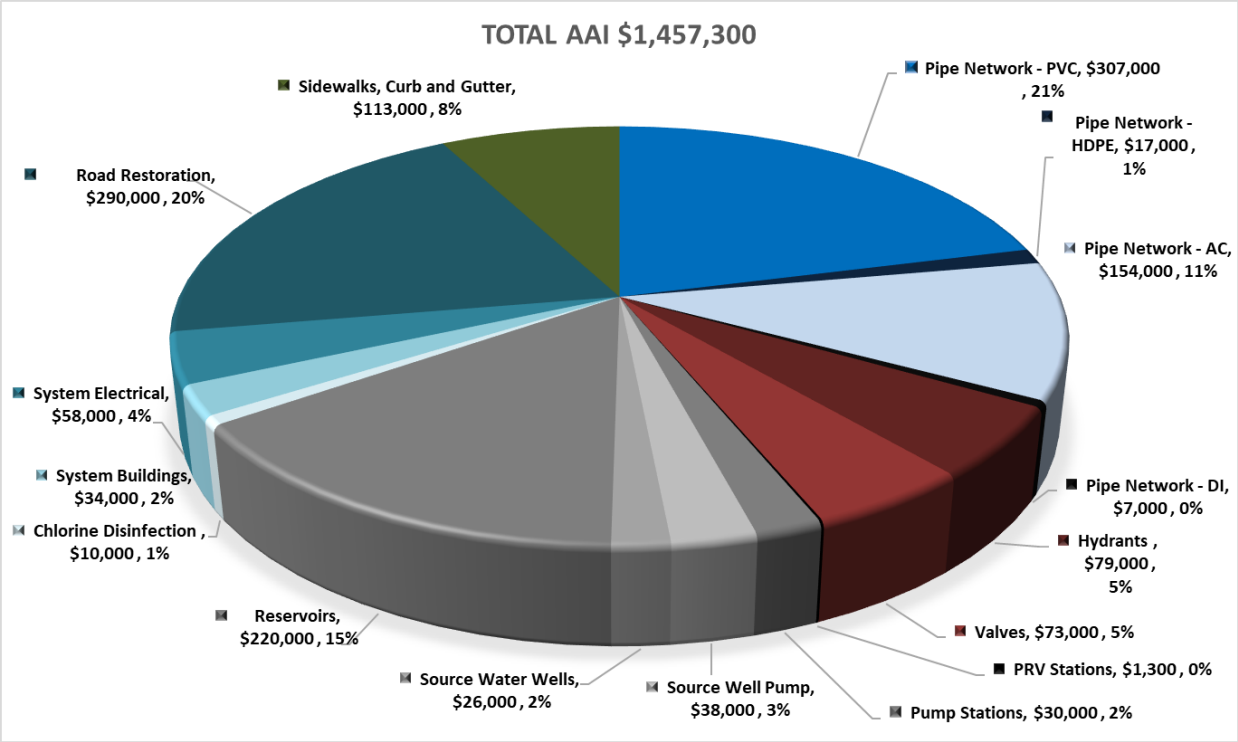


FIGURE 2-2: TOTAL AVERAGE ANNUAL INVESTMENT BREAK DOWN

TABLE 2-3: ASSET SUMMARY, EXPECTED SERVICE LIFE, AND AVERAGE ANNUAL INVESTMENT

PROJECTS	EXPECT SERVICE LIFE	Total REPLACEMENT COST (2023 CAD$)	AAI (2023 CAD$ PER YEAR)
PIPE NETWORK - PVC	**80 – 96***	$21,630,000	$307,000
PIPE NETWORK - HDPE	**80 – 96***	$1,474,000	$17,000
PIPE NETWORK - AC	**65 – 72***	$6,914,185	$154,000
PIPE NETWORK - DI	**65 – 72***	$475,000	$7,000
HYDRANTS	**40**	$3,168,000	$79,000
VALVES	**40**	$2,921,000	$73,000
PRV STATIONS	**40**	$50,000	$1,300
PUMP STATIONS	**20**	$600,000	$30,000
SOURCE WELL PUMP	**20**	$750,000	$38,000
SOURCE WATER WELLS	**60**	$1,550,000	$26,000
RESERVOIRS	**50**	$10,980,000	$220,000
CHLORINE DISINFECTION	**25**	$250,000	$10,000
SYSTEM BUILDINGS	**75**	$2,550,000	$34,000
SYSTEM ELECTRICAL	**15**	$875,000	$58,000
ROAD RESTORATION	**PIPE BASED**	$24,776,000	$290,000
SIDEWALKS, CURB AND GUTTER	**PIPE BASED**	$9,647,000	$113,000
	TOTAL	$100,099,232	$1,457,300

*Risk based ESL values are dynamic and change per pipe based on individual risk scores.
Note: Total Replacement Cost does not include Engineering (15%) and Contingency (30%).

Services were accounted for by adding $150 per linear meter of pipe. This accounts for approximately $3500 per service connection to be replaced when the corresponding pipe is replaced. Also, AAI values for road restoration, and Sidewalks, curb and Gutter are based on replacement with corresponding pipes. These values were determined with an equivalent cost per linear meter of pipe. A sample set of pipe (all watermain replacement projects later discussed in Section 4.1.1) was used to quantity the amount of road restoration and, sidewalk, and curb and gutter corresponding to these pipes. For road restoration, the rate was based on a weighted average of the cost to replace residential roads (71% of pipe) and commercial roads (29%). For Sidewalk, curb and gutter, the rate was calculated based on the percentage of pipe requiring sidewalk, and curb and gutter removal (23%). Thus, 23% of the sidewalk, and curb and gutter rates were applied to each linear meter of pipe. Furthermore, the ESL for this infrastructure is less than that of pipes. However, this work will only occur when pipe replacement is undertaken.

It is Important to note that the AAI is calculated for assets that are a like for like replacement which will be funded by reserves. This distinction is critical when considering funding

avenues for future projects, specifically capital funded projects. Capital funding can offset the AAI values (contributing to reserves) if a current asset is being modified under a capital funded project. In Section 3 of this report, capital projects are proposed that will modify and replace existing infrastructure. For the purposes of this report, it is assumed that any assets being modified, replaced, or removed in the proposed capital projects will be funded by capital budgets. Thus, these assets were removed from the AAI calculation. A breakdown of these assets is provided in Section 4.0.

This practice has a certain risk when considering the feasibility of completing the capital project. If the capital project is not completed, no reserves would be set aside for replacement of the infrastructure. If this is the case, the breakdown of these assets (in Section 4.0) also provides AAI values inform the Town of its AAI obligations if a proposed capital project is abandoned.

2.3 Annual Total Replacement Costs

The annual total replacement cost was determined based on the total replacement costs of all assets expected to be replaced in the corresponding year. Specifically, the replacement date was determined based on the asset's installation date and ESL. Annual total replacement costs are presented in Figure 2-3 and similar annual replacement cost figures for system component categories (as per Table 2-3) are presented in Appendix C. When observing the annual total replacement costs, the total replacement cost in the first year was determined to be $10 million. This initial cost will be partially offset with the existing reserve balance. Also, this is not considered a regular total replacement cost because this year shows the total replacement cost for all assets with outstanding replacement dates in 2023.

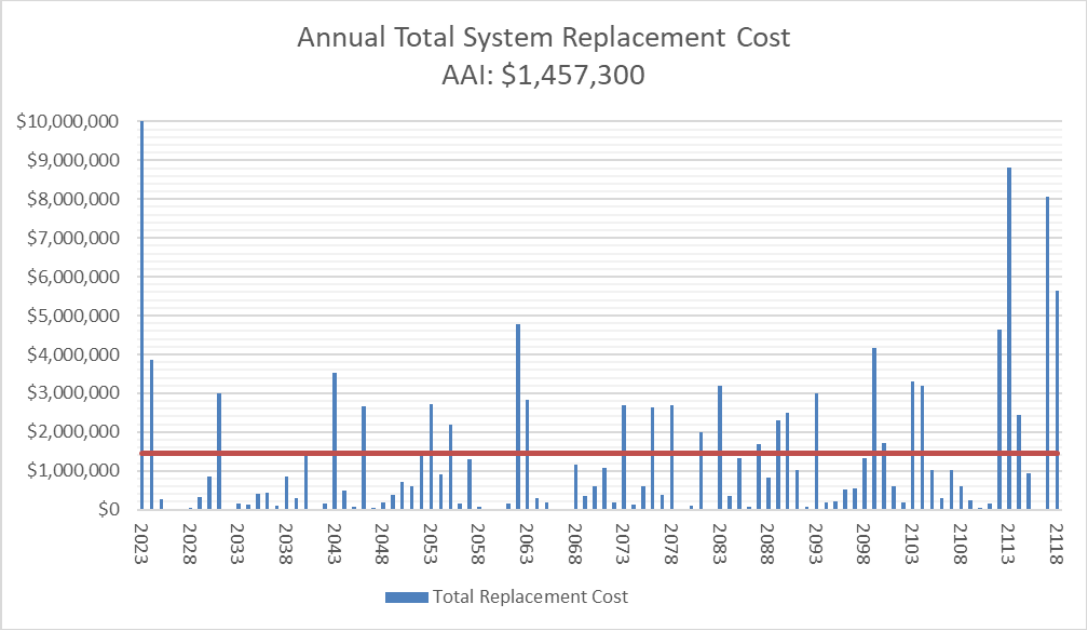


FIGURE 2-3: ANNUAL TOTAL REPLACEMENT COSTS

2.4 Reserve Balance Model

A financial model was constructed showing a hypothetical reserve balance. This financial model can be viewed in Figure 2-4 and the corresponding data is provided in Table D1 in Appendix D. The reserve balance is calculated based on an initial reserve balance as provided by the Town of Osoyoos ($3,033,600) and subsequent years being calculated as the previous year's balance plus the AAI and less the annual total replacement cost. This analysis was conducted for a period which was based on all assets being replaced at least once. As such, this period corresponds to 96 years because this is the longest ESL in the asset inventory. Other assets with shorter ESL periods were repeated in the analysis to represent continual replacement costs. For example, the annual replacement cost for electrical components cycles every 15 years as per the Electrical ESL. Repetition of system component categories can be observed in the annual replacement cost figures in Appendix C.

When analyzing Figure 2-4, the initial balance and the final balance are considered. The initial balance is a significant deficit which corresponds to the assumed replacement of all assets with outstanding expected replacement dates. This has been offset based on the starting reserve balance of $3,033,600.50 as provided by the Town. It is understood that these assets will likely be replaced over several years which will minimize impacts to significant initial costs. Eventually, the AAI brings the reserve balance to a positive value and oscillates above zero. The final balance is expected to be above zero with a final value of roughly $14 million. This is expected because the AAI is continually contributing funds to continually replace infrastructure.

Thus, the positive balance is not a surplus. This financial model is intended to be used as a working model and will need to be updated based on actual system maintenance and upgrades.

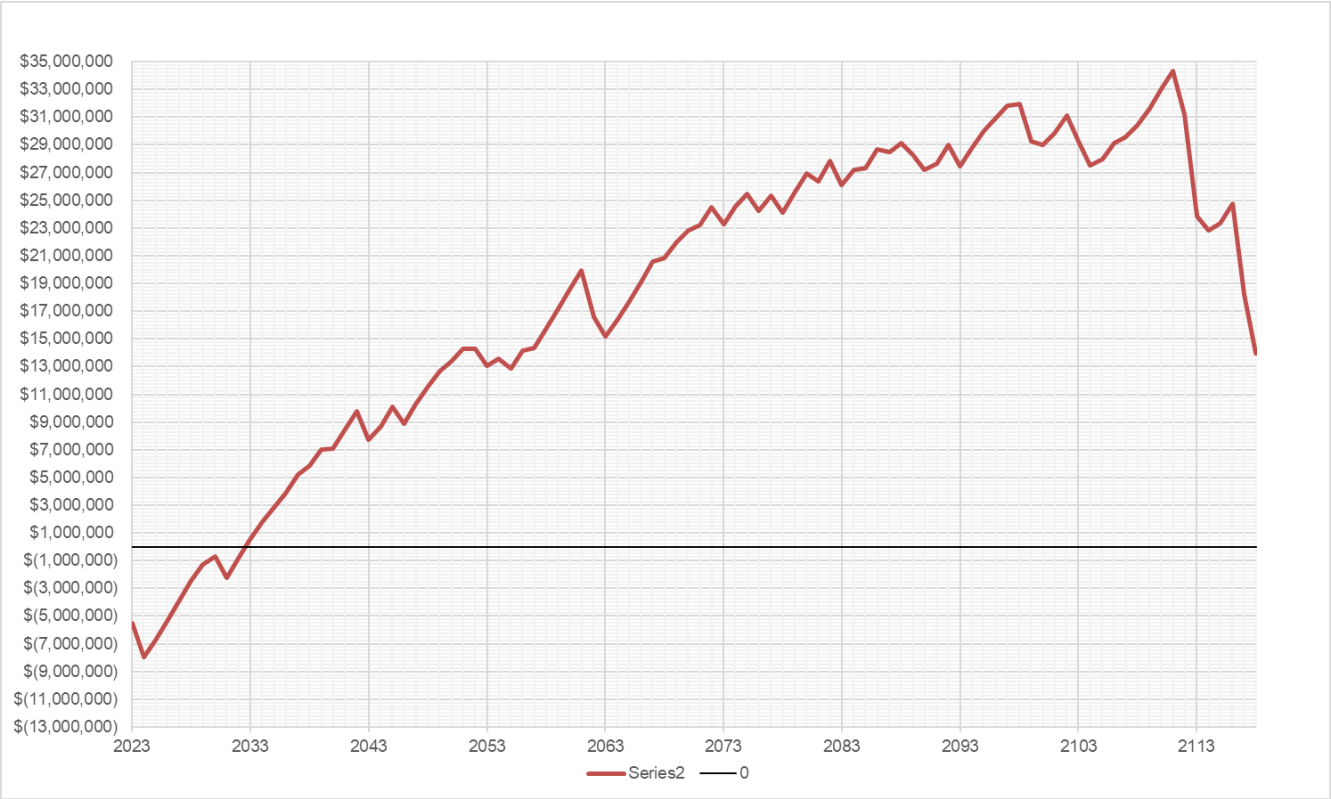


FIGURE 2-4: RESERVE BALANCE MODEL (UPDATE)

3.0 Domestic Water System Capital Plan

The Domestic Water System Capital Plan will serve as a basis for improvements and upgrades to the Osoyoos municipal water system from 2024 to 2044. In this section, there will be recommendations for upgrades relating to the system performance and implementation of water treatment including associated distribution upgrades. Key considerations for these upgrades include future demand scenarios based on projected population growth in the area.

This Plan includes the assessment of an overall water system model for the Town of Osoyoos' municipal water system. By reviewing the Town's water system, it can be accurately assessed for potential constraints or areas of concern. This Capital Plan focuses on the source capacity, source quality, treatment efficacy, and distribution of water to users in the Osoyoos area.

In 2019 and 2020, TRUE Consulting (TRUE) developed a report titled *Osoyoos Water Supply Options Assessment* discussing the current issues of water supply in the Osoyoos area. Water supply issues are mainly present due to the presence of manganese in certain groundwater supplies. While manganese has limited health effects, the aesthetic and operational issues related to its presence often lead to treatment requirements. In the *Osoyoos Water Supply Options Assessment* report, three source/treatment options are presented as solutions to the current situation: groundwater with two manganese removal plants, groundwater with three manganese removal plants, and surface water with a membrane treatment plant. Currently, the first option is favored by the Town. Implementation of water treatment was solidified in 2019 when Health Canada introduced guidelines around allowable concentrations in drinking water.

The Town of Osoyoos has concurrently been attempting to reduce daily water consumption to adhere to the province's goals from the Provincial Living Water Smart Initiative. The main steps the Town is taking are ensuring public education and installing water meters. The Town has installed meters on the major water users and is preparing Mock Billings for both the metered and unmetered users. The *Water Meter Implementation Plan* developed by TRUE in 2021 proposes two options for water meter implementation. Of the two, the recommended option is to implement mostly in-home meters, with point of service meters on most strata developments.

3.1 Water Demand and Performance Criteria

Water demands can be calculated using various methods such as the Master Municipal Construction Documents (MMCD) design criteria manual or the Osoyoos Subdivision and Development Servicing Standards. These methods are valid for small developments, but they may be overly conservative on a full system scale. The following section will explain how system demands were developed using existing consumption data recorded by the Town of Osoyoos.

Design criteria such as Fire Flow (FF) requirements and Peak Hourly Demand (PHD) minimum pressures have been taken directly from the Osoyoos Subdivision Servicing Bylaw.

3.1.1 Historical Demand Data

The population serviced by Osoyoos' municipal water system has been changing yearly due to the System 8 and 9 twinning projects. As a basis, the Census populations from 2001 to 2021 are presented in Table 3-1.

TABLE 3-1: HISTORICAL CENSUS POPULATION

CENSUS YEAR	POPULATION	5-YEAR GROWTH
2001	4,295	6.8%
2006	4,752	10.6%
2011	4,845	2.0%
2016	5,050	5.0%
2021	5,556	10.0%

System 8 and 9 twinning took place in a total of 5 phases from 2016 to 2021. In total, 338 connections were added to the municipal system. For analysis purposes, a total population served was required. As the twinning occurred in a rural area, a household population of 2.45 capita per dwelling (connection) was assumed. A summary of the additional population served per year is shown in Table 3-2.

TABLE 3-2: SYSTEM 8 AND 9 TWINNING ADDITIONAL CONNECTIONS

YEAR	NO. OF CONNECTIONS ADDED	ADDITIONAL POPULATION SERVICED
2016	55	135
2017	78	191
2018	29	71
2019	0	0
2020	176	431

The 'total serviced population' for the Osoyoos municipal water system for 2021 was determined by summing the total additional population serviced from the twinning projects and the 2021 census population. This population is presented in Table 3-3.

TABLE 3-3: 2021 TOTAL SERVICED POPULATION.

YEAR	TOTAL SERVICED POPULATION
2021	6,384

For this analysis, demand and population data were analyzed since 2001. Trends of the Average Day Demand (ADD) and Maximum Day Demand (MDD) are shown in Figure 3-1. Of note, the system capacity was reached during the MDD in 2021 when all pumps were operating.

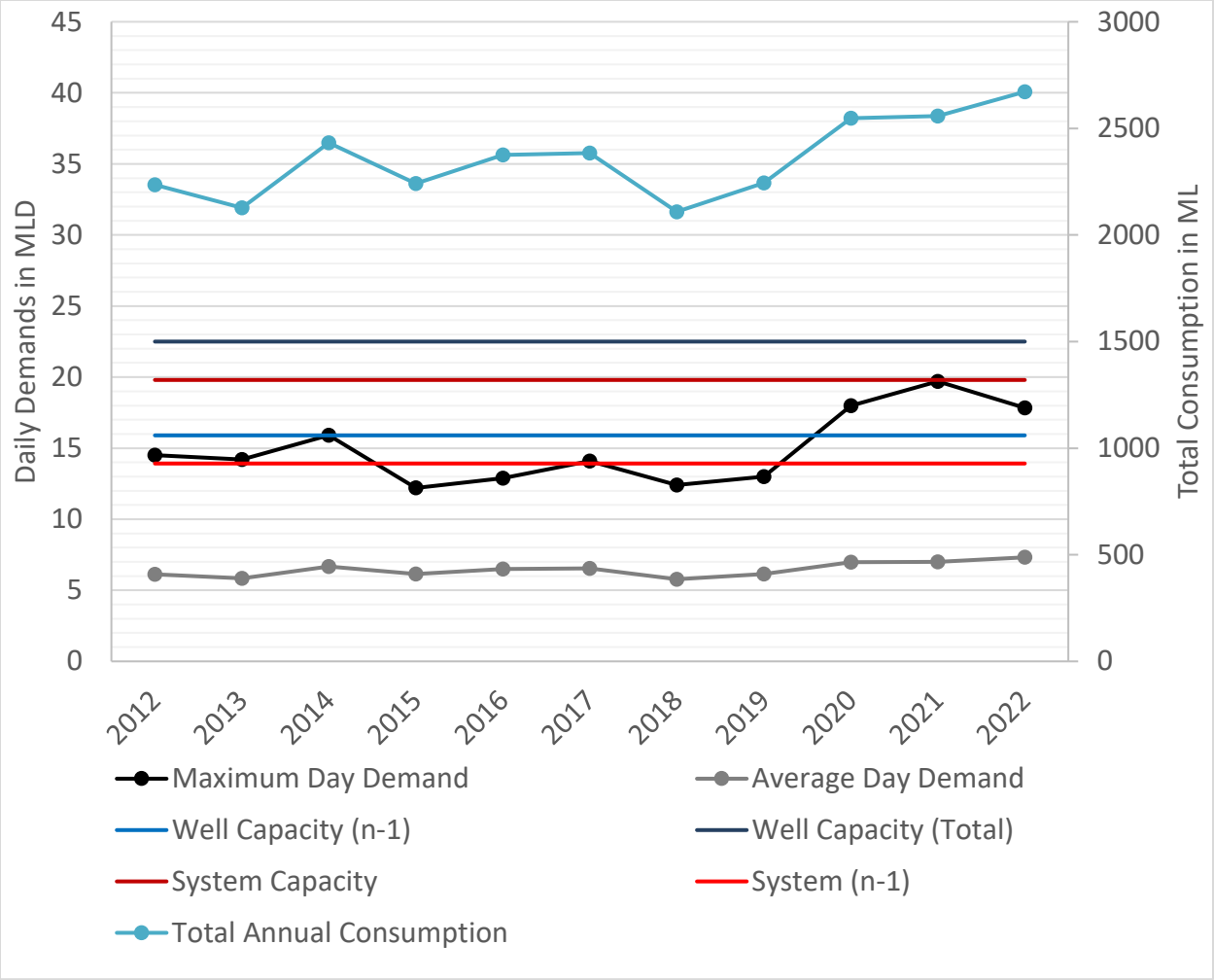


FIGURE 3-1: HISTORICAL CONSUMPTION DATA.

Calculating these historical flows as per capita water demands involved dividing the total consumption by the number of users. It is important to recognize that these water demands were calculated based on census populations with the addition of the new System 8 and 9 users. As a result, this consumption includes all residential, commercial, industrial, and water used by seasonal residents.

For a more accurate result, the per capita consumptions were calculated and averaged over the past 5 years. These values are shown in Table 3-4.

TABLE 3-4: AVERAGE CONSUMPTION OVER LAST 5 YEARS

YEAR	TOTAL SERVICED POPULATION	TOTAL CONSUMPTION (ML)	ADD (L/cap/day)	ADD (L/s)	MDD (L/cap/day)	MDD (L/s)
2017	5,342	2,384	1,223	75.6	2,639	163.2
2018	5,323	2,109	1,085	66.8	2,329	143.5
2019	5,354	2,244	1,148	71.1	2,428	150.5
2020	5,886	2,548	1,186	80.8	3,058	208.3
2021	6,384	2,558	1,098	81.1	3,086	228.0
		5-year Average	**1,148**	**75.1**	**2,708**	**178.8**

3.1.2 Population Projections

The Osoyoos OCP suggests a population growth of 2% year over year. Following these guidelines, the population will increase as shown in Table 3-5.

TABLE 3-5: POPULATION PROJECTIONS

YEAR	TOTAL SERVICED POPULATION
2021	6,384
2033	8,079
2043	9,870

3.1.3 Demand Forecasts

Water consumption has always followed trends of high seasonal variance due largely to the tourism and agricultural nature of the Town's industries. Figure 3-1 shows the historical Maximum Day Demands have been larger than the System's 'n-1' capacity of 13.9 MLD. During these times, no redundancy in the system is allowed and oftentimes the pumps are run 24 hours per day to meet the system demands.

TRUE Consulting has been working with the Town to develop and implement a Water Metering Program in attempts to decrease the annual water consumption of the system's users. As the system capacity is currently at or over capacity, a decrease in per capita consumption is the most practical way to decrease the stress on the system. The following two demand scenarios aim to assess the expected decrease in water demand as a result of water metering.

3.1.3.1 Demand Forecasts with Water Conservation

Referring to Table 3-4, the 5-year historical ADD is 1,148 L/cap/day. Reductions in water consumption associated with water metering vary based on many factors. As a conservative estimate, it was assumed that the water consumption would decrease by 20% in the first 10 years, 10% in the next 10 years, and decrease by another 10% in the following 10 years for the final time. Projected water demands based on water metering are summarized in Table 3-6.

TABLE 3-6: FORECASTED WATER CONSUMPTION WITH METERING

YEAR	ADD (L/CAP/DAY)	MDD (L/CAP/DAY)
2023	1,125	2,744
2033	1,013	2,471
2043	911	2,222

The MDD can be calculated by multiplying the ADD by a factor of 2.44, which is an average of the historical MDD/ADD ratio. Figure 3-2 depicts anticipated MDD trends for 1%, 2% and 3% population growth scenarios. These trends were used to assess the required system capacity to meet these demands. As the OCP suggests a population growth of 2%, the required system capacity for 2% population growth is presented in Figure 3-2.

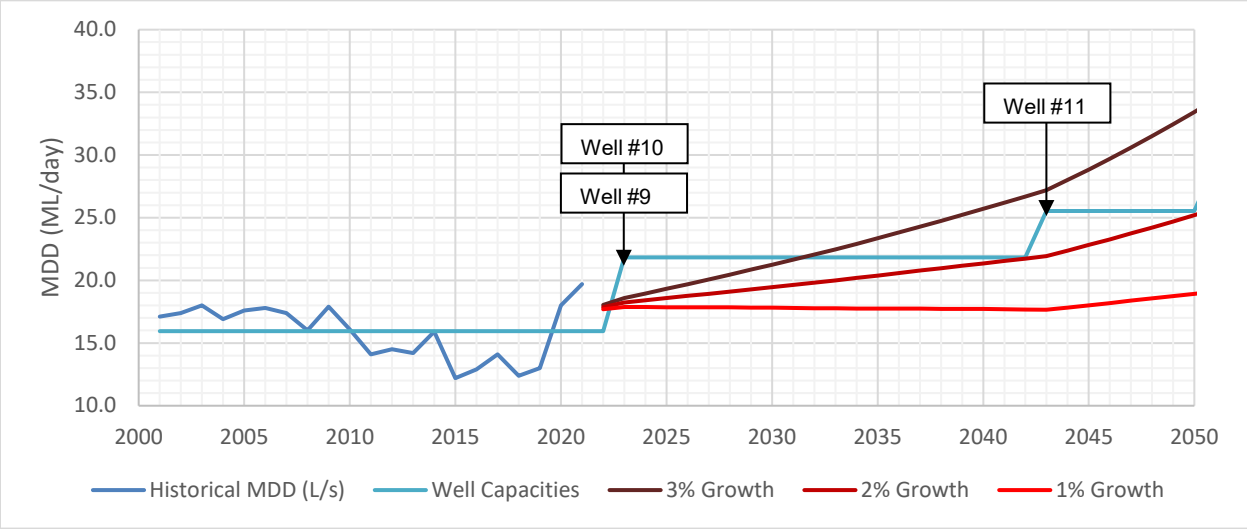


FIGURE 3-2: MDD ANALYSIS WITH WATER CONSERVATION

As seen in Figure 3-2, two new wells are required in 2023 to meet the projected flows. Once these wells are implemented, a third well is not required until 2042. Assumed well capacities are presented in Table 3-7. The estimated value for Well #9 could be conservative with the actual capacity for well #9 and #10 ideally being 3.5 MLD. The actual well capacities will dictate the number of required wells.

TABLE 3-7: WELL INSTALLATION DATES WITH WATER CONSERVATION

WELL	YEAR REQUIRED	ASSUMED CAPACITY (L/S)	CUMULATIVE SYSTEM CAPACITY (MLD)
'N-1' SYSTEM CAPACITY	-	184.8	16.0
WELL #9	2023	25.2*	21.9
WELL #10	2023	42.8	
WELL #11	2042	42.8	25.6

**This value is based on the assessed capacity of abandoned Well #7.*

3.1.3.2 Demand Forecasts without Water Conservation

The same analysis as shown above was performed, except no water conservation was applied. The average annual daily consumption per capita of 1,148 L/capita/day was carried through to 2043.

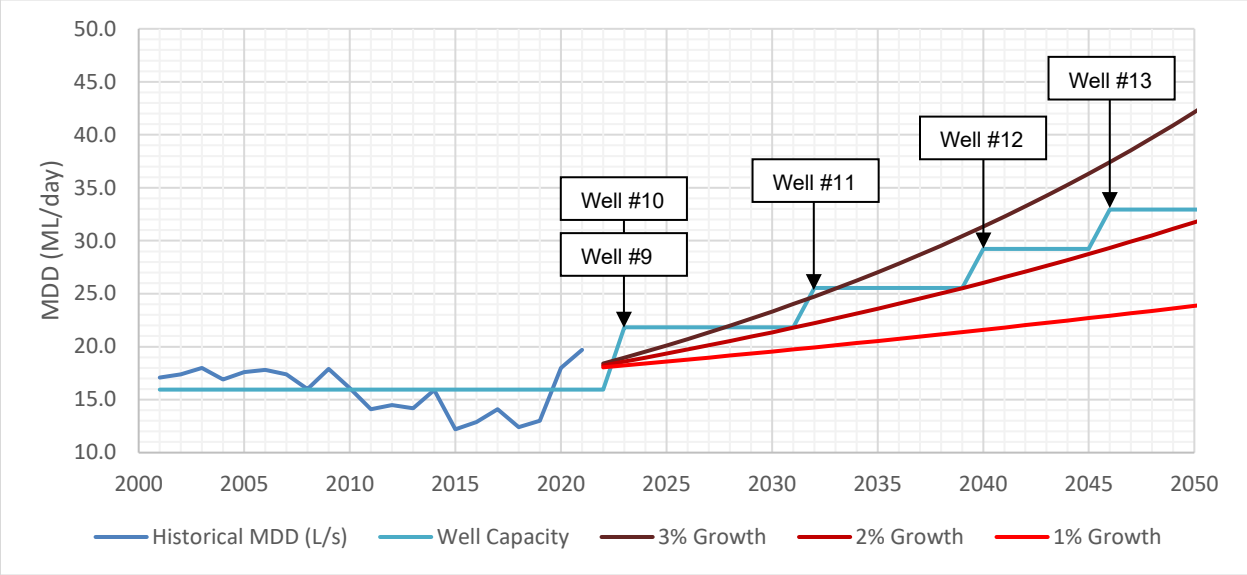


FIGURE 3-3: MDD ANALYSIS WITHOUT WATER CONSERVATION

Based on these results, two new wells will be required to meet the demands in 2023. Following suite, new wells are required in 2032, 2039 and 2045. A summary of well installations is presented in Table 3-8.

TABLE 3-8: WELL INSTALLATION DATES WITHOUT WATER CONSERVATION

WELL	YEAR REQUIRED	ASSUMED CAPACITY (L/S)	CUMULATIVE SYSTEM CAPACITY (MLD)
'N-1' SYSTEM CAPACITY	-	184.8	16.0
WELL #9	2023	25.2*	21.9
WELL #10	2023	42.8	
WELL #11	2032	42.8	25.6
WELL #12	2039	42.8	29.2
WELL #13	2045	42.8	32.9

**This value is based on the assessed capacity of abandoned Well #7.*

Both Table 3-7 and Table 3-8 suggest that two new wells are required for adequate system performance in 2023. While this is not a requirement, one well should be installed to provide additional source water capacity security at a minimum. A second well would be required for adequate system redundancy by 2025.

As previously noted, a test well program is currently ongoing. Although preliminary results for this test well program are not available, this capital plan considers development of wells #9 and

#10 in 2024. Cost estimates detailing this work can be viewed in the project sheets provided in Appendix E with anticipated locations as shown on Figure F1, in Appendix F. Works include building the pumphouse, supply and installation of a 75 hp vertical turbine pump, connection to the raw water supply system (further discussed in Section 3.5.2.4.2), and electrical components including hardware, variable frequency drive, Scada and PLC programming, and auxiliary power. The cost estimate was based on similar designs to recent pumphouses in Osoyoos. Also, the cost estimate considers the work required for developing a single well. Thus, it can be applied to each well site individually.

3.2 Fire Flow Requirements

The Osoyoos Subdivision Servicing Bylaw requires fire flow to be calculated based on the FUS guideline equation. For this report, the MMCD values for fire flow will be followed as shown in Table 3-9.

TABLE 3-9: FIRE FLOW REQUIREMENTS BASED ON MMCD.

DEVELOPMENT TYPE	MINIMUM FIRE FLOW (L/S)
SINGLE FAMILY RESIDENTIAL	60
APARTMENTS, TOWNHOUSES	90
COMMERCIAL	150
INSTITUTIONAL	150
INDUSTRIAL	225

3.3 Pressure Requirements

The minimum water pressures are based on three separate water use scenarios. These scenarios and pressure requirements come from the Town of Osoyoos Service and Development Bylaw, as shown in Table 3-10.

TABLE 3-10: SYSTEM PRESSURE GUIDELINES

USE SCENARIO	SYSTEM PRESSURE (PSI)
PEAK HOURLY DEMAND	40 psi Minimum
STATIC PRESSURE	125 psi Maximum
MAX DAY DEMAND + FIRE FLOW	20 psi Minimum

3.4 Reservoir Capacity Assessment

The MMCD provides guidelines to the required volume of reservoirs in municipalities. Reservoirs should be designed to provide storage for fire flow situations, an equalization factor, and emergency storage. Considering fire storage, 150 L/s was used as a target value because of the Town's existing buildings.

The guidelines for calculating reservoir storage are as follows:

Total Storage Volume = A + B + C

where:

A = Fire Storage

B = Equalization Storage (25% of MDD)

C = Emergency Storage (25% of A + B)

Table 3-11 provides a summary of the storage volumes for 2023 and 2043 without water conservation (current conditions) and with water conservation (metering). In general, the town does not have sufficient capacity in their reservoirs to contain the required volume of 7,200 m^3. Currently, the total reservoir capacity in the system is 6,000 m^3.

TABLE 3-11: RESERVOIR SIZING REQUIREMENTS

STORAGE COMPONENT	2023 STORAGE (M^3)	2023 STORAGE CONSERVATION (M^3)	2043 STORAGE (M^3)	2043 STORAGE CONSERVATION (M^3)
MDD (M^3/D)	18,600*	18,200	27,600	21,900
A – FIRE STORAGE**	1,100	1,100	1,100	1,100
B – EQUALIZATION STORAGE	4,700	4,600	6,900	5,500
C – EMERGENCY STORAGE	1,400	1,400	2000	1,600
TOTAL STORAGE (A + B + C)	**7,200**	**7,100**	**10,000**	**8,200**

**MDD CALCULATED WITH 2.44 MULTIPLIED BY THE 5 YEAR AVERAGE ADD IN TABLE 3-4.*
*** FIRE FLOW IS 150 L/S FOR 2 HOURS*

Equalization storage serves to balance the system between max day demands (MDD) and peak hour demands (PHD) when the supply system cannot keep up with the peak hour flows. If the

supply system can keep up with PHD, then the equalization storage is redundant. The MMCD criteria assume that the supply systems can only supply the MDD, which is a typical parameter for water supply.

Osoyoos' water supply system cannot supply the entire PHD, however the wells can offset some of the PHD water demand, therefore lowering the equalization requirements. The 'revised' equalization storage component is calculated as:

$$B = 0.25 * (PHD - 'n - 1' Well\ Production)$$

Table 3-12 present revised reservoir volumes based on the above equation.

It is important to note that this approach is only appropriate if auxiliary power is installed at each well pump. This is the case because the advantage of having equalization capacity in a reservoir is that it is not impacted by power outages which improves system resilience. The pumps would act similarly if back-up power was available. The Town has budgeted for including backup power at each well site.

TABLE 3-12: REVISED REQUIRED RESERVOIR STORAGE

STORAGE COMPONENT	2023 STORAGE (REVISED) (M^3)	2023 STORAGE CONSERVATION (REVISED) (M^3)	2043 STORAGE (REVISED) (M^3)	2043 STORAGE CONSERVATION (REVISED) (M^3)
'N-1' WELL PRODUCTION	15,900*	15,900*	29,200	25,500
MDD (M^3/D)**	18,600	18,200	26,700	21,900
A – FIRE STORAGE***	1,100	1,100	1,100	1,100
B – EQUALIZATION STORAGE	3,000	2,900	2,700	1,800
C – EMERGENCY STORAGE	1,025	1,000	950	750
TOTAL STORAGE (A + B + C)	**5,125**	**5,000**	**4,750**	**3,650**

** Considering current conditions without installation of recommended Wells*
*** PHD = 1.5 MDD*
**** Fire flow is 150 L/s for 2 hours*

Analyzing the system under these assumptions proves that there is sufficient storage for the proposed time frame. This will ensure reservoir sizing is compliant with applicable design criteria. Furthermore, it is recommended that auxiliary power be installed at each pump station to allow for system redundancy. Class D cost estimates are provided on the corresponding project sheet in Appendix E. These cost estimates are intended to provide a magnitude of cost which should be confirmed during the design phase for budgetary purposes. In the case that

capital reserves cannot accommodate installing auxiliary power at each well, a sequential approach is recommended based on well usage. The recommended sequencing is listed in order of well priority below.

1. Well #1 and #3
2. Well #4 and #5
3. Well #6 and #8

This sequence also considers a proposed well strategy presented in Section 3.5.2.4.1. The first phase of this plan intends to use wells #1, #3, #4 and #5, and future wells #9 and #10 (which include auxiliary power in their cost estimates). Thus, the majority of wells will have auxiliary power with wells #4 and #5 being installed in the near future.

3.5 Hydraulic Model & Proposed Upgrades

3.5.1 Hydraulic Model

The latest version of WaterCAD v8i was utilized to analyze the performance of the Town's water system. To develop the hydraulic (pipe) network the best available information was used. Sources of information included:

- GIS Composite (developed for georeferenced asset inventories),
- CAD Composite, and
- Record Drawings.

Any unknown attribute data for linear assets were determined based on professional judgement. The following list of assumptions were used to speculate attribute data for linear assets only. Specifically, assumed values were determined for known assets with incomplete records.

- Installation Year: was assumed based on adjacent infrastructure with like materials and diameters. In the case these details were not concise, a conservative installation year was assumed based on a common installation year within the area. Specifically, a conservative installation year is an earlier installation date which shows an earlier replacement date.
- Pipe Material: was assumed based on adjacent infrastructure with like installation year and diameters. If this information was not concise, pipe material was assumed to be AC or PVC, prior and post to 1979, respectively.
- Pipe Diameter: was assumed based on adjacent infrastructure with like installation year and materials. If this information was not concise, the general pipe diameter within the area was assumed based on the functionality of the pipe. This assumption inherently has more risk associated with it based on impacts to engineering calculations.

Assumed attributes are color coded in Table B1 located in Appendix B. A total of 125 attribute assumptions were made for 105 linear assets out of 1,099 linear assets characterized by 4,356 attributes.

System performance is generally analyzed at ground surface where users generally access the system (hydrants, interior plumbing). Hence the model elements are set to existing ground elevation and not the as constructed elevations. The relative elevations of the model components were determined with LiDAR information from the province and as-built records for applicable infrastructure.

Demands were allocated to different sections of the model through a GIS spatial analysis. Parcel polygons were attached to the closest hydraulic node in the model and then the connections were verified through a quality control process. Using the OCP designation, the parcels were used to develop equivalent populations per area. These populations were used to determine flowrates per parcel from flowrates identified in Section 3.1. Other applicable system performance criteria that were taken as constraints in the water model are summarized in Table 3-13.

TABLE 3-13: HYDRAULIC MODEL CONSTRAINTS

CONSTRAINT	VALUE	UNITS
MIN PRESSURE AT PHD	40	PSI
MIN PRESSURE AT MDD + FF	20	PSI
MAXIMUM VELOCITY	3.5	M/S
'C' FACTOR	130	-

The Town of Osoyoos Development and Servicing Bylaw (ODSB) does not outline a maximum allowable velocity in watermains. As such, the maximum velocity of 3.5 m/s outlined in the MMCD design guidelines was used. The ODSB suggests a 'C' Factor of 120, however TRUE feels that this is too low, and has opted to use a value of 130.

3.5.2 Hydraulic Model Results

The figures in this report section are images from WaterCAD scenarios and show junctions that do not meet the required fire flows in red. In contrast, the nodes that achieve the required fire flow are not shown in these figures. Areas of concern are circled in green. It is important to note that the other nodes showing a failed Fire Flow Analysis are generally due to the location of the node chosen for the analysis and are not an accurate representation of the actual fire flow in the area. Therefore, the nodes not specifically addressed are not considered a significant deficiency.

The available fire flow is determined by calculating the available flow at a specific node while keeping the rest of the system within the constraints of pipe velocity and system pressure. As per Table 3-10, the minimum pressure during fire flow conditions is 20 psi. Under fire flow

conditions, the current system has areas where pressure drops lower than 20 psi. This residual pressure does not meet the required performance criteria.

The following analyses mainly focus on the Town's core with minimal discussion relating to the rural surrounding areas. This is because there are no supply constraints in the rural area, and the FUS guideline of 33 L/s (2,000 L/min) associated with structure separations of greater than 30 meters is easily achievable throughout.

3.5.2.1 Existing Conditions

Two scenarios were analyzed under the current system conditions for MDD and Fire Flow, listed below. The first scenario represents conditions with the lowest system performance and the second demonstrates improved system performance utilizing the current system infrastructure to its full capabilities.

- Scenarios 1 – 2023 MDD and Fire Flow Pumps Off
  - This scenario models the water system performance with pressure and flows from the reservoirs.
- Scenario 2 – 2023 MDD and Fire Flow Pumps On (n-1)
  - This scenario allows for additional pressure and flows to be provided by the source well pumps.

The ADD and MDD used for these scenarios correspond to the 5-year average values presented in Table 3-4.

3.5.2.1.1 Scenario 1 – 2023 MDD and Fire Flow Pumps Off

The current water system is analyzed assuming that all pressure and flows are provided by the reservoirs (i.e., the system is analyzed under gravity conditions with all pumps turned off). Results are shown in Figure 3-4. In general, there are several areas of concern with flows that consistently do not meet fire flow requirements.

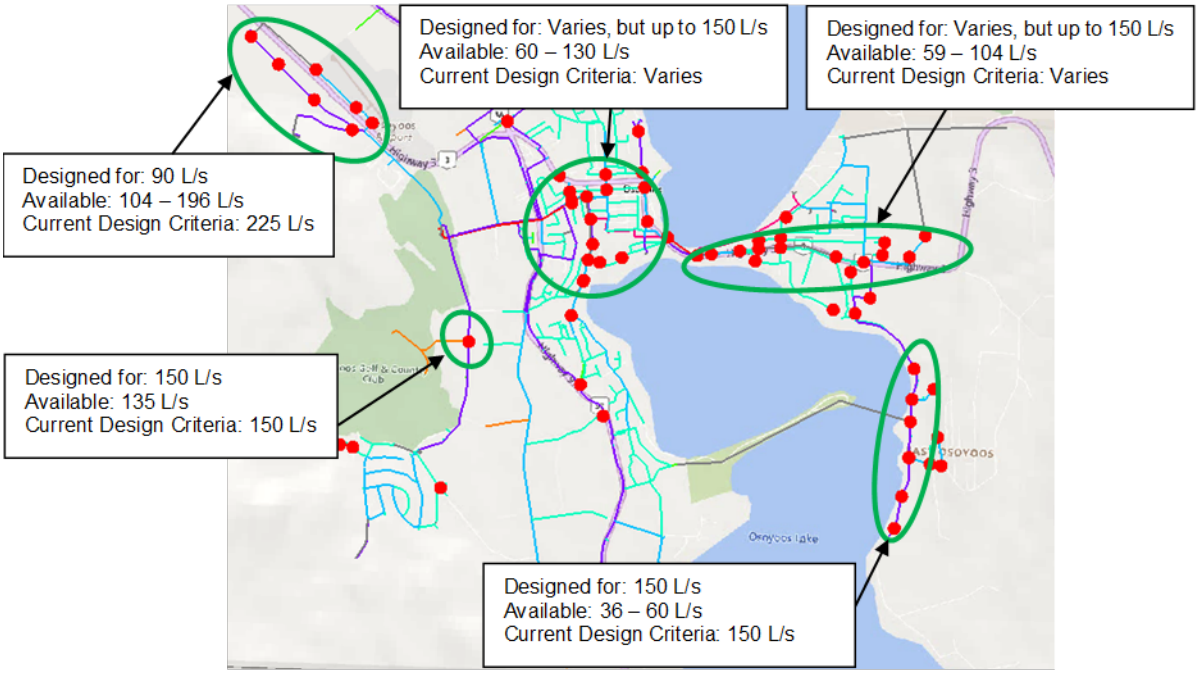


FIGURE 3-4: SCENARIO 1 FIRE FLOW RESULTS

3.5.2.1.2 Scenario 2 - 2023 MDD and Fire Flow Pumps On (n-1)

The Town of Osoyoos is currently considering installing auxiliary power at all current and future water sources. Under these conditions, the system can be analyzed with the pumps running at their sources, while still adopting the 'n-1' approach. Results of this scenario are presented in Figure 3-5. When comparing the results of Scenario 2 to Scenario 1, there is improved Fire Flow along Highway 3 on the east side of the lake, improvements near Kingfisher Park, and improvements in the Town's downtown core.

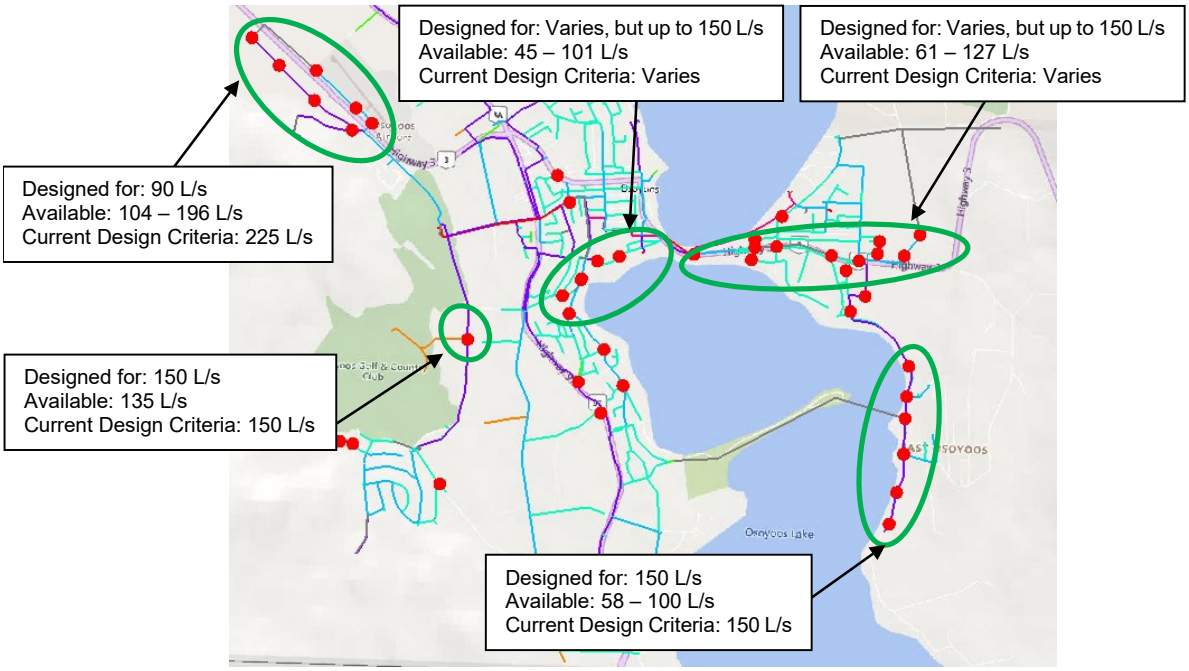


FIGURE 3-5: SCENARIO 2 FIRE FLOW RESULTS

3.5.2.2 Future Conditions

Scenarios 1 and 2 provided insight to the current system capacities and constraints. Whereas analysis under future demand conditions assists in determining the location of possible system constraints. Additional scenarios were created to assess future conditions as listed below.

- Scenario 3 – 2043 MDD and Fire Flow – Pumps On (n-1)
  - This scenario models the current system performance under 2043 MDD and Fire Flow demands.
  - Results of this scenario are used to determine upgrades to the water distribution system prior to proposed water treatment plant (WTP) upgrades.
- Scenario 4 – 2043 MDD and Fire Flow – Pumps on (n-1) – Upgrades not related to WTP
  - This scenario demonstrates the system performance with the upgrades as determined in Scenario 3.

The 2043 ADD and MDD for these scenarios are presented in Table 3-6. These demands consider water conservation from metering.

3.5.2.2.1 Scenario 3 – 2043 MDD and Fire Flow – Pumps On (n-1)

The results shown in Figure 3-6 represent five main areas of concern that arise from running future flows in the current system including: Southeast Lakeshore Drive, Highway corridor along the east side, Kingfisher Drive near 89th St, the Secondary School, and Industrial Park.

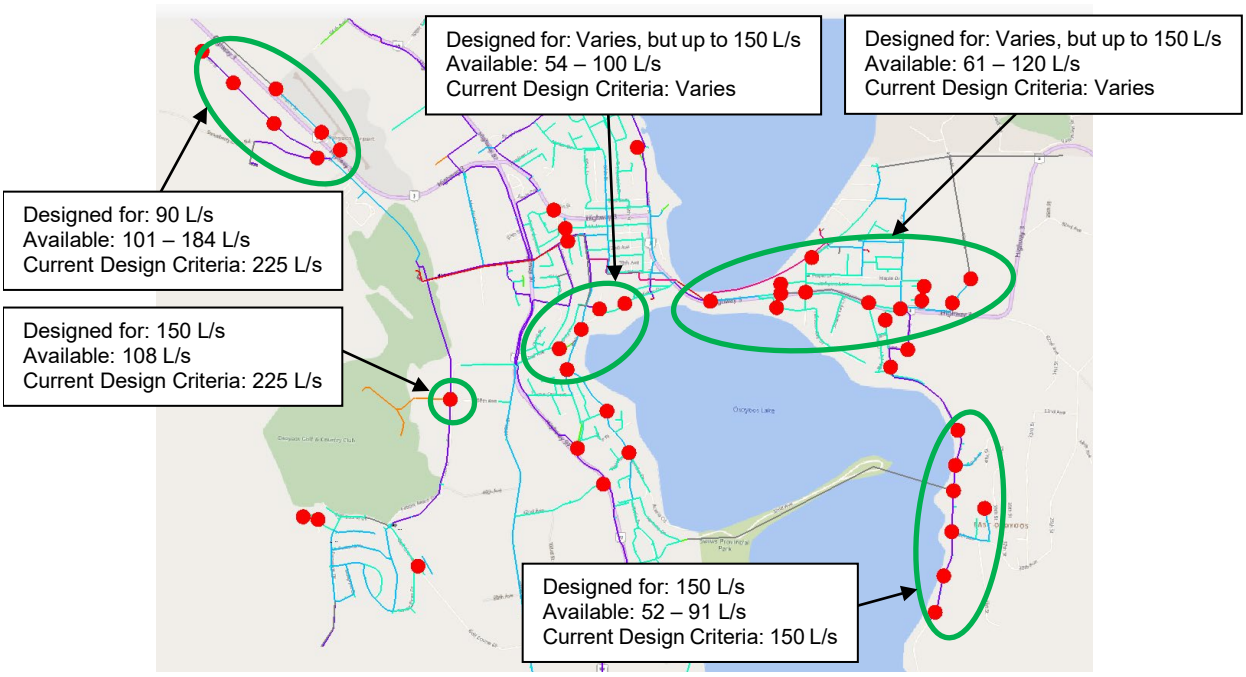


FIGURE 3-6: SCENARIO 3 FIRE FLOW RESULTS

The deficiencies above can be split into two areas: deficiencies that should be addressed prior to WTP construction, and deficiencies that should be addressed with WTP construction. The following recommended upgrades correspond to works that should be completed prior to WTP upgrades.

74th Avenue Upsizing

There is currently no continuous, large diameter watermain connecting both the East and West sides of the Town. The existing infrastructure layout is currently capable of receiving a 300 mm watermain on 74th Avenue. The installation of approximately 180 m of 300 mm diameter pipe would greatly increase the distribution system capacity and provide a trunk main connection through the Town. A Project Sheet is provided in Appendix E which provides a layout drawing and cost estimate for this project.

62nd Avenue Extension

There is currently no connection between the watermain along 89th avenue and the watermain along 62nd avenue. Connecting these watermains greatly increases the available fire flows in the area and provides beneficial looping. A Project Sheet is provided in Appendix E which provides a layout drawing and cost estimate for this project. The cost estimate for this project accounts for this work to be completed simultaneously with upgrades to this intersection. As such, road, curb and gutter, and sidewalk works are not considered.

89th Street Upsizing

The current watermain diameter installed on 89th Street decreases from 250 mm to 200 mm as it extends south towards Kingfisher Drive. This constriction limits flows from Well #1. There is also a non-conventional looping connection on this main near the daycare. The current connection as well as the proposed realignment and upsizing of these watermains can be seen on a Project Sheet provided in Appendix E. The Project Sheet provides a layout drawing and cost estimate for this project.

Construction of the three system upgrades discussed above greatly increases system resilience and alleviates some of the challenges within the system. These updates also improve the water system capacity once a WTP is installed. The water model results from a scenario that includes each of these upgrading scenarios are illustrated in Scenario 4.

3.5.2.2.2 Scenario 4 – 2043 MDD and Fire Flow – Pumps on (n-1) – Upgrades not related to WTP

The proposed upgrades presented in Section 3.5.2.2.1 serve as the basis for upgrading key areas of the system prior to WTP implementation. These upgrades greatly improve the system capacity, and work to improve overall system performance as future demand increases. This is shown in Figure 3-7.

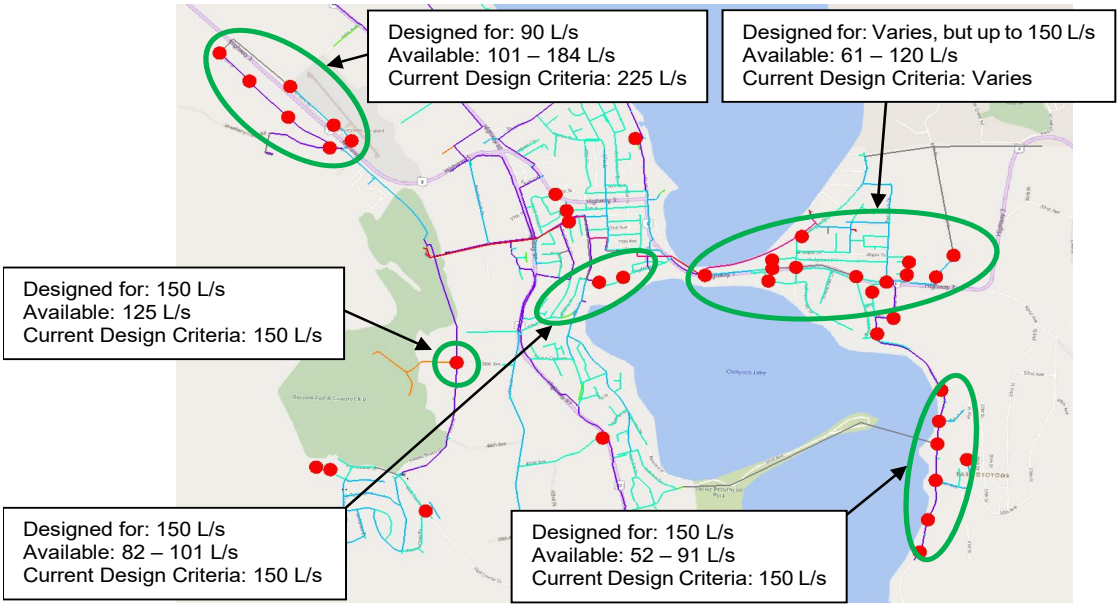


FIGURE 3-7: SCENARIO 4 FIRE FLOW RESULTS

3.5.2.3 Water Treatment Plant Upgrades

TRUE has been working extensively with the Town to determine the feasibility of implementing Water Treatment Plants, with the goal of addressing the issue of manganese concentrations in

the Town's groundwater supply. There are currently two locations for the main WTP that are being considered: Jack Shaw Gardens off Kingfisher Drive (Kingfisher) and at Lot 1 EPP107350 near Cottonwood Park (Cottonwood). The main water treatment plant would provide treatment for Wells #1, #3, #4, #5, #8 and any future wells in the vicinity.

Independent of the location of the main WTP, there will likely be a secondary WTP. This smaller WTP will operate in conjunction with one of the main water treatment plant options by servicing Well #6 and any future wells in the vicinity. The WTP will be located near the railway wye at Spartan Drive and 92nd Avenue. This plant will be taken as the 'Spartan Plant'. Please note that, separately from this report, further review is currently ongoing to determine whether all raw groundwater can be conveyed to a single Manganese removal plant. This work is preliminary.

Scenarios 5 and Scenario 6 consider these two water treatment plant options. Scenario 5 considers constructing the Kingfisher and Spartan WTPs and Scenario 6 considers constructing the Cottonwood and Spartan WTPs. All WTP scenario analysis has been performed using the 'n-1' approach, assuming that Well #5 is held in reserve.

3.5.2.3.1 Scenario 5: Kingfisher WTP – 2043 MDD and Fire Flow – Pumps on (n-1)

The Kingfisher WTP would provide groundwater treatment and disinfection to Wells #1, #4, #5, #8, and any future wells in the area. In addition to providing water treatment, there is observed system improvements of fire flows when compared to Scenario 4.

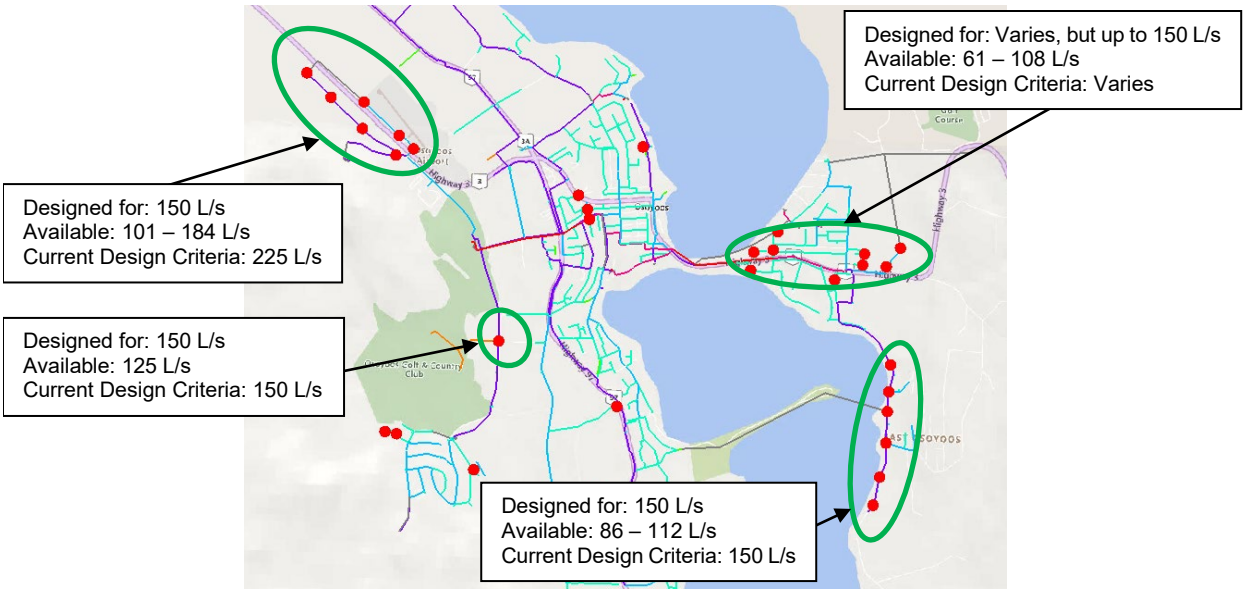


FIGURE 3-8: SCENARIO 5 FIRE FLOW RESULTS

3.5.2.3.2 Scenario 6: Cottonwood WTP – 2043 MDD and Fire Flow – Pumps on (n-1)

The Cottonwood WTP would provide groundwater treatment and disinfection to the same wells as the Kingfisher WTP. Both raw water conversion as well as distribution main upsizing and installation are required. A conceptual plan of the Cottonwood WTP and cost estimate are provided on a Project Sheet provided in Appendix E.

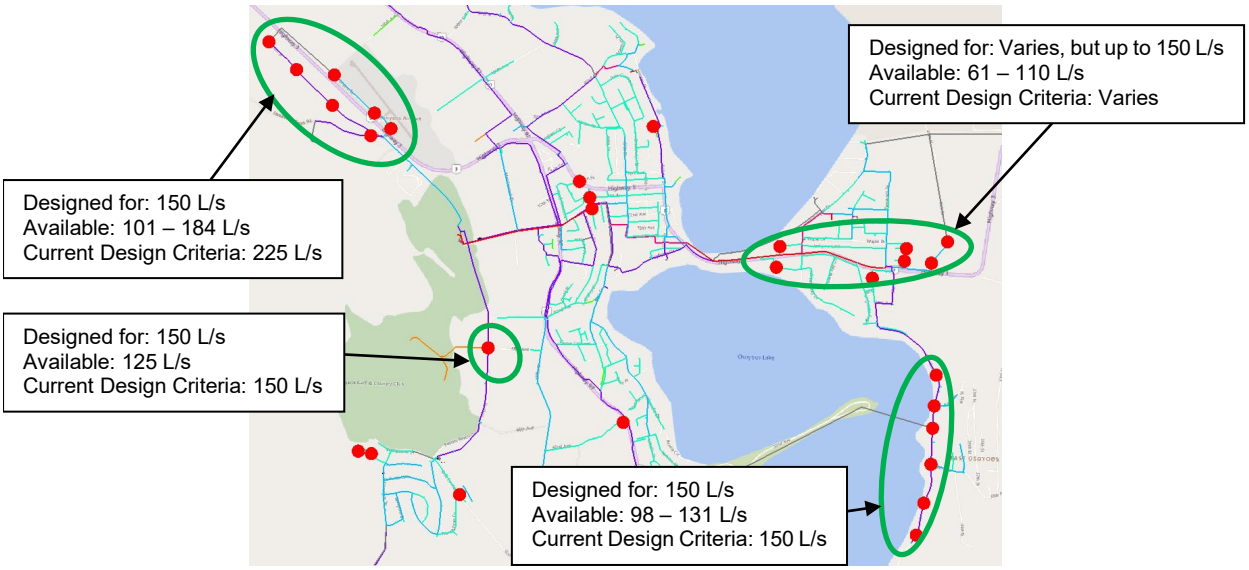


FIGURE 3-9: SCENARIO 6 FIRE FLOW RESULTS

From a hydraulic point of view, both plants improve the capacity of the system. The main difference is that the Cottonwood WTP improves the capacity in the southeast sector more than the Kingfisher WTP. Furthermore, a preliminary drilling program being conducted in early 2023 has shown results that there may be viable groundwater sources located east of Osoyoos Lake. Also, there is more available space for a WTP east of Osoyoos Lake. For these reasons, the Cottonwood WTP is being considered as the most viable option. Domestic water system upgrades will be required to implement this WTP. This is discussed in Section 3.5.2.4.

3.5.2.4 Water Treatment Plant Domestic Water System Upgrades

Upgrades required to implement the Cottonwood WTP include implementing a raw water supply network and upgrades to the domestic water system. These upgrades are largely directed by a proposed source well utilization strategy and proposed location for the WTP. Based on the Cottonwood WTP location, raw water supply mains are required to transport flows to the WTP and the domestic water mains must be upgraded to effectively convey flows from the WTP and provide adequate fire flows. In general, these works include the following.

- Converting sections of the existing domestic system to raw water supply mains.
- Installing new raw water and domestic system water mains.
- Upsizing sections of domestic water mains.

Detailed cost estimates and Project Sheets for these works are presented in Appendix E. Also detailed layouts of the proposed upgrades are presented on Figures F1, F2, F3 and F4 in Appendix F. These figures show the raw water treatment system in red and the domestic system upgrades in blue. Both systems are discussed in Section 3.5.2.4.2 which represent the minimum works required to implement the WTP. These works are phased with essential works being completed in Phase 1 for implementation of the Cottonwood WTP. Subsequently, Phase 2 and Phase 3 consist of upsizing water mains and extending the raw water supply system. Additionally, upsizing the watermain on Main Street, East of Cottonwood Drive is recommended to improve distribution capacity towards the east. However, it will not impede the implementation of the Cottonwood WTP.

3.5.2.4.1 Source Water Wells Plan

The implementation of the Cottonwood WTP will require extensive infrastructure upgrades that will be completed in phases to allow for a more practical capital investment forecast. Infrastructure upgrades are dictated by a source water well strategy to convey raw water to the WTP. Raw water requiring treatment is impacted by high concentrations of manganese which is a known issue at Wells #4, #5, #6 and #8. Furthermore, it is assumed that future Wells #9 and #10 will be impacted by manganese concentrations. These wells will require treatment which is the basis for the source water well strategy. This strategy is summarized in Table 3-14 which shows each phase of infrastructure upgrades and the corresponding wells in use. The proposed strategy can supply the required demand forecast considering conservation measures as presented in Table 3-7, in Section 3.1.3. During high demand events, the system will operate above the 'n-1' system capacity but within the total system capacity.

TABLE 3-14: SOURCE WATER WELL STRATEGY SUMMARY

PHASE	WELL	POWER (HP)	MAX SUPPLY (US GPM)	MAX SUPPLY (MLD)	CUMULATIVE SYSTEM CAPACITY (MLD)	CUMULATIVE SYSTEM CAPACITY 'N-1' (MLD)
CURRENT					22.5	16.0
PHASE 1 2025	**#1**	50	295	1.6	22.4	15.9
	#3	75	620	3.4		
	#4	75	715	3.9		
	#5	100	1,200	6.5		
	#9	75*	645**	3.5**		
	#10	75*	645**	3.5**		
PHASE 3 2030	**#8**	75	650	3.5	25.9	19.4
FUTURE	**#6**	50	650	3.5	29.4	22.9

*Pump size estimated based on assumed sustainable well capacity.
**Assumed value based on similar values with existing Wells #3, #6 and #8. Flow rate to be confirmed by pump test.

Phase 1 of the infrastructure upgrades includes implementing the raw water supply system to the Cottonwood WTP. This system will connect Wells #4, #5, #9 and #10 and convey flows to the WTP. After treatment, the WTP pumpstation will provide flows to the domestic water system. Wells not connected to the raw water supply system include #1 and #3, #6 and #8. Wells #1 and #3 do not experience elevated manganese concentrations which allows them to operate independently from the Cottonwood WTP. This minimizes infrastructure upgrades. Well #6 and #8 are considered a standby well if system capacity cannot be maintained during high demand events. If well #6 and or well #8 are put online, a water quality advisory would be issued for the effected service area.

Phase 2 is not included in Table 3-14 because source well operations are not modified. Works in this Phase include watermain upsizing to allow for works in Phase 3. Phase 3 works include connecting Well #8 to the raw water supply system. This upgrade could extend to Well #1 if manganese concentrations became a concern at this well.

Considering future wells, Well #11 is anticipated to be located on the west side of Osoyoos Lake and South of Well #6. Raw water supply from Well #11 could be conveyed to a common lake crossing with Well #8. Subsequently, the raw water supply main at Well #11 could be extended to Well #6. This approach should be confirmed during the design phase to confirm conveyance is more cost effective compared to treatment at a common location between Wells #6 and #11.

3.5.2.4.2 Cottonwood WTP Implementation

The proposed raw water supply network and domestic system upgrades are shown on Figures F1 to F5 in Appendix F. Figure F1 shows Phase 1, Figure F2 shows Phase 2, Figure F3 shows Phase 3 and Figure F4 provides a completed system layout once all phases are installed. Also F5 shows a proposed watermain upsizing project to enhance flow capacity to the east of Osoyoos. The proposed raw water supply network will convey flows from Wells #3, #4, #5, #8, #9 and #10 to the WTP. Domestic system upgrades include upsizing existing water mains and installing new water mains to accommodate the conversion of domestic system mains to convey raw water. Proposed upsizing of mains ensure adequate fire flow capacity can be achieved throughout the system. This is critical through the Lake crossing and Main St. water main which currently act as constrictions for flows from the 340 reservoirs.

Detailed cost estimate are provided on the corresponding project sheets in Appendix E. In general, all hydrants, valves, water services and existing system connections will be replaced where any features are disturbed or modified for the raw water supply system. Works also include re-instating impacted road surfaces, curb and gutters, and side walks.

Phase 1: Cottonwood WTP and Raw Water Supply

Figure F1 shows Phase 1 which includes connecting Wells #4, #5. #9 and #10 to the water treatment plant. Wells #4 and #5 flows will be conveyed to the WTP via an existing 300 mm water main. The existing water main from Wells #4 and #5 will be disconnected from the domestic system and repurposed as a raw water supply main. This water main runs along the

Osoyoos Lake beach line, North of Cottonwood Dr. until it reaches the Cottonwood Dr. elbow that turns directly Southwards. At this point, a new 300 mm PVC raw water supply main will be installed on Cottonwood Drive, replacing the existing 150 mm AC watermain. This raw water supply main will convey flows south towards Maple Dr. where it will turn eastwards to the WTP (also replacing the existing 150 mm AC watermain on Maple Drive).

Wells #9 and #10 will be connected to the raw water supply system with new raw water supply mains. The Well #9 raw water supply main will connect directly to the adjacent Cottonwood WTP. Well #10 will be connected to the raw water supply system via a new water main located in a right-of-way flowing westwards towards Wells #4 and #5. After crossing Cottonwood Drive, it will connect to the converted raw water supply main from Wells #4 and #5.

Domestic system upgrades are also shown on Figure F1. Upgrades include installing a new 450 mm PVC water main on Maple Drive to convey flows from the WTP to the domestic water system. This new main will flow from the WTP westwards on Maple Dr. until Cottonwood Drive. At this point, the new main will connect to the existing system to convey flows southwards and it will continue northwards with a reduced size of 300 mm. The new water main will convey flows northwards to the existing watermain on Cottonwood Drive and connect to the existing 300 mm PVC water main in the Osoyoos Lake Beach line. At this connection, the new watermain will elbow into the existing water main which will eliminate cross connections with the converted raw water supply main. The purpose of this connection is to maintain both domestic system watermains to the lake crossing so flow capacity is not constricted through one watermain.

Phase 2: Domestic Water Main Upsizing

Figure F2 shows the scope of work for Phase 2. This work includes upsizing watermain on Cottonwood Drive and Main Street to enhance flow capacity from the lake crossing. A 450 mm water main will replace the existing 150 mm AC watermain on Cottonwood Drive then turn west on Main St. until it reaches the lake crossing. Along Main St., a new section of 450 mm main will be installed between Cottonwood Dr. and Ponderosa Drive. From Ponderosa Dr. to the lake crossing, the 450 mm water main will replace the existing AC water main and connect directly to the existing 450 mm lake crossing. The 450 mm water main from the lake crossing will greatly enhance the system capacity to provide fire flows.

This will allow the watermain in the Osoyoos beach line to be converted to a raw water supply main in Phase 3.

Phase 3: Raw Water Supply Expansion

Figure F3 shows the scope of work for Phase 3. This includes connecting Well #8 to the raw water supply system. Raw water flows from Wells #8 will be conveyed to the WTP via repurposed water mains similar to Well #4 and #5. Well #8 will be disconnected from the domestic water system and the existing 150 mm water main on Kingfisher Dr. will be converted to a raw water supply main. The water main flows eastwards along Kingfisher Dr. to the existing raw water lake crossing at the Highway. Along this flow path several connections to the existing system will be disconnected and capped. In addition, a new section of raw water main will be

required to connect the converted water main to the existing flange connection point at the lake crossing. This extension will pass under the existing water main and turn eastwards to the lake crossing.

After the lake crossing, the eastern end of this pipe will be connected to the existing water system which will be converted to a raw water supply main. This conversion will include disconnecting the southern arm of the Tee connection where the lake crossing is Teed into the domestic system. This will direct flow Northwards along the existing converted 300 mm water main located in the Osoyoos Lake beach line. Flows will then be conveyed along the beach line towards Cottonwood Drive. At Cottonwood drive this pipe will be disconnected from the domestic system and tied into the 300 mm raw water main conveying flows from Wells #4 and #5. Thus, flows will be conveyed to the WTP.

Phase 3 upgrades to the domestic system include removing a dead-end section and installing a new watermain on Kingfisher Drive. A dead-end section is created when the domestic system is disconnected at the Osoyoos Beach line. Thus, this pipe should be abandoned from this point to the Cottonwood Drive Tee. This will allow continuous flow along Cottonwood Drive.

Upgrades west of Osoyoos Lake include installing a new 250 mm watermain on Kingfisher Dr. because the existing watermain is proposed to be converted to a raw water supply main. This includes connecting to the existing 350 mm water main at the west end of the lake crossing. Then crossing under the highway and continuing along Kingfisher drive until the main reaches Well #8.

East Main Street Upsizing

In addition to the required raw water and domestic system upgrades, it is recommended that the water main on Main Street, East of Cottonwood Drive be upsized. This will improve flow capacity to the east sector of Osoyoos. The existing 150 mm asbestos cement (AC) water main that runs along Main St. (Highway 3) limits system capacity to provide fire flows to the surrounding area and developments SE of Osoyoos Lake. To improve system capacity, upsizing the watermain on Main St. would improve these circumstances. The proposed scope of work is shown on Figure F5, in Appendix F. This work includes replacing approximately 660 m of AC watermain with 350 mm PVC watermain with applicable appurtenances. Work begins at Cottonwood drive, crosses the highway, extends eastwards, and terminates at Tamarack Drive.

3.5.2.5 East Sector Reservoir Upgrades

Until this point, all upgrades discussed in this report are recommended to occur in the near future. The East Sector Reservoir upgrades listed in this section are considered as projects that would increase the capacity and redundancy in the system. Currently, the original 340 reservoir may need to be replaced based on its ESL. Given that there are two reservoirs at this location, there is an opportunity to divert these funds to install an East Sector. This would provide enhanced service to the current residences and promote development. These developments

would likely include cost sharing with the Osoyoos Indian Band, Regional District of Okanagan-Similkameen, and developers through DCC. TRUE is providing a description of each proposed upgrade for discussion purposes only. Detailed cost estimates are provided on the corresponding project sheets in Appendix E.

East Sector Reservoir

The Town and the Osoyoos Indian Band (OIB) have been discussing the implementation of a treated water reservoir on the east side of town, near the south end of Sonora Dunes Golf Course. This location can be viewed on Figure F6, in Appendix F. The reservoir could provide water to any future developments in the area, as well as provide balancing, emergency storage and fire flows directly on the east side of Osoyoos. This reservoir could also address any reservoir storage deficiencies discussed in the *Reservoir Analysis* Section providing additional system resilience. Also discussed in the East Sector Densification Plan, this reservoir could provide a minimum fire flow of 150 L/s to OIB developments. It is unknown as to whether the OIB wishes to proceed with a treated water reservoir at this time.

Distribution infrastructure required for effective use of the reservoir is listed below. Figure F6 in Appendix F shows the layout of the proposed distribution projects. Detailed cost estimates for each project are provided in Appendix E. Cost estimates consider highway crossing, hydrant installation and restoration of road structures.

- East Sector Reservoir Supply / Distribution Main
  - Work includes installing a 700 m length of 300 mm PVC watermain from the East Sector Reservoir to 45th street, along the boundary of the OIB lands and the potential RDOS expansion area.
- East Sector Reservoir Cottonwood Drive Looping
  - Work includes extending the watermain from 45th Street to Cottonwood Drive (total length of 570 m) and installing a back flow prevention Chamber.
- East Sector Nk'mip Corner Water Connection
  - Work includes installing a 850 m, 300 mm PVC water main on 45th Street and connect to the existing system at the south end of 45th Street.

The Supply/Distribution Main is required to be installed and either the Cottonwood Drive Looping Project or Nk'mip Corner Water Connection project would be required to connect the Reservoir to the domestic system. The Cottonwood Drive Looping project is more cost effective and provides greater capacity to the system. For these reasons, it is recommended to occur prior to the Nk'mip Corner Water Connection project. The Nk'mip Corner Water Connection project would provide beneficial looping within the system; however, it will likely be development driven.

3.5.3 Proposed System Upgrades Summary

This section summarizes the proposed capital projects for the Town's water system which include source Wells #9 and #10, water treatment upgrades, implementation of a raw water supply system, domestic system upgrades, and East Sector Reservoir and domestic system projects. A summary of the projects is shown in Table 3-15 with anticipated installation dates and total project value. Project sheets and cost estimates are included in Appendix E. Class D cost estimates are intended to provide a magnitude of projects cost and are not intended to be budgetary values. Notably, the east sector reservoir is not included in this list because it is considered to be funded by replacement of the 340 reservoir.

Furthermore, the Town has planned to develop groundwater production sources in the vicinity of Cottonwood Drive and Maple Drive (Wells #9 and #10). These plans are contingent on the result of an ongoing test well program. As such, the viability of the proposed production wells cannot be confirmed at this time. Therefore, recommendations related to implementation of additional groundwater sources cannot be confirmed at this time.

TABLE 3-15: PROPOSED SYSTEM AND WATER TREATMENT UPGRADES

PROJECTS	COST PLUS ENGINEERING (15%) AND CONTINGENCY (30%)	INSTALLATION DATE
Capital - 74th Avenue Upsizing	$657,000	2024
Capital - Wells Pump Auxiliary Power	$1,487,000	2024
Capital - Well #9 And #10 C/W Auxiliary Power	$1,937,200	2024
Capital - Phase 1 WTP Upgrades	$1,170,000	2025
Capital - Cottonwood WTP	$7,208,000	2025
Capital - 89th Street Upgrades	$758,000	2026
Capital - 62nd Avenue Tie-in	$231,000	2027
Capital - East Sector Reservoir Supply / Distribution Main	$952,000	2029
Capital - East Sector Reservoir Cottonwood Drive Looping	$1,197,000	2029
Capital - Phase 2 WTP Upgrades	$2,671,000	2030
Capital - Phase 3 WTP Upgrades	$919,000	2035
Capital - East Main Street Upsizing	$1,905,000	2040
Capital - East Sector Nk'Mip Corner Water Connection	$1,218,000	2042

4.0 Domestic Water System Implementation Pan

The Domestic Water System Implementation Plan proposes practical steps to effectively achieve the recommendations of the Asset Management Plan and Capital Plan. This translates into a joint replacement, capital, pro-active and engineering project work forecast. The main purpose for this approach was to eliminate mass replacement of assets in 2023 which is shown in the reserve balance model in Section 2.0. Based on the work forecast, next steps to maintain and fund the proposed projects were determined. This entails updating the reserve balance model to consider the work plan with replacement, capital, pro-active and engineering projects. The purpose for updating the reserve balance is to determine the proposed incremental monthly service fee (MSF). The proposed MSF will be determined based on multiple expenses including the AAI for replacement projects, additional AAI for capital, pro-active projects and engineering projects, and AAI to support financing capital and pro-active project funding.

Additional AAI corresponding to the capital, pro-active and engineering projects will be required for ongoing maintenance. This value was calculated by updating the asset management plan (as per Section 2.0) and the reserve balance model with the recommended work forecast. These updates will show the Town what AAI obligations they will incur once the capital, pro-active and engineering projects are completed and indicate how to budget for replacement of infrastructure throughout their lifespan. As previously mentioned in Section 2.2, proposed capital projects will modify, replace, or abandon existing infrastructure. These assets were removed from the original asset management analysis because the replacement cost is considered to be funded by capital budgets. A complete table of modified assets can be viewed in Table G2, in Appendix G. Considering pro-active projects, these assets are only additions to the system and do not modify or replace any current assets.

AAI values associated with financing capital and pro-active project were calculated with two financial models. These models are presented in Section 4.5. This approach was undertaken because The town has indicated that the capital projects will require additional financing. Furthermore, it is assumed that the pro-active projects will be financed.

4.1 Work Forecast

The proposed work forecast is presented in Figure 4-1, on Page 45. This figure presents annual construction costs with stacked columns showing contributions of individual projects. Individual projects are denoted with codes which correspond to Table 4-1, Table 4-2, Table 4-3, Table 4-4, and Table 4-5. These tables also summarize anticipated construction costs. Detailed cost breakdowns for This work forecast is intended to be used by the Town of Osoyoos for planning purposes and should be modified as needed based on current conditions and operations. It was developed to correspond to the Capital Plan period which is 20 years. Thus, projects were projected to 2044. On a high level, projects were sequenced based on the following factors, listed in order of priority.

1. Regulatory compliance pertaining to source water quality and treatment.
2. System performance including balancing storage and fire flow availability.
3. Financial planning to eliminate a negative reserve balance and promote a consistent annual expenditure (when possible).
4. Work Planning to allow for relatively consistent annual work loads to minimize impacts to the Towns Staff.
5. Risk-based system replacement projects considering critical infrastructure.
6. Independent and dependant project considerations were identified to support the previous considerations and take advantage of project efficiencies.

When applying these considerations, hierarchical patterns are established. Capital projects are proposed primarily for system compliance and performance criteria. Thus, these projects are scheduled according to the proposed installation dates which largely dictate the work forecast. These compliance and system performance considerations are discussed in Section 3.5 of the Capital Plan.

Similarly, engineering projects correspond to routine compliance reporting. For this reason, the engineering projects were scheduled as required by the applicable regulations. Typically, these projects re-occur every 5 years. Thus, several of the engineering projects re-occur in the work forecast. Cost estimates for engineering projects are provided in Appendix G, Table G3.

Following, replacement projects were prioritized and scheduled. Replacement projects were categorized based on watermain replacement projects and other existing asset projects. It was determined that system performance was more impacted by the existing asset projects corresponding to source well pumps, chlorine disinfection, reservoirs, source wells and electrical components. Also, it is understood that these components are generally more susceptible to wear and tear when compared to watermains. For these reasons, these projects were scheduled based on their original AM replacement date or deferred by roughly 1 to 3 years. Deferring replacement projects was done to create a more consistent work forecast with less extreme annual expenditures.

Watermain replacement projects were mainly scheduled in years with lower workloads. These projects were prioritized based on proximity to watermain capital projects (system performance consideration), then risk-score. Several capital projects are surrounded or connected to high or medium risk watermain replacement projects. For this reason, these projects were scheduled together to promote efficiency during construction. Subsequently, watermain projects were prioritized based on risk score. In general, high-capacity trunk mains yield a higher risk score. Thus, these critical pipes will be replaced first. These pipes correspond to original AC pipe installed in the earliest locations of the town. The vast majority of these pipes yielded a risk score of high or medium. The work forecast projects all high and medium risk pipe to be replaced in the next 20 years.

Considering replacement deferrals, some watermain projects experience the greatest replacement deferrals roughly from 1 to 10 years. This is the case because all high-risk pipe

would be required to be replaced in 2023. However, this is not realistic from either a work feasibility or financial perspective. For these reasons, these projects are scheduled throughout the work forecast to mitigate financial impacts and extreme workloads. Considering medium risk watermain projects, these projects experience the greatest deferrals because they are less critical to the system being small diameter watermain, mostly in residential areas. Furthermore, Section 4.1.1 present the replacement projects with additional project specific considerations.

Lastly, the majority of pro-active projects were scheduled in order of priority based on regulatory compliance and system performance. Four main project categories are recommended in order of priority: chlorine monitoring upgrades, automatic flushing stations, pressure zone connections (including automatic flushing), and watermain looping projects. Watermain looping projects were scheduled last because they were considered less critical. In general, the looping projects with the greatest system improvement and proximity to other projects dictated scheduling.

Detailed cost estimates for watermain looping projects are provided in Appendix G, Table G4. Furthermore, project layout figures are provided in Appendix H, showing the location of each pro-active project and the boundaries of each watermain looping project.

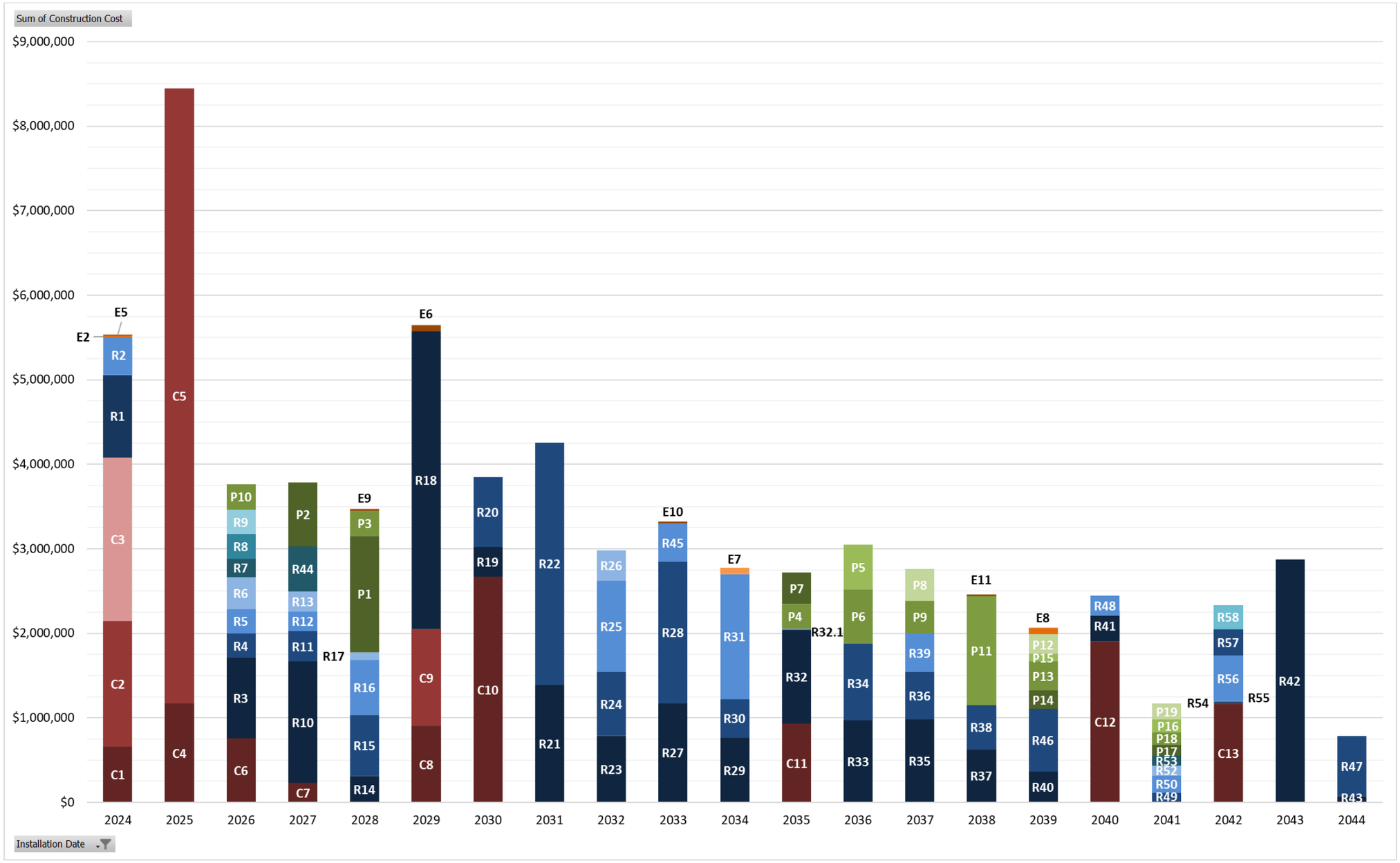


FIGURE 4-1: REPLACEMENT, CAPITAL WORK, PRO-ACTIVE AND ENGINEERING PROJECT FORECAST

TABLE 4-1: EXISTING ASSET REPLACEMENT PROJECTS

	PROJECTS	CONSTRUCTION COST	INSTALLATION DATE
R4	*Pump(s) for Water Supply Well #1 and Electrical Components*	$290,000	2026
R5	*Pump(s) for Water Supply Well #3 and Electrical Components*	$290,000	2026
R6	*Pump(s) for Water Supply Well #4 and Electrical Components*	$377,000	2026
R7	*Pump(s) for Water Supply Well #5 and Electrical Components*	$217,500	2026
R8	*Pump(s) for Water Supply Well #6 and Electrical Components*	$290,000	2026
R9	*Pump(s) for Water Supply Well #8 and Electrical Components*	$290,000	2026
R11	*Water Supply Well #1*	$362,500	2027
R12	*Well #1 Chlorine Disinfection*	$232,000	2027
R13	*Well #6 Chlorine Disinfection*	$232,000	2027
R44	*Hydrant Replacement Program Project 1*	$539,400	2027
R14	*340 Reservoir PRV Station*	$311,750	2028
R15	*Pump(s) for 340 Reservoir Booster to 402 Reservoir Pumps and Piping and Electrical Components*	$725,000	2028
R16	*Pump(s) for Fairway Hills Booster Station Pumps and Piping and Electrical Components*	$652,500	2028
R17	*Well #3 Chlorine Disinfection*	$87,000	2028
R18	*340 Zone Reservoir (1350 Cu. M)*	$3,523,500	2029
R22	*Industrial Park Reservoir*	$2,871,000	2031
R26	*Water Supply Well #3*	$362,500	2032
R45	*Hydrant Replacement Program Project 2*	$452,400	2033
R32.1	*Well #8 Chlorination Electrical Components*	$14,500	2035
R40	*Water Supply Well #4*	$362,500	2039
R46	*Hydrant Replacement Program Project 3*	$748,200	2039
R41	*Water Supply Well #1 Pump House*	$362,500	2040
R48	*Water Supply Well #1 Electrical Components*	$116,000	2040
R49	*Water Supply Well #3 Electrical Components*	$116,000	2041
R50	*Water Supply Well #4 and #5 Electrical Components*	$203,000	2041
R52	*Water Supply Well #6 Electrical Components*	$116,000	2041
R53	*Water Supply Well #8 Electrical Components*	$116,000	2041
R54	*Well #1 Chlorine Disinfection Electrical Components*	$14,500	2042
R55	*Well #6 Chlorine Disinfection Electrical Components*	$14,500	2042

R42	*Dividend Ridge Reservoir*	$2,871,000	2043
R56	*340 Reservoir PRV Station Electrical Components*	$539,400	2042
R57	*340 Reservoir Booster to 402 Reservoir Electrical Components*	$311,750	2042
R58	*Fairway Hills Booster Station Electrical Components*	$290,000	2042
R43	*Well #4 and #5 Chlorine Disinfection*	$72,500	2044
R47	*Hydrant Replacement Program Project 4*	$713,400	2044
	Total	$19,087,800	

TABLE 4-2: WATERMAIN REPLACEMENT PROJECTS

	PROJECTS	CONSTRUCTION COST	INSTALLATION DATE
R1	*Watermain Project: Central 74th Street*	$976,850	2024
R2	*Watermain Project: South Heron Lane and Loon Crescent*	$447,121	2024
R3	*Watermain Project: 89th Street, From 74th Street to Well #1*	$949,858	2026
R10	*Watermain Project: South 89th St., Osprey Place and East 62nd Ave*	$1,434,512	2027
R19	*Watermain Project: Ponderosa Dr.*	$350,944	2030
R20	*Watermain Project: 74th Street, 340 Reservoir Distribution Main*	$826,348	2030
R21	*Watermain Project: 74th Street East, 87th From 74a Ave to 68 Ave, and 68Th Ave*	$1,386,322	2031
R23	*Watermain Project: Watermain East of 85th St., 68th Ave. and Main St. from 68th Ave. to Kingfisher Dr.*	$788,191	2032
R24	*Watermain Project:: Watermain between Main St. from 78 Ave. to Spartan Drive, Spartan Dr. to Main St., Main St. to 74a Ave*	$754,305	2032
R25	*Watermain Project: Main St. from 74a Ave to 83rd St. and 83rd St to 68Ave.*	$1,079,206	2032
R27	*Watermain Project:74a Ave., Heron Lane, and Night Hawk Dr.*	$1,174,240	2033
R28	*Watermain Project: 87th St. from Jubilee Dr. to 74a Ave.*	$1,671,454	2033
R30	*Watermain Project: 89th Street North*	$458,486	2034
R31	*Watermain Project: 74th Ave between Finch Crescent Nighthawk Dr., Finch Crescent, Swan Crescent, and Nighthawk Dr.*	$1,478,516	2034
R29	*Watermain Project: 72 Ave West, Watermains North and South of 72 Ave*	$764,832	2034
R32	*Watermain Project: Kingfisher Dr. and Looping Watermain*	$1,109,006	2035
R33	*Watermain Project: Lombardy Ln. and Tamarack Dr.*	$972,880	2036

R34	*Watermain Project: Maple Dr.*	$910,294	2036
R35	*Watermain Project: Oleander Dr. from Magnolia Pl. to Lobelia Dr., and North Lobelia Dr.*	$981,440	2037
R36	*Watermain Project: Oleander Dr North from Magnolia Pl.*	$558,236	2037
R39	*Watermain Project: Rose Pl.*	$461,413	2037
R37	*Watermain Project: Harbour Key Dr. from Main St. to Cottonwood Dr.*	$626,634	2038
R38	*Watermain Project: South Oleander Dr., Jasmine Dr. and 32nd Ave. East*	$525,633	2038
	Total	$20,686,720	

TABLE 4-3: CAPITAL PROJECTS SUMMARY

	PROJECTS	CONSTRUCTION COST	INSTALLATION DATE
C1	*Capital - 74th Avenue Upsizing*	$656,850	2024
C2	*Capital - Wells Pump Auxiliary Power*	$1,486,250	2024
C3	*Capital - Well #9 And #10 C/W Auxiliary Power*	$1,937,200	2024
C4	*Capital - Phase 1 WTP Upgrades*	$1,170,150	2025
C5	*Capital - Cottonwood WTP*	$7,277,260	2025
C6	*Capital - 89th Street Upgrades*	$758,350	2026
C7	*Capital - 62nd Avenue Tie-in*	$230,550	2027
C8	*Capital - East Sector Reservoir Supply / Distribution Main*	$901,900	2029
C9	*Capital - East Sector Reservoir Cottonwood Drive Looping*	$1,146,950	2029
C10	*Capital - Phase 2 WTP Upgrades*	$2,670,900	2030
C11	*Capital - Phase 3 WTP Upgrades*	$932,350	2035
C12	*Capital - East Main Street Upsizing*	$1,905,300	2040
C13	*Capital - East Sector Nk'Mip Corner Water Connection*	$1,167,613	2042
	Total	$22,241,623	

TABLE 4-4: PRO-ACTIVE PROJECTS

	PROJECTS	CONSTRUCTION COST	INSTALLATION DATE
P10	*Chlorine Monitoring*	$304,500	2026
P2	*Looping Project & Pressure Zone Connection: 148 St to Highway 97*	$755,500	2027
P1	*Looping Project: Dividend Ridge via Gold Course Dr. South to 107 St.*	$1,377,700	2028
P3	*Automatic Flushing System: Lakeshore Dr.*	$297,300	2028
P4	*Automatic Flushing System: Domestic System 8 at 150th Ave.*	$294,400	2035
P7	*Pressure Zone Connection: 122 Ave.*	$324,800	2035
P6	*Looping Project: East 100 Avenue & Pressure Zone Connection*	$639,500	2036
P5	*Looping Project: Spartan Dr. and Braeburn Pl.*	$532,200	2036
P9	*Pressure Zone Connection: Heron Ln. and 74a Ave.*	$380,200	2037
P8	*Pressure Zone Connection: Nighthawk Dr. from Killdeer Pl.*	$380,200	2037
P11	*Looping Project: Industrial Park Looping*	$1,284,900	2038
P14	*Looping Project: Strata Pl. to Main St.*	$216,100	2039
P13	*Looping Project: Rosa Pl. to Alysum Ct. and Heather Pl. to Larkspur Pl.*	$343,700	2039
P15	*Looping Project: Poplar Ct.*	$96,800	2039
P12	*Looping Project: Loon Crescent and Heron Ln. to Night Hawk Dr.*	$230,100	2039
P17	*Looping Project: Meadowarc Dr. to Wren Pl.*	$132,300	2041
P18	*Looping Project: Glen Abbey Cr.*	$155,200	2041
P16	*Looping Project: Quail Ridge Pl. to Golf Course Dr.*	$152,300	2041
P19	*Looping Project: Lambert Ct. to Vadette Dr.*	$196,500	2041
	Total	$8,094,200	

TABLE 4-5: ENGINEERING PROJECTS

	PROJECTS	CONSTRUCTION COST	INSTALLATION DATE
E1	*Water Conservation Plan*	$25,000	2023
E2	*Source Water Protection Plan (Well Protection Plan)*	$15,000	2024
E3	*Water Master Plan Review*	$75,000	2023
E4	*Detailed Asset Management Plan*	$75,000	2023
E5	*Asset Management Software*	$15,000	2024

E6	*Water Master Plan Review*	$75,000	2029
E7	*Water Master Plan Review*	$75,000	2034
E8	*Water Master Plan Review*	$75,000	2039
E9	*Water Conservation Plan*	$25,000	2028
E10	*Water Conservation Plan*	$25,000	2033
E11	*Water Conservation Plan*	$25,000	2038
	Total	$505,000	

4.1.1 Replacement Projects

Existing asset and watermain replacement projects represent works required by the risk-based asset management analysis presented in report Section 2.0. These projects were created by grouping similar or pertinent works with like replacement dates. This approach creates feasible project scopes that can be executed. Based on these project scopes, construction costs were determined to develop the work forecast. Existing asset replacement project construction costs are based on the sum of system component replacement cost as per the AM plan, and an addition 15% for Engineering and 30% for Contingency. These projects and construction cost estimates are summarized in Table 4-1. Construction cost estimates are equivalent to Class D cost estimates and should be confirmed during detailed design.

Watermain projects were developed based on linear asset risk scores and grouped together to form continuous water main replacement projects. These projects are summarized in Table 4-2 and detailed cost estimate tables are provided in Appendix G, in Table G5. Furthermore, a project layout figures are provided in Appendix H, showing the boundaries of each watermain project. Construction cost estimates include 15% for Engineering and 30% for Contingency. These projects assume replacement of all valves, hydrants and services connected to the pipes being replaced. In some cases, newly replaced hydrants may be excluded from these costs as determined during detailed design. Other assumptions include removal and reestablishing disturbed asphalt, curb and gutter, and sidewalks.

The following Lists of projects details other project specific details.

- Projects R4, R5, R6, R7, R8 and R8, Pump(s) for Water Supply Well #1, #3, #4 and #5, #6 and #8 and Electrical Components
    - These projects were deferred from replacement in 2023 to 2026 to mitigate large initial costs.
    - It is recommended that a review of all source wells be completed to resize all pump to effective extract the sustainable well yield. In the case of well #6, it is anticipated that the pump is not extracting the sustainable well yield with flow potentially less than half that at full capacity.
    - Consideration should also be given for operation in the raw water supply system which may allow for more consistent pressures.
- R11: Water Supply Well #1

    - This project should be conducted simultaneously with project R4 with the new pump being sized for the new well.
- R12: Well #1 Chlorine Disinfection
    - This project is a routine maintenance project.
- R13: Well #6 Chlorine Disinfection
    - Consideration to mainline injection of chlorine should be considered in this project. Currently, it is injected directly into Well #6 which is enhancing manganese precipitation. It is anticipated that this is impacting the pump performance.
- R44, R45, R46 and R47: Hydrant Replacement Program Project 1, 2, 3, and 4
    - The hydrant replacement program projects aim to replace hydrants that are past their service life and are not being replaced by watermain projects. Hydrant replacement was prioritized based on replacing the oldest hydrants firsts. Based on these criteria, hydrants were grouped into 4 projects and distributed throughout the work forecast to achieve some construction and procurement advantages (and to mitigate a large cost in 2023). The first project aims to replace most of the grossly outstanding hydrants in 2027 with decreasing urgency as the plan progresses. All hydrants in projects R44 and R45 should be replaced in 2023; however, this was an impractical number of hydrants. To separate these projects, the oldest hydrants were placed in R44. On average, the age of the hydrants to be replaced in R45 (at the time of replacement) will be roughly the same age as those replaced in R44.
    - This program achieves replacing all the outstanding hydrants in the next 20 years and sets a consistent start for an ongoing hydrant maintenance program.
- R14: 340 Reservoir PRV Station
    - This is a routine replacement project.
    - If the condition is assessed as sufficient, this project could be deferred and completed with project R20 which replaces the watermain exiting the PRV station.
- R15: Pump(s) for 340 Reservoir Booster to 402 Reservoir Pumps and Piping and Electrical Components
    - This is a routine replacement project. Consideration for replacement of the 402 reservoir in project R22 should be considered.
- R16: Pump(s) for Fairway Hills Booster Station Pumps and Piping and Electrical Components
    - This is a routine replacement project. Consideration for auxiliary power should be considered during design.
- R17: Well #3 Chlorine Disinfection
    - This is a routine replacement project.
- R18: 340 Zone Reservoir (1350 Cu. M)
    - It is proposed that funds for replacing this reservoir be used to build the East Sector reservoir in collaboration with the OIB. This will also provide enhanced fire

flow protection and system pressure to the east side of Osoyoos including future development.
    - This project would be required to be completed in conjunction with capital projects C8 and C9. These capital projects are specifically for providing flows from the east reservoir to the town. If the east reservoir is not installed, these projects are not required.
    - Similarly, capital project C13 is a looping water main project connected the east reservoir distribution system. Thus, if the east sector reservoir is not completed, this project is not required. Furthermore, this project would largely be driven by development in the area which should be confirmed at the time of implementation.
- R22: Industrial Park Reservoir
    - Currently this reservoir has a minor leak. Depending on its condition, this project may need to be moved up if this reservoir begins to excessively leak.
- R26: Water Supply Well #3
    - This is a routine replacement project. Well condition should be assessed prior to installing a new well.
- R40: Water Supply Well #4
    - This is a routine maintenance project. The condition of Well #4 could be assessed prior to installing a new well.
- R42: Dividend Ridge Reservoir
    - This is a routine replacement project. Consideration should be given to raising this reservoir during design to accommodate additional development if necessary.
- R43: Well #4 and #5 Chlorine Disinfection
    - Disinfection system may not be necessary at this location in the future. These wells will be connected to the Raw water supply system corresponding to Capital Project C4: Capital - Phase 1 WTP Upgrades. Thus, chlorine disinfection will be conducted at the Cottonwood WTP.

The following electrical component projects are routine replacement projects.

- R32.1: Well #8 Chlorination Electrical Components
- R41: Water Supply Well #1 Pump House
- R48: Water Supply Well #1 Electrical Components
- R49: Water Supply Well #3 Electrical Components
- R50: Water Supply Well #4 and #5 Electrical Components
- R52: Water Supply Well #6 Electrical Components
- R53: Water Supply Well #8 Electrical Components
- R54: Well #1 Chlorine Disinfection Electrical Components
- R55: Well #6 Chlorine Disinfection Electrical Components
- R56: 340 Reservoir PRV Station Electrical Components

- R57: 340 Reservoir Booster to 402 Reservoir Electrical Components
- R58: Fairway Hills Booster Station Electrical Components

Watermain Replacement Projects

- R1: Watermain Project: Central 74th Street
  - The scope of this project partially overlaps with capital project C1 Capital - 74th Avenue Upsizing if this project is undertaken as a like for like replacement. Alternatively, there is an opportunity to upsize this water main to achieve the goal of Capital Project C1. The existing watermain is parallel to the proposed watermain upgrade in C1. It is likely that upsizing the main is more cost effective to reduce surface disturbance and other contract considerations. This should be confirmed during detailed design.
- R2: Watermain Project: South Heron Lane and Loon Crescent
  - Similar to Project R1, this project has overlapping scope with project C1. For this reason, it is recommended to be completed simultaneously.
- R3: Watermain Project: 89th Street, From 74th Street to Well #1
  - The scope of this project surrounds capital project C6: Capital - 89th Street Upgrades. It is recommended that these projects be completed simultaneously with additional consideration given to well #1 water distribution during detailed design.
- R10: Watermain Project: South 89th St., Osprey Place and East 62nd Ave
  - The scope of this project surrounds capital project C7: Capital - 62nd Avenue Tie-in. It is recommended that this project be completed simultaneously with project C7. The scope of the project could be reduced if necessary to limit works to 62nd Ave and 89th Street to reduce cost associated with replacing the intersection.
- R19: Watermain Project: Ponderosa Dr.
  - The scope of this project partially overlaps with capital project C10: Phase 2 WTP Upgrades. The section of pipe on Main Street will be replaced with a 450 distribution main and the connection on Cottonwood Drive will be replaced, as per project C10.
  - It should be confirmed that the scope of this project and C10 are considered together during detailed design. Based on road disturbances on Main St. (Highway #3), it may be more cost effective to place the 450 distribution main on Ponderosa Drive. However, this was originally disregarded because the Cottonwood Drive watermain would still require a 450 mm water main to facilitate project C12. Thus, more 450 mm diameter watermain would need to be installed in the long term which is more costly. However, this pipe is only projected to be installed 5 years later. Thus, in the short term, it would be more cost effective to replace Ponderosa Drive with the 450 mm distribution main because it eliminates this project. This should be considered during detailed design based on the circumstances at that time.

- R20: Watermain Project: 74th Street, 340 Reservoir Distribution Main
    - This project is the first high risk watermain replacement project that does not overlap with a capital project. It was selected because this water main provides flows to the 402 pressure zone which is integral to the system.
    - This project was planned in consideration of the downstream pipe in project R1 being replaced or modified.
- R21: Watermain Project: 74th Street East, 87th From 74a Ave to 68 Ave, and 68Th Ave
    - This project is intended to continue pipe replacement from Project R1 with the purpose of extending replaced pipe to the lake crossing. This will improve the system resilience if this AC watermain fails.
- R23: Watermain Project: Watermain East of 85th St., 68th Ave. and Main St. from 68th Ave. to Kingfisher Dr.
    - Similar to Project R21, this project extends replaced watermain to the lake crossing.
- R24: Watermain Project: Watermain between Main St. from 78 Ave. to Spartan Drive, Spartan Dr. to Main St., Main St. to 74a Ave
    - This project is a routine replacement project which coincides with project R23 to provide a replaced water main into the North section of Osoyoos.
- R25: Watermain Project: Main St. from 74a Ave to 83rd St. and 83rd St to 68Ave.
    - This project connects the replaced watermain in R24 to the lake crossing and provides looping of replaced pipe.
- R27: Watermain Project:74a Ave., Heron Lane, and Night Hawk Dr.
    - Similar to R25, this project is a routine replacement that will provide looping with replaced pipe.
- R28: Watermain Project: 87th St. from Jubilee Dr. to 74a Ave.
    - This project is largely a replacement project, but it will provide a more secure water supply to the north of Osoyoos.
- R30: Watermain Project: 89th Street North
    - This project is a routine replacement project for high-risk pipe.
- R31: Watermain Project: 74th Ave between Finch Crescent Nighthawk Dr., Finch Crescent, Swan Crescent, and Nighthawk Dr.
    - This project is a routine replacement project for high-risk pipe.
- R29: Watermain Project: 72 Ave West, Watermains North and South of 72 Ave
    - This project is a routine replacement project for high-risk pipe.
    - This is the last project with the majority of pipe to be replaced having a high-risk score.
- R32: Watermain Project: Kingfisher Dr. and Looping Watermain
    - This project is the first medium risk pipe replacement project.
    - The scope of this project is a continuation of capital project C11: Phase 3 WTP Upgrades which could experience efficiencies during construction.

    - This scope also includes the section of watermain that could connect Source Well #1 to the raw water supply system to the future Cottonwood WTP. This should be considered during detailed design if manganese concentrations become a concern at Well #1.
- R33: Watermain Project: Lombardy Ln. and Tamarack Dr.
    - Project R33 and R34 are scheduled to take place in the same year. This was sequenced to provide flows from the Future Cottonwood WTP to the East of Osoyoos and receive flows from the proposed East Sector Reservoir.
    - This will also provide looping of replaced pipe in conjunction with capital project C12: Capital - East Main Street Upsizing.
- R34: Watermain Project: Maple Dr.
    - See project R33 for details.
- R35: Watermain Project: Oleander Dr. from Magnolia Pl. to Lobelia Dr., and North Lobelia Dr.
    - This is a routine replacement project which will provide system resilience for water supply to southern Osoyoos.
- R36: Watermain Project: Oleander Dr North from Magnolia Pl.
    - This project is a continuation of project R35.
- R39: Watermain Project: Rose Pl.
    - This is a routine replacement project.
    - During detailed design, consideration could be given to making this system looped to eliminate dead end connections.
- R37: Watermain Project: Harbour Key Dr. from Main St. to Cottonwood Dr.
    - This is routine replacement projects.
- R38: Watermain Project: South Oleander Dr., Jasmine Dr. and 32nd Ave. East
    - This is a routine replacement project which will provide system resilience for water supply to southern Osoyoos.

4.2 Capital Projects Average Annual Investment

The AAI for capital projects as described in Section 3.5.3, has been determined based on similar analyses discussed in Section 2.0, with additional assumptions list as follows.

1. The equivalent total replacement costs were based on replacement of the water infrastructure similar to the assessment completed in Section 2.0. Replacement costs also consider construction costs including removal and replacement of road structures, sidewalks, curbs, and traffic control.
2. The Useful Life Remaining value exceeds the ESL because the proposed assets are yet to be installed. As such, the AAI is deferred to the year after the installation year.
3. ESL values for linear assets were based on *BCGATCA* values.

The total cumulative AAI for the proposed system upgrades is estimated to be $374,342 in addition to the reported total system AAI in Section 2.2. The total AAI values per project are

composed of categorized components with differing ESL. The detailed breakdown and calculations of AAI values can be viewed in Table I1, in Appendix I. AAI values are summarized in Table 4-6 with corresponding installation dates. It is recommended that the Town update their AAI reserve contribution as per the cumulative AAI forecast in Table 4-6 (with contributions beginning in the year after the installation year).

TABLE 4-6: AAI SUMMARY FOR PROPOSED CAPITAL PROJECTS

PROJECTS	TOTAL REPLACEMENT COST	AVERAGE ANNUAL INVESTMENT	INSTALLATION DATE	CUMULATIVE AVERAGE ANNUAL INVESTMENT	MONTHLY SERVICE FEE
74TH AVENUE UPSIZING	$373,400	$4,986	2024	$114,033	$2.72
WELL PUMPS AUXILIARY POWER	$1,025,000	$51,250	2024		
WELL #9 AND #10 C/W AUXILIARY POWER	$1,786,000	$57,797	2024		
PHASE 1 WTP UPGRADES	$764,996	$11,100	2025	$284,248	$6.77
COTTONWOOD WTP	$4,579,000	$159,115	2025		
89TH STREET UPGRADES	$441,443	$6,531	2026	$290,779	$6.92
62ND AVENUE TIE-IN	$159,200	$2,259	2027	$293,037	$6.98
*EAST SECTOR RESERVOIR SUPPLY / DISTRIBUTION MAIN**	$552,000	$7,238	2029	$311,850	$7.42
*EAST SECTOR RESERVOIR COTTONWOOD DRIVE LOOPING**	$643,000	$11,575	2029		
PHASE 2 WTP UPGRADES	$1,836,431	$26,874	2030	$338,724	$8.06
PHASE 3 WTP UPGRADES	$552,405	$8,536	2035	$347,260	$8.27
EAST MAIN STREET UPSIZING	$1,308,017	$18,531	2040	$365,792	$8.71
*EAST SECTOR NK'MIP CORNER WATER CONNECTION**	$597,000	$8,550	2044	$374,342	$8.91

Figure 4-2 shows the capital project replacement costs and cumulative AAI forecast. Initially, the AAI value will increase by roughly $114,033 dollars corresponding to roughly $3.2 million in construction replacement costs. The following year, the most significant investment and AAI increase will be made because of the Cottonwood WTP construction and associated works. Corresponding construction replacement cost totals roughly $5.3 million with the cumulative AAI increasing to roughly $284,248. Between 2026 to 2042 (final year of capital investment), annual capital works replacement cost very between roughly $160,000 to 1.8 million with years having no capital costs. This period of reduced investment is envisioned to help the Town manage the

large capital investment incurred in 2025. During this period, the increase in cumulative AAI values varies between $2,300 to $27,000.

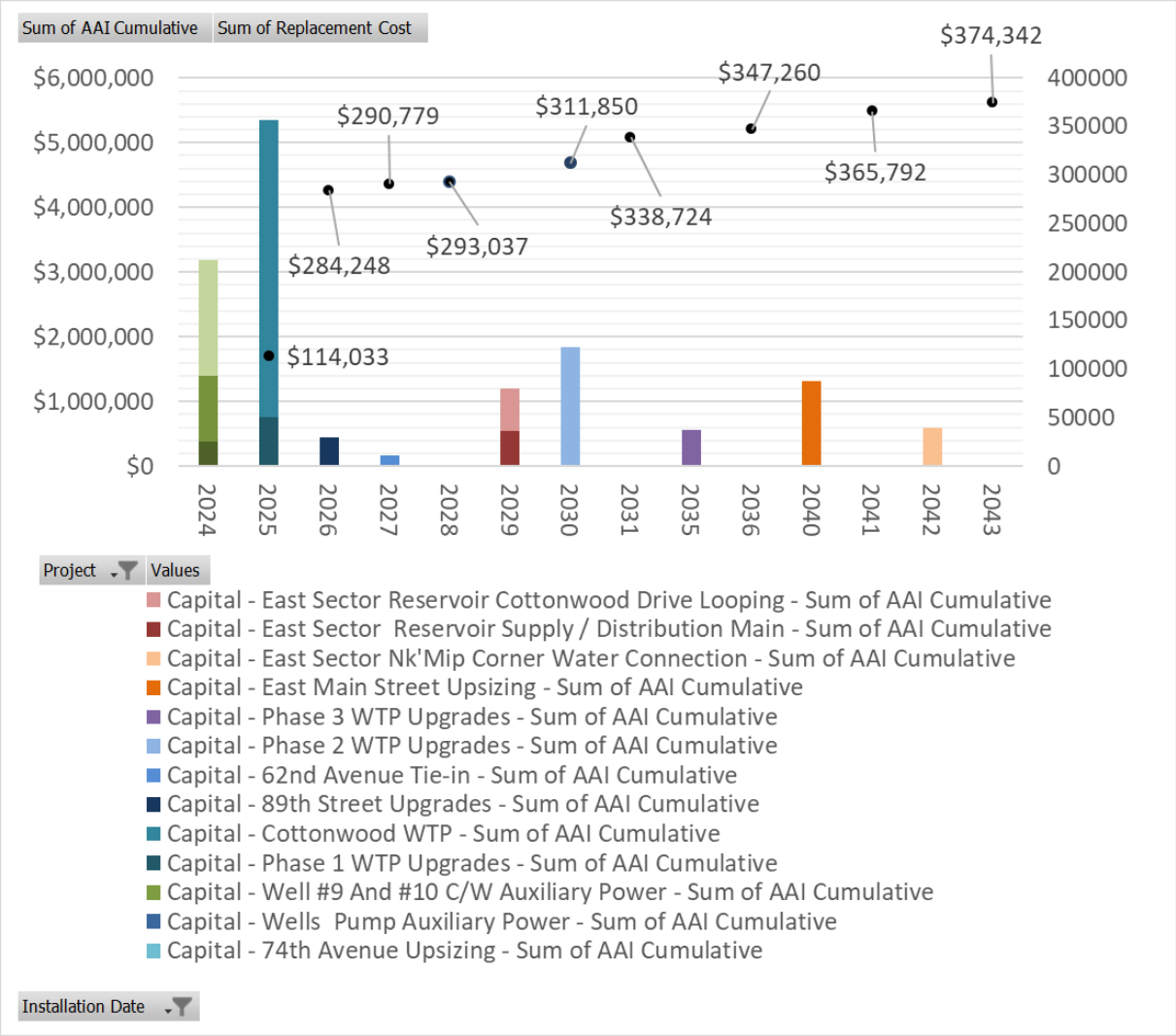


FIGURE 4-2: CAPITAL REPLACEMENT COST AND CUMULATIVE AAI FORECAST

4.3 Pro-active Projects Average Annual Investment

The AAI for pro-active projects has been determined based on analyses discussed in Section 2.0, with the additional assumptions listed in Section 4.2. The total cumulative AAI for the proposed system upgrades is estimated to be $83,878 in addition to the reported total system AAI in Section 2.2. The detailed breakdown and calculations of AAI values can be viewed in Table I2, in Appendix I. AAI values are summarized in Table 4-6 with corresponding installation dates. It is recommended that the Town update their AAI reserve contribution as per the cumulative AAI forecast in Table 4-6 (with contributions beginning in the year after the installation year).

TABLE 4-7 AAI SUMMARY FOR PROPOSED PRO-ACTIVE PROJECTS

	PROJECTS	REPLACEMENT COST	AVERAGE ANNUAL INVESTMENT	INSTALLATION DATE	CUMULATIVE AVERAGE ANNUAL INVESTMENT	MONTHLY SERVICE FEE
P10	*CHLORINE MONITORING*	$304,500	$6,750	2026	**$6,750**	$0.16
P2	*LOOPING PROJECT & PRESSURE ZONE CONNECTION: 148 ST TO HIGHWAY 97*	$755,500	$8,342	2027	**$15,092**	$0.36
P1	*LOOPING PROJECT: DIVIDEND RIDGE VIA GOLD COURSE DR. SOUTH TO 107 ST.*	$1,377,700	$11,690	2028	**$31,085**	$0.74
P3	*AUTOMATIC FLUSHING SYSTEM: LAKESHORE DR.*	$297,300	$4,304	2028		
P4	*AUTOMATIC FLUSHING SYSTEM: DOMESTIC SYSTEM 8 AT 150TH AVE.*	$294,400	$4,204	2035	**$40,594**	$0.97
P7	*PRESSURE ZONE CONNECTION: 122 AVE.*	$324,800	$5,304	2035		
P6	*LOOPING PROJECT: EAST 100 AVENUE & PRESSURE ZONE CONNECTION*	$639,500	$7,417	2036	**$53,646**	$1.28
P5	*LOOPING PROJECT: SPARTAN DR. AND BRAEBURN PL.*	$532,200	$5,635	2036		
P9	*PRESSURE ZONE CONNECTION: HERON LN. AND 74A AVE.*	$380,200	$5,294	2037	**$64,235**	$1.53
P8	*PRESSURE ZONE CONNECTION: NIGHTHAWK DR. FROM KILLDEER PL.*	$380,200	$5,294	2037		
P11	*LOOPING PROJECT: INDUSTRIAL PARK LOOPING*	$1,284,900	$11,690	2038	**$75,924**	$1.81
P14	*LOOPING PROJECT: STRATA PL. TO MAIN ST.*	$216,100	$1,188	2039	**$80,643**	$1.92
P13	*LOOPING PROJECT: ROSA PL. TO ALYSUM CT. AND HEATHER PL. TO LARKSPUR PL.*	$343,700	$2,063	2039		
P15	*LOOPING PROJECT: POPLAR CT.*	$96,800	$385	2039		
P12	*LOOPING PROJECT: LOON CRESCENT AND HERON LN. TO NIGHT HAWK DR.*	$230,100	$1,084	2039		
P17	*LOOPING PROJECT: MEADOWARC DR. TO WREN PL.*	$132,300	$691	2041	**$83,878**	$2.00
P18	*LOOPING PROJECT: GLEN ABBEY CR.*	$155,200	$888	2041		
P16	*LOOPING PROJECT: QUAIL RIDGE PL. TO GOLF COURSE DR.*	$152,300	$863	2041		
P19	*LOOPING PROJECT: LAMBERT CT. TO VADETTE DR.*	$196,500	$794	2041		

4.4 Reserve Balance Model

The reserve balance model was updated to show the range and improvement of monthly service fees with varying scenarios. Section 4.4.1 presents a base case scenario which represents the PSAB AAI values for the existing system, and the capital and pro-active projects without the work forecast. This would be considered the maximum required AAI yielding the largest MSF. In Section 4.4.2, the reserve balance model is updated with the work forecast to eliminate an initial deficit in 2023. This model is analyzed with three cases showing the range of MSF that could be achieved. These cases are discussed further in Section 4.4.2.

4.4.1 Capital and Pro-active Projects Reserve Balance Update

Project categories are included based on funding sources being replacement projects from reserve balance funding, and capital projects and pro-active projects funded by capital funds. A reserve balance model was developed considering the original system, and system with capital and pro-active projects. The first 20 years of this reserve balance model can be viewed in Figure 4-3. The complete reserve balance model can be viewed in Appendix I with the supporting data Table I3. The capital projects and pro-active project reserve balances are calculated similarly to the reserve balance in Section 2.4. Modifications to this analysis include the following.

- The AAI values are updated each year as per the capital projects AAI forecast in Table 4-6. Specifically, the cumulative AAI value is applied to the year after the installation year.
- ESLs for all existing linear assets being replaced for a second cycle were based on the risk base ESL similar to the original analysis. This is conservative because the ESL for the replacement pipes will be greater, reducing the AAI value.
- ESL values for future linear assets were based on *BCGATCA values*. Risk based ESLs were not determined for future assets. Thus, maintaining an ESL of 80 would average the variable ESL which would be determined based on a risk-based approach. This can be updated once the assets are installed.
- Installation cost is considered to be funded by capital budgets which do not show any initial expenditures in the model. Thus, the model will show the reserve balance to increase substantially during the first cycle with large expenditures at the end of the life cycle.

When analyzing Figure 4-3, the existing, capital, and pro-active balance is compared to the original reserve balance model. This balance trend is like the original analysis because current assets drive replacement costs, resulting in a deficit from 2023 to 2028. The trend climbs more quickly because of the increased AAI contribution. Over the next 20 years, the reserve balance is shown to continually increase. This is attributed to periods of saving for future replacements. Replacements begin to become increasingly frequent after 2053 when the long-term reserve balance forecast begins to increase at a slower rate and eventually plateaus. For long term

trends, see Appendix I, Table I3. The resulting MSF from this analysis is $34.70 in 2023 and increases incrementally to $45.80 in 2041.

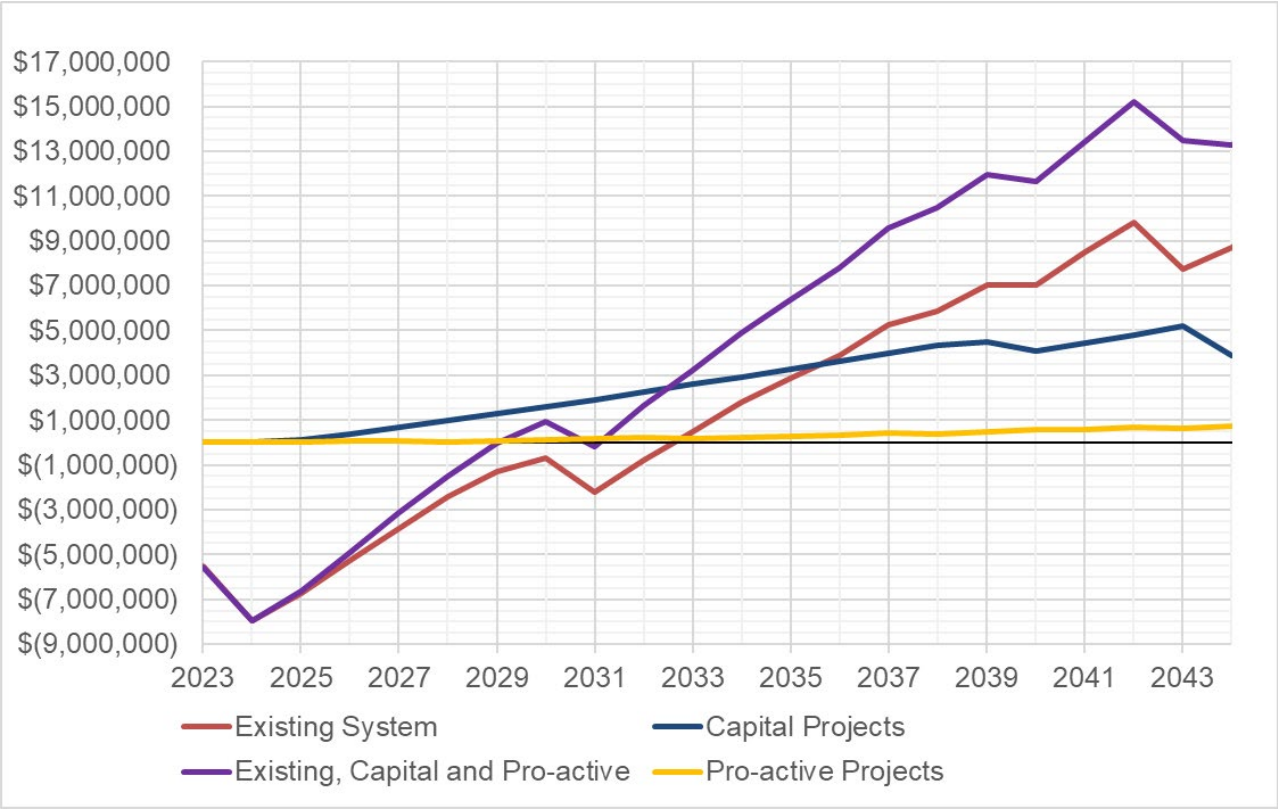


FIGURE 4-3: CAPITAL PROJECTS RESERVE BALANCE FORECAST

4.4.2 Work Forecast Reserve Balance Update

The work forecast reserve balance model updates the model to consider the proposed work plan. This entailed corresponding the annual replacement costs in the reserve balance model to the work forecast for the duration of the work forecast. After the work forecast period, annual replacement costs are calculated similarly to the model in Section 4.4.1. Additional assumptions are as follows.

- Hydrant AAI values are calculated based on the ESL and replacement cost. This is conservative because the Hydrant replacement program does not replace hydrants within the required ESL. This approach was accepted because ongoing hydrant replacement is expected for equipment that fails.
- Similar to Hydrants, the valve AAI values are calculated based on ESL even though they will only be replaced with the pipe. This will provide funds for ongoing replacement of failed valves.

The 20-year work forecast reserve balance model is presented in Figure 4-4. The full work forecast reserve balance model can be viewed in Appendix I, with supporting calculations in Table I4. This model considers three scenarios which are as follows.

1. Scenario 1: PSAB (Light Blue Trend in on Figure 4-4)
    a. This case assumes the full AAI value is being collected for replacement, capital, and pro-active projects. This case would be considered the upper bound of this analysis.
2. Scenario 2: Recommended (Purple Trend in on Figure 4-4)
    a. This scenario is recommended because it achieves the minimum sustainable MSF. This was calculated based on holding the capital and pro-active AAI values constant (shown in blue and yellow on Figure 4-4) and varying the AAI for current assets. The AAI for current assets was analyzed considering the work forecast. It was observed that a minimum reserve balance was experienced in 2034. Thus, the AAI for replacement projects was varied to account for a reserve balance of zero in this year. This resulted in a positive reserve balance until 2116 which was deemed acceptable. This trend is shown in green on Figure 1-1Figure 4-4. This trend was developed in consideration of minimizing the MSF for the current system. In summary, this scenario achieves collecting the required AAI value for all new system assets (capital projects) while minimizing AAI from the current system (which has been made possible by the work forecast).
3. Scenario 3: Minimum Contribution (Red Trend in on Figure 4-4)
    a. This scenario aims to achieve the minimum AAI value to minimize the MSF increase. Like Scenario 2, the AAI values for capital projects and pro-active projects were held constant and the AAI for replacement projects was minimized. This is possible because AAI contribution from capital projects and pro-active projects will offset the deficit from the reduced replacement project AAI. This can be observed in Figure 4-4. This approach does maintain a positive reserve balance until 2100. However, this results in approximately a $30 million deficit at the end of the system's life cycle. Allowing this deficit is not practical and MSF rates would inevitably need to be increased to account for this.

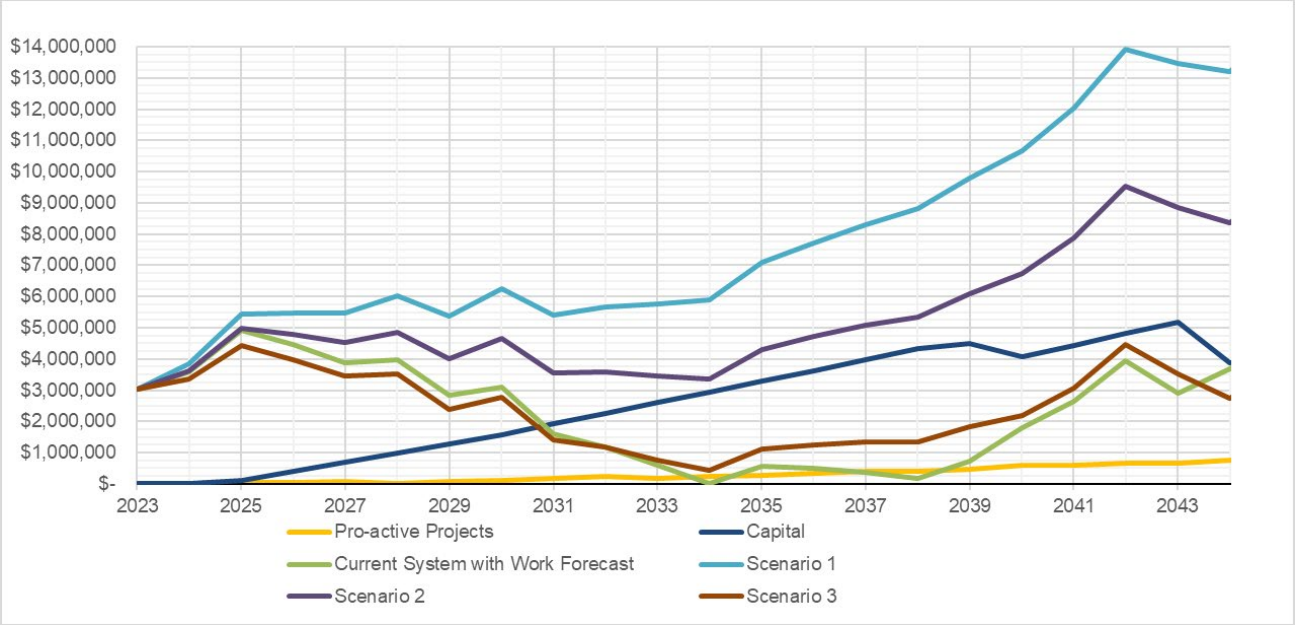


FIGURE 4-4: WORK FORECAST RESERVE BALANCE MODEL

Table 4-8 presents the incremental MSF values for each scenario. Notably, the Base Case and Scenario 1 MSF values are the same because Scenario 1 considers the PSAD AAI value.

TABLE 4-8: CUMULATIVE MONTHLY SERVICE FEE INCREASE COMPARISON

YEAR	BASE CASE (PSAB)	SCENARIO 1	SCENARIO 2 (RECOMMENDED)	SCENARIO 3
*2024**	$35.17	$35.17	$29.68	$23.31
2025	$37.89	$37.89	$32.39	$26.03
2026	$41.94	$41.94	$36.44	$30.08
2027	$42.26	$42.26	$36.76	$30.40
2028	$42.51	$42.51	$37.01	$30.65
2029	$42.89	$42.89	$37.39	$31.03
2030	$43.34	$43.34	$37.84	$31.48
2031	$43.97	$43.97	$38.47	$32.11
2036	$44.41	$44.41	$38.91	$32.55
2037	$44.72	$44.72	$39.22	$32.86
2038	$44.97	$44.97	$39.47	$33.11
2039	$45.25	$45.25	$39.75	$33.39
2040	$45.36	$45.36	$39.86	$33.50
2041	$45.80	$45.80	$40.30	$33.94
2042	$45.88	$45.88	$40.38	$34.02
2043	$46.08	$46.08	$40.59	$34.22

*Contribution for existing system.

4.5 Capital and Pro-active Project Financing Model

A financing model was developed to represent borrowing funds for capital and pro-active projects. The purpose of this model is to show the incremental increase in monthly service fee to support borrowing funds. The financial model can be viewed in Figure 4-5 and Figure 4-6, for capital and pro-active projects, respectively. Supporting calculations provided in Appendix J. The red trends represent the loan balance which shows decreases in value corresponding to the capital and pro-active projects work forecast. The green trends represent the monthly service fee required to sustain the loan. This is simply calculated by dividing the annual payment by 12 months and the number of services. The MSF is dynamic because borrowing will continue until the proposed works are completed. During this time the MSF will increase incrementally. Once borrowing is completed and loans for individual projects are completed, the MSF begins to drop incrementally until all loans are completed.

The model was based on borrowing total project values in the project installation year. Interest rates were based off the long-term lending rates reported by the Municipal Finance Authority of BC (MFABC). At the time of this analysis, an interest rate of 4.62% was reported by the MFABC for a 30-year loan period. This is the selected loan period because it will minimize the required increases in service fees. The MSF values are summarized in Section 4.6.

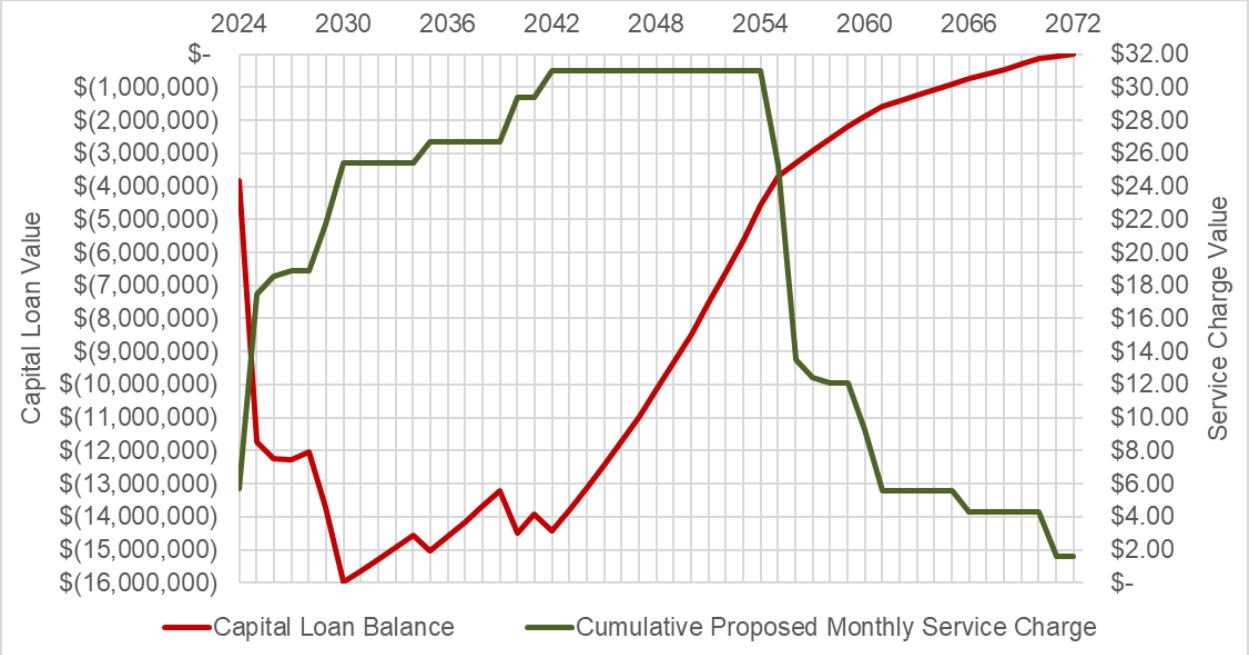


FIGURE 4-5: CAPITAL FINANCING MODEL

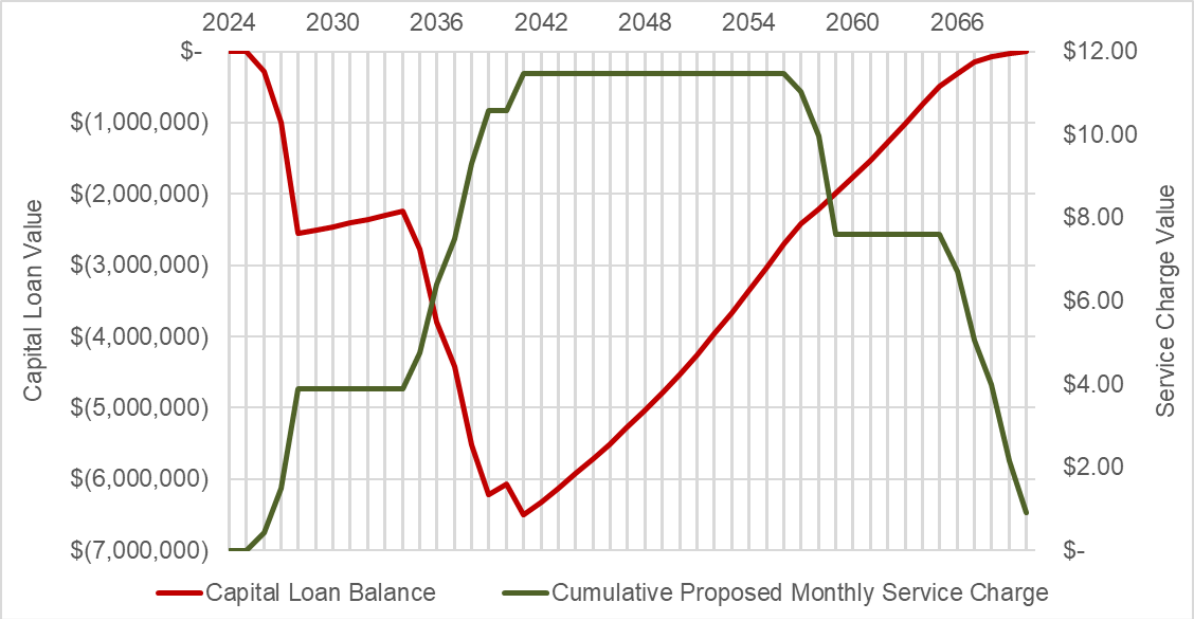


FIGURE 4-6: PRO-ACTIVE PROJECT FINANCING MODEL

4.6 Monthly Service Fee Summary

The recommended incremental MSF schedule is presented in Table 4-9. This considers the recommended Scenario 2 and the contribution for capital and pro-active loan payments. The incremental fee would decrease corresponding to capital and pro-active loans coming to term; however, this is not considered because it is assumed fees will not decrease.

TABLE 4-9: RECOMMENDED INCREMENTAL MONTHLY SERVICE FEE INCREASE

YEAR	SCENARIO 2	CAPITAL FINANCE	PRO-ACTIVE FINANCE	TOTAL
2024	$29.68	$5.69		$35.37
2025	$32.39	$17.48		$49.87
2026	$36.44	$18.54	$0.43	$55.42
2027	$36.76	$18.86	$1.50	$57.12
2028	$37.01	$19.18	$3.88	$60.07
2029	$37.39	$22.04	$3.88	$63.31
2030	$37.84	$25.72	$3.88	$67.43
2031	$38.47	$25.72	$3.88	$68.07
2035	$38.47	$27.02	$4.75	$70.24
2036	$38.91	$27.02	$6.41	$72.34
2037	$39.22	$27.02	$7.49	$73.73
2038	$39.47	$27.02	$9.31	$75.80
2039	$39.75	$27.02	$10.57	$77.34
2040	$39.86	$29.68	$10.57	$80.11
2041	$40.30	$29.68	$11.47	$81.45
2042	$40.38	$31.31	$11.47	$83.16
2043	$40.59	$31.31	$11.47	$83.36

5.0 Conclusions and Recommendations

In summary, TRUE's recommendations are as follows:

1. Complete the recommended Capital Projects to improve the system capacity to provide required fire flows, implement water treatment and implement the east sector reservoir.
    a. 74th avenue upgrades include installing a 300 mm trunk main through the downtown core to allow conveyance of fire flows from west to east within Osoyoos.
    b. Well pumps auxiliary power to offset the requirement for balancing in the deficient system reservoir capacity.
    c. Well #9 and #10 including auxiliary power to increase system capacity and fulfill the source water well strategy.
    d. Phase 1 WTP upgrades to implement the raw water supply system including connecting wells #9 and #10.
    e. Cottonwood Water Treatment Plant to treat wells impacted by elevated manganese concentrations.
    f. 89th Street upgrades increases the system capacity that can be conveyed from Well #1 (future location of Kingfisher WTP) by up sizing the existing 200 mm watermain to a 250 mm watermain.
    g. 62nd Avenue upgrades entails connecting the existing watermains on 89th Street and 62nd Avenue which greatly enhances flows south of the downtown core by creating a looped conveyance system.
    h. Phase 2 WTP upgrades to upsize the watermain between the Cottonwood WTP to the lake crossing to eliminate the need for two water mains from the WTP to the lake crossing.
    i. Phase 3 WTP to connect Well #8 to the raw water supply system.
    j. East Sector Reservoir and associated system upgrades to service OIB and future developments in the East sector.

    In summary, these upgrades significantly improve the domestic water system resilience and ability to provide the required potable water and system performance.
2. It is recommended that the pro-active project be completed to improve system performance, regulatory compliance and ease of operation. These projects focus on chlorine residual monitoring, dead end flushing with automatic flushing stations, and watermain looping projects to eliminate dead ends. This would significantly enhance the systems performance to maintain chlorine residuals.
3. It is recommended that two additional groundwater production wells be installed to meet current demand considering the 'n-1' system demand. This will ensure that there is acceptable system redundancy for water supply. A test well program is ongoing, and the results of this program will determine the viability of future groundwater sources within the town boundary.
4. It is recommended that auxiliary power be installed at each source well to ensure system redundancy for emergency storage. Currently, the total reservoir capacity in the system

is not sufficient to provide adequate equalization storage. Thus, water supply during the PHD for MDD events relies on the source well pumping.

   a. Alternatively, reservoir upgrading can be completed to increase storage. The scope of this alternative option is significantly aided by water conservation, reducing the required additional storage volume by 40% to 50%.

5. Excessive concentrations of manganese in source water are required to be treated. It is recommended that water treatment for manganese removal be implemented which was determined to be the most cost-effective option. The Cottonwood WTP would contain biological manganese removal systems, with onsite chlorine generation and contact tanks. Water treatment would service all source water wells.
6. It is recommended to implement a raw water supply network and upgrades to the domestic water system simultaneously with the construction of the Cottonwood WTP. Raw water supply mains are required to transport flows to the WTP and the domestic water mains must be upgraded to effectively convey flows from the WTP and provide adequate fire flows. In general, these works include the following.
   a. Converting sections of the existing domestic system to raw water supply mains.
   b. Installing new raw water and domestic system water mains.
   c. Upsizing sections of domestic water mains.
7. It is recommended that the Town of Osoyoos implements the MSF schedule as presented in Table 4-9. This will ensure that the Town can fund the required capital projects to meet system performance and regulatory criteria, and fund ongoing replacement of infrastructure.

APPENDIX A

System Composite Drawings

For Continuation See Sheet 3

Legend

- Fire Hydrant Assembly
- Gate Valve
- Blowoff / Standpipe
- Municipal Watermain
- Municipal Watermain - 402 Pressure Reduced
- Irrigation Main
- Irrigation Main - System 9A
- Water Utility Structure
- Municipal Boundary
- First Nation Reserve Boundary

RESERVOIR
1000 cu.m. (240M. Imp. Gal.)
TWL 400m. (1312')

HWY 97 & 100th AVE

HWY 97 & 92nd AVE

JUBILEE DR & 92nd AVE

87th ST & 92nd AVE

87th ST & 92nd AVE

WYE WELL

QUINCE LN & GALA CRES

VALIANT LANE

HWY 3 & MEADOWLARK DR

WESTRIDGE PUB

HWY 97 & EAGLE CT

HWY 97 & 74th AVE

EAGLE COURT & MAIN ST

RESERVOIR
2550 cu.m. (676,000 IGAL)
TWL 340m. (1120')

RESERVOIR
1360 cu.m. (300000 IGAL)
TWL 346m. (1120')

402 PR
PRESSURE
REDUCING
STATION

SYSTEM 8/9 RESERVOIR
482cu. m. (10600 IGAL)
TWL 360.85m. (1184')

MEADOWLARK DR
& 74th AVE

HWY 97 & 62nd AVE

HWY 97 & 62nd AVE

NIGHTHAWK DR & 74th AVE

KINGFISHER DR & 83rd ST

89th ST & PRIMROSE LN

HWY 97 & 89th ST

107 ST & 58 AVE

HWY 97 & CACTUS CRES

IRRIGATION
PUMPHOUSE #9

WELL 1

WELL 2

WELL 3

WELL 4

WELL 5

COTTONWOOD PARK

NORTH TAMARACK DR

LAKESHORE DR
& BAYVIEW CRES

LAKESIDE CELLARS

LOBELIA DR & 32nd AVE

WASTEWATER TREATMENT

PEBBLE BEACH DR

FAIRWAY HILLS
BOOSTER
STATION

GOLF COURSE DR
& PEBBLE BEACH DR

FAIRWINDS DR

CYPRESS HILLS DR

MAIN RESERVOIRS

For Continuation See Sheet 2

0 200 400 600 800 1,000 m

Sheet 3
Sheet 1
Sheet 2

TRUE CONSULTING

Osoyoos
Canada's warmest welcome

WATER SYSTEM COMPOSITE

MUNICIPAL SYSTEM AND SYSTEM 8/9

SCALE	1:5,000
DESIGN BY	
DRAWN BY	ET
DATE	5/8/2023
PROJECT REF No.	305-2061

DRAWING No.
305-2061-01

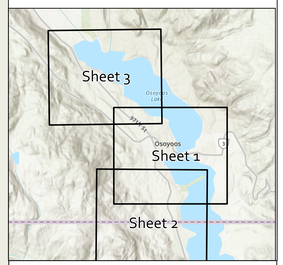
SHEET
1 OF 3

REVISION
01

R:\Clients\300-399\302\302-2061\03 Drawings\GIS\302-2061.aprx

Legend

- Fire Hydrant Assembly
- Gate Valve
- Blowoff / Standpipe
- Municipal Watermain
- Municipal Watermain - 402 Pressure Reduced
- Irrigation Main
- Irrigation Main - System 9A
- Water Utility Structure
- Municipal Boundary
- First Nation Reserve Boundary
- Cadastral
- Gate Valve



IRRIGATION BOOSTER STATION

SYSTEM # 8 PUMPHOUSE

WYE WELL

HWY 97 & 100th AVE

HWY 97 & 92nd AVE

87th ST & 92nd AVE

87th ST & 92nd AVE

JUBILEE DR & 92nd AVE

For Continuation See Sheet 1

0 200 400 600 800 1,000 m

TRUE CONSULTING

Osoyoos
Canada's warmest welcome

WATER SYSTEM COMPOSITE

MUNICIPAL SYSTEM AND SYSTEM 8

SCALE	1:5,000
DESIGN BY	
DRAWN BY	ET
DATE	5/5/2023
PROJECT REF No.	305-2061

DRAWING No.
305-2061-01

SHEET 3 OF 3

REVISION **01**

R:\Clients\300-399\302\302-2061\03 Drawings\GIS\302-2061.aprx

For Continuation See Sheet 1

HWY 97 & 62nd AVE

HWY 97 & 62nd AVE

89th ST & PRIMROSE LN

WASTEWATER TREATMENT
CHLORINE CONTACT CHAMBER

PEBBLE BEACH DR

107 ST & 58 AVE

HWY 97 & CACTUS CRES

IRRIGATION PUMPHOUSE #3

HWY 97 & 89th ST

FAIRWAY HILLS BOOSTER STATION

LOBELIA DR & 32nd AVE

FAIRWINDS DR
PRESSURE REDUCING STATION

GOLF COURSE DR & PEBBLE BEACH DR

CYPRESS HILLS DR

DIVIDEND RIDGE RESERVOIR
1136 cu.m. (250,000 IGAL)
TWL 452m (1483ft)

BOOSTER STATION

Osoyoos Lake

Strawberry Creek Trail

Legend

- Fire Hydrant Assembly
- Gate Valve
- Blowoff / Standpipe
- Municipal Watermain
- Municipal Watermain - 402 Pressure Reduced
- Irrigation Main
- Irrigation Main - System 9A
- Water Utility Structure
- Municipal Boundary
- First Nation Reserve Boundary
- Cadastral
- Gate Valve

Sheet 3
Sheet 1
Sheet 2

0 200 400 600 800 1,000 m

TRUE CONSULTING

Osoyoos
Canada's warmest welcome

WATER SYSTEM COMPOSITE

MUNICIPAL SYSTEM AND SYSTEM 9

SCALE	1:5,000
DESIGN BY	
DRAWN BY	ET
DATE	5/5/2023
PROJECT REF No.	305-2061

DRAWING No.
305-2061-01

SHEET
2 OF 3

REVISION
01

R:\Clients\300-399\302\302-2061\03 Drawings\GIS\302-2061.aprx

For Continuation See Sheet 3

For Continuation See Sheet 2

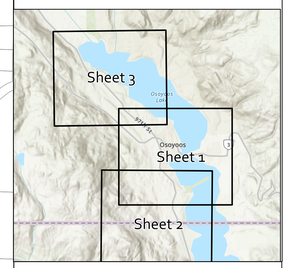
Legend

Water Main Risk Category
- High
- Medium
- Low

First Nation Reserve Boundary

Municipal Boundary

OSOYOOS 1



TRUE CONSULTING

Osoyoos
Canada's warmest welcome

WATER SYSTEM COMPOSITE

WATER MAIN RISK CATEGORY

SCALE	1:5,000
DESIGN BY	AM
DRAWN BY	ET
DATE	5/5/2023
PROJECT REF No.	305-2061

DRAWING No.
305-2061-02

SHEET
1 OF 3

REVISION
00

0 200 400 600 800 1,000 m

R:\Clients\300-399\302\302-2061\03 Drawings\GIS\302-2061.aprx

APPENDIX B

Asset Inventories for Component Categories

Assumption Legend

	Assumed install year based on adjacent infrastructure with like material and diameter. If this was not clear, assumed conservative install year was selected showing replacement earlier.
	Assumed service pipe with no information.
	Assumed diameter based on hydrant lead or similar infrastructure with same install year and material.
Unknown	Unknown pipe materials assumed to be replaced with PVC
AC	All AC assumed to be replaced with PVC
bold	Anticipated services which are not the Towns assets.
	Assumed pipe material based on adjacent pipe material and installation year. PVC was assumed for pipes installed after 1979 and AC was assumed prior to 1979.
	No shape length in GIS asset attributes, thus reported lengths were measured from the GIS composite.

Table B1: Osoyoos Water Utility Asset Management - Water Distribution Network - Pipe Inventory

Label	Diameter (mm)	Material	Length/QTY (m)	Year Installed	Expected Service Life	Useful Life Remaining	Criticality Category	Probability Category	Risk Category	PSAB Estimated Replacement Date	Risk Estimated Replacement Date	Pipe Replacement Unit Cost	Current Total Replacement Cost
WML0001	150	AC	2.92	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$876.48
WML0002	150	AC	72.77	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$21,831.44
WML0003	150	AC	18.22	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$5,466.23
WML0006	150	PVC	9.11	1968	80	25	Low	Low	Low	2048	2064	$300.00	$2,731.71
WML0007	150	PVC	63.63	1968	80	25	Low	Low	Low	2048	2064	$300.00	$19,088.42
WML0008	150	AC	39.06	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$11,717.80
WML0010	150	PVC	58.80	1968	80	25	Low	Low	Low	2048	2064	$300.00	$17,640.77
WML0011	150	PVC	3.16	1968	80	25	Low	Low	Low	2048	2064	$300.00	$948.31
WML0012	150	AC	1.68	1959	65	1	Low	High	Medium	2024	2024	$300.00	$504.10
WML0013	150	AC	3.20	1959	65	1	Low	High	Medium	2024	2024	$300.00	$959.63
WML0014	250	AC	9.52	1959	65	1	Medium	High	High	2024	2023	$350.00	$3,332.95
WML0015	250	AC	98.17	1959	65	1	Medium	High	High	2024	2023	$350.00	$34,359.37
WML0016	250	AC	47.70	1959	65	1	Medium	High	High	2024	2023	$350.00	$16,693.47
WML0017	250	AC	14.39	1959	65	1	Medium	High	High	2024	2023	$350.00	$5,036.42
WML0018	250	AC	173.83	1959	65	1	Medium	High	High	2024	2023	$350.00	$60,839.64
WML0019	200	AC	123.52	1959	65	1	Medium	High	High	2024	2023	$350.00	$43,232.04
WML0020	200	AC	4.71	1970	65	12	Medium	Medium	Medium	2035	2035	$350.00	$1,650.12
WML0021	200	AC	92.23	1970	65	12	Medium	Medium	Medium	2035	2035	$350.00	$32,280.71
WML0022	200	AC	55.39	1970	65	12	Medium	Medium	Medium	2035	2035	$350.00	$19,388.02
WML0023	250	AC	9.42	1970	65	12	Medium	Medium	Medium	2035	2035	$350.00	$3,296.58
WML0024	250	AC	254.82	1970	65	12	Medium	Medium	Medium	2035	2035	$350.00	$89,185.67
WML0025	250	AC	6.17	1970	65	12	Medium	Medium	Medium	2035	2035	$350.00	$2,159.22
WML0026	200	AC	97.75	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$34,211.70
WML0027	200	AC	40.68	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$14,236.93
WML0028	200	AC	10.90	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$3,816.69
WML0029	300	PVC	5.59	2008	80	65	Medium	Very Low	Low	2088	2104	$500.00	$2,793.21
WML0030	300	PVC	35.86	2008	80	65	Medium	Very Low	Low	2088	2104	$500.00	$17,931.12
WML0031	300	PVC	3.90	2008	80	65	Medium	Very Low	Low	2088	2104	$500.00	$1,952.37
WML0032	400	PVC	19.60	2008	80	65	High	Very Low	Low	2088	2104	$750.00	$14,702.04
WML0033	400	PVC	697.63	2008	80	65	High	Very Low	Low	2088	2104	$750.00	$523,226.25
WML0034	250	PVC	229.91	1994	80	51	Medium	Very Low	Low	2074	2090	$450.00	$103,460.62
WML0035	250	PVC	87.22	1992	80	49	Medium	Very Low	Low	2072	2088	$450.00	$39,246.83
WML0036	250	PVC	133.94	1992	80	49	Medium	Very Low	Low	2072	2088	$450.00	$60,272.84
WML0037	250	PVC	88.81	1991	80	48	Medium	Very Low	Low	2071	2087	$450.00	$39,963.82
WML0038	200	PVC	25.50	1991	80	48	Medium	Very Low	Low	2071	2087	$350.00	$8,925.01
WML0039	300	PVC	32.78	2008	80	65	Medium	Very Low	Low	2088	2104	$500.00	$16,391.92
WML0040	150	PVC	135.22	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$40,567.36
WML0041	150	AC	74.35	1959	65	1	Low	High	Medium	2024	2024	$300.00	$22,305.93
WML0042	150	AC	197.18	1959	65	1	Low	High	Medium	2024	2024	$300.00	$59,153.03
WML0043	150	AC	20.07	1959	65	1	Low	High	Medium	2024	2024	$300.00	$6,021.29
WML0044	250	AC	68.94	1959	65	1	Medium	High	High	2024	2023	$350.00	$24,130.17
WML0045	200	AC	74.79	1959	65	1	Medium	High	High	2024	2023	$350.00	$26,175.43
WML0046	200	AC	18.05	1959	65	1	Medium	High	High	2024	2023	$350.00	$6,316.08
WML0047	150	PVC	6.78	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$2,034.10
WML0048	200	PVC	3.21	1991	80	48	Medium	Very Low	Low	2071	2087	$350.00	$1,125.10
WML0049	150	AC	6.92	1971	65	13	Low	Medium	Low	2036	2049	$300.00	$2,076.58
WML0050	150	AC	7.01	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$2,102.15
WML0051	150	AC	7.05	1976	65	18	Low	Medium	Low	2041	2054	$300.00	$2,115.98
WML0052	150	AC	73.70	1976	65	18	Low	Medium	Low	2041	2054	$300.00	$22,110.61
WML0053	150	AC	8.82	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$2,644.71
WML0054	150	AC	32.50	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$9,749.96
WML0055	150	AC	109.11	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$32,732.09
WML0056	150	AC	14.45	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$4,336.22
WML0057	200	AC	44.59	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$15,604.79
WML0058	200	AC	88.72	1971	65	13	Medium	Medium	Medium	2036	2036	$350.00	$31,051.31
WML0059	200	AC	10.57	1971	65	13	Medium	Medium	Medium	2036	2036	$350.00	$3,700.17
WML0060	200	AC	172.09	1971	65	13	Medium	Medium	Medium	2036	2036	$350.00	$60,233.00
WML0061	150	AC	88.20	1971	65	13	Low	Medium	Low	2036	2049	$300.00	$26,458.85
WML0062	150	AC	156.15	1971	65	13	Low	Medium	Low	2036	2049	$300.00	$46,845.19
WML0063	150	AC	18.75	1971	65	13	Low	Medium	Low	2036	2049	$300.00	$5,624.87
WML0064	200	AC	21.21	1971	65	13	Medium	Medium	Medium	2036	2036	$350.00	$7,422.27
WML0065	150	AC	4.37	1978	65	20	Low	Low	Low	2043	2056	$300.00	$1,312.49
WML0066	150	AC	95.36	1978	65	20	Low	Low	Low	2043	2056	$300.00	$28,609.07
WML0067	150	AC	42.50	1978	65	20	Low	Low	Low	2043	2056	$300.00	$12,750.02
WML0068	150	AC	92.26	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$27,678.11
WML0069	150	AC	9.35	1979	65	21	Low	Low	Low	2044	2057	$300.00	$2,803.79
WML0070	150	AC	99.44	1979	65	21	Low	Low	Low	2044	2057	$300.00	$29,831.62
WML0071	150	PVC	6.47	1975	80	32	Low	Very Low	Low	2055	2071	$300.00	$1,940.23
WML0072	150	PVC	61.65	1975	80	32	Low	Very Low	Low	2055	2071	$300.00	$18,496.44
WML0073	150	PVC	150.96	1975	80	32	Low	Very Low	Low	2055	2071	$300.00	$45,288.59
WML0074	150	AC	40.69	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$12,206.73
WML0075	150	AC	103.50	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$31,050.63
WML0076	200	PVC	63.89	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$22,360.43
WML0077	200	PVC	13.76	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$4,815.63
WML0078	200	PVC	85.94	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$30,079.90
WML0079	200	PVC	29.31	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$10,257.81
WML0080	200	PVC	53.00	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$18,551.62
WML0081	200	PVC	22.74	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$7,960.21
WML0082	150	PVC	9.25	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$2,775.29
WML0083	150	PVC	5.49	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$1,646.86
WML0084	150	AC	8.32	1971	65	13	Low	Medium	Low	2036	2049	$300.00	$2,494.92
WML0085	150	AC	12.72	1979	65	21	Low	Low	Low	2044	2057	$300.00	$3,816.97
WML0086	150	AC	109.01	1979	65	21	Low	Low	Low	2044	2057	$300.00	$32,702.06
WML0087	150	AC	123.13	1979	65	21	Low	Low	Low	2044	2057	$300.00	$36,937.90
WML0088	150	PVC	6.63	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$1,989.73
WML0089	150	AC	4.06	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$1,217.33
WML0090	150	AC	9.15	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$2,745.05
WML0091	150	AC	69.31	1976	65	18	Low	Medium	Low	2041	2054	$300.00	$20,791.98
WML0092	150	AC	99.89	1976	65	18	Low	Medium	Low	2041	2054	$300.00	$29,966.82
WML0093	150	AC	182.72	1976	65	18	Low	Medium	Low	2041	2054	$300.00	$54,814.79
WML0094	150	AC	164.21	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$49,262.94
WML0095	150	AC	43.01	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$12,903.12
WML0096	150	AC	113.57	1976	65	18	Low	Medium	Low	2041	2054	$300.00	$34,071.14
WML0097	150	AC	88.35	1976	65	18	Low	Medium	Low	2041	2054	$300.00	$26,504.00
WML0098	200	AC	249.98	1971	65	13	Medium	Medium	Medium	2036	2036	$350.00	$87,494.20
WML0099	100	PVC	38.35	1976	80	33	Low	Very Low	Low	2056	2072	$300.00	$11,503.60
WML0100	150	AC	5.99	1973	65	15	Low	Medium	Low	2038	2051	$300.00	$1,796.70
WML0101	150	AC	6.75	1973	65	15	Low	Medium	Low	2038	2051	$300.00	$2,025.69
WML0102	150	AC	7.58	1972	65	14	Low	Medium	Low	2037	2050	$300.00	$2,274.87
WML0103	150	AC	89.43	1973	65	15	Low	Medium	Low	2038	2051	$300.00	$26,830.34

WML0104	150	AC	61.54	1973	65	15	Low	Medium	Low	2038	2051	$300.00	$18,462.93
WML0105	150	AC	11.36	1972	65	14	Low	Medium	Low	2037	2050	$300.00	$3,407.50
WML0106	150	AC	101.10	1972	65	14	Low	Medium	Low	2037	2050	$300.00	$30,329.92
WML0107	150	AC	4.48	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$1,343.19
WML0108	150	AC	140.55	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$42,165.03
WML0109	150	AC	67.64	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$20,292.64
WML0110	150	AC	102.70	1972	65	14	Low	Medium	Low	2037	2050	$300.00	$30,808.93
WML0111	150	AC	7.53	1972	65	14	Low	Medium	Low	2037	2050	$300.00	$2,258.35
WML0112	150	AC	90.81	1972	65	14	Low	Medium	Low	2037	2050	$300.00	$27,244.44
WML0113	150	AC	158.57	1973	65	15	Low	Medium	Low	2038	2051	$300.00	$47,572.10
WML0114	150	AC	85.30	1973	65	15	Low	Medium	Low	2038	2051	$300.00	$25,588.71
WML0115	150	AC	93.23	1972	65	14	Low	Medium	Low	2037	2050	$300.00	$27,968.06
WML0116	150	AC	274.85	1972	65	14	Low	Medium	Low	2037	2050	$300.00	$82,455.80
WML0118	150	AC	4.96	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$1,486.64
WML0119	150	PVC	11.97	1981	80	38	Low	Very Low	Low	2061	2077	$300.00	$3,591.15
WML0120	150	PVC	9.31	1981	80	38	Low	Very Low	Low	2061	2077	$300.00	$2,793.38
WML0121	150	PVC	111.17	1981	80	38	Low	Very Low	Low	2061	2077	$300.00	$33,352.24
WML0122	150	PVC	30.28	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$9,085.29
WML0123	150	AC	36.50	1965	65	7	Low	High	Medium	2030	2030	$300.00	$10,948.85
WML0124	150	AC	56.98	1965	65	7	Low	High	Medium	2030	2030	$300.00	$17,093.91
WML0125	150	AC	2.73	1965	65	7	Low	High	Medium	2030	2030	$300.00	$818.39
WML0126	150	PVC	82.64	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$24,793.28
WML0127	150	AC	18.49	1965	65	7	Low	High	Medium	2030	2030	$300.00	$5,547.49
WML0128	150	AC	13.81	1994	65	36	Low	Very Low	Low	2059	2072	$300.00	$4,143.17
WML0129	150	PVC	10.45	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$3,134.75
WML0130	150	AC	121.35	1965	65	7	Low	High	Medium	2030	2030	$300.00	$36,405.62
WML0131	150	PVC	119.38	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$35,814.26
WML0132	150	PVC	19.46	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$5,837.22
WML0133	150	PVC	33.11	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$9,933.59
WML0134	150	PVC	17.18	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$5,154.40
WML0137	150	PVC	122.30	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$36,690.18
WML0138	150	PVC	6.79	1980	80	37	Low	Very Low	Low	2060	2076	$300.00	$2,036.86
WML0139	150	AC	104.99	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$31,497.36
WML0140	150	PVC	3.70	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$1,110.85
WML0141	200	PVC	585.49	1980	80	37	Medium	Very Low	Low	2060	2076	$350.00	$204,921.77
WML0142	200	PVC	141.00	1980	80	37	Medium	Very Low	Low	2060	2076	$350.00	$49,349.48
WML0143	250	PVC	155.32	1980	80	37	Medium	Very Low	Low	2060	2076	$450.00	$69,894.98
WML0144	250	PVC	91.24	1980	80	37	Medium	Very Low	Low	2060	2076	$450.00	$41,058.10
WML0145	150	PVC	6.75	1980	80	37	Low	Very Low	Low	2060	2076	$300.00	$2,024.81
WML0146	250	PVC	150.77	1980	80	37	Medium	Very Low	Low	2060	2076	$450.00	$67,844.85
WML0147	250	PVC	174.05	1980	80	37	Medium	Very Low	Low	2060	2076	$450.00	$78,323.13
WML0148	250	PVC	200.69	1980	80	37	Medium	Very Low	Low	2060	2076	$450.00	$90,309.72
WML0149	250	PVC	164.76	1995	80	52	Medium	Very Low	Low	2075	2091	$450.00	$74,141.04
WML0150	250	PVC	132.12	1995	80	52	Medium	Very Low	Low	2075	2091	$450.00	$59,453.94
WML0151	150	PVC	10.20	1980	80	37	Low	Very Low	Low	2060	2076	$300.00	$3,058.93
WML0152	150	PVC	9.17	1995	80	52	Low	Very Low	Low	2075	2091	$300.00	$2,751.75
WML0153	250	PVC	151.62	1995	80	52	Medium	Very Low	Low	2075	2091	$450.00	$68,227.37
WML0154	250	PVC	52.70	1995	80	52	Medium	Very Low	Low	2075	2091	$450.00	$23,714.36
WML0155	150	PVC	8.11	1995	80	52	Low	Very Low	Low	2075	2091	$300.00	$2,433.29
WML0156	250	PVC	47.26	1980	80	37	Medium	Very Low	Low	2060	2076	$450.00	$21,268.38
WML0157	150	PVC	10.74	1980	80	37	Low	Very Low	Low	2060	2076	$300.00	$3,221.28
WML0158	250	PVC	612.84	1980	80	37	Medium	Very Low	Low	2060	2076	$450.00	$275,779.77
WML0159	75	PVC	15.89	1982	80	39	Low	Very Low	Low	2062	2078	$2,000.00	$31,776.53
WML0160	150	PVC	4.24	2000	80	57	Low	Very Low	Low	2080	2096	$300.00	$1,271.02
WML0161	150	PVC	6.05	2000	80	57	Low	Very Low	Low	2080	2096	$300.00	$1,815.65
WML0162	150	PVC	6.07	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$1,819.66
WML0163	150	PVC	4.88	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$1,465.08
WML0164	200	PVC	89.22	1992	80	49	Medium	Very Low	Low	2072	2088	$350.00	$31,225.31
WML0165	200	PVC	107.49	1992	80	49	Medium	Very Low	Low	2072	2088	$350.00	$37,623.18
WML0166	200	PVC	135.91	2000	80	57	Medium	Very Low	Low	2080	2096	$350.00	$47,569.08
WML0168	150	PVC	12.41	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$3,721.90
WML0169	150	PVC	7.64	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$2,290.55
WML0170	150	PVC	6.93	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$2,078.00
WML0171	150	PVC	8.46	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$2,537.20
WML0172	150	PVC	10.44	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$3,130.68
WML0173	150	PVC	11.91	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$3,573.50
WML0174	150	PVC	9.83	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$2,950.06
WML0175	200	PVC	18.72	1989	80	46	Medium	Very Low	Low	2069	2085	$350.00	$6,553.62
WML0176	200	PVC	149.70	1989	80	46	Medium	Very Low	Low	2069	2085	$350.00	$52,395.74
WML0177	200	PVC	106.68	1989	80	46	Medium	Very Low	Low	2069	2085	$350.00	$37,339.39
WML0178	150	PVC	79.15	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$23,745.34
WML0179	150	PVC	22.18	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$6,653.75
WML0180	150	PVC	6.09	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$1,826.31
WML0181	200	PVC	89.36	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$31,274.37
WML0182	200	PVC	149.16	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$52,204.49
WML0183	150	PVC	6.45	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$1,933.76
WML0184	150	PVC	6.42	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$1,927.39
WML0185	150	PVC	3.43	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$1,029.74
WML0186	200	PVC	92.95	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$32,533.63
WML0187	200	PVC	16.75	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$5,861.01
WML0188	150	PVC	8.80	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$2,639.91
WML0189	200	PVC	78.63	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$27,522.02
WML0190	200	PVC	117.32	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$41,062.36
WML0191	200	PVC	22.40	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$7,839.70
WML0192	150	PVC	5.76	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$1,729.31
WML0193	150	PVC	8.30	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$2,488.99
WML0194	150	PVC	14.36	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$4,307.59
WML0195	150	PVC	17.15	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$5,145.37
WML0196	150	PVC	121.38	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$36,413.56
WML0197	150	PVC	12.99	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$3,896.35
WML0198	150	PVC	112.32	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$33,695.04
WML0199	150	PVC	43.21	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$12,963.07
WML0200	200	AC	152.88	1959	65	1	Medium	High	High	2024	2023	$350.00	$53,508.83
WML0201	200	AC	13.21	1959	65	1	Medium	High	High	2024	2023	$350.00	$4,622.60
WML0202	200	AC	7.58	1959	65	1	Medium	High	High	2024	2023	$350.00	$2,654.30
WML0203	150	AC	61.49	1959	65	1	Low	High	Medium	2024	2024	$300.00	$18,445.63
WML0204	150	AC	103.87	1959	65	1	Low	High	Medium	2024	2024	$300.00	$31,159.50
WML0205	150	AC	99.82	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$29,945.69
WML0206	150	AC	5.79	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$1,735.88
WML0207	100	AC	87.39	1959	65	1	Low	High	Medium	2024	2024	$300.00	
WML0208	150	PVC	40.52	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$12,156.68
WML0209	150	AC	27.60	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$8,281.31
WML0210	150	AC	57.74	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$17,323.25
WML0211	150	AC	66.24	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$19,871.56
WML0212	150	AC	7.35	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$2,204.21
WML0213	150	AC	47.49	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$14,246.28
WML0214	150	AC	6.86	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$2,057.39
WML0215	150	AC	27.34	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$8,201.39
WML0216	150	AC	12.76	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$3,826.94
WML0217	150	AC	2.91	1959	65	1	Low	High	Medium	2024	2024	$300.00	$874.07
WML0218	150	PVC	6.19	1992	80	49	Low	Very Low	Low	2072	2088	$300.00	$1,857.48
WML0219	150	PVC	112.02	1992	80	49	Low	Very Low	Low	2072	2088	$300.00	$33,606.35
WML0220	150	PVC	70.31	1992	80	49	Low	Very Low	Low	2072	2088	$300.00	$21,091.62
WML0221	150	PVC	10.84	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$3,250.76
WML0222	150	PVC	38.01	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$11,401.68
WML0223	150	PVC	15.56	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$4,667.55
WML0224	150	AC	114.78	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$34,433.04
WML0225	150	PVC	3.12	1992	80	49	Low	Very Low	Low	2072	2088	$300.00	$935.70
WML0226	300	PVC	32.74	2022	80	79	Medium	Very Low	Low	2102	2118	$500.00	$16,372.13

WML0227	300	PVC	4.51	1959	80	16	Medium	Medium	Medium	2039	2039	$500.00	$2,255.14
WML0228	150	AC	277.44	1959	65	1	Low	High	Medium	2024	2024	$300.00	$83,232.42
WML0229	200	PVC	43.44	1995	80	52	Medium	Very Low	Low	2075	2091	$350.00	$15,204.65
WML0230	250	PVC	23.30	1995	80	52	Medium	Very Low	Low	2075	2091	$450.00	$10,484.74
WML0231	150	AC	6.20	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,861.30
WML0232	150	AC	16.38	1959	65	1	Low	High	Medium	2024	2024	$300.00	$4,915.25
WML0233	150	AC	157.10	1959	65	1	Low	High	Medium	2024	2024	$300.00	$47,131.11
WML0234	150	AC	5.00	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,499.52
WML0235	150	AC	8.39	1965	65	7	Low	High	Medium	2030	2030	$300.00	$2,517.88
WML0236	50	PVC	60.09	2005	80	62	Low	Very Low	Low	2085	2101	$2,000.00	$120,173.52
WML0237	150	AC	2.21	1965	65	7	Low	High	Medium	2030	2030	$300.00	$663.36
WML0238	150	AC	90.19	1965	65	7	Low	High	Medium	2030	2030	$300.00	$27,055.90
WML0239	150	AC	17.82	1965	65	7	Low	High	Medium	2030	2030	$300.00	$5,345.39
WML0240	150	AC	1.65	1965	65	7	Low	High	Medium	2030	2030	$300.00	$495.53
WML0241	150	AC	131.80	1959	65	1	Low	High	Medium	2024	2024	$300.00	$39,540.26
WML0242	150	AC	138.76	1959	65	1	Low	High	Medium	2024	2024	$300.00	$41,628.60
WML0243	150	AC	133.80	1959	65	1	Low	High	Medium	2024	2024	$300.00	$40,139.21
WML0244	150	AC	144.24	1959	65	1	Low	High	Medium	2024	2024	$300.00	$43,270.79
WML0245	150	AC	22.05	1964	65	6	Low	High	Medium	2029	2029	$300.00	$6,615.26
WML0246	150	PVC	38.35	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$11,504.64
WML0247	150	PVC	98.12	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$29,435.29
WML0248	150	PVC	46.69	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$14,007.65
WML0249	150	AC	146.79	1991	65	33	Low	Very Low	Low	2056	2069	$300.00	$44,037.06
WML0250	150	AC	74.74	1991	65	33	Low	Very Low	Low	2056	2069	$300.00	$22,420.87
WML0251	250	PVC	148.50	1991	80	48	Medium	Very Low	Low	2071	2087	$450.00	$66,823.99
WML0252	150	PVC	18.80	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$5,640.81
WML0253	250	PVC	29.59	1991	80	48	Medium	Very Low	Low	2071	2087	$450.00	$13,317.73
WML0254	150	PVC	8.07	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$2,421.56
WML0255	250	PVC	157.10	1991	80	48	Medium	Very Low	Low	2071	2087	$450.00	$70,696.32
WML0256	150	PVC	8.74	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$2,621.11
WML0257	150	PVC	6.04	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$1,813.20
WML0258	150	AC	13.98	1991	65	33	Low	Very Low	Low	2056	2069	$300.00	$4,195.44
WML0259	150	AC	4.53	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$1,357.63
WML0260	200	AC	15.14	1959	65	1	Medium	High	High	2024	2023	$350.00	$5,300.38
WML0261	200	AC	38.25	1959	65	1	Medium	High	High	2024	2023	$350.00	$13,388.71
WML0262	200	AC	8.81	1959	65	1	Medium	High	High	2024	2023	$350.00	$3,082.53
WML0263	200	AC	57.66	1959	65	1	Medium	High	High	2024	2023	$350.00	$20,179.98
WML0264	200	AC	69.12	1959	65	1	Medium	High	High	2024	2023	$350.00	$24,191.84
WML0265	200	AC	140.72	1959	65	1	Medium	High	High	2024	2023	$350.00	$49,252.02
WML0266	200	AC	9.09	1959	65	1	Medium	High	High	2024	2023	$350.00	$3,179.76
WML0267	150	AC	60.15	1959	65	1	Low	High	Medium	2024	2024	$300.00	$18,046.36
WML0268	150	PVC	121.70	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$36,511.15
WML0269	150	AC	162.98	1959	65	1	Low	High	Medium	2024	2024	$300.00	$48,893.31
WML0270	150	AC	136.23	1959	65	1	Low	High	Medium	2024	2024	$300.00	$40,870.25
WML0271	150	PVC	219.87	1959	80	16	Low	Medium	Low	2039	2055	$300.00	$65,959.64
WML0272	200	AC	44.34	1959	65	1	Medium	High	High	2024	2023	$350.00	$15,517.81
WML0273	200	AC	67.52	1959	65	1	Medium	High	High	2024	2023	$350.00	$23,630.52
WML0274	150	AC	147.08	1959	65	1	Low	High	Medium	2024	2024	$300.00	$44,123.19
WML0275	150	AC	3.38	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,012.63
WML0276	150	AC	7.98	1959	65	1	Low	High	Medium	2024	2024	$300.00	$2,393.19
WML0277	200	AC	9.78	1959	65	1	Medium	High	High	2024	2023	$350.00	$3,423.47
WML0278	200	AC	21.75	1959	65	1	Medium	High	High	2024	2023	$350.00	$7,612.74
WML0279	200	AC	101.47	1959	65	1	Medium	High	High	2024	2023	$350.00	$35,514.13
WML0280	150	AC	6.05	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,816.10
WML0281	150	AC	6.61	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,983.30
WML0282	150	AC	8.30	1959	65	1	Low	High	Medium	2024	2024	$300.00	$2,489.34
WML0283	150	AC	88.78	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$26,634.67
WML0284	150	PVC	6.75	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$2,025.64
WML0285	150	AC	84.99	1959	65	1	Low	High	Medium	2024	2024	$300.00	$25,497.18
WML0286	150	AC	1.48	1959	65	1	Low	High	Medium	2024	2024	$300.00	$444.59
WML0287	150	AC	6.16	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,848.47
WML0288	150	AC	6.57	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,970.82
WML0289	150	AC	1.50	1959	65	1	Low	High	Medium	2024	2024	$300.00	$450.45
WML0290	150	AC	6.74	1959	65	1	Low	High	Medium	2024	2024	$300.00	$2,020.57
WML0291	150	PVC	6.52	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$1,955.93
WML0292	150	PVC	5.64	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$1,691.30
WML0293	150	AC	44.93	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$13,477.94
WML0294	150	AC	7.13	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$2,137.70
WML0295	150	AC	104.45	1959	65	1	Low	High	Medium	2024	2024	$300.00	$31,335.55
WML0296	150	AC	6.69	1959	65	1	Low	High	Medium	2024	2024	$300.00	$2,007.99
WML0297	150	AC	118.10	1959	65	1	Low	High	Medium	2024	2024	$300.00	$35,430.28
WML0298	150	AC	33.24	1959	65	1	Low	High	Medium	2024	2024	$300.00	$9,973.25
WML0299	150	AC	15.54	1959	65	1	Low	High	Medium	2024	2024	$300.00	$4,662.51
WML0300	150	AC	12.52	1959	65	1	Low	High	Medium	2024	2024	$300.00	$3,756.30
WML0301	300	PVC	718.80	1987	80	44	Medium	Very Low	Low	2067	2083	$500.00	$359,400.80
WML0302	300	DI	144.10	1987	65	29	Medium	Low	Low	2052	2065	$500.00	$72,051.92
WML0303	300	DI	10.61	1987	65	29	Medium	Low	Low	2052	2065	$500.00	$5,305.23
WML0304	150	AC	6.22	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,866.95
WML0305	150	AC	5.15	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,543.61
WML0306	150	AC	4.97	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,491.30
WML0307	150	AC	2.99	1959	65	1	Low	High	Medium	2024	2024	$300.00	$895.76
WML0308	300	AC	16.75	1980	65	22	Medium	Low	Low	2045	2058	$450.00	$7,537.93
WML0309	300	AC	93.57	1980	65	22	Medium	Low	Low	2045	2058	$450.00	$42,106.22
WML0310	150	PVC	5.71	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$1,712.37
WML0311	150	AC	6.00	1966	65	8	Low	High	Medium	2031	2031	$300.00	$1,800.00
WML0312	150	AC	1.83	1966	65	8	Low	High	Medium	2031	2031	$300.00	$549.81
WML0313	150	AC	5.12	1972	65	14	Low	Medium	Low	2037	2050	$300.00	$1,535.55
WML0314	150	PVC	6.86	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$2,056.79
WML0315	150	PVC	127.48	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$38,244.09
WML0316	150	PVC	6.92	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$2,075.78
WML0317	150	PVC	2.24	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$673.39
WML0318	200	PVC	49.93	1980	80	37	Medium	Very Low	Low	2060	2076	$350.00	$17,474.43
WML0319	200	PVC	13.02	1980	80	37	Medium	Very Low	Low	2060	2076	$350.00	$4,556.52
WML0320	150	PVC	13.67	1980	80	37	Low	Very Low	Low	2060	2076	$300.00	$4,101.18
WML0321	150	PVC	9.99	1980	80	37	Low	Very Low	Low	2060	2076	$300.00	$2,995.91
WML0322	150	AC	6.06	1976	65	18	Low	Medium	Low	2041	2054	$300.00	$1,819.40
WML0323	150	AC	6.04	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$1,813.09
WML0324	150	AC	6.04	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$1,813.09
WML0325	150	AC	6.04	1971	65	13	Low	Medium	Low	2036	2049	$300.00	$1,813.09
WML0326	150	AC	8.25	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$2,473.54
WML0327	150	AC	8.08	1965	65	7	Low	High	Medium	2030	2030	$300.00	$2,424.32
WML0328	150	AC	4.30	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$1,290.90
WML0329	150	AC	90.20	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$27,061.49
WML0330	150	AC	77.12	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$23,136.75
WML0331	150	AC	14.31	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$4,293.62
WML0332	150	AC	91.98	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$27,594.06
WML0333	150	AC	194.58	1966	65	8	Low	High	Medium	2031	2031	$300.00	$58,372.51
WML0334	150	AC	3.19	1960	65	2	Low	High	Medium	2025	2025	$300.00	$957.66
WML0335	150	AC	13.44	1960	65	2	Low	High	Medium	2025	2025	$300.00	$4,031.57
WML0336	150	AC	43.40	1966	65	8	Low	High	Medium	2031	2031	$300.00	$13,018.74
WML0337	150	AC	185.05	1966	65	8	Low	High	Medium	2031	2031	$300.00	$55,515.36
WML0338	150	AC	167.60	1966	65	8	Low	High	Medium	2031	2031	$300.00	$50,278.62
WML0339	150	AC	2.63	1966	65	8	Low	High	Medium	2031	2031	$300.00	$790.42
WML0340	150	AC	6.66	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$1,998.95
WML0341	150	PVC	3.43	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$1,030.29
WML0342	150	PVC	53.50	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$16,048.79
WML0343	150	PVC	1.64	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$491.96
WML0344	150	AC	89.21	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$26,763.70
WML0345	150	AC	137.46	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$41,236.64

WML0346	150	PVC	188.84	2000	80	57	Low	Very Low	Low	2080	2096	$300.00	$56,652.84
WML0347	150	AC	141.19	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$42,355.72
WML0348	150	PVC	60.14	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$18,041.44
WML0349	200	PVC	133.25	1981	80	38	Medium	Very Low	Low	2061	2077	$350.00	$46,635.85
WML0350	200	PVC	23.01	1981	80	38	Medium	Very Low	Low	2061	2077	$350.00	$8,054.68
WML0351	200	AC	115.97	1977	65	19	Medium	Medium	Medium	2042	2042	$350.00	$40,588.54
WML0352	200	AC	32.48	1977	65	19	Medium	Medium	Medium	2042	2042	$350.00	$11,368.22
WML0353	150	PVC	6.83	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$2,050.16
WML0354	150	AC	8.77	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$2,632.34
WML0355	150	AC	1.94	1959	65	1	Low	High	Medium	2024	2024	$300.00	$581.89
WML0356	250	PVC	6.67	1993	80	50	Medium	Very Low	Low	2073	2089	$450.00	$3,002.31
WML0357	150	AC	5.36	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,607.27
WML0358	150	AC	6.44	1973	65	15	Low	Medium	Low	2038	2051	$300.00	$1,933.16
WML0359	150	AC	6.31	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,893.84
WML0360	150	AC	154.91	1959	65	1	Low	High	Medium	2024	2024	$300.00	$46,473.50
WML0361	150	AC	64.82	1959	65	1	Low	High	Medium	2024	2024	$300.00	$19,447.04
WML0362	150	AC	8.31	1959	65	1	Low	High	Medium	2024	2024	$300.00	$2,491.90
WML0363	150	AC	136.12	1959	65	1	Low	High	Medium	2024	2024	$300.00	$40,836.75
WML0364	150	PVC	3.57	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$1,071.59
WML0365	150	PVC	7.61	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$2,284.40
WML0366	150	PVC	7.92	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$2,375.43
WML0367	150	AC	5.22	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$1,565.87
WML0368	150	AC	17.46	1976	65	18	Low	Medium	Low	2041	2054	$300.00	$5,237.86
WML0369	150	PVC	6.63	2000	80	57	Low	Very Low	Low	2080	2096	$300.00	$1,988.25
WML0370	150	PVC	5.00	2001	80	58	Low	Very Low	Low	2081	2097	$300.00	$1,498.86
WML0371	150	PVC	14.86	1995	80	52	Low	Very Low	Low	2075	2091	$300.00	$4,458.41
WML0372	200	PVC	81.57	2003	80	60	Medium	Very Low	Low	2083	2099	$350.00	$28,548.54
WML0373	200	PVC	112.71	2003	80	60	Medium	Very Low	Low	2083	2099	$350.00	$39,449.41
WML0374	200	PVC	13.50	2003	80	60	Medium	Very Low	Low	2083	2099	$350.00	$4,725.78
WML0375	150	PVC	9.51	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$2,851.62
WML0376	150	PVC	11.32	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$3,395.89
WML0377	150	PVC	9.46	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$2,839.10
WML0378	150	PVC	7.26	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$2,178.65
WML0379	150	PVC	7.26	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$2,177.22
WML0380	150	PVC	7.48	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$2,245.30
WML0381	150	PVC	8.52	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$2,556.27
WML0382	150	PVC	8.30	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$2,488.83
WML0383	150	PVC	6.44	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$1,932.31
WML0384	150	PVC	103.96	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$31,187.56
WML0387	150	PVC	7.22	1968	80	25	Low	Low	Low	2048	2064	$300.00	$2,166.48
WML0388	150	PVC	6.95	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$2,083.80
WML0389	150	PVC	5.50	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$1,649.04
WML0390	200	PVC	185.59	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$64,956.85
WML0391	150	PVC	12.00	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$3,600.00
WML0392	200	PVC	12.00	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$4,199.99
WML0393	150	PVC	5.80	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$1,738.74
WML0394	150	PVC	11.75	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$3,525.33
WML0395	200	PVC	7.99	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$2,797.67
WML0396	200	PVC	285.83	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$100,039.20
WML0397	200	AC	96.89	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$33,911.96
WML0398	200	AC	76.71	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$26,847.84
WML0399	200	AC	68.67	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$24,036.07
WML0400	200	AC	37.53	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$13,135.21
WML0401	200	AC	128.14	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$44,847.50
WML0402	200	AC	15.94	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$5,578.79
WML0403	200	PVC	26.78	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$9,373.47
WML0404	200	PVC	104.35	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$36,523.58
WML0405	200	PVC	80.87	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$28,304.62
WML0406	150	PVC	6.30	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$1,890.48
WML0407	150	PVC	5.85	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$1,755.01
WML0408	200	AC	67.52	1959	65	1	Medium	High	High	2024	2023	$350.00	$23,633.63
WML0409	200	AC	2.47	1959	65	1	Medium	High	High	2024	2023	$350.00	$864.89
WML0410	200	AC	61.35	1959	65	1	Medium	High	High	2024	2023	$350.00	$21,471.75
WML0411	200	AC	4.47	1959	65	1	Medium	High	High	2024	2023	$350.00	$1,564.83
WML0412	150	AC	206.84	1964	65	6	Low	High	Medium	2029	2029	$300.00	$62,053.42
WML0414	150	AC	43.69	1964	65	6	Low	High	Medium	2029	2029	$300.00	$13,106.76
WML0415	150	AC	129.86	1965	65	7	Low	High	Medium	2030	2030	$300.00	$38,958.57
WML0416	150	AC	2.90	1965	65	7	Low	High	Medium	2030	2030	$300.00	$868.82
WML0417	150	AC	68.25	1965	65	7	Low	High	Medium	2030	2030	$300.00	$20,475.39
WML0418	200	PVC	59.95	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$20,980.98
WML0419	200	PVC	62.71	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$21,949.83
WML0420	150	PVC	85.78	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$25,733.58
WML0421	150	PVC	131.47	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$39,440.19
WML0422	150	PVC	79.89	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$23,967.81
WML0423	200	PVC	66.93	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$23,425.24
WML0424	200	PVC	76.77	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$26,869.74
WML0426	150	PVC	42.48	2009	80	66	Low	Very Low	Low	2089	2105	$300.00	$12,742.61
WML0427	200	PVC	17.52	2007	80	64	Medium	Very Low	Low	2087	2103	$350.00	$6,133.06
WML0428	150	PVC	11.00	2007	80	64	Low	Very Low	Low	2087	2103	$300.00	$3,299.51
WML0429	300	PVC	127.87	2008	80	65	Medium	Very Low	Low	2088	2104	$500.00	$63,935.25
WML0430	150	PVC	12.00	1975	80	32	Low	Very Low	Low	2055	2071	$300.00	$3,600.00
WML0431	150	PVC	7.80	2009	80	66	Low	Very Low	Low	2089	2105	$300.00	$2,340.36
WML0432	150	PVC	7.80	2009	80	66	Low	Very Low	Low	2089	2105	$300.00	$2,339.63
WML0433	200	PVC	81.18	2009	80	66	Medium	Very Low	Low	2089	2105	$350.00	$28,413.28
WML0434	200	PVC	151.16	2009	80	66	Medium	Very Low	Low	2089	2105	$350.00	$52,906.36
WML0435	200	PVC	170.14	2009	80	66	Medium	Very Low	Low	2089	2105	$350.00	$59,549.09
WML0436	200	PVC	167.05	2009	80	66	Medium	Very Low	Low	2089	2105	$350.00	$58,468.57
WML0437	200	PVC	83.76	1980	80	37	Medium	Very Low	Low	2060	2076	$350.00	$29,314.73
WML0438	200	PVC	3.00	2009	80	66	Medium	Very Low	Low	2089	2105	$350.00	$1,050.00
WML0439	150	PVC	7.80	2009	80	66	Low	Very Low	Low	2089	2105	$300.00	$2,340.35
WML0440	150	PVC	4.88	2009	80	66	Low	Very Low	Low	2089	2105	$300.00	$1,465.05
WML0441	150	PVC	6.28	2009	80	66	Low	Very Low	Low	2089	2105	$300.00	$1,883.91
WML0442	100	PVC	26.36	2009	80	66	Low	Very Low	Low	2089	2105	$300.00	$7,908.93
WML0443	200	PVC	59.12	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$20,691.91
WML0444	200	PVC	74.25	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$25,986.31
WML0445	150	PVC	4.88	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$1,465.09
WML0446	150	PVC	8.76	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$2,627.62
WML0447	300	PVC	52.21	2008	80	65	Medium	Very Low	Low	2088	2104	$500.00	$26,106.28
WML0448	300	PVC	113.49	2008	80	65	Medium	Very Low	Low	2088	2104	$500.00	$56,746.38
WML0449	350	PVC	36.28	2021	80	78	High	Very Low	Low	2101	2117	$1,700.00	$61,672.60
WML0450	450	HDPE	177.48	2021	80	78	High	Very Low	Low	2101	2117	$2,000.00	$354,960.32
WML0451	350	PVC	12.39	2021	80	78	High	Very Low	Low	2101	2117	$1,700.00	$21,067.83
WML0452	150	PVC	4.13	2008	80	65	Low	Very Low	Low	2088	2104	$300.00	$1,238.01
WML0453	200	PVC	18.00	2003	80	60	Medium	Very Low	Low	2083	2099	$350.00	$6,300.01
WML0454	150	PVC	18.00	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$5,399.98
WML0455	150	PVC	28.04	1981	80	38	Low	Very Low	Low	2061	2077	$300.00	$8,412.57
WML0456	150	PVC	1.60	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$480.65
WML0457	150	AC	58.36	1972	65	14	Low	Medium	Low	2037	2050	$300.00	$17,507.44
WML0458	150	AC	19.40	1965	65	7	Low	High	Medium	2030	2030	$300.00	$5,821.37
WML0459	150	PVC	93.02	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$27,904.82
WML0460	150	PVC	21.40	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$6,420.10
WML0461	150	PVC	179.15	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$53,745.00
WML0462	150	AC	107.93	1973	65	15	Low	Medium	Low	2038	2051	$300.00	$32,380.05
WML0463	150	AC	87.43	1973	65	15	Low	Medium	Low	2038	2051	$300.00	$26,229.29
WML0464	150	AC	6.48	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,942.51
WML0465	150	AC	1.11	1959	65	1	Low	High	Medium	2024	2024	$300.00	$331.90
WML0466	400	PVC	12.16	2008	80	65	High	Very Low	Low	2088	2104	$750.00	$9,123.34
WML0467	250	PVC	125.89	1997	80	54	Medium	Very Low	Low	2077	2093	$450.00	$56,649.97
WML0468	250	PVC	82.63	2012	80	69	Medium	Very Low	Low	2092	2108	$450.00	$37,185.19

WML0469	150	PVC	20.83	2012	80	69	Low	Very Low	Low	2092	2108	$300.00	$6,247.53
WML0470	100	PVC	79.64	2012	80	69	Low	Very Low	Low	2092	2108	$300.00	$23,892.72
WML0471	100	PVC	12.34	2012	80	69	Low	Very Low	Low	2092	2108	$300.00	$3,702.72
WML0472	150	PVC	5.36	2012	80	69	Low	Very Low	Low	2092	2108	$300.00	$1,609.48
WML0473	250	PVC	392.79	2012	80	69	Medium	Very Low	Low	2092	2108	$450.00	$176,756.50
WML0474	200	PVC	50.31	1997	80	54	Medium	Very Low	Low	2077	2093	$350.00	$17,609.73
WML0475	200	PVC	47.46	1997	80	54	Medium	Very Low	Low	2077	2093	$350.00	$16,610.29
WML0476	100	PVC	56.03	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$16,808.96
WML0477	150	PVC	3.32	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$996.67
WML0478	150	PVC	3.78	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$1,135.37
WML0479	150	PVC	4.15	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$1,244.66
WML0480	250	PVC	116.37	1997	80	54	Medium	Very Low	Low	2077	2093	$450.00	$52,365.95
WML0481	250	PVC	59.18	1997	80	54	Medium	Very Low	Low	2077	2093	$450.00	$26,628.83
WML0482	150	AC	6.99	1959	65	1	Low	High	Medium	2024	2024	$300.00	$2,095.67
WML0483	200	AC	9.89	1959	65	1	Medium	High	High	2024	2023	$350.00	$3,462.50
WML0484	200	AC	146.55	1959	65	1	Medium	High	High	2024	2023	$350.00	$51,293.46
WML0485	200	AC	9.44	1959	65	1	Medium	High	High	2024	2023	$350.00	$3,304.33
WML0486	200	AC	110.60	1959	65	1	Medium	High	High	2024	2023	$350.00	$38,708.54
WML0487	200	AC	45.38	1959	65	1	Medium	High	High	2024	2023	$350.00	$15,884.18
WML0488	150	PVC	6.13	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$1,838.88
WML0489	150	PVC	40.29	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$12,086.15
WML0490	250	AC	10.31	1964	65	6	Medium	High	High	2029	2023	$350.00	$3,607.83
WML0491	250	AC	73.33	1964	65	6	Medium	High	High	2029	2023	$350.00	$25,665.59
WML0492	150	PVC	15.78	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$4,733.33
WML0493	250	AC	47.05	1964	65	6	Medium	High	High	2029	2023	$350.00	$16,466.91
WML0494	150	PVC	8.88	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$2,664.11
WML0495	150	PVC	166.44	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$49,930.77
WML0496	150	PVC	3.46	1993	80	50	Low	Very Low	Low	2073	2089	$300.00	$1,037.16
WML0497	150	PVC	12.31	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$3,691.55
WML0498	150	PVC	104.02	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$31,207.18
WML0499	150	PVC	1.92	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$576.30
WML0500	250	PVC	192.95	2008	80	65	Medium	Very Low	Low	2088	2104	$450.00	$86,829.36
WML0501	250	PVC	266.91	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$120,110.40
WML0502	250	PVC	115.45	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$51,953.19
WML0503	250	PVC	161.71	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$72,768.82
WML0504	250	PVC	62.70	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$28,216.97
WML0505	150	AC	52.07	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$15,621.29
WML0506	150	AC	53.06	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$15,917.42
WML0507	150	AC	24.66	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$7,398.83
WML0508	150	PVC	109.66	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$32,896.93
WML0509	150	PVC	53.89	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$16,166.69
WML0510	150	PVC	4.61	1982	80	39	Low	Very Low	Low	2062	2078	$300.00	$1,382.91
WML0511	150	PVC	142.35	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$42,705.79
WML0512	150	PVC	34.97	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$10,492.48
WML0513	150	PVC	73.66	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$22,098.84
WML0514	150	PVC	66.86	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$20,059.22
WML0515	150	AC	4.01	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,202.28
WML0516	150	AC	8.66	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$2,597.17
WML0517	150	AC	12.08	1971	65	13	Low	Medium	Low	2036	2049	$300.00	$3,623.09
WML0518	150	AC	13.67	1959	65	1	Low	High	Medium	2024	2024	$300.00	$4,102.20
WML0519	150	PVC	5.50	2011	80	68	Low	Very Low	Low	2091	2107	$300.00	$1,648.54
WML0520	150	PVC	13.44	2011	80	68	Low	Very Low	Low	2091	2107	$300.00	$4,031.22
WML0521	150	PVC	6.96	2011	80	68	Low	Very Low	Low	2091	2107	$300.00	$2,087.09
WML0522	150	PVC	6.77	2011	80	68	Low	Very Low	Low	2091	2107	$300.00	$2,029.92
WML0523	200	PVC	21.67	2011	80	68	Medium	Very Low	Low	2091	2107	$350.00	$7,585.71
WML0525	150	PVC	2.82	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$846.28
WML0526	150	PVC	14.27	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$4,282.31
WML0527	150	PVC	247.45	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$74,235.23
WML0528	250	PVC	272.63	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$122,681.26
WML0529	250	PVC	368.96	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$166,033.41
WML0530	250	PVC	87.91	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$39,560.10
WML0531	250	PVC	36.39	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$16,375.26
WML0532	250	PVC	108.09	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$48,640.20
WML0533	250	PVC	28.70	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$12,913.56
WML0534	250	PVC	134.52	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$60,532.22
WML0535	250	PVC	103.62	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$46,628.99
WML0536	250	PVC	151.67	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$68,250.02
WML0537	250	PVC	6.19	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$2,784.71
WML0538	250	PVC	146.70	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$66,017.07
WML0539	250	PVC	145.81	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$65,614.77
WML0540	250	PVC	111.82	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$50,317.94
WML0541	250	PVC	127.99	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$57,595.83
WML0542	250	PVC	64.05	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$28,822.36
WML0543	250	PVC	14.67	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$6,602.38
WML0544	150	PVC	5.99	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$1,797.03
WML0545	150	PVC	3.22	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$965.16
WML0546	250	PVC	32.36	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$14,563.69
WML0547	250	PVC	44.83	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$20,174.05
WML0548	150	AC	5.36	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$1,609.44
WML0549	150	AC	11.87	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$3,560.73
WML0550	200	PVC	140.93	2013	80	70	Medium	Very Low	Low	2093	2109	$350.00	$49,327.00
WML0551	150	PVC	4.97	2013	80	70	Low	Very Low	Low	2093	2109	$300.00	$1,490.07
WML0552	200	PVC	197.75	2011	80	68	Medium	Very Low	Low	2091	2107	$350.00	$69,211.44
WML0553	200	PVC	17.03	2011	80	68	Medium	Very Low	Low	2091	2107	$350.00	$5,960.36
WML0554	200	PVC	10.78	2011	80	68	Medium	Very Low	Low	2091	2107	$350.00	$3,771.28
WML0555	200	PVC	25.94	2011	80	68	Medium	Very Low	Low	2091	2107	$350.00	$9,079.70
WML0556	200	PVC	97.45	2011	80	68	Medium	Very Low	Low	2091	2107	$350.00	$34,108.53
WML0557	200	PVC	11.06	2011	80	68	Medium	Very Low	Low	2091	2107	$350.00	$3,872.28
WML0558	200	PVC	32.08	2011	80	68	Medium	Very Low	Low	2091	2107	$350.00	$11,228.01
WML0559	150	AC	9.20	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$2,760.00
WML0560	150	AC	89.72	1970	65	12	Low	Medium	Low	2035	2048	$300.00	$26,914.60
WML0561	150	AC	78.83	1970	65	12	Low	Medium	Low	2035	2048	$300.00	$23,649.28
WML0562	150	AC	32.45	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$9,733.64
WML0563	150	AC	64.46	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$19,336.52
WML0564	150	AC	3.60	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$1,079.74
WML0565	300	PVC	4.49	2008	80	65	Medium	Very Low	Low	2088	2104	$500.00	$2,243.32
WML0566	400	PVC	72.54	2008	80	65	High	Very Low	Low	2088	2104	$750.00	$54,406.95
WML0567	250	PVC	64.80	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$29,161.79
WML0568	250	PVC	45.85	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$20,634.05
WML0569	350	PVC	12.00	2008	80	65	High	Very Low	Low	2088	2104	$1,700.00	$20,407.26
WML0570	400	PVC	32.30	2008	80	65	High	Very Low	Low	2088	2104	$750.00	$24,225.39
WML0571	150	PVC	3.54	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$1,060.94
WML0572	150	AC	11.69	1979	65	21	Low	Low	Low	2044	2057	$300.00	$3,507.27
WML0573	150	AC	4.82	1979	65	21	Low	Low	Low	2044	2057	$300.00	$1,447.26
WML0574	250	AC	3.22	1959	65	1	Medium	High	High	2024	2023	$350.00	$1,128.56
WML0575	200	AC	44.05	1964	65	6	Medium	High	High	2029	2023	$350.00	$15,417.21
WML0576	250	AC	72.23	1959	65	1	Medium	High	High	2024	2023	$350.00	$25,279.01
WML0577	250	AC	12.13	1964	65	6	Medium	High	High	2029	2023	$350.00	$4,244.94
WML0578	250	AC	62.30	1964	65	6	Medium	High	High	2029	2023	$350.00	$21,804.75
WML0579	150	AC	3.54	1970	65	12	Low	Medium	Low	2035	2048	$300.00	$1,062.44
WML0580	150	AC	62.90	1959	65	1	Low	High	Medium	2024	2024	$300.00	$18,871.29
WML0581	150	AC	305.13	1959	65	1	Low	High	Medium	2024	2024	$300.00	$91,538.83
WML0582	150	PVC	22.37	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$6,711.69
WML0583	150	PVC	21.58	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$6,473.70
WML0584	150	PVC	59.36	1979	80	36	Low	Very Low	Low	2059	2075	$300.00	$17,807.21
WML0585	150	PVC	19.78	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$5,933.91
WML0586	150	PVC	7.92	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$2,376.19
WML0587	150	PVC	5.25	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$1,574.36
WML0588	150	AC	1.36	1970	65	12	Low	Medium	Low	2035	2048	$300.00	$406.52

WML0589	200	PVC	119.18	2003	80	60	Medium	Very Low	Low	2083	2099	$350.00	$41,711.52
WML0590	200	PVC	41.21	2003	80	60	Medium	Very Low	Low	2083	2099	$350.00	$14,425.11
WML0591	200	PVC	84.04	2003	80	60	Medium	Very Low	Low	2083	2099	$350.00	$29,413.16
WML0592	200	PVC	11.05	2003	80	60	Medium	Very Low	Low	2083	2099	$350.00	$3,867.71
WML0593	150	PVC	12.60	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$3,780.15
WML0594	150	PVC	13.02	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$3,905.40
WML0595	150	PVC	12.22	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$3,667.19
WML0596	200	AC	51.60	1959	65	1	Medium	High	High	2024	2023	$350.00	$18,059.94
WML0597	200	AC	8.65	1959	65	1	Medium	High	High	2024	2023	$350.00	$3,027.52
WML0598	200	AC	37.39	1959	65	1	Medium	High	High	2024	2023	$350.00	$13,087.68
WML0599	200	AC	18.79	1959	65	1	Medium	High	High	2024	2023	$350.00	$6,576.65
WML0600	200	AC	317.10	1959	65	1	Medium	High	High	2024	2023	$350.00	$110,984.97
WML0601	200	AC	59.05	1959	65	1	Medium	High	High	2024	2023	$350.00	$20,668.16
WML0602	200	AC	87.27	1959	65	1	Medium	High	High	2024	2023	$350.00	$30,543.05
WML0603	150	AC	2.48	1959	65	1	Low	High	Medium	2024	2024	$300.00	$742.96
WML0604	150	AC	4.47	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,340.95
WML0605	150	AC	202.80	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$60,839.18
WML0606	150	AC	6.51	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$1,951.52
WML0607	150	AC	60.38	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$18,115.24
WML0608	150	AC	134.30	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$40,289.71
WML0609	150	AC	8.28	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$2,482.61
WML0610	150	PVC	11.05	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$3,315.78
WML0611	150	AC	5.33	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$1,598.36
WML0612	150	AC	2.65	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$794.35
WML0613	150	AC	153.87	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$46,162.27
WML0614	150	AC	12.57	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$3,769.53
WML0615	150	AC	43.63	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$13,090.30
WML0616	150	AC	54.09	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$16,228.07
WML0617	150	AC	192.19	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$57,658.08
WML0618	150	AC	184.65	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$55,395.12
WML0619	150	AC	232.85	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$69,854.04
WML0620	150	AC	75.95	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$22,786.04
WML0621	150	PVC	241.45	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$72,434.50
WML0622	150	AC	142.18	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$42,653.55
WML0623	150	AC	114.61	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$34,384.37
WML0625	150	PVC	3.68	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$1,104.97
WML0626	150	AC	126.33	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$37,900.08
WML0627	150	AC	15.87	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$4,760.62
WML0628	150	AC	94.19	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$28,255.89
WML0629	150	AC	7.15	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$2,144.90
WML0630	150	AC	72.80	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$21,839.65
WML0631	150	PVC	11.37	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$3,411.74
WML0632	150	PVC	5.60	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$1,679.41
WML0633	150	PVC	4.53	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$1,360.11
WML0634	150	PVC	12.16	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$3,647.72
WML0635	150	AC	11.37	1959	65	1	Low	High	Medium	2024	2024	$300.00	$3,411.07
WML0636	150	PVC	19.23	2016	80	73	Low	Very Low	Low	2096	2112	$300.00	$5,768.00
WML0637	150	AC	24.49	1959	65	1	Low	High	Medium	2024	2024	$300.00	$7,346.11
WML0638	150	AC	2.05	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$615.33
WML0639	250	AC	5.99	1964	65	6	Medium	High	High	2029	2023	$350.00	$2,097.91
WML0640	250	AC	52.80	1964	65	6	Medium	High	High	2029	2023	$350.00	$18,479.17
WML0641	150	AC	33.62	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$10,086.35
WML0642	150	AC	137.09	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$41,126.87
WML0643	150	AC	186.69	1965	65	7	Low	High	Medium	2030	2030	$300.00	$56,006.77
WML0644	250	PVC	4.40	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$1,979.67
WML0645	250	PVC	116.28	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$52,325.00
WML0646	150	AC	3.81	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,144.14
WML0647	150	AC	35.75	1959	65	1	Low	High	Medium	2024	2024	$300.00	$10,726.32
WML0648	150	AC	4.41	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,323.05
WML0649	200	AC	8.81	1959	65	1	Medium	High	High	2024	2023	$350.00	$3,083.82
WML0650	200	AC	68.60	1959	65	1	Medium	High	High	2024	2023	$350.00	$24,010.66
WML0651	200	AC	26.77	1959	65	1	Medium	High	High	2024	2023	$350.00	$9,368.21
WML0652	200	AC	69.56	1959	65	1	Medium	High	High	2024	2023	$350.00	$24,345.63
WML0653	150	AC	3.18	1959	65	1	Low	High	Medium	2024	2024	$300.00	$955.24
WML0654	150	PVC	3.39	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$1,017.59
WML0655	150	PVC	187.83	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$56,348.49
WML0656	150	PVC	5.01	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$1,501.89
WML0657	150	PVC	1.95	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$583.92
WML0658	150	PVC	2.79	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$836.88
WML0659	200	PVC	120.82	1988	80	45	Medium	Very Low	Low	2068	2084	$350.00	$42,288.56
WML0660	150	PVC	68.30	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$20,489.49
WML0661	150	PVC	99.72	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$29,916.55
WML0662	150	PVC	40.58	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$12,173.39
WML0663	200	PVC	109.24	1994	80	51	Medium	Very Low	Low	2074	2090	$350.00	$38,234.58
WML0664	300	PVC	3.65	1994	80	51	Medium	Very Low	Low	2074	2090	$500.00	$1,825.65
WML0665	300	PVC	82.87	1994	80	51	Medium	Very Low	Low	2074	2090	$500.00	$41,433.07
WML0666	150	AC	2.46	1959	65	1	Low	High	Medium	2024	2024	$300.00	$737.64
WML0667	250	PVC	5.74	1995	80	52	Medium	Very Low	Low	2075	2091	$450.00	$2,584.90
WML0668	150	PVC	157.68	2011	80	68	Low	Very Low	Low	2091	2107	$300.00	$47,303.38
WML0669	150	PVC	5.17	2011	80	68	Low	Very Low	Low	2091	2107	$300.00	$1,550.92
WML0670	150	PVC	82.31	2011	80	68	Low	Very Low	Low	2091	2107	$300.00	$24,691.79
WML0671	150	PVC	16.51	2011	80	68	Low	Very Low	Low	2091	2107	$300.00	$4,952.42
WML0672	150	AC	48.18	1979	65	21	Low	Low	Low	2044	2057	$300.00	$14,454.96
WML0673	150	AC	13.65	1979	65	21	Low	Low	Low	2044	2057	$300.00	$4,094.49
WML0674	150	AC	120.13	1979	65	21	Low	Low	Low	2044	2057	$300.00	$36,038.60
WML0675	150	AC	71.09	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$21,326.49
WML0676	150	AC	150.03	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$45,009.83
WML0677	150	AC	4.50	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$1,349.48
WML0678	150	PVC	104.40	2011	80	68	Low	Very Low	Low	2091	2107	$300.00	$31,320.41
WML0679	250	PVC	112.76	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$50,742.03
WML0680	250	PVC	8.40	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$3,780.01
WML0681	250	PVC	129.57	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$58,304.41
WML0682	250	PVC	118.06	2003	80	60	Medium	Very Low	Low	2083	2099	$450.00	$53,126.88
WML0683	150	PVC	38.56	2011	80	68	Low	Very Low	Low	2091	2107	$300.00	$11,569.44
WML0684	150	PVC	8.45	2011	80	68	Low	Very Low	Low	2091	2107	$300.00	$2,535.41
WML0685	150	PVC	207.69	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$62,307.43
WML0686	150	PVC	3.49	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$1,045.87
WML0687	250	PVC	147.38	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$66,319.90
WML0688	250	PVC	2.50	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$1,126.47
WML0689	250	PVC	45.69	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$20,561.46
WML0690	250	PVC	69.09	2008	80	65	Medium	Very Low	Low	2088	2104	$450.00	$31,090.45
WML0691	250	PVC	76.45	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$34,401.00
WML0692	250	PVC	190.71	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$85,819.68
WML0693	250	PVC	8.00	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$3,598.38
WML0694	250	PVC	110.13	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$49,557.71
WML0695	250	PVC	180.38	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$81,172.66
WML0696	250	PVC	191.91	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$86,361.21
WML0697	250	PVC	13.68	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$6,156.57
WML0698	150	PVC	0.70	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$210.21
WML0699	150	PVC	193.48	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$58,043.68
WML0700	150	PVC	3.02	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$905.99
WML0701	150	PVC	3.75	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$1,124.01
WML0702	250	PVC	338.95	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$152,528.76
WML0703	250	PVC	34.25	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$15,411.52
WML0704	250	PVC	11.44	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$5,149.86
WML0705	250	PVC	4.05	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$1,823.45
WML0706	200	PVC	259.47	2017	80	74	Medium	Very Low	Low	2097	2113	$350.00	$90,815.22
WML0707	200	PVC	348.25	2017	80	74	Medium	Very Low	Low	2097	2113	$350.00	$121,885.78
WML0708	50	HDPE	52.26	2019	80	76	Low	Very Low	Low	2099	2115	$2,000.00	$104,519.57

WML0709	250	PVC	283.98	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$127,791.38
WML0710	250	PVC	230.44	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$103,699.83
WML0711	250	PVC	4.12	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$1,855.26
WML0712	250	PVC	814.35	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$366,458.89
WML0713	250	PVC	126.42	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$56,888.02
WML0714	250	PVC	10.82	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$4,869.90
WML0715	150	PVC	27.06	1982	80	39	Low	Very Low	Low	2062	2078	$300.00	$8,117.83
WML0716	200	PVC	6.79	1982	80	39	Medium	Very Low	Low	2062	2078	$350.00	$2,375.16
WML0717	200	PVC	12.07	1982	80	39	Medium	Very Low	Low	2062	2078	$350.00	$4,224.99
WML0718	250	PVC	10.66	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$4,797.57
WML0719	250	PVC	3.33	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$1,497.48
WML0720	200	PVC	47.17	1992	80	49	Medium	Very Low	Low	2072	2088	$350.00	$16,509.15
WML0721	150	PVC	160.43	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$48,129.19
WML0722	150	PVC	2.02	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$606.06
WML0723	200	PVC	223.55	2011	80	68	Medium	Very Low	Low	2091	2107	$350.00	$78,243.93
WML0724	150	PVC	127.56	1997	80	54	Low	Very Low	Low	2077	2093	$300.00	$38,268.62
WML0725	150	PVC	38.81	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$11,642.20
WML0726	100	PVC	37.39	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$11,216.83
WML0727	250	PVC	65.97	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$29,687.78
WML0728	150	PVC	12.47	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$3,741.34
WML0729	100	PVC	40.58	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$12,174.88
WML0730	250	PVC	20.64	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$9,289.23
WML0731	150	PVC	7.93	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$2,377.72
WML0732	250	PVC	2.13	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$958.33
WML0733	150	PVC	8.07	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$2,421.77
WML0734	150	PVC	5.69	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$1,706.36
WML0735	250	PVC	57.45	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$25,850.38
WML0736	250	PVC	28.59	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$12,863.37
WML0737	250	PVC	50.53	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$22,738.46
WML0738	150	PVC	58.40	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$17,519.80
WML0739	150	PVC	5.36	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$1,608.05
WML0740	150	PVC	5.09	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$1,525.69
WML0741	150	PVC	76.99	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$23,097.98
WML0742	250	PVC	98.51	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$44,328.37
WML0743	150	PVC	2.10	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$629.51
WML0744	150	AC	96.81	1959	65	1	Low	High	Medium	2024	2024	$300.00	$29,042.57
WML0745	150	AC	72.55	1959	65	1	Low	High	Medium	2024	2024	$300.00	$21,765.26
WML0746	150	AC	149.18	1959	65	1	Low	High	Medium	2024	2024	$300.00	$44,754.03
WML0747	200	AC	41.62	1959	65	1	Medium	High	High	2024	2023	$350.00	$14,567.13
WML0748	200	AC	17.63	1959	65	1	Medium	High	High	2024	2023	$350.00	$6,170.94
WML0749	200	AC	37.04	1959	65	1	Medium	High	High	2024	2023	$350.00	$12,964.37
WML0750	150	AC	2.03	1959	65	1	Low	High	Medium	2024	2024	$300.00	$607.93
WML0751	75	AC	124.04	1966	65	8	Low	High	Low	2031	2044	$2,000.00	$248,084.66
WML0752	150	AC	14.14	1966	65	8	Low	High	Medium	2031	2031	$300.00	$4,242.47
WML0753	150	AC	53.17	1966	65	8	Low	High	Medium	2031	2031	$300.00	$15,951.72
WML0754	50	PVC	271.79	1975	80	32	Low	Very Low	Low	2055	2071	$2,000.00	$543,582.18
WML0755	200	PVC	0.65	2018	80	75	Medium	Very Low	Low	2098	2114	$350.00	$227.58
WML0756	250	PVC	10.85	2018	80	75	Medium	Very Low	Low	2098	2114	$450.00	$4,881.02
WML0757	250	PVC	427.25	2018	80	75	Medium	Very Low	Low	2098	2114	$450.00	$192,263.99
WML0758	50	HDPE	80.46	2018	80	75	Low	Very Low	Low	2098	2114	$2,000.00	$160,927.38
WML0759	200	PVC	12.16	2018	80	75	Medium	Very Low	Low	2098	2114	$350.00	$4,255.30
WML0760	150	PVC	9.65	2018	80	75	Low	Very Low	Low	2098	2114	$300.00	$2,896.17
WML0761	200	PVC	50.56	2018	80	75	Medium	Very Low	Low	2098	2114	$350.00	$17,696.38
WML0762	150	PVC	3.49	2018	80	75	Low	Very Low	Low	2098	2114	$300.00	$1,047.65
WML0763	150	PVC	3.98	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$1,193.42
WML0764	150	PVC	15.34	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$4,603.38
WML0765	150	PVC	2.92	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$876.92
WML0766	150	PVC	3.26	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$977.29
WML0767	150	PVC	3.45	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$1,033.51
WML0768	150	PVC	2.65	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$794.68
WML0769	100	PVC	244.97	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$73,491.83
WML0770	150	PVC	2.80	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$838.57
WML0771	150	PVC	294.68	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$88,404.12
WML0772	150	PVC	6.59	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$1,978.49
WML0775	200	PVC	10.37	2017	80	74	Medium	Very Low	Low	2097	2113	$350.00	$3,628.43
WML0776	250	PVC	665.60	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$299,519.77
WML0777	250	PVC	302.16	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$135,970.68
WML0778	250	PVC	345.75	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$155,588.77
WML0779	250	PVC	307.28	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$138,275.44
WML0780	250	PVC	815.57	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$367,007.09
WML0781	250	PVC	41.70	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$18,766.58
WML0782	250	PVC	300.62	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$135,277.57
WML0783	200	PVC	3.04	2017	80	74	Medium	Very Low	Low	2097	2113	$350.00	$1,065.40
WML0784	150	PVC	412.46	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$123,737.13
WML0785	150	PVC	4.59	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$1,377.39
WML0786	250	PVC	3.05	2017	80	74	Medium	Very Low	Low	2097	2113	$450.00	$1,371.35
WML0787	100	PVC	250.77	2018	80	75	Low	Very Low	Low	2098	2114	$300.00	$75,229.76
WML0788	250	PVC	6.11	2018	80	75	Medium	Very Low	Low	2098	2114	$450.00	$2,747.50
WML0789	250	PVC	266.40	2018	80	75	Medium	Very Low	Low	2098	2114	$450.00	$119,880.50
WML0790	250	PVC	69.72	2018	80	75	Medium	Very Low	Low	2098	2114	$450.00	$31,376.12
WML0791	250	PVC	602.91	2018	80	75	Medium	Very Low	Low	2098	2114	$450.00	$271,310.55
WML0792	250	PVC	304.84	2018	80	75	Medium	Very Low	Low	2098	2114	$450.00	$137,178.89
WML0793	150	PVC	10.31	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$3,091.70
WML0794	250	AC	2.35	1964	65	6	Medium	High	High	2029	2023	$350.00	$823.62
WML0795	250	AC	19.47	1964	65	6	Medium	High	High	2029	2023	$350.00	$6,813.38
WML0796	250	AC	146.97	1964	65	6	Medium	High	High	2029	2023	$350.00	$51,438.63
WML0797	250	AC	147.93	1964	65	6	Medium	High	High	2029	2023	$350.00	$51,776.68
WML0798	150	AC	2.61	1994	65	36	Low	Very Low	Low	2059	2072	$300.00	$782.25
WML0799	200	AC	5.11	1992	65	34	Medium	Very Low	Low	2057	2070	$350.00	$1,789.88
WML0801	150	PVC	3.34	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$1,002.97
WML0802	250	PVC	91.61	1991	80	48	Medium	Very Low	Low	2071	2087	$450.00	$41,226.12
WML0803	150	PVC	2.75	2008	80	65	Low	Very Low	Low	2088	2104	$300.00	$823.72
WML0804	200	PVC	4.05	2008	80	65	Medium	Very Low	Low	2088	2104	$350.00	$1,416.49
WML0805	150	PVC	6.92	2008	80	65	Low	Very Low	Low	2088	2104	$300.00	$2,076.27
WML0806	150	AC	4.05	1964	65	6	Low	High	Medium	2029	2029	$300.00	$1,215.98
WML0807	250	PVC	128.51	2008	80	65	Medium	Very Low	Low	2088	2104	$450.00	$57,828.28
WML0808	250	PVC	127.88	2008	80	65	Medium	Very Low	Low	2088	2104	$450.00	$57,546.62
WML0809	250	PVC	23.48	2008	80	65	Medium	Very Low	Low	2088	2104	$450.00	$10,563.80
WML0810	250	PVC	29.62	2008	80	65	Medium	Very Low	Low	2088	2104	$450.00	$13,330.40
WML0811	150	PVC	3.36	2008	80	65	Low	Very Low	Low	2088	2104	$300.00	$1,008.28
WML0812	150	PVC	10.00	2008	80	65	Low	Very Low	Low	2088	2104	$300.00	$3,000.15
WML0813	250	PVC	282.04	2008	80	65	Medium	Very Low	Low	2088	2104	$450.00	$126,916.00
WML0814	250	PVC	86.67	2008	80	65	Medium	Very Low	Low	2088	2104	$450.00	$39,000.67
WML0815	250	AC	279.08	1964	65	6	Medium	High	High	2029	2023	$350.00	$97,679.66
WML0816	250	AC	19.57	1964	65	6	Medium	High	High	2029	2023	$350.00	$6,851.14
WML0818	300	PVC	9.99	1994	80	51	Medium	Very Low	Low	2074	2090	$500.00	$4,993.54
WML0819	250	PVC	22.43	1994	80	51	Medium	Very Low	Low	2074	2090	$450.00	$10,094.01
WML0820	250	PVC	176.57	1994	80	51	Medium	Very Low	Low	2074	2090	$450.00	$79,456.21
WML0821	250	PVC	114.12	1994	80	51	Medium	Very Low	Low	2074	2090	$450.00	$51,355.65
WML0822	250	PVC	9.87	1994	80	51	Medium	Very Low	Low	2074	2090	$450.00	$4,439.57
WML0823	250	PVC	129.62	1994	80	51	Medium	Very Low	Low	2074	2090	$450.00	$58,331.01
WML0824	250	PVC	107.54	1994	80	51	Medium	Very Low	Low	2074	2090	$450.00	$48,392.00
WML0825	250	PVC	62.00	1991	80	48	Medium	Very Low	Low	2071	2087	$450.00	$27,899.64
WML0826	200	PVC	107.23	1991	80	48	Medium	Very Low	Low	2071	2087	$350.00	$37,530.83
WML0828	150	PVC	8.77	2017	80	74	Low	Very Low	Low	2097	2113	$300.00	$2,630.45
WML0829	50	PVC	139.94	2017	80	74	Low	Very Low	Low	2097	2113	$2,000.00	$279,887.47
WML0830	350	PVC	193.86	2008	80	65	High	Very Low	Low	2088	2104	$1,700.00	$329,559.45
WML0831	300	PVC	8.17	2008	80	65	Medium	Very Low	Low	2088	2104	$500.00	$4,083.81
WML0832	150	AC	17.59	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$5,276.88

WML0833	150	PVC	2.38	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$712.85
WML0834	150	AC	9.04	1959	65	1	Low	High	Medium	2024	2024	$300.00	$2,711.62
WML0835	150	AC	5.23	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,570.09
WML0836	150	PVC	3.72	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$1,116.36
WML0837	300	PVC	126.37	1988	80	45	Medium	Very Low	Low	2068	2084	$500.00	$63,184.74
WML0838	150	AC	6.31	1974	65	16	Low	Medium	Low	2039	2052	$300.00	$1,894.17
WML0840	150	PVC	1.94	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$580.67
WML0841	200	PVC	1.09	1991	80	48	Medium	Very Low	Low	2071	2087	$350.00	$380.37
WML0842	200	PVC	158.57	2005	80	62	Medium	Very Low	Low	2085	2101	$350.00	$55,498.82
WML0843	150	AC	26.19	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$7,856.52
WML0844	150	PVC	181.39	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$54,417.03
WML0845	100	AC	123.49	1994	65	36	Low	Very Low	Low	2059	2072	$300.00	$37,047.81
WML0846	150	AC	9.49	1970	65	12	Low	Medium	Low	2035	2048	$300.00	$2,846.19
WML0847	150	AC	2.36	1965	65	7	Low	High	Medium	2030	2030	$300.00	$707.34
WML0848	150	PVC	3.18	2008	80	65	Low	Very Low	Low	2088	2104	$300.00	$953.96
WML0849	200	PVC	9.39	2009	80	66	Medium	Very Low	Low	2089	2105	$350.00	$3,287.36
WML0850	150	PVC	9.65	2009	80	66	Low	Very Low	Low	2089	2105	$300.00	$2,894.26
WML0851	200	PVC	9.71	2009	80	66	Medium	Very Low	Low	2089	2105	$350.00	$3,396.84
WML0852	150	PVC	77.69	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$23,306.61
WML0853	150	PVC	11.00	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$3,300.93
WML0854	150	PVC	95.33	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$28,597.56
WML0855	150	PVC	14.41	1968	80	25	Low	Low	Low	2048	2064	$300.00	$4,324.38
WML0856	200	PVC	15.52	2022	80	79	Medium	Very Low	Low	2102	2118	$350.00	$5,430.49
WML0857	200	PVC	4.92	2022	80	79	Medium	Very Low	Low	2102	2118	$350.00	$1,720.29
WML0858	200	PVC	210.53	2022	80	79	Medium	Very Low	Low	2102	2118	$350.00	$73,683.76
WML0859	200	PVC	139.25	2022	80	79	Medium	Very Low	Low	2102	2118	$350.00	$48,736.18
WML0860	200	PVC	5.30	2022	80	79	Medium	Very Low	Low	2102	2118	$350.00	$1,856.02
WML0861	150	PVC	449.38	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$134,815.14
WML0862	250	PVC	3.73	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$1,678.21
WML0863	250	PVC	585.06	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$263,276.81
WML0864	250	PVC	157.99	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$71,095.32
WML0865	250	PVC	3.05	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$1,374.73
WML0866	250	PVC	248.50	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$111,826.88
WML0867	250	PVC	325.10	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$146,293.69
WML0868	250	PVC	86.24	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$38,807.59
WML0869	250	PVC	142.17	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$63,975.65
WML0870	250	PVC	331.06	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$148,977.53
WML0871	250	PVC	288.61	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$129,873.61
WML0872	250	PVC	168.60	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$75,869.38
WML0873	150	PVC	10.54	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$3,163.11
WML0874	150	PVC	432.64	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$129,791.32
WML0875	150	PVC	157.91	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$47,374.19
WML0876	150	PVC	382.16	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$114,648.87
WML0877	150	PVC	45.84	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$13,753.00
WML0878	150	PVC	367.60	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$110,278.92
WML0879	150	PVC	4.50	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$1,349.98
WML0880	50	HDPE	106.63	2021	80	78	Low	Very Low	Low	2101	2117	$2,000.00	$213,269.41
WML0881	150	PVC	300.23	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$90,067.57
WML0882	200	PVC	275.47	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$96,415.59
WML0883	200	PVC	160.24	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$56,082.39
WML0884	200	PVC	284.74	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$99,659.15
WML0885	200	PVC	280.61	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$98,213.32
WML0886	200	PVC	290.41	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$101,643.95
WML0887	200	PVC	6.11	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$2,140.21
WML0888	200	PVC	165.24	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$57,834.36
WML0889	200	PVC	323.25	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$113,136.34
WML0890	200	PVC	236.94	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$82,928.98
WML0891	200	PVC	244.18	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$85,461.80
WML0894	150	PVC	6.25	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$1,875.36
WML0895	150	PVC	480.92	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$144,274.92
WML0896	150	PVC	79.41	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$23,821.65
WML0898	150	PVC	3.83	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$1,148.89
WML0899	150	PVC	207.90	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$62,371.10
WML0900	200	PVC	6.35	2022	80	79	Medium	Very Low	Low	2102	2118	$350.00	$2,221.25
WML0901	200	PVC	327.00	2022	80	79	Medium	Very Low	Low	2102	2118	$350.00	$114,448.35
WML0902	200	PVC	7.29	2022	80	79	Medium	Very Low	Low	2102	2118	$350.00	$2,550.78
WML0903	250	PVC	2.78	2008	80	65	Medium	Very Low	Low	2088	2104	$450.00	$1,249.23
WML0904	250	PVC	83.79	1993	80	50	Medium	Very Low	Low	2073	2089	$450.00	$37,706.69
WML0905	250	PVC	109.01	1993	80	50	Medium	Very Low	Low	2073	2089	$450.00	$49,054.90
WML0906	250	PVC	62.62	1992	80	49	Medium	Very Low	Low	2072	2088	$450.00	$28,180.08
WML0907	250	PVC	32.39	1992	80	49	Medium	Very Low	Low	2072	2088	$450.00	$14,574.22
WML0908	250	PVC	62.11	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$27,947.69
WML0909	250	PVC	64.59	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$29,067.71
WML0910	250	PVC	74.22	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$33,398.86
WML0911	150	PVC	1.18	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$354.42
WML0912	200	PVC	7.32	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$2,560.34
WML0913	150	PVC	7.56	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$2,269.43
WML0914	150	PVC	3.45	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$1,034.73
WML0915	150	PVC	3.35	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$1,004.96
WML0916	150	PVC	3.46	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$1,036.80
WML0917	150	PVC	7.19	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$2,156.08
WML0918	150	PVC	3.90	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$1,169.03
WML0919	150	PVC	7.34	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$2,202.45
WML0920	150	PVC	3.00	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$899.60
WML0921	150	PVC	2.66	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$797.95
WML0922	150	PVC	23.59	1982	80	39	Low	Very Low	Low	2062	2078	$300.00	$7,076.81
WML0923	150	PVC	4.68	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$1,403.52
WML0924	150	PVC	5.80	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$1,739.22
WML0925	200	PVC	2.90	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$1,016.58
WML0926	200	PVC	88.15	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$30,851.37
WML0927	150	PVC	4.01	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$1,202.48
WML0928	50	HDPE	169.53	2021	80	78	Low	Very Low	Low	2101	2117	$2,000.00	$339,069.87
WML0929	150	PVC	190.12	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$57,037.23
WML0930	150	PVC	5.20	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$1,560.45
WML0931	150	PVC	104.21	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$31,263.21
WML0932	50	PVC	77.20	2022	80	79	Low	Very Low	Low	2102	2118	$2,000.00	$154,397.81
WML0933	150	PVC	4.70	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$1,409.75
WML0934	150	PVC	4.87	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$1,460.80
WML0935	200	PVC	5.83	2022	80	79	Medium	Very Low	Low	2102	2118	$350.00	$2,041.64
WML0936	200	PVC	293.08	2022	80	79	Medium	Very Low	Low	2102	2118	$350.00	$102,577.61
WML0937	200	PVC	11.02	2022	80	79	Medium	Very Low	Low	2102	2118	$350.00	$3,858.11
WML0938	150	PVC	15.93	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$4,779.14
WML0939	150	PVC	4.82	2005	80	62	Low	Very Low	Low	2085	2101	$300.00	$1,445.71
WML0940	150	AC	153.57	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$46,071.98
WML0941	150	PVC	20.36	2005	80	62	Low	Very Low	Low	2085	2101	$300.00	$6,107.60
WML0942	150	PVC	122.72	2005	80	62	Low	Very Low	Low	2085	2101	$300.00	$36,814.94
WML0943	150	AC	8.14	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$2,442.56
WML0944	150	AC	2.04	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$613.32
WML0945	200	PVC	157.21	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$55,023.29
WML0946	200	PVC	231.87	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$81,155.60
WML0947	200	PVC	174.59	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$61,107.21
WML0948	200	PVC	0.99	2021	80	78	Medium	Very Low	Low	2101	2117	$350.00	$346.23
WML0949	150	AC	8.63	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$2,590.49
WML0950	150	PVC	68.34	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$20,502.75
WML0951	150	PVC	0.50	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$150.01
WML0954	150	AC	160.19	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$48,055.69
WML0955	150	AC	142.74	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$42,823.02
WML0956	150	AC	108.36	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$32,507.28
WML0957	150	AC	3.75	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$1,124.61

WML0958	100	AC	80.04	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$24,013.40
WML0959	150	AC	12.17	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$3,651.83
WML0960	150	AC	184.15	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$55,244.17
WML0961	150	AC	61.21	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$18,363.33
WML0962	150	AC	287.70	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$86,309.60
WML0963	150	AC	1.58	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$473.56
WML0964	150	PVC	81.40	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$24,419.94
WML0965	150	PVC	8.64	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$2,590.62
WML0966	150	PVC	116.04	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$34,811.10
WML0967	150	AC	3.64	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$1,090.67
WML0968	200	AC	216.42	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$75,745.27
WML0969	150	AC	4.57	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$1,372.24
WML0970	200	AC	14.25	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$4,988.88
WML0971	200	AC	147.69	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$51,690.52
WML0972	200	AC	7.22	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$2,526.13
WML0973	200	AC	147.97	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$51,790.68
WML0974	200	AC	12.70	1975	65	17	Medium	Medium	Medium	2040	2040	$350.00	$4,443.35
WML0975	150	AC	4.48	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$1,343.47
WML0976	150	AC	47.82	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$14,345.80
WML0977	150	AC	104.78	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$31,435.03
WML0978	150	AC	54.78	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$16,433.81
WML0979	250	PVC	199.10	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$89,596.83
WML0980	250	PVC	8.59	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$3,863.86
WML0981	250	PVC	3.66	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$1,648.24
WML0982	250	PVC	21.94	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$9,871.48
WML0983	250	PVC	73.34	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$33,000.84
WML0984	250	PVC	65.25	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$29,361.19
WML0985	50	PVC	82.29	1982	80	39	Low	Very Low	Low	2062	2078	$2,000.00	$164,583.61
WML0986	**100**	PVC	40.83	**1982**	80	39	Low	Very Low	Low	2062	2078	$300.00	$12,248.00
WML0987	**100**	PVC	13.78	**1982**	80	39	Low	Very Low	Low	2062	2078	$300.00	$4,135.45
WML0988	**100**	PVC	13.78	**1982**	80	39	Low	Very Low	Low	2062	2078	$300.00	$4,135.46
WML0989	**0**	PVC	1.42	**1982**	80	39	#N/A	Very Low	#N/A	2062	#N/A		
WML0992	150	PVC	5.38	2007	80	64	Low	Very Low	Low	2087	2103	$300.00	$1,614.08
WML0993	150	PVC	45.26	2007	80	64	Low	Very Low	Low	2087	2103	$300.00	$13,577.73
WML0994	150	PVC	30.69	2007	80	64	Low	Very Low	Low	2087	2103	$300.00	$9,206.21
WML0995	150	PVC	95.05	2007	80	64	Low	Very Low	Low	2087	2103	$300.00	$28,513.66
WML0996	150	PVC	41.57	2007	80	64	Low	Very Low	Low	2087	2103	$300.00	$12,471.19
WML0997	150	PVC	4.58	2007	80	64	Low	Very Low	Low	2087	2103	$300.00	$1,372.90
WML0998	150	PVC	52.80	2007	80	64	Low	Very Low	Low	2087	2103	$300.00	$15,838.63
WML0999	150	PVC	102.67	2009	80	66	Low	Very Low	Low	2089	2105	$300.00	$30,799.98
WML1000	150	PVC	12.49	2009	80	66	Low	Very Low	Low	2089	2105	$300.00	$3,747.00
WML1001	150	PVC	161.62	2009	80	66	Low	Very Low	Low	2089	2105	$300.00	$48,485.06
WML1002	150	PVC	124.66	2009	80	66	Low	Very Low	Low	2089	2105	$300.00	$37,396.95
WML1003	150	PVC	163.97	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$49,189.84
WML1004	150	PVC	3.35	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$1,006.14
WML1005	150	PVC	4.62	1982	80	39	Low	Very Low	Low	2062	2078	$300.00	$1,386.69
WML1006	250	PVC	3.10	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$1,394.76
WML1007	250	PVC	60.87	1982	80	39	Medium	Very Low	Low	2062	2078	$450.00	$27,389.88
WML1008	150	PVC	9.57	1982	80	39	Low	Very Low	Low	2062	2078	$300.00	$2,870.75
WML1009	100	PVC	34.03	2018	80	75	Low	Very Low	Low	2098	2114	$300.00	$10,208.60
WML1010	300	PVC	153.47	2007	80	64	Medium	Very Low	Low	2087	2103	$500.00	$76,733.11
WML1011	300	PVC	163.15	2001	80	58	Medium	Very Low	Low	2081	2097	$500.00	$81,575.01
WML1012	300	PVC	103.61	2001	80	58	Medium	Very Low	Low	2081	2097	$500.00	$51,804.67
WML1013	250	DI	236.46	1979	65	21	Medium	Low	Low	2044	2057	$1,700.00	$401,983.27
WML1014	250	DI	40.23	1979	65	21	Medium	Low	Low	2044	2057	$1,700.00	$68,397.42
WML1015	250	DI	1.00	1979	65	21	Medium	Low	Low	2044	2057	$1,700.00	$1,702.60
WML1016	350	HDPE	177.04	2021	80	78	High	Very Low	Low	2101	2117	$1,700.00	$300,972.73
WML1017	350	PVC	3.40	2021	80	78	High	Very Low	Low	2101	2117	$1,700.00	$5,781.69
WML1018	200	PVC	228.42	1980	80	37	Medium	Very Low	Low	2060	2076	$350.00	$79,945.34
WML1019	150	AC	183.25	1959	65	1	Low	High	Medium	2024	2024	$300.00	$54,976.31
WML1020	150	AC	127.99	1959	65	1	Low	High	Medium	2024	2024	$300.00	$38,396.27
WML1021	150	AC	55.85	1959	65	1	Low	High	Medium	2024	2024	$300.00	$16,754.12
WML1022	150	AC	113.85	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$34,154.11
WML1023	150	AC	202.39	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$60,718.36
WML1024	150	AC	174.27	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$52,280.60
WML1025	150	AC	85.09	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$25,526.00
WML1026	150	AC	2.89	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$867.92
WML1027	150	AC	1.17	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$352.48
WML1028	150	AC	2.41	1977	65	19	Low	Medium	Low	2042	2055	$300.00	$723.21
WML1029	150	AC	2.26	1959	65	1	Low	High	Medium	2024	2024	$300.00	$677.98
WML1030	200	AC	97.90	1959	65	1	Medium	High	High	2024	2023	$350.00	$34,265.26
WML1031	200	AC	95.52	1959	65	1	Medium	High	High	2024	2023	$350.00	$33,432.64
WML1032	200	AC	113.08	1959	65	1	Medium	High	High	2024	2023	$350.00	$39,578.94
WML1033	150	AC	28.31	1959	65	1	Low	High	Medium	2024	2024	$300.00	$8,491.94
WML1034	150	AC	185.99	1959	65	1	Low	High	Medium	2024	2024	$300.00	$55,796.30
WML1035	150	AC	114.48	1959	65	1	Low	High	Medium	2024	2024	$300.00	$34,343.21
WML1036	200	AC	48.55	1959	65	1	Medium	High	High	2024	2023	$350.00	$16,991.41
WML1037	150	AC	45.12	1959	65	1	Low	High	Medium	2024	2024	$300.00	$13,535.07
WML1038	150	AC	122.53	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$36,759.16
WML1039	150	AC	87.64	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$26,293.05
WML1040	150	AC	39.25	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$11,775.33
WML1041	150	AC	9.37	1959	65	1	Low	High	Medium	2024	2024	$300.00	$2,811.28
WML1042	150	PVC	6.01	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$1,802.11
WML1043	150	PVC	1.88	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$563.22
WML1045	150	PVC	53.13	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$15,939.69
WML1046	150	PVC	60.42	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$18,126.04
WML1047	150	PVC	72.46	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$21,737.90
WML1048	150	PVC	3.27	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$982.46
WML1049	50	PVC	14.08	2021	80	78	Low	Very Low	Low	2101	2117	$2,000.00	$28,162.81
WML1050	150	PVC	9.44	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$2,831.28
WML1051	150	PVC	252.13	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$75,638.61
WML1052	200	PVC	125.34	1994	80	51	Medium	Very Low	Low	2074	2090	$350.00	$43,870.05
WML1053	150	PVC	159.28	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$47,784.21
WML1054	150	PVC	63.55	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$19,066.21
WML1055	200	PVC	13.42	1994	80	51	Medium	Very Low	Low	2074	2090	$350.00	$4,696.14
WML1056	100	PVC	37.42	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$11,226.86
WML1057	150	PVC	2.94	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$880.98
WML1058	150	PVC	7.41	2012	80	69	Low	Very Low	Low	2092	2108	$300.00	$2,221.96
WML1059	150	PVC	67.79	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$20,336.39
WML1060	150	AC	0.56	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$166.67
WML1061	100	PVC	10.64	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$3,193.38
WML1062	50	PVC	0.98	2022	80	79	Low	Very Low	Low	2102	2118	$2,000.00	$1,957.51
WML1063	100	PVC	3.49	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$1,047.57
WML1064	100	PVC	2.18	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$653.61
WML1067	100	PVC	1.87	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$559.83
WML1068	200	PVC	2.90	2022	80	79	Medium	Very Low	Low	2102	2118	$350.00	$1,015.56
WML1069	150	PVC	2.90	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$870.59
WML1070	150	PVC	2.72	1991	80	48	Low	Very Low	Low	2071	2087	$300.00	$814.80
WML1071	150	PVC	3.36	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$1,008.38
WML1073	150	PVC	308.54	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$92,562.72
WML1074	150	PVC	112.78	1989	80	46	Low	Very Low	Low	2069	2085	$300.00	$33,834.16
WML1075	250	PVC	309.95	1993	80	50	Medium	Very Low	Low	2073	2089	$450.00	$139,476.62
WML1076	200	PVC	115.94	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$40,580.38
WML1077	200	PVC	111.82	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$39,135.52
WML1078	200	PVC	10.28	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$3,598.16
WML1079	200	PVC	93.33	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$32,665.45
WML1080	200	PVC	127.09	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$44,481.06
WML1081	200	PVC	24.47	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$8,562.86
WML1082	200	PVC	21.33	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$7,463.94

WML1083	200	PVC	132.13	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$46,247.14
WML1084	200	PVC	124.11	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$43,440.14
WML1085	200	PVC	116.56	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$40,796.44
WML1086	200	PVC	16.98	1993	80	50	Medium	Very Low	Low	2073	2089	$350.00	$5,942.30
WML1087	150	PVC	3.12	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$934.84
WML1088	250	AC	0.84	1964	65	6	Medium	High	High	2029	2023	$350.00	$295.47
WML1093	300	DI	1.95	1987	65	29	Medium	Low	Low	2052	2065	$500.00	$973.62
WML1094	250	PVC	93.51	1995	80	52	Medium	Very Low	Low	2075	2091	$450.00	$42,078.41
WML1095	150	AC	21.71	1975	65	17	Low	Medium	Low	2040	2053	$300.00	$6,512.51
WML1096	200	PVC	8.63	2004	80	61	Medium	Very Low	Low	2084	2100	$350.00	$3,022.00
WML1097	150	AC	6.04	1976	65	18	Low	Medium	Low	2041	2054	$300.00	$1,813.12
WML1098	150	AC	1.73	1959	65	1	Low	High	Medium	2024	2024	$300.00	$519.62
WML1099	200	AC	9.35	1959	65	1	Medium	High	High	2024	2023	$350.00	$3,273.11
WML1100	150	AC	5.03	1959	65	1	Low	High	Medium	2024	2024	$300.00	$1,507.59
WML1101	150	AC	1.50	1972	65	14	Low	Medium	Low	2037	2050	$300.00	$449.99
WML0773	200	PVC	405.95	2017	80	74	Medium	Very Low	Low	2097	2113	$350.00	$142,081.43
WML0060	150	AC	172.09	1971	65	13	Low	Medium	Low	2036	2049	$300.00	$51,628.29
WML0792	250	PVC	304.84	2018	80	75	Medium	Very Low	Low	2098	2114	$450.00	$137,178.89
WML0058	200	AC	88.72	1971	65	13	Medium	Medium	Medium	2036	2036	$350.00	$31,051.31
WML0009	150	PVC	85.57	1968	80	25	Low	Low	Low	2048	2064	$300.00	$25,671.16
WML0004	150	AC	25.65	1968	65	10	Low	Medium	Low	2033	2046	$300.00	$7,696.31
WML0473	250	PVC	392.79	2012	80	69	Medium	Very Low	Low	2092	2108	$450.00	$176,756.50
WML0396	150	PVC	285.83	2004	80	61	Low	Very Low	Low	2084	2100	$300.00	$85,747.88
WML0892	250	PVC	458.40	2021	80	78	Medium	Very Low	Low	2101	2117	$450.00	$206,278.33
WML0897	150	PVC	28.21	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$8,462.19
WML0384	150	PVC	103.96	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$31,187.56
WML0385	150	PVC	48.70	2003	80	60	Low	Very Low	Low	2083	2099	$300.00	$14,608.71
WML0950	150	PVC	68.34	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$20,502.75
WML0600	200	AC	317.10	1959	65	1	Medium	High	High	2024	2023	$350.00	$110,984.97
WML1102	150	PVC	0.00	2007	80	64	Low	Very Low	Low	2087	2103	$300.00	$0.00
WML0135	150	PVC	2.82	1994	80	51	Low	Very Low	Low	2074	2090	$300.00	$845.77
WML0862	250	PVC	3.73	2022	80	79	Medium	Very Low	Low	2102	2118	$450.00	$1,678.21
WML1103	150	PVC	5.37	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$1,610.40
WML1104	150	PVC	3.64	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$1,091.70
WML1105	150	PVC	4.28	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$1,283.40
WML1106	100	PVC	1.51	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$452.70
WML1107	100	PVC	3.31	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$992.70
WML1108	150	PVC	3.03	2022	80	79	Low	Very Low	Low	2102	2118	$300.00	$909.60
WML1109	100	PVC	2.71	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$814.20
WML0167	200	PVC	73.43	2000	80	57	Medium	Very Low	Low	2080	2096	$350.00	$25,699.14
WML0990	100	PVC	5.33	2021	80	78	Low	Very Low	Low	2101	2117	$300.00	$1,599.05
			78.73										**$31,810,942.75**

NOTE: PIPE VALUES WITH NO INSTALL YEAR CORRESPOND TO ASSUMED PIPE INSTALL YEAR.
NOTE: INSTALL YEAR CORRESPONDS TO SUPPLY PIPE, THESE FEATURES ARE LIKELY REPLACED MORE FREQUENTLY.
NOTE: PIPE VALUES WITH NO INSTALL YEAR CORRESPOND TO ASSUMED PIPE INSTALL YEAR IN PIPE TABLE.

Table B2: Osoyoos Water Utility Asset Management - Water Distribution Network - Hydrant Inventory

QGIS Asset ID (Hydrant)	Location	QGIS Asset ID (Watermain)	Year Installed	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/ea.)
WHY0001	14 YUCCA PL	WML0001	1968	40	0	2023	$12,000.00
WHY0002	28 SANDPIPER PL	WML0494	1993	40	10	2033	$12,000.00
WHY0003	5 YUCCA PL	WML0011	1968	40	0	2023	$12,000.00
WHY0004	6416 89TH ST	WML0013	1959	40	0	2023	$12,000.00
WHY0005	2 QUAIL PL	WML0833	1994	40	11	2034	$12,000.00
WHY0006		WML0579	1970	40	0	2023	$12,000.00
WHY0007		WML1070	1991	40	8	2031	$12,000.00
WHY0008	51 CACTUS CRES	WML0488	1991	40	8	2031	$12,000.00
WHY0009		WML0510	1982	40	0	2023	$12,000.00
WHY0010	6006 89TH ST	WML0846	1970	40	0	2023	$12,000.00
WHY0011	5901 MAIN ST	WML0588	1970	40	0	2023	$12,000.00
WHY0012	8702 JUBILEE DR	WML0611	1974	40	0	2023	$12,000.00
WHY0013		WML0612	1974	40	0	2023	$12,000.00
WHY0014		WML0625	1994	40	11	2034	$12,000.00
WHY0015		WML0806	1964	40	0	2023	$12,000.00
WHY0016		WML0701	2017	40	34	2057	$12,000.00
WHY0017		WML0763	1994	40	11	2034	$12,000.00
WHY0018	8333 KINGFISHER DR	WML0835	1959	40	0	2023	$12,000.00
WHY0019	8507 CHICKADEE CRT	WML0834	1959	40	0	2023	$12,000.00
WHY0020	3 FINCH CRES	WML0638	1968	40	0	2023	$12,000.00
WHY0021	6008 COTTONWOOD DR	WML0564	1975	40	0	2023	$12,000.00
WHY0022	9 HARBOUR KEY DR	WML0646	1959	40	0	2023	$12,000.00
WHY0023	23 HARBOUR KEY DR	WML1029	1959	40	0	2023	$12,000.00
WHY0024		WML0515	1959	40	0	2023	$12,000.00
WHY0025	5506 MAIN ST	WML0559	1975	40	0	2023	$12,000.00
WHY0026	5302 TAMARACK DR	WML0677	1975	40	0	2023	$12,000.00
WHY0027	6004 51ST ST	WML0545	2003	40	20	2043	$12,000.00
WHY0028	5604 LAKESHORE DR	WML0544	2003	40	20	2043	$12,000.00
WHY0029	5604 LAKESHORE DR	WML0587	2003	40	20	2043	$12,000.00
WHY0030	43 BAYVIEW CRES	WML0573	1979	40	0	2023	$12,000.00
WHY0031	5223 LAKESHORE DR	WML0525	2003	40	20	2043	$12,000.00
WHY0032		WML0517	1971	40	0	2023	$12,000.00
WHY0033	6403 COTTONWOOD DR	WML0516	1975	40	0	2023	$12,000.00
WHY0034	3203 LAKESHORE DR	WML0380	2003	40	20	2043	$12,000.00
WHY0035	4306 LAKESHORE DR	WML0595	2003	40	20	2043	$12,000.00
WHY0036	4304 36TH AVE	WML0571	2003	40	20	2043	$12,000.00
WHY0037		WML0040	2003	40	20	2043	$12,000.00
WHY0038	4351 LAKESHORE DR	WML0594	2003	40	20	2043	$12,000.00
WHY0039	7603 SPARTAN DR	WML0653	1959	40	0	2023	$12,000.00
WHY0040	5 PARK PL	WML0477	1997	40	14	2037	$12,000.00
WHY0041	8 Park Place	WML0478	1997	40	14	2037	$12,000.00
WHY0042	8502 74TH AVE	WML0482	1959	40	0	2023	$12,000.00
WHY0043		WML0648	1959	40	0	2023	$12,000.00
WHY0044		WML0805	2008	40	25	2048	$12,000.00
WHY0045		WML0812	2008	40	25	2048	$12,000.00
WHY0046		WML0636	2016	40	33	2056	$12,000.00
WHY0047		WML0635	1959	40	0	2023	$12,000.00
WHY0048		WML0603	1959	40	0	2023	$12,000.00
WHY0049		WML0658	2017	40	34	2057	$12,000.00
WHY0050	8315 KINGFISHER DR	WML0666	1959	40	0	2023	$12,000.00
WHY0051	8310 70TH AVE	WML0604	1959	40	0	2023	$12,000.00
WHY0052	2 SANDPIPER PL	WML0496	1993	40	10	2033	$12,000.00
WHY0053	9111 92ND AVE	WML0633	1994	40	11	2034	$12,000.00
WHY0054	9121 92ND AVE	WML0634	1991	40	8	2031	$12,000.00
WHY0055	9101 92ND AVE	WML0632	1994	40	11	2034	$12,000.00
WHY0056		WML0684	2011	40	28	2051	$12,000.00
WHY0057		WML0669	2011	40	28	2051	$12,000.00
WHY0058		WML0654	2017	40	34	2057	$12,000.00
WHY0059		WML0734	2017	40	34	2057	$12,000.00
WHY0060		WML0731	2017	40	34	2057	$12,000.00
WHY0061		WML0743	2017	40	34	2057	$12,000.00
WHY0062		WML0739	2017	40	34	2057	$12,000.00
WHY0063	8713 MAIN ST	WML0750	1959	40	0	2023	$12,000.00

WHY0064	8111 MAIN ST	WML1041	1959	40	0	2023	$12,000.00
WHY0065	3206 JASMINE DR	WML0339	1966	40	0	2023	$12,000.00
WHY0066	10 CURLEW CRT	WML0722	1997	40	14	2037	$12,000.00
WHY0067	12 EAGLE CRT	WML0801	1991	40	8	2031	$12,000.00
WHY0068	9206 HIGHWAY 97	WML0047	1991	40	8	2031	$12,000.00
WHY0069	9106 74 th Ave	WML0848	2008	40	25	2048	$12,000.00
WHY0070		WML0811	2008	40	25	2048	$12,000.00
WHY0071	8312 92ND AVE	WML0836	1994	40	11	2034	$12,000.00
WHY0072		WML0764	2017	40	34	2057	$12,000.00
WHY0073		WML0768	2017	40	34	2057	$12,000.00
WHY0074		WML0770	2017	40	34	2057	$12,000.00
WHY0075		WML0767	2017	40	34	2057	$12,000.00
WHY0076		WML0785	2017	40	34	2057	$12,000.00
WHY0077		WML0772	2017	40	34	2057	$12,000.00
WHY0078		WML0765	2017	40	34	2057	$12,000.00
WHY0079		WML0766	2017	40	34	2057	$12,000.00
WHY0080		WML0793	2017	40	34	2057	$12,000.00
WHY0081		WML0760	2018	40	35	2058	$12,000.00
WHY0082		WML0762	2018	40	35	2058	$12,000.00
WHY0083		WML0700	2017	40	34	2057	$12,000.00
WHY0084		WML0686	2017	40	34	2057	$12,000.00
WHY0085		WML0828	2017	40	34	2057	$12,000.00
WHY0086		WML0803	2008	40	25	2048	$12,000.00
WHY0087	11401 115TH ST	WML0138	1980	40	0	2023	$12,000.00
WHY0088	11625 115TH ST	WML0152	1995	40	12	2035	$12,000.00
WHY0089	11615 115TH ST	WML0155	1995	40	12	2035	$12,000.00
WHY0090	4911 CEDAR LN	WML1097	1959	40	0	2023	$12,000.00
WHY0091	4911 CEDAR LN	WML0322	1976	40	0	2023	$12,000.00
WHY0092	6201 TAMARACK DR	WML0323	1975	40	0	2023	$12,000.00
WHY0093	5701 JACKPINE LN	WML0324	1975	40	0	2023	$12,000.00
WHY0094	6407 MAPLE DR	WML0325	1971	40	0	2023	$12,000.00
WHY0095	5708 LOMBARDY LN	WML0326	1975	40	0	2023	$12,000.00
WHY0096	7 HEATHER PL	WML0328	1977	40	0	2023	$12,000.00
WHY0097	3400 89TH ST	WML0340	1968	40	0	2023	$12,000.00
WHY0098	4210 OLEANDER DR	WML0341	1993	40	10	2033	$12,000.00
WHY0099	7003 87TH ST	WML0362	1959	40	0	2023	$12,000.00
WHY0100	9409 Spartan Dr	WML0365	1994	40	11	2034	$12,000.00
WHY0101	13 BRAEBURN PL	WML0364	1994	40	11	2034	$12,000.00
WHY0102	3 Breaburn	WML0366	1994	40	11	2034	$12,000.00
WHY0103	8507 CHICKADEE CRT	WML0370	2001	40	18	2041	$12,000.00
WHY0104	11601 115TH ST	WML0371	1995	40	12	2035	$12,000.00
WHY0105	4610 41ST ST	WML0375	2003	40	20	2043	$12,000.00
WHY0106	4000 LAKESHORE DR	WML0379	2003	40	20	2043	$12,000.00
WHY0107		WML0376	2003	40	20	2043	$12,000.00
WHY0108	2615 LAKESHORE DR	WML0382	2003	40	20	2043	$12,000.00
WHY0109	2615 LAKESHORE DR	WML0377	2003	40	20	2043	$12,000.00
WHY0110	2801 LAKESHORE DR	WML0378	2003	40	20	2043	$12,000.00
WHY0111	5005 LAKESHORE DR	WML0381	2003	40	20	2043	$12,000.00
WHY0112	11 WILDFLOWER LN	WML0383	2003	40	20	2043	$12,000.00
WHY0113	10 WILLOW CRES	WML0368	1976	40	0	2023	$12,000.00
WHY0114	8310 70TH AVE	WML0359	1959	40	0	2023	$12,000.00
WHY0115	8012 GRAVENSTEIN DR	WML0358	1973	40	0	2023	$12,000.00
WHY0116	9101 MAIN ST	WML0357	1959	40	0	2023	$12,000.00
WHY0117		WML0355	1959	40	0	2023	$12,000.00
WHY0118	6207 HWY97	WML0354	1968	40	0	2023	$12,000.00
WHY0119	34 CACTUS CRES	WML0353	1991	40	8	2031	$12,000.00
WHY0120	10 ROSE PL	WML0327	1965	40	0	2023	$12,000.00
WHY0121	9420 115TH ST	WML0321	1980	40	0	2023	$12,000.00
WHY0122	9400 115TH ST	WML0320	1980	40	0	2023	$12,000.00
WHY0123		WML0317	1994	40	11	2034	$12,000.00
WHY0124	8706 PRIMROSE LN	WML0316	1979	40	0	2023	$12,000.00
WHY0125	4012 OLEANDER DR	WML0312	1966	40	0	2023	$12,000.00
WHY0126	3610 JASMINE DR	WML0311	1966	40	0	2023	$12,000.00
WHY0127	8503 78TH AVE	WML0310	1997	40	14	2037	$12,000.00
WHY0128	7902 MAIN ST	WML0307	1959	40	0	2023	$12,000.00
WHY0129	6910 MAIN ST	WML0306	1959	40	0	2023	$12,000.00
WHY0130	7308 MAIN ST	WML0305	1959	40	0	2023	$12,000.00
WHY0131	7702 MAIN ST	WML0304	1959	40	0	2023	$12,000.00
WHY0132	18 JONAGOLD PL	WML0294	1974	40	0	2023	$12,000.00
WHY0133	7808 SPARTAN DR	WML0292	1997	40	14	2037	$12,000.00
WHY0134	7802 SPARTAN DR	WML0291	1997	40	14	2037	$12,000.00

WHY0135	7807 GRAVENSTEIN DR	WML0284	1997	40	14	2037	$12,000.00
WHY0136	8011 87TH ST	WML0290	1959	40	0	2023	$12,000.00
WHY0137	8014 89TH ST	WML0289	1959	40	0	2023	$12,000.00
WHY0138	7811 87TH ST	WML0288	1959	40	0	2023	$12,000.00
WHY0139	7811 78th ST	WML0287	1959	40	0	2023	$12,000.00
WHY0140	7802 89TH ST	WML0465	1959	40	0	2023	$12,000.00
WHY0141	7814 89TH ST	WML0286	1959	40	0	2023	$12,000.00
WHY0142	5 PARK PL	WML0282	1959	40	0	2023	$12,000.00
WHY0143	8313 78TH AVE	WML0281	1959	40	0	2023	$12,000.00
WHY0144	8130 MAIN ST	WML0280	1959	40	0	2023	$12,000.00
WHY0145	8507 78TH AVE	WML0276	1959	40	0	2023	$12,000.00
WHY0146	4 LOON CRES	WML0275	1959	40	0	2023	$12,000.00
WHY0147	8902 JUBILEE DR	WML0259	1974	40	0	2023	$12,000.00
WHY0148		WML0258	1991	40	8	2031	$12,000.00
WHY0149	13 LAMBERT CRT	WML0257	1991	40	8	2031	$12,000.00
WHY0150	5 LAMBERT CRT	WML0256	1991	40	8	2031	$12,000.00
WHY0151	8020 MAIN ST	WML0254	1991	40	8	2031	$12,000.00
WHY0152	21 SWAN CRES	WML0237	1965	40	0	2023	$12,000.00
WHY0153	21 SWAN CRES	WML0235	1965	40	0	2023	$12,000.00
WHY0154	7214 HERON LN	WML0234	1959	40	0	2023	$12,000.00
WHY0155	7008 NIGHTHAWK DR	WML0356	1993	40	10	2033	$12,000.00
WHY0156	8317 68TH AVE	WML0231	1959	40	0	2023	$12,000.00
WHY0157	6802 NIGHTHAWK DR	WML0225	1992	40	9	2032	$12,000.00
WHY0158	13 KILLDEER PL	WML0221	1997	40	14	2037	$12,000.00
WHY0159	36 KILLDEER PL	WML0218	1992	40	9	2032	$12,000.00
WHY0160	10 OSPREY PL	WML0217	1959	40	0	2023	$12,000.00
WHY0161	6206 NIGHTHAWK DR	WML0212	1968	40	0	2023	$12,000.00
WHY0162	9 QUAIL PL	WML0214	1968	40	0	2023	$12,000.00
WHY0163	12500 PINEHURST PL	WML0194	1989	40	6	2029	$12,000.00
WHY0164	12300 PINEHURST PL	WML0193	1989	40	6	2029	$12,000.00
WHY0165	11717 OLYMPIC VIEW DR	WML0192	1993	40	10	2033	$12,000.00
WHY0166		WML0188	1993	40	10	2033	$12,000.00
WHY0167	4000 FAIRWINDS DR	WML0185	1993	40	10	2033	$12,000.00
WHY0168	3805 SAWGRASS DR	WML0184	2004	40	21	2044	$12,000.00
WHY0169	11905 OLYMPIC VIEW DR	WML0183	1993	40	10	2033	$12,000.00
WHY0170	3803 CYPRESS HILLS DR	WML0180	2004	40	21	2044	$12,000.00
WHY0171	11917 LA COSTA LN	WML0174	1993	40	10	2033	$12,000.00
WHY0172	4211 FAIRWINDS DR	WML0173	1989	40	6	2029	$12,000.00
WHY0173	12100 GOLF COURSE DR	WML0172	1989	40	6	2029	$12,000.00
WHY0174	11903 LA COSTA LN	WML0171	1993	40	10	2033	$12,000.00
WHY0175	11714 QUAIL RIDGE PL	WML0170	1989	40	6	2029	$12,000.00
WHY0176	11705 LA COSTA LN	WML0169	1993	40	10	2033	$12,000.00
WHY0177	11600 STRAWBERRY CK RD	WML0168	1989	40	6	2029	$12,000.00
WHY0178	11703 OLYMPIC VIEW DR	WML0163	1993	40	10	2033	$12,000.00
WHY0179	11501 LA COSTA LANE	WML0162	1993	40	10	2033	$12,000.00
WHY0180	3808 PEBBLE BEACH DR	WML0161	2000	40	17	2040	$12,000.00
WHY0181	4208 PEBBLE BEACH DR	WML0160	2000	40	17	2040	$12,000.00
WHY0182	11701 QUAIL RIDGE PL	WML0369	2000	40	17	2040	$12,000.00
WHY0183	10201 115TH ST	WML0157	1980	40	0	2023	$12,000.00
WHY0184	11001 115TH ST	WML0151	1980	40	0	2023	$12,000.00
WHY0185	10601 115TH ST	WML0145	1980	40	0	2023	$12,000.00
WHY0186	8917 JUBILEE DR	WML0838	1974	40	0	2023	$12,000.00
WHY0187	6 DOGWOOD PL	WML0129	1979	40	0	2023	$12,000.00
WHY0188	6 LARKSPUR PL	WML0120	1981	40	0	2023	$12,000.00
WHY0189	4010 LOBELIA DR	WML0119	1981	40	0	2023	$12,000.00
WHY0190	3 HEATHER PL	WML0118	1975	40	0	2023	$12,000.00
WHY0191	22 SANTA ROSA PL	WML0108	1974	40	0	2023	$12,000.00
WHY0192	8406 87TH ST	WML0107	1974	40	0	2023	$12,000.00
WHY0193	3 MCINTOSH CRT	WML0102	1972	40	0	2023	$12,000.00
WHY0194	8209 GRAVENSTEIN DR	WML0101	1973	40	0	2023	$12,000.00
WHY0195	8604 GALA CRES	WML0313	1972	40	0	2023	$12,000.00
WHY0196	8208 GALA CRES	WML0100	1973	40	0	2023	$12,000.00
WHY0197	26 SOLANA KEY CRT	WML0090	1977	40	0	2023	$12,000.00
WHY0198	5914 MAIN ST	WML0089	1975	40	0	2023	$12,000.00
WHY0199	19 BAYVIEW CRES	WML0088	1979	40	0	2023	$12,000.00
WHY0200	31 BAYVIEW CRES	WML0085	1979	40	0	2023	$12,000.00
WHY0201	6018 MAPLE DR	WML0084	1971	40	0	2023	$12,000.00
WHY0202	6817 COTTONWOOD DR	WML0071	1975	40	0	2023	$12,000.00
WHY0203	11 POPLAR CRT	WML0065	1978	40	0	2023	$12,000.00
WHY0204	37 WILLOW CRES	WML0367	1975	40	0	2023	$12,000.00
WHY0205	9 SPRUCE CRT	WML0069	1979	40	0	2023	$12,000.00

WHY0206	7011 COTTONWOOD DR	WML0053	1975	40	0	2023	$12,000.00
WHY0207	6802 45TH ST	WML0050	1975	40	0	2023	$12,000.00
WHY0208	6817 TAMARACK DR	WML0049	1971	40	0	2023	$12,000.00
WHY0209	7801 COTTONWOOD DR	WML0388	2004	40	21	2044	$12,000.00
WHY0210		WML0389	2004	40	21	2044	$12,000.00
WHY0211	7401 COTTONWOOD DR	WML0393	2004	40	21	2044	$12,000.00
WHY0212		WML0407	2004	40	21	2044	$12,000.00
WHY0213	4012 30TH AVE	WML0406	2004	40	21	2044	$12,000.00
WHY0214	8308 68TH AVE	WML0428	2007	40	24	2047	$12,000.00
WHY0215	16 EMPIRE ST	WML0431	2009	40	26	2049	$12,000.00
WHY0216	28 EMPIRE ST	WML0432	2009	40	26	2049	$12,000.00
WHY0217	10400 HIGHWAY 3	WML0439	2009	40	26	2049	$12,000.00
WHY0218	3803 TORREY PINES DR	WML0440	2009	40	26	2049	$12,000.00
WHY0219	3417 TORREY PINES DR	WML0441	2009	40	26	2049	$12,000.00
WHY0220	3611 CYPRESS HILLS DR	WML0445	2004	40	21	2044	$12,000.00
WHY0221	12106 FAIRWINDS DR	WML0446	2004	40	21	2044	$12,000.00
WHY0222	8309 66TH AVE	WML0452	2008	40	25	2048	$12,000.00
WHY0223	8512 78TH AVE	WML0464	1959	40	0	2023	$12,000.00
WHY0224	10 FUJI CRT	WML0472	2012	40	29	2052	$12,000.00
WHY0225	56 Fuji CRT	WML0469	2012	40	29	2052	$12,000.00
WHY0226		WML0847	1965	40	0	2023	$12,000.00
WHY0227		WML0930	2022	40	39	2062	$12,000.00
WHY0228		WML0900	2022	40	39	2062	$12,000.00
WHY0229		WML0914	2021	40	38	2061	$12,000.00
WHY0230		WML0915	2021	40	38	2061	$12,000.00
WHY0231		WML0916	2021	40	38	2061	$12,000.00
WHY0232		WML0919	2021	40	38	2061	$12,000.00
WHY0233		WML0922	1982	40	0	2023	$12,000.00
WHY0234		WML1087	2022	40	39	2062	$12,000.00
WHY0235		WML1071	2022	40	39	2062	$12,000.00
WHY0236		WML0923	2022	40	39	2062	$12,000.00
WHY0237		WML1103	2022	40	39	2062	$12,000.00
WHY0238		WML0873	2022	40	39	2062	$12,000.00
WHY0239		WML0924	2021	40	38	2061	$12,000.00
WHY0240		WML1105	2022	40	39	2062	$12,000.00
WHY0241		WML1104	2022	40	39	2062	$12,000.00
WHY0242		WML0927	2021	40	38	2061	$12,000.00
WHY0243		WML0911	2021	40	38	2061	$12,000.00
WHY0244		WML0912	2021	40	38	2061	$12,000.00
WHY0245		WML0913	2021	40	38	2061	$12,000.00
WHY0246		WML0917	2021	40	38	2061	$12,000.00
WHY0247		WML0918	2021	40	38	2061	$12,000.00
WHY0248		WML0920	2021	40	38	2061	$12,000.00
WHY0249		WML0921	2021	40	38	2061	$12,000.00
WHY0250		WML1069	2022	40	39	2062	$12,000.00
WHY0251		WML0933	2022	40	39	2062	$12,000.00
WHY0252	6406 NIGHTHAWK DR	WML0939	2005	40	22	2045	$12,000.00
WHY0253	9106 HUMMING BIRD LN	WML0944	1968	40	0	2023	$12,000.00
WHY0254		WML0949	1968	40	0	2023	$12,000.00
WHY0255	5803 OLEANDER DR	WML0967	1975	40	0	2023	$12,000.00
WHY0256	5001 OLEANDER DR	WML0969	1975	40	0	2023	$12,000.00
WHY0257	2 MAGNOLIA PL	WML0975	1975	40	0	2023	$12,000.00
WHY0258	4665 PEBBLE BEACH DR	WML0992	2007	40	24	2047	$12,000.00
WHY0259		WML1004	1991	40	8	2031	$12,000.00
WHY0260		WML1102	2007	40	24	2047	$12,000.00
WHY0261		WML1008	1982	40	0	2023	$12,000.00
WHY0262	69 HARBOUR KEY DR	WML1028	1977	40	0	2023	$12,000.00
WHY0263	52 HARBOUR KEY DR	WML1026	1977	40	0	2023	$12,000.00
WHY0264	40 HARBOUR KEY DR	WML1028	1977	40	0	2023	$12,000.00
WHY0265	8013 VEDETTE DR	WML1050	2021	40	38	2061	$12,000.00
WHY0266		WML1058	2012	40	29	2052	$12,000.00
WHY0267	10 CRAB APPLE CRT	WML1057	1994	40	11	2034	$12,000.00
WHY0268		WML0850	2009	40	26	2049	$12,000.00

NOTE: PIPE VALUES WITH NO INSTALL YEAR OR DIAMETER CORRESPOND TO ASSUMED PIPE INSTALL YEAR AND PIPE D
NOTE: INSTALL YEAR CORRESPONDS TO SUPPLY PIPE, THESE FEATURES ARE LIKELY REPLACED MORE FREQUENTLY.

Table B3: Osoyoos Water Utility Asset Management - Water Distribution Network - Valve Inventory

QGIS Asset ID (Valve)	Valve Type	QGIS Asset ID (Watermain)	Diameter (mm)	Year Installed (Watermain)	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/ea.)
WVA0001	Valve - Existing	WML0861	150	2022	40	39	2062	$3,000.00
WVA0002	Hydrant Gate	WML0001	150	1968	40	0	2023	$3,000.00
WVA0003	Valve - Existing	WML0002	150	1968	40	0	2023	$3,000.00
WVA0004	Hydrant Gate	WML0011	150	1968	40	0	2023	$3,000.00
WVA0005	Valve - Existing	WML0579	150	1970	40	0	2023	$3,000.00
WVA0006	Valve - Existing	WML0024	250	1970	40	0	2023	$6,000.00
WVA0007	Valve - Existing	WML0842	200	2005	40	22	2045	$4,500.00
WVA0008	Valve - Existing	WML0843	150	1968	40	0	2023	$3,000.00
WVA0009	Valve - Existing	WML0207	100	1959	40	0	2023	$2,000.00
WVA0010	Valve - Existing	WML0580	150	1959	40	0	2023	$3,000.00
WVA0011	Valve - Existing	WML0505	150	1968	40	0	2023	$3,000.00
WVA0012	Valve - Existing	WML0007	150	1968	40	0	2023	$3,000.00
WVA0013	Valve - Existing	WML0507	150	1968	40	0	2023	$3,000.00
WVA0013	Valve - Existing	WML0508	150	1991	40	8	2031	$3,000.00
WVA0014	Valve - Existing	WML0315	150	1991	40	8	2031	$3,000.00
WVA0015	Hydrant Gate	WML1070	150	1991	40	8	2031	$3,000.00
WVA0016	Valve - Existing	WML0499	150	1991	40	8	2031	$3,000.00
WVA0017	Valve - Existing	WML0509	150	1991	40	8	2031	$3,000.00
WVA0018	Valve - Existing	WML0497	150	1991	40	8	2031	$3,000.00
WVA0019	Hydrant Gate	WML0488	150	1991	40	8	2031	$3,000.00
WVA0020	Valve - Existing	WML0509	150	1991	40	8	2031	$3,000.00
WVA0021	Valve - Existing	WML0872	250	2022	40	39	2062	$6,000.00
WVA0022	Valve - Existing	WML0511	150	1994	40	11	2034	$3,000.00
WVA0023	Valve - Existing	WML0501	250	2022	40	39	2062	$6,000.00
WVA0024	Valve - Existing	WML0019	200	1959	40	0	2023	$4,500.00
WVA0025	Valve - Existing	WML0019	200	1959	40	0	2023	$4,500.00
WVA0026	Valve - Existing	WML0044	250	1959	40	0	2023	$6,000.00
WVA0027	Valve - Chamber	WML0585	150	2003	40	20	2043	$3,000.00
WVA0028	Hydrant Gate	WML0047	150	1991	40	8	2031	$3,000.00
WVA0029	Valve - Existing	WML0075	150	1975	40	0	2023	$3,000.00
WVA0030	Valve - Existing	WML0070	150	1979	40	0	2023	$3,000.00
WVA0031	Valve - Existing	WML0098	200	1971	40	0	2023	$4,500.00
WVA0032	Valve - Existing	WML0094	150	1975	40	0	2023	$3,000.00
WVA0033	Valve - Existing	WML0097	150	1976	40	0	2023	$3,000.00
WVA0034	Valve - Existing	WML0096	150	1976	40	0	2023	$3,000.00
WVA0035	Valve - Existing	WML0068	150	1975	40	0	2023	$3,000.00
WVA0036	Valve - Existing	WML0098	200	1971	40	0	2023	$4,500.00
WVA0037	Valve - Existing	WML0056	150	1975	40	0	2023	$3,000.00
WVA0038	Valve - Existing	WML0068	150	1975	40	0	2023	$3,000.00
WVA0039	Valve - Existing	WML0060	200	1971	40	0	2023	$4,500.00
WVA0040	Valve - Existing	WML0060	200	1971	40	0	2023	$4,500.00
WVA0041	Valve - Existing	WML0617	150	1975	40	0	2023	$3,000.00
WVA0042	Valve - Existing	WML0619	150	1975	40	0	2023	$3,000.00
WVA0043	Valve - Existing	WML0396	200	2004	40	21	2044	$4,500.00
WVA0044	Valve - Existing	WML0397	200	1975	40	0	2023	$4,500.00
WVA0045	Valve - Existing	WML0400	200	1975	40	0	2023	$4,500.00
WVA0046	Valve - Existing	WML0114	150	1973	40	0	2023	$3,000.00
WVA0047	Valve - Existing	WML0106	150	1972	40	0	2023	$3,000.00
WVA0048	Valve - Existing	WML0104	150	1973	40	0	2023	$3,000.00
WVA0049	Valve - Existing	WML0463	150	1973	40	0	2023	$3,000.00
WVA0050	Valve - Existing	WML0110	150	1972	40	0	2023	$3,000.00
WVA0051	Valve - Existing	WML0845	100	1994	40	11	2034	$2,000.00
WVA0052	Valve - Existing	WML0844	150	1994	40	11	2034	$3,000.00
WVA0053	Valve - Existing	WML0135	150	1979	40	0	2023	$3,000.00
WVA0054	Valve - Existing	WML0127	150	1965	40	0	2023	$3,000.00
WVA0055	Valve - Existing	WML0845	100	1994	40	11	2034	$2,000.00
WVA0056	Valve - Existing	WML0965	150	1994	40	11	2034	$3,000.00
WVA0057	Valve - Existing	WML0966	150	1994	40	11	2034	$3,000.00
WVA0058	Valve - Existing	WML0133	150	1979	40	0	2023	$3,000.00
WVA0059	Valve - Existing	WML0149	250	1995	40	12	2035	$6,000.00
WVA0060	Valve - Existing	WML0139	150	1974	40	0	2023	$3,000.00
WVA0061	Valve - Existing	WML0154	250	1995	40	12	2035	$6,000.00
WVA0062	Valve - Existing	WML0153	250	1995	40	12	2035	$6,000.00
WVA0063	Valve - Existing	WML0156	250	1980	40	0	2023	$6,000.00
WVA0064	Valve - Existing	WML0144	250	1980	40	0	2023	$6,000.00

Table B3: Osoyoos Water Utility Asset Management - Water Distribution Network - Valve Inventory

QGIS Asset ID (Valve)	Valve Type	QGIS Asset ID (Watermain)	Diameter (mm)	Year Installed (Watermain)	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/ea.)
WVA0065	Valve - Existing	WML0159	75	1982	40	0	2023	$1,800.00
WVA0066	Valve - Existing	WML1086	200	1993	40	10	2033	$4,500.00
WVA0067	Valve - Existing	WML0166	200	2000	40	17	2040	$4,500.00
WVA0068	Valve - Existing	WML1073	150	1989	40	6	2029	$3,000.00
WVA0069	Valve - Existing	WML1074	150	1989	40	6	2029	$3,000.00
WVA0070	Valve - Existing	WML1074	150	1989	40	6	2029	$3,000.00
WVA0071	Valve - Existing	WML0175	200	1989	40	6	2029	$4,500.00
WVA0072	Valve - Existing	WML0178	150	1989	40	6	2029	$3,000.00
WVA0073	Valve - Existing	WML0198	150	1989	40	6	2029	$3,000.00
WVA0074	Valve - Existing	WML1080	200	1993	40	10	2033	$4,500.00
WVA0075	Valve - Existing	WML1082	200	1993	40	10	2033	$4,500.00
WVA0076	Valve - Existing	WML0420	150	1993	40	10	2033	$3,000.00
WVA0077	Valve - Existing	WML0181	200	2004	40	21	2044	$4,500.00
WVA0078	Valve - Existing	WML0418	200	1993	40	10	2033	$4,500.00
WVA0079	Valve - Existing	WML0189	200	2004	40	21	2044	$4,500.00
WVA0080	Valve - Existing	WML1078	200	1993	40	10	2033	$4,500.00
WVA0081	Valve - Existing	WML0186	200	1993	40	10	2033	$4,500.00
WVA0082	Valve - Existing	WML0187	200	1993	40	10	2033	$4,500.00
WVA0083	Valve - Existing	WML0196	150	1989	40	6	2029	$3,000.00
WVA0084	Valve - Existing	WML0197	150	1989	40	6	2029	$3,000.00
WVA0085	Valve - Existing	WML0940	150	1968	40	0	2023	$3,000.00
WVA0086	Valve - Existing	WML0205	150	1968	40	0	2023	$3,000.00
WVA0087	Valve - Existing	WML0208	150	1994	40	11	2034	$3,000.00
WVA0088	Valve - Existing	WML0513	150	1994	40	11	2034	$3,000.00
WVA0089	Valve - Existing	WML0210	150	1968	40	0	2023	$3,000.00
WVA0090	Valve - Existing	WML0219	150	1992	40	9	2032	$3,000.00
WVA0091	Valve - Existing	WML0222	150	1997	40	14	2037	$3,000.00
WVA0092	Valve - Existing	WML0220	150	1992	40	9	2032	$3,000.00
WVA0093	Valve - Existing	WML0203	150	1959	40	0	2023	$3,000.00
WVA0094	Valve - Existing	WML0203	150	1959	40	0	2023	$3,000.00
WVA0095	Valve - Existing	WML0202	200	1959	40	0	2023	$4,500.00
WVA0096	Valve - Existing	WML0045	200	1959	40	0	2023	$4,500.00
WVA0097	Valve - Existing	WML0415	150	1965	40	0	2023	$3,000.00
WVA0098	Valve - Existing	WML0417	150	1965	40	0	2023	$3,000.00
WVA0099	Valve - Existing	WML0643	150	1965	40	0	2023	$3,000.00
WVA0100	Valve - Existing	WML0415	150	1965	40	0	2023	$3,000.00
WVA0101	Valve - Existing	WML0412	150	1964	40	0	2023	$3,000.00
WVA0102	Valve - Existing	WML0414	150	1964	40	0	2023	$3,000.00
WVA0103	Valve - Existing	WML0252	150	1991	40	8	2031	$3,000.00
WVA0104	Valve - Existing	WML0246	150	1991	40	8	2031	$3,000.00
WVA0105	Valve - Existing	WML0249	150	1991	40	8	2031	$3,000.00
WVA0106	Valve - Existing	WML0015	250	1959	40	0	2023	$6,000.00
WVA0107	Valve - Existing	WML0274	150	1959	40	0	2023	$3,000.00
WVA0108	Valve - Existing	WML0263	200	1959	40	0	2023	$4,500.00
WVA0109	Valve - Existing	WML0484	200	1959	40	0	2023	$4,500.00
WVA0110	Valve - Existing	WML0361	150	1959	40	0	2023	$3,000.00
WVA0111	Valve - Existing	WML0459	150	1997	40	14	2037	$3,000.00
WVA0112	Valve - Existing	WML0267	150	1959	40	0	2023	$3,000.00
WVA0113	Valve - Existing	WML0461	150	1997	40	14	2037	$3,000.00
WVA0114	Valve - Existing	WML0283	150	1974	40	0	2023	$3,000.00
WVA0115	Valve - Existing	WML0228	150	1959	40	0	2023	$3,000.00
WVA0116	Valve - Existing	WML0300	150	1959	40	0	2023	$3,000.00
WVA0117	Valve - Existing	WML1030	200	1959	40	0	2023	$4,500.00
WVA0118	Valve - Existing	WML1033	150	1959	40	0	2023	$3,000.00
WVA0119	Valve - Existing	WML1019	150	1959	40	0	2023	$3,000.00
WVA0120	Valve - Existing	WML0301	300	1987	40	4	2027	$7,500.00
WVA0121	Valve - Existing	WML1076	200	1993	40	10	2033	$4,500.00
WVA0122	Valve - Existing	WML0444	200	2004	40	21	2044	$4,500.00
WVA0123	Valve - Existing	WML0116	150	1972	40	0	2023	$3,000.00
WVA0124	Valve - Existing	WML0319	200	1980	40	0	2023	$4,500.00
WVA0125	Valve - Existing	WML0142	200	1980	40	0	2023	$4,500.00
WVA0126	Valve - Existing	WML0141	200	1980	40	0	2023	$4,500.00
WVA0127	Valve - Existing	WML0331	150	1977	40	0	2023	$3,000.00
WVA0128	Valve - Existing	WML0329	150	1977	40	0	2023	$3,000.00
WVA0129	Valve - Existing	WML0974	200	1975	40	0	2023	$4,500.00
WVA0130	Valve - Existing	WML0330	150	1977	40	0	2023	$3,000.00
WVA0131	Valve - Existing	WML0333	150	1966	40	0	2023	$3,000.00

Table B3: Osoyoos Water Utility Asset Management - Water Distribution Network - Valve Inventory

QGIS Asset ID (Valve)	Valve Type	QGIS Asset ID (Watermain)	Diameter (mm)	Year Installed (Watermain)	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/ea.)
WVA0131	Valve - Existing	WML0387	150	1968	40	0	2023	$3,000.00
WVA0132	Valve - Existing	WML0333	150	1966	40	0	2023	$3,000.00
WVA0133	Valve - Existing	WML0338	150	1966	40	0	2023	$3,000.00
WVA0134	Valve - Existing	WML0346	150	2000	40	17	2040	$3,000.00
WVA0135	Valve - Existing	WML0345	150	1968	40	0	2023	$3,000.00
WVA0136	Valve - Existing	WML0351	200	1977	40	0	2023	$4,500.00
WVA0137	Valve - Existing	WML0347	150	1977	40	0	2023	$3,000.00
WVA0138	Valve - Existing	WML0232	150	1959	40	0	2023	$3,000.00
WVA0139	Valve - Existing	WML0577	250	1964	40	0	2023	$6,000.00
WVA0140	Valve - Existing	WML0241	150	1959	40	0	2023	$3,000.00
WVA0141	Valve - Existing	WML0244	150	1959	40	0	2023	$3,000.00
WVA0142	Valve - Existing	WML0242	150	1959	40	0	2023	$3,000.00
WVA0143	Valve - Existing	WML0243	150	1959	40	0	2023	$3,000.00
WVA0144	Valve - Existing	WML0360	150	1959	40	0	2023	$3,000.00
WVA0145	Valve - Existing	WML0600	200	1959	40	0	2023	$4,500.00
WVA0146	Valve - Existing	WML0429	300	2008	40	25	2048	$7,500.00
WVA0147	Valve - Existing	WML0598	200	1959	40	0	2023	$4,500.00
WVA0148	Valve - Existing	WML0363	150	1959	40	0	2023	$3,000.00
WVA0149	Valve - Existing	WML0660	150	1994	40	11	2034	$3,000.00
WVA0150	Valve - Existing	WML1051	150	1994	40	11	2034	$3,000.00
WVA0151	Valve - Existing	WML1052	200	1994	40	11	2034	$4,500.00
WVA0152	Valve - Existing	WML0335	150	1960	40	0	2023	$3,000.00
WVA0153	Valve - Existing	WML0336	150	1966	40	0	2023	$3,000.00
WVA0154	Valve - Existing	WML0372	200	2003	40	20	2043	$4,500.00
WVA0155	Valve - Existing	WML0533	250	2003	40	20	2043	$6,000.00
WVA0156	Valve - Existing	WML0542	250	2003	40	20	2043	$6,000.00
WVA0157	Valve - Existing	WML0454	150	2003	40	20	2043	$3,000.00
WVA0158	Valve - Existing	WML0854	150	2003	40	20	2043	$3,000.00
WVA0159	Valve - Existing	WML0384	150	2003	40	20	2043	$3,000.00
WVA0160	Valve - Existing	WML0385	150	2003	40	20	2043	$3,000.00
WVA0161	Valve - Existing	WML0855	150	1968	40	0	2023	$3,000.00
WVA0162	Valve - Existing	WML0054	150	1975	40	0	2023	$3,000.00
WVA0163	Valve - Existing	WML0390	200	2004	40	21	2044	$4,500.00
WVA0164	Valve - Existing	WML0396	200	2004	40	21	2044	$4,500.00
WVA0165	Valve - Existing	WML0077	200	2004	40	21	2044	$4,500.00
WVA0166	Valve - Existing	WML0390	200	2004	40	21	2044	$4,500.00
WVA0167	Valve - Existing	WML0078	200	2004	40	21	2044	$4,500.00
WVA0168	Valve - Existing	WML0394	150	2004	40	21	2044	$3,000.00
WVA0169	Valve - Existing	WML0064	200	1971	40	0	2023	$4,500.00
WVA0170	Valve - Existing	WML0057	200	1975	40	0	2023	$4,500.00
WVA0171	Valve - Existing	WML0460	150	1997	40	14	2037	$3,000.00
WVA0172	Valve - Existing	WML0026	200	1975	40	0	2023	$4,500.00
WVA0173	Valve - Existing	WML0489	150	1979	40	0	2023	$3,000.00
WVA0174	Valve - Existing	WML0907	250	1992	40	9	2032	$6,000.00
WVA0175	Valve - Existing	WML0054	150	1975	40	0	2023	$3,000.00
WVA0176	Valve - Existing	WML0392	200	2004	40	21	2044	$4,500.00
WVA0177	Valve - Existing	WML0391	150	2004	40	21	2044	$3,000.00
WVA0178	Valve - Existing	WML0395	200	2004	40	21	2044	$4,500.00
WVA0180	Valve - Existing	WML0428	150	2007	40	24	2047	$3,000.00
WVA0181	Valve - Existing	WML1010	300	2007	40	24	2047	$7,500.00
WVA0182	Valve - Existing	WML0512	150	1994	40	11	2034	$3,000.00
WVA0183	Valve - Existing	WML0842	200	2005	40	22	2045	$4,500.00
WVA0184	Valve - Existing	WML0429	300	2008	40	25	2048	$7,500.00
WVA0185	Valve - Existing	WML0076	200	2004	40	21	2044	$4,500.00
WVA0186	Valve - Existing	WML0430	150	1975	40	0	2023	$3,000.00
WVA0187	Valve - Existing	WML0436	200	2009	40	26	2049	$4,500.00
WVA0188	Valve - Existing	WML0437	200	1980	40	0	2023	$4,500.00
WVA0189	Valve - Existing	WML0433	200	2009	40	26	2049	$4,500.00
WVA0190	Valve - Existing	WML0426	150	2009	40	26	2049	$3,000.00
WVA0191	Valve - Existing	WML1001	150	2009	40	26	2049	$3,000.00
WVA0192	Valve - Existing	WML0442	100	2009	40	26	2049	$2,000.00
WVA0193	Valve - Existing	WML0442	100	2009	40	26	2049	$2,000.00
WVA0194	Valve - Existing	WML0999	150	2009	40	26	2049	$3,000.00
WVA0195	Valve - Existing	WML0167	200	2000	40	17	2040	$4,500.00
WVA0196	Valve - Existing	WML0427	200	2007	40	24	2047	$4,500.00
WVA0197	Valve - Existing	WML0424	200	2004	40	21	2044	$4,500.00
WVA0198	Valve - Existing	WML0592	200	2003	40	20	2043	$4,500.00

Table B3: Osoyoos Water Utility Asset Management - Water Distribution Network - Valve Inventory

QGIS Asset ID (Valve)	Valve Type	QGIS Asset ID (Watermain)	Diameter (mm)	Year Installed (Watermain)	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/ea.)
WVA0199	Valve - Existing	WML0403	200	2004	40	21	2044	$4,500.00
WVA0200	Valve - Existing	WML0423	200	2004	40	21	2044	$4,500.00
WVA0201	Valve - Existing	WML0422	150	1993	40	10	2033	$3,000.00
WVA0202	Valve - Existing	WML0182	200	2004	40	21	2044	$4,500.00
WVA0203	Valve - Existing	WML0190	200	2004	40	21	2044	$4,500.00
WVA0204	Valve - Existing	WML0443	200	2004	40	21	2044	$4,500.00
WVA0205	Valve - Existing	WML0191	200	2004	40	21	2044	$4,500.00
WVA0206	Valve - Existing	WML0447	300	2008	40	25	2048	$7,500.00
WVA0207	Valve - Existing	WML0229	200	1995	40	12	2035	$4,500.00
WVA0208	Valve - Existing	WML0605	150	1974	40	0	2023	$3,000.00
WVA0209	Valve - Existing	WML0018	250	1959	40	0	2023	$6,000.00
WVA0210	Valve - Existing	WML0453	200	2003	40	20	2043	$4,500.00
WVA0211	Valve - Existing	WML0374	200	2003	40	20	2043	$4,500.00
WVA0212	Valve - Existing	WML0086	150	1979	40	0	2023	$3,000.00
WVA0213	Valve - Existing	WML0093	150	1976	40	0	2023	$3,000.00
WVA0214	Valve - Existing	WML0093	150	1976	40	0	2023	$3,000.00
WVA0215	Valve - Existing	WML0055	150	1975	40	0	2023	$3,000.00
WVA0216	Valve - Existing	WML0066	150	1978	40	0	2023	$3,000.00
WVA0217	Valve - Existing	WML0121	150	1981	40	0	2023	$3,000.00
WVA0218	Valve - Existing	WML0350	200	1981	40	0	2023	$4,500.00
WVA0219	Valve - Existing	WML1080	200	1993	40	10	2033	$4,500.00
WVA0220	Valve - Existing	WML1081	200	1993	40	10	2033	$4,500.00
WVA0221	Valve - Existing	WML1081	200	1993	40	10	2033	$4,500.00
WVA0222	Valve - Existing	WML1080	200	1993	40	10	2033	$4,500.00
WVA0223	Valve - Existing	WML0853	150	2003	40	20	2043	$3,000.00
WVA0224	Valve - Existing	WML0297	150	1959	40	0	2023	$3,000.00
WVA0225	Valve - Existing	WML0260	200	1959	40	0	2023	$4,500.00
WVA0226	Valve - Existing	WML0285	150	1959	40	0	2023	$3,000.00
WVA0227	Valve - Existing	WML0457	150	1972	40	0	2023	$3,000.00
WVA0228	Hydrant Gate	WML0108	150	1974	40	0	2023	$3,000.00
WVA0229	Valve - Existing	WML0109	150	1974	40	0	2023	$3,000.00
WVA0230	Valve - Existing	WML0239	150	1965	40	0	2023	$3,000.00
WVA0231	Valve - Existing	WML0416	150	1965	40	0	2023	$3,000.00
WVA0232	Valve - Existing	WML0458	150	1965	40	0	2023	$3,000.00
WVA0233	Valve - Existing	WML0964	150	2003	40	20	2043	$3,000.00
WVA0234	Valve - Existing	WML0112	150	1972	40	0	2023	$3,000.00
WVA0235	Valve - Existing	WML0113	150	1973	40	0	2023	$3,000.00
WVA0236	Valve - Existing	WML0618	150	1975	40	0	2023	$3,000.00
WVA0237	Valve - Existing	WML0471	100	2012	40	29	2052	$2,000.00
WVA0238	Valve - Existing	WML0473	250	2012	40	29	2052	$6,000.00
WVA0239	Valve - Existing	WML0837	300	1988	40	5	2028	$7,500.00
WVA0240	Valve - Existing	WML0492	150	1993	40	10	2033	$3,000.00
WVA0241	Valve - Existing	WML0491	250	1964	40	0	2023	$6,000.00
WVA0242	Hydrant Gate	WML0494	150	1993	40	10	2033	$3,000.00
WVA0243	Valve - Existing	WML0712	250	1982	40	0	2023	$6,000.00
WVA0244	Valve - Existing	WML1037	150	1959	40	0	2023	$3,000.00
WVA0245	Hydrant Gate	WML0510	150	1982	40	0	2023	$3,000.00
WVA0246	Valve - Existing	WML0747	200	1959	40	0	2023	$4,500.00
WVA0247	Hydrant Gate	WML0603	150	1959	40	0	2023	$3,000.00
WVA0248	Valve - Existing	WML0749	200	1959	40	0	2023	$4,500.00
WVA0249	Valve - Existing	WML0746	150	1959	40	0	2023	$3,000.00
WVA0250	Valve - Existing	WML0745	150	1959	40	0	2023	$3,000.00
WVA0251	Valve - Existing	WML0610	150	2021	40	38	2061	$3,000.00
WVA0252	Valve - Existing	WML0613	150	1974	40	0	2023	$3,000.00
WVA0253	Valve - Existing	WML0614	150	1974	40	0	2023	$3,000.00
WVA0254	Valve - Existing	WML0626	150	1974	40	0	2023	$3,000.00
WVA0255	Valve - Existing	WML0613	150	1974	40	0	2023	$3,000.00
WVA0256	Valve - Existing	WML0611	150	1974	40	0	2023	$3,000.00
WVA0257	Hydrant Gate	WML0612	150	1974	40	0	2023	$3,000.00
WVA0258	Valve - Existing	WML1042	150	2021	40	38	2061	$3,000.00
WVA0259	Hydrant Gate	WML0625	150	1994	40	11	2034	$3,000.00
WVA0260	Valve - Existing	WML0268	150	2021	40	38	2061	$3,000.00
WVA0261	Valve - Existing	WML0711	250	1982	40	0	2023	$6,000.00
WVA0262	Valve - Existing	WML0228	150	1959	40	0	2023	$3,000.00
WVA0263	Valve - Existing	WML0835	150	1959	40	0	2023	$3,000.00
WVA0264	Valve - Existing	WML0631	150	1994	40	11	2034	$3,000.00
WVA0265	Valve - Existing	WML0819	250	1994	40	11	2034	$6,000.00

Table B3: Osoyoos Water Utility Asset Management - Water Distribution Network - Valve Inventory

QGIS Asset ID (Valve)	Valve Type	QGIS Asset ID (Watermain)	Diameter (mm)	Year Installed (Watermain)	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/ea.)
WVA0266	Valve - Existing	WML0605	150	1974	40	0	2023	$3,000.00
WVA0267	Valve - Existing	WML0641	150	1968	40	0	2023	$3,000.00
WVA0268	Hydrant Gate	WML0638	150	1968	40	0	2023	$3,000.00
WVA0269	Valve - Existing	WML0642	150	1968	40	0	2023	$3,000.00
WVA0270	Valve - Existing	WML0303	300	1987	40	4	2027	$7,500.00
WVA0271	Valve - Existing	WML0200	200	1959	40	0	2023	$4,500.00
WVA0272	Valve - Existing	WML0300	150	1959	40	0	2023	$3,000.00
WVA0273	Valve - Existing	WML1013	250	1979	40	0	2023	$6,000.00
WVA0274	Valve - Existing	WML0588	150	1970	40	0	2023	$3,000.00
WVA0275	Valve - Existing	WML0675	150	1975	40	0	2023	$3,000.00
WVA0276	Valve - Existing	WML0622	150	1977	40	0	2023	$3,000.00
WVA0277	Valve - Existing	WML0621	150	2003	40	20	2043	$3,000.00
WVA0278	Valve - Existing	WML0560	150	1970	40	0	2023	$3,000.00
WVA0279	Valve - Existing	WML0622	150	1977	40	0	2023	$3,000.00
WVA0280	Valve - Existing	WML0620	150	1975	40	0	2023	$3,000.00
WVA0281	Valve - Existing	WML0620	150	1975	40	0	2023	$3,000.00
WVA0282	Valve - Existing	WML0621	150	2003	40	20	2043	$3,000.00
WVA0283	Valve - Existing	WML0562	150	1975	40	0	2023	$3,000.00
WVA0284	Hydrant Gate	WML0564	150	1975	40	0	2023	$3,000.00
WVA0285	Hydrant Gate	WML0646	150	1959	40	0	2023	$3,000.00
WVA0286	Hydrant Gate	WML1029	150	1959	40	0	2023	$3,000.00
WVA0287	Hydrant Gate	WML0515	150	1959	40	0	2023	$3,000.00
WVA0288	Hydrant Gate	WML0559	150	1975	40	0	2023	$3,000.00
WVA0289	Valve - Existing	WML0676	150	1975	40	0	2023	$3,000.00
WVA0290	Hydrant Gate	WML0677	150	1975	40	0	2023	$3,000.00
WVA0291	Valve - Existing	WML0551	150	2013	40	30	2053	$3,000.00
WVA0292	Valve - Existing	WML0549	150	1975	40	0	2023	$3,000.00
WVA0293	Valve - Existing	WML0548	150	1975	40	0	2023	$3,000.00
WVA0294	Valve - Existing	WML0547	250	2003	40	20	2043	$6,000.00
WVA0295	Valve - Existing	WML0550	200	2013	40	30	2053	$4,500.00
WVA0296	Valve - Existing	WML0683	150	2011	40	28	2051	$3,000.00
WVA0297	Valve - Existing	WML0682	250	2003	40	20	2043	$6,000.00
WVA0298	Hydrant Gate	WML0545	150	2003	40	20	2043	$3,000.00
WVA0299	Valve - Existing	WML0681	250	2003	40	20	2043	$6,000.00
WVA0300	Hydrant Gate	WML0544	150	2003	40	20	2043	$3,000.00
WVA0301	Hydrant Gate	WML0587	150	2003	40	20	2043	$3,000.00
WVA0302	Valve - Existing	WML0644	250	2003	40	20	2043	$6,000.00
WVA0303	Valve - Existing	WML0678	150	2011	40	28	2051	$3,000.00
WVA0304	Valve - Existing	WML0673	150	1979	40	0	2023	$3,000.00
WVA0305	Valve - Existing	WML0586	150	2003	40	20	2043	$3,000.00
WVA0306	Valve - Existing	WML0586	150	2003	40	20	2043	$3,000.00
WVA0307	Valve - Existing	WML0585	150	2003	40	20	2043	$3,000.00
WVA0308	Valve - Existing	WML0527	150	2003	40	20	2043	$3,000.00
WVA0309	Hydrant Gate	WML0525	150	2003	40	20	2043	$3,000.00
WVA0310	Valve - Existing	WML0526	150	2003	40	20	2043	$3,000.00
WVA0311	Valve - Existing	WML0529	250	2003	40	20	2043	$6,000.00
WVA0312	Valve - Existing	WML0528	250	2003	40	20	2043	$6,000.00
WVA0313	Valve - Existing	WML0552	200	2011	40	28	2051	$4,500.00
WVA0314	Valve - Existing	WML0522	150	2011	40	28	2051	$3,000.00
WVA0315	Valve - Existing	WML0521	150	2011	40	28	2051	$3,000.00
WVA0316	Valve - Existing	WML0520	150	2011	40	28	2051	$3,000.00
WVA0317	Valve - Existing	WML0519	150	2011	40	28	2051	$3,000.00
WVA0318	Valve - Existing	WML0523	200	2011	40	28	2051	$4,500.00
WVA0319	Valve - Existing	WML0558	200	2011	40	28	2051	$4,500.00
WVA0320	Valve - Existing	WML0619	150	1975	40	0	2023	$3,000.00
WVA0321	Valve - Existing	WML0062	150	1971	40	0	2023	$3,000.00
WVA0322	Hydrant Gate	WML0517	150	1971	40	0	2023	$3,000.00
WVA0323	Valve - Existing	WML0063	150	1971	40	0	2023	$3,000.00
WVA0324	Valve - Existing	WML1038	150	1975	40	0	2023	$3,000.00
WVA0325	Valve - Existing	WML1039	150	1975	40	0	2023	$3,000.00
WVA0326	Hydrant Gate	WML0516	150	1975	40	0	2023	$3,000.00
WVA0327	Hydrant Gate	WML0595	150	2003	40	20	2043	$3,000.00
WVA0328	Valve - Existing	WML0589	200	2003	40	20	2043	$4,500.00
WVA0329	Valve - Existing	WML0538	250	2003	40	20	2043	$6,000.00
WVA0330	Hydrant Gate	WML0571	150	2003	40	20	2043	$3,000.00
WVA0331	Hydrant Gate	WML0040	150	2003	40	20	2043	$3,000.00
WVA0332	Hydrant Gate	WML0040	150	2003	40	20	2043	$3,000.00

Table B3: Osoyoos Water Utility Asset Management - Water Distribution Network - Valve Inventory

QGIS Asset ID (Valve)	Valve Type	QGIS Asset ID (Watermain)	Diameter (mm)	Year Installed (Watermain)	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/ea.)
WVA0333	Hydrant Gate	WML0594	150	2003	40	20	2043	$3,000.00
WVA0334	Valve - Existing	WML0593	150	2003	40	20	2043	$3,000.00
WVA0335	Valve - Existing	WML0565	300	2008	40	25	2048	$7,500.00
WVA0336	Valve - Existing	WML0030	300	2008	40	25	2048	$7,500.00
WVA0337	Valve - Existing	WML0814	250	2008	40	25	2048	$6,000.00
WVA0338	Valve - Existing	WML0815	250	1964	40	0	2023	$6,000.00
WVA0339	Valve - Existing	WML0568	250	1982	40	0	2023	$6,000.00
WVA0340	Valve - Existing	WML0713	250	1982	40	0	2023	$6,000.00
WVA0341	Valve - Existing	WML0271	150	1959	40	0	2023	$3,000.00
WVA0342	Valve - Existing	WML0474	200	1997	40	14	2037	$4,500.00
WVA0343	Hydrant Gate	WML0653	150	1959	40	0	2023	$3,000.00
WVA0344	Hydrant Gate	WML0477	150	1997	40	14	2037	$3,000.00
WVA0345	Valve - Existing	WML1100	200	1959	40	0	2023	$4,500.00
WVA0346	Valve - Existing	WML0487	200	1959	40	0	2023	$4,500.00
WVA0347	Valve - Existing	WML0481	250	1997	40	14	2037	$6,000.00
WVA0348	Valve - Existing	WML0486	200	1959	40	0	2023	$4,500.00
WVA0349	Valve - Existing	WML0476	100	1997	40	14	2037	$2,000.00
WVA0350	Hydrant Gate	WML0478	150	1997	40	14	2037	$3,000.00
WVA0351	Valve - Existing	WML0482	150	1959	40	0	2023	$3,000.00
WVA0352	Hydrant Gate	WML0648	150	1959	40	0	2023	$3,000.00
WVA0353	Valve - Existing	WML0807	250	2008	40	25	2048	$6,000.00
WVA0354	Hydrant Gate	WML0805	150	2008	40	25	2048	$3,000.00
WVA0355	Hydrant Gate	WML0812	150	2008	40	25	2048	$3,000.00
WVA0356	Hydrant Gate	WML0636	150	2016	40	33	2056	$3,000.00
WVA0357	Valve - Existing	WML0635	150	1959	40	0	2023	$3,000.00
WVA0358	Valve - Existing	WML0601	200	1959	40	0	2023	$4,500.00
WVA0359	Valve - Existing	WML0014	250	1959	40	0	2023	$6,000.00
WVA0360	Valve - Existing	WML0574	250	1959	40	0	2023	$6,000.00
WVA0361	Valve - Existing	WML0015	250	1959	40	0	2023	$6,000.00
WVA0362	Hydrant Gate	WML0654	150	2017	40	34	2057	$3,000.00
WVA0363	Valve - Existing	WML0656	150	2017	40	34	2057	$3,000.00
WVA0364	Valve - Existing	WML0659	200	1988	40	5	2028	$4,500.00
WVA0365	Valve - Existing	WML0663	200	1994	40	11	2034	$4,500.00
WVA0366	Valve - Existing	WML1094	200	1959	40	0	2023	$4,500.00
WVA0367	Valve - Existing	WML0296	150	1959	40	0	2023	$3,000.00
WVA0368	Valve - Existing	WML0297	150	1959	40	0	2023	$3,000.00
WVA0369	Valve - Existing	WML0230	250	1995	40	12	2035	$6,000.00
WVA0370	Hydrant Gate	WML0666	150	1959	40	0	2023	$3,000.00
WVA0371	Hydrant Gate	WML0604	150	1959	40	0	2023	$3,000.00
WVA0372	Hydrant Gate	WML0496	150	1993	40	10	2033	$3,000.00
WVA0373	Valve - Existing	WML0824	250	1994	40	11	2034	$6,000.00
WVA0374	Hydrant Gate	WML0633	150	1994	40	11	2034	$3,000.00
WVA0375	Hydrant Gate	WML0634	150	1991	40	8	2031	$3,000.00
WVA0376	Valve - Existing	WML0255	250	1991	40	8	2031	$6,000.00
WVA0377	Valve - Existing	WML0825	250	1991	40	8	2031	$6,000.00
WVA0378	Valve - Existing	WML0826	200	1991	40	8	2031	$4,500.00
WVA0379	Hydrant Gate	WML0632	150	1994	40	11	2034	$3,000.00
WVA0380	Hydrant Gate	WML0684	150	2011	40	28	2051	$3,000.00
WVA0381	Hydrant Gate	WML0669	150	2011	40	28	2051	$3,000.00
WVA0382	Valve - Existing	WML0671	150	2011	40	28	2051	$3,000.00
WVA0383	Valve - Existing	WML0670	150	2011	40	28	2051	$3,000.00
WVA0384	Valve - Existing	WML0718	250	1982	40	0	2023	$6,000.00
WVA0385	Valve - Existing	WML0716	200	1982	40	0	2023	$4,500.00
WVA0386	Valve - Existing	WML0717	200	1982	40	0	2023	$4,500.00
WVA0388	Valve - Existing	WML1073	150	1989	40	6	2029	$3,000.00
WVA0389	Valve - Existing	WML0721	150	1991	40	8	2031	$3,000.00
WVA0390	Hydrant Gate	WML0734	150	2017	40	34	2057	$3,000.00
WVA0391	Valve - Existing	WML0725	150	2017	40	34	2057	$3,000.00
WVA0392	Valve - Existing	WML0735	250	2017	40	34	2057	$6,000.00
WVA0393	Valve - Existing	WML0032	400	2008	40	25	2048	$15,000.00
WVA0394	Valve - Existing	WML0723	200	2011	40	28	2051	$4,500.00
WVA0395	Valve - Existing	WML0725	150	2017	40	34	2057	$3,000.00
WVA0396	Valve - Existing	WML0741	150	2017	40	34	2057	$3,000.00
WVA0397	Hydrant Gate	WML0731	150	2017	40	34	2057	$3,000.00
WVA0398	Hydrant Gate	WML0743	150	2017	40	34	2057	$3,000.00
WVA0399	Valve - Existing	WML0732	250	2017	40	34	2057	$6,000.00
WVA0400	Hydrant Gate	WML0739	150	2017	40	34	2057	$3,000.00

Table B3: Osoyoos Water Utility Asset Management - Water Distribution Network - Valve Inventory

QGIS Asset ID (Valve)	Valve Type	QGIS Asset ID (Watermain)	Diameter (mm)	Year Installed (Watermain)	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/ea.)
WVA0401	Valve - Existing	WML0726	100	2017	40	34	2057	$2,000.00
WVA0402	Valve - Existing	WML0729	100	2017	40	34	2057	$2,000.00
WVA0403	Valve - Existing	WML0727	250	2017	40	34	2057	$6,000.00
WVA0404	Valve - Existing	WML0738	150	2017	40	34	2057	$3,000.00
WVA0405	Hydrant Gate	WML0573	150	1979	40	0	2023	$3,000.00
WVA0406	Valve - Existing	WML0087	150	1979	40	0	2023	$3,000.00
WVA0407	Valve - Existing	WML0832	150	1975	40	0	2023	$3,000.00
WVA0408	Valve - Existing	WML1040	150	1975	40	0	2023	$3,000.00
WVA0409	Hydrant Gate	WML0750	150	1959	40	0	2023	$3,000.00
WVA0410	Hydrant Gate	WML0339	150	1966	40	0	2023	$3,000.00
WVA0411	Valve - Existing	WML0753	150	1966	40	0	2023	$3,000.00
WVA0412	Valve - Existing	WML0761	200	2018	40	35	2058	$4,500.00
WVA0413	Hydrant Gate	WML0658	150	2017	40	34	2057	$3,000.00
WVA0414	Valve - Existing	WML0722	150	1997	40	14	2037	$3,000.00
WVA0415	Valve - Existing	WML0034	250	1994	40	11	2034	$6,000.00
WVA0416	Valve - Existing	WML0813	250	2008	40	25	2048	$6,000.00
WVA0417	Valve - Existing	WML0639	250	1964	40	0	2023	$6,000.00
WVA0418	Valve - Existing	WML0639	250	1964	40	0	2023	$6,000.00
WVA0419	Valve - Existing	WML0795	250	1964	40	0	2023	$6,000.00
WVA0420	Valve - Existing	WML0798	150	1994	40	11	2034	$3,000.00
WVA0421	Valve - Existing	WML0034	250	1994	40	11	2034	$6,000.00
WVA0422	Valve - Existing	WML0799	200	1992	40	9	2032	$4,500.00
WVA0423	Valve - Existing	WML0804	200	2008	40	25	2048	$4,500.00
WVA0424	Hydrant Gate	WML0801	150	1991	40	8	2031	$3,000.00
WVA0425	Valve - Existing	WML0802	250	1991	40	8	2031	$6,000.00
WVA0426	Valve - Existing	WML0037	250	1991	40	8	2031	$6,000.00
WVA0427	Valve - Existing	WML0038	200	1991	40	8	2031	$4,500.00
WVA0428	Hydrant Gate	WML0811	150	2008	40	25	2048	$3,000.00
WVA0429	Valve - Existing	WML0690	250	2008	40	25	2048	$6,000.00
WVA0430	Valve - Existing	WML0803	150	2008	40	25	2048	$3,000.00
WVA0431	Hydrant Gate	WML0836	150	1994	40	11	2034	$3,000.00
WVA0432	Valve - Existing	WML0818	300	1994	40	11	2034	$7,500.00
WVA0433	Valve - Existing	WML0765	150	2017	40	34	2057	$3,000.00
WVA0434	Valve - Existing	WML0692	250	2017	40	34	2057	$6,000.00
WVA0435	Valve - Existing	WML0766	150	2017	40	34	2057	$3,000.00
WVA0436	Valve - Existing	WML0699	150	2017	40	34	2057	$3,000.00
WVA0437	Valve - Existing	WML0695	250	2017	40	34	2057	$6,000.00
WVA0438	Valve - Existing	WML0700	150	2017	40	34	2057	$3,000.00
WVA0439	Valve - Existing	WML0696	250	2017	40	34	2057	$6,000.00
WVA0440	Valve - Existing	WML0685	150	2017	40	34	2057	$3,000.00
WVA0441	Valve - Existing	WML0793	150	2017	40	34	2057	$3,000.00
WVA0442	Hydrant Gate	WML0764	150	2017	40	34	2057	$3,000.00
WVA0443	Valve - Existing	WML0791	250	2018	40	35	2058	$6,000.00
WVA0444	Valve - Existing	WML0791	250	2018	40	35	2058	$6,000.00
WVA0445	Valve - Existing	WML0790	250	2018	40	35	2058	$6,000.00
WVA0446	Valve - Existing	WML0756	250	2018	40	35	2058	$6,000.00
WVA0447	Hydrant Gate	WML0762	150	2018	40	35	2058	$3,000.00
WVA0448	Valve - Existing	WML0759	200	2018	40	35	2058	$4,500.00
WVA0449	Valve - Existing	WML0760	150	2018	40	35	2058	$3,000.00
WVA0450	Valve - Existing	WML0787	100	2018	40	35	2058	$2,000.00
WVA0451	Valve - Existing	WML0691	250	2017	40	34	2057	$6,000.00
WVA0452	Valve - Existing	WML0782	250	2017	40	34	2057	$6,000.00
WVA0453	Valve - Existing	WML0783	200	2017	40	34	2057	$4,500.00
WVA0454	Valve - Existing	WML0780	250	2017	40	34	2057	$6,000.00
WVA0455	Valve - Existing	WML0784	150	2017	40	34	2057	$3,000.00
WVA0456	Valve - Existing	WML0771	150	2017	40	34	2057	$3,000.00
WVA0457	Hydrant Gate	WML0771	150	2017	40	34	2057	$3,000.00
WVA0457	Hydrant Gate	WML0772	150	2017	40	34	2057	$3,000.00
WVA0458	Hydrant Gate	WML0784	150	2017	40	34	2057	$3,000.00
WVA0459	Valve - Existing	WML0780	250	2017	40	34	2057	$6,000.00
WVA0460	Valve - Existing	WML0769	100	2017	40	34	2057	$2,000.00
WVA0461	Valve - Existing	WML0779	250	2017	40	34	2057	$6,000.00
WVA0462	Valve - Existing	WML0757	250	2018	40	35	2058	$6,000.00
WVA0463	Valve - Existing	WML0778	250	2017	40	34	2057	$6,000.00
WVA0464	Hydrant Gate	WML0767	150	2017	40	34	2057	$3,000.00
WVA0465	Hydrant Gate	WML0770	150	2017	40	34	2057	$3,000.00
WVA0466	Valve - Existing	WML0776	250	2017	40	34	2057	$6,000.00

Table B3: Osoyoos Water Utility Asset Management - Water Distribution Network - Valve Inventory

QGIS Asset ID (Valve)	Valve Type	QGIS Asset ID (Watermain)	Diameter (mm)	Year Installed (Watermain)	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/ea.)
WVA0467	Valve - Existing	WML0786	250	2017	40	34	2057	$6,000.00
WVA0468	Valve - Existing	WML0775	200	2017	40	34	2057	$4,500.00
WVA0469	Hydrant Gate	WML0768	150	2017	40	34	2057	$3,000.00
WVA0470	Valve - Existing	WML0773	150	2017	40	34	2057	$3,000.00
WVA0471	Valve - Existing	WML0704	250	2017	40	34	2057	$6,000.00
WVA0472	Valve - Existing	WML0701	150	2017	40	34	2057	$3,000.00
WVA0473	Valve - Existing	WML0706	200	2017	40	34	2057	$4,500.00
WVA0474	Valve - Existing	WML0687	250	2017	40	34	2057	$6,000.00
WVA0475	Hydrant Gate	WML0686	150	2017	40	34	2057	$3,000.00
WVA0476	Valve - Existing	WML0689	250	2017	40	34	2057	$6,000.00
WVA0477	Valve - Existing	WML0828	150	2017	40	34	2057	$3,000.00
WVA0478	Valve - Existing	WML0707	200	2017	40	34	2057	$4,500.00
WVA0479	Hydrant Gate	WML0806	150	1964	40	0	2023	$3,000.00
WVA0480	Hydrant Gate	WML0763	150	1994	40	11	2034	$3,000.00
WVA0481								
WVA0482	Valve - Existing	WML0278	200	1959	40	0	2023	$4,500.00
WVA0483	Valve - Existing	WML0849	200	2009	40	26	2049	$4,500.00
WVA0484	Hydrant Gate	WML0850	150	2009	40	26	2049	$3,000.00
WVA0485	Valve - Existing	WML0652	200	1959	40	0	2023	$4,500.00
WVA0486	Valve - Existing	WML0851	200	2009	40	26	2049	$4,500.00
WVA0487	Valve - Existing	WML0797	250	1964	40	0	2023	$6,000.00
WVA0488	Valve - Existing	WML0072	150	1975	40	0	2023	$3,000.00
WVA0489	Valve - Existing	WML1018	200	1980	40	0	2023	$4,500.00
WVA0490	Valve - Existing	WML0308	300	1980	40	0	2023	$7,500.00
WVA0491	Valve - Existing	WML1040	150	1975	40	0	2023	$3,000.00
WVA0492	Valve - Existing	WML0030	300	2008	40	25	2048	$7,500.00
WVA0493	Valve - Existing	WML0724	150	1997	40	14	2037	$3,000.00
WVA0494	Valve - Existing	WML0224	150	1968	40	0	2023	$3,000.00
WVA0495	Valve - Existing	WML0821	250	1994	40	11	2034	$6,000.00
WVA0496	Valve - Existing	WML0841	200	1991	40	8	2031	$4,500.00
WVA0497	Hydrant Gate	WML0847	150	1965	40	0	2023	$3,000.00
WVA0498	Valve - Existing	WML0903	250	2008	40	25	2048	$6,000.00
WVA0499	Valve - Existing	WML0831	300	2008	40	25	2048	$7,500.00
WVA0500	Valve - Existing	WML0904	250	1993	40	10	2033	$6,000.00
WVA0501	Valve - Existing	WML0830	350	2008	40	25	2048	$11,000.00
WVA0502	Hydrant Gate	WML0848	150	2008	40	25	2048	$3,000.00
WVA0503	Hydrant Gate	WML0152	150	1995	40	12	2035	$3,000.00
WVA0504	Valve - Existing	WML0155	150	1995	40	12	2035	$3,000.00
WVA0505	Hydrant Gate	WML0371	150	1995	40	12	2035	$3,000.00
WVA0506	Hydrant Gate	WML0138	150	1980	40	0	2023	$3,000.00
WVA0507	Hydrant Gate	WML0151	150	1980	40	0	2023	$3,000.00
WVA0508	Hydrant Gate	WML0145	150	1980	40	0	2023	$3,000.00
WVA0509	Valve - Existing	WML0157	150	1980	40	0	2023	$3,000.00
WVA0510	Hydrant Gate	WML0321	150	1980	40	0	2023	$3,000.00
WVA0511	Hydrant Gate	WML0320	150	1980	40	0	2023	$3,000.00
WVA0512	Hydrant Gate	WML0439	150	2009	40	26	2049	$3,000.00
WVA0513	Hydrant Gate	WML0431	150	2009	40	26	2049	$3,000.00
WVA0514	Hydrant Gate	WML0432	150	2009	40	26	2049	$3,000.00
WVA0515	Valve - Existing	WML0366	150	1994	40	11	2034	$3,000.00
WVA0516	Hydrant Gate	WML0364	150	1994	40	11	2034	$3,000.00
WVA0517	Hydrant Gate	WML0365	150	1994	40	11	2034	$3,000.00
WVA0518	Hydrant Gate	WML0313	150	1972	40	0	2023	$3,000.00
WVA0519	Hydrant Gate	WML0108	150	1974	40	0	2023	$3,000.00
WVA0520	Hydrant Gate	WML0107	150	1974	40	0	2023	$3,000.00
WVA0521	Hydrant Gate	WML0101	150	1973	40	0	2023	$3,000.00
WVA0522	Hydrant Gate	WML0100	150	1973	40	0	2023	$3,000.00
WVA0523	Hydrant Gate	WML0102	150	1972	40	0	2023	$3,000.00
WVA0524	Hydrant Gate	WML0441	150	2009	40	26	2049	$3,000.00
WVA0525	Hydrant Gate	WML0440	150	2009	40	26	2049	$3,000.00
WVA0526	Hydrant Gate	WML0445	150	2004	40	21	2044	$3,000.00
WVA0527	Hydrant Gate	WML0163	150	1993	40	10	2033	$3,000.00
WVA0528	Hydrant Gate	WML0161	150	2000	40	17	2040	$3,000.00
WVA0529	Hydrant Gate	WML0162	150	1993	40	10	2033	$3,000.00
WVA0530	Hydrant Gate	WML0169	150	1993	40	10	2033	$3,000.00
WVA0531	Hydrant Gate	WML0160	150	2000	40	17	2040	$3,000.00
WVA0532	Hydrant Gate	WML0369	150	2000	40	17	2040	$3,000.00
WVA0533	Hydrant Gate	WML0170	150	1989	40	6	2029	$3,000.00

Table B3: Osoyoos Water Utility Asset Management - Water Distribution Network - Valve Inventory

QGIS Asset ID (Valve)	Valve Type	QGIS Asset ID (Watermain)	Diameter (mm)	Year Installed (Watermain)	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/ea.)
WVA0534	Hydrant Gate	WML0168	150	1989	40	6	2029	$3,000.00
WVA0535	Hydrant Gate	WML0172	150	1989	40	6	2029	$3,000.00
WVA0536	Hydrant Gate	WML0173	150	1989	40	6	2029	$3,000.00
WVA0537	Hydrant Gate	WML0193	150	1989	40	6	2029	$3,000.00
WVA0538	Valve - Existing	WML0194	150	1989	40	6	2029	$3,000.00
WVA0539	Hydrant Gate	WML0174	150	1993	40	10	2033	$3,000.00
WVA0540	Hydrant Gate	WML0185	150	1993	40	10	2033	$3,000.00
WVA0541	Hydrant Gate	WML0183	150	1993	40	10	2033	$3,000.00
WVA0542	Hydrant Gate	WML0192	150	1993	40	10	2033	$3,000.00
WVA0543	Hydrant Gate	WML0180	150	2004	40	21	2044	$3,000.00
WVA0544	Hydrant Gate	WML0184	150	2004	40	21	2044	$3,000.00
WVA0545	Hydrant Gate	WML0446	150	2004	40	21	2044	$3,000.00
WVA0546	Hydrant Gate	WML0188	150	1993	40	10	2033	$3,000.00
WVA0547	Hydrant Gate	WML0171	150	1993	40	10	2033	$3,000.00
WVA0548	Hydrant Gate	WML0311	150	1966	40	0	2023	$3,000.00
WVA0549	Hydrant Gate	WML0340	150	1968	40	0	2023	$3,000.00
WVA0550	Hydrant Gate	WML0383	150	2003	40	20	2043	$3,000.00
WVA0551	Hydrant Gate	WML0312	150	1966	40	0	2023	$3,000.00
WVA0552	Hydrant Gate	WML0341	150	1993	40	10	2033	$3,000.00
WVA0553	Hydrant Gate	WML0120	150	1981	40	0	2023	$3,000.00
WVA0554	Hydrant Gate	WML0119	150	1981	40	0	2023	$3,000.00
WVA0555	Hydrant Gate	WML0328	150	1977	40	0	2023	$3,000.00
WVA0556	Hydrant Gate	WML0327	150	1965	40	0	2023	$3,000.00
WVA0557	Valve - Existing	WML0317	150	1994	40	11	2034	$3,000.00
WVA0558	Hydrant Gate	WML0316	150	1979	40	0	2023	$3,000.00
WVA0559	Hydrant Gate	WML0353	150	1991	40	8	2031	$3,000.00
WVA0560	Hydrant Gate	WML0129	150	1979	40	0	2023	$3,000.00
WVA0561	Hydrant Gate	WML0118	150	1975	40	0	2023	$3,000.00
WVA0562	Valve - Existing	WML0967	150	1975	40	0	2023	$3,000.00
WVA0563	Hydrant Gate	WML0833	150	1994	40	11	2034	$3,000.00
WVA0564	Hydrant Gate	WML0354	150	1968	40	0	2023	$3,000.00
WVA0565	Hydrant Gate	WML0214	150	1968	40	0	2023	$3,000.00
WVA0566	Hydrant Gate	WML0212	150	1968	40	0	2023	$3,000.00
WVA0567	Hydrant Gate	WML0217	150	1959	40	0	2023	$3,000.00
WVA0568	Valve - Existing	WML0012	150	1959	40	0	2023	$3,000.00
WVA0569	Valve - Existing	WML0834	150	1959	40	0	2023	$3,000.00
WVA0570	Valve - Existing	WML0452	150	2008	40	25	2048	$3,000.00
WVA0571	Hydrant Gate	WML0231	150	1959	40	0	2023	$3,000.00
WVA0572	Hydrant Gate	WML0370	150	2001	40	18	2041	$3,000.00
WVA0573	Hydrant Gate	WML0355	150	1959	40	0	2023	$3,000.00
WVA0574	Hydrant Gate	WML0225	150	1992	40	9	2032	$3,000.00
WVA0575	Hydrant Gate	WML0221	150	1997	40	14	2037	$3,000.00
WVA0576	Hydrant Gate	WML0218	150	1992	40	9	2032	$3,000.00
WVA0577	Hydrant Gate	WML0356	250	1993	40	10	2033	$6,000.00
WVA0578	Valve - Existing	WML0235	150	1965	40	0	2023	$3,000.00
WVA0579	Hydrant Gate	WML0234	150	1959	40	0	2023	$3,000.00
WVA0580	Hydrant Gate	WML0275	150	1959	40	0	2023	$3,000.00
WVA0581	Hydrant Gate	WML0362	150	1959	40	0	2023	$3,000.00
WVA0582	Hydrant Gate	WML0359	150	1959	40	0	2023	$3,000.00
WVA0583	Hydrant Gate	WML0282	150	1959	40	0	2023	$3,000.00
WVA0584	Valve - Existing	WML0310	150	1997	40	14	2037	$3,000.00
WVA0585	Hydrant Gate	WML0281	150	1959	40	0	2023	$3,000.00
WVA0586	Hydrant Gate	WML0276	150	1959	40	0	2023	$3,000.00
WVA0587	Valve - Existing	WML0465	150	1959	40	0	2023	$3,000.00
WVA0588	Hydrant Gate	WML0464	150	1959	40	0	2023	$3,000.00
WVA0589	Hydrant Gate	WML0287	150	1959	40	0	2023	$3,000.00
WVA0590	Hydrant Gate	WML0284	150	1997	40	14	2037	$3,000.00
WVA0591	Hydrant Gate	WML0286	150	1959	40	0	2023	$3,000.00
WVA0592	Hydrant Gate	WML0291	150	1997	40	14	2037	$3,000.00
WVA0593	Hydrant Gate	WML0292	150	1997	40	14	2037	$3,000.00
WVA0594	Hydrant Gate	WML0472	150	2012	40	29	2052	$3,000.00
WVA0595	Hydrant Gate	WML0469	150	2012	40	29	2052	$3,000.00
WVA0596	Hydrant Gate	WML0358	150	1973	40	0	2023	$3,000.00
WVA0597	Hydrant Gate	WML0290	150	1959	40	0	2023	$3,000.00
WVA0598	Hydrant Gate	WML0237	150	1965	40	0	2023	$3,000.00
WVA0599	Valve - Existing	WML0357	150	1959	40	0	2023	$3,000.00
WVA0600	Hydrant Gate	WML0280	150	1959	40	0	2023	$3,000.00

Table B3: Osoyoos Water Utility Asset Management - Water Distribution Network - Valve Inventory

QGIS Asset ID (Valve)	Valve Type	QGIS Asset ID (Watermain)	Diameter (mm)	Year Installed (Watermain)	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/ea.)
WVA0601	Hydrant Gate	WML1041	150	1959	40	0	2023	$3,000.00
WVA0602	Hydrant Gate	WML0382	150	2003	40	20	2043	$3,000.00
WVA0603	Hydrant Gate	WML0377	150	2003	40	20	2043	$3,000.00
WVA0604	Hydrant Gate	WML0378	150	2003	40	20	2043	$3,000.00
WVA0605	Hydrant Gate	WML0380	150	2003	40	20	2043	$3,000.00
WVA0606	Hydrant Gate	WML0406	150	2004	40	21	2044	$3,000.00
WVA0607	Hydrant Gate	WML0407	150	2004	40	21	2044	$3,000.00
WVA0608	Hydrant Gate	WML0379	150	2003	40	20	2043	$3,000.00
WVA0609	Hydrant Gate	WML0375	150	2003	40	20	2043	$3,000.00
WVA0610	Hydrant Gate	WML0376	150	2003	40	20	2043	$3,000.00
WVA0611	Hydrant Gate	WML0381	150	2003	40	20	2043	$3,000.00
WVA0612	Hydrant Gate	WML0088	150	1979	40	0	2023	$3,000.00
WVA0613	Hydrant Gate	WML0085	150	1979	40	0	2023	$3,000.00
WVA0614	Hydrant Gate	WML0090	150	1977	40	0	2023	$3,000.00
WVA0615	Hydrant Gate	WML0322	150	1976	40	0	2023	$3,000.00
WVA0616	Hydrant Gate	WML1097	200	1959	40	0	2023	$4,500.00
WVA0617	Hydrant Gate	WML0323	150	1975	40	0	2023	$3,000.00
WVA0618	Hydrant Gate	WML0368	150	1976	40	0	2023	$3,000.00
WVA0619	Hydrant Gate	WML0050	150	1975	40	0	2023	$3,000.00
WVA0620	Hydrant Gate	WML0367	150	1975	40	0	2023	$3,000.00
WVA0621	Valve - Existing	WML0325	150	1971	40	0	2023	$3,000.00
WVA0622	Hydrant Gate	WML0065	150	1978	40	0	2023	$3,000.00
WVA0623	Hydrant Gate	WML0084	150	1971	40	0	2023	$3,000.00
WVA0624	Hydrant Gate	WML0306	150	1959	40	0	2023	$3,000.00
WVA0625	Hydrant Gate	WML0305	150	1959	40	0	2023	$3,000.00
WVA0626	Hydrant Gate	WML0304	150	1959	40	0	2023	$3,000.00
WVA0627	Hydrant Gate	WML0307	150	1959	40	0	2023	$3,000.00
WVA0628	Hydrant Gate	WML0071	150	1975	40	0	2023	$3,000.00
WVA0629	Hydrant Gate	WML0053	150	1975	40	0	2023	$3,000.00
WVA0630	Hydrant Gate	WML0393	150	2004	40	21	2044	$3,000.00
WVA0631	Hydrant Gate	WML0389	150	2004	40	21	2044	$3,000.00
WVA0632	Hydrant Gate	WML0388	150	2004	40	21	2044	$3,000.00
WVA0633	Valve - Existing	WML0324	150	1975	40	0	2023	$3,000.00
WVA0634	Hydrant Gate	WML0089	150	1975	40	0	2023	$3,000.00
WVA0635	Hydrant Gate	WML0049	150	1971	40	0	2023	$3,000.00
WVA0636	Hydrant Gate	WML0069	150	1979	40	0	2023	$3,000.00
WVA0637	Valve - Existing	WML0326	150	1975	40	0	2023	$3,000.00
WVA0638	Hydrant Gate	WML0288	150	1959	40	0	2023	$3,000.00
WVA0639	Hydrant Gate	WML0294	150	1974	40	0	2023	$3,000.00
WVA0640	Hydrant Gate	WML0289	150	1959	40	0	2023	$3,000.00
WVA0641	Hydrant Gate	WML0259	150	1974	40	0	2023	$3,000.00
WVA0642	Hydrant Gate	WML0258	150	1991	40	8	2031	$3,000.00
WVA0643	Valve - Existing	WML0257	150	1991	40	8	2031	$3,000.00
WVA0644	Hydrant Gate	WML0256	150	1991	40	8	2031	$3,000.00
WVA0645	Hydrant Gate	WML0254	150	1991	40	8	2031	$3,000.00
WVA0646	Hydrant Gate	WML0838	150	1974	40	0	2023	$3,000.00
WVA0647	Hydrant Gate	WML0930	150	2022	40	39	2062	$3,000.00
WVA0648	Valve - Existing	WML0934	150	2022	40	39	2062	$3,000.00
WVA0649	Valve - Existing	WML0879	150	2022	40	39	2062	$3,000.00
WVA0650	Hydrant Gate	WML0911	150	2021	40	38	2061	$3,000.00
WVA0651	Valve - Existing	WML0929	150	2021	40	38	2061	$3,000.00
WVA0652	Valve - Existing	WML0891	200	2021	40	38	2061	$4,500.00
WVA0653	Valve - Existing	WML0890	200	2021	40	38	2061	$4,500.00
WVA0654	Valve - Existing	WML1109	100	2021	40	38	2061	$2,000.00
WVA0655	Valve - Existing	WML0888	200	2021	40	38	2061	$4,500.00
WVA0656	Valve - Existing	WML0874	150	2021	40	38	2061	$3,000.00
WVA0657	Valve - Existing	WML0886	200	2021	40	38	2061	$4,500.00
WVA0658	Valve - Existing	WML0878	150	2021	40	38	2061	$3,000.00
WVA0659	Valve - Existing	WML0884	200	2021	40	38	2061	$4,500.00
WVA0660	Valve - Existing	WML0883	200	2021	40	38	2061	$4,500.00
WVA0661	Valve - Existing	WML0898	150	2021	40	38	2061	$3,000.00
WVA0662	Valve - Existing	WML0876	150	2021	40	38	2061	$3,000.00
WVA0663	Valve - Existing	WML0881	150	2021	40	38	2061	$3,000.00
WVA0664	Valve - Existing	WML0894	150	2021	40	38	2061	$3,000.00
WVA0665	Valve - Existing	WML0880	50	2021	40	38	2061	$1,600.00
WVA0666	Valve - Existing	WML0895	150	2021	40	38	2061	$3,000.00
WVA0667	Valve - Existing	WML0895	150	2021	40	38	2061	$3,000.00

Table B3: Osoyoos Water Utility Asset Management - Water Distribution Network - Valve Inventory

QGIS Asset ID (Valve)	Valve Type	QGIS Asset ID (Watermain)	Diameter (mm)	Year Installed (Watermain)	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/ea.)
WVA0668	Valve - Existing	WML0925	200	2021	40	38	2061	$4,500.00
WVA0669	Valve - Existing	WML0869	250	2022	40	39	2062	$6,000.00
WVA0670	Valve - Existing	WML0868	250	2022	40	39	2062	$6,000.00
WVA0671	Valve - Existing	WML0866	250	2022	40	39	2062	$6,000.00
WVA0672	Valve - Existing	WML0864	250	2022	40	39	2062	$6,000.00
WVA0673	Valve - Existing	WML0861	150	2022	40	39	2062	$3,000.00
WVA0674	Valve - Existing	WML0891	200	2021	40	38	2061	$4,500.00
WVA0675	Valve - Existing	WML0889	200	2021	40	38	2061	$4,500.00
WVA0676	Valve - Existing	WML0887	200	2021	40	38	2061	$4,500.00
WVA0677	Valve - Existing	WML0885	200	2021	40	38	2061	$4,500.00
WVA0678	Valve - Existing	WML0884	200	2021	40	38	2061	$4,500.00
WVA0679	Valve - Existing	WML0938	150	2021	40	38	2061	$3,000.00
WVA0680	Valve - Existing	WML0870	250	2022	40	39	2062	$6,000.00
WVA0681	Valve - Existing	WML0931	150	2022	40	39	2062	$3,000.00
WVA0682	Valve - Existing	WML0852	150	2022	40	39	2062	$3,000.00
WVA0683	Valve - Existing	WML0857	200	2022	40	39	2062	$4,500.00
WVA0684	Valve - Existing	WML0902	200	2022	40	39	2062	$4,500.00
WVA0685	Valve - Existing	WML0860	200	2022	40	39	2062	$4,500.00
WVA0686	Valve - Existing	WML0856	200	2022	40	39	2062	$4,500.00
WVA0687	Valve - Existing	WML0900	200	2022	40	39	2062	$4,500.00
WVA0688	Valve - Existing	WML0900	200	2022	40	39	2062	$4,500.00
WVA0689	Valve - Existing	WML0910	250	2022	40	39	2062	$6,000.00
WVA0690	Valve - Existing	WML1108	150	2022	40	39	2062	$3,000.00
WVA0691	Valve - Existing	WML1107	100	2022	40	39	2062	$2,000.00
WVA0692	Valve - Existing	WML1106	100	2022	40	39	2062	$2,000.00
WVA0693	Hydrant Gate	WML0918	150	2021	40	38	2061	$3,000.00
WVA0694	Hydrant Gate	WML0922	150	1982	40	0	2023	$3,000.00
WVA0695	Hydrant Gate	WML1087	150	2022	40	39	2062	$3,000.00
WVA0696	Hydrant Gate	WML1071	150	2022	40	39	2062	$3,000.00
WVA0697	Hydrant Gate	WML1069	150	2022	40	39	2062	$3,000.00
WVA0698	Hydrant Gate	WML0923	150	2022	40	39	2062	$3,000.00
WVA0699	Hydrant Gate	WML1103	150	2022	40	39	2062	$3,000.00
WVA0700	Hydrant Gate	WML0873	150	2022	40	39	2062	$3,000.00
WVA0701	Hydrant Gate	WML1105	150	2022	40	39	2062	$3,000.00
WVA0702	Hydrant Gate	WML1104	150	2022	40	39	2062	$3,000.00
WVA0703	Valve - Existing	WML0892	200	2021	40	38	2061	$4,500.00
WVA0704	Valve - Existing	WML0926	200	2021	40	38	2061	$4,500.00
WVA0705	Hydrant Gate	WML0927	150	2021	40	38	2061	$3,000.00
WVA0706	Hydrant Gate	WML0933	150	2022	40	39	2062	$3,000.00
WVA0707	Hydrant Gate	WML0939	150	2005	40	22	2045	$3,000.00
WVA0708	Valve - Existing	WML0944	150	1968	40	0	2023	$3,000.00
WVA0709	Valve - Existing	WML0947	200	2021	40	38	2061	$4,500.00
WVA0710	Valve - Existing	WML0950	150	2022	40	39	2062	$3,000.00
WVA0711	Hydrant Gate	WML0949	150	1968	40	0	2023	$3,000.00
WVA0712	Valve - Existing	WML0954	150	1968	40	0	2023	$3,000.00
WVA0713	Valve - Existing	WML0954	150	1968	40	0	2023	$3,000.00
WVA0714	Valve - Existing	WML0960	150	1968	40	0	2023	$3,000.00
WVA0715	Valve - Existing	WML0962	150	1968	40	0	2023	$3,000.00
WVA0716	Valve - Existing	WML0955	150	1968	40	0	2023	$3,000.00
WVA0717	Valve - Existing	WML0961	150	1968	40	0	2023	$3,000.00
WVA0718	Valve - Existing	WML0962	150	1968	40	0	2023	$3,000.00
WVA0719	Valve - Existing	WML0387	150	1968	40	0	2023	$3,000.00
WVA0720	Hydrant Gate	WML0969	150	1975	40	0	2023	$3,000.00
WVA0721	Valve - Existing	WML0971	200	1975	40	0	2023	$4,500.00
WVA0722	Valve - Existing	WML0971	200	1975	40	0	2023	$4,500.00
WVA0723	Valve - Existing	WML0977	150	1975	40	0	2023	$3,000.00
WVA0724	Valve - Existing	WML0973	200	1975	40	0	2023	$4,500.00
WVA0725	Hydrant Gate	WML0975	150	1975	40	0	2023	$3,000.00
WVA0726	Valve - Existing	WML0846	150	1970	40	0	2023	$3,000.00
WVA0727	Valve - Chamber	WML0985	50	1982	40	0	2023	$1,600.00
WVA0727	Valve - Chamber	WML0982	250	1982	40	0	2023	$6,000.00
WVA0727	Valve - Chamber	WML0981	250	1982	40	0	2023	$6,000.00
WVA0728	Hydrant Gate	WML0992	150	2007	40	24	2047	$3,000.00
WVA0729	Valve - Existing	WML0993	150	2007	40	24	2047	$3,000.00
WVA0730	Valve - Existing	WML0998	150	2007	40	24	2047	$3,000.00
WVA0731	Valve - Existing	WML1003	150	1991	40	8	2031	$3,000.00
WVA0732	Valve - Existing	WML1002	150	2009	40	26	2049	$3,000.00

Table B3: Osoyoos Water Utility Asset Management - Water Distribution Network - Valve Inventory

QGIS Asset ID (Valve)	Valve Type	QGIS Asset ID (Watermain)	Diameter (mm)	Year Installed (Watermain)	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/ea.)
WVA0733	Hydrant Gate	WML1004	150	1991	40	8	2031	$3,000.00
WVA0734	Hydrant Gate	WML1102	150	2007	40	24	2047	$3,000.00
WVA0735	Valve - Existing	WML1007	250	1982	40	0	2023	$6,000.00
WVA0736	Valve - Existing	WML1005	150	1982	40	0	2023	$3,000.00
WVA0737	Valve - Existing	WML0714	250	1982	40	0	2023	$6,000.00
WVA0738	Valve - Existing	WML0021	200	1970	40	0	2023	$4,500.00
WVA0739	Valve - Existing	WML0044	250	1959	40	0	2023	$6,000.00
WVA0740	Valve - Existing	WML0044	250	1959	40	0	2023	$6,000.00
WVA0741	Valve - Existing	WML0449	350	2021	40	38	2061	$11,000.00
WVA0742	Valve - Existing	WML0451	350	2021	40	38	2061	$11,000.00
WVA0743	Valve - Existing	WML1093	300	1987	40	4	2027	$7,500.00
WVA0744	Valve - Existing	WML1017	350	2021	40	38	2061	$11,000.00
WVA0745	Valve - Existing	WML1023	150	1977	40	0	2023	$3,000.00
WVA0746	Hydrant Gate	WML1028	150	1977	40	0	2023	$3,000.00
WVA0747	Valve - Existing	WML1024	150	1977	40	0	2023	$3,000.00
WVA0748	Valve - Existing	WML1027	150	1977	40	0	2023	$3,000.00
WVA0749	Valve - Existing	WML1022	150	1977	40	0	2023	$3,000.00
WVA0750	Valve - Existing	WML1022	150	1977	40	0	2023	$3,000.00
WVA0751	Valve - Existing	WML0156	250	1980	40	0	2023	$6,000.00
WVA0752	Valve - Existing	WML0150	250	1995	40	12	2035	$6,000.00
WVA0753	Valve - Existing	WML0298	150	1959	40	0	2023	$3,000.00
WVA0754	Valve - Existing	WML0242	150	1959	40	0	2023	$3,000.00
WVA0755	Valve - Existing	WML0271	150	1959	40	0	2023	$3,000.00
WVA0756	Valve - Existing	WML1049	50	2021	40	38	2061	$1,600.00
WVA0757	Valve - Existing	WML0366	150	1994	40	11	2034	$3,000.00
WVA0758	Valve - Existing	WML1051	150	1994	40	11	2034	$3,000.00
WVA0759	Valve - Existing	WML1053	150	1994	40	11	2034	$3,000.00
WVA0760	Valve - Existing	WML1056	100	1994	40	11	2034	$2,000.00
WVA0761	Valve - Existing	WML1057	150	1994	40	11	2034	$3,000.00
WVA0762	Valve - Existing	WML1056	100	1994	40	11	2034	$2,000.00
WVA0763	Valve - Existing	WML1059	150	2021	40	38	2061	$3,000.00
WVA0764	Valve - Existing	WML1059	150	2021	40	38	2061	$3,000.00
WVA0765	Valve - Existing	WML0723	200	2011	40	28	2051	$4,500.00
WVA0766	Hydrant Gate	WML0920	150	2021	40	38	2061	$3,000.00
WVA0767	Hydrant Gate	WML0919	150	2021	40	38	2061	$3,000.00
WVA0768	Hydrant Gate	WML0924	150	2021	40	38	2061	$3,000.00
WVA0769	Valve - Existing	WML0508	150	1991	40	8	2031	$3,000.00
WVA0770	Valve - Existing	WML0027	200	1975	40	0	2023	$4,500.00
WVA0771	Hydrant Gate	WML0917	150	2021	40	38	2061	$3,000.00
WVA0772	Hydrant Gate	WML0916	150	2021	40	38	2061	$3,000.00
WVA0773	Hydrant Gate	WML0915	150	2021	40	38	2061	$3,000.00
WVA0774	Valve - Existing	WML0914	150	2021	40	38	2061	$3,000.00
WVA0775	Hydrant Gate	WML0921	150	2021	40	38	2061	$3,000.00
WVA0776	Hydrant Gate	WML0913	150	2021	40	38	2061	$3,000.00
WVA0777	Hydrant Gate	WML0912	200	2021	40	38	2061	$4,500.00
WVA0778	Hydrant Gate	WML1008	150	1982	40	0	2023	$3,000.00
WVA0779	Valve - Existing	WML0408	200	1959	40	0	2023	$4,500.00
WVA0780	Valve - Existing	WML1094	200	1959	40	0	2023	$4,500.00
WVA0781	Valve - Chamber	WML0473	250	2012	40	29	2052	$6,000.00
WVA0782	Hydrant Gate	WML1058	150	2012	40	29	2052	$3,000.00
WVA0783	Valve - Existing	WML1042	150	2021	40	38	2061	$3,000.00
WVA0784	Valve - Existing	WML1045	150	2021	40	38	2061	$3,000.00
WVA0785	Valve - Existing	WML1043	150	2021	40	38	2061	$3,000.00
WVA0786	Valve - Existing	WML1049	50	2021	40	38	2061	$1,600.00
WVA0787	Valve - Existing	WML1050	150	2021	40	38	2061	$3,000.00
WVA0788	Valve - Existing	WML1047	150	2021	40	38	2061	$3,000.00
		WML0715	150	1982	40	0	2023	$3,000.00

Table B4: Osoyoos Water Utility Asset Management - Water System - Pressure Reducing Valve Station Inventory

Item Description	Year Installed	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Current Total Replacement Cost
340 Reservoir PRV Station	1970	50	0	2023	$50,000.00
SUBTOTAL					**$50,000.00**

Table B5: Osoyoos Water Utility - Water System - Pressure Reducing Valve Station Building

Item Description	Year Installed	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Current Total Replacement Cost
340 Reservoir PRV Station	1970	50	0	2023	$150,000.00
SUBTOTAL					**$150,000.00**

Table B6: Osoyoos Water Utility - Water System - Pressure Reducing Valve Station Electrical

Item Description	Year Installed	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Current Total Replacement Cost
340 Reservoir PRV Station	1970	50	0	2023	$15,000.00
SUBTOTAL					**$15,000.00**

Table B7: Osoyoos Water Utility Asset Management - Water System - Pump Station and Supply Well Pump Inventory

Item Description	Power (HP)	Year Installed	Expected Service Life	Useful Life Remaining	Quantity	Estimated Replacement Date	Current Total Replacement Cost
340 Reservoir Booster to 402 Reservoir Pumps and Piping	25	1980	20	0	2	2023	$300,000.00
Fairway Hills Booster Station Pumps and Piping		1993	20	0		2023	$300,000.00
Water Supply Well #1	50	1965	20	0	1	2023	$120,000.00
Water Supply Well #3		1971	20	0	1	2023	$120,000.00
Water Supply Well #4		1979	20	0	1	2023	$120,000.00
Water Supply Well #5	100	1986	20	0	1	2023	$150,000.00
Water Supply Well #6		1995	20	0	1	2023	$120,000.00
Water Supply Well #8	75	1995	20	0	1	2023	$120,000.00
SUBTOTAL							**$1,350,000.00**

Table B8: Osoyoos Water Utility Asset Management - Water System - Pump Station and Supply Well Pump Building Inventory

Item Description	Year Installed	Useful Life	Expected Service Life	Quantity	Estimated Replacement Date	Current Total Replacement Cost
340 Reservoir to 402 Reservoir PS Building	1980	75	32	2	2055	$300,000.00
Fairway Hills Booster Station Building	1993	75	45		2068	$300,000.00
Water Supply Well #1 Pump House	1965	75	17	1	2040	$250,000.00
Water Supply Well #3 Pump House	1971	75	23	1	2046	$250,000.00
Water Supply Well #4 and Well #5 Pump House	1979	75	31	1	2054	$300,000.00
Water Supply Well #6 Pump House	1995	75	47	1	2070	$250,000.00
Water Supply Well #8 Pump House	1995	75	47	1	2070	$250,000.00
SUBTOTAL						**$1,900,000.00**

Table B9: Osoyoos Water Utility Asset Management - Water System - Pump Station and Supply Well Pump Electrical Inventory

Item Description	Year Installed	Useful Life	Expected Service Life	Quantity	Estimated Replacement Date	Current Total Replacement Cost
340 Reservoir to 402 Reservoir PS Electrical	1980	15	0	2	2023	$200,000.00
Fairway Hills Booster Station Electrical		15	0		2023	$150,000.00
Water Supply Well #1 Pump House Electrical	1965	15	0	1	2023	$80,000.00
Water Supply Well #3 Pump House Electrical	1971	15	0	1	2023	$80,000.00
Water Supply Well #4 and Well #5 Pump House Electrical	1979	15	0	1	2023	$140,000.00
Water Supply Well #6 Pump House Electrical	1995	15	0	1	2023	$80,000.00
Water Supply Well #8 Pump House Electrical	1995	15	0	1	2023	$80,000.00
SUBTOTAL						**$810,000.00**

Fairway booster station installation year assumed to be the same as the dividend ridge reservoir.

Table B10: Osoyoos Water Utility Asset Management - Water System - Reservoirs Inventory

Item Description	Maximum Supply (MLD)	Total Depth (m)	Diameter (mm)	Year Installed	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Current Total Replacement Cost
Water Supply Well #1	1.6	30.2	300	1965	60	2	2025	$250,000.00
Water Supply Well #3	3.4	53.1	300	1971	60	8	2031	$250,000.00
Water Supply Well #4	3.9	98.7	200	1979	60	16	2039	$250,000.00
Water Supply Well #5	6.5	86.9	400	1986	60	23	2046	$300,000.00
Water Supply Well #6	3.5	46.9	250	1995	60	32	2055	$250,000.00
Water Supply Well #7 (Not in-use)	2.2	64	250	1995	60	32	2055	$250,000.00
Water Supply Well #8	3.5	43.6	300	1995	60	32	2055	$250,000.00
SUBTOTAL	**24.6**							$1,800,000

Table B11: Osoyoos Water Utility Asset Management - Water System - Reservoirs Inventory

Item Description	Material	Capacity (m^3)	Year Installed	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Unit Replacement Cost ($/$m^3$.)	Current Total Replacement Cost
340 Zone	Concrete	1350	1965	50	0	2023	$1,800.00	$2,430,000.00
340 Zone	Concrete	2550	2012	50	39	2062	$1,800.00	$4,590,000.00
Industrial Park	Concrete	1100	1981	50	8	2031	$1,800.00	$1,980,000.00
Dividend Ridge	Concrete	1100	1993	50	20	2043	$1,800.00	$1,980,000.00
SUBTOTAL								**$10,980,000.00**

Install year of Industrial Park reservoir corresponds to legal survey plan from the RDOS Parcel Identifier Tool.

Table B12: Osoyoos Water Utility Asset Management - Chlorination

Item Description	Year Installed	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Current Total Replacement Cost
Well #1 Chlorine Disinfection		25	0	2023	$50,000
Well #3 Chlorine Disinfection	2003	25	5	2028	$50,000
Well #4 and #5 Chlorine Disinfection	2019	25	21	2044	$50,000
Well #6 Chlorine Disinfection		25	0	2023	$50,000
Well #8 Chlorine Disinfection	2020	25	22	2045	$50,000
SUBTOTAL					**$250,000.00**

Table B13: Osoyoos Water Utility Asset Management - Chlorination Building

Item Description	Year Installed	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Current Total Replacement Cost
Well #1 Chlorine Disinfection Building		75	0	2023	$100,000
Well #3 Chlorine Disinfection Building	2003	75	55	2078	$100,000
Well #4 and #5 Chlorine Disinfection Building	2019	75	71	2094	$100,000
Well #6 Chlorine Disinfection Building		75	0	2023	$100,000
Well #8 Chlorine Disinfection Building	2020	75	72	2095	$100,000
SUBTOTAL					**$500,000.00**

Table B14: Osoyoos Water Utility Asset Management - Chlorination Electrical

Item Description	Year Installed	Expected Service Life	Useful Life Remaining	Estimated Replacement Date	Current Total Replacement Cost
Well #1 Chlorine Disinfection Electrical		15	0	2023	$10,000
Well #3 Chlorine Disinfection Electrical	2003	15	0	2023	$10,000
Well #4 and #5 Chlorine Disinfection Electrical	2019	15	11	2034	$10,000
Well #6 Chlorine Disinfection Electrical		15	0	2023	$10,000
Well #8 Chlorine Disinfection Electrical	2020	15	12	2035	$10,000
SUBTOTAL					**$50,000.00**

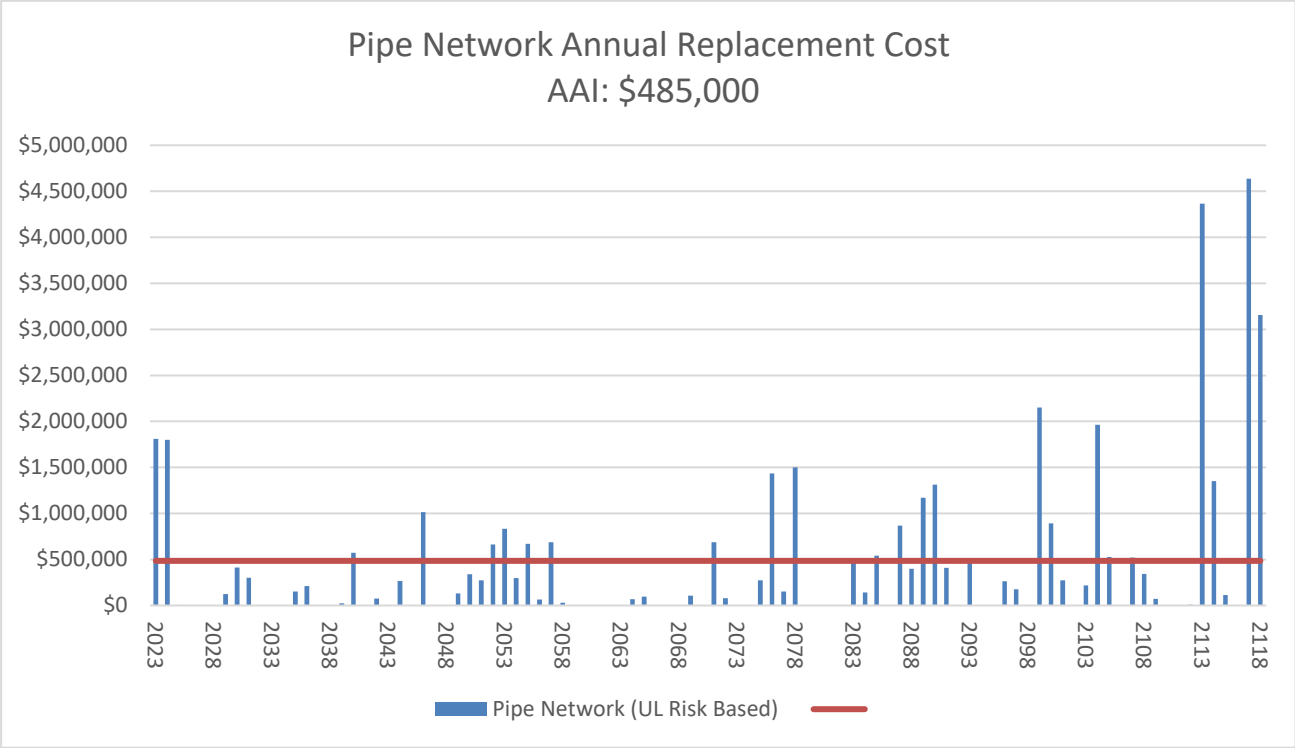
Infrastructure without a known installation year are assumed to be replaced in 2023.

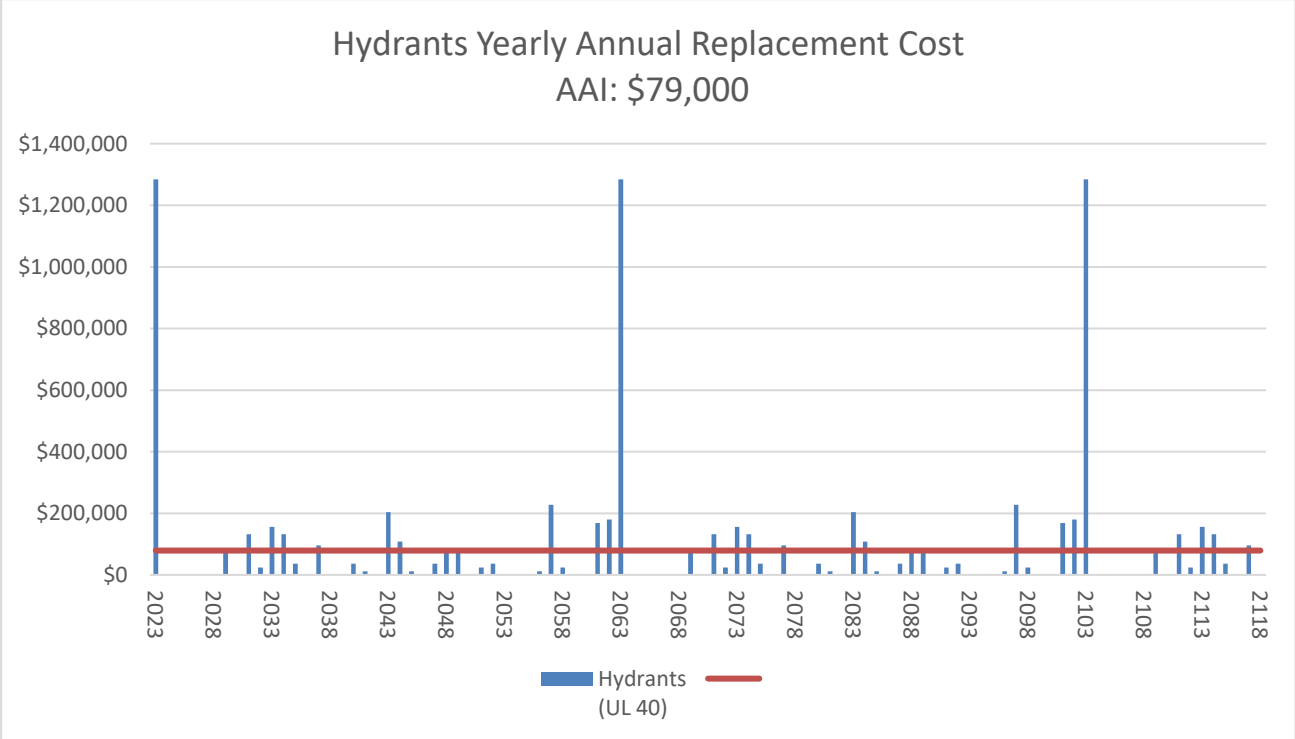
Table B15: Osoyoos Water Utility Asset Management - Unit Prices and Historical Cost Estimates

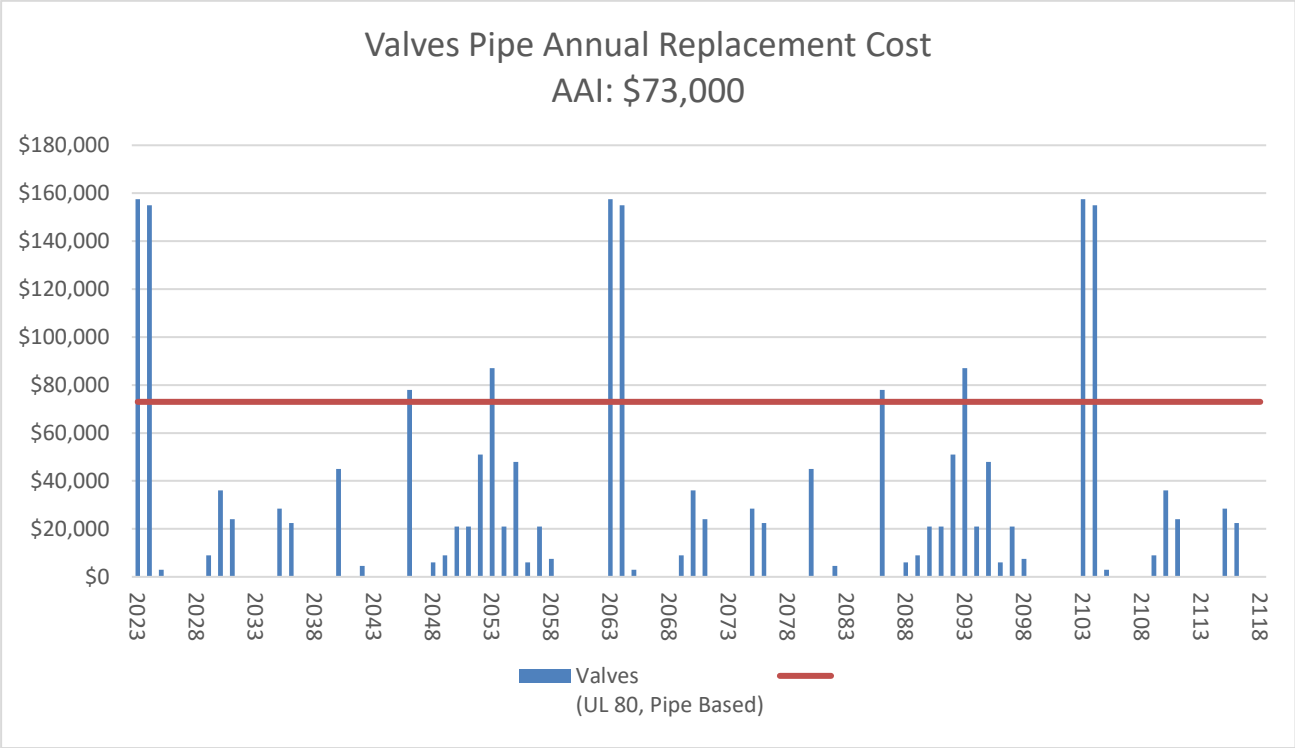
	Description				Unit	Expected Unit Cost*	Comments
						2023	
1.1	50 Ø	PVC	50-PVC	Watermain	lm	$300	Assume all pipe below 150 mm diameter will be replaced with 150 diameter
1.2	50 Ø	HDPE	50-HDPE	Watermain	lm	$300	Assume all pipe below 150 mm diameter will be replaced with 150 diameter
1.3	75 Ø	PVC	75-PVC	Watermain	lm	$300	Assume all pipe below 150 mm diameter will be replaced with 150 diameter
	75 Ø	AC	75-AC	Watermain	lm	$300	Assume all pipe below 150 mm diameter will be replaced with 150 diameter
1.4	100 Ø	PVC	100-PVC	Watermain	lm	$300	Assume all pipe below 150 mm diameter will be replaced with 150 diameter
	100 Ø	AC	100-AC	Watermain	lm	$300	Assume all pipe below 150 mm diameter will be replaced with 150 diameter
1.5	150 Ø	PVC	150-PVC	Watermain	lm	$300	
	150 Ø	AC	150-AC	Watermain	lm	$300	Replace with PVC
1.6	200 Ø	PVC	200-PVC	Watermain	lm	$350	
	200 Ø	AC	200-AC	Watermain	lm	$350	Replace with PVC
1.7	250 Ø	PVC	250-PVC	Watermain	lm	$450	
1.8	250 Ø	DI	250-DI	Watermain	lm	$1,700	Directional Drilling Ductile Iron Pipe to be replaced with HDPE Pipe
	250 Ø	AC	250-AC	Watermain	lm	$450	Replace with PVC
1.9	300 Ø	PVC	300-PVC	Watermain	lm	$500	
1.10	300 Ø	DI	300-DI	Watermain		$500	Replace with PVC
	300 Ø	AC	300-AC	Watermain	lm	$500	Replace with PVC
1.1	350 Ø	PVC	350-PVC	Watermain	lm	$650	
1.1	350 Ø	HDPE	350-HDPE	Watermain	lm	$1,700	Directional Drilling
1.1	400 Ø	PVC	400-PVC	Watermain	lm	$750	
1.1	450 Ø	HDPE	450-HDPE	Watermain	lm	$2,000	Directional Drilling
3.1	50 Ø			Gate Valve		$1,600	
3.2	75 Ø			Gate Valve		$1,800	
3.3	100 Ø			Gate Valve	ea.	$2,000	
3.4	150 Ø			Gate Valve		$3,000	
3.5	200 Ø			Gate Valve		$4,500	
3.6	250 Ø			Gate Valve		$6,000	
3.7	300 Ø			Gate Valve		$7,500	
3.8	350 Ø			Gate Valve		$11,000	
3.9	400 Ø			Gate Valve		$15,000	
4.0	Fire Hydrant (complete)				ea.	$12,000	

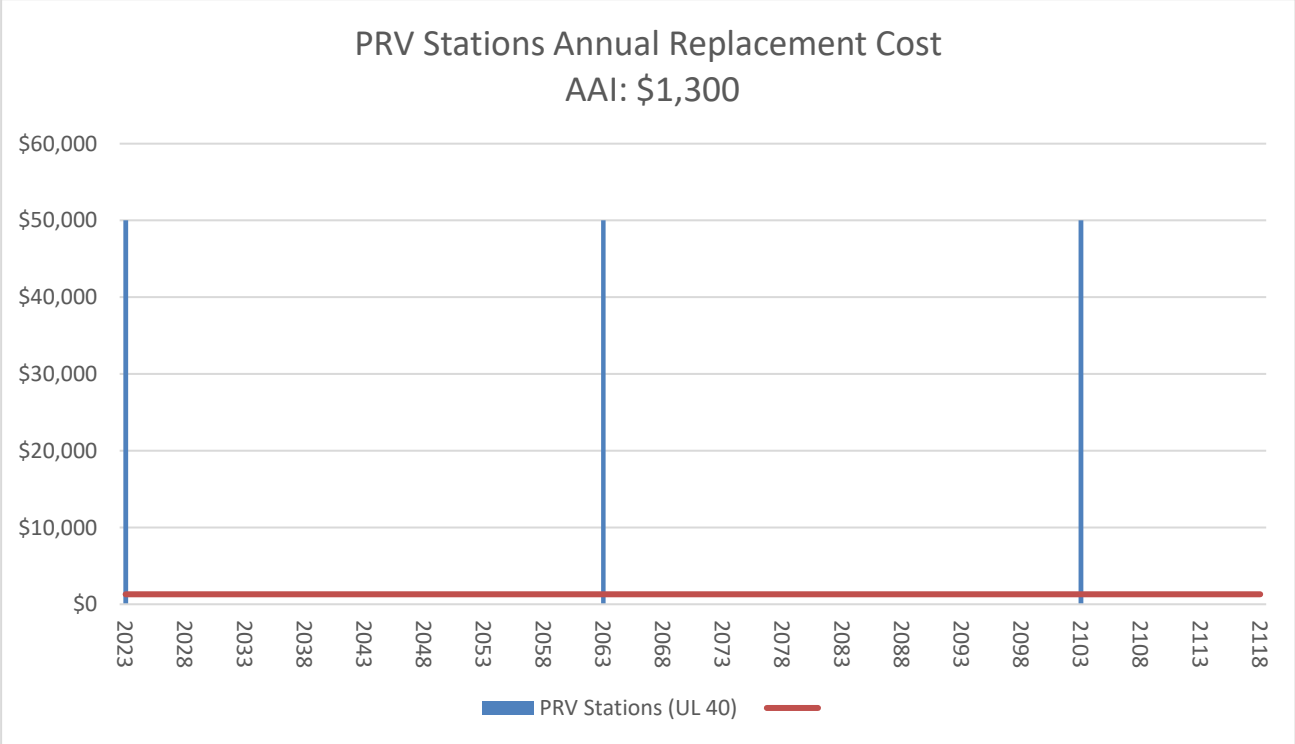
APPENDIX C

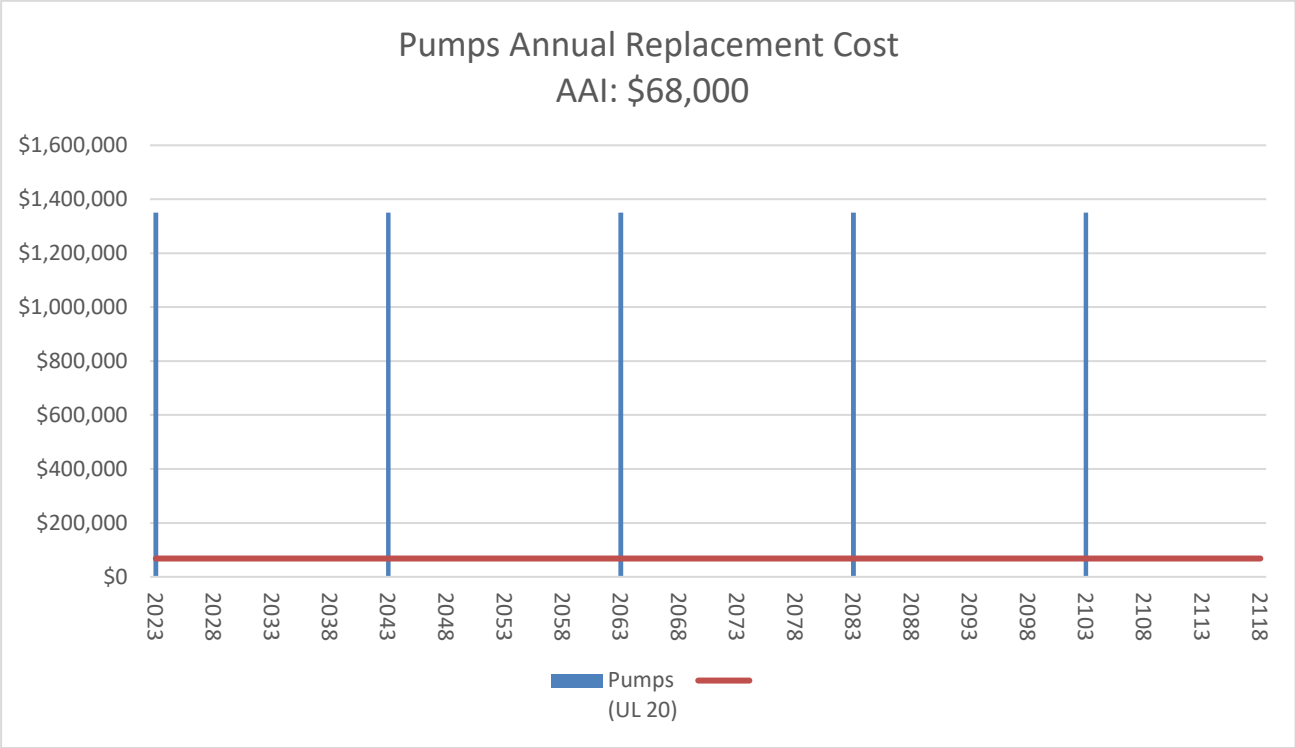
Annual Replacement Costs for System Components

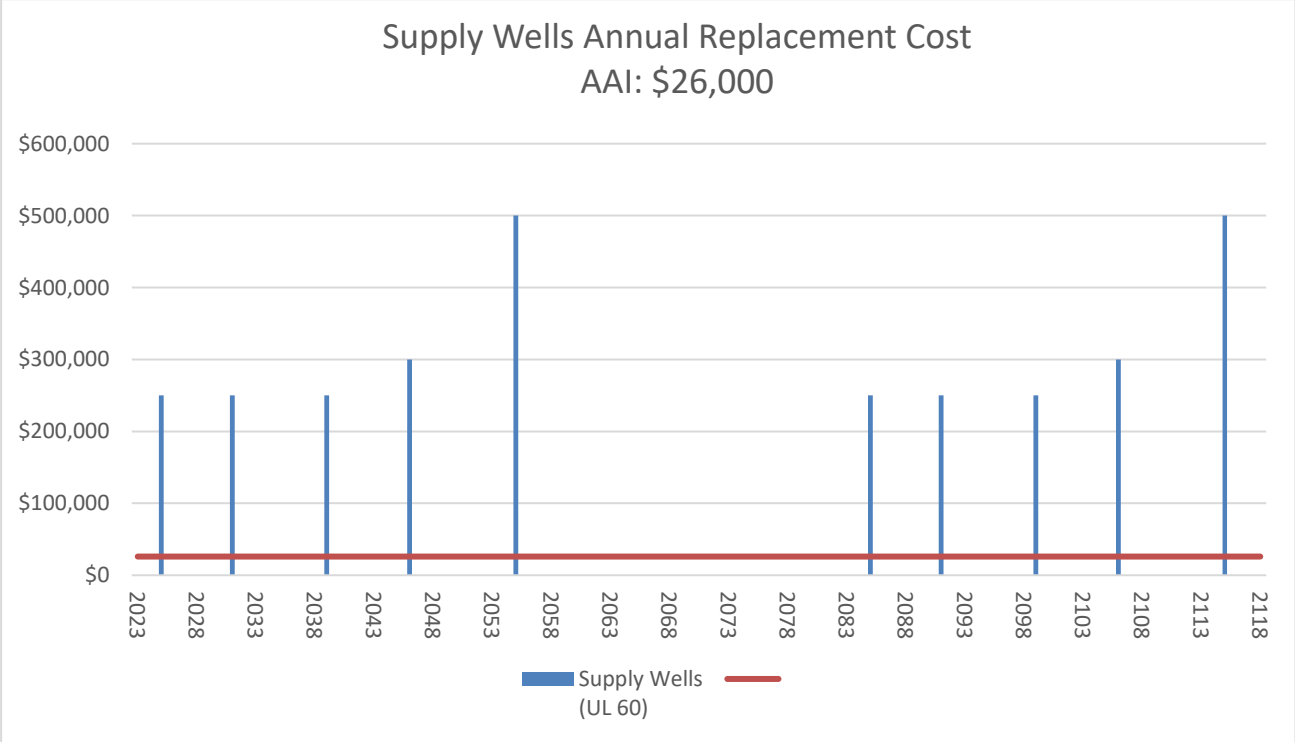

Pipe Network Annual Replacement Cost
AAI: $485,000
$5,000,000
$4,500,000
$4,000,000
$3,500,000
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
2023
2028
2033
2038
2043
2048
2053
2058
2063
2068
2073
2078
2083
2088
2093
2098
2103
2108
2113
2118
Pipe Network (UL Risk Based)

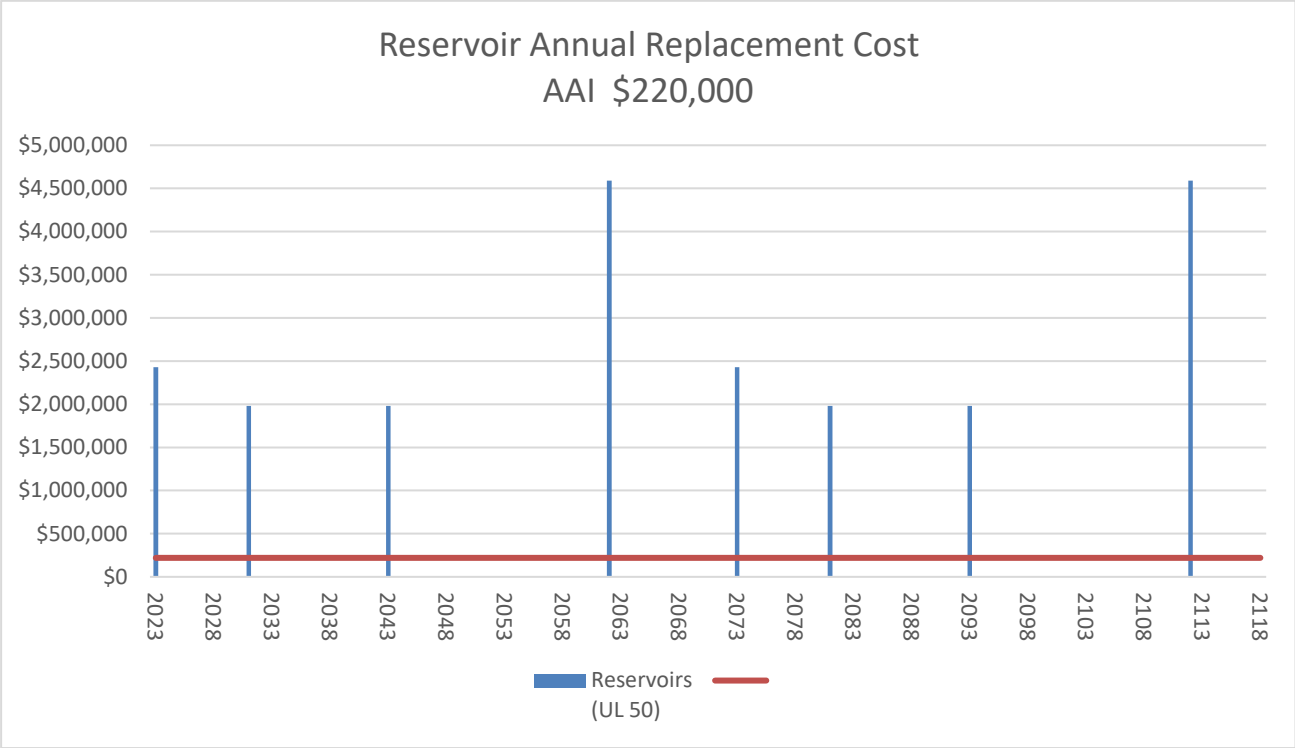

Hydrants Yearly Annual Replacement Cost
AAI: $79,000
$1,400,000
$1,200,000
$1,000,000
$800,000
$600,000
$400,000
$200,000
$0
2023
2028
2033
2038
2043
2048
2053
2058
2063
2068
2073
2078
2083
2088
2093
2098
2103
2108
2113
2118
Hydrants
(UL 40)

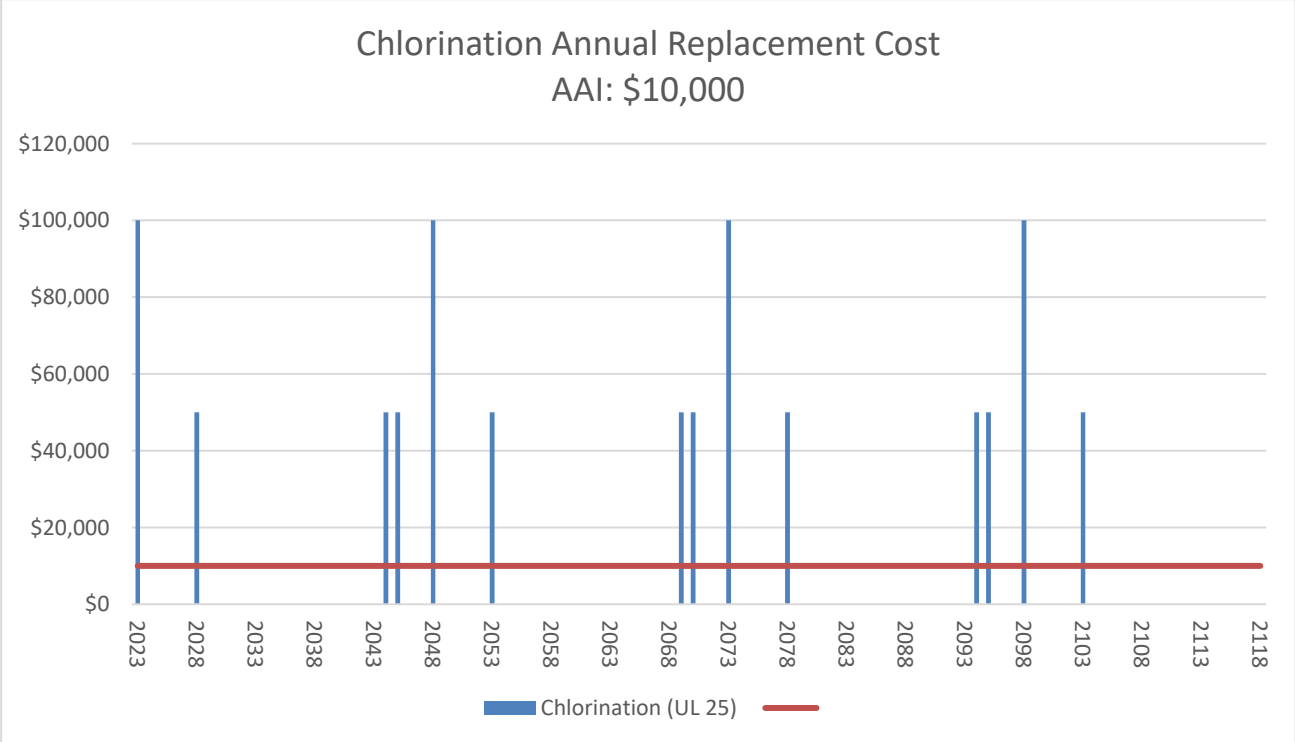

Valves Pipe Annual Replacement Cost
AAI: $73,000
$180,000
$160,000
$140,000
$120,000
$100,000
$80,000
$60,000
$40,000
$20,000
$0
2023
2028
2033
2038
2043
2048
2053
2058
2063
2068
2073
2078
2083
2088
2093
2098
2103
2108
2113
2118
Valves
(UL 80, Pipe Based)

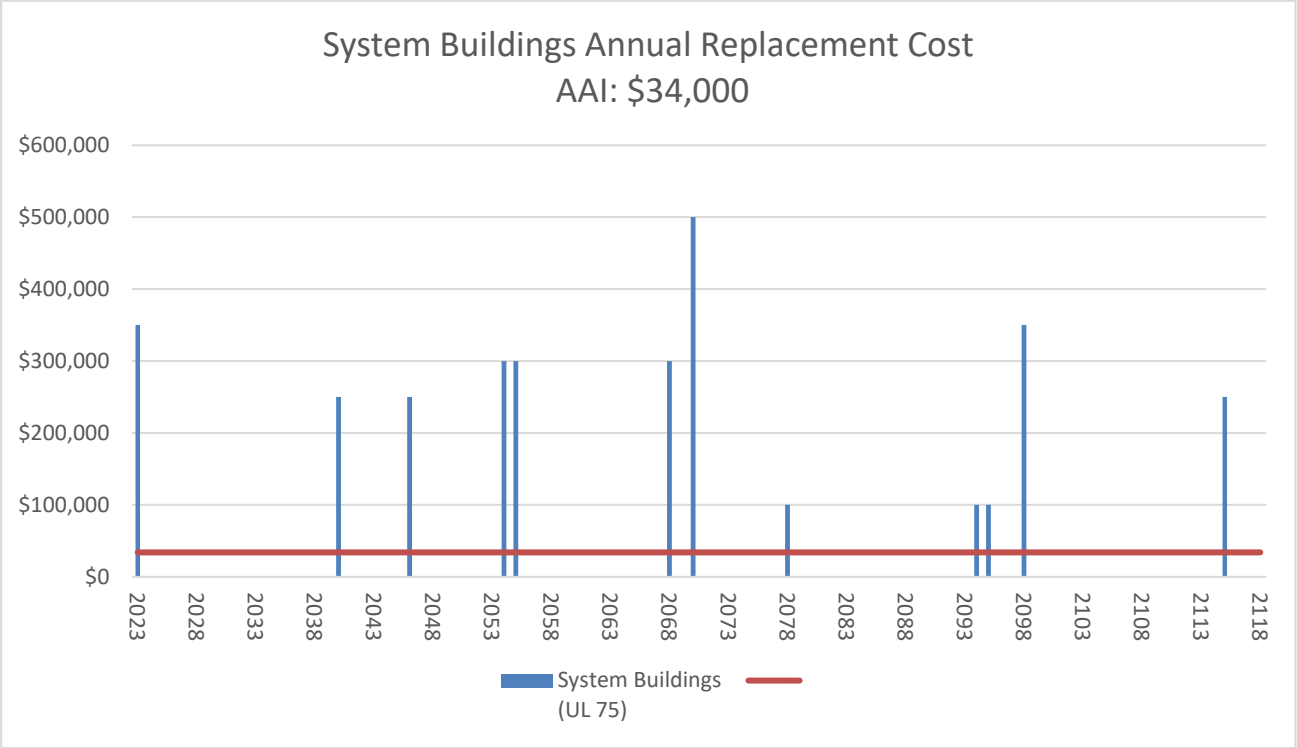

PRV Stations Annual Replacement Cost
AAI: $1,300
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0
2023
2028
2033
2038
2043
2048
2053
2058
2063
2068
2073
2078
2083
2088
2093
2098
2103
2108
2113
2118
PRV Stations (UL 40)

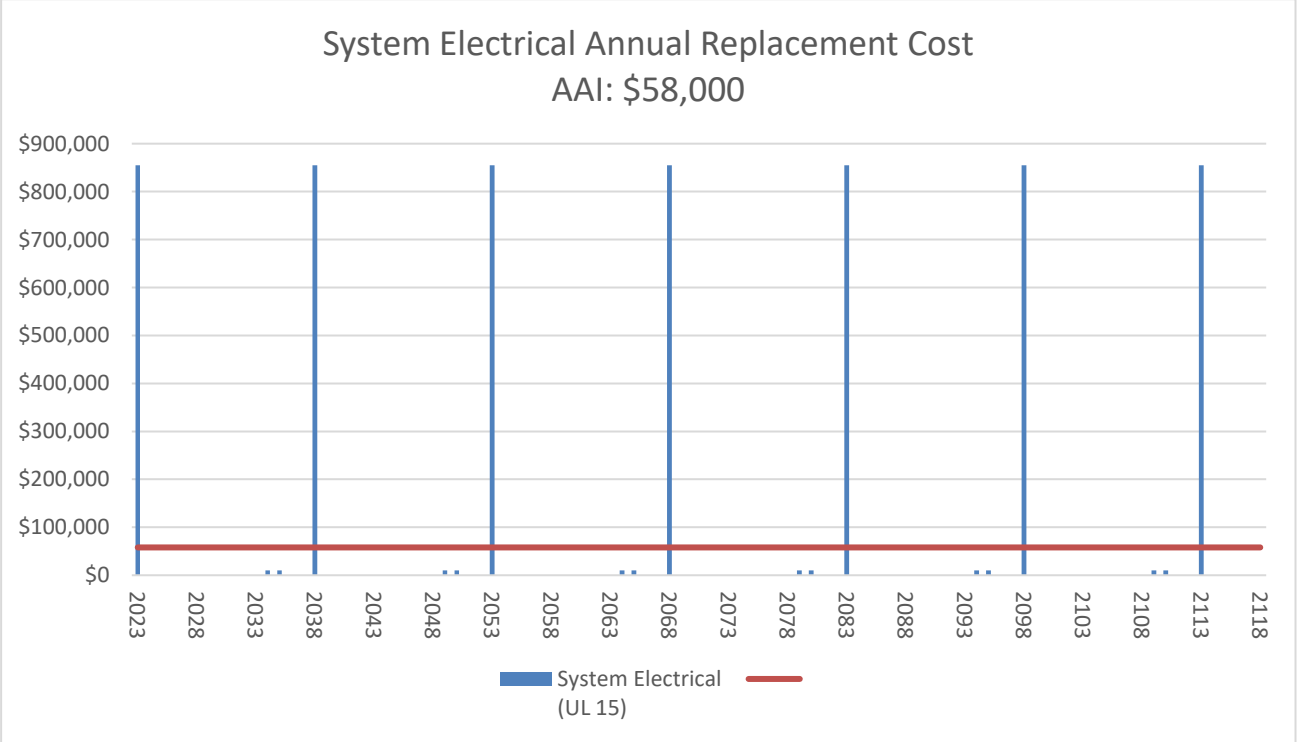

Pumps Annual Replacement Cost
AAI: $68,000
$1,600,000
$1,400,000
$1,200,000
$1,000,000
$800,000
$600,000
$400,000
$200,000
$0
2023
2028
2033
2038
2043
2048
2053
2058
2063
2068
2073
2078
2083
2088
2093
2098
2103
2108
2113
2118
Pumps
(UL 20)

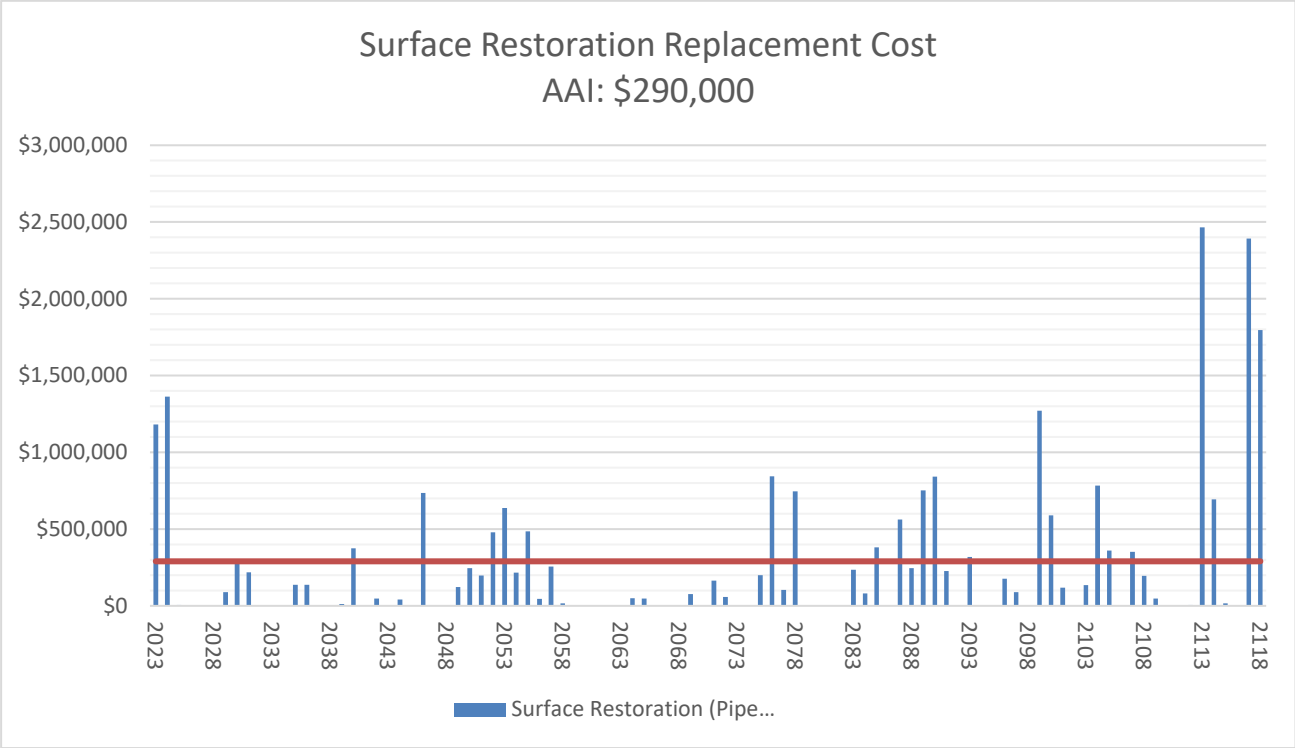

Supply Wells Annual Replacement Cost
AAI: $26,000
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$0
2023
2028
2033
2038
2043
2048
2053
2058
2063
2068
2073
2078
2083
2088
2093
2098
2103
2108
2113
2118
Supply Wells
(UL 60)

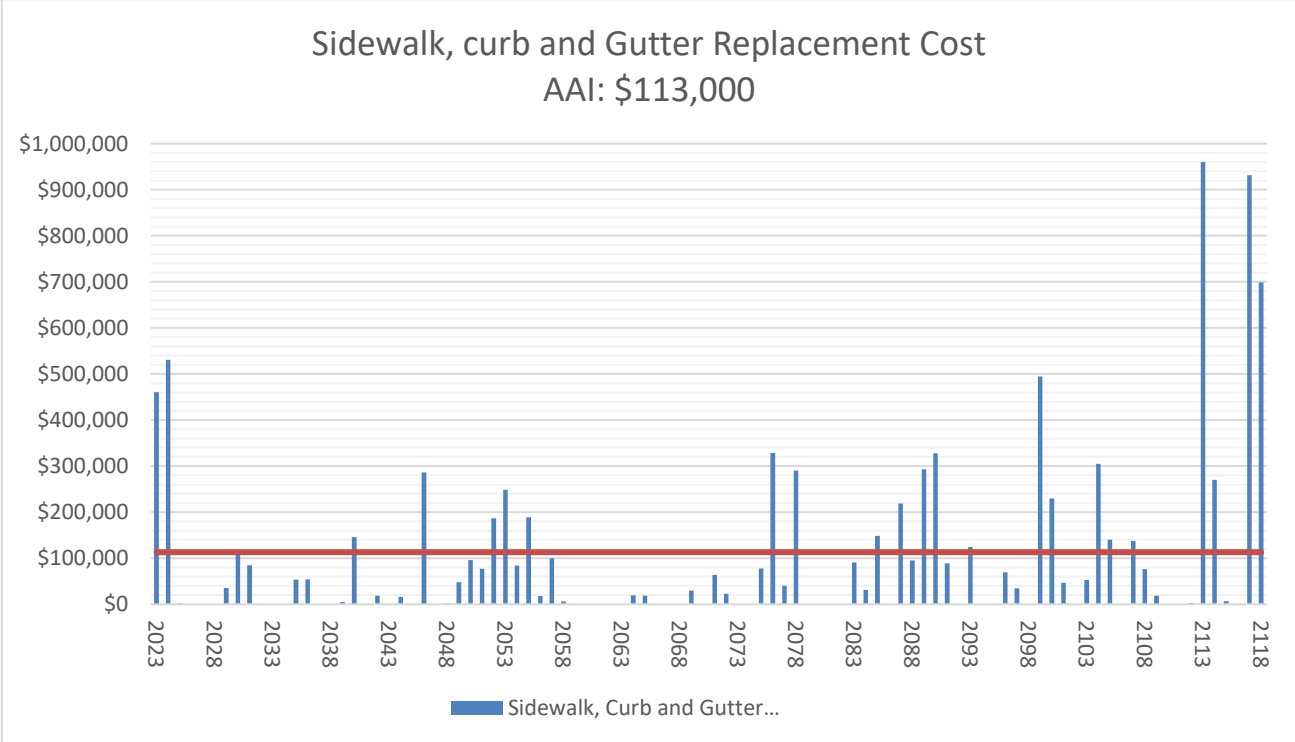

Reservoir Annual Replacement Cost
AAI $220,000
$5,000,000
$4,500,000
$4,000,000
$3,500,000
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
2023
2028
2033
2038
2043
2048
2053
2058
2063
2068
2073
2078
2083
2088
2093
2098
2103
2108
2113
2118
Reservoirs
(UL 50)

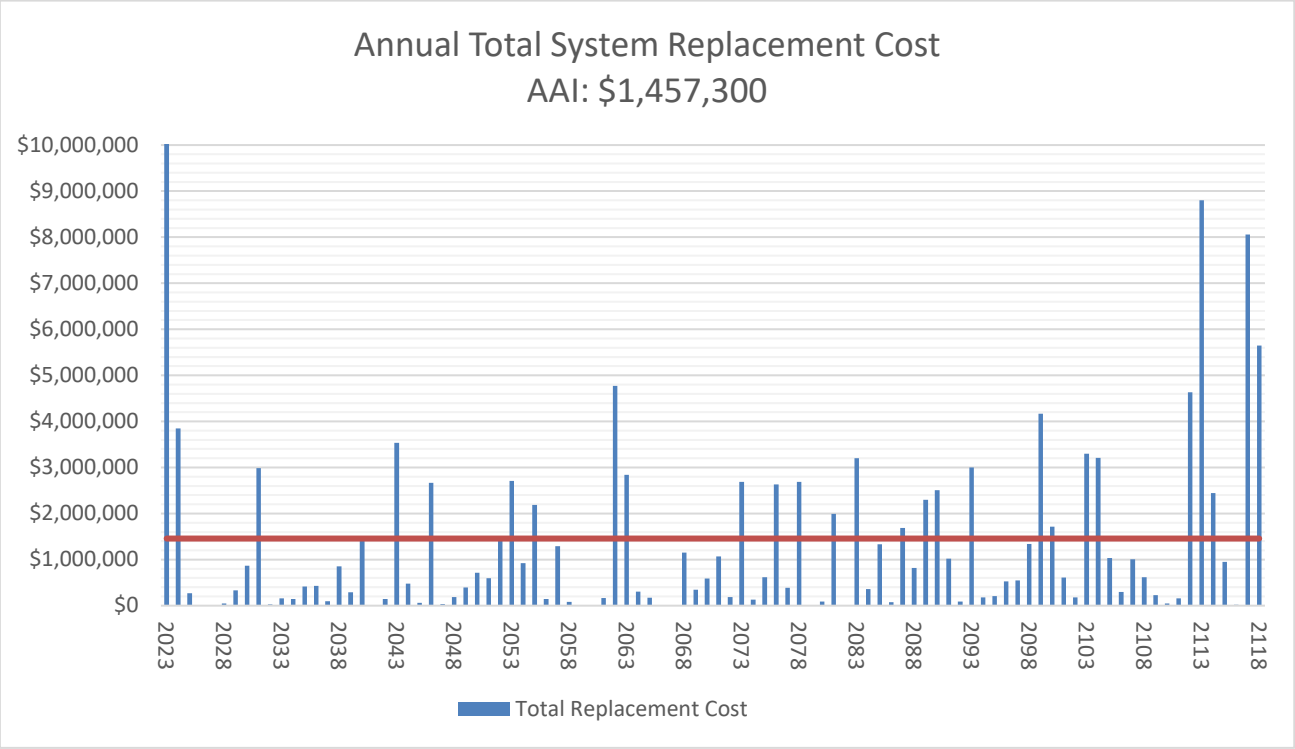

Chlorination Annual Replacement Cost
AAI: $10,000
$120,000
$100,000
$80,000
$60,000
$40,000
$20,000
$0
2023
2028
2033
2038
2043
2048
2053
2058
2063
2068
2073
2078
2083
2088
2093
2098
2103
2108
2113
2118
Chlorination (UL 25)


System Buildings Annual Replacement Cost
AAI: $34,000
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$0
2023
2028
2033
2038
2043
2048
2053
2058
2063
2068
2073
2078
2083
2088
2093
2098
2103
2108
2113
2118
System Buildings
(UL 75)


System Electrical Annual Replacement Cost
AAI: $58,000
$900,000
$800,000
$700,000
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$0
2023
2028
2033
2038
2043
2048
2053
2058
2063
2068
2073
2078
2083
2088
2093
2098
2103
2108
2113
2118
System Electrical
(UL 15)


Surface Restoration Replacement Cost
AAI: $290,000
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
2023
2028
2033
2038
2043
2048
2053
2058
2063
2068
2073
2078
2083
2088
2093
2098
2103
2108
2113
2118
Surface Restoration (Pipe…


Sidewalk, curb and Gutter Replacement Cost
AAI: $113,000
$1,000,000
$900,000
$800,000
$700,000
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$0
2023
2028
2033
2038
2043
2048
2053
2058
2063
2068
2073
2078
2083
2088
2093
2098
2103
2108
2113
2118
Sidewalk, Curb and Gutter…


Annual Total System Replacement Cost
AAI: $1,457,300
$10,000,000
$9,000,000
$8,000,000
$7,000,000
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$0
2023
2028
2033
2038
2043
2048
2053
2058
2063
2068
2073
2078
2083
2088
2093
2098
2103
2108
2113
2118
Total Replacement Cost

APPENDIX D

Reserve Balance Forecast

Table D1: Osoyoos Water Utility Asset Management - Forecast Reserve Account Balance (2023 Dollar Value)

Current Reserve Balance: $ 3,033,600.50

	Pipe Network (UL Risk Based)	Hydrants (UL 40)	Valves (UL 80, Pipe Based)	PRV Stations (UL 40)	Pumps (UL 20)	Supply Wells (UL 60)	Reservoirs (UL 50)	Chlorination (UL 25)	System Buildings (UL 75)	System Electrical (UL 15)	Surface Restoration (Pipe Based)	Sidewalk, Curb and Gutter (Pipe Based)	*Total Replacement Cost*	*Average Annual Investment*	Reserve Balance
2023	$ 1,811,887.41	$1,284,000.00	$ 157,500.00	$ 50,000.00	$1,350,000.00	$ -	$ 2,430,000.00	$ 100,000.00	$ 350,000.00	$ 855,000.00	$1,182,031.91	$ 460,225.29	*$ 10,030,644.61*	*$ 1,457,300.00*	$ (5,539,744.11)
2024	$ 1,799,560.07	$ -	$ 155,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$1,362,449.89	$ 530,471.21	*$ 3,847,481.17*	*$ 1,457,300.00*	$ (7,929,925.28)
2025	$ 7,483.84	$ -	$ 3,000.00	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$ 5,418.78	$ 2,109.81	*$ 268,012.43*	*$ 1,457,300.00*	$ (6,740,637.71)
2026	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ -*	*$ 1,457,300.00*	$ (5,283,337.71)
2027	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ -*	*$ 1,457,300.00*	$ (3,826,037.71)
2028	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ -	$ -	*$ 50,000.00*	*$ 1,457,300.00*	$ (2,418,737.71)
2029	$ 124,487.14	$ 72,000.00	$ 9,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 90,136.66	$ 35,094.80	*$ 330,718.60*	*$ 1,457,300.00*	$ (1,292,156.31)
2030	$ 414,096.43	$ -	$ 36,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 299,832.35	$ 116,740.02	*$ 866,668.80*	*$ 1,457,300.00*	$ (701,525.11)
2031	$ 300,773.56	$ 132,000.00	$ 24,000.00	$ -	$ -	$ 250,000.00	$ 1,980,000.00	$ -	$ -	$ -	$ 217,779.33	$ 84,792.60	*$ 2,989,345.49*	*$ 1,457,300.00*	$ (2,233,570.60)
2032	$ -	$ 24,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 24,000.00*	*$ 1,457,300.00*	$ (800,270.60)
2033	$ -	$ 156,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 156,000.00*	*$ 1,457,300.00*	$ 501,029.40
2034	$ -	$ 132,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ -	$ -	*$ 142,000.00*	*$ 1,457,300.00*	$ 1,816,329.40
2035	$ 153,021.87	$ 36,000.00	$ 28,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ 136,205.94	$ 53,031.92	*$ 416,759.74*	*$ 1,457,300.00*	$ 2,856,869.66
2036	$ 211,957.50	$ -	$ 22,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 138,123.73	$ 53,778.61	*$ 426,359.84*	*$ 1,457,300.00*	$ 3,887,809.82
2037	$ -	$ 96,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 96,000.00*	*$ 1,457,300.00*	$ 5,249,109.82
2038	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 855,000.00	$ -	$ -	*$ 855,000.00*	*$ 1,457,300.00*	$ 5,851,409.82
2039	$ 24,404.11	$ -	$ -	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$ 12,233.17	$ 4,763.00	*$ 291,400.28*	*$ 1,457,300.00*	$ 7,017,309.54
2040	$ 574,044.71	$ 36,000.00	$ 45,000.00	$ -	$ -	$ -	$ -	$ -	$ 250,000.00	$ -	$ 374,080.63	$ 145,648.66	*$ 1,424,774.00*	*$ 1,457,300.00*	$ 7,049,835.55
2041	$ -	$ 12,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 12,000.00*	*$ 1,457,300.00*	$ 8,495,135.55
2042	$ 74,223.93	$ -	$ 4,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 48,368.60	$ 18,832.36	*$ 145,924.89*	*$ 1,457,300.00*	$ 9,806,510.66
2043	$ -	$ 204,000.00	$ -	$ -	$1,350,000.00	$ -	$ 1,980,000.00	$ -	$ -	$ -	$ -	$ -	*$ 3,534,000.00*	*$ 1,457,300.00*	$ 7,729,810.66
2044	$ 266,691.00	$ 108,000.00	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ 40,416.57	$ 15,736.23	*$ 480,843.80*	*$ 1,457,300.00*	$ 8,706,266.85
2045	$ -	$ 12,000.00	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ -	$ -	*$ 62,000.00*	*$ 1,457,300.00*	$ 10,101,566.85
2046	$ 1,014,741.00	$ -	$ 78,000.00	$ -	$ -	$ 300,000.00	$ -	$ -	$ 250,000.00	$ -	$ 734,737.49	$ 286,070.77	*$ 2,663,549.26*	*$ 1,457,300.00*	$ 8,895,317.60
2047	$ -	$ 36,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 36,000.00*	*$ 1,457,300.00*	$ 10,316,617.60
2048	$ 5,863.37	$ 72,000.00	$ 6,000.00	$ -	$ -	$ -	$ -	$ 100,000.00	$ -	$ -	$ 4,245.15	$ 1,652.85	*$ 189,761.37*	*$ 1,457,300.00*	$ 11,584,156.22
2049	$ 129,994.44	$ 72,000.00	$ 9,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ 123,448.90	$ 48,064.95	*$ 392,508.29*	*$ 1,457,300.00*	$ 12,648,947.93
2050	$ 339,357.70	$ -	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ 245,716.72	$ 95,670.05	*$ 711,744.47*	*$ 1,457,300.00*	$ 13,394,503.46
2051	$ 274,228.46	$ 24,000.00	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 198,558.97	$ 77,309.13	*$ 595,096.56*	*$ 1,457,300.00*	$ 14,256,706.90
2052	$ 661,527.09	$ 36,000.00	$ 51,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 478,987.99	$ 186,494.45	*$ 1,414,009.53*	*$ 1,457,300.00*	$ 14,299,997.37
2053	$ 833,046.94	$ -	$ 87,000.00	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ 855,000.00	$ 638,041.48	$ 248,422.08	*$ 2,711,510.50*	*$ 1,457,300.00*	$ 13,045,786.87
2054	$ 298,868.54	$ -	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ 300,000.00	$ -	$ 216,399.97	$ 84,255.54	*$ 920,524.05*	*$ 1,457,300.00*	$ 13,582,562.82
2055	$ 669,143.19	$ -	$ 48,000.00	$ -	$ -	$ 500,000.00	$ -	$ -	$ 300,000.00	$ -	$ 484,502.54	$ 188,641.54	*$ 2,190,287.27*	*$ 1,457,300.00*	$ 12,849,575.55
2056	$ 64,007.38	$ 12,000.00	$ 6,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 46,345.45	$ 18,044.64	*$ 146,397.47*	*$ 1,457,300.00*	$ 14,160,478.08
2057	$ 685,901.03	$ 228,000.00	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 256,938.79	$ 100,039.37	*$ 1,291,879.19*	*$ 1,457,300.00*	$ 14,325,898.89
2058	$ 29,218.85	$ 24,000.00	$ 7,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,867.24	$ 6,177.93	*$ 82,764.02*	*$ 1,457,300.00*	$ 15,700,434.87
2059	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ -*	*$ 1,457,300.00*	$ 17,157,734.87
2060	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ -*	*$ 1,457,300.00*	$ 18,615,034.87
2061	$ -	$ 168,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 168,000.00*	*$ 1,457,300.00*	$ 19,904,334.87
2062	$ -	$ 180,000.00	$ -	$ -	$ -	$ -	$ 4,590,000.00	$ -	$ -	$ -	$ -	$ -	*$ 4,770,000.00*	*$ 1,457,300.00*	$ 16,591,634.87
2063	$ -	$1,284,000.00	$ 157,500.00	$ 50,000.00	$1,350,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 2,841,500.00*	*$ 1,457,300.00*	$ 15,207,434.87
2064	$ 69,308.83	$ -	$ 155,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ 50,184.04	$ 19,539.20	*$ 304,032.07*	*$ 1,457,300.00*	$ 16,360,702.80
2065	$ 94,933.50	$ -	$ 3,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ 47,587.65	$ 18,528.30	*$ 174,049.45*	*$ 1,457,300.00*	$ 17,643,953.35
2066	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ -*	*$ 1,457,300.00*	$ 19,101,253.35
2067	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ -*	*$ 1,457,300.00*	$ 20,558,553.35
2068	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 300,000.00	$ 855,000.00	$ -	$ -	*$ 1,155,000.00*	*$ 1,457,300.00*	$ 20,860,853.35
2069	$ 105,980.05	$ 72,000.00	$ 9,000.00	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ 76,736.35	$ 29,877.37	*$ 343,593.77*	*$ 1,457,300.00*	$ 21,974,559.58
2070	$ 2,556.97	$ -	$ 36,000.00	$ -	$ -	$ -	$ -	$ 50,000.00	$ 500,000.00	$ -	$ 1,666.27	$ 648.76	*$ 590,872.01*	*$ 1,457,300.00*	$ 22,840,987.57
2071	$ 688,319.14	$ 132,000.00	$ 24,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 163,848.30	$ 63,794.50	*$ 1,071,961.94*	*$ 1,457,300.00*	$ 23,226,325.63
2072	$ 80,213.38	$ 24,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 58,079.63	$ 22,613.36	*$ 184,906.36*	*$ 1,457,300.00*	$ 24,498,719.26
2073	$ -	$ 156,000.00	$ -	$ -	$ -	$ -	$ 2,430,000.00	$ 100,000.00	$ -	$ -	$ -	$ -	*$ 2,686,000.00*	*$ 1,457,300.00*	$ 23,270,019.26
2074	$ -	$ 132,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 132,000.00*	*$ 1,457,300.00*	$ 24,595,319.26
2075	$ 274,972.80	$ 36,000.00	$ 28,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 199,097.93	$ 77,518.97	*$ 616,089.71*	*$ 1,457,300.00*	$ 25,436,529.56
2076	$ 1,436,243.55	$ -	$ 22,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 844,504.35	$ 328,808.60	*$ 2,632,056.50*	*$ 1,457,300.00*	$ 24,261,773.06
2077	$ 150,353.35	$ 96,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 103,208.39	$ 40,184.29	*$ 389,746.04*	*$ 1,457,300.00*	$ 25,329,327.02
2078	$ 1,501,772.23	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ 100,000.00	$ -	$ 745,146.54	$ 290,123.54	*$ 2,687,042.31*	*$ 1,457,300.00*	$ 24,099,584.71
2079	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ -	$ -	*$ 10,000.00*	*$ 1,457,300.00*	$ 25,546,884.71
2080	$ -	$ 36,000.00	$ 45,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ -	$ -	*$ 91,000.00*	*$ 1,457,300.00*	$ 26,913,184.71
2081	$ -	$ 12,000.00	$ -	$ -	$ -	$ -	$ 1,980,000.00	$ -	$ -	$ -	$ -	$ -	*$ 1,992,000.00*	*$ 1,457,300.00*	$ 26,378,484.71
2082	$ -	$ -	$ 4,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 4,500.00*	*$ 1,457,300.00*	$ 27,831,284.71
2083	$ 467,132.84	$ 204,000.00	$ -	$ -	$1,350,000.00	$ -	$ -	$ -	$ -	$ 855,000.00	$ 234,162.07	$ 91,171.23	*$ 3,201,466.15*	*$ 1,457,300.00*	$ 26,087,118.57
2084	$ 142,552.39	$ 108,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 80,542.91	$ 31,359.46	*$ 362,454.76*	*$ 1,457,300.00*	$ 27,181,963.81
2085	$ 539,854.23	$ 12,000.00	$ -	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$ 380,929.16	$ 148,315.15	*$ 1,331,098.54*	*$ 1,457,300.00*	$ 27,308,165.26
2086	$ -	$ -	$ 78,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 78,000.00*	*$ 1,457,300.00*	$ 28,687,465.26
2087	$ 869,747.12	$ 36,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 562,057.09	$ 218,837.48	*$ 1,686,641.70*	*$ 1,457,300.00*	$ 28,458,123.57
2088	$ 397,874.86	$ 72,000.00	$ 6,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 244,919.19	$ 95,359.53	*$ 816,153.58*	*$ 1,457,300.00*	$ 29,099,269.98
2089	$ 1,171,109.79	$ 72,000.00	$ 9,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 751,852.10	$ 292,734.36	*$ 2,296,696.26*	*$ 1,457,300.00*	$ 28,259,873.73
2090	$ 1,313,633.51	$ -	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 842,393.28	$ 327,986.66	*$ 2,505,013.45*	*$ 1,457,300.00*	$ 27,212,160.28
2091	$ 408,032.47	$ 24,000.00	$ 21,000.00	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$ 227,862.08	$ 88,718.33	*$ 1,019,612.88*	*$ 1,457,300.00*	$ 27,649,847.40
2092	$ -	$ 36,000.00	$ 51,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 87,000.00*	*$ 1,457,300.00*	$ 29,020,147.40
2093	$ 490,498.65	$ -	$ 87,000.00	$ -	$ -	$ -	$ 1,980,000.00	$ -	$ -	$ -	$ 318,874.31	$ 124,154.03	*$ 3,000,526.99*	*$ 1,457,300.00*	$ 27,476,920.41
2094	$ -	$ -	$ 21,000.00	$ -	$ -	$ -	$ -	$ 50,000.00	$ 100,000.00	$ 10,000.00	$ -	$ -	*$ 181,000.00*	*$ 1,457,300.00*	$ 28,753,220.41
2095	$ -	$ -	$ 48,000.00	$ -	$ -	$ -	$ -	$ 50,000.00	$ 100,000.00	$ 10,000.00	$ -	$ -	*$ 208,000.00*	*$ 1,457,300.00*	$ 30,002,520.41
2096	$ 262,702.30	$ 12,000.00	$ 6,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 177,817.35	$ 69,233.36	*$ 527,753.00*	*$ 1,457,300.00*	$ 30,932,067.40
2097	$ 175,641.88	$ 228,000.00	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 88,545.80	$ 34,475.39	*$ 547,663.08*	*$ 1,457,300.00*	$ 31,841,704.33
2098	$ -	$ 24,000.00	$ 7,500.00	$ -	$ -	$ -	$ -	$ 100,000.00	$ 350,000.00	$ 855,000.00	$ -	$ -	*$ 1,336,500.00*	*$ 1,457,300.00*	$ 31,962,504.33
2099	$ 2,149,987.91	$ -	$ -	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$1,270,446.52	$ 494,649.61	*$ 4,165,084.03*	*$ 1,457,300.00*	$ 29,254,720.29
2100	$ 893,827.83	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 589,640.23	$ 229,577.01	*$ 1,713,045.06*	*$ 1,457,300.00*	$ 28,998,975.23
2101	$ 275,014.50	$ 168,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 119,429.72	$ 46,500.08	*$ 608,944.29*	*$ 1,457,300.00*	$ 29,847,330.94
2102	$ -	$ 180,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 180,000.00*	*$ 1,457,300.00*	$ 31,124,630.94
2103	$ 219,207.60	$1,284,000.00	$ 157,500.00	$ 50,000.00	$1,350,000.00	$ -	$ -	$ 50,000.00	$ -	$ -	$ 135,862.08	$ 52,898.03	*$ 3,299,467.71*	*$ 1,457,300.00*	$ 29,282,463.23
2104	$ 1,962,977.05	$ -	$ 155,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 782,592.81	$ 304,703.28	*$ 3,205,273.15*	*$ 1,457,300.00*	$ 27,534,490.08
2105	$ 527,326.91	$ -	$ 3,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 360,399.88	$ 140,322.05	*$ 1,031,048.84*	*$ 1,457,300.00*	$ 27,960,741.24
2106	$ -	$ -	$ -	$ -	$ -	$ 300,000.00	$ -	$ -	$ -	$ -	$ -	$ -	*$ 300,000.00*	*$ 1,457,300.00*	$ 29,118,041.24
2107	$ 519,239.75	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 352,889.90	$ 137,398.03	*$ 1,009,527.67*	*$ 1,457,300.00*	$ 29,565,813.57
2108	$ 341,773.50	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 195,830.12	$ 76,246.65	*$ 613,850.26*	*$ 1,457,300.00*	$ 30,409,263.31
2109	$ 72,702.25	$ 72,000.00	$ 9,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ 47,538.81	$ 18,509.28	*$ 229,750.35*	*$ 1,457,300.00*	$ 31,636,812.96
2110	$ -	$ -	$ 36,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ -	$ -	*$ 46,000.00*	*$ 1,457,300.00*	$ 33,048,112.96
2111	$ -	$ 132,000.00	$ 24,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 156,000.00*	*$ 1,457,300.00*	$ 34,349,412.96
2112	$ 8,652.00	$ 24,000.00	$ -	$ -	$ -	$ -	$ 4,590,000.00	$ -	$ -	$ -	$ 6,264.60	$ 2,439.13	*$ 4,631,355.73*	*$ 1,457,300.00*	$ 31,175,357.23
2113	$ 4,364,519.10	$ 156,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 855,000.00	$2,465,738.37	$ 960,037.67	*$ 8,801,295.13*	*$ 1,457,300.00*	$ 23,831,362.10
2114	$ 1,351,606.69	$ 132,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 693,973.13	$ 270,199.12	*$ 2,447,778.95*	*$ 1,457,300.00*	$ 22,840,883.15
2115	$ 112,358.54	$ 36,000.00	$ 28,500.00	$ -	$ -	$ 500,000.00	$ -	$ -	$ 250,000.00	$ -	$ 17,027.75	$ 6,629.77	*$ 950,516.06*	*$ 1,457,300.00*	$ 23,347,667.09
2116	$ -	$ -	$ 22,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 22,500.00*	*$ 1,457,300.00*	$ 24,782,467.09
2117	$ 4,636,121.90	$ 96,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$2,392,221.44	$ 931,413.78	*$ 8,055,757.12*	*$ 1,457,300.00*	$ 18,184,009.97
2118	$ 3,156,117.96	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$1,795,421.94	$ 699,049.30	*$ 5,650,589.21*	*$ 1,457,300.00*	$ 13,990,720.76

APPENDIX E

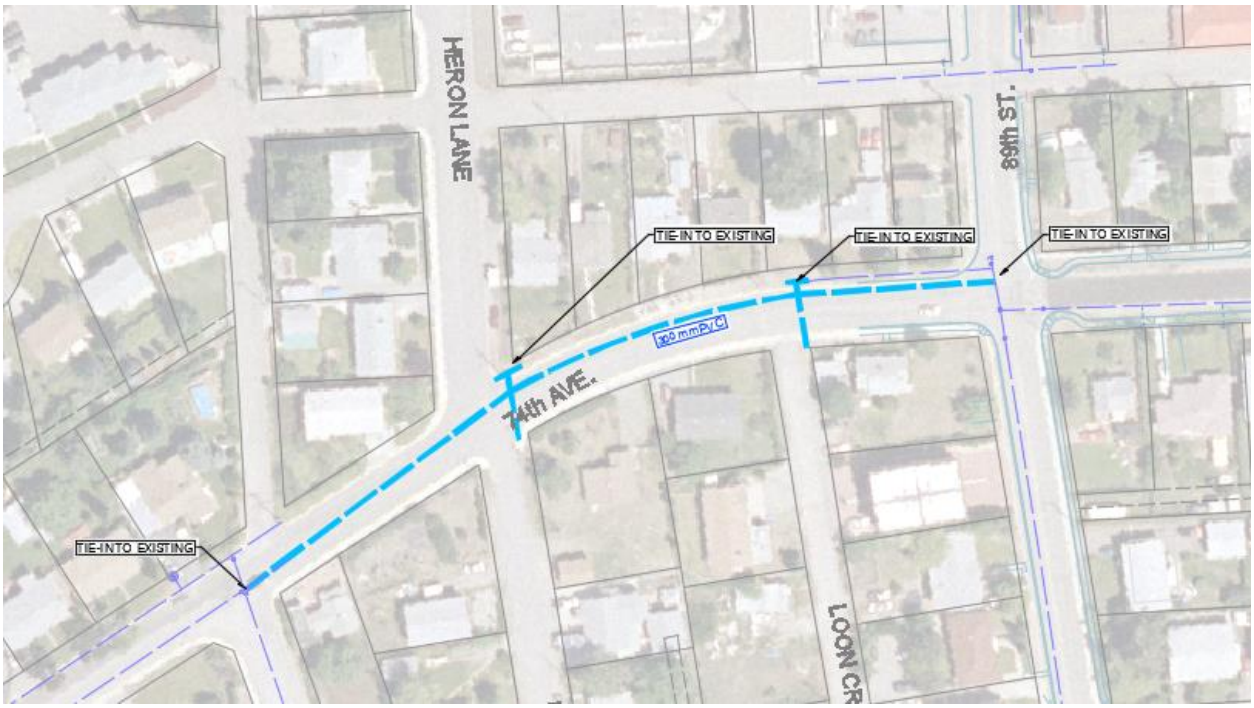
Proposed Capital Project Sheets

Project: 74th Avenue Upsizing

Priority: High **Type:** Upgrade

Trigger: Future Planning

Location Map



Issue

There is not currently a continuous large diameter trunk main between the East and West portions of the Town. This limits distribution capacity for fire flows. This trunk main would enhance flow to the east side of the Town core and east of Osoyoos Lake, allowing flows to gravity flow more effectively from the 340 reservoirs (under non-pumping conditions). Also, these benefits will be critical to improve system performance when water treatment plants are implemented. Specifically, pumping from the WTP through the lake crossing and to the 340 reservoir would be severely constricted.

Scope

Supply and install approximately 180 m of 300 mm pipe with applicable appurtenances and connection to the existing water system. Works also include the re-instating impacted road surfaces, curb and gutters, and side walks.

Time Frame

+/- 2 years

Cost Estimate (Class D)

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
	74A Avenue Upsizing				
1.1	Water System Components				
	300Ø PVC Water Main - Supply and Install	lm	180	$450	$81,000
	150Ø Gate Valve	ea	2	$3,000	$6,000
	250Ø Gate Valve	ea	2	$6,000	$12,000
	300Ø Gate Valve	ea	1	$7,500	$7,500
	300Ø x 250Ø Cross Fittings	ea	2	$4,000	$8,000
	250Ø x 250Ø x 250Ø Tee	ea	3	$2,500	$7,500
	300Ø x 250Ø Reducer	ea	3	$2,000	$6,000
	300Ø x 150Ø Reducer	ea	2	$2,000	$4,000
	250Ø Couplers	ea	6	$1,500	$9,000
	150Ø Couplers	ea	2	$1,200	$2,400
	Tie to Existing Water Main	ea	4	$20,000	$80,000
1.2	Other Construction				
	Removals	m²	500	$12	$6,000
	Asphalt Restoration	m²	500	$100	$50,000
	Concrete Sidewalk	m²	270	$200	$54,000
	Curb and Gutter	lm	180	$250	$45,000
	Traffic Control	L.S.	1	$75,000	$75,000
				Subtotal	**$453,000**
				Engineering (15%)	$68,000
				Contingency (30%)	$136,000
				TOTAL	**$657,000**

Project: Well Pump Auxiliary Power

Priority: High **Type:** Upgrade

Trigger: Future Planning

Location Map



Issue

Reservoir capacity in the domestic water system is deficient considering available capacity for balancing storage. The solution is to install auxiliary power at each source well to ensure operation is not interrupted by power outages. This will allow the system function without additional balancing storage in the reservoirs.

Scope

This work includes implementation of auxiliary power at wells #1, #3, #4, #5, #6 and #8 which includes generator, automatic transfer switch, electrical components, and Scada and PLC programming.

Time Frame

+/- 2 years

Cost Estimate (Class D)

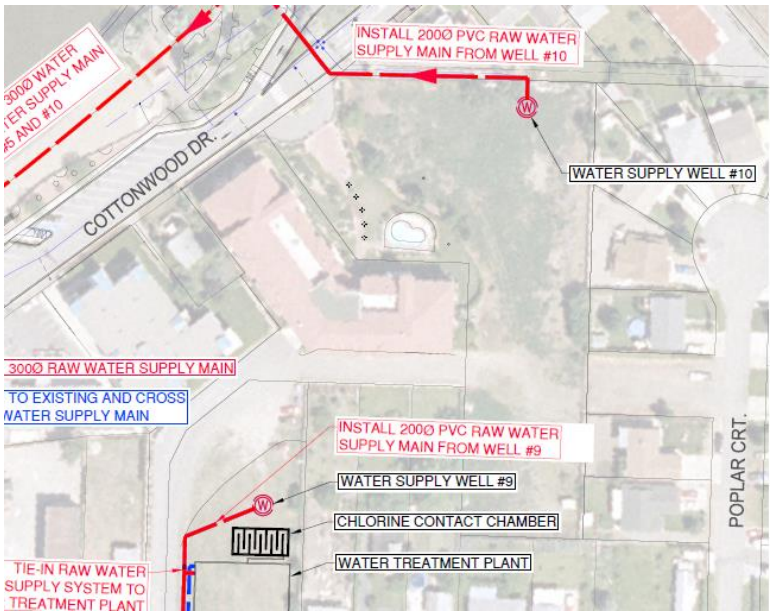
ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Phase 2 Pipe Upgrades					
1.1	Supply and Install Back-up Powerm includes generator, automatic transfer switch, electrical hardware, and PLC and Scada Programming				
	Well #1, for 50 Hp Pump	L.S.	1	$150,000	$150,000
	Well #3, for 75 Hp Pump	L.S.	1	$175,000	$175,000
	Well #4, for 75 Hp Pump	L.S.	1	$175,000	$175,000
	Well #5, for 100 Hp Pump	L.S.	1	$200,000	$200,000
	Well #6, for 50 Hp Pump	L.S.	1	$150,000	$150,000
	Well #8, for 75 Hp Pump	L.S.	1	$175,000	$175,000
				Subtotal	**$1,025,000**
				Engineering (15%)	$154,000
				Contingency (30%)	$308,000
				TOTAL	**$1,487,000**

Project: Source Well Pump and Auxiliary Power

Priority: High **Type:** Upgrade

Trigger: Future Planning

Location Map



Issue

Additional source wells are required to meet water demand in the Town of Osoyoos.

Scope

This cost estimate is based on a single well installation. Considering Well #9 and Well #10, this cost estimate can be multiplied by 2 to estimate the required cost. This work includes installation of the pump house building, 75 hp vertical turbine pump, electrical, controls, SCADA and auxiliary power.

Time Frame

+/- 1 years

Cost Estimate (Class D)

Summary

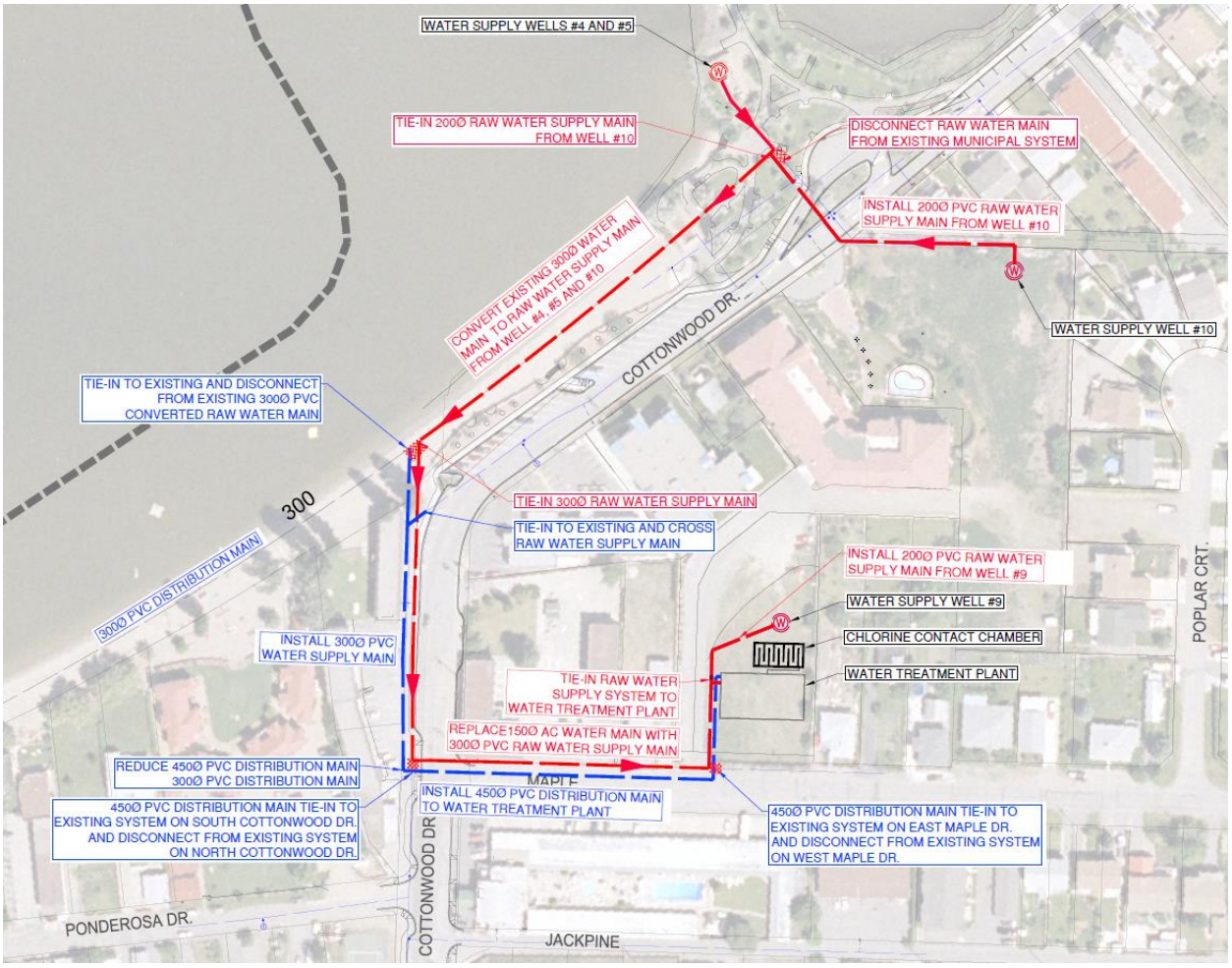
Subtotal Part A - SITEWORKS	$37,500.00
Subtotal Part B - PUMPHOUSE	$455,500.00
Subtotal Part C - AUXILLARY POWER	$175,000.00
TOTAL (A + B + C)	**$668,000.00**
Engineering (15%)	**$100,200.00**
Contingencies (30%)	**$200,400.00**
TOTAL PROJECT	**$968,600.00**

Project: Phase 1 Water Treatment Plant Upgrades

Priority: High **Type:** Upgrade

Trigger: Future Planning

Location Map



Issue

The raw water supply system and domestic system modifications are required to provide raw water to the Cottonwood Water Treatment Plant.

Scope

The location map includes connecting Wells #4, #5. #9 and #10 to the water treatment plant. Wells #4 and #5 flows will be conveyed to the WTP via an existing 300 mm water main. The existing water main from Wells #4 and #5 will be disconnected from the domestic system and repurposed as a raw water supply main. This water main runs along the Osoyoos Lake beach line, North of Cottonwood Dr. until it reaches the Cottonwood Dr. elbow that turns directly Southwards. At this point, a new 300 mm PVC raw water supply main will be installed on Cottonwood Drive, replacing the existing 150 mm AC watermain. This raw water supply main will convey flows south towards Maple Dr. where it will turn eastwards to the WTP (also replacing the existing 150 mm AC watermain on Maple Drive).

Wells #9 and #10 will be connected to the raw water supply system with new raw water supply mains. The Well #9 raw water supply main will connect directly to the adjacent Cottonwood WTP. Well #10 will be connected to the raw water supply system via a new water main located in a right-of-way flowing westwards towards Wells #4 and #5. After crossing Cottonwood Drive, it will connect to the converted raw water supply main from Wells #4 and #5.

Domestic system upgrades are also shown on the location map. Upgrades include installing a new 450 mm PVC water main on Maple Drive to convey flows from the WTP to the domestic water system. This new main will flow from the WTP westwards on Maple Dr. until Cottonwood Drive. At this point, the new main will connect to the existing system to convey flows southwards and it will continue northwards with a reduced size of 300 mm. The new water main will convey flows northwards to the existing watermain on Cottonwood Drive and connect to the existing 300 mm PVC water main in the Osoyoos Lake Beach line. At this connection, the new watermain will elbow into the existing water main which will eliminate cross connections with the converted raw water supply main. The purpose of this connection is to maintain both domestic system watermains to the lake crossing so flow capacity is not constricted through one watermain.

Time Frame

+/- 3 years

Cost Estimate (Class D)

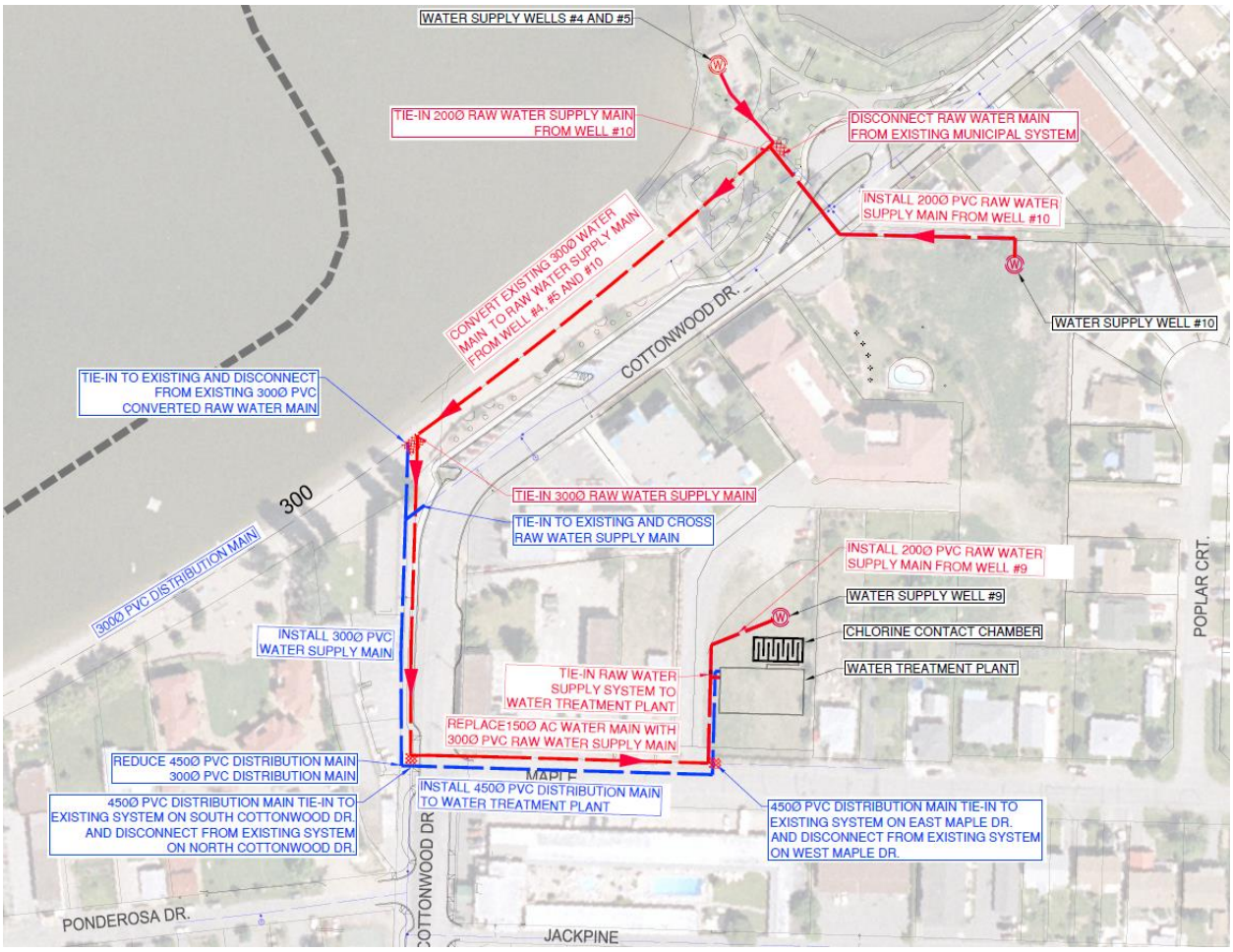
ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Phase 1 Pipe Upgrades					
1.1	Water System Components				
	450ø PVC Water Main - Supply and Install	lm	137	$850	$116,450
	300ø PVC Water Main - Supply and Install	lm	342	$500	$170,750
	200ø PVC Water Main - Supply and Install	lm	136	$300	$40,800
	450ø Gate Valve	ea	2	$18,000	$36,000
	300ø Gate Valve	ea	4	$7,500	$30,000
	200ø Gate Valve	ea	6	$4,500	$27,000
	150ø Gate Valve	ea	1	$3,000	$3,000
	450ø x 450ø x 150ø Tee	ea	1	$4,500	$4,500
	450ø x 300ø x 150ø Tee	ea	1	$4,500	$4,500
	300ø x 300ø x 300ø Tee	ea	2	$3,200	$6,400
	300ø x 300ø x 200ø Tee	ea	3	$3,200	$9,600
	300ø Bend	ea	4	$2,500	$10,000
	200ø Bend	ea	4	$2,000	$8,000
	300ø Couplers	ea	1	$2,200	$2,200
	150ø Couplers	ea	3	$1,200	$3,600
	Fire Hydrant	ea	1	$12,000	$12,000
	New Water Service	ea	5	$5,000	$25,000
	Tie to Existing Water Main	ea	3	$20,000	$60,000
	Disconnect Existing Water Main (Convert to Raw Water)	ea	4	$10,000	$40,000
1.2	Other Construction				
	Road Removals	m²	555	$12	$6,746
	Hydrant Removal	L.S.	1	$2,000	$2,000
	Asphalt Restoration (Commercial)	m²	240	$100	$24,000
	Asphalt Restoration (Residential)	m²	315	$80	$25,200
	Concrete Sidewalk	m²	120	$200	$24,000
	Curb and Gutter	lm	80	$250	$20,000
	Traffic Control	L.S.	1	$95,000	$95,000
				Subtotal	**$807,000**
				Engineering (15%)	$121,000
				Contingency (30%)	$242,000
				TOTAL	**$1,170,000**

Project: Cottonwood Water Treatment Plant

Priority: High **Type:** Upgrade

Trigger: Future Planning

Location



Issue

In 2019, Health Canada implemented guidelines around the acceptable concentrations of manganese in drinking water. Osoyoos source water wells #4, #5, #6 and #8 historically have elevated manganese concentrations above 0.15 mg/L which consistently exceed the Health Canada criteria. Thus, water treatment for these wells is required.

Scope

The proposed water treatment plant layout can be viewed on the location map. This shows the location of the WTP in proximity to Cottonwood Park and connections to wells #4, #5, #9 and #10. The WTP plant includes manganese removal, chlorination and

A primary and secondary Water Treatment Plant (WTP) for manganese removal is recommended. The primary WTP would be located at Lot 1 EPP107350 near Cottonwood Park, referred to as the Cottonwood WTP. It would treat flows from Wells #1, #3, #4, #5 and #8. The secondary WTP would be located at Spartan and 92nd and referred to as the Spartan WTP. It would treat flows from Well #6 and future Wells in the vicinity. Each treatment facility contains a biological manganese removal system, with onsite chlorine generation and contact tanks.

Time Frame

+/- 7 years

Cost Estimate (Class D)

Cottonwood WTP

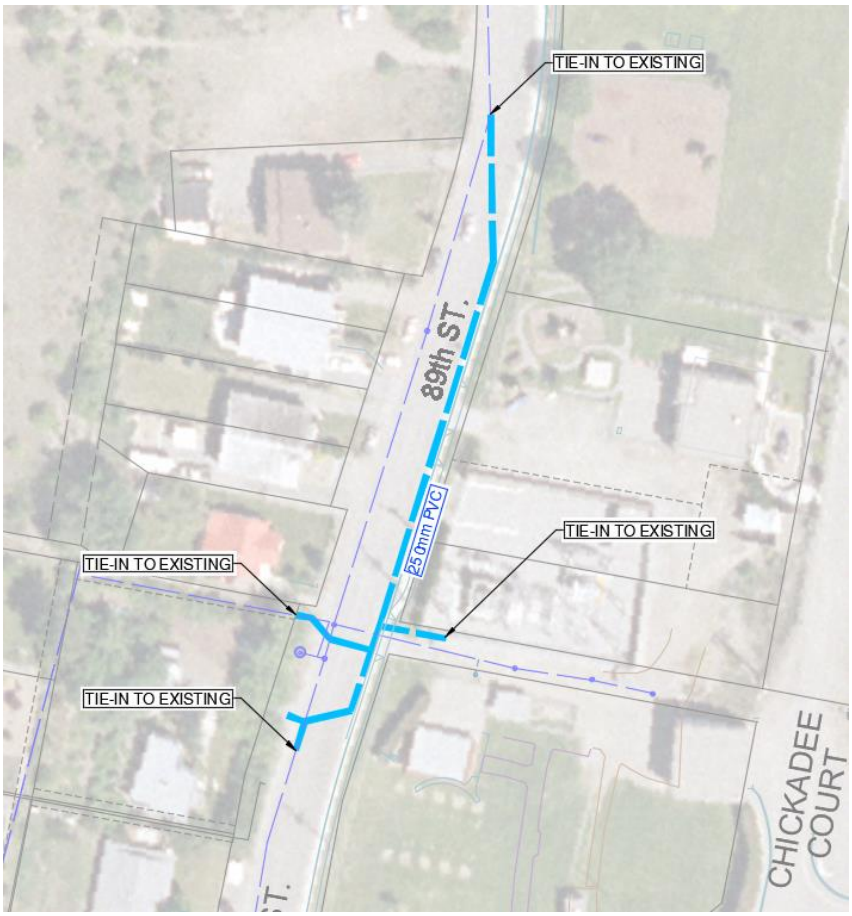
ITEM NO.	DESCRIPTION	ESTIMATE
1.0	General	$210,000
2.0	Manganese Removal System	$790,000
3.0	Water Treatment Plant Foundation	$510,000
4.0	Water Treatment Plant Building (Post-Disaster Design)	$740,000
5.0	Chlorination Room	$260,000
6.0	Pump Station Room	$550,000
7.0	Manganese Removal System (Off-loading, Supply and Installation)	$270,000
8.0	Recycle Pump & Decanter	$90,000
9.0	Backwash Waste Water Tank	$80,000
10.0	Chlorine Contact Tank	$410,000
12.0	Site Piping and Sanitary Forcemain (Backwash Sludge)	$20,000
13.0	Site Piping - (Treated Water Overflow)	$170,000
14.0	Roadworks and Landscaping	$200,000
15.0	Electrical, SCADA and Controls	$670,000
	Subtotal	**$4,971,000**
	Engineering - Allow (15%)	**$746,000**
	Contingencies - Allow (30%)	**$1,491,000**
	TOTAL PROJECT	**$7,208,000**

Project: 89th Street Upgrades

Priority: Medium **Type:** Upgrade

Trigger: Future Planning

Location



Issue

The current watermain on 89th St. decreases from 250 mm to 200 mm (at the Northern tie-in) as it extends South towards Kingfisher Drive which limits system capacity to provide fire flow. This also impacts flows from Well #1 under pumping conditions. Furthermore, this constriction would impact flows from future water treatment plant pipe upgrades.

Scope

Supply and Install approximately 210 m of 250mm PVC watermain with applicable appurtenances, as shown in the Location Figure. Works also include the re-instating impacted road surfaces, curb and gutters, and side walks.

Time Frame

+/- 3 years

Cost Estimate (Class D)

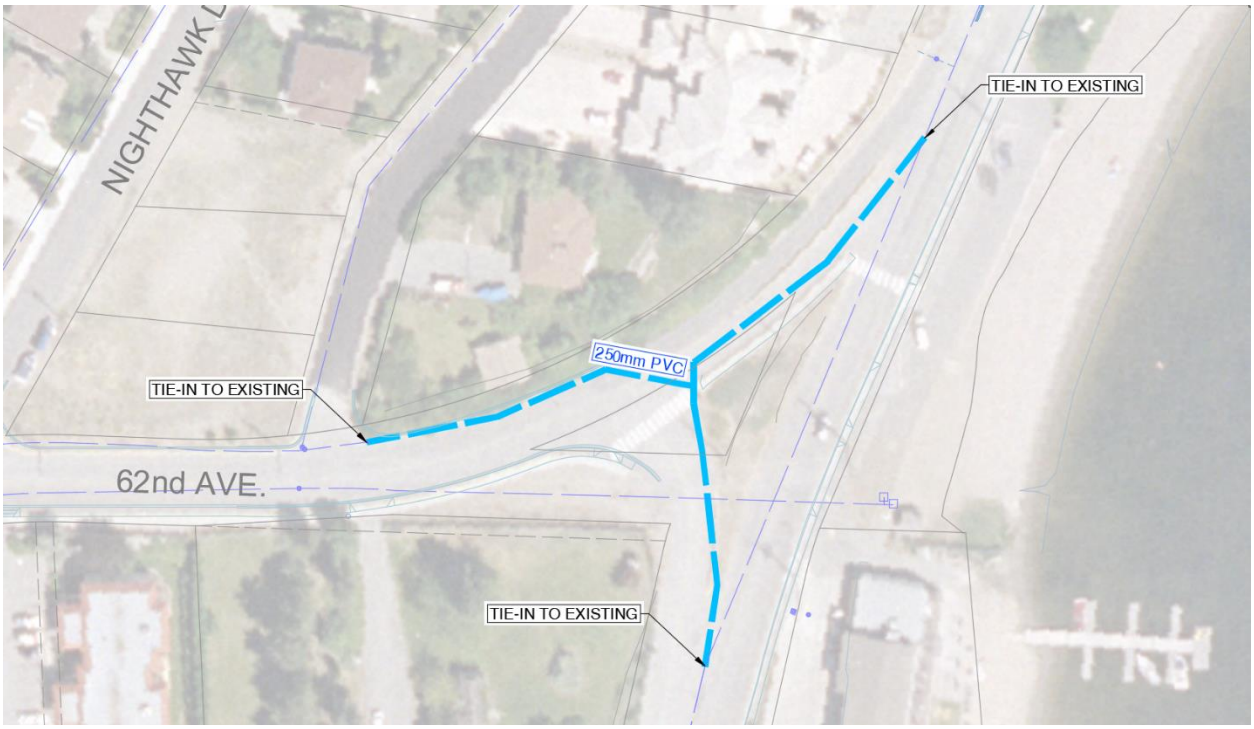
ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
89th Street Water Service Updates					
1.1	Water System Components				
	250Ø PVC Water Main - Supply and Install	lm	210	$400	$84,000
	150Ø Gate Valve	ea	1	$3,000	$3,000
	250Ø Gate Valve	ea	5	$6,000	$30,000
	250Ø x 250Ø x 150Ø Tee	ea	1	$2,000	$2,000
	250Ø x 250Ø x 250Ø Tee	ea	2	$2,500	$5,000
	250Ø Couplers	ea	1	$1,000	$1,000
	200Ø Couplers	ea	1	$900	$900
	150Ø Couplers	ea	1	$750	$750
	Fire Hydrant	ea	1	$12,000	$12,000
	Water Service	ea	12	$5,000	$60,000
	Tie to Existing Water Main	ea	4	$20,000	$80,000
1.2	Other Construction				
	Road Removals	m²	600	$12	$7,293
	Hydrant Removal	L.S.	1	$2,000	$2,000
	Asphalt Restoration	m²	600	$100	$60,000
	Concrete Sidewalk	m²	315	$200	$63,000
	Curb and Gutter	lm	210	$250	$52,500
	Traffic Control	L.S.	1	$60,000	$60,000
				Subtotal	**$523,000**
				Engineering (15%)	$78,000
				Contingency (30%)	$157,000
				TOTAL	**$758,000**

Project: 62nd Avenue Tie-in

Priority: Medium **Type:** Upgrade

Trigger: Future Planning

Location



Issue

There is currently no connection between the watermains along 89th and 62nd avenue which limits system capacity to provide fire flow. This would be significantly improved with this connection creating a looped water system in this area.

Scope

Supply and install approximately 170 m of 250mm PVC pipe with applicable appurtenances, as shown in the Location Figure.

Time Frame

+/- 4 years

Cost Estimate (Class D)

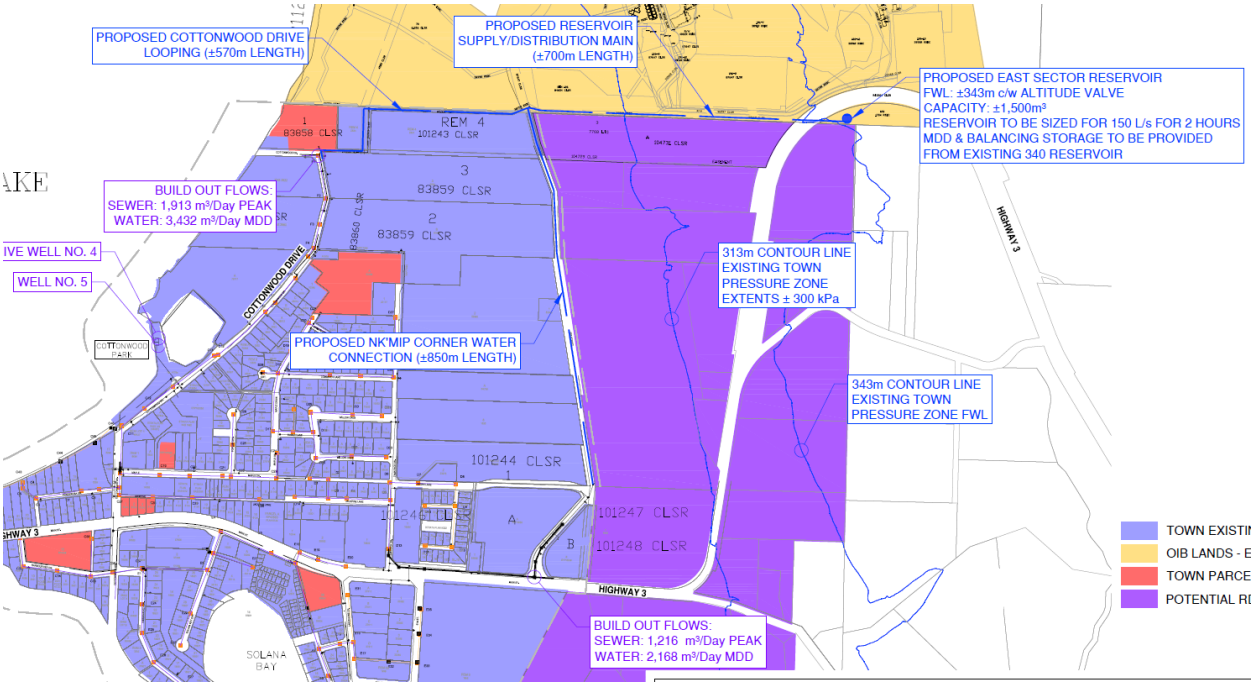
ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
	62nd Avenue Upsizing				
1.1	Water System Components				
	250Ø PVC Water Main - Supply and Install	lm	170	$400	$68,000
	250Ø Gate Valve	ea	3	$4,500	$13,500
	250Ø Air Valve and Chamber	ea	1	$8,000	$8,000
	250Ø x 250Ø x 250Ø Tee	ea	1	$2,500	$2,500
	250Ø x 200Ø Reducer	ea	3	$1,500	$4,500
	200Ø Couplers	ea	3	$900	$2,700
	Tie to Existing Water Main	ea	3	$20,000	$60,000
1.2	Other Construction				
	**Removals, Asphalt Restoration, and Traffic Control have not been included as it is anticipated that these upgrades will occur as a part of the large scale intersection upgrades*				
				Subtotal	**$159,000**
				Engineering (15%)	$24,000
				Contingency (30%)	$48,000
				TOTAL	**$231,000**

Project: East Sector Reservoir Supply/Distribution Main

Priority: Low **Type:** Upgrade

Trigger: Future Planning

Location Map



Issue

Supply to and Distribution from the east sector reservoir is required.

Scope

Work includes installing a 700 m length of 300 mm PVC watermain from the East Sector Reservoir to 45th street, along the boundary of the OIB lands and the potential RDOS expansion area. This project ends at this location because connection to the domestic system can be achieved in two different pathways from this location. For this reason, this project in conjunction with the Cottonwood Drive Loop or the Nk'Mip Corner Water connection project must be completed to connect the east sector reservoir to the domestic system.

Time Frame

+/- 21 years

Cost Estimate (Class D)

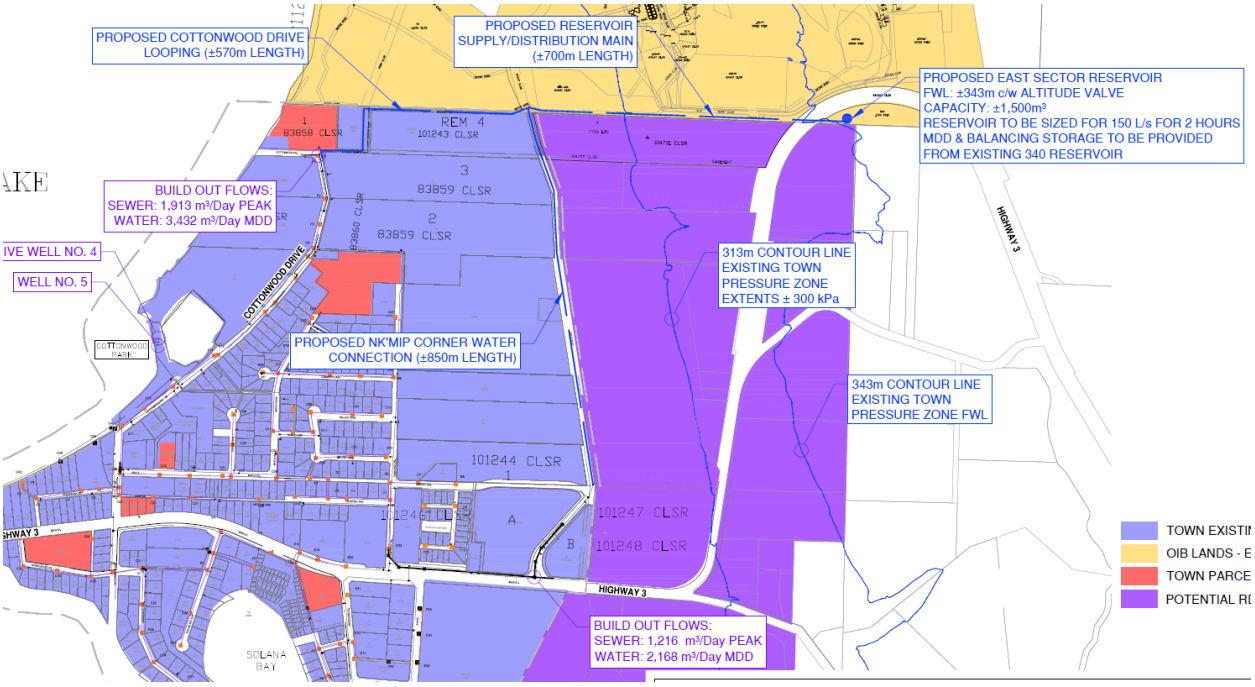
ITEM NO.	DESCRIPTION	UNIT	EST. QUANT	UNIT PRICE	TOTAL PRICE
East Sector Water System Upgrades - Reservoir Supply / Distribution Main					
1.0	**Watermain tie-ins**				
1.1	At reservoir	L.S.	1	$20,000	$20,000
1.2	On 45th Street	L.S.	1	$20,000	$20,000
2.0	**Supply and install 300mm PVC watermain**	l.m.	700	$500	$350,000
3.0	**Highway Crossing**	l.m.	60	$1,500	$90,000
4.0	**Watermain fittings**	Allow	1	$60,000	$60,000
5.0	**Fire hydrant assemblies**	ea.	1	$12,000	$12,000
6.0	**Restoration**				
6.1	Road restoration (including pavement and gravels)	m²	50	$100	$5,000
6.2	Boulevard restoration	m²	2,600	$25	$65,000
				Subtotal	**$622,000**
				Engineering (15%)	$93,000
				Allowance for Archaeology	$50,000
				Contingency (30%)	$187,000
				TOTAL	**$952,000**

Project: East Sector Reservoir Cottonwood Drive Loop

Priority: Low **Type:** Upgrade

Trigger: Future Planning

Location Map



Issue

Extension of the east sector supply/distribution main must be completed to connect to the domestic water system.

Scope

Work includes extending the watermain from 45th Street to Cottonwood Drive (total length of 570 m) and installing a back flow prevention Chamber. This option is the most cost effective to connect the east sector reservoir to the domestic water system.

Time Frame

+/- 21 years

Cost Estimate (Class D)

ITEM NO.	DESCRIPTION	UNIT	EST. QUANT	UNIT PRICE	TOTAL PRICE
East Sector Water System Upgrades - Cottonwood Drive Looping					
1.0	**Watermain tie-ins**				
1.1	On Cottonwood Drive	L.S.	1	$20,000	$20,000
1.2	On 45th Street	L.S.	1	$20,000	$20,000
2.0	**Supply and install 300mm PVC watermain**	l.m.	570	$500	$285,000
3.0	**Watermain fittings**	Allow	1	$50,000	$50,000
4.0	**Fire hydrant assemblies**	ea.	4	$12,000	$48,000
5.0	**Backflow prevention chambers to allow for bulk water supply to IR1**	ea.	2	$110,000	$220,000
6.0	**Restoration**				
6.1	Road restoration (including pavement and gravels) - assume 3m pavement restoration through OIB campground	m^2	1,350	$100	$135,000
6.2	Boulevard restoration	m^2	520	$25	$13,000
				Subtotal	**$791,000**
				Engineering (15%)	$119,000
				Allowance for Archaeology	$50,000
				Contingency (30%)	$237,000
				TOTAL	**$1,197,000**

Project: Phase 2 Water Treatment Plant Upgrades

Priority: High **Type:** Upgrade

Trigger: Future Planning

Location Map



Issue

The domestic water system is restricted by undersized water mains east of the lake crossing. This requires two water mains to convey flows to the west from the Cottonwood Water Treatment Plant. This will not be feasible when one of these two watermains is converted to a raw water supply main in the Phase 3 WTP upgrades. Also, the undersized water mains do not allow fire flows to effectively flow eastward from the 340 reservoir. For these reasons, the water main on Main St. will be upsized to convey flows from the WTP to west Osoyoos and allow for fire flows to flow eastward.

Scope

The location map shows the scope of work for Phase 2. This work includes upsizing the watermain on Cottonwood Drive and Main Street to enhance flow capacity from the lake crossing. A 450 mm water main will replace the existing 150 mm AC watermain on Cottonwood Drive then turn west on Main St. until it reaches the lake crossing. Along Main St., a new section of 450 mm main will be installed between Cottonwood Dr. and Ponderosa Drive. From Ponderosa Dr. to the lake crossing, the 450 mm water main will replace the existing AC water main and connect directly to the existing 450 mm lake crossing. The 450 mm water main from the lake crossing will greatly enhance the system capacity to provide fire flows.

This will allow the watermain in the Osoyoos beach line to be converted to a raw water supply main in Phase 3.

Time Frame

+/- 7 years

Cost Estimate (Class D)

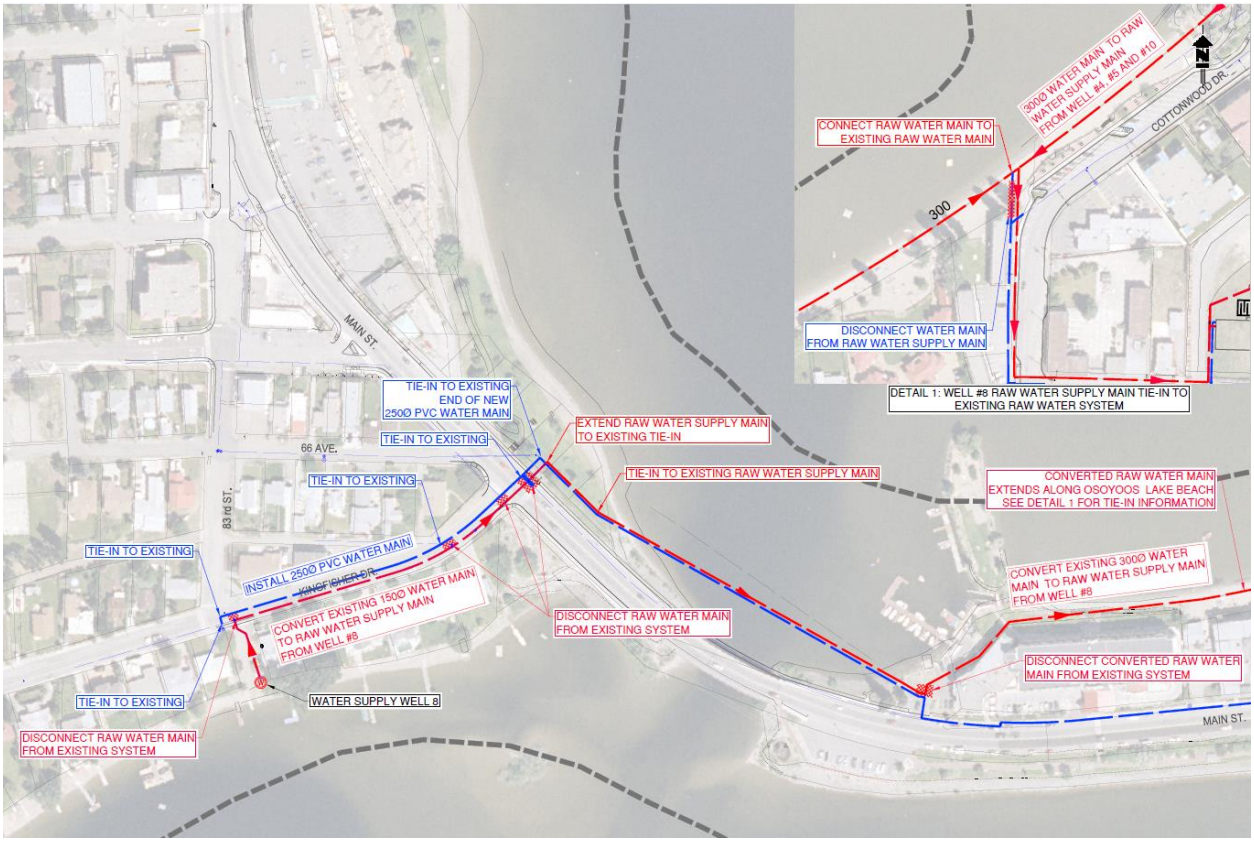
ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Phase 2 Pipe Upgrades					
1.1	Water System Components				
	450Ø PVC Water Main - Supply and Install	lm	755	$850	$641,750
	450Ø Gate Valve	ea	9	$18,000	$162,000
	250Ø Gate Valve	ea	1	$6,000	$6,000
	200Ø Gate Valve	ea	1	$4,500	$4,500
	150Ø Gate Valve	ea	3	$3,000	$9,000
	450Ø x 350Ø x 250Ø Tee	ea	1	$4,500	$4,500
	450Ø x 450Ø x 200Ø Tee	ea	1	$4,500	$4,500
	450Ø x 450Ø x 150Ø Tee	ea	3	$4,500	$13,500
	450Ø PVC to 350Ø HDPE Connection	ea	1	$5,000	$5,000
	350Ø Couplers	ea	1	$2,500	$2,500
	250Ø Couplers	ea	1	$1,800	$1,800
	200Ø Couplers	ea	1	$1,500	$1,500
	150Ø Couplers	ea	3	$1,200	$3,600
	Fire Hydrant	ea	6	$12,000	$72,000
	New Water Service	ea	20	$5,000	$100,000
	Tie to Existing Water Main	ea	1	$20,000	$20,000
1.2	Other Construction				
	Road Removals	m²	2265	$12	$27,531
	Hydrant Removal	L.S.	3	$2,000	$6,000
	Asphalt Restoration (Commercial)	m²	2265	$100	$226,500
	Concrete Sidewalk	m²	1133	$200	$226,500
	Curb and Gutter	lm	755	$250	$188,750
	Traffic Control	L.S.	1	$115,000	$115,000
				Subtotal	**$1,842,000**
				Engineering (15%)	$276,000
				Contingency (30%)	$553,000
				TOTAL	**$2,671,000**

Project: Phase 3 Water Treatment Plant Upgrades

Priority: High **Type:** Upgrade

Trigger: Future Planning

Location Map



Issue

Well #8 is impacted by elevated concentrations of manganese. For this reason, it requires treatment at the Cottonwood Water Treatment Plant. This project connects well #8 to the raw water supply system by converting existing watermains and modifies the domestic system.

Scope

The location map shows the scope of work for Phase 3. This includes connecting Well #8 to the raw water supply system. Raw water flows from Wells #8 will be conveyed to the WTP via

repurposed water mains similar to Well #4 and #5. Well #8 will be disconnected from the domestic water system and the existing 150 mm water main on Kingfisher Dr. will be converted to a raw water supply main. The water main flows eastwards along Kingfisher Dr. to the existing raw water lake crossing at the Highway. Along this flow path several connections to the existing system will be disconnected and capped. In addition, a new section of raw water main will be required to connect the converted water main to the existing flange connection point at the lake crossing. This extension will pass under the existing water main and turn eastwards to the lake crossing.

After the lake crossing, the eastern end of this pipe will be connected to the existing water system which will be converted to a raw water supply main. This conversion will include disconnecting the southern arm of the Tee connection where the lake crossing is Teed into the domestic system. This will direct flow Northwards along the existing converted 300 mm water main located in the Osoyoos Lake beach line. Flows will then be conveyed along the beach line towards Cottonwood Drive. At Cottonwood drive this pipe will be disconnected from the domestic system and tied into the 300 mm raw water main conveying flows from Wells #4 and #5. Thus, flows will be conveyed to the WTP.

Phase 3 upgrades to the domestic system include removing a dead end section and installing a new watermain on Kingfisher Drive. A dead end section is created when the domestic system is disconnected at the Osoyoos Beach line. Thus, this pipe should be abandoned from this point to the Cottonwood Drive Tee. This will allow continuous flow along Cottonwood Drive.

Upgrades west of Osoyoos Lake include installing a new 250 mm watermain on Kingfisher Dr. because the existing watermain is proposed to be converted to a raw water supply main. This includes connecting to the existing 350 mm water main at the west end of the lake crossing. Then crossing under the highway and continuing along Kingfisher drive until the main reaches Well #8.

Time Frame

+/- 12 years

Cost Estimate (Class D)

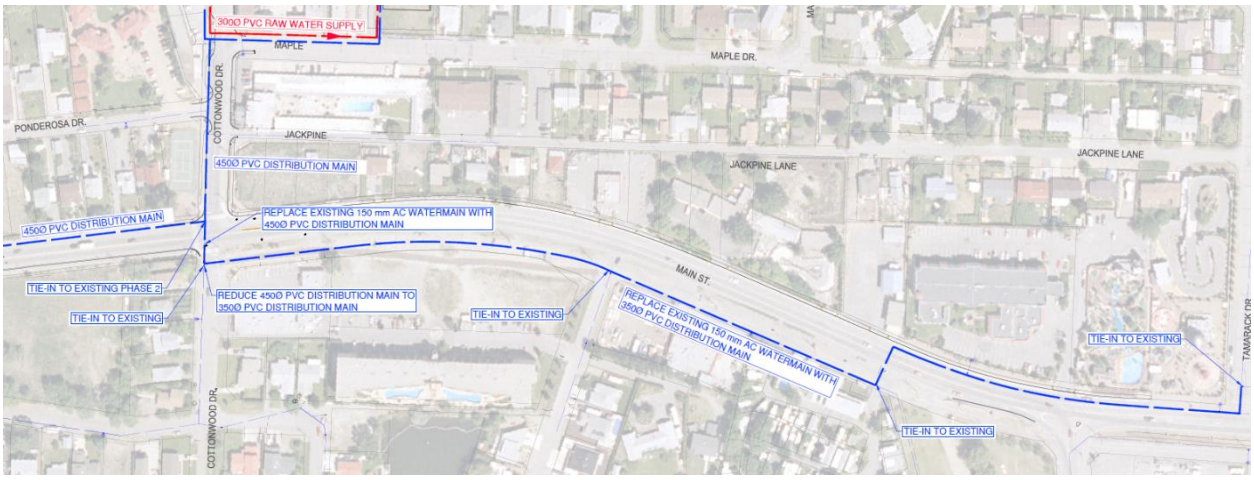
ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
Phase 3 Pipe Upgrades					
1.1	Water System Components				
	250Ø PVC Water Main - Supply and Install	lm	160	$450	$72,000
	250Ø PVC Water Main Hwy Crossing- Supply and Install	lm	30	$1,300	$39,000
	150Ø PVC Raw Water Main - Supply and Install	lm	45	$300	$13,500
	300Ø Gate Valve	ea	2	$7,500	$15,000
	250Ø Gate Valve	ea	9	$6,000	$54,000
	200Ø Gate Valve	ea	1	$4,500	$4,500
	150Ø Gate Valve	ea	3	$3,000	$9,000
	300Ø x 300Ø x 250Ø Tee	ea	1	$3,500	$3,500
	250Ø x 250Ø x 250Ø Tee	ea	2	$2,500	$5,000
	250Ø x 250Ø x 200Ø Tee	ea	1	$2,500	$2,500
	250Ø Bend	ea	2	$2,000	$4,000
	150Ø Bend	ea	1	$1,500	$1,500
	150Ø PVC to 350Ø HDPE Flange Connection	ea	1	$3,500	$3,500
	250Ø Couplers	ea	2	$1,800	$3,600
	200Ø Couplers	ea	1	$1,500	$1,500
	150Ø Couplers	ea	1	$1,200	$1,200
	Fire Hydrant	ea	2	$12,000	$24,000
	New Water Service	ea	8	$5,000	$40,000
	Tie-in to Existing Raw Water Main	ea	4	$20,000	$80,000
	Tie-in to Existing Raw Water Main	ea	1	$20,000	$20,000
	Disconnect Existing Water Main (Convert to Raw Water)	ea	5	$10,000	$50,000
	Disconnect Existing Water Main from Raw Water	ea	1	$10,000	$10,000
1.2	Other Construction				
	Road Removals	m²	420	$12	$5,105
	Hydrant Removal	L.S.	1	$2,000	$2,000
	Asphalt Restoration (Commercial)	m²	420	$100	$42,000
	Concrete Sidewalk	m²	240	$200	$48,000
	Curb and Gutter	lm	160	$250	$40,000
	Traffic Control	L.S.	1	$40,000	$40,000
				Subtotal	**$634,000**
				Engineering (15%)	$95,000
				Contingency (30%)	$190,000
				TOTAL	**$919,000**

Project: East Main Street Upsizing

Priority: Medium **Type:** Upgrade

Trigger: Future Planning

Location



Issue

The existing 150 mm asbestos cement (AC) water main that runs along Main St. (Highway 3) limits system capacity to provide fire flows to the surrounding area and developments SE of Osoyoos Lake. To improve system capacity, upsizing the watermain on Main St., as shown in the above Figure is proposed.

Scope

Supply and Install approximately 660 m of 350 mm PVC watermain with applicable appurtenances, as shown in the above Figure. Works also include the re-instating impacted road surfaces, curb and gutters, and side walks.

Time Frame

+/- 17 years

Cost Estimate (Class D)

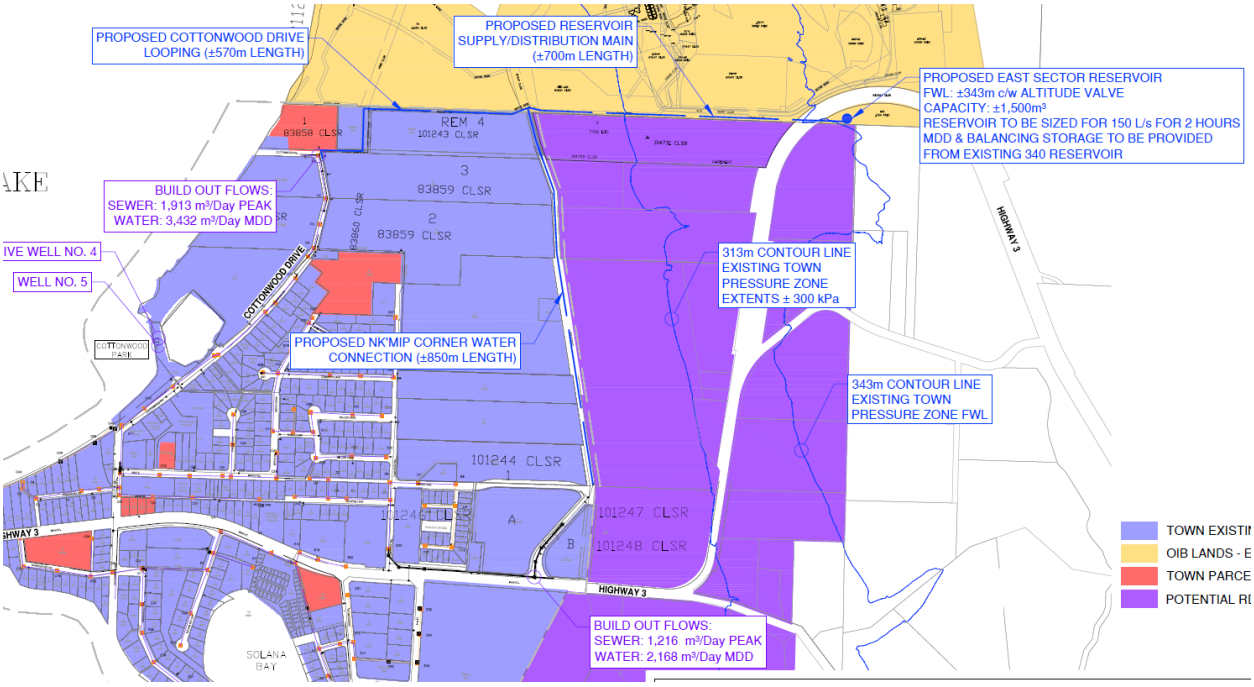
ITEM NO.	DESCRIPTION	UNIT	EST. QUANT.	UNIT PRICE	TOTAL PRICE
	East Main St. Pipe Upgrades				
1.1	Water System Components				
	450Ø PVC Water Main Hwy Crossing - Supply and Install	lm	25	$1,800	$45,000
	350Ø PVC Water Main - Supply and Install	lm	635	$650	$412,750
	350Ø PVC Water Main Hwy Crossing - Supply and Install	lm	25	$1,500	$37,500
	450Ø Gate Valve.	ea	1	$18,000	$18,000
	350Ø Gate Valve.	ea	7	$11,000	$77,000
	250Ø Gate Valve.	ea	1	$6,000	$6,000
	200Ø Gate Valve.	ea	1	$4,500	$4,500
	150Ø Gate Valve	ea	4	$3,000	$12,000
	350Ø x 350Ø x 150Ø Tee	ea	2	$3,500	$7,000
	350Ø x 250Ø x 200Ø Tee	ea	1	$3,500	$3,500
	350Ø Bend	ea	5	$3,000	$15,000
	250Ø Couplers	ea	1	$1,800	$1,800
	200Ø Couplers	ea	1	$1,500	$1,500
	150Ø Couplers	ea	2	$1,200	$2,400
	Fire Hydrant	ea	3	$12,000	$36,000
	New Water Service	ea	7	$5,000	$35,000
	Tie to Existing Water Main	ea	4	$20,000	$80,000
1.2	Other Construction				
	Road Removals	m²	1980	$12	$24,067
	Hydrant Removal	L.S.	3	$2,000	$6,000
	Asphalt Restoration (Commercial)	m²	660	$100	$66,000
	Concrete Sidewalk	lm	480	$200	$96,000
	Curb and Gutter	lm	320	$250	$80,000
	Traffic Control	L.S.	1	$115,000	$115,000
				Subtotal	**$1,182,000**
				Engineering (15%)	$177,000
				Contingency (30%)	$355,000
				TOTAL	**$1,714,000**

Project: East Sector Nk'Mip Corner Water Connection

Priority: Low **Type:** Upgrade

Trigger: Future Planning

Location Map



Issue

Extension of the east sector supply/distribution main must be completed to connect to the domestic water system.

Scope

Work includes installing a 850 m, 300 mm PVC water main on 45th Street and connect to the existing system at the south end of 45th Street. This additional connection would provide beneficial system looping.

Time Frame

+/- 23 years

Cost Estimate (Class D)

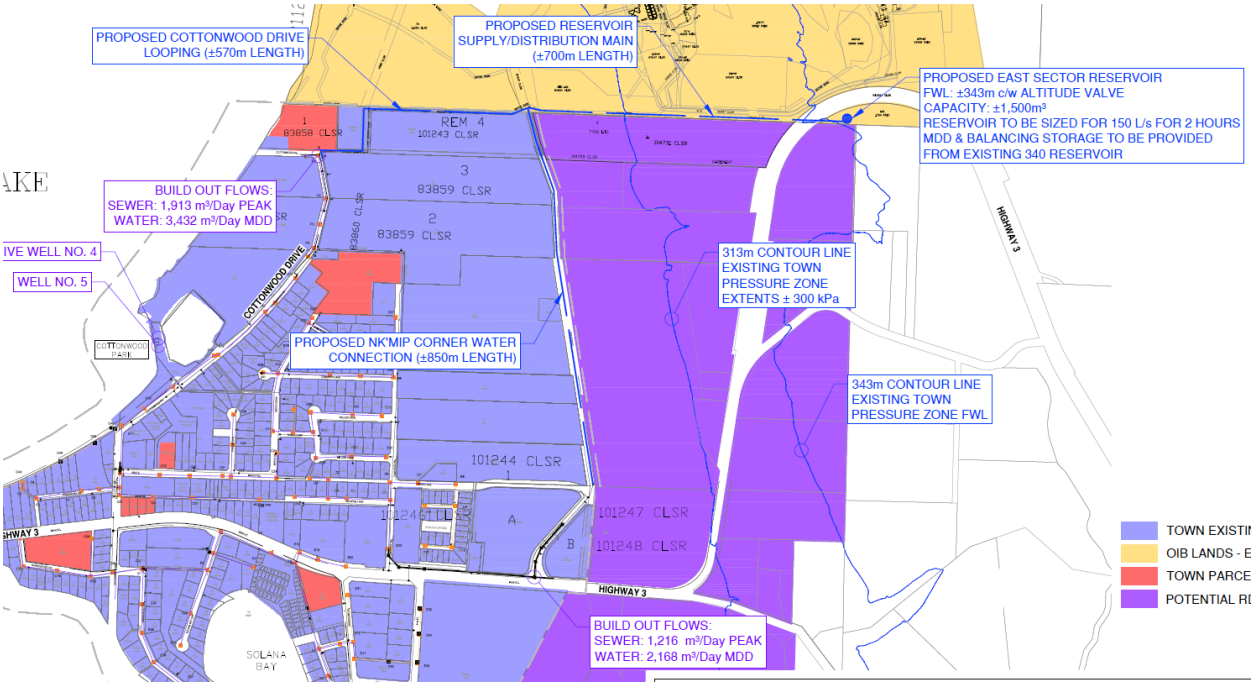
NO.	DESCRIPTION	UNIT	EST. QUANT	UNIT PRICE	TOTAL PRICE
East Sector Water System Upgrades - Nk'Mip Corner Water Connection					
1.0	**Watermain tie-ins**				
1.1	At Nk'Mip Corner	L.S.	1	$20,000	$20,000
1.2	On 45th Street	L.S.	1	$20,000	$20,000
2.0	**Supply and install 300mm PVC watermain**	l.m.	850	$500	$425,000
3.0	**Watermain fittings**	Allow	1	$60,000	$60,000
4.0	**Fire hydrant assemblies**	ea.	6	$12,000	$72,000
5.0	**Restoration**				
5.1	Road restoration (including pavement and gravels) - assume 3m pavement restoration due to narrow construction corridor	m²	2,550	$75	$191,250
5.2	Boulevard restoration	m²	1,700	$10	$17,000
				Subtotal	**$805,000**
				Engineering (15%)	$121,000
				Allowance for Archaeology	$50,000
				Contingency (30%)	$242,000
				TOTAL	**$1,218,000**

Project: East Sector Reservoir

Priority: Low **Type:** Upgrade

Trigger: Future Planning

Location Map



Issue

The east sector of Osoyoos is serviced by the 340 reservoir which is located to the west of the Osoyoos Lake crossing. This is not optimal based on the domestic water system layout. For this reason, an east sector reservoir would provide more efficient and resilient fire flows and emergency storage for the east sector.

Scope

The Town and the Osoyoos Indian Band (OIB) have been discussing the implementation of a treated water reservoir on the east side of town, near the south end of Sonora Dunes Golf Course. This location can be viewed on the location map. The reservoir would provide water to any future developments in the area, as well as provide balancing, emergency storage and fire flows directly on the east side of Osoyoos. This reservoir would address any reservoir storage deficiencies providing additional system resilience. Also discussed in the East Sector Densification Plan, this reservoir could provide a minimum fire flow of 150 L/s to OIB developments.

Time Frame

+/- 21 years

Cost Estimate (Class D)

ITEM	DESCRIPTION	UNIT	EST.	UNIT	TOTAL

NO.			QUANT.	PRICE	PRICE
East Sector Water System Upgrades - Reservoir					
1.0	**Reservoir**				
1.1	Site preparation (including allowance for blasting)	Allow	1	$60,000	$60,000
1.2	Cast-in-place concrete chamber	L.S.	1	$1,600,000	$1,600,000
1.3	Reservoir valve chamber	L.S.	1	$400,000	$400,000
1.4	Interconnecting piping	L.S.	1	$60,000	$60,000
1.5	PLC and SCADA programming	Allow	1	$60,000	$60,000
1.6	Valve chamber electrical, heating, lighting, etc.	L.S.	1	$25,000	$25,000
1.7	Electrical service	L.S.	1	$60,000	$60,000
2.0	**Site Works**				
2.1	Access road to reservoir	L.S.	1	$20,000	$20,000
2.2	Fencing	L.S.	1	$20,000	$20,000
2.3	Reservoir drain and infiltration basin	L.S.	1	$40,000	$40,000
				Subtotal	**$2,345,000**
				Engineering (15%)	$352,000
				Allowance for Archaeology	$50,000
				Contingency (30%)	$704,000
				TOTAL	**$3,451,000**

APPENDIX F

Water Treatment Plant Distribution Upgrades

WATER SUPPLY WELLS #4 AND #5

TIE-IN 200Ø RAW WATER SUPPLY MAIN FROM WELL #10

DISCONNECT RAW WATER MAIN FROM EXISTING MUNICIPAL SYSTEM

INSTALL 200Ø PVC RAW WATER SUPPLY MAIN FROM WELL #10

CONVERT EXISTING 300Ø WATER MAIN TO RAW WATER SUPPLY MAIN FROM WELL #4, #5 AND #10

WATER SUPPLY WELL #10

TIE-IN TO EXISTING AND DISCONNECT FROM EXISTING 300Ø PVC CONVERTED RAW WATER MAIN

TIE-IN 300Ø RAW WATER SUPPLY MAIN

TIE-IN TO EXISTING AND CROSS RAW WATER SUPPLY MAIN

INSTALL 200Ø PVC RAW WATER SUPPLY MAIN FROM WELL #9

WATER SUPPLY WELL #9

CHLORINE CONTACT CHAMBER

WATER TREATMENT PLANT

INSTALL 300Ø PVC WATER SUPPLY MAIN

TIE-IN RAW WATER SUPPLY SYSTEM TO WATER TREATMENT PLANT

REPLACE150Ø AC WATER MAIN WITH 300Ø PVC RAW WATER SUPPLY MAIN

REDUCE 450Ø PVC DISTRIBUTION MAIN 300Ø PVC DISTRIBUTION MAIN

450Ø PVC DISTRIBUTION MAIN TIE-IN TO EXISTING SYSTEM ON SOUTH COTTONWOOD DR. AND DISCONNECT FROM EXISTING SYSTEM ON NORTH COTTONWOOD DR.

INSTALL 450Ø PVC DISTRIBUTION MAIN TO WATER TREATMENT PLANT

450Ø PVC DISTRIBUTION MAIN TIE-IN TO EXISTING SYSTEM ON EAST MAPLE DR. AND DISCONNECT FROM EXISTING SYSTEM ON WEST MAPLE DR.

WATER SUPPLY WELL 3

300Ø PVC DISTRIBUTION MAIN

300

COTTONWOOD DR.

MAPLE DRIVE

BIRCH CRT.

POPLAR CRT.

SUMAC LANE

MAPLE DR.

JACKPINE

JACKPINE LANE

PONDEROSA DR.

No.	DATE	DESCRIPTION	BY	APP'D
-	-	-	-	-

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE CONSULTING
2079 Falcon Road ■ Kamloops BC ■ V2C 4J2
tel 250.828.0881 ■ info@true.ca

TOWN OF OSOYOOS

OSOYOOS CAPITAL PLAN

PHASE 1 UPGRADES

SCALE	1:750
DESIGN BY	AM
DRAWN BY	AM
DATE	MAY 2023
PROJECT REFERENCE No.	302-2061

DRAWING No. **302-2061 F1**

SHEET 1 OF 5

ISSUE/REV. 0

E:\Clients\302-2061\302-2061\13 Drawings\Civil\02 design drawings\302-2061 project sheets 01252023



No.	DATE	DESCRIPTION	BY	APPD
-	-	-	-	-

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE CONSULTING
2079 Falcon Road ■ Kamloops BC ■ V2C 4J2
tel 250.828.0881 ■ info@true.ca

TOWN OF OSOYOOS

OSOYOOS CAPITAL PLAN

PHASE 2 UPGRADES

SCALE	1:1000
DESIGN BY	AM
DRAWN BY	AM
DATE	MAY 2023
PROJECT REFERENCE No.	302-2061

DRAWING No. **302-2061 F2**

SHEET 2 OF 5

ISSUE/REV. **0**

F:\E Projects\300-399\302-2061\03 drawings\acad\02 design drawings\302-2061 project sheets 04302023

72nd AVE.

70th AVE.

68th AVE.

66 AVE.

MAIN ST.

83 rd ST.

KINGFISHER DR.

TIE-IN TO EXISTING
END OF NEW
250Ø PVC WATER MAIN

TIE-IN TO EXISTING

TIE-IN TO EXISTING

TIE-IN TO EXISTING

INSTALL 250Ø PVC WATER MAIN

CONVERT EXISTING 150Ø WATER MAIN
TO RAW WATER SUPPLY MAIN
FROM WELL #8

TIE-IN TO EXISTING

DISCONNECT RAW WATER MAIN
FROM EXISTING SYSTEM

WATER SUPPLY WELL 8

EXTEND RAW WATER SUPPLY MAIN
TO EXISTING TIE-IN

TIE-IN TO EXISTING RAW WATER SUPPLY MAIN

DISCONNECT RAW WATER MAIN
FROM EXISTING SYSTEM

CONVERTED RAW WATER MAIN
EXTENDS ALONG OSOYOOS LAKE BEACH
SEE DETAIL 1 FOR TIE-IN INFORMATION

CONVERT EXISTING 300Ø WATER
MAIN TO RAW WATER SUPPLY MAIN
FROM WELL #8

DISCONNECT CONVERTED RAW WATER
MAIN FROM EXISTING SYSTEM

MAIN ST.

ISHER DR.

CONNECT RAW WATER MAIN TO
EXISTING RAW WATER MAIN

300Ø WATER MAIN TO RAW
WATER SUPPLY MAIN
FROM WELL #4, #5 AND #10

COTTONWOOD DR.

300

DISCONNECT WATER MAIN
FROM RAW WATER SUPPLY MAIN

DETAIL 1: WELL #8 RAW WATER SUPPLY MAIN TIE-IN TO
EXISTING RAW WATER SYSTEM

No.	DATE	DESCRIPTION	BY	APPD
-	-	-	-	-

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE CONSULTING
2079 Falcon Road ■ Kamloops BC ■ V2C 4J2
tel 250.828.0881 ■ info@true.ca

TOWN OF OSOYOOS

OSOYOOS CAPITAL PLAN

PHASE 3 UPGRADES

SCALE	1:1000
DESIGN BY	AM
DRAWN BY	AM
DATE	MAY 2023
PROJECT REFERENCE No.	302-2061

DRAWING No. **302-2061 F3**

SHEET 3 OF 5

ISSUE/REV. **0**

T:\Projects\302-2061\302-2061 F3 drawings\02 design drawings\302-2061 project sheets 01242023

WATER SUPPLY WELLS #4 AND #5

200Ø PVC RAW WATER MAIN

300Ø PVC RAW WATER MAIN

WATER SUPPLY WELL #3

WATER SUPPLY WELL #10

WATER SUPPLY WELL #9

CHLORINE CONTACT CHAMBER

WATER TREATMENT PLANT

300Ø PVC WATER MAIN

300Ø PVC RAW WATER MAIN

300

450Ø PVC WATER MAIN

300Ø PVC RAW WATER MAIN

350Ø HDPE RAW WATER MAIN

250Ø PVC WATER MAIN

150Ø AC RAW WATER MAIN

450Ø HDPE WATER MAIN

450Ø PVC WATER MAIN

WATER SUPPLY WELL #8

78th AVE
MAIN ST.
PARK PLACE
MAIN ST.
MAIN ST.
66 AVE
83rd ST.
SINCLAIR CRES.
COTTONWOOD DR.
SPRUCE CRT.
MAPLE DRIVE
BIRCH CRT.
LOME
MAPLE DR.
SUMAC LANE
MAPLE DR.
MAPLE
MAPLE DR.
PONDEROSA DR.
JACKPINE
JACKPINE LANE
COTTONWOOD DR.
MAIN ST.
MAIN ST.
HARBOUR KEY DR.
POST 79458
POST 41331
COTTONWOOD DR.
HARBOUR KEY DR.
SOJANA KEY CRT.
HARBOUR KEY DR.

No.	DATE	DESCRIPTION	BY	APPD
-	-	-	-	-

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE CONSULTING
2079 Falcon Road ■ Kamloops BC ■ V2C 4J2
tel 250.828.0881 ■ info@true.ca

TOWN OF OSOYOOS

OSOYOOS CAPITAL PLAN

PHASED UPGRADES FINAL LAYOUT

SCALE	1:2500
DESIGN BY	AM
DRAWN BY	AM
DATE	MAY 2023
PROJECT REFERENCE No.	302-2061

DRAWING No. 302-2061 **F4**

SHEET 4 OF 5

ISSUE/REV. **0**

FILE: c:\users\302-2061\302-2061\3 drawings\cad\2 design drawings\302-2061 project sheets 05242023

WATER SUPPLY WELLS #4 AND #5

300Ø PVC RAW WATER SUPPLY

300Ø PVC RAW WATER SUPPLY

300

300Ø PVC RAW WATER SUPPLY

300Ø PVC RAW WATER SUPPLY

WATER SUPPLY WELL #10

WATER SUPPLY WELL #9

CHLORINE CONTACT CHAMBER

WATER TREATMENT PLANT

WATER SUPPLY WELL #3

450Ø PVC DISTRIBUTION MAIN

450Ø PVC DISTRIBUTION MAIN

REPLACE EXISTING 150 mm AC WATERMAIN WITH 450Ø PVC DISTRIBUTION MAIN

TIE-IN TO EXISTING PHASE 2

TIE-IN TO EXISTING

REDUCE 450Ø PVC DISTRIBUTION MAIN TO 350Ø PVC DISTRIBUTION MAIN

TIE-IN TO EXISTING

REPLACE EXISTING 150 mm AC WATERMAIN WITH 350Ø PVC DISTRIBUTION MAIN

TIE-IN TO EXISTING

TIE-IN TO EXISTING

BIRCH CRT.

LOMBARDY LANE

MAPLE DRIVE

WILLOW CRES

SUMAC LANE

POPLAR CRT.

MAPLE DR.

WILLOW CRES

TAMARACK DR.

MAPLE

MAPLE DR.

PONDEROSA DR.

COTTONWOOD DR.

JACKPINE

JACKPINE LANE

JACKPINE LANE

MAIN ST.

COTTONWOOD DR.

HARBOUR KEY DR

TAMARACK DR.

st ST.

IZ

No.	DATE	DESCRIPTION	BY	APPD
-	-	-	-	-

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE CONSULTING
2079 Falcon Road ■ Kamloops BC ■ V2C 4J2
tel 250.828.0881 ■ info@true.ca

TOWN OF OSOYOOS

OSOYOOS CAPITAL PLAN

EAST MAIN STREET UPGRADES

SCALE	1:1000
DESIGN BY	AM
DRAWN BY	AM
DATE	APRIL 2023
PROJECT REFERENCE No.	302-2061
DRAWING No.	302-2061 F5
SHEET	5 OF 5
ISSUE/REV.	0

F:\E\Clients\OSOYOOS\302-2061\03 drawings\cad\02 design drawings\302-2061 project sheets 12452023

N

OSOYOOS LAKE

REM. 196
84654 CLSR

99300 CLSR

1124 CLSR

PROPOSED COTTONWOOD DRIVE LOOPING (±570m LENGTH)

PROPOSED RESERVOIR SUPPLY/DISTRIBUTION MAIN (±700m LENGTH)

PROPOSED EAST SECTOR RESERVOIR
FWL: ±343m c/w ALTITUDE VALVE
CAPACITY: ±1,500m³
RESERVOIR TO BE SIZED FOR 150 L/s FOR 2 HOURS MDD & BALANCING STORAGE TO BE PROVIDED FROM EXISTING 340 RESERVOIR

BUILD OUT FLOWS:
SEWER: 1,913 m³/Day PEAK
WATER: 3,432 m³/Day MDD

COTTONWOOD DRIVE WELL NO. 4

WELL NO. 5

EXISTING MUNICIPAL BOUNDARY

PROPOSED NK'MIP CORNER WATER CONNECTION (±850m LENGTH)

313m CONTOUR LINE
EXISTING TOWN
PRESSURE ZONE
EXTENTS ± 300 kPa

343m CONTOUR LINE
EXISTING TOWN
PRESSURE ZONE FWL

BUILD OUT FLOWS:
SEWER: 1,216 m³/Day PEAK
WATER: 2,168 m³/Day MDD

1
83858 CLSR

REM 4
101243 CLSR

3
83859 CLSR

2
83859 CLSR

83860 CLSR

PC 2019-144
101244 CLSR
1 REM

101246 CLSR

101247 CLSR

101248 CLSR

104731 CLSR

104729 CLSR

EASEMENT

7768 LTD

111076 CLSR

110818 CLSR

109102 CLSR

101245 CLSR

404

405

402

399

403

B

COTTONWOOD DRIVE

CEDAR LANE

COTTONWOOD PARK

GYRO PARK

TULIP PARK

PIONEER WALKWAY

MAIN STREET / HIGHWAY 3

HIGHWAY 3

SOLANA BAY

HIGHWAY 3

TOWN EXISTING SERVICE AREA
OIB LANDS - EXISTING TOWN SEWER SERVICE AREA
TOWN PARCELS WITH FUTURE DENSIFICATION POTENTIAL
POTENTIAL RDOS EXPANSION AREA

0 SCALE: 1:10,000 250

TOWN OF OSOYOOS
EAST SECTOR DENSIFICATION SERVICING
PROPOSED WATER SYSTEM UPGRADES TO SUPPORT OIB DEVELOPMENT

TRUE CONSULTING

DESIGN BY: SAC
SCALE: 1:10000 (11x17)
DWG NO.: FIG F6
REV: 0
DRAWN BY: SAC
DATE: OCT 2021
302-2061

FILE:n:\clients\300-399\302\302-2061\03 drawings\cad\02 design drawings\dn-302-2061-east sector.dwg

APPENDIX G

Capital Projects Asset Management

Table G1: Osoyoos Water Utility Asset Management - Water Distribution Network - Capital Projects Replacement Cost

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment
Capital - 74th Avenue Upsizing									
PVC Water Main	180	l.m.	300	2024	80	81	2104	$117,900	$1,474
150ø Gate Valve	2	ea	150	2024	40	41	2064	$6,000	$150
250ø Gate Valve	2	ea	250	2024	40	41	2064	$12,000	$300
300ø Gate Valve	1	ea	300	2024	40	41	2064	$7,500	$188
Asphalt Restoration (Commercial)	500	m²	-	2024	80	81	2104	$56,000	$700
Concrete Sidewalk	270	m²	-	2024	80	81	2104	$54,000	$675
Curb and Gutter	180	lm	-	2024	80	81	2104	$45,000	$563
Traffic Control	1	L.S.	-	2024	80	81	2104	$75,000	$938
							Subtotal	$373,400	$4,986
							Engineering (15%) and Contingency (30%)	$168,030	$2,244
							Total	$541,430	$7,230
Capital - Wells Pump Auxiliary Power									
Well #1, Auxilary Power for 50 Hp Pump	1	L.S	-	2024	20	21	2044	$150,000	$7,500
Well #3, Auxilary Power for 75 Hp Pump	1	L.S	-	2024	20	21	2044	$175,000	$8,750
Well #4, Auxilary Power for 75 Hp Pump	1	L.S	-	2024	20	21	2044	$175,000	$8,750
Well #5, Auxilary Power for 100 Hp Pump	1	L.S	-	2024	20	21	2044	$200,000	$10,000
Well #6, Auxilary Power for 50 Hp Pump	1	L.S	-	2024	20	21	2044	$150,000	$7,500
Well #8, Auxilary Power for 75 Hp Pump	1	L.S	-	2024	20	21	2044	$175,000	$8,750
							Subtotal	$1,025,000	$51,250
							Engineering (15%) and Contingency (30%)	$461,250	$23,063
							Total	$1,486,250	$74,313
Capital - Well #9 And #10 C/W Auxiliary Power									
Well #9 Installation				2024	60	61	2084	$250,000	$4,167
Well #9 Vertical Turbine pump	1	L.S	-	2024	20	21	2044	$150,000	$7,500
Well #9 Auxilary Power	1	L.S	-	2024	20	21	2044	$175,000	$8,750
Well #9 Electrical	1	L.S	-	2024	15	16	2039	$80,000	$5,333
Well #9 Building	1	L.S	-	2024	75	76	2099	$208,000	$2,773
Well #9 SS Piping	1	L.S	-	2024	80	81	2104	$30,000	$375
Well #10 Installation				2024	60	61	2084	$250,000	$4,167
Well #10 Vertical Turbine pump	1	L.S	-	2024	20	21	2044	$150,000	$7,500
Well #10 Auxilary Power	1	L.S	-	2024	20	21	2044	$175,000	$8,750
Well #10 Electrical	1	L.S	-	2024	15	16	2039	$80,000	$5,333
Well #10 Building	1	L.S	-	2024	75	76	2099	$208,000	$2,773
Well #10 SS Piping	1	L.S	200	2024	80	81	2104	$30,000	$375
							Subtotal	$1,786,000	$57,797
							Engineering (15%) and Contingency (30%)	$803,700	$26,009
							Total	$2,589,700	$83,805
Capital - Phase 1 WTP Upgrades									
PVC Water Main including Fittings and Couplings	137	l.m.	450	2025	80	82	2105	$169,050	$2,113
PVC Water Main including Fittings and Couplings	342	l.m.	300	2025	80	82	2105	$219,200	$2,740
PVC Water Main including Fittings and Couplings	136	l.m.	200	2025	80	82	2105	$48,800	$610
Gate Valve	2	ea	450	2025	40	42	2065	$36,000	$900
Gate Valve	4	ea	300	2025	40	42	2065	$30,000	$750
Gate Valve	6	ea	200	2025	40	42	2065	$27,000	$675
Gate Valve	1	ea	150	2025	40	42	2065	$3,000	$75
Fire Hydrant	1	ea	-	2025	40	42	2065	$12,000	$300
Water Service	5	ea	-	2025	50	52	2075	$25,000	$500
Road Removals	555	m²	-	2025	80	82	2105	$6,746	$84
Asphalt Restoration (Commercial)	240	m²	-	2025	80	82	2105	$24,000	$300
Asphalt Restoration (Residential)	315	m²	-	2025	80	82	2105	$25,200	$315
Concrete Sidewalk	120	m²	-	2025	80	82	2105	$24,000	$300
Curb and Gutter	80	lm	-	2025	80	82	2105	$20,000	$250
Traffic Control	1	L.S.	-	2025	80	82	2105	$95,000	$1,188
							Subtotal	$764,996	$11,100

							Engineering (15%) and Contingency (30%)	$344,248	$4,995
							Total	$1,109,244	$16,095
Capital - Cottonwood WTP									
Pumps for pumpstation, decanter, recycling and backwash	1	L.S	-	2025	20	22	2045	$382,000	$19,100
Building for WTP and Pumpstation	1	L.S	-	2025	75	77	2100	$1,298,000	$17,307
SS, PVC, and HDPE piping for site, pumpstation, decanter, recycling, backwash and chlorine contact tank	1	L.S	100 - 500	2025	80	82	2105	$301,000	$3,763
Electrical for WTP. Pumpstaions and Well VFDs	1	L.S	-	2025	15	17	2040	$781,000	$52,067
Water Treatment for Manganese Removal and Chlorine Disinfection	1	L.S	-	2025	25	27	2050	$1,354,000	$54,160
Valves for Pumpstation, Recycle Pump and Decanter	1	L.S	-	2025	40	42	2065	$49,000	$1,225
Chlorine Contact Tank	1	L.S	-	2025	35	37	2060	$375,000	$10,714
Manholes for Sanitary Backwash, Dechlorination, and Overflow	1	L.S	-	2025	50	52	2075	$39,000	$780
							Subtotal	$4,579,000	$159,115
							Engineering (15%) and Contingency (30%)	$2,060,550	$71,602
							Total	$6,639,550	$230,717
Capital - 89th Street Upgrades									
250ø PVC Water Main - Supply and Install	210	m	250	2026	80	83	2106	$93,650	$1,171
150ø Gate Valve	1	ea	150	2026	40	43	2066	$3,000	$75
250ø Gate Valve	5	ea	250	2026	40	43	2066	$30,000	$750
Fire Hydrant	1	ea	-	2026	40	43	2066	$12,000	$300
New Water Service c/w pit Water Meter	12	ea	-	2026	50	53	2076	$60,000	$1,200
Road Removals	600	m²	-	2026	80	83	2106	$7,293	$91
Asphalt Restoration (Commercial)	600	m²	-	2026	80	83	2106	$60,000	$750
Concrete Sidewalk	315	m²	-	2026	80	83	2106	$63,000	$788
Curb and Gutter	210	lm	-	2026	80	83	2106	$52,500	$656
Traffic Control	1	L.S.	-	2026	80	83	2106	$60,000	$750
							Subtotal	$441,443	$6,531
							Engineering (15%) and Contingency (30%)	$198,649	$2,939
							Total	$640,092	$9,469
Capital - 62nd Avenue Tie-in									
250ø PVC Water Main - Supply and Install	170	m	250	2027	80	84	2107	$137,700	$1,721
250ø Gate Valve	3	ea	250	2027	40	44	2067	$13,500	$338
250ø Air Valve and Chamber	1	ea	250	2027	40	44	2067	$8,000	$200
							Subtotal	$159,200	$2,259
							Engineering (15%) and Contingency (30%)	$71,640	$1,016
							Total	$230,840	$3,275
Capital - East Sector Reservoir Supply / Distribution Main									
PVC Water Main including Fittings and Couplings	700	l.m.	300	2029	80	86	2109	$435,000	$5,438
PVC Water Main Highway Crossing	60	l.m.	300	2029	80	86	2109	$90,000	$1,125
Gate Valves	-	Allow	-	2029	40	46	2069	$15,000	$375
Fire Hydrant	1	ea	-	2029	40	46	2069	$12,000	$300
							Subtotal	$552,000	$7,238
							Engineering (15%) and Contingency (30%)	$248,400	$3,257
							Total	$800,400	$10,494
Capital - East Sector Reservoir Cottonwood Drive Looping									
PVC Water Main including Fittings and Couplings	570	l.m.	300	2029	80	86	2109	$360,000	$4,500
Gate Valves	-	Allow	-	2029	40	46	2069	$15,000	$375
Fire Hydrant	4	ea	-	2029	40	46	2069	$48,000	$1,200
Backflow Chamber	1	L.S	-	2029	40	46	2069	$220,000	$5,500
							Subtotal	$643,000	$11,575
							Engineering (15%) and Contingency (30%)	$289,350	$5,209
							Total	$932,350	$16,784
Capital - Phase 2 WTP Upgrades									
PVC Water Main including Fittings and Couplings	755	l.m.	450	2030	80	87	2110	$698,650	$8,733
Gate Valve	9	ea	450	2030	40	47	2070	$162,000	$4,050
Gate Valve	1	ea	250	2030	40	47	2070	$6,000	$150

Gate Valve	1	ea	200	2030	40	47	2070	$4,500	$113
Gate Valve	3	ea	150	2030	40	47	2070	$9,000	$225
Fire Hydrant	6	ea	-	2030	40	47	2070	$72,000	$1,800
Water Service	20	ea	-	2030	50	57	2080	$100,000	$2,000
Road Removals	2265	m²	-	2030	80	87	2110	$27,531	$344
Asphalt Restoration (Commercial)	2265	m²	-	2030	80	87	2110	$226,500	$2,831
Concrete Sidewalk	1132.5	m²	-	2030	80	87	2110	$226,500	$2,831
Curb and Gutter	755	lm	-	2030	80	87	2110	$188,750	$2,359
Traffic Control	1	L.S.	-	2030	80	87	2110	$115,000	$1,438
							Subtotal	$1,836,431	$26,874
							Engineering (15%) and Contingency (30%)	$826,394	$12,093
							Total	$2,662,826	$38,968
Capital - Phase 3 WTP Upgrades									
PVC Water Main including Fittings and Couplings	160	l.m.	250	2035	80	92	2115	$172,100	$2,151
PVC Water Main Highway Crossing	30	l.m.	250	2035	80	92	2115	$39,000	$488
PVC Water Main including Fittings and Couplings	45	l.m.	150	2035	80	92	2115	$19,700	$246
Gate Valve	2	ea	300	2035	40	52	2075	$15,000	$375
Gate Valve	9	ea	250	2035	40	52	2075	$54,000	$1,350
Gate Valve	1	ea	200	2035	40	52	2075	$4,500	$113
Gate Valve	3	ea	150	2035	40	52	2075	$9,000	$225
Fire Hydrant	2	ea	-	2035	40	52	2075	$24,000	$600
Water Service	8	ea	-	2035	50	62	2085	$40,000	$800
Road Removals	420	m²	-	2035	80	92	2115	$5,105	$64
Asphalt Restoration (Commercial)	420	m²	-	2035	80	92	2115	$42,000	$525
Concrete Sidewalk	240	m²	-	2035	80	92	2115	$48,000	$600
Curb and Gutter	160	lm	-	2035	80	92	2115	$40,000	$500
Traffic Control	1	L.S.	-	2035	80	92	2115	$40,000	$500
							Subtotal	$552,405	$8,536
							Engineering (15%) and Contingency (30%)	$248,582	$3,841
							Total	$800,987	$12,378
Capital - East Main Street Upsizing									
PVC Water Main Highway Crossing	25	l.m.	450	2040	80	97	2120	$45,000	$563
PVC Water Main including Fittings and Couplings	635	l.m.	350	2040	80	97	2120	$523,950	$6,549
PVC Water Main Highway Crossing	25	l.m.	350	2040	80	97	2120	$37,500	$469
Gate Valve	1	ea	450	2040	40	57	2080	$18,000	$450
Gate Valve	7	ea	350	2040	40	57	2080	$77,000	$1,925
Gate Valve	1	ea	250	2040	40	57	2080	$6,000	$150
Gate Valve	1	ea	200	2040	40	57	2080	$4,500	$113
Gate Valve	4	ea	150	2040	40	57	2080	$12,000	$300
Fire Hydrant	3	ea	-	2040	40	57	2080	$36,000	$900
Water Service	7	ea	-	2040	50	67	2090	$35,000	$700
Road Removals	1980	m²	-	2040	80	97	2120	$24,067	$301
Asphalt Restoration (Commercial)	1980	m²	-	2040	80	97	2120	$198,000	$2,475
Concrete Sidewalk	480	m²	-	2040	80	97	2120	$96,000	$1,200
Curb and Gutter	320	lm	-	2040	80	97	2120	$80,000	$1,000
Traffic Control	1	L.S.	-	2040	80	97	2120	$115,000	$1,438
							Subtotal	$1,308,017	$18,531
							Engineering (15%) and Contingency (30%)	$588,608	$8,339
							Total	$1,896,625	$26,871
Capital - East Sector Nk'Mip Corner Water Connection									
PVC Water Main including Fittings and Couplings	850	l.m.	300	2042	80	99	2122	$510,000	$6,375
Gate Valves	-	Allow	-	2042	40	59	2082	$15,000	$375
Fire Hydrant	6	ea	-	2042	40	59	2082	$72,000	$1,800
							Subtotal	$597,000	$8,550
							Engineering (15%) and Contingency (30%)	$268,650	$3,848
							Total	$865,650	$12,398
							Construction Grand Total	**$14,617,893**	**$374,342**
							Engineering (15%) and Contingency (30%)	**$6,578,052**	**$168,454**

Grand Total	**$21,195,945**	**$542,795**

Table G2: Osoyoos Water Utility Asset Management - Water Distribution Network - Capital Projects Altered Assets

GIS Tag	Project	Project Installation Date	Item	Unit	Quantity	unit Cost	Total Replacement Cost	AAI
Phase 1	Phase 3 Water Treatment Plant Upgrades	2035	200 mm PVC Watermain	l.m.	20	$350.00	$7,000.00	$87.50
WHY0004	89th Street	2026	Hydrant	ea	1	$12,000.00	$12,000.00	$300.00
WHY0011	East Main Street Pipe Upgrades	2040	Hydrant	ea	1	$12,000.00	$12,000.00	$300.00
WHY0025	East Main Street Pipe Upgrades	2040	Hydrant	ea	1	$12,000.00	$12,000.00	$300.00
WHY0026	East Main Street Pipe Upgrades	2040	Hydrant	ea	1	$12,000.00	$12,000.00	$300.00
WHY0032	Phase 1 Water Treatment Plant Upgrades	2025	Hydrant	ea	1	$12,000.00	$12,000.00	$300.00
WHY0050	Phase 3 Water Treatment Plant Upgrades	2035	Hydrant	ea	1	$12,000.00	$12,000.00	$300.00
WHY0128	Phase 2 Water Treatment Plant Upgrades	2030	Hydrant	ea	1	$12,000.00	$12,000.00	$300.00
WHY0130	Phase 2 Water Treatment Plant Upgrades	2030	Hydrant	ea	1	$12,000.00	$12,000.00	$300.00
WHY0131	Phase 2 Water Treatment Plant Upgrades	2030	Hydrant	ea	1	$12,000.00	$12,000.00	$300.00
WML0012	89th Street	2026	150 mm AC Watermain	l.m.	2	$450.00	$756.00	$11.63
WML0013	89th Street	2026	150 mm AC Watermain	l.m.	3	$450.00	$1,435.50	$22.08
WML0019	89th Street	2026	200 mm AC Watermain	l.m.	124	$500.00	$61,760.06	$1,187.69
WML0020	89th Street	2026	200 mm AC Watermain	l.m.	5	$500.00	$2,350.00	$36.15
WML0021	89th Street	2026	200 mm AC Watermain	l.m.	12	$500.00	$6,000.00	$92.31
WML0024	62nd Avenue	2027	250 mm AC Watermain	l.m.	100	$500.00	$50,000.00	$769.23
WML0062	Phase 1 Water Treatment Plant Upgrades	2025	150 mm AC Watermain	l.m.	90	$450.00	$40,500.00	$519.23
WML0063	Phase 1 Water Treatment Plant Upgrades	2025	150 mm AC Watermain	l.m.	19	$450.00	$8,437.50	$108.17
WML0200	Phase 3 Water Treatment Plant Upgrades	2035	200 mm AC Watermain	l.m.	4	$500.00	$2,000.00	$38.46
WML0207	62nd Avenue	2027	100 mm AC Watermain	l.m.	38	$450.00	$17,100.00	$263.08
WML0228	Phase 3 Water Treatment Plant Upgrades	2035	150 mm AC Watermain	l.m.	4	$450.00	$1,800.00	$27.69
WML0232	74A Avenue	2024	150 mm AC Watermain	l.m.	16	$450.00	$7,371.00	$113.40
WML0274	74A Avenue	2024	150 mm AC Watermain	l.m.	17	$450.00	$7,425.00	$114.23
WML0303	Phase 2 Water Treatment Plant Upgrades	2030	300 mm DI Watermain	l.m.	11	$650.00	$6,896.50	$88.42
WML0304	Phase 2 Water Treatment Plant Upgrades	2030	150 mm AC Watermain	l.m.	6	$450.00	$2,799.00	$43.06
WML0305	Phase 2 Water Treatment Plant Upgrades	2030	150 mm AC Watermain	l.m.	5	$450.00	$2,313.00	$35.58
WML0307	Phase 2 Water Treatment Plant Upgrades	2030	150 mm AC Watermain	l.m.	3	$450.00	$1,345.50	$20.70
WML0402	East Main Street Pipe Upgrades	2040	150 mm AC Watermain	l.m.	16	$500.00	$7,970.00	$122.62
WML0518	Phase 2 Water Treatment Plant Upgrades	2030	150 mm AC Watermain	l.m.	14	$450.00	$6,151.50	$94.64
WML0548	East Main Street Pipe Upgrades	2040	150 mm AC Watermain	l.m.	5	$450.00	$2,412.00	$30.92
WML0549	East Main Street Pipe Upgrades	2040	150 mm AC Watermain	l.m.	12	$450.00	$5,341.50	$68.48
WML0559	East Main Street Pipe Upgrades	2040	150 mm AC Watermain	l.m.	9	$450.00	$4,140.00	$53.08
WML0560	East Main Street Pipe Upgrades	2040	150 mm AC Watermain	l.m.	90	$450.00	$40,374.00	$517.62
WML0561	East Main Street Pipe Upgrades	2040	150 mm AC Watermain	l.m.	79	$450.00	$35,473.50	$454.79
WML0581	89th Street	2026	150 mm AC Watermain	l.m.	12	$450.00	$5,400.00	$83.08
WML0588	East Main Street Pipe Upgrades	2040	150 mm AC Watermain	l.m.	1	$450.00	$612.00	$7.85
WML0620	East Main Street Pipe Upgrades	2040	150 mm AC Watermain	l.m.	25	$450.00	$11,250.00	$144.23
WML0620	Phase 2 Water Treatment Plant Upgrades	2030	150 mm AC Watermain	l.m.	51	$450.00	$22,950.00	$294.23
WML0621	East Main Street Pipe Upgrades	2040	150 mm PVC Watermain	l.m.	241	$450.00	$108,652.50	$1,131.80
WML0675	East Main Street Pipe Upgrades	2040	150 mm AC Watermain	l.m.	71	$450.00	$31,990.50	$410.13
WML0676	East Main Street Pipe Upgrades	2040	150 mm AC Watermain	l.m.	150	$450.00	$67,513.50	$865.56
WML1014	Phase 2 Water Treatment Plant Upgrades	2030	250 mm DI Watermain	l.m.	40	$1,850.00	$74,425.50	$954.17
WML1015	Phase 2 Water Treatment Plant Upgrades	2030	250 mm DI Watermain	l.m.	1	$1,850.00	$1,850.00	$23.72
WML1030	Phase 2 Water Treatment Plant Upgrades	2030	200 mm AC Watermain	l.m.	98	$500.00	$48,950.00	$941.35
WML1031	Phase 2 Water Treatment Plant Upgrades	2030	200 mm AC Watermain	l.m.	96	$500.00	$47,760.00	$918.46
WML1032	Phase 2 Water Treatment Plant Upgrades	2030	200 mm AC Watermain	l.m.	113	$500.00	$56,540.00	$1,087.31
WML1033	Phase 2 Water Treatment Plant Upgrades	2030	150 mm AC Watermain	l.m.	28	$450.00	$12,739.50	$195.99
WML1034	Phase 2 Water Treatment Plant Upgrades	2030	150 mm AC Watermain	l.m.	112	$450.00	$50,400.00	$775.38
WML1037	Phase 2 Water Treatment Plant Upgrades	2030	150 mm AC Watermain	l.m.	45	$450.00	$20,299.50	$312.30
WML1038	Phase 1 Water Treatment Plant Upgrades	2025	150 mm AC Watermain	l.m.	82	$450.00	$36,900.00	$473.08
WML1094	Phase 3 Water Treatment Plant Upgrades	2035	250 mm PVC Watermain	l.m.	4	$600.00	$2,400.00	$25.00
WVA0024	89th Street	2026	Valve	ea	1	$4,500.00	$4,500.00	$112.50
WVA0025	89th Street	2026	Valve	ea	1	$4,500.00	$4,500.00	$112.50
WVA0107	74A Avenue	2024	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0115	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0116	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0117	Phase 2 Water Treatment Plant Upgrades	2030	Valve	ea	1	$4,500.00	$4,500.00	$112.50
WVA0118	Phase 2 Water Treatment Plant Upgrades	2030	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0138	74A Avenue	2024	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0244	Phase 2 Water Treatment Plant Upgrades	2030	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0270	Phase 2 Water Treatment Plant Upgrades	2030	Valve	ea	1	$7,500.00	$7,500.00	$187.50
WVA0271	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$4,500.00	$4,500.00	$112.50
WVA0272	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0273	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$6,000.00	$6,000.00	$150.00
WVA0274	East Main Street Pipe Upgrades	2040	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0275	East Main Street Pipe Upgrades	2040	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0277	East Main Street Pipe Upgrades	2040	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0278	East Main Street Pipe Upgrades	2040	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0279	East Main Street Pipe Upgrades	2040	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0280	Phase 2 Water Treatment Plant Upgrades	2030	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0281	East Main Street Pipe Upgrades	2040	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0282	East Main Street Pipe Upgrades	2040	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0283	East Main Street Pipe Upgrades	2040	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0288	East Main Street Pipe Upgrades	2040	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0289	East Main Street Pipe Upgrades	2040	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0290	East Main Street Pipe Upgrades	2040	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0292	East Main Street Pipe Upgrades	2040	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0293	East Main Street Pipe Upgrades	2040	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0320	Phase 2 Water Treatment Plant Upgrades	2030	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0321	Phase 1 Water Treatment Plant Upgrades	2025	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0322	Phase 1 Water Treatment Plant Upgrades	2025	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0323	Phase 1 Water Treatment Plant Upgrades	2025	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0324	Phase 1 Water Treatment Plant Upgrades	2025	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0366	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$6,000.00	$6,000.00	$150.00
WVA0367	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0370	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0568	89th Street	2026	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0625	Phase 2 Water Treatment Plant Upgrades	2030	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0626	Phase 2 Water Treatment Plant Upgrades	2030	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0627	Phase 2 Water Treatment Plant Upgrades	2030	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0741	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$11,000.00	$11,000.00	$275.00
WVA0743	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$7,500.00	$7,500.00	$187.50
WVA0780	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$6,000.00	$6,000.00	$150.00
WML0297	Phase 3 Water Treatment Plant Upgrades	2035	150 mm AC Watermain	l.m.	118	$450.00	$53,144.30	$817.60
WML0298	Phase 3 Water Treatment Plant Upgrades	2035	150 mm AC Watermain	l.m.	33	$450.00	$14,959.87	$230.15
WML0299	Phase 3 Water Treatment Plant Upgrades	2035	150 mm AC Watermain	l.m.	16	$450.00	$6,993.77	$107.60
WML0300	Phase 3 Water Treatment Plant Upgrades	2035	150 mm AC Watermain	l.m.	13	$450.00	$5,634.45	$86.68
WVA0224	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0368	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$3,000.00	$3,000.00	$75.00
WVA0753	Phase 3 Water Treatment Plant Upgrades	2035	Valve	ea	1	$3,000.00	$3,000.00	$75.00

Table G3: Osoyoos Water Utility Asset Management - Water Distribution Network - Engineering

Item	Code	Date	Re-occurance	Total Price	AAI
Water Conservation Plan	*E1*	2023	5	$25,000	$5,000
Source Water Protection Plan (Well Protection Plan)	*E2*	2024		$15,000	
Water Master Plan Review	*E3*	2023	5	$75,000	$15,000
Detailed Asset Management Plan	*E4*	2023		$75,000	
Asset Management Software	*E5*	2024		$15,000	
			Total	$205,000	

Table G4: Osoyoos Water Utility Asset Management - Water Distribution Network - Pro-active Project Cost Estimates

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Looping Project: Meadowarc Dr. to Wren Pl.	**P17**							
1.0 Pipe Replacement								
PVC Water Main	95	l.m.	200	2041	$500	$47,500	80	$594
Tie-in to Existing Watermain	2	ea	250	2041	$18,000	$36,000		
1.2 Other Construction								
Road Removals	1	LS	-	2041	$12	$1,500	80	$19
Asphalt Restoration (Residential)	1	LS	-	2041	$80	$3,500	80	$44
Concrete Sidewalk	8	m^2	-	2041	$200	$1,500	80	$19
Curb and Gutter	5	lm	-	2041	$250	$1,250	80	$16
					Subtotal	$91,250		$691
					Engineering (15%)	$13,688		
					Contingency (30%)	$27,375		
					Total	$132,313		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Looping Project: East 100 Avenue & Pressure Zone Connection	**P6**							
1.0 Pipe Replacement								
PVC Water Main	265	l.m.	200	2036	$500	$132,500	80	$1,656
Tie-in to Existing Watermain	2	ea	250	2036	$18,000	$36,000		
1.2 Other Construction								
Road Removals	1060	m^2	-	2036	$12	$12,720	80	$159
Asphalt Restoration (Residential)	1060	m^2	-	2036	$80	$84,800	80	$1,060
2. Pressure Zone Connection								
PRV and Automatic Flushing System	1	L.S	-	2036	$75,000	$75,000	40	$1,875
PRV and Automatic Flushing System Electrical	1	L.S	-	2036	$25,000	$25,000	15	$1,667
PRV and Automatic Flushing System Building	1	L.S	-	2036	$75,000	$75,000	75	$1,000
					Subtotal	$441,020		$7,417
					Engineering (15%)	$66,153		
					Contingency (30%)	$132,306		
					Total	$639,479		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Looping Project: Strata Pl. to Main St.	**P14**							
1.0 Pipe Replacement								
PVC Water Main	140	l.m.	200	2039	$500	$70,000	80	$875
Tie-in to Existing Watermain	3	ea	250	2039	$18,000	$54,000		
1.2 Other Construction								
Road Removals	1	LS	-	2039	$12	$1,500	80	$19
Asphalt Restoration (Commercial)	1	LS	-	2039	$80	$3,500	80	$44
Traffic Control	1	L.S.	-	2039	$20,000	$20,000	80	$250
					Subtotal	$149,000		$1,188
					Engineering (15%)	$22,350		
					Contingency (30%)	$44,700		
					Total	$216,050		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Looping Project: Industrial Park Looping	**P11**							
1.0 Pipe Replacement								
PVC Water Main	1060	l.m.	250	2038	$600	$636,000	80	$7,950

PVC Water Main Highway Crossing	20	l.m.	250	2038	$1,800	$36,000	80	$450
PVC Elbow c/w Restraints	2	l.m.	250	2038	$2,500	$5,000	80	$63
PVC Elbow c/w Restraints	1	l.m.	200	2038	$2,000	$2,000	80	$25
250Ø Gate Valve	4	ea	250	2038	$6,000	$24,000	40	$600
Tie-in to Existing Watermain	3	ea	250	2038	$18,000	$54,000		
Hydrants	2	ea	-	2038	$12,000	$24,000	40	$600
1.2 Other Construction								
Road Removals	180	m²	-	2038	$12	$2,160	80	$27
Asphalt Restoration (Commercial)	180	m²	-	2038	$100	$18,000	80	$225
Traffic Control	1	L.S.	-	2038	$50,000	$50,000	80	$625
2. Chlorine Monitoring								
Chlorine Analyzer, c/w watermain tap	1	L.S	-	2038	$10,000	$10,000	80	$125
Chlorine Analyzer, Cabinet and Foundation	1	L.S	-	2038	$12,500	$12,500	75	$167
Chlorine Analyzer, Electrical	1	L.S	-	2038	$12,500	$12,500	15	$833
Assume conveyance line installed beside highway without highway disturbance								
					Subtotal	$886,160		$11,690
					Engineering (15%)	$132,924		
					Contingency (30%)	$265,848		
					Total	$1,284,932		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Looping Project: Spartan Dr. and Braeburn Pl.	**P5**							
1.0 Pipe Replacement								
PVC Water Main	251	l.m.	200	2036	$500	$125,500	80	$1,569
PVC Elbow c/w Restraints	5	l.m.	200	2036	$2,000	$10,000	80	$125
200Ø Gate Valve	1	ea	200	2036	$4,500	$4,500	40	$113
Tie-in to Existing Watermain	4	ea	250	2036	$18,000	$72,000		
1.2 Other Construction								
Road Removals	1	LS	-	2036	$12	$1,500	80	$19
Asphalt Restoration (Residential)	1	LS	-	2036	$80	$3,500	80	$44
2. Automatic Flushing System								
Automatic Flushing System	1	L.S	-	2036	$60,000	$60,000	40	$1,500
PRV and Automatic Flushing System Electrical	1	L.S	-	2036	$20,000	$20,000	15	$1,333
PRV and Automatic Flushing System Building	1	L.S	-	2036	$70,000	$70,000	75	$933
					Subtotal	$367,000		$5,635
					Engineering (15%)	$55,050		
					Contingency (30%)	$110,100		
					Total	$532,150		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Looping Project: Glen Abbey Cr.	**P18**							
1.0 Pipe Replacement								
PVC Water Main	60	l.m.	200	2041	$500	$30,000	80	$375
PVC Elbow c/w Restraints	3	l.m.	200	2041	$2,000	$6,000	80	$75
Tie-in to Existing Watermain	2	ea	250	2041	$18,000	$36,000		
1.2 Other Construction								
Road Removals	1	LS	-	2041	$12	$1,500	80	$19
Asphalt Restoration (Residential)	1	LS	-	2041	$80	$3,500	80	$44
Concrete Pathway	75	m²	-	2041	$200	$15,000	80	$188
Traffic Control	1	L.S.	-	2041	$15,000	$15,000	80	$188
					Subtotal	$107,000		$888
					Engineering (15%)	$16,050		
					Contingency (30%)	$32,100		
					Total	$155,150		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Looping Project: Rosa Pl. to Alysum Ct. and Heather	**P13**							
1.0 Pipe Replacement								
PVC Water Main	180	l.m.	200	2039	$500	$90,000	80	$1,125
PVC Elbow c/w Restraints	7	l.m.	200	2039	$2,000	$14,000	80	$175
Tie-in to Existing Watermain	4	ea	250	2039	$18,000	$72,000		
1.2 Other Construction								
Road Removals	120	m^2	-	2039	$12	$1,440	80	$18
Asphalt Restoration (Residential)	120	m^2	-	2039	$80	$9,600	80	$120
Property Disturbance	1	L.S.	-	2039	$30,000	$30,000	80	$375
Traffic Control	1	L.S.	-	2039	$20,000	$20,000	80	$250
					Subtotal	$237,040		$2,063
					Engineering (15%)	$35,556		
					Contingency (30%)	$71,112		
					Total	$343,708		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Looping Project: Quail Ridge Pl. to Golf Course Dr.	**P16**							
1.0 Pipe Replacement								
PVC Water Main	86	l.m.	200	2041	$500	$43,000	80	$538
PVC Elbow c/w Restraints	2	l.m.	200	2041	$2,000	$4,000	80	$50
Tie-in to Existing Watermain	2	ea	250	2041	$18,000	$36,000		
1.2 Other Construction								
Road Removals	1	LS	-	2041	$12	$1,500	80	$19
Asphalt Restoration (Commercial)	1	LS	-	2041	$80	$3,500	80	$44
Concrete Sidewalk	8	m^2	-	2041	$200	$1,500	80	$19
Curb and Gutter	10	lm	-	2041	$250	$2,500	80	$31
Traffic Control	1	L.S.	-	2041	$13,000	$13,000	80	$163
					Subtotal	$105,000		$863
					Engineering (15%)	$15,750		
					Contingency (30%)	$31,500		
					Total	$152,250		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Looping Project: Poplar Ct.	**P15**							
1.0 Pipe Replacement								
PVC Water Main	45	l.m.	200	2039	$500	$22,500	80	$281
Tie-in to Existing Watermain	2	ea	250	2039	$18,000	$36,000		
1.2 Other Construction								
Road Removals	90	m^2	-	2039	$12	$1,080	80	$14
Asphalt Restoration (Pathway)	90	m^2	-	2039	$80	$7,200	80	$90
					Subtotal	$66,780		$385
					Engineering (15%)	$10,017		
					Contingency (30%)	$20,034		
					Total	$96,831		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Looping Project: Lambert Ct. to Vadette Dr.	**P19**							
1.0 Pipe Replacement								
PVC Water Main	105	l.m.	200	2041	$500	$52,500	80	$656
PVC Elbow c/w Restraints	3	l.m.	200	2041	$2,000	$6,000	80	$75
Tie-in to Existing Watermain	4	ea	250	2041	$18,000	$72,000		

1.2 Other Construction								
Road Removals	1	LS	-	2041	$12	$1,500	80	$19
Asphalt Restoration (Residential)	1	LS	-	2041	$80	$3,500	80	$44
					Subtotal	$135,500		$794
					Engineering (15%)	$20,325		
					Contingency (30%)	$40,650		
					Total	$196,475		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Looping Project: Loon Crescent and Heron Ln. to Night Hawk Dr.	**P12**							
1.0 Pipe Replacement								
PVC Water Main	100	l.m.	200	2039	$500	$50,000	80	$625
PVC Elbow c/w Restraints	2	l.m.	200	2039	$2,000	$4,000	80	$50
Tie-in to Existing Watermain	4	ea	250	2039	$18,000	$72,000		
1.2 Other Construction								
Road Removals	138	m^2	-	2039	$12	$1,656	80	$21
Asphalt Restoration (Residential)	138	m^2	-	2039	$80	$11,040	80	$138
Traffic Control	1	L.S.	-	2039	$20,000	$20,000	80	$250
					Subtotal	$158,696		$1,084
					Engineering (15%)	$23,804		
					Contingency (30%)	$47,609		
					Total	$230,109		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Looping Project: Dividend Ridge via Gold Course Dr. South to 107 St.	**P1**							
1.0 Pipe Replacement								
PVC Water Main	870	l.m.	200	2028	$500	$435,000	80	$5,438
PVC Elbow c/w Restraints	4	l.m.	200	2028	$2,000	$8,000	80	$100
200Ø Gate Valve	2	ea	200	2028	$4,500	$9,000	40	$225
Tie-in to Existing Watermain	2	ea	250	2028	$18,000	$36,000		
Hydrants	1	ea	-	2028	$12,000	$12,000	40	$300
1.2 Other Construction								
Road Removals	3480	m^2	-	2028	$12	$41,760	80	$522
Asphalt Restoration (Residential)	3480	m^2	-	2028	$80	$278,400	80	$3,480
Traffic Control	1	L.S.	-	2028	$130,000	$130,000	80	$1,625
Assume 4 meter wide asphalt to replace lane.								
					Subtotal	$950,160		$11,690
					Engineering (15%)	$142,524		
					Contingency (30%)	$285,048		
					Total	$1,377,732		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Looping Project & Pressure Zone Connection: 148 St to Highway 97	**P2**							
1.0 Pipe Replacement								
PVC Water Main	235	l.m.	250	2027	$600	$141,000	80	$1,763
PVC Elbow c/w Restraints	7	l.m.	200	2027	$2,000	$14,000	80	$175
250Ø Gate Valve	2	ea	250	2027	$6,000	$12,000	40	$300
Disconnect from Irrigation System	1	ea	150	2027	$18,000	$18,000		
Tie-in to Existing Watermain	2	ea	250	2027	$18,000	$36,000		
1.2 Other Construction								
Road Removals	924	m^2	-	2027	$12	$11,088	80	$139

Asphalt Restoration (Residential)	924	m²	-	2027	$80	$73,920	80	$924
Traffic Control	1	L.S.	-	2027	$40,000	$40,000	80	$500
2. Pressure Zone Connection								
PRV and Automatic Flushing System	1	L.S	-	2027	$75,000	$75,000	40	$1,875
PRV and Automatic Flushing System Electrical	1	L.S	-	2027	$25,000	$25,000	15	$1,667
PRV and Automatic Flushing System Building	1	L.S	-	2027	$75,000	$75,000	75	$1,000
					Subtotal	$521,008		$8,342
					Engineering (15%)	$78,151		
					Contingency (30%)	$156,302		
					Total	$755,462		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Automatic Flushing System: Lakeshore Dr.	**P3**							
1.0 Pipe Replacement								
PVC Water Main	20	l.m.	250	2028	$600	$12,000	80	$150
PVC Elbow c/w Restraints	2	l.m.	200	2028	$2,000	$4,000	80	$50
250Ø Gate Valve	1	ea	250	2028	$6,000	$6,000	40	$150
Tie-in to Existing Watermain	1	ea	250	2028	$18,000	$18,000		
1.2 Other Construction								
Road Removals	1	LS	-	2028	$12	$1,500	80	$19
Asphalt Restoration (Residential)	1	LS	-	2028	$80	$3,500	80	$44
Traffic Control	1	L.S.	-	2028	$10,000	$10,000	80	$125
2. Automatic Flushing System								
Automatic Flushing System	1	L.S	-	2028	$60,000	$60,000	40	$1,500
PRV and Automatic Flushing System Electrical	1	L.S	-	2028	$20,000	$20,000	15	$1,333
PRV and Automatic Flushing System Building	1	L.S	-	2028	$70,000	$70,000	75	$933
					Subtotal	$205,000		$4,304
					Engineering (15%)	$30,750		
					Contingency (30%)	$61,500		
					Total	$297,250		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Automatic Flushing System: Domestic System 8 at 150th Ave.	**P4**							
1.0 Pipe Replacement								
PVC Water Main	20	l.m.	200	2035	$500	$10,000	80	$125
PVC Elbow c/w Restraints	2	l.m.	200	2035	$2,000	$4,000	80	$50
250Ø Gate Valve	1	ea	250	2035	$6,000	$6,000	80	$75
Tie-in to Existing Watermain	1	ea	250	2035	$18,000	$18,000		
1.2 Other Construction								
Road Removals	1	LS	-	2035	$12	$1,500	80	$19
Asphalt Restoration (Residential)	1	LS	-	2035	$80	$3,500	80	$44
Traffic Control	1	L.S.	-	2035	$10,000	$10,000	80	$125
2. Automatic Flushing System								
Automatic Flushing System	1	L.S	-	2035	$60,000	$60,000	40	$1,500
PRV and Automatic Flushing System Electrical	1	L.S	-	2035	$20,000	$20,000	15	$1,333
PRV and Automatic Flushing System Building	1	L.S	-	2035	$70,000	$70,000	75	$933
					Subtotal	$203,000		$4,204
					Engineering (15%)	$30,450		
					Contingency (30%)	$60,900		
					Total	$294,350		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment

Pressure Zone Connection: 122 Ave.	**P7**							
1.0 Pipe Replacement								
PVC Water Main	20	l.m.	250	2035	$600	$12,000	80	$150
PVC Elbow c/w Restraints	4	l.m.	250	2035	$2,500	$10,000	80	$125
250Ø Gate Valve	2	ea	250	2035	$6,000	$12,000	40	$300
1.2 Other Construction								
Road Removals	1	LS	-	2035	$12	$1,500	80	$19
Asphalt Restoration (Residential)	1	LS	-	2035	$80	$3,500	80	$44
Traffic Control	1	L.S.	-	2035	$10,000	$10,000	80	$125
2. Pressure Zone Connection								
PRV and Automatic Flushing System	1	L.S	-	2035	$75,000	$75,000	40	$1,875
PRV and Automatic Flushing System Electrical	1	L.S	-	2035	$25,000	$25,000	15	$1,667
PRV and Automatic Flushing System Building	1	L.S	-	2035	$75,000	$75,000	75	$1,000
					Subtotal	$224,000		$5,304
					Engineering (15%)	$33,600		
					Contingency (30%)	$67,200		
					Total	$324,800		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Pressure Zone Connection: Heron Ln. and 74a Ave.	**P9**							
1.0 Pipe Replacement								
PVC Water Main	20	l.m.	200	2037	$500	$10,000	80	$125
PVC Elbow c/w Restraints	4	l.m.	250	2037	$2,500	$10,000	80	$125
200Ø Gate Valve	2	ea	200	2037	$4,500	$9,000	40	$225
Tie-in to Existing Watermain	2	ea	250	2037	$18,000	$36,000		
1.2 Other Construction								
Road Removals	60	m²	-	2037	$12	$720	80	$9
Asphalt Restoration (Commercial)	60	m²	-	2037	$100	$6,000	80	$75
Concrete Sidewalk	15	m²	-	2037	$200	$3,000	80	$38
Curb and Gutter	10	lm	-	2037	$250	$2,500	80	$31
Traffic Control	1	L.S.	-	2037	$10,000	$10,000	80	$125
2. Pressure Zone Connection								
PRV and Automatic Flushing System	1	L.S	-	2037	$75,000	$75,000	40	$1,875
PRV and Automatic Flushing System Electrical	1	L.S	-	2037	$25,000	$25,000	15	$1,667
PRV and Automatic Flushing System Building	1	L.S	-	2037	$75,000	$75,000	75	$1,000
					Subtotal	$262,220		$5,294
					Engineering (15%)	$39,333		
					Contingency (30%)	$78,666		
					Total	$380,219		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Pressure Zone Connection: Nighthawk Dr. from Killdeer Pl.	**P8**							
1.0 Pipe Replacement								
PVC Water Main	20	l.m.	200	2037	$500	$10,000	80	$125
PVC Elbow c/w Restraints	4	l.m.	250	2037	$2,500	$10,000	80	$125
200Ø Gate Valve	2	ea	200	2037	$4,500	$9,000	40	$225
Tie-in to Existing Watermain	2	ea	250	2037	$18,000	$36,000		
1.2 Other Construction								
Road Removals	60	m²	-	2037	$12	$720	80	$9
Asphalt Restoration (Commercial)	60	m²	-	2037	$100	$6,000	80	$75
Concrete Sidewalk	15	m²	-	2037	$200	$3,000	80	$38
Curb and Gutter	10	lm	-	2037	$250	$2,500	80	$31

Traffic Control	1	L.S.	-	2037	$10,000	$10,000	80	$125
2. Pressure Zone Connection								
PRV and Automatic Flushing System	1	L.S	-	2037	$75,000	$75,000	40	$1,875
PRV and Automatic Flushing System Electrical	1	L.S	-	2037	$25,000	$25,000	15	$1,667
PRV and Automatic Flushing System Building	1	L.S	-	2037	$75,000	$75,000	75	$1,000
					Subtotal	$262,220		$5,294
					Engineering (15%)	$39,333		
					Contingency (30%)	$78,666		
					Total	$380,219		

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment
Chlorine Monitoring	**P10**							
2. Chlorine Monitoring								
Chlorine Analyzer, c/w watermain tap	6	L.S	-	2026	$10,000	$60,000	80	$750
Chlorine Analyzer, Cabinet and Foundation	6	L.S	-	2026	$12,500	$75,000	75	$1,000
Chlorine Analyzer, Electrical	6	L.S	-	2026	$12,500	$75,000	15	$5,000
PZ 340: 104 Ave and 81 St, North End of Cottonwood Dr., 45th St., 26 Ave, 12 Ave, PZ 420: 2nd Ave								
					Subtotal	$210,000		$6,750
					Engineering (15%)	$31,500		
					Contingency (30%)	$63,000		
					Total	$304,500		

Table G5: Osoyoos Water Utility Asset Management - Water Distribution Network - Asset Management Projects

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: Central 74th Street	**R1**					
1.0 Pipe Replacement						
PVC Water Main	333	l.m.	250	2024	$600	$200,014
PVC Water Main	44	l.m.	200	2024	$500	$22,025
PVC Water Main	0	l.m.	150	2024	$450	$0
250ø Gate Valve	3	ea	250	2024	$6,000	$18,000
1.2 Other Construction						
Road Removals	1510	m²	-	2024	$12	$18,115
Asphalt Restoration (Commercial)	1510	m²	-	2024	$100	$150,962
Concrete Sidewalk	566	m²	-	2024	$200	$113,222
Curb and Gutter	377	lm	-	2024	$250	$94,352
Traffic Control	1	L.S.	-	2024	$57,000	$57,000
					Subtotal	$673,690
					Engineering (15%)	$101,053
					Contingency (30%)	$202,107
					Total	$976,850

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: South Heron Lane and Loon Crescent	**R2**					
1.0 Pipe Replacement						
PVC Water Main	326	l.m.	150	2024	$450	$146,504
150ø Gate Valve	3	ea	150	2024	$3,000	$9,000
Hydrants	1	ea	-	2024	$12,000	$12,000
1.2 Other Construction						
Road Removals	977	m²	-	2024	$12	$11,720
Hydrant Removal	1	L.S.	-	2024	$2,000	$2,000
Asphalt Restoration (Residential)	977	m²	-	2024	$80	$78,135
Traffic Control	1	L.S.	-	2024	$49,000	$49,000
					Subtotal	$308,359
					Engineering (15%)	$46,254
					Contingency (30%)	$92,508
					Total	$447,121

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price

Watermain Project: 89th Street, From 74th Street to Well #1	**R3**					
1.0 Pipe Replacement						
PVC Water Main	38	l.m.	300	2024	$650	$24,404
PVC Water Main	413	l.m.	250	2024	$600	$247,529
PVC Water Main	5	l.m.	150	2024	$450	$2,392
250ø Gate Valve	7	ea	250	2024	$6,000	$42,000
150ø Gate Valve	2	ea	150	2024	$3,000	$6,000
Hydrants	2	ea	-	2024	$12,000	$24,000
1.2 Other Construction						
Road Removals	1350	m²	-	2024	$12	$16,203
Hydrant Removal	2	L.S.	-	2024	$2,000	$4,000
Asphalt Restoration (Residential)	1350	m²	-	2024	$80	$108,022
Curb and Gutter	450	lm	-	2024	$250	$112,523
Traffic Control	1	L.S.	-	2024	$68,000	$68,000
					Subtotal	$655,074
					Engineering (15%)	$98,261
					Contingency (30%)	$196,522
					Total	$949,858

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: South 89th St., Osprey Place and East 62nd Ave	**R10**					
1.0 Pipe Replacement						
PVC Water Main	270	l.m.	250	2024	$600	$162,243
PVC Water Main	148	l.m.	200	2024	$500	$73,812
PVC Water Main	389	l.m.	150	2024	$450	$174,985
PVC Water Main	87	l.m.	100	2024	$450	$39,327
300ø Gate Valve	2	ea	300	2024	$7,500	$15,000
250ø Gate Valve	4	ea	250	2024	$6,000	$24,000
200ø Gate Valve	1	ea	200	2024	$4,500	$4,500
150ø Gate Valve	5	ea	150	2024	$3,000	$15,000
100ø Gate Valve	1	ea	100	2024	$2,000	$2,000
Hydrants	4	ea	-	2024	$12,000	$48,000
1.2 Other Construction						
Road Removals	2683	m²	-	2024	$12	$32,194
Hydrant Removal	4	L.S.	-	2024	$2,000	$8,000
Asphalt Restoration (Residential)	2683	m²	-	2024	$80	$214,627
Curb and Gutter	120	lm	-	2024	$250	$30,000
Traffic Control	1	L.S.	-	2024	$136,000	$136,000
					Subtotal	$989,319
					Engineering (15%)	$148,398
					Contingency (30%)	$296,796
					Total	$1,434,512

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: Ponderosa Dr.	**R19**					
1.0 Pipe Replacement						
PVC Water Main	49	l.m.	200	2024	$500	$24,273
PVC Water Main	186	l.m.	150	2024	$450	$83,900
150Ø Gate Valve	2	ea	150	2024	$3,000	$6,000
Hydrants	2	ea	-	2024	$12,000	$24,000
1.2 Other Construction						
Road Removals	705	m²	-	2024	$12	$8,460
Hydrant Removal	2	L.S.	-	2024	$2,000	$4,000
Asphalt Restoration (Residential)	705	m²	-	2024	$80	$56,398
Traffic Control	1	L.S.	-	2024	$35,000	$35,000
					Subtotal	$242,030
					Engineering (15%)	$36,305
					Contingency (30%)	$72,609
					Total	$350,944

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: 74th Street, 340 Reservoir Distribution Main	**R20**					
1.0 Pipe Replacement						
PVC Water Main	622	l.m.	250	2024	$600	$373,331
PVC Water Main	4	l.m.	150	2024	$450	$1,824
250Ø Gate Valve	5	ea	250	2024	$6,000	$30,000
150Ø Gate Valve	1	ea	150	2024	$3,000	$3,000
Hydrants	1	ea	-	2024	$12,000	$12,000
1.2 Other Construction						
Road Removals	1095	m²	-	2024	$12	$13,140
Hydrant Removal	1	L.S.	-	2024	$2,000	$2,000
Asphalt Restoration (Residential)	1095	m²	-	2024	$80	$87,600
Traffic Control	1	L.S.	-	2024	$47,000	$47,000
					Subtotal	$569,895
					Engineering (15%)	$85,484
					Contingency (30%)	$170,969
					Total	$826,348

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: 74th Street East, 87th From 74a Ave to 68 Ave, and 68Th Ave	**R21**					
1.0 Pipe Replacement						
PVC Water Main	676	l.m.	200	2024	$500	$338,072
PVC Water Main	22	l.m.	150	2024	$450	$9,969
200ø Gate Valve	5	ea	200	2024	$4,500	$22,500
150ø Gate Valve	3	ea	150	2024	$3,000	$9,000
Hydrants	3	ea	-	2024	$12,000	$36,000
1.2 Other Construction						
Road Removals	2095	m²	-	2024	$12	$25,139
Hydrant Removal	3	L.S.	-	2024	$2,000	$6,000
Asphalt Restoration (Residential)	2095	m²	-	2024	$80	$167,591
Concrete Sidewalk	492	m²	-	2024	$200	$98,489
Curb and Gutter	553	lm	-	2024	$250	$138,324
Traffic Control	1	L.S.	-	2024	$105,000	$105,000
					Subtotal	$956,084
					Engineering (15%)	$143,413
					Contingency (30%)	$286,825
					Total	$1,386,322

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: Watermain East of 85th St., 68th Ave. and Main St. from 68th Ave. to Kingfisher Dr.	**R23**					
1.0 Pipe Replacement						
PVC Water Main	174	l.m.	200	2024	$500	$86,837
PVC Water Main	293	l.m.	150	2024	$450	$131,783
200ø Gate Valve	2	ea	200	2024	$4,500	$9,000
150ø Gate Valve	3	ea	150	2024	$3,000	$9,000
Hydrants	1	ea	-	2024	$12,000	$12,000
1.2 Other Construction						
Road Removals	1500	m²	-	2024	$12	$17,995
Hydrant Removal	1	L.S.	-	2024	$2,000	$2,000
Asphalt Restoration (Commercial)	400	m²	-	2024	$100	$40,000
Asphalt Restoration (Residential)	1100	m²	-	2024	$80	$87,966
Concrete Sidewalk	210	m²	-	2024	$200	$42,000
Curb and Gutter	140	lm	-	2024	$250	$35,000
Traffic Control	1	L.S.	-	2024	$70,000	$70,000
					Subtotal	$543,580
					Engineering (15%)	$81,537
					Contingency (30%)	$163,074
					Total	$788,191

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project:: Watermain between Main St. from 78 Ave. to Spartan Drive, Spartan Dr. to Main St., Main St. to 74a Ave	**R24**					
1.0 Pipe Replacement						
PVC Water Main	391	l.m.	200	2024	$500	$195,712
PVC Water Main	15	l.m.	150	2024	$450	$6,669
200ø Gate Valve	4	ea	200	2024	$4,500	$18,000
150ø Gate Valve	3	ea	150	2024	$3,000	$9,000
Hydrants	2	ea	-	2024	$12,000	$24,000
1.2 Other Construction						
Road Removals	1343	m²	-	2024	$12	$16,116
Hydrant Removal	2	L.S.	-	2024	$2,000	$4,000
Asphalt Restoration (Commercial)	497	m²	-	2024	$100	$49,698
Asphalt Restoration (Residential)	846	m²	-	2024	$80	$67,680
Concrete Sidewalk	186	m²	-	2024	$200	$37,274
Curb and Gutter	124	lm	-	2024	$250	$31,061
Traffic Control	1	L.S.	-	2024	$61,000	$61,000
					Subtotal	$520,210
					Engineering (15%)	$78,032
					Contingency (30%)	$156,063
					Total	$754,305

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: Main St. from 74a Ave to 83rd St. and 83rd St to 68Ave.	**R25**					
1.0 Pipe Replacement						
PVC Water Main	338	l.m.	200	2024	$500	$169,226
PVC Water Main Highway Crossing	20	l.m.	200		$1,200	$24,000
PVC Water Main	33	l.m.	150	2024	$450	$15,016
200ø Gate Valve	4	ea	200	2024	$4,500	$18,000
150ø Gate Valve	4	ea	150	2024	$3,000	$12,000
Hydrants	4	ea	-	2024	$12,000	$48,000
1.2 Other Construction						
Road Removals	1567	m²	-	2024	$12	$18,807
Hydrant Removal	4	L.S.	-	2024	$2,000	$8,000
Asphalt Restoration (Commercial)	1567	m²	-	2024	$100	$156,729
Concrete Sidewalk	588	m²	-	2024	$200	$117,546
Curb and Gutter	392	lm	-	2024	$250	$97,955
Traffic Control	1	L.S.	-	2024	$59,000	$59,000
					Subtotal	$744,280
					Engineering (15%)	$111,642
					Contingency (30%)	$223,284
					Total	$1,079,206

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project:74a Ave., Heron Lane, and Night Hawk Dr.	**R27**					
1.0 Pipe Replacement						
PVC Water Main	136	l.m.	200	2024	$500	$67,907
PVC Water Main	600	l.m.	150	2024	$450	$270,203
200ø Gate Valve	1	ea	200	2024	$4,500	$4,500
150ø Gate Valve	8	ea	150	2024	$3,000	$24,000
Hydrants	3	ea	-	2024	$12,000	$36,000
1.2 Other Construction						
Road Removals	2209	m²	-	2024	$12	$26,506
Hydrant Removal	3	L.S.	-	2024	$2,000	$6,000
Asphalt Restoration (Residential)	2209	m²	-	2024	$80	$176,704
Concrete Sidewalk	240	m²	-	2024	$200	$48,000
Curb and Gutter	160	lm	-	2024	$250	$40,000
Traffic Control	1	L.S.	-	2024	$110,000	$110,000
					Subtotal	$809,820
					Engineering (15%)	$121,473

Contingency (30%)	$242,946
Total	$1,174,240

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: 87th St. from Jubilee Dr. to 74a Ave.	**R28**					
1.0 Pipe Replacement						
PVC Water Main	451	l.m.	200	2024	$500	$225,319
PVC Water Main	183	l.m.	150	2024	$450	$82,563
200ø Gate Valve	2	ea	200	2024	$4,500	$9,000
150ø Gate Valve	8	ea	150	2024	$3,000	$24,000
Hydrants	6	ea	-	2024	$12,000	$72,000
1.2 Other Construction						
Road Removals	2536	m²	-	2024	$12	$30,437
Hydrant Removal	6	L.S.	-	2024	$2,000	$12,000
Asphalt Restoration (Commercial)	2536	m²	-	2024	$100	$253,645
Concrete Sidewalk	951	m²	-	2024	$200	$190,234
Curb and Gutter	634	lm	-	2024	$250	$158,528
Traffic Control	1	L.S.	-	2024	$95,000	$95,000
					Subtotal	$1,152,727
					Engineering (15%)	$172,909
					Contingency (30%)	$345,818
					Total	$1,671,454

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Water Supply Well #3	**R26**					
1.0 Pipe Replacement						
PVC Water Main	0	l.m.	150	2024	$450	$0
150ø Gate Valve	0	ea	150	2024	$3,000	$0
Hydrants	0	ea	-	2024	$12,000	$0
1.2 Other Construction						
Road Removals	0	m²	-	2024	$12	$0
Hydrant Removal	0	L.S.	-	2024	$2,000	$0
Asphalt Restoration (Residential)	0	m²	-	2024	$80	$0
Concrete Sidewalk	27	m²	-	2024	$200	$5,400
Curb and Gutter	18	lm	-	2024	$250	$4,500
Traffic Control	1	L.S.	-	2024	$0	$0
					Subtotal	$9,900
					Engineering (15%)	$1,485
					Contingency (30%)	$2,970
					Total	$14,355

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: 89th Street North	**R30**					
1.0 Pipe Replacement						
PVC Water Main	303	l.m.	150	2024	$450	$136,486
150ø Gate Valve	3	ea	150	2024	$3,000	$9,000
Hydrants	3	ea	-	2024	$12,000	$36,000
1.2 Other Construction						
Road Removals	910	m²	-	2024	$12	$10,919
Hydrant Removal	3	L.S.	-	2024	$2,000	$6,000
Asphalt Restoration (Residential)	910	m²	-	2024	$80	$72,792
Traffic Control	1	L.S.	-	2024	$45,000	$45,000
					Subtotal	$316,197
					Engineering (15%)	$47,430
					Contingency (30%)	$94,859
					Total	$458,486

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: 74th Ave between Finch Crescent Nighthawk Dr., Finch Crescent, Swan Crescent, and Nighthawk Dr.	**R31**					
1.0 Pipe Replacement						
PVC Water Main	782	l.m.	150	2024	$450	$352,033
PVC Water Main Highway Crossing	20	l.m.	150		$1,000	$20,000
150Ø Gate Valve	12	ea	150	2024	$3,000	$36,000
Hydrants	3	ea	-	2024	$12,000	$36,000
1.2 Other Construction						
Road Removals	3007	m²	-	2024	$12	$36,083
Hydrant Removal	3	L.S.	-	2024	$2,000	$6,000
Asphalt Restoration (Commercial)	800	m²	-	2024	$100	$80,000
Asphalt Restoration (Residential)	2207	m²	-	2024	$80	$176,551
Concrete Sidewalk	300	m²	-	2024	$200	$60,000
Curb and Gutter	400	lm	-	2024	$250	$100,000
Traffic Control	1	L.S.	-	2024	$117,000	$117,000
					Subtotal	$1,019,666
					Engineering (15%)	$152,950
					Contingency (30%)	$305,900
					Total	$1,478,516

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: 72 Ave West, Watermains North and South of 72 Ave	**R29**					
1.0 Pipe Replacement						
PVC Water Main	588	l.m.	150	2024	$450	$264,767
150Ø Gate Valve	7	ea	150	2024	$3,000	$21,000
Hydrants	2	ea	-	2024	$12,000	$24,000
1.2 Other Construction						
Road Removals	1663	m²	-	2024	$12	$19,962
Hydrant Removal	2	L.S.	-	2024	$2,000	$4,000
Asphalt Restoration (Commercial)	1333	m²	-	2024	$100	$133,348
Asphalt Restoration (Residential)	330	m²	-	2024	$80	$26,400
Concrete Sidewalk	500	m²	-	2024	$200	$100,011
Curb and Gutter	333	lm	-	2024	$250	$83,343
Traffic Control	1	L.S.	-	2024	$88,000	$88,000
					Subtotal	$764,832
					Engineering (15%)	$114,725
					Contingency (30%)	$229,449
					Total	$1,109,006

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: Kingfisher Dr. and Looping Watermain	**R32**					
1.0 Pipe Replacement						
PVC Water Main	0	l.m.	200	2024	$500	$0
PVC Water Main	697	l.m.	150	2024	$450	$313,606
150ø Gate Valve	6	ea	150	2024	$3,000	$18,000
Hydrants	3	ea	-	2024	$12,000	$36,000
1.2 Other Construction						
Road Removals	2091	m²	-	2024	$12	$25,089
Hydrant Removal	3	L.S.	-	2024	$2,000	$6,000
Asphalt Restoration (Residential)	2091	m²	-	2024	$80	$167,257
Traffic Control	1	L.S.	-	2024	$105,000	$105,000
					Subtotal	$670,952
					Engineering (15%)	$100,643
					Contingency (30%)	$201,285
					Total	$972,880

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: Lombardy Ln. and Tamarack Dr.	**R33**					
1.0 Pipe Replacement						
PVC Water Main	674	l.m.	200	2024	$500	$336,931
PVC Water Main	-58	l.m.	150	2024	$450	-$26,112
200ø Gate Valve	4	ea	200	2024	$4,500	$18,000
150ø Gate Valve	3	ea	150	2024	$3,000	$9,000
Hydrants	2	ea	-	2024	$12,000	$24,000
1.2 Other Construction						
Road Removals	1848	m²	-	2024	$12	$22,170
Hydrant Removal	2	L.S.	-	2024	$2,000	$4,000
Asphalt Restoration (Residential)	1848	m²	-	2024	$80	$147,800
Traffic Control	1	L.S.	-	2024	$92,000	$92,000
					Subtotal	$627,789
					Engineering (15%)	$94,168
					Contingency (30%)	$188,337
					Total	$910,294

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: Maple Dr.	**R34**					
1.0 Pipe Replacement						
PVC Water Main	219	l.m.	200	2024	$500	$109,258
PVC Water Main	352	l.m.	150	2024	$450	$158,203
200ø Gate Valve	4	ea	200	2024	$4,500	$18,000
150ø Gate Valve	2	ea	150	2024	$3,000	$6,000
Hydrants	1	ea	-	2024	$12,000	$12,000
1.2 Other Construction						
Road Removals	2280	m^2	-	2024	$12	$27,364
Hydrant Removal	1	L.S.	-	2024	$2,000	$2,000
Asphalt Restoration (Commercial)	2280	m^2	-	2024	$100	$228,031
Curb and Gutter	120	lm	-	2024	$250	$30,000
Traffic Control	1	L.S.	-	2024	$86,000	$86,000
					Subtotal	$676,855
					Engineering (15%)	$101,528
					Contingency (30%)	$203,056
					Total	$981,440

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: Oleander Dr. from Magnolia Pl. to Lobelia Dr., and North Lobelia Dr.	**R35**					
1.0 Pipe Replacement						
PVC Water Main	309	l.m.	200	2024	$500	$154,557
PVC Water Main	5	l.m.	150	2024	$450	$2,230
200ø Gate Valve	3	ea	200	2024	$4,500	$13,500
150ø Gate Valve	1	ea	150	2024	$3,000	$3,000
Hydrants	1	ea	-	2024	$12,000	$12,000
1.2 Other Construction						
Road Removals	1256	m^2	-	2024	$12	$15,075
Hydrant Removal	1	L.S.	-	2024	$2,000	$2,000
Asphalt Restoration (Commercial)	1256	m^2	-	2024	$100	$125,628
Curb and Gutter	40	lm	-	2024	$250	$10,000
Traffic Control	1	L.S.	-	2024	$47,000	$47,000
					Subtotal	$384,990
					Engineering (15%)	$57,749
					Contingency (30%)	$115,497
					Total	$558,236

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: Oleander Dr. from Magnolia Pl. to Lobelia Dr., and North Lobelia Dr.	**R36**					
1.0 Pipe Replacement						
PVC Water Main	13	l.m.	150	2024	$450	$5,710
150Ø Gate Valve	3	ea	150	2024	$3,000	$9,000
Hydrants	3	ea	-	2024	$12,000	$36,000
1.2 Other Construction						
Road Removals	38	m²	-	2024	$12	$457
Hydrant Removal	3	L.S.	-	2024	$2,000	$6,000
Asphalt Restoration (Residential)	38	m²	-	2024	$80	$3,045
Traffic Control	1	L.S.	-	2024	$82,000	$82,000
					Subtotal	$432,162
					Engineering (15%)	$64,824
					Contingency (30%)	$129,648
					Total	$626,634

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: Rose Pl.	**R39**					
1.0 Pipe Replacement						
PVC Water Main	391	l.m.	150	2024	$450	$175,727
PVC Water Main	0	l.m.	75	2024	$450	$0
150Ø Gate Valve	2	ea	150	2024	$3,000	$6,000
Hydrants	1	ea	-	2024	$12,000	$12,000
1.2 Other Construction						
Road Removals	1172	m²	-	2024	$12	$14,058
Hydrant Removal	1	L.S.	-	2024	$2,000	$2,000
Asphalt Restoration (Residential)	1172	m²	-	2024	$80	$93,721
Traffic Control	1	L.S.	-	2024	$59,000	$59,000
					Subtotal	$362,506
					Engineering (15%)	$54,376
					Contingency (30%)	$108,752
					Total	$525,633

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price
Watermain Project: Harbour Key Dr. from Main St. to Cottonwood Dr.	**R37**					
1.0 Pipe Replacement						
PVC Water Main	373	l.m.	150	2024	$450	$167,923
150Ø Gate Valve	3	ea	150	2024	$3,000	$9,000
Hydrants	2	ea	-	2024	$12,000	$24,000
1.2 Other Construction						
Road Removals	744	m²	-	2024	$12	$8,934
Hydrant Removal	2	L.S.	-	2024	$2,000	$4,000
Asphalt Restoration (Residential)	744	m²	-	2024	$80	$59,559
Traffic Control	1	L.S.	-	2024	$56,000	$44,800
					Subtotal	$318,216
					Engineering (15%)	$47,732
					Contingency (30%)	$95,465
					Total	$461,413

APPENDIX H

Project Layout Figure

P4: AUTOMATIC FLUSHING STATION: DOMESTIC SYSTEM 8
AT 150TH AVE, PROJECT NOT SHOWN IN LAYOUT

FIGURE H2

FIGURE H3

FIGURE H5

FIGURE H4

FIGURE H6

FIGURE H7

R22

P3

NOTE: R44, R45, R46, AND R47 CORRESPOND TO HYDRANT REPLACEMENT WHICH ARE BASED ON INDIVIDUAL HYDRANT LOCATIONS.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		SANITARY MAIN
		SANITARY FORCEMAIN
		SANITARY MANHOLE
		CLEANOUT
		LIFT STATION
		SEPTIC TANK
		STORM MAIN
		STORM DITCH
		CULVERT
		STORM MANHOLE
		CATCHBASIN
		STORM DRYWELL
		WATER MAIN
		WATER SERVICE
		CURB STOP
		VALVE
		STANDPIPE
		HYDRANT
		AIR RELEASE VALVE
		REDUCER
		SPRINKLER
		IRRIGATION BOX
		END CAP
		POWER
		TEL
		CABLE
		STREET LIGHT
		GAS
		POWER POLE
		LAMP STANDARD
		LIGHT POST
		POLE ANCHOR
		JUNCTION BOX
		TEST PIT
		IRON PIN
		SURVEY CONTROL

No.	DATE	DESCRIPTION	BY	APP'D
-	-	-	-	-

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE CONSULTING
2079 Falcon Road ■ Kamloops BC ■ V2C 4J2
tel 250.828.0881 ■ info@true.ca

Osoyoos
Canada's warmest welcome

APPENDIX H

FIGURE H1: SYSTEM LAYOUT

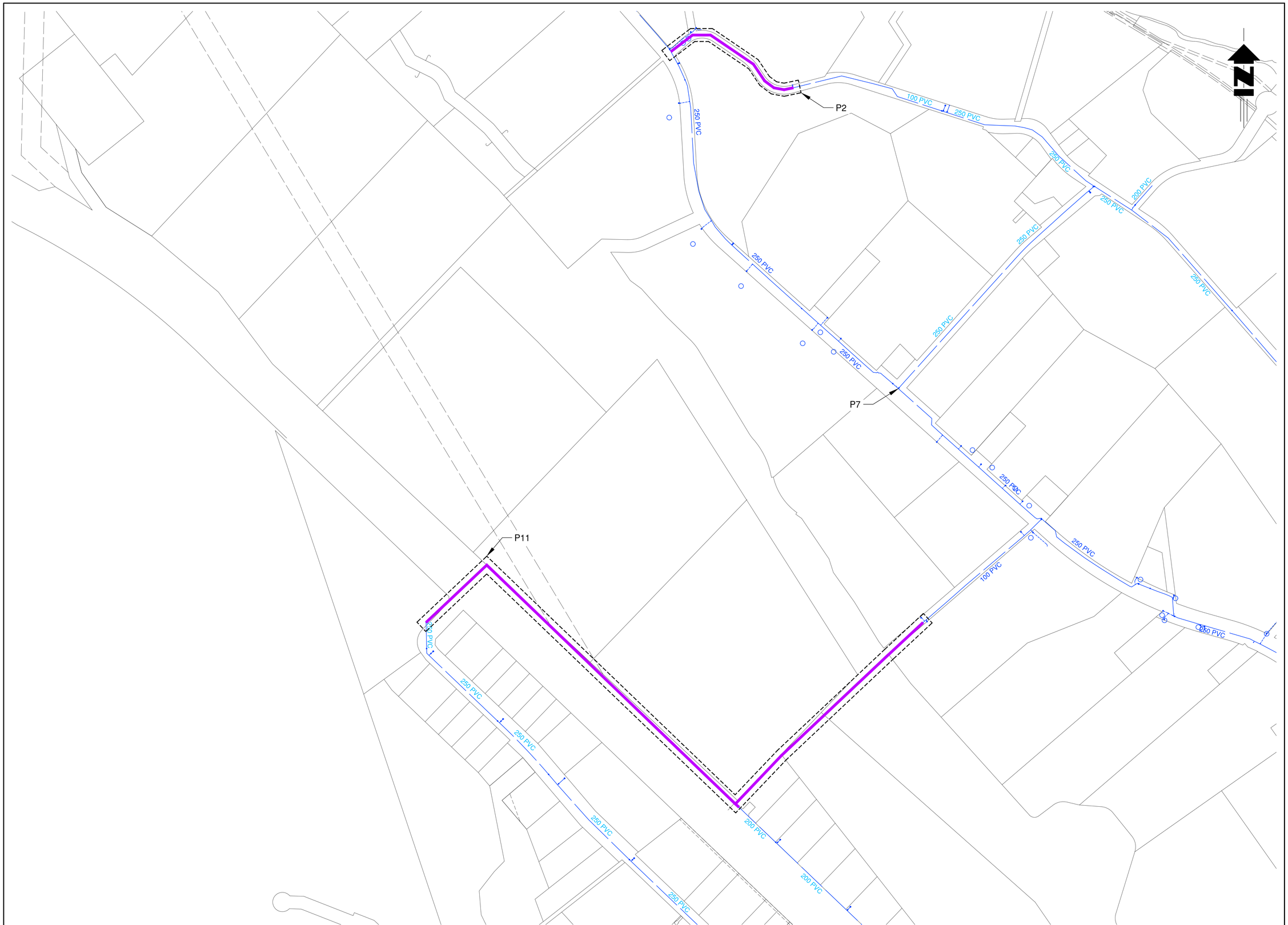
SCALE	1:10000
DESIGN BY	AM
DRAWN BY	AM
DATE	2023-07-24
PROJECT REFERENCE No.	302-2061

DRAWING No. **302-2061 01**

SHEET 1 OF 7

ISSUE/REV. 1

F:\E-Comm\302-2061\302-2061-01 drawing\rev02 design drawing\water composite - asset management



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		SANITARY MAIN
		SANITARY FORCEMAIN
		SANITARY MANHOLE
		CLEANOUT
		LIFT STATION
		SEPTIC TANK
		STORM MAIN
		STORM DITCH
		CULVERT
		STORM MANHOLE
		CATCHBASIN
		STORM DRYWELL
		WATER MAIN
		WATER SERVICE
		CURB STOP
		VALVE
		STANDPIPE
		HYDRANT
		AIR RELEASE VALVE
		REDUCER
		SPRINKLER
		IRRIGATION BOX
		END CAP
		POWER
		TEL
		CABLE
		STREET LIGHT
		GAS
		POWER POLE
		LAMP STANDARD
		LIGHT POST
		POLE ANCHOR
		JUNCTION BOX
		TEST PIT
		IRON PIN
		SURVEY CONTROL

No.	DATE	DESCRIPTION	BY	APPD
-	-	-	-	-

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE CONSULTING
2079 Falcon Road ■ Kamloops BC ■ V2C 4J2
tel 250.828.0881 ■ info@true.ca

Osoyoos
Canada's warmest welcome

APPENDIX H

FIGURE H2: NORTHWEST PROJECTS

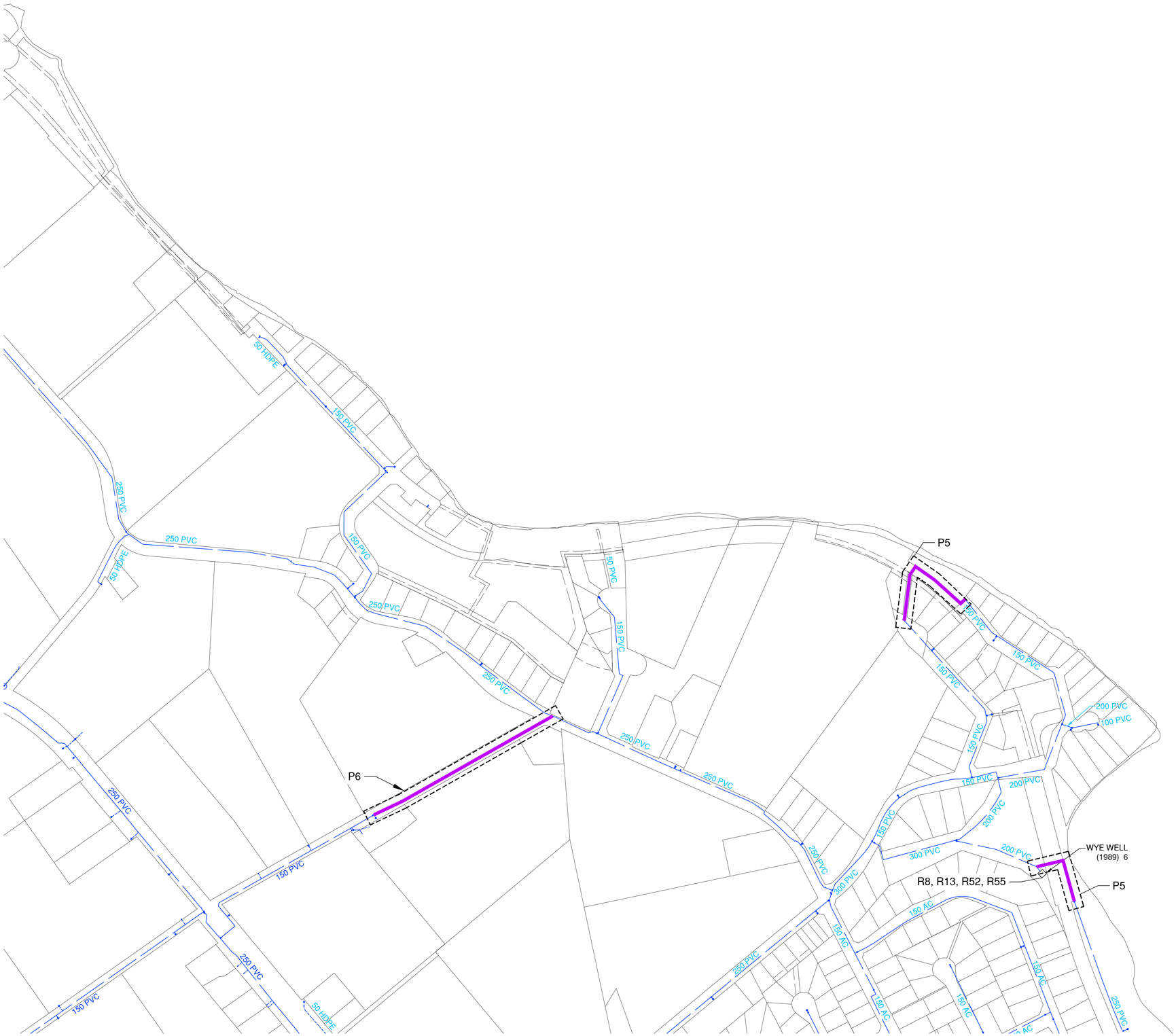
SCALE	1:2500
DESIGN BY	AM
DRAWN BY	AM
DATE	2023-07-24
PROJECT REFERENCE No.	302-2061

DRAWING No. **302-2061 02**

SHEET 2 OF 7

ISSUE/REV. 1

FILE: O:\active\300\302061\2000\100 drawing\cad\200 design drawing\sheet composite - asset management



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		SANITARY MAIN
		SANITARY FORCEMAIN
		SANITARY MANHOLE
		CLEANOUT
		LIFT STATION
		SEPTIC TANK
		STORM MAIN
		STORM DITCH
		CULVERT
		STORM MANHOLE
		CATCHBASIN
		STORM DRYWELL
		WATER MAIN
		WATER SERVICE
		CURB STOP
		VALVE
		STANDPIPE
		HYDRANT
		AIR RELEASE VALVE
		REDUCER
		SPRINKLER
		IRRIGATION BOX
		END CAP
		POWER
		TEL
		CABLE
		STREET LIGHT
		GAS
		POWER POLE
		LAMP STANDARD
		LIGHT POST
		POLE ANCHOR
		JUNCTION BOX
		TEST PIT
		IRON PIN
		SURVEY CONTROL

No.	DATE	DESCRIPTION	BY	APPD
-	-	-	-	-

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE CONSULTING
2079 Falcon Road ■ Kamloops BC ■ V2C 4J2
tel 250.828.0881 ■ info@true.ca

Osoyoos
Canada's warmest welcome

APPENDIX H

FIGURE H3; NORTHEAST PROJECTS

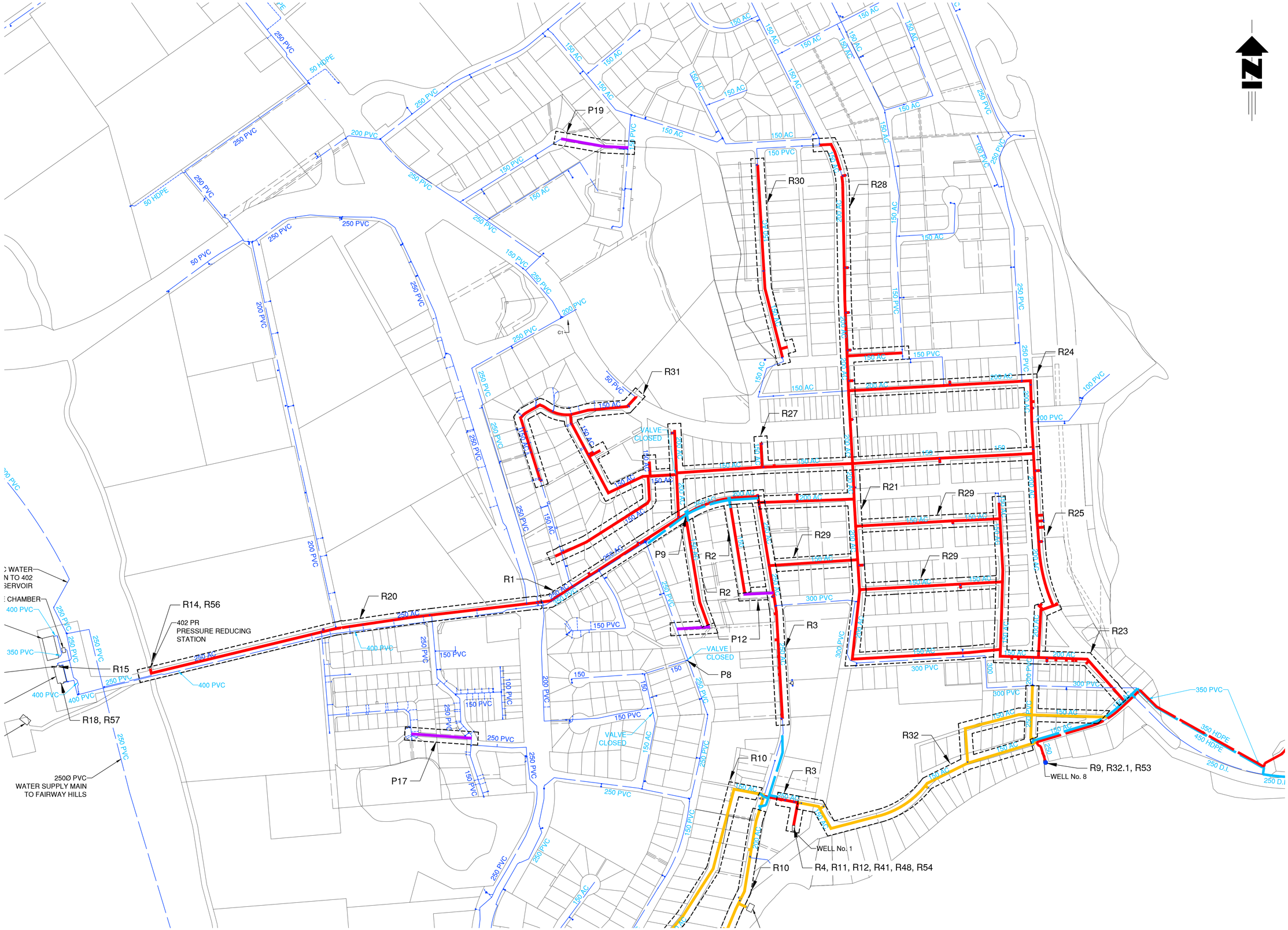
SCALE	1:2500
DESIGN BY	AM
DRAWN BY	AM
DATE	2023-07-24
PROJECT REFERENCE No.	302-2061

DRAWING No. 302-2061 03

SHEET 3 OF 7

ISSUE/REV. 1

I:\E-Comm\302-2061\02-Design\Civil\02 design drawings\water composite - asset management



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		SANITARY MAIN
		SANITARY FORCEMAIN
		SANITARY MANHOLE
		CLEANOUT
		LIFT STATION
		SEPTIC TANK
		STORM MAIN
		STORM DITCH
		CULVERT
		STORM MANHOLE
		CATCHBASIN
		STORM DRYWELL
		WATER MAIN
		WATER SERVICE
		CURB STOP
		VALVE
		STANDPIPE
		HYDRANT
		AIR RELEASE VALVE
		REDUCER
		SPRINKLER
		IRRIGATION BOX
		END CAP
		POWER
		TEL
		CABLE
		STREET LIGHT
		GAS
		POWER POLE
		LAMP STANDARD
		LIGHT POST
		POLE ANCHOR
		JUNCTION BOX
		TEST PIT
		IRON PIN
		SURVEY CONTROL

No.	DATE	DESCRIPTION	BY	APP'D
-	-	-	-	-

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE CONSULTING
2079 Falcon Road ■ Kamloops BC ■ V2C 4J2
tel 250.828.0881 ■ info@true.ca

Osoyoos
Canada's warmest welcome

APPENDIX H

FIGURE H4: CENTRAL PROJECTS

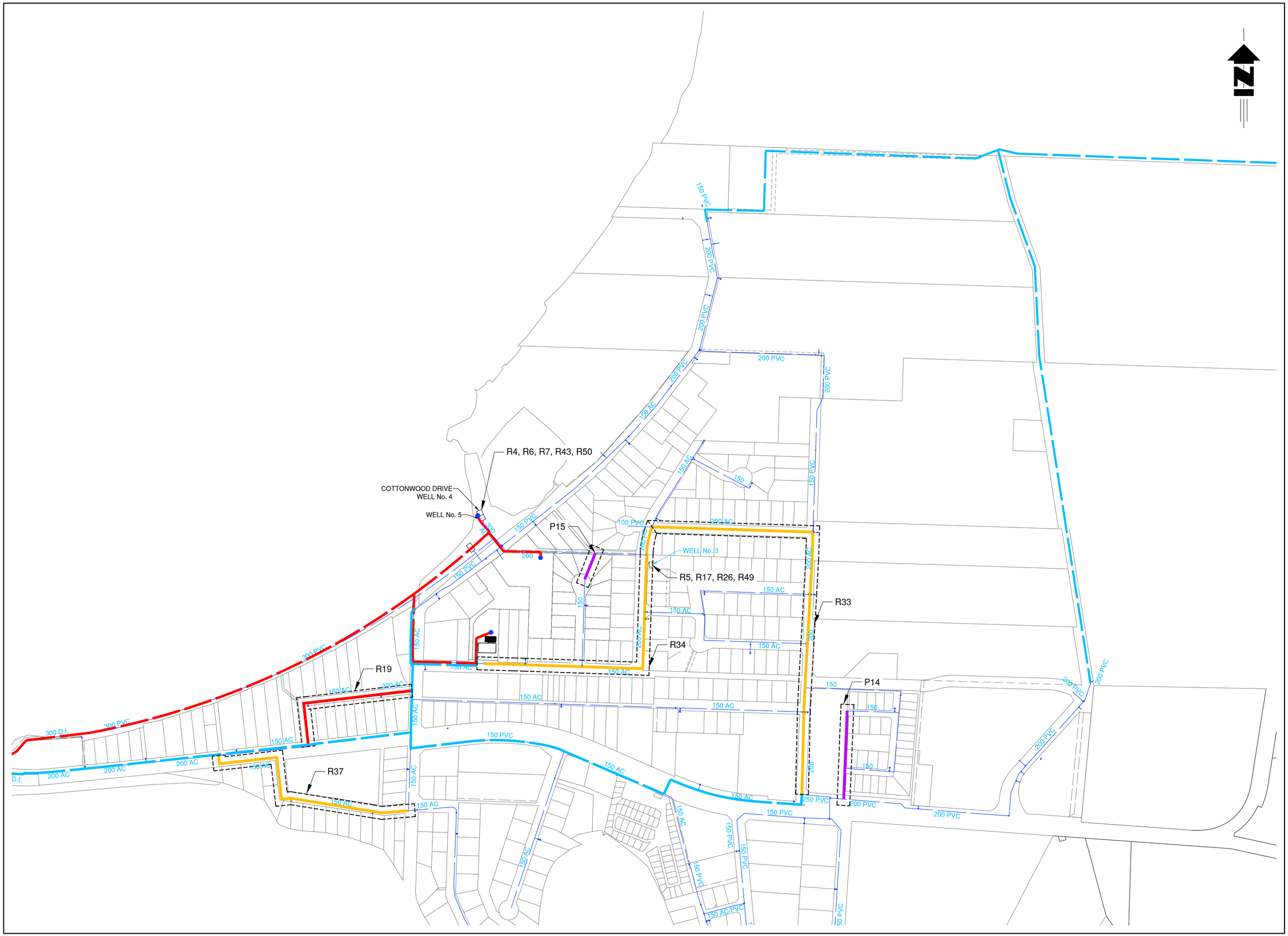
SCALE	1:2500
DESIGN BY	AM
DRAWN BY	AM
DATE	2023-07-24
PROJECT REFERENCE No.	302-2061

DRAWING No. 302-2061 04

SHEET 4 OF 7

ISSUE/REV. 1

K:\Projects\302-2061\02 design drawings\civil\02 design drawings\water\composite water management



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		SANITARY MAIN
		SANITARY FORCEMAIN
		SANITARY MANHOLE
		CLEANOUT
		LIFT STATION
		SEPTIC TANK
		STORM MAIN
		STORM DITCH
		CULVERT
		STORM MANHOLE
		CATCHBASIN
		STORM DRYWELL
		WATER MAIN
		WATER SERVICE
		CURB STOP
		VALVE
		STANDPIPE
		HYDRANT
		AIR RELEASE VALVE
		REDUCER
		SPRINKLER
		IRRIGATION BOX
		END CAP
		POWER
		TEL
		CABLE
		STREET LIGHT
		GAS
		POWER POLE
		LAMP STANDARD
		LIGHT POST
		POLE ANCHOR
		JUNCTION BOX
		TEST PIT
		IRON PIN
		SURVEY CONTROL

No.	DATE	DESCRIPTION	BY	APPD
-	-	-	-	-

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE CONSULTING
2079 Falcon Road ▪ Kamloops BC ▪ V2C 4J2
tel 250.828.0881 ▪ info@true.ca

Osoyoos
Canada's warmest welcome

APPENDIX H

FIGURE H5: EAST PROJECTS

SCALE	1:2500
DESIGN BY	AM
DRAWN BY	AM
DATE	2023-07-24
PROJECT REFERENCE No.	302-2061

DRAWING No. **302-2061 05**

SHEET 5 OF 7

ISSUE/REV. 1

FILE: c:\users\302-2061\05 drawings\civil\02 design drawings\water computer - storm management



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		SANITARY MAIN
		SANITARY FORCEMAIN
		SANITARY MANHOLE
		CLEANOUT
		LIFT STATION
		SEPTIC TANK
		STORM MAIN
		STORM DITCH
		CULVERT
		STORM MANHOLE
		CATCHBASIN
		STORM DRYWELL
		WATER MAIN
		WATER SERVICE
		CURB STOP
		VALVE
		STANDPIPE
		HYDRANT
		AIR RELEASE VALVE
		REDUCER
		SPRINKLER
		IRRIGATION BOX
		END CAP
		POWER
		TEL
		CABLE
		STREET LIGHT
		GAS
		POWER POLE
		LAMP STANDARD
		LIGHT POST
		POLE ANCHOR
		JUNCTION BOX
		TEST PIT
		IRON PIN
		SURVEY CONTROL

No.	DATE	DESCRIPTION	BY	APPD
-	-	-	-	-

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE CONSULTING
2079 Falcon Road ■ Kamloops BC ■ V2C 4J2
tel 250.828.0881 ■ info@true.ca

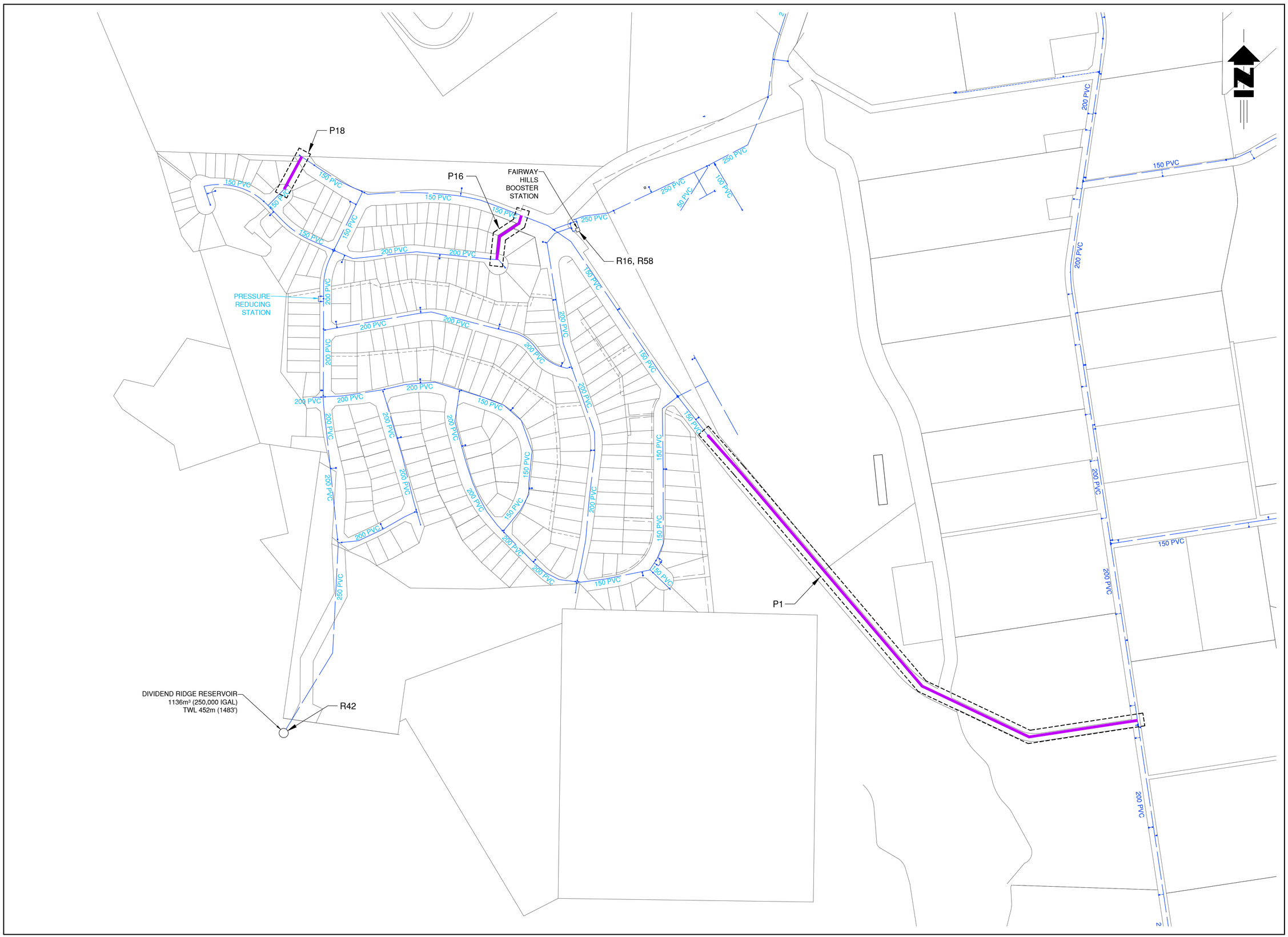
Osoyoos
Canada's warmest welcome

APPENDIX H

FIGURE H6: SOUTH PROJECTS

SCALE	1:2500
DESIGN BY	AM
DRAWN BY	AM
DATE	2023-07-24
PROJECT REFERENCE No.	302-2061
DRAWING No.	302-2061 06
SHEET	6 OF 7
ISSUE/REV.	1

FILE: Clients\300-399\302\302-2061\3 drawings\cad\2 design drawings\asset composite - asset management



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		SANITARY MAIN
		SANITARY FORCEMAIN
		SANITARY MANHOLE
		CLEANOUT
		LIFT STATION
		SEPTIC TANK
		STORM MAIN
		STORM DITCH
		CULVERT
		STORM MANHOLE
		CATCHBASIN
		STORM DRYWELL
		WATER MAIN
		WATER SERVICE
		CURB STOP
		VALVE
		STANDPIPE
		HYDRANT
		AIR RELEASE VALVE
		REDUCER
		SPRINKLER
		IRRIGATION BOX
		END CAP
		POWER
		TEL
		CABLE
		STREET LIGHT
		GAS
		POWER POLE
		LAMP STANDARD
		LIGHT POST
		POLE ANCHOR
		JUNCTION BOX
		TEST PIT
		IRON PIN
		SURVEY CONTROL

No.	DATE	DESCRIPTION	BY	APP'D
-	-	-	-	-

ISSUES / REVISIONS

CONSULTANT SEAL

TRUE CONSULTING
2079 Falcon Road ■ Kamloops BC ■ V2C 4J2
tel 250.828.0881 ■ info@true.ca

Osoyoos
Canada's warmest welcome®

APPENDIX H

FIGURE H7: SOUTHWEST PROJECT

SCALE	1:2500
DESIGN BY	AM
DRAWN BY	AM
DATE	2023-07-24
PROJECT REFERENCE No.	302-2061
DRAWING No.	302-2061 07
SHEET	7 OF 7
ISSUE/REV.	1

T:\E-Comm\302\302-2061\03 drawing\cad\02 design drawing\water composite - asset management

APPENDIX I

Capital and Pro-active Projects Asset Management

Table I1: Osoyoos Water Distribution Network - Capital Projects Average Annual Investment

Pipes

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
PVC Water Main	180	l.m.	300	2024	80	81	2104	$ 117,900.00	$ 1,473.75	Capital - 74th Avenue Upsizing
Well #9 SS Piping	1	L.S	-	2024	80	81	2104	$ 30,000.00	$ 375.00	Capital - Well #9 And #10 C/W Auxiliary Power
Well #10 SS Piping	1	L.S	200	2024	80	81	2104	$ 30,000.00	$ 375.00	Capital - Well #9 And #10 C/W Auxiliary Power
PVC Water Main including Fittings and Couplings	137	l.m.	450	2025	80	82	2105	$ 169,050.00	$ 2,113.13	Capital - Phase 1 WTP Upgrades
PVC Water Main including Fittings and Couplings	342	l.m.	300	2025	80	82	2105	$ 219,200.00	$ 2,740.00	Capital - Phase 1 WTP Upgrades
PVC Water Main including Fittings and Couplings	136	l.m.	200	2025	80	82	2105	$ 48,800.00	$ 610.00	Capital - Phase 1 WTP Upgrades
SS, PVC, and HDPE piping for site, pumpstation, decanter, recycling, backwash and chlorine contact tank	1	L.S	100 - 500	2025	80	82	2105	$ 301,000.00	$ 3,762.50	Capital - Cottonwood WTP
250Ø PVC Water Main - Supply and Install	210	m	250	2026	80	83	2106	$ 93,650.00	$ 1,170.63	Capital - 89th Street Upgrades
250Ø PVC Water Main - Supply and Install	170	m	250	2027	80	84	2107	$ 137,700.00	$ 1,721.25	Capital - 62nd Avenue Tie-in
PVC Water Main including Fittings and Couplings	700	l.m.	300	2029	80	86	2109	$ 435,000.00	$ 5,437.50	Capital - East Sector Reservoir Supply / Distribution Main
PVC Water Main Highway Crossing	60	l.m.	300	2029	80	86	2109	$ 90,000.00	$ 1,125.00	Capital - East Sector Reservoir Supply / Distribution Main
PVC Water Main including Fittings and Couplings	570	l.m.	300	2029	80	86	2109	$ 360,000.00	$ 4,500.00	Capital - East Sector Reservoir Cottonwood Drive Looping
PVC Water Main including Fittings and Couplings	755	l.m.	450	2030	80	87	2110	$ 698,650.00	$ 8,733.13	Capital - Phase 2 WTP Upgrades
PVC Water Main including Fittings and Couplings	160	l.m.	250	2035	80	92	2115	$ 172,100.00	$ 2,151.25	Capital - Phase 3 WTP Upgrades
PVC Water Main Highway Crossing	30	l.m.	250	2035	80	92	2115	$ 39,000.00	$ 487.50	Capital - Phase 3 WTP Upgrades
PVC Water Main including Fittings and Couplings	45	l.m.	150	2035	80	92	2115	$ 19,700.00	$ 246.25	Capital - Phase 3 WTP Upgrades
PVC Water Main Highway Crossing	25	l.m.	450	2040	80	97	2120	$ 45,000.00	$ 562.50	Capital - East Main Street Upsizing
PVC Water Main including Fittings and Couplings	635	l.m.	350	2040	80	97	2120	$ 523,950.00	$ 6,549.38	Capital - East Main Street Upsizing
PVC Water Main Highway Crossing	25	l.m.	350	2040	80	97	2120	$ 37,500.00	$ 468.75	Capital - East Main Street Upsizing
PVC Water Main including Fittings and Couplings	850	l.m.	300	2042	80	99	2122	$ 510,000.00	$ 6,375.00	Capital - East Sector Nk'Mip Corner Water Connection

Valves

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
150Ø Gate Valve	2	ea	150	2024	40	41	2064	$ 6,000.00	$ 150.00	Capital - 74th Avenue Upsizing
250Ø Gate Valve	2	ea	250	2024	40	41	2064	$ 12,000.00	$ 300.00	Capital - 74th Avenue Upsizing
300Ø Gate Valve	1	ea	300	2024	40	41	2064	$ 7,500.00	$ 187.50	Capital - 74th Avenue Upsizing
Gate Valve	2	ea	450	2025	40	42	2065	$ 36,000.00	$ 900.00	Capital - Phase 1 WTP Upgrades
Gate Valve	4	ea	300	2025	40	42	2065	$ 30,000.00	$ 750.00	Capital - Phase 1 WTP Upgrades
Gate Valve	6	ea	200	2025	40	42	2065	$ 27,000.00	$ 675.00	Capital - Phase 1 WTP Upgrades
Gate Valve	1	ea	150	2025	40	42	2065	$ 3,000.00	$ 75.00	Capital - Phase 1 WTP Upgrades
Valves for Pumpstation, Recycle Pump and Decanter	1	L.S	-	2025	40	42	2065	$ 49,000.00	$ 1,225.00	Capital - Cottonwood WTP
150Ø Gate Valve	1	ea	150	2026	40	43	2066	$ 3,000.00	$ 75.00	Capital - 89th Street Upgrades
250Ø Gate Valve	5	ea	250	2026	40	43	2066	$ 30,000.00	$ 750.00	Capital - 89th Street Upgrades
250Ø Gate Valve	3	ea	250	2027	40	44	2067	$ 13,500.00	$ 337.50	Capital - 62nd Avenue Tie-in
250Ø Air Valve and Chamber	1	ea	250	2027	40	44	2067	$ 8,000.00	$ 200.00	Capital - 62nd Avenue Tie-in
Gate Valves	-	Allow	-	2029	40	46	2069	$ 15,000.00	$ 375.00	Capital - East Sector Reservoir Supply / Distribution Main
Gate Valves	-	Allow	-	2029	40	46	2069	$ 15,000.00	$ 375.00	Capital - East Sector Reservoir Cottonwood Drive Looping
Gate Valve	9	ea	450	2030	40	47	2070	$ 162,000.00	$ 4,050.00	Capital - Phase 2 WTP Upgrades
Gate Valve	1	ea	250	2030	40	47	2070	$ 6,000.00	$ 150.00	Capital - Phase 2 WTP Upgrades
Fire Hydrant	1	ea	200	2030	40	47	2070	$ 4,500.00	$ 112.50	Capital - Phase 2 WTP Upgrades
Water Service	3	ea	150	2030	40	47	2070	$ 9,000.00	$ 225.00	Capital - Phase 2 WTP Upgrades
Gate Valve	2	ea	300	2035	40	52	2075	$ 15,000.00	$ 375.00	Capital - Phase 3 WTP Upgrades
Gate Valve	9	ea	250	2035	40	52	2075	$ 54,000.00	$ 1,350.00	Capital - Phase 3 WTP Upgrades
Fire Hydrant	1	ea	200	2035	40	52	2075	$ 4,500.00	$ 112.50	Capital - Phase 3 WTP Upgrades
Water Service	3	ea	150	2035	40	52	2075	$ 9,000.00	$ 225.00	Capital - Phase 3 WTP Upgrades
Gate Valve	1	ea	450	2040	40	57	2080	$ 18,000.00	$ 450.00	Capital - East Main Street Upsizing
Gate Valve	7	ea	350	2040	40	57	2080	$ 77,000.00	$ 1,925.00	Capital - East Main Street Upsizing
Gate Valve	1	ea	250	2040	40	57	2080	$ 6,000.00	$ 150.00	Capital - East Main Street Upsizing
Fire Hydrant	1	ea	200	2040	40	57	2080	$ 4,500.00	$ 112.50	Capital - East Main Street Upsizing
Water Service	4	ea	150	2040	40	57	2080	$ 12,000.00	$ 300.00	Capital - East Main Street Upsizing
Gate Valves	-	Allow	-	2042	40	59	2082	$ 15,000.00	$ 375.00	Capital - East Sector Nk'Mip Corner Water Connection

Electrical

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
Well #9 Electrical	1	L.S	-	2024	15	16	2039	$ 80,000.00	$ 5,333.33	Capital - Well #9 And #10 C/W Auxiliary Power
Well #10 Electrical	1	L.S	-	2024	15	16	2039	$ 80,000.00	$ 5,333.33	Capital - Well #9 And #10 C/W Auxiliary Power
Electrical for WTP. Pumpstaions and Well VFDs	1	L.S	-	2025	15	17	2040	$ 781,000.00	$ 52,066.67	Capital - Cottonwood WTP
Pumps										
Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
Well #1, Auxilary Power for 50 Hp Pump	1	L.S	-	2024	20	21	2044	$ 150,000.00	$ 7,500.00	Capital - Wells Pump Auxiliary Power
Well #3, Auxilary Power for 75 Hp Pump	1	L.S	-	2024	20	21	2044	$ 175,000.00	$ 8,750.00	Capital - Wells Pump Auxiliary Power
Well #4, Auxilary Power for 75 Hp Pump	1	L.S	-	2024	20	21	2044	$ 175,000.00	$ 8,750.00	Capital - Wells Pump Auxiliary Power
Well #5, Auxilary Power for 100 Hp Pump	1	L.S	-	2024	20	21	2044	$ 200,000.00	$ 10,000.00	Capital - Wells Pump Auxiliary Power
Well #6, Auxilary Power for 50 Hp Pump	1	L.S	-	2024	20	21	2044	$ 150,000.00	$ 7,500.00	Capital - Wells Pump Auxiliary Power
Well #8, Auxilary Power for 75 Hp Pump	1	L.S	-	2024	20	21	2044	$ 175,000.00	$ 8,750.00	Capital - Wells Pump Auxiliary Power
Well #9 Auxilary Power	1	L.S	-	2024	20	21	2044	$ 175,000.00	$ 8,750.00	Capital - Well #9 And #10 C/W Auxiliary Power
Well #10 Auxilary Power	1	L.S	-	2024	20	21	2044	$ 175,000.00	$ 8,750.00	Capital - Well #9 And #10 C/W Auxiliary Power
Well #9 Vertical Turbine pump	1	L.S	-	2024	20	21	2044	$ 150,000.00	$ 7,500.00	Capital - Well #9 And #10 C/W Auxiliary Power
Well #10 Vertical Turbine pump	1	L.S	-	2024	20	21	2044	$ 150,000.00	$ 7,500.00	Capital - Well #9 And #10 C/W Auxiliary Power
Pumps for pumpstation, decanter, recycling and backwash	1	L.S	-	2025	20	22	2045	$ 382,000.00	$ 19,100.00	Capital - Cottonwood WTP

Buildings

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
Well #9 Building	1	L.S	-	2024	75	76	2099	$ 208,000.00	$ 2,773.33	Capital - Well #9 And #10 C/W Auxiliary Power
Well #10 Building	1	L.S	-	2024	75	76	2099	$ 208,000.00	$ 2,773.33	Capital - Well #9 And #10 C/W Auxiliary Power
Building for WTP and Pumpstation	1	L.S	-	2025	75	77	2100	$ 1,298,000.00	$ 17,306.67	Capital - Cottonwood WTP

Hydrants

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
Fire Hydrant	1	ea	-	2025	40	42	2065	$ 12,000.00	$ 300.00	Capital - Phase 1 WTP Upgrades
Fire Hydrant	1	ea	-	2026	40	43	2066	$ 12,000.00	$ 300.00	Capital - 89th Street Upgrades
Fire Hydrant	1	ea	-	2029	40	46	2069	$ 12,000.00	$ 300.00	Capital - East Sector Reservoir Supply / Distribution Main
Fire Hydrant	4	ea	-	2029	40	46	2069	$ 48,000.00	$ 1,200.00	Capital - East Sector Reservoir Cottonwood Drive Looping
Fire Hydrant	6	ea	-	2030	40	47	2070	$ 72,000.00	$ 1,800.00	Capital - Phase 2 WTP Upgrades
Fire Hydrant	2	ea	-	2035	40	52	2075	$ 24,000.00	$ 600.00	Capital - Phase 3 WTP Upgrades
Fire Hydrant	3	ea	-	2040	40	57	2080	$ 36,000.00	$ 900.00	Capital - East Main Street Upsizing
Fire Hydrant	6	ea	-	2042	40	59	2082	$ 72,000.00	$ 1,800.00	Capital - East Sector Nk'Mip Corner Water Connection

Services

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
Water Service	5	ea	-	2025	50	52	2075	$ 25,000.00	$ 500.00	Capital - Phase 1 WTP Upgrades
New Water Service c/w pit Water Meter	12	ea	-	2026	50	53	2076	$ 60,000.00	$ 1,200.00	Capital - 89th Street Upgrades
Water Service	20	ea	-	2030	50	57	2080	$ 100,000.00	$ 2,000.00	Capital - Phase 2 WTP Upgrades
Water Service	8	ea	-	2035	50	62	2085	$ 40,000.00	$ 800.00	Capital - Phase 3 WTP Upgrades
Water Service	7	ea	-	2040	50	67	2090	$ 35,000.00	$ 700.00	Capital - East Main Street Upsizing

Tanks

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
Chlorine Contact Tank	1	L.S	-	2025	35	37	2060	$ 375,000.00	$ 10,714.29	Capital - Cottonwood WTP

Manholes

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
Manholes for Sanitary Backwash, Dechlorination, and Overflow	1	L.S	-	2025	50	52	2075	$ 39,000.00	$ 780.00	Capital - Cottonwood WTP

Treatment

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
Water Treatment for Manganese Removal and Chlorine Disinfection	1	L.S	-	2025	25	27	2050	$ 1,354,000.00	$ 54,160.00	Capital - Cottonwood WTP

Valve Chambers

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
Backflow Chamber	1	L.S	-	2029	40	46	2069	$ 220,000.00	$ 5,500.00	Capital - East Sector Reservoir Cottonwood Drive Looping

Supply Wells

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
Well #9 Installation				2024	60	61	2084	$ 250,000.00	$ 4,166.67	Capital - Well #9 And #10 C/W Auxiliary Power
Well #10 Installation				2024	60	61	2084	$ 250,000.00	$ 4,166.67	Capital - Well #9 And #10 C/W Auxiliary Power

Road Restoration

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
Asphalt Restoration (Commercial)	500	m²	-	2024	80	81	2104	$ 56,000.00	$ 700.00	Capital - 74th Avenue Upsizing
Traffic Control	1	L.S.	-	2024	80	81	2104	$ 75,000.00	$ 937.50	Capital - 74th Avenue Upsizing
Road Removals	555	m²	-	2025	80	82	2105	$ 6,746.12	$ 84.33	Capital - Phase 1 WTP Upgrades
Asphalt Restoration (Commercial)	240	m²	-	2025	80	82	2105	$ 24,000.00	$ 300.00	Capital - Phase 1 WTP Upgrades
Asphalt Restoration (Residential)	315	m²	-	2025	80	82	2105	$ 25,200.00	$ 315.00	Capital - Phase 1 WTP Upgrades
Traffic Control	1	L.S.	-	2025	80	82	2105	$ 95,000.00	$ 1,187.50	Capital - Phase 1 WTP Upgrades
Road Removals	600	m²	-	2026	80	83	2106	$ 7,293.10	$ 91.16	Capital - 89th Street Upgrades
Asphalt Restoration (Commercial)	600	m²	-	2026	80	83	2106	$ 60,000.00	$ 750.00	Capital - 89th Street Upgrades
Traffic Control	1	L.S.	-	2026	80	83	2106	$ 60,000.00	$ 750.00	Capital - 89th Street Upgrades
Road Removals	2265	m²	-	2030	80	87	2110	$ 27,531.45	$ 344.14	Capital - Phase 2 WTP Upgrades
Asphalt Restoration (Commercial)	2265	m²	-	2030	80	87	2110	$ 226,500.00	$ 2,831.25	Capital - Phase 2 WTP Upgrades
Traffic Control	1	L.S.	-	2030	80	87	2110	$ 115,000.00	$ 1,437.50	Capital - Phase 2 WTP Upgrades
Road Removals	420	m²	-	2035	80	92	2115	$ 5,105.17	$ 63.81	Capital - Phase 3 WTP Upgrades
Asphalt Restoration (Commercial)	420	m²	-	2035	80	92	2115	$ 42,000.00	$ 525.00	Capital - Phase 3 WTP Upgrades
Traffic Control	1	L.S.	-	2035	80	92	2115	$ 40,000.00	$ 500.00	Capital - Phase 3 WTP Upgrades
Road Removals	1980	m²	-	2040	80	97	2120	$ 24,067.23	$ 300.84	Capital - East Main Street Upsizing
Asphalt Restoration (Commercial)	1980	m²	-	2040	80	97	2120	$ 198,000.00	$ 2,475.00	Capital - East Main Street Upsizing
Traffic Control	1	L.S.	-	2040	80	97	2120	$ 115,000.00	$ 1,437.50	Capital - East Main Street Upsizing

Sidewalk, curb and gutter

Item	QTY	Unit	Diameter (mm)	Year Installed	Expected Service Life (Years)	Useful Life Remaining (Years)	Estimated Replacement Date	Current Total Replacement Cost	Average Annual Investment	Project
Concrete Sidewalk	270	m²	-	2024	80	81	2104	$ 54,000.00	$ 675.00	Capital - 74th Avenue Upsizing
Curb and Gutter	180	lm	-	2024	80	81	2104	$ 45,000.00	$ 562.50	Capital - 74th Avenue Upsizing
Concrete Sidewalk	120	m²	-	2025	80	82	2105	$ 24,000.00	$ 300.00	Capital - Phase 1 WTP Upgrades
Curb and Gutter	80	lm	-	2025	80	82	2105	$ 20,000.00	$ 250.00	Capital - Phase 1 WTP Upgrades
Concrete Sidewalk	315	m²	-	2026	80	83	2106	$ 63,000.00	$ 787.50	Capital - 89th Street Upgrades
Curb and Gutter	210	lm	-	2026	80	83	2106	$ 52,500.00	$ 656.25	Capital - 89th Street Upgrades
Concrete Sidewalk	1132.5	m²	-	2030	80	87	2110	$ 226,500.00	$ 2,831.25	Capital - Phase 2 WTP Upgrades
Curb and Gutter	755	lm	-	2030	80	87	2110	$ 188,750.00	$ 2,359.38	Capital - Phase 2 WTP Upgrades
Concrete Sidewalk	240	m²	-	2035	80	92	2115	$ 48,000.00	$ 600.00	Capital - Phase 3 WTP Upgrades
Curb and Gutter	160	lm	-	2035	80	92	2115	$ 40,000.00	$ 500.00	Capital - Phase 3 WTP Upgrades
Concrete Sidewalk	480	m²	-	2040	80	97	2120	$ 96,000.00	$ 1,200.00	Capital - East Main Street Upsizing
Curb and Gutter	320	lm	-	2040	80	97	2120	$ 80,000.00	$ 1,000.00	Capital - East Main Street Upsizing

Table I2: Osoyoos Water Distribution Network - Pro-active Projects Average Annual Investment

Pipes

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment	Code
PVC Water Main	95	l.m.	200	2041	$ 500.00	$ 47,500.00	80	$ 593.75	P17
PVC Water Main	265	l.m.	200	2036	$ 500.00	$ 132,500.00	80	$ 1,656.25	P6
PVC Water Main	140	l.m.	200	2039	$ 500.00	$ 70,000.00	80	$ 875.00	P14
PVC Water Main	1060	l.m.	250	2038	$ 600.00	$ 636,000.00	80	$ 7,950.00	P11
PVC Water Main Highway Crossing	20	l.m.	250	2038	$ 1,800.00	$ 36,000.00	80	$ 450.00	P11
PVC Elbow c/w Restraints	2	l.m.	250	2038	$ 2,500.00	$ 5,000.00	80	$ 62.50	P11
PVC Elbow c/w Restraints	1	l.m.	200	2038	$ 2,000.00	$ 2,000.00	80	$ 25.00	P11
PVC Water Main	251	l.m.	200	2036	$ 500.00	$ 125,500.00	80	$ 1,568.75	P5
PVC Elbow c/w Restraints	5	l.m.	200	2036	$ 2,000.00	$ 10,000.00	80	$ 125.00	P5
PVC Water Main	60	l.m.	200	2041	$ 500.00	$ 30,000.00	80	$ 375.00	P18
PVC Elbow c/w Restraints	3	l.m.	200	2041	$ 2,000.00	$ 6,000.00	80	$ 75.00	P18
PVC Water Main	180	l.m.	200	2039	$ 500.00	$ 90,000.00	80	$ 1,125.00	P13
PVC Elbow c/w Restraints	7	l.m.	200	2039	$ 2,000.00	$ 14,000.00	80	$ 175.00	P13
PVC Water Main	86	l.m.	200	2041	$ 500.00	$ 43,000.00	80	$ 537.50	P16
PVC Elbow c/w Restraints	2	l.m.	200	2041	$ 2,000.00	$ 4,000.00	80	$ 50.00	P16
PVC Water Main	45	l.m.	200	2039	$ 500.00	$ 22,500.00	80	$ 281.25	P15
PVC Water Main	105	l.m.	200	2041	$ 500.00	$ 52,500.00	80	$ 656.25	P19
PVC Elbow c/w Restraints	3	l.m.	200	2041	$ 2,000.00	$ 6,000.00	80	$ 75.00	P19
PVC Water Main	100	l.m.	200	2039	$ 500.00	$ 50,000.00	80	$ 625.00	P12
PVC Elbow c/w Restraints	2	l.m.	200	2039	$ 2,000.00	$ 4,000.00	80	$ 50.00	P12
PVC Water Main	870	l.m.	200	2028	$ 500.00	$ 435,000.00	80	$ 5,437.50	P1
PVC Elbow c/w Restraints	4	l.m.	200	2028	$ 2,000.00	$ 8,000.00	80	$ 100.00	P1
PVC Water Main	235	l.m.	250	2027	$ 600.00	$ 141,000.00	80	$ 1,762.50	P2
PVC Elbow c/w Restraints	7	l.m.	200	2027	$ 2,000.00	$ 14,000.00	80	$ 175.00	P2
PVC Water Main	20	l.m.	250	2028	$ 600.00	$ 12,000.00	80	$ 150.00	P3
PVC Elbow c/w Restraints	2	l.m.	200	2028	$ 2,000.00	$ 4,000.00	80	$ 50.00	P3
PVC Water Main	20	l.m.	200	2035	$ 500.00	$ 10,000.00	80	$ 125.00	P4
PVC Elbow c/w Restraints	2	l.m.	200	2035	$ 2,000.00	$ 4,000.00	80	$ 50.00	P4
PVC Water Main	20	l.m.	250	2035	$ 600.00	$ 12,000.00	80	$ 150.00	P7
PVC Elbow c/w Restraints	4	l.m.	250	2035	$ 2,500.00	$ 10,000.00	80	$ 125.00	P7
PVC Water Main	20	l.m.	200	2037	$ 500.00	$ 10,000.00	80	$ 125.00	P9
PVC Elbow c/w Restraints	4	l.m.	250	2037	$ 2,500.00	$ 10,000.00	80	$ 125.00	P9
PVC Water Main	20	l.m.	200	2037	$ 500.00	$ 10,000.00	80	$ 125.00	P8
PVC Elbow c/w Restraints	4	l.m.	250	2037	$ 2,500.00	$ 10,000.00	80	$ 125.00	P8
Chlorine Analyzer, c/w watermain tap	1	L.S	-	2038	$ 10,000.00	$ 10,000.00	80	$ 125.00	P11
Chlorine Analyzer, c/w watermain tap	6	L.S	-	2026	$ 10,000.00	$ 60,000.00	80	$ 750.00	P10

Valves

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment	Code
250Ø Gate Valve	4	ea	250	2038	$ 6,000.00	$ 24,000.00	40	$ 600.00	P11
200Ø Gate Valve	1	ea	200	2036	$ 4,500.00	$ 4,500.00	40	$ 112.50	P5
200Ø Gate Valve	2	ea	200	2028	$ 4,500.00	$ 9,000.00	40	$ 225.00	P1
250Ø Gate Valve	2	ea	250	2027	$ 6,000.00	$ 12,000.00	40	$ 300.00	P2
250Ø Gate Valve	1	ea	250	2028	$ 6,000.00	$ 6,000.00	40	$ 150.00	P3
250Ø Gate Valve	1	ea	250	2035	$ 6,000.00	$ 6,000.00	80	$ 75.00	P4
250Ø Gate Valve	2	ea	250	2035	$ 6,000.00	$ 12,000.00	40	$ 300.00	P7
200Ø Gate Valve	2	ea	200	2037	$ 4,500.00	$ 9,000.00	40	$ 225.00	P9
200Ø Gate Valve	2	ea	200	2037	$ 4,500.00	$ 9,000.00	40	$ 225.00	P8

PRV and Automatic Flushing Stations

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment	Code
PRV and Automatic Flushing System	1	L.S	-	2036	$ 75,000.00	$ 75,000.00	40	$ 1,875.00	P6
Automatic Flushing System	1	L.S	-	2036	$ 60,000.00	$ 60,000.00	40	$ 1,500.00	P5
PRV and Automatic Flushing System	1	L.S	-	2027	$ 75,000.00	$ 75,000.00	40	$ 1,875.00	P2
Automatic Flushing System	1	L.S	-	2028	$ 60,000.00	$ 60,000.00	40	$ 1,500.00	P3
Automatic Flushing System	1	L.S	-	2035	$ 60,000.00	$ 60,000.00	40	$ 1,500.00	P4
PRV and Automatic Flushing System	1	L.S	-	2035	$ 75,000.00	$ 75,000.00	40	$ 1,875.00	P7
PRV and Automatic Flushing System	1	L.S	-	2037	$ 75,000.00	$ 75,000.00	40	$ 1,875.00	P9
PRV and Automatic Flushing System	1	L.S	-	2037	$ 75,000.00	$ 75,000.00	40	$ 1,875.00	P8

Hydrants

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment	Code
Hydrants	2	ea	-	2038	$ 12,000.00	$ 24,000.00	40	$ 600.00	P11
Hydrants	1	ea	-	2028	$ 12,000.00	$ 12,000.00	40	$ 300.00	P1

Electrical

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment	Code
PRV and Automatic Flushing System Electrical	1	L.S	-	2036	$ 25,000.00	$ 25,000.00	15	$ 1,666.67	P6
Chlorine Analyzer, Electrical	1	L.S	-	2038	$ 12,500.00	$ 12,500.00	15	$ 833.33	P11
PRV and Automatic Flushing System Electrical	1	L.S	-	2036	$ 20,000.00	$ 20,000.00	15	$ 1,333.33	P5
PRV and Automatic Flushing System Electrical	1	L.S	-	2027	$ 25,000.00	$ 25,000.00	15	$ 1,666.67	P2
PRV and Automatic Flushing System Electrical	1	L.S	-	2028	$ 20,000.00	$ 20,000.00	15	$ 1,333.33	P3
PRV and Automatic Flushing System Electrical	1	L.S	-	2035	$ 20,000.00	$ 20,000.00	15	$ 1,333.33	P4
PRV and Automatic Flushing System Electrical	1	L.S	-	2035	$ 25,000.00	$ 25,000.00	15	$ 1,666.67	P7
PRV and Automatic Flushing System Electrical	1	L.S	-	2037	$ 25,000.00	$ 25,000.00	15	$ 1,666.67	P9
PRV and Automatic Flushing System Electrical	1	L.S	-	2037	$ 25,000.00	$ 25,000.00	15	$ 1,666.67	P8
Chlorine Analyzer, Electrical	6	L.S	-	2026	$ 12,500.00	$ 75,000.00	15	$ 5,000.00	P10

Buildings

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment	Code
PRV and Automatic Flushing System Building	1	L.S	-	2036	$ 75,000.00	$ 75,000.00	75	$ 1,000.00	P6
Chlorine Analyzer, Cabinet and Foundation	1	L.S	-	2038	$ 12,500.00	$ 12,500.00	75	$ 166.67	P11
PRV and Automatic Flushing System Building	1	L.S	-	2036	$ 70,000.00	$ 70,000.00	75	$ 933.33	P5
PRV and Automatic Flushing System Building	1	L.S	-	2027	$ 75,000.00	$ 75,000.00	75	$ 1,000.00	P2
PRV and Automatic Flushing System Building	1	L.S	-	2028	$ 70,000.00	$ 70,000.00	75	$ 933.33	P3
PRV and Automatic Flushing System Building	1	L.S	-	2035	$ 70,000.00	$ 70,000.00	75	$ 933.33	P4
PRV and Automatic Flushing System Building	1	L.S	-	2035	$ 75,000.00	$ 75,000.00	75	$ 1,000.00	P7
PRV and Automatic Flushing System Building	1	L.S	-	2037	$ 75,000.00	$ 75,000.00	75	$ 1,000.00	P9
PRV and Automatic Flushing System Electrical	1	L.S	-	2037	$ 25,000.00	$ 25,000.00	15	$ 1,666.67	P8
Chlorine Analyzer, Cabinet and Foundation	6	L.S	-	2026	$ 12,500.00	$ 75,000.00	75	$ 1,000.00	P10

Road Restoration

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment	Code
Road Removals	1	LS	-	2041	$ 12.00	$ 1,500.00	80	$ 18.75	P17
Asphalt Restoration (Residential)	1	LS	-	2041	$ 80.00	$ 3,500.00	80	$ 43.75	P17
Road Removals	1060	m²	-	2036	$ 12.00	$ 12,720.00	80	$ 159.00	P6
Asphalt Restoration (Residential)	1060	m²	-	2036	$ 80.00	$ 84,800.00	80	$ 1,060.00	P6
Road Removals	1	LS	-	2039	$ 12.00	$ 1,500.00	80	$ 18.75	P14
Asphalt Restoration (Commercial)	1	LS	-	2039	$ 80.00	$ 3,500.00	80	$ 43.75	P14
Traffic Control	1	L.S.	-	2039	$ 20,000.00	$ 20,000.00	80	$ 250.00	P14
Road Removals	180	m²	-	2038	$ 12.00	$ 2,160.00	80	$ 27.00	P11
Asphalt Restoration (Commercial)	180	m²	-	2038	$ 100.00	$ 18,000.00	80	$ 225.00	P11
Traffic Control	1	L.S.	-	2038	$ 50,000.00	$ 50,000.00	80	$ 625.00	P11
Road Removals	1	LS	-	2036	$ 12.00	$ 1,500.00	80	$ 18.75	P5
Asphalt Restoration (Residential)	1	LS	-	2036	$ 80.00	$ 3,500.00	80	$ 43.75	P5
Road Removals	1	LS	-	2041	$ 12.00	$ 1,500.00	80	$ 18.75	P18
Asphalt Restoration (Residential)	1	LS	-	2041	$ 80.00	$ 3,500.00	80	$ 43.75	P18
Traffic Control	1	L.S.	-	2041	$ 15,000.00	$ 15,000.00	80	$ 187.50	P18
Road Removals	120	m²	-	2039	$ 12.00	$ 1,440.00	80	$ 18.00	P13
Asphalt Restoration (Residential)	120	m²	-	2039	$ 80.00	$ 9,600.00	80	$ 120.00	P13
Property Disturbance	1	L.S.	-	2039	$ 30,000.00	$ 30,000.00	80	$ 375.00	P13
Traffic Control	1	L.S.	-	2039	$ 20,000.00	$ 20,000.00	80	$ 250.00	P13
Road Removals	1	LS	-	2041	$ 12.00	$ 1,500.00	80	$ 18.75	P16
Asphalt Restoration (Commercial)	1	LS	-	2041	$ 80.00	$ 3,500.00	80	$ 43.75	P16
Traffic Control	1	L.S.	-	2041	$ 13,000.00	$ 13,000.00	80	$ 162.50	P16
Road Removals	90	m²	-	2039	$ 12.00	$ 1,080.00	80	$ 13.50	P15
Asphalt Restoration (Pathway)	90	m²	-	2039	$ 80.00	$ 7,200.00	80	$ 90.00	P15
Road Removals	1	LS	-	2041	$ 12.00	$ 1,500.00	80	$ 18.75	P19
Asphalt Restoration (Residential)	1	LS	-	2041	$ 80.00	$ 3,500.00	80	$ 43.75	P19
Road Removals	138	m²	-	2039	$ 12.00	$ 1,656.00	80	$ 20.70	P12
Asphalt Restoration (Residential)	138	m²	-	2039	$ 80.00	$ 11,040.00	80	$ 138.00	P12
Traffic Control	1	L.S.	-	2039	$ 20,000.00	$ 20,000.00	80	$ 250.00	P12
Road Removals	3480	m²	-	2028	$ 12.00	$ 41,760.00	80	$ 522.00	P1
Asphalt Restoration (Residential)	3480	m²	-	2028	$ 80.00	$ 278,400.00	80	$ 3,480.00	P1
Traffic Control	1	L.S.	-	2028	$ 130,000.00	$ 130,000.00	80	$ 1,625.00	P1
Road Removals	924	m²	-	2027	$ 12.00	$ 11,088.00	80	$ 138.60	P2
Asphalt Restoration (Residential)	924	m²	-	2027	$ 80.00	$ 73,920.00	80	$ 924.00	P2
Traffic Control	1	L.S.	-	2027	$ 40,000.00	$ 40,000.00	80	$ 500.00	P2
Road Removals	1	LS	-	2028	$ 12.00	$ 1,500.00	80	$ 18.75	P3
Asphalt Restoration (Residential)	1	LS	-	2028	$ 80.00	$ 3,500.00	80	$ 43.75	P3
Traffic Control	1	L.S.	-	2028	$ 10,000.00	$ 10,000.00	80	$ 125.00	P3
Road Removals	1	LS	-	2035	$ 12.00	$ 1,500.00	80	$ 18.75	P4
Asphalt Restoration (Residential)	1	LS	-	2035	$ 80.00	$ 3,500.00	80	$ 43.75	P4
Traffic Control	1	L.S.	-	2035	$ 10,000.00	$ 10,000.00	80	$ 125.00	P4
Road Removals	1	LS	-	2035	$ 12.00	$ 1,500.00	80	$ 18.75	P7
Asphalt Restoration (Residential)	1	LS	-	2035	$ 80.00	$ 3,500.00	80	$ 43.75	P7
Traffic Control	1	L.S.	-	2035	$ 10,000.00	$ 10,000.00	80	$ 125.00	P7
Road Removals	60	m²	-	2037	$ 12.00	$ 720.00	80	$ 9.00	P9
Asphalt Restoration (Commercial)	60	m²	-	2037	$ 100.00	$ 6,000.00	80	$ 75.00	P9
Traffic Control	1	L.S.	-	2037	$ 10,000.00	$ 10,000.00	80	$ 125.00	P9
Road Removals	60	m²	-	2037	$ 12.00	$ 720.00	80	$ 9.00	P8
Asphalt Restoration (Commercial)	60	m²	-	2037	$ 100.00	$ 6,000.00	80	$ 75.00	P8
Traffic Control	1	L.S.	-	2037	$ 10,000.00	$ 10,000.00	80	$ 125.00	P8

Sidewalk, Curb and Gutter

Item	QTY	Unit	Diameter (mm)	Year Installed	Unit Rate	Total Price	Expected Service Life (Years)	Average Annual Investment	Code
Concrete Sidewalk	7.5	m^2	-	2041	$ 200.00	$ 1,500.00	80	$ 18.75	P17
Curb and Gutter	5	lm	-	2041	$ 250.00	$ 1,250.00	80	$ 15.63	P17
Concrete Pathway	75	m^2	-	2041	$ 200.00	$ 15,000.00	80	$ 187.50	P18
Concrete Sidewalk	7.5	m^2	-	2041	$ 200.00	$ 1,500.00	80	$ 18.75	P16
Curb and Gutter	10	lm	-	2041	$ 250.00	$ 2,500.00	80	$ 31.25	P16
Concrete Sidewalk	15	m^2	-	2037	$ 200.00	$ 3,000.00	80	$ 37.50	P9
Curb and Gutter	10	lm	-	2037	$ 250.00	$ 2,500.00	80	$ 31.25	P9
Concrete Sidewalk	15	m^2	-	2037	$ 200.00	$ 3,000.00	80	$ 37.50	P8
Curb and Gutter	10	lm	-	2037	$ 250.00	$ 2,500.00	80	$ 31.25	P8

Table I3: Osoyoos Water Distribution Network - Capital and Pro-active Project Forecast Reserve Account Balance (2023 Dollar Value) (Purple Line)

Current Reserve Balance: $ 3,033,600.50

	Pipe Network (UL Risk Based)	Hydrants (UL 40)	Valves (UL 40)	PRV Stations and Valve Chambers (UL 40)	Pumps and Auxiliary Power (UL 20)	Supply Wells (UL 60)	Reservoirs and Manholes (UL 50)	Chlorine Contact Tank (UL 35)	Water Treatment (UL 25)	System Buildings (UL 75)	System Electrical (UL 15)	Surface Restoration (Pipe Based)	Sidewalk, Curb and Gutter (Pipe Based)	Engineering	*Total Replacement Cost*	*Average Annual Investment*	Reserve Balance
2023	$ 1,811,887.41	$1,284,000.00	$ 175,500.00	$ 50,000.00	$1,350,000.00	$ -	$ 2,430,000.00	$ -	$ 100,000.00	$ 350,000.00	$ 855,000.00	$1,182,031.91	$ 460,225.29	$ -	*$ 10,048,644.61*	*$ 1,457,300.00*	$ (5,557,744.11)
2024	$ 1,799,560.07	$ -	$ 203,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$1,362,449.89	$ 530,471.21	$ -	*$ 3,895,481.17*	*$ 1,477,300.00*	$ (7,975,925.28)
2025	$ 7,483.84	$ -	$ 3,000.00	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$ -	$ 5,418.78	$ 2,109.81	$ -	*$ 268,012.43*	*$ 1,591,332.92*	$ (6,652,604.79)
2026	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ -*	*$ 1,761,547.99*	$ (4,891,056.81)
2027	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ -*	*$ 1,774,828.53*	$ (3,116,228.28)
2028	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ -	$ -	$ 100,000.00	*$ 150,000.00*	*$ 1,785,429.04*	$ (1,480,799.24)
2029	$ 124,487.14	$ 72,000.00	$ 9,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 90,136.66	$ 35,094.80	$ -	*$ 330,718.60*	*$ 1,801,422.71*	$ (10,095.13)
2030	$ 414,096.43	$ -	$ 36,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 299,832.35	$ 116,740.02	$ -	*$ 866,668.80*	*$ 1,820,235.21*	$ 943,471.28
2031	$ 300,773.56	$ 132,000.00	$ 24,000.00	$ -	$ -	$ 250,000.00	$ 1,980,000.00	$ -	$ -	$ -	$ -	$ 217,779.33	$ 84,792.60	$ -	*$ 2,989,345.49*	*$ 1,846,771.85*	$ (199,102.36)
2032	$ -	$ 24,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 24,000.00*	*$ 1,846,771.85*	$ 1,623,669.49
2033	$ -	$ 156,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000.00	*$ 256,000.00*	*$ 1,846,771.85*	$ 3,214,441.35
2034	$ -	$ 132,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ -	$ -	$ -	*$ 142,000.00*	*$ 1,846,771.85*	$ 4,919,213.20
2035	$ 153,021.87	$ 36,000.00	$ 28,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ 136,205.94	$ 53,031.92	$ -	*$ 416,759.74*	*$ 1,846,771.85*	$ 6,349,225.31
2036	$ 211,957.50	$ -	$ 22,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 138,123.73	$ 53,778.61	$ -	*$ 426,359.84*	*$ 1,865,154.00*	$ 7,788,019.47
2037	$ -	$ 96,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,000.00	$ -	*$ 107,000.00*	*$ 1,878,206.33*	$ 9,559,225.81
2038	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 855,000.00	$ -	$ -	$ 100,000.00	*$ 955,000.00*	*$ 1,888,795.17*	$ 10,493,020.98
2039	$ 24,404.11	$ -	$ -	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$ 160,000.00	$ 12,233.17	$ 4,763.00	$ -	*$ 451,400.28*	*$ 1,900,484.67*	$ 11,942,105.37
2040	$ 574,044.71	$ 36,000.00	$ 45,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 250,000.00	$ 781,000.00	$ 374,080.63	$ 145,648.66	$ -	*$ 2,205,774.00*	*$ 1,905,203.62*	$ 11,641,534.98
2041	$ -	$ 12,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,000.00	$ -	$ 21,750.00	$ -	*$ 108,750.00*	*$ 1,923,735.08*	$ 13,456,520.07
2042	$ 74,223.93	$ -	$ 4,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 25,000.00	$ 48,368.60	$ 18,832.36	$ -	*$ 170,924.89*	*$ 1,926,969.46*	$ 15,212,564.63
2043	$ -	$ 204,000.00	$ -	$ -	$1,350,000.00	$ -	$ 1,980,000.00	$ -	$ -	$ -	$ 20,000.00	$ -	$ -	$ 100,000.00	*$ 3,654,000.00*	*$ 1,935,519.46*	$ 13,494,084.09
2044	$ 266,691.00	$ 108,000.00	$ -	$ -	$1,675,000.00	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ 40,416.57	$ 15,736.23	$ -	*$ 2,155,843.80*	*$ 1,935,519.46*	$ 13,273,759.75
2045	$ -	$ 12,000.00	$ -	$ -	$ 382,000.00	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ -	$ -	$ -	*$ 444,000.00*	*$ 1,935,519.46*	$ 14,765,279.21
2046	$ 1,014,741.00	$ -	$ 78,000.00	$ -	$ -	$ 300,000.00	$ -	$ -	$ -	$ 250,000.00	$ -	$ 734,737.49	$ 286,070.77	$ -	*$ 2,663,549.26*	*$ 1,935,519.46*	$ 14,037,249.40
2047	$ -	$ 36,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 36,000.00*	*$ 1,935,519.46*	$ 15,936,768.86
2048	$ 5,863.37	$ 72,000.00	$ 12,000.00	$ -	$ -	$ -	$ -	$ -	$ 100,000.00	$ -	$ -	$ 4,245.15	$ 1,652.85	$ 100,000.00	*$ 295,761.37*	*$ 1,935,519.46*	$ 17,576,526.95
2049	$ 129,994.44	$ 72,000.00	$ 18,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ 123,448.90	$ 48,064.95	$ -	*$ 401,508.29*	*$ 1,935,519.46*	$ 19,110,538.11
2050	$ 339,357.70	$ -	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ 1,354,000.00	$ -	$ 55,000.00	$ 245,716.72	$ 95,670.05	$ -	*$ 2,110,744.47*	*$ 1,935,519.46*	$ 18,935,313.10
2051	$ 274,228.46	$ 24,000.00	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,000.00	$ 198,558.97	$ 77,309.13	$ -	*$ 640,096.56*	*$ 1,935,519.46*	$ 20,230,735.99
2052	$ 661,527.09	$ 36,000.00	$ 51,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ 478,987.99	$ 186,494.45	$ -	*$ 1,464,009.53*	*$ 1,935,519.46*	$ 20,702,245.93
2053	$ 833,046.94	$ -	$ 120,000.00	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ 867,500.00	$ 638,041.48	$ 248,422.08	$ 100,000.00	*$ 2,857,010.50*	*$ 1,935,519.46*	$ 19,780,754.88
2054	$ 298,868.54	$ -	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 300,000.00	$ 160,000.00	$ 216,399.97	$ 84,255.54	$ -	*$ 1,080,524.05*	*$ 1,935,519.46*	$ 20,635,750.29
2055	$ 669,143.19	$ -	$ 51,000.00	$ -	$ -	$ 500,000.00	$ -	$ -	$ -	$ 300,000.00	$ 781,000.00	$ 484,502.54	$ 188,641.54	$ -	*$ 2,974,287.27*	*$ 1,935,519.46*	$ 19,596,982.48
2056	$ 64,007.38	$ 12,000.00	$ 6,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,000.00	$ 46,345.45	$ 18,044.64	$ -	*$ 221,397.47*	*$ 1,935,519.46*	$ 21,311,104.46
2057	$ 685,901.03	$ 228,000.00	$ 27,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 25,000.00	$ 256,938.79	$ 100,039.37	$ -	*$ 1,322,879.19*	*$ 1,935,519.46*	$ 21,923,744.73
2058	$ 29,218.85	$ 24,000.00	$ 7,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000.00	$ 15,867.24	$ 6,177.93	$ 100,000.00	*$ 202,764.02*	*$ 1,935,519.46*	$ 23,656,500.17
2059	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ -*	*$ 1,935,519.46*	$ 25,592,019.63
2060	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 375,000.00	$ -	$ -	$ -	$ -	$ -	$ -	*$ 375,000.00*	*$ 1,935,519.46*	$ 27,152,539.09
2061	$ -	$ 168,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 168,000.00*	*$ 1,935,519.46*	$ 28,920,058.54
2062	$ -	$ 180,000.00	$ -	$ -	$ -	$ -	$ 4,590,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 4,770,000.00*	*$ 1,935,519.46*	$ 26,085,578.00
2063	$ -	$1,284,000.00	$ 175,500.00	$ 50,000.00	$1,350,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000.00	*$ 2,959,500.00*	*$ 1,935,519.46*	$ 25,061,597.46
2064	$ 69,308.83	$ -	$ 228,500.00	$ -	$1,675,000.00	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ 50,184.04	$ 19,539.20	$ -	*$ 2,052,532.07*	*$ 1,935,519.46*	$ 24,944,584.84
2065	$ 94,933.50	$ 12,000.00	$ 148,000.00	$ -	$ 382,000.00	$ -	$ -	$ -	$ -	$ -	$ 55,000.00	$ 47,587.65	$ 18,528.30	$ -	*$ 758,049.45*	*$ 1,935,519.46*	$ 26,122,054.85
2066	$ -	$ 12,000.00	$ 33,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,000.00	$ -	$ -	$ -	*$ 90,000.00*	*$ 1,935,519.46*	$ 27,967,574.31
2067	$ -	$ -	$ 33,500.00	$ 75,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ -	*$ 158,500.00*	*$ 1,935,519.46*	$ 29,744,593.77
2068	$ -	$ 12,000.00	$ 15,000.00	$ 60,000.00	$ -	$ -	$ -	$ -	$ -	$ 300,000.00	$ 867,500.00	$ -	$ -	$ 100,000.00	*$ 1,354,500.00*	*$ 1,935,519.46*	$ 30,325,613.23
2069	$ 105,980.05	$ 132,000.00	$ 39,000.00	$ 220,000.00	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ 160,000.00	$ 76,736.35	$ 29,877.37	$ -	*$ 813,593.77*	*$ 1,935,519.46*	$ 31,447,538.91
2070	$ 2,556.97	$ 72,000.00	$ 217,500.00	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ 500,000.00	$ 781,000.00	$ 1,666.27	$ 648.76	$ -	*$ 1,625,372.01*	*$ 1,935,519.46*	$ 31,757,686.36
2071	$ 688,319.14	$ 132,000.00	$ 24,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,000.00	$ 163,848.30	$ 63,794.50	$ -	*$ 1,146,961.94*	*$ 1,935,519.46*	$ 32,546,243.87
2072	$ 80,213.38	$ 24,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 25,000.00	$ 58,079.63	$ 22,613.36	$ -	*$ 209,906.36*	*$ 1,935,519.46*	$ 34,271,856.97
2073	$ -	$ 156,000.00	$ -	$ -	$ -	$ -	$ 2,430,000.00	$ -	$ 100,000.00	$ -	$ 20,000.00	$ -	$ -	$ 100,000.00	*$ 2,806,000.00*	*$ 1,935,519.46*	$ 33,401,376.42
2074	$ -	$ 132,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 132,000.00*	*$ 1,935,519.46*	$ 35,204,895.88
2075	$ 274,972.80	$ 60,000.00	$ 129,000.00	$ 135,000.00	$ -	$ -	$ 64,000.00	$ -	$ 1,354,000.00	$ -	$ -	$ 199,097.93	$ 77,518.97	$ -	*$ 2,293,589.71*	*$ 1,935,519.46*	$ 34,846,825.63
2076	$ 1,436,243.55	$ -	$ 27,000.00	$ 135,000.00	$ -	$ -	$ 60,000.00	$ -	$ -	$ -	$ -	$ 844,504.35	$ 328,808.60	$ -	*$ 2,831,556.50*	*$ 1,935,519.46*	$ 33,950,788.59
2077	$ 150,353.35	$ 96,000.00	$ 18,000.00	$ 150,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 103,208.39	$ 40,184.29	$ -	*$ 557,746.04*	*$ 1,935,519.46*	$ 35,328,562.01
2078	$ 1,501,772.23	$ 24,000.00	$ 24,000.00	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ 100,000.00	$ -	$ 745,146.54	$ 290,123.54	$ 100,000.00	*$ 2,835,042.31*	*$ 1,935,519.46*	$ 34,429,039.16
2079	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ -	$ -	$ -	*$ 10,000.00*	*$ 1,935,519.46*	$ 36,354,558.62
2080	$ -	$ 72,000.00	$ 162,500.00	$ -	$ -	$ -	$ 100,000.00	$ -	$ -	$ -	$ 55,000.00	$ -	$ -	$ -	*$ 389,500.00*	*$ 1,935,519.46*	$ 37,900,578.08
2081	$ -	$ 12,000.00	$ -	$ -	$ -	$ -	$ 1,980,000.00	$ -	$ -	$ -	$ 45,000.00	$ -	$ -	$ -	*$ 2,037,000.00*	*$ 1,935,519.46*	$ 37,799,097.53
2082	$ -	$ 72,000.00	$ 19,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ -	*$ 141,500.00*	*$ 1,935,519.46*	$ 39,593,116.99
2083	$ 467,132.84	$ 204,000.00	$ -	$ -	$1,350,000.00	$ -	$ -	$ -	$ -	$ -	$ 867,500.00	$ 234,162.07	$ 91,171.23	$ 100,000.00	*$ 3,313,966.15*	*$ 1,935,519.46*	$ 38,214,670.30
2084	$ 142,552.39	$ 108,000.00	$ -	$ -	$1,675,000.00	$ 500,000.00	$ -	$ -	$ -	$ -	$ 160,000.00	$ 80,542.91	$ 31,359.46	$ -	*$ 2,697,454.76*	*$ 1,935,519.46*	$ 37,452,735.00
2085	$ 539,854.23	$ 12,000.00	$ -	$ -	$ 382,000.00	$ 250,000.00	$ 40,000.00	$ -	$ -	$ -	$ 781,000.00	$ 380,929.16	$ 148,315.15	$ -	*$ 2,534,098.54*	*$ 1,935,519.46*	$ 36,854,155.91
2086	$ -	$ -	$ 78,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,000.00	$ -	$ -	$ -	*$ 153,000.00*	*$ 1,935,519.46*	$ 38,636,675.37
2087	$ 869,747.12	$ 36,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 25,000.00	$ 562,057.09	$ 218,837.48	$ -	*$ 1,711,641.70*	*$ 1,935,519.46*	$ 38,860,553.13
2088	$ 397,874.86	$ 72,000.00	$ 12,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000.00	$ 244,919.19	$ 95,359.53	$ 100,000.00	*$ 942,153.58*	*$ 1,935,519.46*	$ 39,853,919.01
2089	$ 1,171,109.79	$ 72,000.00	$ 18,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 751,852.10	$ 292,734.36	$ -	*$ 2,305,696.26*	*$ 1,935,519.46*	$ 39,483,742.21
2090	$ 1,313,633.51	$ -	$ 21,000.00	$ -	$ -	$ -	$ 35,000.00	$ -	$ -	$ -	$ -	$ 842,393.28	$ 327,986.66	$ -	*$ 2,540,013.45*	*$ 1,935,519.46*	$ 38,879,248.22
2091	$ 408,032.47	$ 24,000.00	$ 21,000.00	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$ -	$ 227,862.08	$ 88,718.33	$ -	*$ 1,019,612.88*	*$ 1,935,519.46*	$ 39,795,154.80
2092	$ -	$ 36,000.00	$ 51,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 87,000.00*	*$ 1,935,519.46*	$ 41,643,674.25
2093	$ 490,498.65	$ -	$ 120,000.00	$ -	$ -	$ -	$ 1,980,000.00	$ -	$ -	$ -	$ -	$ 318,874.31	$ 124,154.03	$ 100,000.00	*$ 3,133,526.99*	*$ 1,935,519.46*	$ 40,445,666.72
2094	$ -	$ -	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ 100,000.00	$ 10,000.00	$ -	$ -	$ -	*$ 181,000.00*	*$ 1,935,519.46*	$ 42,200,186.17
2095	$ -	$ -	$ 51,000.00	$ -	$ -	$ -	$ -	$ 375,000.00	$ 50,000.00	$ 100,000.00	$ 55,000.00	$ -	$ -	$ -	*$ 631,000.00*	*$ 1,935,519.46*	$ 43,504,705.63
2096	$ 262,702.30	$ 12,000.00	$ 6,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,000.00	$ 177,817.35	$ 69,233.36	$ -	*$ 572,753.00*	*$ 1,935,519.46*	$ 44,867,472.09
2097	$ 175,641.88	$ 228,000.00	$ 27,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ 88,545.80	$ 34,475.39	$ -	*$ 603,663.08*	*$ 1,935,519.46*	$ 46,199,328.47
2098	$ -	$ 24,000.00	$ 7,500.00	$ -	$ -	$ -	$ -	$ -	$ 100,000.00	$ 350,000.00	$ 867,500.00	$ -	$ -	$ 100,000.00	*$ 1,449,000.00*	*$ 1,935,519.46*	$ 46,685,847.92
2099	$ 2,149,987.91	$ -	$ -	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ 416,000.00	$ 160,000.00	$1,270,446.52	$ 494,649.61	$ -	*$ 4,741,084.03*	*$ 1,935,519.46*	$ 43,880,283.35
2100	$ 893,827.83	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,354,000.00	$1,298,000.00	$ 781,000.00	$ 589,640.23	$ 229,577.01	$ -	*$ 5,146,045.06*	*$ 1,935,519.46*	$ 40,669,757.74
2101	$ 275,014.50	$ 168,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,000.00	$ 119,429.72	$ 46,500.08	$ -	*$ 683,944.29*	*$ 1,935,519.46*	$ 41,921,332.91
2102	$ -	$ 180,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,000.00	$ 25,000.00	$ -	$ -	$ -	*$ 280,000.00*	*$ 1,935,519.46*	$ 43,576,852.36
2103	$ 219,207.60	$1,284,000.00	$ 175,500.00	$ 50,000.00	$1,350,000.00	$ -	$ -	$ -	$ 50,000.00	$ 75,000.00	$ 20,000.00	$ 135,862.08	$ 52,898.03	$ 100,000.00	*$ 3,512,467.71*	*$ 1,935,519.46*	$ 41,999,904.11
2104	$ 2,140,877.05	$ -	$ 228,500.00	$ -	$1,675,000.00	$ -	$ -	$ -	$ -	$ 70,000.00	$ -	$ 782,592.81	$ 304,703.28	$ -	*$ 5,201,673.15*	*$ 1,935,519.46*	$ 38,733,750.42
2105	$ 1,265,376.91	$ 12,000.00	$ 148,000.00	$ -	$ 382,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 360,399.88	$ 140,322.05	$ -	*$ 2,308,098.84*	*$ 1,935,519.46*	$ 38,361,171.04
2106	$ 93,650.00	$ 12,000.00	$ 33,000.00	$ -	$ -	$ 300,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 438,650.00*	*$ 1,935,519.46*	$ 39,858,040.50
2107	$ 716,939.75	$ -	$ 33,500.00	$ 75,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 352,889.90	$ 137,398.03	$ -	*$ 1,315,727.67*	*$ 1,935,519.46*	$ 40,477,832.29
2108	$ 496,773.50	$ 12,000.00	$ 15,000.00	$ 60,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 320,838.12	$ 76,246.65	$ 100,000.00	*$ 1,080,858.26*	*$ 1,935,519.46*	$ 41,332,493.48
2109	$ 1,416,702.25	$ 132,000.00	$ 39,000.00	$ 220,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ 512,698.81	$ 18,509.28	$ -	*$ 2,348,910.35*	*$ 1,935,519.46*	$ 40,919,102.59
2110	$ 698,650.00	$ 72,000.00	$ 217,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 55,000.00	$ -	$ -	$ -	*$ 1,043,150.00*	*$ 1,935,519.46*	$ 41,811,472.05
2111	$ -	$ 132,000.00	$ 24,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 145,000.00	$ 45,000.00	$ -	$ -	$ -	*$ 346,000.00*	*$ 1,935,519.46*	$ 43,400,991.51
2112	$ 8,652.00	$ 24,000.00	$ -	$ -	$ -	$ -	$ 4,590,000.00	$ -	$ -	$ 145,000.00	$ 50,000.00	$ 6,264.60	$ 2,439.13	$ -	*$ 4,826,355.73*	*$ 1,935,519.46*	$ 40,510,155.24
2113	$ 4,364,519.10	$ 156,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000.00	$ 867,500.00	$2,465,738.37	$ 960,037.67	$ 100,000.00	*$ 9,013,795.13*	*$ 1,935,519.46*	$ 33,431,879.56
2114	$ 1,351,606.69	$ 132,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,500.00	$ 160,000.00	$ 693,973.13	$ 270,199.12	$ -	*$ 2,620,278.95*	*$ 1,935,519.46*	$ 32,747,120.07
2115	$ 343,158.54	$ 60,000.00	$ 129,000.00	$ 135,000.00	$ -	$ 500,000.00	$ -	$ -	$ -	$ 250,000.00	$ 781,000.00	$ 17,027.75	$ 6,629.77	$ -	*$ 2,221,816.06*	*$ 1,935,519.46*	$ 32,460,823.47
2116	$ 36,000.00	$ -	$ 27,000.00	$ 135,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,000.00	$ 30,000.00	$ -	$ -	*$ 303,000.00*	*$ 1,935,519.46*	$ 34,093,342.93
2117	$ 4,904,121.90	$ 96,000.00	$ 18,000.00	$ 150,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 25,000.00	$2,494,741.44	$ 931,413.78	$ -	*$ 8,619,277.12*	*$ 1,935,519.46*	$ 27,409,585.26
2118	$ 3,196,117.96	$ 24,000.00	$ 24,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000.00	$1,828,861.94	$ 710,049.30	$ 100,000.00	*$ 5,903,029.21*	*$ 1,935,519.46*	$ 23,442,075.51
2119	$ 2,500,887.41	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$1,252,191.91	$ 460,225.29	$ -	*$ 4,263,304.61*	*$ 1,935,519.46*	$ 21,114,290.36
2120	$ 2,656,510.07	$ 72,000.00	$ 162,500.00	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$1,489,465.89	$ 530,471.21	$ -	*$ 4,960,947.17*	*$ 1,935,519.46*	$ 18,088,862.64
2121	$ 7,483.84	$ 12,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 250,000.00	$ -	$ 5,418.78	$ 2,109.81	$ -	*$ 277,012.43*	*$ 1,935,519.46*	$ 19,747,369.67
2122	$ 699,000.00	$ 72,000.00	$ 19,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 48,000.00	$ 21,750.00	$ -	*$ 860,250.00*	*$ 1,935,519.46*	$ 20,822,639.13
2123	$ -	$ 204,000.00	$ -	$ -	$1,350,000.00	$ -	$ 2,430,000.00	$ -	$ 100,000.00	$ -	$ -	$ -	$ -	$ 100,000.00	*$ 4,184,000.00*	*$ 1,935,519.46*	$ 18,574,158.59
2124	$ -	$ 108,000.00	$ -	$ -	$1,675,000.00	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ -	$ -	$ -	*$ 1,793,000.00*	*$ 1,935,519.46*	$ 18,716,678.05

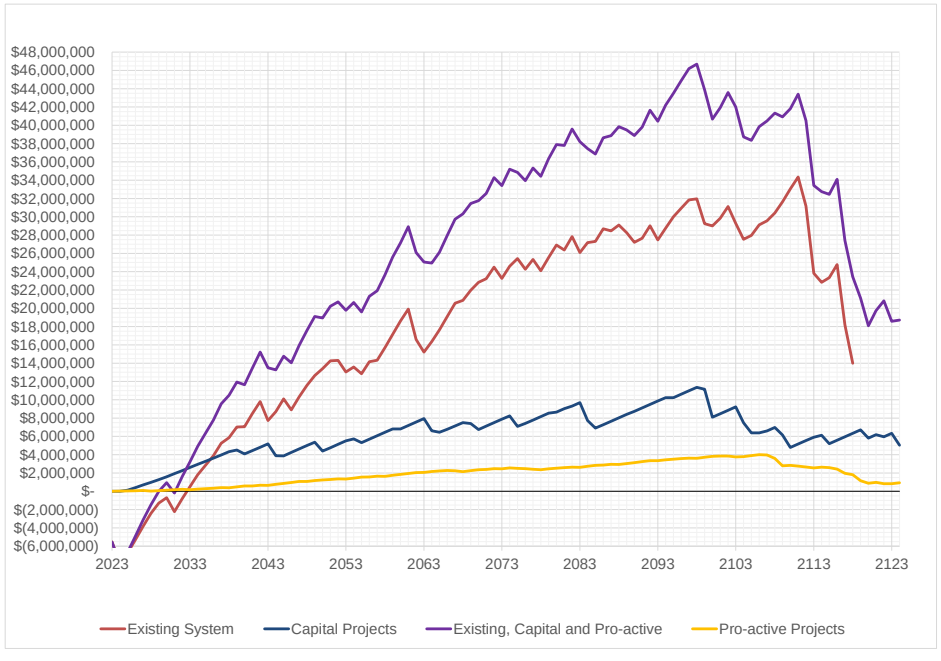


Table I4: Osoyoos Water Distribution Network - Work Plan, Scenario 1, 2 and 3 Forecast Reserve Account Balance (2023 Dollar Value) (Purple Line)

	Pipe Network (UL Risk Based)	Hydrants (UL 40)	Valves (UL 40)	PRV Stations and Valve Chambers (UL 40)	Pumps and Auxiliary Power (UL 20)	Supply Wells (UL 60)	Reservoirs and Manholes (UL 50)	Chlorine Contact Tank (UL 35)	Water Treatment (UL 25)	System Buildings (UL 75)	System Electrical (UL 15)	Surface Restoration (Pipe Based)	Curb and Gutter and Sidewalks	Engineering	*Total Replacement Cost*	*Scenario 3* ***Average Annual Investment***	*Scenario 2* ***Average Annual Investment***	*Scenario 1* *Current Reserve Balance:* ***Average Annual Investment***	*Scenario 3* ***Reserve Balance***	*Scenario 2* ***Reserve Balance***	*Scenario 1* ***Reserve Balance***
																		$ 3,033,600.50	$ 3,033,600.50	$ 3,033,600.50
2023	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ -*	*$ -*	*$ -*	*$ -*	$ 3,033,600.50	$ 3,033,600.50	$ 3,033,600.50
2024	$ 320,419.36	$ 12,000.00	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 223,709.33	$ 87,101.45	$ -	*$ 664,230.14*	*$ 979,172.20*	*$ 1,246,358.39*	*$ 1,477,300.00*	$ 3,348,542.55	$ 3,615,728.75	$ 3,846,670.36
2025	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ -*	*$ 1,093,205.11*	*$ 1,360,391.31*	*$ 1,591,332.92*	$ 4,441,747.66	$ 4,976,120.06	$ 5,438,003.27
2026	$ 233,070.21	$ 24,000.00	$ 48,000.00	$ -	$ 750,000.00	$ -	$ -	$ -	$ -	$ -	$ 460,000.00	$ 148,385.21	$ 57,773.93	$ -	*$ 1,721,229.35*	*$ 1,263,420.18*	*$ 1,530,606.38*	*$ 1,761,547.99*	$ 3,983,938.50	$ 4,785,497.09	$ 5,478,321.91
2027	$ 352,266.30	$ 408,000.00	$ 57,500.00	$ -	$ -	$ 250,000.00	$ -	$ -	$ 100,000.00	$ 200,000.00	$ 20,000.00	$ 294,619.66	$ 114,710.45	$ -	*$ 1,797,096.41*	*$ 1,276,700.72*	*$ 1,543,886.92*	*$ 1,774,828.53*	$ 3,463,542.81	$ 4,532,287.59	$ 5,456,054.02
2028	$ -	$ -	$ -	$ 50,000.00	$ 600,000.00	$ -	$ -	$ -	$ 50,000.00	$ 150,000.00	$ 375,000.00	$ -	$ -	$ 100,000.00	*$ 1,225,000.00*	*$ 1,287,301.24*	*$ 1,554,487.44*	*$ 1,785,429.04*	$ 3,525,844.04	$ 4,861,775.03	$ 6,016,483.07
2029	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,430,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 2,430,000.00*	*$ 1,303,294.90*	*$ 1,570,481.10*	*$ 1,801,422.71*	$ 2,399,138.95	$ 4,002,256.13	$ 5,387,905.78
2030	$ 426,056.34	$ 36,000.00	$ 39,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 320,701.06	$ 124,865.27	$ -	*$ 946,622.66*	*$ 1,322,107.40*	*$ 1,589,293.60*	*$ 1,820,235.21*	$ 2,774,623.69	$ 4,644,927.07	$ 6,261,518.32
2031	$ 348,040.90	$ 36,000.00	$ 31,500.00	$ -	$ -	$ -	$ 1,980,000.00	$ -	$ -	$ -	$ -	$ 227,525.33	$ 88,587.21	$ -	*$ 2,711,653.45*	*$ 1,348,644.05*	*$ 1,615,830.24*	*$ 1,846,771.85*	$ 1,411,614.29	$ 3,549,103.87	$ 5,396,636.73
2032	$ 613,243.25	$ 84,000.00	$ 70,500.00	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$ -	$ 412,040.07	$ 160,428.21	$ -	*$ 1,590,211.54*	*$ 1,348,644.05*	*$ 1,615,830.24*	*$ 1,846,771.85*	$ 1,170,046.80	$ 3,574,722.58	$ 5,653,197.04
2033	$ 645,993.40	$ 420,000.00	$ 61,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 446,509.12	$ 173,848.77	$ 100,000.00	*$ 1,747,851.29*	*$ 1,348,644.05*	*$ 1,615,830.24*	*$ 1,846,771.85*	$ 770,839.57	$ 3,442,701.54	$ 5,752,117.61
2034	$ 762,285.72	$ 96,000.00	$ 66,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 551,943.70	$ 214,899.82	$ -	*$ 1,691,129.25*	*$ 1,348,644.05*	*$ 1,615,830.24*	*$ 1,846,771.85*	$ 428,354.37	$ 3,367,402.53	$ 5,907,760.22
2035	$ 311,813.66	$ 24,000.00	$ 9,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ 227,071.09	$ 88,410.35	$ -	*$ 670,295.10*	*$ 1,348,644.05*	*$ 1,615,830.24*	*$ 1,846,771.85*	$ 1,106,703.31	$ 4,312,937.68	$ 7,084,236.97
2036	$ 564,909.24	$ 36,000.00	$ 48,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000.00	$ 406,625.22	$ 158,319.93	$ -	*$ 1,223,854.39*	*$ 1,367,026.20*	*$ 1,634,212.39*	*$ 1,865,154.00*	$ 1,249,875.12	$ 4,723,295.68	$ 7,725,536.58
2037	$ 605,673.38	$ 60,000.00	$ 54,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 407,990.31	$ 169,851.43	$ -	*$ 1,297,515.11*	*$ 1,380,078.53*	*$ 1,647,264.73*	*$ 1,878,206.33*	$ 1,332,438.54	$ 5,073,045.29	$ 8,306,227.80
2038	$ 742,871.64	$ 60,000.00	$ 36,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 385,201.85	$ 149,978.72	$ 100,000.00	*$ 1,374,052.21*	*$ 1,390,667.36*	*$ 1,657,853.56*	*$ 1,888,795.17*	$ 1,349,053.69	$ 5,356,846.64	$ 8,820,970.76
2039	$ -	$ 516,000.00	$ -	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$ 160,000.00	$ -	$ -	$ -	*$ 926,000.00*	*$ 1,402,356.86*	*$ 1,669,543.06*	*$ 1,900,484.67*	$ 1,825,410.55	$ 6,100,389.70	$ 9,795,455.42
2040	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 250,000.00	$ 781,000.00	$ -	$ -	$ -	*$ 1,031,000.00*	*$ 1,407,075.81*	*$ 1,674,262.01*	*$ 1,905,203.62*	$ 2,201,486.36	$ 6,743,651.71	$ 10,669,659.04
2041	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 535,000.00	$ -	$ 21,750.00	$ -	*$ 556,750.00*	*$ 1,425,607.28*	*$ 1,692,793.47*	*$ 1,923,735.08*	$ 3,070,343.64	$ 7,879,695.19	$ 12,036,644.12
2042	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,000.00	$ -	$ -	$ -	*$ 45,000.00*	*$ 1,428,841.65*	*$ 1,696,027.85*	*$ 1,926,969.46*	$ 4,454,185.29	$ 9,530,723.04	$ 13,918,613.58
2043	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,980,000.00	$ -	$ -	$ -	$ 395,000.00	$ -	$ -	$ 100,000.00	*$ 2,375,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 3,516,576.95	$ 8,860,300.89	$ 13,479,133.04
2044	$ -	$ 492,000.00	$ -	$ -	$1,675,000.00	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ -	$ -	$ -	*$ 2,217,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 2,736,968.60	$ 8,347,878.74	$ 13,197,652.50
2045	$ -	$ 12,000.00	$ -	$ -	$ 382,000.00	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ -	$ -	$ -	*$ 444,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 3,730,360.25	$ 9,608,456.59	$ 14,689,171.95
2046	$ 1,014,741.00	$ -	$ 78,000.00	$ -	$ 750,000.00	$ 300,000.00	$ -	$ -	$ -	$ 250,000.00	$ -	$ 734,737.49	$ 286,070.77	$ -	*$ 3,413,549.26*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 1,754,202.65	$ 7,899,485.18	$ 13,211,142.15
2047	$ -	$ 36,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 36,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 3,155,594.30	$ 9,568,063.03	$ 15,110,661.61
2048	$ -	$ 72,000.00	$ -	$ -	$ 600,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000.00	*$ 672,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 3,920,985.95	$ 10,600,640.88	$ 16,374,181.07
2049	$ 9,177.02	$ 60,000.00	$ 3,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,644.75	$ 2,587.14	$ -	*$ 81,408.92*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 5,276,968.69	$ 12,223,809.81	$ 18,228,291.61
2050	$ 339,357.70	$ -	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ 1,354,000.00	$ -	$ 55,000.00	$ 245,716.72	$ 95,670.05	$ -	*$ 2,110,744.47*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 4,603,615.87	$ 11,817,643.19	$ 18,053,066.60
2051	$ 274,228.46	$ 24,000.00	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 55,000.00	$ 198,558.97	$ 77,309.13	$ -	*$ 650,096.56*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 5,390,910.97	$ 12,872,124.48	$ 19,338,489.49
2052	$ 661,527.09	$ 36,000.00	$ 51,000.00	$ -	$ -	$ -	$ -	$ -	$ 100,000.00	$ -	$ 50,000.00	$ 478,987.99	$ 186,494.45	$ -	*$ 1,564,009.53*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 5,264,293.09	$ 13,012,692.81	$ 19,709,999.42
2053	$ 819,234.55	$ -	$ 69,000.00	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ 12,500.00	$ 628,040.42	$ 244,528.16	$ 100,000.00	*$ 1,823,303.13*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 4,878,381.61	$ 12,893,967.52	$ 19,822,215.75
2054	$ 298,868.54	$ -	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 300,000.00	$ 160,000.00	$ 216,399.97	$ 84,255.54	$ -	*$ 1,080,524.05*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 5,235,249.21	$ 13,518,021.32	$ 20,677,211.15
2055	$ 669,143.19	$ -	$ 48,000.00	$ -	$ -	$ 500,000.00	$ -	$ -	$ -	$ 300,000.00	$ 781,000.00	$ 484,502.54	$ 188,641.54	$ -	*$ 2,971,287.27*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 3,701,353.60	$ 12,251,311.90	$ 19,641,443.34
2056	$ 64,007.38	$ 12,000.00	$ 6,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 535,000.00	$ 46,345.45	$ 18,044.64	$ -	*$ 681,397.47*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 4,457,347.78	$ 13,274,492.28	$ 20,895,565.33
2057	$ 685,901.03	$ 228,000.00	$ 21,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,000.00	$ 256,938.79	$ 100,039.37	$ -	*$ 1,336,879.19*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 4,557,860.24	$ 13,642,190.94	$ 21,494,205.60
2058	$ 29,218.85	$ 24,000.00	$ 7,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 395,000.00	$ 15,867.24	$ 6,177.93	$ 100,000.00	*$ 477,764.02*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 5,517,487.88	$ 14,869,004.77	$ 22,951,961.04
2059	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ -*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 6,954,879.53	$ 16,573,582.62	$ 24,887,480.49
2060	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 375,000.00	$ -	$ -	$ -	$ -	$ -	$ -	*$ 375,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 8,017,271.18	$ 17,903,160.47	$ 26,447,999.95
2061	$ -	$ 168,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 168,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 9,286,662.84	$ 19,439,738.32	$ 28,215,519.41
2062	$ -	$ 180,000.00	$ -	$ -	$ -	$ -	$ 4,590,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 4,770,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 5,954,054.49	$ 16,374,316.17	$ 25,381,038.87
2063	$ -	$ 12,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000.00	*$ 12,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 7,379,446.14	$ 18,066,894.02	$ 27,304,558.32
2064	$ 69,308.83	$ -	$ 40,500.00	$ -	$1,675,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,184.04	$ 19,539.20	$ -	*$ 1,854,532.07*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 6,962,305.72	$ 17,916,939.80	$ 27,385,545.71
2065	$ 94,933.50	$ 36,000.00	$ 145,000.00	$ -	$ 382,000.00	$ -	$ -	$ -	$ -	$ -	$ 55,000.00	$ 47,587.65	$ 18,528.30	$ -	*$ 779,049.45*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 7,620,647.93	$ 18,842,468.20	$ 28,542,015.72
2066	$ -	$ 420,000.00	$ 33,000.00	$ -	$ 750,000.00	$ -	$ -	$ -	$ -	$ -	$ 55,000.00	$ -	$ -	$ -	*$ 1,258,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 7,800,039.58	$ 19,289,046.05	$ 29,219,535.18
2067	$ -	$ -	$ 33,500.00	$ 125,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ -	*$ 208,500.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 9,028,931.24	$ 20,785,123.90	$ 30,946,554.63
2068	$ -	$ 12,000.00	$ 15,000.00	$ 60,000.00	$ 600,000.00	$ -	$ -	$ -	$ -	$ 300,000.00	$ 12,500.00	$ -	$ -	$ 100,000.00	*$ 999,500.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 9,466,822.89	$ 21,490,201.75	$ 31,882,574.09
2069	$ 105,980.05	$ 96,000.00	$ 36,000.00	$ 220,000.00	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ 160,000.00	$ 76,736.35	$ 29,877.37	$ -	*$ 774,593.77*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 10,129,620.77	$ 22,420,185.83	$ 33,043,499.78
2070	$ 2,556.97	$ 108,000.00	$ 186,000.00	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ 500,000.00	$ 781,000.00	$ 1,666.27	$ 648.76	$ -	*$ 1,629,872.01*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 9,937,140.41	$ 22,494,891.67	$ 33,349,147.23
2071	$ 688,319.14	$ 84,000.00	$ 9,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 535,000.00	$ 163,848.30	$ 63,794.50	$ -	*$ 1,543,961.94*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 9,830,570.12	$ 22,655,507.58	$ 33,740,704.74
2072	$ 80,213.38	$ 420,000.00	$ 7,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,000.00	$ 58,079.63	$ 22,613.36	$ -	*$ 632,906.36*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 10,635,055.41	$ 23,727,179.06	$ 35,043,317.83
2073	$ -	$ 96,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 395,000.00	$ -	$ -	$ 100,000.00	*$ 491,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 11,581,447.06	$ 24,940,756.91	$ 36,487,837.29
2074	$ -	$ 24,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 24,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 12,994,838.72	$ 26,621,334.76	$ 38,399,356.75
2075	$ 274,972.80	$ 60,000.00	$ 121,500.00	$ 135,000.00	$ -	$ -	$ 64,000.00	$ -	$ 1,354,000.00	$ -	$ -	$ 199,097.93	$ 77,518.97	$ -	*$ 2,286,089.71*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 12,146,140.66	$ 26,039,822.91	$ 38,048,786.50
2076	$ 1,436,243.55	$ 60,000.00	$ 63,000.00	$ 135,000.00	$ -	$ -	$ 60,000.00	$ -	$ -	$ -	$ -	$ 844,504.35	$ 328,808.60	$ -	*$ 2,927,556.50*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 10,655,975.81	$ 24,816,844.25	$ 37,056,749.45
2077	$ 150,353.35	$ 60,000.00	$ 31,500.00	$ 150,000.00	$ -	$ -	$ -	$ -	$ 100,000.00	$ -	$ -	$ 103,208.39	$ 40,184.29	$ -	*$ 635,246.04*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 11,458,121.43	$ 25,886,176.07	$ 38,357,022.88
2078	$ 1,501,772.23	$ 540,000.00	$ 102,400.00	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ 100,000.00	$ -	$ 745,146.54	$ 290,123.54	$ 100,000.00	*$ 3,329,442.31*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 9,566,070.78	$ 24,261,311.61	$ 36,963,100.02
2079	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,430,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ 2,430,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 8,573,462.43	$ 23,535,889.46	$ 36,468,619.48
2080	$ -	$ 36,000.00	$ 117,500.00	$ -	$ -	$ -	$ 100,000.00	$ -	$ -	$ -	$ 55,000.00	$ -	$ -	$ -	*$ 308,500.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 9,702,354.08	$ 24,931,967.31	$ 38,095,638.94
2081	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,980,000.00	$ -	$ -	$ -	$ 55,000.00	$ -	$ -	$ -	*$ 2,035,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 9,104,745.74	$ 24,601,545.16	$ 37,996,158.40
2082	$ -	$ 72,000.00	$ 15,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ -	*$ 137,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 10,405,137.39	$ 26,169,123.01	$ 39,794,677.85
2083	$ 467,132.84	$ 492,000.00	$ 7,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,500.00	$ 234,162.07	$ 91,171.23	$ 100,000.00	*$ 1,304,466.15*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 10,538,062.90	$ 26,569,234.71	$ 40,425,731.17
2084	$ 142,552.39	$ 12,000.00	$ 12,000.00	$1,675,000.00	$ 500,000.00	$ -	$ -	$ -	$ -	$ -	$ 160,000.00	$ 80,542.91	$ 31,359.46	$ -	*$ 2,613,454.76*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 9,361,999.79	$ 25,660,357.81	$ 39,747,795.87
2085	$ 539,854.23	$ -	$ 46,500.00	$ -	$ 382,000.00	$ -	$ 40,000.00	$ -	$ -	$ -	$ 781,000.00	$ 380,929.16	$ 148,315.15	$ -	*$ 2,318,598.54*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 8,480,792.90	$ 25,046,337.11	$ 39,364,716.78
2086	$ -	$ 36,000.00	$ -	$ -	$ 750,000.00	$ -	$ -	$ -	$ -	$ -	$ 535,000.00	$ -	$ -	$ -	*$ 1,321,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 8,597,184.55	$ 25,429,914.96	$ 39,979,236.24
2087	$ 869,747.12	$ 72,000.00	$ 100,500.00	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$ 45,000.00	$ 562,057.09	$ 218,837.48	$ -	*$ 2,118,141.70*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 7,916,434.51	$ 25,016,351.11	$ 39,796,614.00
2088	$ 397,874.86	$ 60,000.00	$ 18,000.00	$ -	$ 600,000.00	$ -	$ -	$ -	$ -	$ -	$ 395,000.00	$ 244,919.19	$ 95,359.53	$ 100,000.00	*$ 1,811,153.58*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 7,542,672.58	$ 24,909,775.38	$ 39,920,979.87

2089	$ 1,171,109.79	$ -	$ 111,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 751,852.10	$ 292,734.36	$ -	$	*2,326,696.26*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 6,653,367.97	$ 24,287,656.98	$ 39,529,803.07
2090	$ 1,313,633.51	$ 24,000.00	$ 125,500.00	$ -	$ -	$ -	$ -	$ 35,000.00	$ -	$ -	$ -	$ -	$ 842,393.28	$ 327,986.66	$ -	$	*2,668,513.45*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 5,422,246.18	$ 23,323,721.38	$ 38,796,809.08
2091	$ 408,032.47	$ 36,000.00	$ 43,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 227,862.08	$ 88,718.33	$ -	$	*804,112.88*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 6,055,524.95	$ 24,224,186.35	$ 39,928,215.66
2092	$ -	$ -	$ -	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$	*250,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 7,242,916.61	$ 25,678,764.20	$ 41,613,735.12
2093	$ 490,498.65	$ -	$ 51,500.00	$ -	$ -	$ -	$ 1,980,000.00	$ -	$ -	$ -	$ -	$ -	$ 318,874.31	$ 124,154.03	$ 100,000.00	$	*2,965,026.99*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 5,715,281.27	$ 24,418,315.05	$ 40,584,227.58
2094	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ 100,000.00	$ -	$ -	$ -	$ -	$	*150,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 7,002,672.92	$ 25,972,892.90	$ 42,369,747.04
2095	$ -	$ 12,000.00	$ -	$ -	$ -	$ -	$ -	$ 375,000.00	$ 50,000.00	$ 100,000.00	$ 55,000.00	$ -	$ -	$ -	$ -	$	*592,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 7,848,064.57	$ 27,085,470.75	$ 43,713,266.50
2096	$ 262,702.30	$ 228,000.00	$ 27,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 55,000.00	$ 177,817.35	$ 69,233.36	$ -	$ -	$	*819,753.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 8,465,703.22	$ 27,970,295.60	$ 44,829,032.95
2097	$ 175,641.88	$ 24,000.00	$ 3,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ 88,545.80	$ 34,475.39	$ -	$ -	$	*375,663.08*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 9,527,431.80	$ 29,299,210.37	$ 46,388,889.33
2098	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,500.00	$ -	$ -	$ 100,000.00	$ -	$	*12,500.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 10,952,323.45	$ 30,991,288.22	$ 48,311,908.79
2099	$ 2,149,987.91	$ -	$ 169,500.00	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$ 416,000.00	$ 160,000.00	$ 1,270,446.52	$ 494,649.61	$ -	$	*4,910,584.03*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 7,479,131.07	$ 27,785,282.04	$ 45,336,844.21
2100	$ 893,827.83	$ 168,000.00	$ 118,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,354,000.00	$1,298,000.00	$ 781,000.00	$ 589,640.23	$ 229,577.01	$ -	$	*5,432,545.06*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 3,483,977.66	$ 24,057,314.83	$ 41,839,818.61
2101	$ 275,014.50	$ 180,000.00	$ 12,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 535,000.00	$ 119,429.72	$ 46,500.08	$ -	$	*1,167,944.29*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 3,753,425.02	$ 24,593,948.38	$ 42,607,393.77
2102	$ -	$ 12,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000.00	$ 275,000.00	$ 45,000.00	$ -	$ -	$ -	$	*432,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 4,758,816.67	$ 25,866,526.23	$ 44,110,913.23
2103	$ 219,207.60	$ -	$ 24,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ 225,000.00	$ 395,000.00	$ 135,862.08	$ 52,898.03	$ 100,000.00	$	*1,101,967.71*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 5,094,240.62	$ 26,469,136.38	$ 44,944,464.98
2104	$ 2,140,877.05	$ 24,000.00	$ 232,000.00	$ -	$1,675,000.00	$ -	$ -	$ -	$ -	$ -	$ 70,000.00	$ -	$ 913,592.81	$ 403,703.28	$ -	$	*5,459,173.15*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ 1,072,459.12	$ 22,714,541.08	$ 41,420,811.29
2105	$ 1,251,486.67	$ 420,000.00	$ 185,000.00	$ -	$ 382,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 501,979.96	$ 180,675.37	$ -	$	*2,921,142.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (411,291.23)	$ 21,497,976.92	$ 40,435,188.74
2106	$ 93,650.00	$ 12,000.00	$ 33,000.00	$ 50,000.00	$ 750,000.00	$ 300,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 127,293.10	$ 115,500.00	$ -	$	*1,481,443.10*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (455,342.68)	$ 21,721,111.67	$ 40,889,265.10
2107	$ 716,939.75	$ -	$ 86,000.00	$ 75,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 352,889.90	$ 137,398.03	$ -	$	*1,368,227.67*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (386,178.70)	$ 22,057,461.85	$ 41,456,556.88
2108	$ 496,773.50	$ 48,000.00	$ 38,000.00	$ 60,000.00	$ 600,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 320,838.12	$ 76,246.65	$ 100,000.00	$	*1,639,858.26*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (588,645.31)	$ 22,122,181.44	$ 41,752,218.08
2109	$ 1,416,702.25	$ 96,000.00	$ 37,500.00	$ 220,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 512,698.81	$ 18,509.28	$ -	$	*2,301,410.35*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (1,452,664.00)	$ 21,525,348.94	$ 41,386,327.19
2110	$ 698,650.00	$ 156,000.00	$ 181,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 55,000.00	$ 369,031.45	$ 415,250.00	$ -	$	*1,875,431.45*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (1,890,703.80)	$ 21,354,495.34	$ 41,446,415.19
2111	$ -	$ 420,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 145,000.00	$ 55,000.00	$ -	$ -	$ -	$	*620,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (1,073,312.15)	$ 22,439,073.19	$ 42,761,934.65
2112	$ 8,652.00	$ 96,000.00	$ 3,000.00	$ -	$ -	$ -	$ 4,590,000.00	$ -	$ -	$ -	$ 145,000.00	$ 50,000.00	$ 6,264.60	$ 2,439.13	$ -	$	*4,901,355.73*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (4,537,276.22)	$ 19,242,295.31	$ 39,796,098.38
2113	$ 4,364,519.10	$ 24,000.00	$ 223,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000.00	$ 12,500.00	$ 2,465,738.37	$ 960,037.67	$ 100,000.00	$	*8,150,295.13*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (11,250,179.70)	$ 12,796,578.03	$ 33,581,322.71
2114	$ 1,351,606.69	$ 36,000.00	$ 47,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,500.00	$ 160,000.00	$ 693,973.13	$ 270,199.12	$ -	$	*2,571,278.95*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (12,384,067.00)	$ 11,929,876.93	$ 32,945,563.21
2115	$ 343,158.54	$ 84,000.00	$ 100,500.00	$ 135,000.00	$ -	$ 500,000.00	$ -	$ -	$ -	$ -	$ 250,000.00	$ 781,000.00	$ 104,132.92	$ 94,629.77	$ -	$	*2,392,421.23*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (13,339,096.57)	$ 11,242,033.55	$ 32,488,661.44
2116	$ 36,000.00	$ 60,000.00	$ 4,500.00	$ 135,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 535,000.00	$ 30,000.00	$ -	$ -	$	*800,500.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (12,702,204.92)	$ 12,146,111.40	$ 33,623,680.90
2117	$ 4,904,121.90	$ 516,000.00	$ 216,300.00	$ 150,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,000.00	$ 2,494,741.44	$ 931,413.78	$ -	$	*9,257,577.12*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (20,522,390.39)	$ 4,593,112.13	$ 26,301,623.24
2118	$ 3,186,486.52	$ 24,000.00	$ 160,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 395,000.00	$ 1,824,033.94	$ 708,169.52	$ 100,000.00	$	*6,297,689.98*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (25,382,688.71)	$ 0.00	$ 21,939,452.72
2119	$ 689,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ 70,160.00	$ -	$ -	$	*809,160.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (24,754,457.06)	$ 895,417.85	$ 23,065,812.17
2120	$ 1,177,369.36	$ 36,000.00	$ 138,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000.00	$ -	$ -	$ 687,792.56	$ 263,101.45	$ -	$	*2,352,763.38*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (25,669,828.78)	$ 247,232.32	$ 22,648,568.26
2121	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 250,000.00	$ -	$ -	$ -	$ -	$	*250,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (24,482,437.13)	$ 1,701,810.17	$ 24,334,087.71
2122	$ 932,070.21	$ 564,000.00	$ 63,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 196,385.21	$ 79,523.93	$ -	$	*1,834,979.35*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (24,880,024.82)	$ 1,571,408.68	$ 24,434,627.82
2123	$ 352,266.30	$ 12,000.00	$ 57,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 294,619.66	$ 114,710.45	$ 100,000.00	$	*831,096.41*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (24,273,729.59)	$ 2,444,890.11	$ 25,539,050.87
2124	$ -	$ -	$ -	$ -	$1,675,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$	*1,675,000.00*	*$ 1,437,391.65*	*$ 1,704,577.85*	*$ 1,935,519.46*	$ (24,511,337.93)	$ 2,474,467.96	$ 25,799,570.32

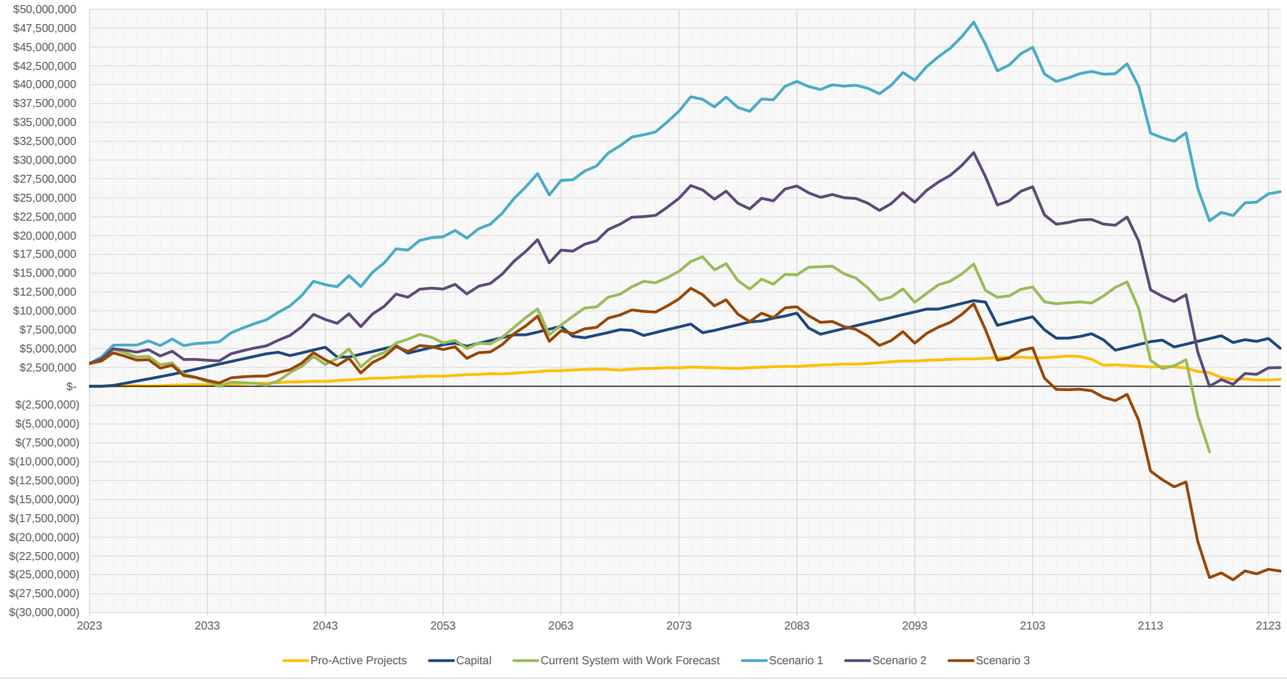

$50,000,000
$47,500,000
$45,000,000
$42,500,000
$40,000,000
$37,500,000
$35,000,000
$32,500,000
$30,000,000
$27,500,000
$25,000,000
$22,500,000
$20,000,000
$17,500,000
$15,000,000
$12,500,000
$10,000,000
$7,500,000
$5,000,000
$2,500,000
$-
$(2,500,000)
$(5,000,000)
$(7,500,000)
$(10,000,000)
$(12,500,000)
$(15,000,000)
$(17,500,000)
$(20,000,000)
$(22,500,000)
$(25,000,000)
$(27,500,000)
$(30,000,000)
2023
2033
2043
2053
2063
2073
2083
2093
2103
2113
2123
Pro-Active Projects
Capital
Current System with Work Forecast
Scenario 1
Scenario 2
Scenario 3

Table I4:

	Scenario 3	*Scenario 3*	*Scenario 2*	*Scenario 2*	*Scenario 1*	*Scenario 1*
	Additional Annual Fee	**Additional Monthly Fee**	**Additional Annual Fee**	**Additional Monthly Fee**	**Additional Annual Fee**	**Additional Monthly Fee**
2023	$ -	$ -	$ -	$ -	$ -	$ -
2024	$ 279.76	$ 23.31	$ 356.10	$ 29.68	$ 422.09	$ 35.17
2025	$ 312.34	$ 26.03	$ 388.68	$ 32.39	$ 454.67	$ 37.89
2026	$ 360.98	$ 30.08	$ 437.32	$ 36.44	$ 503.30	$ 41.94
2027	$ 364.77	$ 30.40	$ 441.11	$ 36.76	$ 507.09	$ 42.26
2028	$ 367.80	$ 30.65	$ 444.14	$ 37.01	$ 510.12	$ 42.51
2029	$ 372.37	$ 31.03	$ 448.71	$ 37.39	$ 514.69	$ 42.89
2030	$ 377.74	$ 31.48	$ 454.08	$ 37.84	$ 520.07	$ 43.34
2031	$ 385.33	$ 32.11	$ 461.67	$ 38.47	$ 527.65	$ 43.97
2032	$ 385.33	$ 32.11	$ 461.67	$ 38.47	$ 527.65	$ 43.97
2033	$ 385.33	$ 32.11	$ 461.67	$ 38.47	$ 527.65	$ 43.97
2034	$ 385.33	$ 32.11	$ 461.67	$ 38.47	$ 527.65	$ 43.97
2035	$ 385.33	$ 32.11	$ 461.67	$ 38.47	$ 527.65	$ 43.97
2036	$ 390.58	$ 32.55	$ 466.92	$ 38.91	$ 532.90	$ 44.41
2037	$ 394.31	$ 32.86	$ 470.65	$ 39.22	$ 536.63	$ 44.72
2038	$ 397.33	$ 33.11	$ 473.67	$ 39.47	$ 539.66	$ 44.97
2039	$ 400.67	$ 33.39	$ 477.01	$ 39.75	$ 543.00	$ 45.25
2040	$ 402.02	$ 33.50	$ 478.36	$ 39.86	$ 544.34	$ 45.36
2041	$ 407.32	$ 33.94	$ 483.66	$ 40.30	$ 549.64	$ 45.80
2042	$ 408.24	$ 34.02	$ 484.58	$ 40.38	$ 550.56	$ 45.88
2043	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2044	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2045	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2046	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2047	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2048	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2049	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2050	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2051	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2052	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2053	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2054	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2055	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2056	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2057	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2058	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2059	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2060	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2061	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2062	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2063	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2064	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2065	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2066	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2067	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2068	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2069	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2070	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2071	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2072	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2073	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2074	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2075	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2076	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2077	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2078	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2079	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2080	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2081	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2082	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2083	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2084	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2085	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2086	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2087	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08
2088	$ 410.68	$ 34.22	$ 487.02	$ 40.59	$ 553.01	$ 46.08

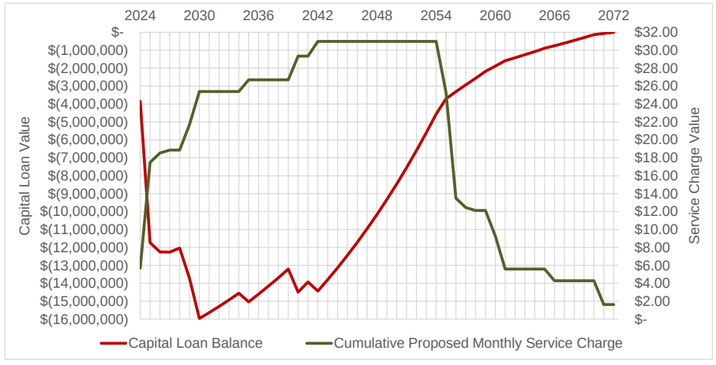
2089	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2090	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2091	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2092	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2093	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2094	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2095	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2096	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2097	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2098	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2099	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2100	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2101	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2102	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2103	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2104	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2105	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2106	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2107	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2108	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2109	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2110	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2111	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2112	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2113	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2114	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2115	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2116	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2117	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2118	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2119	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2120	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2121	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2122	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2123	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08
2124	$	410.68	$	34.22	$	487.02	$	40.59	$	553.01	$	46.08

APPENDIX J

Capital and Pro-active Financing Models

Table J1: Osoyoos Water Distribution Network - Capital Financial Model

	Capital - 74th Avenue Upsizing	Capital - Wells Pump Auxiliary Power	Capital - Well #9 And #10 C/W Auxiliary Power	Capital - Phase 1 WTP Upgrades	Capital - Cottonwood WTP	*Capital - 89th Street Upgrades*	*Capital - 62nd Avenue Tie-in*	*Capital - East Sector Reservoir Supply / Distribution Main*	*Capital - East Sector Reservoir Cottonwood Drive Looping*	*Capital - Phase 2 WTP Upgrades*	*Capital - Phase 3 WTP Upgrades*	*Capital - East Main Street Upsizing*	*Capital - East Sector Nk'Mip Corner Water Connection*	Total Annual Loan Value	*Annual Payment (30 Year Ammortization)*	Capital Loan Balance	Cumulative Proposed Monthly Service Charge
2024	$ 656,850.00	$1,486,250.00	$1,937,200.00											**$ 4,080,300.00**	*$ 239,153.98*	$ (3,841,146.02)	$ 5.69
2025				$1,170,150.00	$7,277,260.00									**$ 8,447,410.00**	*$ 734,272.42*	$ (11,731,744.55)	$ 17.48
2026						*$ 758,350.00*								**$ 758,350.00**	*$ 778,720.72*	$ (12,253,380.42)	$ 18.54
2027							*$ 230,550.00*							**$ 230,550.00**	*$ 792,233.69*	$ (12,257,802.91)	$ 18.86
2028														**$ -**	*$ 792,233.69*	$ (12,031,879.72)	$ 18.86
2029								*$ 901,900.00*	*$ 1,146,950.00*					**$ 2,048,850.00**	*$ 912,320.60*	$ (13,724,281.96)	$ 21.72
2030										*$ 2,670,900.00*				**$ 2,670,900.00**	*$ 1,066,636.84*	$ (15,962,606.95)	$ 25.40
2031														**$ -**	*$ 1,066,636.84*	$ (15,633,442.55)	$ 25.40
2032														**$ -**	*$ 1,066,636.84*	$ (15,289,070.76)	$ 25.40
2033														**$ -**	*$ 1,066,636.84*	$ (14,928,788.99)	$ 25.40
2034														**$ -**	*$ 1,066,636.84*	$ (14,551,862.20)	$ 25.40
2035											*$ 932,350.00*			**$ 932,350.00**	*$ 1,121,283.61*	$ (15,035,224.62)	$ 26.70
2036														**$ -**	*$ 1,121,283.61*	$ (14,608,568.39)	$ 26.70
2037														**$ -**	*$ 1,121,283.61*	$ (14,162,200.64)	$ 26.70
2038														**$ -**	*$ 1,121,283.61*	$ (13,695,210.70)	$ 26.70
2039														**$ -**	*$ 1,121,283.61*	$ (13,206,645.83)	$ 26.70
2040												*$ 1,905,300.00*		**$ 1,905,300.00**	*$ 1,232,956.79*	$ (14,489,136.08)	$ 29.36
2041														**$ -**	*$ 1,232,956.79*	$ (13,925,577.37)	$ 29.36
2042													*$ 1,167,612.50*	**$ 1,167,612.50**	*$ 1,301,392.73*	$ (14,435,158.81)	$ 30.99
2043														**$ -**	*$ 1,301,392.73*	$ (13,800,670.41)	$ 30.99
2044														**$ -**	*$ 1,301,392.73*	$ (13,136,868.65)	$ 30.99
2045														**$ -**	*$ 1,301,392.73*	$ (12,442,399.25)	$ 30.99
2046														**$ -**	*$ 1,301,392.73*	$ (11,715,845.36)	$ 30.99
2047														**$ -**	*$ 1,301,392.73*	$ (10,955,724.68)	$ 30.99
2048														**$ -**	*$ 1,301,392.73*	$ (10,160,486.43)	$ 30.99
2049														**$ -**	*$ 1,301,392.73*	$ (9,328,508.17)	$ 30.99
2050														**$ -**	*$ 1,301,392.73*	$ (8,458,092.51)	$ 30.99
2051														**$ -**	*$ 1,301,392.73*	$ (7,547,463.65)	$ 30.99
2052														**$ -**	*$ 1,301,392.73*	$ (6,594,763.74)	$ 30.99
2053														**$ -**	*$ 1,301,392.73*	$ (5,598,049.09)	$ 30.99
2054														**$ -**	*$ 1,301,392.73*	$ (4,555,286.22)	$ 30.99
2055														**$ -**	*$ 1,062,238.75*	$ (3,703,501.70)	$ 25.29
2056														**$ -**	*$ 567,120.32*	$ (3,307,483.16)	$ 13.50
2057														**$ -**	*$ 522,672.01*	$ (2,937,616.86)	$ 12.44
2058														**$ -**	*$ 509,159.05*	$ (2,564,175.72)	$ 12.12
2059														**$ -**	*$ 509,159.05*	$ (2,173,481.59)	$ 12.12
2060														**$ -**	*$ 389,072.13*	$ (1,884,824.30)	$ 9.26
2061														**$ -**	*$ 389,072.13*	$ (1,582,831.05)	$ 5.59
2062														**$ -**	*$ 234,755.89*	$ (1,421,201.95)	$ 5.59
2063														**$ -**	*$ 234,755.89*	$ (1,252,105.59)	$ 5.59
2064														**$ -**	*$ 234,755.89*	$ (1,075,196.97)	$ 5.59
2065														**$ -**	*$ 234,755.89*	$ (890,115.18)	$ 5.59
2066														**$ -**	*$ 180,109.12*	$ (751,129.37)	$ 4.29
2067														**$ -**	*$ 180,109.12*	$ (605,722.42)	$ 4.29
2068														**$ -**	*$ 180,109.12*	$ (453,597.68)	$ 4.29
2069														**$ -**	*$ 180,109.12*	$ (294,444.76)	$ 4.29
2070														**$ -**	*$ 180,109.12*	$ (127,938.99)	$ 4.29
2071														**$ -**	*$ 68,435.94*	$ (65,413.82)	$ 1.63
2072														**$ -**	*$ 68,435.94*	$ (0.00)	$ 1.63



Interest on positive balance	2.0%
Interest on negative balance	4.6%

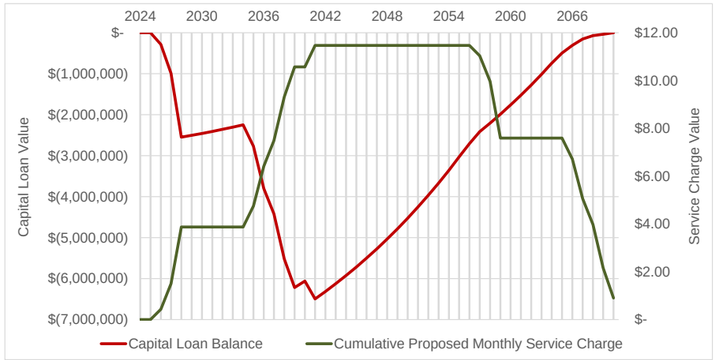
Reserve Balance (Current)	$ -
Approximate Number of Users	3500

Start	End	MSC
2024	2054	$ 5.69
2025	2055	$ 11.79
2026	2056	$ 1.06
2027	2057	$ 0.32
2029	2059	$ 2.86
2030	2060	$ 3.67
2035	2065	$ 1.30
2040	2070	$ 2.66
2042	2072	$ 1.63

Table J2: Osoyoos Water Distribution Network - Pro-active Projects Financial Model

	P10	P2	P1, P3	P4, P7	P6, P5	P9, P8	P11	P14, P13, P15, P12	P17, P18, P16, P19	Total Annual Loan Value	*Annual Payment (30 Year Ammortization)*	Capital Loan Balance	Cumulative Proposed Monthly Service Charge
2024										**$ -**	*$ -*	$ -	$ -
2025										**$ -**	*$ -*	$ -	$ -
2026	$ 304,500.00									**$ 304,500.00**	*$ 18,121.30*	$ (286,378.70)	$ 0.43
2027		$ 755,461.60								**$ 755,461.60**	*$ 63,080.08*	$ (991,990.92)	$ 1.50
2028			$1,674,982.00							**$ 1,674,982.00**	*$ 162,761.04*	$ (2,550,041.86)	$ 3.88
2029										**$ -**	*$ 162,761.04*	$ (2,505,092.75)	$ 3.88
2030										**$ -**	*$ 162,761.04*	$ (2,458,066.99)	$ 3.88
2031										**$ -**	*$ 162,761.04*	$ (2,408,868.65)	$ 3.88
2032										**$ -**	*$ 162,761.04*	$ (2,357,397.34)	$ 3.88
2033										**$ -**	*$ 162,761.04*	$ (2,303,548.05)	$ 3.88
2034										**$ -**	*$ 162,761.04*	$ (2,247,210.93)	$ 3.88
2035				$ 619,150.00						**$ 619,150.00**	*$ 199,607.69*	$ (2,770,574.39)	$ 4.75
2036					$1,171,629.00					**$ 1,171,629.00**	*$ 269,333.28*	$ (3,800,870.65)	$ 6.41
2037						*$ 760,438.00*				**$ 760,438.00**	*$ 314,588.21*	$ (4,422,320.66)	$ 7.49
2038							*$ 1,284,932.00*			**$ 1,284,932.00**	*$ 391,056.65*	$ (5,520,507.23)	$ 9.31
2039								*$ 886,698.20*		**$ 886,698.20**	*$ 443,825.53*	$ (6,218,427.34)	$ 10.57
2040										**$ -**	*$ 443,825.53*	$ (6,061,893.15)	$ 10.57
2041									*$ 636,187.50*	**$ 636,187.50**	*$ 481,686.11*	$ (6,496,454.00)	$ 11.47
2042										**$ -**	*$ 481,686.11*	$ (6,314,904.07)	$ 11.47
2043										**$ -**	*$ 481,686.11*	$ (6,124,966.53)	$ 11.47
2044										**$ -**	*$ 481,686.11*	$ (5,926,253.88)	$ 11.47
2045										**$ -**	*$ 481,686.11*	$ (5,718,360.70)	$ 11.47
2046										**$ -**	*$ 481,686.11*	$ (5,500,862.86)	$ 11.47
2047										**$ -**	*$ 481,686.11*	$ (5,273,316.61)	$ 11.47
2048										**$ -**	*$ 481,686.11*	$ (5,035,257.73)	$ 11.47
2049										**$ -**	*$ 481,686.11*	$ (4,786,200.53)	$ 11.47
2050										**$ -**	*$ 481,686.11*	$ (4,525,636.89)	$ 11.47
2051										**$ -**	*$ 481,686.11*	$ (4,253,035.21)	$ 11.47
2052										**$ -**	*$ 481,686.11*	$ (3,967,839.33)	$ 11.47
2053										**$ -**	*$ 481,686.11*	$ (3,669,467.40)	$ 11.47
2054										**$ -**	*$ 481,686.11*	$ (3,357,310.68)	$ 11.47
2055										**$ -**	*$ 481,686.11*	$ (3,030,732.33)	$ 11.47
2056										**$ -**	*$ 463,564.81*	$ (2,707,187.36)	$ 11.47
2057										**$ -**	*$ 418,606.03*	$ (2,413,653.38)	$ 11.04
2058										**$ -**	*$ 318,925.07*	$ (2,206,239.10)	$ 9.97
2059										**$ -**	*$ 318,925.07*	$ (1,989,242.28)	$ 7.59
2060										**$ -**	*$ 318,925.07*	$ (1,762,220.21)	$ 7.59
2061										**$ -**	*$ 318,925.07*	$ (1,524,709.72)	$ 7.59
2062										**$ -**	*$ 318,925.07*	$ (1,276,226.24)	$ 7.59
2063										**$ -**	*$ 318,925.07*	$ (1,016,262.83)	$ 7.59
2064										**$ -**	*$ 318,925.07*	$ (744,289.11)	$ 7.59
2065										**$ -**	*$ 282,078.42*	$ (496,596.84)	$ 7.59
2066										**$ -**	*$ 212,352.83*	$ (307,186.79)	$ 6.72
2067										**$ -**	*$ 167,097.90*	$ (154,280.92)	$ 5.06
2068										**$ -**	*$ 90,629.46*	$ (70,779.24)	$ 3.98
2069										**$ -**	*$ 37,860.58*	$ (36,188.66)	$ 2.16
2070										**$ -**	*$ 37,860.58*	$ (0.00)	$ 0.90

End of Analysis



Interest on positive balance	2.0%
Interest on negative balance	4.6%

Reserve Balance (Current)	$ -
Approximate Number of Users	3500

Start	End	MSC
2026	2056	$ 0.43
2027	2057	$ 1.07
2028	2058	$ 2.37
2035	2065	$ 0.88
2036	2066	$ 1.66
2037	2067	$ 1.08
2038	2068	$ 1.82
2039	2069	$ 1.26
2041	2071	$ 0.90