

# **STEGE SANITARY DISTRICT**

## **SANITARY SEWER MASTER PLAN**



**November 2017**



**STEGE SANITARY DISTRICT  
2017 SANITARY SEWER MASTER PLAN**

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**1. REPAIR, REHABILITATION AND REPLACEMENT**

Stipulated Order of Preliminary Relief requirement, subparagraph 82.B.3:

*“This plan shall include elimination of known improper flow connections, according to a schedule informed by the inspection results, and address both short-term (repairs of Acute Defects to occur within one year of completion of inspection and assessment) and long term repair, rehabilitation and replacement of sewer pipes.*

*a. A schedule and 10 year financial plan for repair, rehabilitation, and replacement of sewer pipes. This schedule shall identify pipe reaches presently planned as priorities for rehabilitation or replacement over the next three years, with the understanding that the identified priorities are likely to be further developed and revised through the inspection and assessment process, and as a result of changed conditions. The District shall develop its schedule for repair, rehabilitation and replacement of sewer pipes using standardized responses developed by the District to observed defects, taking into account available peak flow rate data;”*

**TEN YEAR FINANCIAL PLAN**

The District works with public financial advisors periodically to assess budget sustainability and to assist with appropriate rate setting. The most recent effort with these financial consultants occurred in 2014 and a ten year plan was developed, as well as a projection of service rates needed to fund ongoing Capital, Operating and Maintenance (O&M) costs. Service rates were subsequently approved for the following five fiscal years, through fiscal year 2018-19. A summary of the ten year financial plan for the Capital Improvements Project (CIP) and Contracted Repairs is included in Figure 1.1.

Figure 1.1 – 10 Year Financial Plan

FISCAL YEAR	CAPITAL IMPROVEMENTS PROJECT (CIP) BUDGET	CONTRACTED REPAIRS BUDGET
2014-15	\$1,725,000	\$57,000
2015-16	\$2,081,000	\$58,000
2016-17	\$2,220,000	\$59,000
2017-18	\$2,365,000	\$60,000
2018-19	\$2,523,000	\$61,000
2019-20	\$2,689,000	\$62,000
2020-21	\$2,867,000	\$63,000
2021-22	\$3,057,000	\$64,000
2022-23	\$3,259,000	\$65,000
2023-24	\$3,473,000	\$66,000

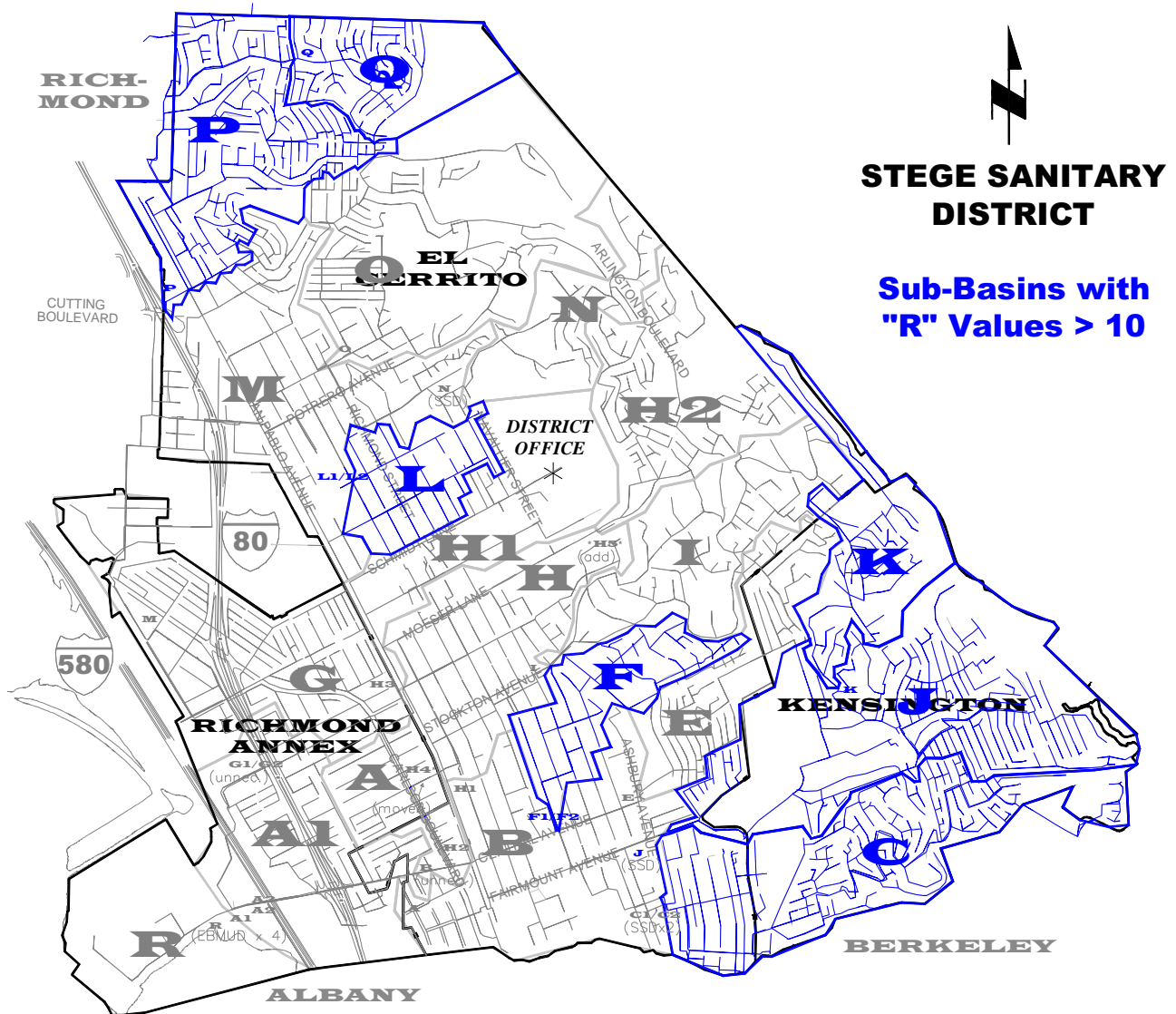
**SHORT TERM**

The project priority list is regularly updated as staff continually performs CCTV assessments and ratings as part of its routine maintenance work. Any “acute” defects, defined as “a failing in a sewer pipe in need of an urgent response to address an imminent risk of an SSO”, will be included on the project list as a high priority for rehabilitation as soon as they are assessed. These segments will be repaired or rehabilitated no later than one year after the assessment is completed.

**LONG TERM (USING PEAK FLOW RATE DATA)**

The District is currently prioritizing line segments to utilize information gathered from its Sub Basin Flow Monitoring Plan. Projects target line segments with the highest Damage Severity Index (DSI) ratings that are located in District sub-basins that have high I/I contribution rates (“R” values), in order to maximize and accelerate I/I reduction. This is the “worst lines in the worst areas” priority. Historically, the priority list of lines generally focused on those that had the highest DSI ratings (worst structural condition and/or require more maintenance), as determined by CCTV assessment. All lines with significant structural issues that may cause an SSO will still be included for repair/rehabilitation but this adjustment will shift more focus on rehabilitation of the “worst lines in the worst areas”. A map indicating isolated sub-basins that have an I/I contribution rate “R” value of 10 or more is shown in Figure 1.2.

Figure 1.2 – District sub-basins with “R” Values of 10 or more



## **2. INSPECTION AND ASSESSMENT PROTOCOLS**

The District continues to maintain an ongoing program to inspect its sanitary sewer mains using Closed Circuit Television (CCTV). The goal is to CCTV inspect every line in the District on no more than a five year revolving schedule which is the current standard frequency for all lines. A repeat inspection of a line segment initiated before the five year scheduled inspection is done if determined necessary by Engineering staff.

### **EVALUATION OF INSPECTION FINDINGS**

A review of the CCTV assessment ratings is made by the Engineering staff every quarter to ensure that ratings are properly assessed and to evaluate the findings for scheduling required repairs or rehabilitation in Capital Improvement Projects or, if needed, cleaning and/or a repeat CCTV inspection. Engineering staff reviews all CCTV assessments with a DSI rating greater than 10 or a total rating greater than 1000. Engineering staff meets periodically with maintenance staff to go over these findings and make adjustments if and when necessary.

Engineering further ranks the CCTV assessments with a DSI rating greater than 10 or a total rating greater than 1000, into ratings of "HIGH PRIORITY, MEDIUM-HIGH, MEDIUM, & LOW" using visual observation, historical maintenance crew feedback and sound Engineering judgment.

## **3. CONDITION-BASED REPAIR AND REPLACEMENT PLAN**

The CCTV assessments are further ranked as follows:

### **Priority 1:**

- Structural defects that have previously caused or contributed to a Sanitary Sewer Overflow (SSO), or defects Engineering determines will most likely cause or contribute to an SSO in the near future.
- Structural defects classified as "Acute Defects".
- Defects ranked as PRIORITY in a high I/I location.

### **Priority 2:**

- Defects ranked as HIGH PRIORITY, but not in a high I/I location.

### **Priority 3:**

- Defects ranked as MEDIUM-HIGH, in a high I/I location.

### **Priority 4:**

- All other defects.



The sanitary sewer lines to be repaired, rehabilitated and replaced are given to the District Contractor in batches based on available budget and schedule.

**4. CAPITAL IMPROVEMENT PLAN (CIP)**

The District’s Capital Improvement Plan includes over \$27.8 million in expenditures over the course of fiscal year 2015 to fiscal year 2024. The plan is organized into funding groups: System Rehabilitation, Capital Equipment, and other capital.

The System Rehabilitation funding group was developed to comply with the EPA Consent Decree and is comprised of the annual pipe-bursting project.

The latest financial plan estimated costs to be \$200 per linear foot with increases at 3.5% per year. Over the next 10 years, approximately 21 miles of pipeline are projected be replaced at a total cost of \$26.3 million. The pipe-bursting project represents 94% of projected capital improvement projects over the next 10 years.

The Capital Equipment funding group includes smaller value capital items including flow meters, diesel engine retrofits, sewer inspection cameras, vehicle replacement, manhole “smart” covers, and other miscellaneous items. The other capital funding group includes manhole adjustments and pump station rehabilitation.

Figure 1.3 below shows the required footage (linear feet) of sanitary sewer main that must be rehabilitated each year in order to comply with the EPA Consent Decree.

Figure 1.3 – CIP Footage Goals

FISCAL YEAR	REHABILITATION FOOTAGE REQ.	CAPITAL IMPROVEMENTS PROJECT (CIP) BUDGET
2014-15	8,627	\$1,725,000
2015-16	10,053	\$2,081,000
2016-17	10,360	\$2,220,000
2017-18	10,667	\$2,365,000
2018-19	10,993	\$2,523,000
2019-20	11,320	\$2,689,000
2020-21	11,660	\$2,867,000
2021-22	12,013	\$3,057,000
2022-23	12,373	\$3,259,000
2023-24	12,740	\$3,473,000

**5. CONSTRUCTION METHODS AND STANDARDS**

The Stege Sanitary District is responsible for the rehabilitation and replacement of the sanitary sewer main line and the property owner is responsible for the entire sanitary sewer lateral up to and including the connection to the sanitary sewer main (SSD Standard Specifications and Details Section 2, page 2-4). As a courtesy to the property owner, the District replaces all sewer connections during its capital improvement program when the main is replaced. All other times, the property owner is responsible for the maintenance of the sanitary sewer main connection.

The District predominantly specifies pipe-bursting with SDR17 HDPE pipe as its preferred method of pipe replacement. However, the District may use a combination of open trenching or cured-in-place pipe in lieu of pipe bursting in very limited circumstances during challenging alignments or where heavy conflicts exist that preclude the safe and effective use of pipe-bursting.

**6. SAN PABLO AVENUE SPECIFIC PLAN AREA - SEWER CONNECTION/CAPACITY CHARGE**

In September 2017, a special study was completed to help plan for future developments in the San Pablo Specific Plan Area (SPSPA) in the City of El Cerrito. ("Sewer Capacity Charge for the San Pablo Avenue Specific Plan Area," September 12, 2017, Urban Economics.) Without the required pipe upsizing, the anticipated development in the SPSPA would surcharge existing facilities.

On October 26, 2017, the Board approved an additional capacity charge to fund sewer capacity improvements needed to serve the projected growth within the SPSPA. Effective November 8, 2017, for new connections and increased discharges in the SPSPA, both residential and nonresidential developments will pay \$217.89 per fixture unit in addition to the existing District-wide sewer connection/capacity charge. The sewer capacity improvements shall be performed by the Stege Sanitary District and solely funded by the SPSPA sewer connection/capacity charge. District staff will determine the priority of the sewer capacity improvements based on the sewer capacity demand and timing of the developments as they are approved and as funding allows.