San José-Santa Clara Regional Wastewater Facility

Capital Improvement Program
Monthly Status Report for April 2014

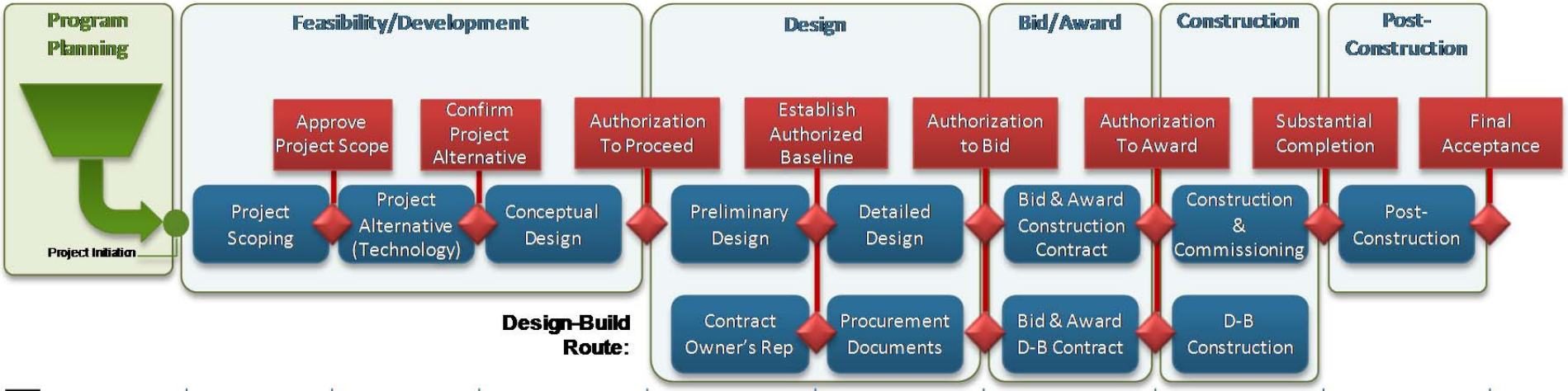
June 5, 2014

This report provides a summary of the progress and accomplishments of the Capital Improvement Program (CIP) for the San José-Santa Clara Regional Wastewater Facility ("Wastewater Facility") for the period of April 2014.

Report Contents

Project Delivery Model 2
Program Summary 3
Program Performance Summary 4
Program Cost Performance 5
Project Performance 7
Project Profile 9
Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram 12
Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram 13
Active Construction Projects – Aerial Plan 14

Project Delivery Model



Active Projects

Design-Bid-Build

- Iron Salt Feed Station
- Plant Instrument Air System Upgrade
- Digester & Thickener Facilities Upgrade
- Training Trailer Replacement
- RWF Street Treatment – Phase III
- ***Filtration Building B2 & B3 Pipe & Valve Replacement***
- 115 KV Circuit Breaker Repl.
- DCS Fiber Optics Exp.
- DCS Upgrade/Repl.
- H/works No.2 Act. Repl.
- Cooling Tower Repl.
- Handrail Repl. – Phase V
- A5-A6 Nitrif. Mag. Meter & Valve Repl.
- ***Digester Gas Storage Repl.***
- ***Fire Main Repl. – Ph. III***
- ***BNR2 Clarifiers Guardrail Repl.***
- ***Dissolved Air Flotation Dissolution Impr.***

Design-Build

- Biosolids Transition Projects
- Cogeneration Facility
- Digester Gas Compressor Upgrade
- Emergency Diesel Generators

Key

- Stage Gates
- Stages

Note: Projects shown in bold and italics have moved phase in the reporting period

Program Summary

April 2014

In 2008 the Wastewater Facility undertook a Plant Master Plan (PMP) effort which ultimately resulted in its adoption in November 2013. The Project Validation process held between October 2013 and January 2014 reviewed the projects identified in the Plant Master Plan in order to develop a five-year and ten-year CIP. This monthly report provides a summary of the progress and accomplishments of the CIP for the month of April 2014 within Fiscal Year 2013-2014.

In the month of April the focus was on implementing our program tools and processes on all existing projects, planning for future resource needs for the CIP Program, moving forward with nine key programmatic studies, and continuing to work with the various groups involved in budget and rate setting, and financing discussions.

We presented updates at regular meetings to the Technical Advisory Committee (TAC) on April 7th, the Transportation & Environment Committee on April 7th, and the Treatment Plant Advisory Committee (TPAC) on April 17th. We also held a TAC Study Session on the CIP on April 8th, a TPAC Study Session on biosolids on April 10th, and a TPAC Study Session to review proposed budgets and a ten-year funding strategy on April 17th.

Look Ahead

In May, we will continue to train and reinforce the use of our processes and tools, in particular our Project Delivery Model (see page 2 of this report). In addition, we will begin to implement the Stage Gate process of the PDM, wherein each project is reviewed and approved before proceeding to next steps in the PDM process. Recruiting will also be proceeding at a fast pace to fill existing vacancies. On May 2nd, staff will host a tour of the Wastewater Facility by attendees of the California Water Environment Association, which is holding its annual conference in Santa Clara this year. We will also be enhancing our web-based SharePoint platform (called the "CIP Portal") by adding additional team sites for individual work groups. Training and implementation of all program tools and processes will also continue.

Program Highlight – Nine Programmatic Studies

During the Project Validation process, the team identified the need for nine studies to complement the Plant Master Plan and develop more specific technical information to support project implementation. These nine studies, which will all be underway by May, will be prepared by a combination of CIP and O&M staff, and in some cases, additional outside consulting input.

The Nine Programmatic Studies:

1. Design Criteria and Sizing Basis
2. Aeration Demands and Biosolids Production Assessment
3. Odor and Corrosion Control
4. Automation Master and Process Control Approach
5. Yard Piping and Tunnel Condition Assessment
6. Facility-wide Utility Systems Evaluation
7. Site Improvement Guidelines
8. Facility-Wide Process Risk Assessment
9. Asset Management Approach and Strategy

Figure 1: Existing service tunnels

Program Performance Summary

Seven KPIs have been established to measure the overall success of the CIP. Each KPI represents a metric which will be monitored on a regular frequency. Through the life of the CIP, KPIs will be selected and measured which best reflect the current maturity of the program. In this initial report, six of the seven KPIs have measurement data available and are reported below. The target for the "Staff Count" KPI will established as part of the analysis of future staffing needs.

Program Key Performance Indicators – Fiscal Year 2013-2014

KPI Description	Target	Actual	Status	Trend	Measurement
Schedule[1]	85%	50% (1/2)	◆	↓	Percentage of CIP projects delivered within 2 months of approved baseline Beneficial Use Milestone. ***Target: 85% of projects delivered within 2 months of approved baseline schedule or better.***
Budget	90%	100% (2/2)	●	→	Percentage of CIP projects that are completed within the approved baseline budget. ***Target: 90% of projects total expenditures do not exceed 101% of the baseline budget.***
Expenditure	≥$72.7M	$90.6M	●	→	Total CIP actual + forecast committed cost for the fiscal year compared to CIP fiscal year budget. ***Target: Forecast committed cost meets or exceeds 50% of budget for Fiscal Year 13/14 ($145.4 / 2 = $72.7M)***
Procurement	100%	100% (12/12)	●	→	Number of actual + forecast consultant and contractor procurements compared to planned for the fiscal year. ***Target: Forecast /actual procurements for fiscal year meet or exceed planned.***
Safety	0	0	●	→	Number of OSHA reportable incidents associated with CIP construction for the fiscal year. ***Target: zero incidents.***
Environment/Permits	0	0	●	→	Number of permit violations caused by CIP construction for the fiscal year. ***Target: zero violations.***
Staff Count[2]	TBD	TBD	TBD	TBD	Number of additional staff started in the previous quarter compared to planned (City/Consultant). ***Target: Number of City and Consultant Staff joined the program team for the quarter meets or exceeds planned.***

Footnote 1 – For the Schedule KPI, the number of delivered projects increased from 1 to 2, This count now includes Dissolved Air Flotation Dissolution Improvements, which reached Beneficial Use as of April 2014.

Footnote:2 – Staff count KPI measured quarterly; all other KPIs measured monthly

KEY:

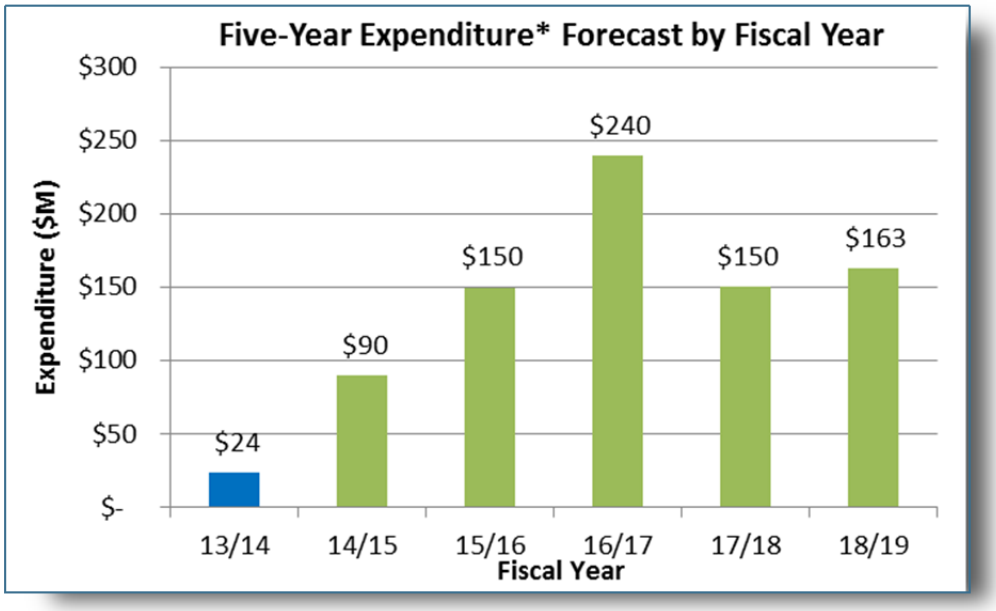
Cost:	● **Meets or exceeds KPI target**	◆ **Does not meet KPI target**

Program Cost Performance

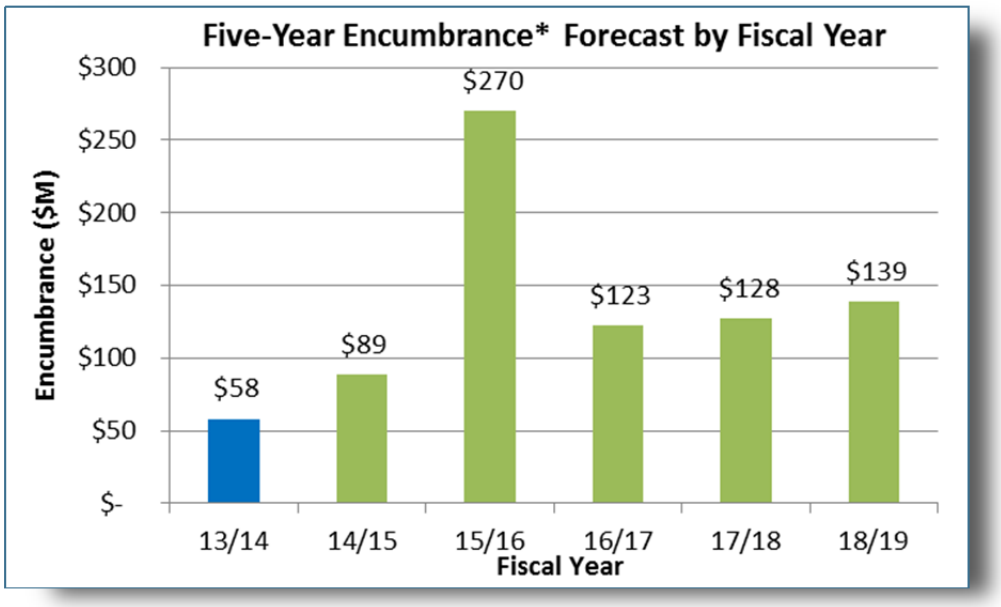
This section provides a summary of CIP cost performance for all construction projects and non-construction activities for FY13-14 and the Five-Year CIP.

Proposed 2015-2019 CIP Expenditure and Encumbrances

To accommodate the proposed increase in expenditures and encumbrances over the next five years, the City is developing a long-term financial strategy to fund the needed, major capital improvements while minimizing the impact to ratepayers. The City held special study sessions with TAC and TPAC in April to discuss the ten-year funding strategy and the financing plan.



*Expenditure defined as: Actual cost expended associated with services and construction of physical assets

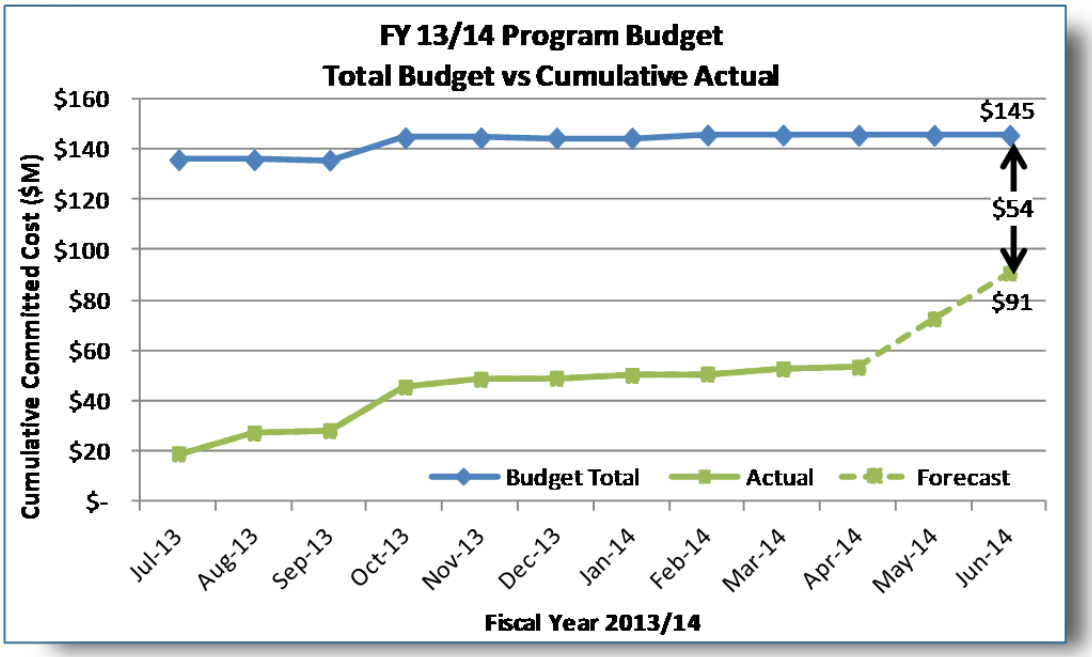


*Encumbrance defined as: Financial commitments, such as purchase orders or contracts, which are chargeable to an appropriation and for which a portion of the appropriation is reserved

Fiscal Year 2013-2014 Program Budget Performance

The fiscal year began with an initial program budget of $135 million, with a $9 million adjustment in October and a $1 million adjustment in February, for a total program budget of $145 million. Committed costs are expenditures and encumbrance balances, including carryover (encumbrance balances from the previous fiscal year). As of the close of the April reporting period, $53 million in cumulative program spending had been achieved. This represents approximately 37% of the total program budget for FY13-14.

Committed costs are forecasted to reach $91 million by the end of the fiscal year resulting in a projected year-end variance of approximately $54 million as shown in the chart below. The last fiscal quarter will see a number of large construction contract awards including Digester Gas Storage Replacement, Fire Main Replacement – Phase III, Digester Gas Compressor, and Emergency Diesel Generators.



The projected year-end variance shrank from $56 million to $54 million due to two bids coming in slightly higher that the engineer's estimates, and the addition of one service order and one purchase order in the forecast.

Project Performance

There are currently nine active projects in the construction or post-construction phase with a further nine projects in feasibility/development, design or bid and award phases (see PDM graphic at the front of this report). All active projects are listed in the table below. Projects in the construction phase have cost and schedule baselines established and are monitored using the City's Capital Project Management System (CPMS). These projects have green/red icons included in the table below to indicate whether they are on budget and schedule using the CPMS data as a source.

Project Name	Phase	Estimated Beneficial Use Date[1]	Cost Performance [2]	Schedule Performance [2]
Baselined Projects				
Dissolved Air Flotation (DAF) Dissolution Improvement	Post-Construction	Apr 2014	◆	◆
115KV Circuit Breaker Replacement	Construction	Jun 2014	●	●
A5-A6 Nitrification Mag. Meter & Valve Replacement	Construction	Jul 2014	●	●
BNR-2 Clarifier Guardrail Replacement	Construction	Dec 2014[3]	●	●
DCS Fiber Optic Network Expansion	Construction	May 2014	●	●
DCS Upgrade/Replacement	Construction	Jun 2016	●	●
Digester Gas Storage Replacement	Construction	May 2015[3]	●	●
Fire Main Replacement - Phase III	Construction	Mar 2015[3]	●	●
Handrail Replacement - Phase V	Construction	Mar 2015	●	●
Pre-Baseline Projects				
Digester Gas Compressor Upgrade	Bid & Award	Jul 2016	N/A	N/A
Emergency Diesel Generators	Bid & Award	Jul 2016	N/A	N/A
Filtration Building B2 & B3 Pipe & Valve Replacement	Bid & Award	Apr 2015	N/A	N/A
RWF Street Rehabilitation - Phase III	Bid & Award	Jan 2015	N/A	N/A
Training Trailer Replacement	Bid & Award	May 2015	N/A	N/A
Digester & Thickener Facilities Upgrade	Feasibility/Development	Feb 2018	N/A	N/A
Cogeneration Facility	Feasibility/Development	Mar 2017	N/A	N/A
Plant Instrument Air System Upgrade	Feasibility/Development	Dec 2015	N/A	N/A
Iron Salt Feed Station	Feasibility/Development	Apr 2016	N/A	N/A

KEY:

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

Footnote 1 – Beneficial Use is defined as when the work is sufficiently complete, in accordance with the contract documents, so that the City can occupy or use the work.

Footnote 2 – An explanation of cost and schedule variances on specific projects identified in this table is provided on the next page.

Footnote 3 – Beneficial Use date pending confirmation of Contractor's schedule

Significant Accomplishments

During the April reporting period, two projects opened bids:

- Digester Gas Compressor Upgrade: This project will install two new gas compressors in a new 5,000 square foot building, located immediately north of the Sludge Control Building. Project Budget: $15,000,000.
- Training Trailer Replacement: This project will replace two existing 30-year-old trailers with a new 7-wide trailer to accommodate the Wastewater Facility's training needs and Operator-in-Training program. Project Budget: $780,000.

Both projects are scheduled for TPAC and City Council consideration in May.

In addition, the Digester Gas Storage Replacement, Fire Main Replacement – Phase III, and BNR-2 Clarifiers Guardrail Replacement projects were awarded on April 22. All three projects are expected to start construction in June.

Explanation of Project Performance Issues

DAF Dissolution Improvement

This project involved the replacement of pipe sections, check valves, and knife gate valves, and the installation of new electric actuators to automate valve operations for the dissolved air flotation process in the Wastewater Facility's Sludge Control Building. One of the new valves required an extended shutdown period and repeated installation attempts. In existing facilities, it is not uncommon for new equipment to present fit and alignment challenges as was encountered in this case. In addition, the installation of the local control panel required a longer than expected submittal review period. These issues resulted in minor cost and schedule impacts (3% above target budget and 3 months beyond target schedule).

In April, the project achieved beneficial use. The contractor's work is essentially complete, with the exception of a local control panel connection and outstanding punch list items. In-house staff is expected to finish the remaining electrical work and staff anticipates project acceptance in July.

Project Profile

Digester Gas Compressor Upgrade

The Wastewater Facility currently operates three digester gas compressors located in the Sludge Control Building: two smaller Ingersoll-Rand single-action gas compressors (GC1 and GC3) installed in 1964, and one Norwalk gas compressor (GC4) installed in 1984. GC1 and GC3 are nearly 50 years old and are increasingly unreliable and difficult to maintain. GC4 is also nearing the end of its useful life due to continuous use.

The gas compressors are a critical element of the Wastewater Facility's power system. The engine generators rely on blended gas to produce power and air for operating the various treatment processes. The compressors receive low-pressure digester gas and boost the pressure to the required operating pressures for use by the engines. Without reliable compressors, the engines would revert to operating on only natural gas with valuable digester gas being flared.

This project will design and construct a new 5,000 square foot building to house two new gas compressors. The new facility will be located immediately north of the existing Sludge Control Building. The project also includes two digester gas pre-coolers, two cooling towers, associated gas piping, and associated building and equipment utility tie-ins.

Bids were opened on April 3, 2014 with all three pre-qualified bidders submitting a proposal. The lowest bid was submitted by Anderson Pacific Engineering and Construction, Inc. with a total bid amount of $11,316,000. This project is scheduled for TPAC and City Council consideration on May 15 and May 20, respectively. Construction is estimated to start June 2014 and anticipated to be completed March 2016. Project Budget: $15,000,000.

Project Location:

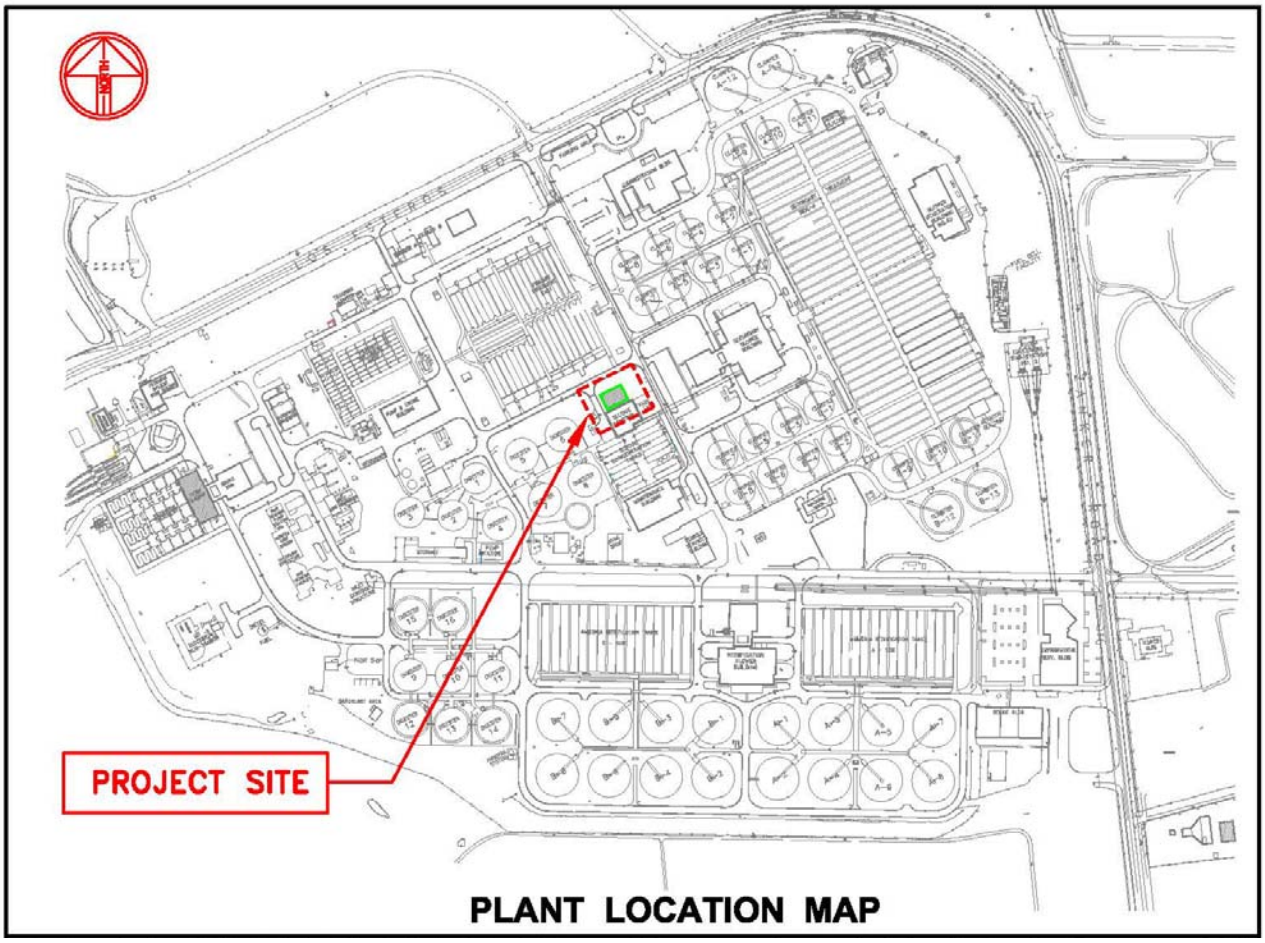


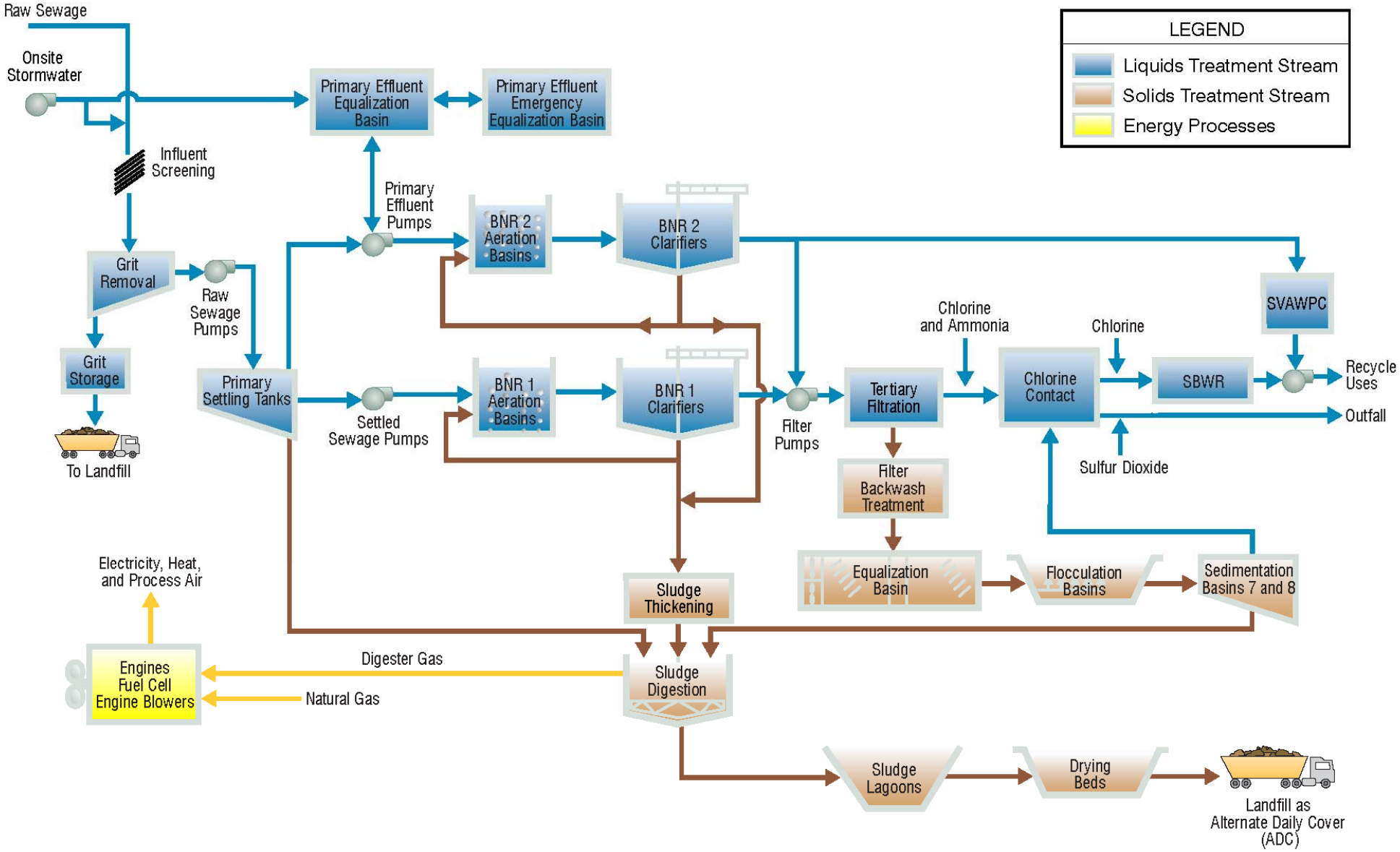
Figure 2: Digester Gas Storage Location Plan

Figure 3: Existing Gas Compressor, GC4

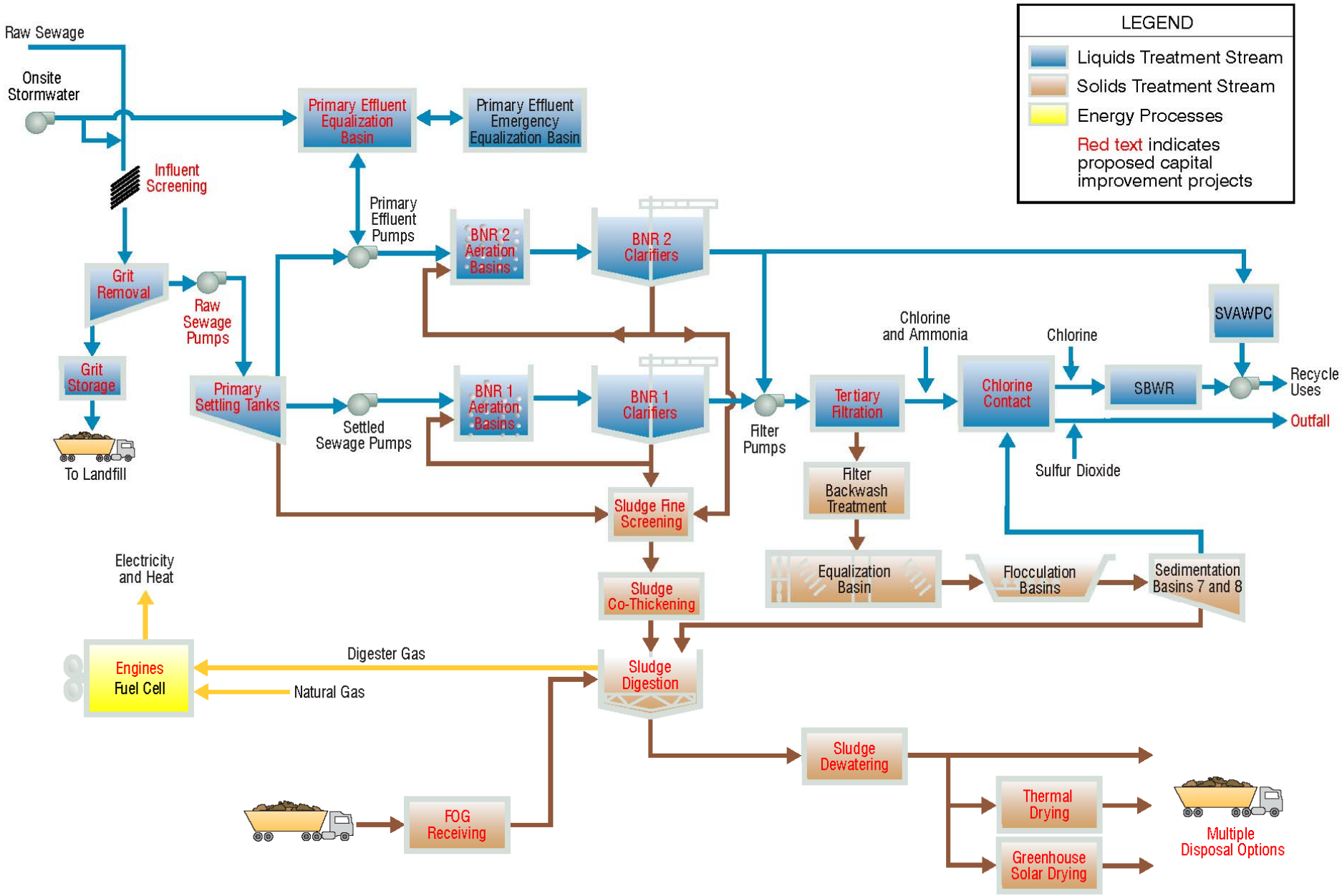
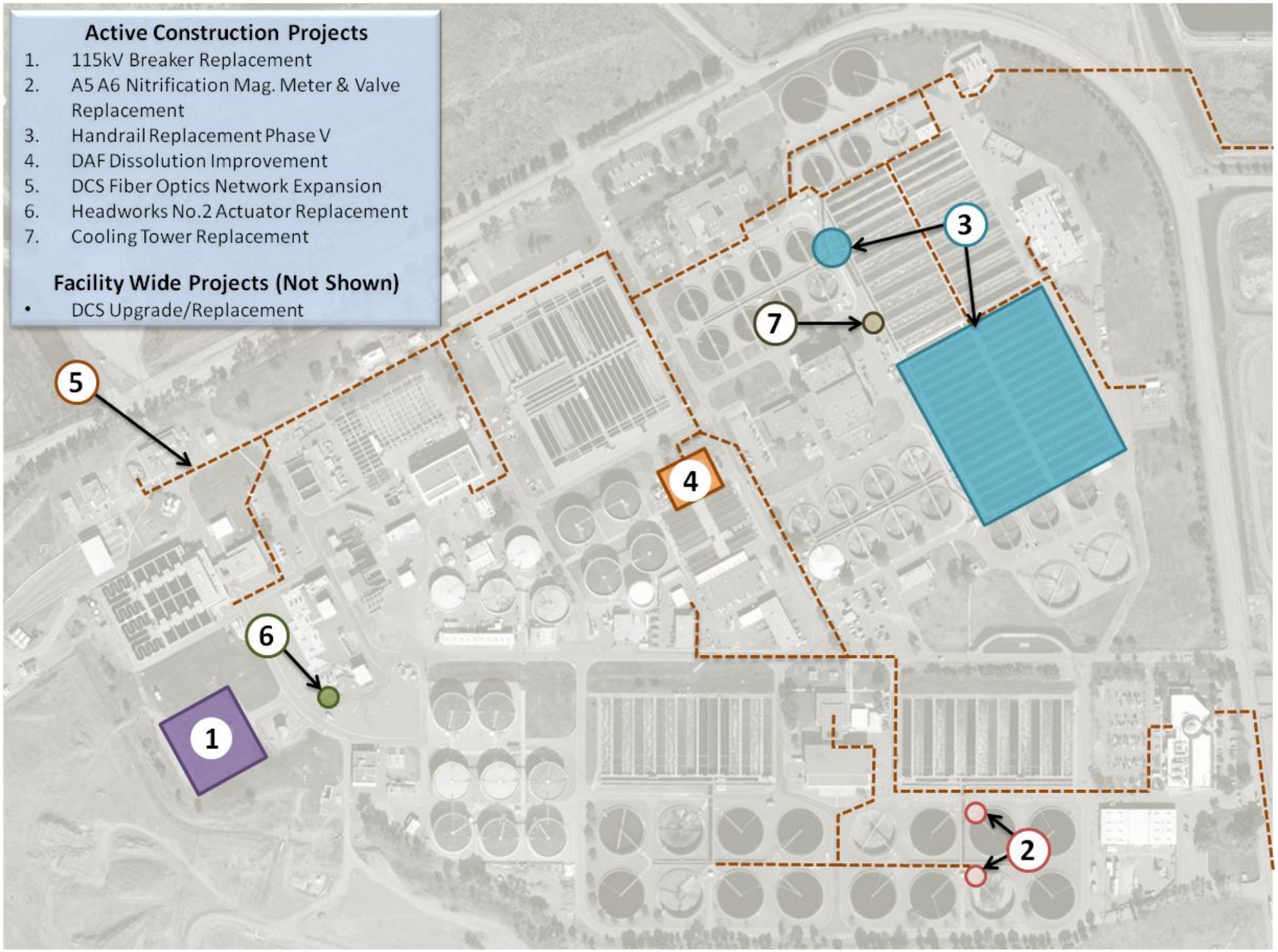
Figure 4: External View of Sludge Control Building

Page intentionally left blank

Regional Wastewater Facility Treatment – Current Treatment Process Flow Diagram



Regional Wastewater Facility Treatment – Proposed Treatment Process Flow Diagram



Active Construction Projects – Aerial Plan