DRAFT

CITY OF PENDLETON

Collection System Master Plan

MSA Murray, Smith & Associates, Inc.
Engineers | Planners

MARCH 2015

COLLECTION SYSTEM MASTER PLAN

FOR

THE CITY OF PENDLETON

MARCH 2015

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COMMON ENGINEERING ACRONYMS & ABBREVIATIONS

A

AACE	AACE International
ABF	activated biological filter
AC	asbestos cement
ADA	Americans with Disabilities Act
ADD	average daily demand
AF	acre-feet
AIA	Airport Industrial Area
AMCL	alternative maximum concentration level
AMI	automated metering infrastructure
AMR	automated meter reading
AMZ	asset management zone
AOR	actual oxygen required
APWA	American Public Works Association
ASR	aquifer storage and recovery
AWWA	American Water Works Association

B

BFP	belt filter press
BLI	buildable lands inventory
BOD	biochemical oxygen demand
BWF	base wastewater flow

C

C&R	construction and replacement
CAA	Clean Air Act
CAD	computer aided drafting
CAS	cast iron
ccf	100 cubic feet
CCI	Construction Cost Index
CCR	Consumer Confidence Report
CCTV	closed-circuit television
cf	cubic feet
cfs	cubic feet per second
CHL	clarifier hydraulic loading
CIA	current impact area
CIP	capital improvement program
CMOM	capacity, management, operation and maintenance
CN	curve number
COD	chemical oxygen demand
COMPASS	Community Planning Association of Southwest Idaho
COSM	Central Oregon Stormwater Manual
CP	concrete pipe

CPI-U	Consumer Price Index, Urban Consumers
CSL	clarifier solids loading
CSMP	Collection System Master Plan
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
CWA	Clean Water Act

D

DBP	disinfection byproducts
d/D	depth to diameter ratio
D/DBP	disinfectants and disinfection byproducts
DEQ	Department of Environmental Quality
DIP	ductile iron pipe
DOD	depth of flow over diameter of pipe
DOE	Department of Ecology
DWF	dry weather flow

E

ENR	Engineering News Record
EOCI	Eastern Oregon Correctional Institution
EPA	U.S. Environmental Protection Agency
ERP	Emergency Response Plan
EUAC	Equivalent Uniform Annual Cost

F

FEMA	Federal Emergency Management Agency
FM	flow monitors
FMB	flow meter basin
FOG	fats, oils, grease
fps	feet per second
ft	foot, feet
FTE	full-time equivalent
FV	future value
FY	fiscal year

G

GAC	granular activated carbon
GBT	gravity belt thickener
GIS	geographical information system
gpapd	gallons per acre per day
gpcpd	gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
GPS	Global Positioning System
gpupd	gallons per unit per day
GWI	groundwater infiltration

H

HDPE	high-density polyethylene
HGL	hydraulic grade line
hp	horsepower
hr	hour
HRT	hydraulic retention time
HVAC	heating, ventilating and air conditioning

I

ID	inside diameter
IEEE	Institute of Electrical and Electronics Engineers
I/I	inflow/infiltration
in	inch, inches
IOC	inorganic compound

K

kVA	kilovolt-ampere
kW	kilowatt

L

L	liter
lb	pound
LCR	Lead and Copper Rule
lf	linear feet
LRAA	locational running annual averages
LS	lift station

M

M	million
ma	milliamp
MCL	maximum concentration level
MCLG	maximum concentration level goal
M/DBP	microbial and disinfection byproducts
MDD	maximum day demand
mg	milligram
MG	million gallons
mgd	million gallons per day
mgh	million gallons per hour
mg/L	milligrams per liter
MH	manhole
mL	milliliter
MLSS	mixed liquor suspended solids
MLVSS	mixed liquor volatile suspended solids
mm	millimeter
MRDL	maximum residual disinfectant levels
mrem	millirems

MSA	Murray, Smith & Associates, Inc.
MSL	mean sea level
N	
NPDES	National Pollutant Discharge Elimination System
NPV	net present value
O	
O&M	operations and maintenance
OAR	Oregon Administrative Rules
ODOT	Oregon Department of Transportation
P	
%	percent (use with numerals – e.g., 13%)
PAL	provisionally accredited levee
pCi/L	picoCuries per liter
PDF	peak design flow
PDWF	peak dry weather flow
PER	Preliminary Engineering Report
PFP	Public Facility Plan
pH	measure of acidity of alkalinity
PHD	peak hour demand
ppb	parts per billion
ppm	parts per million
PRS	pressure-reducing stations
PRV	pressure reducing valve
psi	pounds per square inch
PSV	pressure-sustaining valve
PUD	public utility district
PV	present value
PVC	polyvinyl chloride
PWMP	Public Works Management Practices Manual
PWWF	peak wet weather flow
Q	
QA	quality assurance
QC	quality control
R	
RDII	rainfall dependent infiltration/inflow
ROW	right-of-way
RRF	resource recovery facility
RSSD	Rieth Sanitary Sewer District
S	
SBOD	soluble biochemical oxygen demand
SCADA	supervisory control and data acquisition
SDC	system development charge

SDR	standard dimension ratio
sec	second (measurement of time)
SOC	synthetic organic compound
SOW	scope of work
SRT	solids retention time
SSOAP	Sanitary Sewer Overflow Analysis and Planning
SVI	sludge volume index
SWMP	Stormwater Master Plan

T

TAZ	traffic analysis zones
Tc	time of concentration
TCR	Total Coliform Rule
TDH	total dynamic head
TMDL	total maximum daily load
TP	transite pipe
T/S	transit/storage
TSS	total suspended solids
Tt	travel time
TTHM	total trihalomethanes

U

UGA	urban growth area
UGB	urban growth boundary
UIC	underground injection control
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

V

VFD	variable-frequency drive
VCP	vitrified clay pipe
VFD	variable frequency drive
VOC	volatile organic compound
VSS	volatile suspended solids

W

WAS	waste-activated sludge
WFP	water filtration plant
WRF	water reclamation facility
WSMP	Water System Master Plan
WWTP	wastewater treatment plant

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EXECUTIVE SUMMARY

Introduction

The City of Pendleton (City) owns and operates a sewer collection system serving the residents and businesses within its service area. This Collection System Master Plan (CSMP) serves as a planning document to help evaluate growth to build-out of the City's urban growth boundary (UGB), which will approximately double the number of current residents and projected sewer loadings. The UGB covers an area of 13.4 square miles and defines the extent to which the City may expand in the future; it was used as the boundary for build-out projections within this CSMP.

This CSMP addresses the City's sewer collection system only, and does not include any evaluation or improvement recommendations for the Resource Recovery Facility (RRF). The Pendleton Wastewater Treatment Facility Plan completed in 2007 provides recommendations for the RRF.

How This Plan Should Be Used

This CSMP serves as the guiding document for future collection system improvements, and should:

- Be reviewed annually in coordination with other utilities to prioritize and budget needed improvements.
- Have its mapping updated regularly to reflect ongoing development and construction.
- Have its specific system improvement recommendations regarded as conceptual. (The location, size and timing of projects may change as additional site-specific details and potential alternatives are investigated and analyzed in the preliminary engineering phase of project design.)
- Update and refine its cost estimates with preliminary engineering and final project designs.

Scope of Work

The City selected Murray, Smith & Associates, Inc. (MSA) to create master plans for the potable water, stormwater, and sewer collection systems. The scope of work (SOW) for this CSMP includes the following major tasks and deliverables:

- Describe the City's existing collection system.
- Develop and calibrate a hydraulic model.

- Develop population and dry weather sewer flow projections consistent with the City's 2011 Comprehensive Plan Update.
- Develop infiltration and inflow dependent wet weather flow projections.
- Develop design and planning criteria.
- Evaluate the collection system's hydraulic capacity to identify deficiencies for existing (2013), 5-year, 10-year, 20-year, and build-out planning horizons.
- Conduct and summarize benchmarking data comparing the City's operations and maintenance (O&M) practices to similar municipalities.
- Review the City's current O&M program and present recommendations.
- Develop an ongoing repair and replacement program for lifts stations, system piping and manholes.
- Develop capital improvement program (CIP) recommendations and cost opinions for projects required through build-out.
- Develop a specific future improvement plan for the Airport Industrial Area (AIA) in northwest Pendleton.
- Develop a collection system financial plan that identifies a funding strategy for the CIP, aging infrastructure repair and replacement, and staffing.

Organization of the CSMP

This CSMP is organized into seven sections, as described in Table 1-1. Detailed technical information and support documents are included in the appendices.

Table 1-1
CSMP Organization

Section	Description
1 – Executive Summary	Purpose and scope of the CSMP and summary of key components of each part of the plan.
2 – Existing System Description	Description of the service area and overview of the existing system and facilities.
3 – Population and Wastewater Flow Projections	Population projections, dry weather and wet weather estimates for existing and future sewer flows.
4 – System Analysis	Calibration methodology and results, overview of the evaluation criteria and approach, discussion of hydraulic deficiencies for existing and future planning horizons.
5 – Operations and Maintenance	Describes current operations and maintenance procedures, summary of benchmarking results comparing the City to similar municipalities, summary of recommendations.
6 – Capital Improvement Program	Improvement recommendations including cost opinions and timeframe for implementation.
7 – Financial Evaluation	Strategy for funding collection system improvements.

Existing System Description

The Public Works Director manages the City-owned collection system and supervises the Public Works Superintendent, who oversees the system's operation.

Prior to the planning process, MSA and the City undertook an effort to create a Geographic Information System (GIS) of the water, collection and storm systems. Prior to the creation of the GIS, information on the system was generally maintained in CAD, however in some cases hard copy maps provided the most accurate record of the size and location of infrastructure. The new GIS was used as the basis for this planning effort including the development of the hydraulic model. The City recently hired a GIS Coordinator who is working to improve the quality of the information in addition to collecting new data points and attributes.

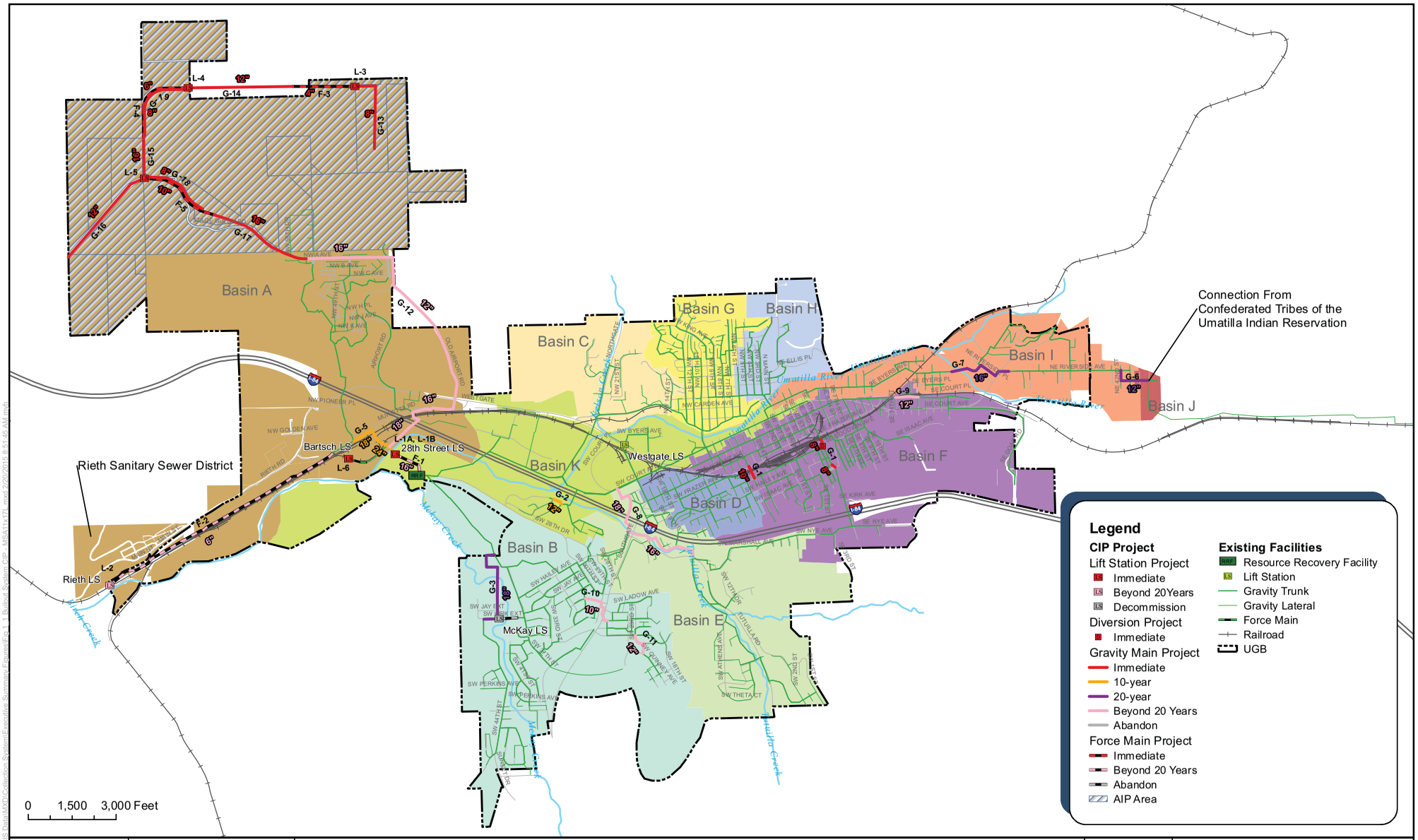
As part of this CSMP, the City's service area was separated into 11 sewer basins shown in Figure 1-1. The collection system consists of approximately 87 miles of gravity pipelines, two miles of force mains, and five lift stations that convey sewage to the RRF.

The City's collection system serves approximately 17,600 people within the City's urbanized area. The Eastern Oregon Correctional Institution is the City's single largest sewer contributor housing approximately 1,600 people and contributing approximately 10% of the City's wastewater flows. In addition, the City receives and conveys flows from the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and Rieth Sanitary Sewer District (RSSD) for treatment at the City's RRF.

Population Projections

Population growth and flow projections were developed for; existing, 5-, 10-, 20-year and build-out intervals. Existing flows were estimated based on flow meter data, RRF influent data, existing winter water consumption records and wastewater diurnal patterns. Future flows were based on residential and non-residential flow factors derived from existing wastewater flow characteristics, non-residential area projections, and population projections.

Population projections were based on land use and zoning designations, current and future population, densities, vacancy rates and other assumptions consistent with the City's 2011 Comprehensive Plan Update. The location and rate of anticipated development was based on a review of the developable land and input from City staff. Population projections are presented in Table 1-2.



MSA
Murray, Smith & Associates, Inc.

CITY OF PENDLETON INCORPORATED 1880 OREGON

City of Pendleton
Collection System Master Plan

Figure 1-1
CIP Projects

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Table 1-2
Population Projections

Planning Horizon	Population
Existing	17,611
5-Year	19,716
10-Year	21,897
20-Year	23,970
Build-Out	31,324

Wastewater Flow Projections

Projected wastewater flows are made up of three components: base wastewater flows (BWF), groundwater infiltration (GWI) and rainfall-dependent infiltration/inflow (RDII). BWF is the average domestic wastewater from residential, commercial, industrial and institutional sources. GWI is groundwater entering the collection system unrelated to a rain event, which in the City's case is from the Umatilla River and its tributary streams for two to three months each spring. RDII is storm water that enters the collection system though infiltration and inflow.

Together, the average BWF and GWI make up average dry weather flow (DWF). Peak DWF is the peak hour of DWF during a typical day with maximum GWI contribution. Peak RDII from the design storm that occurs at the same hour as peak DWF results in the peak design flow (PDF). Peak DWF and PDF were used to analyze the collection system under dry- and wet-weather conditions, respectively. Wastewater flow projections are presented in Table 1-3.

Table 1-3
System-Wide Wastewater Flow Projections

Scenario	Wastewater Flow[1]					
	Unit	Existing (2013)	5-Year	10-Year	20-Year	Build-Out
Average Dry Weather Flow	gpm[2]	1,943	2,427	2,791	3,112	4,350
	mgd[3]	2.8	3.5	4.0	4.5	6.3
Peak Dry Weather flow	gpm	2,612	3,170	3,619	4,005	5,854
	mgd	3.8	4.6	5.2	5.8	8.4
Peak Wet Weather Flows	gpm	3,885	4,416	4,869	5,258	8,965
	mgd	5.6	6.4	7.0	7.6	12.9
Peak Design Flow[4]	gpm	6,497	7,585	8,488	9,265	14,819
	mgd	9.4	10.9	12.2	13.3	21.3

[1] *Per Resolution No. 1065, agreement with the CTUIR, and City input, a permitted flow of 350 gpm, 525 gpm,700 gpm, and 700 gpm was included for 5-year, 10-year, 20-year, and build-out scenarios, respectively.*
[2] *gpm = Gallons per minute.*
[3] *mgd = Million gallons per day.*
[4] *Total flow when the maximum dry weather flow and peak RDII from the design storm occur at the same time, with the peak hour contribution coinciding with the peak storm intensity.*

System Analysis

The collection system analysis includes a hydraulic model calibration summary followed by evaluations of gravity pipe, pumping, and force main capacity. Sewer basins were developed as part of this CSMP and were used to assist in describing deficiency locations. Basin locations are presented in Figure 1-1. These general conclusions were developed through the system analysis and subsequent validation with City staff:

- The existing piping system has adequate capacity to serve existing peak dry weather and peak design flows, with the exceptions of SE Goodwin Avenue in Basin F, SW Riverview Drive in Basin K, and the McKay Lift Station force main in Basin B.
- Existing lift station facilities have adequate capacity to convey peak design flows through the 20-year planning horizon, with the exception of the 28th Street Lift Station, which is currently deficient.
- The Bartsch Lift Station appears to be oversized through the 20-year planning horizon. Correcting pump sizes and installing a variable-frequency drive (VFD) at this facility should be considered.
- Further investigation at the Rieth Lift Station is recommended to verify actual flows and pump performance.
- In general, the existing piping system is adequately sized to serve projected 20-year flows. Minimal improvements generally south of the railroad are required with a few extensive improvement needed including piping required to decommission McKay Lift Station and improvements to serve future flows from the CTUIR and development in the AIA.
- In general, the existing piping system is adequately sized to serve projected build-out flows beyond 20 years. A few additional minimal improvements located south of the Umatilla River and a few extensive improvements will be required. Extensive improvements are located along Tutuilla Creek (as areas south of Interstate-84 and west of Southgate develop) and generally west of the RRF (as the AIA and RSSD continue to develop).
- Lift stations and force mains at Rieth, 28th Street, and McKay may need to be expanded beyond 20 years to serve projected build-out flows.
- The effectiveness of the City's sliplining program is apparent when historical flow meter data at the RRF is reviewed. Continued sewer flow monitoring is recommended to further understand the distribution and volume of inflow/infiltration (I/I), the impact of spring runoff on the collection system, and the ongoing repair and replacement program.
- The hydraulic deficiency analysis is based on planning-level population growth information provided by City's 2011 Comprehensive Plan Update. Actual development patterns and timing may change the priority of future improvements.

Operations and Maintenance

Assessment of the City's collection system O&M program included reviewing information from

City staff, comparing the City's O&M practices with those of four similarly sized regional utilities, and consulting regulatory requirements.

The City's Sewer Utility and Streets Division staff are responsible for the O&M of the wastewater treatment and collection system, respectively. The Sewer Utility and Streets Division currently operates with nine full-time equivalent employees (FTEs); two of these FTEs are under the direction of the PW Superintendent and are responsible for the collection system's O&M, storm system O&M, weed spraying, and street maintenance. The City would like to have dedicated O&M staff for each utility with some sharing of resources as needed.

Four other utilities where surveyed to compare their O&M practices to the City's current program including: Walla Walla, Washington; Pullman, Washington; Redmond, Oregon; and Asotin County Public Utility District, Washington. The performance indicators show that each FTE in the City is responsible for more wastewater collected (annual average), total length of gravity system, and total number of lift stations than most of the utilities surveyed. In general, the City operates with fewer staff than the rest of the survey group.

Routine collection system operations include monthly visits to all lift stations, periodic inspection and cleaning of the gravity mains, and responding to customer inquiries and complaints. The City is working to update their program through pursuing Public Works Accreditation, which is implementation of best practices as outlined in the American Public Works Association's *Public Works Management Practices Manual-8th Edition* (PWMP Manual). The following list summarizes key recommendations based on a review of the City's O&M practices, accreditation goals, and benchmarking of other collection systems:

- Update, adopt, and implement the *2007 Wastewater Collection System Maintenance Program* (Appendix B) based on incorporation of the PWMP Manual best management practices to provide consistent long-term O&M.
- Hire 2.5 additional FTEs. Two FTEs are required to implement the Cleaning and Inspection Program, and a partial FTE is required to implement the O&M program and any associated record keeping.
- Hire 1.5 additional FTEs, which will be part of a second crew of four full time staff with dedicated equipment to perform the ongoing pipe replacement program on a 100-year cycle. The other 2.5 FTEs on the crew would be shared and funded with the Water and Storm Utilities.

Capital Improvement Program

The CIP describes projects identified to address existing and future capacity deficiencies and to plan for ongoing repair and replacement of aging infrastructure. Recommended projects are grouped into three categories: capacity projects needed to convey future flows through the existing system (excluding the airport), projects needed to serve future development in the AIA, and an annual replacement program to address aging infrastructure.

Implementation timeframes for these projects include immediate, 10-year, 20-year and beyond 20 years (build-out). Regular CSMP updates are also recommended and budgeted for approximately every five years. The total expected cost by timeframe, per category and infrastructure type, is shown in Table 1-4. All CIP projects (excluding ongoing repair and replacement) are presented in Figure 1-1.

In general, the existing gravity system is adequately sized to serve flows over the next 20 years. This CIP includes $22,777,000 in improvements over the next 20 years. There are $88,470,000 in improvements to serve build-out flows including; capacity projects, AIA projects, and 100 years of an annual replacement program. Most of the expense within the next 20 years is for development of the AIA and the lifecycle cost of replacing the existing system.

A project summary follows:

- The estimated total cost of an annual program to replace aging infrastructure including gravity main, force main and lift stations over a 100-year cycle is $67,200,000.
- The annual replacement program cost will start at $250,000 per year for first five years and increase incrementally to $672,000 per year after five years and to approximately $699,000 per year beyond 20 years.
- The total estimated cost for all non-airport capacity projects to convey build-out flows is $12,420,000.
- Immediate capacity projects to be constructed within the next five years include constructing approximately 800 feet of gravity main (including one diversion structure), upgrading capacity at one lift station and installing new motors and VFDs at a second lift station. The total estimated cost is $778,000.
- In order to convey 10-year design flows, it is recommended that approximately 300 feet of gravity main be constructed for a total estimated capacity project cost of $104,000.
- In order to convey 20-year design flows, approximately 3,300 feet of gravity main and lift station decommission will be needed in addition to approximately 3,600 feet of gravity main needed if CTUIR flows increase to the contracted amounts, for a total estimated cost of $1,715,000. Wastewater treatment costs associated with additional flow from the CTUIR were not included in this CIP.
- In order to convey build-out flows beyond 20 years, it is recommended that the City construct approximately 19,900 feet of gravity main for a total estimated cost of $5,127,000, and approximately 10,300 feet of force main for a total estimated cost of $785,000.
- Recommended lift station improvements to convey build-out flows beyond 20 years include increasing the firm capacity at two lift stations. The total estimated cost is $3,911,000.
- The CSMP should be updated approximately every five years at a cost of $150,000 per update.
- A budgetary allowance of $370,000 has been provided for the purchase of a combo truck to replace the current combo truck that is being transferred to the Storm Utility in the

immediate timeframe. This cost assumes an estimated $420,000 to purchase a new truck and a $50,000 transfer of funds from the Storm Utility to the Sewer Utility for the current combo truck.

- To convey build-out flows from the AIA, approximately 21,800 feet of gravity main, 6,600 feet of force main, and three lift stations are required. The total estimated cost is $7,880,000.

Table 1-4
CIP Summary

Project Category	Project Description	CIP Schedule and Project Cost Summary[1]				
		0-5 Years (Immediate)	6-10 Years	11-20 Years	Beyond 20 Years	Total
Gravity Main	Capacity Projects	$204,000	$104,000	$1,715,000	$5,127,000	$7,150,000
	AIA[2] Projects	$3,025,000	$597,000			$3,622,000
	Annual Replacement Program[1]	$1,250,000	$2,645,000	$5,290,000	$43,715,000	$52,900,000
	Subtotal	**$4,479,000**	**$3,346,000**	**$7,005,000**	**$48,842,000**	**$63,672,000**
Lift Station	Capacity Projects	$574,000			$3,911,000	$4,485,000
	AIA Projects	$3,791,000				$3,791,000
	Annual Replacement Program[3]		$690,000	$1,380,000	$11,730,000	$13,800,000
	Subtotal	**$4,365,000**	**$690,000**	**$1,380,000**	**$15,641,000**	**$22,076,000**
Force Main	Capacity Projects				$785,000	$785,000
	AIA Projects	$467,000				$467,000
	Annual Replacement Program[3]		$25,000	$50,000	$425,000	$500,000
	Subtotal	**$467,000**	**$25,000**	**$50,000**	**$1,210,000**	**$1,752,000**
Other	Collection System Master Plan Updates	$150,000	$150,000	$300,000	TBD	$600,000
	Combo Truck[4]	$370,000				$370,000
	Subtotal	**$520,000**	**$150,000**	**$300,000**	**TBD**	**$970,000**
CIP Total		**$9,831,000**	**$4,211,000**	**$8,735,000**	**$65,693,000**	**$88,470,000**

[1] *Cost are based on the* Engineering News Record December 2013 Construction Cost Index.

[2] *Airport Industrial Area (AIA).*

[3] *Cost based on 100 years of annual replacement programs.*

[4] *Cost is based on an estimated $50,000 trade-in value for the current truck that will go toward the estimated $420,000 cost of a new truck.*

Financial Plan

Background

The sewer system is an enterprise fund of the City, and is supported by sewer system fees and charges, as opposed to general City revenues. The primary funding source is monthly sewer rates charged to customers inside and outside the City. The current monthly sewer rate for a residential dwelling unit is $28.35 inside the City, and $42.50 for a residential retail customer outside the City. The City charges outside-City wholesale customers 110% of the inside-City rates, per prior contract agreements with CTUIR and RSSD. Rates for non-residential customers include both a fixed monthly service charge, and an additional volume charge on water usage over 1,100 cubic feet (cf) for commercial customers.

According to the *2013 Washington/Oregon Water Rate Survey* by Raftelis Financial Consultants, Inc., the City's residential sewer bill is the seventh lowest out of the 41 utilities surveyed. The median bill was $39.73 per month, compared to the City's current bill of $28.35 per month. This represents just the sewer portion of monthly bills and does not include water or other service charges.

The City established an annual inflationary adjustment to its water and sewer rates in 2006. In April of each year, rates are adjusted by an amount equal to the lesser of either 3.5%, or the year-to-year percentage change in the Portland-Salem Consumer Price Index, Urban Consumers (CPI-U). Rate increases beyond inflationary adjustments have been limited to regulatory-driven cost increases.

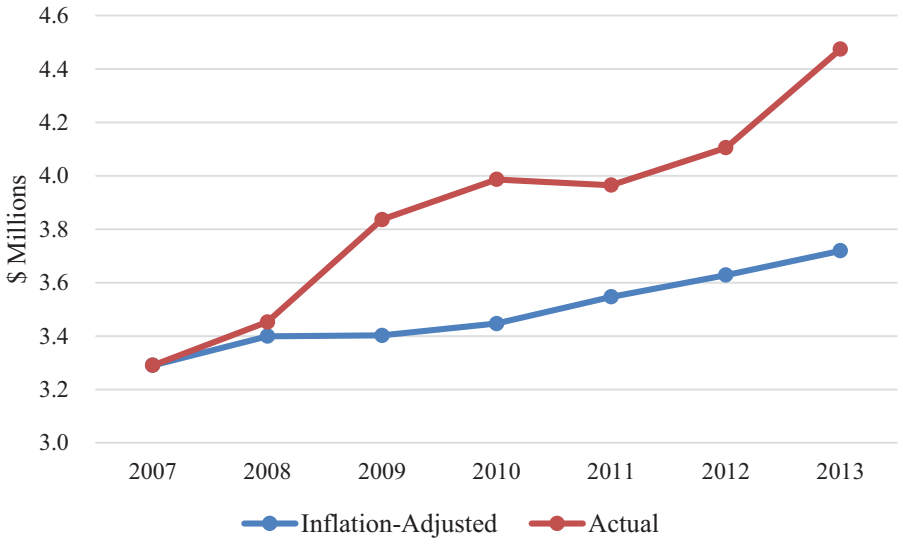
Non-inflationary rate changes over the past ten years are as follows:

- 2005 – 18% increase
- 2006 – 4.6% increase
- 2007 – 98% increase
- 2014 – 7% decrease

Financial Capacity

Since the inflationary adjustment was implemented in 2006, it has not kept pace with rising costs for water and sewer system operations. Figure 1-2 shows a comparison of inflation-adjusted operating expenses for the water and sewer systems combined, compared to actual historical expenses. The CPI-U (used to adjust rates annually) has increased at an average annual rate of 2.3% since 2007, compared to an average increase in operating costs of about 5.3%. This disparity is due to a number of factors, including higher cost escalation for electricity and chemicals (a large part of the sewer system operating costs), franchise fees (related to non-inflationary rate increases), and City-allocated services costs (primarily personnel costs).

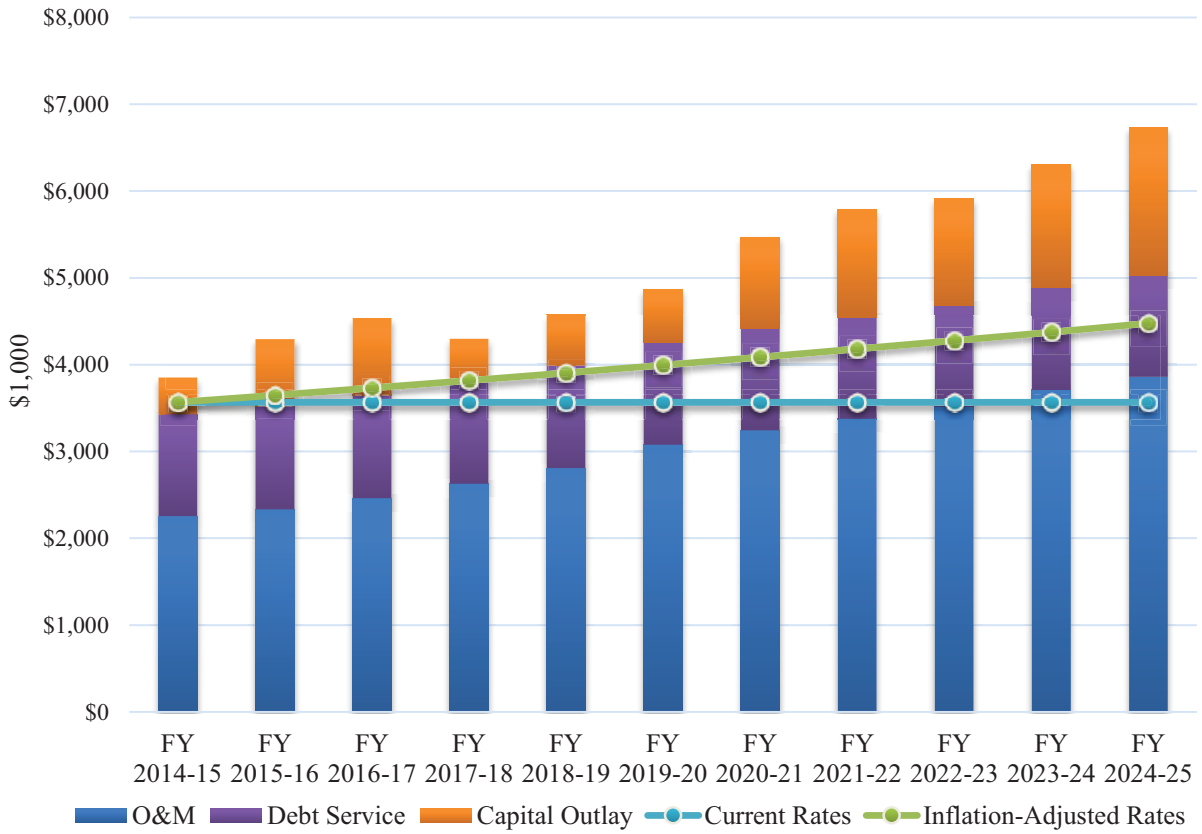
Figure 1-2
Historical Operating Expense Comparison (Combined Water & Sewer)



Given that the historical rate increases have not kept pace with operating cost inflation, and the City has not increased rates for non-CPI related cost increases (like funding capital improvements related to rehabilitation and repair, and collection system capacity expansion) since 2007, the current rates do not provide sufficient financial capacity to address the future projected system needs (both operating or capital). Figure 1-3 shows the forecasted current and inflation-adjusted rate revenue, compared to projected annual operating, debt service, and capital outlay requirements for the next 10 years (capital requirements shown in this figure do not include improvements associated with Airport Industrial Area projects).

In fiscal year (FY) 2015-16, current rates adjusted for the historical average CPI of 2.3% would just cover current operating costs (about $2.4 million) and debt service ($1.2 million). The City has funded other capital-related expenses in the current budget year (FY2014-15) by drawing down existing operating fund balances. Given the significant capital improvement costs and additional staffing requirements identified in this CSMP, along with other repair and replacement needs for the RRF, additional revenue will be needed beginning in fiscal year 2015-16 to adequately fund the system. Although a transfer from the sewer fund to a fund intended for improvements at the RRF is included in the financial analysis, no evaluation of the improvements needed or adequacy of this funding amount for the RRF are included in this CSMP.

Figure 1-3
Projected Sewer System Revenue Requirements from Rates



General note: Debt Service and Capital Outlay do not include AIA projects.

It is recommended that the additional revenue come from both increases to the City's existing sewer system rates, as well as implementation of new System Development Charges (SDCs). The City currently charges SDCs for the street system, but not for the water, wastewater, and stormwater utilities, and as such is missing an important funding source for capital improvements. Following industry standards for development of SDCs, the recommended CIP would support an SDC of approximately $3,100 per equivalent residential unit. A recent survey by the League of Oregon Cities indicated the range for sewer SDCs is about $500 to $12,000, with the median $3,500 per unit.

While SDCs are generally an important part of a capital funding strategy, they are only a part of the solution, as rate increases will be needed to fund the majority of capital improvements (related to rehabilitation and replacement, and remedying existing deficiencies), and all increases to operating costs (as SDCs may not be used for system operation and maintenance). Table 1-5 shows the total percent increase over current revenue needed for additional revenue requirements within the 10-year planning window. The system has experienced limited customer growth in recent years; if this trend continues, the majority of

increased revenue will need to come from sewer rate increases. The required increases shown in Table 1-5 are total for the 10-year planning period. Options for phasing the increases based on the projected timing of capital improvements and staffing modifications will be provided to the City Council.

Table 1-5
Additional Revenue Requirements (10-Year Period)

Item	Annual Cost	Required Percentage Increase
Current Rate Revenue	**$3,565,000**	
Additional Requirements[1]		
New Staff	$386,073	11%
Franchise Fee on Rate Increase	$235,268	7%
Other Operating Costs	$936,095	26%
Rate-supported CIP Costs	$757,277	21%
RRF Transfer	$600,000	17%
Debt Service		
AIA Projects	$545,043	15%
Other Projects	$0	0%
Reserve on New Debt	$196,698	6%
Total Additional Requirements	**$3,656,455**	**103%**

[1] *Annual amount needed in FY 2024-25 above current (FY 2014-15) requirements including projected inflation.*

Recommendations

The following recommendations related to funding the additional staffing and capital improvements as identified in this CSMP are offered for the City's consideration:

- Adopt a new SDC based on the growth-related portion of this CSMP and completed Phase I RRF improvements. Adjust the SDC annually for inflation based on the Engineering News Record (ENR) Construction Cost index (20-city average). Update SDCs as necessary to incorporate significant changes to the CIP, including Phase II improvements at the RRF.
- Budget an annual operating contingency equal to 30 to 90 days of O&M costs (consistent with industry standards).
- Change the index for annual inflation-adjustments to rates from the CPI to the ENR. The current index has not kept pace with utility cost increases since it was adopted in 2006. The average annual increase in the ENR (20-city average) has been 3.0%, compared to 2.3% for the CPI.
- Maintain existing capital reserves of $3.8 million to fund Phase II of the RRF expansion.

- Set sewer rates sufficient to fund additional cash reserves for ongoing repair and replacement of existing facilities beyond those included in this CSMP (currently estimated at $600,000 per year for the RRF).
- Cash fund annual repair and replacement collection system CIP costs. Limit additional debt funding for major projects, including AIA improvements.
- Review the financial plan annually, and make modifications to planned rate increases and capital phasing as needed to meet system performance targets.

Summary and Overall CSMP Recommendations

This CSMP constituted a major investment of time and resources for City staff and the consultant team. The City and, in particular, the Public Works Department should be commended for its foresight in initiating such a comprehensive scope of work in order to successfully operate, maintain, design and improve the City's collection system. This CSMP utilized industry standard approaches by compiling and converting information to a GIS database and utilizing hydraulic modeling software to successful ends.

Prior to this CSMP no single collection system inventory nor hydraulic model existed. Collecting and compiling system data allowed for a more accurate and comprehensive look at the collection system as a whole than what was previously available. The hydraulic modeling allowed for the evaluation of collection system alternatives based on system hydraulics. The capital projects that have been identified, provide the City with a plan, phased over the next 20 years and beyond that is affordable and implementable.

Based on the findings in this CSMP, the following recommendations are made:

- Implement the improvements in the short term (1-10 years) as identified in the CIP to address existing capacity and condition issues as well as provide for planned development in the AIA. In order to maintain infrastructure an annual repair and replacement program should be implemented.
- Operation and maintenance programs should be implemented to increase the lifecycle of infrastructure and to reduce unplanned maintenance.
- Reassess long-term improvements (beyond 10 years) using future CSMP updates: the GIS, hydraulic model and flow monitoring information
- Continue improving the quality of available collection system information, specifically:
    - Continue to collect flow monitoring information to understand the impact of wet weather events and river influence on available capacity and system performance
    - Continue collecting CCTV information related to pipe condition and link to the GIS database
    - Continue utilizing the hydraulic model as a tool for predicting flows in the system

- Hire four additional FTEs to support operation and maintenance programs and the annual replacement program.

Policy Recommendations

In order to prevent unnecessary large expenditures in the future, it is recommended that the City reconsider its financial and planning review policies, as follows:

Planning Review Policies

Although planning documents have detailed collection system upgrades, there are no policies in place requiring regular updates, public discussion, or review. Consequently, as updated information becomes available and changes in the system occur, planning may be altered and significant investments could be made when an alternative based on new information may be a better option. The following policy recommendations will better define the requirements of future collection system planning and help future City councils and the public plan for future investments long before they are needed:

- Require City staff to provide an annual review to Council on the status of the master plan.
- Provide an updated or new master plan to City Council every five years for adoption.

Once the City revises its policies, it is crucial that future City councils and staff understand the rationale behind these policies. To realize the potential impact of any future policy revisions, the historical context and reasoning behind existing policies must be clearly understood.