San José-Santa Clara Regional Wastewater Facility

Capital Improvement Program

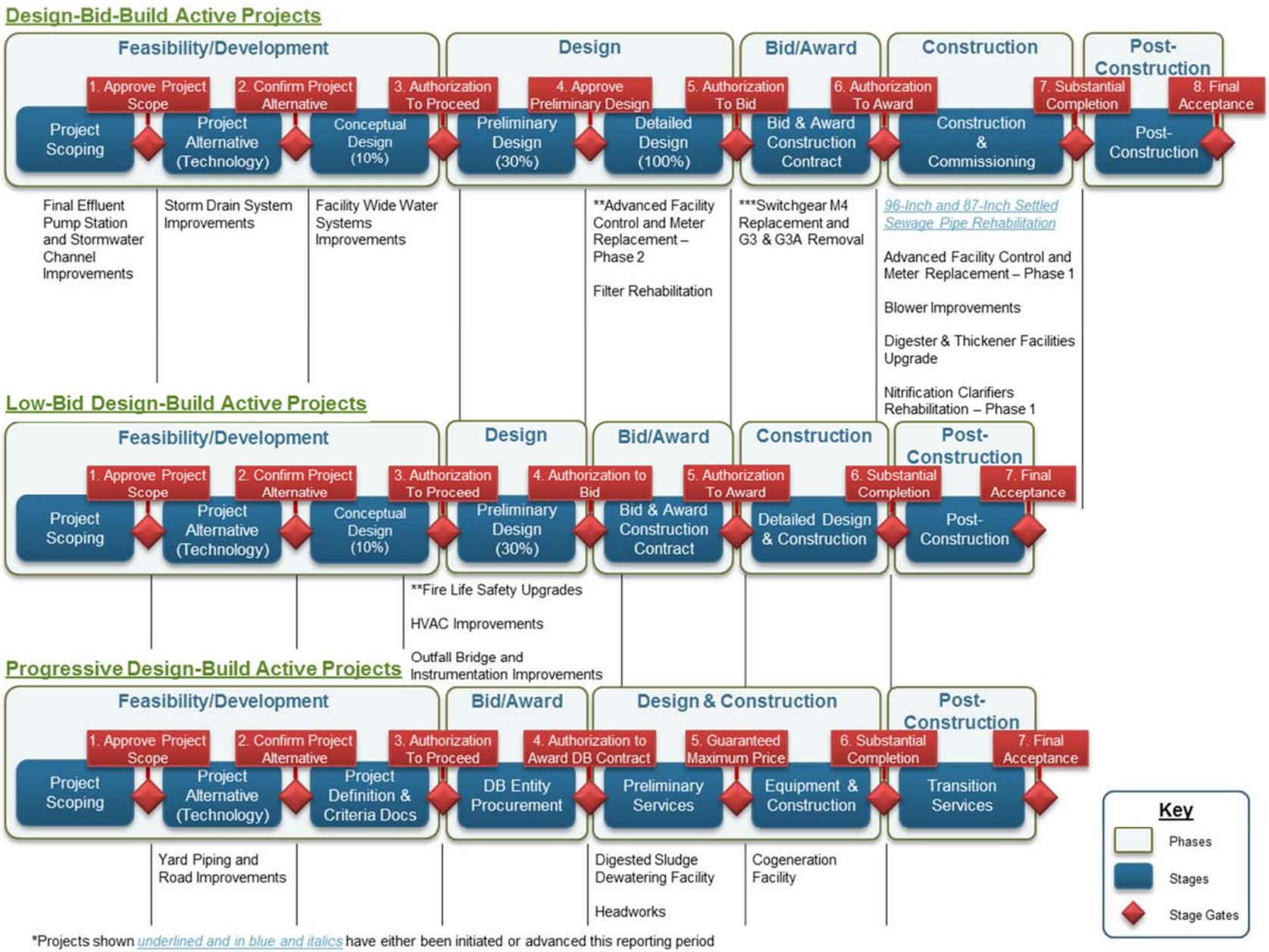
Monthly Status Report: November 2019

January 2, 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 November 2019.

Report Contents

Project Delivery Models



*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

November 2019

In November, the Fire Life Safety Upgrades Project passed Stage Gate 4: Authorization to Bid of the Project Delivery Model (PDM). This low-bid design-build project is expected to be advertised in January.

The Treatment Plant Advisory Committee (TPAC) and City of San José Council (Council) approved the award of the 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation Project construction contract. The City anticipates issuing a Notice to Proceed (NTP) to the contractor in January.

The contractor for the Digester and Thickener Facilities Upgrade Project installed an interior heavy-plastic protective coating and internal gas piping for Digesters 5 through 8, the new pipe rack tie in of digester gas piping for Digester 9, 15, and 16, and six sludge screens in the new Sludge Screen Building.

Figure 1: Contractor prepares to remove blower motor as part of the Blower Rehabilitation Project

The Cogeneration Facility Project design-builder continued building out the interiors of the Power & Air Operations Center, Cogeneration Building control room, and the Electrical and Mechanical Building.

The Blower Improvements Project contractor performed preparatory work on the Process Air Building (PAB) blower No 2 prior to removing the motor and blower base.

The Advanced Facility Control and Meter Replacement – Phase 1 Project contractor installed the remaining 3 of 11 drain plates in the return-activated sludge (RAS) meter vaults. Operational testing is anticipated to commence in February.

The design consultant for the Storm Drain System Improvements Project completed field surveys and the integration of the survey data into the hydraulic model.

The City provided comments to the Headworks Project design-builder on the 60 percent design and cost model. In addition, the design-builder and City staff continued reviewing the terms and conditions of the proposed Definitive Contract Amendment (DCA) and continued negotiations on the guaranteed maximum price (GMP). Staff intends to seek Council approval of the GMP in spring 2020.

The City issued an NTP for the Nitrification Clarifier Rehabilitation – Phase 1 Project and held a pre-construction meeting with the contractor, Overaa Construction.

For the Digested Sludge Dewatering Facility Project, the City held two workshops as part of the preliminary services: project definition and subsurface utilities/hazardous materials investigations.

Look Ahead

The following key activities are forecast for December 2019 and January 2020:

- Staff will recommend the award of the construction contract for the Switchgear M4 Replacement and G3 & G3A Removal Project to TPAC and Council.
- An NTP will be issued to the contractor to begin construction of the 96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation Project.
- Two projects will seek to advance through stage gates:
    - Headworks Project – Stage Gate 5: Guaranteed Maximum Price; and
    - Yard Piping and Road Improvements Project – Stage Gate 2: Confirm Project Alternative.
- The program will initiate an Energy Management Strategy Update and Process Optimization Study in December and January, respectively.

Program Highlight – Testing, Startup, and Commissioning

The CIP is entering a multi-year period of intense construction activity. During this time, numerous projects will require testing, startup, and commissioning (TSC) of new or rehabilitated facilities, often concurrently, following the CIP's well-defined TSC processes (see Figure 2 below). TSC will require a significant commitment of resources from operations and maintenance (O&M) and CIP staff. In addition, these efforts will require coordination with day-to-day RWF operations to prevent operational conflicts and potential construction delays.

In anticipation of this increased TSC activity, the CIP initiated a readiness assessment in summer 2019 to confirm that adequate RWF resources and expertise are available and that the processes, procedures, roles, responsibilities, systems, and tools are in place.

The objectives of this assessment include:

- Forecasting TSC activities for all planned CIP projects, including process and vendor training, and functional and acceptance testing.
- Estimating resource demands on CIP and O&M staff to support TSC activities.
- Recommending and assisting CIP staff with implementing improvements to TSC processes, procedures, organization, roles, and responsibilities, as necessary.
- Coordinating with the construction management (CM) team to review CM roles, responsibilities, and organizational structure pertaining to TSC activities.
- Identifying risks associated with TSC activities for each project and the overall Program as a result of having projects performing TSC activities concurrently.
- Implementing a process to confirm that TSC activities are being performed and completed successfully on all projects.

It is anticipated that this assessment will be completed in early 2020 and recommendations implemented in the first half of 2020.

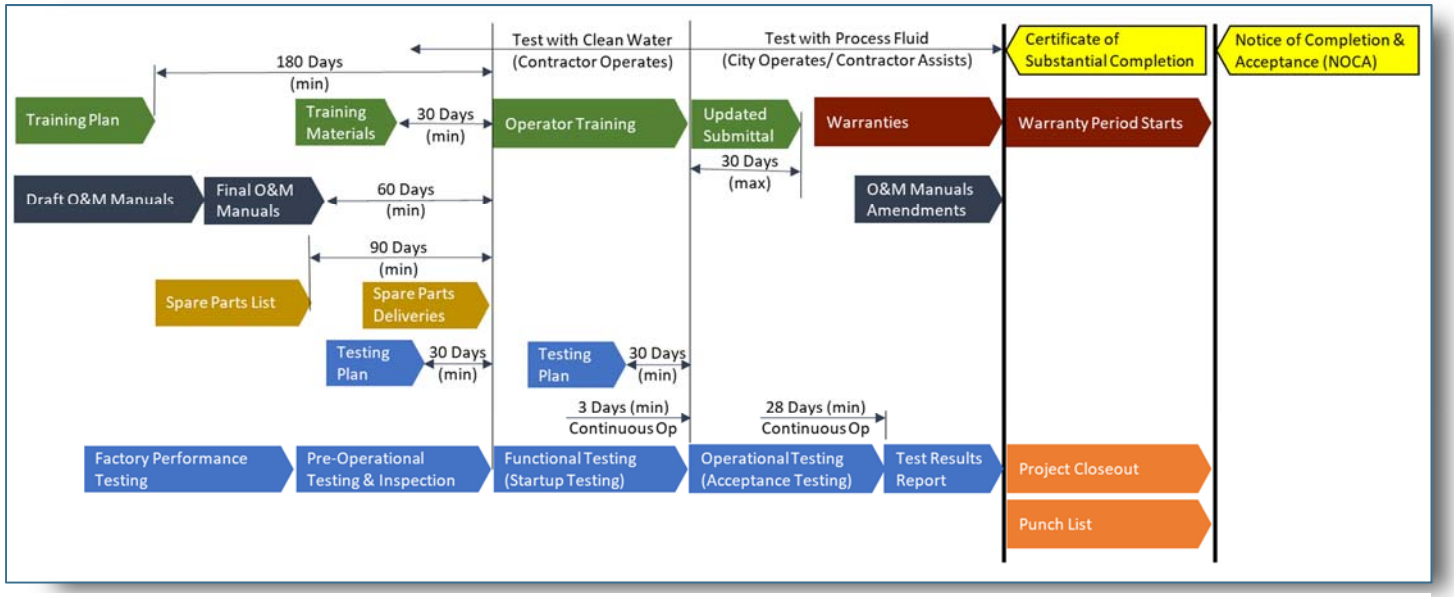


Figure 2: CIP Design-Bid-Build TSC Process

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%	91% 10/11[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%							
Schedule[2]	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%							
Budget[4]	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%							
Expenditure[5]	$372M	$213M	●	↑	$412M	●	↓
Measurement: CIP FY19-20 committed costs. Target: Committed cost meets or exceeds 70% of planned Budget. 70% of $531M = $372M. Therefore Fiscal Year End Green: >=$372M; Amber: $292M to $372M; Red: < $292M							
Procurement	80%	40% 2/5[6]	◆	↓	88% 7/8[7]	●	↓
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[8]	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 Rate[9]	10%	20% 17/86[10]	▲	↓	9% 8/86	●	→
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%							

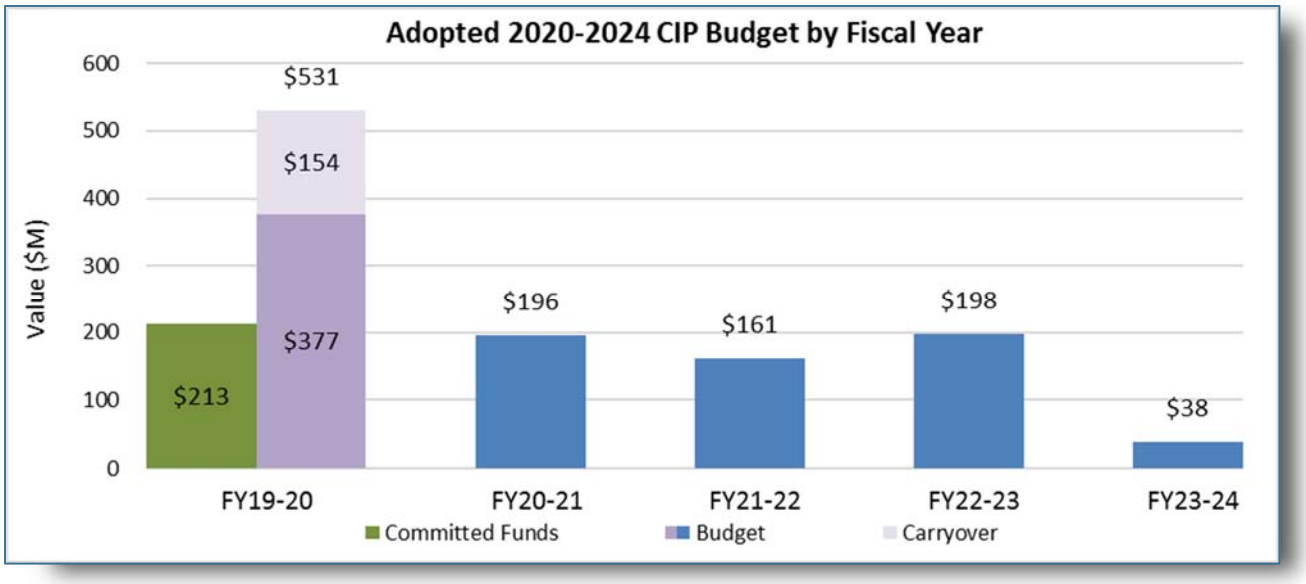
Notes

1. The Plant Instrument Air System Upgrade and Fire Life Safety Upgrades projects passed Stage Gate 8: Final Acceptance, and Stage Gate 4: Authorization to Bid, respectively.
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 increased after the final FY18-19 budget reconciliation action shifted unspent previous year budget to the current fiscal year budget. Additionally, the fiscal year-end forecast decreased roughly $1 million after forecast encumbrances were adjusted.
6. The program revised the advertisement date of three procurements to later this fiscal year.
7. The City postponed the advertisement of the HVAC Improvements Project construction contract until next fiscal year.
8. The Bay Area Air Quality Management District (BAAQMD) issued a notice of violation for the CIP's construction of a new digester gas holder without a permit. The City contested the violation because the equipment installed appeared to be exempt from permitting. The CIP currently believes the violation will be rescinded.
9. The vacancy rate KPI measures CIP-approved positions, including ESD, Public Works, and program management consultant full-time staff.
10. 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.

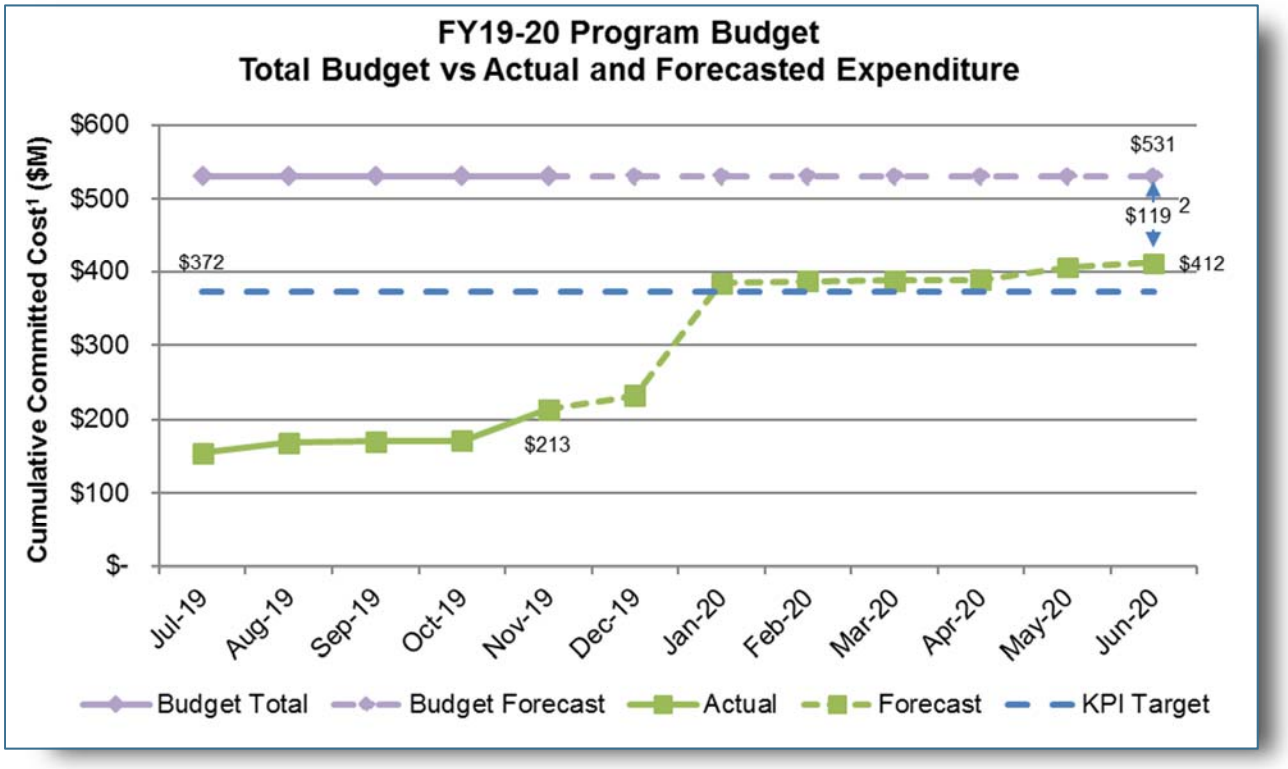
The FY19-20 budget is $401.5 million, which consists of $339.6 million in new funds and $61.9 million in rebudgets. For purposes of this monthly report, the adopted FY19-20 budget is adjusted from $401.5 million to $377.2 million due to the exclusion of certain appropriations that are not measured as 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 $153.6 million.

Budget of $377.2 million and carryover of $153.6 million totals $530.8 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 $153.6 million, for a total of $530.8 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 six projects in the construction and post-construction phases and an additional 12 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. Blower Improvements	Construction	Sep 2022	●	●
6. Nitrification Clarifiers Rehabilitation – Phase 1	Construction	Jan 2023[3]	●	●

Key:

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

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 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. Switchgear M4 Replacement and G3 & G3A Removal	Bid/Award	May 2022
4. Outfall Bridge and Instrumentation Improvements	Design	Dec 2021
5. Fire Life Safety Upgrades	Design	Jul 2022
6. Advanced Facility Control & Meter Replacement - Phase 2	Design	Jan 2023
7. Filter Rehabilitation	Design	Jul 2023
8. HVAC Improvements	Design	Sep 2023
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	Feb 2026
12. Yard Piping and Road Improvements	Feasibility/Development	Nov 2027

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 project team held workshops for project definition and subsurface utilities/hazardous materials investigations.
- The project team continued sludge sample collection in preparation for onsite centrifuge testing.

Digester and Thickener Facilities Upgrade Project

- Contractor Walsh installed an interior heavy-plastic protective coating and internal gas piping for Digesters 5 through 8; new pipe rack tie-in of digester gas piping for Digesters 9, 15, and 16; and six sludge screens in the new Sludge Screen Building.

Facilities Package

96-Inch and 87-Inch Settled Sewage Pipe Rehabilitation Project

- On November 19, Council approved award of a construction contract to Michels Pipeline Construction. The City will issue the NTP in January 2020.

Fire Life Safety Upgrades Project

- The project passed Stage Gate 4: Authorization to Bid. The City will advertise for construction bids in January 2020.

Storm Drain System Improvements Project

- Design consultant AECOM completed field surveys and began integrating survey data into the hydraulic model. The results will document flood risks to the RWF. In December, the project team will review the flood risks and the design consultant will submit draft recommendations for flood risk reduction alternatives.

Liquids Package

Advanced Facility Control and Meter Replacement – Phase 1 Project

- Contractor Overaa Construction (Overaa) completed drain plate installation in the return activated sludge (RAS) meter vaults B9, B10, and B11, as well as conduit work in the secondary clarifier area.
- The operational test of the new equipment in Secondary Tanks B1, B2, B3, and B4 and in the secondary clarifiers is anticipated to begin in February 2020.

Blower Improvements Project

- Contractor Monterey Mechanical began preparing to rehabilitate the PAB No 2 blower. Next month, the contractor will remove the blower, sand blast, and repaint the impeller housing and stand.

Headworks Project

- Owner's Advisor CDM Smith and the City provided comments to design-builder CH2M on the 60 percent design and cost model.
- The City and CH2M continued to negotiate the GMP and DCA, which is anticipated to be brought to Council for approval in February 2020.

Nitrification Clarifier Rehabilitation - Phase 1 Project

- The City executed the construction contract with Overaa, held a pre-construction meeting, and issued the NTP.

Power and Energy Package

Cogeneration Facility Project

- Design-builder CH2M installed drywall in the Cogeneration Building control room, the Electrical and Mechanical Building, and in Power and Air Operations Center.
- CH2M also installed windows and doors in the Cogeneration Building control room, as well as piping and supports to the hydrogen sulfide siloxane vessels. In the Power and Air Operations Center, CH2M completed the 6-inch, 8-inch and 14-inch hot water supply/return piping installation.

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 they could be completed more quickly and efficiently.

Project Profile – Digested Sludge Dewatering Facility

During the RWF wastewater treatment process, a series of physical, biological, and chemical processes treats liquid and solid streams. Separated solids, or sludge, is thickened and processed through anaerobic digesters for 15 to 30 days to reduce pathogens and sludge volume. The thickened digested sludge is then pumped to open-air lagoons and drying beds for further sludge volume reduction, treatment, and stabilization over a four-year cycle. The RWF generates approximately 85 dry tons of these biosolids per day, which are used as alternate daily cover (ADC) at the local Newby Island Landfill.

The 2013 Plant Master Plan recommended transitioning from the existing open-air lagoons and drying beds to a new mechanical dewatering facility, which would:

- Reduce odors in the community;
- Increase and diversify RWF disposition options;
- Reduce the biosolids processing area footprint from 750 acres to about 160 acres, enabling other land uses; and
- Create flexibility to respond to future regulatory changes governing treated biosolids landfill disposal and changing market conditions related to beneficial reuse of treated biosolids.

Following Council approval of the RWF biosolids management strategy, in December 2014 and June 2015, the CIP initiated the Digested Sludge Dewatering Facility Project (Project). The need for the Project was underscored by the recent implementation of state Senate Bill 1383, signed by Governor Jerry Brown in 2016, that targets the reduction of short-lived climate pollutants such as methane and aims to achieve a 50 percent reduction in organic waste disposal by 2020. This could preclude the RWF from continuing to dispose of biosolids at landfills as early as 2022. With construction of a new dewatering facility, the RWF will have more biosolids disposition options available to comply with SB 1383.

The Project is being delivered using the progressive design-build method. In October 2016, Owner's Advisor Brown and Caldwell (B&C) began developing project alternatives. B&C completed the alternatives analysis in 2017 and the Project Definition Report (PDR) in October 2018. The City selected decanter centrifuges (See Figure 3) for the dewatering technology after finding all other large peer agencies surveyed were either currently using or planning to use centrifuges because the technology is proven, produces relatively dry cake, requires a relatively small footprint, and has lower overall predicted capital and lifecycle costs.

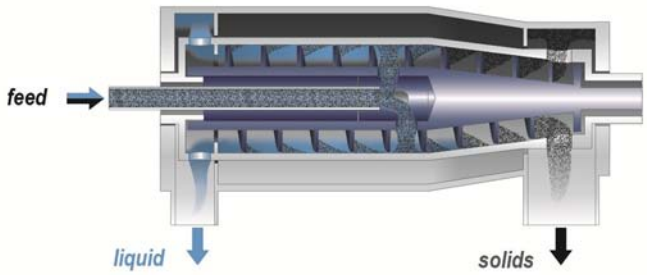


Figure 3: Dewatering Centrifuge

The Project includes transfer sludge pumps; digested sludge storage tanks and feed pump stations; dewatering centrifuges; sludge cake conveyance facilities; polymer facilities; centrate pumps; and truck load-out facilities. The new facility will be located on the east side of Zanker Road. The estimated total project cost is $128 million.

In January 2019, the Walsh Construction Company lead design-build team with designer Black and Veatch was ranked first of the three teams that proposed. In September 2019, Council approved a design-build contract with Walsh to begin preliminary services for the Project.

Preliminary services include site investigations, facility design through 60 percent, and two early work packages. The first early work package consists of site preparation, including the potential use of surcharging to consolidate the soil beneath the site. The second early work package consists of final design completion. Once the City negotiates the GMP with Walsh, the construction phase will begin, likely in April 2021. Beneficial Use is expected in November 2023.

Figure 4: Design Build Partnering Session with all stakeholders

In October 2019, an initial partnering workshop (See Figure 4) was held between Walsh, Black and Veatch, B&C, and the City to introduce team members and agree on overall project goals. A series of workshops are scheduled to run through early 2020 to define the overall basis of the project. Workshop topics include: subsurface utilities/hazardous investigations; project definition; risk management; process modelling; flows and loads; cost model; process equipment; permitting/project interfaces. The workshops will culminate in the preparation of a Basis of Design Report, followed by development of a 60 percent design, the submission of a Definitive Project Submittal, agreement of the GMP, and signing of the DCA, which will allow construction to commence.

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Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram

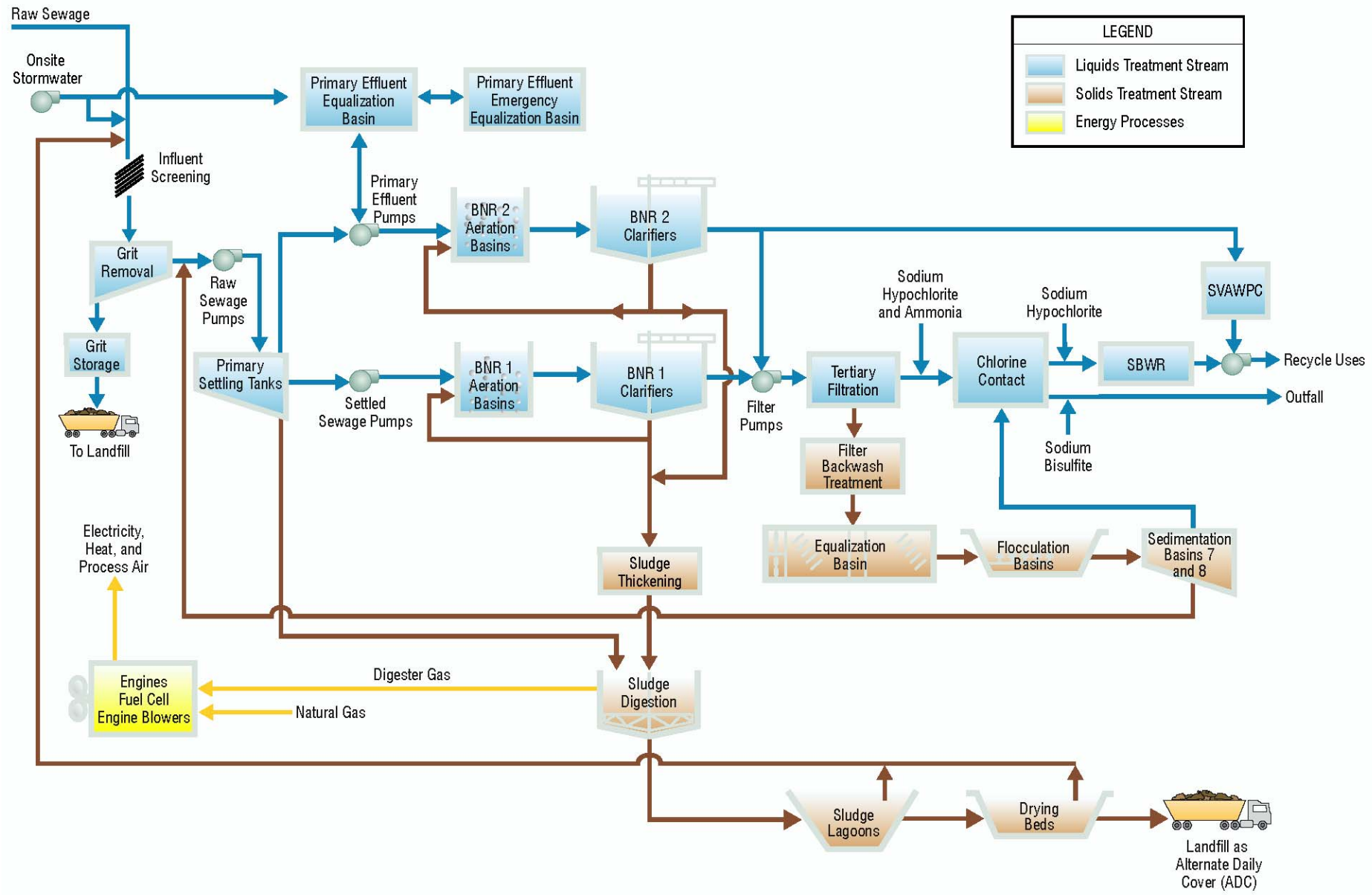

Figure 5 – Current Treatment Process Flow Diagram

Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram

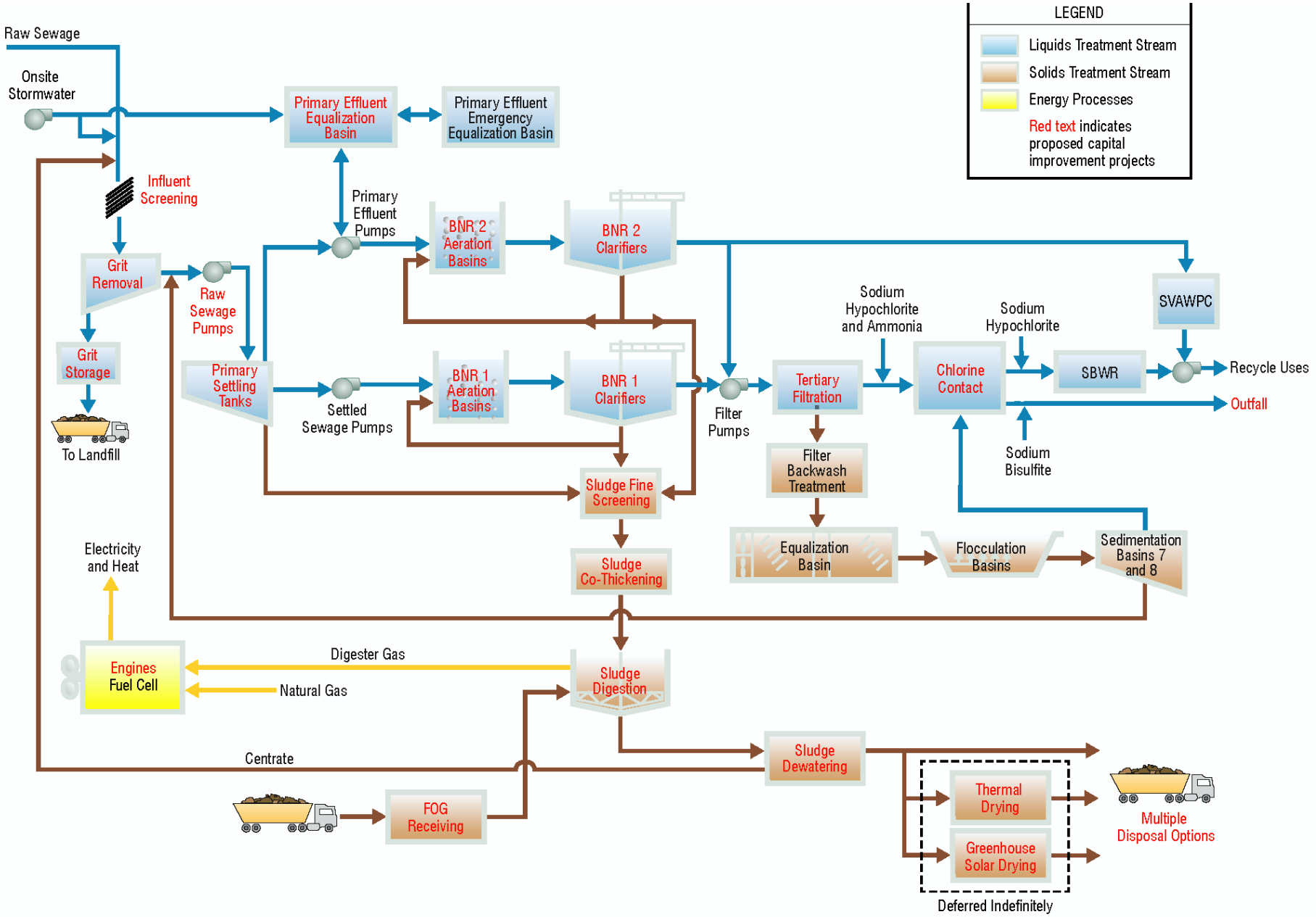

Figure 6 – Proposed Treatment Process Flow Diagram

Active Construction Projects – Aerial Plan

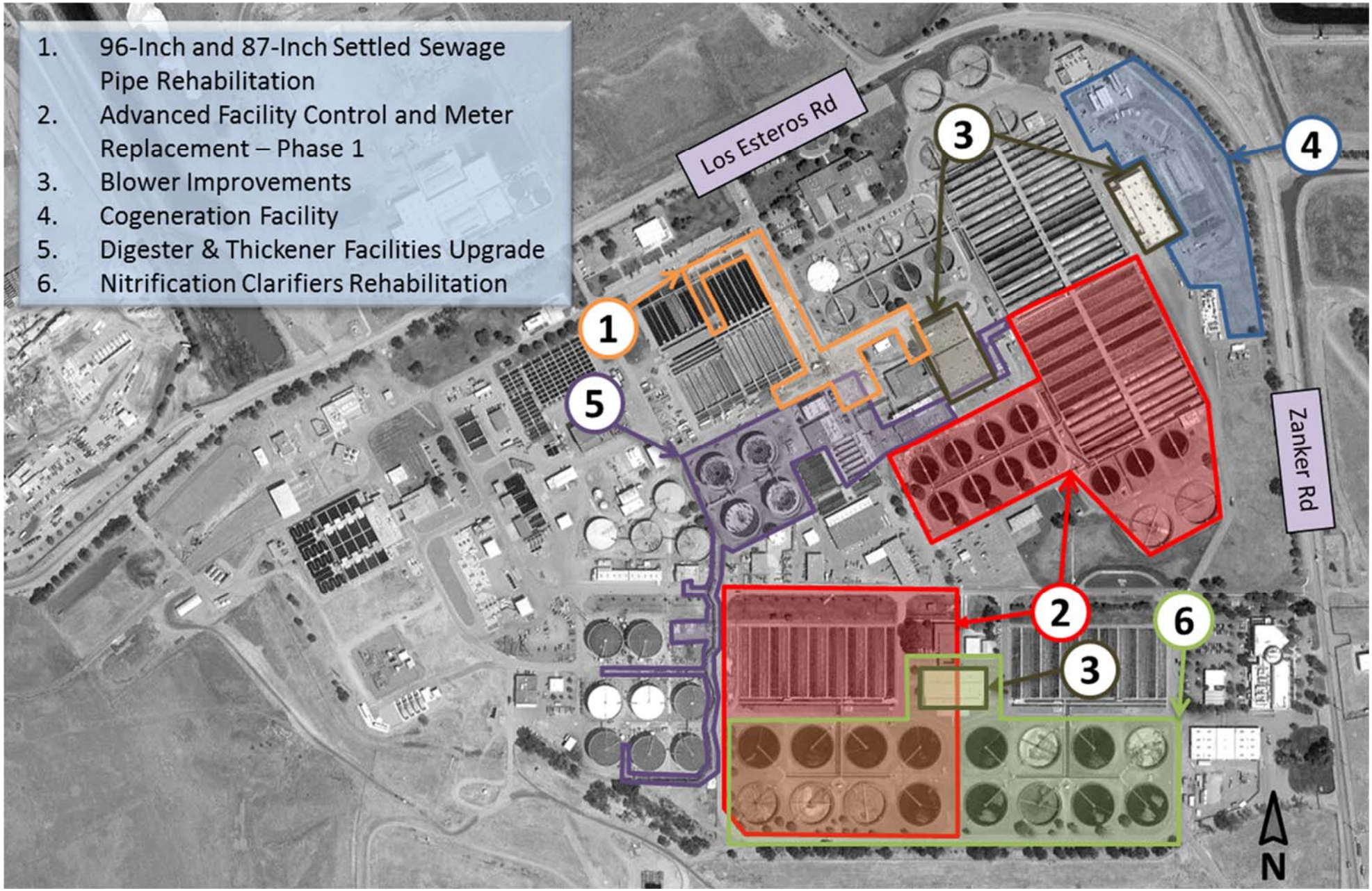

Figure 7: Active Construction Projects