



Ross Valley Sanitary District Year-End Capital Program Report FY 2020/21 July 2020 - June 2021

District Mission

We provide our customers with high quality wastewater collection service, through a system that has no avoidable sanitary sewer overflows, at the lowest sustainable cost, in order to protect public health and the environment.

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Year-End Capital Program Report FY 2020/20 July 2020-June 2021

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INTRODUCTION

Ross Valley Sanitary District (RVSD or District) follows a prioritized plan for infrastructure assessment and replacement and rehabilitation. Over the last eight years, the District has invested in its infrastructure to bring the system up to a better level of service, including through the Capital Program projects. FY 2020/21 was the eighth year of implementation of what was planned as a 7-year Capital Program Implementation Plan in the 2013 Infrastructure Asset Management Plan (IAMP).

The IAMP was intended to be a dynamic planning tool that is adjusted as needed to address future issues and priorities that may arise. Project packaging, prioritization and schedules were changed since 2013 based on updated data and risk assessment results, but the vast majority of commitments in the 2013 IAMP were completed by the end of this eighth year, including the Laurel Grove Sewer Rehabilitation Project and the FY 19/20 Force Main Appurtenances Project. The District has executed a contract to construct the last pump station improvements project to complete the 2013 IAMP plan, at the Larkspur Pump Station (PS14) and new generators at PS24/PS25 on South Eliseo Drive, but the work is not yet complete.

A 2021 IAMP update was completed in September 2021 and now guides the Capital Program. The 2021 IAMP is a risk-based prioritization of assets for capital and in-house repair, and most of the District's assets assessed during the IAMP update were determined to be moderate to low risk based on the various risk model calculations for each asset type. In the current 5-year financial forecast, budgeted project and labor support needs remain high in FY 2021/22 and then taper down towards the steady-state capital improvement level projected in FY 2022/23, a pay-go plan that should not require any additional financing by revenue bonds, etc.

Year-End Capital Program Report

This report is the fourth year-end Capital Program Report since the IAMP and presents a snapshot of the Capital Program on completion of the eighth year of the implementation. This year-end report aggregates and augments the project status and financials over the fiscal year. It looks at the progress on the Capital Program as compared to the IAMP Capital Program Implementation Plan and provides some detail as to projects that were completed in FY 2020/21 as well as the 8-year emergency repair history.

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INFRASTRUCTURE ASSET MANAGEMENT PLAN (IAMP)

Ross Valley Sanitary District's (RVSD or District) Infrastructure Asset Management Plan (IAMP, VWHA, 2013) was prepared in October 2013 as part of the requirements for complying with the May 13, 2013 San Francisco Bay Regional Water Quality Control Board (RWQCB) Order No. R2-2013-0020, a Cease and Desist Order (CDO). The IAMP recommendations replaced in their entirety recommendations from RVSD's previous capital improvement planning document, which is named the Sewer System Replacement Master Plan (SSRMP, RMC, 2007).

The 2013 IAMP presents a prioritized plan for infrastructure replacement to meet the following specific requirements of the CDO:

- Replace or rehabilitate specific pipes with Grade 5 structural defects by June 30, 2018. If certain conditions are met, this action may be deferred up to June 30, 2021.
- Prioritize rehabilitation or replacement of other pipes using a methodology that considers condition and risk factors. The District must rehabilitate, on a three-year rolling average, 4 miles of pipe per year.
- Prioritize pump station, force main, and trunk line capital improvement needs and integrate these replacements, and their needed funding, into the District's Capital Improvement Plan (CIP).
- The proposed capital needs must consider the project implementation schedule from the District's SSRMP. The SSRMP projects must be completed by June 30, 2019, or later if approved by the Executive Officer.
- Provide an ongoing process for the assessment and prioritization of pipeline, force main, and pump station replacement and rehabilitation based on the results of condition assessments completed.

The 2021 IAMP (HDR, West Yost, and Nute Engineering, 2021) presents a prioritized plan for infrastructure replacement that is based on a comprehensive risk model of the system and represents a financially and institutionally sustainable path forward beyond the 2013 CDO. In the 2021 IAMP, each asset in the system is assigned a risk-based score which assists in prioritizing pipe segments and manholes for grouping into gravity sewer improvement projects going forward. Force main and pump station (especially smaller lift station) assets not comprehensively evaluated in the 2013 IAMP were addressed in this update as well. The 2021 IAMP includes a [summary report](#), [gravity main assessment](#), [manhole assessment](#), [creek crossing assessment](#), [hydraulic modeling](#), [I&I Reduction Plan](#), [Force Main Assessment](#), [Lift Station Assessment](#) and Integrated Capital Improvement Plan. A budget and schedule of improvements is recommended in the [Integrated Capital Improvement Plan \(Chapter 9\)](#).

Gravity Sewer Improvement Projects

Three different groupings of gravity sewer projects were presented in the 2013 IAMP:

Group A and B – 45 pipes were required to be rehabilitated in two projects in FY 2013/14 per the CDO. These are referred to as the Group A and B projects.

Sewer Rehabilitation – The 2013 IAMP used a custom numerical database model to assign risk to every mainline and trunk line pipe segment in the CMMS database. This model, also known as the Sewer Main Asset Replacement Tool (SMARTool), was developed in Microsoft® Access. The IAMP represented a snapshot in time that was documented in the District’s computerized maintenance management system (CMMS) as of May 2013. At that time, 40% of the District’s pipelines had not been condition assessed.

Data from additional condition assessment and asset inventory were integrated into updates to the SMARTool results in 2014 and 2015. Sewer rehabilitation project scope and prioritization were reevaluated based on these updated results.

Capacity Improvements – Capacity improvement projects from the SSRMP were reevaluated in the IAMP. The following capacity projects were recommended in the implementation plan:

- Miracle Mile (San Anselmo) (Completed)
- Lower Butterfield/Meadowcroft (San Anselmo) (Completed)
- Manor Easement (Kentfield) (Partially Completed / Postponed, Capacity Impacts Not Observed)
- Spruce/Park/Merwin/Broadway (Fairfax) (Postponed, Capacity Impacts Not Observed)

Four capacity improvement projects were included but recommended for further study:

- Upper Butterfield (Sleepy Hollow) (Postponed, Capacity Impacts Not Observed)
- Westbrae/Hawthorne (Fairfax) (Postponed, Capacity Impacts Not Observed)
- Laurel Grove/McAllister (Kentfield) (Completed)
- Sonoma/Nokomis (San Anselmo) (Completed)

Since the IAMP, additional information and alternative approaches have been applied to evaluate and further study the capacity needs in the collection system. For example, a much narrower scope of work relieved capacity deficiencies on Miracle Mile, at significant cost savings and without the major disruption to the community at this critical location at the Hub in San Anselmo. Deployment of SmartCover level monitors in manholes has also been used to collect system performance data and provide an alarm if levels rise too high in the manholes during wet weather, for instance at the Manor Easement, Westbrae-Hawthorne, Upper Butterfield and Spruce-Fairfax locations.

Gravity Improvement Projects for future years will be defined based on risk-based assessments in the 2021 IAMP. The FY 2022/23 Gravity Sewer Improvements Project will be the first of these projects defined based on the 2021 IAMP.

Pump Station Rehabilitation Projects

Pump stations were evaluated in the 2013 IAMP, and improvements were recommended for 6 pump stations. The most significant projects include full pump station rehabilitation of PS 12 Bon Air, PS 13 Greenbrae and major electrical improvements at PS 15 Kentfield. Notices of Completion were issued for these projects in FY 2019/20. The three remaining pump stations, PS 14 Larkspur, PS 24 (650 S. Eliseo) and PS 25 (1350 S. Eliseo), completed design and went out to bid in FY 2020/21.

The 2021 IAMP includes a minor pump station assessment and recommends one or two lift station rehabilitation projects in each of the next three years. LS 20 (Larkspur Landing), LS 30 (Heather Gardens), and LS 31 and LS 32 (Riviera Circle, Larkspur) are the highest priority rehabilitation projects identified.



Force Main Projects

Force main assessments were conducted for the 2013 IAMP and force main appurtenances projects (e.g., air valves, isolation (plug) valves, cathodic protection, and bypass force main rehabilitation projects) were recommended. The 2019/20 Force Main Appurtenances Project, including replacement of five air release valves and three plug valves on the system, completed construction in FY 2020/21.

The 2021 IAMP provided desktop assessment of all the District's force mains and included field evaluations of FM-33 and FM-14 that cross Corte Madera Creek, as well as FM-13 and FM-1. The field assessments concluded that there were no deficiencies that warranted rehabilitation projects. Force mains will be periodically assessed based on the IAMP recommendations.

Flow Monitoring and Other Plans and Studies

Flow monitoring and additional condition assessment were recommended in the 2013 IAMP and 2021 IAMP. The District monitored flows in a 2014 study, uses SmartCovers in manholes to collect flow data at 50 key locations, completed a Large Diameter Condition Assessment project, and completed the CCTV of the system by District crews. A Flow Monitoring Study was recommended in the 2021 IAMP to be conducted in FY 2021/22 to compare flows to 2006 and 2014 and determine the impact of the \$108 Million capital program, in-house repair program and the lateral replacement program (ordinance, grants and loans) on flows. The updated flow monitoring and modeling will also determine whether three capacity projects listed in the 2013 IAMP (Westbrae/Hawthorne, Spruce-Park-Merwin-Broadway, and Upper Butterfield) are still needed based on new flow monitoring and modeling information, because SmartCover monitoring, including an historic 200 yr., 12-hr. storm on October 24, 2021, has not shown capacity deficiencies at these locations.

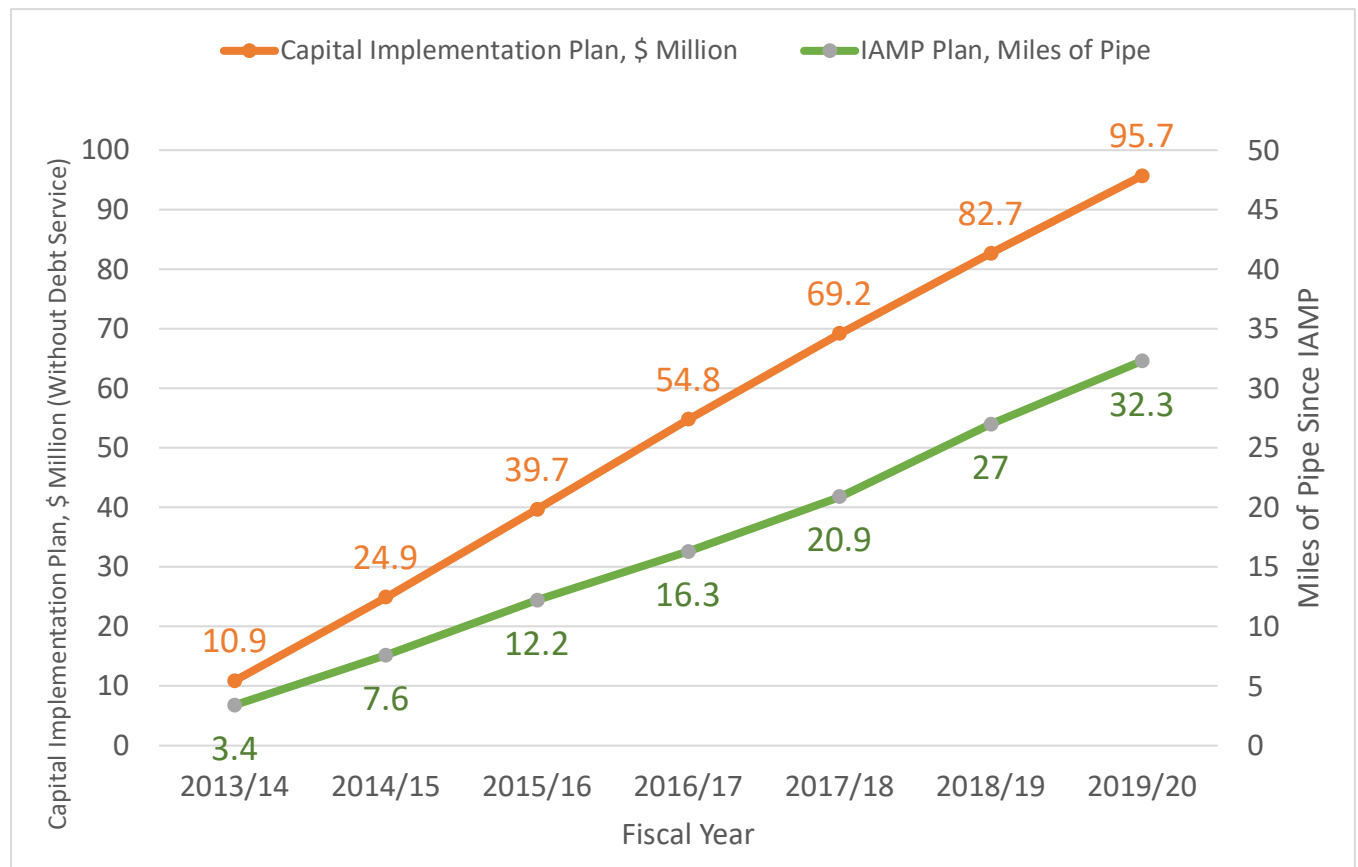
CAPITAL PROGRAM IMPLEMENTATION

Project descriptions and status for Capital Projects discussed below are included in Appendix A.

2013 IAMP Plan and Capital Program Implementation Progress

Projects and activities and associated costs and a preliminary implementation timeline were presented in the 2013 IAMP. The cumulative cost of the recommended CIP and the miles of pipe to be completed are shown on the following figure over the 7-year plan.

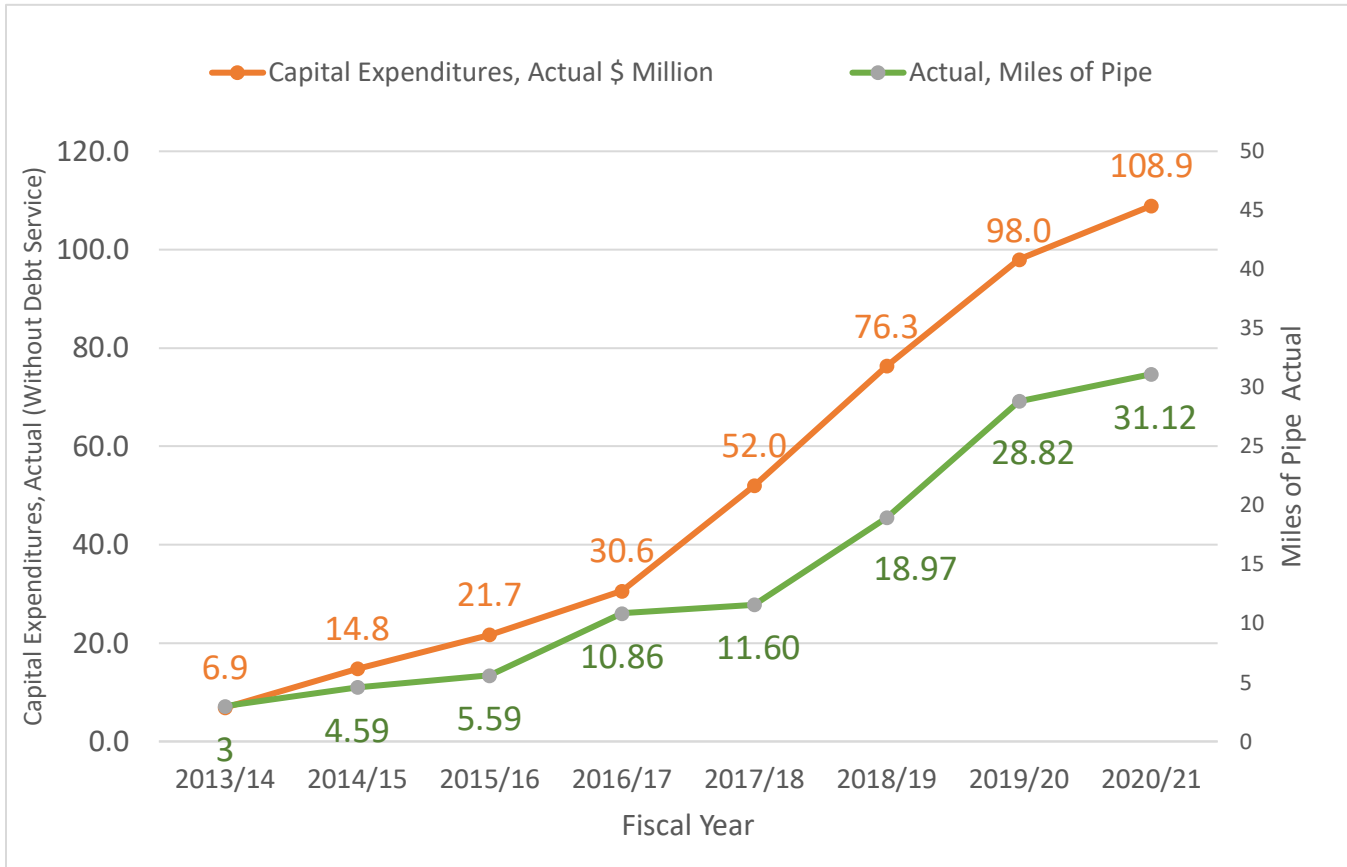
Figure 1. IAMP Capital Program Implementation Plan



The actual progress in miles of pipe completed and total capital expenditures is shown on the following figure. These expenditures do not include debt service, so they are directly comparable to the IAMP budgeted costs. Note that these lengths do not include any work done by District crews, such as the Repair Crew lining repairs and Condition Assessment Crew support of Inflow and Infiltration Reduction Program work. Such District efforts are integral to its CDO compliance approach, and yield a commensurate amount of rehabilitated pipe length, but are discussed in the Year-End Metrics Report and not described in this Year-End Capital Program Report.



Figure 2. IAMP Capital Program Implementation Progress



Gravity Sewer Improvement Projects

The following gravity sewer improvement projects were completed prior to FY 2020/21:

- FY 2014 Gravity Sewer Rehab Group A
- FY 2014 Gravity Sewer Rehab Group B
- Magnolia Avenue Trunk Line Rehabilitation
- FY 2014/15 Pipeline Rehabilitation Projects, including:
 - Rehabilitation
 - Manor Easement capacity improvement
 - McAllister capacity improvement
- 2016 Magnolia Ave Sewer Rehabilitation and Town of San Anselmo FY2015/16 Magnolia Ave Paving Project
- Large Diameter Gravity Sewer Rehabilitation Project I
- Large Diameter Gravity Sewer Rehabilitation Project II-1
- Baywood Ct Creek Crossing Replacement (Emergency Resolution 17-1532)

- Large Diameter Gravity Sewer Rehabilitation Project II-2
- FY 2015/16 Gravity Sewer Improvements Project
- FY 2016/17 Gravity Sewer Rehabilitation Project
 - The Miracle Mile Capacity Project recommended in the 2013 IAMP was added to this scope
- FY 2016/17 Gravity Sewer Improvement Project - Nokomis and Meadowcroft, primarily:
 - Meadowcroft capacity improvement
 - Nokomis capacity improvement (Sonoma was determined to not be required during design)
- Large Diameter Gravity Sewer Project II-3A - Upper Shady Lane/ Ross Common, including:
 - Upper Shady Lane capacity improvement
- FY 2016/17 Gravity Sewer Improvement Project – Butterfield/Meadowcroft-Arroyo, including:
 - Rehabilitation
 - Lower Butterfield capacity improvement

The following gravity sewer improvement projects were completed in FY 2020/21:

- Large Diameter Gravity Sewer Project II-3B - Lower Shady Lane/Poplar
- Laurel Grove Sewer Rehabilitation Project

The following gravity sewer improvement projects were in construction phase in FY 2020/21:

- FY 2020/21 Gravity Sewer Improvements Project
- Butterfield/Arroyo-Kenrick Gravity Sewer Improvements Project

The following gravity sewer improvement projects were in design phase in FY 2020/21:

- Winship Bridge Sewer Relocation
- Nokomis Bridge Sewer Relocation

Pump Station Rehabilitation Projects

The following pump station rehabilitation projects were completed prior to FY 2020/21:

- Portions of PS 15 Kentfield Pump Station Improvements identified in the IAMP
- PS 15 Kentfield Comminutor Replacement
- PS 12 Bon Air and PS 13 Greenbrae Pump Station Rehabilitation Projects
- PS 15 Kentfield Pump Station Improvements

The following pump station rehabilitation projects were in the design phase during FY 2020/21:

- PS 14, 24, & 25 Pump Station Improvements Project



Force Main Projects

The following force main projects were completed prior to FY 2020/21:

- FY 2014/15 Force Main Appurtenance Project

The following force main projects were completed during FY 2020/21:

- FY 2019/20 Force Main Appurtenance Project

Other Capital Projects

The following other capital projects were completed in FY 2020/21:

- Larkspur Excavation and Remediation Project at 2000 Larkspur Landing Circle, the former RVSD wastewater treatment plant, to remove soils contaminated by trace levels of PCBs in accordance with U.S. EPA requirements.

Plans and Studies

The following plans and studies were completed prior to FY 2020/21:

- Flow Monitoring Study
- Large Diameter Condition Assessment

The following plans and studies were in progress during FY 2020/21:

- Infrastructure Asset Management Plan Update

CAPITAL PROGRAM FINANCIALS

In FY 2020/21, combined capital program earnings for gravity sewer improvement, pump station, and force main projects totaled \$7.5 million¹ for construction contracts and \$1.6 million for professional services agreements. Four capital projects were completed in FY 2020/21; project summary sheets for these are included in Appendix B.

Construction Financials

Construction financials are included in Table 1. Construction billings were close to the expected spending of \$9.1 million. Remaining budget was moved forward to FY 2020/21 because the projects will still be completed. Payments to the contractor and associated retention were 83% of the total budget amount.

Professional Services Financials

Professional services financials are included in Table 2.

¹ \$6.7 million due to contractor plus \$800 thousand in retention balance at the end of the year



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YEAR-END CAPITAL PROGRAM REPORT
FY 2020/21 JULY 2020 - JUNE 2021

Table 1. Capital Improvement Projects – Construction Phase Financials – FY 2020/21 Year End

FY 2020/21																														
Project	Construction			Construction Contract							Progress Billings through FY 2020/21 Year End (\$000)																			
	Probable Construction Cost in Budget	Updated Probable Construction Cost	FY 2020/21 Construction Budget	Award Month	Completion Month ²	Contractor	Contract Amount	Change Orders Total	% of Original Contract	Revised Contract Amount	Payments prior FY	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Total Payments FY 2021/21	Total Payments to Date	Retention Balance	Total Billed to Date	Contract Amount Remaining		
GRAVITY SEWER IMPROVEMENT PROJECTS																														
Laurel Grove Sewer Rehabilitation Project	2,500	1,795	2,310	Jun-2020	May-2021	Glosage Engineering, Inc.	1,795	578	32.2%	2,373			757	541	365	333								259		2,255	2,255	119	2,373	0
Large Diameter Gravity Sewer Project II-3B - Lower Shady Lane/Poplar	5,300	5,300	845	Mar-2019	Oct-2021	Cratus Inc.	4,959	(190)	-3.8%	4,770	4,431	101													101	4,531	238	4,770	0	
Butterfield/Arroyo-Kenrick Gravity Sewer Improvements Project	4,400	2,177	170	May-2021	May-2022	Ranger Pipelines, Inc.	2,177			2,177													215	215	215	11	226	1,951		
FY 20/21 Gravity Sewer Improvements Project	5,100	4,370	300	Jun-2021	May-2022	Glosage Engineering, Inc.	4,370			4,370																			4,370	
Force Main Projects																														
FY 2019/20 Force Main Appurtenances Project	1,140	1,200	1,300	Feb-2020	Mar-2021	Trinet Construction, Inc.	1,180	52	4.4%	1,232	227			426	265	198								54		943	1,170	62	1,232	0
OTHER																														
Larkspur Landing Excavation and Remediation Project	7,000	9,700	4,150	May-2019	Dec-2020	ERRG, Inc.	8,803	(560)	-6.4%	8,243	4,661	2,170	836	136				29							3,171	7,832	412	8,243	0	
Total for Projects In/Budgeted for Construction FY 2020/21	25,440	24,542	9,075				23,284	(119)	-0.5%	23,165	9,318	2,270	1,592	1,103	630	531		29		54	259		215	6,684	16,002	842	16,844	6,321		
Key:																														
											Notes: 1. Dollar amounts are in thousands (\$000) 2. Completion month is anticipated Board acceptance and filing the Notice of Completion, not the construction work (in the field) completion																			
Construction work is completed (Final Completion)																														
Construction work is awarded or in progress																														



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YEAR-END CAPITAL PROGRAM REPORT
FY 2020/21 JULY 2020 - JUNE 2021

Table 2. Capital Improvement Projects – Professional Services Contract Financials – FY 2020/21 Year End

Project and Consultant	Professional Services Contract					Billings through FY 2020/21				Payment History		
	Contract Date	Contract Amount	Amendment Total	% of Original Contract	Revised Contract Amount	Q1	Q2	Q3	Q4	Payments FY 2020/21	Payments Prior FY	Payments to Date
GRAVITY SEWER IMPROVEMENT PROJECTS												
Laurel Grove Sewer Rehabilitation Project										512		686
Nute Engineering (ENG/ESDC)	Dec-2019	159		0%	159	38	7	3			102	149
Jill Barnes (PM)	Mar-2020	12	113	960%	125	54	26				26	107
Integral Consulting, Inc. (ENV)	Dec-2019	34	34	99%	69	1	17	3			34	55
Psomas (CM)	May-2020	330	45	14%	375	155	123	39	45		12	375
Large Diameter Gravity Sewer Rehabilitation Project II-3 A & B										40		1,330
Brown and Caldwell (ENG/ESDC)	Jan-2016	525	171	32%	696		21				660	681
Jill Barnes Task Orders 4 & 5 (PM)	Jun-2018	10		0%	10						5	5
Integral Consulting, Inc. (ENV)	Jun-2019	24	37	157%	61			6	12		27	45
Psomas (CM)	Oct-2016	557	130	23%	687	2					598	600
Butterfield/Arroyo-Kerrick Gravity Sewer Improvements Project										212		212
Harris and Associates (ENG/ESDC)	Feb-2021	158		0%	158			91	17			108
Jill Barnes (PM)	Feb-2021	105		0%	105			31				31
Integral Consulting, Inc. (ENV)	Feb-2021	41	28	68%	69			14	29			44
Psomas (CM)	May-2021	266		0%	266				29			29
FY 20/21 Gravity Sewer Improvements Project										310		310
Harris and Associates (ENG/ESDC)	Jul-2020	378		0%	378	75	51	146	12			285
Jill Barnes (PM)	Feb-2021	25		0%	25			21				21
Integral Consulting, Inc. (ENV)	Mar-2021	13	10	74%	22			4				4
PUMP STATION PROJECTS												
PS 14, 24, & 25 Pump Station Improvements Project										142		161
Nute Engineering (ENG)	Feb-2020	235	4	2%	240	19	48	31	43		19	161
Force Main Projects												
FY 2019/20 Force Main Appurtenances Project										119		417
Schaaf & Wheeler (ENG)	Jul-2018	156	64	41%	220	4	3				201	208
Jill Barnes (PM)	Mar-2020	11	61	553%	72	17	8				23	47
Integral Consulting, Inc. (ENV)	Jun-2019	7	0	0%	7	1		1			4	6
Psomas (CM)	Apr-2020	171	0	0%	171	54	25	7			70	156
OTHER												
Larkspur Landing Excavation and Remediation Project										309		1,129
Integral Consulting, Inc. (ENV)	Jul-2019	68	53	78%	121	28		19			62	109
Kennedy/Jenks (ESDC/CM)	Jun-2019	883	137	16%	1,020	231	11	20			758	1,020
Total CIP Professional Services		4,163	887	21%	5,056	680	341	436	188	1,644	2,601	4,245

Key:

- Construction work is in progress
- Project is in Design (Construction work not started)
- Project Completed

Notes:

1. Amounts are in thousands of dollars.
2. One contract (per consultant) may be distributed across multiple construction projects for tracking.



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EMERGENCY REPAIR PROJECTS

Over the last 8 fiscal years, the District has completed 9 emergency repairs that were brought to the Board for action (when the repair was expected to cost greater than \$15,000) to declare or review and terminate an emergency. These emergency repair projects are summarized below.

55% of the emergency repair projects are identified during response to an SSO and 55% involve a creek crossing; the IAMP Update Phase II includes a creek crossing assessment task and review/update to the likelihood of failure and consequence of failure criteria in the risk model.

Table 3. Emergency Repair History

Name	Board or GM	Month(s)	Asset	Cause	SSO	Creek	Slide	Pipe Repair	CIPP Line	Replace	Manhole	Approximate Cost
Westbrae Trunkline	Board	Jul 2013	150 LF of 8-inch with aerial creek crossing	Age/joint	X	X		X	X		X	\$ 70,000
Greenbrae Force Main	Board	Sep-Oct 2013	30-inch RCP force main in ARV vault	Pipe material	X			X				\$ 50,000
11 Evergreen	Board	Nov 2013	20 LF of 6-inch in bridge over creek	Age/Joint	X	X		X				\$ 10,000
3 Boardwalk 1	GM	Jun-Jul 2016	10 LF of 8-inch in tidal zone	Structural collapse		X		X				\$ 70,000
Ichabod easement	Board	Sep-Nov 2016	340 LF of 10-inch with aerial creek crossing	Bank erosion	X	X		X	X			\$ 100,000
31 Ellsworth	Board	Mar-Jun 2017	Easement below pipeline failed, no damage to sewer	Slide			X					\$ 20,000
Baywood Ct	Board	Sep 2017 to Feb 2018	240 LF of 14-inch across creek	Tree/Age		X				X		\$ 460,000
9 Summit Rd	Board	Jul 2019 to Nov 2019	200 LF of 4-inch pipe	Slide	X		X					\$ 145,000
31 Ellsworth	Board	Jun 2020 to Oct 2020	Damaged easement threatening stability of sewer	Slide			X					\$ 83,000
Total			960 LF									\$ 1,008,000



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APPENDIX A. PROJECT DESCRIPTIONS AND STATUS

Gravity Sewer Improvement Projects

Project Name	Project Description	Status
As-Needed, On Call Sanitary Sewer System Construction Services	As-needed repair and replacement of sewer system infrastructure including urgent and emergency pipe repairs and installation of manholes.	Ongoing/As-Needed
District Capitalized Repairs	Annual repair, restoration, and improvement of gravity sewer pipeline infrastructure.	Ongoing/As-Needed
FY 2015/16 Gravity Sewer Improvements	6.7 miles of rehabilitation/replacement of gravity sewers in Kent Woodlands Upper, Southwood, and Winship areas.	Completed
FY 2016/17 Gravity Sewer Rehabilitation Project	8.4 miles of rehabilitation/replacement and restoration by repair of gravity sewers in Butterfield/Woodside, Scenic, Tamalpais, and Madrone areas.	Completed
FY 2016/17 Gravity Sewer Improvements Nokomis/ Meadowcroft	0.6 mi of diversion and replacement gravity sewer in San Anselmo including new diversion and replacement gravity sewer by open-cut (~1,900 LF), pipe bursting (~350 LF), pipe reaming (~440LF), and cured-in-place pipe (~350 LF) methods, including the Nokomis and Lower Butterfield capacity improvements	Completed
FY 2016/17 Gravity Sewer Improvements Butterfield/ Meadowcroft-Arroyo	0.4 mi of diversion and replacement gravity sewer in San Anselmo including open-cut and pilot-tube guided boring methods in Meadowcroft Dr, Willow Way, and Butterfield Rd between Meadowcroft and Arroyo	Completed
FY 2016/17 Gravity Sewer Improvements Butterfield/ Arroyo-Kenrick	0.3 mi of diversion and replacement gravity sewer in San Anselmo including open-cut methods in Butterfield Rd between Arroyo and Kenrick	Construction
Laurel Grove Sewer Rehabilitation Project	Replacement of approximately 4,436 feet of pipe, mostly by pipe bursting and upsizing the diameter of the trunk line under Laurel Grove Avenue between Sir Francis Drake Blvd. and Makin Grade.	Completed
FY 2020/21 Gravity Sewer Improvements	2 mi of gravity sewer rehabilitation and additional restoration predominately in the Sequoia Park area of San Anselmo, South Eliseo Drive between Bon Air Rd. and Corte Real, and near Rancheria and Evergreen in Kent Woodlands.	Construction
Inflow and Infiltration Reduction Program	I&I reduction on gravity sewers, including joint grouting, CIPP lining, manhole rehabilitation, and other I&I reduction work	IAMP Update
Large Diameter Gravity Sewer Rehabilitation Project II-1	Rehabilitation of high priority Techite and non-reinforced concrete large diameter pipe, ranging from 18- to 36-inch diameter, on the Original 1920s Trunk Sewer, Ross Valley Trunk Line and the Shady Lane Trunk Sewer.	Completed
Large Diameter Gravity Sewer Rehabilitation Project II-2	Rehabilitation of Techite and non-reinforced concrete large diameter pipe, ranging from 18- to 36-inch diameter, on the Original 1920s Trunk Sewer and Ross Valley Trunk Line through Downtown San Anselmo.	Completed
Large Diameter Gravity Sewer Rehabilitation Project II-3A – Upper Shady Lane/Ross Common	0.4 miles of trunk sewer reconstruction in Ross, including portions of the Shady Lane Trunk Sewer including Upper Shady Lane and Ross Common	Completed



Project Name	Project Description	Status
Large Diameter Gravity Sewer Rehabilitation Project II-3B - Lower Shady Lane/Poplar	0.8 miles of trunk sewer reconstruction in Ross, including portions of the Shady Lane Trunk Sewer including rehabilitation in Lower Shady Lane and Poplar Avenue and parallel sewer installation in Poplar Avenue	Completed

Pump Station Projects

PUMP STATION PROJECTS		
LS 30 Heather Gardens Lift Station Improvements	Pump station relocation/separation from storm water pump station.	Planning
LS 20 Larkspur Landing A Lift Station Improvements	Pump station rehabilitation to submersible pumps.	Planning
Riviera Circle Pump Station Improvements Riviera Circle pump station equipment upgrades, LS 31, 32, 33, 34, 35, and 36	Riviera Circle pump station equipment upgrades, LS 31, 32, 33, 34, 35, and 36	Future
PS 12 Bon Air and PS 13 Greenbrae Pump Station Rehabilitation Projects	Full pump station rehabilitation to improve the capacity, operation, and reliability of PS 12 Bon Air and PS 13 Greenbrae pump stations.	Completed
PS 15 Kentfield Comminutor Replacement	Replacement of the grinders at PS 15 Kentfield.	Completed
PS 15 Kentfield Pump Station Improvements Project	Replace variable frequency drives and miscellaneous electrical and instrumentation improvements at PS 15 Kentfield.	Completed
Pump Station Equipment Upgrades	Annual maintenance rehabilitation/ replacement of pump station mechanical and electrical components.	Ongoing/As-Needed
Lift Station Evaluation	Evaluation of the District's minor pump stations	IAMP Update
PS 14, 24, & 25 Pump Station Improvements Project	Improve the capacity, operation, backup power and reliability of PS 14, 24, & 25.	Design

Force Main Projects

FORCE MAIN PROJECTS		
FY 2019/20 Force Main Appurtenance Projects	Isolation and air release valves, bypass connections, and corrosion protection. Includes isolation and air release valves on FM,-13, -14, -24 and -33.	Completed

Other Capital Projects

OTHER CAPITAL PROJECTS		
Larkspur Excavation and Remediation Project at 2000 Larkspur Landing Circle	Remove and replace approximately 40,000 cubic yards of PCB contaminated soil	Completed



APPENDIX B. PROJECTS COMPLETED IN FY 2020/21

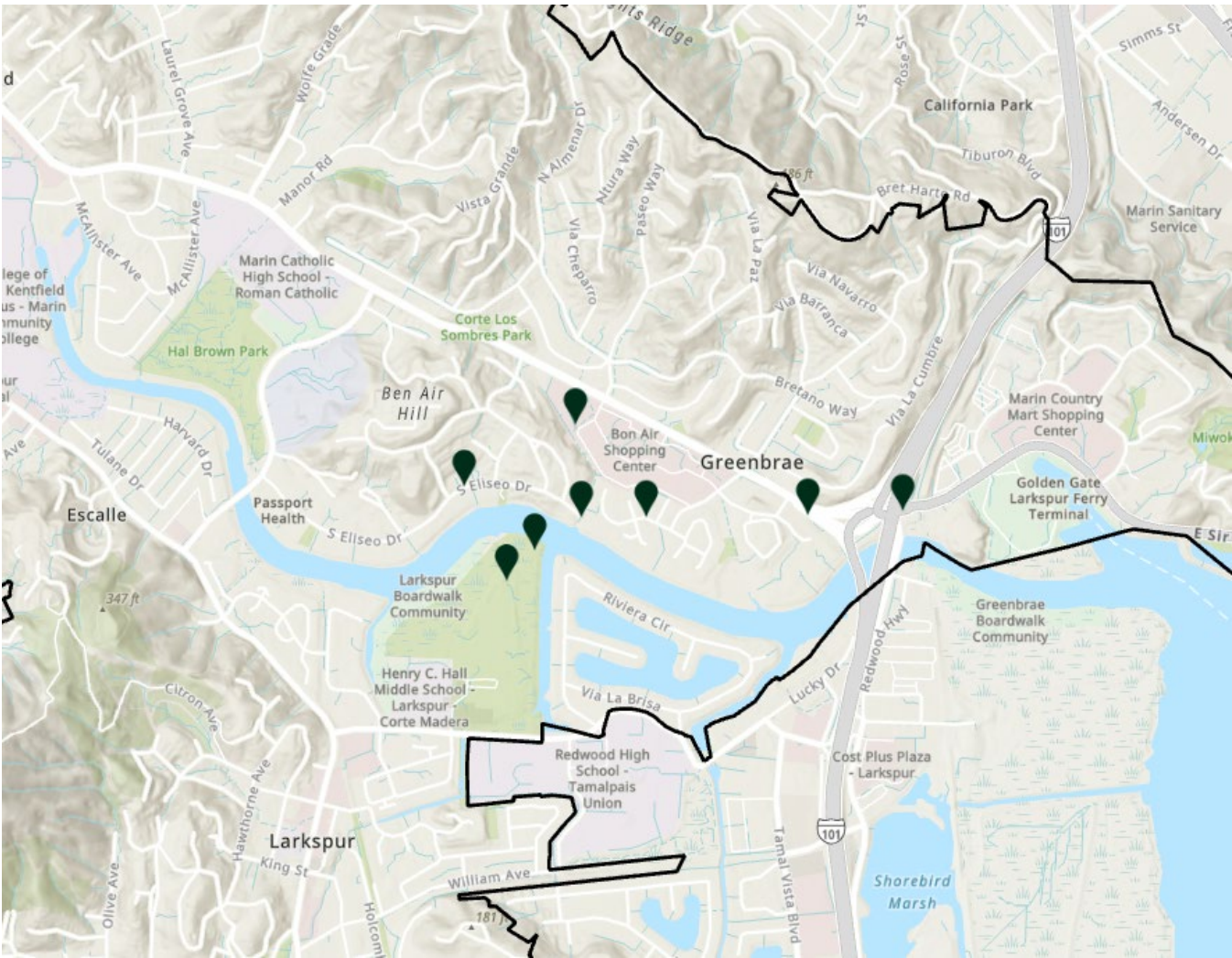
Notice of Completion was filed on four projects in FY 2020/21: FY 2019/20 Force Main Appurtenance Project, Larkspur Excavation and Remediation Project, Laurel Grove Sewer Rehabilitation Project, and Large Diameter Gravity Sewer Project II-3B – Lower Shady Lane/Poplar Avenue.

FY 2019/20 Force Main Appurtenance Project

Project Name: FY 2019/20 Force Main Appurtenance Project
Project Type: Force Main Improvements
Project Description: Repair or replacement of three existing plug valves, installation of five air valves, and construction of two anode test stations along RVSD’s force mains in the City of Larkspur.
Community(ies): Larkspur
Engineer: Schaaf & Wheeler
Contractor: Trinet Construction, Incorporated
Construction Manager: Psomas, Inc.
Award Month: February 2020 Contract Date: February 12, 2020
Notice to Proceed: May 6, 2020 Final Completion: February 9, 2021
Board Acceptance: March 17, 2021 Notice of Completion: March 17, 2021

Table with 4 columns: Fiscal Year, 2019/20, 2020/21, TOTAL. Row 1: Construction, 227, 1,005, 1,232.

Map of the Project





Larkspur Excavation and Remediation Project

Project Name: Larkspur Excavation and Remediation Project

Project Type: Land remediation

Project Description: Excavation and removal of 53,733 cubic yards of contaminated soil and fill material, transportation, and offsite disposal of the contaminated materials, and backfilling and regrading of the site.

Community(ies): Larkspur

Engineer: Kennedy/Jenks Consultants

Contractor: Engineering/Remediation Resources Group (ERRG) Inc

Construction Manager: Kennedy/Jenks Consultants

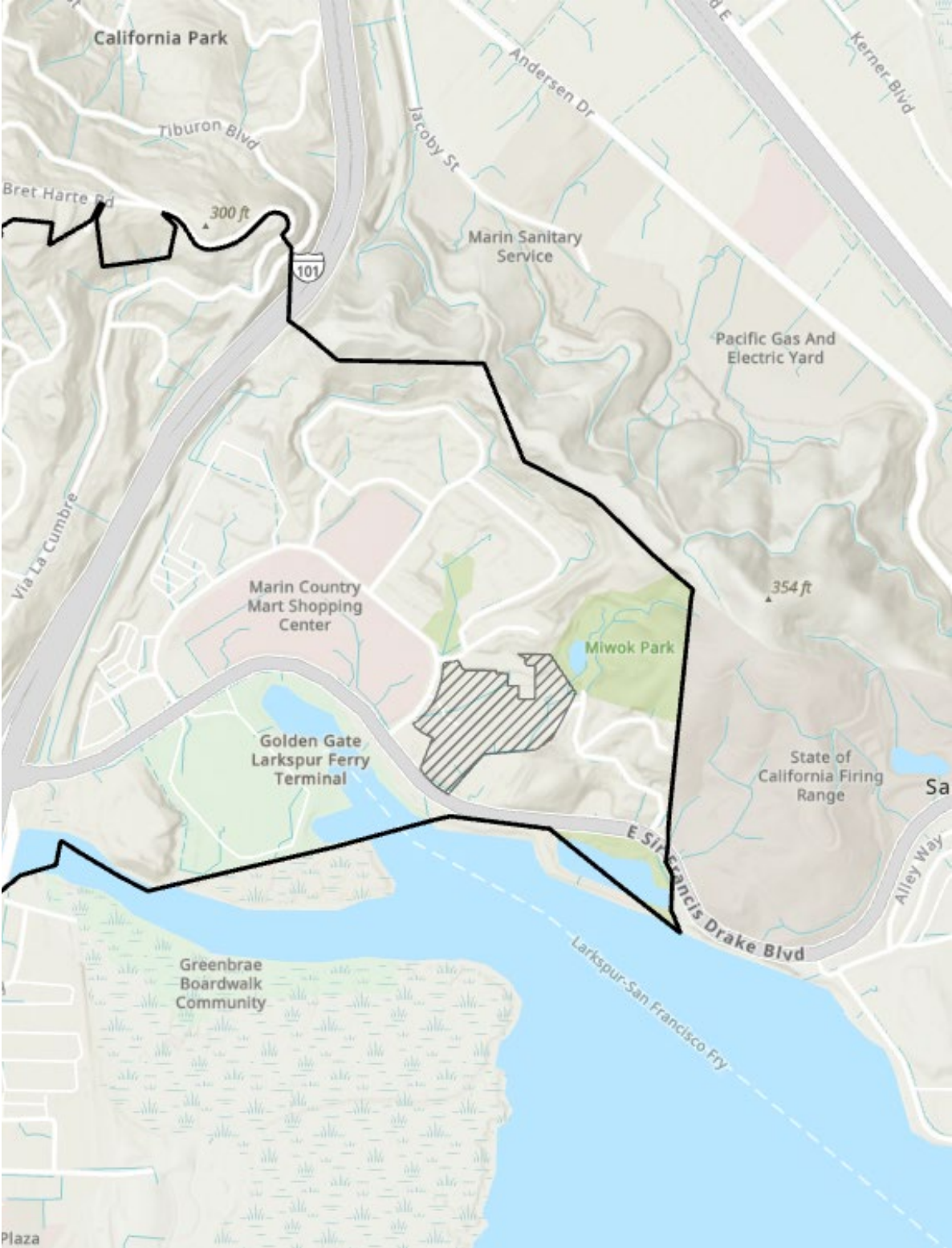
Award Month: May 2019 Contract Date: May 31, 2019

Notice to Proceed: May 31, 2019 Final Completion: November 16, 2020

Board Acceptance: December 16, 2020 Notice of Completion: December 16, 2020

CONSTRUCTION FINANCIALS				
Project Costs (\$000) by Fiscal Year				
Fiscal Year	2018/19	2019/20	2020/21	TOTAL
Construction	30	4,650	3,582	8,243

Map of the Project





Laurel Grove Sewer Rehabilitation Project

Project Name: Laurel Grove Sewer Rehabilitation Project

Project Type: Gravity Sewer Improvements

Project Description: Hydraulic capacity increase, I&I reduction, SSO reduction and structural rehabilitation

Community(ies): Kentfield, Ross, San Anselmo

Construction Methods: Open-Cut construction, pipe burst rehabilitation, manhole construction, and lateral connections.

Length of Pipe: ~6,330 feet 1.2 miles

Engineer: Nute Engineering

Contractor: Glosage Engineering, Incorporated

Construction Manager: Psomas, Inc.

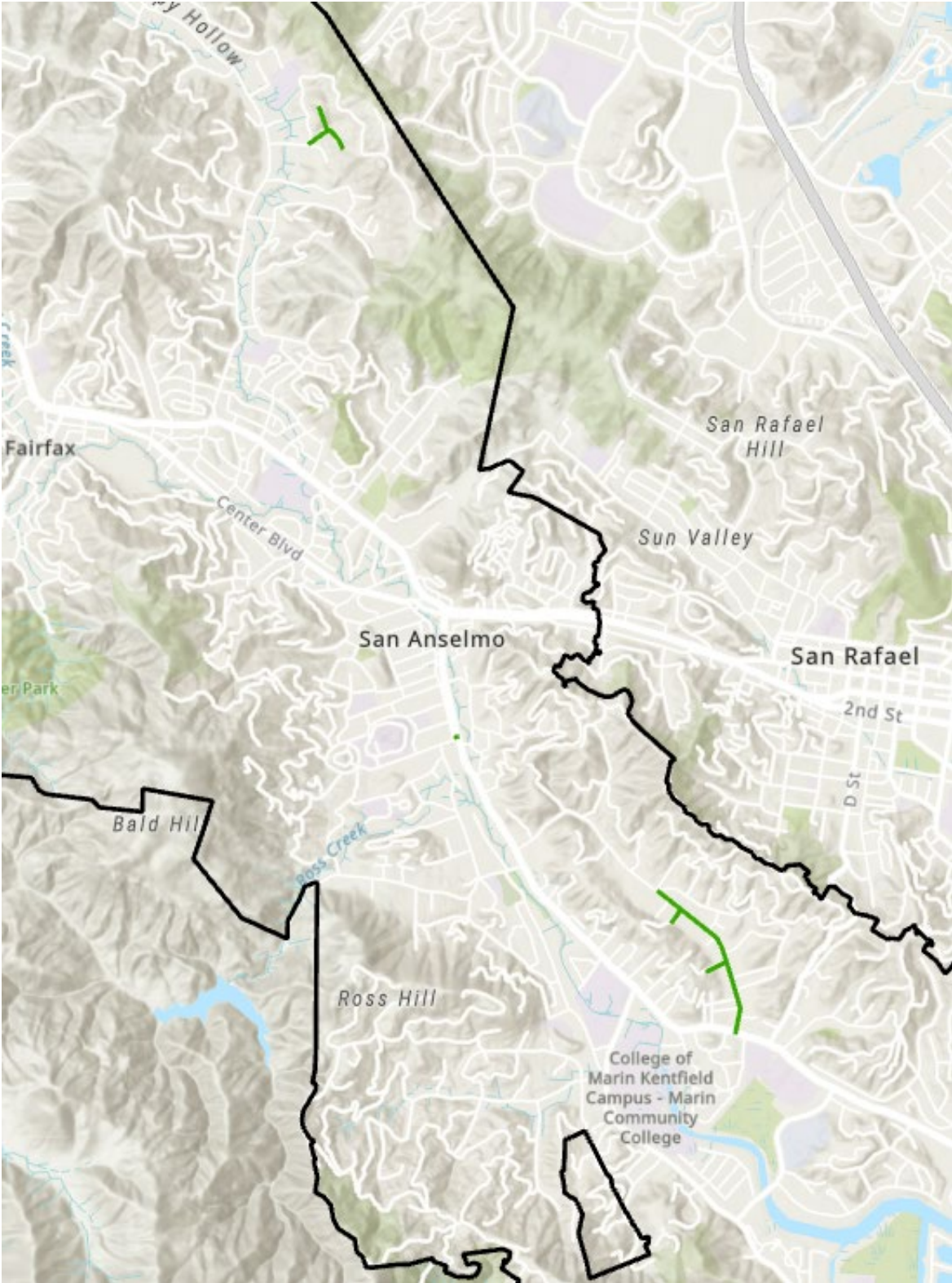
Award Month: June 2020 Contract Date: June 10, 2020

Notice to Proceed: July 6, 2020 Final Completion: February 5, 2021

Board Acceptance: May 19, 2021 Notice of Completion: May 19, 2021

CONSTRUCTION FINANCIALS		
Project Costs (\$000) by Fiscal Year		
Fiscal Year	2020/21	TOTAL
Construction	2,373	2,373

Map of the Project





Large Diameter Gravity Sewer Project II-3B – Lower Shady Lane/Poplar Avenue

Project Name: Large Diameter Gravity Sewer Project II-3B – Lower Shady Lane/Poplar Avenue

Project Type: Gravity Sewer Improvements

Project Description: Construction of high priority gravity sewer main in the Town of Ross ranging in size from 6 to 24-inch diameter as well as a double barrel siphon under Ross Creek.

Community(ies): Ross

Construction Methods: Pipe-bursting, Open-cut construction, manhole rehabilitation and installation.

Length of Pipe: ~5,800 1.1 miles

Engineer: Brown and Caldwell

Contractor: Cratus, Inc.

Construction Manager: Psomas, Inc.

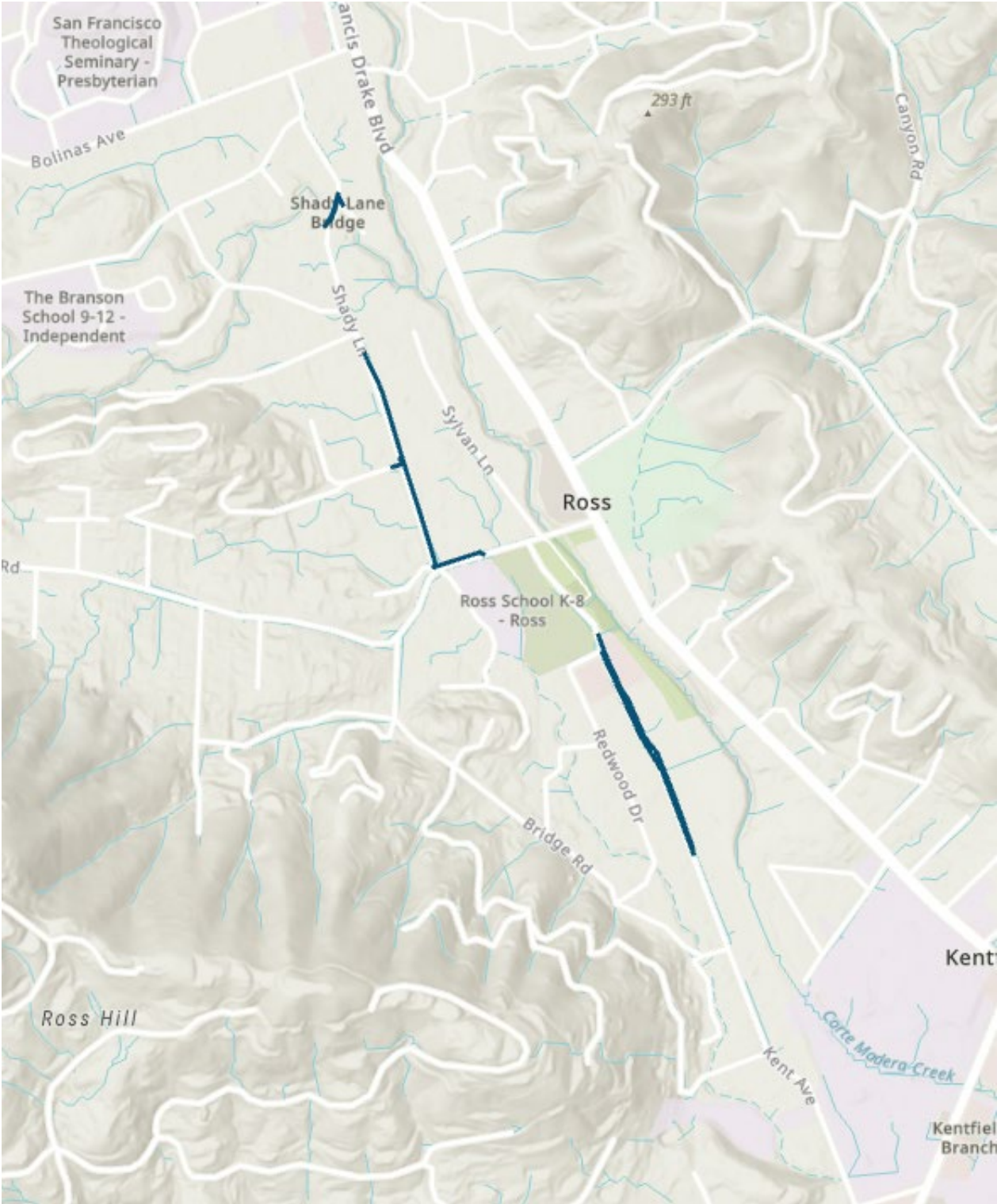
Award Month: March 2019 Contract Date: April 30, 2019

Notice to Proceed: June 3, 2019 Final Completion: July 2020

Board Acceptance: October 21, 2020 Notice of Completion: October 21, 2020

CONSTRUCTION FINANCIALS			
Project Costs (\$000) by Fiscal Year			
Fiscal Year	2019/20	2020/21	TOTAL
Construction	4,431	339	4,770

Map of the Project





APPENDIX C. ACRONYMS, ABBREVIATIONS, TERMS, AND DEFINITIONS

ADWF	Average Dry Weather Flow
ARV	air release valve
CBT	Competency Based Training program
CCTV	closed circuit television
CDO	Cease and Desist Order
CIP	Capital Improvement Plan or Program
CIPP	cured-in-place pipe; a pipe lining method
CIWQS	California Integrated Water Quality System
CMMS	Computerized Maintenance Management System
CMSA	Central Marin Sanitation Agency
COF	Consequence of Failure
Design Storm	10-year 24-hour design storm (USCS Type IA rainfall distribution curve)
District	Ross Valley Sanitary District or Sanitary District No. 1 of Marin County
EMS	Enterprise Management System
F _c	Consequence of Failure
F _L	Likelihood of Failure
FM	force main
FOG	Fats, Oil, and Grease
ft	feet
FY	Fiscal Year; July to June
gal	gallons
GIS	Geographic Information Systems
GPS	Global Positioning System for satellite-based location information
HFC	High Frequency Cleaning, <1 year
hr	hour
IAMP	Infrastructure Asset Management Plan
I&I	Infiltration and Inflow
in	inches
InfoNet	District's CMMS software
JPA	Joint Powers Authority (part of CMSA)
kWh	kilowatt-hour; unit of energy

LF	linear feet
LOF	Likelihood of Failure
LOS	Level of Service
LRGP	Lateral Replacement Grant Program
LRLP	Lateral Replacement Loan Program
LS	Lift Station
MACP	Manhole Assessment and Certification Program ©
MG	million gallons; measure of flow volume.
mgd	million gallons per day; measure of flow rate
mi	miles
O&M	Operations and Maintenance
PACP	Pipeline Assessment and Certification Program ©
PS	Pump Station
PSL	Private Sewer Lateral
PWWF	Peak Wet Weather Flow
QA/QC	quality assurance and quality control
RDI/I	rainfall-dependent infiltration/inflow
R Factor	wet weather I&I volume/rain volume onto tributary area, as percent (a measure of how much of the rain that falls makes its way into the sanitary sewer pipes)
RVSD	Ross Valley Sanitary District or Sanitary District No. 1 of Marin County
RWQCB	Regional Water Quality Control Board
SCADA	supervisory control and data acquisition
SMARTool	Sewer Main Asset Replacement Tool; risk model
SOP	Standard Operating Procedure
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
USA	Underground Service Alert
VFD	variable frequency drive
WWPF	wet weather peaking factor
WWTP	wastewater treatment plant
yr	Year