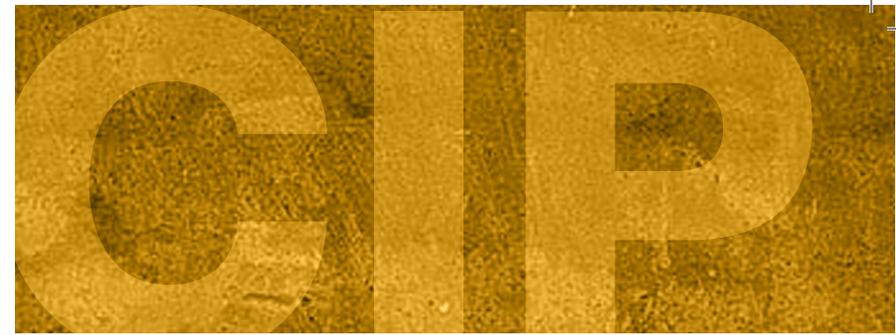


2014 - 2019
**CAPITAL IMPROVEMENT
PLAN**

Tri-City
Service
District



Tri-City Service District

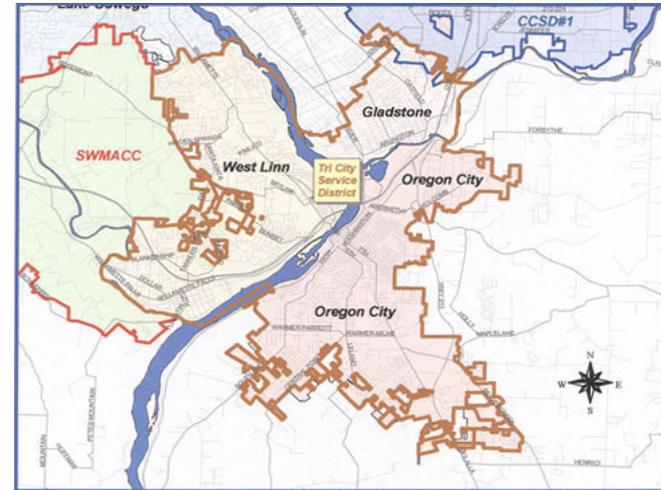
In 1980 the cities of Oregon City, West Linn, and Gladstone, in conjunction with Clackamas County, formed Tri-City Service District. A \$65 million construction program designed to upgrade the sewerage systems serving the residents of the area was undertaken, and in FY 1987-88 the entire system was first placed into service. The Tri-City Service District (TCSD) provides wholesale wastewater treatment services for the cities of Gladstone, Oregon City, and West Linn, as well as services to a small retail population outside of these three cities. Currently, TCSD is also serving some of the Clackamas industrial area under contract with Clackamas County Service District No. 1 (CCSD #1).

History

The Tri-City Service District was formed in 1980 to carry out a sewage improvement program for the Willamette and Clackamas Rivers. Tri-City Service District is governed by the Clackamas County Board of Commissioners. The Tri-City Advisory Committee, comprised of representatives from each city, provides feedback and direction to the governing board regarding TCSD policies and budget decisions.

The Tri-City Water Pollution Control Plant

The Tri-City Water Pollution Control Plant (TCWPCP) was built between 1983 and 1986, replacing 21 raw



sewage overflow points to the Clackamas and Willamette Rivers, to respond to a potential building moratorium and to replace obsolete treatment plants in Oregon City and West Linn. In 1996, a new laboratory was constructed and jointly funded by the TCSD and CCSD #1 to centralize and meet water quality testing needs for both districts. One year later, a de-chlorination system was added to comply with new permit limits on chlorine discharge. Aeration basin modifications were added in 2002 to handle waste increases coming from industrial customers in the TCSD. In 2006, an odor control project was completed to replace aging ventilation equipment and ductwork. Most recently, the treatment plant was expanded with a state-of-the-art membrane bioreactor system that produces effluent that meets Oregon's highest reclaimed water standards. The

\$90 million expansion was funded by the neighboring sanitary district to the north of Tri-City under an Intergovernmental Agreement to co-locate their treatment works at the Tri-City site. The expansion received local and national attention making it one of the County's most successful and highly regarded Capital Improvement Projects. TCSD serves nearly 65,000 customers and treats nearly 3.2 billion gallons of wastewater per year.

Introduction

The staff of Water Environment Services (WES) has developed this annual, five-year Capital Improvement Plan (CIP) for the Tri-City Service District (TCSD). The document includes the results of master planning efforts, technical review and annual inspection of the existing assets belonging to TCSD.

This CIP document represents the results of planning activities developed under the Asset Management, Biosolids, Capacity Management, Energy, Fleet, Operations, and Regulatory programs. Proposed projects are funded in each year's adopted budget. However, the 5-year CIP provides a tool for assessing future resource needs, projecting rates and assessing Service Development Charges (SDCs) when new customers join the system. In general, the CIP covers forecasted capital expenditures for Fiscal Year 2014-15 through 2018-19. This document has been prepared for the following purposes:

- To provide recommendations for needed replacement, rehabilitation and repair projects necessary to protect the TCSD's assets.
- To furnish supporting cost information necessary to permit the development of Program budgets and staffing plans.

- To anticipate capital expenditures in advance to allow for adequate budgetary planning and anticipate required policy decisions and/or adjustments.

Background

The Tri-City Service District (TCSD) is facing several challenges over the next five years.

Though the facilities have been well maintained since being constructed in 1986, the facility and its equipment is aging and requires on-going capital expenditures to maintain its award-winning operational performance well into the future. An initial analysis has identified a minimal need for approximately \$4.4 million annually in asset replacement. In response to this need, funding is included in this plan for a gradually increasing amount for asset replacement to eventually reach this level of funding as a response to this need.

TCSD also faces a major challenge in the area of solids handling. The original Tri-City facility did not construct solids and liquids capabilities that were matched from a capacity standpoint nor provide for process redundancy. TCSD facility needs were discussed in 2007-08 with the TCSD Site Committee, Advisory Committee, and the Board of County Commissioners as part of the conditional use permit process for CCSD #1 prior to their Phase I construction at the Tri-City plant. In 2010, TCSD invested in temporary solids handling equipment

as a back-up system to be utilized by TCSD for mitigating near term operating pressure. The objective of this temporary investment was to provide operating staff with some level of process redundancy and afford staff the time needed to reassess the future direction of the District's Biosolids Program and the plants solids handling needs to support future growth. WES staff initiated these planning efforts in 2012 and will continue with the efforts thru 2014. In 2013, a Site Master Plan Update was completed. This update identified a phased series of capital improvements in the areas of wet weather, solids handling, and general improvements to meet growth needs for TCSD and CCSD #1 for the next 20 years. It is called Phase II of the Capacity Management Program. The only Phase II effort included in this plan is the planning for future power expansion. Phase II projects, except for Intertie #3, will be co-investments between CCSD #1 and TCSD at the Tri-City facility to reduce overall investment requirements.

Plan Organization

The remainder of this plan presents all projects proposed for TCSD on a program by program basis. Since 2007, WES has been developing a comprehensive strategic plan for the department and the Districts served by WES. From this effort, WES has developed a program-oriented approach to providing services. These programs include: Asset Management, Biosolids, Capacity Management, Energy, Fleet, Operations, and Regulatory.

Within each program, the material is organized as follows:

Introduction: This section provides the reader with a summary program description followed by a discussion of sub-programs (if applicable) and their goals, objectives, program elements, issues, and concerns.

Capital cost summary: Capital projects are summarized in a table showing the project name, subprogram, and the level of expenditure during the project's fiscal years.

Capital project detail: Following this summary, each project is presented in greater detail with a fuller description of the project and its justification. Costs in this section include all hard and soft capital costs including outside and internal labor. Although projects have been coordinated as part of our recommendation process, modifications may be needed as other projects are identified and interdepartmental priorities change. In addition, projects may be combined in construction contracts. These decisions will usually occur as part of the project pre-design efforts. Costs are presented in current year dollars and have not been adjusted for inflation for the five years covered. Total costs are summarized by individual year.

Summary

This plan is the result of a department-wide effort demonstrating our commitment to providing quality services combined with prudent fiscal restraint. Many challenges will continue to present themselves, including rising costs, new and changing regulations, and the continued growth of the region. We hope that in this plan you will see that WES remains committed to “Excellence in Public Service” and the prudent use of public funds.

TCSD Project Total Summary by Program

Program	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	Total
TCSD							
Asset Management	\$ 200,000	\$ 700,000	\$ 2,600,000	\$ 295,000	\$ 600,000	\$ 590,000	\$ 4,985,000
Biosolids	\$ -	\$ -	\$ 350,000	\$ -	\$ 150,000	\$ -	\$ 500,000
Capacity Management	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 111,000	\$ 111,000
Energy	\$ -	\$ -	\$ 200,000	\$ 2,300,000	\$ -	\$ -	\$ 2,500,000
Fleet	\$ -	\$ 64,087	\$ 79,258	\$ 91,529	\$ 73,044	\$ 66,649	\$ 374,567
Operations	\$ 105,000	\$ 1,824,000	\$ 800,000	\$ 800,000	\$ 900,000	\$ 800,000	\$ 5,229,000
Regulatory	<u>\$ 1,295,294</u>	<u>\$ 292,000</u>	<u>\$ 1,292,000</u>	<u>\$ 3,000</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 2,882,294</u>
	\$ 1,600,294	\$ 2,880,087	\$ 5,321,258	\$ 3,489,529	\$ 1,723,044	\$ 1,567,649	\$ 16,581,861

ASSET MANAGEMENT



Asset Management Program

PROGRAM INTRODUCTION

The core function of the Asset Management Program is to assess, develop and systematically replace or rehabilitate the District's assets to support staff's ability to effectively operate the District's wastewater treatment and conveyance systems, meet its permit obligations, and secure favorable rates on future capital borrowings. The program's goal is to mitigate spikes in District rate by consistently re-investing in the system prior to its assets reaching the end of their useful life.

The District's equipment, facilities and infrastructure generally have design services lives ranging from a low of five to twenty years for major equipment to forty plus years for structures. The management of the Districts expanding inventory of assets mandate that the CIP be a very dynamic and flexible planning tool; but one that is stable enough to provide a baseline for the System Development Charge (SDC) calculations that is revisited on a five year cycle. The SDC is a one-time charge that new customers pay when requesting service.

The ever increasing cost of managing District assets requires an increasing level of responsibility for assessing and prioritizing project recommendations thru a more disciplined Business Case Evaluation (BCE) approach. The District has adopted an informal BCE methodology for projects with

values greater than \$100K but less than \$500K. Project efforts over \$500K typically are subject to a more rigorous planning process. The Asset Management program is responsible for all assets where the value of rehabilitation or replacement is greater than \$100K. Replacement of smaller valued assets are identified within the Districts Operations programs budgeted and funded on a program level with specific project identification at the start of the fiscal year.

The Asset Management program has been organized into three subprograms: Treatment, Conveyance, and Fleet.

A. TREATMENT

INTRODUCTION

The Treatment Subprogram provides the integrated processes to assess treatment facility process equipment, buildings, and infrastructure typically within the fence lines of the treatment facility. The Treatment Subprogram is designed to minimize life cycle costs of infrastructure assets while continuously delivering established levels of treatment service.

Due to the significant value of these assets and their potential replacement/rehabilitation, formalized and structured processes (e.g. condition assessment, business

case evaluation, etc.) will be employed to prioritize potential capital improvement projects.

GOALS AND OBJECTIVES

The goal of Treatment is to maximize the service life of existing process equipment, facilities, and infrastructure at the five treatment facilities owned and operated by WES at the lowest life cycle cost. This goal will be achieved by: systematically assessing the condition of assets; determining the rehabilitation, replacement, and augmentation needs of equipment, facilities, and infrastructure assets; and by identifying risks (likelihood/consequence) associated with asset failure and the development of the components of life cycle costs in an environment of limited resources. This approach will require the following practices:

- Implement project prioritization decision-making practices that will maximize the benefit of the capital dollars to achieve the lowest life cycle costs
- Develop and maintain asset inventory that includes asset location, valuation, and designed service life
- Identify critical assets that require routine maintenance or reveal the need for rehabilitation or replacement
- Assign available funding or develop funding mechanisms to execute CIP projects

- Comply with Environmental Protection Agency's (EPA) Capacity, Management, Operations and Maintenance (CMOM) Program requirements for owner/operators of wastewater collection systems

PROGRAM ELEMENTS

Liquids Handling

- Renew failed or failing electrical, mechanical, physical, and chemical systems within the liquids stream to eliminate the environmental and fiscal liability associated with non-permit complying discharges of untreated or partially treated sewage.
- Renew failed or failing facilities and infrastructure within the liquids stream to ensure facilities and infrastructure housing electrical, mechanical, physical, and chemical systems continue to retain their essential protective or process function.
- Replace electrical, mechanical, physical, and chemical systems within the liquids stream that are approaching the end of useful and/or economic service life due to conditions and/or age and where routine maintenance and renewal are no longer an effective activity.
- Replace facilities and infrastructure within the liquids stream that have reached the end of useful and/or economic service life due to conditions or age and where routine maintenance or renewal of the facility or infrastructure are no longer an effective activity.

Solids Handling

- Renew failed or failing electrical, mechanical, physical, and chemical systems within the solids stream to eliminate the environmental and fiscal liability associated with biosolids disposal.
- Renew failed or failing facilities and infrastructure within the solids stream to ensure that facilities and infrastructure housing electrical, mechanical, physical, and chemical systems continue to retain their essential protective or process function.
- Replace electrical, mechanical, physical, and chemical systems within the solids stream that are approaching the end of useful and/or economic service life due to conditions and/or age and where routine maintenance and renewal of these systems are no longer an effective activity.
- Replace facilities and infrastructure within the solids stream that have reached the end of useful and/or economic service life due to conditions and/or age and where routine maintenance or renewal of the facility or infrastructure are no longer an effective activity.

Other

- Renew failed or failing electrical, mechanical, and physical, systems associated with support buildings (e.g. treatment plant administrative building, lab, etc.).

B. CONVEYANCE

INTRODUCTION

The Conveyance Subprogram provides the integrated processes to assess collection system, pump stations, buildings, and infrastructure that have an asset value of greater than \$100,000. Conveyance is designed to minimize life cycle costs of infrastructure assets while continuously delivering established levels of service.

Due to the significant value of these assets and their potential replacement/rehabilitation, formalized and structured processes (e.g. condition assessment, business case evaluation, etc.) will be employed to prioritize potential conveyance projects.

GOALS AND OBJECTIVES

The goal of Conveyance is to maximize the service life of existing pump stations, pipes, facilities, and infrastructure associated with the conveyance system owned and operated by WES at the lowest lifecycle cost. This goal will be achieved using three approaches: systematically assessing the condition of assets; determining the rehabilitation, replacement, and augmentation needs of equipment, facilities, and infrastructure assets; by identifying risks (likelihood/consequence) associated with asset failure; and development of the components of life cycle

cost in an environment with limited resources. This approach will require the following practices:

- Implement project prioritization decision-making practices that will maximize the benefit of the capital dollars to achieve the lowest life cycle costs.
- Develop and maintain asset inventory that includes asset location, valuation, and designed service life.
- Identify critical assets in inventory that require routine maintenance or need rehabilitation or replacement.
- Assign available funding or develop funding mechanisms to execute CIP projects.
- Comply with Environmental Protection Agency's (EPA) Capacity, Management, Operations and Maintenance (CMOM) Program requirements for owner/operators of wastewater collection systems.

PROGRAM ELEMENTS

Pump Stations

- Renew failed or failing electrical, mechanical, physical, and chemical systems at the conveyance system pump station to eliminate the environmental and fiscal liability associated with pump station failure.
- Renew failed or failing facilities and infrastructure at the conveyance system pump station to ensure facilities and infrastructure housing electrical,

mechanical, physical, and chemical systems continue to retain their essential protective or process function.

- Replace electrical, mechanical, physical, and chemical systems at the conveyance system pump station that are approaching the end of useful and/or economic service life due to conditions or age and where routine maintenance and renewal are no longer an effective activity.
- Replace facilities and infrastructure at the conveyance system pump station that have reached the end of useful and/or economic service life due to conditions or age and where routine maintenance or renewal is no longer an effective activity.

Collection System

- Renew failed or failing infrastructure systems (pipes, manholes, etc.) within the conveyance system to eliminate the environmental and fiscal liability associated with collection system failures.
- Replace infrastructure systems within the conveyance system that are approaching the end of useful and/or economic service life due to conditions or age and where routine maintenance and renewal are no longer effective.

Asset Management Projects

Project	Program	SubProgram	Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Standby Generator System Rehabilitation-Gladstone	Asset Management	Conveyance	Sewer Construction	\$ -	\$ -	\$ -	\$ -	\$150,000	\$350,000	\$ 500,000
Standby Generator System Rehabilitation-River Street	Asset Management	Conveyance	Sewer Construction	\$ -	\$ -	\$ -	\$ 50,000	\$450,000	\$ -	\$ 500,000
Digester Complex Roof Replacement	Asset Management	Treatment	Sewer Construction	\$ -	\$ -	\$ -	\$245,000	\$ -	\$ -	\$ 245,000
Helical Scum Skimmer System - Tri-City WPCP	Asset Management	Treatment	Sewer Construction	\$ -	\$ -	\$ -	\$ -	\$ -	\$240,000	\$ 240,000
Willamette Pump Station Upgrades	Asset Management	Treatment	Sewer Construction	\$ 200,000	\$700,000	\$2,600,000	\$ -	\$ -	\$ -	\$3,500,000
				\$ 200,000	\$700,000	\$2,600,000	\$295,000	\$600,000	\$590,000	\$4,985,000

ASSET MANAGEMENT

Project Name: Standby Generator System Rehabilitation - Gladstone Pump Station

Subprogram: Conveyance

District: Tri-City Service District

Project Description: The standby generator system is the emergency power backup for the pump station located in the City of Gladstone. In the event of a power outage, the backup power supplied by the standby generator system keeps the station operational until the power is restored, avoiding possible sewage overflows at the pump station and creating a public health risk. The equipment is nearing the end of its useful life and is need of an overhaul.

Project Costs:

Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	TOTAL
TCSD					\$150,000	\$350,000	\$500,000
Total							\$500,000



ASSET MANAGEMENT

Project Name: Helical Scum Skimmer System – Tri-City Water Pollution Control Plant

Subprogram: Treatment

District: Tri-City Service District

Project Description: The Helical Scum Skimmer system is original plant equipment that has seen an increased amount of maintenance become necessary to keep it operational. Parts are not readily available and at times have to be fabricated as needed. The skimmer is an older design that is difficult and time consuming to maintain. Removal of floating materials (scum) is vital to the treatment plant to prevent oil, grease, plastics and other materials from creating problems with odor, scum buildup and potential organic load problems. To continue to maintain this equipment into the future is no longer cost effective.

Project Costs:

Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	TOTAL
TCSD						\$240,000	\$240,000
Total							\$240,000



BIOSOLIDS



Biosolids Program

PROGRAM INTRODUCTION

The Biosolids Program manages Class B biosolids generated at the Tri-City Water Pollution Control Plant (WPCP), the Kellogg Creek WPCP and the Hoodland Sewage Treatment Plant (STP). Biosolids is defined as the organic **product** of municipal wastewater treatment that can be beneficially used. At present, the program's primary management strategy is hauling biosolids from the treatment plants and applying it to agricultural land as a soil conditioner and fertilizer.

The Hoodland and Kellogg Creek plants produce a liquid biosolids product. This product is hauled to and applied on agricultural land in Clackamas County by WES staff for a nominal fee. When land application of the liquid product is not possible due to weather, field availability, or other barriers, it is directed to the Tri-City WPCP for dewatering and subsequent transport to Sherman County for land application. CCSD #1 compensates the Tri-City Service District for this service in accordance with the established Intergovernmental Agreement.

The Tri-City WPCP produces a dewatered biosolids (cake) product that is hauled to and applied on agricultural land in Eastern Oregon (Sherman County).

GOALS AND OBJECTIVES

The focused and immediate goals of the Biosolids Program are to:

- Commence the second phase of the strategic planning effort to determine the future direction of the program. This decision will establish the direction for the Biosolids Program and drive capital investments for the plants and the Biosolids Program.
- Continue to remove biosolids from the plants to support continued efficient and compliant plant operations.
- Continue to pursue short term cost effective and risk adverse options for biosolids management while the strategic planning effort identifies a long term solution.

PROGRAM ELEMENTS

Distribution

- WES owns and operates a fleet of 28 trucks and other large equipment required to accomplish the hauling and land application of biosolids. This fleet includes large tractors and trailers to move dewatered and liquid product to land application sites, front end loaders and Terragators®.

Program Management

- The biosolids fleet replacement program uses the best practices method as the primary tool for establishing replacement cycles. To the extent possible, financial smoothing across a ten to twenty year planning period is the goal.
- Program oversight, direction, policy development, regulatory compliance and strategic planning drive program management. Coordination with all programs and the overall strategic plan of the department promotes program success and achievement of the program strategic intent.

ISSUES AND CONCERNS

- As restrictions on land application in the valley continue to increase, more of Kellogg's biosolids are dewatered and transported to Eastern Oregon. This further stresses the importance of maximizing payload size. The purchase of a second truck and pup will bring the fleet closer to desired levels for maximizing payload.
- The restrictions on land application of liquid product in Clackamas County during wet weather results in a significant portion of Kellogg Creeks' product being diverted to Tri-City for dewatering and subsequent transport to Sherman County. The back-up centrifuge at TC is not designed to handle

the volume from Kellogg. In the summer there are times we cannot apply, and dewatering at TC can result in high ammonia concentrations in the effluent putting TC at risk of a permit violation; in wet weather volume is an issue. A more permanent solution is needed.

Figure 1: Truck and trailer for liquids



Figure 2: Trailer for dewatered biosolids



Biosolids Projects

Project	Program	SubProgram	Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Tri-City Biosolids Fleet Replacement	Biosolids	Distribution	Sewer Construction	\$ -	\$ -	\$ 350,000	\$ -	\$ 150,000	\$ -	\$ 500,000
				\$ -	\$ -	\$ 350,000	\$ -	\$ 150,000	\$ -	\$ 500,000

BIOSOLIDS

Project Name: Tri-City Biosolids Fleet Replacement

Subprogram: Distribution

District: Tri-City Service District/Clackamas County Service District No. 1 * *



Project Description: In 2012-13 Clackamas County Service District No. 1 and Tri-City Service District jointly purchased a new cake hauling truck and pup to increase productivity by reducing staff hours and fuel consumption when hauling cake to Eastern Oregon. We anticipate the need for a new truck and pup in FY2015-16 when another truck in the existing fleet will need replacement. Water Environment Services uses a Terragator® to spread the cake biosolids after they are delivered to the site in Eastern Oregon. A new Terragator® (or similar) is needed in FY2015-16. Both the Terragator® and the truck and pup are a joint investment between Tri-City Service District and Clackamas County Service District No. 1.

2015-16 Includes: New Double Cake Truck and Pup and a Cake Terragator 2002 (shared investment with Clackamas County Service District No. 1).

2017-18 Includes: New Double Cake Truck and Pup (shared investment with Clackamas County Service District No. 1).

Project Costs:

Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	TOTAL
TCSD			\$350,000		\$150,000		\$500,000
CCSD #1			\$350,000		\$150,000		\$500,000
Total							\$1,000,000

**This project is jointly funded between the two Districts.

CAPACITY MANAGEMENT



Capacity Management Program

PROGRAM INTRODUCTION

The Capacity Management Program will provide capital assets to serve growth-related needs. These assets must expand the conveyance, treatment, or inflow and infiltration (I&I) issues to each district, have a larger cost (greater than \$100,000), higher risk, require the involvement of stakeholders external to Water Environment Services (WES), and require expertise external to WES. The planning, design, and construction of these assets are the responsibility of the Capacity Management Program.

A. SANITARY SEWAGE TREATMENT CAPACITY

INTRODUCTION

The Sanitary Sewage Treatment Capacity Subprogram provides for the systematic construction of new facilities necessary to provide sanitary sewage treatment services for growth. The focus is on treatment facilities with one or more of the following characteristics: a cost greater than \$100,000; come with some amount of systemic risk; would benefit from stakeholder involvement; and require expertise external to WES. Its intent is to provide

a district-wide approach for those assets not normally covered under the Asset Management Program or

Operating Program, but is equally important to maintain the integrity of the treatment systems of the District. The

Treatment Capacity Program was designed to ensure that the District is addressing growth proactively and with an acceptable approach to the financing that works for the District and rate payer financial needs.

The financial impact as well as the scale of these projects require thorough planning and design efforts. Criteria and decision tools employed under this effort tends to be more quantitative in nature, relying primarily on a formal business case evaluation approach. Qualitative tools, including ratepayer surveys and customer outreach, play a role influencing both the ultimate project and its timing. The budgeting approach will be developed within the District's Capital Improvement Plan. This provides the longer time frame for developing both the financing and planning approaches for these significant projects.

GOALS AND OBJECTIVES

The goal of the Treatment Capacity Subprogram is to provide the critical and significant assets needed to serve growth in treatment needs within the District and to do so in a manner that addresses financing, risk management, and existing system needs collectively in

the manner most acceptable to District customers, regulators, and stakeholders. This goal can be achieved through the annual Capital Improvement Planning Process where projects are identified, cost and timing are estimated, and a rigorous Business Case Evaluation is performed to help determine project priority.

The approach to determining the need for a Treatment Capacity Project requires the following:

- Accurate forecasts of customer growth are developed and maintained
- Identify critical aspects of the overall treatment process affected by growth
- Preliminary planning efforts are undertaken to define the specific project need, timing, and cost
- The project is included in the next annual capital planning process
- The project is then included in the appropriate budget year where project design is initiated, and staffing and Department resources are identified to construct the project

PROGRAM ELEMENTS

Solids Handling

- Solids handling capacity for both Districts will be fully utilized within the next ten to fifteen years assuming current practices continue. In 2013, a Site Master Plan Update was completed. Called Phase II

of the Capacity Management Program, it identified the timing for a series of capital improvements in the areas of wet weather, solids handling, and general improvements to meet growth needs for TCSD and CCSD #1 for the next 20 years. The only Phase II effort included in this plan is the planning for future power expansion. Phase II projects, except for Intertie #3, will be co-investments between CCSD #1 and TCSD at the Tri-City facility. In addition, an effort is currently underway to examine alternative business plans for the Biosolids and Energy Programs that will, in turn, impact both the timing and need for additional solids handling facilities. This effort began in 2012 and will continue over the next two to three years with facilities design beginning by 2018.

Liquids Handling

- Phase I of the Capacity Management Plan for CCSD #1 was completed in FY 2012-13. This \$132 million effort provided “catch-up” capacity for CCSD #1 as well as additional capacity for future growth for CCSD #1 and TCSD. Initially, this additional capacity was estimated to provide for growth through FY 2014-15. With the completion of the Tri-City WPCP Site Master Plan in 2013, existing liquids capacity is now estimated to last until approximately 2050. Additional wet weather facilities will be needed by 2029. Though facilities are not needed for some time, WES has initiated a study of system

Inflow and Infiltration (I&I) in both TCSD (working with member cities who are responsible for collection in the district) and CCSD #1 with the ultimate goal of balancing investment in collection and conveyance systems with investments in treatment capacity to arrive at the lowest, most effective level of investment in liquids treatment facilities overall.

ISSUES AND CONCERNS

These program elements will require significant funding and thus will put considerable pressure on future rates. Coordinating these financial pressures with all other Programs will provide a challenge to future financial planning efforts for both Districts. Thorough planning and pre-design efforts are necessary to assure proper sizing and timing of future construction efforts to assure maximum rate payer benefit.

B. SANITARY SEWAGE COLLECTION SYSTEM CAPACITY

INTRODUCTION

The Sanitary Sewage Collection System Capacity Subprogram provides for the systematic construction of new facilities necessary to provide sanitary sewage collection services for growth in Clackamas County Service District No. 1 (CCSD #1). The TCSD provides sewage treatment services only and so does not need this subprogram.

C. INFLOW AND INFILTRATION MITIGATION

INTRODUCTION

The Inflow and Infiltration Mitigation Subprogram provides evaluation and mitigation of inflow and infiltration into the collection system of CCSD #1 and supports similar efforts for the collection systems feeding into TCSD. These efforts will consider the costs and benefits of such efforts in terms of their ability to add treatment capacity by reducing the need to transmit and treat ground water making its way into the collection systems supporting the Districts.

The scale of these projects requires initial planning and design efforts as well as coordination with the cities within CCSD #1 and the cities feeding into TCSD. Criteria and decision tools employed under this effort tend to be more quantitative in nature relying primarily on a formal business case evaluation approach. Qualitative tools, including ratepayer surveys and customer outreach, play a particularly significant role influencing both the ultimate project and its timing when working with all affected cities. The budgeting approach will be developed within the Capital Improvement Plan of the Districts and in coordination with the members of TCSD. This provides a longer time frame for developing both the financing and planning approaches for these significant projects.

GOALS AND OBJECTIVES

The goal of the Inflow and Infiltration Mitigation Subprogram is to provide the assets and resources needed to address the most effective opportunities for mitigation. Typically, the most attractive opportunities will provide additional treatment capacity by effectively and efficiently reducing Inflow and Infiltration at a cost that is significantly less than the cost of building new treatment capacity. The goal is to serve growth in collection and treatment system needs within the Districts and to do so in a manner that addresses financing, risk management, and existing system needs collectively in the manner most acceptable to District customers, regulators, and stakeholders. This goal can be achieved through the annual Capital Improvement Planning Process where projects are identified, cost and timing are estimated, and a rigorous Business Case Evaluation is performed to help determine project priority.

The approach to determining the need for an Inflow and Infiltration Mitigation Project requires the following:

- Develop and maintain accurate forecasts of customer growth
- Identify critical aspects of the overall collection process affected by growth

- Implement a robust flow management program for both Districts
- Undertake preliminary planning efforts to define the specific project need, timing, and cost
- Include the project in the next annual capital planning process
- Include the project in the appropriate budget year where project design is initiated
- Identify staffing and department resources to construct the project

PROGRAM ELEMENTS

Cities Support

- Provide financial support for cities in both Districts to correct identified I&I projects. This financial support has yet to be investigated and is not yet reflected in the CIP or the budget for either District.

Unincorporated Area Support

- This program element does not apply to TCSD as the District only serves incorporated cities. CCSD#1 will directly pursue identified I&I projects located within the areas of the District that are served directly by the District. These efforts have yet to be investigated and so are not yet reflected in the CIP or the budget for CCSD #1.

ISSUES AND CONCERNS

The level of funding could put significant pressure on future rates. These efforts have yet to be investigated and rely on coordination of the entities involved. As important is the development of a significant flow management system for each District that is critical to developing a successful effort.

Capacity Management Projects

Project	Program	SubProgram	Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Phase II - Power/Electrical Expansion	Capacity Management	Treatment-Sewer	Sewer SDC/Construction	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 111,000	\$ 111,000
				\$ -	\$ -	\$ -	\$ -	\$ -	\$ 111,000	\$ 111,000

CAPACITY MANAGEMENT

Project Name: Phase II - Power/Electrical Expansion

Subprogram: Treatment - Sewer

District: Tri-City Service District/Clackamas County Service District No. 1 **



Project Description: Additional, long-term power capabilities will be necessary for the Tri-City WPCP to support Phase II projects to be constructed during its 20-year time frame. This project includes new switchgear and standby generators, and an expanded electrical system as well as the need to move the entire electrical system out of the 100-year flood plain. Planning and design will begin in 2018-19 and is estimated to be completed in 2019-20 for a total cost of \$2.5 million.

Project Costs:

Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	TOTAL
TCSD						\$111,000	\$111,000
CCSD #1						\$189,000	\$189,000
Total							\$300,000

**This project is jointly funded between the two Districts.

ENERGY



Energy Program

PROGRAM INTRODUCTION

The Energy Program at WES is emerging. The Energy Program is focused on reducing energy consumption and increasing the production of energy from the treatment of wastewater.

As utility bills continue to rise, energy management becomes critical to controlling rates, which is a major driver in decisions made at WES.

GOALS AND OBJECTIVES

- Engage in a strategic planning effort to determine the future direction of the program. This decision will establish the direction for the energy program and drive capital investments for the plants.
- Aggressively pursue opportunities for energy conservation.

PROGRAM ELEMENTS

• **Conservation**

Initial efforts are focused on opportunities to conserve energy in the treatment plants and pump stations. This

includes equipment efficiency updates and operational changes.

• **Generation**

Opportunities for energy generation exist at various locations in the plant. Examples include hydro, extracting heat from the effluent and biogas production.

• **Program Management**

Program oversight, direction, policy development, regulatory compliance and strategic planning drive program management. Coordination with Operations and the overall strategic plan of the department assure program success and achievement of the programs strategic intent.

ISSUES AND CONCERNS

The issues and concerns for the Energy Program include: air permit impacts, selecting the right technologies to meet WES goals, locating end users within the designated geographic area, and funding energy recovery technologies.

Energy Projects

Project	Program	SubProgram	Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Cogeneration Unit Replacement - Digester Building	Energy	Generation	Sewer Construction	\$ -	\$ -	\$ 200,000	\$ 2,300,000	\$ -	\$ -	\$ 2,500,000
				\$ -	\$ -	\$ 200,000	\$ 2,300,000	\$ -	\$ -	\$ 2,500,000

FLEET



Fleet Program

PROGRAM INTRODUCTION

The vehicle replacement program is a recent addition to the Districts CIP process. Its purpose is to holistically manage the capital needs associated with fleet purchases for all other district programs. In general, this program covers transportation related expenditures that supports, either directly or indirectly, the services provided by district staff including line and administrative functions. The rolling stock, except specialized equipment, is normally maintained by Clackamas County utilizing their fleet maintenance programming. The County in turn charges the district for the vehicle maintenance work and fleet management. When a vehicle is identified for near term replacement, District staff places the replacement on the five year capital plan so it can be balanced with other budget, safety and rate considerations.

GOALS AND OBJECTIVES

The goal of this program is to systematically replace District vehicles to minimize the impact on rates without adversely impacting service levels.

ISSUES AND CONCERNS

The District currently faces a backlog of old and outdated vehicles. Historically each operating program or functional group has purchased vehicles and other rolling stock based on their needs and available capital without regard to a more encompassing District fleet capital plan. The District is still in its infancy in developing an affordable fleet replacement program and has chosen to consolidate and re-distribute the fleet among district programs until a management strategy is fully developed.

The District intends to utilize some form of the Oregon Department of Transportation model developed with Oregon State University to make vehicle replacement decisions. The program assessed the replacement and maintenance cost of each type of equipment to determine the most cost-effective time to replace. Decisions are based on miles, hours and age of equipment weighted with economic and useful life cycle projects of the equipment.

Fleet Projects

Project	Program	SubProgram	Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Miscellaneous Tri-City Fleet Replacement	Fleet			\$ -	\$ 64,087	\$ 79,258	\$ 91,529	\$ 73,044	\$ 66,649	\$ 374,567
				\$ -	\$ 64,087	\$ 79,258	\$ 91,529	\$ 73,044	\$ 66,649	\$ 374,567

Vehicle Description	Loc	Prog	2014-15	2015-16	2016-17	2017-18	2018-19	Total
ASSET MANAGEMENT								
			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
BIOSOLIDS								
2001 Ford Ext Cab F350	TC	BS	\$ 33,938	\$ -				\$ 33,938
			\$ 33,938	\$ -	\$ -	\$ -	\$ -	\$ 33,938
CONSTRUCTION MANAGEMENT								
			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
LAB								
2006 Ford E250 Econoline Van	TC	Lab	\$ -	\$ 20,453	\$ -			\$ 20,453
1997 Ford Taurus	TC	Lab	\$ -	\$ -	\$ 24,346		\$ -	\$ 24,346
			\$ -	\$ 20,453	\$ 24,346	\$ -	\$ -	\$ 44,799
SURFACE WATER								
			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
POOL VEHICLES								
2008 Ford Taurus	TC	Pool	\$ -	\$ 27,611		\$ -		\$ 27,611
			\$ -	\$ 27,611	\$ -	\$ -	\$ -	\$ 27,611
OPERATIONS								
2001 Chevy Blazer	TC	OPS	\$ 30,149	\$ -				\$ 30,149
2001 Chevy Astro-8 Passngr Van	TC	OPS	\$ -			\$ 26,425	\$ -	\$ 26,425
2005 Ford F150 4X4 Pickup	TC	OPS	\$ -			\$ 24,789	\$ -	\$ 24,789
2008 Ford F150	TC	OPS	\$ -	\$ -	\$ -	\$ 21,830	\$ -	\$ 21,830
2009 Ford Escape Hybrid	TC	OPS		\$ -		\$ -	\$ 32,337	\$ 32,337
1993 FORD DUMP TRUCK	TC	OPS	\$ -		\$ 67,183			\$ 67,183
1996 Chev 3500	TC	OPS	\$ -	\$ 31,193				\$ 31,193
1996 Ford Superduty F450 Boom	TC	OPS	\$ -			\$ -	\$ 34,312	\$ 34,312
			\$ 30,149	\$ 31,193	\$ 67,183	\$ 73,044	\$ 66,649	\$ 268,218
SOILS								
			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
			\$ 64,087	\$ 79,258	\$ 91,529	\$ 73,044	\$ 66,649	\$ 374,566

OPERATIONS



Operations Program

PROGRAM INTRODUCTION

The Operations program oversees the daily operation of five wastewater treatment facilities that treat over 6 billion gallons of wastewater annually. The program is responsible for the management of the daily operations of the sanitary sewer collection system in CCSD#1 servicing the unincorporated area of North Clackamas County as well as the Cities of Happy Valley, Boring, the Hoodland corridor, Milwaukie, Johnson City and Fischer's Forest Park near Redland. In the Tri-City District, the Operations program manages the daily operation of the wastewater treatment facilities at the Tri-City Wastewater Treatment Plant that serves the cities of Gladstone, Oregon City, and West Linn. Service areas are served by separate, noncontiguous collection systems that convey sewage to five wastewater treatment facilities:

- Tri-City Water Pollution Control Plant
- Kellogg Creek Water Pollution Control Plant
- Boring Water Pollution Control Plant
- Hoodland Water Pollution Control Plant
- Fischer's Forest Park Water Pollution Control Facility

PROGRAM ELEMENTS

System Optimization

- Capital improvements to maximize the efficiency and redundancy of the District process and delivery systems. These efforts typically include process modifications that improve treatment effectiveness, modify or add process controls and instrumentation that improve management of biological, chemical or physical processes, resize equipment to better match actual operating conditions, and/or improvements that mitigate operational challenges or on-going process problems.

Rehabilitation/Replacement

- This subprogram category is for replacement of existing process or system assets that have outlived their useful life or have historically been “labor intensive” to maintain in its designed service. This category is independent of the Asset Management Program in that it includes the smaller valued assets that are easier to replace or rehabilitate and are typically replaced or rehabilitated by in-house staff.

Modernization

- This subprogram identifies efforts that incorporate changing or emerging technologies into our existing processes that improve system performance or system management. This category may also include capital associated with pilot project work as a precursor to full implementation of a new technology.

Facilities Maintenance

- Capital projects necessary to maintain or assure the integrity of the existing building and grounds. These efforts may include repair activities, including mechanical, electrical, and instrumentation repairs or replacements that maintain the building environment, protect equipment from deterioration, or support a healthy work environment for District staff.

Inter-Agency Response

- Capital projects necessary for timely response to other agency's (county, city, ODOT) capital or maintenance improvement plans. Inter agency response projects are those that typically do not provide systems improvements to the District systems but require action because of the location of District infrastructure in public right-of-way or as a condition of recorded easements

Property and Easement Procurement:

- Capital investments necessary to purchase (or secure) legal and binding rights to property and access easements to existing District facilities or to meet future growth prior to the execution of a Capacity Management project.

GOALS AND OBJECTIVES

The core function of the Operations Program is to manage and operate sewage treatment facilities, collection and conveyance systems, pump stations and other infrastructure to meet state and federal wastewater discharge permit requirements. The program is also focused on eliminating or reducing exposure to system failures that create flow induced violations. General program emphasis areas include:

- System Wide Integration
- Resource Reclamation
- Regulatory Compliance
- Maximize Efficiencies
- Maximize Effectiveness

Operations Projects

Project	Program	SubProgram	Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Septage Receiving Station	Operations	Asset Replacement	Sewer Construction	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Video Surveillance and Security Project	Operations	Control	Sewer Construction	\$ -	\$ 100,000	\$ -	\$ -	\$ -	\$ -	\$ 100,000
Seal Coat Entrances & Drives at Bolton, River Street & Willamette	Operations	Conveyance	Sewer Construction	\$ -	\$ -	\$ -	\$ -	\$ 100,000	\$ -	\$ 100,000
Lime Silo	Operations	Optimization	Sewer SDC	\$ 105,000	\$ 400,000	\$ -	\$ -	\$ -	\$ -	\$ 505,000
MBR Washer Compactor	Operations	Optimization	Sewer Construction	\$ -	\$ 244,000	\$ -	\$ -	\$ -	\$ -	\$ 244,000
Screenings Building Barscreens	Operations	Optimization	Sewer Construction	\$ -	\$ 80,000	\$ -	\$ -	\$ -	\$ -	\$ 80,000
Centrifuge Rebuild	Operations	Rehabilitation	Sewer Construction	\$ -	\$ 200,000	\$ -	\$ -	\$ -	\$ -	\$ 200,000
Small Projects -- Operations	Operations	Rehabilitation	Sewer Construction	\$ -	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 2,000,000
Unspecified Asset Replacement	Operations	Rehabilitation	Sewer Construction	\$ -	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 2,000,000
				\$ 105,000	\$ 1,824,000	\$ 800,000	\$ 800,000	\$ 900,000	\$ 800,000	\$ 5,229,000

OPERATIONS

Project Name: Septage Receiving Station

Subprogram: Asset Replacement

District: Tri-City Service District



Project Description: The current septage system charges a fee for septage brought to it by private firms. The fee more than covers the costs of the program, providing some non-rate revenue to the District. This system is capable of receiving a maximum of 1,000 gallons per day. A new septage system would have capacity for 40,000 gallons per day, allow for an automated receiving process (saving labor costs), and would more efficiently transport the septage to the digesters, saving additional operating costs.

Project Costs:

Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	TOTAL
TCSD							TBD
Total							TBD

OPERATIONS

Project Name: Seal Coat Entrances and Drives at Bolton, River Street, and Willamette Pump Stations

Subprogram: Conveyance

District: Tri-City Service District

Project Description: The asphalt at three pump stations needs to be resealed to preserve its integrity and ensure long life. The project will ensure safe operation of equipment in and around the stations and prevent the need to replace the asphalt prematurely.

Project Costs:



Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	TOTAL
TCSD					\$100,000		\$100,000
Total							\$100,000

OPERATIONS

Project Name: Screenings Building Barscreens

Subprogram: Optimization

District: Tri-City Service District/Clackamas County Service District No. 1 **



Project Description: New barscreens would capture more of the inorganic material coming into the Tri-City treatment plant. All processes downstream from the barscreens, including the new Membrane Bioreactor owned by CCSD #1, would operate more efficiently from this increased level of screening. Three barscreens would be replaced and rake shelves would also be replaced. This project would be done in-house by the maintenance staff.

Project Costs:

Funding Source	Life to Date	2013-14	2014-15	2015-16	2016-17	2017-18	TOTAL
TCS			\$80,000				\$80,000
CCSD #1			\$20,000				\$20,000
Total							\$100,000

**This project is jointly funded between the two Districts.

OPERATIONS

Project Name: Small Projects - Operations

Subprogram: Rehabilitation

District: Tri-City Service District

Project Description: This project funds small projects within the Operations Program that are capital in nature. Small pump replacements, small machinery, etc are included. The intent is to give Operations quick access to funds to accomplish small-scale capital replacements efficiently, maintaining effective treatment plant operations.

Project Costs:

Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	TOTAL
TCSD		\$400,000	\$400,000	\$400,000	\$400,000	\$400,000	\$2,000,000
Total							\$2,000,000



REGULATORY



Regulatory Program

PROGRAM INTRODUCTION

The Regulatory Program provides technical internal support to other programs and divisions within Water Environment Services (WES) in two forms: research and analysis regarding current and future regulatory requirements, and development of state and federal regulations, procurements that enhance the Districts ability to meet future regulations. The Regulatory Program also coordinates National Pollution Discharge Elimination System (NPDES) and MS4 permit renewal and assists in compliance and reporting.

GOALS AND OBJECTIVES

Under general policy direction, provides analysis and interpretation of state and federal proposals, laws, rules and regulations and their impacts. Coordinates and manages all of WES' legislative and intergovernmental relationships with Congress, the State Legislature, agencies of the federal government, State of Oregon, and other units of government. Develops service levels to meet regulatory requirements and exceed the requirements, if they benefit our customers. Collaborates with other jurisdictions to identify and address regulations.

PROGRAM ELEMENTS

- **Government Affairs**
Coordinate and provide leadership and management for all of the Department's legislative and intergovernmental relationships with the State Legislature, agencies of the federal government, State of Oregon, and other units of government. Coordinate WES' regulatory requirements in a manner that consistently meets desired service levels.
- **Analysis**
Analyzes and interprets highly complex state and federal proposals, laws, rules and regulations and their impacts. Monitor standard operating procedures and reporting protocols required to meet regulations and permits.
- **Communications**
Engage, educate and inform stakeholders, and the public on WES' regulatory requirements and related issues through communications, public relations, and community outreach and media relations.

Regulatory Projects

Project	Program	SubProgram	Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Blue Heron - West Linn Facility Purchase and Restoration	Regulatory	Capacity Management	Sewer SDC	\$ 1,295,294	\$ 292,000	\$ 1,292,000	\$ 3,000	\$ -	\$ -	\$ 2,882,294
				\$ 1,295,294	\$ 292,000	\$ 1,292,000	\$ 3,000	\$ -	\$ -	\$ 2,882,294

REGULATORY

Project Name: Blue Heron - West Linn Facility Purchase and Restoration

Subprogram: Capacity Management

District: Tri-City Service District/ Clackamas County Service District No. 1 **



Project Description: Includes the purchase of the former Blue Heron Paper Company West Linn facility, remediation, and restoration of the site. The industrial wastewater treatment lagoon and outfall to the Willamette River provides the Districts additional capacity for growth and economic development and the ability to meet regulatory requirements. The cost of the project will be jointly shared between the Districts and includes the purchase of the 39 acre site, remediation, and restoration of the 14 acre industrial wastewater treatment lagoon.

Project Costs:

Funding Source	Life to Date	2014-15	2015-16	2016-17	2017-18	2018-19	TOTAL
TCSD	\$1,295,294	\$292,000	\$1,292,000	\$3,000			\$2,882,294
CCSD #1	\$1,317,175	\$292,000	\$1,292,000	\$3,000			\$2,904,175
Total							\$5,786,469

**This is a jointly funded project between the two Districts.

