



San José-Santa Clara
Regional Wastewater Facility

Capital Improvement Program

Monthly Status Report: December 2019

February 6, 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 December 2019.

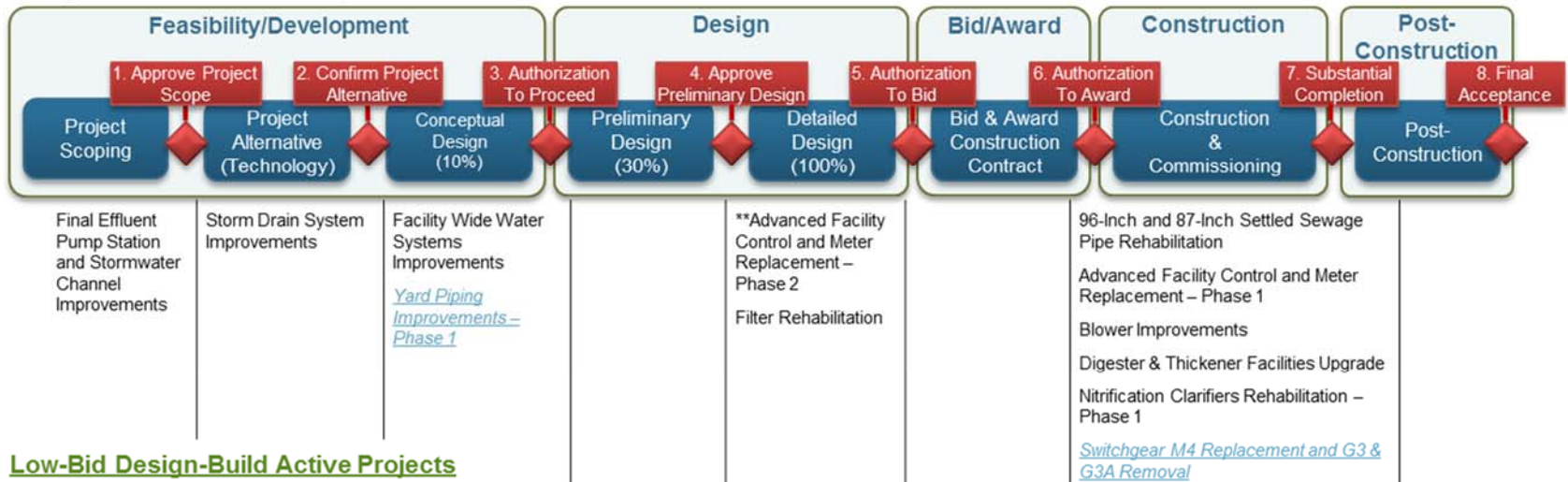
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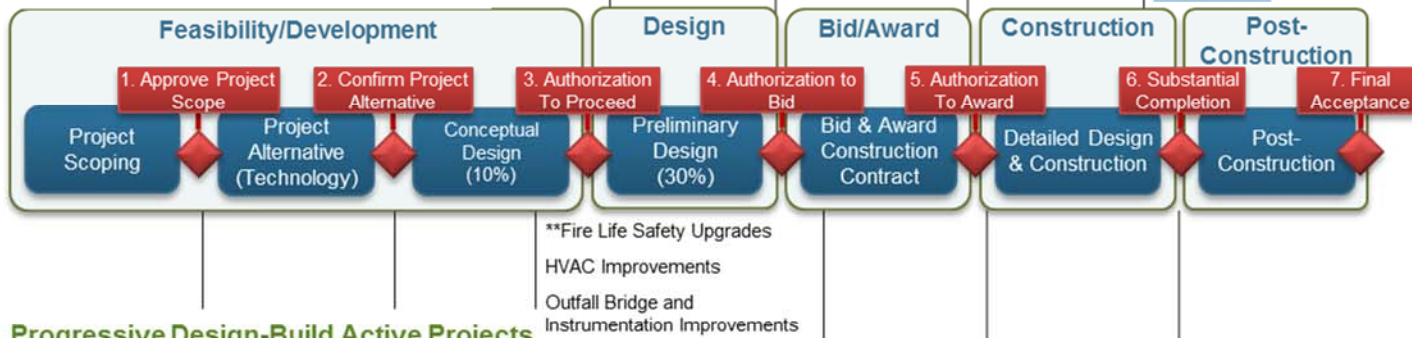


Project Delivery Models

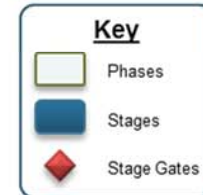
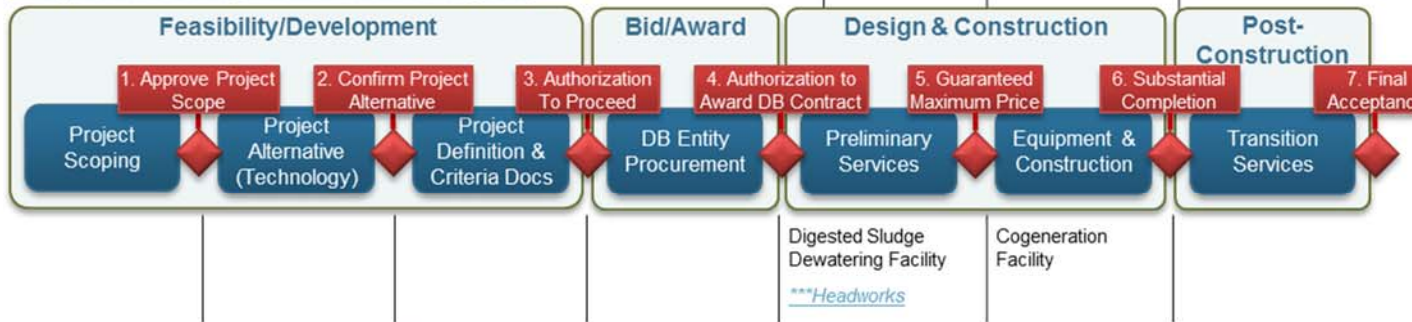
Design-Bid-Build Active Projects



Low-Bid Design-Build Active Projects



Progressive Design-Build Active Projects



*Projects shown underlined and in blue and italics have either been initiated or advanced this reporting period
 **Project will move to the next stage if the Department of Public Works authorizes the team to advertise the construction contract for bid.
 ***Project will move to the next stage if City Council approves award of the construction contract.



Program Summary

December 2019

In December, two projects advanced through the Project Delivery Model (PDM). On the Headworks Project, the design-builder and project team reached agreement on the guaranteed maximum price (GMP). The project passed Stage Gate 5: Guaranteed Maximum Price and the City intends to seek Council approval of the definitive contract amendment (DCA) in February. The Yard Piping and Road Improvements Project passed Stage Gate 2: Confirm Project Alternative. As part of the alternatives analysis work, the project team and design consultant re-evaluated the sequencing of work and project delivery method. To better align construction with planned maintenance shutdowns, the project scope will be completed in four phases, as design-bid-build projects, in successive summers, between 2021 and 2024. Design of the first phase is expected to begin this summer, with construction award anticipated in spring 2021.

The Treatment Plant Advisory Committee (TPAC) and the San José City Council (Council) approved the award of the Switchgear M4 Replacement and G3 & G3A Removal Project construction contract. The City anticipates issuing a Notice to Proceed (NTP) to the contractor in February.

The contractor for the Digester and Thickener Facilities Upgrade Project reached a major milestone with the removal of all temporary scaffolding and roof access towers around Digesters 5-8, signifying completion of exterior insulation and stairways. The contractor also completed a major excavation and installation of a 48-inch diameter subnatant pipeline beneath an existing tunnel. Operations accepted the fourth of eight remote digesters. Digester gas piping for each of these digesters is now located on the elevated pipe rack rather than in the tunnels, which is a safety improvement.

The Cogeneration Facility Project design-builder pulled medium voltage (4160V) cables between the M2 Switchgear and several manholes to connect the new cogeneration engines to the RWF's electrical grid.

The Blower Improvements Project contractor received variable frequency drives (VFDs) for the three blowers in the Process Air Building (PAB). The contractor also received a new temporary shower/locker room trailer, which will allow interior work to be done in Building 40. They also continued rehabilitating the first blower in the Process Air Building (PAB) by removing the motor and blower base, then sandblasting and painting the impeller housing and stand.

The Advanced Facility Control and Meter Replacement – Phase 1 Project contractor prepared the newly installed equipment in Secondary Tanks B1 to B4 and Secondary Clarifiers for operational testing, which is anticipated to start in February.

For the Digested Sludge Dewatering Facility Project, the project team held two workshops: (1) flows and loads; and (2) project cost model. Additionally, the project team reviewed the test plan for the centrifuge study expected to begin in January. This study will compare the performance of various manufacturers' centrifuges.

Look Ahead

The following key activities are forecast for January and February 2020:

- Staff will recommend to TPAC and Council:
 - Approval of the DCA for the Headworks Project; and
 - Approval of a second amendment to the Brown and Caldwell (B&C) consultant agreement for the Digester & Thickener Facilities Upgrade Project to allow B&C to provide professional services through the end of construction.
- An NTP will be issued to the contractors for the following projects:
 - 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation Project; and
 - Switchgear M4 Replacement and G3 & G3A Removal Project.
- Four projects will seek to advance through stage gates:
 - Storm Drain System Improvements Project – Stage Gate 2: Confirm Project Alternative;
 - Fire Life Safety Upgrades Project – Stage Gate 5: Authorization to Award and Establish Baseline (if required);
 - Advanced Facility Control and Meter Replacement – Phase 2 Project – Stage Gate 6: Authorization to Award and Establish Baseline (if required); and
 - Filter Rehabilitation Project – Stage Gate 5: Authorization to Bid.



Figure 1: Aerial view of Digesters 5-8

Program Highlight – Health and Safety

For any capital program, ensuring a culture and climate of safety requires a top-down commitment. For the RWF's capital program, this commitment is embodied by the following statement in the CIP's Health and Safety Plan:

"It is the policy of the CIP Program to conduct all work activities in a manner that protects employees, the public and the environment; provides for a safe and healthful work environment; and complies with applicable regulations and requirements."

The safety policy statement commits the entire CIP to promoting a safe and productive workplace which program leadership drives downwards throughout the organization. A clearly visible safety commitment statement helps staff at all levels understand the CIP's commitment to safety.

To further put into action a safety-minded culture, CIP protocol requires the following:

- Every meeting begins with a safety moment;
- All new employees go through a safety orientation and meet with the Health Safety and Security Manager (HSS Manager); and
- The safety team is involved early to promote a culture of safety, set the tone for the project's safe execution, and establish safety expectations of each contractor.

Open lines of communication are also extremely important for a good safety program. Bottom-to-top feedback needs to be established so that any project team member can easily communicate unsafe conditions.

Implementing a Sustainable Health and Safety Program

As shown on the inverted pyramid in Figure 2, leadership is the safety program driver. Leadership ensures funding, scheduling, and compliance, and they are ultimately responsible for the safety outcome.

Advanced Safety Management activities include human performance, job safety analyses, stop work authority, and behavior-based safety.

Systems refer to safety inspections, training, pre-construction meetings and orientations, contract language, and the owner-controlled insurance program (OCIP).

And finally, at the bottom of the pyramid are the legal requirements including Occupational Safety and Health Administration (OSHA) regulations, state and local laws and regulations.



Figure 2: This pyramid illustrates the importance of leadership in a sustainable health and safety program.

Tracking Safety Performance

Safety performance tracking is a key part of the CIP's commitment to safety. The HSS Manager maintains and tracks all records that pertain to safety performance, accident investigations, root cause findings, and leading and lagging indicators. CIP leadership can track these metrics, set clear goals, and implement strategies to achieve program safety goals.

When an injury occurs, it disrupts the workplace, and it disrupts the victim and his/her coworkers. One of the duties of the HSS Manager is to investigate incidents. Tasks during an investigation include:

- Capture photographic documentation of the incident site;
- Ensure all evidence is secured;
- Interview the victim(s) and any witnesses when possible;
- Notify leadership;
- Document the incident in the appropriate report(s); and
- Ensure that the contractor provides corrective actions, discusses lessons learned, and retrain their workers accordingly.

The CIP has tracked more than 500,000 contractor staff hours since the CIP started and has maintained incident rates well below the industry average (See Figure 3). For instance, the one recordable injury in all of 2019 resulted in a recordable rate of 0.83 for CIP projects. This is well below the federal Bureau of Labor Statistics, Department of Labor report of November 7, 2019, which shows an industry average of 3.0. Overall, the CIP maintains a perfect track record for reportable incidents, which is a key performance indicator that is reported in this monthly report (See Page 6).



Project	Hours	2019 INCIDENTS				
		First Aid Cases	OSHA Recordables	Theft/ Vandalism	Lost Work Day Cases (LWDC)	Property Damage or Near Hit Events
Digester & Thickener Upgrade	123506.00	2	1			2
Cogeneration Facility	96,326.00					
Advanced Facility Control and Meter Repl.	12,072.00					
Blower Improvements	7,017.00					1
Others	0.00					
Total	238,921.00	2	1	0	0	3

Figure 3: Project Incident Tracking for 2019

Safety programs are successful only when leadership and all employees recognize and support the value of safety to the organization. Accountability from all managers and supervisors, as well as involved and empowered staff, improves safety and leads to greater effectiveness and productivity.



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%	92% 12/13 ¹			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%							
Schedule²	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. ³ Target: Green: >= 90%; Amber: 75% to 90%; Red: < 75%							
Budget⁴	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. ³ Target: Green: >= 90%; Amber: 75% to 90%; Red: < 75%							
Expenditure⁵	\$370M	\$213M			\$411M		
Measurement: CIP FY19-20 committed costs. Target: Committed cost meets or exceeds 70% of planned Budget. 70% of \$528M = \$370M. Therefore Fiscal Year End Green: >=\$370M; Amber: \$291M to \$370M; Red: < \$291M							
Procurement	80%	40% 2/5			88% 7/8		
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							
Environmental	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 Rate⁶	10%	19% 16/86 ⁷			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

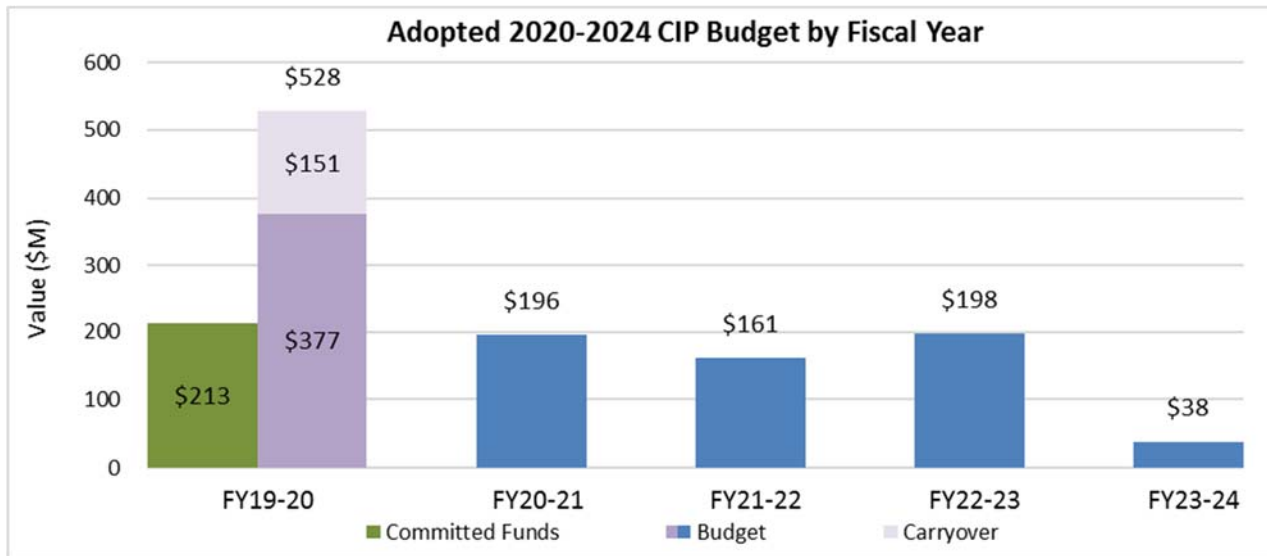
1. The Yard Piping and Road Improvements Project passed Stage Gate 2: Confirm Project Alternative and the Headworks Project passed Stage Gate 5: Guarantee Maximum Price.
2. The CIP does not anticipate any projects reaching Beneficial Use this fiscal year.
3. The baseline Beneficial Use date and the baseline budget for each project are established at construction contract award and execution.
4. The CIP does not anticipate accepting any projects this fiscal year.
5. The program budget and resulting fiscal-year expenditure target decreased after multiple contracts were closed and the remaining encumbered balances were liquidated. Additionally, the fiscal year-end forecast decreased by roughly \$1 million after forecast encumbrances were adjusted.
6. The vacancy rate KPI measures CIP-approved positions, including ESD, Public Works, and program management consultant full-time staff.
7. The vacancy count decreased 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.

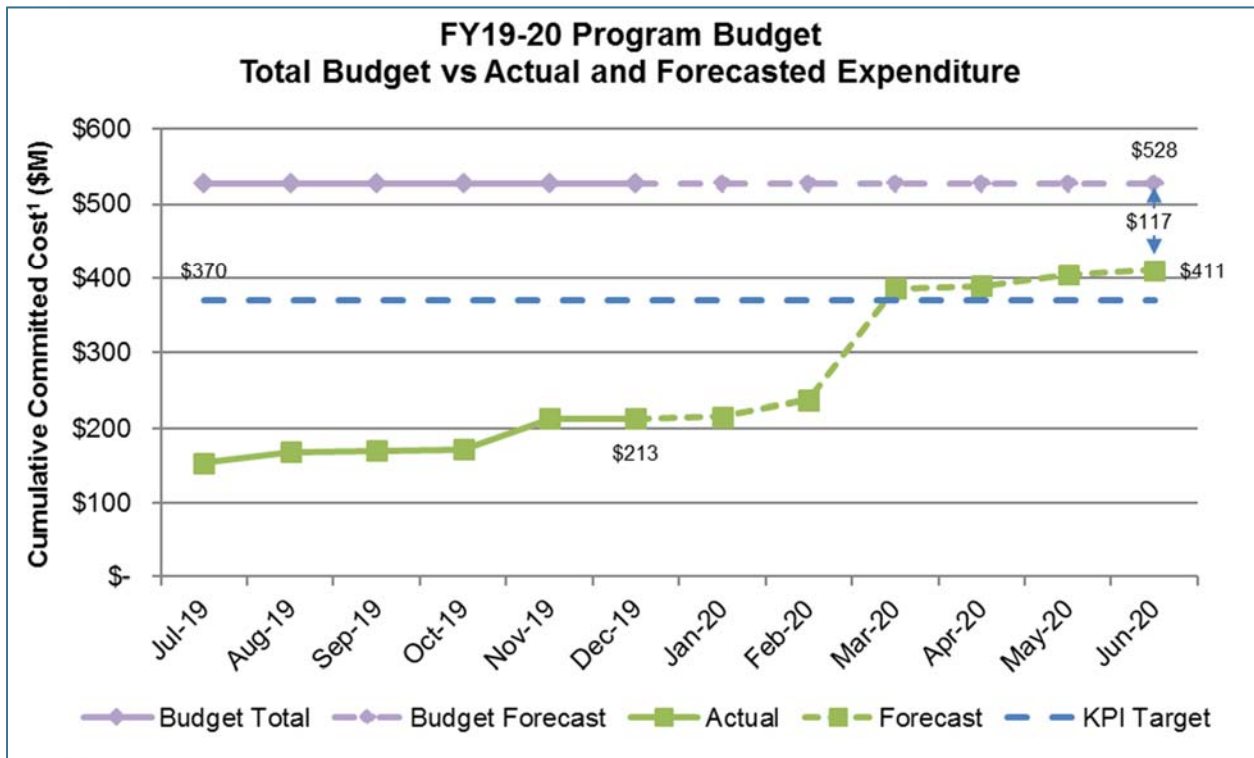
Carryover: Encumbrance balances at the end of the previous fiscal year are automatically carried forward to the current fiscal year as carryover funding to pay invoices for approved construction contracts and consultant agreements. FY19-20 carryover is \$151.0 million.

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 \$40 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. Three construction contracts are now anticipated to be awarded in FY20-21 instead of FY19-20, based on updated schedules:
 - i. Filter Rehabilitation Project
 - ii. HVAC Improvements
 - iii. 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 design and first phase of construction will no longer occur this fiscal year.
 - d. The Nitrification Clarifiers Rehabilitation – Phase 1 construction bids came in under budget.
 - e. Several other minor encumbrances for consultant services are either lower than budgeted or are anticipated to be awarded in FY20-21.
 - 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. Digester and Thickener Facilities Upgrade	Construction	Nov 2020	◆	◆
3. 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation	Construction	Feb 2021 ³	●	●
4. Advanced Facility Control & Meter Replacement - Phase 1	Construction	June 2021	●	●
5. Switchgear M4 Replacement and G3 & G3A Removal	Construction	May 2022 ³	●	●
6. Blower Improvements	Construction	Sep 2022	●	●
7. Nitrification Clarifiers Rehabilitation – Phase 1	Construction	Jan 2023 ³	●	●

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 accepts the contractor's construction schedule.



Project Performance – Pre-Baselined Projects

Project Name	Phase	Estimated Beneficial Use Date ¹
1. Headworks	Design and Construction	Feb 2023
2. Digested Sludge Dewatering Facility	Design and Construction	Nov 2023
3. Fire Life Safety Upgrades	Bid/Award	Jul 2022
4. Advanced Facility Control & Meter Replacement - Phase 2	Bid/Award	Jan 2023
5. Outfall Bridge and Instrumentation Improvements	Design	Dec 2021
6. Filter Rehabilitation	Design	Jul 2023
7. HVAC Improvements	Design	Feb 2025
8. Yard Piping Improvements – Phase 1	Feasibility/Development	Oct 2021
9. Storm Drain System Improvements	Feasibility/Development	Feb 2024
10. Facility Wide Water Systems Improvements	Feasibility/Development	Jan 2025
11. Final Effluent Pump Station and Stormwater Channel Improvements	Feasibility/Development	May 2026

Notes

1. 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

- The City held workshops to discuss flow and loads and the project cost model.
- Staff reviewed the test plan for the centrifuge study, which is expected to begin in January.

Digester and Thickener Facilities Upgrade Project

- Contractor Walsh removed all temporary scaffolding and roof access towers around the digesters, signifying completion of exterior insulation and stairways.
- Walsh completed installation of a 36-inch diameter pressure flow pipe and removed the re-route pipes and pumps installed to facilitate the replacement.
- Walsh installed the fire suppression system and HVAC ductwork throughout the new Sludge Screening Building.
- Walsh completed a major excavation and installation of a 48-inch diameter subnatant pipeline beneath an existing tunnel.
- Operations accepted the fourth of eight remote digesters with the gas now being conveyed through piping on the new, elevated pipe rack rather than through the underground tunnels, providing RWF staff with a safer working environment.

Liquids Package

Advanced Facility Control and Meter Replacement – Phase 1 Project

- Contractor Overaa prepared the new equipment in Secondary Tanks B1 to B4 and Secondary Clarifiers for operational testing starting in February.

Blowers Improvements Project

- Contractor Monterey Mechanical received all three PAB blower VFDs and will set them on their foundations in January.
- Monterey Mechanical began rehabilitation of the existing PAB No. 2 electrical motor.
- The contractor delivered a new, temporary shower/locker room to the site. This room will facilitate work to be done in the Building 40 locker room. The temporary facilities are expected to be available to the operations and maintenance staff in February 2020.

Headworks Project

- Design-builder CH2M Hill Engineers, Inc. (CH2M) and the City finished GMP negotiations. The project passed Stage Gate 5: Guaranteed Maximum Price, and staff will recommend the DCA for approval to TPAC and Council in February.

Power and Energy Package

Cogeneration Facility Project

- Design Builder CH2M pulled medium-voltage (4160V) cables between the M2 Switchgear and several manholes preparing to connect to the RWF electrical grid.

Switchgear M4 Replacement and G3 & G3A Removal Project

- Council awarded the construction contract to Blocka Construction. The City anticipates issuing the NTP in February with equipment fabrication beginning this year and installation next year.



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 the 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. To minimize further delays, the City and contractor have worked together to sequence several tasks so that they could be completed more quickly and efficiently.



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Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram

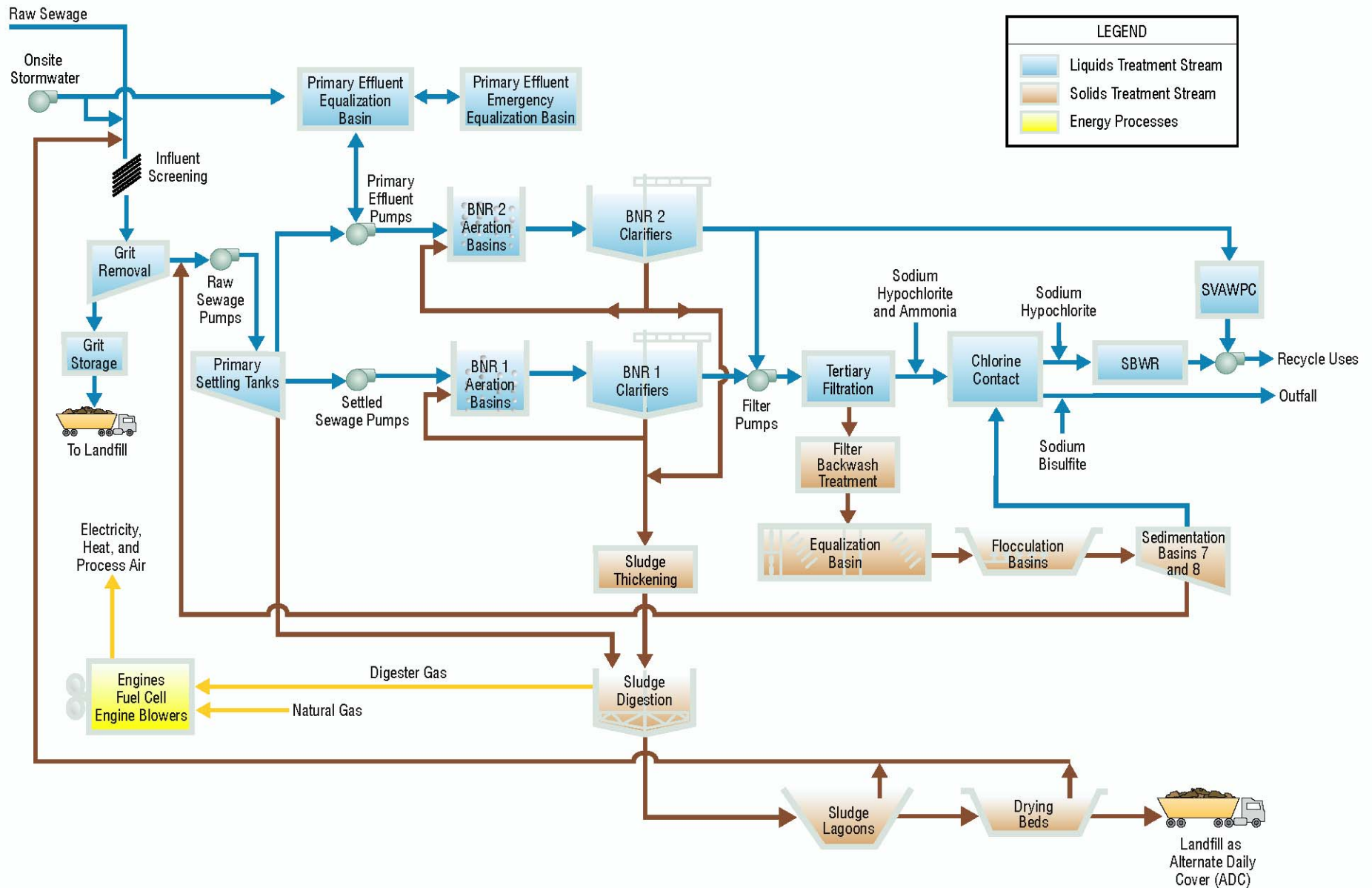


Figure 4 – Current Treatment Process Flow Diagram



Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram

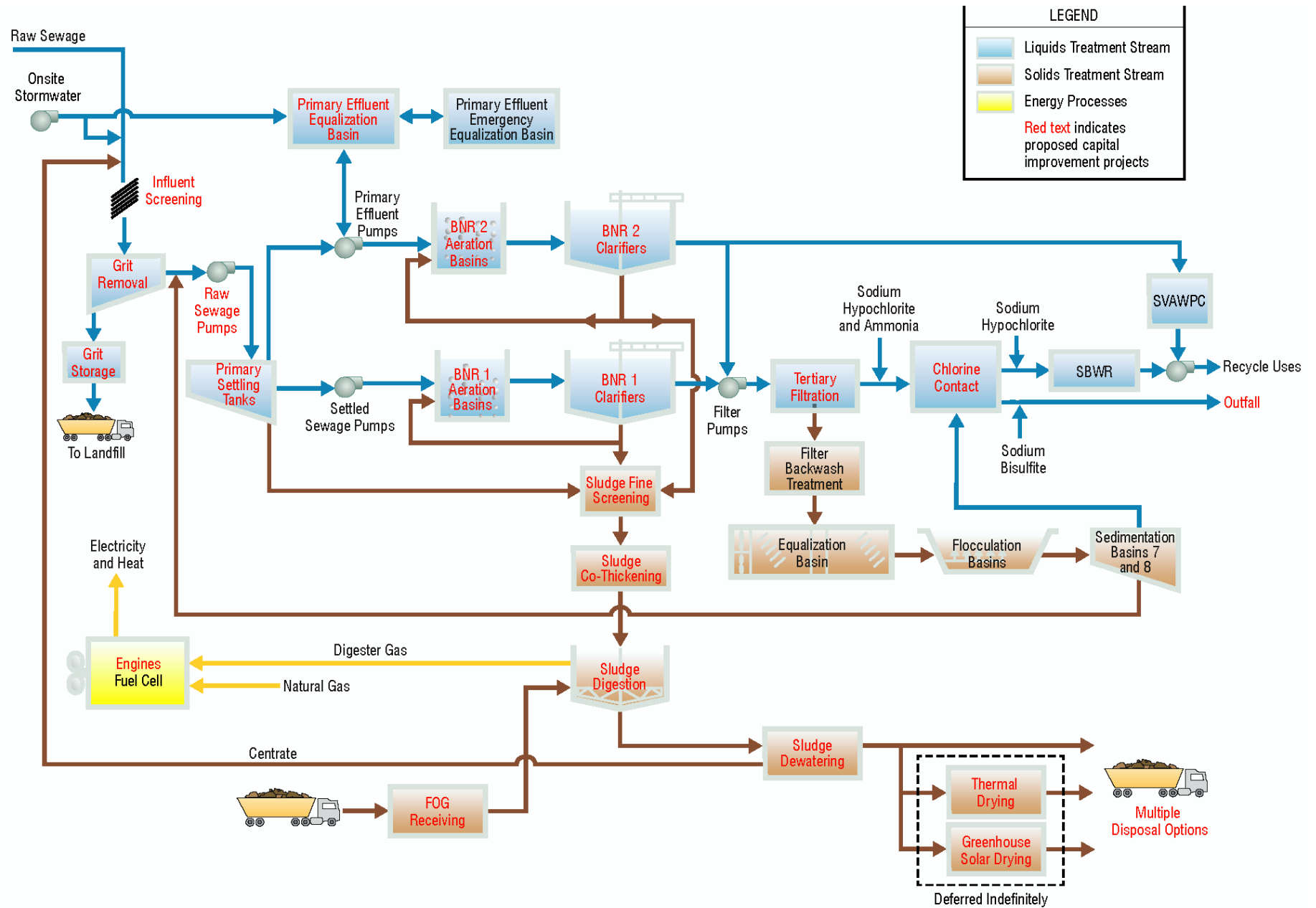


Figure 5 – Proposed Treatment Process Flow Diagram



Active Construction Projects – Aerial Plan

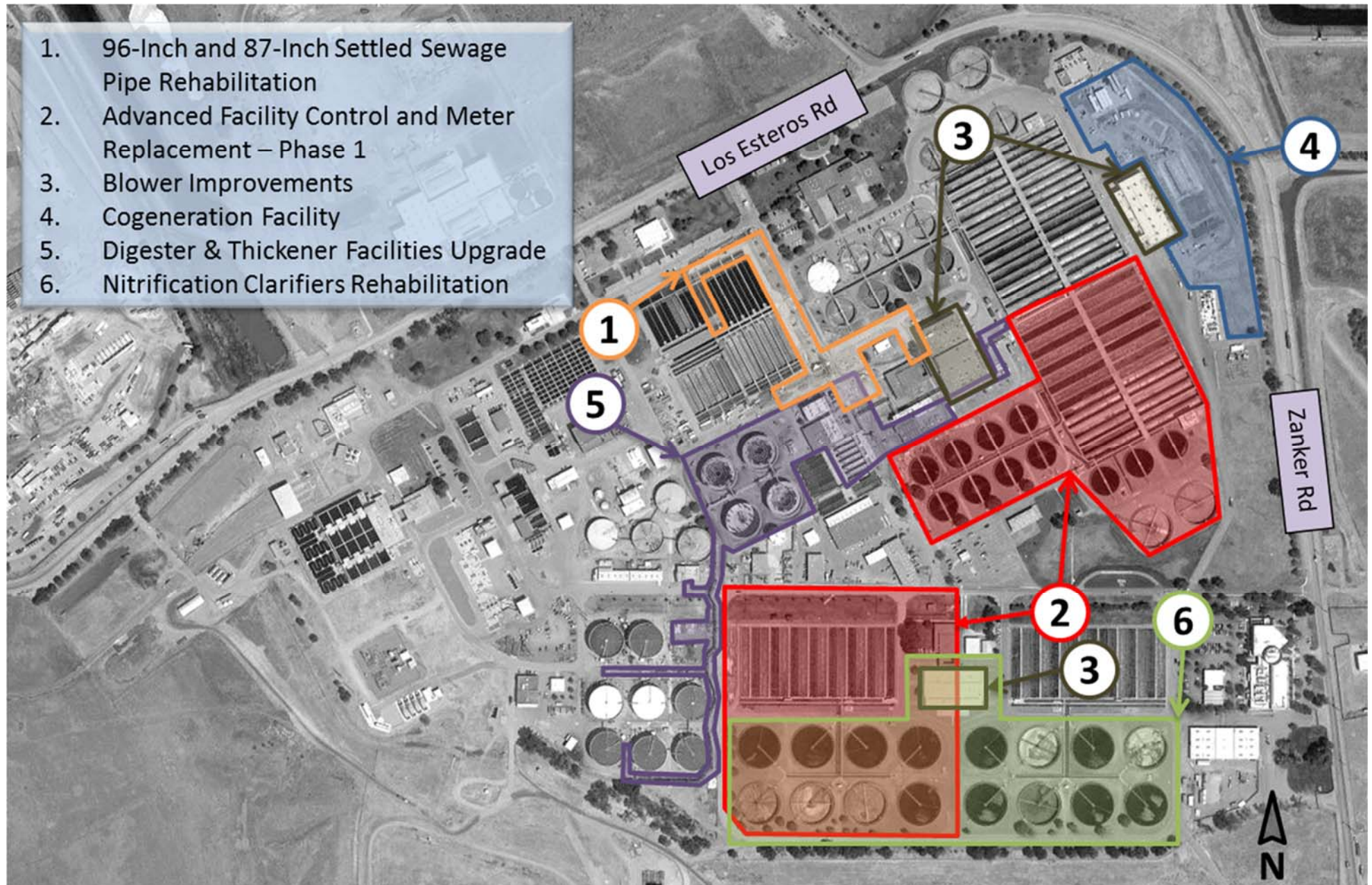


Figure 6: Active Construction Projects

