



San José-Santa Clara  
Regional Wastewater Facility

# Capital Improvement Program Monthly Status Report: September 2019

November 7, 2019

This report summarizes the progress and accomplishments of the Capital Improvement Program (CIP) for the San José-Santa Clara Regional Wastewater Facility (RWF) for September 2019.

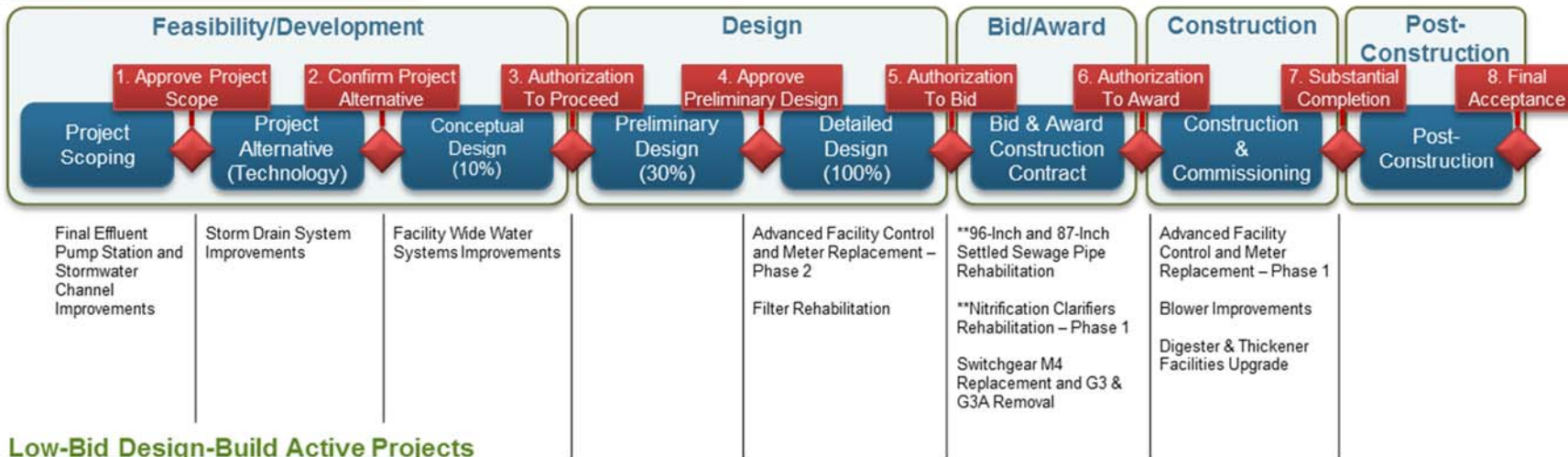
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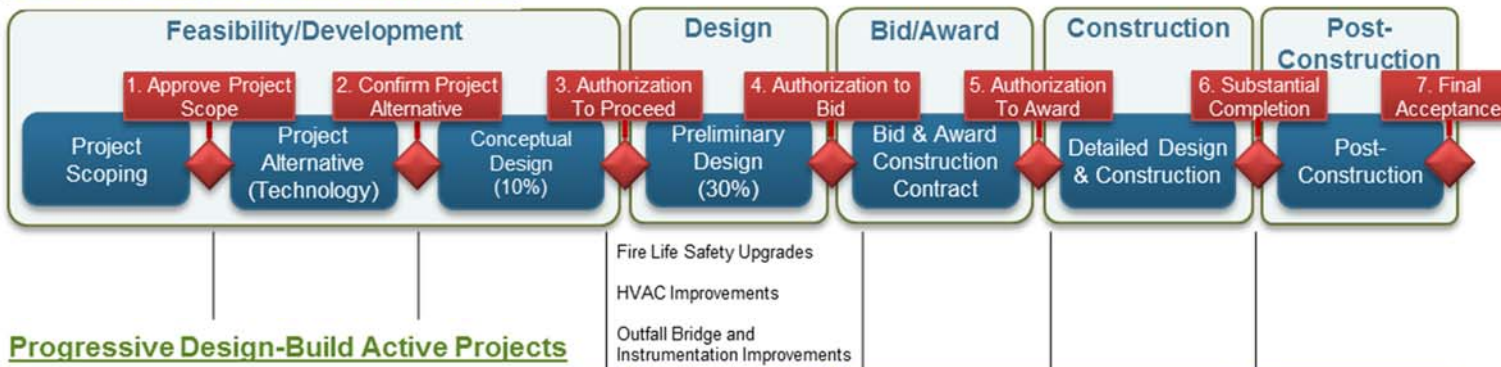


# Project Delivery Models

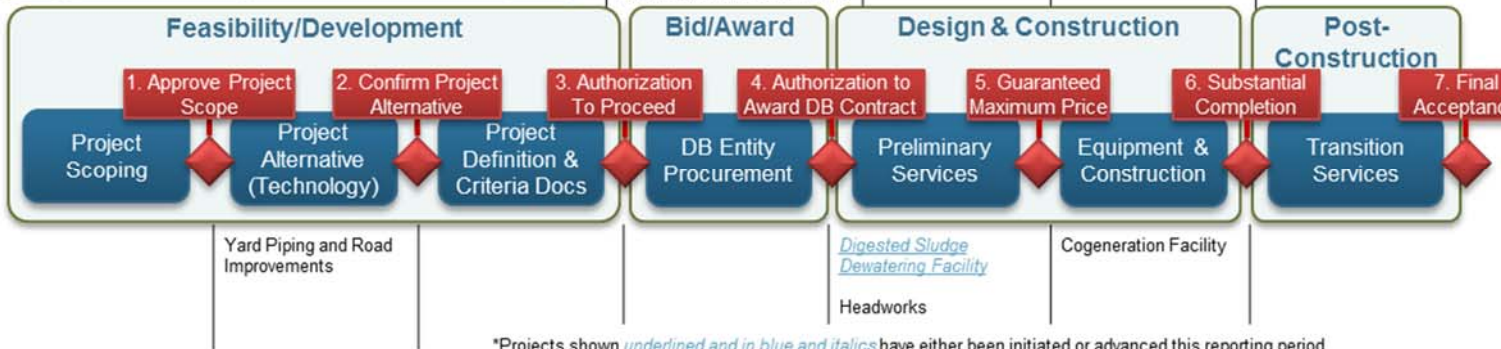
## Design-Bid-Build Active Projects



## 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  
 \*\*Project will move to the next stage if City Council approves award of the construction contract.



# Program Summary

## September 2019

In September, the Treatment Plant Advisory Committee (TPAC) and City Council (Council) approved the award of the design-build contract for the performance of preliminary services and discrete portions of the design-build work, referred to as “early work packages” for the Digested Sludge Dewatering Facility Project. Next month, the design-builder and the City will hold a partnering meeting to kick-off the preliminary services for the project. TPAC and Council also approved time extensions to three general engineering master consultant agreements, which will allow the consultants to provide engineering services through the completion of several projects, including the Advanced Facility Control & Meter Replacement – Phase 2 Project and Switchgear M4 Replacement and G3 & G3A Removal (Switchgear) Project.

The City received two bids for the Switchgear Project. Staff will evaluate the bids with the goal of recommending the construction contract for award to TPAC and Council in December.

This month, the contractor for the Digester and Thickener Facilities Upgrade (Digester Upgrade) Project reached two major milestones: 1) the final concrete pour for the new digester roofs, and 2) the final concrete pour for the seismic ring beam foundation. The contractor also completed the exterior insulation on Digester 6.

The Cogeneration Facility Project design-builder anchored and readied all medium voltage switchgear and motor control centers in preparation for cable installation allowing power and lighting circuitry to be electrified. The design-builder also installed hot water supply/return pipelines up to the interface point with the Digester Upgrade Project. In addition, the hot water boilers were set and anchored in the electrical equipment butler building.

The Blower Improvements Project contractor completed the variable frequency drive electrical conduits and began forming the equipment concrete pads in Building 40. The City and contractor also held a partnering session focused on safety and work quality.

The Advanced Facility Control and Meter Replacement – Phase 1 Project contractor completed the valve and instrument replacement work in the Secondary Battery B area and is preparing for pre-operational and functional testing in November and full operational testing in December.

For the Filter Rehabilitation Project, staff evaluated the five statements of qualifications (SOQs) received and determined that three contractors are qualified to bid on the project.

### Look Ahead

The following key activities are forecast for October and November 2019:

- Staff will recommend the following to TPAC and Council:
  - Award the construction contract for the Nitrification Clarifier Rehabilitation - Phase 1 Project;
  - Award the construction contract for the 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation Project; and
  - Amend two construction management master consultant agreements to clarify terms and conditions.
- A Notice to Proceed (NTP) will be issued to the contractor to begin construction of the Nitrification Clarifier Rehabilitation – Phase 1 Project.
- Four projects will seek to advance through stage gates, including:
  - Switchgear M4 Replacement and G3 & G3A Removal Project – Stage Gate 6 – Authorization to Award & Establish Baseline;
  - Advanced Facility Control and Meter Replacement Project – Phase 2 – Stage Gate 5: Authorization to Bid;
  - Fire Life Safety Upgrades Project - Stage Gate 4: Authorization to Bid;



Figure 1: Completed exterior insulation on Digesters 5 & 6

## Program Highlight – Environmental Team Coordination

The Environmental Team (ET) ensures that all CIP projects are in compliance with applicable environmental laws and regulations, including those governing environmental review (California Environmental Quality Act or CEQA) and the protection of water quality (Federal Clean Water Act and State Porter-Cologne Act); air quality (Bay Area Air Quality Management District rules and regulations); sensitive species and habitats (Federal Migratory Bird Treaty Act, federal and state Endangered Species Acts, and California Fish and Game Code); and resources associated with the San Francisco Bay (McAteer-Petris Act). To perform this compliance work, the team coordinates closely with the City's Planning, Building, and Code Enforcement Department to obtain clearances under CEQA. The team also applies for permits through the United States Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife (CDFW), and/or Bay Conservation and Development Commission; assists with air permit coordination; and complies with Santa Clara Valley Habitat Plan requirements.

The ET provides environmental support to CIP projects at almost every project stage, from initiation through construction:

- Beginning at the project scoping stage, a designated ET project lead works with the project team to assess the project's environmental review and permitting requirements.
- At the project alternative stage, the project lead identifies preliminary environmental constraints and opportunities, and verifies an environmental consultant procurement strategy, should one be required.
- At the conceptual design/project definition stage through contract bid and award, the project lead attends design workshops, oversees completion of CEQA documentation to support approval and execution of design and construction contracts, assists with obtaining permits and other approvals, if needed, and helps project staff identify any additional environmental requirements that may be triggered by a change in design and/or technology.
- During the construction stage, the project lead attends pre-construction and construction progress meetings, and tracks implementation of mitigation measures and permit conditions during construction.

In addition to its compliance and environmental support duties, the ET also works with multiple parties to manage the western burrowing owl population in the RWF bufferlands. These groups include the Santa Clara Valley Habitat Agency, the Santa Clara Valley Audubon Society, and RWF operations and maintenance (O&M) staff. To protect the owl and ensure its continued success at the RWF, the ET works with CIP project teams to ensure that projects being constructed within or adjacent to the bufferlands comply with the terms and conditions of the Santa Clara Valley Habitat Plan and with project-level mitigation measures to protect burrowing owls. When necessary, the ET establishes "no mow" zones to discourage owls from settling near active construction sites. On rare occasions when owls, nesting birds, or other wildlife move into an active construction zone, the ET cordons off the area and temporarily postpones nearby activities until the animals' safety and wellbeing can be assured. Figures 2 through 5 on the following page illustrate some of this activity.

Ultimately, the ET's goal is to ensure successful CIP project delivery while minimizing permit violations and risks to the environment. This goal is linked to the environmental key performance indicator (see Program Key Performance Indicators on page 7) and the Environmental Services Department's mission to deliver world-class utility services and programs to improve our health, environment, and economy. The ET has assisted the CIP in reaching several recent milestones, including:

- Submitting permit applications to the USACE, RWQCB, and CDFW to address impacts by the Headworks Project to jurisdictional state and federal waters, special-status wildlife, and sensitive habitat in the vicinity of the new Headworks 3 site;
- Finalizing the addendum to the Plant Master Plant Environmental Impact Report (EIR) for the Digested Sludge Dewatering Project to comply with CEQA and support approval of the City's progressive design-build contract with contractor Walsh Construction Company, LLC (Walsh); and
- Completing the first administrative draft initial study for the Outfall Bridge and Instrumentation Improvements Project to comply with CEQA and support approval and execution of the future low-bid design-build contract.





Figure 2: Nest with eggs found during a 2019 nesting bird survey in the RWF bufferlands



Figure 3: ET staff setting up remote cameras in the Emergency Basin to observe burrowing owls



Figure 4: Area cordoned off at the Emergency Basin Overflow Structure to protect a nesting mourning dove



Figure 5: A visiting burrowing owl at the Headworks 2 facility in 2017

## 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
<b>Stage Gates</b>	90%	86% 6/7 <sup>1</sup>			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%							
<b>Schedule<sup>2</sup></b>	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. <sup>3</sup> Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75%							
<b>Budget<sup>4</sup></b>	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. <sup>3</sup> Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75%							
<b>Expenditure</b>	\$369M	\$170M			\$421M <sup>5</sup>		
Measurement: CIP FY19-20 committed costs. Target: Committed cost meets or exceeds 70% of planned Budget. 70% of \$527M = \$369M. Therefore Fiscal Year End Green: >=\$369M; Amber: \$290M to \$369M; Red: < \$290M							
<b>Procurement</b>	80%	100% 2/2			100% 8/8		
Measurement: Number of consultant and contractor procurements advertised compared to planned for the fiscal year. Target: Green: >= 80%; Amber: 70% to 79%; Red: < 70%							
<b>Safety</b>	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							
<b>Environmental</b>	0	0			0		
Measurement: Number of permit violations caused by CIP delivery for the fiscal year. Target: Green: zero incidents; Amber: 1 to 2; Red: > 2							
<b>Vacancy Rate<sup>6</sup></b>	10%	22% 19/86			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

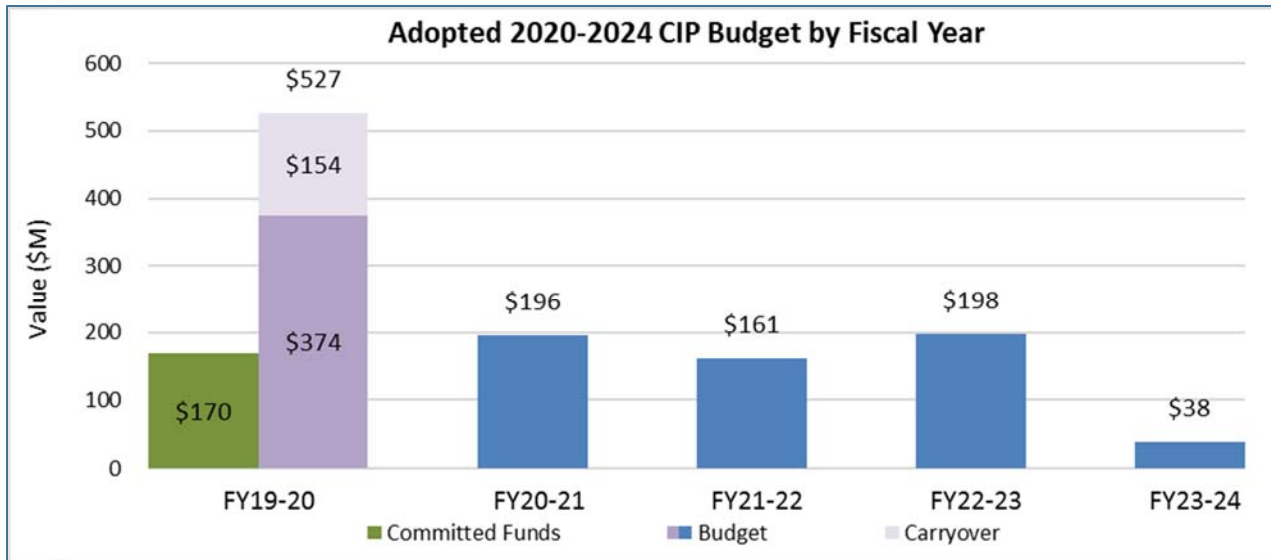
1. The Headworks Critical Improvements and Iron Salt Feed Station projects passed Stage Gate 8: Final Acceptance.
2. The CIP does not anticipate any projects reaching Beneficial Use this fiscal year.
3. The baseline Beneficial Use date and the baseline budget for each project are established at construction contract award and execution.
4. The CIP does not anticipate accepting any projects this fiscal year.
5. The fiscal year-end expenditure forecast decreased \$30 million primarily due to the Filter Rehabilitation Project construction award being postponed until next fiscal year.
6. The vacancy rate KPI measures CIP-approved positions, including ESD, Public Works, and program management consultant full-time staff.



## 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 \$399 million, which consists of \$339.6 million in new funds and \$59.7 million in rebudgets. For purposes of this monthly report, the adopted FY19-20 budget is adjusted from \$399 million to \$374 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; and Urgent and Unscheduled Treatment Plant Rehabilitation. Similar adjustments have been made to the budgets for FY20-21 through FY23-24.

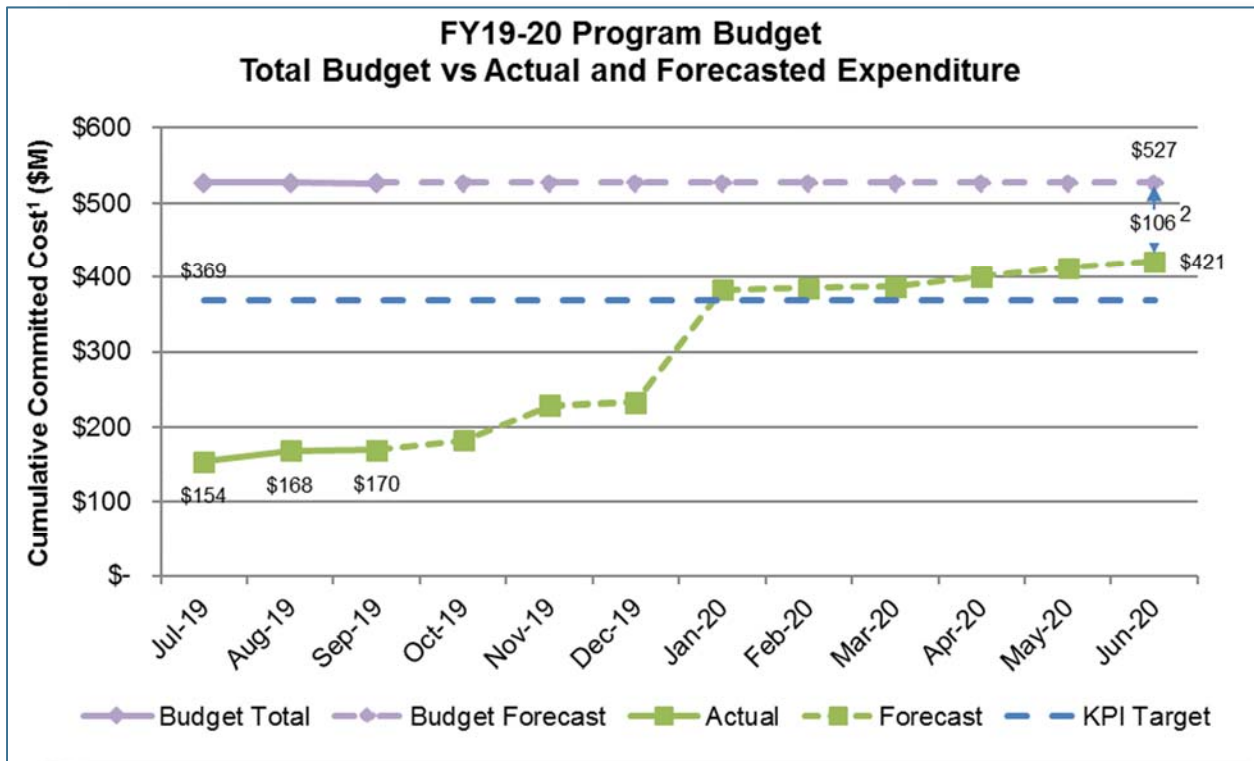
**Carryover:** Encumbrance balances at the end of the previous fiscal year are automatically carried forward to the current fiscal year as carryover funding to pay invoices for approved construction contracts and consultant agreements. FY19-20 carryover decreased by \$500,000 to \$153.6 million due to liquidation of the completed Construction-Enabling Improvements Project construction contract.

Budget of \$373.6 million and carryover of \$153.6 million totals \$527.3 million for FY19-20.



## Fiscal Year 2019-2020 Program Budget Performance

The FY19-20 CIP budget is comprised of approximately \$373.6 million in new and rebudgeted funds, plus encumbered carryover of \$153.6 million, for a total of \$527.3 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; and Urgent and Unscheduled Treatment Plant Rehabilitation items. Overall, the forecast fiscal year-end committed funds exceed the fiscal year-end target by \$52 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. Two construction contracts are now anticipated to be awarded in FY20-21 instead of FY19-20, based on updated schedules:
    - i. Filter Rehabilitation Project
    - ii. 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. 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 four projects in the construction and post-construction phases and an additional 14 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 <sup>1</sup>	Cost Performance <sup>2</sup>	Schedule Performance <sup>2</sup>
1. Cogeneration Facility	Design & Construction	Sep 2020		
2. Digester and Thickener Facilities Upgrade	Construction	Nov 2020		
3. Advanced Facility Control & Meter Replacement - Phase 1	Construction	June 2021		
4. Blower Improvements	Construction	Sep 2022		

#### Key:

<b>Cost:</b>	 On Budget	 >1% Over Budget	<b>Schedule:</b>	 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.



## Project Performance – Pre-Baselined Projects

Project Name	Phase	Estimated Beneficial Use Date <sup>1</sup>
1. Headworks	Design and Construction	Jan 2023
2. Digested Sludge Dewatering Facility	Design and Construction	Nov 2023
3. 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation	Bid/Award	Nov 2020
4. Switchgear M4 Replacement and G3 & G3A Removal	Bid/Award	May 2022
5. Nitrification Clarifiers Rehabilitation – Phase 1	Bid/Award	Dec 2022
6. Outfall Bridge and Instrumentation Improvements	Design	Dec 2021
7. Advanced Facility Control & Meter Replacement - Phase 2	Design	Dec 2022
8. Fire Life Safety Upgrades	Design	Mar 2023
9. HVAC Improvements	Design	May 2023
10. Filter Rehabilitation	Design	Jul 2023
11. Storm Drain System Improvements	Feasibility/Development	Feb 2024
12. Facility Wide Water Systems Improvements	Feasibility/Development	Aug 2024
13. Final Effluent Pump Station and Stormwater Channel Improvements	Feasibility/Development	Feb 2025
14. Yard Piping and Road Improvements	Feasibility/Development	Nov 2027

### 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.
- The Flood Protection Project was placed on hold while Valley Water performs a flood risk analysis.



## Project Significant Accomplishments

### Biosolids Package

#### Digested Sludge Dewatering Facility and Thickener Facilities Upgrade Project

- Council approved the award of a design-build contract to Walsh Construction Company, LLC (Walsh) for the performance of preliminary services. Next month, the City will issue an NTP to Walsh authorizing work to prepare a basis of design report, 30 and 60 percent designs, and the development of a cost model.

#### Digester and Thickener Facilities Upgrade Project

- Contractor Walsh completed the concrete pour for the new digester roofs and ring beam foundations, the exterior insulation on the second of four digesters, and interior of Digester 8.
- Walsh installed covers for the renovated dissolved air flotation thickener (DAFT) tanks and removed the old and abandoned pipes in the DAFT tank gallery and tunnel ahead of replacing the 36-inch sludge pressure flow pipeline.
- Walsh completed the concrete masonry unit walls for the east and west electrical buildings and successfully tested the load center transformers and electrical load centers.

### Facilities Package

#### Fire Life Safety Upgrades Project

- Design consultant K/J submitted the final 30 percent design, specifications, and construction cost estimate. Staff anticipates advertising the low-bid design-build contract in early 2020.

#### Yard Piping and Road Improvements Project

- Owner's advisor Black and Veatch conducted a workshop to review the draft conditional assessment report.

### Liquids Package

#### Advanced Facility Control and Meter Replacement – Phase 1 Project

- Contractor Overaa Construction completed the equipment replacement work in Secondary Battery B area.
- Staff conducted a pre-startup inspection and issued a construction "punch list" to Overaa, which is anticipated to be completed in November. Full operational testing is expected in December.

#### Blower Improvements Project

- Contractor Monterey Mechanical Company (MMC) completed the Building 40 variable frequency drive conduit openings and began forming the associated concrete pads.
- The City held a partnering session that focused on project safety and work quality.

#### Filter Rehabilitation Project

- The City evaluated the five SOQs received and determined that three contractors were qualified to bid on the construction contract. Staff anticipates advertising the construction contract in early 2020.

#### Headworks Project

- Design-builder CH2M completed condition assessments of headworks-related infrastructure and led a 60 percent risk workshop. Next month, the City anticipates receiving the 60 percent cost estimate.

### Power and Energy Package

#### Cogeneration Facility Project

- Design-builder CH2M anchored and readied medium voltage switchgear and motor control centers for cable installation; installed hot water supply/return lines across the existing aeration basins; set and anchored hot water boilers in the engine building; shimmed and leveled the engine/generators in place; installed all storefront glazing and windows in the power and air operations center; and completed the metal interior framing in the engine building.
- CH2M also installed the hot water boilers in the electrical building and continued installing the mechanical pipe supports and interior piping in the engine building.

#### Switchgear M4 Replacement and G3 & G3A Removal Project

- The City received two construction bids on September 26. Staff will evaluate the bids and anticipates bringing a recommendation to Council in December 2019.



## 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 worked together to sequence several tasks so they could be completed more quickly and efficiently.



## Project Profile – Blower Improvements

The RWF's secondary treatment process consists of two separate biological nutrient removal systems, or BNRs, known as BNR-1 and BNR-2. These BNRs remove organics from the incoming primary effluent. Their main system components include blowers, aeration tanks, air headers, and diffusers. Air from the blowers accelerates the biodegradation of organic material in the BNR process.

BNR-1 and BNR-2 were constructed in 1961 and 1975, respectively. The 14 aeration blowers that serve BNR-1 and BNR-2 are housed in the Process Air Building (PAB), Secondary Blower Building (SBB), and Tertiary Blower Building (TBB) (see Figure 6). The blower system has aged beyond its original design life and needs rehabilitation to ensure long-term operation while minimizing maintenance requirements. This project will extend the useful life of the RWF's aeration system by 30 years, while also significantly improving the system's energy efficiency.

The project scope includes removing four gas engines and blowers and converting the two remaining blower engines to electric in the SBB; replacing gearboxes, electric engines, and associated electrical control equipment in the PAB and TBB blowers; adding a climate control system to the TBB electrical room; providing new discharge, blow off, and check valves to all blowers; and providing clean agent fire protection to the PAB electrical room. To ensure that the RWF continues to meet discharge permit requirements while construction is underway, CIP and O&M teams coordinate extensively.

Design consultant Brown and Caldwell completed the project design in May 2018 and the City awarded the \$29.5 million construction contract to MMC in November 2018. Construction began in January 2019 and is anticipated to reach Beneficial Use by March 2022.

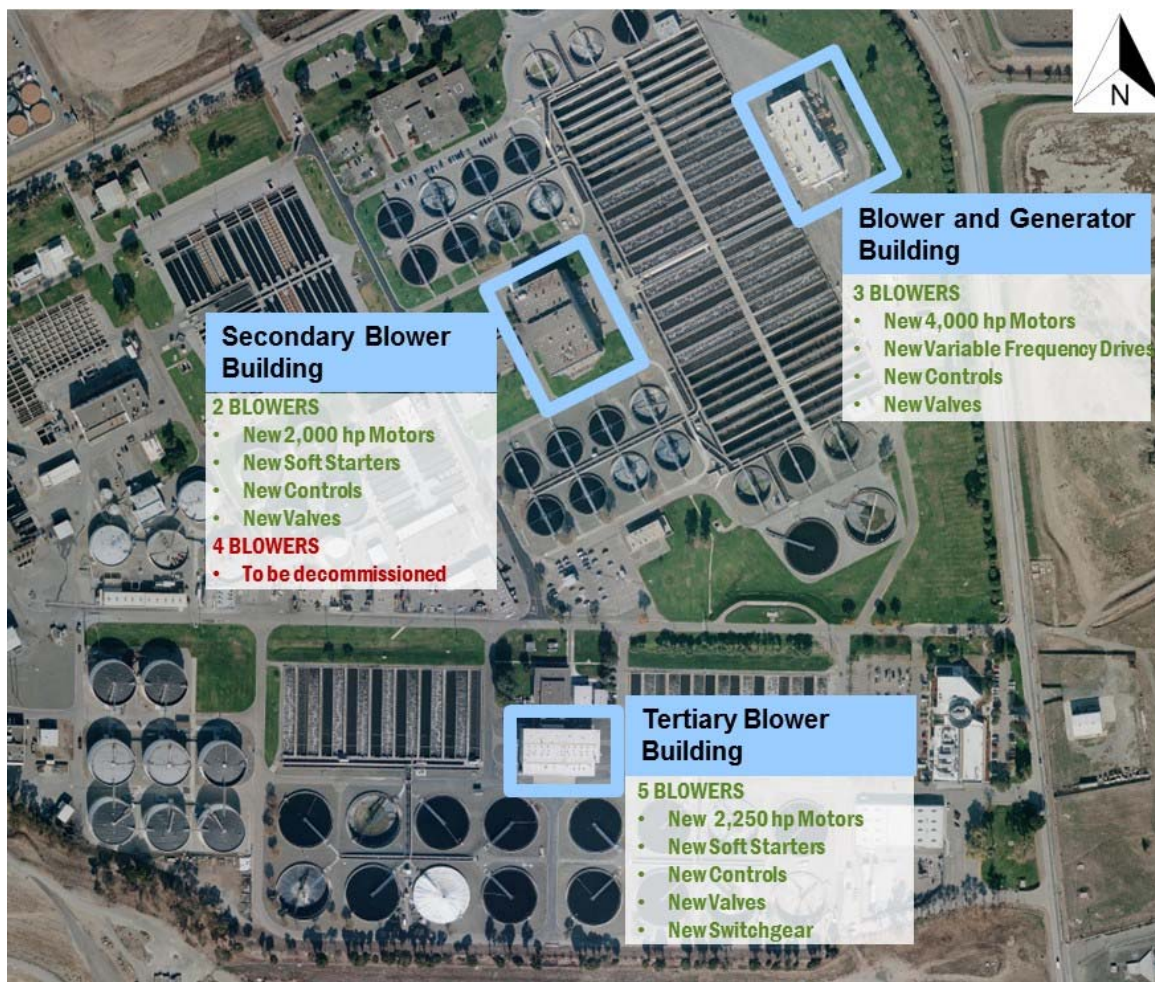


Figure 6. Project site map

# Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram

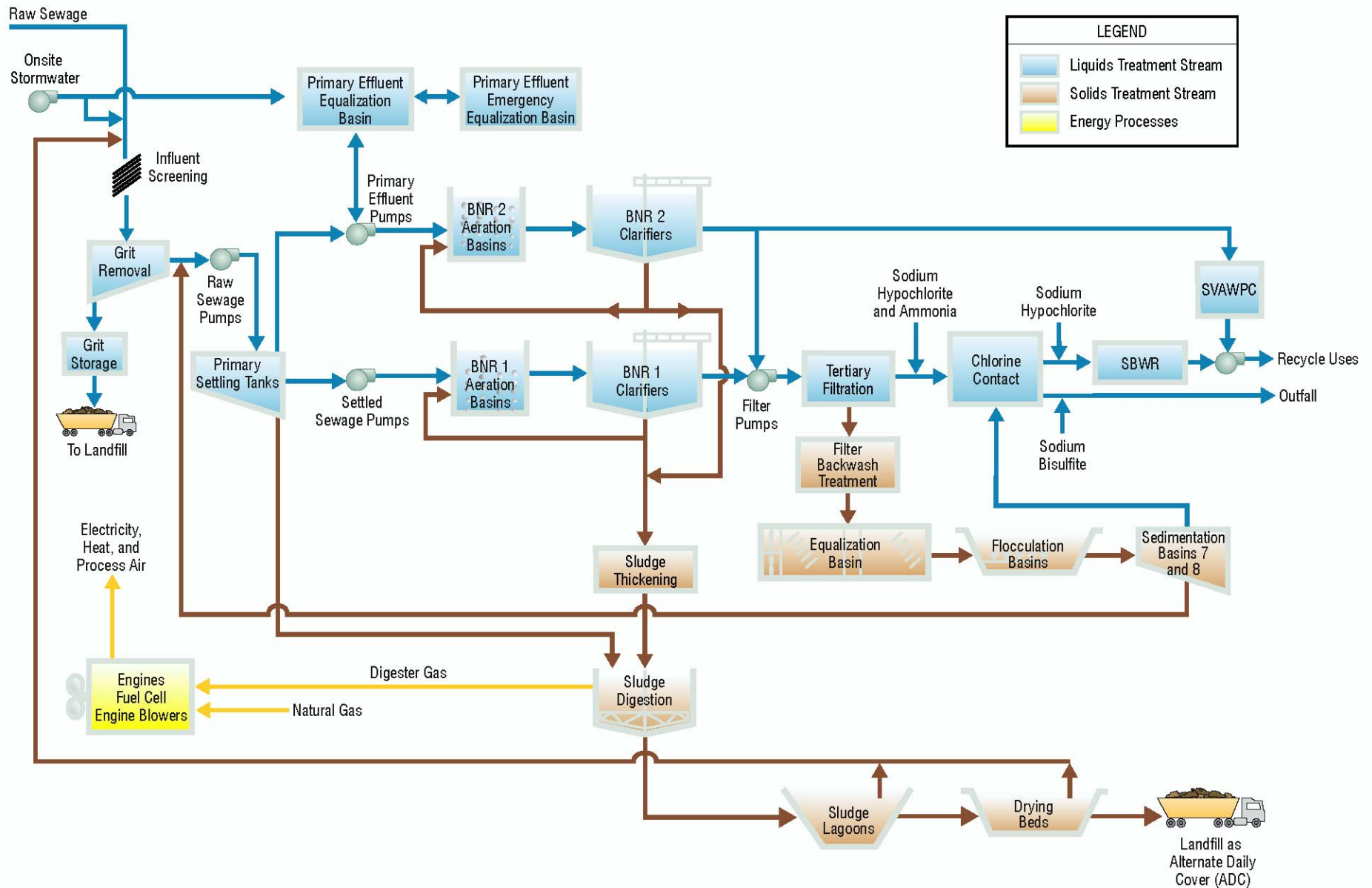


Figure 7 – Current Treatment Process Flow Diagram



# Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram

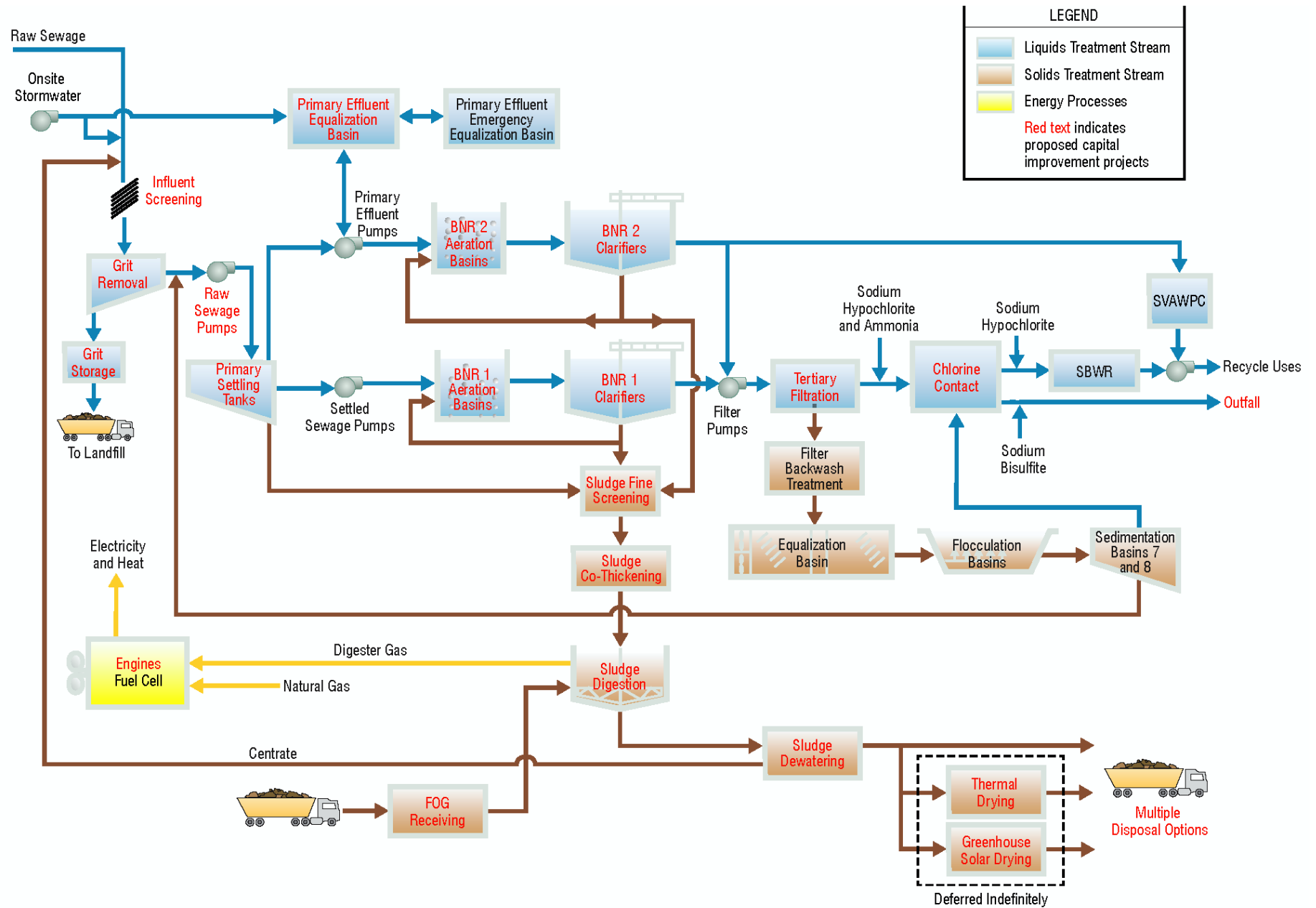


Figure 8 – Proposed Treatment Process Flow Diagram



## Active Construction Projects – Aerial Plan

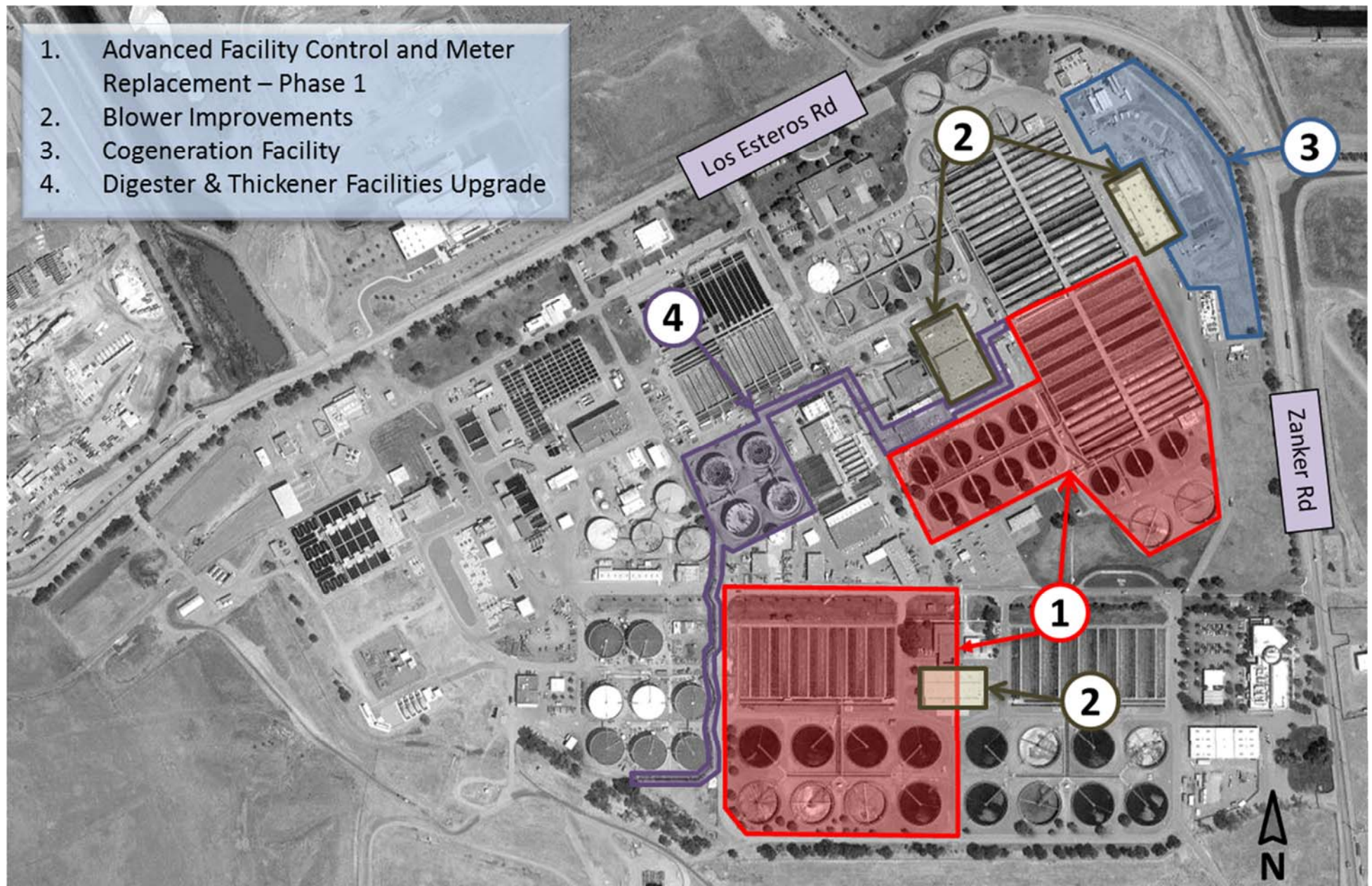


Figure 9: Active Construction Projects