

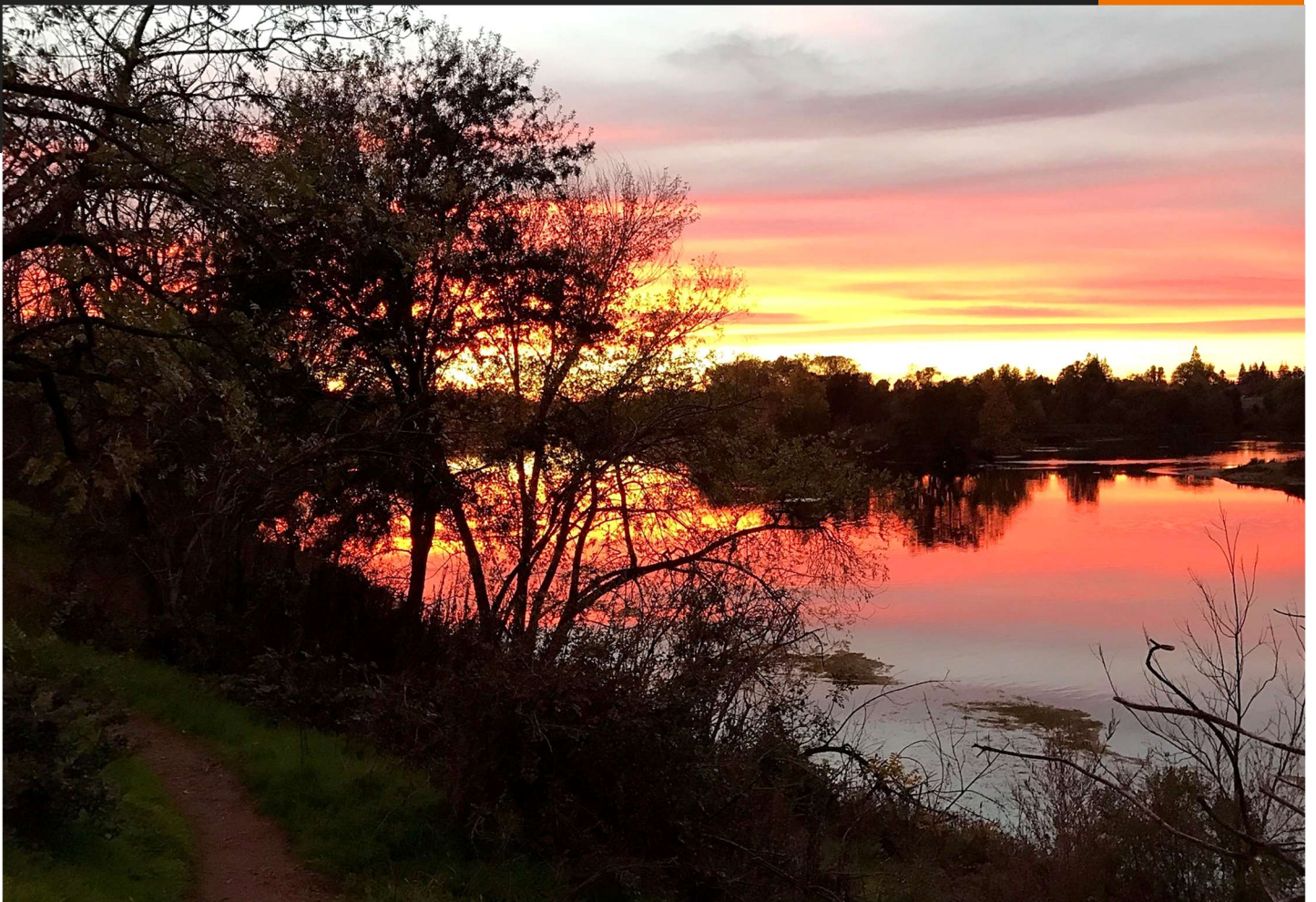


City of Sacramento

Office of the City Auditor – Research and Analysis Division

Department of Utilities – Storm Drainage Fund Review

April 2020





**Department of Utilities – Storm
Drainage Fund Review**

April 2020

Prepared for:

City of Sacramento, Office of the City
Auditor – Research and Analysis
Division

Prepared by:

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Summary Fact Sheet

Background

The City of Sacramento Department of Utilities (DOU) is responsible for the City's water, wastewater, and storm drainage services. Within DOU, the Storm Drainage Fund manages the storm drainage infrastructure system, consisting of pumping stations, pipes, ditches, channels, and levees. The City's storm drainage system is unique within California due to two key characteristics: 1) the City pumps approximately 95 percent of drainage flows, and 2) the City has one of two combined sewer systems (CSS) in the state. DOU charges Storm Drainage Fees to City residents and businesses. Current annual Storm Drainage Fee revenue totals approximately \$35-\$40 million per year. Due to challenges associated with Proposition 218, Storm Drainage Fees have not been increased since 1996. This has led to financial challenges as fee revenues have stagnated while expenditures and system investment needs continue to rise.

Benchmarking

The City's Storm Drainage Fund was benchmarked against peer agencies and bond rating agency standards for AA rated utilities using financial key performance indicators. Benchmarking provided a general understanding of the Storm Drainage Fund's current financial standing. This analysis showed that the Storm Drainage Fund falls short of many rating agency benchmarks, but the City's challenges are not unique within California as the peer agencies also fell short of many of the same benchmarks.

Valuation

A system asset valuation was conducted to estimate the value of assets managed by the Storm Drainage Fund. Due to incomplete asset information, general quantities and unit cost estimates were used to develop an estimate of the total asset value. Based on the provided quantities, estimated unit costs, and

key assumptions for each asset category, this analysis yielded an estimated Storm Drainage Fund asset valuation of approximately \$8.1 billion.

Critical Information Enhancements

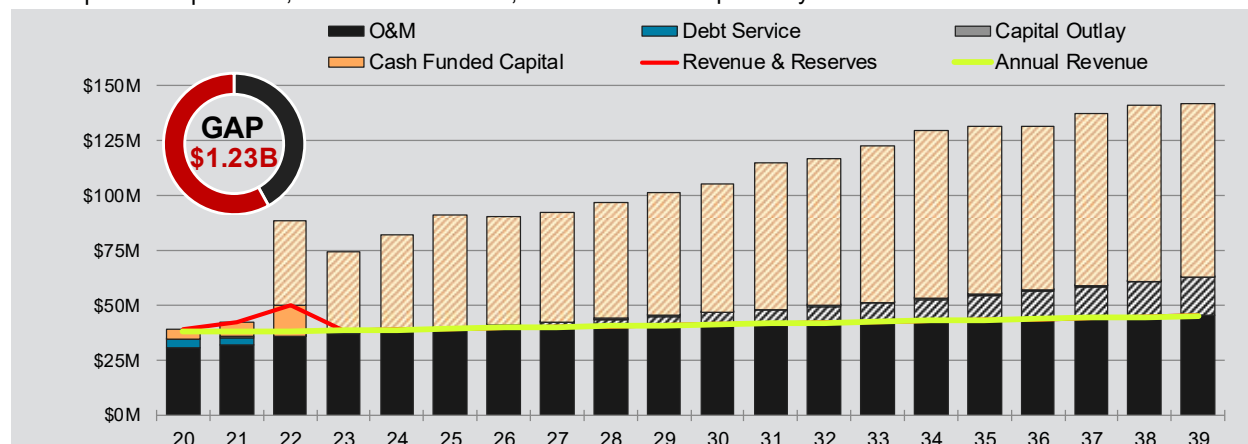
City and DOU staff recognize the existing asset register lacks critical information necessary to fully document the value, age and remaining useful life of the Storm Drainage Fund's assets. The asset register should be enhanced to include, at a minimum, a complete inventory of quantities, dimensions, acquisition dates, estimated useful lives, and original costs. This update will increase the accuracy of the asset valuation, improve tracking of asset depreciation, and allow for general forecasting of infrastructure repair and replacement cost schedules.

Fiscal Forecasts

The following scenarios were developed to present fiscal forecasts of alternative level of service enhancements, capital improvement plans, and CSS cost allocation approaches:

1. Continue current underfunded level of service,
2. Implement level of service and capital investment enhancements in FY 2021-22,
3. Ramp-up level of service and capital investment enhancements with current CSS cost allocations,
4. Ramp-up level of service and capital investment enhancements with historical CSS cost allocation targets,
5. Ramp-up level of service and capital investment enhancements with alternative, calculated CSS cost allocations, and
6. Ramp-up level of service and capital investment enhancements with zero CSS cost allocations.

The figure below illustrates the forecasted funding gap for scenario 2, described above. Hatched columns represent unfunded expenditures based on the limitations of forecasted revenues and fund balances, represented by the yellow and red lines, respectively.



Abbreviations

FY	Fiscal Year
DOU	City of Sacramento Department of Utilities
CAFR	Comprehensive Annual Financial Report
CIP	Capital Improvement Program
O&M	Operations and Maintenance
MYOP	Multi-year Operating Project
CSS	City of Sacramento's Combined Sewer System
NPDES	National Pollution Discharge Elimination System
SB	Senate Bill
KPI	Key Performance Indicator
SFPUC	San Francisco Public Utilities Commission
WWE	Wastewater Enterprise Fund
MHI	Median Household Income
FADS	Funds Available for Debt Service
AACE	Association for the Advancement of Cost Engineering
GIS	Geographic Information System
FAMS	Financial Analysis and Management System
FTE	Full Time Equivalent
LOS	Level of Service
POTW	Publicly Owned Treatment Works
MGD	Million Gallons per Day
BMP	Best Management Practices
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	California State Water Resources Control Board
FEMA	Federal Emergency Management Agency



CalTrans	California Department of Transportation
GO	General Obligation Bond
COP	Certificate of Participation
CWSRF	California's Clean Water State Revolving Fund



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

Introduction

1.0 INTRODUCTION

In accordance with the City Auditor's 2019/20 Audit Plan, we have completed the *Department of Utilities' Storm Drainage Fund Review*. We believe this report meets our objectives of reviewing the fiscal sustainability of the Storm Drainage Fund in accordance with Generally Accepted Government Auditing Standards Section 8.128. We did not seek to test internal controls, such as those related to the department's evaluation of the storm drainage infrastructure or the fund's revenue and expenses.

We conducted this audit in accordance with Generally Accepted Government Auditing Standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We would like to thank the Department of Utilities staff for their time, effort and transparency to enable our completion of a thorough and independent review of the Storm Drainage Fund.



Background

2.0 BACKGROUND

Founded in 1849, the City of Sacramento (City) is both the capital city and the oldest incorporated city in California. As of January 2019, the City had an estimated population of 508,172. Sacramento is a progressive City with great pride in its ethnic and cultural diversity, concern for environmental and social issues and emphasis on quality in the provision of governmental services. Sacramento is a charter city, operating under the City Council-Manager form of government. Its fiscal year (FY) 2019-2020 budget is \$1.2 billion with 4,773 full-time equivalent positions.

This review focuses on the City's Department of Utilities (DOU), which has a FY 2019-20 operating budget of \$189.6 million and 574.9 full-time equivalent positions. Specifically, this review assesses the financial stability of DOU's Storm Drainage Fund, which has an operating budget of \$35.4 million and 114 full-time equivalent positions^{1,2}. The Storm Drainage Fees have not increased since 1996 leading to funding constraints described in detail in this report.

2.1 DEPARTMENT OF UTILITIES

The City of Sacramento Department of Utilities (DOU) is responsible for the City's water, wastewater, and storm drainage services. Each of these services is provided with funding from individual enterprise funds dedicated to each service offering. As defined in the City's Annual Budget, "Enterprise Funds account for programs and services financed and operated similar to business-type activities which include services rendered to the general public on a fee basis³." As enterprise funds, these funds are housed within the City government and are intended to be self-sustaining to cover operational and capital spending needs through fees charged for the services provided.

In providing water, wastewater, and storm drainage services, DOU works in conjunction with other City departments as well as regional, state, and federal agencies towards the maintenance, development, and rehabilitation of the City's water resources infrastructure. The mission of DOU is to provide customers dependable, high quality water, storm drainage, and wastewater services in a fiscally and environmentally sustainable manner.

¹ Budget information provided by DOU staff for Fiscal Year 2019-2020

² FTE Information - City of Sacramento. *Approved Budget, Fiscal Year 2019/20*. Schedule 1D – Staffing by Fund

³ City of Sacramento. *Approved Budget, Fiscal Year 2019/20*.



Background

Within DOU, the storm drainage infrastructure system consists of pumping stations, pipes, basins, ditches, channels, and levees. The storm drainage infrastructure system ensures safe and reliable collection and conveyance of stormwater runoff, in addition to the prevention of flooding and compliance with State regulatory permits. DOU provides storm drainage services to a population of more than 500,000 people throughout the City. The City's storm drainage system consists of both a combined sewer system (CSS) and separated drainage system, as defined in figure 1⁴. Additionally, approximately 95 percent of the City's stormwater is moved through the drainage system by pumps. These two factors, a combined system and nearly all water moved by pumps, add expenses to the Storm Drainage Fund and make the City's Storm Drainage operations unique in California, where most drainage systems are separate and flows are conveyed via gravity.

Figure 1: Combined Sewer & Separated Drainage System Definitions

Combined Sewer System:

Combined sewer systems collect rainwater runoff, domestic sewage, and industrial wastewater into one pipe.

Separated Drainage System:

Separated drainage systems collect rainwater runoff in separate pipes from domestic sewage and industrial wastewater.

2.2 STORM DRAINAGE FUND

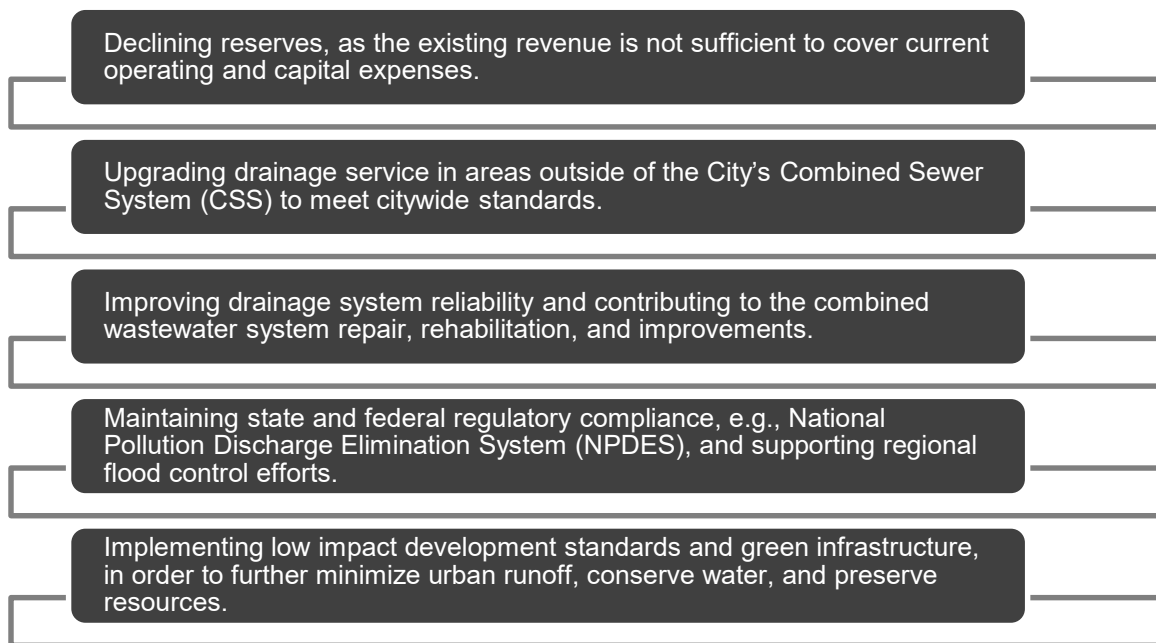
DOU charges Storm Drainage Fees to City residents and businesses; fee revenue collected from drainage customers are deposited in the Storm Drainage Fund. These revenues are intended to meet the spending needs of storm drainage operations for pumping stations, wet weather treatment and storage, collection system maintenance, related engineering services, flood plain management, customer service and billing, education programs, water quality monitoring, innovative green infrastructure programs, regulatory compliance, and a Capital Improvement Program (CIP). Fund expenditures are divided among operations and maintenance (O&M) costs, debt service, CIP, and multi-year operating projects (MYOPs). According to the City's FY 2019-2020 Approved Budget, there are several challenges facing the Storm Drainage Fund, as seen in figure 2 below.

⁴ United States Environmental Protection Agency. <https://www.epa.gov/npdes/combined-sewer-overflows-csos>. (2019)



Background

Figure 2: Challenges Facing the Storm Drainage Fund



Source: City of Sacramento FY 2019-2020 Approved Budget.

Figure 3 presents a summary of historical Storm Drainage Fund revenue, represented by the blue line, and a breakdown of expenditures between operating expenses, debt service and capital investments from FY 2013-14 through FY 2017-18^{5,6,7}.

⁵ Revenue and operating expenses from Statement of Revenues, Expenses and Change in Net Position in the comprehensive annual financial reports from FY 2013-14 through FY 2017-18.

⁶ Debt service based on Statement of Cash Flows in the comprehensive annual financial reports from FY 2013-14 through FY 2017-18.

⁷ Capital expenditures based on historical capital investment budgets provided by DOU staff.



Background

Figure 3: Drainage Fund Historical Cash Flow Summary

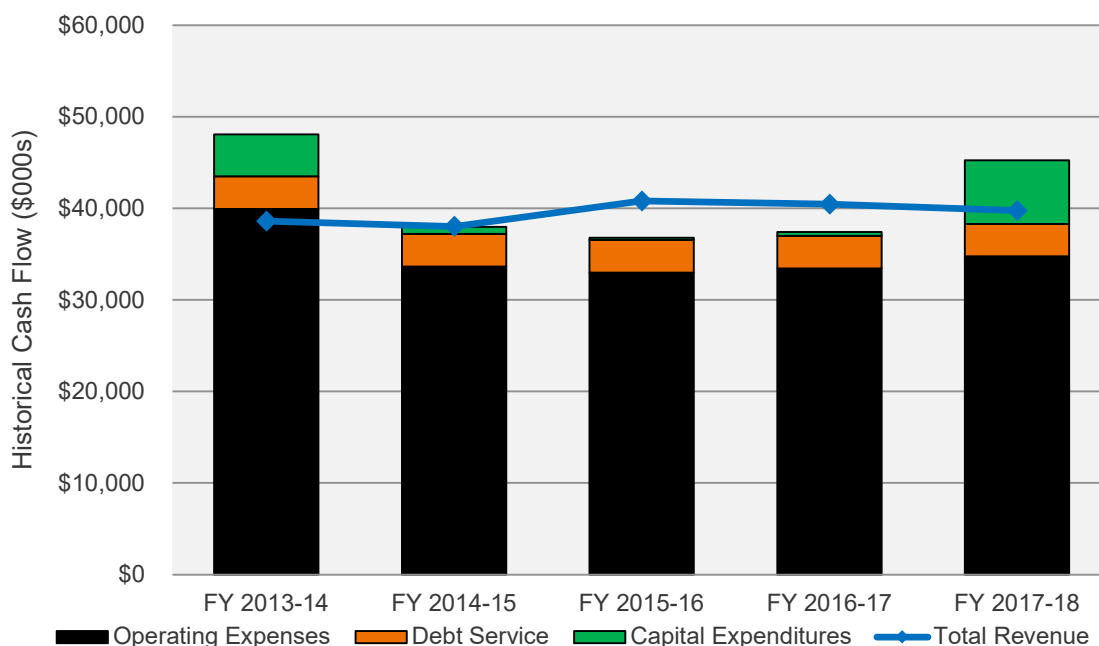


Figure 3 indicates revenues fall short of expenditures in multiple years. The City has made capital investments averaging approximately \$2.6 million per year over the previous five years⁸. In comparison, DOU staff have developed a 30-year CIP consisting of approximately \$34 million per year in investment needs. This projected need is more than ten times higher than the limited capital investment that has been possible over the last five years. Risks of critical system failures, changes in regulatory requirements, and system enhancements to adapt to climate change further exacerbate the cost pressures on the Storm Drainage Fund. This funding shortfall will be discussed in greater detail in later sections of this report.

The Storm Drainage Fund collects fee revenue from local customers to fund operating and capital investment needs for the City's storm drainage system. As previously stated, the City has not increased Storm Drainage Fees since 1996 due to challenges associated with Proposition 218's procedural requirements (discussed further in section 2.3). Figure 4 presents the City's current Storm Drainage Fee structure.

⁸ Capital investments during this period included acquisition of a new billing system which led to a one-time spike in capital expenditures.



Background**Figure 4: City of Sacramento Storm Drainage Fees**

Customer Class	Fee	Units
Single-Family Residential Customers		
1-3 Rooms	\$7.53	per household
4-5 Rooms	\$9.58	per household
6-7 Rooms	\$11.31	per household
8-9 Rooms	\$13.38	per household
10-15 Rooms	\$15.25	per household
Over 15 Rooms (Per Room)	\$1.19	per household
Multiple-Family Residential Customers		
Each dwelling unit charged the same as a single-family residence		
Non-Residential Customers		
General Non-Residential	\$0.001928	per square foot of gross area
Cemeteries, City Parks & Airports	\$0.001928	per square foot of impervious area
Vacant Undeveloped Parcels	\$0.001928	per square foot of 11% of gross area
Common Area Parcels	\$0.001928	per square foot of 30% of gross area
Minimum Fee	\$8.39	per parcel

2.3 PROPOSITION 218 AND FUNDING

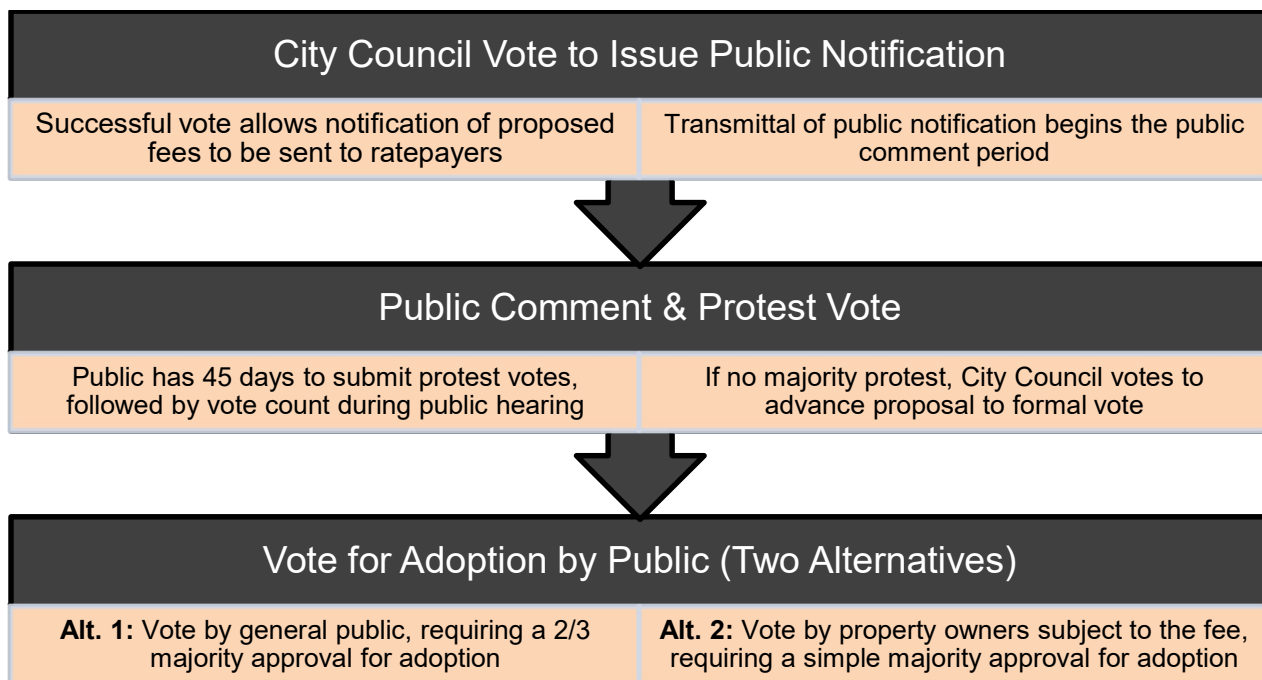
Proposition 218 is a State of California constitutional amendment passed in November 1996 that places substantive and procedural requirements on the implementation of new and increases in existing rates, fees, and taxes. Under Proposition 218, the City's existing Storm Drainage Fee would be considered a "property related fee". As such, the substantive requirements of Proposition 218 require a cost-of-service analysis to demonstrate that the fee charged does not exceed the cost of serving rate payers and that the fee charged to a parcel or person does not exceed the proportional cost of service attributable to the parcel. One critical aspect of Proposition 218 is that it prohibits DOU from using funds collected for one utility to pay the cost of providing a different utility. For example, funds collected from charging water rates cannot be used to pay for storm drainage projects that are unrelated to the provision of water service.

The procedural requirements of Proposition 218 vary based on the type of fee, assessment or tax being implemented or increased. Figure 5 summarizes the procedural requirements applicable to property related fees. It is worth noting that storm drainage fees are not granted the same exemption provided to water, wastewater, and solid waste property related fees which exempts those fees from the requirement to obtain a 2/3 majority vote, or simple majority vote among affected property owners. This exemption allows water, wastewater, and solid waste fees to be adopted or increased by City Council after the 45-day public comment period as long as a majority of rate payers do not issue formal written protest votes against the fee implementation or change. Figure 5 outlines the process for nonexempt property related fees, which includes the City's Storm Drainage Fee.



Background

Figure 5: Proposition 218 Procedural Requirements for Nonexempt Property Related Fees



The added complexity associated with increasing nonexempt property related fees, such as the City’s Storm Drainage Fee, has prevented DOU from requesting a rate increase from the voters since passage of Proposition 218, leaving the Storm Drainage Fund’s revenues fairly stagnant over the last 23 years while the costs of providing storm drainage services continue to rise.

The City has not raised Storm Drainage Fees since 1996 due to the added complexity associated with increasing nonexempt property related fees.

2.3.1 Stormwater Fees and California Senate Bill 231

In September 2017, Governor Brown signed Senate Bill (SB) 231, which amended the definition of “sewer” under Article XIIC and XIID of the California Constitution to include both sanitary and storm sewers. This legislation was intended to allow cities to establish storm water fees as a property related fee (or incorporate storm water costs into sewer fees) with a “majority protest” vote under the same requirements applied to water, sewer, and solid waste utilities under Proposition 218. Fees adopted under this approach would be required to meet the same cost of service and cost proportionality requirements discussed above.

Currently, no communities have sought to establish a new storm drainage fee, or increase an existing fee, using this approach. The Howard Jarvis Taxpayers Association, a California lobbying and policy



Background

organization, has indicated that they intend to challenge any community that attempts to institute a storm water fee using this approach. As such, adoption of a new, or adjustment of an existing, property-related fee for storm drainage services based on the passage of SB 231 carries a degree of legal risk.

2.4 OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of this review is to provide an independent and objective assessment of the fiscal sustainability of the Storm Drainage Fund through a detailed review of fiscal policies and procedures, industry best practices, financial benchmarking, expense and revenue history, service level and system capacity, and storm drainage infrastructure valuation. The scope of this review included financial information for FY 2013-14 through FY 2017-18, in addition to unaudited actual financials from FY 2018-19 and budget information for FY 2019-20.

In addition to actual and budget financial information, this review evaluated outstanding debt obligations, asset information, master plans, a 30-year CIP, staffing levels, and various other sources of information. These data sources were reviewed and discussed in detail with DOU and City Auditor's Office staff to ensure understanding and applicability of information, to identify potential additional needs of a fully funded storm drainage utility, and to begin the analysis of the Storm Drainage Fund's potential approaches to accomplishing its objectives. Recognized future needs included increasing levels of service, maintaining regulatory compliance, and reinvesting in existing system assets. After compiling, synthesizing, and to the extent possible estimating/quantifying these expenditures, forecasts of multiple scenarios were developed to understand the level of revenue required to meet the identified needs.

This review was conducted using the best available information. This analysis was highly dependent on DOU providing timely information and relied on the information provided for the analysis. The provided information was augmented by the compilation of targeted best practice data, cost estimates and valuation estimates, and by the professional experience and judgment of Stantec's financial and engineering professionals.



While The City of Sacramento's Storm Drainage Fund's Financial Key Performance Indicators Are In Line with Peer Agencies, Revenue Constraints will Continue to Prevent Needed System Investments

3.0 WHILE THE CITY OF SACRAMENTO'S STORM DRAINAGE FUND'S FINANCIAL KEY PERFORMANCE INDICATORS ARE IN LINE WITH PEER AGENCIES, REVENUE CONSTRAINTS WILL CONTINUE TO PREVENT NEEDED SYSTEM INVESTMENTS

The City's Storm Drainage Fund was benchmarked against peer agencies from California and bond rating agency metrics to provide a high-level understanding of the current financial position of the Storm Drainage Fund. Benchmarking was completed by using key performance indicators (KPIs) commonly evaluated by ratings agencies as well as metrics that illustrate similarities and differences between the City's system and peer agencies. Benchmarking KPIs were broken down into the following four general categories:

- Community, Operations, and System
- Cash Flow and Balances
- Capital Investment
- Debt Coverage and Obligations

Benchmarking comparisons are frequently compiled to help evaluate performance and financial sustainability of an enterprise by reference to similarly situated enterprises or organizations. Since no two organizations face the same mix of challenges and opportunities, the results of any such comparison must be considered thoughtfully, with conscious effort to place any results into an appropriate context.

Comparisons against rating agency metrics relied on the special report, *2019 Water and Sewer Medians*,⁹ from Fitch Ratings, one of three primary rating agencies that determine the credit worthiness of public utilities (in addition to private enterprises). This special report presents the median value for each KPI tracked by Fitch Ratings grouped by region, system size, and rating category (e.g. A, AA, AAA). The Storm Drainage Fund's performance was benchmarked against the median values for AA rated utilities based on the fact the City's most recent revenue bond was rated "AA-" in 2017. The *2019 Water and Sewer Medians* from Fitch Ratings was used to illustrate the financial metrics of public utilities that not only meet the minimum requirements for each rating category, but rather those that represent the midpoint among AA rated utilities for each KPI. Although the benchmarking evaluation of this study is focused on comparing the Storm Drainage Fund to stormwater agencies, the fundamental financial principles of a well-funded water or wastewater utility would also apply to stormwater utilities. Financial KPIs were calculated using publicly available information from each agency's most recent comprehensive annual financial reports¹⁰ (CAFR) from fiscal years (FY) 2015-16 through FY 2017-18. While agencies often report financial information in different ways and at varying levels of detail, relying on CAFRs means KPIs were calculated using audited information from consistent data sources.

⁹ Fitch Ratings. Public Finance. (2018). *2019 Water and Sewer Medians: Special Report*.

¹⁰ A city's Comprehensive Annual Financial Report is an official and audited report summarizing the City's financial position, income statement and cash flows, including enterprise and other special revenue funds.



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

While The City of Sacramento's Storm Drainage Fund's Financial Key Performance Indicators Are In Line with Peer Agencies, Revenue Constraints will Continue to Prevent Needed System Investments

3.1 PEER STORM DRAINAGE AGENCIES

In addition to the fundamental challenges of building meaningful comparisons between any set of complex enterprises, compiling a list of peer stormwater agencies can be especially difficult in California because of the variability in scale and types of assets (e.g. pumps, levees, conveyance, etc.) managed by funds around the state. Additionally, due to the challenges in establishing dedicated sources of revenue to fund storm drainage operations and investment needs created by the procedural requirements of Proposition 218, there are a limited number of stormwater enterprise funds in the state. Further complicating the matter is the fact that Sacramento has one of two combined sewer systems (CSS) in the state; the other CSS is located in San Francisco.

The list below summarizes the names of the communities and associated enterprise funds for the City and the eight California agencies that served as benchmarking peers in this review. These agencies were selected as they each have a dedicated source of revenue and operate as enterprise funds, they represent a range of sizes and operational complexities, and are distributed throughout the state to provide a broad perspective of the financial and operational conditions of stormwater agencies.

- A. City of Sacramento – *Storm Drainage Fund*
- B. City of Davis – *Storm Sewer Fund*
- C. City of San Jose – *Storm Drainage Service Use Charge Fund*
- D. City of San Clemente – *Clean Ocean Fund and Storm Drain Fund*
- E. City of Berkeley – *Clean Storm Water Fund*
- F. City of Santa Monica – *Stormwater Management Enterprise Fund and Clean Beaches & Ocean Parcel Tax Fund*
- G. City of Santa Cruz – *Storm Water Enterprise Fund*
- H. City of Santa Clara – *Storm Drain Improvement Fund*
- I. Los Angeles County – *Flood Control District*

It is worth noting that San Francisco is not included in this portion of the benchmarking analysis because the San Francisco Public Utilities Commission (SFPUC) manages stormwater assets through the wastewater enterprise fund. San Francisco's system and financial structure is discussed further in Section 3.1.1.

3.1.1 Agencies with Combined Systems

As previously mentioned, the City maintains one of two combined storm drainage-sanitary sewer systems in the State. The only other peer agency within California with a combined system, San Francisco Public Utilities Commission (SFPUC), maintains a citywide combined system to manage and treat stormwater and sewage at its water pollution control plants. The SFPUC wastewater management system, consisting of over 1,900 miles of sewer mains and laterals, 27 pump stations, and three treatment plants,



While The City of Sacramento's Storm Drainage Fund's Financial Key Performance Indicators Are In Line with Peer Agencies, Revenue Constraints will Continue to Prevent Needed System Investments

is operated and maintained within a single Wastewater Enterprise Fund (WWE). The fact that the combined system is operated and managed through a single enterprise fund has led SFPUC to charge a single set of wastewater rates to meet the revenue requirements associated with funding both sewage and stormwater system operational and capital investment needs. By managing the combined system entirely through the WWE, SFPUC is able to adjust wastewater fees without the full ballot approval process required for stormwater property related fees. As described in section 2.3, this allows SFPUC to increase wastewater fees to cover costs of the CSS through a “majority protest”¹¹ vote, as wastewater (or sewer) fees are exempt from the electoral requirements of general property related fees, rather than putting the issue on a ballot to all affected property owners or to the general electorate. This exemption simplifies the process of adopting new fees or adjusting existing fees to ensure revenue sufficiency to meet ongoing funding needs.

One differentiating factor of the City and SFPUC's combined systems is the scale and coverage of the combined system within the overall service area. SFPUC's combined sewer system network spans the entirety of the service area, while the City's combined system is largely isolated to the older portions of the City. This amounts to approximately 7,500 acres (23 percent) of the City's total service area being served by a combined system¹².

3.2 COMMUNITY, OPERATIONS AND SYSTEM BENCHMARKING

Benchmarking included an evaluation and comparison of community, operations and system metrics. This preliminary evaluation provides an understanding of the relative size and socioeconomic environment of the service area as well as some idea of the system dynamics of the peer agencies included in the study. Recognizing that no two systems are identical, these benchmarks provide context to the similarities and differences between the peer agencies and the communities within which they operate. The list of community, operational and system benchmarks is provided in figure 6.

Figure 6: List and Definition of Community, Operations and System Benchmarks

Benchmark	Definition
Served Population	Total population of the community served.
Community Median Household Income	Fiftieth percentile income of the community served.
Current Rate, Fee, or Tax	Current charge to customers or residents, including the form of revenue (fee, tax, millage) and structure.
O&M Expenses per Mile of Conveyance Pipe	Annual operating expenses per mile of conveyance pipe managed by the enterprise.
Percent of O&M Budget Dedicated to Payroll	Share of total O&M budget paid to employees in salaries, health care, and other benefits.

¹¹ A “majority protest” vote requires the majority of rate payers to issue formal written protests against the proposed fee adjustments in order to block adoption of the proposed fees.

¹² City of Sacramento Department of Utilities. (2014). *2013-2014 City of Sacramento Sewer System Management Plan*

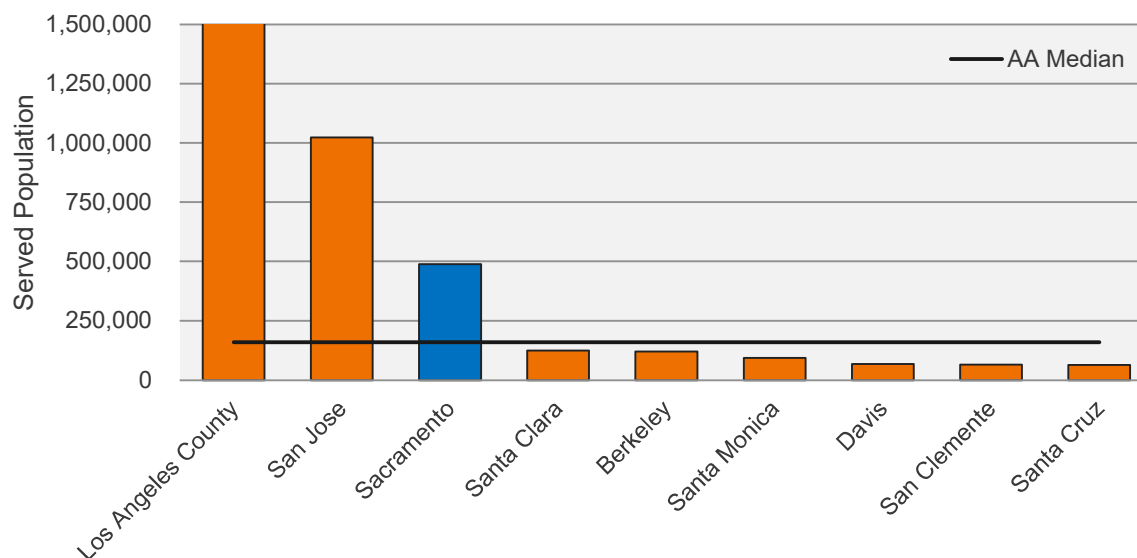


DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

While The City of Sacramento's Storm Drainage Fund's Financial Key Performance Indicators Are In Line with Peer Agencies, Revenue Constraints will Continue to Prevent Needed System Investments

It is important to understand the scale of each agency and its served population base. To that end the total population was compared for the community served by each agency¹³, as presented in figure 7. Figure 7 includes the population for each of the peer agencies, sorted in descending order; in addition, the solid line represents the median value for Fitch Ratings' AA rated utilities used in the financial benchmarking. The City's population is shaded in blue.

Figure 7: Comparison of Served Populations of Each Agency



* Note: Los Angeles County Flood District serves over 10 million residents. Figure has been scaled to allow for clear differentiation of each agency's population.

Reviewing the benchmarks of the community within which each agency operates, it is apparent that the City's DOU serves more people than the majority of the other agencies evaluated, and more people than that of the median AA rated utility. Los Angeles County has a population of over 10 million, but figure 7 is scaled to allow for clear differentiation of each agency's population.

Additionally, median household income (MHI) can be compared to illustrate one element of the socioeconomic environment in the communities served by each agency. This provides some insight into the potential challenges faced by residents in each community to pay their utility bills. Figure 8 shows a comparison of the community MHI for each of the peer agencies¹⁴ with the City's MHI shaded blue. Again, the communities are ranked in descending order based on community MHI, with the median values for the AA rated utilities from Fitch Ratings represented by the solid black line. Figure 8 also includes a dashed gray line representing the State of California MHI as a point of reference.

¹³ United States Census Bureau. *American Community Survey – Table B01003*. 2013-2017 5-year Average

¹⁴ United States Census Bureau, *American Community Survey – Table S1903*, 2013-2017 5-year Average



While The City of Sacramento's Storm Drainage Fund's Financial Key Performance Indicators Are In Line with Peer Agencies, Revenue Constraints will Continue to Prevent Needed System Investments

Figure 8: Comparison of Community Median Household Incomes (2017 Dollars)

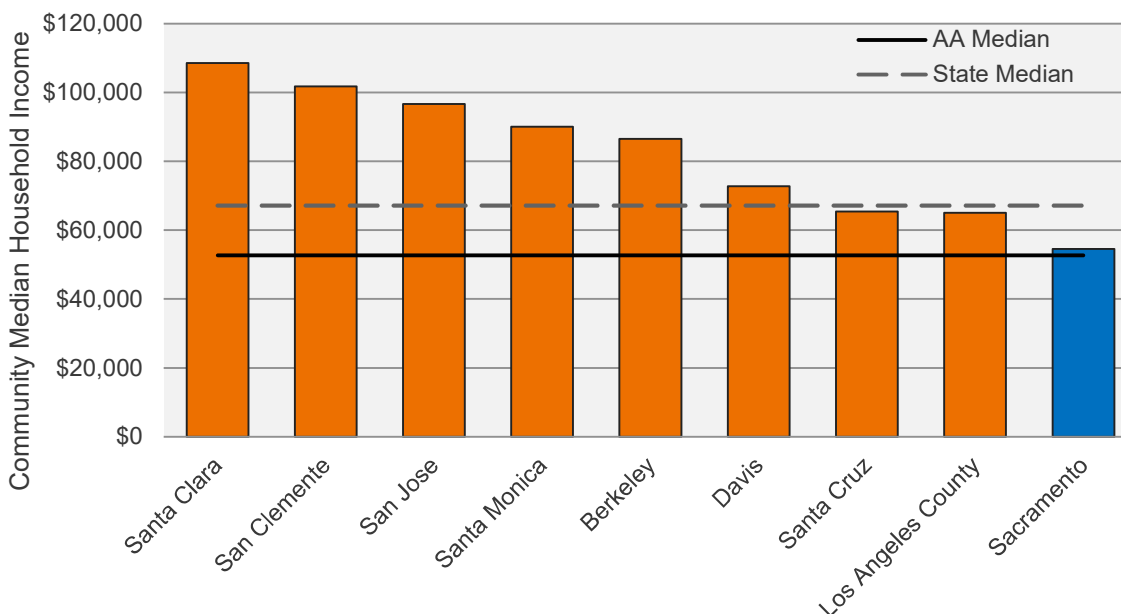


Figure 8 clearly shows that all California agencies included in the evaluation have MHIs greater than the median for AA rated utilities. However, it is worth noting that the City is one of three agencies with an MHI below the state MHI of \$67,169¹⁵ and the City's MHI is the lowest among the peer agencies. Although this information is not adjusted to reflect differences in costs of living in each community, this KPI suggests that the City's residents may be more sensitive to increases in utility rates, including Storm Drainage Fees, than in other communities as low-income households may perceive their utility bills to create greater burdens than in higher-income areas.

The City's Storm Drainage Fee was compared against the rates, fees and taxes of the peer agencies to get a sense of the cost per household for customers in the service area. It should be noted that a number of factors can influence the magnitude of the fees in any given community. Such factors include, but are not limited to:

- Levels of service
- Types of assets (e.g. pumps, levees, drainage basins, pipes, etc.)
- Scale of system
- Customer types and number of customers
- Population/housing density
- Other funding sources (e.g. general fund contributions, miscellaneous fees)
- Fiscal policies (e.g. reserves, debt financing, debt service coverage, etc.)
- Fee structures and collection methods

It should be restated that when comparing these fees between the peer agencies, Sacramento is the only agency with shared responsibility of a combined sewer system, and the only agency required to move nearly all drainage flows through pumps. These factors are significant and unique characteristics that add to the breadth of scope for the City's Storm Drainage Fund and increase the agency's revenue needs. Figure 9 presents the rates, fees or taxes charged by each of the peer stormwater agencies.

¹⁵ *Ibid.*



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Agencies often establish varying fee structures, including flat, tiered, and area-based fees. As previously presented in figure 4, the City's Storm Drainage Fee includes a tiered structure for residential customers based on the number of rooms in each household. This differs from many of the agencies listed below, which charge flat fees to all residential customers regardless of parcel or household size. To allow for comparison of the costs to residential customers under various fee structures, a typical bill was estimated for each agency. Typical bill calculation details are footnoted below.

Figure 9: Stormwater Rates, Fees and Taxes at Each Peer Agency

Stormwater Agency	Basis of Fee	Current Fee	Typical Bill
Santa Monica	Parcel Billing Units ^{16,17}	\$11.73	\$11.73
Sacramento	Household	\$11.31	\$11.31
Santa Cruz	Parcel	\$9.09	\$9.09
San Clemente	Household ¹⁸	\$8.06	\$8.06
San Jose	Household	\$7.87	\$7.87
Los Angeles County**	Square Feet Impervious ¹⁹	\$0.0021	\$7.61
Davis	Square Feet Gross Area ^{20,21}	\$0.000776	\$5.39
Berkeley	Parcel	\$3.57	\$3.57
Santa Clara	Housing Units	\$1.96	\$1.96

Further benchmarking of operations provides some high-level insight into the operating efficiency and operating cost structure of each agency. It should be noted that evaluation of operating efficiency based on CAFR data is limited by data availability and consistency in reporting. Differences in the scale, complexity, and responsibilities of each agency cannot be reflected in a single number. As such, these comparisons should be interpreted as informative, but not necessarily indicative of challenges or successes for any individual agency. Unless otherwise footnoted, all financial information used in this benchmarking is based on FY 2017-18 CAFR data.

The first operating KPI was based on total operations and maintenance (O&M) costs (e.g. personnel, services, contracts, supplies, etc.) per mile of conveyance pipe²². This metric provides insight into the operating expenditures of each agency in terms of the costs associated with maintaining buried infrastructure. Note that differences in O&M costs per mile are to be expected to reflect the unique

¹⁶ Parcel Billing Units defined by a formula inclusive of parcel size and runoff coefficients in the City's rate ordinance where the majority of single-family residences equate to one Parcel Billing Unit.

¹⁷ Santa Monica fees include a Stormwater Management User Fee and a Clean Beaches and Ocean Parcel Tax.

¹⁸ San Clemente Fees include the Clean Ocean Program Fee of \$5.10 per household in addition to a Storm Drain Fee of \$2.96 per household for single family residences.

¹⁹ Fee converted from \$0.025 per year to monthly rate of \$0.0021 per month. Impervious area per parcel used in calculating the typical bill estimated based on an analysis of the average single family parcel size in the City of Sacramento, and an estimation of typical percent impervious area based on guidance provided in the document *User's Guide for the California Impervious Surface Coefficients* published by the Integrated Risk Assessment Branch - Ecotoxicology Branch of the California Office of Environmental Health and Hazard Assessment.

²⁰ Current fee includes a Storm Sewer Fee of \$0.000232/sq. ft. and Drainage Rate of \$0.000544/sq. ft. of gross area.

²¹ Gross area per parcel used in calculating the typical bill estimated based on an analysis of the average single-family parcel size in the City of Sacramento.

²² Sacramento O&M includes the General Fund tax of 11 percent of gross revenue, less bad debt expense.



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While The City of Sacramento's Storm Drainage Fund's Financial Key Performance Indicators Are In Line with Peer Agencies, Revenue Constraints will Continue to Prevent Needed System Investments

situations in each location associated with maintaining pumping stations, levees, or other unique characteristics at each agency. Figure 10 presents a comparison of O&M costs per mile of conveyance pipe for each of the agencies reporting sufficient data for calculation. Agencies lacking the available data appear as blanks in the figure.

Figure 10: O&M Costs per Mile of Conveyance Pipe

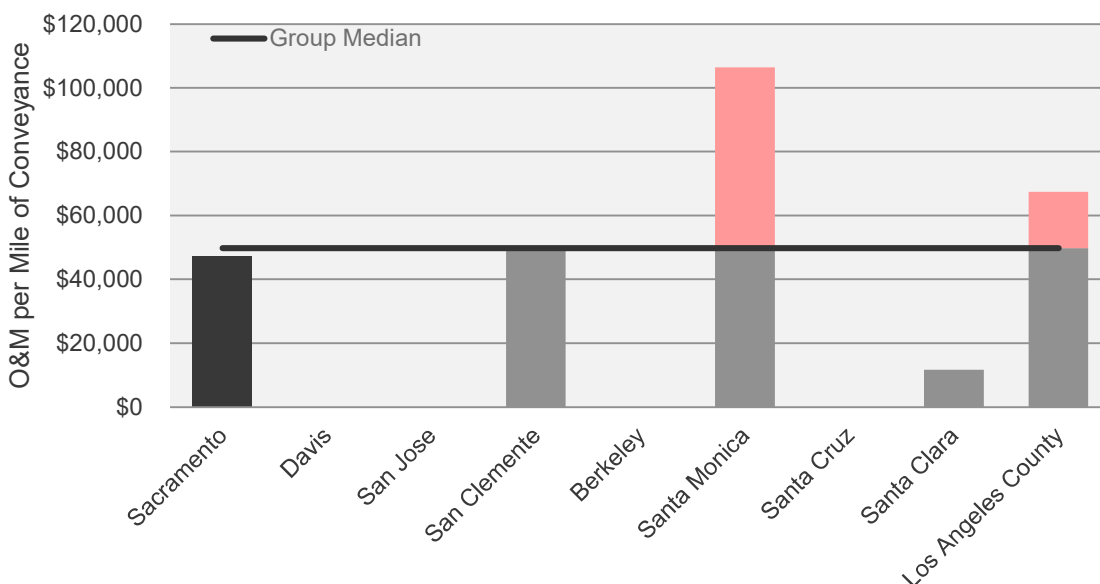


Figure 10 indicates the City falls just below the median agency in terms of O&M expenditures per mile of conveyance.

Evaluation of the percentage of O&M costs associated with personnel provides further insight into each agency's cost structure. Again, this benchmark was calculated for all agencies reporting sufficient detail in their CAFRs for categorization of O&M expenses. Figure 11 illustrates the differences in the O&M cost structure for each agency with the share of O&M expenses dedicated to personnel costs²³. Agencies lacking the available data appear as blanks in the figure.

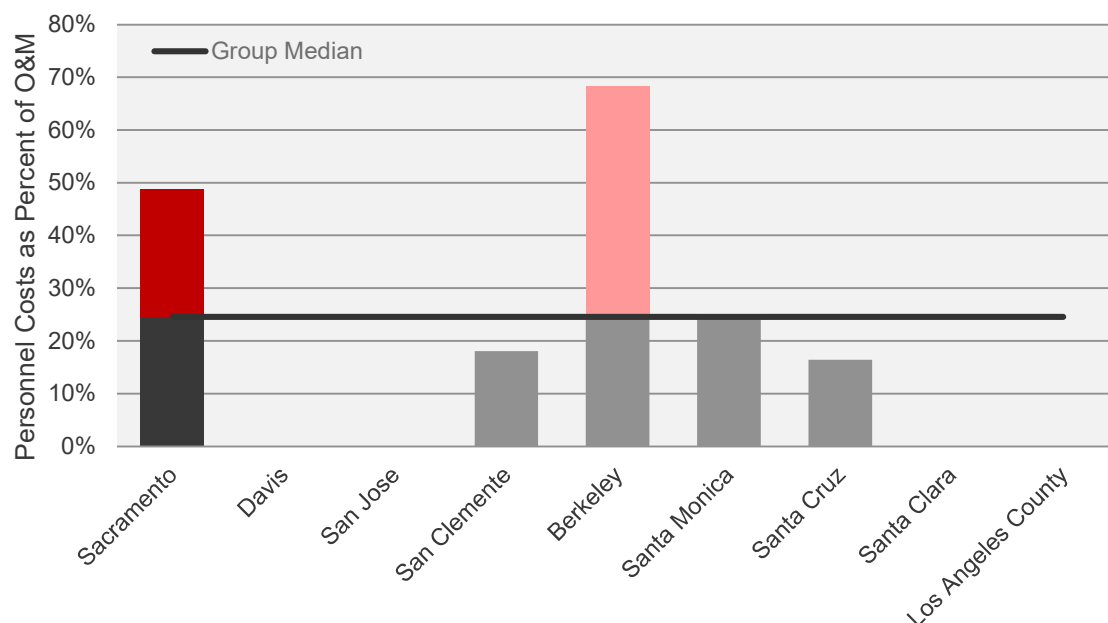
²³ Sacramento O&M includes the General Fund tax of 11 percent of gross revenue, less bad debt expense.



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

While The City of Sacramento's Storm Drainage Fund's Financial Key Performance Indicators Are In Line with Peer Agencies, Revenue Constraints will Continue to Prevent Needed System Investments

Figure 11: Personnel as a Percentage of O&M Expenditures



Note: O&M cost structures can vary due to differences in system complexity and scale, staff experience, personnel cost accounting and costs of living, among other factors.

Figure 11 indicates the City spends a greater share of their operating budget on personnel than the median of the group of peer agencies. Again, this could be due to a higher level of complexity requiring more experienced staff, a greater amount of work done by consultants, differences in cost of living, or variations in how each agency accounts for personnel costs in each enterprise fund. For example, the City's CSS and extensive pumping of storm drainage flows likely increase staffing needs over the peer agencies. Additionally, the scale of each agency differs, requiring highly variable staffing levels to administer and manage stormwater programs and maintain systems.²⁴

The City's cost structure indicates a relatively efficient operation but with a higher degree of O&M expenditures dedicated to personnel costs than peer agencies.

²⁴ San Clemente and Santa Cruz are smaller stormwater systems requiring far fewer staff to maintain fewer miles of storm drainage infrastructure.



While The City of Sacramento's Storm Drainage Fund's Financial Key Performance Indicators Are In Line with Peer Agencies, Revenue Constraints will Continue to Prevent Needed System Investments

3.3 FINANCIAL KEY PERFORMANCE INDICATORS (KPI)

Discussions were held with the City to identify financial KPIs that would provide an informative overview of the City's Storm Drainage Fund. These discussions yielded 11 financial KPIs that were calculated following guidance provided by Fitch Ratings²⁵. Financial KPIs were calculated using the balance sheet and income statements from each agency or community's CAFRs from FY 2017-18 (or FY 2015-16 to FY 2017-18 for three year averages).

Financial KPIs were grouped into three categories – cash flow and balances, capital investment, and debt coverage and obligations – to provide an overview of the Fund's cash flow and financial position, system reinvestment, and current leverage and ability to meet obligations. Interpretation of these financial KPIs is most instructive when evaluating them as a group within each category of KPIs to allow for a more comprehensive and nuanced understanding of the dynamics impacting each set of results.

3.3.1 Cash Flow and Balances KPIs

The first set of financial KPIs focused on the cash flow, available balances, and liquidity of each agency's enterprise fund²⁶. Ratios of revenues, expenses, and available cash can effectively communicate elements of an agency's existing cost structure, and the ability to make investments in the system. These benchmarks provide valuable insight into the sustainability of the current operating paradigm. Figure 12 presents the list and definitions of cash flow and balances KPIs.

Figure 12: Financial Key Performance Indicators – Cash Flow and Balances

Benchmark	Definition
Operating Margin	Net operating revenue margin (total operating revenue, less operating expenses) divided by total operating revenue.
Operating Revenue Growth, Three-Year Average	Average annual change in operating revenue over a three-year period.
Operating Expenditure Growth, Three-Year Average	Average annual change in operating expenditures over a three-year period.
Days Cash on Hand	Cash and investments divided by operating expenditures (less depreciation) multiplied by 365 to indicate financial flexibility to pay near-term obligations.
Days of Operating Revenue in Accounts Receivable	Current unrestricted accounts receivable divided by operating revenues, multiplied by 365; indicating rate at which customer revenues are received.

Figure 13 shows the results of benchmarking the peer agencies using each of the five KPIs described above. The table presents the 2019 Fitch Median for AA rated utilities as a point of comparison with the calculated value for the City's financials and the median value for the group of peer agencies. Values

²⁵ Fitch Ratings. Public Finance. (2018). *2019 Water and Sewer Medians: Special Report*.

²⁶ As described in Section 2.2, Enterprise funds are funds within the local government that are intended to be self-sustaining through dedicated sources of revenue, such as charges for service, property related fees, special taxes, etc.



While The City of Sacramento's Storm Drainage Fund's Financial Key Performance Indicators Are In Line with Peer Agencies, Revenue Constraints will Continue to Prevent Needed System Investments

Additionally, the “Sample” column illustrates the agencies exceeding or falling short of the AA rated median benchmark with agencies that exceed the benchmark represented by blue blocks and the agencies that fall short represented in red. The letters at the bottom of the Sample column correspond to the lettered list of peer agencies and enterprise funds listed in section 3.1. It should be noted that whether the goal is to achieve a KPI value greater than the target (e.g. operating margin) or below the target (e.g. three-year average change in O&M expenses), the blue and red blocks reflect agencies that achieve or fall short of the given target value, respectively.

Cash Flow and Balances KPIs	2019 Fitch Median AA Rating	Sacramento	Group Median	Sample
Operating Margin	42%	12%	2%	
3-Yr Average Annual Change in Revenue	3.9%	-0.8%	1.55%	
3-Yr Average Annual Change in O&M Exp.	3.4%	2.6%	2.6%	
Days Cash on Hand	591	379	379	
Days of Operating Rev in Accts Receivable	43	54	17	
				A B C D E F G H

Operating Revenue & Expenses

- ## Available Fund Balances

- The City's days cash on hand is currently below the median of AA rated utilities, but still exceeds one year of O&M expenditures.
- Previously discussed cost pressures and flat revenues will likely continue to decrease this balance of available cash.

Revenue and Receivables

- An elevated level of operating revenue in accounts receivable is indicative of slow payment from customers which could yield liquidity problems in times of financial stress, such as incidents of critical system failures or emergency repairs.

Increasing O&M expenditures and flat revenues will further constrain system investments as cash balances are used to meet investment needs.



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

While The City of Sacramento's Storm Drainage Fund's Financial Key Performance Indicators Are In Line with Peer Agencies, Revenue Constraints will Continue to Prevent Needed System Investments

3.3.2 Capital Investment KPIs




The second set of financial KPIs focused on the level of capital investment in each agency's system and the general condition of those assets expressed in financial terms. These KPIs use asset values, depreciation and capital investment information to illustrate the general sufficiency of system investments. figure 14 presents the list and definitions of three capital investment KPIs.

Figure 14: Financial Key Performance Indicators – Capital Investment

Benchmark	Definition
Capital Spending as a % of Depreciation	Total capital spending as a percentage of current-year depreciation.
Free Cash as a % of Depreciation	Current surplus revenue after payment of operating expenses, debt service and operating transfers out divided by current-year depreciation; Indicates financial capacity to maintain facilities at current level of service from existing cash flows.
Age of Plant	Age of facilities and potential deferred maintenance estimated based on total accumulated depreciation divided by annual depreciation expense.

Figure 15 presents the results of benchmarking capital investment levels in the same format described in Section 3.3.1. Gaps in the "Sample" column indicate insufficient data was available to calculate the KPIs of interest for some peer agencies.

Figure 15: Summary of Capital Investment Benchmarks

Capital Investment KPIs	2019 Fitch Median AA Rating	Sacramento	Group Median	Sample
Capital as Percent of Annual Depr.	157%	15%	72%	
Free Cash as Percent of Annual Depr.	124%	14%	41%	
Age of Plant	16	19	21	
				A B C D E F G H I



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

While The City of Sacramento's Storm Drainage Fund's Financial Key Performance Indicators Are In Line with Peer Agencies, Revenue Constraints will Continue to Prevent Needed System Investments

A review of the capital investment KPIs in figure 15 highlight several important takeaways:

General Capital Investment

- The City and the group median both fail to reach the level of the median AA rated utilities in all three benchmarks, illustrating a common trend of under-investment in stormwater infrastructure.
- At approximately 10 percent of the Fitch Median benchmark, the City's capital investment is particularly low.

Investment vs. Depreciation

- The City's level of capital investment is greatly lower than annual depreciation, indicating the system is aging faster than assets are being rehabilitated or replaced.

Aging Infrastructure

- The City and all but one peer agency have an overall system age greater than the median of AA rated utilities.

An already aged stormwater system will continue to deteriorate as cashflow shortfalls restrict the rate of system investment to levels below the rate of depreciation, thereby increasing the risk of critical system failures.

3.3.3 Debt Coverage and Obligations KPIs

The final list of financial KPIs summarizes each agency's ability to cover annual debt payments in addition to the total level of outstanding obligations. This set of benchmarks is important in illustrating an agency's capacity to leverage debt to meet future investment needs. Figure 16 lists the three debt-related KPIs and definitions.

Figure 16: Financial Key Performance Indicators – Debt Coverage and Obligations

Benchmark	Definition
All-In Debt Service Coverage	Revenue available for debt service divided by annual debt service, indicating ability for current revenues net of operating expenses to meet the current year debt service.
Total Outstanding Long-Term Debt per Customer	Total outstanding debt divided by the number of served customers, indicating existing debt burden of the storm drainage utility attributable to each customer served by the utility.
Debt to Funds Available for Debt Service (FADS)	Total amount of outstanding debt divided by the total funds available for debt service, indicating debt leverage relative to existing funds available for debt service.

Figure 17 presents the results of benchmarking debt-related KPIs for the comparable agencies in the same format described in Section 3.3.1. In this category of KPIs the "Sample" column becomes sparsely populated because very few stormwater agencies have issued debt for capital needs.



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

While The City of Sacramento's Storm Drainage Fund's Financial Key Performance Indicators Are In Line with Peer Agencies, Revenue Constraints will Continue to Prevent Needed System Investments

Figure 17: Summary of Debt Coverage and Obligations Benchmarks

Debt KPIs	2019 Fitch Median AA Rating	Sacramento	Group Median	Sample								
All-In Debt Service Coverage Ratio	2.5	1.4	1.4	■			■	■				
Outstanding Debt per Customer	\$1,731	\$58	\$58	■			■	■				
Debt to FADS	5.2	1.7	1.7	■			■				■	
				A B C D E F G H I								

Debt related benchmarks indicate a few trends in the group of peer agencies:

General Leveraging of Debt for Capital Investments

- Very few peer agencies have issued debt to meet system investment needs, and those that have issued debt have done so sparingly.

Revenue Sufficiency for Debt Service Coverage

- The City currently meets its debt coverage needs and debt service coverage requirements with annual cash flows, but falls short of the median for AA rated utilities.

City Summary of Existing Debt Leverage

- The City meets or exceeds all but one debt-related benchmarks for AA rated utilities.

The City has leveraged a low degree of debt to meet capital investment needs and is meeting its current payment obligations with annual cash flows.



While The City of Sacramento's Storm Drainage Fund's Financial Key Performance Indicators Are In Line with Peer Agencies, Revenue Constraints will Continue to Prevent Needed System Investments

3.4 CONCLUSIONS & RECOMMENDATIONS

A review of the takeaways from each of the benchmarking categories yields a simple but compelling summary of the historical and current financial dynamics driving the City's Storm Drainage Fund sustainability:

Cash Flow and Balances

- Existing cash flows leave minimal revenue available for capital investments, requiring drawdowns from balances to make major system investments.

Capital Investment

- Continued reliance on limited available cash for system investments will lead to further deterioration of Storm Drainage Fund assets, increasing the risk of critical system failures, as constrained cash flows leave investments short of the rate of depreciation.

Debt Coverage and Obligations

- The City has historically leveraged minimal debt to meet investment needs, leaving capacity for further debt issuances for necessary system investments if sufficient revenue is made available to support the associated debt service.

Although capacity exists for further use of debt to meet investment needs, flat revenues and increasing O&M expenditures will constrain the City's ability to meet greater debt obligations in the future, particularly as the aging system increases the need for emergency repairs.



The Department of Utilities' Storm Drainage Infrastructure Has an Estimated Valuation of Approximately \$8.1 Billion; However, Critical Asset Information is Lacking

4.0 THE DEPARTMENT OF UTILITIES' STORM DRAINAGE INFRASTRUCTURE HAS AN ESTIMATED VALUATION OF APPROXIMATELY \$8.1 BILLION; HOWEVER, CRITICAL ASSET INFORMATION IS LACKING

Stantec performed a preliminary valuation of the City's hard assets owned by the Storm Drainage Fund that provide drainage-related service. This valuation reflects the replacement cost of the City's storm drainage infrastructure in 2019 dollars. The valuation was performed using industry standard cost estimating practices and data provided by the Department of Utilities.

4.1 CITY OF SACRAMENTO STORM DRAINAGE ASSET VALUATION

Unit costs used to estimate the valuation of the Storm Drainage Fund's infrastructure assets were developed using engineering judgement, recent project experience in the state of California, and RSMeans²⁷ cost estimating guidance. Additionally, vehicle and equipment valuations were estimated based on the vehicle and equipment register provided by DOU which included the purchase date, original cost and expected useful life for the vast majority of listed assets. These costs were escalated to 2019 dollars to estimate the total value of vehicle and equipment assets. The unit costs, quantities and estimated valuation are presented for each asset category in figure 18.

²⁷ RSMeans Heavy Construction Cost Data. Norwell, MA. RSMeans, 2019.



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

The Department of Utilities' Storm Drainage Infrastructure Has an Estimated Valuation of Approximately \$8.1 Billion; However, Critical Asset Information is Lacking

Figure 18: Asset Valuation Estimate by Asset Category

	Asset Class	Costing Parameter	Unit Cost	Unit	Quantity	Estimated Asset Value
1	Drainage Detention Basins	\$/unit storage volume	\$14.29 ²⁸	cubic feet	146,324,750	\$2,090,981,000
2	Floodgates	\$/gate	varies by type ²⁹	each	175	\$2,689,000
3	Control Valves	diameter	\$2,500 ³⁰	each	202	\$505,000
4	Discharge Points	cost per facility	\$100,000 ³⁰	each	1,243	\$124,300,000
5	Inlets	\$/inlet	\$8,500 ³⁰	each	39,089	\$332,257,000
6	Mains- Separate Storm Drainage	\$/in-lf	\$540 ³⁰	linear feet	4,488,000	\$2,423,520,000
7	Mains – Combined Sewer	\$/in-lf	\$600 ³⁰	linear feet	1,232,764 ³¹	\$739,659,000
8	Mains – Separate Storm Sewer that flows into Combined Sewer	\$/in-lf	\$540 ³⁰	linear feet	42,243	\$22,812,000
9	Manholes	\$/manhole	\$8,000 ³⁰	each	29,120	\$232,960,000
10	Sump Stations	varies	\$1M to \$100M ³²	each	126	\$2,087,586,000
11	Relief Wells	\$/well	\$59,000 ³⁰	each	83	\$4,897,000
TOTAL DRAINAGE INFRASTRUCTURE VALUATION						\$8,062,166,000
12	Vehicles & Equipment	Total	Replacement Cost New		158	\$11,395,000
TOTAL DRAINAGE FUND ASSET VALUATION						\$8,073,561,000

The estimates presented in figure 18 should be understood as high-level estimates with a high degree of uncertainty due to a lack of critical asset information. This is discussed further in the next section.

²⁸ The unit cost of drainage detention basin replacement is estimated as \$14.29 per cubic yard of basin volume using Table 1. City of Los Angeles SCM Costs Survey Results (Source: "Los Angeles Sustainable Water Project: Ballona Creek Watershed", UCLA, November 2015).

²⁹ A conservative cost of \$3,000 per gate installed was estimated for flap gates, \$24,000 for sluice gates smaller than 36", \$56,000 for sluice gates larger than 36", \$10,000 for metal flood gates, and \$10,000 for wooden flood gates, using engineering judgement and published data.

³⁰ Unit cost was estimated based on prior Stantec project experience, vendor quotes, and RS Means Estimating.

³¹ As directed by City of Sacramento, 50 percent of the combined sewer system mains and combined sewer sump stations were allocated to the drainage system valuation.

³² Construction Cost obtained from City of Tracy Citywide Water System Master Plan, 2012; https://www.ci.tracy.ca.us/documents/Appendix_G_Cost_Estimating.pdf



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

The Department of Utilities' Storm Drainage Infrastructure Has an Estimated Valuation of Approximately \$8.1 Billion; However, Critical Asset Information is Lacking

This valuation estimate generally aligns with an Association for the Advancement of Cost Engineering (AACE) International Class 5 Cost Estimate. Class 5 estimates are generally prepared based on very limited information, and subsequently have wide accuracy ranges. Typically, engineering is from two to ten percent complete. These estimates are often prepared for strategic planning purposes, market studies, assessment of viability, project location studies, and long-range capital planning. Virtually all Class 5 estimates use stochastic estimating or industry standards such as cost curves, capacity factors, and other parametric techniques. Expected accuracy ranges are from –20 to –50 percent on the low side and +30 to +100 percent on the high side, depending on technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination.

The estimated valuation of the City's Storm Drainage Fund assets ranges from \$4.0 billion to \$6.5 billion on the lower range and \$10.5 billion to \$16.2 billion on the higher range. The estimated valuation of the City's Storm Drainage Fund assets total approximately \$8.1 billion.

4.2 CRITICAL INFORMATION RELATED TO STORM DRAINAGE ASSETS IS LACKING

Stantec commenced their valuation process by soliciting data from the City's DOU. The following information was obtained from DOU.

- GIS database of DOU drainage assets;
- Detention basin inventory;
- Water Quality Detention Basin Condition Assessment & Maintenance Prescriptions (2017); and
- Vehicle & equipment asset register.

Review of the data above clearly indicated that the GIS database of the City's drainage asset register was lacking critical information such as installation/construction date, expected useful life, original cost, material, size, capacity, and application or intended use (e.g. flood control basin, water quality basin, etc.); it should be noted that the vehicle and equipment asset register appeared to generally contain the necessary critical information. Where information was unavailable, assumptions or estimates were made to arrive at a reasonable and conservative estimate.

This lack of asset information made estimation of the approximate system age and forecasting of replacement cycles based on asset ages impossible. Expanding the existing asset register to include the critical information described above would enable the department to accurately estimate the approximate age of the system. By completing this effort, DOU would have the necessary information to better estimate the total system value, in addition to projecting a potential replacement cycle and cost schedule based on asset values, asset ages and expected useful lives.



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

The Department of Utilities' Storm Drainage Infrastructure Has an Estimated Valuation of Approximately \$8.1 Billion; However, Critical Asset Information is Lacking

DOU staff recognize this lack in asset information for Storm Drainage Fund assets and have been updating asset registers with the pertinent information for more recently installed/constructed assets. Updates to the City's historical Storm Drainage Fund asset register has been included in DOU's Master Plan; however, prioritizing investments in infrastructure and limited available funds have restricted DOU from advancing this initiative. Recognition of this information gap served as part of the impetus for this system valuation analysis to produce a general understanding of the approximate value of system assets.

Updating the Storm Drainage Fund's asset register to include detailed asset dimensions and characteristics, in addition to costs, installation/construction date and expected useful life would allow for improved valuation estimates and forecasts of replacement cost schedules to evaluate capital investment sufficiency.



5.0 THE STORM DRAINAGE FUND CANNOT MEET SERVICE LEVEL GOALS WITH ITS CURRENT SERVICE FEES

5.1 MODELING APPROACH OVERVIEW

As part of the Storm Drainage Fund Review, a long-term fiscal forecast was developed using Stantec's Financial Analysis and Management System (FAMS). This forecast was developed to evaluate the sufficiency of revenue generated from Storm Drainage Fees to meet the Storm Drainage Fund's operating and capital spending needs as well as City and DOU financial policies and targets. This analysis primarily relied upon data provided by DOU staff, such as operating budgets, capital improvement plans, and fiscal policies. Meetings were held with DOU and City Auditor's Office staff to refine key assumptions and inputs to establish an accurate baseline reflecting the fund's current and forecasted operational and financial position. This process also included reviews of alternative multi-year planning scenarios and examined the impact of changes to key assumptions and inputs on forecast outcomes. This scenario analysis ultimately included projections of required increases to Storm Drainage Fees as well as projection of the bill impacts to customers associated with each alternative. Details regarding source data, assumptions, targets and policies, and scenario analyses are discussed in the following sections.

It should be noted that any fee increases the City proposes for adoption would need to meet the substantive and procedural requirements set forth under Proposition 218, discussed in section 2.3. Alternatively, the City could attempt to adopt fee increases with a "majority protest" vote similar to water, sewer, and solid waste fees as proposed under SB 231 and discussed in section 2.3.1.

5.2 DATA AND ASSUMPTIONS

Source datasets for the fiscal forecasts were provided by DOU staff. These datasets provided the basis for forecasts of both the current underfunded operating paradigm, as well as alternative forecast scenarios. This information was reviewed with staff from both DOU and the City Auditor's Office to ensure the information was accurate, complete, and appropriate for the purposes of this Review. City Auditors participated in discussions of plan alternatives, provided guidance, and ensured independence in the analysis. Critical inputs and source datasets provided by DOU are described in figure 19.



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

The Storm Drainage Fund Cannot Meet Service Level Goals With Its Current Service Fees

Figure 19: Fiscal Forecast Inputs and Source Data Descriptions

Beginning Balances	<ul style="list-style-type: none">• FY 2018-19 Trial Balance• FY 2018-19 Fund Balance Worksheet
Operating Expenses	<ul style="list-style-type: none">• FY 2015-16 through FY 2018-19 Budget and Actual Expenses• FY 2019-20 Budgeted Expenses
Operating Revenues	<ul style="list-style-type: none">• FY 2015-16 through FY 2018-19 Budget and Actual Revenues• FY 2019-20 Budgeted Revenues
Existing Debt Service	<ul style="list-style-type: none">• Amortization schedules for outstanding bonds and loans
Operating Fund Reserve Target	<ul style="list-style-type: none">• 4-months of operations & maintenance expenses• Operating Reserve Guideline: Water, Wastewater & Storm Drainage Funds
Current Capital Investment Plan	<ul style="list-style-type: none">• Storm Drainage Fund (Fund 6011) Revenue and Expenditure Five-Year Forecast
Recommended Capital Investment Plan	<ul style="list-style-type: none">• 30-Year Best Management Practices Capital Investment Plan
Multi-Year Operating Projects	<ul style="list-style-type: none">• Storm Drainage Fund (Fund 6011) Revenue and Expenditure Five-Year Forecast
Escalation Factors and Execution Rates	<ul style="list-style-type: none">• FY 2019 - FY 2023 Rate Model Cost Drivers - January 2018
Customer Account Growth	<ul style="list-style-type: none">• Utility Customer Service Agreements Analysis for Fiscal Years 2015-16 through 2018-19

Additional estimates and assumptions were discussed and reviewed with DOU and City Auditor's Office staff. These estimates and assumptions were used to produce a conservative forecast of the Storm Drainage Fund's long-term sustainability. Key assumptions are outlined in figure 20.



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Figure 20: Baseline Assumptions Applied in Fiscal Forecast

Category	Assumption	Source or Basis
Annual Storm Drainage Customer Growth Rate	1.00% per year	Utility Customer Service Agreements Analysis ³³
Operations & Maintenance Budget Execution Rate³⁴	95% for non-labor expenditures	Budget and Actual Expense History
CIP Escalation Rate	3.50% starting in FY 2019-20	<i>FY 2019 - FY 2023 Rate Model Cost Drivers - January 2018</i>
Multi-Year Operating Projects Execution Rate	75% per year	<i>FY 2019 - FY 2023 Rate Model Cost Drivers - January 2018</i>
Annual Grant Funding	\$700,000 per year (with capital cost escalation)	Annualized history of grant funding during the previous five years
Annual Interest Earnings Rate	1.00% per year	<i>FY 2019 - FY 2023 Rate Model Cost Drivers - January 2018</i> (Investment Pool A interest rate)
General Fund Transfer³⁵	11% of gross revenues less bad debt expense per year	Current operating budget and forecasted revenue
Capital Funding Sources	100% cash-funded CIP	Discussions with DOU staff
Near Term Critical CIP	\$2.5 million in FY 2019-20 \$5.4 million in FY 2020-21 \$5.0 million in FY 2021-22	Discussions with DOU staff

³³ This analysis indicated a recent average growth rate of approximately 1.1-1.2 percent; this trend was rounded down to 1.0 percent as a conservative estimate of forecasted growth.

³⁴ Budget execution rates represent the typical relationship between actual expenditures relative to budgeted expenditures, yielding a value less than 100 percent when actual expenditures are less than budgeted, and greater than 100 percent when expenditures exceed budgets.

³⁵ A current legal case is challenging the 11 percent tax transfer from enterprise funds to the general fund. This tax transfer represents approximately \$4 million per year from the Storm Drainage fund during the period of FY 2015-16 to FY 2018-19. The pending case may result in the City being required to cease this transfer from enterprise funds to the general fund. However, due to the variable nature of the pending case, and maintaining the conservativeness of the analysis, we have assumed that this mandated transfer will stay throughout the forecast period.



The Storm Drainage Fund Cannot Meet Service Level Goals With Its Current Service Fees

5.3 SCENARIO 1 – CURRENT UNDERFUNDED LEVEL OF SERVICE

The baseline financial management scenario evaluated in this analysis consisted of a forecast of the current underfunded level of service. This scenario represents a continuation of the current underfunded level of service operating paradigm wherein system investments are limited by revenue constraints. This plan includes the baseline information outlined in figure 19 and the assumptions presented in figure 20. The CIP forecasted in this scenario relies on the current five-year forecast, which assumes a near term average cash investment of \$4.3 million per year for the periods FY 2019-20 through FY 2021-22, followed by an annual flat rate investment of \$250,000 of system capital over the remainder of the forecast period, for a long-term average CIP of approximately \$0.9 million per year from FY 2019-20 through FY 2038-39. These numbers are based on planned and proposed projects in the near term (which are subject to change), and a reduced level of investment in the long term due to recognized funding constraints. Additionally, the forecast includes approximately \$2.4 million per year in multi-year operating projects (MYOPs)³⁶ (average \$3.2 million per year from FY 2019-20 through FY 2038-39 in budgeted MYOPs, adjusted for 75 percent execution, as described in figure 20).

This scenario provided a diagnostic view of the Storm Drainage Fund's sustainability under a continuation of the current underfunded level of service. This scenario is recognized by DOU staff to be unsustainable due to underinvestment in the system increasing the risk of critical system failures. The results of the capital spending benchmark review confirm the inadequacy of current spending patterns.

Despite the noted insufficiency, Scenario 1 is still worth attention to determine how long existing cash flows and balances could sustain even this underfunded level of investment. Figure 21 presents a forecast of the Storm Drainage Fund cash balances under this underfunded level of service forecast scenario. The blue columns in the figure represent the forecasted year-end cash balances. These balances can be compared to the black line, representing the previously described Storm Drainage Fund operating reserve target of four-months of O&M expenses.

³⁶ Storm Drainage Fund (Fund 6011) Revenue and Expenditure Five-Year Forecast



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Figure 21: Storm Drainage Operating Fund Balance – Current Underfunded Level of Service

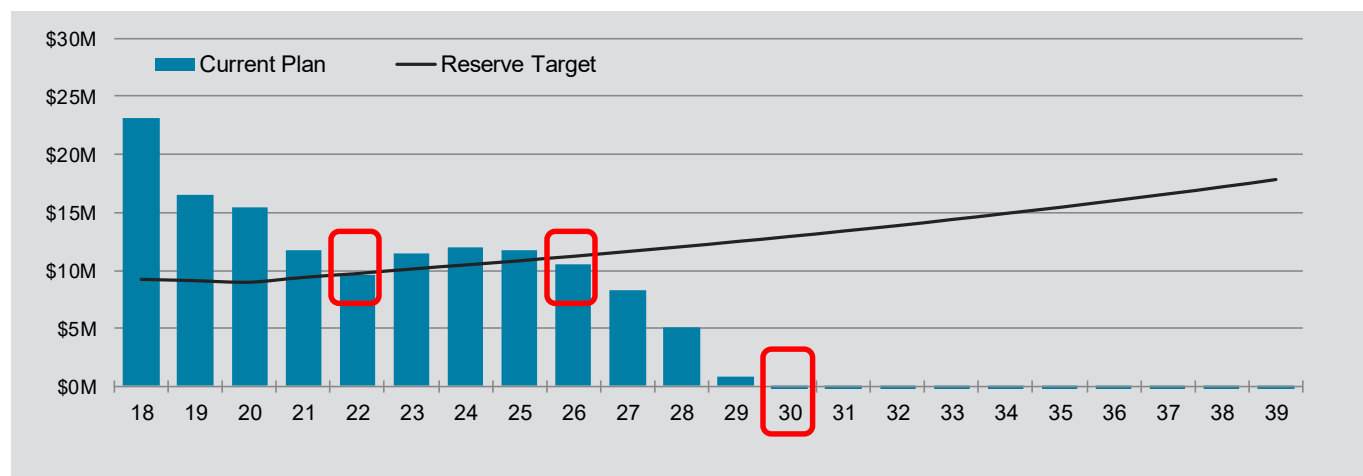


Figure 21 clearly demonstrates the revenue inadequacy of this scenario. Not only does this scenario fail to generate revenues sufficient to address much needed system investments, but it also results in drawdowns of fund balances just below the reserve target in FY 2021-22 before rebounding for three years, and then falling and remaining below the target in FY 2025-26. Fund balances are forecasted to be drawn down to zero by FY 2029-30. This scenario also assumes no catastrophic flood events, critical system failures, changes in regulatory requirements or other unexpected capital needs; if any of these events occurred, a complete drawdown to zero could occur prior to FY 2029-30.

Recognizing the scenario forecast above assumes the Storm Drainage Fee will remain unchanged, this scenario could also be evaluated to understand the level of fee increases needed to meet the funding needs and targets of this current underfunded level of service scenario. Calculating the annual fee increases needed to sustain this underfunded operating scenario, fee increases would begin in FY 2025-26 and would average approximately 2.7 percent through the remaining years of the forecast period (FY 2038-39). These are largely inflationary increases to keep up with capital cost escalation and O&M inflation. These increases would maintain the fund balance at the target level and would allow for a continuation of the historical and currently planned capital investment levels, which are insufficient. Although the magnitude of the calculated fee increases is small, this scenario shows that rate increases will be necessary even under a scenario that does not support the capital investment needs of the system and increases the risk of critical infrastructure failures each year.

Continuation of the current underfunded level of service operating paradigm will force fund balances to remain below targets by the end of FY 2025-26 and exhaust all available cash by FY 2029-30. Under the current operating paradigm, fee increases would still be needed just to continue at the insufficient level of service.



*The Storm Drainage Fund Cannot Meet Service Level Goals With Its Current Service Fees***5.4 ENHANCED LEVELS OF SERVICE SCENARIOS**

Additional scenarios were developed to generate a forecast of the true funding needs of the Storm Drainage Fund. These scenarios incorporated the 30-year best management practices CIP provided by DOU, which was forecast to commence in FY 2021-22. This recommended CIP increased the average annual capital investment level from approximately \$0.5 million per year to approximately \$34 million per year from FY 2021-22 through the end of the projection period in FY 2038-39. This CIP is intended to meet the true investment needs of the storm drainage system, as identified by DOU engineers. Additionally, based on the provided 30-year best management practices CIP and discussions with DOU staff, it was determined that the Storm Drainage Fund was forecasted to meet approximately 50 percent of the projected CSS capital investment needs of \$9.5 million per year in the first year of the proposed best management practices CIP. Existing MYOPs were left unchanged under this scenario, though an increased level of vehicle and equipment replacements were added to match the forecasted replacement schedule under the level of service enhancements, as described below.

Additionally, further enhancements to the Storm Drainage Fund's capital and O&M needs were identified through a thorough review of provided data and discussions with DOU and City Auditor's Office staff. These reviews and discussions were targeted at enhancing levels of service and, to the extent possible, quantifying the capital and O&M costs associated with meeting those levels of service.

Stantec engineers worked with DOU staff to identify additional capital investment needs to ensure regulatory compliance, meet water quality targets, and adhere to timely vehicle and equipment replacement schedules. Information necessary to estimate the costs and schedules associated with achieving these enhancements were provided by DOU staff. These capital investment enhancements are outlined in figure 22.

Figure 22: Capital Investment Level of Service Enhancements Outside the 30-Year Best Management Practices CIP

Level of Service Enhancement	Basis of Cost Estimates	Estimated Annual Cost Impact
Water Quality Program Enhancements – Priority Pollutants	Trash capture amendments and green infrastructure	\$1.3-\$1.5 million
NPDES Permit Compliance	Multiple discharge elimination, runoff control and monitoring program enhancements	\$2.4-\$3.0 million
Recommended Vehicle and Equipment Replacement	Vehicle and equipment replacement schedule	Average \$1.5 million
TOTAL		\$6.0 million



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In addition to the identified capital investment increases, additional O&M costs were identified and estimated to improve maintenance of storm drainage infrastructure. These enhancements are described in figure 23.

Figure 23: Operations & Maintenance Level of Service Enhancements Outside the 30-Year Best Management Practices CIP

Level of Service Enhancement	Basis of Cost Estimates	Estimated Annual Cost Impact
Increase frequency of CCTV inspections ³⁷	Increased staffing and additional equipment	\$1.2 million
Increase frequency of drainage cleaning ³⁸	Increased staffing and additional equipment	\$1.3 million
Additional NPDES compliance activities	Increased staffing	\$0.5 million
Additional staffing for priority pollutant program needs (e.g. trash capture program)	Increased staffing	\$0.2 million
TOTAL		\$3.2 million

Discussions with DOU staff identified additional operational and capital needs that were unable to be quantified due to a lack of available or accurate data. Although sufficient data was not available to allow for estimation of the cost impacts associated with these needs, it is safe to say implementing these service enhancements would further increase the funding needs of the Storm Drainage Fund. These needs are identified in figure 24.

³⁷ DOU staff provided two tiers of CCTV enhancements in terms of life cycles and associated annual costs; 22 or 11 years. For purposes of this analysis, Stantec assumed the City would aim to meet the 11-year life cycle.

³⁸ DOU staff provided two tiers of drainage cleaning enhancements in terms of life cycles and associated annual costs; 11.5 or 7.5 years. For purposes of this analysis, Stantec assumed the City would aim to meet the 7.5-year life cycle.



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Figure 24: Additional Unquantified Funding Needs

Level of Service Enhancement	Basis of Estimated Cost Impact	Source
Operations and maintenance costs of upgrading and maintaining water quality basins converted from dry basins to multi-use basins.	Dry basin O&M estimated at \$5,000 per acre; multi-use basin O&M estimated at \$15,000 per acre. Cost impacts were not quantified due to insufficient quantity and size data.	DOU Staff
Capital costs for implementation of strategies to meet bacteria Priority Water Quality Constituent requirements (American River)	Not quantified	DOU Staff
Operations and maintenance costs of green infrastructure measures that may help meet mercury and pesticide Priority Water Quality Constituent reduction goals	Not quantified	DOU Staff
Formalize policies regarding allocations of operations and maintenance costs, including planned and unplanned rain patrols	Not quantified	DOU Staff
Flood Control Channel Rehabilitation/Replacement Program	Not quantified – cost of proactive lining is \$115/linear foot of channel compared to \$640/linear foot cost of lining when performed reactively	DOU Staff
Modifications to DOU cash reserve policies	Not quantified	DOU Staff

DOU staff should formalize a plan of level of service enhancements, develop cost estimates for each activity, and conduct cost-benefit analyses to prioritize the most viable and beneficial enhancements.



The Storm Drainage Fund Cannot Meet Service Level Goals With Its Current Service Fees

5.5 SCENARIO 2 – MEET FORECASTED LEVEL OF SERVICE TARGETS AS SCHEDULED IN THE 30-YEAR BEST MANAGEMENT PRACTICES CIP

The second scenario layered the aforementioned level of service enhancements and recommended 30-year CIP onto the current underfunded level of service forecast scenario discussed in section 5.1 with an implementation year of FY 2021-22. This scenario was first evaluated in the same diagnostic view, assuming no changes to the current Storm Drainage Fee.

Beginning with a view of the Storm Drainage Fund's available fund balance, figure 25 again presents the forecasted end of year fund balance and reserve targets under Scenario 2.

Figure 25: Storm Drainage Operating Fund Balance – Unfunded Level of Service Enhancements

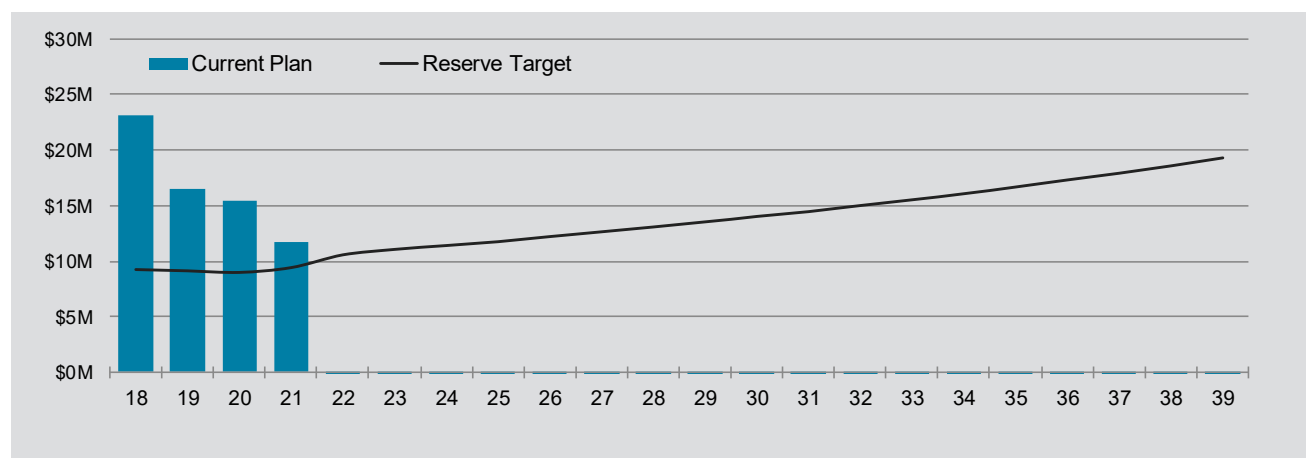


Figure 25 clearly illustrates the inability of current balances and cash flows to meet the full funding needs of the Storm Drainage Fund as balances are immediately exhausted upon commencement of the recommended CIP and level of service enhancements.

Enhancing levels of service and implementing the full recommended 30-year CIP in FY 2021-22 would immediately exhaust all available cash reserves without implementing fee increases.

The financial dynamics of this scenario can be further explored by evaluating the funded and unfunded annual expenditures. Figure 26 presents the annual expenditures in columns with annual revenues represented by the yellow line, and the additional use of available fund balances represented by the red line. The expenditure columns are shaded by expenditure category, with the funded share of those expenses represented by a solid fill and the unfunded share represented by the hatched fill. Additionally,



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the cumulative funding gap over the full projection period is quantified and presented in the upper left corner.

Figure 26: Storm Drainage Funding Gap – Full Level of Service Enhancements

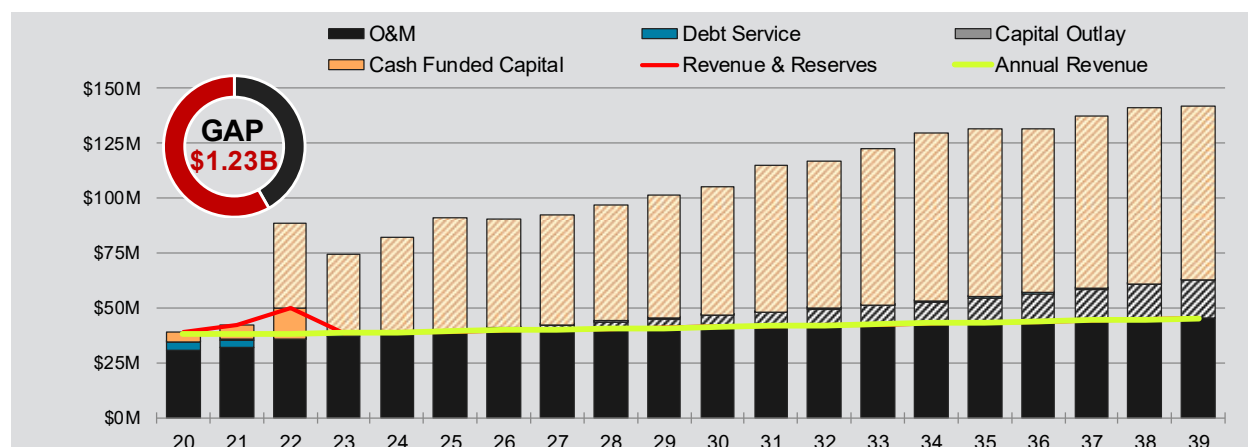


Figure 26 reinforces the findings from figure 25 as the unfunded share of capital in FY 2022-23 exceeds the entirety of the available fund balance in figure 25. From that point forward, only annual revenues are available to meet annual expenditures, and the unfunded share of annual expenditures increases until even O&M expenses are no longer fully funded in FY 2024-25. The total cumulative funding gap under this scenario grows to \$1.23 billion by FY 2038-39.

Following the same process discussed in section 5.1, the magnitude of fee increases necessary to fully fund all expenditure requirements and maintain sufficient reserves could be calculated. Under Scenario 2, this forecast requires a fee increase of approximately 129 percent in FY 2021-22, followed by an average annual fee increase of approximately 2.4 percent throughout the remainder of the forecast period. While this level of revenue increase would allow an enhanced level of service to be fully funded, DOU's ability to conduct the necessary plans and studies, increase and allocate staff, and manage this increased level of project execution within the identified schedule would not be feasible. Additionally, this magnitude of fee increase would likely meet severe opposition from stakeholders as fees would more than double in one year. As such, alternative scenarios were analyzed to increase levels of service gradually while altering key variables.

Fee increases required to meet this immediate increase in expenditures would more than double the Storm Drainage Fee in FY 2021-22 with an immediate Storm Drainage Fee increase of approximately 129 percent and cumulative increases of approximately 174 percent by the end of the decade (FY 2029-30).



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5.6 SCENARIO 3 – MEET FORECASTED LEVEL OF SERVICE TARGETS BY FY 2030

Scenario 3 includes a ramping up of the best management practices 30-year CIP over a multi-year period. Rather than immediately implementing the 30-year CIP in FY 2021-22 at 100 percent execution, this scenario commences at 20 percent execution of the proposed CIP in FY 2021-22, increasing by 10 percentage points each subsequent year until it reaches 100 percent execution by FY 2029-30. This ramp-up strategy allows DOU to increase staff and capacity to deliver projects while phasing in higher levels of spending to reduce the immediate, significant impacts to ratepayers.

This gradual approach to implementing the proposed CIP and level of service enhancements was deemed to be a more viable option for the City and its customers. Additionally, an important factor that was considered under this scenario is the allocation of the combined sewer system (CSS) capital and O&M costs between the Storm Drainage Fund and Wastewater Fund. Historically, the policy developed by DOU stated that the Storm Drainage Fund was to cover approximately 75 percent of the CSS-related O&M and capital costs. Supporting information describing the basis for this policy was not available, and it is worth noting that there is no singular standard approach to determining an appropriate cost allocation basis. In reality, the desired level of CSS capital funding contributions from the Storm Drainage Fund has not been met in recent years due to insufficient Storm Drainage Fee revenues. Given this uncertainty, the following sections focus on quantifying the relative impact of this forecast scenario under varying levels of CSS cost allocations.

5.6.1 Scenario 3a – Meet Targets by FY 2030, Existing Combined Sewer System Cost Allocations

As stated in section 5.4, the 30-year best management practices CIP assumes the Storm Drainage Fund will meet approximately 50 percent of the projected CSS capital investment needs of \$9.5 million per year. This amounted to a total of \$4.75 million per year in CSS capital expenditures from the Storm Drainage Fund³⁹. Again, this is less than the historically stated goal of meeting 75 percent of the City's CSS expenditures with Storm Drainage Fund revenues but attempts to strike a balance between the 75 percent goal, and the capacity of the Storm Drainage Fund to support the CSS. Additionally, the Storm Drainage Fund has achieved its goal of covering 75 percent of CSS-related O&M. The Storm Drainage Fund's allocation of CSS-related O&M was held consistent at 75 percent for this forecast scenario.

This scenario assumes the Drainage Fund will take a gradual, ramped up approach to implementing the recommended 30-year CIP and level of service enhancements. This includes ramping up to meeting 50 percent of CSS capital cost allocations by FY 2029-30. This scenario also assumes the Drainage Fund's allocation of CSS operating costs would continue at the average rate of 75 percent. Based on these inputs and assumptions, the rate plan presented in figure 27 would meet the Storm Drainage Fund's annual revenue needs. The rate plan in figure 27 is condensed to show increases through FY 2029-30 for presentation purposes. A full rate plan through FY 2038-39 is provided in Appendix B.

³⁹ Forecasted CSS spending in DOU 30-year best management practice CIP



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Figure 27: Calculated Rate Plan – CIP and Level of Service Enhancement Ramp-up at Existing CSS Allocations

Fiscal Year	2022	2023	2024	2025	2026	2027	2028	2029	2030
CSS Capital Allocation % to Storm Drainage	10%	15%	20%	25%	30%	35%	40%	45%	50%
CSS Operating Allocation % to Storm Drainage	75%	75%	75%	75%	75%	75%	75%	75%	75%
CIP and Enhanced Level of Service Execution⁴⁰	20%	30%	40%	50%	60%	70%	80%	90%	100%
Estimated Required Fee Increase	18.9%	8.1%	14.4%	16.3%	7.0%	7.8%	10.4%	10.9%	8.7%
Typical Residential Storm Drainage Bill⁴¹	\$13.45	\$14.54	\$16.64	\$19.35	\$20.71	\$22.33	\$24.66	\$27.36	\$29.74

Comparing this scenario to Scenario 2 clearly illustrates the impact of ramping up the level of service and capital investment enhancements to reach targets by FY 2029-30. This ramp up reduces the cumulative rate increase by FY 2029-30 by over 10 percentage points, reducing the forecasted impacts to customers. It should be noted that while gradually ramping up the level of capital investment and level of service enhancements lowers near-term rate increases, this delay in reaching the full recommended level of capital investment increases the risk of critical system failures in the near-term and has the potential to increase costs over the long term. These trade-offs must be carefully considered in developing an implementation plan for the proposed CIP.

A gradual, ramped up approach to implementing the desired level of service enhancements and recommended 30-year CIP would decrease the immediate fee increases to a more levelized rate of increases yielding a cumulative Storm Drainage Fee increase of 163 percent through FY 2029-30.

⁴⁰ This execution factor only applies to the projects identified in the 30-year CIP and does not apply to the fleet replacement costs or MYOPs.

⁴¹ Typical Residential Storm Drainage Bill based on a typical household size of 6-7 rooms.



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5.6.2 Scenario 3b – Meet Targets by FY 2030, Targeted Combined Sewer System Capital Cost Allocations

The underlying assumptions and mechanics of this scenario are the same as scenario 3a, but this scenario considers the impacts of projecting future CSS capital costs to ramp up to the historically stated goal of 75 percent of the combined system expenditures to be funded through Storm Drainage. Figure 27 demonstrates the results with the incorporation of that historical department wide goal.

Figure 28: Proposed Combined Sewer System Cost Allocation Approaches

Fiscal Year	2022	2023	2024	2025	2026	2027	2028	2029	2030
CSS Capital Allocation % to Storm Drainage	15%	23%	30%	38%	45%	53%	60%	68%	75%
CSS Operating Allocation % to Storm Drainage	75%	75%	75%	75%	75%	75%	75%	75%	75%
CIP and Enhanced Level of Service Execution⁴²	20%	30%	40%	50%	60%	70%	80%	90%	100%
Estimated Required Fee Increase	20.3%	8.8%	14.8%	16.5%	7.4%	8.2%	10.6%	11.1%	8.9%
Typical Residential Storm Drainage Bill⁴³	\$13.60	\$14.79	\$16.99	\$19.80	\$21.27	\$23.01	\$25.46	\$28.28	\$30.79

Unsurprisingly, this scenario leads to cumulative increases greater than those generated in Scenario 3a, and only two percentage points lower than the immediate enhancements in Scenario 2.

A gradual, ramped up approach to implementing the desired level of service enhancements and recommended 30-year CIP would decrease the immediate fee increases to a more levelized rate of increases, but aiming for a higher CSS capital allocation will generate a higher fee increase than scenario 3a, yielding a cumulative Storm Drainage Fee increase of 172 percent through FY 2029-30.

⁴² This execution factor only applies to the projects identified in the 30-year CIP and does not apply to the fleet replacement costs or MYOPs.

⁴³ Typical Residential Storm Drainage Bill based on a typical household size of 6-7 rooms.



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5.6.3 Scenario 3c – Meet Targets by FY 2030, Modified Combined Sewer System Capital Cost Allocations

As stated previously, there is no singular standard approach to allocating CSS costs between wastewater and storm water enterprise funds. Looking within California, the only other agency with a CSS is SFPUC which manages the entire CSS through the wastewater enterprise (see section 3.1.1). Nationally, many agencies manage combined systems in similar manners, even if they charge a stormwater fee to recover costs for separated stormwater infrastructure; however, this is only one of many potential cost allocation methodologies for CSS systems.

To provide a better understanding of the potential cost allocation methodologies, alternative approaches to allocating CSS costs were outlined in a technical memo provided to DOU staff. These allocation approaches are outlined in figure 29 and summarized in the memo submitted to DOU, included as Appendix C. The “Total or Average Flow Basis” and “Capacity Basis” described in figure 29 are highlighted orange as these were deemed the most appropriate for use in this analysis and were the two approaches with sufficient data available to allow for estimation of a representative cost allocation percentage. For purposes of this scenario analysis, the “Total or Average Flow Basis” was used to allocate annual O&M expenses because the total flow is representative of the level of maintenance and staff time dedicated to maintaining the CSS over the course of the year. Additionally, the “Capacity Basis” was used to allocate CSS-related capital costs because capital costs are directly related to the size of infrastructure required. As such, infrastructure must be sized to not only handle average daily sanitary flows, but must also be large enough to handle peak drainage flows during storm events.

Figure 29: Proposed Combined Sewer System Cost Allocation Approaches

Total or Average Flow Basis

- Allocate costs based on the relative share of total annual flows through the combined system from sanitary sewer and wastewater sources, and stormwater runoff using total annual dry and wet weather flows.

Water Quality Basis

- Similar to the “Total or Average Flow Basis”, with the addition of water quality characteristics to determine pollutant loading from each source.
- Most appropriate for allocating treatment-related costs rather than collection and conveyance.

Capacity Basis

- Based on the cost differential between infrastructure sized to handle sanitary flows (typically estimated as average or dry-weather flows) vs drainage flows (typically estimated as peak, storm event flows).

Construction Cost Basis

- Based on the cost of installation of sanitary sewers vs stormwater conveyance systems.

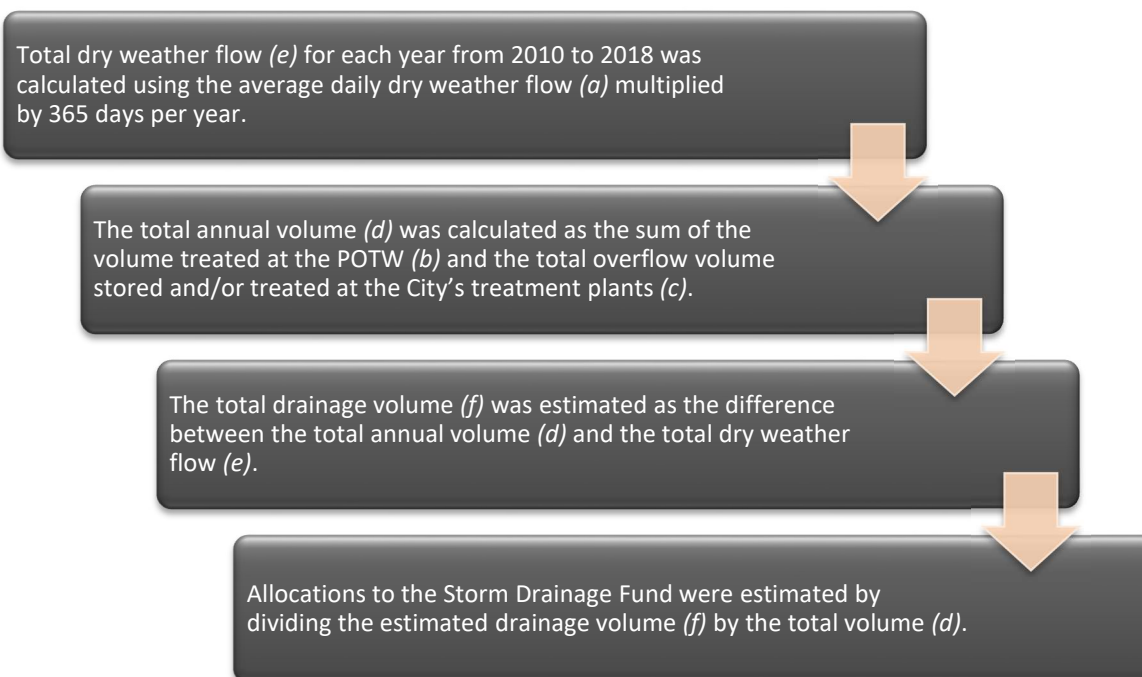


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An estimate of CSS cost allocations to the Storm Drainage Fund was calculated following the “Total or Average Flow Basis” using historic wet and dry weather flow data provided by DOU staff. The flow data included average daily dry, wet, and peak weather flows, in addition to the total volumes treated at the Regional Sanitation publicly owned treatment works (POTW) and the total overflow volume for the period ranging from 2010 to 2018. The calculation steps are described in figure 30 with the actual data and calculations in figure 31. Letters listed in the calculation steps in figure 30 correspond to the column labels in figure 31.

Figure 30: Estimated Total Flow Allocation Calculation Steps



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Figure 31: Total Flow Allocation Basis Calculations

	(a)	(b)	(c)	(d)	(e)	(f)
				(b) + (c)	(a) X 365 days	(e) - (d)
Calendar Year	Dry Flow	POTW Vol	Overflow Vol	Total Vol	Dry Vol	Wet Vol
	MGD	MG	MG	MG	MG	MG
2010	16.6	7,020	193	7,214	6,045	1,168
2011	18.5	7,398	157	7,555	6,750	804
2012	16.4	6,891	387	7,278	5,986	1,292
2013	16.6	6,278	0	6,278	6,065	213
2014	16.3	7,279	387	7,665	5,938	1,727
2015	14.9	5,952	90	6,043	5,441	602
2016	15.2	6,644	191	6,835	5,532	1,303
2017	20.0	8,962	720	9,682	7,301	2,381
2018	15.2	6,673	293	6,966	5,561	1,404
Total / Average	16.6	63,097	2,419	65,516	54,620	10,896

	Total Volume (MG)	Allocation
Wastewater	54,620	83%
Storm Drainage	10,896	17%

The calculations outlined in figure 30 and demonstrated in figure 31 yielded an estimated Storm Drainage Fund allocation of 17 percent of the total CSS O&M costs. Incorporating this allocation into the fiscal forecast yielded the outcomes presented in figure 32.

The allocation percentage for the “Capacity Basis” used to allocate CSS capital costs was estimated based on DOU input. According to DOU staff, approximately 540 million gallons per day (MGD) must be pumped and treated during storm events. Of this, approximately 30 MGD is wet weather sanitary flows while the remaining 510 MGD can be attributed to storm drainage flows. As a result, the “Capacity Basis” yields a capital cost allocation of approximately 95 percent to the Storm Drainage Fund. Again, this scenario assumes the Storm Drainage Fund will ramp up to meeting this targeted level of cost allocation by FY 2029-30.



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Figure 32: Calculated Rate Plan – CIP and Level of Service Enhancement Ramp-up at Modified CSS Allocations

Fiscal Year	2022	2023	2024	2025	2026	2027	2028	2029	2030
CSS Capital Allocation % to Storm Drainage	19%	29%	38%	48%	57%	67%	76%	86%	95%
CSS Operating Allocation % to Storm Drainage	17%	17%	17%	17%	17%	17%	17%	17%	17%
CIP and Enhanced Level of Service Execution⁴⁴	20%	30%	40%	50%	60%	70%	80%	90%	100%
Estimated Required Fee Increase	17.2%	10.0%	15.6%	17.1%	7.8%	8.5%	11.0%	11.3%	9.1%
Typical Residential Storm Drainage Bill⁴⁵	\$13.25	\$14.57	\$16.84	\$19.72	\$21.26	\$23.07	\$25.60	\$28.51	\$31.11

It should be noted that while gradually ramping up the level of capital investment and level of service enhancements lowers near-term rate increases, this delay in reaching the full recommended level of capital investment increases the risk of critical system failures in the near-term and has the potential to increase costs over the long term. These trade-offs must be carefully considered in developing an implementation plan for the proposed CIP.

The cumulative effect of decreasing CSS-related O&M allocations while increasing capital allocations leads to a cumulative rate increases nearly equivalent to Scenario 2, and greater than Scenario 3a and 3b. This should be further evaluated to refine data used in calculating the allocations to ensure the most accurate allocation percentages possible.

Modifying the allocation of CSS operating costs to 17 percent based on a total flow basis and 95 percent of capital costs based on the capacity basis, along with the continuation of a gradual ramped up approach to implementing the desired level of service enhancements and recommended 30-year CIP could yield cumulative Storm Drainage Fee increases of approximately 175 percent.

⁴⁴ This execution factor only applies to the projects identified in the 30-year CIP and does not apply to the fleet replacement costs or MYOPs.

⁴⁵ Typical Residential Storm Drainage Bill based on a typical household size of 6-7 rooms.



The Storm Drainage Fund Cannot Meet Service Level Goals With Its Current Service Fees

5.6.4 Scenario 3d – Meet Level of Service Targets by FY 2030, Zero Combined Sewer System Cost Allocations

A third alternative evaluated as part of this review was to consider the potential for the City to modify its financial, capital, and operational management of the CSS to a manner similar to the only other CSS in California – San Francisco Public Utilities Commission (SFPUC). As discussed in Section 3.1.1, SFPUC manages a CSS throughout their entire service area through one enterprise fund, the Wastewater Enterprise (WWE). This means SFPUC charges a single set of wastewater rates to meet the revenue requirements associated with managing both the sanitary sewer and stormwater system needs. Following an approach similar to SFPUC would likely result in zero CSS costs being allocated to the Storm Drainage Fund. However, unlike SFPUC, the City's CSS network does not span the entire service area. As such, the Storm Drainage Fund would maintain responsibility for the separate stormwater collection and conveyance system. This approach could materially improve the ease of funding for required CSS projects, though it must be acknowledged that this would increase the funding needs of the City's Wastewater Fund, likely leading to fee increases for wastewater service.

This shift in management approach for the CSS would also enhance equity in cost recovery for drainage projects in the City as the current approach makes it difficult to equitably distribute costs between the sanitary sewer and storm drainage systems. Moreover, the existing structure hinders accountability from each system because one system could be unintentionally subsidizing the other by paying more or less than the allocated share of costs for the CSS.

Scenario 3d considered the possibility of shifting all CSS-related costs to the Wastewater Fund, dropping the projected share of CSS costs allocated to the Storm Drainage Fund to zero percent beginning in FY 2021-22. Following this approach, the rate increases and associated residential bills were calculated and are presented in figure 33.



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

The Storm Drainage Fund Cannot Meet Service Level Goals With Its Current Service Fees

Figure 33: Calculated Rate Plan – CIP and Level of Service Enhancement Ramp-up at Zero CSS Allocations

Fiscal Year	2022	2023	2024	2025	2026	2027	2028	2029	2030
CSS Capital Allocation % to Storm Drainage	0%	0%	0%	0%	0%	0%	0%	0%	0%
CSS Operating Allocation % to Storm Drainage	0%	0%	0%	0%	0%	0%	0%	0%	0%
CIP and Enhanced Level of Service Execution ⁴⁶	20%	30%	40%	50%	60%	70%	80%	90%	100%
Estimated Required Fee Increase	10.9%	7.7%	14.1%	16.2%	6.3%	7.3%	10.2%	10.9%	8.5%
Typical Residential Storm Drainage Bill ⁴⁷	\$12.54	\$13.50	\$15.40	\$17.89	\$19.03	\$20.42	\$22.51	\$24.95	\$27.07

Scenario 3d yields the lowest cumulative rate increases of the four alternative allocation approaches. However, it should be noted this would have considerable impacts on the City's Wastewater Fund and the impacts on each fund should be evaluated in tandem to understand the shared impacts of this alternative approach.

Modeling management of the City's CSS after SFPUC, i.e. eliminating the allocation of CSS costs to the Storm Drainage Fund, could further reduce Storm Drainage fee increases to cumulative fee increases of approximately 139 percent by FY 2029-30. These costs would, however, most likely need to be covered through increased wastewater rates.

All scenarios evaluated as part of this review indicated the need for increases to the City's Storm Drainage Fee, with a minimum of inflationary increases to continue the current underfunded level of service, and a maximum of 175 percent cumulative increases by the end of the decade if CSS capital cost allocations are increased to 95 percent, assuming no critical failures occur.

⁴⁶ This execution factor only applies to the projects identified in the 30-year CIP and does not apply to the fleet replacement costs or MYOPs.

⁴⁷ Typical Residential Storm Drainage Bill based on a typical household size of 6-7 rooms.



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

The Storm Drainage Fund Cannot Meet Service Level Goals With Its Current Service Fees

Each of the scenarios that consider alternative approaches to allocating CSS capital and/or O&M expenditures between the Storm Drainage Fund and Wastewater Fund would ultimately yield impacts to the Wastewater Fund's annual funding need. As such, the fiscal impacts and associated fee increases for each fund should be evaluated in tandem as these approaches are considered in further detail.



The Department of Utilities Should Consider Various Funding Options to Achieve Their 30 Year Capital Improvement Plan

6.0 THE DEPARTMENT OF UTILITIES SHOULD CONSIDER VARIOUS FUNDING OPTIONS TO ACHIEVE THEIR 30 YEAR CAPITAL IMPROVEMENT PLAN

The forecast scenarios described in Section 5.0 rely on some overarching assumptions regarding sources of funding for operations and capital investment. Although the primary source of funding will continue to be Storm Drainage Fee revenues, additional options exist that could impact the magnitude of drainage fee increases in the future. These options could provide dedicated funding sources for operating expenses, capital investments, or both. Three primary categories of additional funding options – miscellaneous fees revenue, grant funding, and debt financing – are discussed further below.

6.1 MISCELLANEOUS FEES REVENUE

Miscellaneous fees charged for specific services provided by DOU to individuals or businesses are different from the Storm Drainage Fees charged to all parcels in the service area. These fees are calculated based on the estimated costs of providing specific services, estimated based on staff time, hourly rates, and the costs associated with the use of equipment and materials. Although these fees are similar in that they are typically intended to cover the costs of services, they differ from the Storm Drainage Fees because they can be assessed to individual customers requiring additional services and are therefore not considered property related fees. This difference means these fees can be implemented or increased without following the procedural requirements of Proposition 218.

The City currently charges fees for specific services, including plan checks, flood zone determination, and compliance reviews. DOU staff recognize that these fees may not cover the entire costs of providing these services. Therefore, to adhere to the best financial practices, these fees should be reviewed and increased as necessary to ensure cost recovery for these services. In addition to increasing existing miscellaneous fees, DOU staff likely provide additional services to specific customers or parcels. Such services may include but are not limited to, inspections of erosion best management practices (BMPs), re-inspections, and stormwater pollution prevention plan (SWPPP) reviews. New miscellaneous fees calculated to recover the costs of providing these services could be implemented. Calculating and implementing appropriate miscellaneous fees for specific services is important to ensure these costs are ultimately borne by those receiving the benefits from the services.

Existing miscellaneous fees could be enhanced, or new fees could be implemented to ensure full cost recovery for specific services.

6.2 GRANT FUNDING

A number of grant programs exist for the purpose of funding stormwater infrastructure projects. However, these programs are dependent on funding from federal and state governments, and as such may change



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

The Department of Utilities Should Consider Various Funding Options to Achieve Their 30 Year Capital Improvement Plan

over time in their funding capacity and availability, application requirements, and project selection criteria. Because of this variability, a generalized, historical level of grant funding was included in the forecasts, as discussed in section 5.2.

DOU has collected a total of over \$4.5 million in grant funding over the last six years. DOU staff indicated an ongoing commitment to pursuing additional grant funding in the future to complete important projects and minimize rate impacts. Grant programs often aim to fund projects that meet certain goals, including projects that provide multiple benefits, innovative projects, and projects that enhance flood protection or climate change adaptation. A selection of existing grant programs is presented below to provide a brief example of available programs and the goals or requirements of each:

- **California Proposition 1 Storm Water Grant Program** – Administered by the California State Water Resources Control Board (SWRCB), the program focuses on funding multi-benefit stormwater management projects which may include, but are not be limited to, green infrastructure, rainwater, and stormwater capture projects and stormwater treatment facilities. The applicant is required to provide a minimum match requirement of 50 percent of the total project cost.
- **Flood Mitigation Assistance Grant Program** – Administered by the United States Federal Emergency Management Agency (FEMA), this program helps communities fund planning and mitigation projects to reduce future flood losses. Local agencies are considered sub-applicants and must apply through their state office (in California, the Governor's Office of Emergency Services) in order to obtain funding from the Flood Mitigation Assistance Grant Program. The program requires a 25 percent local match.
- **CalTrans Adaptation Planning Grant Program** – Administered by the California Department of Transportation (CalTrans), this program provides funding to support planning actions at local and regional levels that advance climate change efforts on the transportation system, including natural and green infrastructure adaptation plans. Caltrans encourages applicants to address deficiencies in disadvantaged communities, including communities vulnerable to climate change impacts. The program awards projects through annual funding cycles and requires a local match of 11.47 percent of the total project costs.

DOU has shown a commitment to pursuing grant funding to meet specific needs of the Storm Drainage Fund. This practice should be continued and enhanced to increase grant funding to the extent practical in order to minimize impacts to rate payers.

6.3 DEBT FINANCING

The use of debt is often very helpful in mitigating drastic rate increases that would otherwise be needed to cover the capital costs of singular, large-scale projects. Examples of such projects may include major enhancements to specific drainage management structures, or construction of new stormwater storage structures (e.g. basins or runoff storage vaults). The use of debt for such projects enhances inter-generational equity as it spreads the costs of completing these large projects over the span of the



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

The Department of Utilities Should Consider Various Funding Options to Achieve Their 30 Year Capital Improvement Plan

repayment period, and therefore distributes the costs between current and future ratepayers who benefit from these projects.

Although much of the Storm Drainage Funds' proposed 30-year CIP consists of annual investments which would commonly be cash funded, several debt financing options exist for specific projects, as appropriate:

- **Revenue Bonds** – Revenue bonds are the most common form of debt financing for utility infrastructure investments. They are a form of municipal bond that is typically issued on a tax-exempt basis, which results in lower interest rates for borrowers. Revenue bonds require specific, dedicated non-tax revenues, such as utility rate revenue, to be pledged to guarantee payment. Revenue bonds are often issued based on the financial standing and credit rating of the individual utility issuing the bonds (as opposed to the City). Additional costs are commonly incurred in the issuance of revenue bonds, including legal fees, registration fees, underwriting fees, and other issuance costs. In addition to these costs and administrative requirements, revenue bonds also carry covenants that commonly require a utility to generate net revenue after operating costs to meet debt service needs plus a defined margin (e.g. 25 percent).
- **General Obligation Bonds** – General Obligation (GO) bonds are similar to revenue bonds, with the distinction that GO bonds are issued based on the issuer's pledge of its full faith, credit, and taxing authority. GO bonds are issued by local governments, typically on a tax-exempt basis, and sometimes are used to meet municipal utility capital investment needs. In these cases, the GO bonds are still repaid by utility rate revenues, similar to a revenue bond, although the bond is issued based on the financial standing and credit rating of the taxing authority (the City).
- **Certificates of Participation** – Certificates of Participation (COP) provide long-term financing without some of the administrative, regulatory, or legal hurdles often associated with bonds, including voter approval. However, legislative approval is still required prior to the issuance of COPs. Under a COP, the lessee makes payments to shareholders using revenues generated from the operation of the facilities, similar to a revenue bond. Interest rates are often higher under a COP based on the increased risk of non-appropriation.
- **Clean Water State Revolving Fund Loans** – Multiple government-financed loan programs exist with the sole purpose of financing infrastructure investments. California's Clean Water State Revolving Fund (CWSRF) loan program is focused on financing projects benefiting water quality. Eligible projects include, but are not limited to, the construction of municipal wastewater facilities, nonpoint source pollution control, green infrastructure projects, estuary program projects, and stormwater reduction and treatment projects. Loan terms under this program typically include an interest rate of approximately 50 percent of the latest state GO bond rate and a repayment period of up to 30 years. Applying for these programs often require extensive



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

The Department of Utilities Should Consider Various Funding Options to Achieve Their 30 Year Capital Improvement Plan

studies to show the project yields the intended benefits, meets compliance requirements, is “shovel-ready” (for construction), and can be repaid by the agency in the form of debt payments.

Although the majority of the Storm Drainage Fund's 30-year CIP consists of annual projects, large one-time projects could be debt financed to enhance inter-generational equity by distributing the costs over the life of the asset.



STORM DRAINAGE FUND REVIEW APPENDICES

Appendix A BENCHMARKING DETAILS

Appendix A, “Benchmarking Details” provides a summary of the results from the benchmarking analysis conducted as part of the Storm Drainage Fund Review. This appendix presents the numerical results for each Key Performance Indicator (KPI) for the City of Sacramento’s Drainage Fund and for each peer agency. Additionally, the summary includes the benchmark value of the median KPI result for AA rated utilities, as reported by Fitch Ratings, a bond rating agency. These values were gathered from Fitch’s report titled, *2019 Water and Sewer Medians: Special Report*.



Appendix B FISCAL FORECAST SCENARIO RESULTS

Appendix B, “Fiscal Forecast Scenario Results” provides a detailed summary of the financial dynamics and results for each of the scenarios discussed in Section 5.0 of the Storm Drainage Fund Review. The results shown in this appendix include summaries of cash flow balances relative to reserve targets, forecasted revenues and expenses, forecasted expenses by category (operating and maintenance (O&M), capital improvement plan (CIP), debt, and transfers out (TO)), forecasted CIP spending, forecasted CIP funding from multiple sources, and a cash flow summary that illustrates funded and unfunded expenses with a cumulative funding gap. The following scenarios are summarized in this appendix.

1. Scenario 1: Continue current underfunded level of service,
2. Scenario 2: Implement level of service and capital investment enhancements in FY 2021-22,
3. Scenario 3a: Ramp-up level of service and capital investment enhancements with current CSS cost allocations,
4. Scenario 3b: Ramp-up level of service and capital investment enhancements with historical CSS cost allocation targets,
5. Scenario 3c: Ramp-up level of service and capital investment enhancements with alternative, calculated CSS cost allocations, and
6. Scenario 3d: Ramp-up level of service and capital investment enhancements with zero CSS cost allocations.



DEPARTMENT OF UTILITIES - STORM DRAINAGE FUND REVIEW

City of Sacramento Storm Drainage Fund - Funding Gap: Scenario 1 - Current Underfunded Level of Service

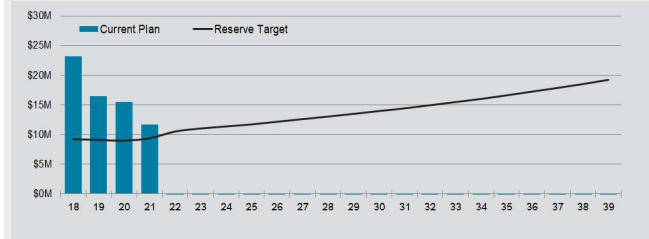


DEPARTMENT OF UTILITIES - STORM DRAINAGE FUND REVIEW

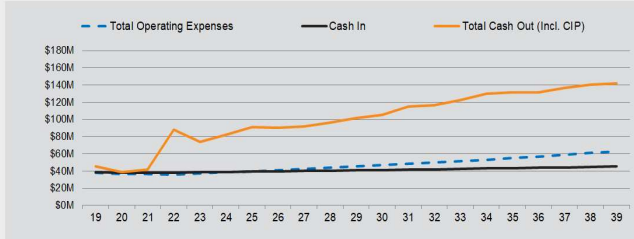
City of Sacramento Storm Drainage Fund - Funding Gap: Scenario 2 – Meet Forecasted Level of Service Targets as Scheduled in the 30-Year Best Management Practices CIP

FAMS-XL CITY OF SACRAMENTO																						<div>Stantec</div>				
																						CAIC	SAVE	CTRL	LAST	OVR
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038	FY 2039	FY 2030	FY 2039			
Storm Drainage Rate Plan	0.00%	0.00%	0.00%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.00%	0.00%			
Residential Storm Drainage Bill	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31	\$11.31					
																						Check				
Annual Funding Gap (\$M)	\$0.00	\$0.00	\$0.00	(\$38.65)	(\$35.71)	(\$43.41)	(\$52.00)	(\$50.45)	(\$51.98)	(\$56.22)	(\$60.72)	(\$64.01)	(\$73.32)	(\$74.64)	(\$79.86)	(\$86.75)	(\$88.19)	(\$87.91)	(\$92.78)	(\$96.08)	(\$96.44)					
																						Scenario Manager				
Senior-Lien DSC	10.07	10.13	9.37	28.04	23.20	20.42	17.74	13.65	9.65	5.72	1.58	-2.83	-6.86	-11.96	-20.94	-27.29	-41.92	-51.61	-61.03	-71.22	N/A	Financial Plan Enhancement Yr	Enhanced FY 2022			

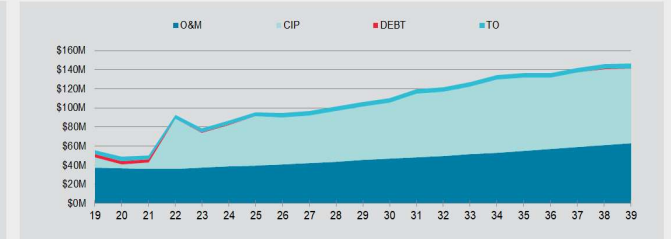
Operating Fund



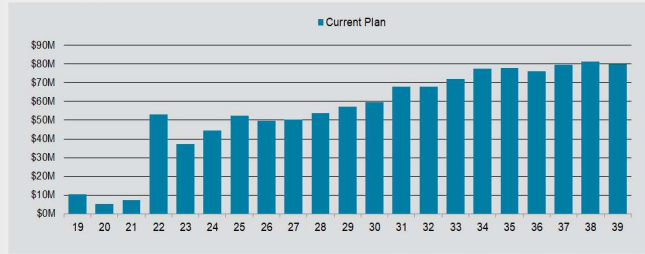
Revenues vs. Expenses



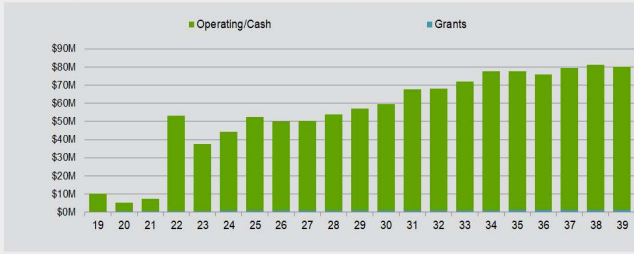
Expenses by Type



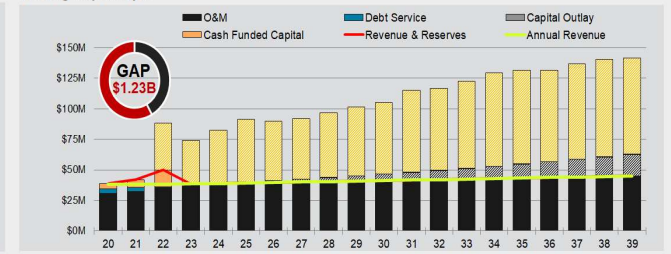
CIP Spending



CIP Funding



Funding Gap Analysis



DEPARTMENT OF UTILITIES - STORM DRAINAGE FUND REVIEW

City of Sacramento Storm Drainage Fund - Calculated Rate Plan: Scenario 3a – Meef Targets by FY 2030, Existing Combined Sewer System Cost Allocations



DEPARTMENT OF UTILITIES - STORM DRAINAGE FUND REVIEW

City of Sacramento Storm Drainage Fund - Calculated Rate Plan: Scenario 3b – Meet Targets by FY 2030, Targeted Combined Sewer System Capital Cost Allocations



DEPARTMENT OF UTILITIES - STORM DRAINAGE FUND REVIEW

City of Sacramento Storm Drainage Fund - Calculated Rate Plan: Scenario 3c – Meet Targets by FY 2030, Modified Combined Sewer System Capital Cost Allocations

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Stantec

CALC | SAVE | CTRL | LAST | OVR

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038	FY 2039	FY 2030	FY 2039
Storm Drainage Rate Plan	0.00%	0.00%	0.00%	17.2%	10.0%	15.6%	17.1%	7.8%	8.5%	11.0%	11.3%	9.1%	8.5%	1.4%	3.7%	4.9%	1.0%	0.0%	1.4%	2.4%	0.0%	175.07%	245.45%
Residential Storm Drainage Bill	\$11.31	\$11.31	\$11.31	\$13.25	\$14.57	\$16.84	\$19.72	\$21.26	\$23.07	\$25.60	\$28.51	\$31.11	\$33.77	\$34.24	\$35.49	\$37.24	\$37.61	\$37.61	\$38.15	\$39.07	\$39.07	Check	
Annual Funding Gap (\$M)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	Scenario Manager	
Senior-Lien DSC	10.07	10.13	9.37	69.42	86.13	117.43	160.02	181.83	207.93	245.58	286.61	326.30	367.54	374.46	488.36	524.93	644.16	644.48	658.92	682.83	N/A	Financial Plan	Enhanced
																						Enhancement Yr	FY 2022

Operating Fund

Revenues vs. Expenses

Expenses by Type

CIP Spending

CIP Funding

Funding Gap Analysis

DEPARTMENT OF UTILITIES - STORM DRAINAGE FUND REVIEW

City of Sacramento Storm Drainage Fund - Calculated Rate Plan: Scenario 3d – Meef Level of Service Targets by FY 2030, Zero Combined Sewer System Cost Allocation



Appendix C COMBINED SEWER SYSTEM COST ALLOCATION METHODOLOGIES

Appendix C, “Combined Sewer System Cost Allocation Methodologies” includes a technical memorandum submitted to Department of Utilities and City Auditor’s Office staff to summarize potential cost allocation approaches for the City’s combined sewer system (CSS). These approaches are intended to allocate the City’s CSS related O&M and CIP costs between the Storm Drainage Fund and the Wastewater Fund. Two approaches – the total or average flow based approach and the capacity based approach – were incorporated into Scenario 3c of the financial analysis. Scenario 3c applied the total flow approach to allocate CSS related O&M expenses and the capacity approach to allocate CSS related CIP.



To:	Jordan Sweeney Senior Auditor, City of Sacramento	From:	Rupeet Malhotra, PE Benjamin Stewart, PE Stantec Consulting Services
File:	Combined Sewer System – Cost Allocation Methodologies for Stormwater and Sewer Costs	Date:	October 29, 2019

Subject: Cost Allocation Methodologies for Stormwater and Sewer Related Costs in Combined Sewer Systems

Overview

Stantec has been retained by the City of Sacramento Auditor's Office to perform a review of the Storm Drainage Fund. An essential part of the review is to provide a methodology for allocating the Combined Sewer System Capital and Operation and Maintenance Costs between the sewer and storm drainage services sectors. While there is no specific industry standard for cost allocation, the following methods are proposed as reasonable methodologies based on a review of available literature, as referenced. This memorandum provides the proposed methodologies that may be considered.

Total or Average Flow Based - Annual Flow or Volume Based Allocation:

- Aims to differentiate between the total volume of sanitary sewer flows and storm-event surface water flows
- Can use flow data that allows for differentiation between sanitary and surface water flows, such as:
 - Daily combined sewer flow data for dry- and wet-weather days
 - Annual treatment flow data with mean annual precipitation
 - Peak flow estimation requires assessment of impervious and pervious areas draining to the combined sewer system
 - A combination of rainfall intensity, drainage area, and runoff coefficients (based on land use) used to calculate the peak runoff flow
 - Peak sanitary flow during dry weather with combined peak flow during wet weather¹²
- Specifically relates to allocating both O&M and treatment costs

Quality Based – Wastewater Strength or Loading Based Allocation:

- Similar to the quantity-based allocation, but incorporates wastewater strength characteristics of the two flows
- For example, the design of a treatment plant's aeration basins is based on the influent flow's BOD concentration
 - The separation of costs between sanitary and stormwater can be determined by comparing the strength samples of the influent flow from both dry and wet weather periods to determine a reasonable ratio¹
- Specifically relates to allocating both O&M and treatment costs

Capacity Based Allocation – Infrastructure Sizing Based Allocation²:

- Based on the cost differential between infrastructure to handle sanitary flows (average) vs drainage flows (peak)
- Can be based on sampling of pipe sizes (measured in inch-feet) necessary to handle average versus peak flows
- Approach would increase the allocation over the flow basis as the capacity basis does not account for the limited number of days during which the stormwater capacity is needed
- Can use average and peak flow data
- Can be related to allocating O&M and/or capital conveyance costs

Construction Cost Based Allocation³:

- Costs can be allocated to the Storm Drainage Fund based on the cost of installation of sanitary sewers versus stormwater conveyance systems. In the City of Portland Study referenced herein, the costs of several recent combined sewer separation projects were reviewed to determine total sewer costs and storm drain costs.

¹ Mike Borchers, Mike Mussman, "Establishing an Equitable Stormwater Fee Structure for Combined Wastewater Systems", Black and Veatch, Gaithersburg, MD

² Stormwater Utility and Rate Consultation – Credits Analysis and Recommendations Study, Philadelphia Water Department; June 30, 2011, AMEC

³ Allocations Rationale - Wastewater and Stormwater Program Costs, City of Portland, Maine, Woodard & Curran, AMEC, September 19, 2013

Appendix D STORM DRAINAGE FUND ASSET VALUATION SUMMARY

Appendix D, “Storm Drainage Fund Asset Valuation Summary” discusses the approach to estimating the total value of the City’s storm drainage infrastructure. This discussion includes the results of the valuation by asset type, in addition to a summary of information sources, quantities, unit cost estimates, assumptions, and limitations of the valuation. The level of accuracy is also discussed to provide the proper context and appropriate ranges of estimates for the estimated system valuation.



Storm Drainage Fund Asset Valuation Summary

STORM DRAINAGE FUND ASSET VALUATION SUMMARY

D.1 DISCUSSION OF DATA PROVIDED BY THE CITY

Stantec commenced their valuation process by soliciting data from the City's DOU. The following information was obtained from the City.

- GIS Database of City's Asset Register
- Detention Basin Inventory
- Water Quality Field Manual
- Discussions with City staff
- Drainage Fund Capital Summary
- City's Long-Term Control Plan
- 2015-2016 Stormwater Annual Report
- Operation and Maintenance Cost for 2015-2018
- Capital and Operation-Maintenance Cost for Trash Capture Devices
- Vehicle Asset Register

D.2 CITY OF SACRAMENTO DRAINAGE ASSET VALUATION

The City maintains a GIS database of their infrastructure assets. Stantec provided a preliminary valuation of the City's assets using industry standard cost estimating practices and data provided in the GIS Asset Register.

The system valuation was developed as an estimate of current replacement costs for each category of assets. The estimate was developed as a Class 5 Estimate¹, which is typically used for concept screening and has an expected accuracy range of -20% to -50% and +30% to +100%. A class 5 estimate is developed because the asset register contains only basic information about the assets such as infrastructure age, date of installation, asset location, identification code, and length/area, but is missing critical design characteristics such as material, size, capacity, diameter, flow rate, and exact application, which are critical to accurate estimation of cost. Therefore, estimates were developed assuming key characteristics such as pipe sizes, pump station capacity, and outfall diameter to name a few.

¹ Based upon the Association for the Advancement of Cost Engineering (AACE) cost estimate classification system a Class 5 estimate would be typical for the Conceptual Engineering Phase.



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

Storm Drainage Fund Asset Valuation Summary

Unit costs were developed using engineering judgement, recent project experience in the state of California, and RS Means² Cost Estimating Guidance. Detailed assumptions, unit costs, and asset replacement cost estimates are described below.

Figure D.1: Asset Valuation Estimate by Asset Category

	Asset Class	Costing Parameter	Unit Cost	Unit	Quantity	Estimated Asset Value
1	Drainage Detention Basins	\$/unit storage volume	\$14.29 ³	cubic feet	146,324,750	\$2,090,980,700
2	Floodgates	\$/gate	varies by type ⁴	each	175	\$2,688,800
3	Control Valves	diameter	\$2,500 ⁵	each	202	\$505,000
4	Discharge Points	cost per facility	\$100,000 ⁵	each	1,243	\$124,300,000
5	Inlets	\$/inlet	\$8,500 ⁵	each	39,089	\$332,256,500
6	Mains- Separate Storm Drainage	\$/in-lf	\$540 ⁵	linear feet	4,488,000	\$2,423,520,000
7	Mains – Combined Sewer	\$/in-lf	\$600 ^{5,6}	linear feet	1,232,764 ⁶	\$739,659,000
8	Mains – Separate Storm Sewer that flows into Combined Sewer	\$/in-lf	\$540 ⁵	linear feet	42,243	\$22,812,000
9	Manholes	\$/manhole	\$8,000 ⁵	each	29,120	\$232,960,000
10	Sump Stations	varies	\$1M to \$100M ^{6,7}	each	126	\$2,087,586,000
11	Relief Wells	\$/well	\$59,000 ⁵	each	83	\$4,897,000
TOTAL DRAINAGE INFRASTRUCTURE VALUATION						\$8,062,166,000
12	Vehicles & Equipment	Total	Replacement Cost New		158	\$11,395,000
TOTAL DRAINAGE FUND ASSET VALUATION						\$8,073,561,000

² RSMeans Heavy Construction Cost Data. Norwell, MA. RSMeans, 2019.

³ The unit cost of drainage detention basin replacement is estimated as \$14.29 per cubic yard of basin volume using Table 1. City of Los Angeles SCM Costs Survey Results (Source: "Los Angeles Sustainable Water Project: Ballona Creek Watershed", UCLA, November 2015).³.

⁴ A conservative cost of \$3,000 per gate installed was estimated for flap gates, \$24,000 for sluice gates smaller than 36", \$56,000 for sluice gates larger than 36", \$10,000 for metal flood gates, and \$10,000 for wooden flood gates, using engineering judgement and published data.

⁵ Unit cost was estimated based on prior Stantec project experience, vendor quotes, and RS Means Estimating.

⁶ As directed by City of Sacramento, 50 percent of the combined sewer system mains and combined sewer sump stations were allocated to the drainage system valuation.

⁷ Construction Cost obtained from City of Tracy Citywide Water System Master Plan, 2012; https://www.ci.tracy.ca.us/documents/Appendix_G_Cost_Estimating.pdf



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

Storm Drainage Fund Asset Valuation Summary

The assumptions and methodologies used to develop the valuation are presented in the following sub-sections.

D.2.1 Assumptions for System Valuation

Stantec performed a preliminary valuation of the City's hard assets using published unit costs and prior project experience. The assumptions for the valuation and approach are explained below.

- **Drainage Detention Basins** – Stantec was provided an inventory of the City's Drainage Detention Basins from the city's asset register and GIS database. The register contained attributes such as basin name, type, ownership and maintenance responsibility, and physical characteristics such as perimeter, area and depth for a limited number of the basins. Basin storage volume was provided for some of the ponds in the Water Quality Field Manual and a list of detention basins provided by the DOU staff. A 5-foot depth was assumed for all basins lacking storage volume or depth information for system valuation purposes. The unit cost of drainage detention basin replacement was estimated as \$14.29 per cubic yard (cy) of basin volume using a City of Los Angeles Stormwater Control Measures Costs Survey Study performed in 2015. This cost includes mobilization and demobilization, clearing, grubbing, excavation and backfill, and synthetic liner for the basins. Construction costs do not include grading an access roadway, outfall construction, contingency and other miscellaneous costs by a contractor. The total valuation for basins was estimated at \$2,090,980,700.
- **Floodgates** – The unit cost of floodgates was estimated as \$1,000 each. The asset register includes floodgates that ranged in size from 15-inch to 60-inch and are sluice-type, flap gate type, metal door or log-stop structure. Flood gate costs range from \$124 to \$761 for sizes 6-inch to 36-inch flap gates. A conservative cost of \$3,000 per flap gate installed was estimated using engineering judgement and published data. Sluice gates smaller than 36-inch were estimated at \$28,400 installed and sluice gates larger than 36-inch were estimated at \$58,800 installed using published data. Other metal and wooden type flood gates were estimated to cost \$10,000 installed based on published data. The total cost of replacement of floodgates was estimated to be \$2,688,800.
- **Levees** – The cost of levees can vary and depends on the size. The asset register does not provide any usable data to provide a cost. Furthermore, DOU staff indicated the City is not responsible for upgrades of levees, and therefore, valuation of levees was not conducted.
- **Stormwater Open Channel/Drains** - No usable data was available to provide a cost estimate for stormwater open channels or drains. Costs for open channel replacement can vary significantly based on the type of canal or channel, whether they are man-made or natural, and lined or unlined. Therefore, valuation of open channels was not performed.
- **Cleanouts** – it is assumed that cleanouts are included in the lump sum cost of sump stations, and therefore, valuation of cleanouts was not performed separately.
- **Control Valves** - Costs for replacement of control valves were estimated at \$2,500 each. These costs include 4-inch to 8-inch plug valves plus shipping and handling; costs do not include excavation and backfill, factory testing, contingency and other miscellaneous contractor costs. The value for control valves was estimated to be \$505,000.
- **Discharge Points** – It is assumed that “discharge points” are the outfalls or points of discharge of stormwater into the American or Sacramento Rivers. Size and type of outlet information was missing from the asset register and therefore, an estimate of \$100,000 each was calculated based



DEPARTMENT OF UTILITIES – STORM DRAINAGE FUND REVIEW

Storm Drainage Fund Asset Valuation Summary

on prior Stantec experience and engineering judgement. The discharge points were estimated to be \$124,300,000.

- **Fittings** – it is assumed that fittings are included in the lump sum cost of sump stations, and therefore, valuation of fittings was not performed separately.
- **Inlets** – The asset register does not provide any physical characteristics for grates such as type or size. Using prior experience, Stantec has estimated the cost of a double hooded inlet as \$8,500 each. The inlets valuation was estimated to be \$332,256,500.
- **Lateral Lines** – it is assumed that lateral lines are included in the lump sum cost of sump stations, and therefore, valuation of lateral lines was not performed separately.
- **Mains** - Pipe diameters for a majority of pipes were missing in the data provided. Available pipe diameters range from 6-inch to 90-inch. Therefore, conservative estimates of \$540 per linear foot for gravity pipes and \$600 per linear foot for force mains were used. This cost includes mobilization/demobilization, clearing, grubbing, open-cut construction, excavation & backfill up to 20 feet deep, pipe sizes of 6-inch to 36-inch PVC SDR 35, tracer wire, CCTV, and installation and testing. As per DOU's guidance, 50 percent of combined sewer asset costs were allocated to the Storm Drainage Fund. Cost estimates do not include other pipe materials, manholes, trenchless construction, traffic control, trench pavement restoration, public outreach, easement acquisition, contingency and other miscellaneous contractor costs. The combined valuation of all mains was estimated to be \$3,185,991,000.
- **Manholes** - Depth, size, and manhole type data were missing for most of the manholes. Typical manhole costs range from \$6,500 to \$10,000 each. A conservative estimate of \$8,000 per manhole was used. This cost includes 48-inch diameter manholes, frame and cover, up to 20-feet deep excavation, backfill, and installation and testing. These costs do not include bypass pumping, trenchless construction, traffic control, trench pavement restoration, public outreach, easement acquisition, contingency and other miscellaneous contractor costs. The valuation of manholes was estimated to be \$232,960,000.
- **Network Structures** - Network structures are understood to be junction boxes. it is assumed that network structures are included in the lump sum cost of sump stations, and therefore, valuation of network structures was not performed separately.
- **Sump Stations** – Costs were developed using DOU data on pump station sizes and capacity. 2012 cost estimate data from the City of Tracy's pump stations were used as a baseline and costs were extrapolated based on capacity. An ENR escalation factor was then applied to 2012 costs to estimate costs to 2019 dollars. Costs range from \$1 million to \$100 million per sump station based on capacity. The total cost of sump stations was estimated as \$2,087,586,000.
- **Screens** – Costs for some of the screens that serve as risers in detention basins were included in the detention basin cost estimates. No usable data was available to provide costs for additional screens. These screen costs can vary significantly based on the type, size, and location of screens.
- **System Valves** – Valve costs were included in the estimate of sump station costs and, therefore, a separate valuation was not conducted.
- **Vaults** – Vault costs were included in the estimate of sump station costs and, therefore, a separate valuation was not conducted
- **Relief Wells** – Relief wells along the levees were estimated at \$59,000 each, based on prior Stantec experience. The relief wells valuation was estimated to be \$4,897,000.



MEMO

TO: Jorge Oseguera

FROM: Bill Busath

DATE: March 30, 2020

SUBJECT: Department of Utilities Response to Auditor's Drainage Fund Review

This memo serves as the Department of Utilities (DOU) response to the Auditor's Drainage Fund Review.

I want to thank the Auditor and his team for their diligent work on this review. DOU agrees with the findings and conclusions in this report.

I would like to highlight three of the findings in this report that I believe are critical to gaining an understanding of the condition of drainage fund.

First, the City's storm drainage system is unique in two important ways, which make it difficult to compare it to other jurisdictions when looking at cost: 1) The City's storm drainage system includes one of two combine systems in the state, San Francisco being the second. 2) The topography in the City is such that approximately 95 percent of the City's stormwater moves through and exits the drainage system by pumps. This makes operation, maintenance and improvement of the City's drainage system more costly than almost any system in the state. As stated in the recommendation, "These two factors, a combined system and nearly all water moved by pumps, add expenses to the Storm Drainage Fund and make the City's Storm Drainage operations unique in California, where most drainage systems are separate and flows are conveyed via gravity. These factors are significant and unique characteristics that add to the breadth of scope for the City's Storm Drainage Fund and increase the agency's revenue needs."

Second, the Auditor found that "All scenarios evaluated as part of this review indicated the need for increases to the City's Storm Drainage Fee...".

Finally, the drainage rate has not been increased for over 23 years. The last increase was in 1996. Due to the lack of rate adjustments, the department has not been able to adequately invest in system capital improvements. The lack of investment over a significant period of time puts this critical infrastructure at risk.