



Memorandum

TO: TRANSPORTATION AND
ENVIRONMENT COMMITTEE

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

FROM: Matt Cano

DATE: November 8, 2021

Approved

Date

11/22/21

RECOMMENDATION

Accept the attached reports highlighting investments, activities and capital improvements to the City's storm sewer and sanitary sewer collection systems for Fiscal Year 2020-2021.

OUTCOME

These reports provide 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; 35,500 storm drain inlets; 4,500 miles of curb and gutter; 1,712 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 2020-2021 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; 17 pump stations; 39,496 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 through major interceptor pipelines located in the northern part of San José. *Attachment B* summarizes the FY 2020-2021 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.

These reports address 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 catch basin inserts, 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 identify 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 (Valley Water).

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 levels 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 staff to identify and confirm required capacity improvements 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 issues was observed in past storms, or where flooding is predicted to be greater than 6-inches deep during a 3-year design storm event. These high priority projects would upsize roughly 26 miles of storm sewer pipes, and the planning-level cost for these high priority projects is estimated to be approximately \$215 million, including the \$35 million being funded by Measure T for the planning, design, and construction of the Charcot area storm drain improvements.

In addition to the storm drain capacity improvement, the Master Plan also identified up to 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 within the next several years.

The Storm Sewer CIP invested in the construction of a pump station in Alviso which provides capacity to protect the neighborhood from a 100-year storm event. The construction has been completed, and the pump station is in full operation this winter. In addition, with Measure T funding, the Charcot Area Storm Drain Improvements Project will improve the drainage for the Charcot sub-drainage area, reducing the flooding areas under both the 10-year and 100-years storm events.

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. As noted above, except for the Charcot area storm drain improvements project that is funded by Measure T, there still exists a funding gap of up to \$180 million in the Storm CIP Program for high priority projects.

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, and development and implementation of the Green Stormwater Infrastructure (GSI) Plan. The current 5-year Stormwater Permit that became effective January 1, 2016 was administratively extended and the next Stormwater Permit is anticipated to be reissued in July 2022. The Tentative Order, recently released in September 2021, proposed changes to the Stormwater Permit requirements that could affect many provisions related to new and redevelopments, trash load reduction, polychlorinated biphenyls (PCBs) controls, and green stormwater infrastructure implementation.

City staff worked collaboratively with consultants to develop a GSI Plan which describes how the City will shift from directing stormwater flows from impervious surfaces into existing storm drain infrastructure to systems 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 September 2019¹, 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 which is currently largely unfunded. With the funding from Measure T, the first regional GSI project at the River Oaks pump station is currently in the design phase and will be completed in 2023.

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 42 capacity improvement projects totaling over \$100 million. There are three additional

¹ <https://sanjose.legistar.com/LegislationDetail.aspx?ID=4117667&GUID=9D5FF30F-A2E2-4406-A271-A00427072490&Options=&Search=>

capacity improvement projects currently under design and/or construction totaling \$9 million. Two other high priority CIP projects have been scheduled to be included in the 2021-2026 work plan.

Since 2015, the Master Plan expanded the study to include smaller diameter pipes to further evaluate the capacity of the system and identify needed improvements in the entire system. The model found no deficiency under dry weather. This effort is expanding to evaluate the system under the wet weather condition and is anticipated to be completed by the end of 2022.

The Fourth Street Interceptor Phase VI Project (\$42 million) was awarded as a Design-Build project² and is currently under construction with anticipated completion date in mid-2022. The project includes installation of the 96-inch interceptor along Fourth Street crossing under two freeways 101 and 880, and removal of a 60-inch brick sewer over 100 years old from service.

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 for all small pipes in the collection system and prioritizes sewer repair projects to address the deficiencies. The city-wide effort is 89 percent complete as of FY 2019-20 and is on target to complete the system assessment in FY 2021-22. This augments the approximately 80 miles of sewer pipes DOT staff inspect annually.

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

² <https://sanjose.legistar.com/LegislationDetail.aspx?ID=3489305&GUID=3E9FDA97-D5A6-4C86-B666-2D01D06D86B8&Options=&Search=>

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 to identify 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 proactive 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 entering into adjacent storm sewers. The program utilizes remote controlled cameras to identify sewer mains with damage that may potentially cause sewage to reach nearby storm sewer pipes. 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

Attachments: A – Storm Sewer System Annual Report FY 2020-2021
B – Sanitary Sewer System Annual Report FY 2020-2021

For questions please contact Mathew Nguyen, Deputy Director for the Department of Public Works at (408) 535-8384.