



Memorandum

TO: TRANSPORTATION AND
ENVIRONMENT COMMITTEE

FROM: Matt Cano

**SUBJECT: STORM SEWER AND SANITARY
SEWER ANNUAL REPORTS**

DATE: October 16, 2019

Approved

Date

10-26-19

RECOMMENDATION

Accept the reports highlighting investments, activities and capital improvements to the City's storm sewer and sanitary sewer collection systems for Fiscal Year 2018-19.

OUTCOME

This report provides the Committee with an update on program investments and achievements pertaining to the City's storm sewer and sanitary sewer collection systems.

BACKGROUND

The City's storm sewer system consists of approximately 1,100 miles of storm sewer pipe; 32,200 storm drain inlets; 4,500 miles of curb and gutter; 1,510 storm outfalls; and 31 pump stations. The system conveys storm water into two major watersheds: Coyote Creek and the Guadalupe River. *Attachment A* summarizes the FY 2018-19 activities in the *Storm Sewer Capital Improvement Program*.

The City's sanitary sewer system consists of approximately 2,030 miles of sewer mains (up to 90 inches in diameter); over 10 miles of force mains; 18 pump stations; 39,380 manholes; and over 202,000 laterals. The system serves the residents and businesses and conveys wastewater to the San José/Santa Clara Regional Wastewater Facility by major interceptor pipelines located in the northern part of San José. *Attachment B* summarizes the FY 2018-19 activities in the *Sanitary Sewer Capital Improvement Program*.

A strong partnership between three Departments has been developed to manage these critical and complex systems. The Department of Public Works (DPW) manages Storm and Sanitary Sewer Capital Improvement Programs and assists with private development review. The Department of Transportation (DOT) manages the operations and maintenance of the two systems, and the Environmental Services Department (ESD) manages storm water policy and regulatory compliance

as part of its watershed protection efforts, as well as managing the Regional Wastewater Facility (RWF), the ultimate destination of all wastewater flows conveyed by the sanitary sewer collection system.

ANALYSIS

For both sanitary and storm sewer systems, three key elements guide our strategy:

- Planning for needed capacity based on the planned growth of the City,
- Delivering capital improvements to keep the existing systems in good operating condition, and
- Ensuring system operations comply with Council Policy and Regulatory requirements.

This report addresses current efforts and future actions related to each of these elements for both sewer systems, as well as discussing funding strategies for ensuring that the necessary resources for these efforts are available.

Storm Sewer System

Introduction

Historically, the Storm Sewer Capital Improvement Program (CIP) has invested in capital improvements and system rehabilitations to maximize the conveyance of stormwater and protect public and private property from flooding. Recent regulatory changes now require the capture of trash and treatment of storm water runoff prior to flows entering the creeks or rivers. The South Bay and remaining riparian corridors within San José are natural settings that support both the flora and fauna native to the South Bay.

In compliance with recent regulatory requirements, the Storm Sewer CIP includes projects to improve the water quality of the urban runoff that is conveyed through the waterways by (1) identifying trash hot spots in creeks and rivers, (2) intercepting trash and organic matter with the installation of hydrodynamic separators, and (3) treating stormwater flows prior to entering the storm sewer system. The various treatment alternatives constructed by both public and private projects reduce trash and improve water quality in the South Bay.

In order to gain a beneficial understanding of the storm sewer system, master planning efforts were initiated in FY 2011-12 to develop a hydrodynamic model of the system. The model will support the need to capture and treat the flows as well as identifying conveyance needs of the various watersheds within the City. The storm sewer model is also being coordinated and calibrated to align with the model of rivers and creeks maintained by the Santa Clara Valley Water District.

Capacity Management

The Storm Sewer Master Plan is used to analyze system deficiencies and address the planned growth detailed in the Envision San José 2040 General Plan. The Storm Sewer Master Plan is an

on-going, multi-year program that requires changes and refinements to reflect the dynamic in the area and to adapt to regulatory requirements or events. With limited staffing level and funding, the City has strategically split the program into multiple phases.

The initial phase of the Storm Sewer Master Plan was completed in December 2017 and identified and prioritized storm sewer capacity improvement projects. This hydrologic and hydraulic model, based on pipelines of 24-inch in diameter and larger which added up to approximately 40 percent of the storm drain system, was developed and calibrated in coordination with the Valley Water and DOT maintenance staff to identify and confirm deficiencies in the existing storm sewer system and group them into high, medium and low priority projects. High priority projects are recommended for over 22 storm drainage areas where flooding due to capacity deficiency was observed in past storms, or where flooding is predicted to be greater than 6-inch deep during a 3-year design storm event. These high priority projects would upsize roughly 26 miles of storm sewer pipes and construct a new pump station in the Charcot Avenue area. The planning-level cost for these high priority projects is estimated to be approximately \$215 million.

In addition to the storm drain capacity improvement, the Master Plan also identified 20 outfall locations along Coyote Creek that would benefit from the installation of flap gates to prevent high creek levels from back-flowing through the systems.

In subsequent phases of the Master Plan, the City has strategically divided the system into smaller modeling areas and prioritized these areas based on Phase I Master Plan results and historical flooding information. These phases will provide model refinement to include pipelines smaller than 24-inch in diameter.

The Storm Sewer CIP invested in the construction of a pump station in Alviso which will provide capacity to protect the neighborhood from a 100-year storm event. The construction has been completed, and the pump station will be in full operation this winter.

In December 2015, the RWF developed a hydrologic and hydraulic model to evaluate the performance of the existing stormwater systems that serve the RWF. A total of 18 pipeline capacity deficiencies were identified which total approximately \$9 million to resolve. In addition to evaluating the stormwater system, RWF conducted a flooding study and is currently working with Valley Water staff to identify the potential for flooding at the RWF during a 500-year river flooding event.

Capitalized Maintenance

The Storm Sewer Capital Program continues to deliver projects to address localized ponding and flooding. The program also includes projects to rehabilitate the system's largest and most critical pump stations.

Alignment with Council Policy and Regulatory Agencies

The Storm Sewer CIP is aligned to meet the requirements of the Municipal Regional Stormwater Permit (MRP), specifically addressing trash load reduction to creeks and rivers. In addition, City staff worked collaboratively with consultants to develop a Green Stormwater Infrastructure (GSI) Plan which describes how the City will shift from directing stormwater flows from impervious surfaces into existing storm drain infrastructure to a system where stormwater runoff is slowed, infiltrated, and/or treated prior to discharge into storm drain systems and receiving waterbodies. The GSI Plan was approved by City Council in early September, and in the next few decades, City staff will implement the plan starting by further identifying and prioritizing locations for potential projects, beginning planning of projects, developing planning level cost estimates, and seeking potential funding sources to support the program.

Sanitary Sewer System

Introduction

The focus of the Sanitary Sewer CIP is to ensure the collection system has adequate capacity to address current and future planned capacity needs, ensure reliable sewer service, and to eliminate sanitary sewer overflows (SSO's). The CIP is a balance of capacity enhancement projects and rehabilitation projects to extend the service life of the system. Ongoing condition assessment and capacity management analysis guide the investments in the system.

Capacity Management

The Citywide Sanitary Sewer Master Plan and North San José Detailed Master Plan were completed in 2013 for large diameter trunk lines. Altogether the planning efforts identified 105 capacity improvement projects totaling approximately \$188 million. These projects were identified to address capacity deficiencies under existing conditions as well as to provide capacity for planned future growth through the next 25 to 30 years. Since the completion of the trunk system master plan, the master plan has conducted flow monitoring and hydraulic modeling to further evaluate the need of each project and incorporate high priority projects into the 5-yr CIP. To date, the City has completed 36 capacity improvement projects totaling \$79 million. There are four additional capacity improvement projects currently under design and/or construction totaling \$21 million. Another ten high priority CIP projects have been included in the 2020-2025 work plan.

Since 2015, the Master Plan expanded the study to include smaller diameter pipes to further evaluate capacity of the system and identify deficiencies in the entire system. This effort is anticipated to be completed by the end of 2020.

In addition, the Fourth Street Interceptor Phase VI Project (\$42 million) has recently been awarded as a Design-Build project and is currently under construction with anticipated completion date in mid-2021. This project allows a 60-inch brick sewer to be removed from service after over 100 years.

Capacity improvement projects are funded from both Sewer Service and Use charges and Sewer Connection Fees, depending on the extent to which the improvements are needed to address existing deficiencies or serve new development. Overall, approximately 40 percent of the total estimated capacity projects can be attributed to future growth (\$79 million), with the remaining costs attributable to existing users.

Capitalized Maintenance

Over the last two decades, the CIP focused on construction or rehabilitation of large diameter trunk sewers and interceptor sewers to convey peak wet weather flows and to support the growth in the General Plan. Since 85 percent of the collection system consists of small diameter pipes, the recent focus has been to repair and rehabilitate these neighborhood sewers.

The Condition Assessment Program, initiated in FY 2011-12, inspects and categorizes sewer defects in the entire collection system and prioritizes sewer repair projects to address the deficiencies. The city-wide effort is 55 percent complete as of FY 2017-18 and is on target to complete the system assessment in FY 2021-22.

Alignment with Council Policy and Regulatory Agencies

The primary purpose of Council Policy 8-7: Sanitary Sewer Level of Service is to ensure adequate conveyance capacity is available to support economic development and to prevent sewage spills from the collection system. The policy is currently under review to ensure it is in alignment with recent regulatory changes and the planned growth identified in the 2040 General Plan.

In 2010, the U.S. Environmental Protection Agency along with the State and Regional Water Quality Control Boards completed an Inspection of the City's sanitary sewer collection system. The findings from the Inspection were issued in January 2011. These findings and subsequent communications with the regulatory agencies resulted in improvements in the way the City responds to and analyzes sanitary sewer overflows.

DOT, DPW and ESD continue to coordinate efforts in identifying opportunities to address and minimize sanitary sewer overflows in a timely manner. As a result, the number of SSOs has been consistently reduced over successive years since 2012 as shown on Figure 2 in Attachment B. The sanitary collection system has experienced a significant decrease in SSOs since FY 2011-12 as a result of the proactive actions to respond to blockages, perform cleaning and condition assessments, repairs and rehabilitations and other efforts to operate and maintain the system.

The 2016 Baykeeper Consent Decree requires the City to develop and implement an Exfiltration Abatement Program. The goal of the program is to identify and prioritize pipe rehabilitation, replacement, and repairs to minimize the risk of wastewater leaching from the sanitary system and entering into adjacent storm sewers. The program identifies sewer mains with damage that may potentially cause sewage to reach nearby storm sewer pipes. This effort inspects sanitary sewers with remote controlled cameras. The City has incorporated this work into the Sanitary Sewer CIP program and continues to meet the requirements set forth in the Consent Decree.

COORDINATION

This report has been coordinated with the Department of Transportation, Environmental Services Department, and the City Attorney's Office.

/s/
MATT CANO
Director of Public Works

For questions please contact Michael O'Connell, Deputy Director for the Department of Public Works at (408) 535-8300.

Attachments: A – Storm Sewer System Annual Report FY 2017-2018
B – Sanitary Sewer System Annual Report FY 2017-2018