San José-Santa Clara Regional Wastewater Facility

Capital Improvement Program
Monthly Status Report: April 2016

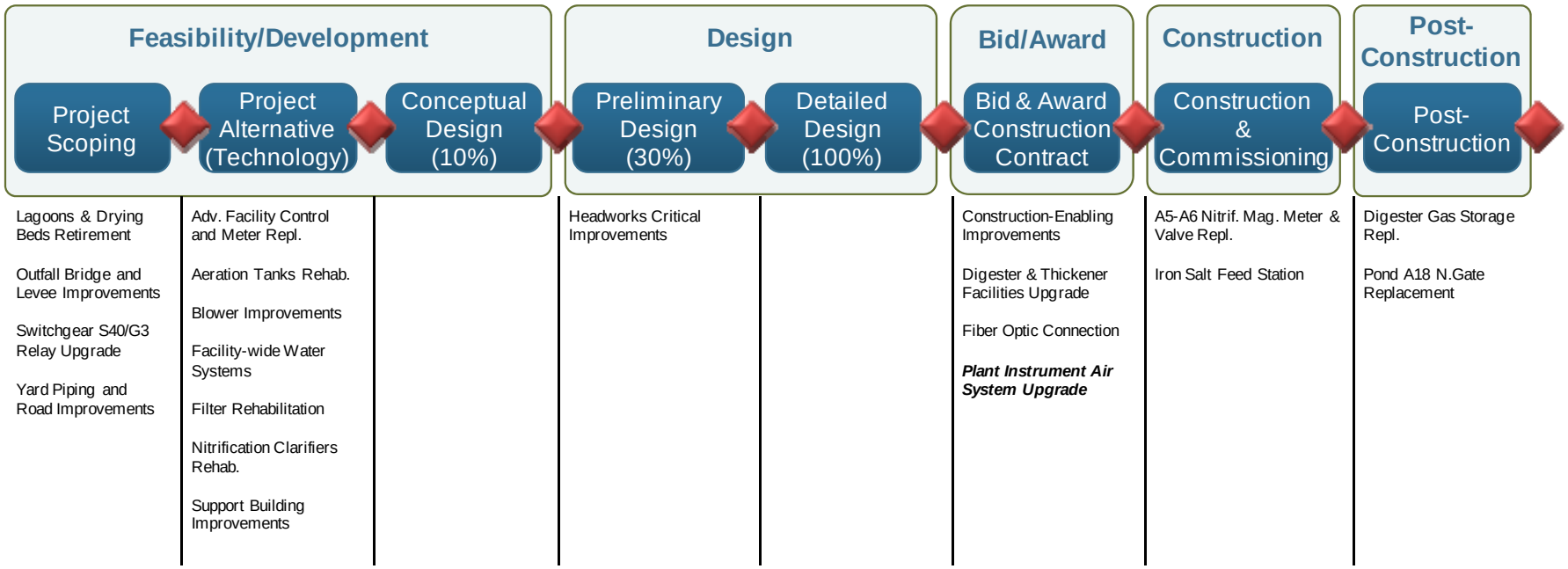
June 2, 2016

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

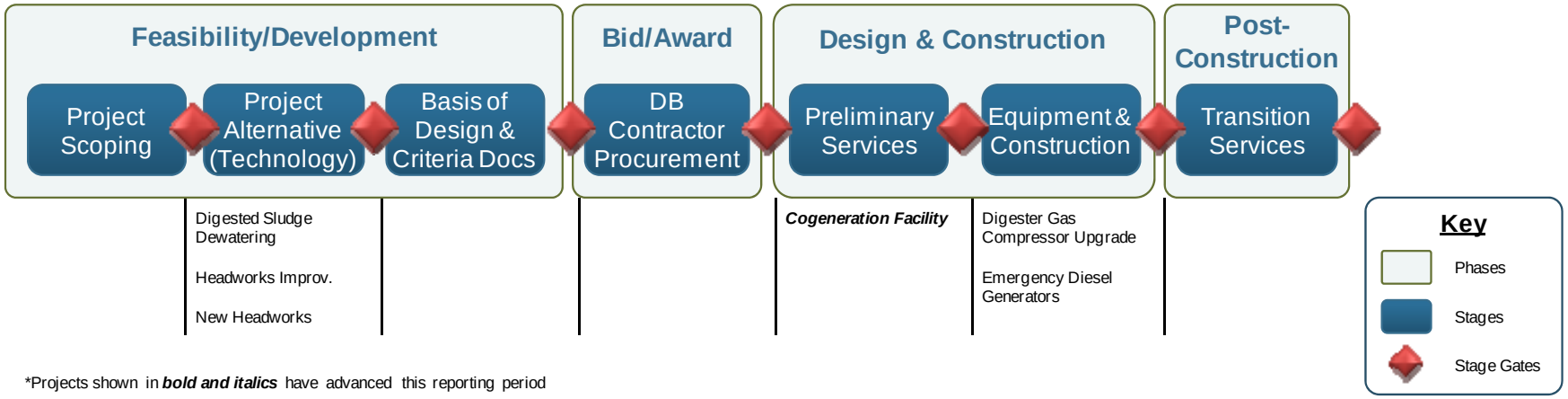
Report Contents

Project Delivery Model

Design-Bid-Build Active Projects



Design-Build Active Projects



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

Program Summary

April 2016

In April, the CIP progressed on multiple fronts, including advancing the Plant Instrument Air System Upgrade Project through the Project Delivery Model (PDM) Authorization-To-Bid Stage Gate. In additional developments, CIP staff:

- Advertised a Request for Qualifications (RFQ) for System Integrator Services to pre-qualify consultants for future CIP projects;
- Advertised a construction contract for the Plant Instrument Air System Upgrade Project. This project will replace the existing instrument air compressor system at the Secondary Blower and Nitrification buildings with a new dedicated air compressor system that will provide suitable redundancy and capacity to support all RWF operations in the event of an extended power loss;
- Received bids from three contractors for the Construction-Enabling Improvements Project with award scheduled for June 2016; and
- Received Statements of Qualifications (SOQ) from four consultants for the recently-advertised Owner's Advisor services for the Digested Sludge Dewatering Facility Project.

Staff presented the following recommendations to the Treatment Plant Advisory Committee (TPAC) and City Council (Council) this month:

- Award a design-build contract to CH2M Hill for the Cogeneration Facility Project;
- Purchase and implement a Design and Construction Management System (DCMS) with Bentley Systems; and
- Adopt a resolution terminating the emergency declaration for the replacement of Pond A18's northern gate structure.

Staff also presented the Semiannual Status Report for the period July through December 2015 to TPAC, Council, and the Transportation and Environment (T&E) Committee. All recommendations were accepted or approved.

Design continued on the Headworks Critical Improvements Project, with the project scheduled to reach the Preliminary Design 30 percent milestone next month. Alternatives analysis commenced this month on the Headworks Improvement and New Headworks projects, and is scheduled to commence on the Filter Rehabilitation and Nitrification Clarifiers Rehabilitation projects during the next two months.

Staff issued a notice of intent to award the construction contract for the Digester and Thickener Facilities Upgrade Project, having assessed the reasons for bids received exceeding the Engineer's Estimate. A recommendation will be made to TPAC and Council next month to proceed with the award of the contract to the lowest bidder, Walsh Construction, and for construction to commence this fiscal year.

In addition, construction continued at the RWF on the Emergency Diesel Generators, Digester Gas Compressor Upgrade, and Iron Salt Feed Station projects.

Look Ahead

In May, staff will recommend Council award a construction contract for the Digester Thickener and Facility Upgrade Project; a construction contract for the Fiber Optic Connection Project; a master consultant agreement for General Engineering; and a master consultant agreement for the Nitrification Clarifier Rehabilitation Project. The City will issue an RFQ for a design consultant on the Support Building Improvements Project and a Notice-to-Proceed to CH2M Hill for the Cogeneration Facility Project. Staff will organize a partnering session with CH2M Hill and begin to schedule workshops for the Cogeneration Facility Project design. Project teams will work to advance the Headworks Critical Improvements Project through the Authorization-to-Proceed Stage Gate, and the Flood Protection Study through the Final Acceptance Stage Gate. Staff will also present the 2017-2021 Proposed CIP for review by the Planning Commission, TPAC, and City Council during special study sessions.

In June, staff will seek Council's award of consultant contracts for the following projects: Aeration Tanks and Blower Rehabilitation; Construction Management and Inspection Services; Facility Wide Water Systems Improvements; and Value Engineering and Peer Review Services. Finally, staff will seek Council award of a construction contract and right-of-way dedication for the Construction Enabling Improvements Project.

In addition, all CIP project managers and project engineers will continue formal staff training with the next training session focused on communications management.

Program Highlight – Value Management Plan

Each CIP project utilizes a Value Management Plan (VMP) to obtain the greatest benefits for the lowest cost. CIP projects are major investments; therefore, it is imperative that formal processes, procedures, and tools be used to maximize project value. The VMP includes the systems and structure to achieve this goal and consists of four distinct activities that occur at specific stages throughout the life of a project:

1. Value Scoping – During initial project definition and scoping, staff review project needs, scope requirements, cost reduction opportunities, overall approach to value management, and documentation of results within the VMP.
2. Value Analysis – As project alternative solutions are being evaluated, staff analyze value-based alternatives to arrive at the most cost-effective set of project facilities. This analysis is included in documents such as Business Case Analyses, Conceptual Design, Project Definition, and Basis of Design reports.
3. Value Engineering – During the early stages of detailed design, an independent, third-party value engineering team performs a prescriptive and systematic value assessment of the project's design, and prepares findings and recommendations to add value and reduce costs.
4. Value Review – At the end of project startup, staff focus on lessons learned to apply to future projects and optimize current facilities.

Together, these four activities keep the project team focused on adding value and reducing costs while achieving project objectives. Currently, the project team has completed 23 separate value scoping and value analysis activities on 17 different CIP projects. The City is working on a consultant selection process and expects to award two $5 million agreements in June for value engineering and peer review services. The selected consultants will undertake independent value engineering activities during the design phase.

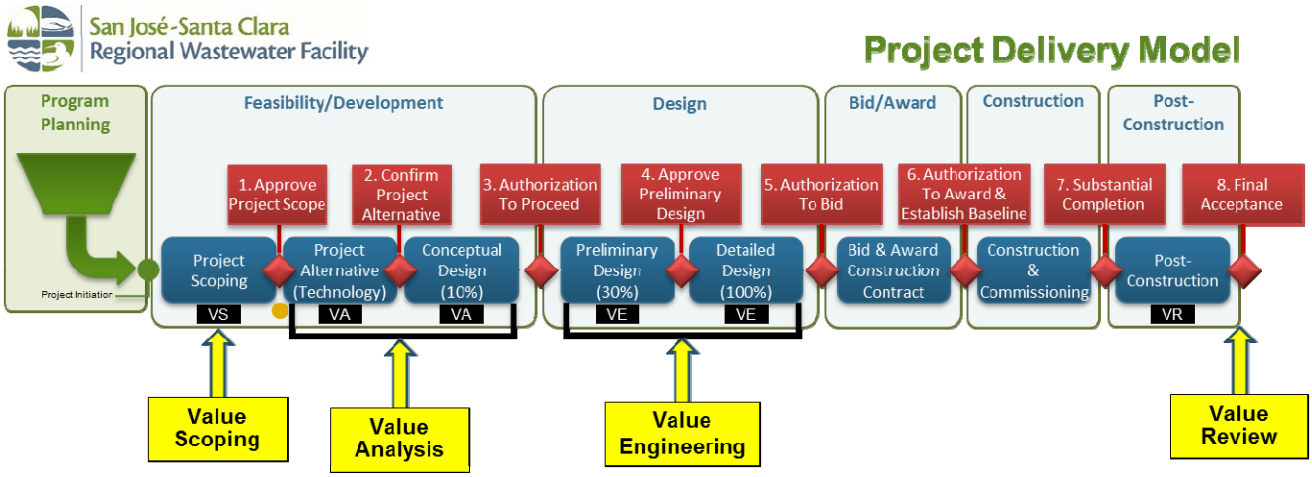


Figure 1 – Value Management Phasing

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% (18/18)[1]			100% (24/24)[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	$77M			$208M[3]		
Measurement: CIP Fiscal Year 15/16 committed costs. Committed cost meets or exceeds 70% of planned Budget (70% of $210M = $147M							
Procurement	80%	100% (16/16)[4]			100% (17/17)[5]		
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							
Staffing[6]	80%	53% (9/17)			59% (17/29)		
Measurement: Number of planned positions filled for the fiscal year. Criteria: Red: < 70%; Amber: 70% to 79%; Green: >=80%							

Notes

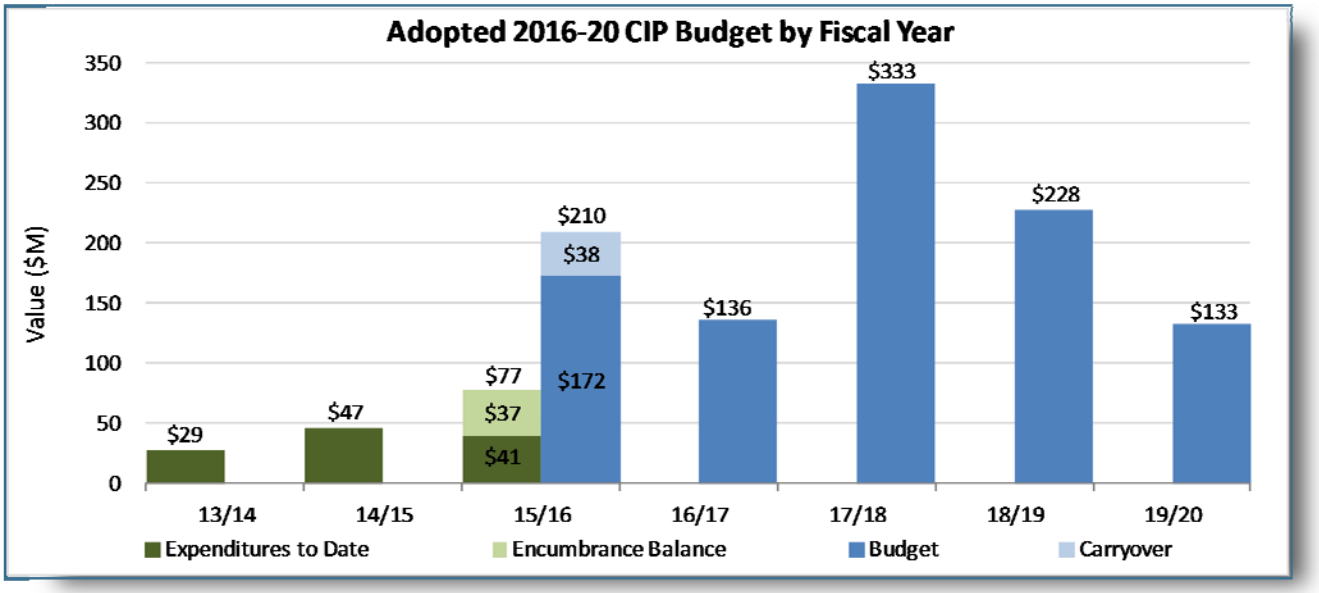
1. The number of completed stage gates increased from 17 to 18 for the Stage Gate KPI Fiscal Year to Date (YTD) as the Plant Instrument Air System Upgrade Project successfully completed its stage gate.
2. The Fiscal Year End Stage Gate KPI total has decreased by one project.
3. The forecast increase of $9M is due to the Digester & Thickener Facilities Upgrade Project: The City's portion of the contingency, approximately $9M, will be encumbered in FY15-16 instead of FY16-17 as previously planned. The balance will still be encumbered next fiscal year.
4. The Procurement KPI Year to Date has increased from 14 to 16 as procurements were advertised in April for the Plant Instrument Air System Upgrade Project construction contract and System Integrator Services pre-qualification.
5. The Fiscal Year End total procurements were increased by one project due to a decision to include the System Integrator Services pre-qualification in the KPI.
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.

Program Cost Performance Summary

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

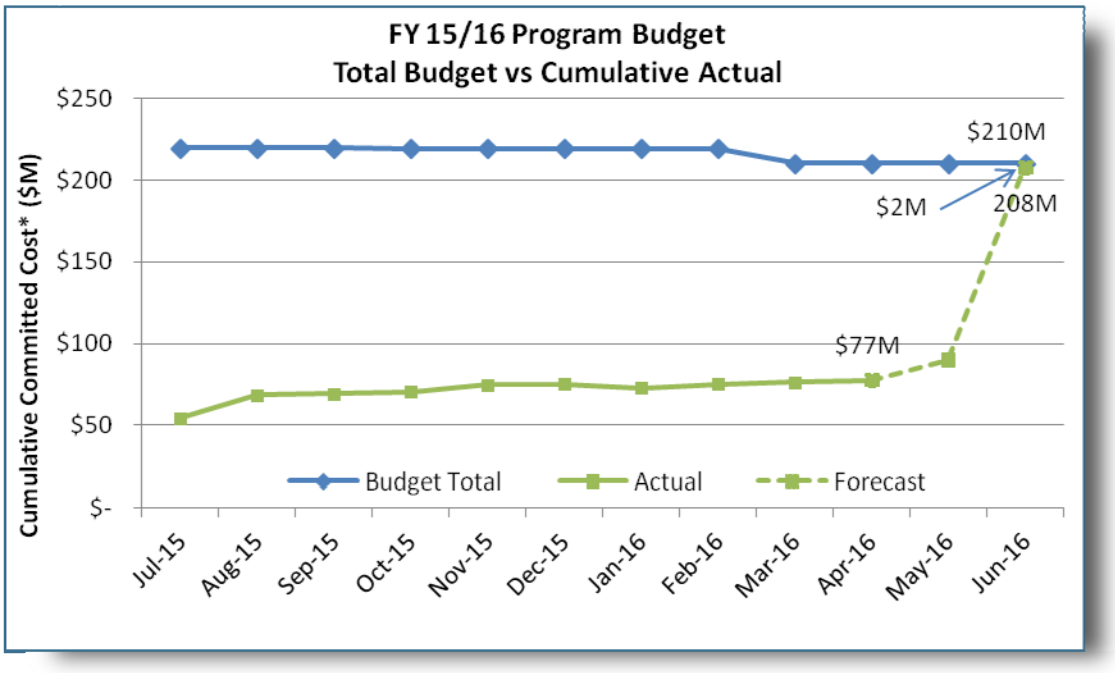
Encumbrance Balance: The amount of the remaining encumbrance committed after payments.

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. Carryover is different from rebudgeted funds, in that it automatically utilizes funding that was previously committed, but not yet paid.

Fiscal Year 2015-2016 Program Budget Performance

This budget comprises 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, bid and award, or design and construction (design build projects) 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 Project Management System (CPMS). Green/red icons are included in the table below to indicate whether these projects are on budget and schedule, using 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		

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

Project Performance – Pre-Baselined Projects

Project Name	Phase	Estimated Beneficial Use Date[1]
Cogeneration Facility	Design & Construction	May 2019
Construction-Enabling Improvements	Bid & Award	Feb 2017
Fiber Optic Connection	Bid & Award	Feb 2017
Plant Instrument Air System Upgrade	Bid & Award	Jan 2018
Digester & Thickener Facilities Upgrade	Bid & Award	July 2019
Headworks Critical Improvements	Design	Sept 2017
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	April 2022
New Headworks	Feasibility/Development	Aug 2022
Yard Piping and Road Improvements	Feasibility/Development	Aug 2022
Nitrification Clarifiers Rehabilitation	Feasibility/Development	Sept 2022
Aeration Tanks Rehabilitation	Feasibility/Development	Sept 2023
Support Building Improvements	Feasibility/Development	Jan 2027
Lagoons & Drying Beds Retirement	Feasibility/Development	Mar 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 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

- Staff completed investigation into the bids received.
- Due to the critical nature of the system, necessary connections to the future Cogeneration Facility, a severe labor shortage, and low likelihood that rebidding would result in lower bids, staff worked diligently to develop a funding strategy that minimizes impact to rate payers.
- The City issued a notice of intent to award to the lowest bidder, Walsh Construction. Staff will recommend Council award the construction contract in May.

Digester Gas Storage Replacement

- The contractor completed all outstanding work.
- The City submitted the Notice of Completion and Acceptance for the project to the County.

Digested Sludge Dewatering Facility

- Four SOQ documents for Owner's Advisor were submitted by prospective consultants. The Technical Evaluation Panel will complete ranking and interviews in May 2016.

Facilities Package

Cogeneration Facility

- The project team reached a significant milestone this month with the award of the design-build contract to CH2M Hill Engineers, Inc. The contract is being executed and the first notice to proceed will be issued in May.

Construction-Enabling Improvements

- The project team received three bids. Staff will recommend Council award the construction contract in June.

Facility Wide Water Systems Improvements

- Staff completed negotiations with the top-ranked consultant and is targeting Council approval in June.

Fiber Optic Connection

- Staff has concluded discussions with the second low bidder and will recommend Council award of the contract to them on May 24.

Liquids Package

Blower Improvements

- A consultant team comprised of MWH, Carollo, and Howden Roots completed a condition assessment of Secondary Blower Building blowers, Tertiary Blower Building blowers, and process air blowers.

Nitrification Clarifiers Rehabilitation

- On April 14, TPAC approved staff's recommendation to award a master consultant agreement to HDR Engineering, Inc. Staff anticipates presenting the agreement for Council consideration on May 10.

Power and Energy

Plant Instrument Air System Upgrade

- The City advertised the construction contract on BidSync. Bids are due on June 2 with award of the contract expected in September 2016.

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 2015. Discussions between senior management from both sides have been productive. A negotiated agreement to resolve all outstanding contract issues was concluded in January 2016 and a change order was issued 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. The Contractor has completed the list of outstanding items on two manual actuators. 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 2015 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 the Notice of Completion and Acceptance was submitted to the County at the end of April to be recorded.

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 has completed the design and submitted the controls to the City for review and reference. Caterpillar expects to deliver the controls 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 Office of the City Attorney and the Public Works Department are reviewing the PG&E Telemetry Services Agreement.
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 that commissioning for the EG-1 engine modification and the new generators may be combined, which will reduce the schedule delay.

Project Profile – Aeration Tanks Rehabilitation and Blower Improvements

The RWF secondary treatment process consists of two separate biological nutrient removal (BNR) systems, BNR-1 and BNR-2. These systems include a biological treatment process that removes organics from the incoming primary effluent. System components include aeration tanks, in which air is added to allow biodegradation of organic material, and blowers, which supply the air. Figure 2 illustrates the BNR process.

BNR-1 and BNR-2 were originally constructed in 1961 and 1975, respectively. Key components of the systems have aged beyond their useful lives and require rehabilitation to ensure long-term operability while minimizing maintenance requirements. The objective of this project is as follows:

- To rehabilitate various critical components of the BNR systems, such as blowers, motors, piping systems, pumps, and aeration basins, and
- To optimize the secondary treatment process to meet future regulatory requirements and to increase efficiency.

This effort has been divided into two projects:

The Blower Improvements Project will include a detailed condition assessment, and will design and install new motors, variable frequency drives, instrumentation, and controls. The project's feasibility and development phase is scheduled for completion in August 2016. Final design and installation will be performed by the design consultant and construction contractor, respectively, and are scheduled for completion by January 2019. This project must be constructed prior to the startup of a new cogeneration facility in January 2019, as the new facility will use a blended gas supply previously used in some of the aeration blowers.

The Aeration Tanks Rehabilitation Project will include a comprehensive condition assessment and rehabilitation of existing aeration basin mechanical, electrical, and structural components. The project will include rehabilitation of existing pipe systems, replacement of aeration diffusers, concrete repairs, pump replacements, control upgrades, and rehabilitation of other appurtenances to minimize maintenance requirements. The project is scheduled to be completed by the end of 2024.

Brown & Caldwell has been selected as the highest-ranked design consultant for both projects. Council award is scheduled for June 2016. The notice to proceed for both projects is scheduled for August 2016, which will allow design work to commence for the Blower Improvements Project and evaluation of project alternatives to commence on the Aeration Tanks Rehabilitation Project.

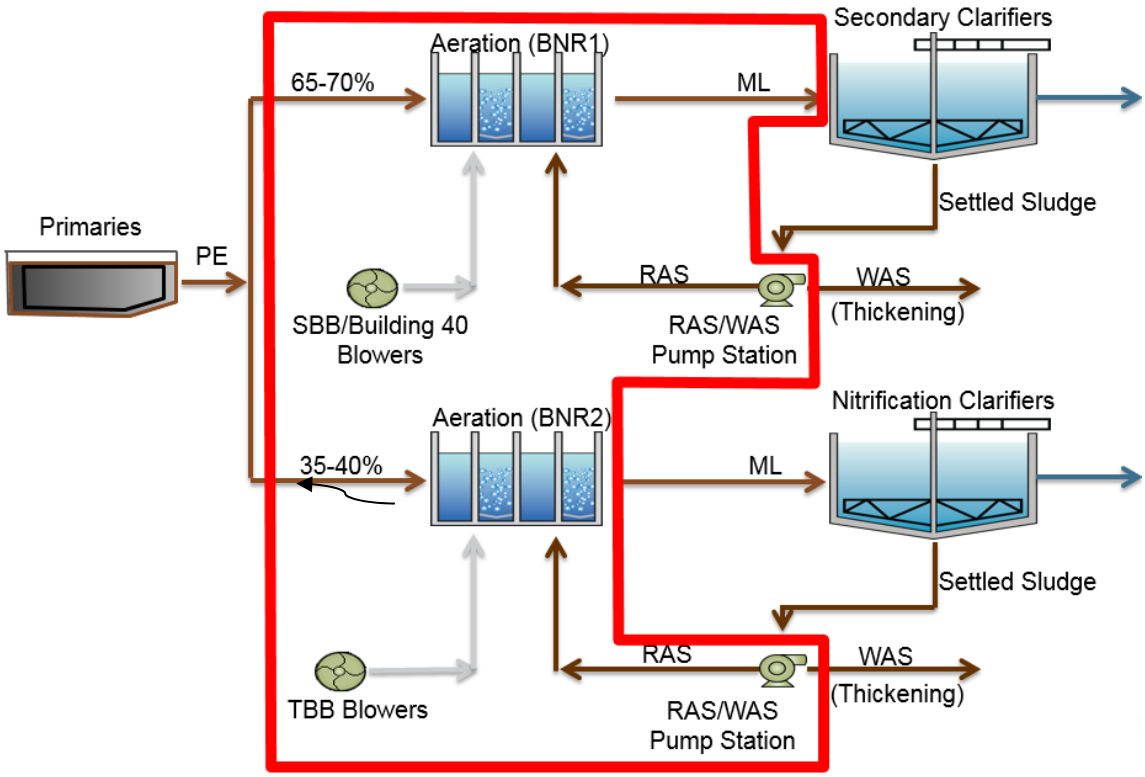


Figure 2 – BNR Process

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Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram

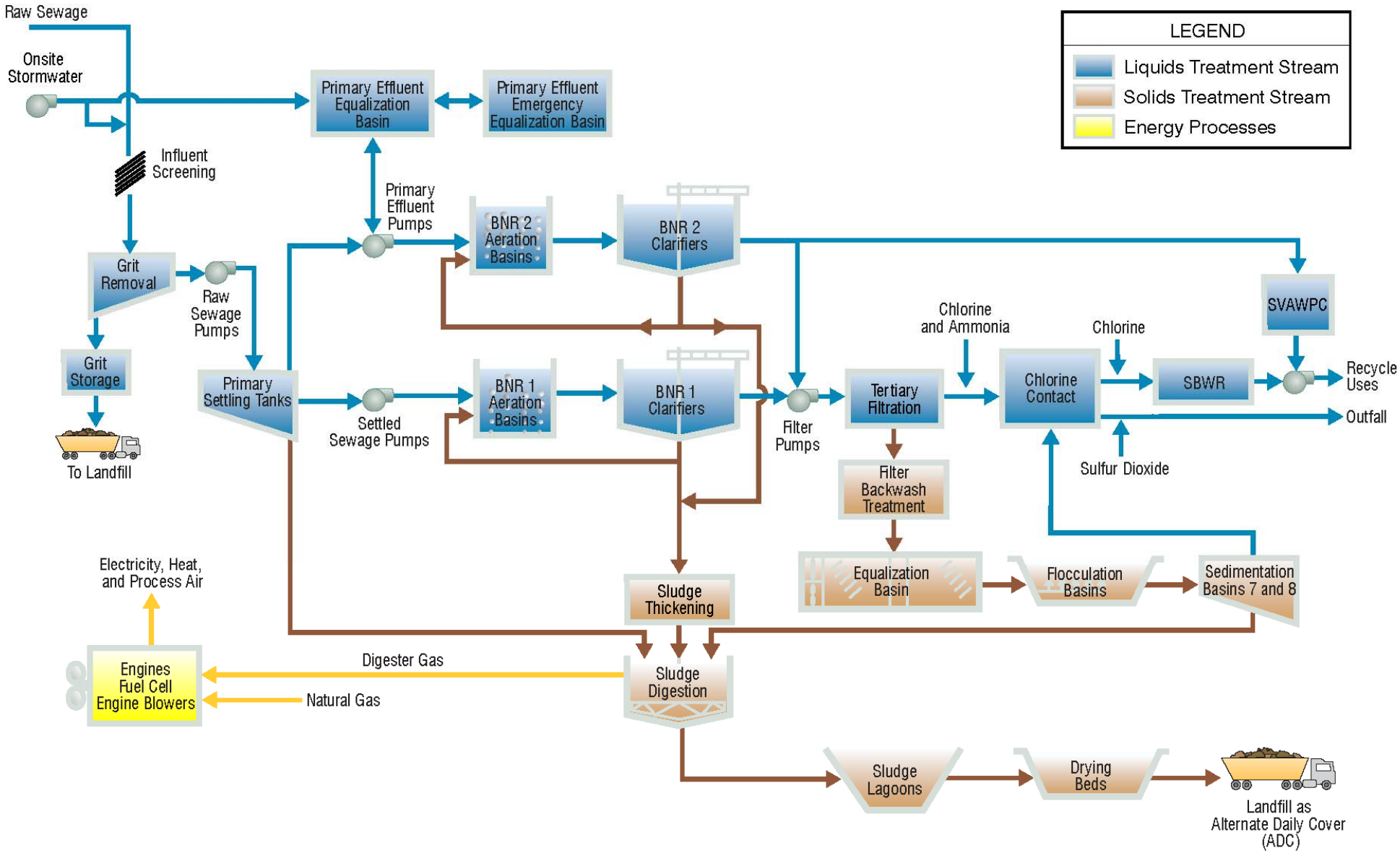

Figure 3 – Current Treatment Process Flow Diagram

Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram

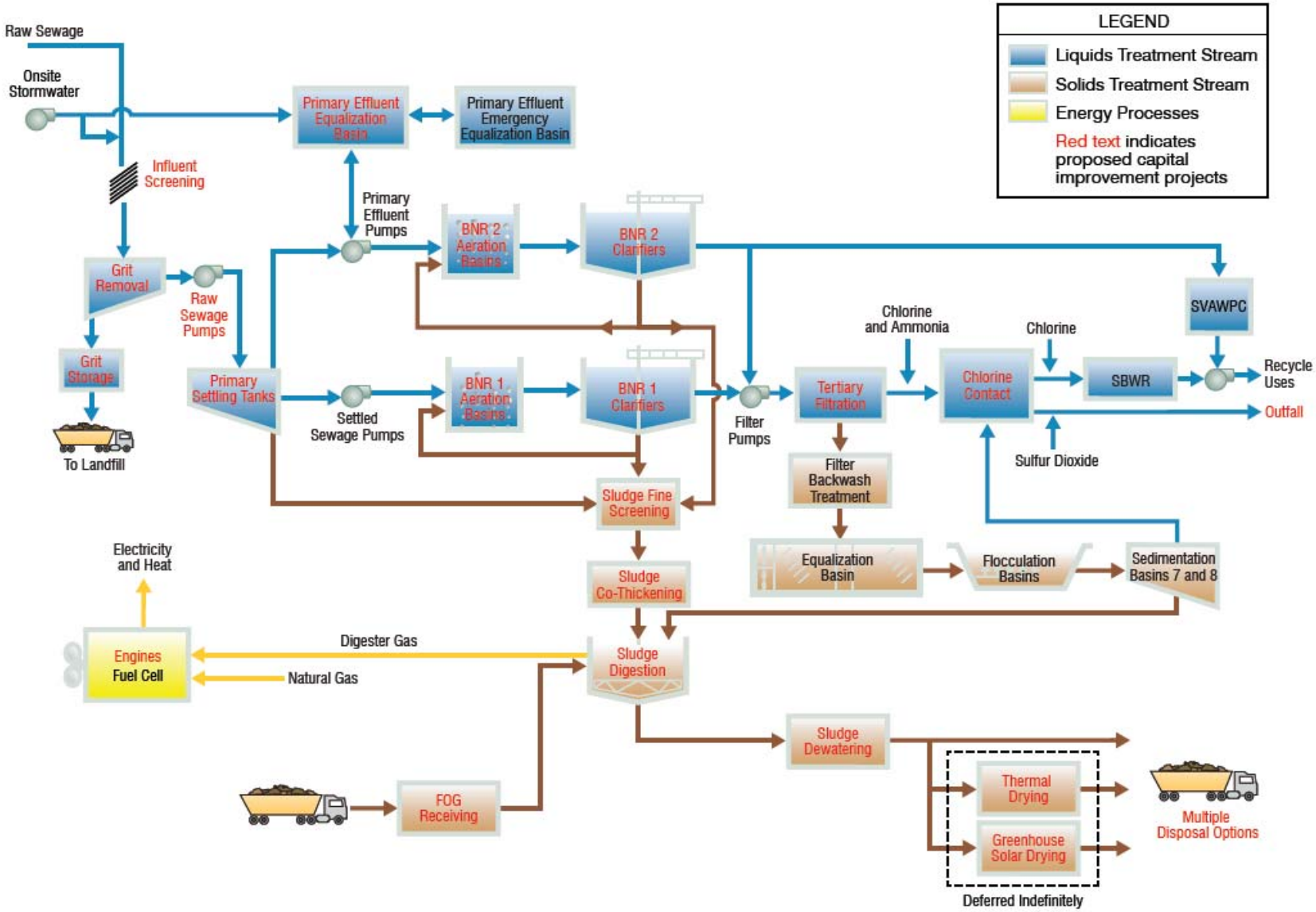

Figure 4 – Proposed Treatment Process Flow Diagram

Active Construction Projects – Aerial Plan

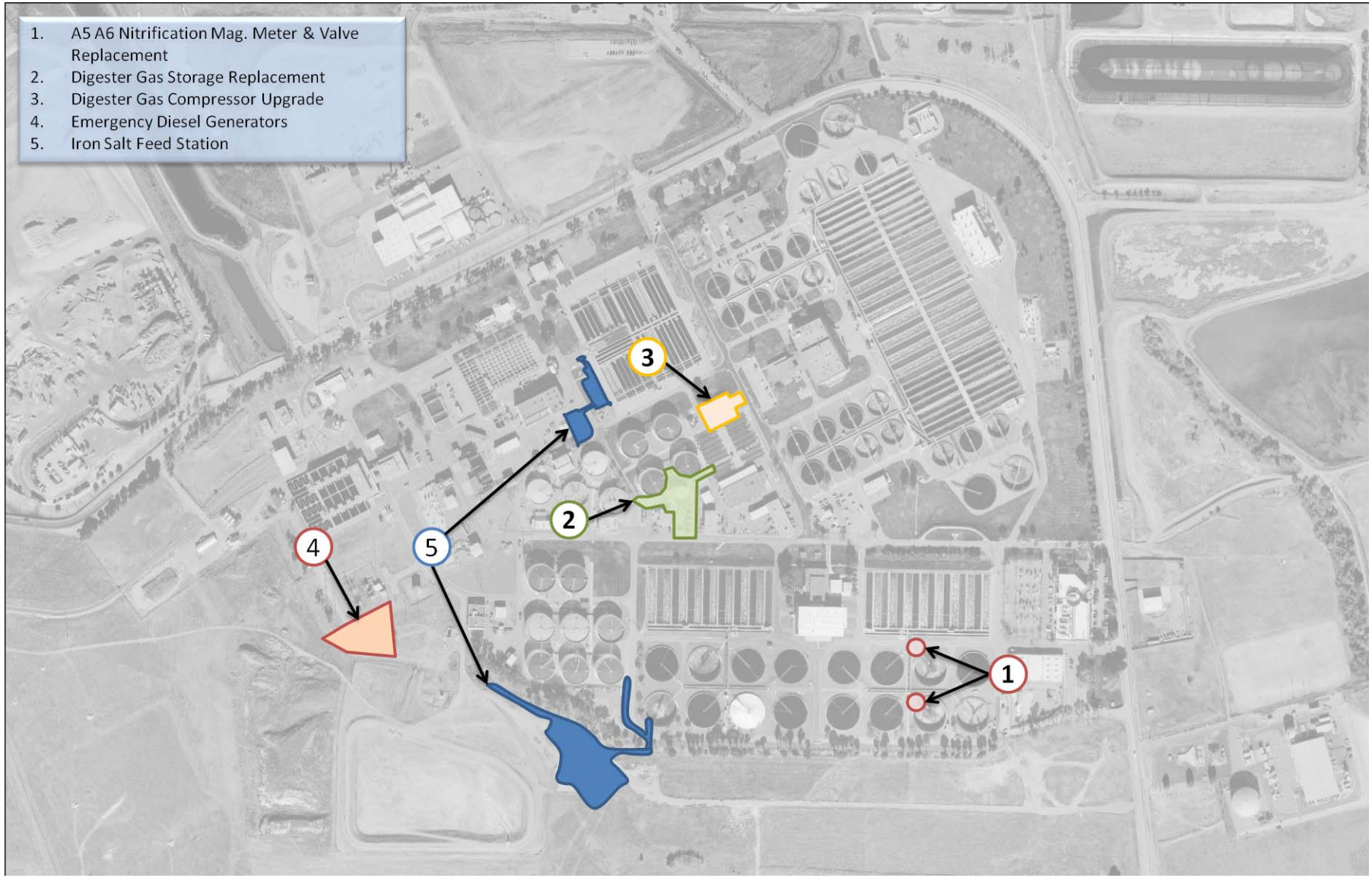

Figure 5 – Active Construction Projects