



San José-Santa Clara
Regional Wastewater Facility

Capital Improvement Program Monthly Status Report: March 2016

May 12, 2016

This report summarizes the progress and accomplishments of the Capital Improvement Program (CIP) for the San José-Santa Clara Regional Wastewater Facility (RWF) for March 2016.

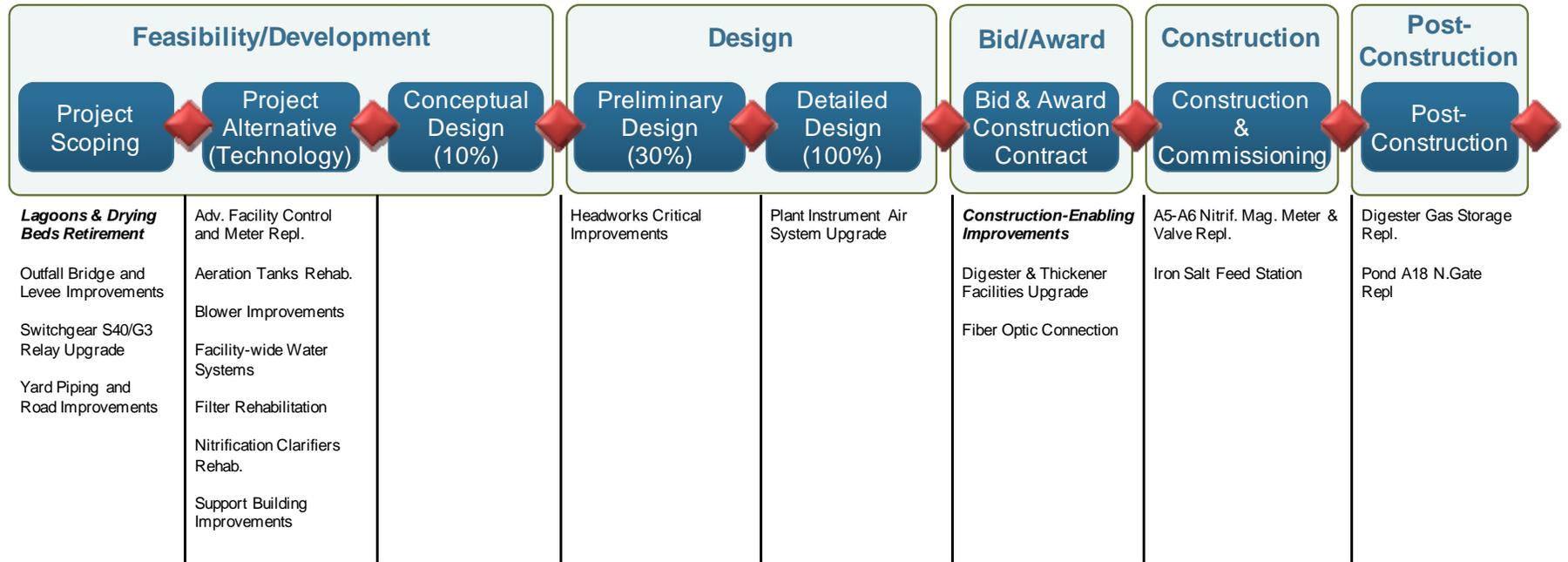
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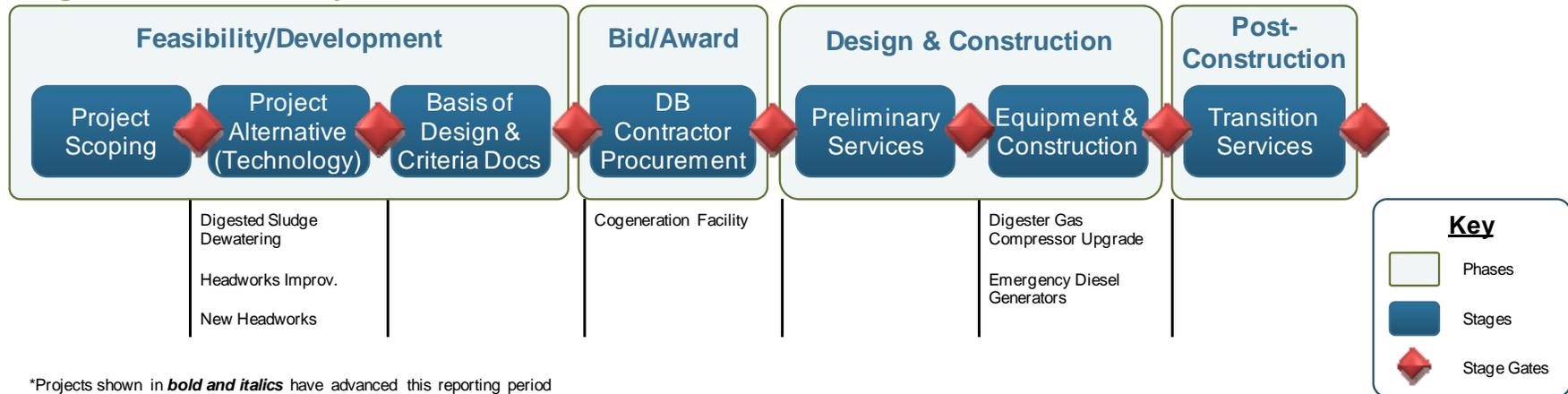


Project Delivery Model (PDM)

Design-Bid-Build Active Projects



Design-Build Active Projects



*Projects shown in **bold and italics** have advanced this reporting period



Program Summary

March 2016

In March, the CIP progressed on multiple fronts, including advancing the Cogeneration Facility Project through the Project Delivery Model (PDM) Authorization To Award stage gate process.

In additional developments, CIP staff:

- Advertised a Request for Qualifications (RFQ) for Owner's Advisor services for the Digested Sludge Dewatering Facility. This project will be delivered by the progressive design-build delivery method and will provide a new, dedicated mechanical dewatering facility to process digested sludge at the RWF.
- Advertised a construction contract valued at \$3.0 million for the Construction-Enabling Improvements Project. This project will improve safe access to and from the RWF from Zanker Road and support increased construction activities associated with all CIP projects in the future.
- Received five bids ranging between \$110 million and \$129 million for the Digester and Thickener Facilities Upgrade Project. The bids received were significantly higher than the \$85 million Engineers Estimate; work commenced to evaluate the bids, assess the reasons for the price variance, and recommend next steps.

Construction documentation for the Plant Instrument Air System Upgrade Project was finalized. The project is scheduled to pass through the Authorization to Bid stage gate and advertise for construction in April.

Design started on the Headworks Critical Improvements Project. Condition assessments on the aeration blowers also commenced, which will allow replacement and repair options to be evaluated in advance of design work scheduled to begin this summer.

Anderson Pacific Engineering Construction, Inc., began construction on the Iron Salt Feed Station Project. In addition, construction continued on the Emergency Diesel Generators and Digester Gas Compressor Upgrade projects. The Emergency Diesel Generator Project passed a number of significant milestones, including completion of the factory acceptance test for the switchgear and remote control panels, and onsite installation of the engine generator units.

Look Ahead

In April, staff will continue to move forward with consultant procurement efforts for projects including Nitrification Clarifiers Rehabilitation; Aeration Tank and Blower Rehabilitation; Facility Wide Water Systems Improvement; and Advanced Facility Control and Meter Replacement. Procurements for a number of programmatic services will also continue to advance, including General Engineering Services; Design and Construction Management Software (DCMS); Value Engineering and Peer Review Services; Construction Management and Inspection Services; and Audit Services. An RFQ for System Integrator Services prequalification is scheduled to be issued in April.

Staff will present recommendations on a number of projects to the Treatment Plant Advisory Committee (TPAC) and the City Council (Council) from April through June, including the Cogeneration Facility (design-build award, State Revolving Fund application); DCMS (purchase and implementation of software system); Nitrification Clarifiers Rehabilitation Project (consultant award); Construction-Enabling Project (construction award and right-of-way dedication); Pond A18 Northern Gate Structure (end of emergency declaration); the RWF Semiannual Status Report (status update); Digester and Thickener Facilities Upgrade Project (construction contract award); Aeration Tank and Blower Rehabilitation Project (consultant award); Facility Wide Water Systems Improvement Project (consultant award); Value Engineering and Peer Review Services (consultant award); General Engineering (consultant award); and Construction Management and Inspection Services (consultant award).

In addition, all CIP project managers and project engineers will continue formal staff training in April with a special session on council memo preparation and communications.



Program Highlight – Construction Administration Plan

It is an exciting time for the CIP as several more projects make the transition from design into construction. With over 30 separate projects valued at more than \$1.4 billion to be constructed over the next 10 years, it is important that each project's construction be managed using a consistent set of processes and procedures. The Construction Administration Plan (CAP) has been prepared by the CIP Construction Management (CM) team to provide this guidance from pre-construction through project closeout.

While primarily intended as a tool for day-to-day use by the CM staff, all members of a project team including the project manager; Environmental; Safety; and Operations and Maintenance staff will also find the document a useful knowledge resource. The CAP complements and references other Program Execution Plan documents, such as the Design Guidelines; O&M Engagement Plan; and Incident Communication Plan, as well as existing City of San José standard specifications and other project delivery resources. Organized to mirror the PDM, the document includes sections on Authorities and Responsibilities; Design and Procurement Phases; Construction Management; Testing; Startup and Commissioning; and Project Closeout.

The CAP describes the various roles and responsibilities of each member of the Construction Management team, as well as communication, coordination, and other actions to be undertaken at each part of the construction process. The plan details key tasks for various phases of construction, such as pre-bid and pre-construction meetings; scheduling meetings; contractor submittal review; document management; change requests; inspections; commissioning plans; and project closeout. Flow charts show common processes and procedures for daily inspection reporting; change orders; invoicing; submittal review; and substantial completion/project closeout. Routine forms used throughout the construction and closeout phases are also included.

The CAP is reviewed and updated annually to capture new or evolving information. It is found on the CIP Portal along with other project delivery documents. The plan provides a comprehensive, clear, and consistent set of construction procedures to ensure that construction is carried out in an efficient and safe manner.



Figure 1 – Assoc. Engineer Rene Apelo and Sr. Inspector Allan Morgenroth Collaborate at the Digester Gas Compressor Upgrades Project

Program Performance Summary

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

Program Key Performance Indicators – Fiscal Year 2015-2016

KPI	Target	Fiscal Year to Date			Fiscal Year End		
		Actual	Status	Trend	Forecast	Status	Trend
Stage Gates	80%	100% (17/17) ¹			100% (25/25) ²		
Measurement: Percentage of initiated projects and studies that successfully pass each stage gate. Criteria: Red: < 70%; Amber: 70% to 80%; Green: >=80%							
Schedule	85%	33% (1/3)			25% (1/4)		
Measurement: Percentage of CIP projects delivered within 2 months of approved baseline Beneficial Use Milestone. Criteria: Red: < 75%; Amber: 75% to 85%; Green: >=85%							
Budget	90%	100% (4/4)			83% (5/6)		
Measurement: Percentage of CIP projects that are completed within the approved baseline budget. Criteria: Red: < 80%; Amber: 80% to 89%; Green: >=90%							
Expenditure	\$147M ³	\$76M			\$199M ⁴		
Measurement: CIP Fiscal Year 15/16 committed costs. Committed cost meets or exceeds 70% of planned Budget (70% of \$210M = \$147M)							
Procurement	80%	93% (14/15) ⁵			100% (16/16)		
Measurement: Number of consultant and contractor procurements for initiated projects and program-wide services advertised compared to planned for the fiscal year. Criteria: Red: < 70%; Amber: 70% to 79%; Green: >=80%							
Safety	0	0			0		
Measurement: Number of OSHA reportable incidents associated with CIP construction for the fiscal year. Criteria: Red: > 2; Amber: 1 to 2; Green: zero incidents							
Environmental	0	0			0		
Measurement: Number of permit violations caused by CIP construction for the fiscal year. Criteria: Red: > 2; Amber: 1 to 2; Green: zero incidents							
Staffing⁶	80%	53% (9/17) ⁷			59% (17/29) ⁸		
Measurement: Number of planned positions filled for the fiscal year. Criteria: Red: < 70%; Amber: 70% to 79%; Green: >=80%							

Notes

1. The number of completed stage gates increased from 16 to 17 for the Stage Gate KPI Fiscal Year to Date (YTD) as the Cogeneration Facility Project successfully completing its stage gate.
2. The Fiscal Year End Stage Gate KPI total has decreased by a net three projects.
3. Carryover in the amount of \$7.5M was liquidated, reducing both the budget and the expenditure target. The expenditure target is reduced because the liquidated carryover will not be spent as anticipated. In addition, a budget action was approved by Council to reduce the Funds Transfer in the amount of \$1.6M, due to removal of commercial paper funding in the FY15-16 budget. These actions reduced the CIP portion of the budget from \$219M to \$210M.
4. The forecast increase of \$11.0M is due primarily to the Digester & Thickener Facilities Upgrade Project bid that came in approximately \$23M higher than projected. This increase of \$23M is offset by the liquidation of carryover (as explained in footnote #3) and the reduction of projected encumbrances totaling \$4.5M, the most significant being the Cogeneration Facility Project Notice to Proceed (NTP) (\$3M) that will be authorized in FY16-17.
5. The Procurement KPI Year to Date has increased from 12 to 14 as procurements were advertised in March for consultant services for the Digester Sludge Dewatering Facility Project; and the construction contract for the Construction-Enabling Improvements Project. The consultant services contract for the Support Building Improvements Project was expected to be advertised for bid in March, but is now expected to be advertised in April.
6. The City Staffing level KPI for planned recruitments for positions that are vacant at the start of the fiscal year is measured quarterly; all other KPIs are measured monthly. KPI measurement does not account for staff turnover throughout the fiscal year.
7. At the beginning of the fiscal year, the program expected to hire 10 positions in the third quarter. Of these 10 positions, two were filled. One additional hire in the first quarter was inadvertently uncounted, but has been added to the total this quarter.
8. The Fiscal Year End Staffing KPI has been revised to reflect current hiring expectations.

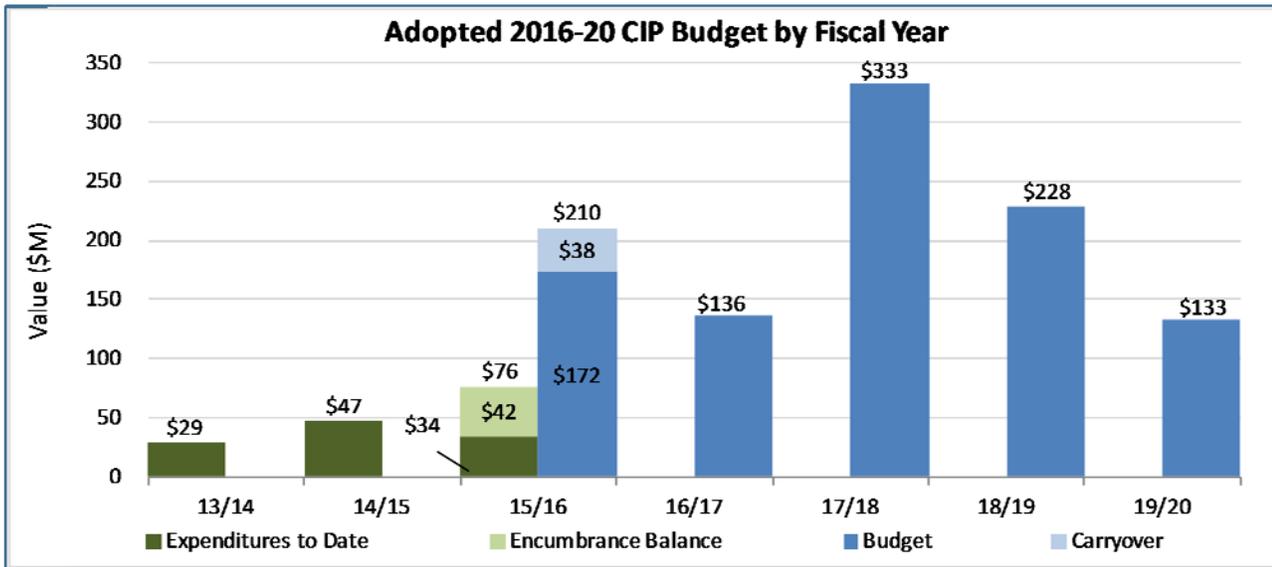


Program Cost Performance Summary

This section summarizes CIP cost performance for all construction projects and non-construction activities for FY15-16 and the 2016-2020 CIP.

Adopted 2016-2020 CIP Expenditure and Encumbrances

To accommodate the proposed increase in expenditures and encumbrances over the next five years, the City is implementing a long-term financial strategy to fund needed, major capital improvements while minimizing the impact to ratepayers. FY13-14 and FY14-15 expenditures have been adjusted to reflect the CIP portion of the Treatment Plant Capital Fund, Fund 512, excluding South Bay Water and Urgent and Unscheduled Cost (\$2.6M and \$1.5M, respectively).



Notes

Expenditure: Actual cost expended, either by check to a vendor or through the City's financial system for expenses such as payroll or 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. The encumbrance reserves the funding within the appropriation and project.

Encumbrance Balance: The amount of the remaining encumbrance committed after payments.

Budget: Adopted FY 2016-2020 Budget. This is new funding plus rebudgeted funds.

Carryover: Encumbrance balances at the end of a fiscal year become carryover funding. This is different from rebudgets, in that it is done automatically to utilize funding that was previously committed, but not yet paid.

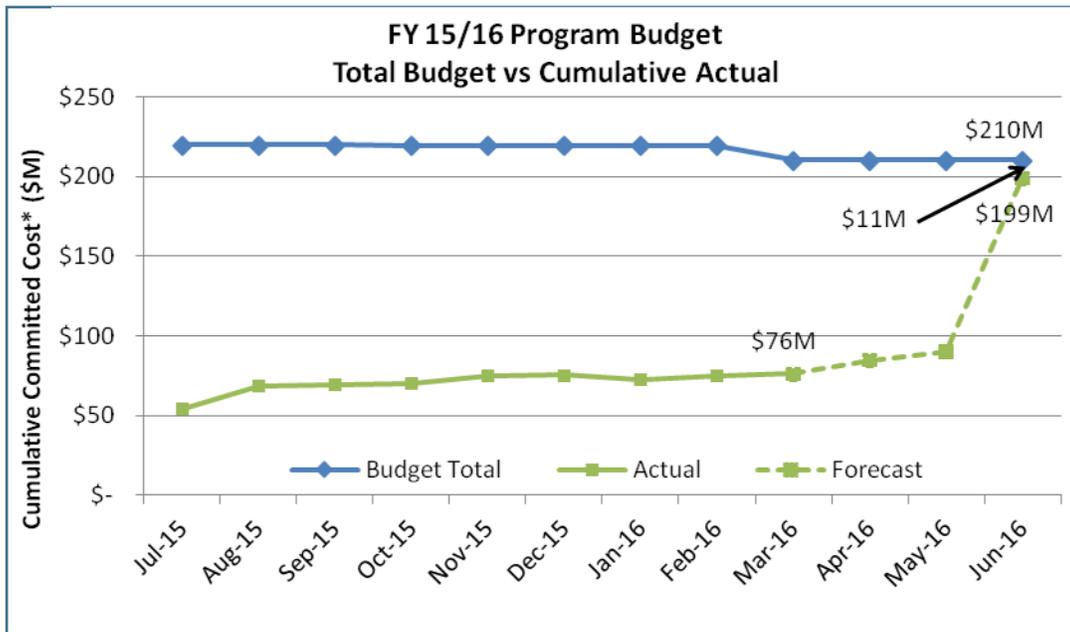


Fiscal Year 2015-2016 Program Budget Performance

The fiscal year program budget has been reduced from \$219 million to \$210 million due to the following two factors:

1. Liquidation of encumbered carryover funding in the amount of \$7.5 million; and
2. Reduction of funds transfer due to Council's approval to remove commercial paper funding from the budget in the amount of \$1.6 million.

This budget represents the 2015-2016 budget of \$172 million plus carryover of \$38 million. The budget excludes Reserves, Ending Fund Balance, South Bay Water Recycling, Public Art, and Urgent and Unscheduled Rehabilitation items.



*Committed costs are expenditures and encumbrance balances, including carryover (encumbrance balances from the previous fiscal year).



Project Performance Summary

There are currently six active projects in the construction or post-construction phases, with a further 20 projects in feasibility/development, design, or bid and award phases (see PDM graphic, page 2). All active projects are listed in the tables below. Projects in the construction phase have cost and schedule baselines established and are monitored using the City's Capital Staff System (CPMS). Green/red icons are included in the table below to indicate whether these projects are on budget and schedule, using the CPMS data as a source.

Project Performance – Baselined Projects

Project Name	Phase	Estimated Beneficial Use Date ¹	Cost Performance ²	Schedule Performance ²
Pond A18 Northern Gate Structure	Post-Construction	Aug 2015 ³	N/A ⁴	N/A ⁴
Digester Gas Storage Replacement	Post-Construction	Nov 2015 ³		
A5-A6 Nitrification Mag. Meter & Valve Replacement	Construction	May 2016		
Digester Gas Compressor Upgrade	Construction	Oct 2016		
Emergency Diesel Generators	Construction	Dec 2016		
Iron Salt Feed Station	Construction	Sept 2017 ⁵		

KEY:

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

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 being 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.
- Actual Beneficial Use date.
- Due to the emergency nature of the Pond A18 Northern Gate Replacement project, cost and schedule performance measurement criteria have not been applied.
- Beneficial Use date updated to reflect actual contract NTP.



Project Performance – Pre-Baselined Projects

Project Name	Phase	Estimated Beneficial Use Date ¹
Construction-Enabling Improvements	Bid & Award	Feb 2017
Fiber Optic Connection	Bid & Award	Feb 2017
Cogeneration Facility	Bid & Award	Apr 2019
Digester & Thickener Facilities Upgrade	Bid & Award	July 2019
Headworks Critical Improvements	Design	Aug 2017
Plant Instrument Air System Upgrade	Design	Jan 2018
Blower Improvements	Feasibility/Development	Jan 2019
Adv. Facility Control & Meter Replacement	Feasibility/Development	June 2020
Switchgear S40 Upgrade, M4 Replacement, G3 & G3A Removal	Feasibility/Development	Jan 2021
Headworks Improvements	Feasibility/Development	April 2021
Outfall Bridge and Levee Improvements	Feasibility/Development	Nov 2021
Digested Sludge Dewatering Facility	Feasibility/Development	Dec 2021
Facility Wide Water Systems Improvements	Feasibility/Development	Mar 2022
Filter Rehabilitation	Feasibility/Development	Mar 2022
New Headworks	Feasibility/Development	Aug 2022
Nitrification Clarifiers Rehabilitation	Feasibility/Development	Aug 2022
Yard Piping and Road Improvements	Feasibility/Development	Aug 2022
Aeration Tanks Rehabilitation	Feasibility/Development	Sept 2023
Support Building Improvements	Feasibility/Development	Jan 2027
Lagoons & Drying Beds Retirement	Feasibility/Development	Mar 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 being reviewed as part of project schedule reviews.



Significant Accomplishments

The projects below are described under different “packages.” In the CIP, packages are groups of projects organized within the same treatment process area.

Biosolids Package

Digester and Thickener Facilities Upgrade

- The City received five construction bids ranging between \$110 million to \$129 million. The bids received were above the \$85 million Engineers Estimate. Staff expect to award this fiscal year.

Digester Gas Storage Replacement

- The contractor completed all work. The project team anticipates Project Acceptance and Notice of Completion in April 2016.

Digested Sludge Dewatering Facility

- Prospective bidders attended a site tour and presentation on March 17.
- The project team completed the final RFQ documents for the Owner’s Advisor role. Bidding documents were released on BidSync. Statements of Qualifications (SOQ) documents are due April 18.

Facilities Package

Cogeneration Facility

- Staff completed final contract negotiations with the selected design-builder, CH2M. The contract is scheduled for Council approval in April.

Construction-Enabling Improvements

- This project has been advertised with bids due in early April.

Facility Wide Water Systems Improvements

- The City conducted interviews with three firms and expects to post the final consultant rankings in April.

Fiber Optic Connection

- The low bidder was unable to execute the contract; therefore, staff has begun discussions with the second-lowest bidder.

Liquids Package

Aeration Tanks and Blower Rehabilitation

- Staff conducted a site walk-through of the Tertiary Blower Building, Secondary Blower Building and Building 40 blowers in preparation for a condition assessment.
- Staff held consultant interviews and selected a consultant.

Iron Salt Feed Station

- The City issued the Notice to Proceed to the contractor. Beneficial Use is expected in September 2017.

Power and Energy

Emergency Diesel Generators

- The project team completed the factory acceptance test for the switchgear and remote control panels.
- The contractor installed the engine-generator units on their foundations.



Explanation of Project Performance Issues

A5-A6 Nitrification Magnetic Meter & Valve Replacement

In September 2014 during startup, the project team discovered that the actuators that had been specified and installed were incompatible with the available power supply. Engineering staff determined it would cost more to modify the electrical system than to order and install compatible actuators. Operations and Maintenance (O&M) staff requested that the actuators match the custom actuators used in the other 14 clarifiers. The City pursued various options to resolve the issue and received a proposal from the contractor to install new actuators based on a revised specification. A counterproposal was provided to the contractor in December. Discussions between senior management from both sides have been productive. A negotiated agreement to resolve all outstanding contract issues was concluded in January. A change order was issued on January 27 for the contractor to purchase replacement custom actuators, with lead time of between 12 to 14 weeks. Council approved the additional required funding in March. Contractor mobilization, actuator installation, wiring, troubleshooting, and punch list signoff will take a minimum of three weeks. Beneficial Use is forecast for late May 2016.

Digester Gas Storage Replacement

During a comprehensive review of the gas storage tank design submitted by design consultant Brown and Caldwell, it was noted that the removable piston legs used in the subcontractor's proposed design did not meet design standards and could cause problems with the tank's intended use. The contractor was granted a three-month, no-cost time extension to September 28 to complete design modifications to the gas holder support structure. Several owner-requested changes were evaluated during the pre-startup period, resulting in three additional change orders. All work requiring welding or other spark-producing activities was completed prior to the introduction of gas. The tank successfully passed its required leakage test and was commissioned in November 2015. The tank is in use, the project is within budget, and final contract closeout activities are expected to be completed in April 2016.

Emergency Diesel Generator

The schedule for completion is delayed approximately three months due to the following three factors:

1. Caterpillar, the supplier of the Emergency Diesel Generator system, encountered delays in developing the controls that interface with the existing RWF controls. Caterpillar is continuing to develop the controls and is scheduled to deliver them to the City by May 2016.
2. Additional time is required for Pacific Gas & Electric (PG&E) to approve and witness-test the installation and commissioning of the Emergency Diesel Generator equipment. The City Manager's Office is reviewing the work cost breakdown provided by PG&E.
3. The commissioning sequence for the existing facility cogeneration engines EG-1, EG-2, and EG-3 changed. The controls for the existing generators are being modified to load-share with the new emergency diesel generators. However, these units can be modified only after the new generators have been commissioned. This sequence change has extended the project completion date. After revisiting the rehabilitation sequence for the existing cogeneration generators, the project team determined the EG-1 engine modification and new generators' commissioning may be combined, which will reduce the schedule delay.



Project Profile – Emergency Diesel Generator Package 2A Project

The Emergency Diesel Generator Project is located in the southwest area of the RWF. In 2012, the RWF completed an Energy Management Strategic Plan. The plan assessed the RWF's energy systems, identified the need for emergency power in the event of power failure from the local utility company, and recommended building emergency power facilities for critical and secondary loads.

The project includes installation of four emergency diesel generators, each with the capacity to produce 3 megawatts (MW) of power. These generators are classified as Tier 4, the Environmental Protection Agency's (EPA) most efficient energy designation, because their advanced emission control technology reduces exhaust emissions by more than 90 percent, and their ultra-low-sulfur diesel technology reduces sulfur emissions to 15 parts per million (ppm). The generators will automatically start, synchronize, and energize the RWF electrical distribution system within five minutes of a power outage.

The project includes two, 25,000-gallon diesel fuel tanks that contain enough fuel to operate the four generators for 48 hours. Continuous emergency power generation is possible as long as there is a reliable fuel supply. The project also includes a storage building; emissions, fueling, control, and monitoring systems; and connection to RWF's Distributed Control System (DCS), switchgear, synchronizing panel, protective relays, and other components.

The project delivery method is low-bid design-build. The project team developed the 30 percent design drawings and specifications for a design-build entity to complete project design and construction. Council awarded the design-build contract to Anderson Pacific Engineering and Construction on June 17, 2014. The City provided the contractor with the Notice to Proceed on September 8, 2014. Currently, the project is under construction with the final design in progress. All emergency diesel generators, generators' enclosures, fuel tanks, exhaust systems, and control systems were delivered and installed on site with testing and commissioning to follow.

The advanced emission technologies allowed the City to obtain its Authority-to-Construct permit from the Bay Area Air Quality Management District without the installation of a Rypos emission filter unit, as originally designed. This resulted in a credit of \$700,000 to the construction contract. Project startup testing and commission will commence in October 2016, with a Beneficial Use date expected by December 2016.

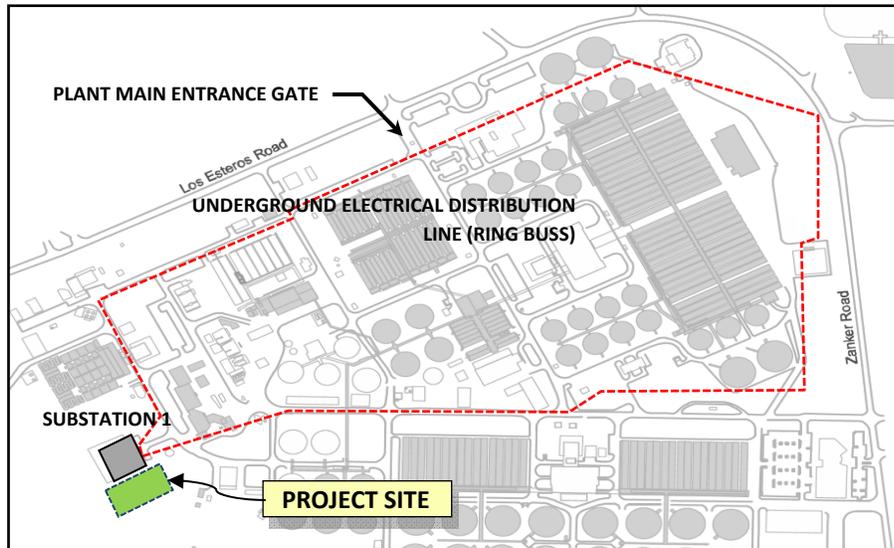


Figure 2 – Emergency Diesel Generator Location Map

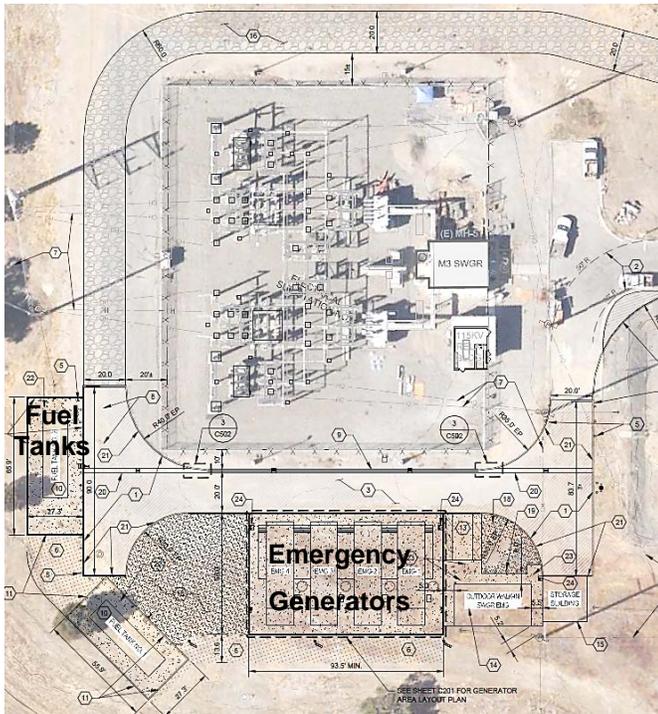


Figure 3– Project Site Layout



Figure 4 – Storage Building and Generators



Figure 5 – Generator Engines Installation



Figure 6 – Generator Enclosure Installation



Figure 7 – Generator Concrete Pads Installation

Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram

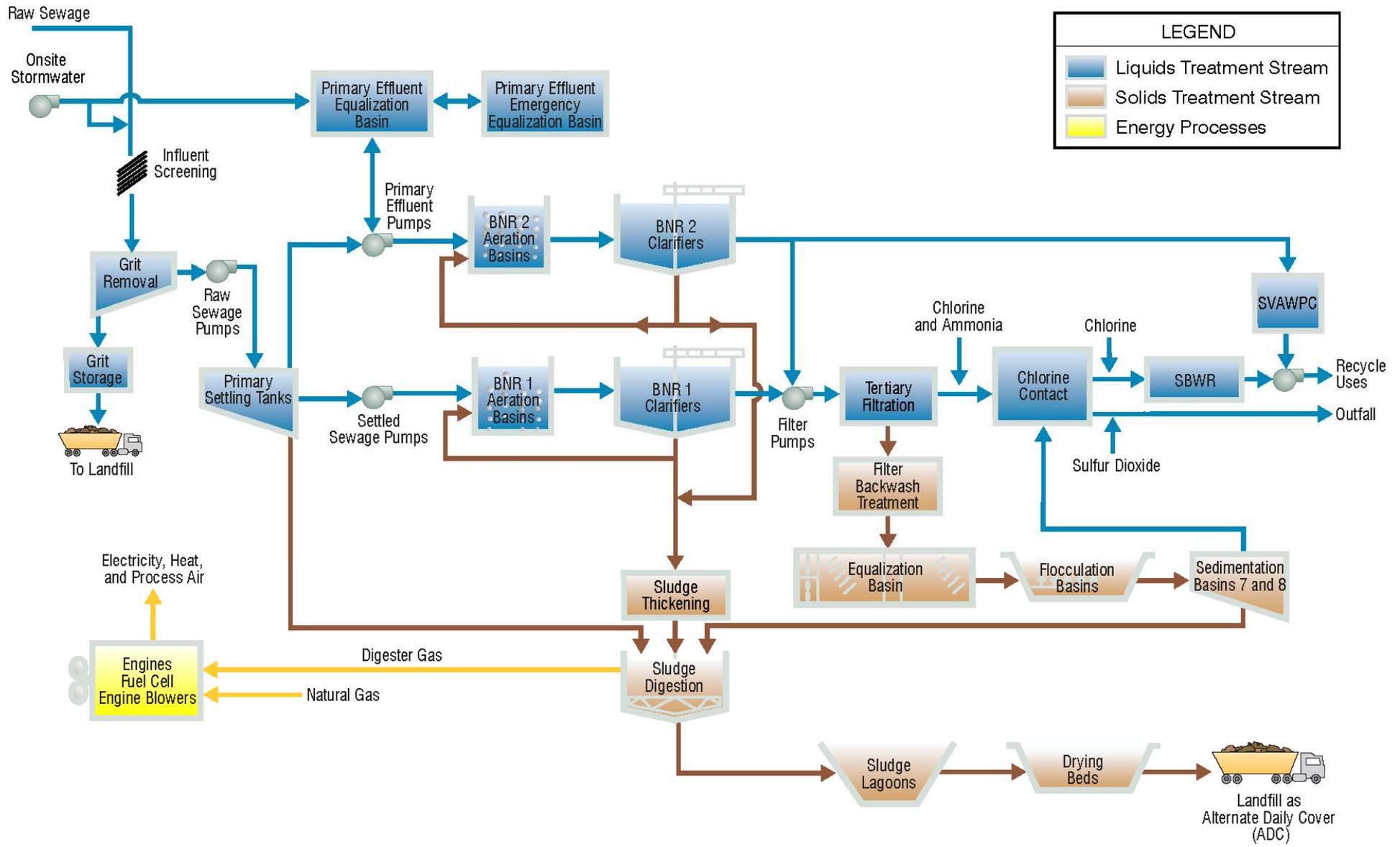


Figure 8 – Current Treatment Process Flow Diagram



Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram

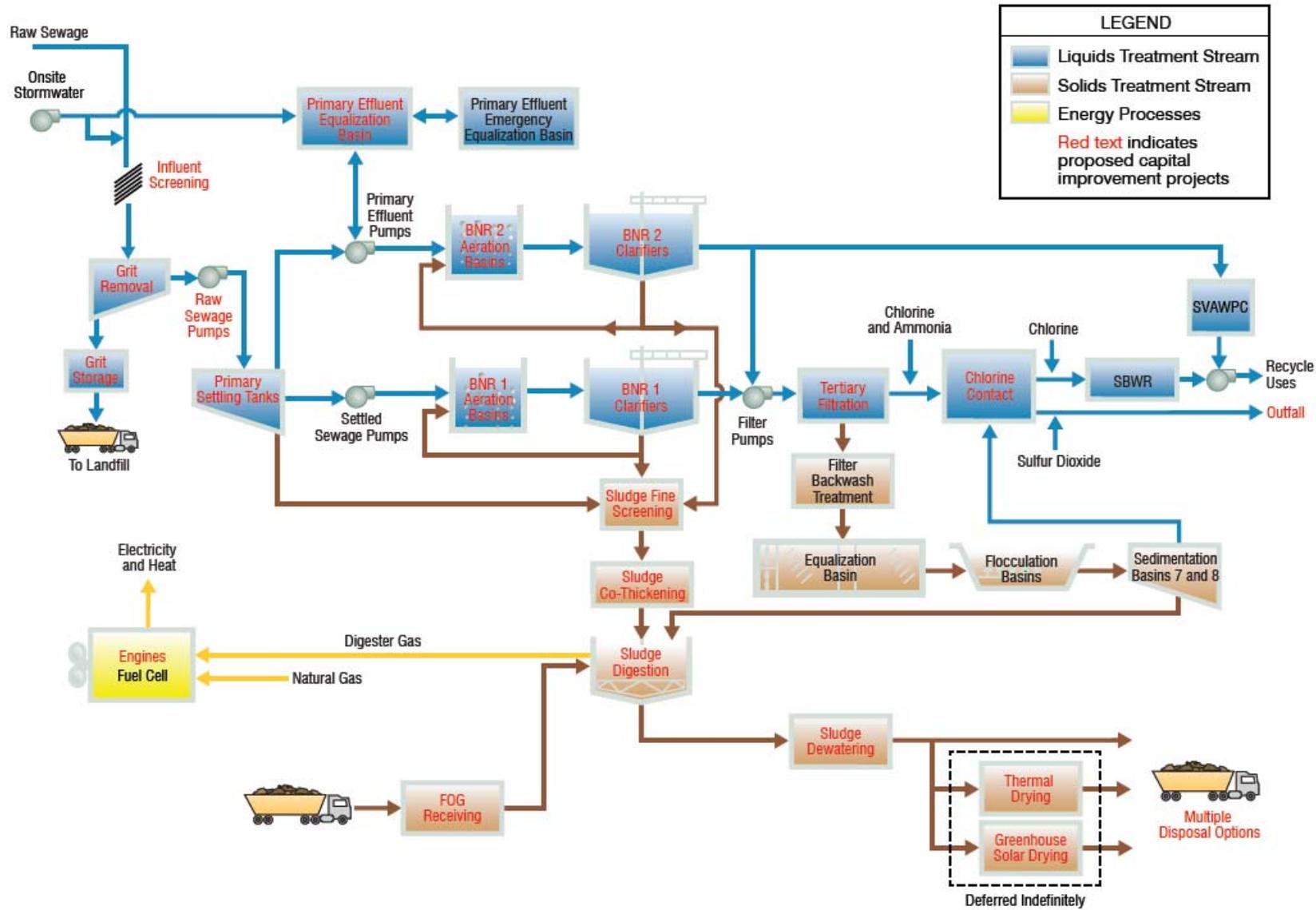


Figure 9 – Proposed Treatment Process Flow Diagram



Active Construction Projects – Aerial Plan

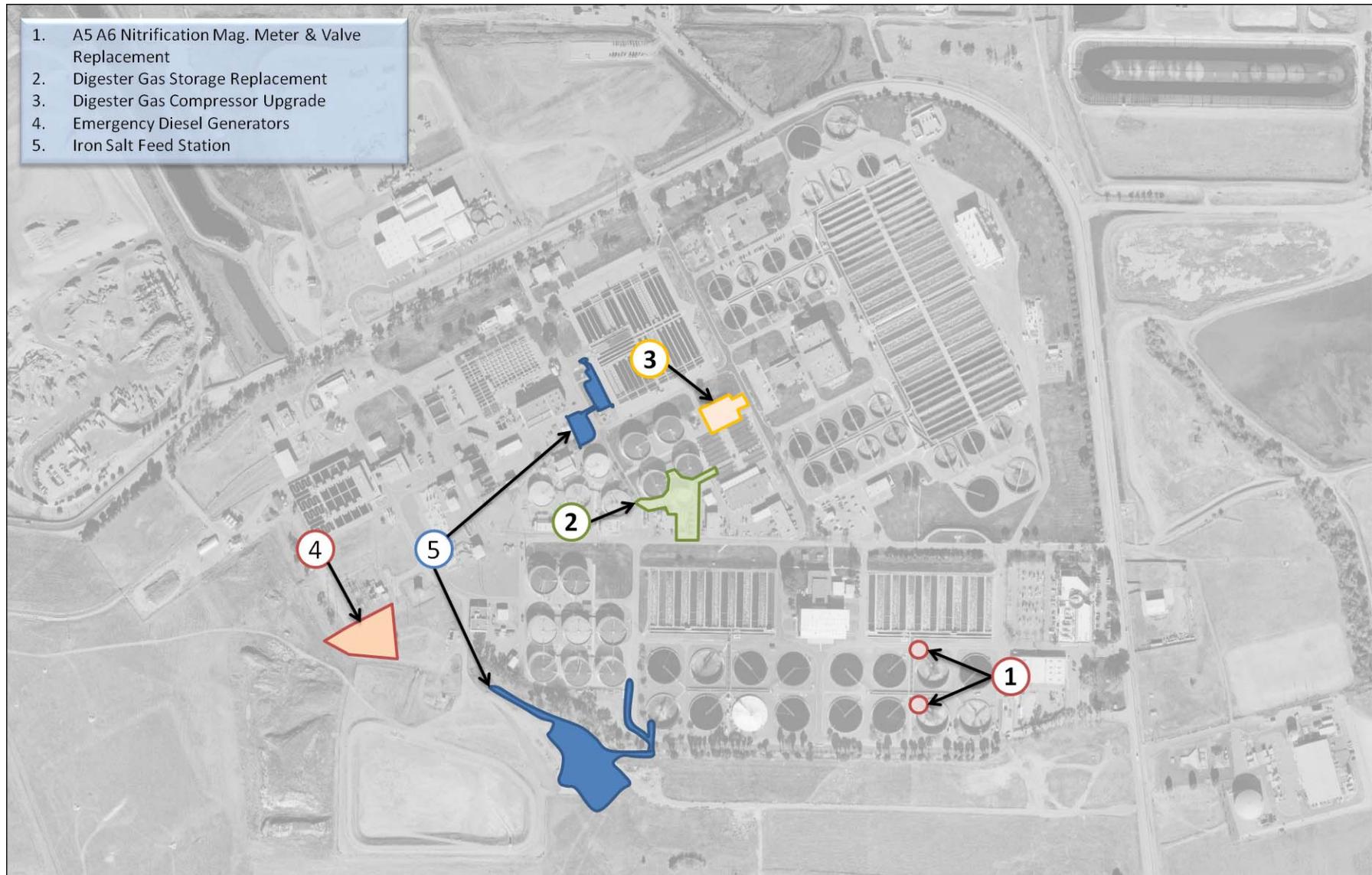


Figure 10 – Active Construction Projects