



San José-Santa Clara
Regional Wastewater Facility

Capital Improvement Program

Monthly Status Report: March 2020

May 14, 2020

This report summarizes the progress and accomplishments of the Capital Improvement Program (CIP) for the San José-Santa Clara Regional Wastewater Facility (RWF) for March 2020.

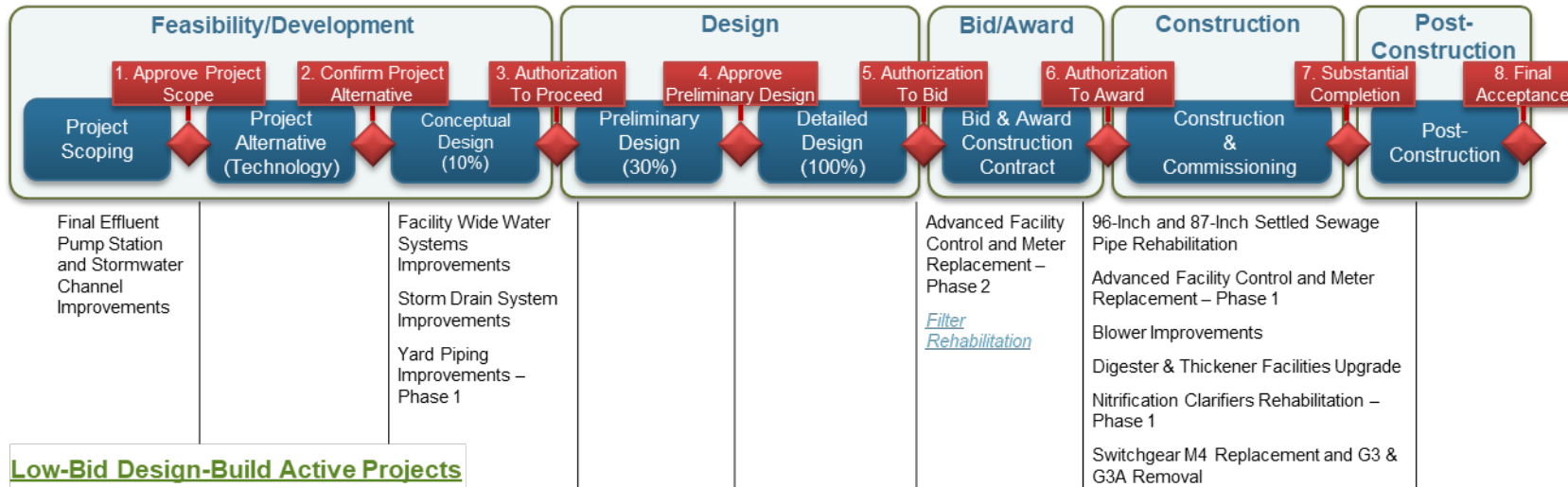
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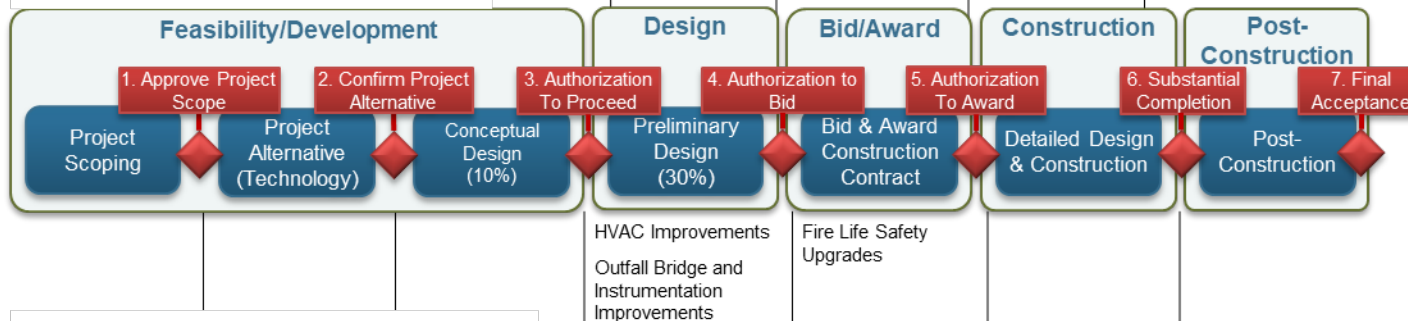


Project Delivery Models

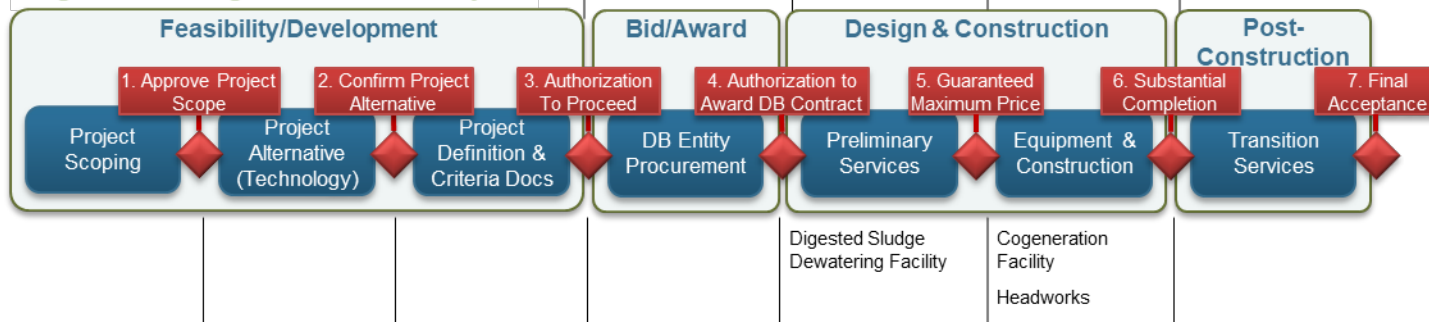
Design-Bid-Build Active Projects



Low-Bid Design-Build Active Projects



Progressive Design-Build Active Projects



Key

- Phases
- Stages
- ◆ Stage Gates

*Projects shown underlined and in blue and italics have either been initiated or advanced this reporting period.



Program Summary

March 2020

In March, the COVID-19 pandemic impacted the CIP in a number of ways. In response to the Santa Clara County Public Health Officer Order of March 16, all CIP staff (except for key construction management field staff) commenced remote working. Construction continued with enhanced safety protocols enacted to be in compliance with the March 16 and subsequent County orders. Design activities also continued, with City and consultant staff adapting and learning to work effectively through virtual meetings and email communication.

The Digester and Thickener Facilities Upgrade Project contractor successfully pressure-tested the new hot water supply and return pipes along the elevated pipe rack on C Street. The contractor also completed construction of a pressure flow box for its temporary use as part of the primary effluent re-route system to allow the 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation Project to proceed. Work continued in the dissolved air flotation thickener (DAFT) gallery and tunnels in preparation for functional and operational commissioning. Operations and Maintenance (O&M) accepted the seventh of the eight remote digesters.

The Cogeneration Facility Project design-builder completed splicing the new medium-voltage (4160 volt) conductors into the existing conductors and energized the new M2 Switchgear.

The Blower Improvements Project contractor installed a local electrical control panel for one of the motors in the Process Air Building and poured an exterior wall for the new electrical room. The contractor also installed the new S11 Switchgear at the Tertiary Blower Building.

The Advanced Facility Control and Meter Replacement – Phase 1 Project contractor began functional testing of the secondary influent and return activated sludge flow meters.

The Nitrification Clarifier Rehabilitation – Phase 1 and 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation project teams reviewed and returned contractor submittals.

The City issued a Notice of Intent to Award the construction contract for the Advanced Facility Control and Meter Replacement – Phase 2 Project to the low bidder, Kiewit.

The City advertised the construction contract for the Filter Rehabilitation Project. Staff anticipates opening bids in mid-June.

The City issued the Notice to Proceed (NTP) to the design-builder on the Headworks Project to finish design and begin construction. The design-builder submitted the 90 percent design documents for Early Design Package 1 for mass excavation and utility relocations. Construction is scheduled to start in June 2020.

The design-builder for the Digested Sludge Dewatering Facility Project held a facility concepts workshop and an architectural workshop. During these workshops, O&M staff selected screw conveyors and cake bins over pumps and silos to move and store the sludge in a lower pressure, easier to operate and maintain, system. They also refined the building layout including office space and staff facility requirements.

Look Ahead

The following key activities are forecast for April and May 2020:

- The City will issue an NTP to the contractor for the Switchgear M4 Replacement and G3 & G3A Removal Project.
- Staff will recommend award of the construction contract for the Advanced Facility Control and Meter Replacement – Phase 2 Project.
- Two projects will seek to advance through the following stage gates:
 - Flood Protection Project – Stage Gate 1: Approve Project Scope
 - Yard Piping Improvements – Phase 1 Project – Stage Gate 3: Authorization to Proceed
- Two studies will seek to advance through Stage Gate 1: Approve Project Scope:
 - Process Optimization Study
 - Energy Management Strategic Plan Update Study



Figure 1: Construction PPE during the COVID-19 pandemic

Program Highlight – Using Drones to Monitor Construction Progress

Owners and contractors are increasingly using drones as a valuable tool to monitor construction progress through video and still photographs. The CIP started using drones to record RWF construction progress in April 2018 through the program management consultant.

The use of drones at the RWF presents unique challenges. The Facility's continuous operation, plus multiple active CIP construction projects require flight paths that do not hinder work and are also safe for all personnel working at ground level. Drones must have a high level of control and accuracy for survey-grade work, requiring an experienced and qualified drone operator. In addition, because the RWF is situated under the Norman Y. Mineta San José International Airport flight path, the Federal Aviation Authority (FAA) requires a Certificate of Waiver or Authorization before a drone can be flown over the RWF. Each drone flight is carefully planned and communicated with O&M, construction management, and the RWF Safety Management personnel. An example of a typical drone flight paths is shown in Figure 4.



Figure 2: Operator piloting drone



Figure 3: Example of drone used on the CIP

The CIP flies drones every few months to capture video and still imagery. Benefits from this regular schedule include capturing project progress from a unique perspective not previously available. Drone photos on page 5 of this report show progress on two of the CIP's largest projects over several months.

In addition to recording construction progress, drone footage is incorporated into program reporting (such as this Monthly Status Report), ESD social media, and is stored on the CIP Portal for project reference and use.

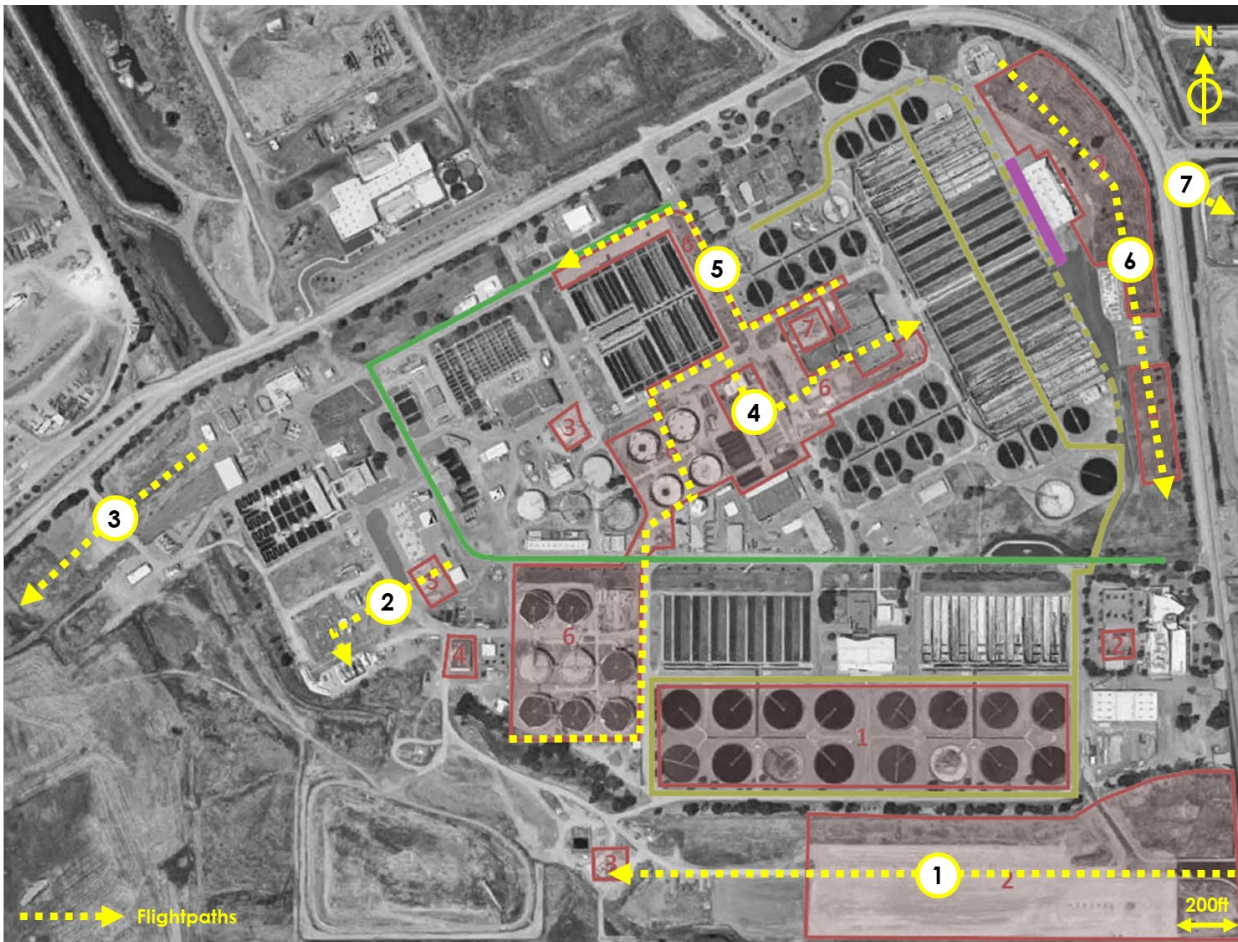


Figure 4: Example of a drone flightpath

Digester & Thickener Facilities Upgrade Project: Digesters 5-8



Cogeneration Facility Project: Engine Generator Building



Figure 5: Examples of progress photographs captured from a drone (top to bottom)

Program Performance Summary

Eight key performance indicators (KPIs) have been established to measure overall CIP success. Each KPI represents a metric that will be monitored on a regular basis. Through the life of the CIP, KPIs that best reflect the current program will be selected and measured. KPIs are reset each fiscal year.

Program Key Performance Indicators – Fiscal Year 2019-2020

KPI	Target	Fiscal Year to Date			Fiscal Year End		
		Actual	Status	Trend	Forecast	Status	Trend
Stage Gates	90%	93% 14/15			95% 19/20		
Measurement: Percentage of initiated projects and studies that successfully pass each stage gate on their first attempt. Target: Green: >= 90%; Amber: 75% to 90%; Red: < 75%							
Schedule¹	90%	N/A 0/0	N/A	N/A	N/A 0/0	N/A	N/A
Measurement: Percentage of CIP projects delivered within 2 months of approved baseline Beneficial Use Milestone. ² Target: Green: >= 90%; Amber: 75% to 90%; Red: < 75%							
Budget³	90%	N/A 0/0	N/A	N/A	N/A 0/0	N/A	N/A
Measurement: Percentage of CIP projects that are accepted by the City within the approved baseline budget. ² Target: Green: >= 90%; Amber: 75% to 90%; Red: < 75%							
Expenditure	\$370M	\$368M			\$403M ⁴		
Measurement: CIP FY19-20 committed costs. Target: Committed costs meets or exceeds 70% of planned budget. 70% of \$528M = \$370M. Therefore Fiscal Year End Green: >=\$370M; Red: < \$370M							
Procurement	80%	83% 5/6 ⁵			100% 6/6		
Measurement: Number of consultant and contractor procurements advertised compared to planned for the fiscal year. Target: Green: >= 80%; Amber: 70% to 80%; Red: < 70%							
Safety	0	0			0		
Measurement: Number of OSHA reportable incidents associated with CIP delivery for the fiscal year. Criteria: Green: zero incidents; Amber: 1 to 2; Red: > 2							
Environmental⁶	0	1			0		
Measurement: Number of permit violations caused by CIP delivery for the fiscal year. Target: Green: zero incidents; Amber: 1 to 2; Red: > 2							
Vacancy Rate⁷	10%	15% 13/86 ⁸			9% 8/86		
Measurement: Ratio of the number of vacant approved positions to approved positions. Target: Green: <= 10%; Amber: 10% to 20%; Red: > 20%							

Notes

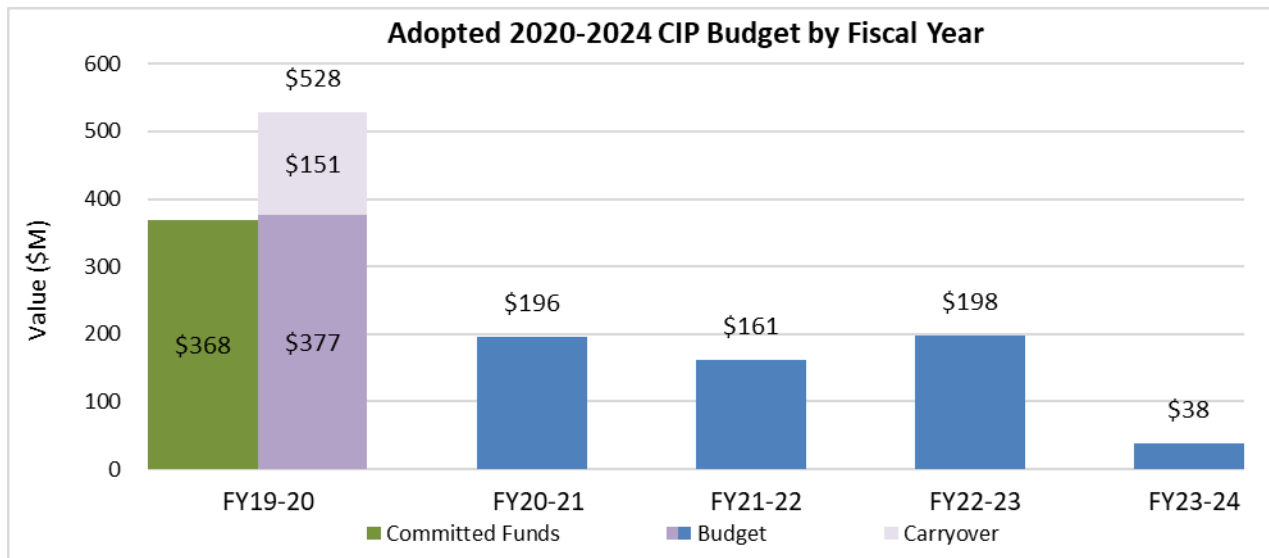
1. The CIP does not anticipate any projects reaching Beneficial Use this fiscal year.
2. The baseline Beneficial Use date and the baseline budget for each project are established at construction contract award and execution.
3. The CIP does not anticipate accepting any projects this fiscal year.
4. The CIP fiscal year-end forecast decreased \$5 million dollars due to revised encumbrance values.
5. The program advertised the Filter Rehabilitation Project construction contract this month.
6. The City has appealed a Bay Area Air Quality Management District notice of violation related to permitting procedures and is awaiting a response.
7. The vacancy rate KPI measures CIP-approved positions, including ESD, Public Works, and program management consultant full-time staff.
8. The City vacancy rate increased by one.



Program Budget Performance Summary

This section summarizes the cumulative monthly budget performance for fiscal year (FY)19-20 based on the Adopted 2020-2024 CIP.

Adopted 2020-2024 CIP Expenditure and Encumbrances



Notes:

Committed Funds: Total of expenditures and encumbrances.

Expenditure: Actual cost expended, either by check to a vendor or through the City's financial system, for expenses such as payroll or for non-personal expenses that do not require a contract.

Encumbrance: Financial commitments such as purchase orders or contracts that are committed to a vendor, consultant, or contractor. An encumbrance reserves the funding within the appropriation and project.

The FY19-20 budget is \$401.5 million, which consists of \$339.6 million in new funds, \$61.9 million in rebudgets. For purposes of this monthly report, the adopted FY19-20 budget is adjusted from \$401.5 million to \$377.2 million due to the exclusion of certain appropriations that are not measured as part of the expenditure KPI. Excluded appropriations include City Hall Debt Service Fund; Clean Water Financing Authority Debt Service Payment Fund; Debt Service Repayment for Plant Capital Improvement Projects (San José only debt service); Equipment Replacement Reserve; Ending Fund Balance; Public Art; City Facilities Emergency Power; and Urgent and Unscheduled Treatment Plant Rehabilitation. Similar adjustments have been made to the budgets for FY20-21 through FY23-24.

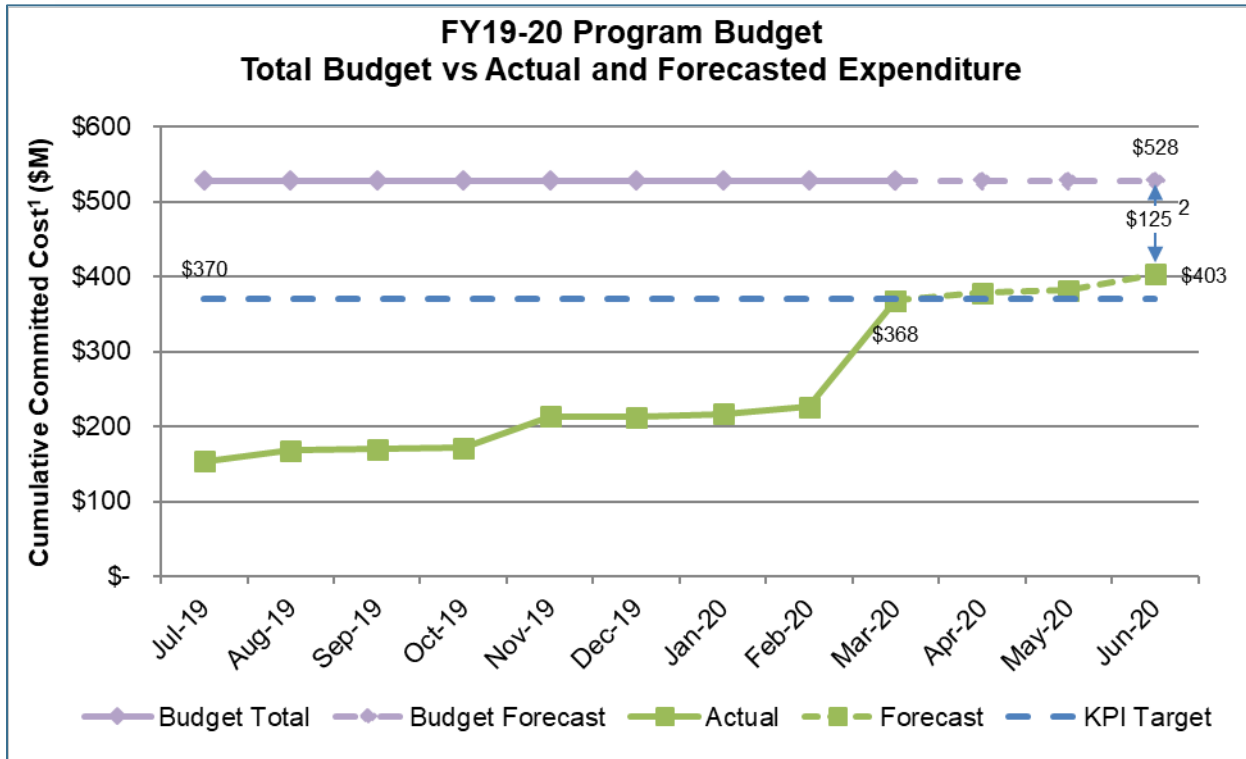
Carryover: Encumbrance balances at the end of the previous fiscal year are automatically carried forward to the current fiscal year as carryover funding to pay invoices for approved construction contracts and consultant agreements. FY19-20 carryover is \$151.0 million.

A budget of \$377.2 million and carryover of \$151.0 million totals \$528.2 million for FY19-20.



Fiscal Year 2019-2020 Program Budget Performance

The FY19-20 CIP budget is comprised of approximately \$377.2 million in new and rebudgeted funds, plus encumbered carryover of \$151.0 million, for a total of \$528.2 million. This excludes City Hall Debt Service Fund; Clean Water Financing Authority Debt Service Payment Fund; Debt Service Repayment for Plant Capital Improvement Projects (San José only debt service); Equipment Replacement Reserve; Ending Fund Balance; Public Art; City Facilities Emergency Power; and Urgent and Unscheduled Treatment Plant Rehabilitation items. Overall, the forecast fiscal year-end committed funds exceed the fiscal year-end target by \$33 million.



Notes:

1. Committed costs are expenditures and encumbrance balances, including carryover (encumbrance balances from the previous fiscal year).
2. The variance between budget and commitments can be primarily attributed to the following factors:
 - a. Four construction contracts will not be awarded in FY19-20, based on updated schedules:
 - i. Filter Rehabilitation Project
 - ii. Fire Life Safety Improvements
 - iii. HVAC Improvements
 - iv. Outfall Bridge and Instrumentation Improvements Project
 - b. Several consultant service orders are not anticipated to be awarded in FY19-20:
 - i. Aeration Tank Rehabilitation Project, conceptual through final design
 - ii. Facility Wide Water Systems Improvements Project, preliminary engineering and value engineering
 - iii. Flood Protection Project, alternatives analysis and conceptual design
 - c. The Yard Piping and Road Improvements Project was divided into multiple design-bid-build phases, resulting in different encumbrance points and values.
 - d. Construction bids for the Nitrification Clarifiers Rehabilitation – Phase 1 and Advanced Facility Control and Meter Replacement - Phase 2 projects came in under budget.
 - e. Several other minor encumbrances for consultant services are either lower than budgeted or are not anticipated to be awarded in FY19-20.
 - f. Several authorized positions remain vacant, resulting in lower personal services expenses than budgeted.



Project Performance Summary

There are currently seven projects in the construction and post-construction phases and an additional 11 projects in feasibility/development, design, bid and award, or design and construction phases (see PDM, page 2). Projects in the construction phase have established cost and schedule baselines and are monitored using the City's Capital Project Management System (CPMS). Green/red icons are included in the table below to indicate whether these projects are on budget and schedule.

Project Performance – Baselined Projects

Project Name	Phase	Estimated Beneficial Use Date ¹	Cost Performance ²	Schedule Performance ²
1. Cogeneration Facility	Design & Construction	Sep 2020	●	●
2. 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation	Construction	Jan 2021	●	●
3. Digester and Thickener Facilities Upgrade	Construction	Mar 2021	◆	◆
4. Advanced Facility Control & Meter Replacement - Phase 1	Construction	June 2021	●	●
5. Switchgear M4 Replacement and G3 & G3A Removal	Construction	Aug 2022 ³	●	●
6. Blower Improvements	Construction	Sep 2022	●	●
7. Nitrification Clarifiers Rehabilitation – Phase 1	Construction	Jan 2023	●	●

Key:

Cost:	● On Budget	◆ >1% Over Budget	Schedule:	● On Schedule	◆ >2 months delay
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Notes

- Beneficial Use is defined as work that is sufficiently complete, in accordance with contract documents, that it can be used or occupied by the City. Beneficial Use dates are reviewed as part of project schedule reviews.
- An explanation of cost and schedule variances on specific projects identified in this table is provided on page 12.
- The project construction Beneficial Use date will be baselined once the City issues the construction contract NTP letter.



Project Performance – Pre-Baselined Projects

Project Name	Phase	Estimated Beneficial Use Date ¹
1. Headworks	Design and Construction	Jun 2023
2. Digested Sludge Dewatering Facility	Design and Construction	Oct 2023
3. Fire Life Safety Upgrades	Bid/Award	Nov 2022
4. Advanced Facility Control & Meter Replacement - Phase 2	Bid/Award	Jan 2023
5. Filter Rehabilitation	Bid/Award	Jul 2023
6. Outfall Bridge and Instrumentation Improvements	Design	Dec 2021
7. HVAC Improvements	Design	May 2025
8. Yard Piping Improvements – Phase 1	Feasibility/Development	Nov 2021
9. Storm Drain System Improvements	Feasibility/Development	Oct 2023
10. Facility Wide Water Systems Improvements	Feasibility/Development	Jan 2025
11. Final Effluent Pump Station and Stormwater Channel Improvements	Feasibility/Development	May 2026

Notes

- Beneficial Use is defined as work that is sufficiently complete, in accordance with contract documents, that it can be used or occupied by the City. Beneficial Use dates are reviewed as part of project schedule reviews.



Project Significant Accomplishments

Biosolids Package

Digested Sludge Dewatering Facility Project

- Design-builder Walsh Construction Company II (Walsh) held a facility concepts workshop at which O&M identified preferences for cake bins and screw conveyors, which will be incorporated into the dewatering building layout.
- Walsh also held a workshop with the City on architectural options and resulting O&M staffing estimates. During the workshop, the City provided direction to further refine the building layout, office space requirements, and staff facilities.

Digester and Thickener Facilities Upgrade Project

- Contractor Walsh successfully pressure-tested the new hot water supply and return pipes along the C Street section of the elevated pipe rack. Walsh also began installing digester gas and hot water piping along the next section of the rack.
- Walsh completed construction of pressure flow box #2, successfully hydro-tested it and began backfilling around it in preparation for another project, which will install pumps for a temporary re-route.
- Walsh installed a 4,000-pound check valve, new pipe supports, and pressure flow tank 6 control panel in the DAFT gallery and tunnels.
- The City's Process Control System staff confirmed instrument communications for the seventh of eight remote digesters. This confirmation enabled Walsh to transfer operations of that digester gas system from the tunnel to the elevated pipe rack and remove most of the temporary digester gas re-route piping.

Liquids Package

Advanced Facility Control and Meter Replacement – Phase 1 Project

- Contractor Overaa began functional testing 25 secondary influent and return-activated sludge flow meters. Overaa will complete the testing with RWF treated effluent in April.

Advanced Facility Control and Meter Replacement – Phase 2 Project

- The City issued a Notice of Intent to Award. The project team will recommend that Council award the construction contract to the lowest bidder, Kiewit, in May.

Blowers Improvements Project

- Contractor Monterey Mechanical Company installed the Process Air Building motor No. 2 local electrical control panel and poured the exterior wall for the new electrical room.
- The contractor also installed the new Switchgear S11 at the Tertiary Blower Building.

Filter Rehabilitation Project

- The City advertised the construction contract on Bidding on March 11, 2020. Due to COVID-19, staff extended the bid period. Bids are expected to be opened in mid-June and the construction contract awarded in October 2020.

Final Effluent Pump Station and Stormwater Channel Improvement Project

- Staff held a workshop in March to shortlist four alternatives to move forward with further evaluation.
- Consultant Brown and Caldwell will identify alternative evaluation criteria and develop a life cycle cost for each shortlisted alternative. Staff will hold a second workshop in April to score and select the preferred alternative.

Headworks Project

- The City issued an NTP to contractor CH2M for final design and construction. The 90 percent design documents for Early Design Package 1 for mass excavation and utility relocations were submitted. Construction is scheduled to start in June 2020.

Nitrification Clarifier Rehabilitation - Phase 1 Project

- The City reviewed and returned submittals including baseline schedule, MCC enclosure, panelboards, operator control stations, industrial coatings, switchgear, stainless steel pipe, and ductile iron pipe.

Power and Energy Package

Cogeneration Facility Project

- Design-builder CH2M completed splicing the new medium-voltage (4160 volt) conductors into the existing conductors inside multiple manholes and energized Switchgear M2.



Explanation of Project Performance Issues

Digester and Thickener Facilities Upgrade Project

This project encountered numerous unforeseen conditions at the beginning of construction in 2016, including corroded underground pipe and other obstructions for new building foundations. A temporary reroute system was installed to enable replacement of a 78-inch settled sewage pipeline and junction structure during the 2018 dry season.

In 2017, design modifications were required to address seismic risks, control system changes, additional underground obstructions, pipe anchorage, and new fire department requirements. Discovery of hazardous materials required submittal of an extensive cleanup proposal to the federal Environmental Protection Agency (EPA) for approval. Once mitigation was completed in 2019, the City submitted another report to the EPA that detailed how it met each EPA cleanup permit requirement.

To pay for the additional work to address unforeseen conditions, Council approved a construction contingency increase of \$15 million in November 2017 and another contingency increase of \$25 million in June 2018.

Delays for these conditions have amounted to 273 working days. The original construction completion and Beneficial Use date of September 2019 has been delayed and rescheduled to November 2020. Currently, the City is evaluating Walsh's request for additional delays due to numerous design related change orders. This may delay the project an additional 71 working day, moving completion to March 2021.



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Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram

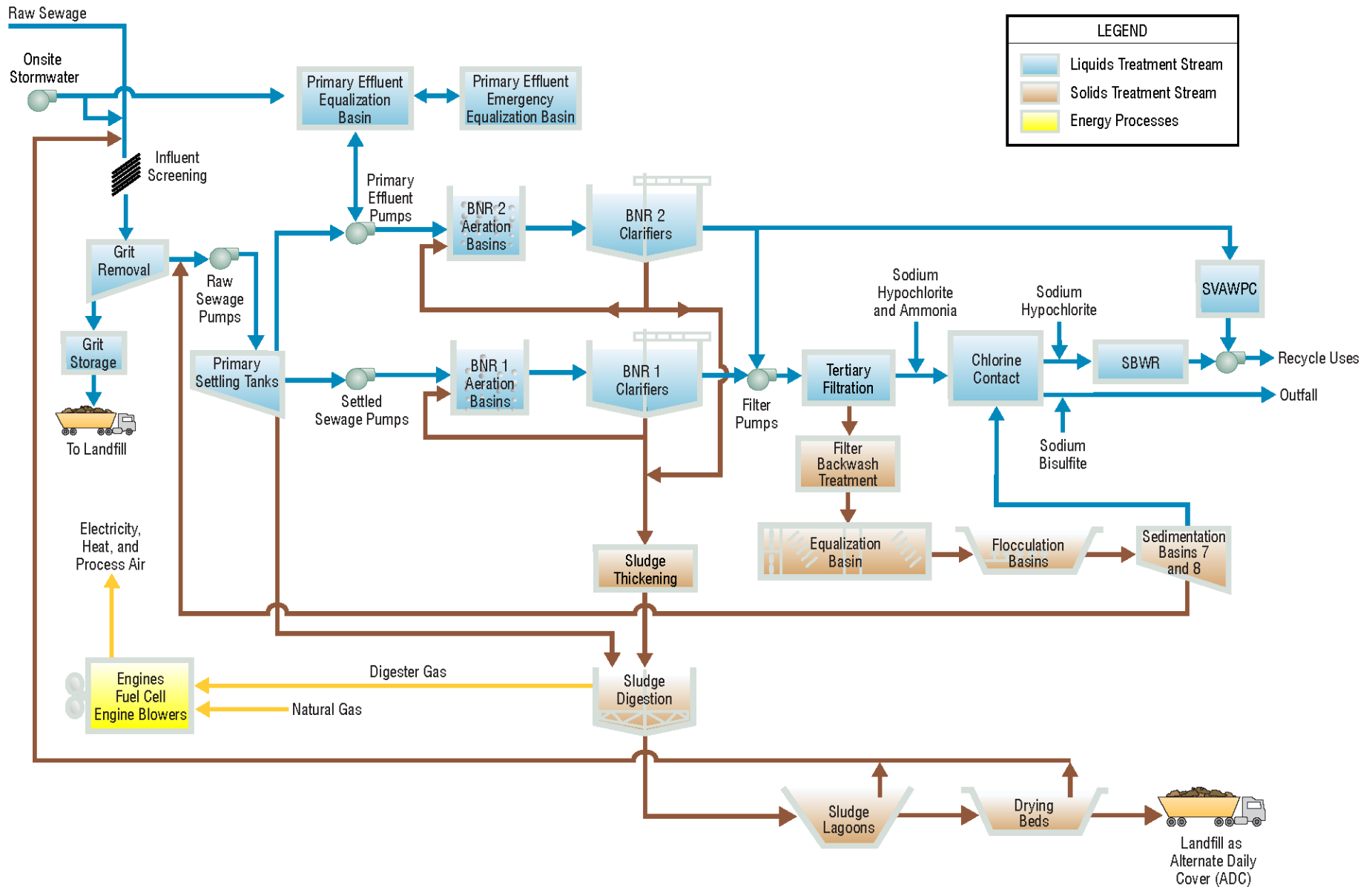


Figure 6 – Current Treatment Process Flow Diagram



Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram

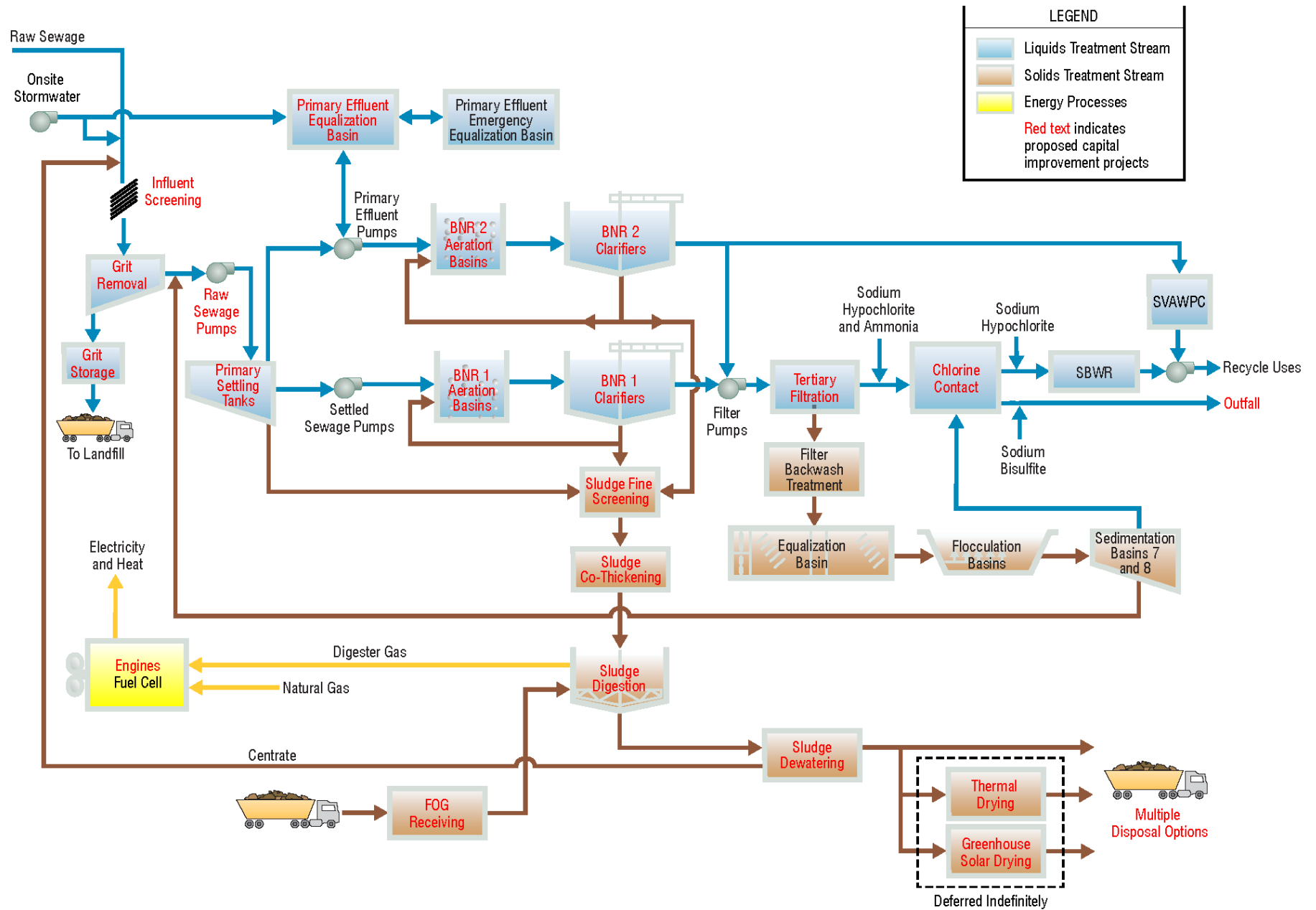


Figure 7 – Proposed Treatment Process Flow Diagram



Active Construction Projects – Aerial Plan

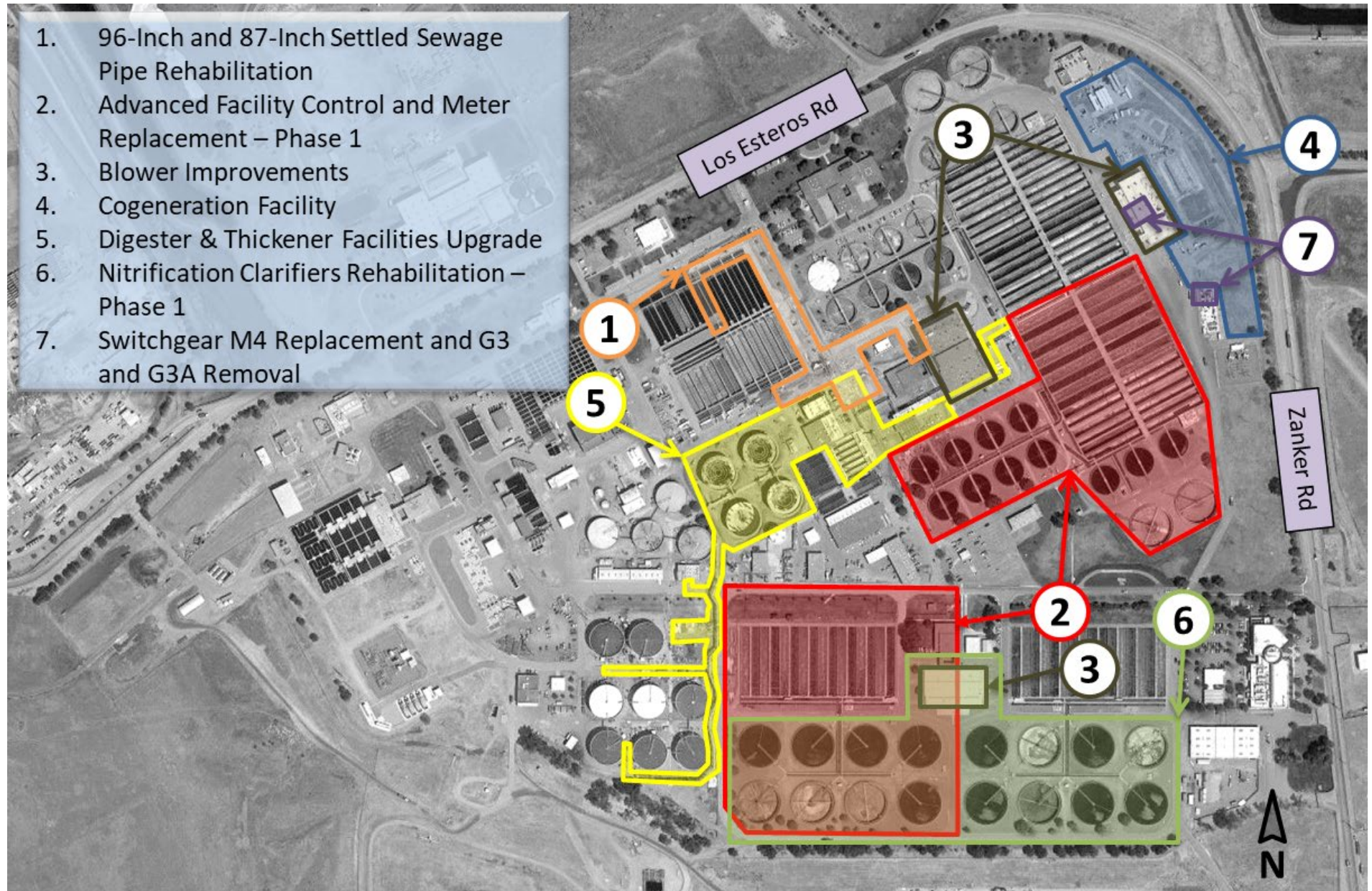


Figure 8: Active Construction Projects