



**San José-Santa Clara**  
Regional Wastewater Facility

# Capital Improvement Program

## Monthly Status Report: May 2020

July 8, 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 May 2020.

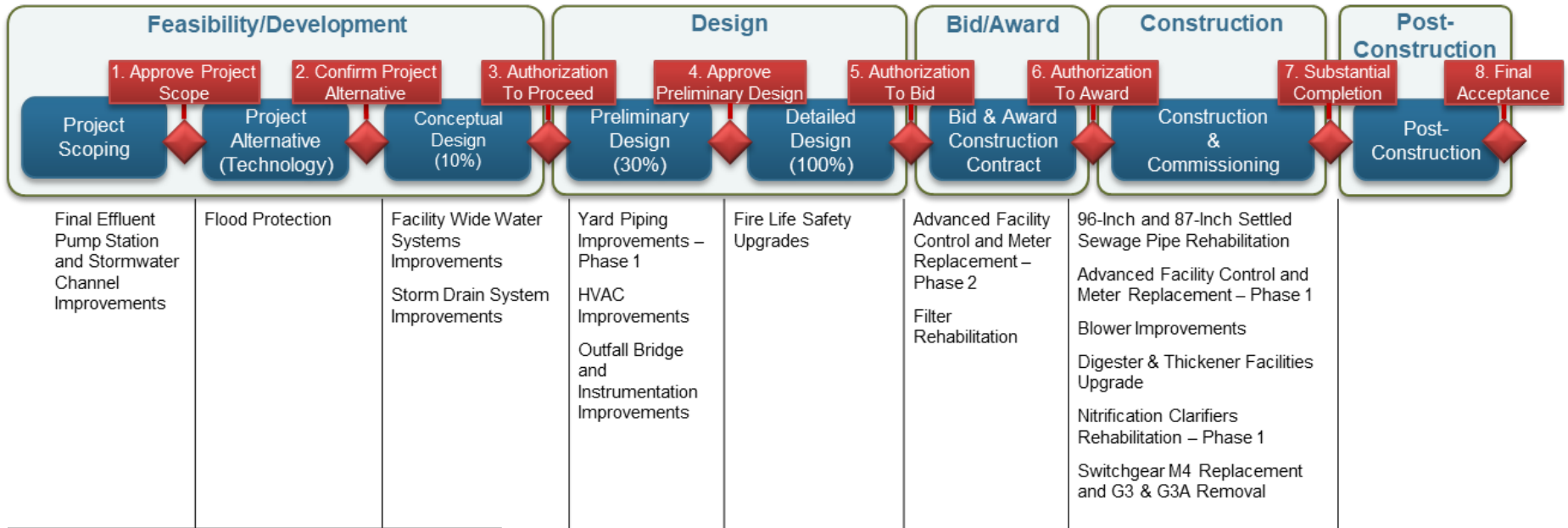
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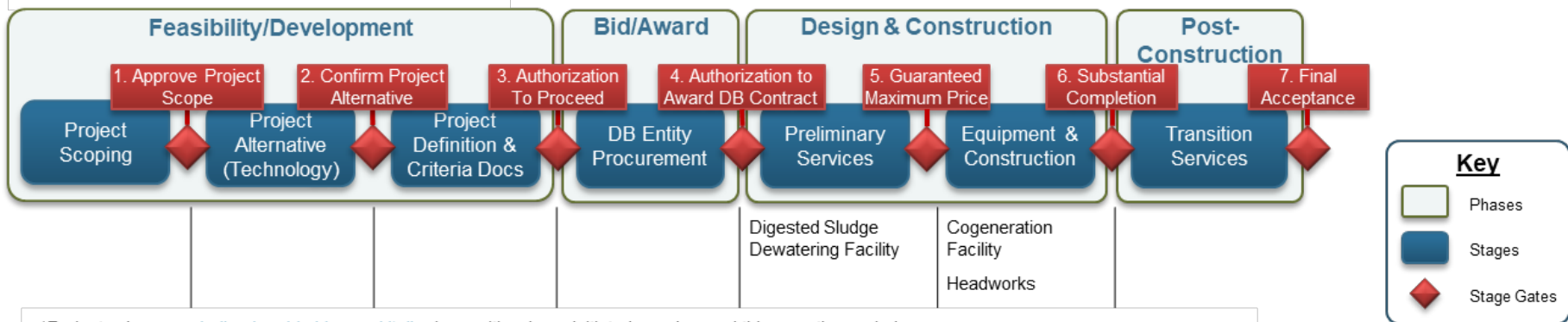


# Project Delivery Models

## Design-Bid-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.

**Key**

- Phases
- Stages
- ◆ Stage Gates



# Program Summary

## May 2020

In May, CIP projects continued to progress despite COVID-19 pandemic impacts. Projects in construction continued with all contractors and construction management (CM) staff following the latest guidance from the Santa Clara County Public Health Officer. All other CIP staff continued to work remotely.

The Advanced Facility Control and Meter Replacement – Phase 2 Project construction contract award was approved by TPAC and will be presented to the San José City Council (Council) in early June.

The Digester and Thickener Facilities Upgrade Project contractor completed work on the last of the 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. Work progressed in the dissolved air flotation thickener (DAFT) tank area, with installation of nine new thickened sludge progressive cavity pumps and the attachment of foul air piping to the thickened sludge canopy structure.

The Cogeneration Facility Project design-builder continued pre-operational and functional testing for the cooling towers, gas treatment system, cogeneration engines, and boilers. The overhead crane in the engine generator building was tested and certified.

The Blower Improvements Project contractor began removing hazardous material in the Building 40 locker rooms.

The Advanced Facility Control and Meter Replacement – Phase 1 Project contractor completed functional testing of 41 of 53 flow meters in the Secondary Battery B area with RWF process water.

The Headworks Project design-builder and City teams moved to construction trailers in the RWF's construction-enabling area. Staff initiated environmental pre-construction surveys and received permits to allow construction to start on June 1.

The 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation Project contractor assembled and tested the DAFT liquid effluent (DLE) reroute system in preparation for operation in June. The system will allow pipes to be dewatered and repaired over the summer.

The City issued the Notice to Proceed (NTP) for the Switchgear M4 Replacement and G3 & G3A Removal Project to the Contractor.

On the Filter Rehabilitation Project, staff held a non-mandatory site walk for bidders on May 28.

The Facility Wide Water Systems Improvements Project team received the Conceptual Design Report (CDR) submittal from the design consultant for review. The 100 percent design submittal was completed for the exploratory trenching work that will inform the project's design.

The design-builder for the Digested Sludge Dewatering Facility Project submitted the draft Basis of Design Report (BODR), which documents project recommendations. The final centrifuge manufacturer completed sludge dewatering tests.

## Look Ahead

The following key activities are forecast for June and July 2020:

- Staff will recommend award of the construction contract for the Advanced Facility Control and Meter Replacement – Phase 2 Project to Council.
- The City will open bids for the Filter Rehabilitation Project on June 18.
- Three projects will seek to advance through the following stage gates:
  - HVAC Improvements Project – Stage Gate 4: Approve Preliminary Design
  - Facility-wide Water Systems Improvements Project – Stage Gate 3: Authorization to Proceed
  - Outfall Bridge and Instrumentation Improvements Project – Stage Gate 4: Approve Preliminary Design



## Program Highlight – Construction Management Training

The CIP has been providing training to project managers and other CIP staff for several years. These project management (PM) training modules are prepared and delivered by the program management consultant with support from City subject matter experts. The training program follows the internationally recognized Project Management Institute (PMI) Project Management Body of Knowledge (PMBOK) tailored for the CIP. To date, 33 modules have been delivered. The training consists of a mix of presentation material and hands-on exercises, which reinforce each topic being taught.

With the increasing number of CIP projects in construction in 2020, the focus of recent PM training modules has been on Construction Management (CM) knowledge and skills. The purpose of these modules is to:

- Improve CIP staff knowledge of the project manager and construction manager roles in construction;
- Help staff understand CM team members' roles and responsibilities;
- Identify areas for improved O&M engagement;
- Improve understanding of the construction contract and how it should be administered;
- Improve communication with contractors; and
- Increase staff knowledge of the CIP Construction Administration Plan (CAP) processes and procedures.

Each module covers a number of CM topics with a combination of slides, exercises and lessons learned discussions led by experienced trainers in two-hour training modules, which provide participants with key foundational knowledge needed to effectively manage a construction project.

CM topics covered to date include:

- CM processes and procedures;
- CM team roles and responsibilities;
- CM communication protocols;
- Contract management; and
- Decision making.

Future CM training topics will include reporting and meetings; checklists for final construction deliverables; and closeout procedures. With current restrictions on in-person gatherings due to COVID-19, the training is being delivered virtually, with more than 60 participants attending via Microsoft Teams. Recorded sessions of the CM training will be made available on the CIP Portal.

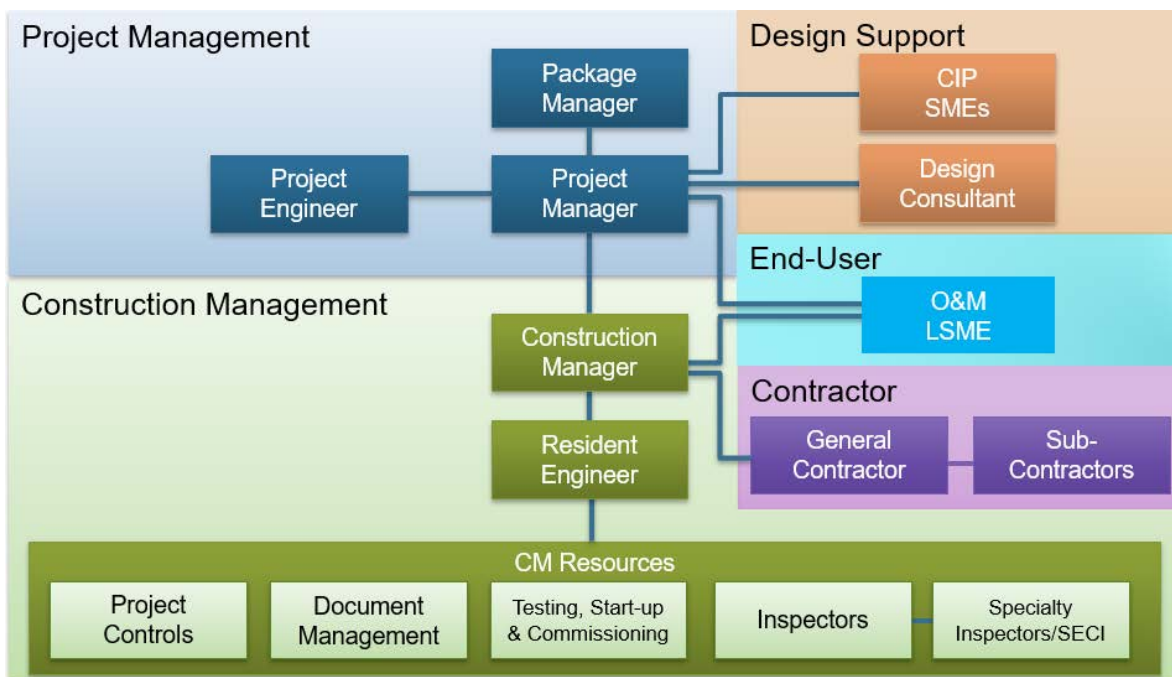


Figure 1 – CIP CM training focuses on communication protocols and best practices to promote effective team leadership and project execution.

## 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%	95% 19/20 <sup>1</sup>			96% 22/23		
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 90%; 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 90%; Red: < 75%							
<b>Expenditure</b>	\$370M	\$383M			\$405M <sup>5</sup>		
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							
<b>Procurement</b>	80%	83% 5/6			83% 5/6 <sup>6</sup>		
Measurement: Number of consultant and contractor procurements advertised compared to planned for the fiscal year. Target: Green: >= 80%; Amber: 70% to 80%; 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<sup>7</sup></b>	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							
<b>Vacancy Rate<sup>8</sup></b>	10%	15% 13/86			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

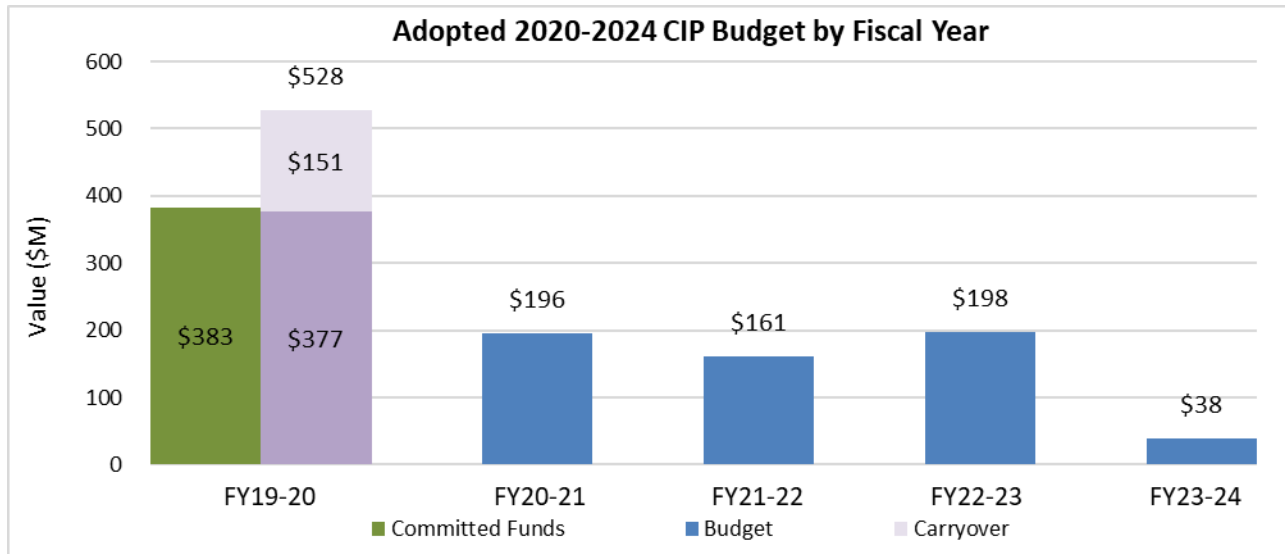
- The Construction Enabling Project passed Stage Gate 8: Final Acceptance.
- No CIP projects will reach Beneficial Use this fiscal year.
- The baseline Beneficial Use date and the baseline budget for each project are established at construction contract award and execution.
- No CIP projects will reach project acceptance this fiscal year.
- The forecast expenditure has increased due to higher than anticipated expenses.
- The CIP will not advertise the subsurface investigation construction contract for the Facility Wide Water Systems Improvements Project this fiscal year.
- The City has appealed a BAAQMD notice of violation related to permitting procedures and is awaiting a response.
- 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 \$401.5 million, which consists of \$339.6 million in new funds and \$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.

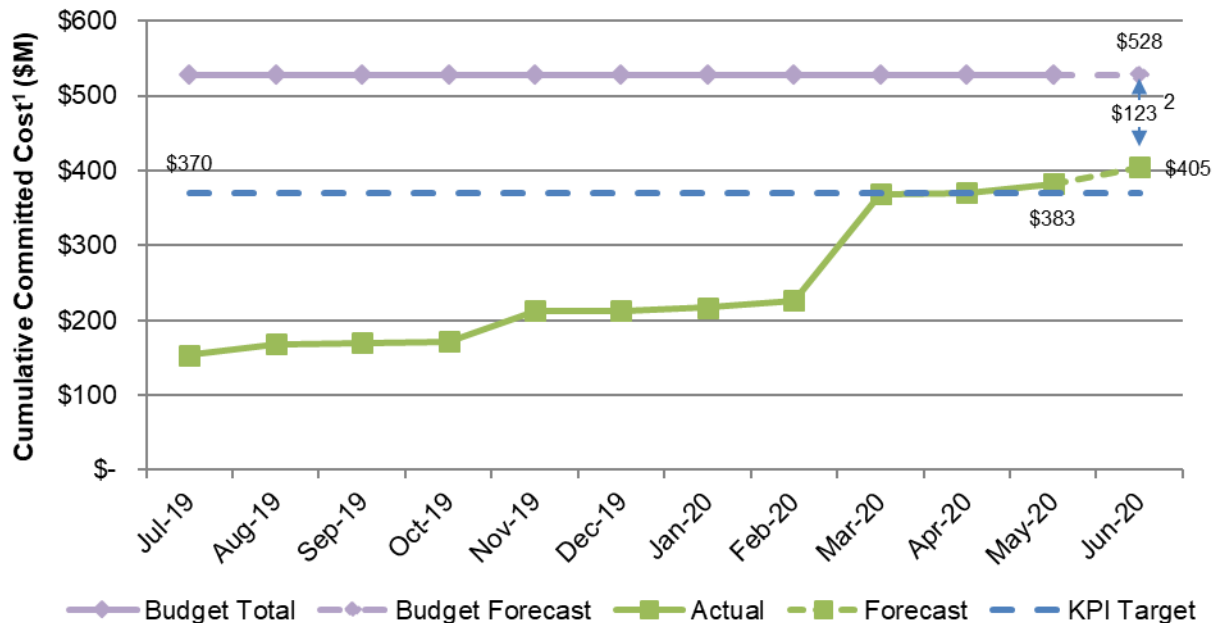
Budget of \$377.2 million and carryover of \$151.0 million totals \$528.2 million for FY19-20.



## 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 \$35 million.

**FY19-20 Program Budget  
Total Budget vs Actual and Forecasted Expenditure**



### 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 was restructured into multiple design-bid-build projects, 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 <sup>1</sup>	Cost Performance <sup>2</sup>	Schedule Performance <sup>2</sup>
1. Cogeneration Facility	Design & Construction	Oct 2020	●	●
2. 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation	Construction	Jan 2021	●	●
3. Digester and Thickener Facilities Upgrade	Construction	May 2021	◆	◆
4. Advanced Facility Control & Meter Replacement - Phase 1	Construction	June 2021	◆	●
5. Blower Improvements	Construction	Sep 2022	●	●
6. Nitrification Clarifiers Rehabilitation – Phase 1	Construction	Jan 2023 <sup>3</sup>	●	●
7. Switchgear M4 Replacement and G3 & G3A Removal	Construction	Jan 2023 <sup>3</sup>	●	●

#### Key:

Cost:	● On Budget	◆ >1% Over Budget	Schedule:	● On Schedule	◆ >2 months delay
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#### 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.
2. An explanation of cost and schedule variances on specific projects identified in this table is provided on page 11.
3. 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 <sup>1</sup>
1. Headworks	Design and Construction	Jun 2023
2. Digested Sludge Dewatering Facility	Design and Construction	Nov 2023
3. Advanced Facility Control & Meter Replacement - Phase 2	Bid/Award	Jan 2023
4. Filter Rehabilitation	Bid/Award	Jan 2024
5. Fire Life Safety Upgrades	Design	Nov 2022
6. Outfall Bridge and Instrumentation Improvements	Design	Dec 2022
7. HVAC Improvements	Design	Apr 2024
8. Yard Piping Improvements – Phase 1	Feasibility/Development	Oct 2021
9. Storm Drain System Improvements	Feasibility/Development	Sep 2023
10. Facility Wide Water Systems Improvements	Feasibility/Development	Feb 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 delivered a draft BODR, which documents alternatives that have been evaluated, project recommendations, and the estimated project cost. Walsh also selected the preferred alternative associated with the new dewatering facility's configuration and conveyance equipment.
- Walsh completed the final centrifuge manufacturer test and confirmed that all the centrifuge manufacturers can achieve the desired cake dryness.

### Digester and Thickener Facilities Upgrade Project

- Contractor Walsh finished moving digester gas piping from the tunnel to the elevated pipe rack on the last of the eight remote digesters. All gas-related equipment at the remote digesters are now being operated by the RWF.
- Walsh finished installing nine new thickened sludge progressive cavity pumps. Walsh also finished attaching foul air and sludge discharge piping under and adjacent to the thickened sludge canopy structure.
- Walsh energized and tested the two new motor control centers that will operate the renovated DAFT tanks and accompanying equipment.
- The project startup team reviewed and approved the DAFT startup plan and finalized the control strategy for the new pressure retention tanks.

## Facilities Package

### Facility Wide Water Systems Improvements Project

- Consultant Kennedy Jenks (K/J) submitted the CDR for City review.
- K/J also completed the 100 percent design submittal for the exploratory trenching work that will help inform the design.

### Yard Piping Improvements – Phase 1 Project

- The project team held a design workshop with Operations and Maintenance (O&M) to discuss findings, alternatives and recommendations for the pipes to be rehabilitated.

## Liquids Package

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

- Contractor Overaa completed functional testing for 41 of 53 flow meters in the Secondary Battery B area with RWF process water. The team anticipates functional testing to be completed in June.

### Advanced Facility Control and Meter Replacement – Phase 2 Project

- Staff recommended award of the construction contract to TPAC and will bring the item to Council in June.

### Blowers Improvements Project

- Contractor Monterey Mechanical began removing hazardous material in the Building 40 locker rooms.

### Filter Rehabilitation Project

- The City advertised the construction contract and will open bids in June 18. Staff also conducted a non-mandatory site walk for the three pre-qualified contractors.

### Headworks Project

- Design-builder CH2M Hill Engineers (CH2M) finalized Early Design Package 1, which includes utility relocation, supply of temporary fiber and power, and mass excavation.
- The design-builder and City teams moved into the project's construction trailers in the construction-enabling area.
- Staff initiated environmental pre-construction surveys received permits that will allow construction to start on June 1.

## Power and Energy Package

### Cogeneration Facility Project

- Design-builder CH2M inspected, tested and certified the overhead crane in Building 45.

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

- The City issued the NTP to contractor Blocka Construction Inc. on May 22.



## 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 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.

In late 2019 and early 2020, further design modifications were required to remove underground interferences so that new pipe and conduit duct banks could be installed. As a result, twice as much paving had to be removed and excavation performed than originally planned. A reduction in fly ash availability due to COVID-19-related power plant shutdowns increased paving materials costs. After an anchor in the tunnel ceiling failed, structural engineers determined that new pipes needed to be supported from the tunnel floors instead. The contractor was required to redesign supports and procure different support materials than originally planned. These factors, along with additional pipe supports required in the elevated pipe rack and the digester area, also increased costs. Finally, more concrete than originally planned was used for equipment pads, which required site drainage redesign.

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. Staff will approach Council for a third contingency increase in Fall 2020.

Delays for these conditions have amounted to 273 working days. The original construction completion and Beneficial Use date of September 2019 was delayed to November 2020. Currently, the City is evaluating contractor Walsh's request for additional delays due to numerous design-related change orders. This may postpone project completion to May 2021.

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

In late 2018, the CIP identified the need for additional CM team resources to adequately manage the construction, testing, and startup challenges the project was experiencing as well as unforeseen conditions (see drain plate issue below). The project team subsequently added staff and increased budget hours for both the CM and project management teams to better support the project's construction and post-construction phases.

Additional staff time and consultant engineering services were required in late 2019 to resolve an unforeseen corroded drain plates and other obstructions for the new flowmeter equipment. A design modification was required to address the aging pipe flange connected to the drain plate. The project and construction teams were required to perform additional work to resolve the unforeseen conditions; this additional work has resulted in additional project delivery costs due to increased CM costs. Completion of this work has now been pushed to July 2020, with an additional cost of \$530,000, but has not changed the overall construction completion date of December 2020.



# Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram

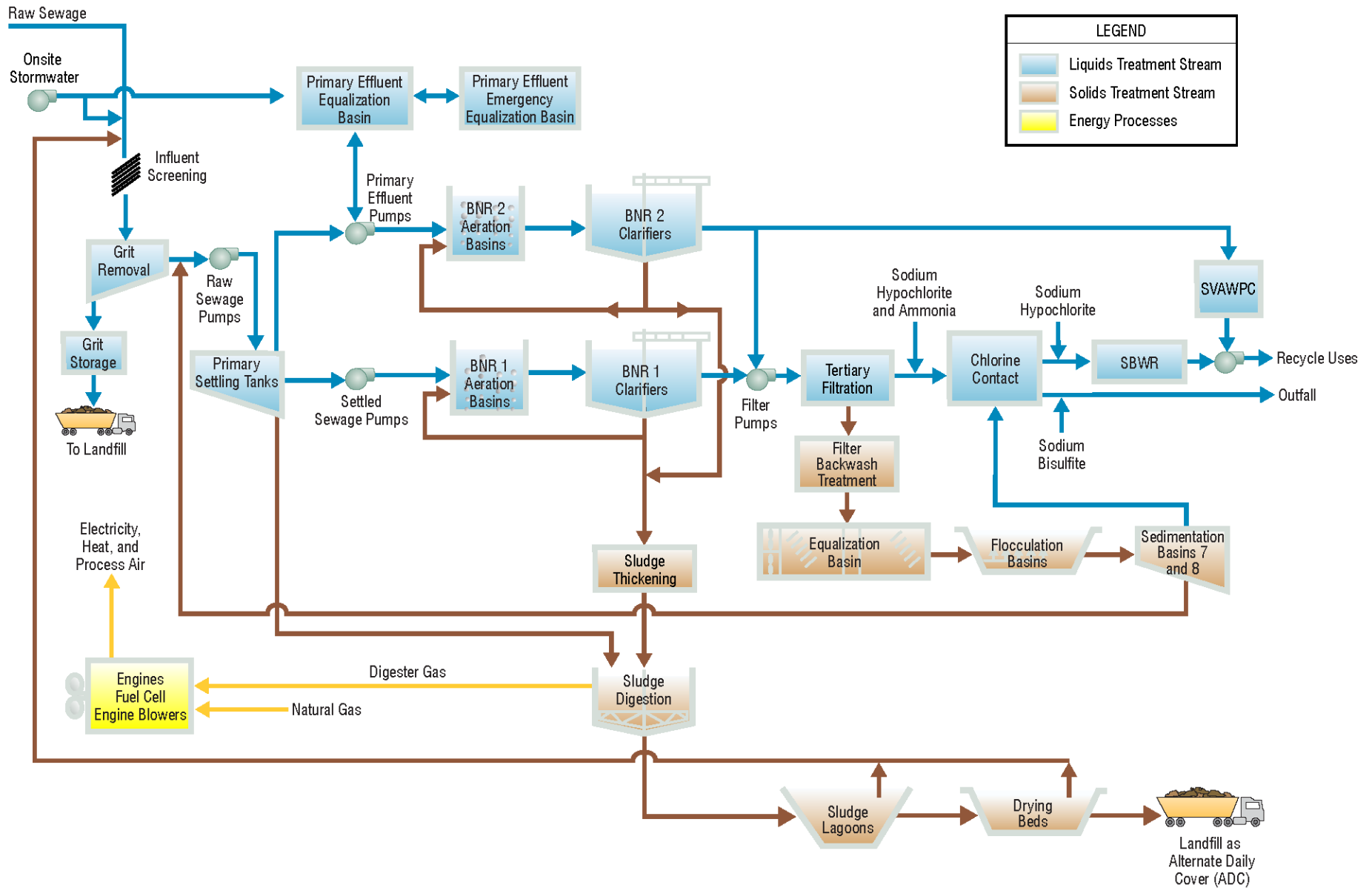


Figure 2 – Current Treatment Process Flow Diagram



# Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram

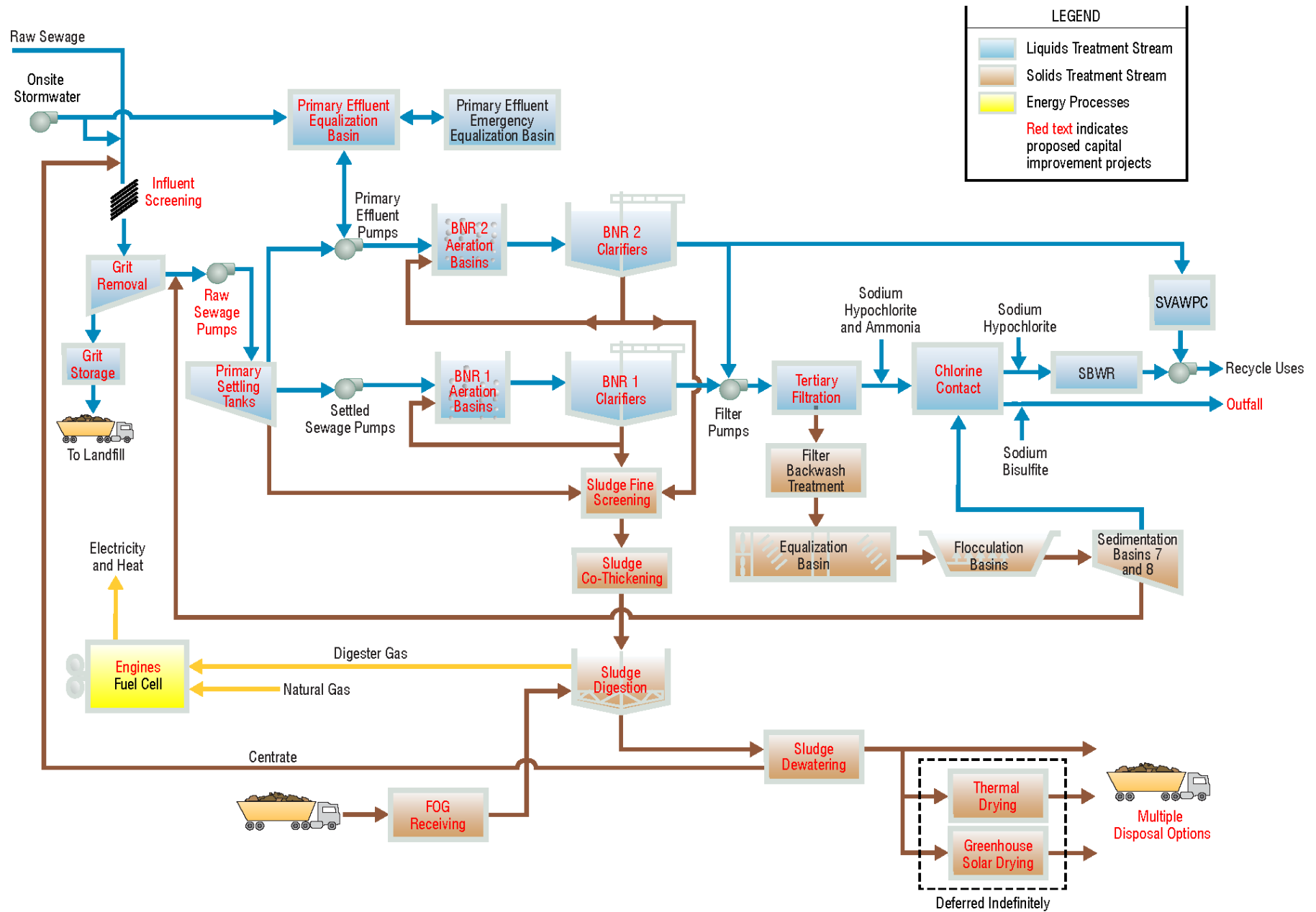


Figure 3 – Proposed Treatment Process Flow Diagram



## Active Construction Projects – Aerial Plan

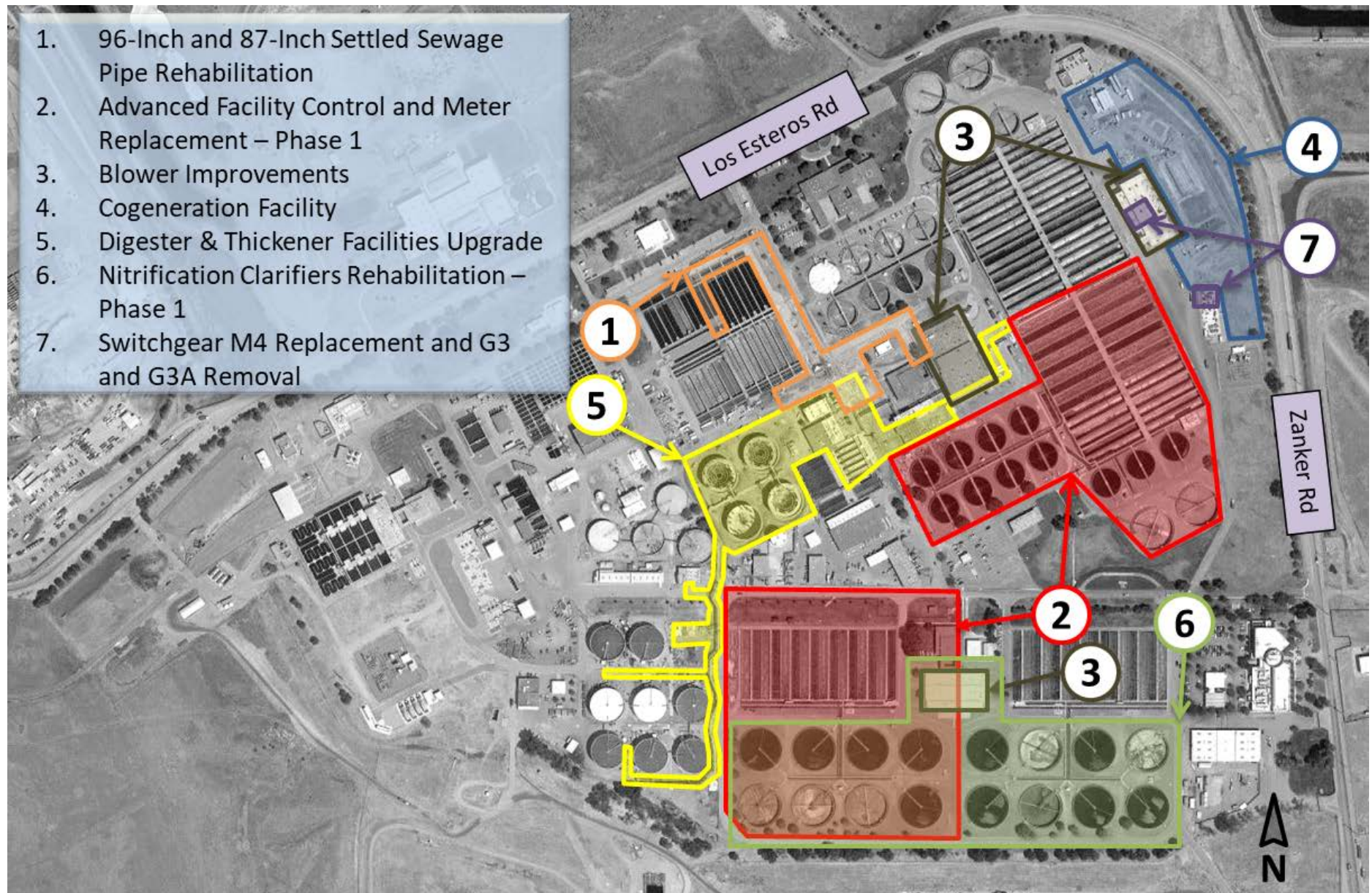


Figure 4 – Active Construction Projects