City of Simi Valley
Sewer System Reliability Assessment and Financial Plan Update

PROJECT REPORT

FINAL | July 2019

carollo

CITY OF SIMI VALLEY

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EXECUTIVE SUMMARY

ES.1 Introduction

The City of Simi Valley (City)'s sewer system is managed by the Public Works Department Sanitation Services Division (Sanitation) and consists of two major components:

- Water Quality Control Plant (WQCP): a wastewater treatment facility with a design flow of 12.5 million gallons per day (mgd) and a peak day flow of 15.5 mgd. The WQCP is a conventional activated sludge plant that uses the Modified Ludzack-Ettinger (MLE) process and tertiary filtration to produce effluent that is discharged to the Arroyo Simi or used for reclaimed water.
- Collection system: a system of gravity sewer mains, manholes, pressurized force mains, and lift stations serving more than 125,000 residents in a 47 square mile service area.

This Sewer System Reliability Assessment and Financial Plan Update Project (Project) builds on past work and incorporates new data to update the results and recommendations into a new 20-year Capital Improvement Plan (CIP) for the entire sewer system.

For this project, Carollo Engineers, Inc., (Carollo) completed the following tasks:

- Assessed the condition of the assets within the WQCP, the collection system, and Sanitation's overall organization and supervisory control and data acquisition (SCADA) system.
- Determined future recommendations that would supplement current and ongoing improvement efforts.
- Analyzed the City's finances to draw conclusions about the forecasted total surplus or deficiency to inform how this CIP will be funded from 2019 to 2039.

ES.2 Assessment of the Water Quality Control Plant

Constructed in 1972, the WQCP has been expanded and upgraded significantly since its initial design. Today, the City is pursuing upgrades through an ESCO Project, a project completed by an energy services company (ESCO) to improve a facility's energy efficiency. Working with its ESCO contractor, Schneider Electric, the City will implement 11 improvement projects in various areas of the plant over the next 2 to 3 years.

Carollo performed a multifaceted assessment of the WQCP to determine 21 improvement projects for the CIP, each of which is detailed in Table 3.1 of Section 3.2, WQCP Capital Improvement Plan Recommendations. The projects include safety improvements, equipment replacements, process rehabilitations, and long-term process modifications to meet future regulations.

Carollo compiled information about the plant to create facility description sheets for each major plant process area. The sheets include a description of the process and its history, the related input and output processes, a summary of equipment and design capacities, and figures or

photos. The sheets also contain information about the facility's current state, as well as pending changes planned as part of the ESCO Project, where applicable.

Visual Condition Assessment and Thermal Imaging

Carollo and plant staff conducted a 1-day visual condition assessment of aboveground WQCP assets. The plant was found to be in fair condition and its largest, most-pressing problems were already being addressed by the ESCO Project.

Allied Reliability Group, in coordination with the City's ESCO Project partner Taft Electric Company, identified and tested hundreds of the WQCP's MCC and switchgear buckets, breakers, and components of 480-volt equipment. Most of the equipment was found to be in good condition. However, seven priority repair items were noted, ranging in priority from critical to minor according to the tests' temperature readings. None of these items require full replacements, only repairs that can be completed by City staff or contracted out.

Examination of Potential Future Regulations

To prepare the WQCP to meet compliance requirements in the future, Carollo performed a cursory review of pending or potential California regulations that may affect the City's sewer system over the next 20 years.

In particular, Carollo considered new state-wide impairment thresholds for total nitrogen (TN) and total phosphorus (TP) that may affect the WQCP's operations. Depending on how much discharge limits are lowered, the plant's existing biological nutrient removal (BNR) process may need to be upgraded to enhanced nutrient removal (ENR) to reduce TN levels. With that being said, this requirement is not anticipated to take effect until 2035, near the end of the CIP planning period.

ES.3 Assessment of the Collection System

The collection system collects and conveys wastewater from the City's residences and businesses to the WQCP for treatment. Having been expanded since its construction in the early 1960s, the collection system currently consists of the following assets:

- 380 total miles of gravity mains and trunk sewer pipes
- 7,345 manholes
- 3 active lift stations: Arroyo Simi, Lost Canyons, and Wood Ranch
- 0.25 miles of pressurized force mains

Carollo assessed the collection system to determine 20 improvement projects for the 20-year CIP, each of which is detailed in Table 4.1 of Section 4.2, Collection System Capital Improvement Plan Recommendations.

Condition Evaluation

Carollo imported closed-circuit television (CCTV) inspection data and other pipe information from the City's Geographic Information System (GIS) into a modeling software to analyze the condition and remaining life of the pipelines and to identify repair and rehabilitation requirements. Of the 140 miles of sewer pipe with inspection data, 60 miles had no significant defect, 31 miles had minor defects, and 29 miles had a moderate to severe defects.

Each pipe segment was checked for defects using the CCTV data. A total of 125 different defect codes were flagged by the model and run through a decision logic framework to determine

whether additional inspection, repair, or rehabilitation was needed. Ultimately, Carollo identified 15 pipeline improvement projects grouped by pipe location, size, and activity.

Hydraulic Evaluation

To understand the collection system's hydraulic issues, Carollo reviewed two analyses: the 2010 Sewer System Evaluation and Capacity Assurance Plan prepared by Brown and Caldwell; and the 2016 MS Excel capacity model prepared by the City.

Given these results, the collection system does not have any capacity issues. The few pipes that require attention were included in 15 improvement projects identified from the condition evaluation.

ES.4 Assessment of the Organization

In addition to the City's WQCP and collection system, Carollo assessed the various aspects of Sanitation's organization, information technology (IT), and SCADA system to determine seven improvement projects for the CIP, each of which is detailed in Table 5.1 of Section 5.1, Organizational and SCADA Capital Improvement Plan Recommendations.

Organizational Assessment

To develop improvement projects for Sanitation's overall organization, Carollo reviewed two key documents prepared by LA Consulting: the 2013 Sanitation Operations Efficiency Analysis and the subsequent Implementation Plan prepared in 2014. More specifically, Carollo considered the organizational changes that were made between the two reports and the effects those changes had. Findings were then shared and discussed with City staff in an organizational assessment workshop.

This review determined that, while many of the recommendations offered in the two past documents have been implemented, recommendations to invest more in IT, consulting services, and additional staff resources were not. To substantially and measurably improve Sanitation's organizational efficiency, the City is recommended to conduct the following four CIP projects:

- Performance Measurement Program
- CMMS Improvement Program
- Inventory Management Program
- Project Management System

SCADA System Assessment

Carollo reviewed the SCADA system's existing architecture and ongoing improvements to understand how the SCADA system currently serves the sewer system and will serve it in the future. Carollo reviewed and updated network architecture maps, conducted workshops with City staff, and conducted a limited inspection of the SCADA equipment and software during a site visit to the WQCP.

The assessment resulted in several key findings about the current state of the Sanitation's SCADA system, including its project planning, design, and implementation process; network architecture; fiber optic infrastructure; servers; and human-machine interface (HMI) software. The following three projects were included in the recommended 20-year CIP:

- Rockwell PlantPAX Migration Project
- Lift Station SCADA Integration Project

- Alarm Management System

ES.5 Capital Improvement Plan

The improvement projects identified in the assessment of the City's WQCP, collection system, and organization and SCADA system were combined into a recommended CIP, then prioritized through a risk-based approach. Each project includes an estimated cost, duration, and start year.

The table below summarizes the number of projects and total cost estimates for the 20-year CIP by project category.

Table ES.1 20-Year Capital Improvement Plan Summary

Project Category	Number of Projects	20-Year Cost Estimate
New WQCP Projects	21	$41.3 M
Existing WQCP CIP	4	$3.5 M
New Collection System Projects	20	$116.3 M
Existing Collection System CIP	4	$4.1 M
SCADA Improvement Projects	3	$1.8 M
Organizational Improvement Projects	4	$1.4 M
Total 20-Year CIP	56	$168.3 M

With more than 50 improvement projects in the 20-year CIP, a risk-based approach was used to determine which projects will have the greatest effect on the sewer system's reliability and should be prioritized and scheduled first.

Each project was assigned a probability of failure (PoF) score, according to the estimated remaining life of the assets in that project or the timing until the project is required. Next, each project was assigned a consequence of failure (CoF) score based on a triple-bottom-line approach, an industry-standard methodology that quantifies the environmental, social, and financial effects that a project may have. Each project's CoF was then multiplied by its PoF score to determine its risk score. Finally, the projects were ranked according to their risk scores, and the CIP schedules were shifted to prioritize the higher-risk projects.

Table 6.5 in Section 6.4, Prioritized Project List, lists the 56 capital improvement projects for the next 20 years, prioritized by their risk score and project dependencies. The figure below shows the recommended 20-year CIP budget by project category.

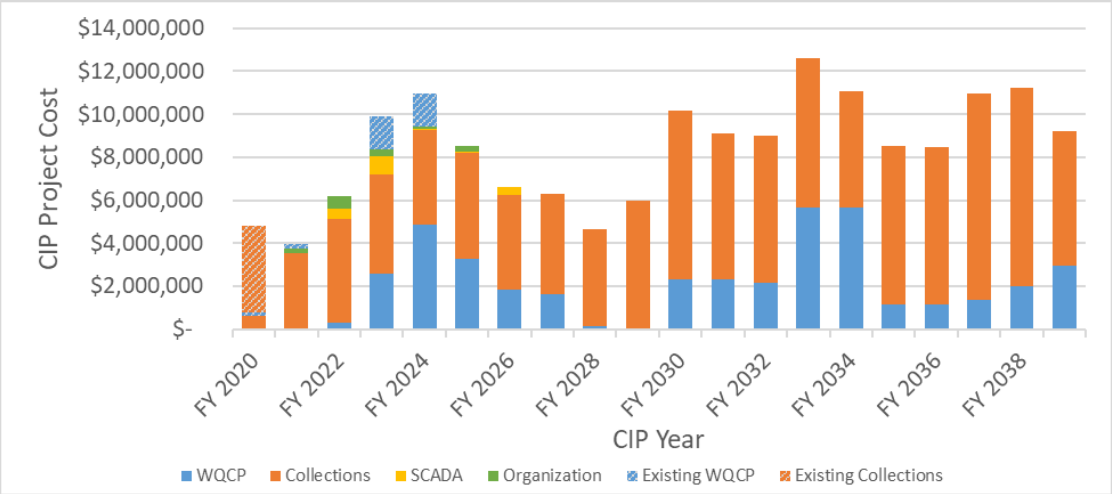


Figure ES.1 20-Year Capital Improvement Plan Budget Estimates

ES.6 Financial Sufficiency

In collaboration with the City, Carollo evaluated the financial sufficiency for the recommended 20-year CIP. The financial forecast works to define the necessary annual funding contributions that would substantiate the availability of funds for the CIP's rehabilitation and replacement projects. To this end, a cash-flow and capital funding analysis was developed to outline potential funding strategies.

The financial sufficiency evaluation determined whether the Sanitation Fund's existing user service rates would be sufficient to cover the recommended CIP and, if not, the general level of rate increases that would be required to do so.

Findings and Results

The following figure shows a summarized financial forecast for the Sanitation Fund, assuming that no further increases (beyond the adopted FY 2019/20 increase) are implemented. As shown, the Sanitation Fund will not be able to fund future capital investments without additional rate increases. If rates were held steady and the CIP was implemented as scheduled, all working capital would be depleted by FY 2022/23.

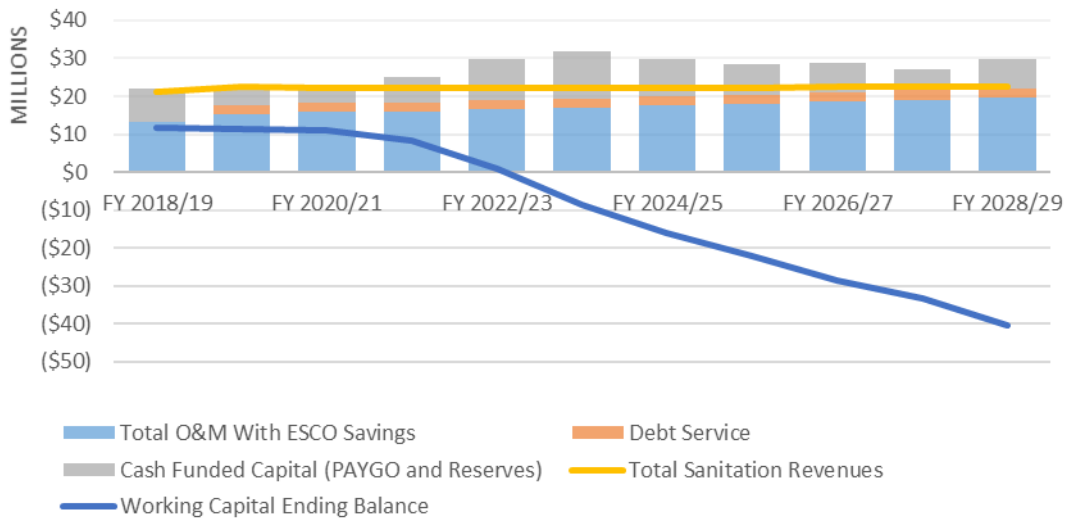


Figure ES.2 Financial Projection without Rate Increases

Carollo developed four funding strategy scenarios to evaluate the 20-year sewer system CIP's impact on the Sanitation Fund. Each scenario assumes that a different amount of debt is issued to fund CIP projects.

- Scenario 1 - No Additional Debt: assumes that all 20-year sewer system CIP projects are Pay-As-You-Go (PAYGO) funded using revenues from rates or fees and available reserves.
- Scenario 2 - Minimal Additional Debt: assumes that rate increases are front loaded in the first 5 years of the analysis, then additional debt issuances are used to smooth out peaks in CIP spending.
- Scenario 3 - Moderate Additional Debt: assumes that additional debt issuances are used to smooth out peaks in CIP spending and to moderate rate increases in the first 5 years of the analysis.
- Scenario 4 - Maximized Additional Debt: maximizes the use of debt in order to mitigate rate increases in the short term.

The figure below compares the total capital funding sources for FY 2019/20 through FY 2038/39 for each scenario.

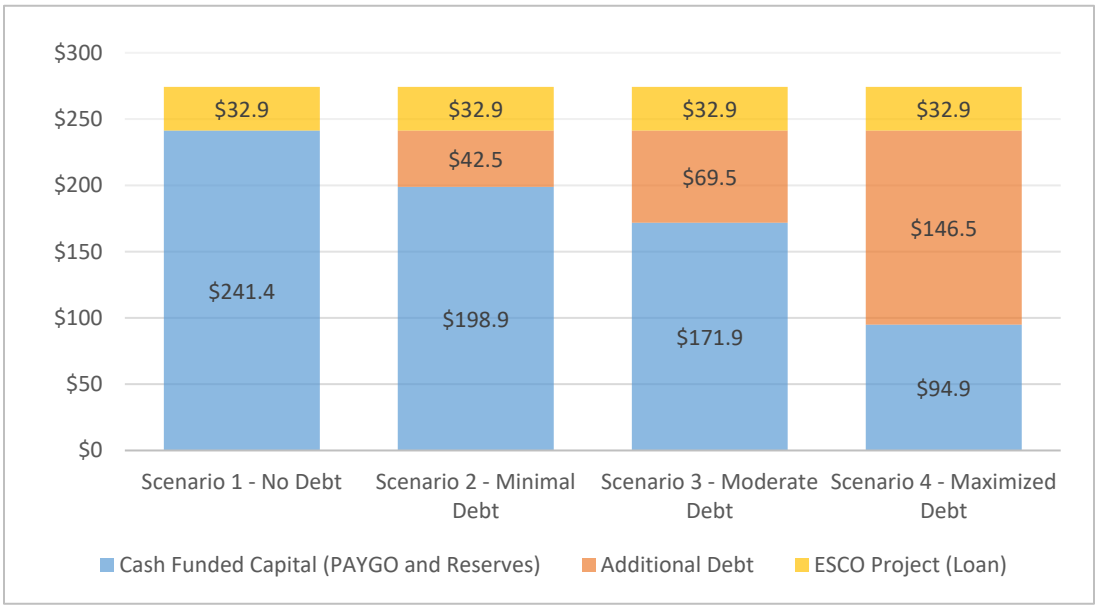


Figure ES.3 Capital Funding Comparison

The following figure compares the estimated yearly increases in single-family residential bills for each scenario from FY 2019/20 to FY 2038/39. The long-term rate outlook of each scenario is generally the same with estimated-single family charges ranging from about $65 to $73 per month by FY 2038/39. However, Scenarios 1 and 2, and to a lesser extent than Scenario 3, would require higher annual increases in the near-term.

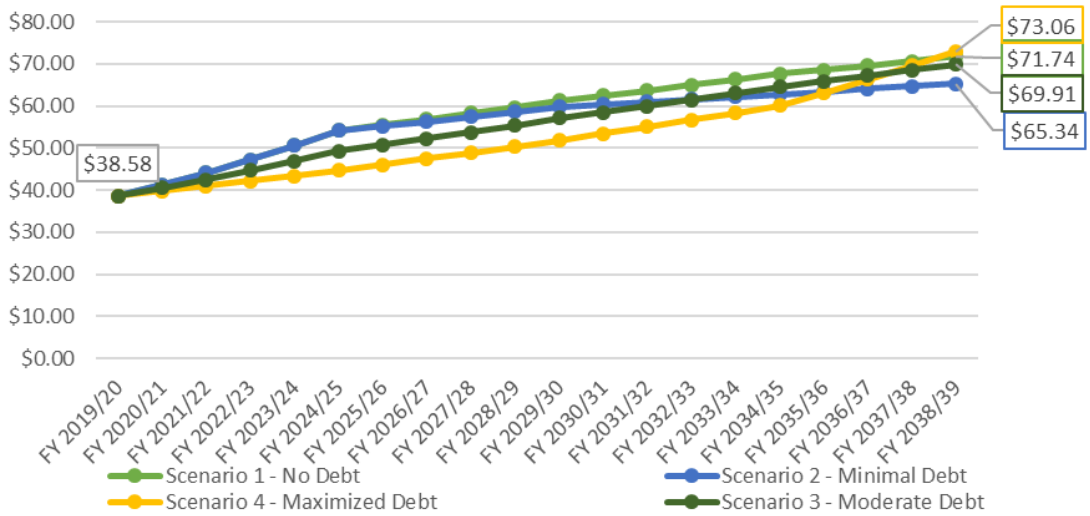


Figure ES.4 Estimated Single Family Residential Bill Comparison

All four scenarios can provide sufficient funding for this CIP. However, a measured approach such as that shown in Scenario 2 or Scenario 3 would likely provide the most sustainable option for the City going forward. Moderated use of debt can allow for some smoothing of rate increases by spreading peak CIP costs over time, but it avoids the pitfalls of overreliance on debt (including debt coverage requirements, high interest costs, and higher long-term rate increases) as in Scenario 4.

Chapter 1

INTRODUCTION

This chapter provides an overview of the Sewer System Reliability Assessment and Financial Plan Update Project.

1.1 Project Purpose

This project sets the foundation for the development of the City of Simi Valley (City)'s sanitary sewer system strategy, as managed by the Public Works Department Sanitation Division (Sanitation). The project intent is to determine the future implementation efforts, capital improvement projects, and budget priorities for the City's collection system and Water Quality Control Plant (WQCP) to ensure a reliable sewer system.

To this end, the project approach focused on determining the system's condition and capacity, incorporating current improvement efforts, and understanding future needs to develop a tactical, prudent, and effective 20-year capital improvement plan (CIP) that encompasses the needs of the WQCP and collection system.

1.2 Background and History

The City's last Sewer Master Plan update was completed by John S. Murk Engineers in June 1985. Over the last 34 years, the City has worked with various consultants to prepare plans and reports in lieu of a formal Master Plan update. These reports include the following:

- 2008 Sewer Collection System Asset Evaluation and Rehabilitation Plan, prepared by Kennedy/Jenks.
- 2009 Sewer System Management Plan (SSMP), prepared by Brown and Caldwell.
- 2010 Sewer System Evaluation and Capacity Assurance Plan, prepared by Brown and Caldwell.
- 2011 Sanitation Asset Reliability Assessment and Financial Plan, prepared by Carollo Engineers, Inc. (Carollo).
- 2013 Sanitation Operations Efficiency Analysis, prepared by LA Consulting.
- 2015 Sanitation Rate Study Final Report, prepared by Raftelis.
- 2015 Supervisory control and data acquisition (SCADA) System Replacement Scope, prepared by EMA Engineering (EMA).
- 2016 MS Excel capacity model of 8 to 14-inch sewers, prepared by City staff.

The City has implemented a number of recommendations from these reports especially over the last 10 years. This current project builds upon the work completed in the previous studies and incorporates new data to update the results and recommendations into a CIP for the entire sanitary sewer system.

1.3 Scope of Work

The general scope of this project is to perform an assessment of various aspects of the City's sanitary sewer system to produce a prioritized CIP for the next 20 years. The project scope consisted of the following tasks and related activities:

- **Project Visioning**: Set the vision and objectives of the project through receiving input from City staff on overarching goals of and desires for the sanitary sewer system.
- **Water Quality Control Plant Assessment**: Develop an updated process flow schematic of the WQCP and develop descriptions of the existing plant processes. Conduct a visual condition assessment of the WQCP to identify improvement needs not being covered by the ongoing Energy Services Company (ESCO) project. This assessment did not include process modeling or water quality analyses.
- **Collection System Assessment**: Evaluate the condition and hydraulic capacity of the collection system pipelines. Incorporate inspection results and City data to determine the condition of the pipelines for needed rehabilitation or replacement. Use the previously developed hydraulic data to incorporate hydraulic deficiencies into the improvement recommendations. This assessment did not include any new hydraulic modeling or flow monitoring.
- **Organizational Assessment**: Evaluate other aspects of the City's organization that may require improvements. This specifically focused on reviewing EMA's SCADA evaluation and LA Consulting's Sanitation Operations Efficiency Analysis to determine recommendations from those studies that still need to be implemented. This assessment did not repeat the previous studies but reviewed their recommendations.
- **Capital Plan Development and Prioritization**: Combine the recommendations from the three assessments (WQCP, collection system, and organizational) into a single CIP and budget for the next 20 years.
- **Financial Sufficiency Assessment**: Perform an assessment of the City's current finances to sufficiently fund the 20-year CIP. The simplified assessment focuses on conclusions about the total surplus or deficiency that is forecasted over the next 20 years. This assessment is not a rate study or comprehensive financial review.
- **Project Report**: Create a report to summarize all of the evaluations and findings of the project into a concise Sewer System Reliability Assessment and Financial Plan report for the City to use as a guide to implementing the capital program.

In addition to the above tasks, Carollo also performed project management tasks, such as project coordination, progress reporting, project meetings, and workshops.

Chapter 2

SEWER SYSTEM FACILITIES OVERVIEW

This Chapter provides an overview of the City of Simi Valley (City)'s sanitary sewer system and related facilities. The sewer system is separated and described in two parts: the Water Quality Control Plant (WQCP) and collection system.

2.1 Water Quality Control Plant

The City's WQCP was constructed in 1972 to serve a population of 120,000 residents and an average dry weather flow of 7.8 million gallons per day (mgd) with a maximum capacity of 12.5 mgd. In its initial design, the plant included aerated grit removal, primary sedimentation tanks, aeration tanks, secondary sedimentation tanks, a chlorine contact basin, sludge thickening, and a digester. The plant and facilities were expanded in 1978 with the installation of tertiary filters, an additional secondary sedimentation tank, an additional sludge thickener, and an additional digester.

Additional upgrades and installations were made throughout the 1980s and 1990s, including a second chlorine contact tank, Digesters 3 and 4, and new primary clarifiers. In 2004, the secondary treatment process was upgraded to nitrification and denitrification with the construction of the four west process basins. In 2007, a secondary process was upgraded to Modified Ludzack-Ettinger (MLE). The three east process basins were converted to parallel processes, totaling seven biological nutrient removal basins. In its current configuration, the plant has a design flow of 12.5 mgd and a peak day flow of 15.5 mgd.

After 2007, only minor replacements have been made to plant equipment, although upgrades to the digesters, dewatering system, and secondary clarifiers have all been evaluated. Table 2.1 shows a summary of the history of major construction and upgrade projects at the plant.

Table 2.1 Timeline of Major WQCP Projects

Year	Project Title
1972	Plant Construction
1977	Plant Expansion
1982	Digester 1 Improvements
1983	RAS/WAS Pump Station Upgrades
1983	Digester 2 Modifications
1985 - 1997	Phase 1 Expansion (8 separate Construction Contracts)
1999	Backwash Pond/FEB Upgrade
2001	Influent Bar Screen Replacement
2002	Nitrification/Denitrification Project
2007	Parallel MLE Modifications
2019	ESCO Project Upgrades

Note:
(1) This timeline is based on information provided by the City and a review of available record drawings.

2.1.1 ESCO Project

The City is currently pursuing upgrades to the WQCP in what is referred to as the ESCO Project or a project completed by an energy services company (ESCO) that helps identify and improve energy efficiency for a facility. The realized cost savings can be used to finance capital improvements through the ESCO.

For example, improving the operation of centrifugal blowers typically results in the highest energy costs for a wastewater treatment plant; however, by improving the energy efficiency, the plant saves several thousand dollars per year, which can then be applied over the next 10 years to complete capital improvements needed in other parts of the plant. This type of project and funding agreement has been applied to several wastewater treatment facilities throughout California in recent years.

Schneider Electric is the ESCO contractor working with the City on the current project. A series of technical memoranda known as the Replacement Energy Conservation Measure (RECM), Optimization Energy Conservation Measure (OECM), and Generation Energy Conservation Measure (GECM) was developed as part of a separate project through a combined effort between the City, Schneider Electric, Carollo, and other Schneider Electric sub-consultants. These memos served as the basis of design for improvements included in the ESCO Project.

The ESCO Project is currently going through the approval process and will result in eleven improvement projects in various areas of the plant over the next 2 to 3 years. The following list of RECM and OECM projects are currently scoped in the ESCO Project. The areas of the plant affected by the project are shown in parentheses, if not clearly stated in the name.

- RECM 1 - Headworks Equipment Replacement
- RECM 3 - East and West BNR Blower Upgrades
- RECM 4 - BNR Mixer Replacement
- RECM 6 - Dewatering Equipment Replacement
- RECM 7 - Digester Mixers and Feed Sludge Pump Replacement (Primary Sludge Pump Station and Microscreen Sludge Pump Station)
- RECM 8 - Secondary Clarifier Nos. 1 through 4 and East/West RAS Pump Equipment Replacement
- RECM 9 - Tertiary Media Filtration System
- OECM 1 - Ammonia Based Aeration Control (ABAC)
- OECM 2 - Channel Mixing Optimization (Primary Clarifiers, BNR, and Secondary Clarifiers)
- OECM 3 - Aerated Grit Chamber Optimization
- GECM 1 - Digester Gas Conditioning for Compressed Natural Gas (CNG) Fueling

These ESCO upgrades and improvements cover the majority of the plant's process areas. The evaluation of the WQCP assumes that these projects will be completed as described in the latest ESCO Project's scope, which was provided to Carollo for review.

2.1.2 Facility Descriptions

The existing plant facilities are summarized in this section. Figure 2.1 and Figure 2.2 show the layout of the plan and a schematic of the major plant processes, respectively. Following the figures are facility description sheets for each of the major plant processes:

- Headworks
- Grit removal
- Primary sedimentation
- Flow equalization basin (FEB)
- Biological nutrient removal (BNR)
- Secondary clarification
- Tertiary filters
- Disinfection
- Dissolved air flotation thickeners (DAFT)
- Solids digestion
- Sludge-holding tanks and pump stations
- Dewatering
- Drying beds (no facility description sheet)

The description sheets include a description of the process and its history, the related input and output processes, a summary of equipment and design capacities, and figures or photos. The information shown was determined through the plant's construction drawings, as-builts, and reports provided by the City, as well as input from plant staff. The description sheets also contain information about the facility's current state, as well as pending changes planned as part of the ESCO Project, where applicable.

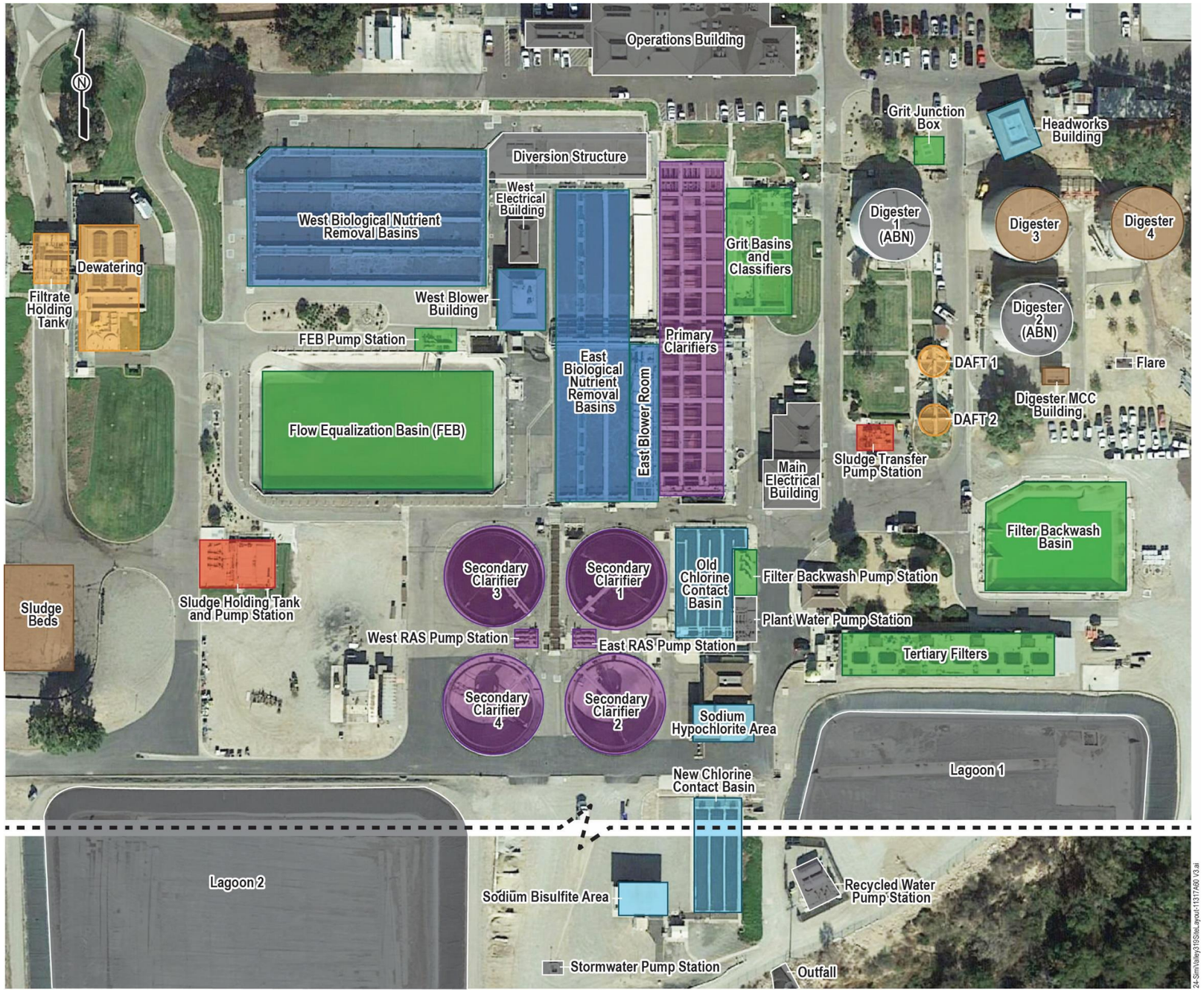


Figure 2.1 Plant Layout

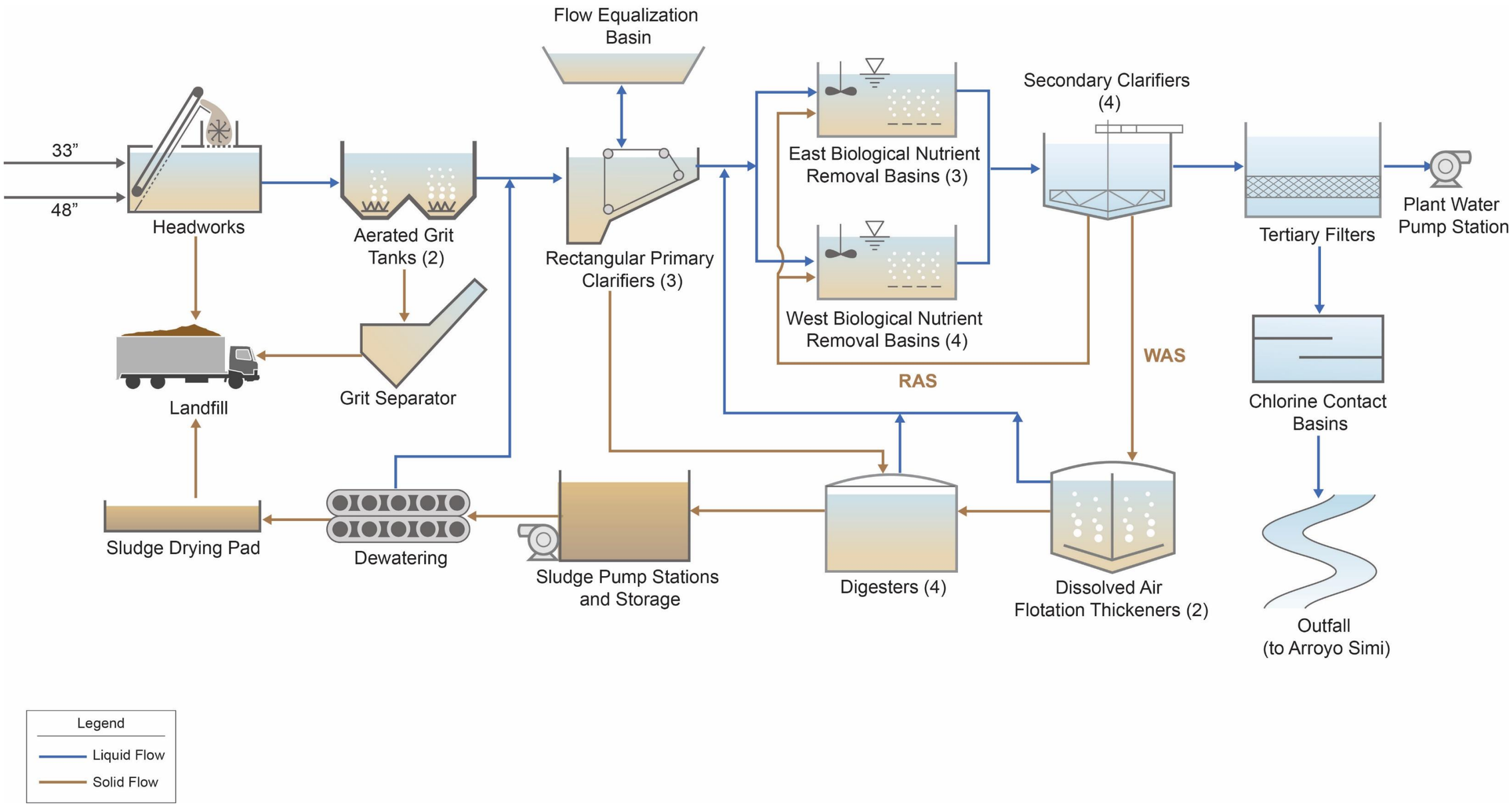


Figure 2.2 Plant Process Schematic

HEADWORKS

Above Photo: Bar Screens

Above Photo: Washer/Compactor

The headworks removes larger debris from plant influent using bar screens. The bar screens are the articulated rake-type with rake attachments that sweep up the screen and remove debris that is then discharged to dedicated washers and compactors. The washer and compactors utilize an auger with washwater to remove organics and reduce water and the overall volume of screenings. The headworks also includes a bypass and overflow channel with a wider screen.

The headworks building is located in the northeast area of the plant.

Related Processes

Process Inputs

- Plant influent (liquid)

Process Outputs

- Grit removal system (liquid)

Equipment Summary

Intakes

- Number of units: 2
- Size: 33 and 48-inch diameter

Bar Screens

- Number of units: 2
- Type: articulated single-rake
- Screen spacing: 3/8 or 1/4-inch
- Channel dimensions: 4-ft x 9-ft

Washer/Compactor

- Number of units: 2
- Motor size: 5 hp

**Equipment information shown for pending ESCO project.*

Design Capacity*

Bar Screens

- Capacity per unit: 6,250 gpm (9 mgd)
- Total capacity: 12,500 gpm (18 mgd)

Washer/Compactor

- Capacity per unit: 70 ft^3/hr (0.01 mgd)
- Total capacity: 140 ft^3/hr (0.02 mgd)

**Design criteria shown for pending ESCO project.*

History

1972: Original plant construction: two bar screens

1985: Plant expansion: significant upgrades made to the headworks facility

2001: Bar screens replaced

2019: Equipment replacement (ESCO RECM-1)

SITE LAYOUT

Above Photo: Headworks aerial image

Above Photo: Headworks Building

GRIT REMOVAL

Above Photo: Grit Basin 1

Above Photo: Grit Classifiers and Hoppers

The plant grit removal system uses aerated grit chambers, which allow grit to settle out of the water by diffusing air from the aeration process blowers into the bottom of the tank and creating a spiral-flow trajectory. The heavier particles then settle to the bottom of the tank and are removed.

The grit removal facility is located east of the primary clarifiers.

Related Processes

Process Inputs

- Headworks (liquid)

Process Outputs

- Primary clarifiers (liquid)

Equipment Summary

Grit Chambers

- Number of chambers: 2
- Length: 40 ft
- Width: 25 ft
- Water depth: 14 ft

Grit Pumps

- Number of units: 4 (2 per tank)
- Motor size: 7.5 hp

Grit Classifiers

- Number of units: 3 (2+1)
- Type: spiral shaft
- Size: 12-inch
- Motor size: 0.75 hp

Design Capacity

Grit Chambers

- Capacity per unit: 11.2 mgd (7,780 gpm)
- Total capacity: 22.4 mgd (15,560 gpm)

Grit Pumps

- Capacity per unit: 125 gpm (0.18mgd)
- Total capacity: 500 gpm (0.72 mgd)

Grit Classifiers

- Capacity per unit: 150 gpm (0.22 mgd)
- Total capacity: 300 gpm (7.2 mgd)
- Firm capacity: 150 gpm (0.22 mgd)

History

1972: Original plant construction: two aerated grit chambers, grit separator, and screw conveyor

1988: Expanded grit chamber. Added grit classifier

2001: Installed Grit Classifiers 1, 2, and 3

2019: Equipment replacement (ESCO OECM-3)

SITE LAYOUT

PRIMARY SEDIMENTATION

Above Photo: Primary Clarifier No. 3

Above Photo: Primary Sludge Pump

Primary clarifiers allow for the settling of solids prior to biological secondary treatment. Influent flows through long, rectangular tanks that are sloped to collect settled solids, which are then pumped to the digesters, while the liquid flows through the system to the biological nutrient removal (BNR) basins.

The primary clarifiers are located in the central area of the plant.

Related Processes

Process Inputs

- Primary clarifiers (liquid)
- Flow equalization basin (liquid)
- Dewatering (liquid)

Process Outputs

- BNR basins (liquid)
- Flow equalization basin (liquid)
- Digesters (solids)

Equipment Summary

Clarifier Tanks

- Number of units: 3
- Basin shape: rectangular
- Mechanism type: flights and chains
- Drive size: 5 hp
- Basin length: 115 ft
- Basin width: 20 ft
- Average water depth: 8.6 ft

Primary Sludge Pumps

- Number of units: 2
- Type: Progressive cavity
- Total dynamic head: 230 ft (100 psi)
- Motor size: 15 hp

Design Capacity

Clarifier Tanks

- Capacity per tank: 6,319 gpm (9.1 mgd average annual flow)
- Total capacity: 18,958 gpm (27.3 mgd average annual flow)

Primary Sludge Pumps

- Capacity per unit: 120 gpm (0.17 mgd)
- Total capacity: 240 gpm (0.35 mgd)

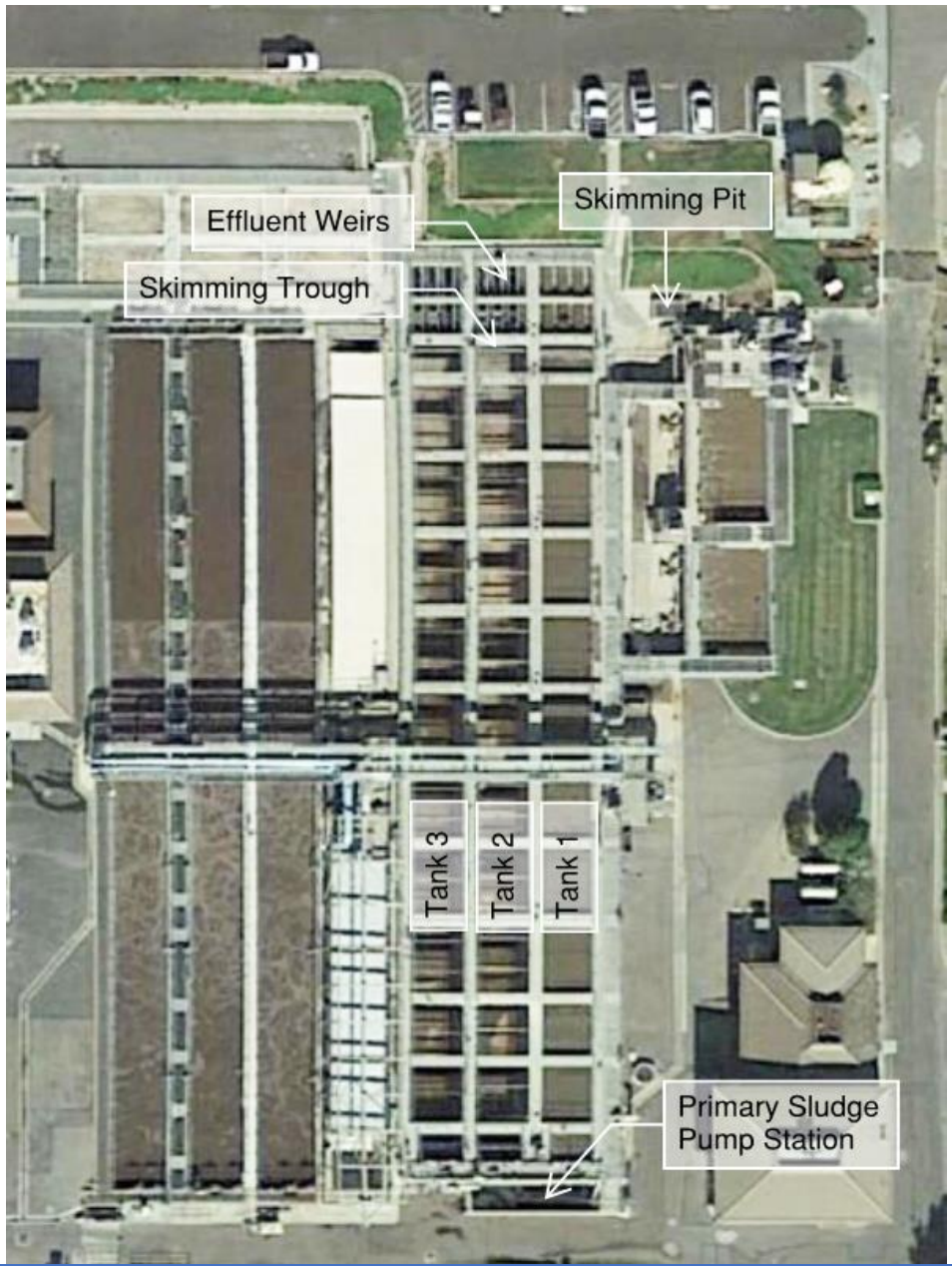
History

1972: Original construction: four primary clarifiers

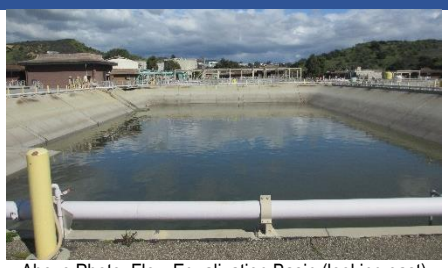
1985: Constructed new Clarifiers 1 and 2

1988: Removed original Clarifiers 3 and 4, constructed new Clarifier 3

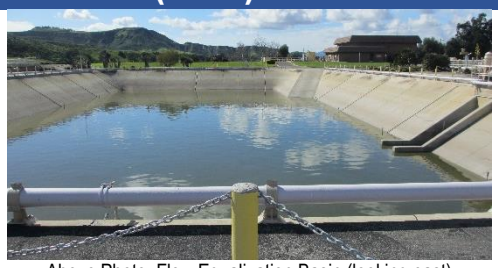
SITE LAYOUT


Effluent Weirs
Skimming Pit
Skimming Trough
Tank 3
Tank 2
Tank 1
Primary Sludge
Pump Station

FLOW EQUALIZATION BASIN (FEB)



Above Photo: Flow Equalization Basin (looking east)



Above Photo: Flow Equalization Basin (looking east)

The flow equalization basin allows for more consistent and steady flow from the primary clarification step to the biological nutrient removal and downstream processes. Flow is pumped into and out of the primary clarification area depending on the plant influent flow.

The flow equalization basin is located on the west side of the plant.

Related Processes

Process Inputs

- Primary effluent channel (liquid)

Process Outputs

- Primary effluent channel (liquid)

Equipment Summary

Basin

- Number of basins: 1
- Length: 200 ft
- Width: 100 ft

FEB Pump Station

- Number of pumps: 3
- Type: vertical turbine
- Power: 30 hp

FEB Underdrain Pumping System

- Number of pumps: 2
- Type: submersible
- Power: 5 hp
- Design head: 30 ft

Design Capacity

Basin

- Capacity: 2 mg

FEB Pumps

- Design flow per pump: 3,000 gpm (4.32 mgd)
- Total design flow: 9,000 gpm (12.96 mgd)

FEB Underdrain Pumps

- Capacity per unit: 200 gpm (0.29 mgd)
- Total capacity: 400 gpm (0.58 mgd)

History

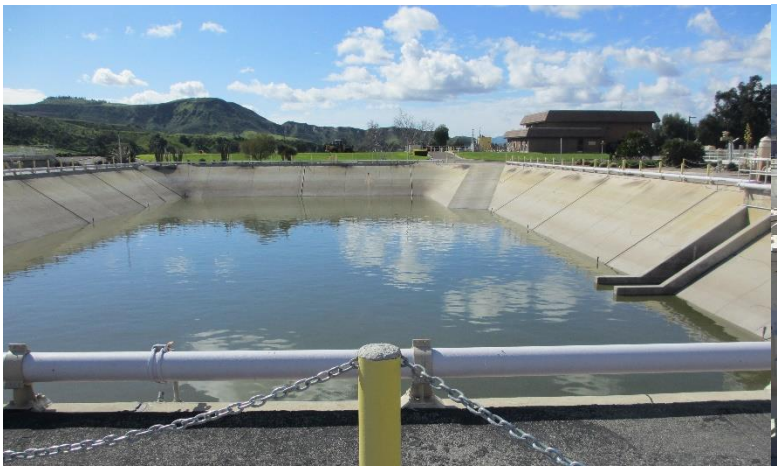
1985: Plant expansion: Constructed FEB Basin 1

1988: Constructed FEB Basin 2, added FEB Pump 3

2004: Removed FEB 1 (during West BNR construction)

SITE LAYOUT

FEB Pump Station
FEB Underdrain Pump Station
Flow Equalization Basin (FEB)



BIOLOGICAL NUTRIENT REMOVAL (BNR)

Above Photo: West BNR Basins

Above Photo: East BNR Basin 1

The dual biological nutrient removal (BNR) processes (also referred to as aeration basins) utilize biological processes to remove nutrients from the primary effluent. The seven BNR basins use the Modified Ludzack-Ettinger (MLE) configuration, which consists of three anoxic zones followed by one aeration zone. The configuration includes a mixed-liquor recycle from the aerobic zone to the first anoxic zone to supplement the nitrogen source provided by the return-activated sludge (RAS) for the bacteria.

The four west process basins are located in the northwest area of the plant, and the three east process basins are located in the central area.

Related Processes

Process Inputs

- Primary clarifiers (liquid)
- DAFT (liquid)
- Digesters (liquid)
- Secondary clarifiers, RAS (solids)

Process Outputs

- Secondary clarifiers (liquid)

Equipment Summary

Process Basins

- Number of basins: 7 (3 East + 4 West)
- Volume per basin (West): 0.66 mg
- Volume per basin (East): 0.56 mg
- Total basin volume: 4.32 mg
- Diffuser type: AEROSTRIP
- Baffle material: fiberglass

Mixers

- Number of units: 21 (3 per basin)
- Type: mechanical submersible
- Power: 4 hp

Mixed Liquor Recycle (MLR) Pumps

- Number of units: 7 (1 per basin)
- Power: 12 hp West
- Power 7.5 hp East

East Blower System

- Number of units: 5
- Air required: 2,600 scfm min/8,300 scfm max
- Discharge pressure: 6.9 psig min/7.7 psig max

West Blower System

- Number of units: 4 (2 single + 2 multi-stage)
- Air required: 3,200 scfm min/10,2000 scfm max
- Discharge pressure: 7.7 psig min/8.5 psig max

Design Capacity

Basins

- Total average annual flow: 10,500 gpm (12.5 mgd)
- Flow Split: 60/40 (approximate, manually controlled)
- East basin flow per basin: 2,650 gpm (3.8 mgd)
- East basins total design flow: 8,000 gpm (11.5 mgd)
- West basin flow per basin: 7,700 gpm (11.1 mgd)
- West basins total design flow: 30,800 gpm (44.4 mgd)

Mixed Liquor Recycle (MLR) Pumps

- Capacity per pump (West): 8,100 gpm (11.7 mgd)
- Capacity per pump (East): 3,675 gpm (5.3 mgd)
- Total MLR pump capacity: 43,425 gpm (62.7 mgd)

Blowers

- West basin single stage capacity: 5,000 scfm
- West basin multi stage capacity: 2,900 scfm
- East basin capacity: 2,933 scfm

BIOLOGICAL NUTRIENT REMOVAL (BNR)

History

1972: Original plant construction: three east basins

2004: Constructed four basins (West). Upgraded process to full nitrification and partial denitrification. Converted East aeration basins to polishing basins

2007: Converted East polishing basins to parallel BNR process basins to match MLE West basins. Added mixed-liquor return

2019: Ammonia-based aeration control (ESCO OECM-1)

2019: Blower replacement (ESCO RECM 3)

2019: Mixer replacement (ESCO RECM-4)

SITE LAYOUT

SECONDARY CLARIFICATION

Above Photo: Secondary Clarifier No. 2

Above Photo: West RAS Pump Station

Secondary clarifiers allow for the settling of solids and removal of scum from the previous biological treatment processes. The sludge collected in the secondary clarifiers is removed and pumped to the BNR basins by the RAS pumps and to the dissolved air flotation thickener (DAFT) by the waste activated sludge (WAS) pumps.

The secondary clarifiers are located on the east side of the plant.

Related Processes

Process Inputs

- BNR basins (liquid)

Process Outputs

- Tertiary filters (liquid)
- BNR basins, RAS (solids)
- DAFT, WAS (solids)

Equipment Summary

Clarifier Tanks

- Number of clarifiers: 4
- Basin diameter: 90-ft
- Mechanism type: riser pipe
- Mechanism drive HP: 1 hp
- Center column diameter: 30-inch
- Side water depth: 14.5-ft

RAS Pumps

- Number of stations: 2
- Pumps per station: 3 (2 + 1)
- Motor size: 20 hp

WAS Pumps

- Number of stations: 1
- Pumps per station: 2
- Motor size: 20 hp

Design Capacity

Clarifier Tanks

- Average annual flow: 12.5 mgd
- Maximum monthly flow: 14.6 mgd
- Max month overflow rate: 765 gpd/ft^2

RAS Pumping

- Design flow: 2,500 gpm per pump
- Firm capacity: 7.2 mgd

WAS Pumping

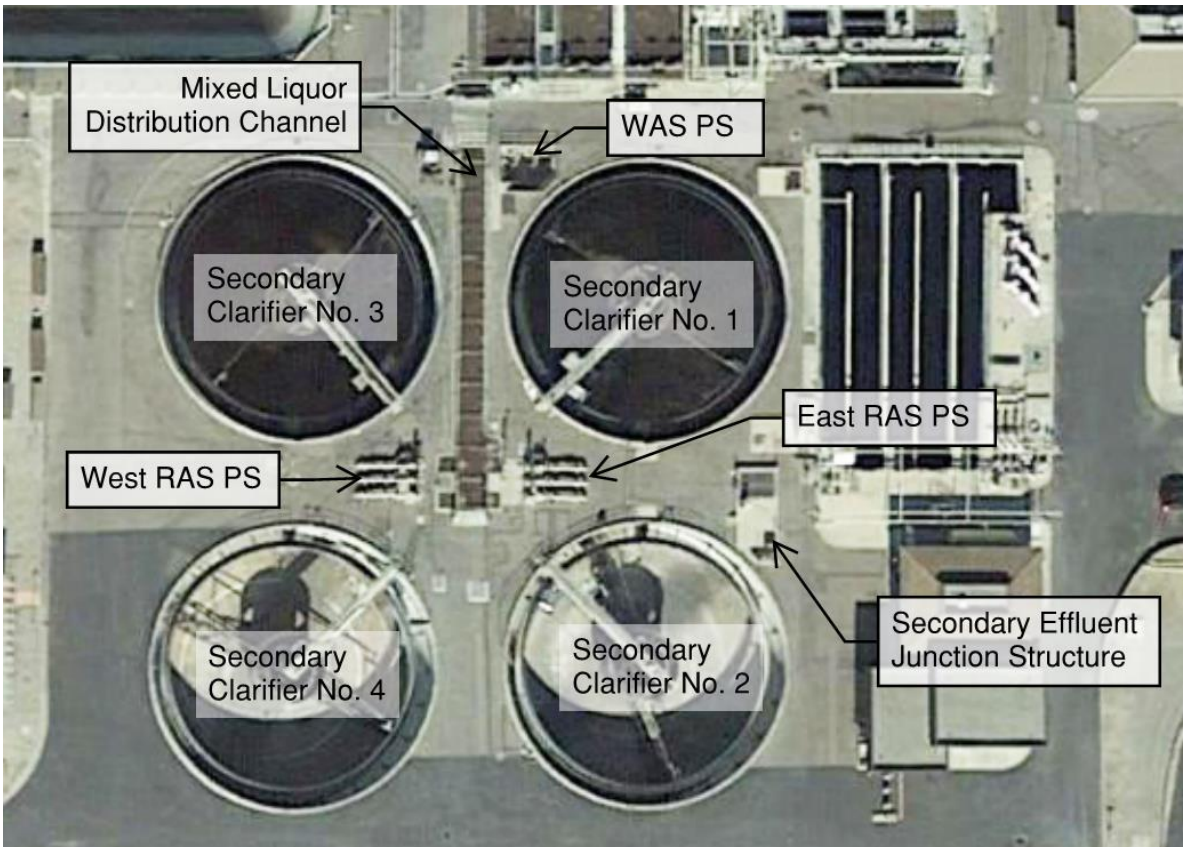
- Design flow: 300 gpm

SECONDARY CLARIFICATION

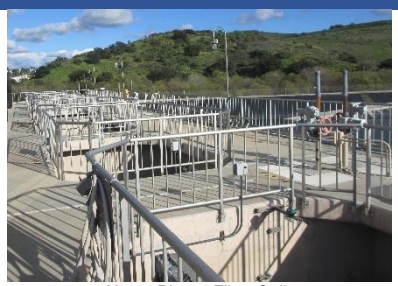
History

1972: Original plant construction: Clarifiers 1 and 2 and East RAS pump station
1978: Plant expansion: Constructed Clarifiers 3 and 4 and West RAS pump station
1984: Constructed Clarifier 4
2004: Refurbished RAS pumps
2019: Channel-mixing optimization (ESCO OECM-2)
2019: Equipment replacement (ESCO RECM-8)

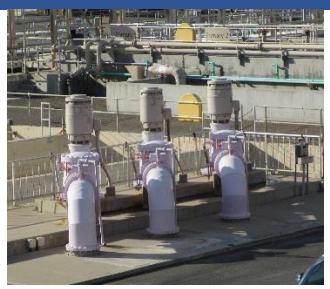
SITE LAYOUT



TERTIARY FILTERS



Above Photo: Filter Cells



Above Photo: Filter Backwash Pump Station

The tertiary filters provide additional removal of suspended solids after the secondary clarifiers. Secondary effluent is pumped to the top of the filters and flows down through layers of anthracite coal, sand media, and gravel that further removes particulate not removed by the secondary clarifiers. The filters are backwashed with combined air and water according to the time spent or headloss measured at each filter cell for the media to be cleaned. Backwash wastewater is discharged to an adjacent backwash waste basin.

The tertiary filtration facility is located in the southeast corner of the plant.

Related Processes

Process Inputs

- Secondary clarifiers (liquid)

Process Outputs

- Chlorine contact basins (liquid)
- Primary clarifiers (backwash)

Equipment Summary

Filters

- Number of filters: 8
- Length (each half): 19.5 ft
- Width (each half): 18 ft

Applied Water Pumps

- Number of pumps: 3
- Type: vertical turbine
- Power: 75 hp
- Design head: 14.5 ft

Backwash Pumps

- Number of pumps: 3
- Type: vertical turbine
- Power: 75 hp
- Design head: 20 ft

Backwash Blowers

- Number of blowers: 2
- Type: multistage
- Power: 100 hp

Design Capacity

Filters

- Hydraulic loading, ADWF: 2.6 gpm/sf
- Hydraulic loading, PWWF: 4.8 gpm/sf

Backwash Basin

- Capacity: 1.26 mg

Applied Water Pumps

- Design flow per pump: 6,680 gpm (9.6 mgd)
- Total design flow: 26,720 gpm (38.5 mgd)

Backwash Pumps

- Design flow per pump: 7,000 gpm
- Total design flow: 12,000 gpm

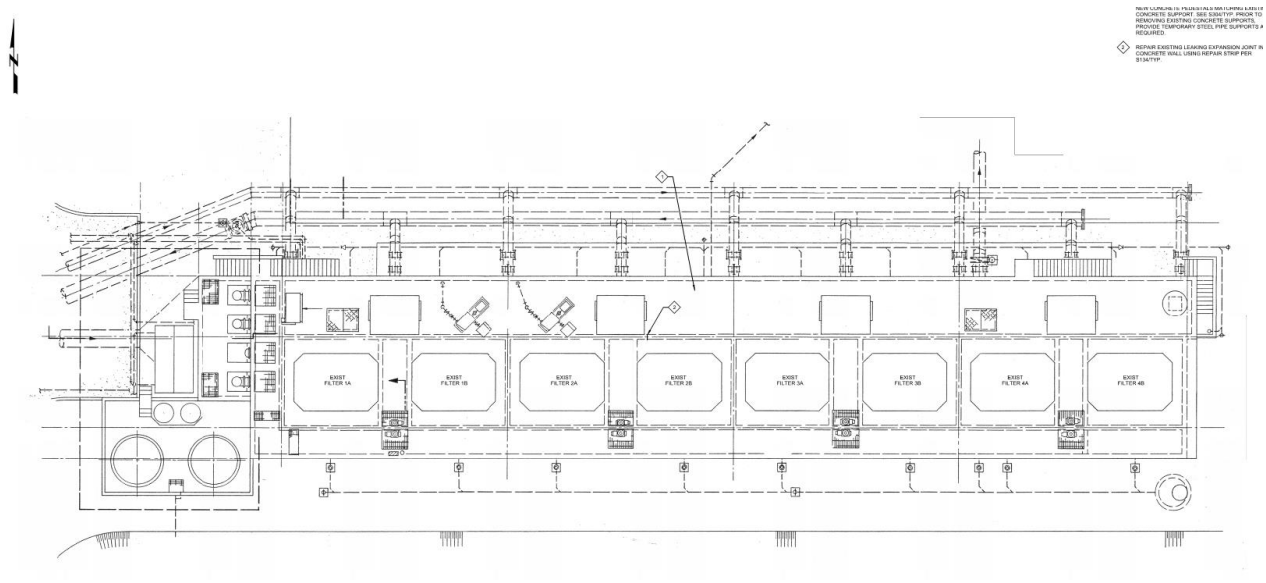
History

1978: Plant expansion: constructed filters

2006: Replaced filter media and underdrains

2019: Filter rehabilitation (ESCO RECM-9)

SITE LAYOUT


EXIST FILTER 1A
EXIST FILTER 1B
EXIST FILTER 2A
EXIST FILTER 2B
EXIST FILTER 3A
EXIST FILTER 3B
EXIST FILTER 4A
EXIST FILTER 4B

Backwash Pump Station
Backwash Pond
Backwash Blowers
Filter Structure and Piping Gallery
Applied Pump Station
1A
1B
2A
2B
3A
3B
4A
4B

DISINFECTION

Above Photo: Basin 1 (Old)

Above Photo: Basin 2 (New)

Disinfections occurs in the chlorine contact basins, which, as effluent flows through the basins, destroy pathogens through an initial dose of sodium hypochlorite and aqueous ammonia (chloramination) and sufficient contact time. The basins are configured with baffles to provide a plug-flow reactor, and sufficient retention time meets the required contact time for disinfection. Prior to discharge from the outfall, dechlorination occurs to consume residual hypochlorite through the dosing of sodium bisulfite.

The two chlorine contact basins are located in the south and southeast areas of the plant.

Related Processes

Process Inputs

- Tertiary filters (liquid)

Process Outputs

- Outfall (liquid)

Equipment Summary

Basin 1 (North/Old)

- Number of passes: 6
- Length (each pass): 98.5 ft
- Total flow-path length: 604 ft
- Width (each pass): 10 ft
- Flow depth: 8.8 ft
- Baffle material: wood

Basin 2 (South/New)

- Number of passes: 3
- Length (each pass): 373
- Total flow-path length: 1,129 ft
- Width (each pass): 13 ft
- Flow depth: 8.7 ft
- Baffle material: wood

Sodium Hypochlorite System

- Number of tanks: 2
- Tank volume: 7,000 gallons (each)
- Number of pumps: 3
- Type: peristaltic.

Sodium Bisulfite System

- Number of tanks: 2
- Tank volume: 7,000 gallons (each)
- Number of pumps: 3
- Type: progressive cavity

Design Capacity

Basin 1

- Contact time at 10.5 mgd: 57 min
- Contact time, PWWF: 39 min
- Total wet volume: 0.34 mg

Basin 2

- Contact time at 10.5 mgd: 130 min
- Contact time, PWWF: 88 min
- Total wet volume: 0.92 mg

History

1972: Original plant construction: Contact Basin 1

1994: Constructed Contact Basin 2

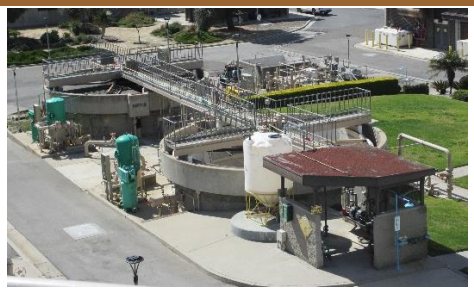
2002: Replaced sodium bisulfite tanks

SITE LAYOUT

Above Photo: Sodium Hypochlorite Station

Above Photo: Sodium Bisulfite Station

DISSOLVED AIR FLOTATION THICKENERS (DAFT)



Above Photo: X

Above Photo: X

The dissolved air flotation thickeners (DAFTs) separate and thicken WAS solids from the liquid and then send the liquid back to the BNR basins.

The DAFT system dissolves air in a pressurized portion of its own recycled liquid effluent or "subnatant" inside a saturation tank. The pressurized recycle stream that contains dissolved air is combined with the influent WAS flow and released into the DAFT tank, where the dissolved air forms bubbles that adhere to the solids, causing them to rise to the surface, where they are removed.

The DAFTs are located on the east side of the plant.

Related Processes

Process Inputs

- Secondary clarifier WAS (solids)

Process Outputs

- Digesters (solids)
- BNR basins (liquid)

Equipment Summary

Thickener Tanks

- Number of thickeners: 2
- Diameter: 25 ft
- Average depth: 6.3 ft
- Effective surface area: 435 ft^2
- Drive unit: 5 hp

Air Saturation Tanks

- Number of tanks: 2
- Diameter: 2.5 ft
- Height: 6 ft
- Pressure rating: 100 psi at ambient

Thickener Feed Pumps

- Number of pumps: 2
- Type: centrifugal

Thickened Sludge Pumps (TWAS)

- Number of pumps: 2
- Type: positive displacement

Design Capacity

Thickeners

- Surface loading: 6.7 $lbs/ft^2/day$

Air Saturation Tanks

- Volume: 29 ft^3
- Pressure: 70 psig

Thickener Feed Pumps

- Design flow per pump: 150 gpm (0.18 mgd)
- Total design flow: 300 gpm (0.36 mgd)

Thickened Sludge Pumps

- Design flow per pump: 75 gpm (0.09 mgd)
- Total design flow: 150 gpm (0.18 mgd)

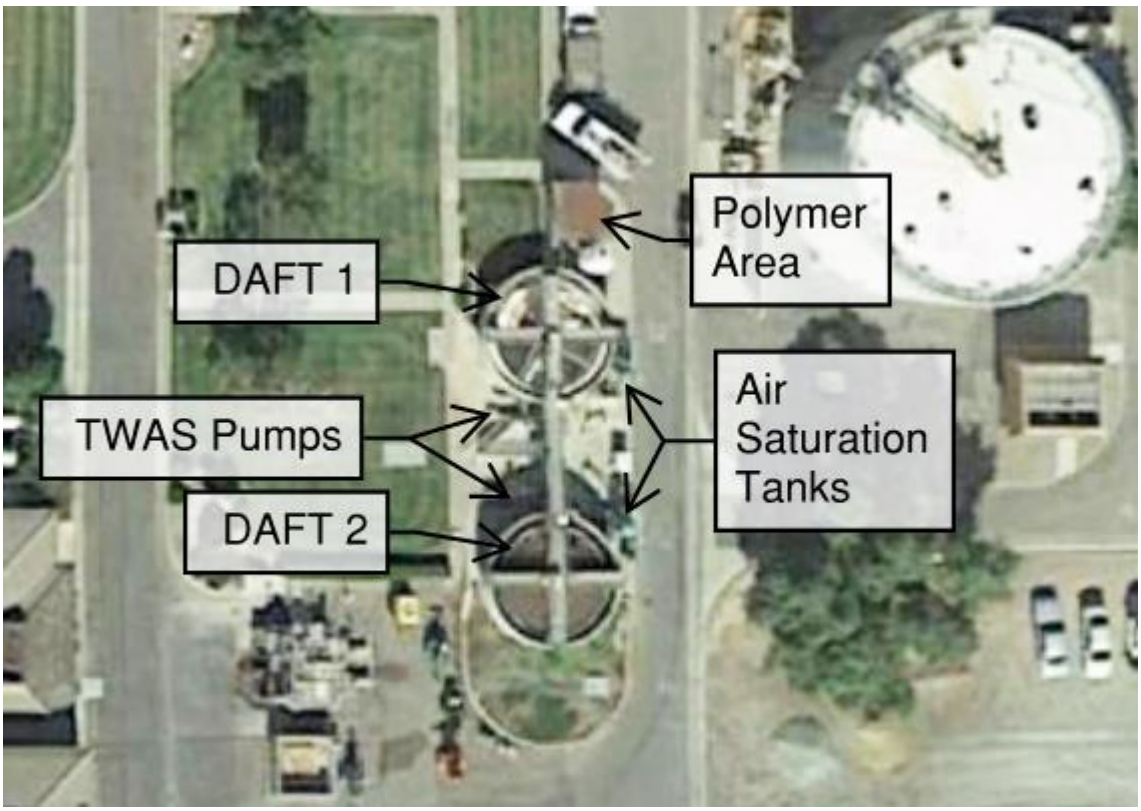
History

1972: Original plant construction: DAFT 1

1978: Plant expansion: DAFT 2

2017: Replaced Air Saturation Tank 1

SITE LAYOUT



SOLIDS DIGESTION

Above Photo: Digester Gas Pump Station

Above Photo: Digester No. 4

The digesters allow the sludge to break down anaerobically by mixing without aeration. This provides an anaerobic environment for the required bacteria to degrade the sludge, thus producing a thickened sludge, a liquid effluent, and methane-heavy biogas. The digesters use a gas-lance mixing system.

The digesters are located on the east side of the plant.

Equipment Summary

Digester Tanks

- Number of digesters: 2
- Diameter: 65 ft
- Height: 41.75 ft
- Maximum liquid depth: 33 ft
- Maximum liquid volume: 0.9 mg

Digester Mixers

- Number of units: 2 (1 per active tank)

Gas Compressors Digester Recirculation Pump

- Total number of pumps: 2 (1 per digester)
- Type: centrifugal
- Power: 60 hp

Boilers

- Number of units: 3
- Heat input rating: 1 MBtu/hr

Heat Exchanger

- Number of units: 2
- Type: tube in tube
- Tubers per unit: 8
- Diameter: 6-inch

**Equipment information shown for pending ESCO project.*

Related Processes

Process Inputs

- DAFT (solids)
- Primary clarifiers (solids)
- Grease pit (solids)

Process Outputs

- Sludge pump stations and storage (solids)

Design Capacity

Digesters

- Maximum liquid volume: 0.9 mg
- Average hydraulic residence time: 31 days

Digester Recirculation Pump

- Design flow per pump: 800 gpm (1.15 mgd)
- Total design flow: 3200 gpm (4.6 mgd)

Heat Exchanger

- Heat transfer required: 0.9 MBtu/hr
- Design headloss: 7.5 ft wc

**Design criteria shown for pending ESCO project.*

History

1972: Original plant construction: Digester 1

1985: Constructed Digester 2

1988: Constructed Digesters 3 and 4

2019: Replace mixers and sludge pumps (ESCO RECM-7)

SITE LAYOUT

Above Photo: Digester No. 2

Above Photo: Digester Gas Flare

SLUDGE-HOLDING TANKS & PUMP STATIONS

Above Photo: Sludge Micro-Screen Tank

Above Photo: Sludge Storage Holding Tank

The sludge-holding tanks and sludge pump stations convey sludge from the east side of the plant, where the digester and DAFT are located, to the west side of the plant, where the dewatering area is located. The micro-screen holding tank and pump station screens the sludge from the digesters with microscreens and pumps it to the sludge-holding tank and pump station. The sludge-holding tank stores sludge before it is pumped to the dewatering building and allows for the dewatering process to not be run constantly.

The sludge pump station is on the east side of the plant next to the DAFTs, and the sludge-holding station is located on the west side of the plant near the dewatering building.

Related Processes

Process Inputs

- Digesters (solids)

Process Outputs

- Dewatering (solids)

Equipment Summary

Sludge Transfer Station (pumps to sludge storage)

- Number of pumps: 2
- Type: centrifugal

Micro-screens [1]

- Screen manufacturer: Hycor

[1] *Equipment to be removed by pending ESCO project.*

Micro-screen Pump Station (pumps to dewatering)

- Number of tanks: 1

Sludge Storage Pump Station (to dewatering)

- Number of pumps: 3
- Type: progressive cavity pump with VFD

Design Capacity

Micro-screen Holding Tank

- Surface loading: 6.7 lbs/ft^2/day

Micro-screen Station Pumps (to storage)

- Design flow per pump: 400 gpm (0.58 mgd)
- Total design flow: 800 gpm (1.15 mgd)

Sludge Storage Holding Tank

- Surface loading: 6.7 lbs/ft^2/day

Sludge Storage Station Pumps (to dewatering)

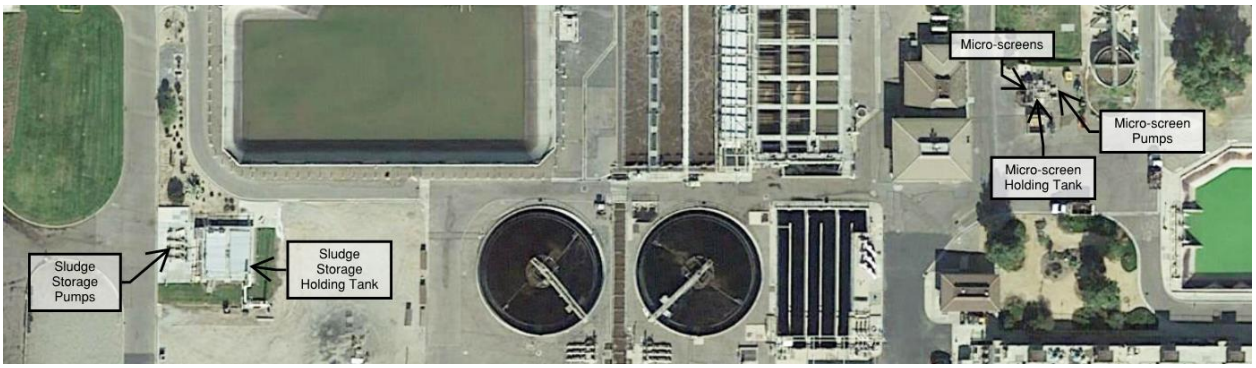
- Design flow per pump: 150 gpm (0.216 mgd)
- Total design flow: 450 gpm (0.648 mgd)

History

1972: Original plant construction: sludge storage tank

2019: Remove micro-screens, add grinder, and add pump (ESCO RECM-7)

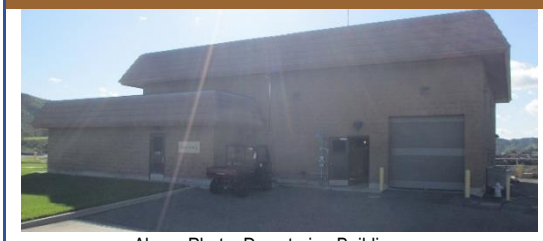
SITE LAYOUT



Above Photo: Microscreens

Above Photo: Sludge Transfer Pumps

DEWATERING



Above Photo: Dewatering Building

Above Photo: Belt Filter Press

The dewatering facility uses belt-filter presses to dewater the digested sludge before transporting it to the drying pads. The belt presses use gravity and compression to remove the liquid from the solids. The liquid effluent is returned to the grit chambers, while the solids are placed on a conveyor to a dump truck and sent to the sludge-drying pads. The dewatering equipment runs for roughly six hours per day. Sludge is stored in the sludge-holding station while the equipment is not running.

The dewatering area is located on the west side of the plant.

Related Processes

Process Inputs

- Sludge storage (solids)

Process Outputs

- Sludge-drying pad (solids)
- Grit removal system (liquid)

Equipment Summary

Belt Presses

- Number of presses: 3

Solids Belt Conveyor

- Number of units: 2
- Type: open belt conveyor

Sludge Feed Pumps

- Number of pumps: 3
- Type: progressive cavity
- Power: 7.5 hp

Filtrate Equalization Tank and Pump Station

- Number of tanks: 1
- Tank volume: 0.2 mg
- Number of pumps: 2
- Power: 7.5 hp

Polymer System

- Number of tanks: 1
- Number of pumps: 4 (3 feed + 1 transfer)

Design Capacity

Belt Presses

- Operation duration: 6 to 7 hours per day
- Surface loading: 6.7 lbs/ft2/day
- Loading rate: 100-150 gpm
- Solids produced: 82,000 lbs/day
- Average cake % solids: 13.6%

Sludge Feed Pumps

- Design flow per pump: 150 gpm at 35 TDH

Filtrate Pumps

- Design flow per pump: 250 gpm at 50 TDH

Polymer Feed Pumps

- Design flow per pump: 10 gpm (0.14 mg)
- Total design capacity: 20 gpm (0.3 mg)

History

1972: Original dewatering facility

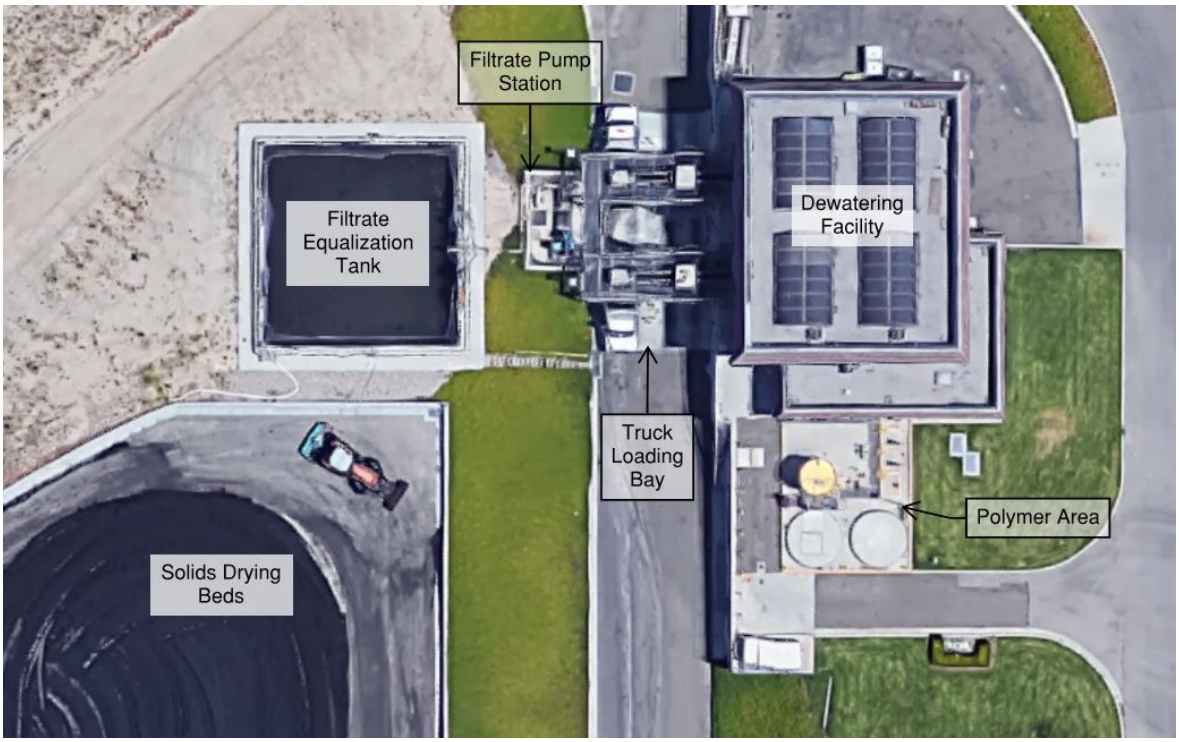
1988: Constructed new dewatering facility, demolished original

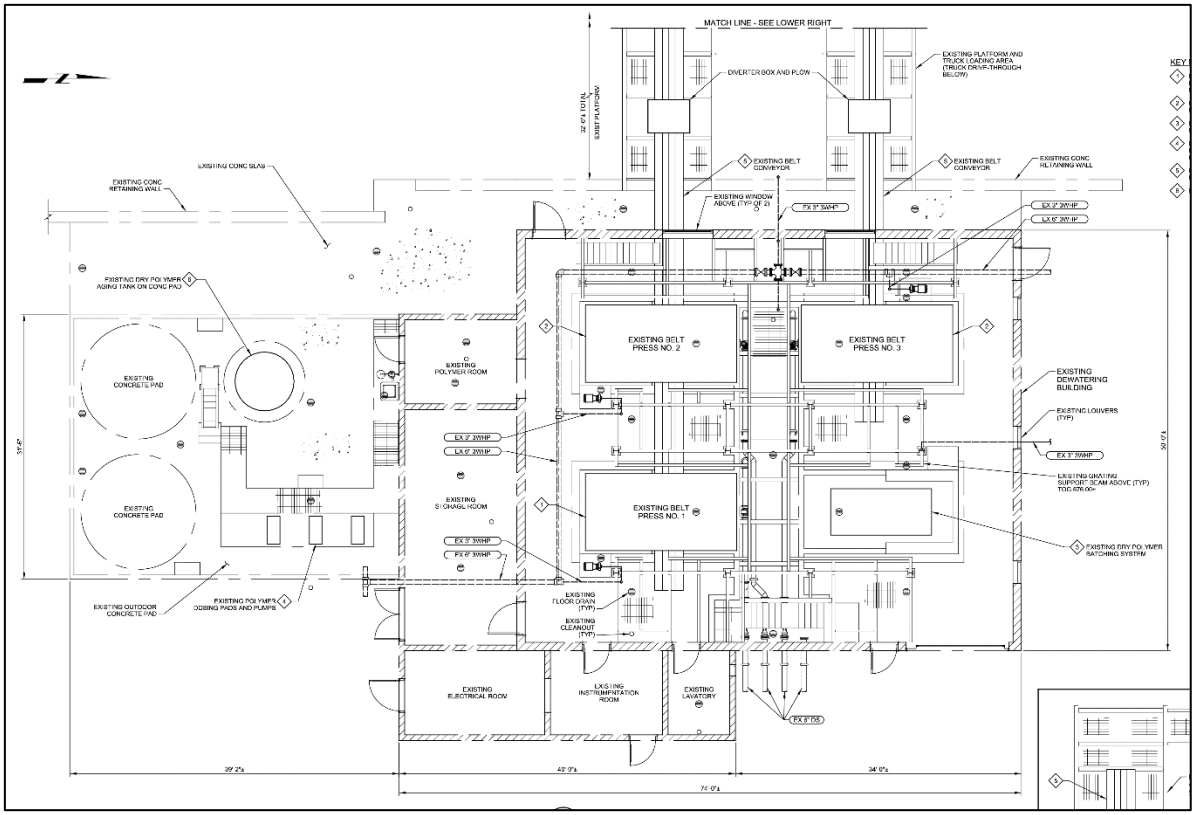
2003: Constructed filtrate holding tank

2009: Facility drain and ventilation modifications

2019: Replace equipment (ESCO RECM-6)

SITE LAYOUT


Filtrate Pump Station
Filtrate Equalization Tank
Dewatering Facility
Truck Loading Bay
Polymer Area
Solids Drying Beds


MATCH LINE - SEE LOWER RIGHT
DIVERTER BOX AND PLOW
EXISTING PLATFORM AND TRUCK LOADING AREA (TRUCK DRIVE-THROUGH BELOW)
EXISTING BELT CONVEYOR
EXISTING CONC. RETAINING WALL
EXISTING CONC SLAB
EXISTING WINDOW ABOVE (TYP OF 2)
EXISTING DRY POLYMER AGING TANK ON CONC PAD
EXISTING CONCRETE PAD
EXISTING POLYMER ROOM
EXISTING BELT PRESS NO. 2
EXISTING BELT PRESS NO. 3
EXISTING BELT PRESS NO. 1
EXISTING DEWATERING BUILDING
EXISTING LOUVERS (TYP)
EXISTING GRATING SUPPORT BEAM ABOVE (TYP) TOS 476.00±
EXISTING DRY POLYMER BATCHING SYSTEM
EXISTING SIGNAGE ROOM
EXISTING OUTDOOR CONCRETE PAD
EXISTING POLYMER DOSING PADS AND PUMPS
EXISTING FLOOR DRAIN (TYP)
EXISTING CLEANOUT (TYP)
EXISTING ELECTRICAL ROOM
EXISTING INSTRUMENTATION ROOM
EXISTING LAVATORY
39' 2"±
43' 0"±
34' 0"±
74' 0"±

2.2 Collection System

The collection system collects and conveys wastewater from the City's residences and businesses to the WQCP for treatment. The collection system covers a service area of roughly 47 square miles and serves more than 125,000 residents.

The collection system began construction in the early 1960s and has been continuously expanded from the 1990s through today. The primary assets of the collection system are the gravity main pipes, manholes, pressurized force mains, and lift stations.

The following summarizes the collection system:

- 47 square miles service area
- 380 total miles of gravity mains and trunk sewer pipes
- 7,345 manholes
- 3 active lift stations (Arroyo Simi, Lost Canyons, and Wood Ranch)
- 0.25 miles of pressurized force mains

The collection system's pipes range in size from 4 inches to 48 inches in diameter. The vast majority of pipes are 8 inches in diameter. These pipes are often classified according to their diameter: standard gravity mains have diameters that are less than 12 inches, and trunk mains have diameters greater than or equal to 12 inches. Figure 2.3 shows the miles of pipes by diameter.

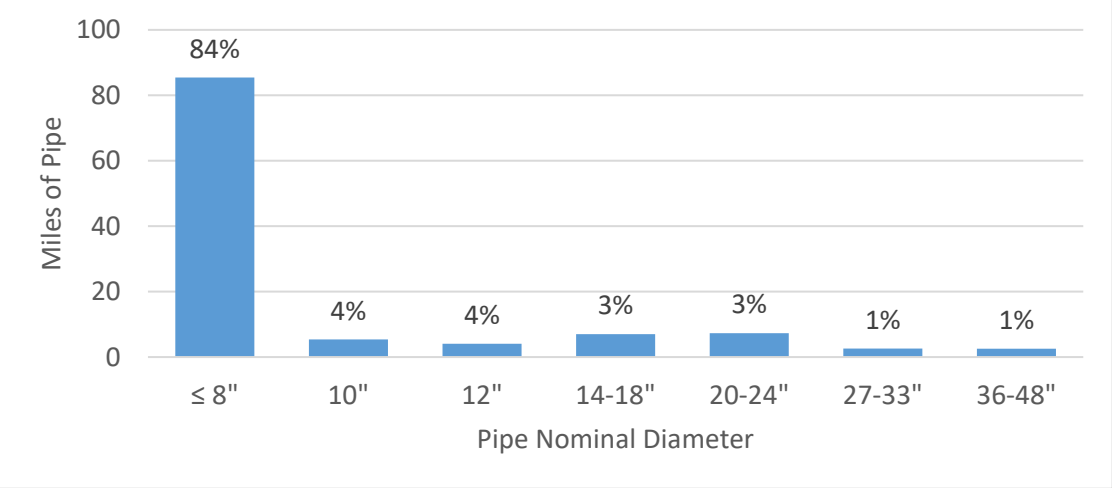


Figure 2.3 Collection System Pipe Diameters

Figure 2.4 shows a map of the collection system.

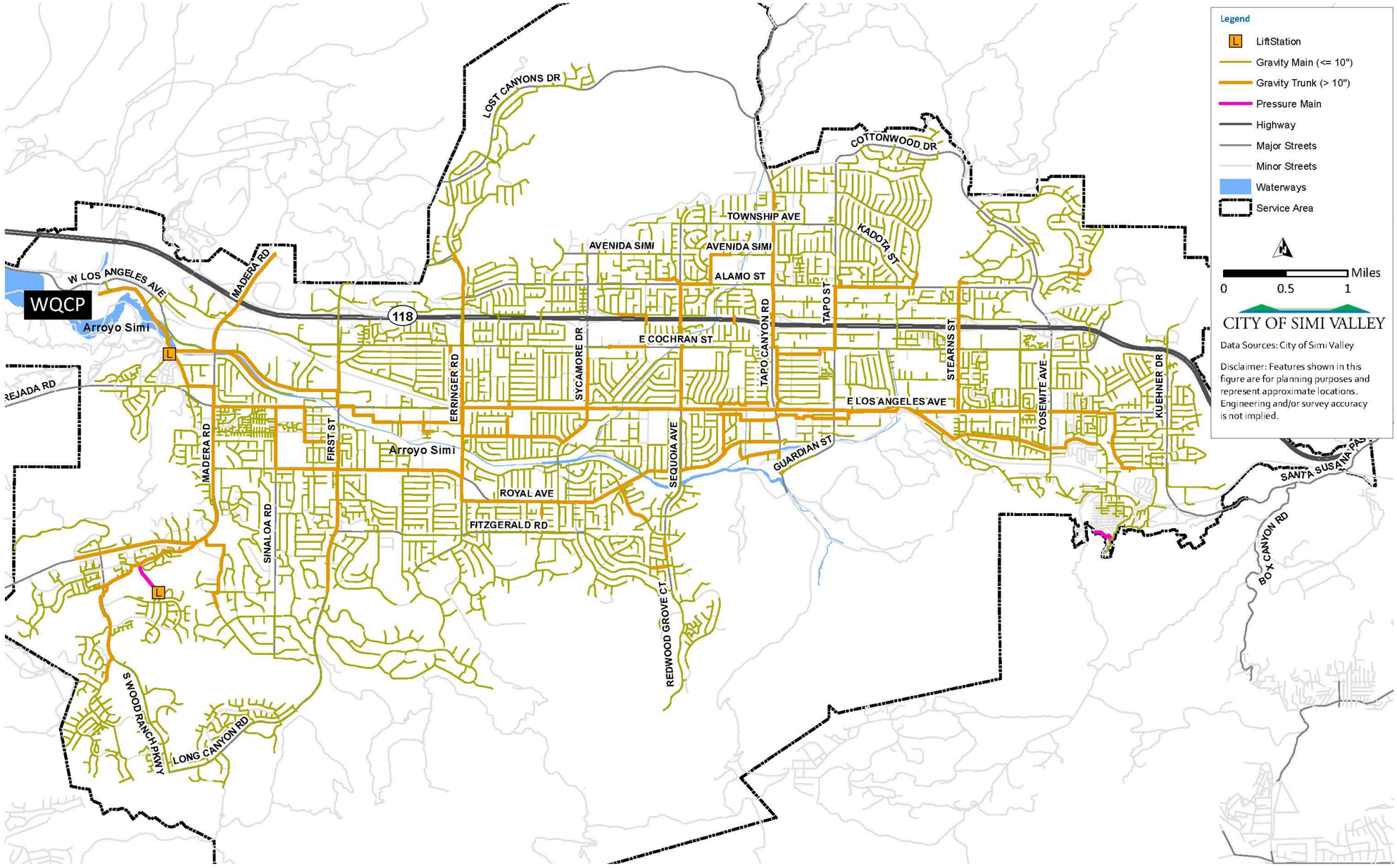


Figure 2.4 Collection System Map

The gravity mains and trunk sewers pipes are constructed of six primary materials:

- Plastic (50 percent of total system miles)
- Asbestos cement (31 percent)
- Clay (14 percent)
- Ductile iron (2 percent)
- Reinforced concrete (1 percent)
- Glass-fiber-reinforced (<1 percent)

Figure 2.5 shows the miles of sewer pipe constructed in each decade since 1960. The percentages shown indicate how much of the total collection system was constructed in that decade (based on miles of pipe). The different colors represent the different pipeline constructions.

The oldest pipes in the collection system are nearing 60 years old but approximately 75 percent of the system is less than 50 years old.

Asbestos cement was the primary construction material in the 1960s and part of the 1970s. Plastic pipe has been the primary construction material since the mid-1970s through today. About half of all miles of sewer pipeline are plastic.

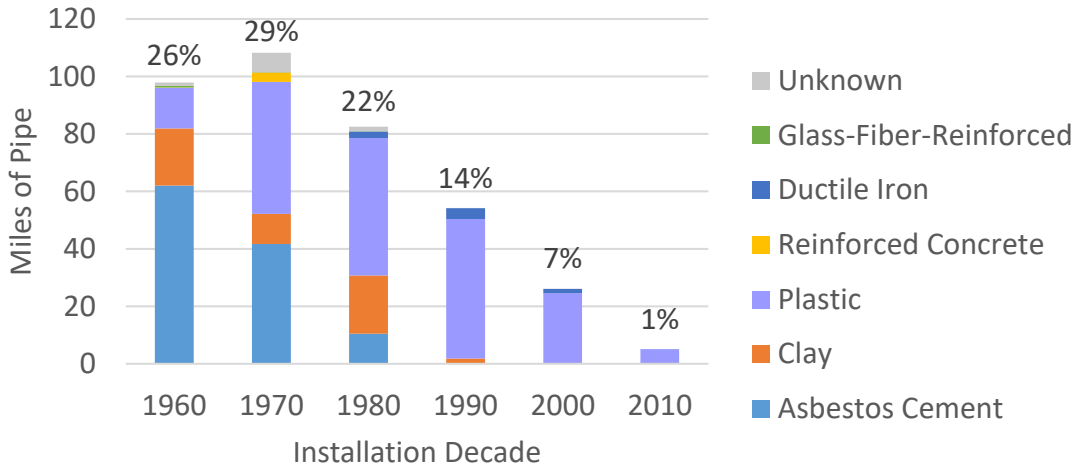


Figure 2.5 Collection System Pipe Construction Decades

The City is continuously maintaining and repairing the collection system. City staff cleans and inspects the pipelines on a daily basis, while a contractor is hired to inspect the trunk lines on a five-year cycle. Manholes are repaired or lined on an as-needed basis.

The City has recently completed and ongoing capital improvement projects to cured-in-place pipe (CIPP)-line portions of the system.

Chapter 3

WATER QUALITY CONTROL PLANT ASSESSMENT

This chapter contains the findings and recommendations of the Water Quality Control Plant (WQCP)'s assessment.

3.1 Assessment Methodology

Carollo Engineers, Inc. (Carollo) performed a multifaceted assessment of the WQCP to determine improvement projects to be included in the capital improvement plan (CIP). The assessment included the following evaluations:

- Visual condition assessment.
- Thermal imaging of the 480-volt (V) equipment.
- Examination of potential future regulations.
- Review of the City's 5-year CIP projects, the energy services company (ESCO) Project's scope of work, and the unimplemented recommendations from the 2011 WQCP assessment.
- Lifecycle modeling of the remaining WQCP assets.

This chapter details the findings of these assessments.

3.2 Capital Improvement Plan Recommendations

Given the findings of the WQCP evaluations, the following improvement projects are recommended for the CIP.

Table 3.1 WQCP Improvement Projects

	Project Title	Project Description
1	Primary Clarifier and pump station (PS) Rehabilitation	Replace internal components and mechanism due to age and condition. Repair concrete degradation inside basins and of walkways. Replace sludge pump station components based on age and condition (except sludge pumps, which are included in the ESCO Project).
2	Grit Pumping Improvements	Replace grit pumps and control based on age and condition. Relocate controls to an area with proper head clearance. Install crane in pump area for equipment maintenance.
3	Flow Equalization Basin (FEB) Pump Station and Basin Upgrades	Replace FEB pumps and controls based on performance. Replace dump valves. Repair basin joints.
4	East biological nutrient removal (BNR) Repairs	Seal leaking roof to motor control center (MCC) room. Resurface concrete above blower and MCC rooms and re-slope to avoid pooling water. Repair cracking walkways and crane beam corrosion. Replace influent gates and air piping based on age and condition. Replace stairs to blower room to improve safety.

Table 3.1 WQCP Improvement Projects (continued)

	Project Title	Project Description
5	Waste Activated Sludge (WAS) Pump Station Overhaul	Replace WAS pumps, piping, valves, and control panel based on age and condition.
6	Secondary Effluent Diversion Structure Repair	Repair cracking concrete in structure wall and replace gates based on performance.
7	Tertiary Filter Rehabilitation	Replacement of pumps, blowers, gates, and valves based on age and condition. Replacement of MCCs H and J based on age. Rehabilitation of filter structure due to settling.
8	Chlorine Contact Tanks Rehabilitation	Replace gates and baffles based on condition. Recoat tanks and repair broken concrete. Replace MCCs L and LA based on age. Replace effluent weir beams based on condition.
9	MCC Replacements	Replace MCCs installed before 1990 based on age.
10	Plant-Wide Safety Improvements	Install additional tie-off locations. Replace digester stairs handrail and repair cracking roof concrete. Install kickplates around filter cells and South Chlorine Contact Basin (CCB).
11	Gravel Sump (Stormwater Pump Station) Expansion	Expand wet well, install larger pumps. Install permanent discharge piping based on capacity.
12	Sodium Bisulfite Station Improvements	Replace chemical storage tanks and pumps based on age.
13	Sodium Hypochlorite Station Improvements	Replace tank cover based on condition. Replace chemical storage tanks and pumps based on age.
14	Dissolved Air Flotation Thickeners (DAFT) foundation cracking investigation	Investigate hole under foundation and cracks in foundation ring.
15	Sludge Thickening Study	Study feasibility of alternatives to the current DAFT system.
16	Sludge Thickening Process Overhaul	Replace or overhaul DAFT process and associated equipment. Consider alternative technologies.
17	Sludge storage pumping modifications study	Investigate ways to optimize sludge pumping.
18	Electrical Coordination Study	Perform coordination study to reflect all changes to the WQCP's power distribution system.
19	Digester Internal Condition Inspection	Inspect interior of digester tanks and internal equipment.
20	Nitrogen and Phosphorous Regulatory Improvements (online 2035)	Upgrade BNR basins to meet potential total nitrogen and total phosphorous regulations.
21	Asset Lifecycle Modeling Forecast	Replace WQCP assets not included in the above projects over the planning period.

Note:
(1) Full Infrared Thermographic Report in Appendix B.

The following sections detail the findings that led to these recommendations. Chapter 6 (Capital Improvement Plan) discusses the cost estimates and schedules for these projects.

3.3 Visual Assessment

On March 7, 2019, Carollo conducted a 1-day visual condition assessment of aboveground WQCP assets. The assessment was performed by two engineers, John Richardson and David Baranowski, utilizing a similar approach and framework as those used in the 2011 Sanitation Asset Reliability Assessment conducted by Carollo.

The assessment team met with plant staff to discuss issues in each area of the plant then toured the entire WQCP to look for other problems not already identified by plant staff, such as structural deterioration or equipment concerns. The team asked plant staff for anecdotal maintenance and performance histories, installation dates, and typical condition parameters that could be used to standardize procedures for future assessments.

The City and Carollo determined that a multi-day, multi-disciplinary assessment was not necessary given the breadth of the ESCO Project's effects on the WQCP and Carollo's involvement with that project. To supplement the site visit, however, the team considered the current ESCO Project's scope and reviewed additional improvement needs not already being addressed by that project.

3.3.1 General Findings

The following are the general findings from the condition assessment:

- The biggest issues of the plant are being addressed by the ESCO Project.
- The City addressed many of the issues from the 2011 study, particularly the building seismic upgrades, but not all of them.
- Portions of the WQCP are approaching 50 years of age and will need significant overhauls in the near future.
- A few safety improvements, such as fall protection and slip hazards, were noted.
- Overall, the plant is in fair condition and no pressing items were identified that are not being addressed by the ESCO Project.

3.3.2 Process Area Findings

The following sections discuss assessment findings from each major plant process area.

3.3.2.1 Headworks

Figure 3.1 Headworks Building

The majority of this area is addressed by ESCO Project Replacement Energy Conservation Measure (RECM) 1 (Headworks Equipment Replacement). The scope of RECM 1 includes the following:

- Improve the influent hydraulics and flow distribution.
- Replace the existing bar screens and compacting conveyors as well as associated instrumentation and controls.
- Provide solid covers on channels as well as ventilation to mitigate corrosion and odors.
- Upgrade headworks ventilation systems.
- Make roofing and seismic upgrades.

The following observations and findings were made during the condition assessment:

- The inlet channels and the junction structure between the headworks and grit removal area lack fall protection.
- Moderate corrosion and odors noted.
- The headworks was installed around 1986, making it 32 years old.
- The building had a seismic retrofit according to recommendations made in the 2011 study.

The improvement needs in this area, not already being addressed by the ESCO Project, are as follows:

- Safety improvements: fall protection around inlet channels and junction structure.

3.3.2.2 Grit Removal

Figure 3.2 Grit Basin No. 1

Portions of this area are addressed by ESCO Project Optimization Energy Conservation Measure (OECM) 3 (Aerated Grit Chamber Optimization). The scope of OECM 3 includes the following:

- Replace grit classifiers.
- Replace air diffuser piping.
- Repair concrete wear at bottom of existing grit chambers.

The following observations and findings were made during the condition assessment:

- Staff indicated an imbalance of flow between the two channels and associated grit basins, a condition that should be investigated.
- Staff noted an issue with electrical conduits. They have added sleeves around the conduit, but the staff thinks they should be replaced with PVC.
- No containment exists around the grit classifier and dumpster area. In addition, there are no drain covers. Continuous water flowing through the grit dumpsters has resulted in algae growth on the concrete, which is a potential slip hazard. Staff believes this will be corrected when the grit classifiers are replaced by the ESCO Project.
- Grit pump area has limited access and no equipment for rigging or hoisting. Consider adding a hoist/crane.
- Electrical equipment in the grit pump area has low each clearance and produces an inadequate working condition.
- The pads for grit pumps 1 and 2 are in poor condition. Pads for pumps 3 and 4 are not as bad but are also not good.

- Replacement of the grit pumps and blowers was removed from the original ESCO Project's scope.

The improvement needs in this area, not already being addressed by the ESCO Project, are as follows:

- Replace and relocate equipment panels.
- Replace grit pumps 1 and 2 and repair the pump pads.
- Install hoist or crane in the pump area.

3.3.2.3 Primary Sedimentation

Figure 3.3 Primary Clarifier No. 2

Portions of this area are addressed by ESCO Project OECM 2 (Channel Mixing Optimization) and RECM 7 (Digester Mixers and Feed Sludge Pump Replacement). The scope of OECM 3 and RECM 7 includes the following:

- Install Enviromix system and air compressors for these areas:
  - Primary influent channels: distributes flow from the grit classifiers to the primary clarifiers.
  - Primary effluent channels: distributes flow from the primary clarifiers to the BNR influent channel(s).
- Replace primary sludge pumps.

The following observations and findings were made during the condition assessment:

- Only Clarifier No. 3 was in service during the site visit. Clarifiers No. 1 and 2 were drained and out of service. Only one clarifier is needed during normal operations.
- Interiors of Clarifiers No. 1 and 2 show signs of moderate to severe corrosion with exposed aggregate. Chain and sprocket were replaced with fiberglass reinforced plastic,

but mounting plates, shafts, and wear strips are in poor condition. The drive assemblies were in okay condition.

- The underside of the walkway has lost concrete and chunks have fallen off and into the tanks.
- The sludge pumps are being replaced by the ESCO Project, but the rest of the sludge pump station needs an overhaul. Piping, valves, actuators, and the control cabinet are 40 years old and need replacement.
- An electrical junction box is located under the stairs near the entrance to the sludge pump station. The box cover is not sealed and was recently flooded. This area is also not accessible because it is located under stairs.
- The 2011 study found moderate to severe concrete corrosion in the influent and effluent channels. No improvements have been made since that study.

The improvement needs in this area, not already being addressed by the ESCO Project, are as follows:

- Major primary clarifier rehabilitation: repair the basins and influent and effluent channels, repair the damage on the concrete walkway, replace all mechanical equipment and gates, replace electrical components and instrumentation, and replace the scum pumps.
- Overhaul of the primary sludge pump station: replace the piping, valves, actuators, flow meter, supply fan, and control panel and instrumentation.
- Junction box under the metal stairs: seal the lid, add a berm around the lid, or relocate the box.

3.3.2.4 Biological Nutrient Removal (BNR)

Figure 3.4 West BNR Tanks

Portions of this area are addressed by ESCO Project RECM 3 (East and West BNR Blower Upgrades) and RECM 4 (BNR Mixer Replacement), OECM 1 (Ammonia Based Aeration Control), and OECM 2 (Channel Mixing Optimization). The scope of these projects includes the following:

- RECM 3:
  - Remove the two existing (west) single-stage centrifugal blowers and variable frequency drives (VFDs).
  - Relocate two existing multi-stage centrifugal blowers from the east blower to the west blower building.

  - Replace flow control valves.
  - Install new supply and exhaust fans for east and west blower areas.
- RECM 4:
  - Replace existing mixers with coarse air mixing system that utilizes compressed air and multiple actuated air valves manufactured by EnviroMix.
  - Replace mixed-liquor return (MLR) pumps.
- OCEM 1:
  - Replace existing modulating butterfly valves utilized to control aeration in the East and West BNR basins with high performance butterfly valves.
  - Replace existing manual aeration drop valves in East and West BNR basins with valves whose flow characteristics are linear in nature throughout their entire adjustment range.
  - Install programmable logic controllers (PLCs), sensors, and controllers. Integrate PLC(s) with existing supervisory control and data acquisition (SCADA) system.
- OECM 2:
  - Install Enviromix system and air compressors for these areas:
    - BNR influent: distributes flow from the primary effluent channel to the BNR basin(s).
    - BNR Effluent: distributes flow from BNR basin(s) to the mixed-liquor distribution channel.

The following observations and findings were made during the condition assessment:

- Influent channel splitting issues:
  - The east influent gates appear to be original and approximately 40 years old. The City does not know the gates' manufacturer and can no longer get replacement parts.
  - The air piping in the influent channel near the splitter gates shows severe corrosion.
- East BNR tanks:
  - Diffusers were replaced about 2 years ago with Aero-strip.
  - Concrete on the underside of the walkway is deteriorating (similar to the primaries). It has been patched but has failed again.
  - The concrete on top of the blower room is cracking.
  - The roof and ceiling into the MCC room are leaking. Tarps are being used to cover the MCC so it does not get wet. The ceiling was epoxy injected, but it does not appear to be working.
  - The bases of the steel beams for the crane are corroding.
  - The blower room has a makeshift wall and door. This area is accessed through a steep ship ladder that is difficult to walk down and can pose a safety issue for staff carrying equipment.
- West BNR tanks:
  - The blower building is in good condition. The existing blower system is oversized and will be modified as part of the ESCO Project.
  - Diffusers were replaced about 2 years ago with Aero-strip.
  - No concrete issues observed.

The improvement needs in this area, not already being addressed by the ESCO Project, are as follows:

- Repair cracks and spalls in the walkways, leaking ceiling above MCC, and corrosion on the steel beams for the crane.
- Replace the inlet gates and replace the corroded air piping.
- Replace the ladder and construct a new wall and doorway to the blower room.

3.3.2.5 Secondary Clarification

Figure 3.5 Secondary Clarifier

Portions of this area are addressed by ESCO Project RECM 8 (Secondary Clarifier Nos. 1 through 4 and East/West return activated sludge (RAS) Pump Equipment Replacement) and OECM 2 (Channel Mixing Optimization). The scope of these projects includes the following:

- Replace process equipment and rehabilitate associated structures including the secondary clarifier. Replace the secondary clarifiers mechanisms, scum troughs, drives, V-notch weirs, walkway, and associated center columns.
- Rehabilitate pumps and associated wet well structures. Remove, rebuild and retrofit each RAS pump with smaller motors and new impellers designed to operate on the pump curve. Replace valves and gates.
- Upgrade the center column and foundation of each secondary clarifier (Nos. 1 through 4) to meet the current seismic code.
- Install Enviromix system and air compressors for the mixed liquor distribution channel (OECM 2).

The following observations and findings were made during the condition assessment:

- The existing RAS pumps are oversized and, to avoid running to the far right of the pump curves, the discharge plug valves for each pump need to be throttled to approximately 50 percent closed.
- No issues were observed for the existing secondary scum pumps, although the scum pit's concrete may need to be rehabilitated.
- Inlet slide gates and weir troughs appear to be in good condition.

- The diversion structure's concrete is cracking. The 2011 condition assessment found the same concrete cracking but also noted large cracks in the dividing wall and significant cracking between the top slab and perimeter wall.
- The diversion gates are difficult to operate according to staff.
- WAS pumps are in poor condition. Staff noted that the pumps had an air locking issue but they were able to fix it.
- This area lacks tie-offs for fall protection for workers performing maintenance in the tanks.

The improvement needs in this area, not already being addressed by the ESCO Project, are as follows:

- Overhaul the WAS pump station: replace the WAS pumps, valves, piping, and instrumentation.
- Repair the diversion structure's concrete and repair or replace the gates.
- Install additional tie-off locations around the clarifiers.

3.3.2.6 Filters

Figure 3.6 Top of Filter Structure

Portions of this area are addressed by ESCO Project RECM 9 (Tertiary Media Filtration System). The scope of RECM 9 includes the following:

- Rehabilitate the piping: this includes replacing the backwash air piping, blasting and recoating the backwash water piping that is corroded, and replacing selected backwash piping fittings that have corroded.

The following observations and findings were made during the condition assessment:

- The original RECM 9 included the following items, which were subsequently removed from the final ESCO Project's scope. All of these items still need to be addressed in this area.
  - Replace equipment such as the backwash pumps and backwash blowers.
  - Rehabilitate controls: restore manual backwash capabilities and replace all wiring that has reached or exceeded its economic useful life.

  - Rehabilitate structural components this includes repairing seismic joints that have separated due to settling of the tertiary filter building.
  - Replace valves such as the new basin drain valves.
- Replace gates for the applied and backwash pumps per staff's suggestions.
- Replace filter media last changed in 2009 (10 years old): the City is planning an inspection of the filter media and underdrains in the coming years. Replacement of these items will be determined after the inspection.
- Replace the applied pump and VFDs.
- Address the wall near the applied pumps: settlement of the structure has stopped, but the wall still leaks. This was first noted in the 2011 study.
- Address minor cracking in filter cells, which does not appear to be an issue.
- Consider replacing MCC H and J, which are both 40 years old.
- Address lack of adequate fall protection for all cells.
- Replace or fix loose exterior railing.
- Address pipes and valves that date back to 1979 (40 years old) and are nearing the end of their useful life.
- Address the HVAC unit on the roof, which appears to be original and nearing the end of its useful life.

The improvement needs in this area, not already being addressed by the ESCO project, are as follows:

- Replace equipment including filter backwash pumps, waste backwash pumps, and backwash blowers. Replace valves including basin drain valves and spray water valves. Replace gates including those for the applied and backwash pumps. Replace the HVAC unit.
- Replace MCCs H and J.
- Rehabilitate the controls: this includes restoring manual backwash capabilities and replacing all wiring that has reached or exceeded its economic useful life.
- Rehabilitate structural components: this includes repairing seismic joints that have separated due to settling of the tertiary filter building.

3.3.2.7 Disinfection

Figure 3.7 Chlorine Contact Basins (North/Old and South/New)

This area is not addressed by any part of the ESCO Project.

The following observations and findings were made during the condition assessment:

- North Chlorine Contact Basin (CCB) (old):
  - Concrete cracking at some anchors.
  - Concrete cracking near the skimming trough. Otherwise, the concrete's condition was acceptable given what was visible.
  - Portions of the wood baffles are broken.
  - Green algal growth observed.
- South CCB (new) and effluent weir:
  - Only one train of the South CCB was in service during inspection. The other two trains were drained and undergoing repairs.
  - The concrete lining appeared to be in okay condition but may need to be replaced given its age.
  - All isolation slide gates have issues, and some do not seal. The gates appear to be made of aluminum, which corrodes quickly in the presence of chlorine. Stainless steel gates should be used in this area.
  - Portions of the wood baffles are broken.
  - Corrosion of the concrete and adjacent steel beam was observed at the sodium bisulfite addition points.
  - Corrosion was observed in the beams supporting the grates in the effluent weir (dechlorination area). This is likely caused by bisulfite dosing in this area.
  - The City noted that the effluent weir area should be covered to avoid algae growth.
  - The Parshall flume is in need of repair according to staff.
  - The basin lacks kickplates around the perimeter.
  - Green algal growth observed.
- Chemical storage stations: discussed in Section 3.3.2.13
- MCCs L and LA in the chlorine building are old and need to be replaced.

The improvement needs in this area are as follows:

- Repair broken concrete in the North CCB and replace the lining in the South CCB.
- Replace gates and baffles.
- Replace MCCs L and LA.
- Repair the Parshall flume, install a cover over the effluent weir area, and replace the corroded grates and beams in the effluent weir area.
- Install kickplates around the South CCB.

3.3.2.8 Flow Equalization Basin

Figure 3.8 Flow Equalization Basin

This area is not addressed by any part of the ESCO Project.

The following observations and findings were made during the condition assessment:

- According to staff, the pumps are not the correct ones for this application since they are not designed to pass solids. Thus, they need frequent maintenance and repair. The pumps are designed for clean water, but the FEB handles primary effluent. Before being removed from the ESCO Project's scope, RECM 5 (Flow Equalization Pump Replacement) called for the replacement of the FEB pumps with vertical, mixed-flow pumps.
- The pump controls and electrical equipment should also be replaced along with the pumps.
- The pump area lacks lighting.
- The City indicated that two 24-inch dump valves in the basin need replacement.
- Staff noted that the joint material is popping out and needs to be repaired.
- The basin drain pumps are original and have exceeded their expected life.

The improvement needs in this area are as follows:

- Replace the FEB pumps and associated controls. Install lighting.
- Replace the dump valves.
- Repair the concrete joints.
- Replace the drain pumps.

3.3.2.9 Sludge Thickening

Figure 3.9 DAFT Tanks

This area is not addressed by any part of the ESCO Project.

The following observations and findings were made during the condition assessment:

- Only one DAFT tank is needed during normal operations. DAFT 2 (south) was in service during the visit, while DAFT 1 (north) was empty. Both structures have minor cracking on the outside tank walls. Some evidence of leaking was found but nothing significant.
- A hole has formed under the foundation DAFT 2 and the concrete base ring is cracked. To determine the appropriate remedy, the City should perform a detailed investigation of the foundation.
- Minor to moderate corrosion was observed on the internal mechanisms. The most severe corrosion was seen in the skimming pit. Concrete aggregate is starting to appear.
- The 10 year old thickened waste activated sludge (TWAS) pumps are in fair condition.
- Saturation tank 1 was replaced in 2017. Saturation tank 2 appears to be the original.
- The polymer tank and peristaltic pumps were replaced about 5 years ago. The polymer transfer pump was not and needs to be replaced.
- Staff noted that the operators for the telescoping valves have issues.
- The entire area will need an overhaul in the next 10 to 15 years. The equipment and technology date back to the 1970s. An alternative thickening technology may be more efficient once the ESCO Project upgrades are complete.

The improvement needs in this area are as follows:

- Investigate foundation cracking and hole under DAFT 2. Perform a structural review of the exterior cracks in both tanks.
- Execute a major process rehabilitation or replacement eventually.

3.3.2.10 Digesters

Figure 3.10 Digester No. 4

Portions of this area are addressed by ESCO Project RECM 7 (Digester Mixers and Feed Sludge Pump Rehabilitation) and GECM 1 (Biogas Treatment System). The scope of RECM 7 and GECM 1 includes the following:

- Replace the existing lance type gas mixing system with mechanical mixing (Digesters No. 3 and 4 only).
- Refurbish the existing digester heating system including replacing the existing digester recirculation pump(s), heat exchanger(s) and associated 3-way control valve, and condensing boiler(s).
- Install a new digester gas conditioning system and modify the existing compressed natural gas (CNG) fill station.

The following observations and findings were made during the condition assessment:

- The majority of the equipment in this area is included in the ESCO Project.
- Digesters No. 1 and 2 have been out of service for many years and likely will never be put back into service. The equipment associated with these digesters has been decommissioned.
- The interior condition of the digester tanks is unknown. The tanks were constructed in 1988 and will be taken out of service as part of the ESCO Project. The condition of the interior tank should be inspected during this time to determine if any rehabilitation is needed.
- Cracking has formed near handrail posts on the digester's roof. Minor cracking and staining can also be seen near the top of Digester No. 3. Pooling water was found on the roof during the assessment.

- The handrail for Digester No. 3's stairway does not appear tall enough to meet safety requirements.
- Access to the digester area is limited for cranes and large trucks. Pulling of pumps and mixing equipment is difficult, which may contribute to less frequent maintenance.
- A recent project replaced large portions of the flare piping and flame arrestors. However, some piping that was not replaced has minor corrosion.
- MCC DCC is from 1987 and, although staff indicated that it works fine, it should be replaced due to its age.

The improvement needs in this area, not already being addressed by the ESCO Project, are as follows:

- Inspect the digester's internal condition.
- Replace MCC DCC.
- Replace the digester stairway's handrail and repair cracking on and around digester roof.

3.3.2.11 Sludge Pump Stations

Figure 3.11 Sludge Storage Holding Tank

Portions of this area are addressed by ESCO Project RECM 7 (Digester Mixers and Feed Sludge Pump Rehabilitation) and RECM 6 (Dewatering Equipment Replacement). The scopes of RECM 7 and RECM 6 includes the following:

- Demolish the existing sludge microscreens.
- Add an in-line grinder to the influent piping to the sludge-holding tank and add a fourth belt-filter press-feed pump.

The following observations and findings were made during the condition assessment:

- Sludge microscreen tank and pumps:
  - According to staff, the pumps have suction issues and the station has had maintenance issues. However, the ESCO Project will likely lead to this tank being bypassed and the pumps being taken out of service.
  - The transfer tank's interior condition is unknown. Staff was not aware of the last time it was inspected.

  - No containment area exists around the microscreen dumpsters, and the continuously flowing washwater presents a slipping hazard. In addition, algal growth has formed and drain covers are missing. However, these screens will be removed per the ESCO Project, which should eliminate this problem.
  - An abandoned chemical containment area is located next to the tank. The equipment and structure could be demolished to free up space in this area.
- Sludge-holding storage tank and pumps:
  - Staff believes that this tank was T-Lock lined in the 1980s.
  - All pumps are from 1989, making them 30 years old. These pumps are approaching the end of their useful lives in the coming years. Rotors and stators have been replaced on all three sludge feed pumps.
  - The configuration of this station may be modified to eliminate the internal submersible pumps. Staff noted operational issues of the pumps and believe this station may work better if it is modified.

The improvement needs in this area, not already being addressed by the ESCO Project, are as follows:

- Study potential modifications to the sludge-holding storage pump station to determine if a redesign is feasible.

3.3.2.12 Dewatering

Figure 3.12 Dewatering Building

Portions of this area are addressed by ESCO Project RECM 6 (Dewatering Equipment Replacement). The scope of RECM 6 includes the following:

- Replace two of three existing belt filter presses with refurbished units including appurtenances such as the conveyor and polymer equipment.
- Add a fourth belt filter press and associated pump if the project budget allows.
- Replace all polymer equipment (day tank, polymer pumps, etc.)
- Provide an in-line grinder to the influent piping to the sludge-holding tank.
- Prep and paint the existing roof structure including the underside of roof metal decking.
- Prep and paint the mezzanine structure (vertical and horizontal components) and the underside of decking, not including the existing galvanized treading.

The following observations and findings were made during the condition assessment:

- Much of this area is being overhauled by the ESCO Project.
- MCC N is 30 years old and likely needs to be replaced, especially if another belt press is going to be installed.
- Severe corrosion was observed on the corner of the indoor polymer tank. This tank is planned to be removed as part of the ESCO Project.
- Underside of metal roof is corroded. This is likely an indication that the HVAC system is not working well enough to treat the air in the building.
- Staff noted that the filtrate tank is undersized and the aluminum ladders are rotting.

The improvement needs in this area, not already being addressed by the ESCO Project, are as follows:

- Replace MCC N.

3.3.2.13 Miscellaneous Facilities

This section addresses other WQCP facilities that are not addressed by any part of the ESCO Project. With that being said, some ongoing design efforts are already underway in these areas.

The following observations and findings were made during the condition assessment:

- Gravel sump (stormwater pump station):
  - This station serves the WQCP as well as the adjacent City property and it is currently not large enough to handle the runoff during a storm event. The wet well is too small, which causes this area to flood. Staff noted that a larger station is needed and a permanent discharge pipe needs to be installed.
- Plant water pump station:
  - New 3W pump station is being designed by Cannon Engineering. The station may be relocated.
  - The current station does not have backup power or a standby power option.
- Recycled/reclaimed water pump station:
  - The pump station replacement was designed by Cannon Engineering. The station may be relocated.
- Ferric storage (next to grit removal area):
  - The ferric tank was installed in the 1990s.
  - The chemical feed pumps are 10 years old, and staff is in the process of replacing them.
  - The containment area was upgraded per recommendations from the 2011 study.
- Alum storage:
  - This station is not normally used. According to staff, it only runs if the water is out of compliance.
- Sodium hypochlorite and sodium bisulfite storage:
  - The roof of the sodium hypochlorite storage facility is missing tiles and the remaining ones can blow off during high winds or could fall on someone. This type of cover is not suited for the outdoors.
  - The sodium bisulfite tanks were installed in 2003 and are 15 years old. These tanks are likely nearing the end of their useful lives.

The improvement needs in these miscellaneous areas are as follows:

- Expand the gravel sump in the stormwater pump station.
- Replace the sodium hypochlorite structure's ceiling.
- Replace the sodium bisulfite tanks.

3.3.2.14 Plant Power

Figure 3.13 MCC-2

The plant power system is not included in any part of the ESCO Project.

The following observations and findings were made during the condition assessment:

- A number of MCCs and switchgears were replaced, demolished, or added as part of the MCC Replacement Project over the last 10 years.
- Six MCCs that were installed prior to 1990 are still in service: H (1978), J (1978), L (1978), LA (1978), DCC (1988), and N (1989). These have all reached the end of their useful lives and should be considered for replacement.
- The City should perform a coordination study on the plant's power system once upgrades are completed. The system has undergone many changes in recent years and will be going through more in the near future.
- Staff indicated problems with the electrical system such as paved over or inaccessible duct banks, improper grounding, arc flash and safety concerns, and new units being fed by old feeder lines.
- Thermal imaging of the 480-V system was performed as part of this project. The findings are included in the following section.

The improvement needs in this area are as follows:

- Replace aging MCCs that have reached the end of their useful lives.

3.4 Thermal Imaging

Between February 26 and 28, 2019, Allied Reliability Group inspected and performed thermal imaging of the 480-V equipment. The Taft Electric Company, who is working with the City on the ESCO Project, coordinated the inspection and reviewed the report. Appendix B includes a copy of Allied Reliability Group's report.

The thermal imaging inspected and tested hundreds of MCC and switchgear buckets, breakers, and components. In general, the equipment was found to be in good condition. However, seven priority repair items were noted in the report, ranging in priority from critical to minor, according to the temperature reading.

None of these findings indicate that any piece of equipment must be fully replaced; instead, City staff or a contractor can make the necessary repairs.

Table 3.2 summarizes the findings and recommendations from the thermal imaging report.

Table 3.2 Thermal Imaging Findings and Recommendations Summary

Priority	Equipment	Finding(s)	Recommendation(s)
Critical	MCC N (Dewatering)	Poor connection - Poor contact	Replace affected components.
Important	MCC D1 (East BNR)	Poor connection - Poor contact	Disassemble, clean all contacts, inspect for damage, replace components if damaged, and then reassemble the unit. Check current for imbalance or overloading.
Important	MCC P (West BNR)	Poor connection - Poor contact (2 instances)	Disassemble, clean all contacts, inspect for damage, replace components if damaged, and then reassemble the unit. Check current for imbalance or overloading.
Minor	MSB (Main MCC Building)	Poor connection - Poor contact	Disassemble, clean all contacts, inspect for damage, replace components if damaged, and then reassemble the unit.
Minor	MCC-1 (Main MCC Building)	Poor connection - Poor contact (2 instances)	Disassemble, clean all contacts, inspect for damage, replace components if damaged, and then reassemble the unit. Check current for imbalance or overloading.

Note:
(1) Full Infrared Thermographic Report in Appendix B.

3.5 Future Regulator Review

Utilities must be aware of and, to the extent possible, plan for the future regulatory direction of government agencies and any potential new requirements. In a state like California where the government is responsible for large areas and diverse geography, regulations can be extremely challenging to accurately predict over the next 20 years.

Using its work on wastewater treatment plant master plans with similar local agencies, Carollo performed a cursory review of pending or future regulations that may impact the City's sewer

system over the next 20 years. Through this high-level review process, Carollo found one potential regulation that could necessitate an improvement project for the WQCP or collection system over the project's planning period. With that being said, various other issues that could lead to future regulations warrant discussion. These topics must be monitored over time to anticipate future regulatory effects on facility needs.

Below are six topics that may have the potential for long-term effects on the City's sewer system.

3.5.1 Nitrogen and Phosphorus

New statewide impairment thresholds for total nitrogen (TN) and total phosphorus (TP) may be included in the State Board's upcoming Biostimulatory Substances Amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California (ISWEBE Plan). Numerous water bodies throughout the state have already been deemed "impaired" due to elevated nutrient (nitrogen and phosphorus) concentrations. Until recently, these 303(d) listings were confined to lakes and reservoirs where high nutrient levels contribute to excess algae growth, low dissolved oxygen, and fish kills.

Recently, however, the Environmental Protection Agency (EPA) and other states have enacted more restrictive nutrient standards to protect aquatic organisms, particularly benthic macroinvertebrates. California initiated a similar effort called the Numeric Nutrient Endpoints or the Nutrient Policy in 2010. In 2016, to develop a method to measure biological integrity, California merged its program to develop a nutrient policy called the California Stream Condition Index (CSCI). This new policy is not expected to occur for at least 10 years since it will take about that long to finalize the policy, determine whether the river should be added to the 303(d) list, and develop a total maximum daily limit (TMDL).

Using discussions with others in the industry, Carollo has assumed the year 2035 for needed compliance with TN and TP TMDLs for planning purposes. However, how the amendment will be implemented for specific water bodies or publicly owned treatment works and what regulatory off-ramps might be provided to dischargers are still unknown. The City should continue monitoring their discharge levels alongside regulatory progress.

- Current effects on the WQCP: given current TN and TP discharge limits for Arroyo Simi and the surrounding water bodies, no changes are currently required.
- Future effects on the WQCP: if state regulations require lower discharge limits for TN and TP and assuming that the WQCP is not meeting those limits when they take effect, the following effects are expected to take place:
  - Phosphorous: no additional processes would be needed to address TP limits. However, operations may likely be modified with additional chemical dosing to remove TP in the filters.
  - Nitrogen: the existing BNR process would need to be upgraded to enhanced nutrient removal (ENR) to reduce TN to the required levels.

3.5.2 Climate Change and Water Conservation

Climate change could produce a number of future effects including severe droughts, intense storms, increased influent concentrations and temperatures, increased peaking factors, and increased odors and corrosion caused by the sulfide and sulfuric acid generated from increased microbial activity. Chlorine residuals could also be affected due to elevated temperatures.

Recent California droughts led to state-mandated conservation efforts. Current and future water conservation efforts could also result in even more concentrated influent wastewater with higher solids and biochemical oxygen demand (BOD) loadings.

The WQCP is typically in compliance with the current total dissolved solids (TDS) limits; however, staff has indicated that the recent drought, which caused the Metropolitan Water District of Southern California to blend more with Colorado River water, resulted in a change in potable water quality. As a result, the TDS limits at the plant became harder to consistently meet during this period.

Prolonged periods of drought increase reliance on poorer quality water supplies with higher TDS, while water conservation increases the concentration of salt in raw sewage. If droughts continue due to climate change, then salt concentrations are expected to rise and potentially exceed the TDS, chloride, and sodium objectives for Arroyo Simi. This may result in a new, more stringent wasteload allocation for river discharge.

In addition, in December of 2016, the EPA proposed a new method to develop water quality objectives for conductivity. These methods may also lead to more restrictive water quality standards to protect salt-sensitive, aquatic species living in the river.

- Current effects on the WQCP: climate change and conservation have caused a reduction in flows of the last few years; however, the WQCP has not seen adverse changes that necessitate improvements at this time.
- Future effects on the WQCP: the WQCP may need to implement advanced waste treatment (e.g. reverse osmosis) to reduce salt concentrations in the final effluent. In addition, climate change and conservation may require plant process modifications to accommodate greater ranges of influent conditions (low average flow with very high winter peaking). However, since the effects of climate change are just beginning to be studied, no timeframe is set for when these changes may be needed or required.

3.5.3 Compounds of Emerging Concern (CECs)

Compounds of emerging concern (CEC), also called emerging pollutants of concern (EPOC), consist of a large group of pharmaceuticals, personal care products, industrial-use chemicals, and some commercial chemicals. While concerns exist over the public health and environmental effects of these unregulated chemicals, researchers know little about how trace levels of them in discharges affect the environment.

The entire wastewater industry is challenged to addressing uncertainties about the environment and the public health effects of CECs. Because wastewater collection systems and treatment plants are potential primary pathways for CECs to enter the environment, the occurrence and persistence of CECs in these systems must be monitored along with current and future regulations. Around the country, studies and pilot testing are underway to look for alternative treatment methods that will reduce the concentration of CECs in treatment plant effluent.

- Current effects on the WQCP: current concentrations and the level of regulation for CECs do not require any changes to plant processes.
- Future effects on the WQCP: future research and regulations regarding CECs, as well as increases in CEC concentrations, could necessitate changes to existing processes or the addition of new advanced processes for CEC removal.

3.5.4 Nanomaterials

Nanotechnology offers the potential for many useful and valuable commercial and industrial products. Fabricating nanomaterials, however, can introduce nanoparticles and associated processing catalysts such as nickel, silver, and cobalt into wastewater.

Little is known about how the physical and chemical characterization of nanoparticles relates to their bio-interactions and potential environmental consequences. Scientists are studying the human health risks associated with exposure to nanomaterials and the potential ecotoxicity of their release to the environment. Further research in this area will affect decisions on controlling and managing the introduction of nanoparticles into sewer and wastewater treatment systems.

- Current effects on the WQCP: due to the relatively low concentrations of nanomaterials in the environment and wastewater collection systems, no changes are currently required.
- Future effects on the WQCP: as our understanding of how nanomaterials affect the environment improves, future regulations could necessitate changes for the plant processes.

3.5.5 Biosolids Management

According to the EPA, biosolids are "nutrient-rich organic materials resulting from the treatment of domestic sewage in a treatment facility. When treated and processed, these residuals can be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth."

Previously in California, only a handful of counties in the state had restrictions against land application in place. However, by 2016, that trend reversed and land application, particularly in northern and central California, has become highly regulated.

Multiple regulatory bodies currently impose biosolids requirements that have direct and indirect effects on the WQCP. These include California Assembly Bill (AB) 341, AB 1826, AB 1594, Senate Bill (SB) 605, and SB 1383. Public opinion and ongoing court cases may also affect future limitations on land application. In general, the public is largely opposed to the land application of biosolids, especially of Class B materials with increasing concerns on emerging contaminants.

The limitation on land application of biosolids may drive an industry shift towards Class A biosolids. The City should monitor discussions regarding the "healthy soils initiative" since they may produce a feasible avenue to aid continued Class B biosolids land application.

Biosolids could also be affected by changes in concentrations and regulations regarding CECs, as well as other potential contaminants including nanomaterials. Reactivation and regrowth in biosolids are also currently being tested to better understand their mechanism and implications.

- Current effects on the WQCP: with current concentrations and regulations, the City's practice of biosolids' landfill disposal does not require changes at this time.
- Future effects on the WQCP: potential regulations and restrictions on landfill disposal could require the City to find an alternative method of biosolids management such as modifications to produce Class A biosolids.

3.5.6 Air Quality

The City is part of the Ventura County Air Pollution Control District. On February 14, 2017, the Ventura County Air Pollution Control Board adopted the 2016 Ventura County Air Quality Management Plan (AQMP), which presents Ventura County's strategy (including related mandated elements) to attain the 2008 federal 8-hour ozone standard by 2020, as required by the federal Clean Air Act Amendments of 1990 and the EPA's applicable clean air regulations.

The neighboring South Coast Air Quality Management District (SCAQMD), which covers Los Angeles, Orange, San Fernando, and San Bernardino counties, recently enacted its own AQMP that has additional requirements that may indicate what could affect the City in the future. Most notably are CMB-03 (Emission Reductions from Non-Refinery Flares) and BCM-10 (Emission Reductions from Greenwaste Composting), which could affect the WQCP's digester gas and biosolids. Additionally, other requirements may determine future modifications to emergency engines and generators. Diesel options may not be acceptable in future years.

- Current effects on the WQCP: current regulations do not require any noteworthy changes to plant operations.
- Future effects on the WQCP: when planning for future modifications to emergency engines and generators, diesel options may not be acceptable.

3.5.7 Regulatory Review Conclusions

At present, one potential (not yet pending or under review) regulation is anticipated to have a direct or significant effect on the City's sewer system within the 20-year planning horizon: the regulations on TN and TP limits. The extent of the effects will depend on the limits required, but it could necessitate the conversion of the current BNR process into ENR. ENR is similar enough to the existing BNR that modifying the existing tanks should be sufficient and not require any new structures. However, for the purposes of planning, we do not anticipate this requirement taking effect until 2035, which is near the end of the 20-year planning period.

Other regulations are currently being studied that could emerge and require moderate to significant changes to the WQCP's treatment processes. Most notably are the potential effluent TDS limits that may necessitate installing advanced water treatment technologies, restrictions on landfill disposal that may require producing Class A biosolids, air quality restrictions that may require changes to emergency generators, and extreme flow peaks during intense storms that may require adding temporary storage to buffer peak flows. Because none of these requirements have progressed far enough to estimate timeframes for implantation, they are all assumed to fall outside the 20-year planning period.

3.6 Existing 5-Year WQCP Projects

The City prepared projects and budget for the next 5 years, and these projects were compared to the findings and recommendations from the above evaluations. Many of the projects on the 5-year CIP are being addressed by the ESCO Project or their aspects were identified by the condition assessment.

The following projects were carried over from the existing CIP and included in the new 20-year CIP. The project descriptions were adapted from the 5-year CIP's project sheets.

- Building roof rehabilitation: this project proposes to evaluate the roof structures and repair deficiencies for eight buildings at the WQCP, including Administration, Westside

Electric, Westside Aeration, Dewatering, Chlorine, Filter Control, Main Electrical, and Digester. These buildings have been in service from 20 to 40 or more years. A roof evaluation of both the structure and the roof material is necessary to identify areas to be repaired and reduce the risk of catastrophic failure. Design and construction will follow the evaluation. The Headworks building's roof structure was recently rehabilitated.

- Electrical conveyance replacement: this project proposes to replace the WQCP's electrical power conveyance system, namely the conduit and wires and junction structures that connect the distribution centers to the actual field equipment, such as the pump motors, lighting, and operating equipment. These wires and conduits have been in service for more than 40 years and must be replaced to ensure system reliability. The electrical distribution system replacement project was recently completed in 2017.
- Laboratory fume hood replacements: this project proposes to replace four fume hoods that are more than 30 years old in the WQCP's Laboratory. Replacement is recommended because of the hoods' age and to provide a safe area for distillation while running a variety of laboratory analyses.
- WQCP road paving: this project proposes to reconstruct roads within the WQCP that have been in service for more than 30 years. Reconstruction is recommended because the roadway's base structures have failed. The project is proposed to be constructed in five phases. The first three phases will complete Collections Way and the parking lot south of the Administration building, Dewatering Way from the entrance to the biosolids loading area, and a portion of Main Street. The final phase will pave Clarifier Way.

3.7 Asset Lifecycle Modeling

In addition to the evaluations noted above, lifecycle modeling was performed on the WQCP assets to forecast if and when they might need to be replaced during this CIP's planning period. The model was built using the asset list from the City's Hansen software and the asset data from the 2011 study. The two lists were merged to create an inventory of the WQCP assets.

The intent of the inventory was to build a data repository at a suitable level of detail for CIP planning. The inventory was developed according to the hierarchies of the facilities, processes, and assets. An "asset" was generally defined as a complete physical component of a facility that enables service to be provided, is critical to plant operation, and has a value greater than $10,000.

Assets included in the ESCO Project or in the recommendations noted above were assumed to be replaced and not modeled for future replacements. The remaining assets were modeled for replacement using their age or known condition, similar to the process performed in the 2011 study. Table 3.3 shows the expected life of the primary categories of assets. Each asset's age was compared against the expected life in the table to determine when to replace it.

Table 3.3 Expected Life Assumptions

Discipline	Asset Category	Default Expected Life (years) (1)
Civil/Site work		50
Structural		
	General	50
	Concrete	50
	Fiberglass	25
	Steel	25
	Plastic	10
Mechanical		
	General	20
	Pumps	15
	Valves	35
	Major Process Equipment	20
	Chemical Equipment	15
	HVAC	15
Electrical		30
Instrumentation		15

Note:
(1) Expected life of individual assets modified as needed.

The outputs of the model were used to develop long-term budgetary numbers for the CIP. Because assets in the worst condition are being addressed by the ESCO Project or the recommendations from the other evaluations, the remaining replacements are assumed to start after other projects have been completed and they are prioritized accordingly, as described in Chapter 6 (Capital Improvement Plan).

Chapter 4

COLLECTION SYSTEM ASSESSMENT

This chapter contains the findings and recommendations from the collection system assessment.

4.1 Assessment Methodology

Carollo Engineers, Inc. (Carollo) performed an evaluation of the gravity collection system to determine the improvement projects to be included in the capital improvement plan (CIP). The assessment included the following evaluations:

- Condition evaluation using closed-circuit television (CCTV) inspection data and other condition information.
- Hydraulic evaluation using the results of previous hydraulic studies.
- Review of the City of Simi Valley (City)'s 5-year CIP projects for the collection system.
- Lifecycle modeling of non-inspected pipes.

The findings of these evaluations and assessments are included in this chapter.

4.2 Capital Improvement Plan Recommendations

Given the findings of the collection system evaluations, the following improvement projects are recommended for the CIP.

Table 4.1 Collection System Capital Improvement Projects

	Project Title	Project Description
1	Sinaloa Lake-West	Rehabilitation of 10,596 feet of 6 to 10-inch, PVC pipes.
2	Sinaloa Lake-East	Rehabilitation of 13,306 feet of 8 to 10-inch, PVC and asbestos cement pipes.
3	Easy-Arroyo Simi	Rehabilitation of 4,797 feet and four point repairs of 8 to 39-inch primarily PVC and asbestos cement pipes.
4	Mountain Valley-Justin	Rehabilitation of 6,713 feet and four point repairs of 8 to 33-inch, primarily asbestos cement pipes.
5	Royal-Arroyo Simi	Rehabilitation of 9,665 feet and seven point repairs of 10 to 36-inch, primarily asbestos cement pipes.
6	E Los Angeles Ave Trunk	Rehabilitation of 2,002 feet and eight point repairs of 12 to 20-inch, primarily asbestos cement pipes.
7	Civic Center-Alamo	Rehabilitation of 2,971 feet and one point repair of 8 to 18-inch, primarily PVC pipes.
8	East Simi-Indian Hills Ridge	Rehabilitation of 5,126 feet of 8 to 10-inch, primarily PVC pipes.
9	Aurelia-Arroyo Simi	Rehabilitation of 4,163 feet and nine point repairs of 8 to 10-inch, primarily asbestos cement pipes.

Table 4.1 Collection System Capital Improvement Projects (continued)

	Project Title	Project Description
10	Sebring-Santa Susana	Rehabilitation of 6,432 feet and seven point repairs of 8 to 21-inch, primarily asbestos cement pipes.
11	Wright Ranch-Cochran	Rehabilitation of 6,467 feet and one point repair of 8 to 18-inch, primarily PVC pipes.
12	Madera-Woodranch	Rehabilitation of 554 feet and four point repairs of 8 to 18-inch, primarily PVC pipes.
13	Sinaloa-Royal-Long Canyon	Rehabilitation of 4,365 feet and 11 point repairs of 12 to 27-inch, primarily asbestos cement pipes.
14	Stearns	Rehabilitation of 1,016 feet and two point repairs of 12 to 18-inch, primarily asbestos cement pipes.
15	Tapo Canyon-Rebecca	Rehabilitation of 1,404 feet and seven point repairs of 12 to 21-inch, primarily asbestos cement pipes.
16	Pipeline Lifecycle Model	Age-based modeling to forecast pipe rehabilitation during the planning period.
17	Manhole Lifecycle Model	Age-based modeling to forecast manhole rehabilitations during the planning period.
18	Trunkline Inspection Program	Continuation of the program to inspect all trunk lines on a five-year cycle.
19	Supplemental Inspection Program	Program to inspect all sewer pipelines on a five-year cycle (to supplement the work already being done by City staff).

The sections below discuss the findings that led to these recommendations. Chapter 6 (Capital Improvement Plan) provides the estimated costs and schedules for these projects.

4.3 Hydraulic Evaluation

The evaluation of the collection system hydraulic issues was developed using the results from two other analyses:

- 2010 Sewer System Evaluation and Capacity Assurance Plan, prepared by Brown and Caldwell.
- 2016 Microsoft Excel capacity model of 8 to 14-inch sewers, prepared by City staff.

Each analysis focused on different subsets of the gravity pipelines using vastly different approaches.

The Brown and Caldwell study developed a hydraulic model for the trunk sewers (12 inches and larger), while the City's capacity model calculated theoretical flows for pipes 14 inches and smaller. The Brown and Caldwell model used flow monitoring to build and calibrate a hydraulic model that simulated dry and wet weather flows to identify hydraulic deficiencies in current and future land-use scenarios. Meanwhile, the City's capacity model used pipe data from the City's Geographic Information System (GIS) and assumed customer loadings to calculate the theoretical flow capacity for each pipe. The City's model was built on conservative assumptions and relied on pipeline invert data from GIS. Figure 4.1 combines the findings of each analysis.

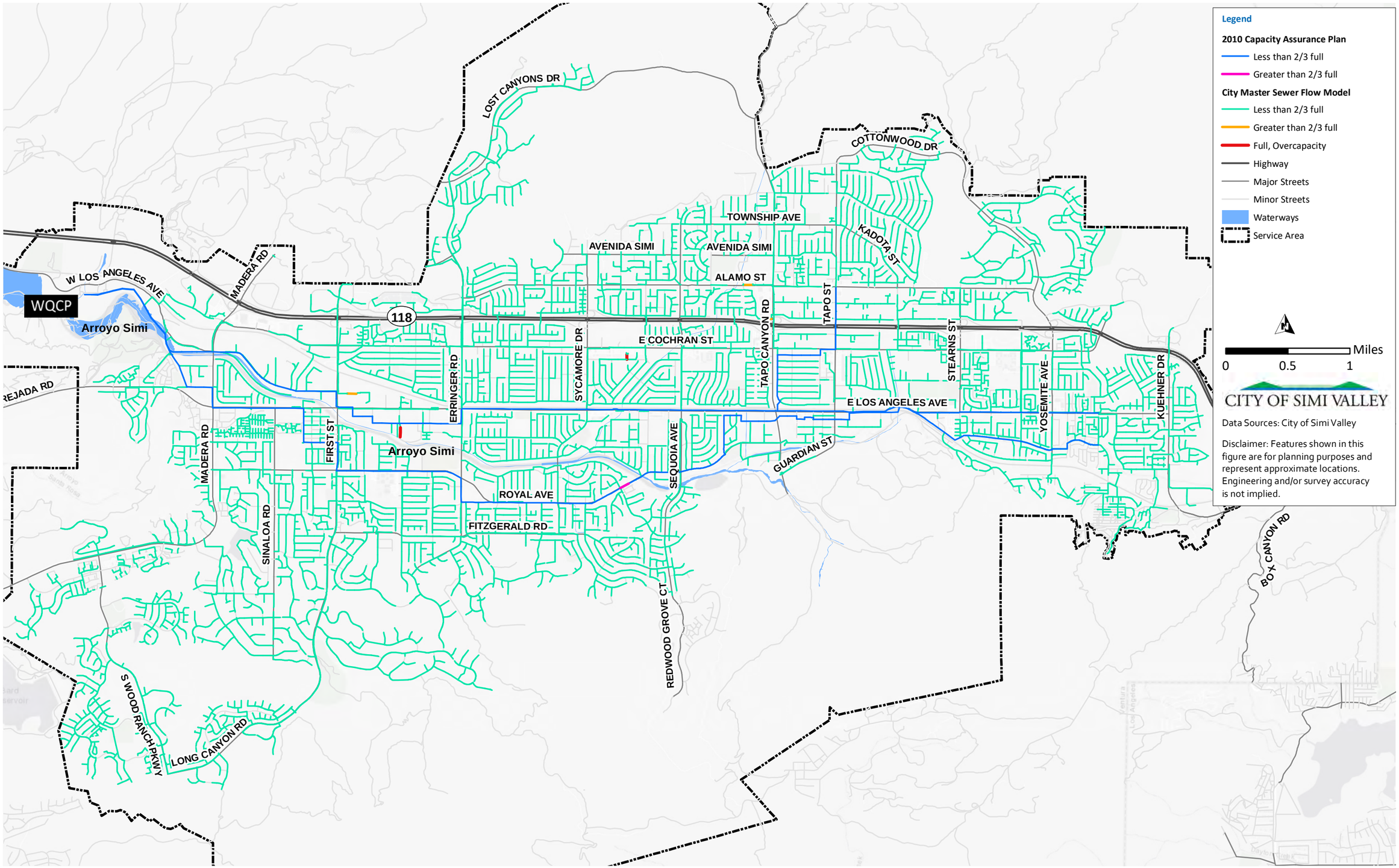


Figure 4.1 Gravity Main: Hydraulic Model Results

4.3.1 Hydraulic Findings and Recommendations

The results from both analyses were combined to look for hydraulic issues in the collection system that need to be addressed in the CIP.

The Brown and Caldwell model identified a single pipe segment that was greater than two-thirds full and required attention. This pipe is located in Royal Avenue, west of Sequoia Avenue. All other pipes were modeled to be less than two-thirds full and, therefore, don't reflect any hydraulic issues.

The City's capacity model provided the percentage of pipe capacity being used in each segment, ranging from 0 to 150 percent. The model found three pipes with capacities greater than two-thirds full and two pipes with a capacity above 100 percent. Four pipes were 8 inches in diameter and one was 4 inches in diameter.

The City's model had a few data points that produced invalid results. These pipes had equal upstream and downstream inverts, which resulted in a calculated flow of 0 cubic feet per second. This led to the pipe being flagged as over-capacity, regardless of the estimated customer flows. Thus, the results for these pipes were disregarded as actual hydraulic issues.

Figure 4.1 shows the locations of these pipes and their resulting capacities. In general, the collection system does not have any capacity issues. Due to the small number of these problematic pipes, the preferred course of action was to combine them with the condition evaluation results (as discussed in the following sections) and group them into capital improvement projects in the same areas.

4.4 Condition Evaluation

The condition evaluation used CCTV inspection data and other pipe information to identify pipelines to be replaced or lined. The primary source of gravity sewer pipe data was the City's GIS. Additional information included CCTV inspection databases, computerized maintenance management system (CMMS) records, cleaning schedules, known hot spots, the existing capital improvement projects, anecdotal information from City staff, and select information from the 2011 Carollo Below-Ground Asset Management (BAM) model.

The pipeline information was loaded into a software program to analyze the condition and remaining life of the pipelines and to identify needs for collection system repairs and rehabilitation. Carollo used Innovyze InfoMaster as the modeling software.

4.4.1 CCTV Inspection Data

The collection system is inspected by City staff and contractors on an annual and ongoing basis. City staff inspects the smaller diameter pipelines (less than 12 inches) and contractors typically inspect the trunk lines (12 inches and larger). Both inspections use the standardized National Association of Sewer Service Companies Pipeline Assessment Certification Program (NASSCO PACP) scoring systems.

For the analysis, Carollo received a total of seven CCTV databases: six contractor databases and one City database. The contractor inspections ranged from 2012 to 2018, while the City inspections ranged from 2015 to 2019. The City had additional CCTV data prior to 2015; however, the data was coded using a different pipe-ID system and could not be successfully loaded into the model.

A combined total of 140 miles in inspection data was contained in the seven CCTV databases. This is roughly 32 percent of the 380 total miles of gravity pipelines in the model. Figure 4.2 shows the miles of inspection per year, separated by City inspections and contractor inspections.

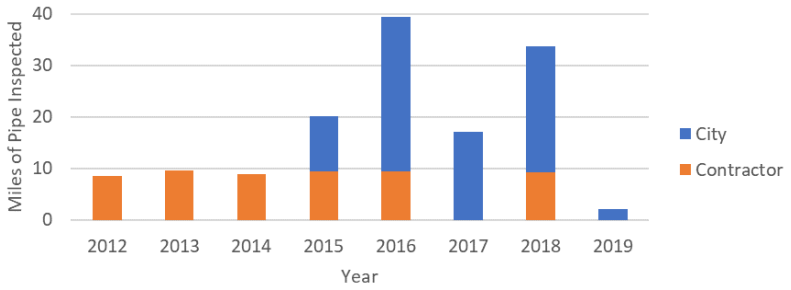


Figure 4.2 CCTV Inspection Data Timeline

The trunk lines (pipes 12 inches and greater) are inspected on a 5-year schedule. With 43 miles of trunk lines, this equates to roughly 9 miles of inspection per year and matches the contractor data received. In total, 55 miles of contractor CCTV inspection data, dating back to 2012, was evaluated.

The City CCTV inspection data totaled 85 miles over the last 4 years. The miles of inspection varied widely on a yearly basis, in part, due to a breakdown of a CCTV camera. From 2015 to 2018, the City averaged 21 miles per year in CCTV inspections. Figure 4.4 shows a map of the inspected pipelines.

Nearly 70 percent of the system has no CCTV inspection data. Of the 120 miles with inspection data, 60 miles (50 percent) found no significant defects, 31 miles (27 percent of inspected pipe) has minor defects of grades 1 or 2, and 29 miles (24 percent) has moderate to severe defects (grades 3, 4, or 5).

The condition model utilizes individual observations and defect coding to determine the condition of each pipeline. Figure 4.3 shows the breakdown of the peak defect score for each pipeline.

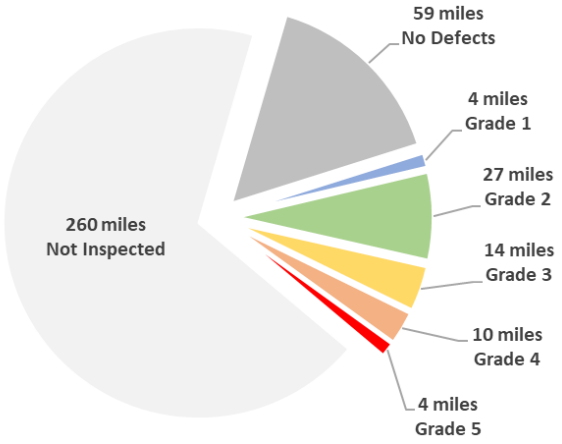


Figure 4.3 CCTV Inspection Scoring Summary

Figure 4.5 shows the peak defect score for each surveyed pipe. This peak defect could be structural, operational, or other.

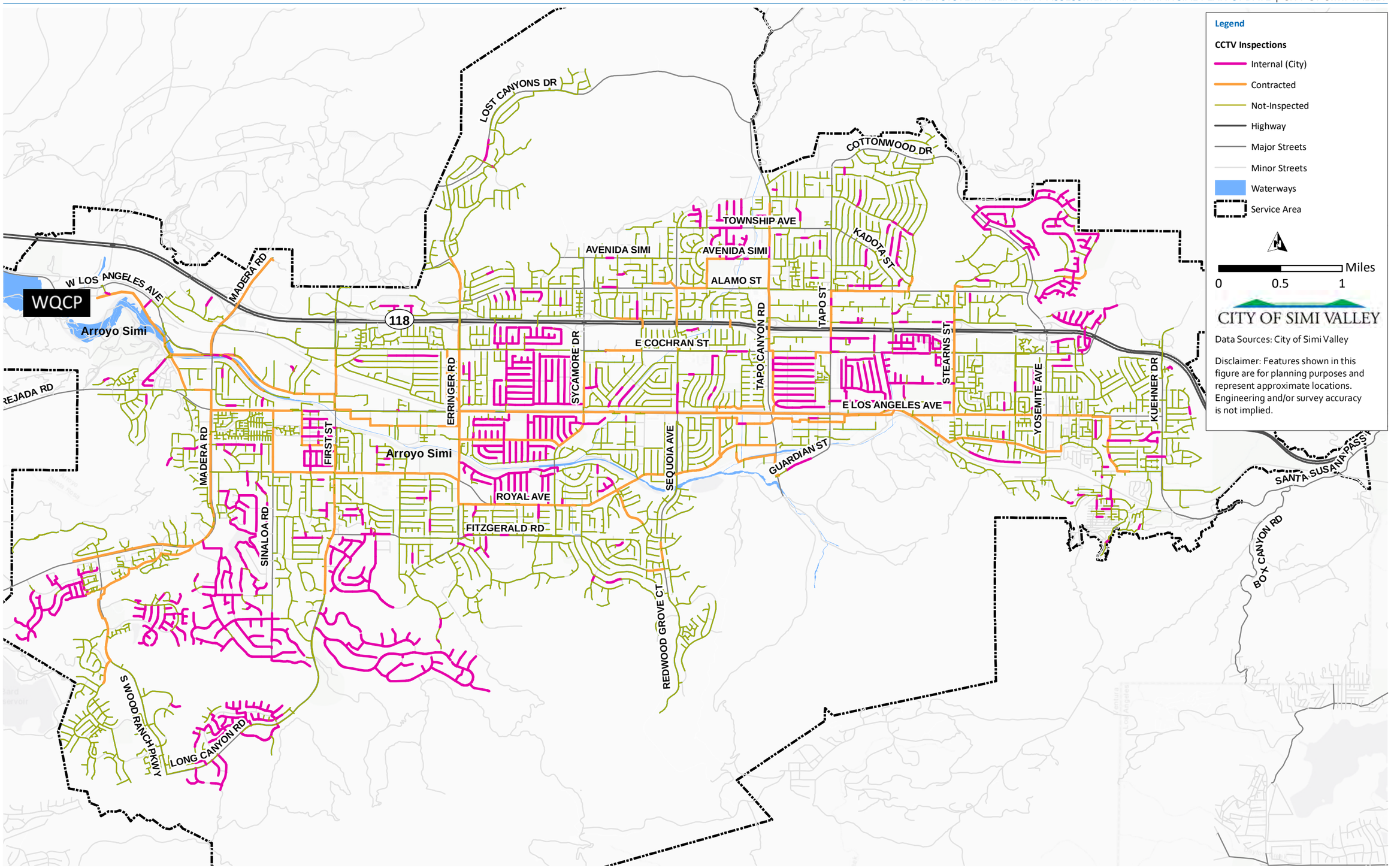


Figure 4.4 Gravity Main: CCTV Inspection Data

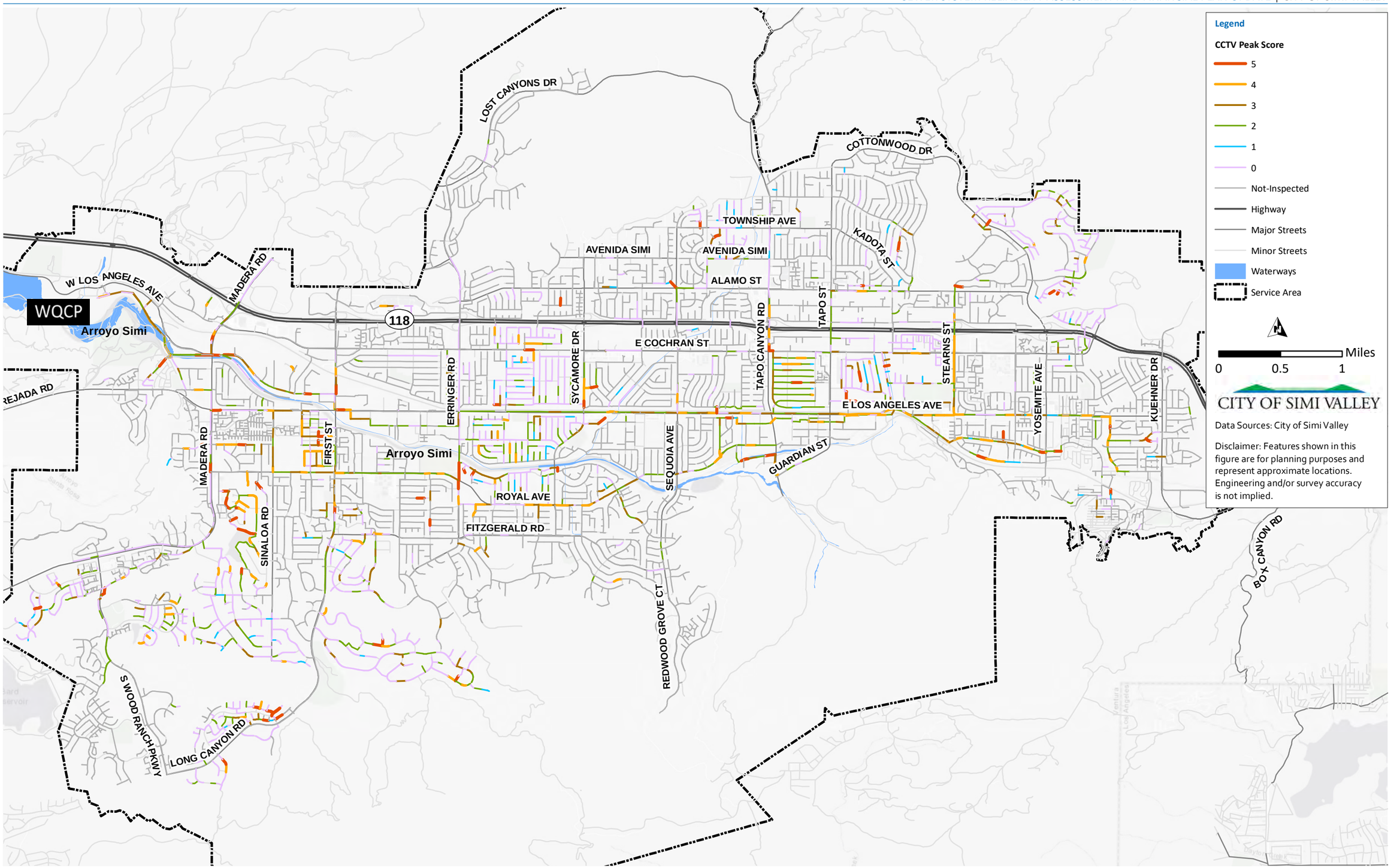


Figure 4.5 Gravity Main: CCTV Peak Score

4.4.2 Existing CIP Projects

The City developed a 5-year CIP according to data from recent CCTV inspections and the findings from the 2011 Carollo study. The existing CIP contains 14 pipeline rehabilitation projects, some of which were already completed or are currently underway. Figure 4.6 lists these projects.

- Beaumont - Complete
- LA Avenue (Bishop to Barnes) - Complete
- 24-inch to 36-inch in Easy Street, Fifth Street, and Ventura Avenue - Complete
- 10-inch to 12-inch Sewerline - Underway
- Strathearn Place-Arroyo Simi - Underway
- Royal (Pride-Erringer) - Underway

These pipes were not included in the model outputs.

The rest of the projects included in the 5-year CIP were reviewed against the latest CCTV inspection data to determine if they should remain in the CIP or be removed. The pipes that remained in the CIP were regrouped with other pipes into new CIP projects.

In a few cases, pipes in the existing CIP did not have CCTV inspection records in the model. These pipes may have been inspected in a prior round of CCTV data that Carollo was unable to load into the model due to discrepancies with City GIS data. In these cases, the pipes remained in the CIP and were regrouped with neighboring pipes into new projects to receive previously assigned rehabilitation tasks.

4.4.3 Condition Model Framework

The condition model used the defect coding from the CCTV inspection data to determine the type of action needed (repair, rehabilitation, or replacement) for each pipe segment, given the number and severity of defects it has. Not all defects codes indicate the need to repair or rehabilitate a pipe. For example, excessive grease deposits require cleaning and no other actions.

The model focused on the following eleven defect code groups to determine if repair or rehabilitation of the pipeline was needed.

- Broken pipes (B)
- Holes in pipes (H)
- Collapsed pipes (X)
- Cracking (C) or Fractures (F)
- Surface damage (S)
- Deformed pipes (D)
- Infiltration (I)
- Joints (J) and Line offsets (L)
- Missing mortar or bricks (M)

A total of 125 different defect codes within these eleven categories were flagged by the model and run through a decision logic framework to determine whether additional inspection, repair, or rehabilitation was needed.

Recommendations for rehabilitation were assumed to also include the potential for complete replacement of segments that cannot be sufficiently addressed through internal relining (CIPP)

and point repairs. The specific actions will be determined during the more detailed planning and design phases of the projects.

Table 4.2 summarize the algorithm developed to analyze the pipe data and determine the resulting activity.

Table 4.2 Activity Decision Logic

Cause (1)	Activity
Pipes with no CCTV data.	Inspection
Pipes with peak defect scores of 0, 1, or 2.	Re-inspection
Pipes without a defect in one of the eleven categories list above.	Re-inspection
Pipes with exactly one defect from the list above (defect length less than half of the pipe length).	Point Repair
Pipes with exactly one defect from the list above (defect length greater than half of the pipe length).	Rehabilitation
Pipes with more than one defect from the list above.	Rehabilitation

Note:
(1) Based on CCTV defect and scoring data only. CCTV video was not used to verify accuracy of data.

The outputs of the model are shown in Figure 4.7.

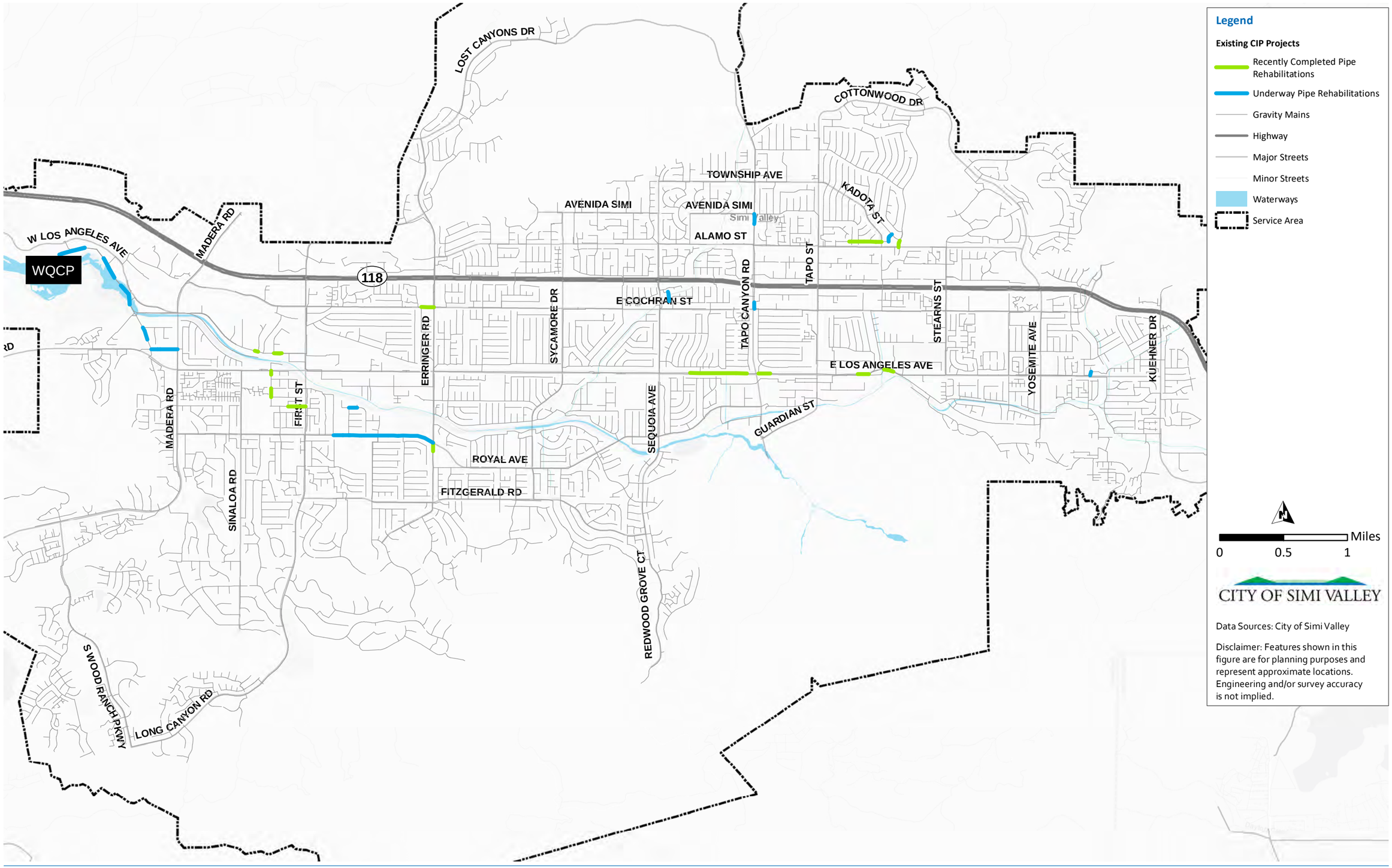


Figure 4.6 Gravity Main: Existing CIP Projects

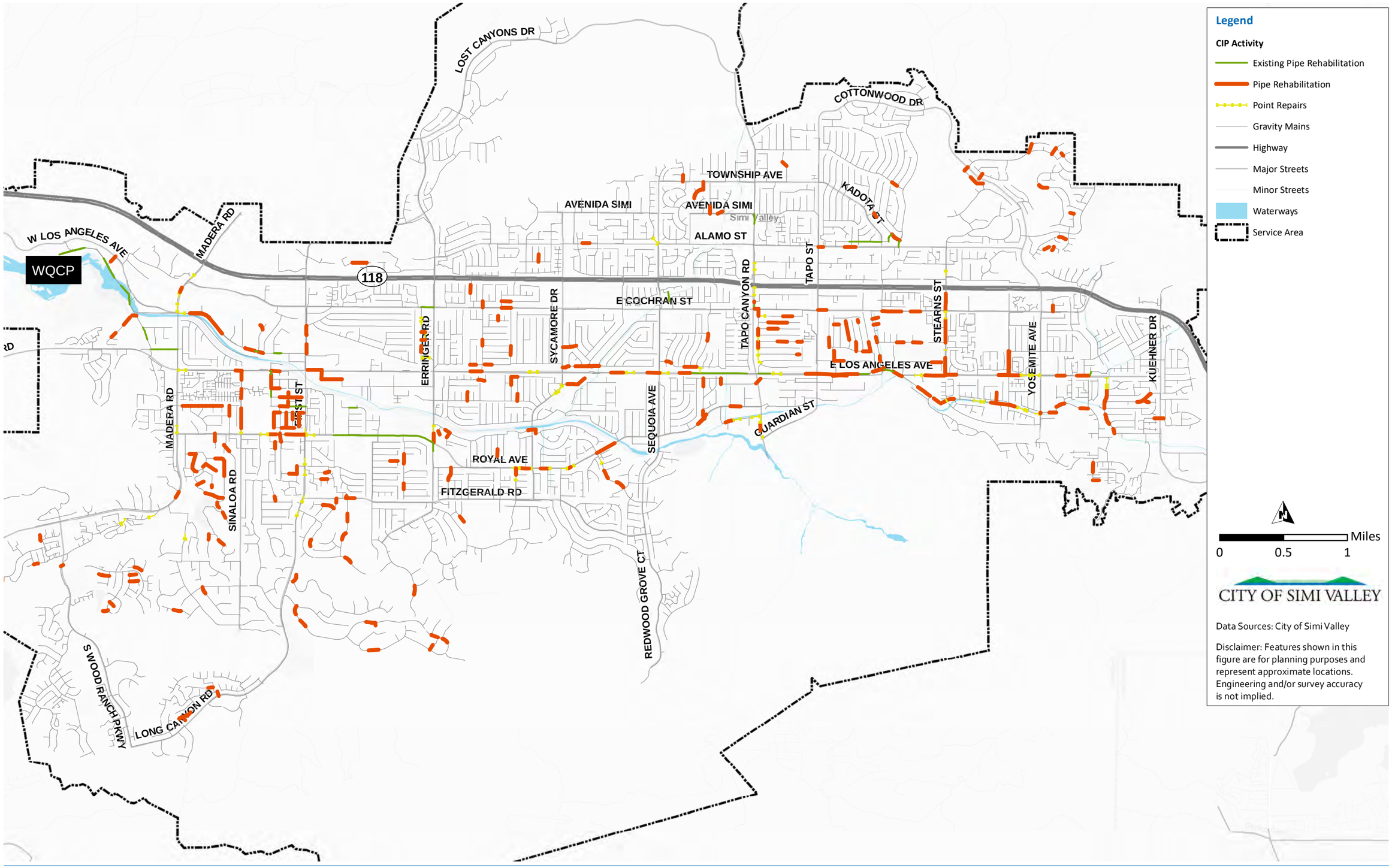


Figure 4.7 Gravity Main: CIP Activity

4.4.4 Capital Improvement Projects

Given the results of the model, 15 CIP projects were developed. These projects group the pipes according to location, size, and/or activity. Due to the distributed nature of the results, some projects cover a large area.

Table 4.3 describes the projects, while Figure 4.8 maps them.

Table 4.3 Pipeline Capital Improvement Projects

	Project Title	Project Description
1	Sinaloa Lake-West	Rehabilitation of 10,596 feet of 6 to 10-inch, PVC pipes located in the western portion of the Sinaloa Lake service area.
2	Sinaloa Lake-East	Rehabilitation of 13,306 feet of 8 to 10-inch, PVC and asbestos cement pipes located in the eastern portion of the Sinaloa Lake service area.
3	Easy-Arroyo Simi	Rehabilitation of 4,797 feet and four point repairs of 8 to 39-inch, primarily PVC and asbestos cement, partially continuous pipe segments located in the northwest portion of the City's service area around Easy St and Arroyo Simi.
4	Mountain Valley-Justin	Rehabilitation of 6,713 feet and four point repairs of 8 to 33-inch, primarily asbestos cement pipes located in the north-central portion of the City's service area near Mountain Valley and Justin Elementary.
5	Royal-Arroyo Simi	Rehabilitation of 9,665 feet and seven point repairs of 10 to 36-inch, primarily asbestos cement pipes located in the south-central portion of the City's service area around Royal Ave and Arroyo Simi.
6	E Los Angeles Ave Trunk	Rehabilitation of 2,002 feet and eight point repairs of 12 to 20-inch, primarily asbestos cement pipes spanning from the north-central to west-central portion of the City's service area along E. Los Angeles Ave.
7	Civic Center-Alamo	Rehabilitation of 2,971 feet and one point repair of 8 to 18-inch, primarily PVC, partially continuous pipe segments located in the north-central portion of the City's service area around Civic Center and Alamo St.
8	East Simi-Indian Hills Ridge	Rehabilitation of 5,126 feet of 8 to 10-inch, primarily PVC pipes located in the eastern portion of the City's service area around Indian Hills Ridge.
9	Aurelia-Arroyo Simi	Rehabilitation of 4,163 feet and nine point repairs of 8 to 10-inch, primarily asbestos cement pipes located in the eastern portion of the City's service area near Aurelia St and Arroyo Simi.
10	Sebring-Santa Susana	Rehabilitation of 6,432 feet and seven point repairs of 8 to 21-inch, primarily asbestos cement pipes located in the eastern portion of the City's service area around Sebring and Santa Susana.
11	Wright Ranch-Cochran	Rehabilitation of 6,467 feet and one point repair of 8 to 18-inch, primarily PVC pipes located in the eastern portion of the City's service area near Wright Ranch and Cochran St.
12	Madera-Woodranch	Rehabilitation of 554 feet and four point repairs of 8 to 18-inch, primarily VCP pipes located in the southwestern portion of the City's service area around Madera Rd and Woodranch.
13	Sinaloa-Royal-Long Canyon	Rehabilitation of 4,365 feet and 11 point repairs of 12 to 27-inch, primarily asbestos cement pipes located in the southwestern portion of the City's service area around Sinaloa Rd, Royal Ave, and Long Canyon Rd.
14	Stearns	Rehabilitation of 1,016 feet and two point repairs of 12 to 18-inch, primarily asbestos cement pipes located in the southwestern portion of the City's service area near Stearns St.
15	Tapo Canyon-Rebecca	Rehabilitation of 1,404 feet and seven point repairs of 12 to 21-inch, primarily asbestos cement pipes located in the southwestern portion of the City's service area along Tapo Canyon and Rebecca St.

Note:
(1) Project Summary Sheets included in Appendix A.

4.5 Asset Lifecycle Modeling

In addition to the evaluations noted above, asset lifecycle modeling was performed on the remaining assets that did not have CCTV inspection data to forecast if and when they might need to be replaced or rehabilitated during this project's planning period. This model followed a similar approach to Carollo's 2011 BAM model.

Table 4.4 lists the expected service life for the primary material types of sewer pipe in the City's system based on industry-reported estimated life expectancies, City experience, and CCTV data. The expected service life is a measure of the number of years expected until a failure may occur, and a pipe needs to be rehabilitated or replaced. Generally, the expected life indicates a timeframe in which 50 percent of pipelines need to be rehabilitated or replaced prior to the delineated length of time and 50 percent needs rehabilitation afterward.

Pipes with inspection data that were not included in the previous sections' projects were included in the model, and their expected remaining service life was adjusted based on the peak defect score.

Table 4.4 Expected Service Life Assumptions

Sewer Pipe Material	Expected Life (years) (1)
Asbestos Cement	60
Plastic	75
Clay	75
Reinforced Concrete	75
Ductile Iron	75
Glass-Fiber-Reinforced	75
CIPP Lined	50
Unknown	75

Note:
(1) Based on 2011 Carollo study and modified using an analysis of City's CCTV data

The results of the model forecast that 75 miles of sewer pipe will need to be repaired or rehabilitated by 2039. Because these pipes don't have inspection data, the type of activity required is purely speculative. For the purposes of the capital improvement budget, the cost for pipe rehabilitation was used as the default.

The outputs of the model were used to develop long-term budgetary numbers for the CIP. Because the sewer pipes with the worst-known condition are being addressed by the projects in the previous section, the rehabilitation or replacements of these remaining pipes are assumed to begin after the other projects are completed.

The lifecycle of manholes was also included in the model. The City provided a list of manholes with infiltration, calcium deposits, and exposed aggregate. The cost to repair these manholes was also included in the near-term CIP.

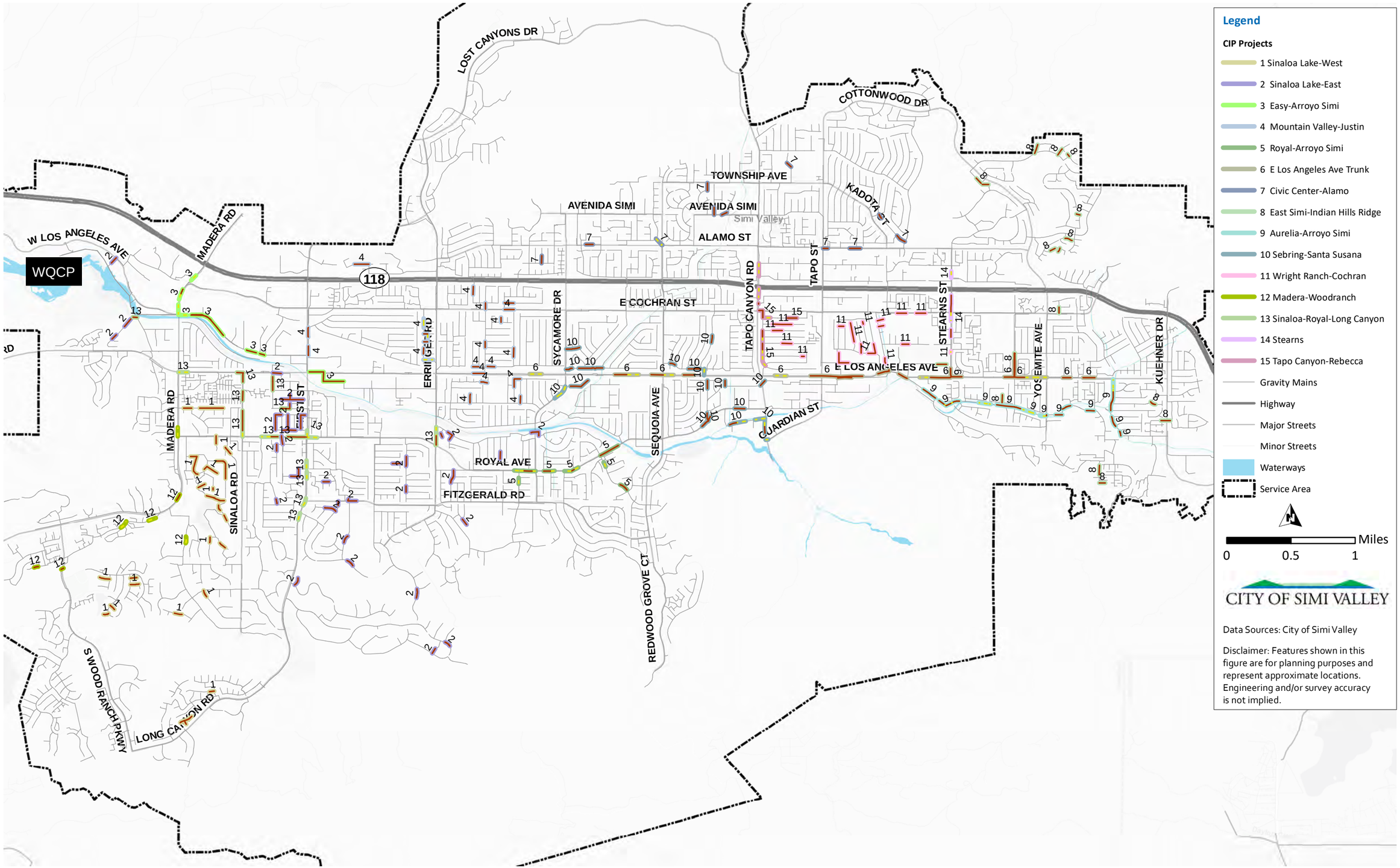


Figure 4.8 Gravity Main: CIP Projects

The useful life of sewer manholes is generally longer than the useful life of sewer mains, but this can also be affected by the materials used in the construction of the manholes. Because the City's GIS does not contain specific information on the manhole materials, linings, and construction techniques, a single original useful life of 75 years was used for all manholes. A long-term project to rehabilitate manholes according to their age was included in the CIP.

4.6 CCTV Inspection Program

As noted in Section 4.4.1 above, CCTV inspection of the collection system is completed regularly by both City staff and contractors. Approximately 43 miles of trunk lines are inspected on a 5-year cycle by a contractor, and the remaining 330 miles of smaller-diameter pipes are inspected by City staff. To inspect all 330 miles on the industry's best practice of a 5-year cycle would equate to 66 miles of inspection annually.

However, given the CCTV inspection data provided from between years 2015 to 2018, the City staff is only inspecting 21 miles per year, short of the 66 miles goal by 45 miles. To achieve the five-year inspection cycle, Carollo recommends hiring additional inspection contractors or acquiring another CCTV inspection truck and additional collection system maintenance staff to inspect the additional miles of pipe per year.

The CIP includes a project for this additional CCTV inspection work, which is assumed to be completed by inspection contractors for the purposes of cost estimating.

Chapter 5

ORGANIZATIONAL AND SCADA SYSTEM ASSESSMENT

The organizational and supervisory control and data acquisition (SCADA) system assessment evaluates aspects of the City of Simi Valley (City)'s Public Works Sanitation Division (Sanitation) and its organization, information technology, and SCADA systems for recommended improvements to be included in the capital improvement plan (CIP). The assessment was divided into organizational and SCADA system reviews that are further described in the following sections.

5.1 Capital Improvement Plan Recommendations

Given the findings of the organizational, technological, and SCADA system evaluations, the following improvement projects are recommended for the CIP.

Table 5.1 Organizational and SCADA Improvement Projects

	Project Title	Project Description
1	Performance Measurement Program	Develop a Sanitation-wide performance measurement program according to American Water Works Association (AWWA)/ Water Environment Federation (WEF)/ Water Research Foundation (WRF) Effective Utility Management (EUM) industry standards, which includes key performance indicators (KPIs), processes, and systems for data collection and reporting.
2	Computerized Maintenance Management System (CMMS) Improvements Program	Conduct an assessment of current CMMS use and implement improvements to the asset inventory for collections and recycled water systems, preventive maintenance procedures and tasks, a condition assessment of sewer mains and manholes, activity-based costing for all maintenance tasks, risk-based asset prioritization, and integration with Geographic Information System (GIS) and SCADA systems.
3	Inventory Management Program	Conduct an assessment of current inventory management practices and data and implement improvements to centralized warehousing, materials management, inventory control, purchasing process, and related CMMS inventory management tools
4	Project Management System	Develop project management system requirements for Sanitation, evaluate software alternatives, procure system and configuration services, and implement project management information system (PMIS). Consider similar project management needs for other divisions of Public Works to leverage additional resources and common information systems for implementation.

Table 5.1 Organizational and SCADA Improvement Projects (continued)

	Project Title	Project Description
5	Rockwell PlantPAX Migration	Migrate the existing SCADA system hardware and software to the latest Rockwell Automation PlantPAX platform. This includes upgrading all existing PLC hardware not included in energy services company (ESCO) projects and completely re-programming the programmable logic controller (PLC) and human machine interface (HMI) software. This effort also includes a high-performance graphic display design and workshops, a SCADA reporting and CMMS integration requirements study, and alarm philosophy development workshops.
6	Lift Station SCADA Integration	Upgrade PLC and communication infrastructure at the three existing sewer life stations and integrate them into the plant SCADA system. This upgrade should be completed after the migration project and the PLCs should be integrated directly into PlantPAX.
7	Alarm Management Program	Implement an annual program to continuously improve alarming to increase operator efficiency and avoid nuisance alarms. The intent is to analyze alarms annually, classify them, and prioritize improvement areas. The resolution to the alarming may include changes to the PLC code to prevent false alarm conditions, more frequent maintenance on instrumentation, or equipment replacement.

The sections below discuss the findings that led to these recommendations. Chapter 6 (Capital Improvement Plan) provides the estimated costs and schedules for these projects.

5.2 Organizational Assessment

The primary effort of the organizational assessment focused on a review of the Sanitation Operations Efficiency Analysis, prepared by LA Consulting in 2013, and the subsequent Implementation Plan prepared in 2014. Carollo Engineers, Inc. (Carollo)'s assessment included an analysis of the organizational changes made since the previous study and how the changes have affected the City and staff.

Findings and recommendations in this section were based solely on the Operations Efficiency Analysis, Carollo's review of the information provided by the City, and input from City staff.

5.2.1 Methodology

Carollo conducted a review of the 2013 Sanitation Operations Efficiency Analysis and discussed the findings during an Organizational Assessment workshop to gather feedback from City staff. Findings from the Operations Efficiency Analysis included reviews of both operations and engineering groups within the Sanitation.

The workshop and follow-up meetings focused on the organizational changes implemented since the analysis was conducted, remaining recommendations that were postponed, and general discussions about other related organizational improvements that are needed.

The recommendations from the Operations Efficiency Analysis were organized according to the following areas:

- General
- Planning
- Organizing

- Directing / Scheduling
- Controlling / Improving

Carollo reviewed each of the 67 recommendations from the Operations Efficiency Analysis, discussed them with City staff during the workshop, and then prepared a summary of recommended capital projects to be included in the CIP.

5.2.2 Findings and Recommendations

Carollo's review of the Operations Efficiency Analysis and subsequent Implementation Plan determined that many of the recommendations related to organizational efficiencies, such as sharing staff resources across divisions, have been implemented. However, many other recommendations that require investments in information technology, consulting services, and additional staff resources were not implemented in the last five years. As documented in the report, these initial investments are required to achieve the desired efficiency improvements; however, no previous plans or budgets have been allocated to implement these recommendations.

Carollo determined four major areas that can be planned and executed as projects to achieve the City's desired organizational efficiency improvements. The recommendations from the Operations Efficiency Analysis were grouped and summarized as follows (the preceding numbers refer to item numbers in the 2013 report recommendations):

- Performance Measurement:
  - 3. Develop Sanitation performance measures.
  - 17. Establish a performance-based budget and integrate with CMMS.
  - 26. Establish performance measures and goals for each PM.
  - 64. Establish change order performance measures.
  - 66. Establish continuous improvement process with quarterly updates.
- Maintenance Management:
  - 4. Eliminate redundant systems and integrate into one CMMS.
  - 5. Review the use of Hansen for both the plant and collection system.
  - 8. Develop asset inventories in CMMS and GIS with replacement values.
  - 13. Establish a sewer-line cleaning-cycle based on need and condition.
  - 14. Integrate all preventive maintenance and routine schedules within CMMS.
  - 15. Develop overhead rates and integrate into CMMS for job costing.
  - 16. Identify equipment rates for each asset class including all costs.
  - 17. Populate and maintain condition assessment data in CMMS and GIS.
  - 27. Integrate recycled water assets into CMMS.
  - 40. Dedicate resources to establish the PM program and load into CMMS.
  - 41. Integrate a collections-cleaning process into GIS, CMMS, and CCTV.
  - 55. Standardize tracking of labor, equipment, and materials by activity.
  - 59. Utilize the same system for work tracking, planning, and reporting.
  - 60. Train supervisors and managers to use CMMS and linked GIS.
  - 62. Simplify and eliminate redundancies with integrated CMMS.
- Inventory Management:
  - 45. Evaluate and reduce the materials inventory.
  - 46. Control and consolidate inventories and establish accountability.
  - 47. Consider centralizing and reducing inventories.

  - 48. Automate inventory tracking and link to work orders.
  - 61. Streamline and automate work processes for purchasing.
- Project Management:
  - 6. Establish a project management system.
  - 22. Establish project budget and goals including internal costs.
  - 23. Capitalize engineering expenditures in the budget.
  - 30. Develop formal project management skills.
  - 53. Establish an engineering tracking system for project and tasks.
  - 63. Develop a complete and simplified project management system.
  - 65. Budget internal costs by project using industry standards.

5.2.3 Improvement Projects

Carollo recommends that the City invest in these organizational improvement projects, which should result in substantial and measurable efficiency improvements for Sanitation, as already documented in the Operations Efficiency Analysis. A description of the recommended capital projects are detailed below with estimated costs and durations and also discussed in Chapter 6 (Capital Improvement Plan):

PERFORMANCE MEASUREMENT PROGRAM

- Develop a Sanitation-wide performance measurement program according to EUM standards set forth by the AWWA, WEF, and WRF. This program will include KPIs, processes, and systems for data collection and reporting. The estimated project duration is 9 months.

CMMS IMPROVEMENTS PROGRAM

- Conduct an assessment of current CMMS use and implement improvements to the asset inventory for collections and recycled water systems, preventive maintenance procedures and tasks, condition assessment of sewer mains and manholes, activity-based costing for all maintenance tasks, risk-based asset prioritization, and integration with GIS and SCADA systems. The estimated project duration is 18 months.

INVENTORY MANAGEMENT PROGRAM

- Conduct an assessment of current inventory management practices and data and implement improvements to centralized warehousing, materials management, inventory control, purchasing process, and related CMMS inventory management tools. The estimated project duration is 9 months.

PROJECT MANAGEMENT SYSTEM

- Develop project management system requirements for Sanitation, evaluate software alternatives, procure system and configuration services, and implement a PMIS. Consider similar project management needs for other divisions of Public Works to leverage additional resources and common information systems for implementation. The estimated project duration is 15 months.

5.3 SCADA System Assessment

Carollo reviewed the existing SCADA system's architecture and ongoing improvements to understand the SCADA system for the current and future needs of the Water Quality Control

Plant (WQCP) and sewer lift stations. For the assessment, Carollo considered the SCADA system's preliminary design previously developed by EMA Engineering (EMA), as well as input from City staff as part of workshops and findings from a WQCP site visit. Carollo reviewed recent changes made to the system at the WQCP and considered additional improvements needed to implement a robust and reliable SCADA system. The recommended improvements were packaged into capital improvement projects that are included in the CIP detailed in Chapter 6 (Capital Improvement Plan).

5.3.1 Methodology

To prepare Sanitation's SCADA system assessment, Carollo conducted the following activities as part of the Sewer System Reliability Assessment project:

- Reviewed the SCADA Replacement Project's Request for Proposals (RFP) and Scope of Work prepared by EMA.
- Reviewed the updated SCADA network architecture maps provided by City.
- Interviewed Sanitation's SCADA support staff.
- Conducted limited inspection of the SCADA equipment and software at the WQCP.
- Discussed Sanitation's current state and recommendations with Rockwell Automation representatives.
- Held a SCADA analysis and preliminary results workshops with City staff.

Using the information gathered from the documentation review, group workshops, and site inspections, Carollo prepared draft recommendations to be included in the SCADA architecture strategy. The strategy consists of the following areas, which are discussed further in the findings and recommendations below:

- SCADA network architecture.
- Fiber optic infrastructure.
- Servers and HMI software.

A part of this effort, Carollo reviewed and updated Sanitation's SCADA network and server maps, which are shown in Figure 5.1 and Figure 5.2.

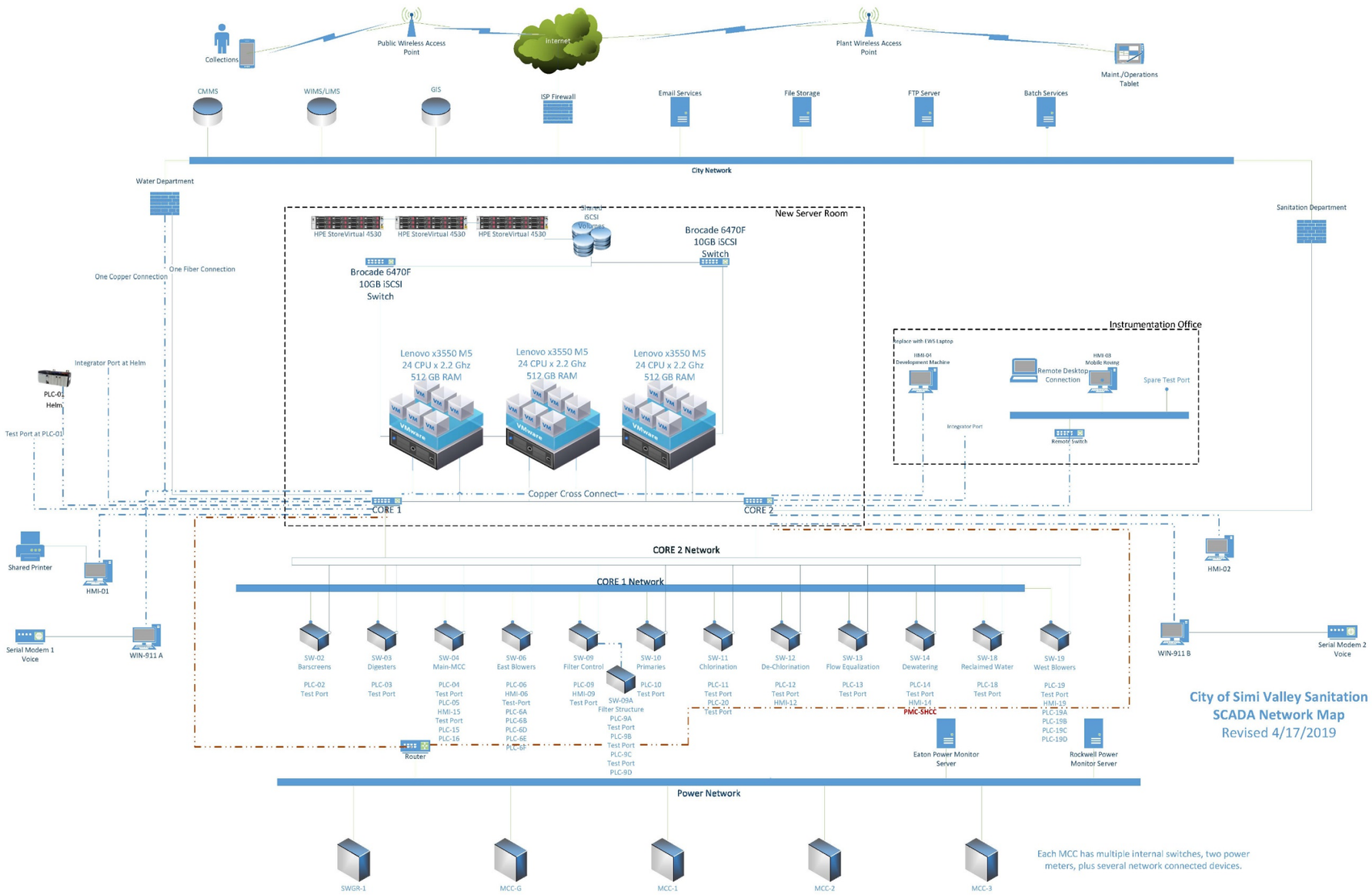


Figure 5.1 SCADA Network Map

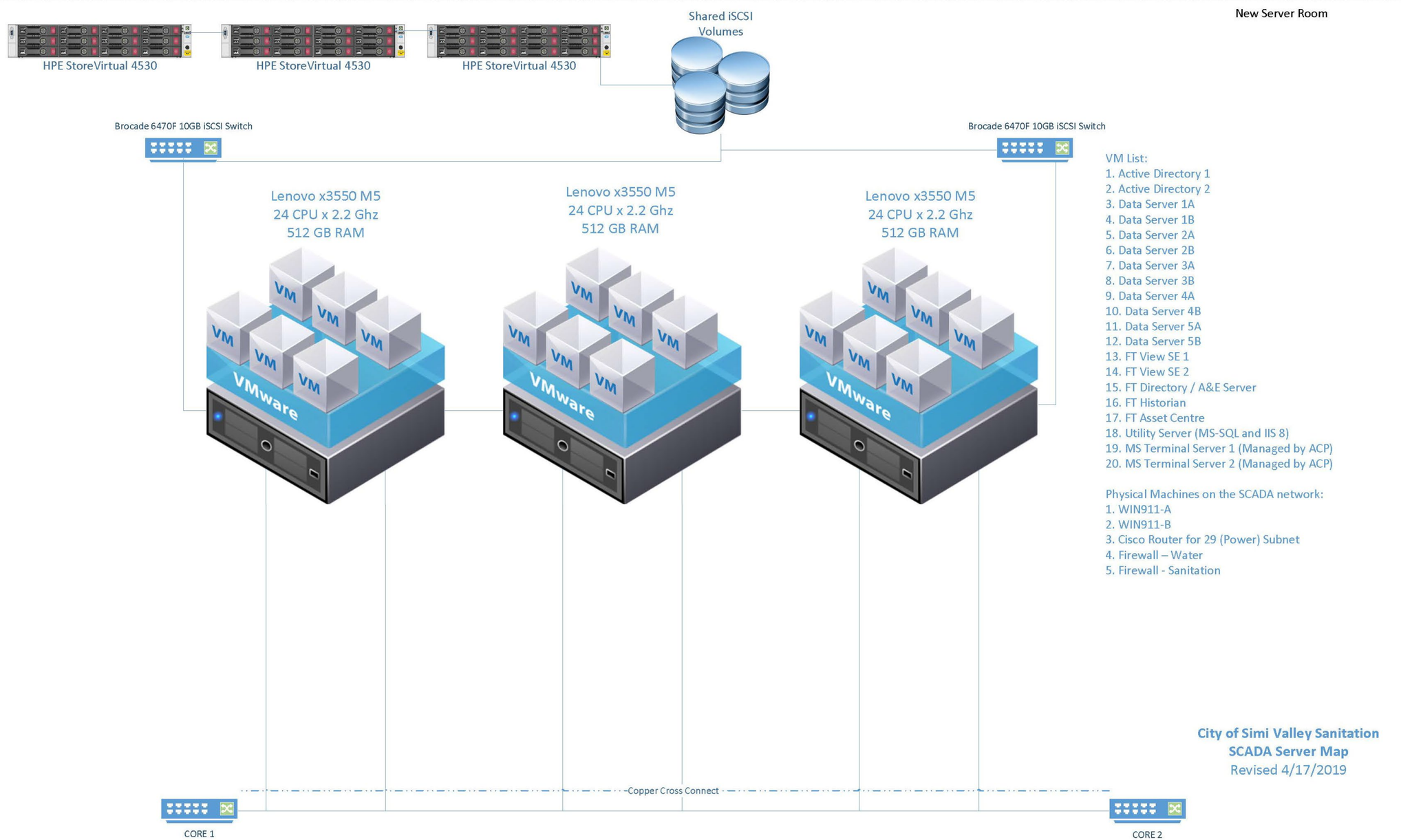


Figure 5.2 SCADA Server Map

5.3.2 Key Findings

The SCADA system assessment and recommendations were developed with information gathered through the SCADA analysis workshop and a comparison between the City's current state versus industry best practices. The discussions with City staff helped identify potential improvements and provided Carollo with general information about the state of the current HMI software cutover.

The documentation review, workshops, and subsequent communications resulted in the following key findings on the current state of Sanitation's SCADA system.

PROJECT PLANNING, DESIGN, AND IMPLEMENTATION PROCESS

The City issued the SCADA Improvements Project RFP without a formal design process. And while the project included successful upgrades to several elements, including the implementation of revised network hardware, installation of mini data center utilizing a full software-defined networking (SDN) arrangement, and new HMI software licensing, the project fell short of the City's expectations because several critical configuration activities were not completed.

The integrator hired was not certified to provide programming services for Rockwell Automation FactoryTalk and they also apparently under-bid the project, resulting in shortcuts to reduce costs. The City is currently negotiating with a FactoryTalk-certified integrator and, at the same time, terminating their contract with the uncertified integrator. Although some aspects of the project were completed successfully, Sanitation's operations staff mostly does not use the FactoryTalk system because the system programming and configuration are not completed or have been inaccurately implemented.

Carollo recommends that the City perform a formal design to fully define the configuration and programming scope and provide projected implementation costs to complete the SCADA Improvements Project. During the design, adjustments can be made to fit the CIP budget before the project is bid for implementation. The design process will carefully consider risks and mitigation factors that can be incorporated into the contract to protect the City against nonperforming contractors. Regardless of whether this is a design-bid-build or design-build, similar design elements should be considered for any project expected to be more than $100,000.

SCADA NETWORK ARCHITECTURE

The current control network's architecture follows good design practices and appears to provide unimpeded communication service among existing PLCs and both the Rockwell Automation FactoryTalk and Schneider Electric Wonderware HMIs.

The network's logical topology is configured in a redundant star with core switches in the primary server room and service switches distributed throughout the site, which provides network service to PLCs and devices in each area of the plant. The switch hardware is relatively new and near the beginning of its useful life. Future expansion of the existing network should continue to follow the network's logical, redundant-star topology.

With the improvements to the plant's SCADA network architecture, servers, and HMI, an opportunity exists to expand the SCADA system to include the three sewer lift stations, which are not currently connected to the SCADA network and only have the capability to notify

operations of alarms via the Win-911 paging software. Integrating the lift stations onto the plant SCADA system would allow operations to remotely monitor, respond to alarms, and potentially control the lift station equipment from a single HMI, without additional SCADA server hardware and software. However, the PLC and communication infrastructure at the lift stations will need to be upgraded to support the connection to the plant SCADA network.

FIBER OPTIC INFRASTRUCTURE

As shown in the SCADA diagrams, the SCADA fiber-optic network is distributed throughout the plant in a physical star configuration. In some cases, fiber-optic cables are routed through former control panels that have become large pull boxes for communication and control wiring because some of the existing duct banks were not relocated with the new PLC panels. The older abandoned control panels take up a lot of space, which could be more effectively used after the duct bank is relocated and the fiber-optic cables are reconfigured.

Currently, the fiber optic infrastructure can be improved to accommodate future network expansion and flexibility. However, due to the limited incremental benefits and high expected implementation costs, Carollo does not recommend considering these improvements in the near term.

SCADA SERVERS

The recent SCADA replacement project included the installation of redundant blade servers operating in VMWare's virtual machine environment, redundant storage arrays, and core Ethernet switches. This SDN configuration provides flexibility in adapting to major changes in server counts and software without significant hardware costs. SDNs are common practice for most utilities of similar size to the City and larger.

The Wonderware system is currently operating on a collection of standalone hardware servers, which are at the end of their useful life with a significant risk of failure. As soon as practical, Carollo recommends either completely migrating to the Rockwell Automation FactoryTalk platform or migrating the Wonderware system to virtual machines. Carollo noted that the existing Wonderware servers are likely undersized, which is potentially why it is currently underperforming.

SCADA HMI SOFTWARE

In the short term, the City should consider migrating off of the existing Wonderware hardware servers as described above and preventing the high-risk nature of server failures. One option includes completing the FactoryTalk migration and fully decommissioning the Wonderware hardware and software. The City appears to be moving in this direction; however, if this effort is delayed or postponed, migrating the Wonderware system to the SDN platform may require less effort as a stop-gap measure.

5.3.3 Improvement Recommendations

Given the key findings detailed above, Carollo recommends the following improvements for Sanitation's SCADA system.

COMPLETE MIGRATION TO ROCKWELL AUTOMATION PLANTPAX

The City has expressed the desire to implement Rockwell Automation PlantPAX, which will require upgrades to the PLC hardware and reconfiguration of the PLC and HMI software. The

PLC hardware can be upgraded simply by replacing the central processing unit (CPU) module with a later model, 1756-L7x or 1756-L8x series. As discussed in the key findings regarding the fiber-optic infrastructure, some advantage can be had in replacing the entire PLC while simultaneously demolishing older enclosures and reclaiming some of the space that is currently not being used optimally. Some of the PLCs will be upgraded with the major process improvements included in the ESCO Project. However, the ESCO Project does not include all of the PLCs, and a separate effort is needed to upgrade all of the remaining PLCs to the latest models that support PlantPAX.

In addition to the hardware, the existing PLC and HMI software code and configuration cannot be reused in any practical manner. Each PLC that is converted to PlantPAX will need to be reprogramed along with the corresponding HMI configuration using PlantPAX standard objects or custom-made objects. Reprogramming the PLC and HMI could start with reverse engineering the existing code and mimicking the current operation; however, since the PLC and HMI will need to be completely reprogrammed, the City may consider revisiting the current control strategies with engineering and operations staff and look for ways to improve each system through workshops and design meetings. Process engineering could also be a part of this activity.

Rockwell Automation has confirmed that PlantPAX and FactoryTalk applications can reside on the same server application. However, creating separate FactoryTalk server pairs dedicated to PlantPAX application is recommended during the cutover phases of work. In code migration projects, new code is often developed and old code is left in place to be implemented if a major problem arises during commissioning.

After a few PLC cutovers, it can be difficult to know what database tags are in use and what can be deleted. Deleting any tags in a working HMI can be risky to plant operation, so these tags tend to be left behind unused and then take up space on the servers. By using dedicated servers for PlantPAX and only allowing the PlantPAX code on those servers, the problem of unused tags is easily resolved. When the final PLC is cutover to PlantPAX, no unused or abandoned tags will exist due to the transition.

Rockwell Automation has stated that they have flexible licensing programs for migration projects and they will work with the City, as needed, to implement the optimal approach to the PlantPAX upgrade.

HIGH-PERFORMANCE GRAPHICS

The City expressed an interest in moving toward high-performance graphics which can help streamline operator monitoring and control functions. When properly implemented, this style of graphic interface helps prioritize the operator's attention on the most critical actions needed, followed by less critical control and monitoring functions.

Working with high-performance graphics can cause a culture shock for some operators, so workshops should be held to help illustrate how high-performance graphics would work and function. Before complete plant implementation, a pilot or trial is advised for one process area, which allows all operations staff to interact with the new interface and provide feedback.

Once implemented, the City should plan on additional operator training to ensure proper operation of the facility. Costs associated with implementing high-performance graphics are not significant if included with the PlantPAX upgrade and programming effort.

REPORTING IMPROVEMENTS

The City would like to expand its reporting capabilities according to current and future needs of operation data from SCADA. Rockwell VantagePoint was recommended by EMA but the City does not think this software provides the functionality and capabilities that they need. At the minimum, the City would like to connect many of their motor control centers and switchgear-based networks and leverage energy analysis and motor-efficiency reporting.

Carollo recommends integrating SCADA with the Hansen CMMS to improve preventive maintenance for monitored equipment. To further define these reporting and integration requirements, Carollo also recommends conducting a reporting improvements study as part of the PlantPAX migration project, prior to implementing any additional software.

ALARM MANAGEMENT PROGRAM

The City has expressed interest in developing a detailed alarm management philosophy, based on industry best practices and potentially adopting the ISA18.2 standards. Carollo recommends that the City develops this philosophy during the design phase of the PlantPAX migration project.

After the project is complete, Carollo recommends implementing an alarm management program designed to mitigate nuisance alarms. This annual or semiannual program will evaluate alarm history to find the most frequent alarms, determine if they are actually a nuisance, and develop a plan to mitigate the nuisance. Nuisance alarms can be generated from failing instrumentation, improper hardwired logic, and flaws in the PLC programming logic, but they can be identified and removed through this alarm management program.

LIFT STATION SCADA INTEGRATION

The City has an opportunity to leverage the SCADA system's HMI software and network communications to include the three sewer lift stations in the collection system. Bringing these remote sites onto the plant SCADA system will allow operators to remotely monitor the lift stations, respond to alarms, and potentially control the lift stations from a single set of HMI screens without any additional SCADA software licenses or server hardware.

Carollo recommends conducting a planning and design study to determine the most cost effective PLC and communications infrastructure upgrades required, prior to extending the communications network and incorporating the sewer lift stations into the plant SCADA system.

5.3.4 Improvement Projects

Given the assessment, key findings, and identified improvements, Carollo recommends the following SCADA improvement projects, which are included in the CIP detailed in Chapter 6 (Capital Improvement Plan).

ROCKWELL PLANTPAX MIGRATION PROJECT

- Migrate the existing SCADA system hardware and software to the latest Rockwell Automation PlantPAX platform. This includes upgrading all existing PLC hardware not included in the ESCO Projects and completely re-programming the PLC and HMI software. This effort also includes a high-performance graphic display design and workshops, a SCADA-reporting and CMMS-integration requirements study, and alarm philosophy development workshops. The estimated project duration is 24 months.

LIFT STATION SCADA INTEGRATION PROJECT

- Upgrade PLC and communication infrastructure at the three existing sewer lift stations and integrate them into the plant SCADA system. This upgrade should be completed after the migration project and the PLCs should be integrated directly into PlantPAX. The estimated project duration is 9 months.

ALARM MANAGEMENT PROGRAM

- Implement an annual program to continuously improve alarming to increase operator efficiency and avoid nuisance alarms. The intent is to annually analyze alarms, classify them, and prioritize improvement areas. The resolution to the alarming may include changes to the PLC code to prevent false alarm conditions, more frequent maintenance on instrumentation, or equipment replacement. The estimated project duration is 5 years.

Chapter 6

CAPITAL IMPROVEMENT PLAN

This chapter contains the prioritized capital improvement plan (CIP) and budget estimates made according to the assessments in the previous chapters.

6.1 Prioritized Capital Improvement Plan

The improvement projects from the previous chapters were combined into a CIP and prioritized through a risk analysis. Each project includes an estimated cost, duration, and start year. Appendix A shows all project summary sheets.

Table 6.1 summarizes the number of projects and total cost estimates for the 20-year CIP by project category, while Figure 6.1 illustrates the annual CIP budget estimates.

Table 6.1 20-Year Capital Improvement Plan Summary

Project Category	Number of Projects	20-Year Cost Estimate
New WQCP Projects	21	$41.3 M
Existing WQCP CIP	4	$3.5 M
New Collection System Projects	20	$116.3 M
Existing Collection System CIP	4	$4.1 M
SCADA Improvement Projects	3	$1.8 M
Organizational Improvement Projects	4	$1.4 M
Total 20-Year CIP	**56**	**$168.3 M**

The following sections discuss the project cost assumptions and prioritization method used to develop this CIP.

6.2 Risk Prioritization Method

To organize more than 50 improvement projects in this 20-year CIP, Carollo developed a risk-based approach method to prioritize and schedule these projects according to the effects they will have on the sewer system's reliability. Similar risk criteria were created for the Water Quality Control Plant (WQCP) and collection system projects. However, unlike previous studies that calculated risk at the asset level and used more quantitative criteria and weighting factors to develop risk scores, this risk assessment assigned risk scores to the individual projects using a qualitative method.

Each project was first assigned a probability of failure (PoF) score according to the estimated remaining life of relevant assets or the timing until that project is required. The following PoF scoring system was used:

- 5: projects needed immediately or assets that have already failed
- 4: projects estimated to be needed in 5 years
- 3: projects estimated to be needed in 10 years
- 2: projects not anticipated or needed for 10 to 15 years
- 1: projects not needed until the end of the 20-year planning period

These scores and project timings were established according to the judgment of the evaluating staff.

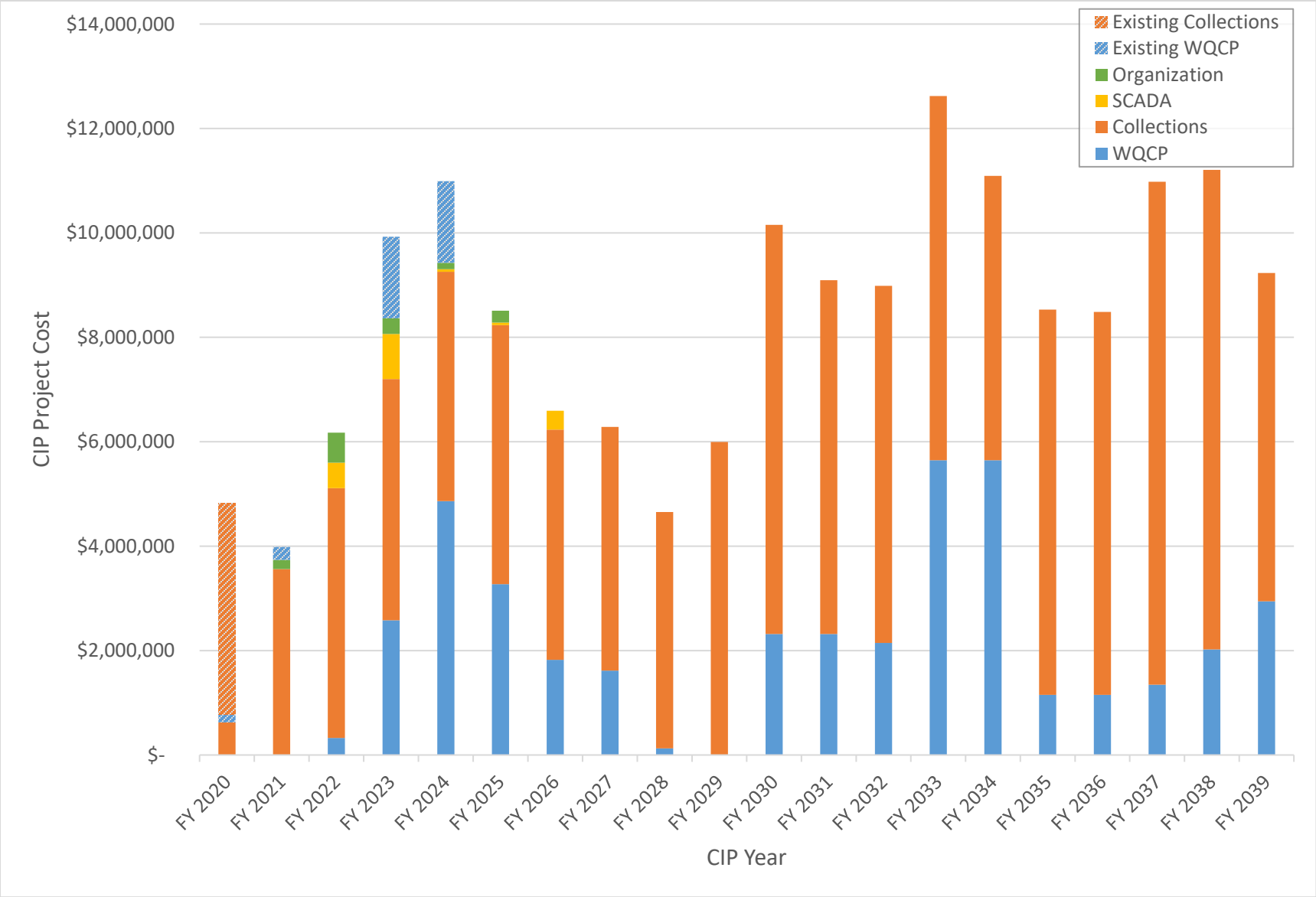


Figure 6.1 20-Year Capital Improvement Plan Budget Estimates

Next, each project was assigned a consequence of failure (CoF) values using a triple-bottom-line approach, an industry standard methodology that considers and quantifies the effects of a project on the environment, community, and economics. The CoF factors for the WQCP focus on reliability and safety, while the factors for the collection system focus on environmental and regulatory effects, as well as those to City staff and customers.

The descriptions and examples of the triple-bottom-line's CoF factors are listed below:

- **Environmental**: meet or exceed permit limits and minimize reportable offenses. Improve habitat and minimize effects on the environment.
  - Permit and regulatory compliance
  - Breaks or spills near waterways
- **Social**: maintain a high standard of worker safety and protection. Minimize community disruptions or service interruptions.
  - Safety issues or plant shutdowns
  - Breaks or spills in high traffic areas or near critical facilities
- **Financial**: implement cost-effective projects and solutions. Maximize economic benefits for customers through cost-effective operations.
  - Significant financial repercussions, such as emergency repairs
  - Cost savings, energy efficiency, and technological improvements

Table 6.2 contains the definitions and scoring used to rate each project.

Table 6.2 Consequence of Failure Factors

CoF Factor	Low or No Effect (1)	Medium Effect (3)	High Effect (5)
Environmental	• No anticipated environmental effects.	• Potential for minor environmental effects. • Pipes are close enough to waterways that a large spill might reach them.	• Potential for violation or significant environmental effect. • Pipes adjacent to waterways.
Social	• No effects on service delivery; redundant asset or service available.	• Potential for minor injury. • Potential for short-term process disruptions. • Service disruption for a small number of customers.	• Potential for significant injury. • Potential for plant shutdown or long-term process disruption. • Service disruption for a large number of customers or largest flow pipes. • Adjacent to a critical facility or high-traffic area.
Financial	• No anticipated effect on the budget.	• Minor financial burden (emergency repairs, etc.). • Minor annual costs or energy savings, maintenance, or reliability improvements.	• Significant financial burden (emergency repairs, etc.). • Significant annual costs or energy savings, maintenance, or reliability improvement.

Each project was assigned CoF scores for each of the three triple-bottom-line factors and the average of the three category scores was calculated to find the overall CoF score. The CoF was then multiplied by the PoF score to determine the risk score. The project summary sheets in Appendix A show the scores for each project's triple-bottom-line factors.

The projects were then ranked according to their risk score, and schedules were shifted to accommodate the higher risk projects first. Some projects were dependent on the completion of others, which was considered in the scheduling process.

6.3 Cost Estimates

The capital cost for each project was estimated at a Class 5 planning level according to the Association for the Advancement of Cost Engineering (AACE) International's definitions of the five "class estimates" in AACE International Recommended Practice No. 18R-97. The accuracy of any cost estimate may change according to the design, mobilization, economies of scale, and project phasing.

Cost estimates are comprised of both direct and indirect costs estimated for all planning, design, construction, construction management, and administration activities of the project. Table 6.3 shows the markups applied to the projects, which differ between the WQCP projects and collections projects to match what is typically seen in the industry. Appendix A has detailed cost estimates included with the project summary sheets.

Table 6.3 Project Markup Assumptions

Factor	WQCP Project Markup	Collection System Project Markup
General Conditions	10%	12%
Contingency	25%	15%
Contractor overhead and profit	10%	10%
Sales tax (1)	7.75%	0%
Engineering, legal, and administration	30%	10%
Total markup (2)	**202%**	**156%**

Notes:
(1) Sales tax calculated on 50% of materials and labor subtotal.
(2) Markup factors are compounded.

Unit costs for plant equipment and construction came from Carollo's project experience and cost-estimating database. Meanwhile, unit costs for sewer rehabilitation using cured-in-place pipe linings came from recent bids provided by the City and costs from the 2011 study. Costs for bypassing activities and traffic control were applied additional factors according to the type of road located over a particular pipe.

Table 6.4 Collection System Unit Costs Table

Pipe Diameter	Base Pipe Rehabilitation Cost	Bypass and Traffic Control Markup (Typical Street) (1)	Bypass and Traffic Control Markup (Major Road) (2)
3	$65	16%	32%
4	$65	16%	32%
6	$65	16%	32%
8	$65	16%	32%
9	$78	16%	32%
10	$78	16%	32%
12	$85	16%	32%
14	$146	26%	50%
15	$157	26%	50%
16	$167	26%	50%
18	$188	47%	84%
20	$209	47%	84%
21	$219	47%	84%
24	$251	47%	84%
27	$282	47%	96%
30	$313	47%	96%
33	$345	58%	107%
36	$470	58%	107%
39	$509	58%	107%
42	$548	58%	107%
48	$627	58%	107%
Point Repair	$20,000	n/a	n/a

Notes:
(1) Defined as Caltrans street functional classifications Local, Minor Arterial, or Unknown.
(2) Defined as Caltrans street functional classifications Major Collector, Principal Arterial, Freeway, or Expressway.

6.4 Prioritized Project List

Table 6.5 lists the 56 capital improvement projects for the next 20 years (2020 to 2039) prioritized by their risk score and project dependencies. The CIP includes existing capital projects that are already underway or were carried over from the City's existing 5-year CIP. The energy services company (ESCO) Project and its costs were not included in the prioritization. Chapter 7 (Financial Sufficiency Evaluation) describes the effects of the ESCO Project on the City's financial plan.

Table 6.5 20-Year Capital Improvement Projects

Project Title	Project Area	PoF (1-5)	CoF (1-5)	Risk Score (1-25)	Risk Rank (1-42)	Cost Estimate	Start Year (Duration)
Arroyo Lift Station	Existing Collections	n/a	n/a	n/a	n/a	$90,000	2020 (1 years)
Royal (Pride-Erringer)	Existing Collections	n/a	n/a	n/a	n/a	$2,990,000	2020 (1 years)
10-12" Sewerline	Existing Collections	n/a	n/a	n/a	n/a	$970,000	2020 (2 years)
WQCP Road Paving	Existing WQCP	n/a	n/a	n/a	n/a	$300,000	2020 (2 years)
Trunkline Inspection Program	Collections	n/a	n/a	n/a	n/a	$3,000,000	2020 (20 years)
Supplemental Inspection Program	Collections	n/a	n/a	n/a	n/a	9500000	2020 (20 years)
Laboratory Fume Hoods	Existing WQCP	n/a	n/a	n/a	n/a	$100,000	2021 (1 years)
Sebring-Santa Susana	Collections	5	4	20	3	$1,480,000	2021 (1 years)
Sinaloa-Royal-Long Canyon	Collections	5	4.5	22.5	2	$1,940,000	2021 (2 years)
CMMS Improvements Program	Organization	1	2	2	35	$500,000	2021 (2 years)
Easy-Arroyo Simi	Collections	5	5	25	1	$6,020,000	2021 (3 years)
Performance Management Program	Organization	1	1.5	1.5	41	$250,000	2022 (1 years)
Rockwell PlantPAX Migration	SCADA	3	3	9	16	$1,250,000	2022 (2 years)
Tertiary Filter Rehabilitation	WQCP	4	4	16	4	$3,263,900	2022 (3 years)
Alarm Management Program	SCADA	1	2	2	35	$250,000	2022 (5 years)
Sinaloa Lake-West	Collections	5	3	15	8	$1,170,000	2023 (1 years)
Plant-wide Safety Improvements	WQCP	4	2	8	20	$212,400	2023 (1 years)
Digester Internal Condition Inspection	WQCP	4	1	4	30	$200,000	2023 (1 years)
Inventory Management Program	Organization	1	2	2	35	$300,000	2023 (1 years)
Building Roof Rehabs	Existing WQCP	n/a	n/a	n/a	n/a	$1,125,000	2023 (2 years)
Electrical Conveyance Replacement	Existing WQCP	n/a	n/a	n/a	n/a	$2,000,000	2023 (2 years)
East BNR Repairs	WQCP	4	2.5	10	14	$757,600	2023 (2 years)
Grit Pumping Improvements	WQCP	4	2	8	20	$394,300	2023 (2 years)
Primary Clarifier and PS Rehabilitation	WQCP	3	3	9	16	$2,970,500	2023 (3 years)

Table 6.5 20-Year Capital Improvement Projects (continued)

Project Title	Project Area	PoF (1-5)	CoF (1-5)	Risk Score (1-25)	Risk Rank (1-42)	Cost Estimate	Start Year (Duration)
Royal-Arroyo Simi	Collections	4	4	16	4	$950,000	2024 (1 years)
Arelia-Arroyo Simi	Collections	5	3	15	8	$1,370,000	2024 (1 years)
WAS Pump Station Overhaul	WQCP	3	3	9	16	$247,000	2024 (1 years)
DAFT foundation cracking investigation	WQCP	3	2.5	7.5	25	$50,000	2024 (1 years)
Civic Center-Alamo St	Collections	5	1	5	27	$550,000	2024 (1 years)
MCC Replacements	WQCP	4	4	16	4	$1,411,600	2024 (2 years)
Secondary Effluent Diversion Structure Repair	WQCP	3	4	12	13	$190,600	2024 (2 years)
FEB Pump Station and Basin Upgrades	WQCP	4	2	8	20	$685,200	2024 (2 years)
Project Management System	Organization	1	1	1	42	$350,000	2024 (2 years)
E Los Angeles Ave Trunk	Collections	4	4	16	4	$6,240,000	2024 (3 years)
Mountain Valley/Justin El	Collections	5	2.5	12.5	10	$1,200,000	2025 (1 years)
Thickening Study	WQCP	1	2	2	35	$200,000	2025 (1 years)
Sludge storage pumping modifications study	WQCP	1	2	2	35	$100,000	2025 (1 years)
Gravel Sump (Stormwater Pump Station) Expansion	WQCP	4	2	8	20	$150,800	2025 (2 years)
Chlorine Contact Tanks Rehabilitation	WQCP	3	3	9	16	$3,091,500	2025 (3 years)
Manhole Asset Lifecycle Model Forecast	Collections	n/a	n/a	n/a	n/a	$765,000	2025 (5 years)
Tapo Canyon-Rebecca	Collections	5	2.5	12.5	10	$640,000	2026 (1 years)
Lift Station SCADA Integration	SCADA	1	3	3	33	$310,000	2026 (1 years)
Electrical Coordination Study	WQCP	1	2	2	35	$250,000	2026 (1 years)
Sodium Bisulfite Station Improvements	WQCP	3	2.5	7.5	25	$241,200	2026 (2 years)
Sinaloa Lake-East	Collections	5	2.5	12.5	10	$1,710,000	2027 (1 years)
Madera-Woodranch	Collections	5	2	10	14	$250,000	2027 (1 years)
Stearns	Collections	4	2	8	20	$450,000	2027 (1 years)
East Simi-Indian Hills Ridge	Collections	5	1	5	27	$590,000	2027 (1 years)

Table 6.5 20-Year Capital Improvement Projects (continued)

Project Title	Project Area	PoF (1-5)	CoF (1-5)	Risk Score (1-25)	Risk Rank (1-42)	Cost Estimate	Start Year (Duration)
Wright Ranch-Cochran	Collections	5	1	5	27	$740,000	2027 (1 years)
Sodium Hypochlorite Station Improvements	WQCP	2	2	4	30	$194,800	2027 (2 years)
Pipeline Asset Lifecycle Model Forecast	Collections	n/a	n/a	n/a	n/a	$60,843,471	2028 (12 years)
Manhole Asset Lifecycle Model Forecast	Collections	n/a	n/a	n/a	n/a	$15,562,500	2028 (12 years)
Asset Lifecycle Model Forecast	WQCP	n/a	n/a	n/a	n/a	$14,763,468	2030 (10 years)
Nitrogen and Phosphorous Regulatory Improvements	WQCP	1	2.5	2.5	34	$10,000,000	2032 (3 years)
DAFT Process Overhaul	WQCP	2	2	4	30	$1,929,900	2037 (3 years)

Note:
(1) Risk factors were not scored for the existing CIP projects or long-term asset models.

Chapter 7

FINANCIAL SUFFICIENCY EVALUATION

In collaboration with the City of Simi Valley (City), Carollo Engineers, Inc. (Carollo) developed a financial sufficiency evaluation incorporating the results of the Sewer System Reliability Assessment Project. This forecast does not formalize or approve the 20-year sewer system capital improvement plan (CIP), but rather works to define the necessary annual funding contributions that would substantiate the availability of funds for rehabilitation and replacement. Towards this effort, a cash flow and capital funding analysis was developed, with the goal of outlining potential funding strategies for the 20-year sewer system CIP. This chapter presents the methodology and results of the financial sufficiency evaluation.

In 2015, the District worked with Raftelis Financial Consultants (RFC) to develop a Sanitation Rate Study (2015 Study). As part of the 2015 Study, a financial plan was developed for the Sanitation Fund to provide financial sufficiency, to meet operation and maintenance (O&M) costs, and to ensure sufficient funding for capital refurbishment and replacement (R&R) needs. The Rate Study developed and proposed rates that would fund forecasted expenditures through fiscal year (FY) 2019/20. The last rate increase of the 2015 Study is scheduled to be implemented on July 1, 2019 and will add an approximately 7 percent rate increase to all sanitation rates.

After the initiation of the project, the City contracted with Black and Veatch to develop an updated rate study to set rates for FY 2020/21 through FY 2024/25, incorporating the results of the study, including the 20-year sewer system CIP. The financial sufficiency evaluation and funding strategies presented in this chapter will serve as a high level guide for the Black and Veatch study. Modifications to the finding projections presented in this chapter are likely as the Black and Veatch study will conduct a more thorough review and projection of the Sanitation Fund finances.

7.1 Methodology

The financial sufficiency evaluation developed for this chapter aims to determine whether the existing and adopted rates would be sufficient to cover the capital program developed in the project and if not, the level of rate increases that would be required to do so. The evaluation relies on a revenue requirements analysis that is used to test revenue sufficiency against expected revenue needs.

7.1.1 Revenue Requirements

The revenue requirements analysis sets the basis for short- and long-term financial planning. The analysis serves as a means of evaluating the Sanitation Fund's fiscal health and adequacy of current rate levels to cover the 20-year sewer system CIP. If revenue projections under existing rates do not meet forecasted requirements, rates need to be adjusted. The analysis is based on relevant financial information provided by City staff, including existing reserves, budgeted O&M costs, budgeted revenues, and expected customer growth, as well as other information.

The revenue requirement is derived of five components: Operations and Maintenance (O&M), Annual Debt Service; Policy Requirements and Coverage; Capital Expenditures; and Offsetting Revenues.

There are two tests utilized to define the annual revenues necessary to provide both sufficient (1) cash flow, and (2) debt coverage. These sufficiency tests are commonly used to determine the amount of annual revenue that must be generated from an agency's rates.

- *Cash Flow Sufficiency* defines the amount of annual revenues that must be generated in order to meet annual expenditure obligations of the utility.
- *Debt Coverage* refers to the collection of revenues to meet all operating expenses and debt service obligations plus an additional percentage of that debt service. The Sanitation fund does not currently hold any outstanding debt obligations with defined coverage requirements. However, the City plans to issue debt to fund the ESCO Project beginning in FY 2019/20, and may require additional debt to fund capital projects beyond that time. Typical debt coverage ratios range from 1.10x to 1.35x depending on an agency's specific financial situation and the type of debt being issued. For this analysis, the bond coverage test was set to meet a 1.40x coverage ratio for prudent financial planning.

The cash flow test identifies projected cash requirements in each given year. Cash requirements include O&M expenses, debt service payments, policy-driven additions to working capital, miscellaneous capital outlays, and rate-funded capital expenditures. These expenses are compared to the total annual projected revenues. Shortfalls are then used to calculate needed rate increases.

The bond-coverage test measures the ability of a utility to meet policy-driven revenue obligations. Based on the analysis assumptions, the Sanitation Fund will need to collect sufficient funds through rates to meet all ongoing O&M expenses, as well as 1.40 times the total debt-service requirements due in each year.

Revenues must be sufficient to satisfy both tests. If revenues are found to be deficient through one or both of the tests, then the greater deficiency (shortfall) drives the rate increase.

7.1.2 Scenarios

Four funding strategy scenarios have been developed to evaluate the 20-year sewer system CIP's impact on the Sanitation Fund. Each scenario assumes that a different amount of debt is issued to fund CIP projects. All scenarios include the expected debt issuance that will be used to fund the ESCO project.

Scenario 1: No Additional Debt

This scenarios assumes that all 20-year sewer system CIP projects are Pay-As-You-Go (PAYGO) funded using revenues from rates or fees and available reserves.

Scenario 2: Minimal Additional Debt

This scenario assumes that rate increases are front loaded in the first 5 years of the analysis, then additional debt issuances are used to smooth out peaks in CIP spending. The first additional debt issuance would be required in FY 2023/24.

Scenario 3: Moderate Additional Debt

This scenario assumes that additional debt issuances are used to smooth out peaks in CIP spending and to moderate rate increases in the first 5 years of the analysis. The first additional debt issuance would be required in FY 2022/23.

Scenario 4: Maximized Additional Debt

This scenarios maximizes the use of debt in order to mitigate rate increases in the short term. The first additional debt issuance would be needed in FY 2022/23, with debt proceeds needed in every subsequent year of the analysis.

7.1.3 Assumptions and Inputs

The evaluation relied on several assumptions and inputs in order to develop financial projections.

Fund Balances (Working Capital)

The starting fund balance incorporated in the analysis is input based on the City's FY 2019/20 budget. The budget projects a stating working capital balance for FY 2019/20 (July 1, 2019) of $22.3 million. This balance serves as the starting point for the working capital projections of the analysis. The working capital ending balance for reach year is calculated by adding net positive cash flows, or applying deficits, to the beginning balance for each year.

In addition to the working capital balance, the City also holds $11.5 million in reserves to pay for future unfunded pension liabilities. Based on guidance from City staff, that balance is restricted, and is therefore not available to fund capital projects. As such, this amount was not included in the funding projections.

Growth

The City provided customer growth projections based on the 2015 Urban Water Management Plan. Over the projection period customer growth is expected at 0.29 percent per year. This growth factor is applied to user service charges along with any calculated rate increases.

Escalation

The projected costs and revenues included in the analysis include a standard general inflation factor of 3 percent to match the typical long term Consumer Price Index increase. The Black and Veatch study may refine the escalation factors to include factors for specific types of costs or revenues in their more detailed analysis.

Debt

Debt service for additional debt issuances is calculated using typical assumptions for municipal revenue bonds. Table 7.1 presents the debt service assumptions. The Black and Veatch study may refine the debt service assumptions as the more detailed short term funding plan is developed for the rate study.

Table 7.1 Debt Service Assumptions

Element	Assumption
Issuance Costs (percent of proceeds)	1.0%
Reserve Amount (one year of debt service)	6.5%
Interest Rate	5.0%
Amortization Period	30 years

7.1.3.1 Estimated Bills

Estimated single family bills presented in this document are for illustrative purposes and calculated by applying overall percentage rate increases to existing single family rates. As Black and Veatch completes the detailed rate analysis, rate impacts for specific types of customers may vary due to potential changes in the cost allocation or rate structure.

7.2 Financial Projections

Financial projections for FY 2019/20 through FY 2038/39 were developed based on the inputs and assumptions described above, as well as other inputs provided by the City or developed for the project. Projections of the ESCO Project impacts, O&M costs, capital expenditures, and most offsetting revenues (all except interest earnings) are common for all three scenarios.

7.2.1 ESCO Project

The ESCO Project includes rehabilitation and replacement work throughout the treatment plant aimed at increasing energy and operational efficiency to reduce costs. The project is expected to cost a total of $36.7 million and be funded primarily with debt.

7.2.1.1 Renewable Natural Gas

The ESCO Project includes a Renewable Natural Gas component (project ID GECM-1 RNG) that will not be financed along with the other ESCO project costs. Savings and revenues generated through the GECM-1 RNG project will be allocated to the City's General Fund. As such, the General Fund will be responsible for the project's construction cost. Because the GECM-1 RNG project will be fully funded using money from outside of the Sanitation fund, it is not included in this funding analysis.

7.2.1.2 Financing

Table 7.2 shows the financing assumption for the ESCO project. Based on guidance from the City, the analysis includes financing for $32.9 million of the $36.7 million total project cost. The City expects to use a 20-year bank loan rather than traditional municipal bonds for the ESCO project. Debt service payments associated with the ESCO project are expected to total approximately $2.4 million per year and commence in FY 2019/20.

Table 7.2 ESCO Project Financing Assumptions

Element	Assumption
Project Cost	$36,708,736
Less: GECM-1 RNG (Outside Funding)	($3,799,093)
Amount to be Financed	$32,909,643
Interest Rate	3.75%
Years	20
Issuance Costs	1%
Total	**$33,238,739**
Annual Payment	**$2,391,929**
Payment Start FYE	**2020**

7.2.1.3 Savings

The ESCO Project focuses on rehabilitation and replacement of aging assets in a manner that also provides energy and operational efficiency and cost savings to the Sanitation Fund. The City estimated that the ESCO Project will provide plant O&M cost savings of $353,000 per year (2019 dollars) when it is completed. The analysis assumes that cost saving from the ESCO Project are realized starting in FY 2021/22. Savings for future years are escalated at 3 percent per year. Table 7.3 shows the estimated savings associated with each element of the ESCO Project.

Table 7.3 ESCO Project Estimated Savings

Unit Process	Annual Energy Savings	Annual O&M Savings	Combined
Headworks	$311	$25,000	$25,311
Blower Relocation, SCADA, Valves, and Ventilation	$1,432	$25,000	$26,432
Mixed Liquor Return Pump	$997	$500	$1,497
Dewatering System, Polymer System, and Feed Sludge Pump Replacement (Retain Press #1)	($303)	$32,000	$31,697
Digester Rehabilitation	$59,908	$35,000	$94,908
Secondary Clarifier Nos. 1 - 4 and East/West RAS Pump Replacement	$664	$10,000	$10,664
Tertiary Filter Piping Rehab	$126	$16,500	$16,626
Ammonia Based Aeration Controls and Valves (ABAC)	$8,672	$0	$8,672
Channel Air Optimization and BNR Anoxic Mixing - Enviromix	$60,254	$0	$60,254
Aerated Grit Chambers Optimization	$411	$0	$411
LACCE - rate change	$77,003	$0	$77,003
Total	**$209,475**	**$144,000**	**$353,475**

Note:
(1) Totals may not tie due to rounding.

7.2.2 O&M Cost Projections

Projected O&M costs are common to all scenarios. They are expenditures that the Sanitation Fund incurs for day-to-day operations such as employee salaries and benefits, fuel, chemicals, and power. Other costs in the operating budget include indirect costs from the City's indirect cost allocation plan.

The Sanitation Fund's FY 2019/20 operating budget served as the basis for forecasting future operating expenses for each of the utilities. The budget was compared to prior year actual financial information to identify any anomalies or one-time expenditures not appropriate for forecasting in future years. Costs for FY 2020/21 through FY 2024/25 were forecast based on a general inflation factor of 3.1 percent per year to match the preliminary overall cost escalation in the City's current rate setting effort. Costs for years beyond FY 2024/25 were forecast using a general inflation escalation factor of 3 percent per year that was discussed with City staff.

Table 7.4 compares the budgeted O&M costs for FY 2019/20 to the projected costs for the last year of the analysis, FY 2038/39. Based on the expected cost escalation, and accounting for ESCO savings, annual O&M costs will increase from approximately $15.4 million per year to $27.1 million per year over the study period. Figure 7.1 shows the projected O&M costs for each fiscal year of the analysis.

Table 7.4 Budgeted O&M Costs

O&M Division	FY 2019/20 Budget	FY 2038/39 Projection	Increase In Annual O&M
Administration - Sanitation	$5,410,688	$9,533,820	$4,123,132
Sewer Line Maintenance	$1,248,000	$2,199,019	$951,019
Plant O&M	$6,814,750	$12,007,826	$5,193,076
Environmental Compliance	$800,180	$1,409,945	$609,765
Transfers & Reimbursements	$592,250	$1,043,565	$451,315
Vehicle Replacement	$531,500	$936,521	$405,021
Total O&M	**$15,397,368**	**$27,130,698**	**$11,733,330**
Less: ESCO Savings	n/a	($638,415)	($638,415)
Total O&M with ESCO Savings	**$15,397,368**	**$26,492,283**	**$11,094,915**

Note:
(1) Totals may not tie due to rounding.

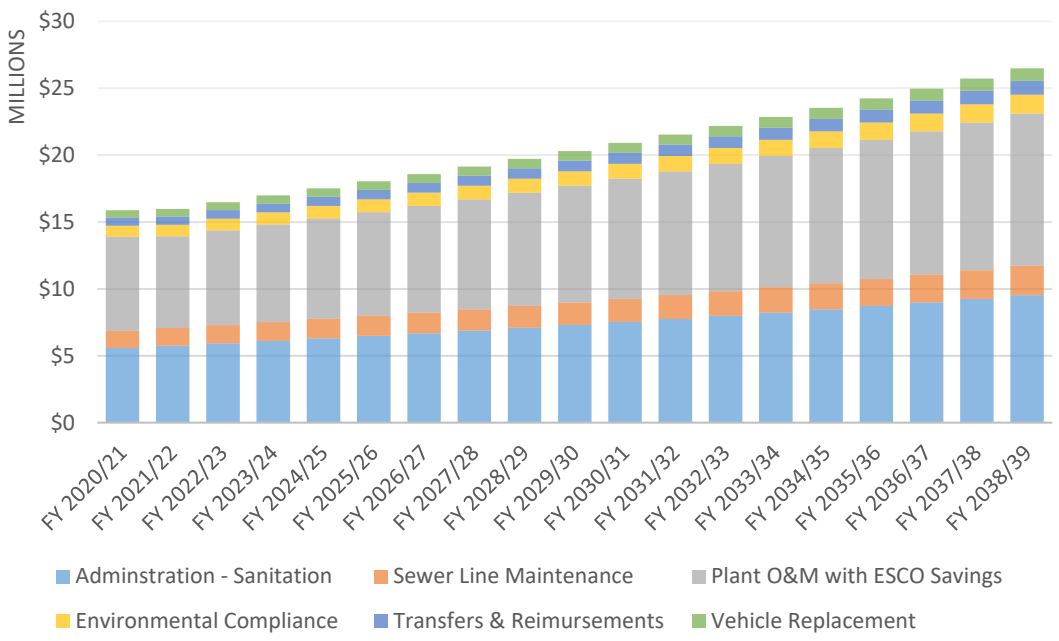


Figure 7.1 Projected O&M Costs

7.2.3 Capital Expenditures

The funding analysis includes capital expenditures for the ESCO Project and the projects developed for the 20-year sewer system CIP, as discussed previously in this report. Capital costs for future years (with the exception of the ESCO Project) are escalated at 3 percent per year based on the long-term average of the Engineering News Record Construction Cost Index (ENR CCI). Table 7.5 shows the included CIP costs in FY 2019/20 dollars and escalated dollars. Figure 7.2 shows the expected CIP cots for each year in escalated dollars.

Table 7.5 Escalated CIP Costs

	FY 2019/20 Dollars (millions)	Escalated Dollars (millions)
WQCP	$41.3	$57.5
ESCO	$36.7	$32.9
Collections	$116.2	$163.6
SCADA	$1.8	$2.0
Organization	$1.4	$1.5
Other	$0.0	$0.0
Existing WQCP	$3.5	$3.9
Existing Collections	$4.1	$4.1
Total CIP	**$205.0**	**$265.4**

Note:
(1) Totals may not tie due to rounding.

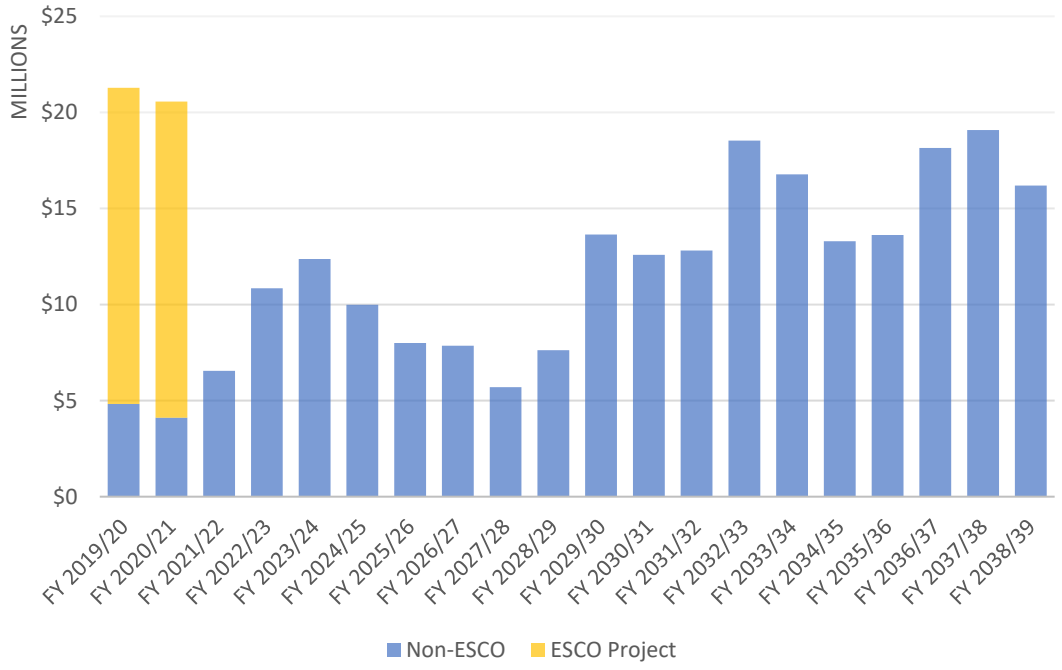


Figure 7.2 Escalated CIP

7.2.4 Fund Balance and Reserves

The Sanitation fund currently holds reserves that have been generated through user rates, connection fees, and other revenue sources. Money is held and tracked in three separate funds:

- Fund 700 Sanitation Fund: operating fund for the sanitation program.
- Fund 701 Sanitation Connection Fee Fund: funds generated through connection fees to be spent on eligible capital projects.
- Fund 702 Sanitation Replacement Reserve: funds set aside for capital replacements of collections and treatment infrastructure and assets.

The starting fund balance included in the analysis is based on the FY 2017/18 ending balance for each fund. The total balance of the three funds was then adjusted to account for a Public Employees Retirement System (PERS) liability set aside and for prior years' capital projects that have been approved but not yet implemented or budgeted. Table 7.6 shows the beginning fund balance and adjustments. The deficit of approximately $1.02 million for FY 2018/19 is based on the City's estimated actual revenues and expenditures for FY 2018/19.

Projected reserve balances for each scenario vary year-to-year based on fluctuations in capital spending. Comparable agencies with comprehensive reserve policies typically target a total reserve of between 180 and 365 days of operating expenses for prudent financial planning. The total target is typically made up of several components which may include an operating reserve, capital reserves, rate stabilization reserves, debt service reserves, etc. For this analysis, each of the scenarios targets a minimum year-end working capital fund balance of approximately 180 days of O&M expenses. The inclusion of a debt service reserve component in the projected debt calculations allows for a lower target working capital balance while still providing adequate conservatism for the analysis.

Table 7.6 Starting Fund Balance

Item	Amount
700 Sanitation Fund	$20,576,180
701 Sanitation Connection Fee Fund	7,114,240
702 Sanitation Replacement Reserve	4,747,245
Total FY 2017/18 Ending Fund Balance	**$32,437,665**
Less: PERS Set Aside	($11,542,734)
FY 2017/18 Ending Balance Less PERS Set Aside	**$20,894,931**
Less: Prior Years Capital	($8,204,758)
FY 2017/18 Ending Balance Available	**$12,690,173**
Estimated Surplus (deficit) for FY 2018/19	($1,024,800)
Estimated FY 2018/19 Ending Balance Available for New Projects and Reserves	**$11,665,373**

7.2.5 Offsetting Revenues

In addition to user service charge revenues, the Sanitation Fund collects revenues from several other sources including interest earnings, non-rate charges for services, environmental compliance program revenues, recycled water charges, and other miscellaneous revenues. These offsetting revenues can be used to decrease the amount of revenue required from user rates. This category also included the expected payback form the general fund for the GECM-1 RNG project. Figure 7.3 identifies the projected offsetting revenues included in the analysis.

Offsetting revenues are forecasted to increase by 3-percent per year based on general inflation with the exception of interest earnings which are calculated based on the available fund balance. Calculated interest earnings decrease FY 2020/21 due to the use of reserves for prior years' capital projects and the exclusion of the PERS set aside.

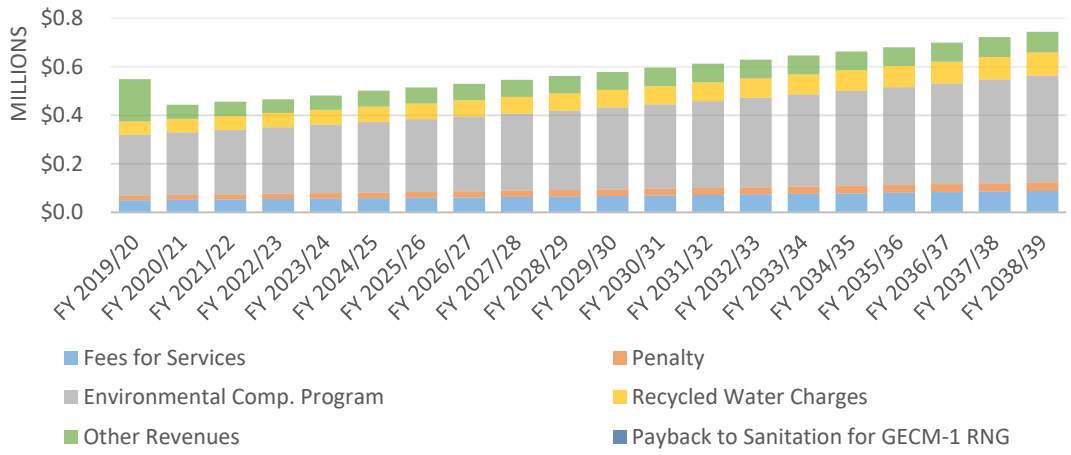


Figure 7.3 Offsetting Revenues

7.3 Findings and Results

Figure 7.4 shows a summarized financial forecast for the Sanitation Fund assuming that no further increases (beyond the adopted FY 2019/20 increase) are implemented. As shown, the Sanitation Fund will not be able to fund future capital investments without additional rate increases. If rates were held steady and the CIP was implemented as scheduled, all working capital would be depleted by FY 2022/23.

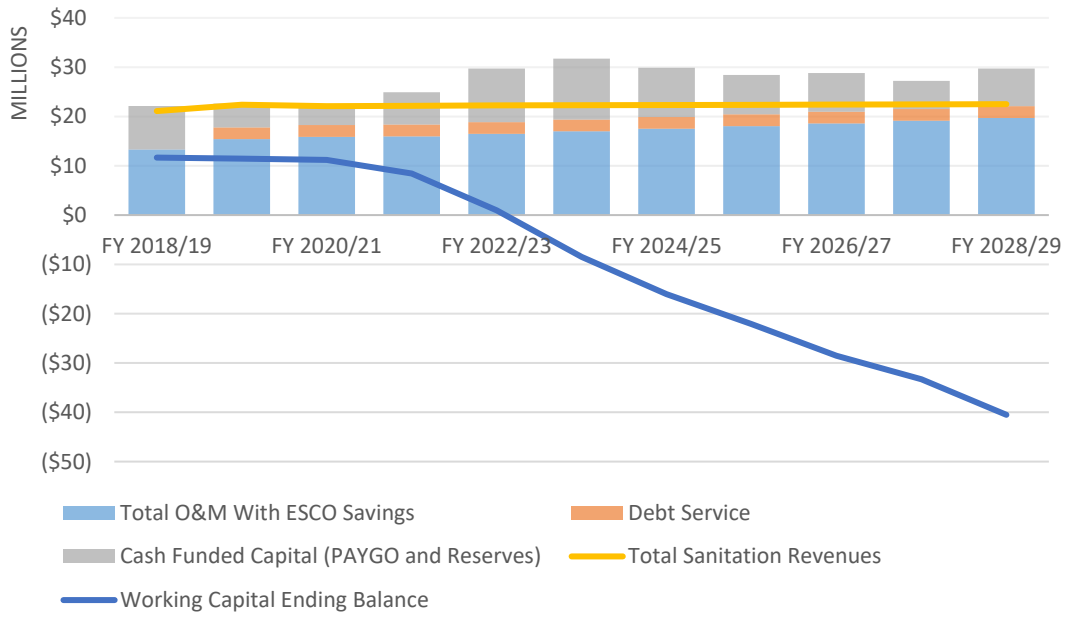


Figure 7.4 Financial Projection without Rate Increases

The following sections present the results of each funding scenario along with the necessary rate revenue increases and associated bill impacts required to implement each scenario.

7.3.1 Scenario 1- No Additional Debt

Scenario 1 assumes that all 20-year sewer system CIP projects are PAYGO funded. No additional debt (beyond the ESCO loan) is included.

Figure 7.5 shows the expected capital funding by source for each year of the analysis.

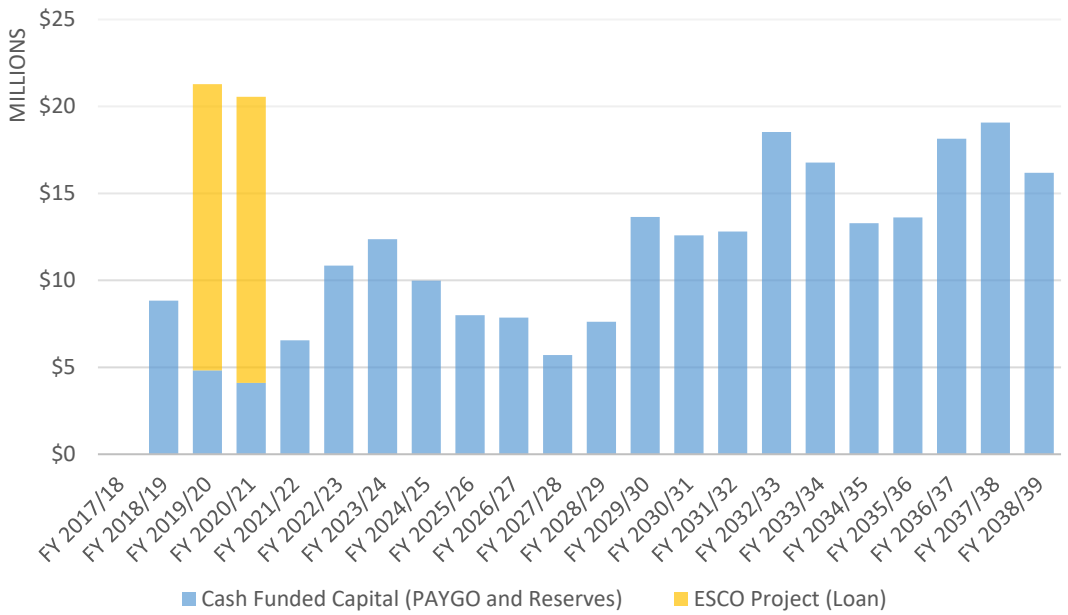


Figure 7.5 Scenario 1 Capital Funding Sources

Table 7.7 presents the total funding from each source over the 20-year analysis period. Approximately $241 million in cash funding would be required to fund the 20-year sewer system CIP.

Table 7.7 Scenario 1 Capital Funding Summary

	20-Year Sum (Millions)
Cash Funded Capital (PAYGO and Reserves)	$241.37
Additional Debt	$0.00
ESCO Project (Loan)	$32.91
Total CIP Funding	**$274.28**

Note:
(1) Totals may not sum due to rounding.

Under Scenario 1, the increases of user service charge rates would need to be higher in the initial years of the analysis in order to build the financial capacity necessary to fund CIP expenditures in peak years. After the initial higher increases, smaller increases could be implemented as the capital funding capacity of the fund continues to grow due to the compounding effect of increases. Rate increases could potentially be smoothed if the City elected to further decrease reserves in years with high levels of capital spending.

Table 7.8 shows the annual rate revenue increases that would be necessary in each year to fully implement the 20-year sewer system CIP. The compounded rate increase over the 20-year projection period is approximately 86 percent.

Table 7.8 Scenario 1 Rate Increases

Period	Annual Increase
FY 2019/20 Adopted	7.00%
FY 2020/21 through FY 2024/25	7.00%
FY 2025/26 through FY 2029/30	2.50%
FY 2020/31 through FY 2034/35	2.00%
FY 2035/36 through FY 2038/39	1.50%
Compounded Increase	
FY 2020/21 through FY 2038/39	85.95%

Figure 7.6 shows a summarized financial forecast for Scenario 1. With the increases shown above in Table 7.8, the Sanitation Fund would have sufficient cash available in each year to fund capital projects. The projected working capital balance would fluctuate year-to-year based on the peaks and troughs in CIP expenditures. Reserve balances could be smoothed if the City opted to spread some capital expenditures over multiple years. If the City ultimately decides to adopt a cash funding model such as Scenario 1, prudent financial planning will be imperative to ensure that sufficient revenues or reserves are available in each year to avoid delaying projects.

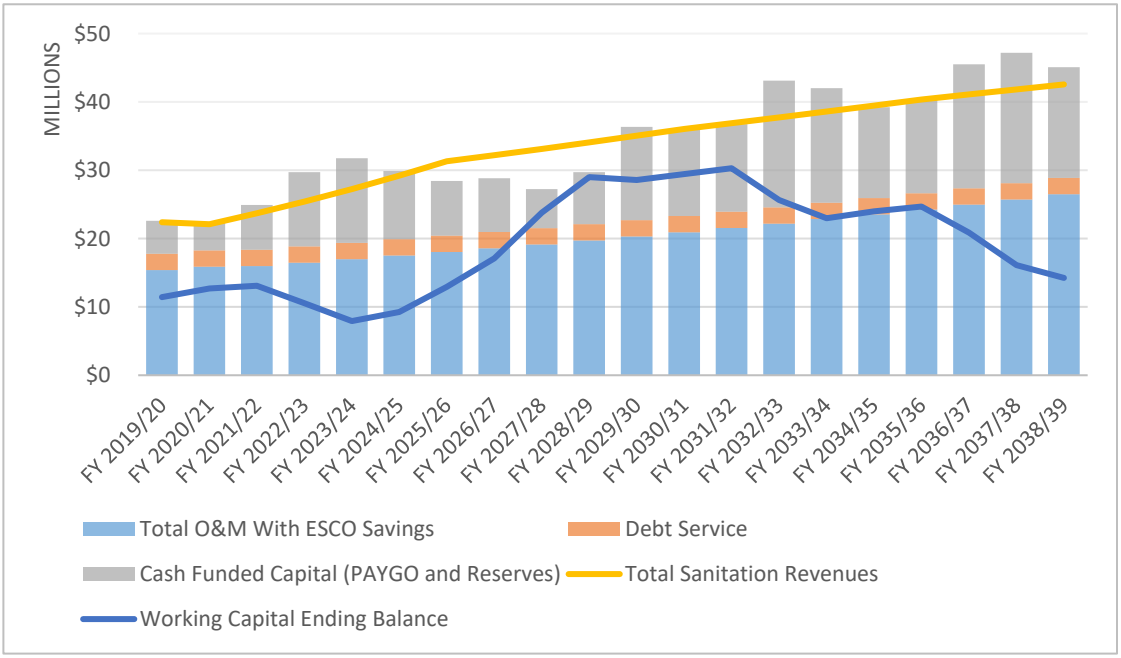


Figure 7.6 Scenario 1 Financial Forecast

Figure 7.7 shows estimated monthly single family residential bills for each year of the analysis based on the rate increases shown in Table 7.8. Under Scenario 1, the monthly single family residential bill would increase from $38.58 in FY 2019/20 to $71.74 by FY 2038/39. Beyond that time, it is likely that further rate increases would be required to keep up with increases in O&M costs and continued capital investment.

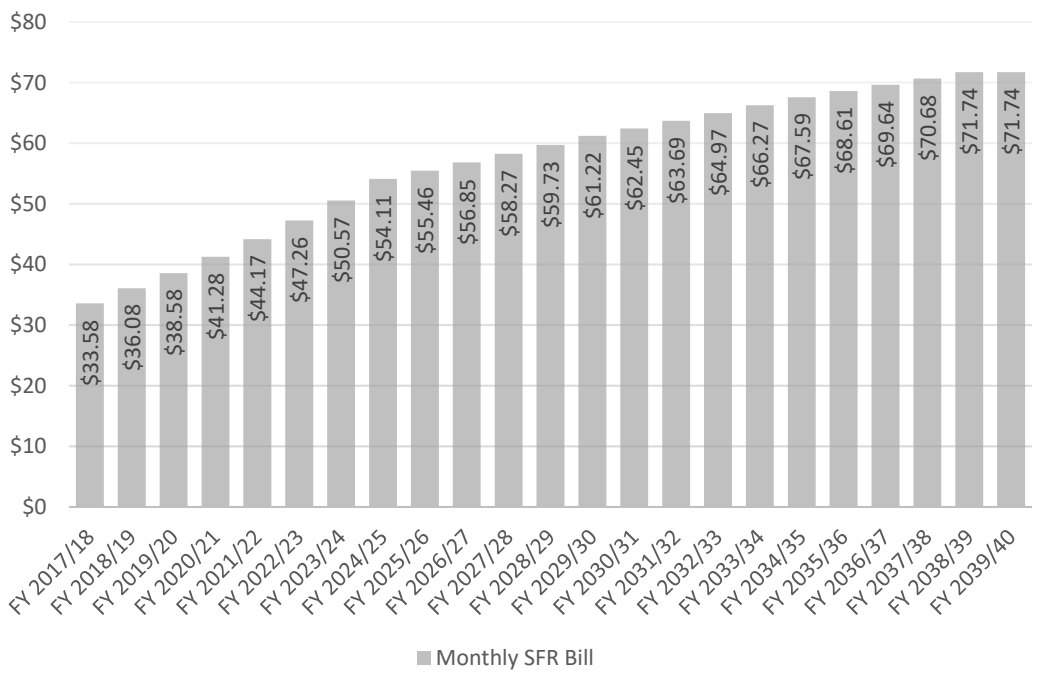


Figure 7.7 Scenario 1 Estimated Single Family Residential Bills

7.3.2 Scenario 2 – Minimal Additional Debt

Scenario 2 assumes minimal use of additional debt (beyond the ESCO loan) to fund CIP projects. Debt issuances were targeted for years with relatively high CIP expenditures in order to smooth their impact on the Sanitation Fund finances. Table 7.9 shows the projected debt issuances that would be required, as well as the debt service associated with each.

Table 7.9 Scenario 2 Projected Debt Issuances

Year	Proceeds Required (millions)	Issuance Amount (millions)	Annual Debt Service (millions)
FY 2023/24	$5.00	$5.41	$0.35
FY 2024/25	$6.00	$6.49	$0.42
FY 2033/34	$5.50	$5.95	$0.39
FY 2036/37	$8.00	$8.65	$0.56
FY 2037/38	$10.00	$10.81	$0.70
FY 2038/39	$8.00	$8.65	$0.56
Total	**$42.5**	**$45.95**	

Notes:
(1) Totals may not sum due to rounding.
(2) Issuance amount includes 1 percent issuance costs and a debt service reserve requirement equal to one year of debt service payments.

Figure 7.8 shows the expected capital funding by source for each year of the analysis.

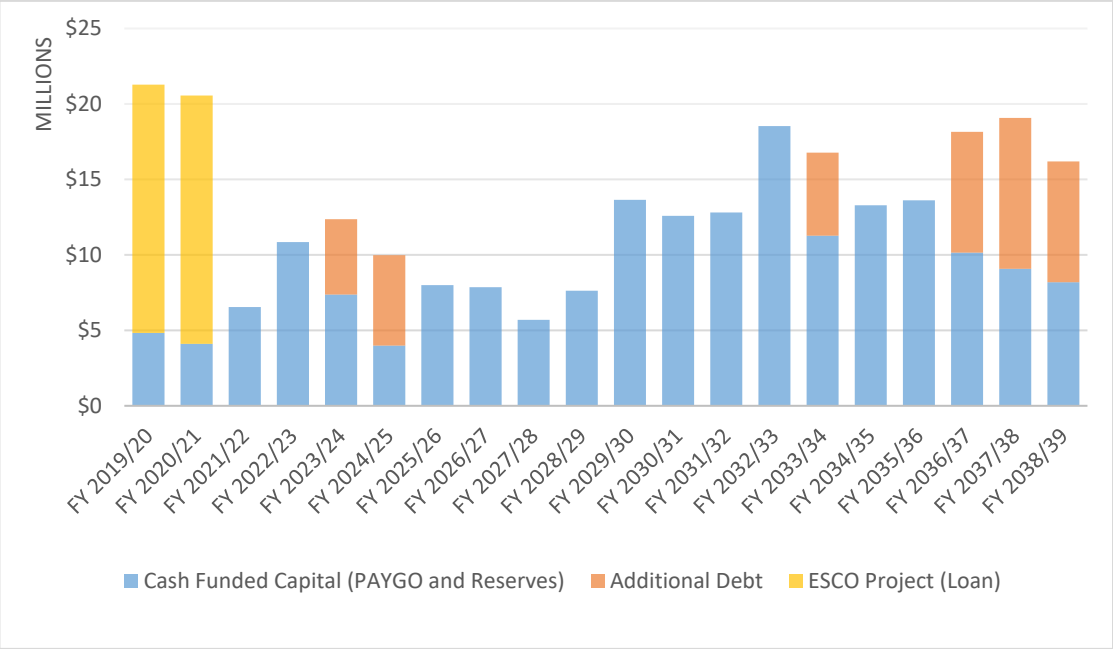


Figure 7.8 Scenario 2 Capital Funding Sources

Table 7.10 presents the total funding from each source over the 20-year analysis period for Scenario 2. Approximately $198.87 million in cash funding would be required to fund the 20-year sewer system CIP. A total of $42.50 million in new bond proceeds would be required along with the $32.91 million ESCO loan.

Table 7.10 Scenario 2 Capital Funding Summary

	20-Year Sum (Millions)
Cash Funded Capital (PAYGO and Reserves)	$198.87
Additional Debt	$42.50
ESCO Project (Loan)	$32.91
Total CIP Funding	**$274.28**

Note:
(1) Totals may not sum due to rounding.

Under Scenario 2, the increases of user service charge rates are weighted slightly to the near term in order to avoid debt issuances until FY 2023/24. After the initial higher increases, smaller increases could be implemented as the capital funding capacity of the fund continues to grow due to the compounding effect of increases. The use of debt to fund capital in peak years allows for increases to be smoothed.

Table 7.11 shows the annual rate revenue increases that would be necessary in each year to fully implement the 20-year sewer system CIP. After the initial 5 percent per year increase in FY 2020/21 through FY 2024/25, increases could be stabilized at or below inflationary levels. The compounded rate increase over the 20-year projection period is approximately 69.4 percent.

Table 7.11 Scenario 2 Rate Increases

Period	Annual Increase
FY 2019/20 Adopted	7.00%
FY 2020/21 through FY 2024/25	7.00%
FY 2025/26 through FY 2029/30	2.00%
FY 2020/31 through FY 2038/39	1.00%
Compounded Increase	
FY 2020/21 through FY 2038/39	69.4%

Figure 7.9 shows a summarized financial forecast for Scenario 2. With the increases shown above in Table 7.11, the Sanitation Fund would have sufficient cash available in each year to fund capital projects. The projected working capital balance would exhibit less year-to-year fluctuation as compared to Scenario 1, since the use of debt helps to smooth the impact of peaks in CIP expenditures. At the end of the projection period the Sanitation fund would hold $40.4 million in outstanding debt principal.

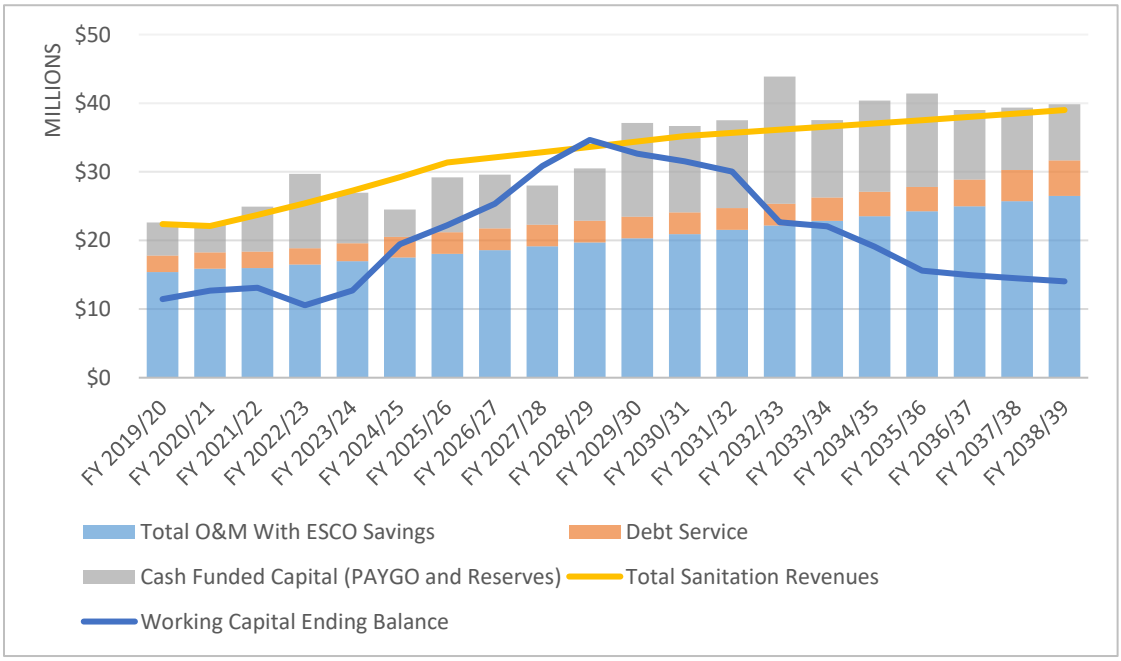


Figure 7.9 Scenario 2 Financial Forecast

Figure 7.10 shows estimated monthly single family residential bills for each year of the analysis based on the rate increases shown in Table 7.11. Under Scenario 2, the monthly single family residential bill would increase from $38.58 in FY 2019/20 to $65.34 by FY 2038/39, the lowest overall increase of the scenarios tested.

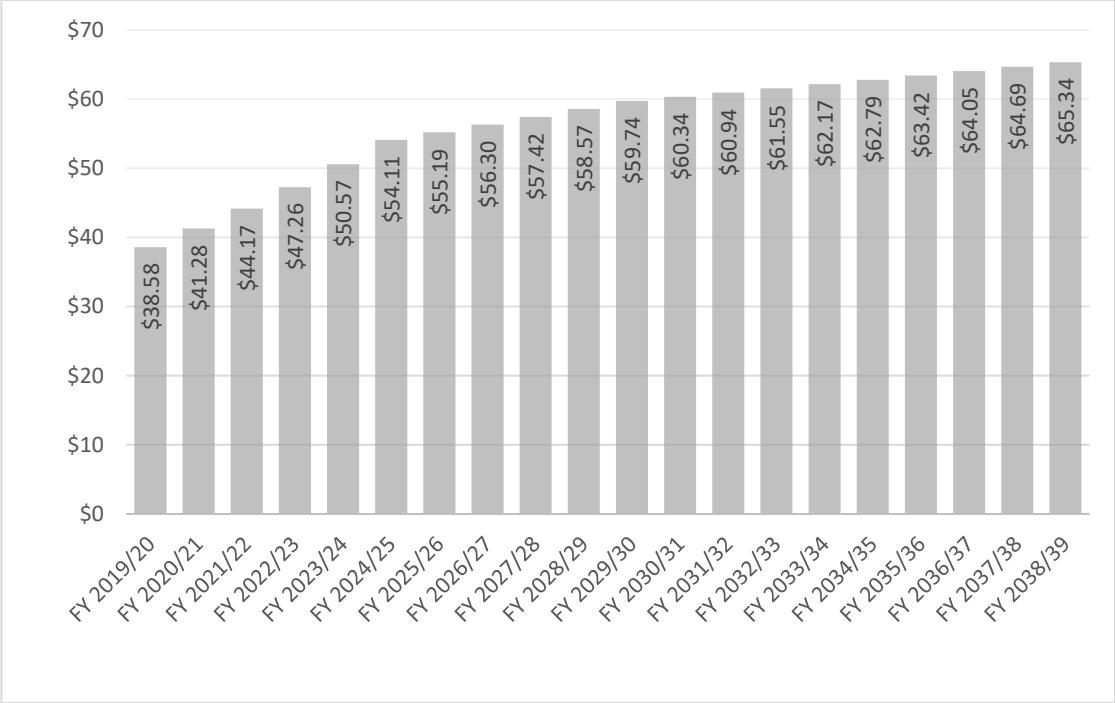


Figure 7.10 Scenario 2 Estimated Single Family Residential Bills

7.3.3 Scenario 3 – Moderate Additional Debt

Scenario 3 assumes moderate use of additional debt (beyond the ESCO loan) to fund CIP projects. The first additional debt issuance would need to take place in FY 2022/23 and debt proceeds for capital funding would be required in several subsequent years. This increased use of debt, as compared to Scenario 2, would allow the City to spread costs out over time to mitigate rate increases in the short term. Table 7.15 shows the projected debt issuances that would be required as well as the debt service associated with each.

Table 7.12 Scenario 3 Projected Debt Issuances

Year	Proceeds Required (millions)	Issuance Amount (millions)	Annual Debt Service (millions)
FY 2022/23	$7.50	$8.11	$0.53
FY 2023/24	$6.00	$6.49	$0.42
FY 2024/25	$3.50	$3.78	$0.25
FY 2029/30	$2.50	$2.70	$0.18
FY 2032/33	$10.50	$11.35	$0.74
FY 2033/34	$10.00	$10.81	$0.70
FY 2035/36	$5.00	$5.41	$0.35

Table 7.12 Scenario 3 Projected Debt Issuances (continued)

Year	Proceeds Required (millions)	Issuance Amount (millions)	Annual Debt Service (millions)
FY 2036/37	$8.50	$9.19	$0.60
FY 2037/38	$8.00	$8.65	$0.56
FY 2038/39	$8.00	$8.65	$0.56
Total	**$69.50**	**$75.14**	

Notes:
(1) Totals may not sum due to rounding.
(2) Issuance amount includes 1 percent issuance costs and a debt service reserve requirement equal to one year of debt service payments.

Figure 7.14 shows the expected capital funding by source for each year of the analysis.

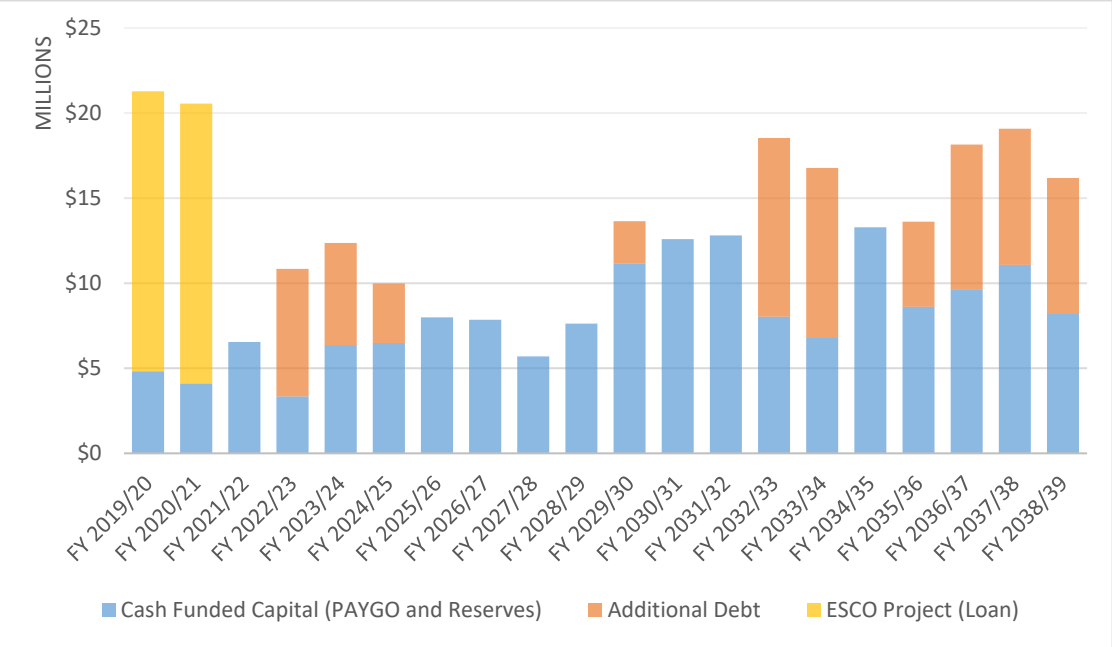


Figure 7.11 Scenario 3 Capital Funding Sources

Table 7.16 presents the total funding from each source over the 20-year analysis period. Approximately $171.87 million in cash funding would be required to fund the 20-year sewer system CIP. A total of $69.50 million in new bond proceeds would be required along with the $32.91 million ESCO loan.

Table 7.13 Scenario 3 Capital Funding Summary

	20-Year Sum (Millions)
Cash Funded Capital (PAYGO and Reserves)	$171.87
Additional Debt	$69.50
ESCO Project (Loan)	$32.91
Total CIP Funding	**$274.28**

Note:
(1) Totals may not tie due to rounding.

Table 7.17 shows the annual rate revenue increases that would be necessary in each year to fully implement the 20-year sewer system CIP in Scenario 3. The compounded rate increase over the 20-year projection period is approximately 81.2 percent.

Table 7.14 Scenario 3 Rate Increases

Period	Annual Increase
FY 2019/20 Adopted	7.00%
FY 2020/21 through FY 2024/25	5.00%
FY 2025/26 through FY 2029/30	3.00%
FY 2030/31 through FY 2034/35	2.50%
FY 2035/36 through FY 2038/39	2.00%
Compounded Increase	
FY 2020/21 through FY 2038/39	81.2%

Figure 7.15 shows a summarized financial forecast for Scenario 3. With the increases shown above in Table 7.17, the Sanitation Fund would have sufficient cash available in each year to fund capital projects. The projected working capital balance would exhibit less year-to-year fluctuation as compared to Scenarios 1 and 2 since the use of debt helps to smooth the impact of peaks in CIP expenditures. At the end of the projection period the Sanitation fund would hold $64.3 million in outstanding debt principal.

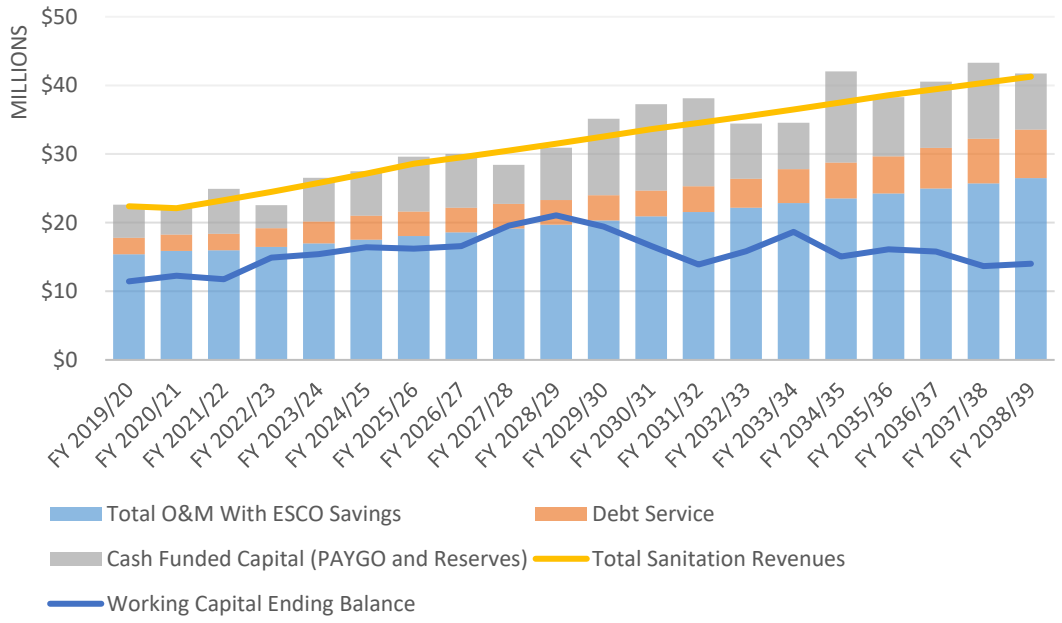


Figure 7.12 Scenario 3 Financial Forecast

Figure 7.16 shows the estimated monthly single family residential bills for each year of the analysis, based on the rate increases shown in Table 7.14. Under Scenario 3, the monthly single family residential bill would increase from $38.58 in FY 2019/20 to $69.91 by FY 2038/39, the second lowest overall increase of the scenarios tested.

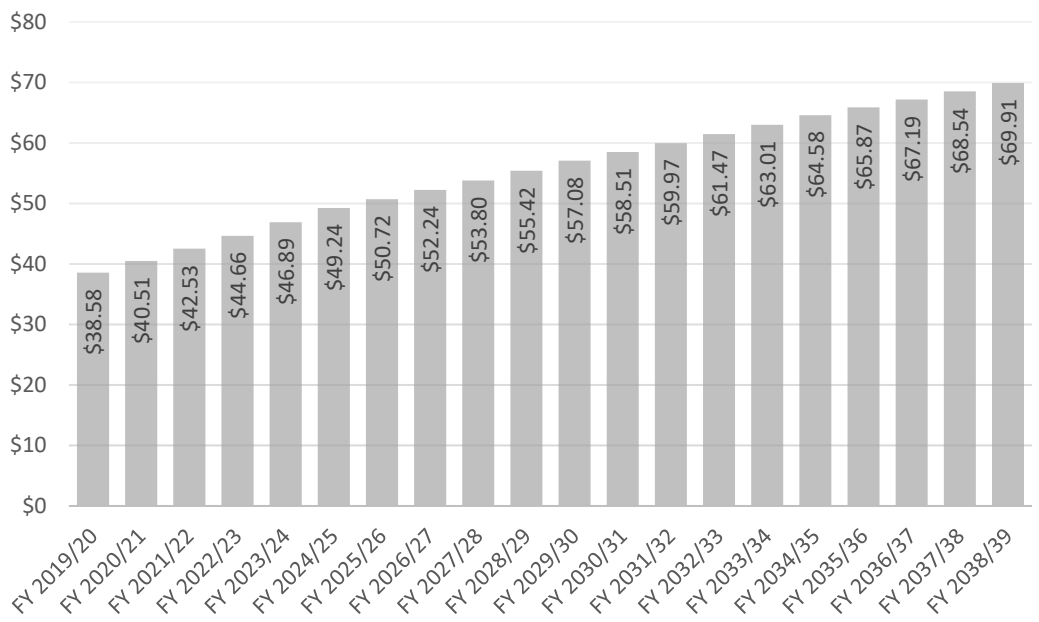


Figure 7.13 Scenario 3 Estimated Single Family Residential Bills

7.3.4 Scenario 4 – Maximized Additional Debt

Scenario 4 assumes maximized use of additional debt (beyond the ESCO loan) to fund CIP projects. The first additional debt issuance would need to take place in FY 2022/23 and debt proceeds for capital funding would be required in every year thereafter. This heavy use of debt would allow the City to spread costs out over time to mitigate rate increases in the short term. Table 7.15 shows the projected debt issuances that would be required as well as the debt service associated with each.

Table 7.15 Scenario 4 Projected Debt Issuances

Year	Proceeds Required (millions)	Issuance Amount (millions)	Annual Debt Service (millions)
FY 2022/23	$8.50	$9.19	$0.60
FY 2023/24	$7.50	$8.11	$0.53
FY 2024/25	$5.50	$5.95	$0.39
FY 2025/26	$4.00	$4.32	$0.28
FY 2026/27	$3.50	$3.78	$0.25
FY 2027/28	$1.00	$1.08	$0.07
FY 2028/29	$3.00	$3.24	$0.21
FY 2029/30	$9.00	$9.73	$0.63
FY 2030/31	$7.50	$8.11	$0.53
FY 2031/32	$8.50	$9.19	$0.60
FY 2032/33	$14.00	$15.14	$0.98

Table 7.15 Scenario 4 Projected Debt Issuances (continued)

Year	Proceeds Required (millions)	Issuance Amount (millions)	Annual Debt Service (millions)
FY 2033/34	$13.00	$14.05	$0.91
FY 2034/35	$9.50	$10.27	$0.67
FY 2035/36	$10.50	$11.35	$0.74
FY 2036/37	$14.50	$15.68	$1.02
FY 2037/38	$15.00	$16.22	$1.05
FY 2038/39	$12.00	$12.97	$0.84
Total	**$146.50**	**$158.38**	

Notes:
(1) Totals may not sum due to rounding.
(2) Issuance amount includes 1 percent issuance costs and a debt service reserve requirement equal to one year of debt service payments.

Figure 7.14 shows the expected capital funding by source for each year of the analysis

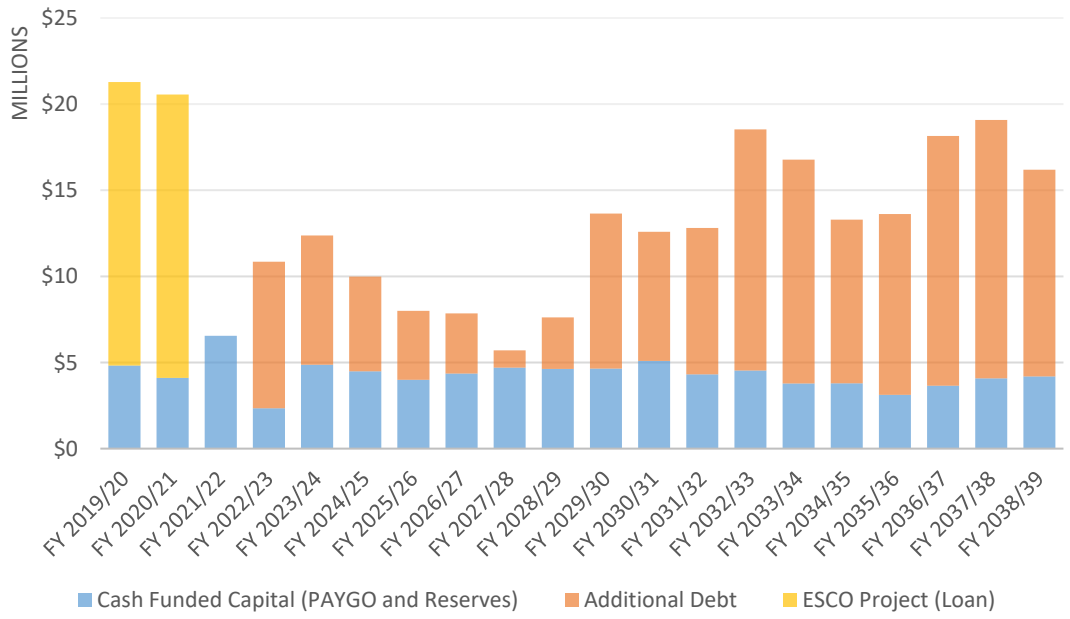


Figure 7.14 Scenario 4 Capital Funding Sources

Table 7.16 presents the total funding from each source over the 20-year analysis period. Approximately $94.87 million in cash funding would be required to fund the 20-year sewer system CIP. A total of $146.50 million in new bond proceeds would be required along with the $32.91 million ESCO loan.

Table 7.16 Scenario 4 Capital Funding Summary

	20-Year Sum (Millions)
Cash Funded Capital (PAYGO and Reserves)	$94.87
Additional Debt	$146.50
ESCO Project (Loan)	$32.91
Total CIP Funding	**$274.28**

Note:
(1) Totals may not tie due to rounding.

Under Scenario 4, the increases in user service charges are held constant at 3 percent per year for FY 2020/21 through FY 2035/36. After that time, higher increases at 5.0 percent per year would be required in order to meet debt coverage requirements.

Table 7.17 shows the annual rate revenue increases that would be necessary in each year to fully implement the 20-year sewer system CIP in Scenario 4. The compounded rate increase over the 20-year projection period is approximately 89.4 percent.

Table 7.17 Scenario 4 Rate Increases

Period	Annual Increase
FY 2019/20 Adopted	7.00%
FY 2020/21 through FY 2035/36	3.00%
FY 2035/36 through FY 2038/39	5.00%
Compounded Increase	
FY 2020/21 through FY 2038/39	89.4%

Figure 7.15 shows a summarized financial forecast for Scenario 4. With the increases shown above in Table 7.17, the Sanitation Fund would have sufficient cash available in each year to fund capital projects. The projected working capital balance would exhibit less year-to-year fluctuation as compared to Scenario 1 since the use of debt helps to smooth the impact of peaks in CIP expenditures.

While this scenario offers the ability to hold annual increases to a lower level in the near-term, it does bring several drawbacks.

- As the amount of debt issued increases and debt service makes up a larger share of annual expenditures, the Sanitation Fund will have less control over its financial planning and rate setting. This is evidenced in Scenario 3 as the need to meet debt coverage requirements becomes the primary driver of rate increases beginning in FY 2033/34.
- At the end of the 20-year period, the Sanitation Fund would hold approximately $136 million in outstanding debt principal with debt service of over $12.4 million per year.
- Though debt issuances could be combined and provide funding for projects over multiple years, it may be impractical for the Sanitation Fund to have debt proceeds available to fund projects in every year.

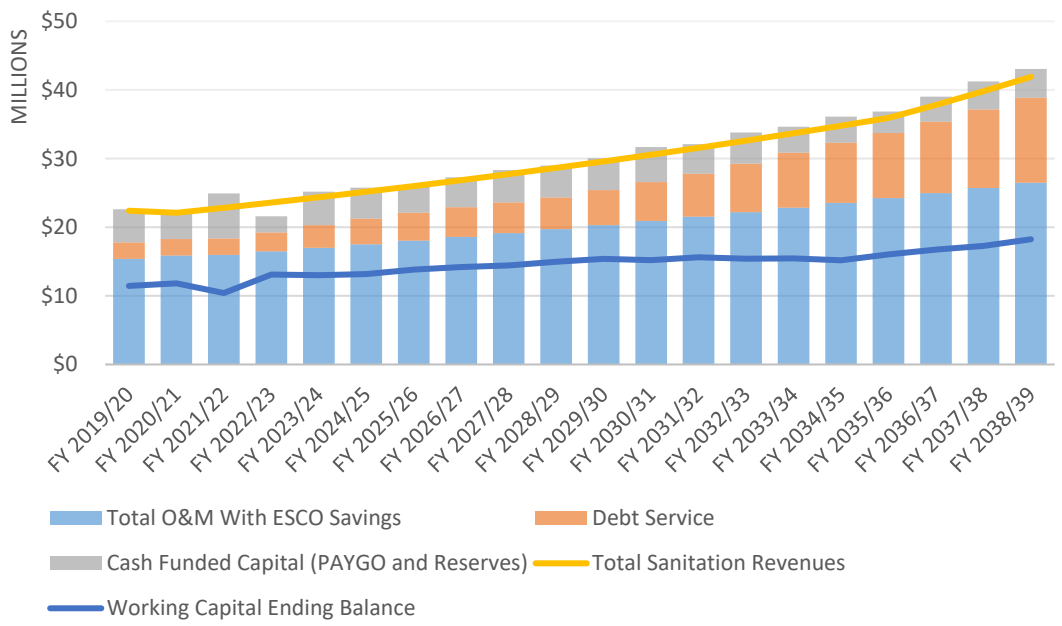


Figure 7.15 Scenario 4 Financial Forecast

Figure 7.16 shows the estimated monthly single family residential bills for each year of the analysis, based on the rate increases shown in Table 7.17. Under Scenario 4, the monthly single family residential bill would increase from $38.58 in FY 2019/20 to $73.06 by FY 2038/39, the highest overall increase of the scenarios tested.

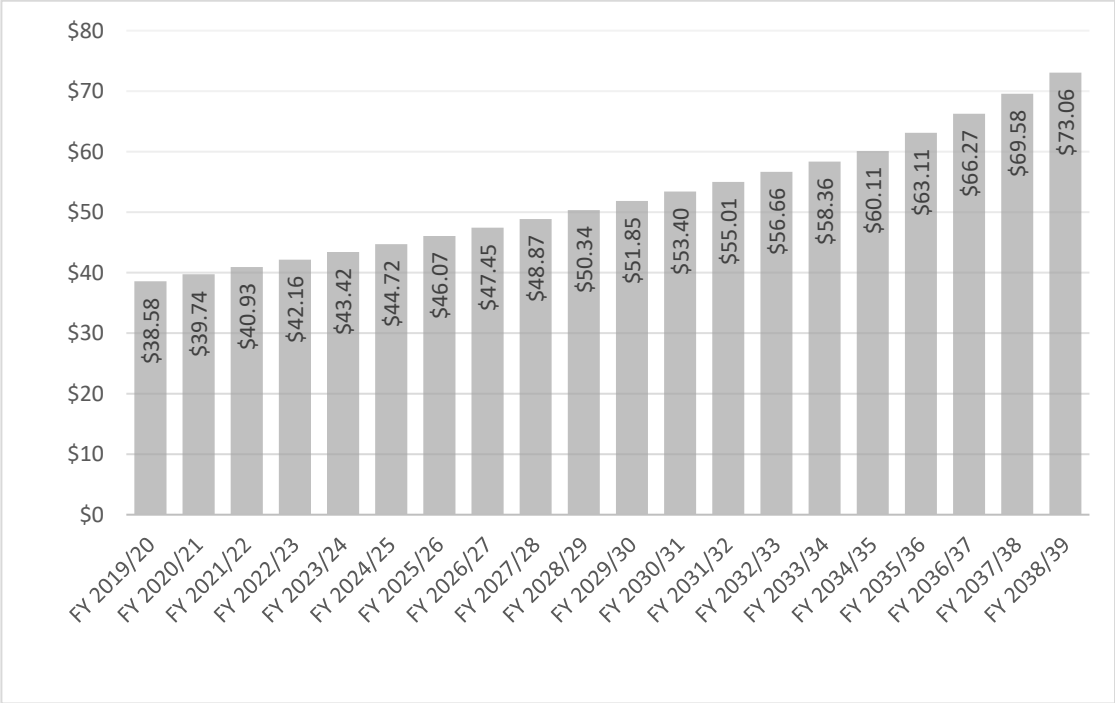


Figure 7.16 Scenario 4 Estimated Single Family Residential Bills

7.4 Conclusion

Figure 7.17 compares the total capital funding sources for FY 2019/20 through FY 2038/39 for each scenario. As shown, Scenario 4 would require substantial use of debt in order to hold rate increases to 3 percent per year through FY 2035/36 and still implement the full 20-year sewer system CIP.

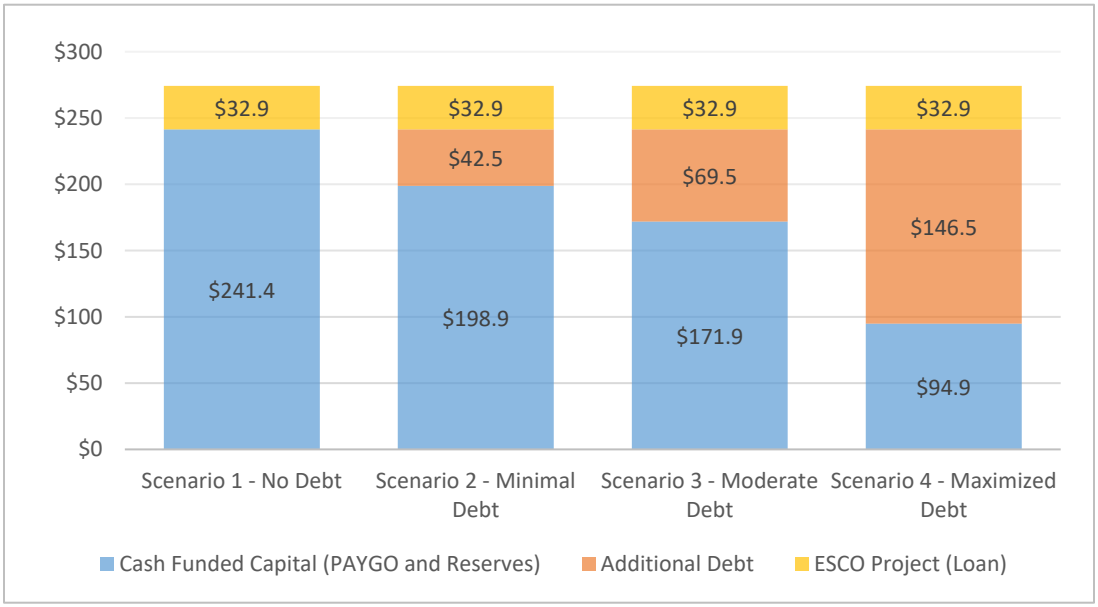


Figure 7.17 Capital Funding Comparison

Figure 7.18 compares the outstanding debt principal and projected interest payments that the sewer fund would hold after FY 2038/39 for each scenario. As shown, Scenario 4 would result in the City still needing to pay off almost $136 million in debt principal with almost $98 million in interest payments after the end of the study period in FY 2038/39. This would likely lead to higher rate increases beyond FY 2038/39 as compared to other scenarios.

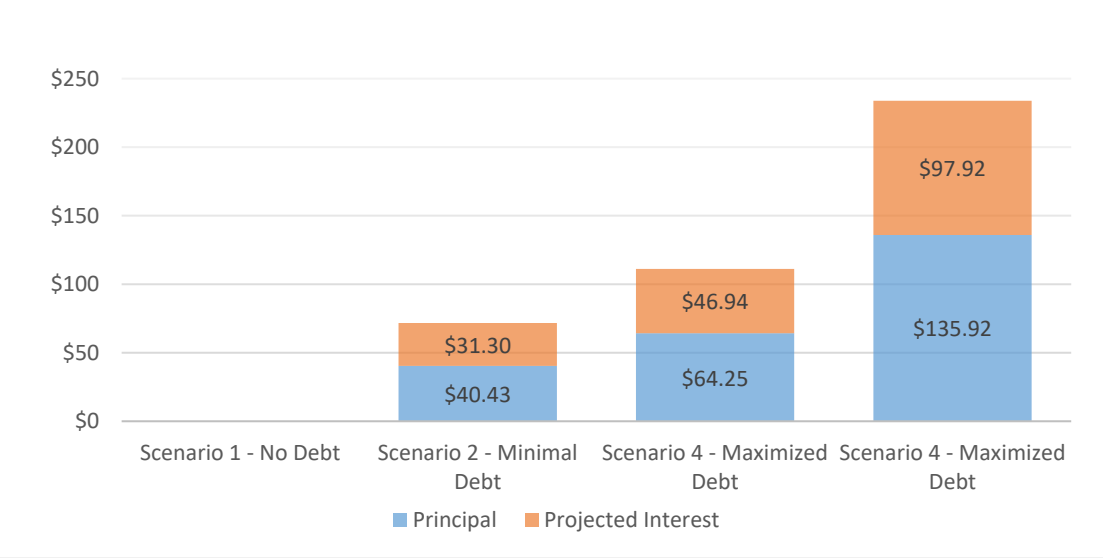


Figure 7.18 Comparison of Outstanding Debt after FY 2038/39

Figure 7.19 compares estimated single family residential bills for FY 2019/20 through FY 2038/39 for each scenario.

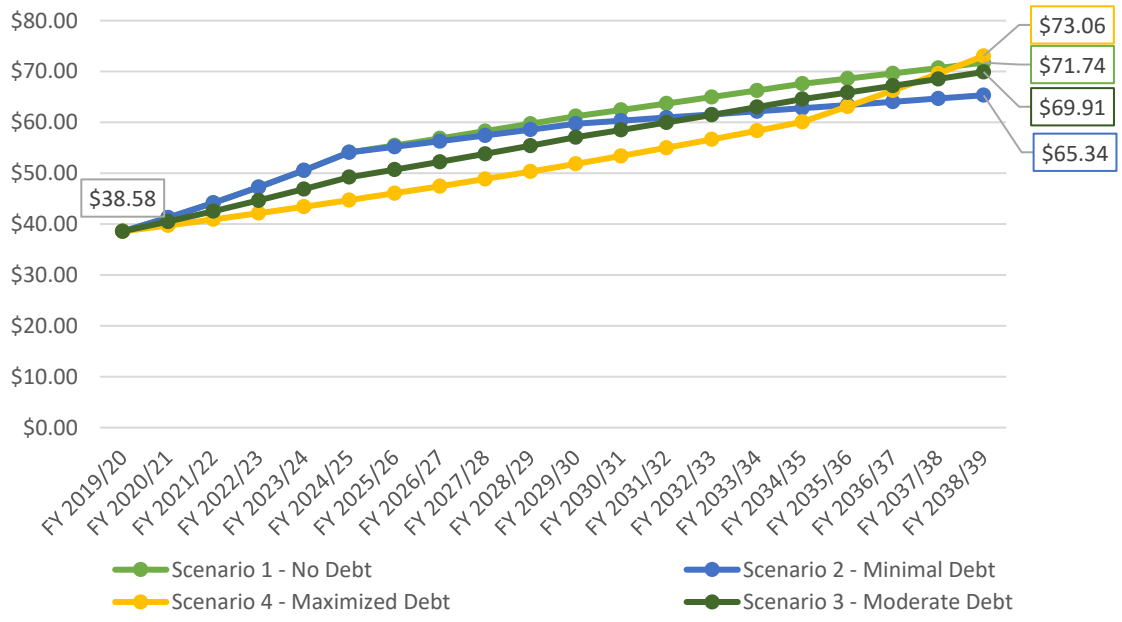


Figure 7.19 Estimated Single Family Residential Bill Comparison

As shown in Figure 7.19, the long-term rate outlook for each of the scenarios are the same general magnitude, with estimated single family charges ranging from about $65 to $73 per month by FY 2038/39. Increasing the amount of debt issued, allows rate increases to be smoothed over time, for a more gradual ramp up to the ultimate rates.

Each scenario can provide sufficient funding for the 20-year sewer system CIP, however a measured approach such as that shown in Scenario 2 or Scenario 3 would likely provide the most sustainable option for the City going forward. Moderated use of debt can allow for some smoothing of rate increases by spreading peak CIP costs over time, but it avoids the pitfalls of overreliance on debt as in Scenario 4.

The projections presented within this Chapter are intended to provide general direction for the Sanitation Fund's financial planning, not to serve as the basis for implemented rate increases. As the City works with Black and Veatch to complete the detailed rate study, more detailed short term projections should be developed for the rate study period.

Appendix A

PROJECT SUMMARY SHEETS

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE:	Primary Clarifier and PS Rehabilitation
PROJECT NO.:	WQCP01
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	TBD

PROJECT DESCRIPTION:

The purpose of this project is to rehabiliate the aging primary clarifiers. The project scope includes: Replace the internal components and mechanism due to age and condition. Repair concrete degradation inside basins and of walkways. Replace sludge pump station components based on age and condition (except sludge pumps, which are included in ESCO).

AREAS IMPACTED: Primary Clarification, Digestion

STARTING YEAR:	2023	**PRECEEDING PROJECT:**	ESCO RECM-7 and OECM 2
PROJECT DURATION:	3	**FOLLOWING PROJECT:**	none

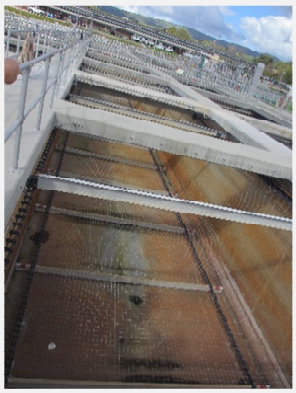
RISK SCORE:	9	**PROBABILITY OF FAILURE:**	3	*ENVIRONMENTAL COF:*	*3*
RISK RANK:	16	**CONSEQUENCE OF FAILURE:**	3	*SOCIAL COF:*	*3*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:				297,050			
Construction:					1,336,725	1,336,725	
Construction Services:							
				297,050	***1,336,725***	***1,336,725***	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							2,970,500

FIGURES:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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CITY OF SIMI VALLEY

Sewer System Reliability Assessment and Financial Plan Update

TASK :	Water Quality Control Plant Assessment	**ESTIMATE PREPARATION DATE :**	5/16/2019
JOB # :	11317A.60	**PREPARED BY :**	DB
LOCATION :	Simi Valley ,CA	**REVIEWED BY :**	DB
TITLE :	Primary Clarifier and PS Rehabilitation	**PROJECT NUMBER:**	WQCP01

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	New Mechanisms	3	EA	$50,000	$150,000	
	Concrete Rehab	15000	SF	$45	$675,000	
	New Scum Trough	3	EA	$20,000	$60,000	
	New Effluent Launders	2	EA	$25,000	$50,000	
	Influent/Effluent Channel Concrete Rehab	5000	SF	$43	$212,500	
	New Primary Sludge Pumps (part of ESCO)	0	EA	$0	$0	
	New Sludge Suction Piping	100	LF	$250	$25,000	
	New Valve and Actuators	3	EA	$10,000	$30,000	
	New Control Panel	1	EA	$25,000	$25,000	
	SUBTOTAL					**$1,227,500**
2	**Allowances**					
	Process Mechanical Allowance	5	%		$61,375	
	Yard Piping & Site Civil Allowance	5	%		$61,375	
	Electrical and Instrumentation Allowance	10	%		$122,750	
	Construction Difficulty	0	%		$0	
	Total					$245,500
	SUBTOTAL					**$1,473,000**
	Estimating Contingency	25	%			$368,250
						$1,841,250
	General Conditions	10	%			$184,125
						$2,025,375
	General Contractor Overhead & Profit	10	%			$202,538
						$2,227,913
	Sales Tax on 50% of Subtotal	7.75	%			$57,079
	CONSTRUCTION COST SUBTOTAL					**$2,284,991**
	Engineering, Management, and Legal	30	%			$685,497
	PROJECT COST (2019 Dollars)					**$2,970,500**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE:	Grit Pumping Improvements
PROJECT NO.:	WQCP02
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	TBD

PROJECT DESCRIPTION:

The purpose of this project is to replace aging grit equipment not included in the ESCO project. The project scope includes: Replace grit pumps and control based on age and condition. Relocate controls to area with proper head clearance. Install crane in pump area for equipment maintenance.

AREAS IMPACTED: Grit Removal

STARTING YEAR:	2023	**PRECEEDING PROJECT:**	ESCO OECM 3
PROJECT DURATION:	2	**FOLLOWING PROJECT:**	none

RISK SCORE:	8	**PROBABILITY OF FAILURE:**	4	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	20	**CONSEQUENCE OF FAILURE:**	2	*SOCIAL COF:*	*3*
				FIANCIAL COF:	*1*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:				138,005			
Construction:					256,295		
Construction Services:							
				138,005	***256,295***		

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							394,300

FIGURES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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CITY OF SIMI VALLEY

Sewer System Reliability Assessment and Financial Plan Update

TASK : Water Quality Control Plant Assessment
JOB # : 11317A.60
LOCATION : Simi Valley ,CA
TITLE : Grit Pumping Improvements

ESTIMATE PREPARATION DATE : 5/16/2019
PREPARED BY : DB
REVIEWED BY : DB
PROJECT NUMBER: WQCP02

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	New Grit Pumps	4	EA	$25,000	$100,000	
	New Pump Panels	1	LS	$50,000	$50,000	
	Install Jib Crane	1	EA	$20,000	$20,000	
	SUBTOTAL					**$170,000**
2	**Allowances**					
	Process Mechanical Allowance	5	%		$8,500	
	Yard Piping & Site Civil Allowance	0	%		$0	
	Electrical and Instrumentation Allowance	10	%		$17,000	
	Construction Difficulty	0	%		$0	
	Total					$25,500
	SUBTOTAL					**$195,500**
	Estimating Contingency	25	%			$48,875
						$244,375
	General Conditions	10	%			$24,438
						$268,813
	General Contractor Overhead & Profit	10	%			$26,881
						$295,694
	Sales Tax on 50% of Subtotal	7.75	%			$7,576
	CONSTRUCTION COST SUBTOTAL					**$303,269**
	Engineering, Management, and Legal	30	%			$90,981
	PROJECT COST (2019 Dollars)					**$394,300**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE:	FEB Pump Station and Basin Upgrades
PROJECT NO.:	WQCP03
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	TBD

PROJECT DESCRIPTION:

The purpose of this project is to replace aging and underperforming FEB equipment. The project scope includes: Replace FEB pumps and controls based on performance. Replace dump valves. Repair basin joints.

AREAS IMPACTED: Flow Equalization Basin, Primary Sedimentation

STARTING YEAR:	2024	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	2	**FOLLOWING PROJECT:**	none

RISK SCORE:	8	**PROBABILITY OF FAILURE:**	4	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	20	**CONSEQUENCE OF FAILURE:**	2	*SOCIAL COF:*	*3*
				FIANCIAL COF:	*2*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:					239,820		
Construction:						445,380	
Construction Services:							
					239,820	***445,380***	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							685,200

FIGURES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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CITY OF SIMI VALLEY

Sewer System Reliability Assessment and Financial Plan Update

TASK : Water Quality Control Plant Assessment
JOB # : 11317A.60
LOCATION : Simi Valley ,CA
TITLE : FEB Pump Station and Basin Upgrades

ESTIMATE PREPARATION DATE : 5/16/2019
PREPARED BY : DB
REVIEWED BY : DB
PROJECT NUMBER: WQCP03

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	Replace FEB pumps	3	EA	$45,000	$135,000	
	Replace controls and electrical	1	LS	$40,500	$40,500	
	Repair pump bases, miscellaneous repairs	1	LS	$20,000	$20,000	
	Replace 24 inch dump valves	2	EA	$30,000	$60,000	
	Lighting Improvements	1	LS	$5,000	$5,000	
	Drain pumps	2	EA	$5,000	$10,000	
	Concrete joint repair	1	LS	$25,000	$25,000	
	SUBTOTAL					**$295,500**
2	**Allowances**					
	Process Mechanical Allowance	5	%		$14,775	
	Yard Piping & Site Civil Allowance	0	%		$0	
	Electrical and Instrumentation Allowance	10	%		$29,550	
	Construction Difficulty	0	%		$0	
	Total					$44,300
	SUBTOTAL					**$339,800**
	Estimating Contingency	25	%			$84,950
						$424,750
	General Conditions	10	%			$42,475
						$467,225
	General Contractor Overhead & Profit	10	%			$46,723
						$513,948
	Sales Tax on 50% of Subtotal	7.75	%			$13,167
	CONSTRUCTION COST SUBTOTAL					**$527,115**
	Engineering, Management, and Legal	30	%			$158,134
	PROJECT COST (2019 Dollars)					**$685,200**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE: East BNR Repairs
PROJECT NO.: WQCP04
LEAD DEPARTMENT: Public Works
PROJECT MANAGER: TBD

PROJECT DESCRIPTION:

The purpose of this project is to make repairs to the East BNR area. The project scope includes: Seal leaking roof to MCC room. Resurface concrete above blower and MCC rooms and re-slope to avoid pooling water. Repair cracking walkways and crane beam corrosion. Replace influent gates and air piping based on age and condition. Replace stairs to blower room to improve safety

AREAS IMPACTED: Biological Nutrient Removal

STARTING YEAR:	2023	**PRECEEDING PROJECT:**	ESCO RECM 3,4 & OECM 1,2
PROJECT DURATION:	2	**FOLLOWING PROJECT:**	none

RISK SCORE:	10	**PROBABILITY OF FAILURE:**	4	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	14	**CONSEQUENCE OF FAILURE:**	2.5	*SOCIAL COF:*	*3*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:				265,160			
Construction:					492,440		
Construction Services:							
				265,160	***492,440***		

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							757,600

FIGURES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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CITY OF SIMI VALLEY

Sewer System Reliability Assessment and Financial Plan Update

TASK :	Water Quality Control Plant Assessment	**ESTIMATE PREPARATION DATE :**	5/16/2019
JOB # :	11317A.60	**PREPARED BY :**	DB
LOCATION :	Simi Valley ,CA	**REVIEWED BY :**	DB
TITLE :	East BNR Repairs	**PROJECT NUMBER:**	WQCP04

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	Surface Concrete Patch and Slope	1500	SF	$40	$60,000	
	Concrete Walkway Repair	300	SF	$40	$12,000	
	Crane Beam Corrosion Repair	11	EA	$2,000	$22,000	
	Install Blower Room Wall and Doorway	1	LS	$15,000	$15,000	
	New Blower Room Stairs	1	LS	$5,000	$5,000	
	MCC Room Ceiling Expoxy Injection	1	LS	$25,000	$25,000	
	New Influent Gates	6	EA	$30,000	$180,000	
	New Influent Channel Air Piping	150	LF	$150	$22,500	
	SUBTOTAL					**$341,500**
2	**Allowances**					
	Process Mechanical Allowance	0	%		$0	
	Yard Piping & Site Civil Allowance	10	%		$34,150	
	Electrical and Instrumentation Allowance	0	%		$0	
	Construction Difficulty	0	%		$0	
	Total					$34,200
	SUBTOTAL					**$375,700**
	Estimating Contingency	25	%			$93,925
						$469,625
	General Conditions	10	%			$46,963
						$516,588
	General Contractor Overhead & Profit	10	%			$51,659
						$568,246
	Sales Tax on 50% of Subtotal	7.75	%			$14,558
	CONSTRUCTION COST SUBTOTAL					**$582,805**
	Engineering, Management, and Legal	30	%			$174,841
	PROJECT COST (2019 Dollars)					**$757,600**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE:	WAS Pump Station Overhaul
PROJECT NO.:	WQCP05
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	TBD

PROJECT DESCRIPTION:

The purpose of this project is to replace aging WAS pumping equipment. The project scope includes: Replace WAS pumps, piping, valves and control panel based on age and condition.

AREAS IMPACTED: Secondary Clarification, Digestion

STARTING YEAR:	2024	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1	**FOLLOWING PROJECT:**	none

RISK SCORE:	9	**PROBABILITY OF FAILURE:**	3	*ENVIRONMENTAL COF:*	*2*
RISK RANK:	16	**CONSEQUENCE OF FAILURE:**	3	*SOCIAL COF:*	*4*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:					247,000		
Construction:							
Construction Services:							
					247,000		

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							247,000

FIGURES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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CITY OF SIMI VALLEY

Sewer System Reliability Assessment and Financial Plan Update

TASK :	Water Quality Control Plant Assessment	**ESTIMATE PREPARATION DATE :**	5/16/2019
JOB # :	11317A.60	**PREPARED BY :**	DB
LOCATION :	Simi Valley ,CA	**REVIEWED BY :**	DB
TITLE :	WAS Pump Station Overhaul	**PROJECT NUMBER:**	WQCP05

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	New Pumps	2	EA	$20,000	$40,000	
	New Suction and Discharge Piping	100	LF	$250	$25,000	
	New Valve (unactuated)	4	EA	$2,000	$8,000	
	Control Panel	1	EA	$25,000	$25,000	
	SUBTOTAL					**$98,000**
2	**Allowances**					
	Process Mechanical Allowance	5	%		$4,900	
	Yard Piping & Site Civil Allowance	10	%		$9,800	
	Electrical and Instrumentation Allowance	10	%		$9,800	
	Construction Difficulty	0	%		$0	
	Total					$24,500
	SUBTOTAL					**$122,500**
	Estimating Contingency	25	%			$30,625
						$153,125
	General Conditions	10	%			$15,313
						$168,438
	General Contractor Overhead & Profit	10	%			$16,844
						$185,281
	Sales Tax on 50% of Subtotal	7.75	%			$4,747
	CONSTRUCTION COST SUBTOTAL					**$190,028**
	Engineering, Management, and Legal	30	%			$57,008
	PROJECT COST (2019 Dollars)					**$247,000**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE:	Secondary Effluent Divesrion Structure Repair
PROJECT NO.:	WQCP06
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	TBD

PROJECT DESCRIPTION:

The purpose of this project is to improve the condition of the secondary effluent diversion structure. The project scope includes: Repair cracking concrete in structure wall and replace gates based on performance.

AREAS IMPACTED: Secondary Clarification, Tertiary Filters

STARTING YEAR:	2024	**PRECEEDING PROJECT:**	ESCO RECM 8 and OECM 2
PROJECT DURATION:	2	**FOLLOWING PROJECT:**	none

RISK SCORE:	12	**PROBABILITY OF FAILURE:**	3	*ENVIRONMENTAL COF:*	*4*
RISK RANK:	13	**CONSEQUENCE OF FAILURE:**	4	*SOCIAL COF:*	*4*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:					66,710		
Construction:						123,890	
Construction Services:							
					66,710	***123,890***	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							190,600

FIGURES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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CITY OF SIMI VALLEY

Sewer System Reliability Assessment and Financial Plan Update

TASK :	Water Quality Control Plant Assessment	**ESTIMATE PREPARATION DATE :**	5/16/2019
JOB # :	11317A.60	**PREPARED BY :**	DB
LOCATION :	Simi Valley ,CA	**REVIEWED BY :**	DB
TITLE :	Secondary Effluent Divesrion Structure Repair	**PROJECT NUMBER:**	WQCP06

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	New Gates	2	EA	$30,000	$60,000	
	Concrete Cracking Repair	1	LS	$30,000	$30,000	
	SUBTOTAL					**$90,000**
2	**Allowances**					
	Process Mechanical Allowance	0	%		$0	
	Yard Piping & Site Civil Allowance	0	%		$0	
	Electrical and Instrumentation Allowance	5	%		$4,500	
	Construction Difficulty	0	%		$0	
	Total					$4,500
	SUBTOTAL					**$94,500**
	Estimating Contingency	25	%			$23,625
						$118,125
	General Conditions	10	%			$11,813
						$129,938
	General Contractor Overhead & Profit	10	%			$12,994
						$142,931
	Sales Tax on 50% of Subtotal	7.75	%			$3,662
	CONSTRUCTION COST SUBTOTAL					**$146,593**
	Engineering, Management, and Legal	30	%			$43,978
	PROJECT COST (2019 Dollars)					**$190,600**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE:	Tertiary Filter Rehabiliation
PROJECT NO.:	WQCP07
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	TBD

PROJECT DESCRIPTION:

The purpose of this project is to replace aging and poor condition equipment in the tertiary filters. The project scope includes: Replacement of pumps, blowers, gates, and valves based on age and condition. Replacement of MCCs H and J based on age. Rehabilitation of filter structure due to settling.

AREAS IMPACTED: Tertiary Filters

STARTING YEAR:	2022	**PRECEEDING PROJECT:**	ESCO RECM 9
PROJECT DURATION:	3	**FOLLOWING PROJECT:**	none

RISK SCORE:	16	**PROBABILITY OF FAILURE:**	4	*ENVIRONMENTAL COF:*	*4*
RISK RANK:	4	**CONSEQUENCE OF FAILURE:**	4	*SOCIAL COF:*	*4*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:			326,390				
Construction:				1,468,755	1,468,755		
Construction Services:							
			326,390	***1,468,755***	***1,468,755***		

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							3,263,900

FIGURES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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CITY OF SIMI VALLEY

Sewer System Reliability Assessment and Financial Plan Update

TASK : Water Quality Control Plant Assessment
JOB # : 11317A.60
LOCATION : Simi Valley ,CA
TITLE : Tertiary Filter Rehabiliation

ESTIMATE PREPARATION DATE : 5/16/2019
PREPARED BY : DB
REVIEWED BY : DB
PROJECT NUMBER: WQCP07

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	Blowers	2	EA	$53,000	$106,000	
	Filter Backwash Pumps	3	EA	$50,000	$150,000	
	Waste Backwash Pumps	3	EA	$50,000	$150,000	
	New Buried Drain Valves	8	EA	$5,000	$40,000	
	New Air Handling Unit	1	EA	$10,000	$10,000	
	Applied and Backwash gates	16	EA	$18,000	$288,000	
	New MCC H	1	EA	$150,000	$150,000	
	New MCC J	1	EA	$90,000	$90,000	
	New Spray Water System Valves	8	EA	$2,500	$20,000	
	New Waste Backwash Valves	2	EA	$18,000	$36,000	
	Filter Structure Rehabilitation	1	LS	$200,000	$200,000	
	Filter Railing Repair/Replacement	1	LS	$5,000	$5,000	
	SUBTOTAL					**$1,245,000**
2	**Allowances**					
	Process Mechanical Allowance	10	%		$124,500	
	Yard Piping & Site Civil Allowance	5	%		$62,250	
	Electrical and Instrumentation Allowance	15	%		$186,750	
	Construction Difficulty	0	%		$0	
	Total					$373,500
	SUBTOTAL					**$1,618,500**
	Estimating Contingency	25	%			$404,625
						$2,023,125
	General Conditions	10	%			$202,313
						$2,225,438
	General Contractor Overhead & Profit	10	%			$222,544
						$2,447,981
	Sales Tax on 50% of Subtotal	7.75	%			$62,717
	CONSTRUCTION COST SUBTOTAL					**$2,510,698**
	Engineering, Management, and Legal	30	%			$753,209
	PROJECT COST (2019 Dollars)					**$3,263,900**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE:	Chlorine Contact Tanks Rehabiliation
PROJECT NO.:	WQCP08
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	TBD

PROJECT DESCRIPTION:

The purpose of this project is to improve the condition of the chlorine contact basins. The project scope includes: Replace gates and baffles based on condition. Recoat tanks and repair broken concrete. Replace MCCs L and LA based on age. Replace effluent weir beams based on condition.

AREAS IMPACTED: Disinfection

STARTING YEAR:	2025	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	3	**FOLLOWING PROJECT:**	none

RISK SCORE:	9	**PROBABILITY OF FAILURE:**	3	*ENVIRONMENTAL COF:*	*4*
RISK RANK:	16	**CONSEQUENCE OF FAILURE:**	3	*SOCIAL COF:*	*3*
				FIANCIAL COF:	*1*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:						309,150	
Construction:							
Construction Services:							
						309,150	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:	1,391,175	1,391,175					
Construction Services:							
	1,391,175	***1,391,175***					***3,091,500***

FIGURES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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CITY OF SIMI VALLEY

Sewer System Reliability Assessment and Financial Plan Update

TASK :	Water Quality Control Plant Assessment	**ESTIMATE PREPARATION DATE :**	5/16/2019
JOB # :	11317A.60	**PREPARED BY :**	DB
LOCATION :	Simi Valley ,CA	**REVIEWED BY :**	DB
TITLE :	Chlorine Contact Tanks Rehabiliation	**PROJECT NUMBER:**	WQCP08

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	Concrete repair	1	LS	$15,000	$15,000	
	New CCB Lining	39000	SF	$18	$702,000	
	Replace gates	12	EA	$30,000	$360,000	
	Replace effluent weir beams	4	EA	$20,000	$80,000	
	New MCC L	1	EA	$60,000	$60,000	
	New MCC LA	1	EA	$60,000	$60,000	
	Baffles	6	EA	$5,000	$30,000	
	Parshall Flume Repair	1	LS	$20,000	$20,000	
	Effluent Weir Grating Cover	600	SF	$10	$6,000	
	SUBTOTAL					**$1,333,000**
2	**Allowances**					
	Process Mechanical Allowance	5	%		$66,650	
	Yard Piping & Site Civil Allowance	5	%		$66,650	
	Electrical and Instrumentation Allowance	5	%		$66,650	
	Construction Difficulty	0	%		$0	
	Total					$200,000
	SUBTOTAL					**$1,533,000**
	Estimating Contingency	25	%			$383,250
						$1,916,250
	General Conditions	10	%			$191,625
						$2,107,875
	General Contractor Overhead & Profit	10	%			$210,788
						$2,318,663
	Sales Tax on 50% of Subtotal	7.75	%			$59,404
	CONSTRUCTION COST SUBTOTAL					**$2,378,066**
	Engineering, Management, and Legal	30	%			$713,420
	PROJECT COST (2019 Dollars)					**$3,091,500**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE:	DAFT Process Overhaul
PROJECT NO.:	WQCP09
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	TBD

PROJECT DESCRIPTION:

The purpose of this project is to overhaul the aging sludge thickening process area. The project scope includes: Replace or overhaul DAFT process and associated equipment. Consider alternative technologies.

AREAS IMPACTED: Digestion, Dewatering, Sludge Holding Tank

STARTING YEAR:	2037	**PRECEEDING PROJECT:**	Sludge Thickening Study
PROJECT DURATION:	3	**FOLLOWING PROJECT:**	none

RISK SCORE:	4	**PROBABILITY OF FAILURE:**	2	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	30	**CONSEQUENCE OF FAILURE:**	2	*SOCIAL COF:*	*2*
				FIANCIAL COF:	*2*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:							
Construction:							
Construction Services:							

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:						445,364	
Construction:						1,484,536	
Construction Services:							
						1,484,536	***1,484,536***

FIGURES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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Sewer System Reliability Assessment and Financial Plan Update

TASK :	Water Quality Control Plant Assessment	**ESTIMATE PREPARATION DATE :**	5/16/2019
JOB # :	11317A.60	**PREPARED BY :**	DB
LOCATION :	Simi Valley ,CA	**REVIEWED BY :**	DB
TITLE :	DAFT Process Overhaul	**PROJECT NUMBER:**	WQCP09

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	New or Rehabiliated Thickener Units	2	EA	$300,000	$600,000	
	New TWAS Pumps	2	EA	$25,000	$50,000	
	New Polymer Pumping System	1	LS	$10,000	$10,000	
	SUBTOTAL					**$660,000**
2	**Allowances**					
	Process Mechanical Allowance	10	%		$66,000	
	Yard Piping & Site Civil Allowance	20	%		$132,000	
	Electrical and Instrumentation Allowance	15	%		$99,000	
	Construction Difficulty	0	%		$0	
	Total					$297,000
	SUBTOTAL					**$957,000**
	Estimating Contingency	25	%			$239,250
						$1,196,250
	General Conditions	10	%			$119,625
						$1,315,875
	General Contractor Overhead & Profit	10	%			$131,588
						$1,447,463
	Sales Tax on 50% of Subtotal	7.75	%			$37,084
	CONSTRUCTION COST SUBTOTAL					**$1,484,546**
	Engineering, Management, and Legal	30	%			$445,364
	PROJECT COST (2019 Dollars)					**$1,929,900**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE:	MCC Replacements
PROJECT NO.:	WQCP10
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	TBD

PROJECT DESCRIPTION:

The purpose of this project is to replace aging MCC equipment. The project scope includes: Replace MCCs installed before 1990 based on age.

AREAS IMPACTED: Tertiary Filters, Disinfection, Digestion, Dewatering

STARTING YEAR:	2024	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	2	**FOLLOWING PROJECT:**	Coordination Study

RISK SCORE:	16	**PROBABILITY OF FAILURE:**	4	*ENVIRONMENTAL COF:*	*4*
RISK RANK:	4	**CONSEQUENCE OF FAILURE:**	4	*SOCIAL COF:*	*4*
				FIANCIAL COF:	*4*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:					705,800		
Construction:						705,800	
Construction Services:							
					705,800	***705,800***	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							1,411,600

FIGURES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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CITY OF SIMI VALLEY

Sewer System Reliability Assessment and Financial Plan Update

TASK : Water Quality Control Plant Assessment
JOB # : 11317A.60
LOCATION : Simi Valley ,CA
TITLE : MCC Replacements

ESTIMATE PREPARATION DATE : 6/12/2019
PREPARED BY : DB
REVIEWED BY : DB
PROJECT NUMBER: WQCP10

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	MCC DCC - Digesters	1	EA	$120,000	$120,000	
	MCC N - Dewatering	1	EA	$240,000	$240,000	
	Temporary Power	1	LS	$200,000	$200,000	
	MCC H - Filters (Included in Filter Project)		*EA*	*$150,000*	*$0*	
	MCC J - Filters (Included in Filter Project)		*EA*	*$90,000*	*$0*	
	MCC L - Disinfection (Included in CCB Project)		*EA*	*$60,000*	*$0*	
	MCC LA - Disinfection (Included in CCB Project)		*EA*	*$60,000*	*$0*	
	SUBTOTAL					**$560,000**
2	**Allowances**					
	Process Mechanical Allowance	0	%		$0	
	Yard Piping & Site Civil Allowance	0	%		$0	
	Electrical and Instrumentation Allowance	25	%		$140,000	
	Construction Difficulty	0	%		$0	
	Total					$140,000
	SUBTOTAL					**$700,000**
	Estimating Contingency	25	%			$175,000
						$875,000
	General Conditions	10	%			$87,500
						$962,500
	General Contractor Overhead & Profit	10	%			$96,250
						$1,058,750
	Sales Tax on 50% of Subtotal	7.75	%			$27,125
	CONSTRUCTION COST SUBTOTAL					**$1,085,875**
	Engineering, Management, and Legal	30	%			$325,763
	PROJECT COST (2019 Dollars)					**$1,411,600**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE:	Plant-wide Safety Improvements
PROJECT NO.:	WQCP11
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	TBD

PROJECT DESCRIPTION:

The purpose of this project is to improve safety at the plant. The project scope includes: Install additional tie-off locations. Replace digester stairs handrail and repair cracking roof concrete. Install kickplates around filter cells and South CCB.

AREAS IMPACTED: Plant-wide

STARTING YEAR:	2023	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1	**FOLLOWING PROJECT:**	none

RISK SCORE:	8	**PROBABILITY OF FAILURE:**	4	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	20	**CONSEQUENCE OF FAILURE:**	2	*SOCIAL COF:*	*4*
				FIANCIAL COF:	*1*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:				212,400			
Construction:							
Construction Services:							
				212,400			

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							212,400

FIGURES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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CITY OF SIMI VALLEY

Sewer System Reliability Assessment and Financial Plan Update

TASK : Water Quality Control Plant Assessment
JOB # : 11317A.60
LOCATION : Simi Valley ,CA
TITLE : Plant-wide Safety Improvements

ESTIMATE PREPARATION DATE : 5/16/2019
PREPARED BY : DB
REVIEWED BY : DB
PROJECT NUMBER: WQCP11

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	Additional Tie-Offs	25	EA	$2,500	$62,500	
	Digester Stair Railing Height	200	LF	$50	$10,000	
	Digester Top Railing and Concrete Crack Repair	1	LS	$15,000	$15,000	
	Install Kickplates (New CCB + Filter Cells)	1280	LF	$10	$12,800	
	SUBTOTAL					**$100,300**
2	**Allowances**					
	Process Mechanical Allowance	0	%		$0	
	Yard Piping & Site Civil Allowance	5	%		$5,015	
	Electrical and Instrumentation Allowance	0	%		$0	
	Construction Difficulty	0	%		$0	
	Total					$5,000
	SUBTOTAL					**$105,300**
	Estimating Contingency	25	%			$26,325
						$131,625
	General Conditions	10	%			$13,163
						$144,788
	General Contractor Overhead & Profit	10	%			$14,479
						$159,266
	Sales Tax on 50% of Subtotal	7.75	%			$4,080
	CONSTRUCTION COST SUBTOTAL					**$163,347**
	Engineering, Management, and Legal	30	%			$49,004
	PROJECT COST (2019 Dollars)					**$212,400**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE:	Gravel Sump (Stormwater Pump Station) Expansion
PROJECT NO.:	WQCP12
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	TBD

PROJECT DESCRIPTION:

The purpose of this project is to improve the stormwater pumping at the WQCP site. The project scope includes: Expand wet well, install larger pumps, and install permanent discharge piping based on capacity.

AREAS IMPACTED: None

STARTING YEAR:	2025	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	2	**FOLLOWING PROJECT:**	none

RISK SCORE:	8	**PROBABILITY OF FAILURE:**	4	*ENVIRONMENTAL COF:*	*3*
RISK RANK:	20	**CONSEQUENCE OF FAILURE:**	2	*SOCIAL COF:*	*1*
				FIANCIAL COF:	*1*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:						52,780	
Construction:							
Construction Services:							
						52,780	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:	98,020						
Construction Services:							
	98,020						***150,800***

FIGURES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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CITY OF SIMI VALLEY

Sewer System Reliability Assessment and Financial Plan Update

TASK :	Water Quality Control Plant Assessment	**ESTIMATE PREPARATION DATE :**	5/16/2019
JOB # :	11317A.60	**PREPARED BY :**	DB
LOCATION :	Simi Valley ,CA	**REVIEWED BY :**	DB
TITLE :	Gravel Sump (Stormwater Pump Station) Expansion	**PROJECT NUMBER:**	WQCP12

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	New Pumps (Larger Capacity)	2	EA	$15,000	$30,000	
	New Discharge Piping	100	EA	$100	$10,000	
	Expand Wet Well	1	EA	$25,000	$25,000	
	SUBTOTAL					**$65,000**
2	**Allowances**					
	Process Mechanical Allowance	0	%		$0	
	Yard Piping & Site Civil Allowance	10	%		$6,500	
	Electrical and Instrumentation Allowance	5	%		$3,250	
	Construction Difficulty	0	%		$0	
	Total					$9,800
	SUBTOTAL					**$74,800**
	Estimating Contingency	25	%			$18,700
						$93,500
	General Conditions	10	%			$9,350
						$102,850
	General Contractor Overhead & Profit	10	%			$10,285
						$113,135
	Sales Tax on 50% of Subtotal	7.75	%			$2,899
	CONSTRUCTION COST SUBTOTAL					**$116,034**
	Engineering, Management, and Legal	30	%			$34,810
	PROJECT COST (2019 Dollars)					**$150,800**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE:	Sodium Bisulfite Station Improvements
PROJECT NO.:	WQCP13
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	TBD

PROJECT DESCRIPTION:

The purpose of this project is to replacing aging chemical equipment. The project scope includes: Replace chemical storage tanks and pumps based on age.

AREAS IMPACTED: Disinfection

STARTING YEAR:	2026	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	2	**FOLLOWING PROJECT:**	none

RISK SCORE:	7.5	**PROBABILITY OF FAILURE:**	3	*ENVIRONMENTAL COF:*	*3*
RISK RANK:	25	**CONSEQUENCE OF FAILURE:**	2.5	*SOCIAL COF:*	*2*
				FIANCIAL COF:	*2*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:							
Construction:							
Construction Services:							

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:	84,420						
Construction:		156,780					
Construction Services:							
	84,420	***156,780***					***241,200***

FIGURES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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CITY OF SIMI VALLEY

Sewer System Reliability Assessment and Financial Plan Update

TASK :	Water Quality Control Plant Assessment	**ESTIMATE PREPARATION DATE :**	5/16/2019
JOB # :	11317A.60	**PREPARED BY :**	DB
LOCATION :	Simi Valley ,CA	**REVIEWED BY :**	DB
TITLE :	Sodium Bisulfite Station Improvements	**PROJECT NUMBER:**	WQCP13

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	New FRP Tanks	2	EA	$50,000	$100,000	
	New Peristaltic Pumps	2	EA	$2,000	$4,000	
	SUBTOTAL					**$104,000**
2	**Allowances**					
	Process Mechanical Allowance	0	%		$0	
	Yard Piping & Site Civil Allowance	10	%		$10,400	
	Electrical and Instrumentation Allowance	5	%		$5,200	
	Construction Difficulty	0	%		$0	
	Total					$15,600
	SUBTOTAL					**$119,600**
	Estimating Contingency	25	%			$29,900
						$149,500
	General Conditions	10	%			$14,950
						$164,450
	General Contractor Overhead & Profit	10	%			$16,445
						$180,895
	Sales Tax on 50% of Subtotal	7.75	%			$4,635
	CONSTRUCTION COST SUBTOTAL					**$185,530**
	Engineering, Management, and Legal	30	%			$55,659
	PROJECT COST (2019 Dollars)					**$241,200**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
WQCP PROJECT SUMMARY SHEET

PROJECT TITLE:	Sodium Hypochlorite Station Improvements
PROJECT NO.:	WQCP14
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	TBD

PROJECT DESCRIPTION:

The purpose of this project is to replacing aging chemical equipment. The project scope includes: Replace tank cover based on condition. Replace chemical storage tanks and pumps based on age.

AREAS IMPACTED: Disinfection

STARTING YEAR:	2027	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	2	**FOLLOWING PROJECT:**	none

RISK SCORE:	4	**PROBABILITY OF FAILURE:**	2	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	30	**CONSEQUENCE OF FAILURE:**	2	*SOCIAL COF:*	*3*
				FIANCIAL COF:	*1*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:							
Construction:							
Construction Services:							

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:		68,180					
Construction:			126,620				
Construction Services:							
		68,180	***126,620***				***194,800***

FIGURES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

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CITY OF SIMI VALLEY

Sewer System Reliability Assessment and Financial Plan Update

TASK :	Water Quality Control Plant Assessment	**ESTIMATE PREPARATION DATE :**	5/16/2019
JOB # :	11317A.60	**PREPARED BY :**	DB
LOCATION :	Simi Valley ,CA	**REVIEWED BY :**	DB
TITLE :	Sodium Hypochlorite Station Improvements	**PROJECT NUMBER:**	WQCP14

ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	SUBTOTAL	TOTAL
1	**Equipment and Activities**					
	New FRP Tanks	2	EA	$30,000	$60,000	
	New Peristaltic Pumps	2	EA	$2,000	$4,000	
	Roof Modifications	1	LS	$20,000	$20,000	
	SUBTOTAL					**$84,000**
2	**Allowances**					
	Process Mechanical Allowance	0	%		$0	
	Yard Piping & Site Civil Allowance	10	%		$8,400	
	Electrical and Instrumentation Allowance	5	%		$4,200	
	Construction Difficulty	0	%		$0	
	Total					$12,600
	SUBTOTAL					**$96,600**
	Estimating Contingency	25	%			$24,150
						$120,750
	General Conditions	10	%			$12,075
						$132,825
	General Contractor Overhead & Profit	10	%			$13,283
						$146,108
	Sales Tax on 50% of Subtotal	7.75	%			$3,743
	CONSTRUCTION COST SUBTOTAL					**$149,851**
	Engineering, Management, and Legal	30	%			$44,955
	PROJECT COST (2019 Dollars)					**$194,800**

Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
SCADA/ORGANIZATION PROJECT SUMMARY SHEET

PROJECT TITLE: Rockwell PlantPAX Migration
PROJECT NO.: SCADA1
LEAD DEPARTMENT: Public Works
PROJECT MANAGER: TBD

PROJECT DESCRIPTION:

Migrate the existing SCADA System hardware and software to the latest Rockwell Automation PlantPAX platform. This includes upgrades to all existing PLC hardware not included in ESCO projects, and completely re-programming the PLC and HMI software. This effort also includes High Performance Graphic display design and workshops, a SCADA reporting and CMMS integration requirements study, and alarm philosophy development workshops.

AREAS IMPACTED:

STARTING YEAR:	2022		**PRECEEDING PROJECT:**	none	
PROJECT DURATION:	2 years		**FOLLOWING PROJECT:**	none	
RISK SCORE:	9	**PROBABILITY OF FAILURE:**	3	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	16	**CONSEQUENCE OF FAILURE:**	3	*SOCIAL COF:*	*3*
				FIANCIAL COF:	*4*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:			437,500	812,500			
Construction:							
Construction Services:							
			437,500	***812,500***			

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							1,250,000

FIGURES & NOTES:

Assumes CPU replacement and re-programming of 11 PLCs (not included in ESCO projects) to PlantPAX platform including PLC-01, 07, 08, 12, 14, 15, 16, 17, 18, East Blower, and 20 with a total estimated 556 I/O points at $1300/point. Includes sales tax on CPU replacement cost and assumes 25% construction estimating contingency and 15% engineering cost.

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
SCADA/ORGANIZATION PROJECT SUMMARY SHEET

PROJECT TITLE: Alarm Management Program
PROJECT NO.: SCADA2
LEAD DEPARTMENT: Public Works
PROJECT MANAGER: TBD

PROJECT DESCRIPTION:

This is an annual program to continuously improve alarming to increase operator efficiency and avoid nuisance alarms. The intent is to analyze alarms annually, classify the alarms, and priorities improvement areas. The resolution to the alarming may include changes to PLC code to prevent false alarm conditions, more frequent maintenance on instrumentation, or equipment replacement.

AREAS IMPACTED: None

STARTING YEAR:	2022	**PRECEEDING PROJECT:**	Alarm Management Program
PROJECT DURATION:	5 years	**FOLLOWING PROJECT:**	none

RISK SCORE:	2	**PROBABILITY OF FAILURE:**	1	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	35	**CONSEQUENCE OF FAILURE:**	2	*SOCIAL COF:*	*1*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:			50,000	50,000	50,000	50,000	
Construction:							
Construction Services:							
			50,000	***50,000***	***50,000***	***50,000***	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:	50,000						
Construction:							
Construction Services:							
	50,000						***250,000***

FIGURES & NOTES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
SCADA/ORGANIZATION PROJECT SUMMARY SHEET

PROJECT TITLE: Lift Station SCADA Integration
PROJECT NO.: SCADA3
LEAD DEPARTMENT: Public Works
PROJECT MANAGER: TBD

PROJECT DESCRIPTION:

Upgrade PLC and communication infrastructure at the three existing sewer Lift Stations and integrate them into the plant SCADA system. This upgrade should be completed after the Migration Project and the PLCs should be integrated directly into PlantPAX.

AREAS IMPACTED: None

STARTING YEAR:	2026	**PRECEEDING PROJECT:**	Rockwell PlantPAX Migration
PROJECT DURATION:	9 months	**FOLLOWING PROJECT:**	none

RISK SCORE:	3	**PROBABILITY OF FAILURE:**	1	*ENVIRONMENTAL COF:*	*3*
RISK RANK:	33	**CONSEQUENCE OF FAILURE:**	3	*SOCIAL COF:*	*1*
				FIANCIAL COF:	*4*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:							
Construction:							
Construction Services:							

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:	310,000						
Construction:							
Construction Services:							
	310,000						***310,000***

FIGURES & NOTES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
SCADA/ORGANIZATION PROJECT SUMMARY SHEET

PROJECT TITLE: Performance Management Program
PROJECT NO.: ORG1
LEAD DEPARTMENT: Public Works
PROJECT MANAGER: TBD

PROJECT DESCRIPTION:

Develop a Sanitation-wide performance measurement program, based on the AWWA/WEF/WRF Effective Utility Management (EUM) industry standards, including KPIs, processes, and systems for data collection and reporting

AREAS IMPACTED: None

STARTING YEAR:	2022	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	9 months	**FOLLOWING PROJECT:**	none

RISK SCORE:	1.5	**PROBABILITY OF FAILURE:**	1	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	41	**CONSEQUENCE OF FAILURE:**	1.5	*SOCIAL COF:*	*1*
				FIANCIAL COF:	*2*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:			250,000				
Construction:							
Construction Services:							
			250,000				

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							250,000

FIGURES & NOTES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
SCADA/ORGANIZATION PROJECT SUMMARY SHEET

PROJECT TITLE: CMMS Improvements Program
PROJECT NO.: ORG2
LEAD DEPARTMENT: Public Works
PROJECT MANAGER: TBD

PROJECT DESCRIPTION:

Conduct assessment of current CMMS use and implement improvements to asset inventory for collections and recycled water systems, preventive maintenance procedures/tasks, condition assessment of sewer mains and manholes, activity-based costing for all maintenance tasks, risk-based asset prioritization, and integration with GIS and SCADA systems.

AREAS IMPACTED: None

STARTING YEAR:	2021	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	18 months	**FOLLOWING PROJECT:**	none

RISK SCORE:	2	**PROBABILITY OF FAILURE:**	1	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	35	**CONSEQUENCE OF FAILURE:**	2	*SOCIAL COF:*	*1*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:		175,000	325,000				
Construction:							
Construction Services:							
		175,000	***325,000***				

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							500,000

FIGURES & NOTES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
SCADA/ORGANIZATION PROJECT SUMMARY SHEET

PROJECT TITLE: Inventory Management Program
PROJECT NO.: ORG3
LEAD DEPARTMENT: Public Works
PROJECT MANAGER: TBD

PROJECT DESCRIPTION:

Conduct assessment of current inventory management practices and data, and implement improvements to centralized warehousing, materials management, inventory control, purchasing process, and related CMMS inventory management tools

AREAS IMPACTED: None

STARTING YEAR:	2023	**PRECEEDING PROJECT:**	CMMS Improvements Progra
PROJECT DURATION:	9 months	**FOLLOWING PROJECT:**	none

RISK SCORE:	2	**PROBABILITY OF FAILURE:**	1	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	35	**CONSEQUENCE OF FAILURE:**	2	*SOCIAL COF:*	*1*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:				300,000			
Construction:							
Construction Services:							
				300,000			

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							300,000

FIGURES & NOTES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
SCADA/ORGANIZATION PROJECT SUMMARY SHEET

PROJECT TITLE: Project Management System
PROJECT NO.: ORG4
LEAD DEPARTMENT: Public Works
PROJECT MANAGER: TBD

PROJECT DESCRIPTION:

Develop project management system requirements for Sanitation Division, evaluate software alternatives, procure system and configuration services, and implement PMIS. Consider similar project management needs for other divisions of the Public Works Department, in order to leverage additional resources and common information systems for implementation.

AREAS IMPACTED: None

STARTING YEAR:	2024	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	15 months	**FOLLOWING PROJECT:**	none

RISK SCORE:	1	**PROBABILITY OF FAILURE:**	1	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	42	**CONSEQUENCE OF FAILURE:**	1	*SOCIAL COF:*	*1*
				FIANCIAL COF:	*1*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:					122,500	227,500	
Construction:							
Construction Services:							
					122,500	***227,500***	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
							350,000

FIGURES & NOTES:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment

Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM

COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	Sinaloa Lake-West
PROJECT NO.:	CS01
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 10,596 feet of 6 to 10-inch, PVC pipes located in the western portion of the Sinaloa Lake area. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: Adirondack Ct, Blue Lake Ct, Calzona Ct, Capri Dr, Capri Dr, Carmel Dr, Cayuga Dr, Crown Ct, E. Bonita Dr, Elvdao Dr, Fresh Meadows Rd, Golden Fern Ct, Goldenwood Cir, Innwood Rd, Lake Breeze Pl, Parkview Ct, Pecan Valley Pl, Rosita Dr, Royal Ave, Mollison Dr.

STARTING YEAR:	2023	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1 year	**FOLLOWING PROJECT:**	none

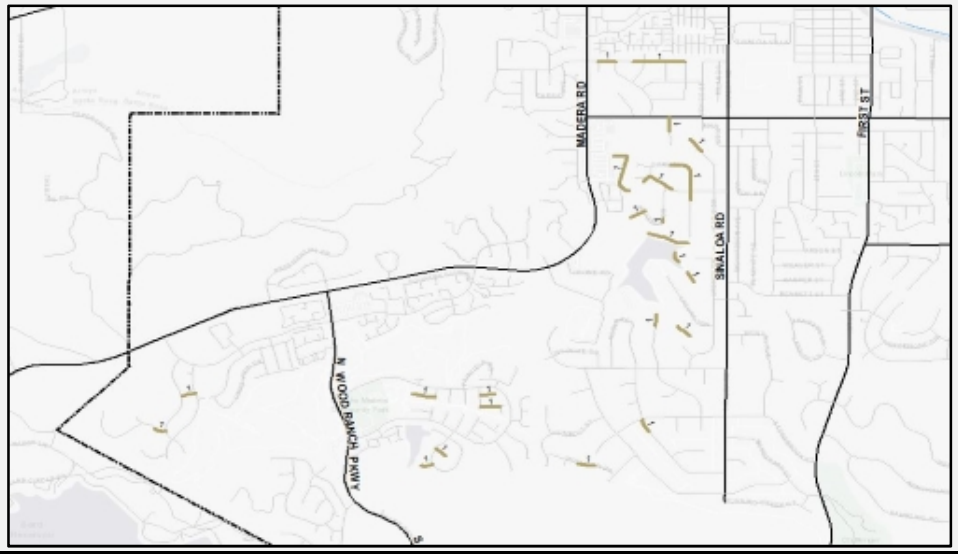
RISK SCORE:	15	**PROBABILITY OF FAILURE:**	**5**	*ENVIRONMENTAL COF:*	*5*
RISK RANK:	8	**CONSEQUENCE OF FAILURE:**	**3**	*SOCIAL COF:*	*1*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:				$ 108,987			
Construction:				1,091,013			
Construction Services:							
	-	-	-	***1,200,000***	-	-	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-			***1,200,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Typical		
PROJECT TITLE :	Sinaloa Lake-West		
PROJECT NO.:	CS01		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe	160	LF	$ 65	$ 10,473
	8" Host Pipe	10,435	LF	$ 65	$ 681,291
	10" Host Pipe		LF	$ 78	$ -
	12" Host Pipe		LF	$ 85	$ -
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe		LF	$ 157	$ -
	16" Host Pipe		LF	$ 167	$ -
	18" Host Pipe		LF	$ 188	$ -
	20" Host Pipe		LF	$ 209	$ -
	21" Host Pipe		LF	$ 219	$ -
	24" Host Pipe		LF	$ 251	$ -
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe		LF	$ 470	$ -
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*10,596*	*LF*	***Subtotal***	***$ 691,764***
2	**Point Repairs**				
	Internal/External Repair		EA	$ 20,000	$ -
				Subtotal	***$ -***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	10,596	LF	10%	$ 69,176
	≤ 16" Pipe	-	LF	20%	$ -
	≤ 24" Pipe	-	LF	40%	$ -
	≤ 30" Pipe	-	LF	40%	$ -
	> 30" Pipe	-	LF	50%	$ -
	Traffic Control			5%	$ 34,588
				Subtotal	***$ 103,765***
4	**Allowances**				
	General Conditions			12%	$ 95,463
	Contingency			15%	$ 119,329
	Contractor Overhead & Profit			10%	$ 79,553
				Subtotal	***$ 1,089,874***
	Engineering, Legal, & Admin			10%	$ 108,987.37
				Total Project Cost	***$ 1,198,861***
			Rounded Project Cost		***$ 1,200,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	Sinaloa Lake-East
PROJECT NO.:	CS02
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 13,306 feet of 8 to 10-inch, PVC and asbestos cement pipes located in eastern portion of the Sinaloa Lake area. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: 2nd St, 3rd St, 4th St, Ashland Ave, Ayhen St, Balsamo Ave, Bliss Ct, Buster St, Dakin Ave, Duarte Cir, Elizondo Ave, Fitgerald Rd, Hemlock Ridge Ct, Margo Dr, Mellow Ln, Paul St, Royal Ave, Sycamore Dr, Terrace Dr, Ventura Ave, W. Los Angeles Ave, Winton Ct.

STARTING YEAR:	2027	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1 year	**FOLLOWING PROJECT:**	none

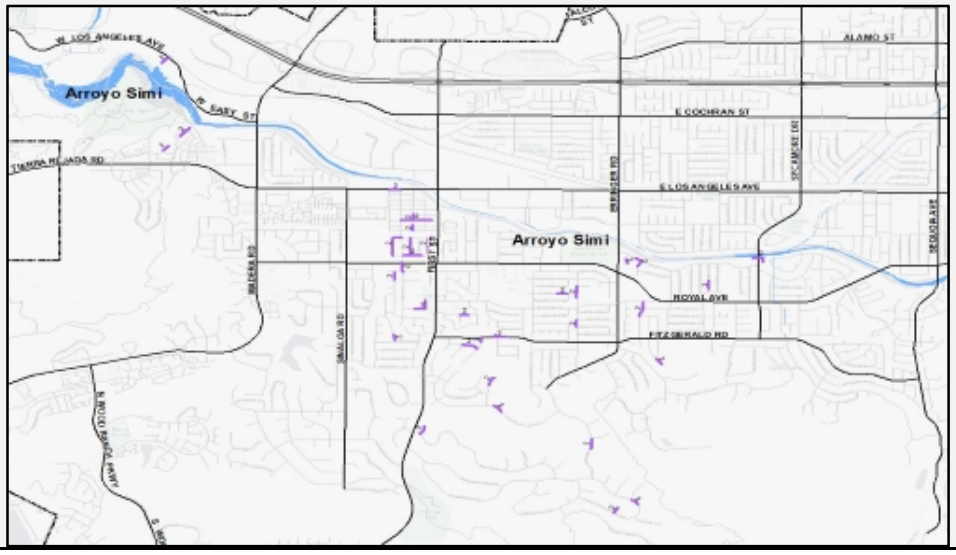
RISK SCORE:	12.5	**PROBABILITY OF FAILURE:**	**5**	*ENVIRONMENTAL COF:*	*3*
RISK RANK:	10	**CONSEQUENCE OF FAILURE:**	**2.5**	*SOCIAL COF:*	*1*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-	-	-	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:		$ 158,511					
Construction:		1,591,489					
Construction Services:							
	-	***1,750,000***	-	-			***1,750,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Major		
PROJECT TITLE :	Sinaloa Lake-East		
PROJECT NO.:	CS02		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe		LF	$ 65	$ -
	8" Host Pipe	11,673	LF	$ 65	$ 762,110
	10" Host Pipe	1,633	LF	$ 78	$ 127,904
	12" Host Pipe		LF	$ 85	$ -
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe		LF	$ 157	$ -
	16" Host Pipe		LF	$ 167	$ -
	18" Host Pipe		LF	$ 188	$ -
	20" Host Pipe		LF	$ 209	$ -
	21" Host Pipe		LF	$ 219	$ -
	24" Host Pipe		LF	$ 251	$ -
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe		LF	$ 470	$ -
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*13,306*	*LF*	***Subtotal***	***$ 890,014***
2	**Point Repairs**				
	Internal/External Repair		EA	$ 20,000	$ -
				Subtotal	***$ -***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	13,306	LF	15%	$ 133,502
	≤ 16" Pipe	-	LF	30%	$ -
	≤ 24" Pipe	-	LF	60%	$ -
	≤ 30" Pipe	-	LF	70%	$ -
	> 30" Pipe	-	LF	80%	$ -
	Traffic Control			15%	$ 133,502
				Subtotal	***$ 267,004***
4	**Allowances**				
	General Conditions			12%	$ 138,842
	Contingency			15%	$ 173,553
	Contractor Overhead & Profit			10%	$ 115,702
				Subtotal	***$ 1,585,115***
	Engineering, Legal, & Admin			10%	$ 158,511.47
				Total Project Cost	***$ 1,743,626***
			Rounded Project Cost		***$ 1,750,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	Easy-Arroyo Simi
PROJECT NO.:	CS03
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 4,797 feet and 4 point repairs of 8 to 39-inch primarily PVC and asbestos cement, partially continuous pipe segments located in the northwest portion of the City's service area around Easy St and Arroyo Simi. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: E. Easy St, E. Los Angeles Ave, Madera Rd, N. Chain Dr, Patricia Ave, W. Easy St, Williams St.

STARTING YEAR:	2021	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	3 years	**FOLLOWING PROJECT:**	none

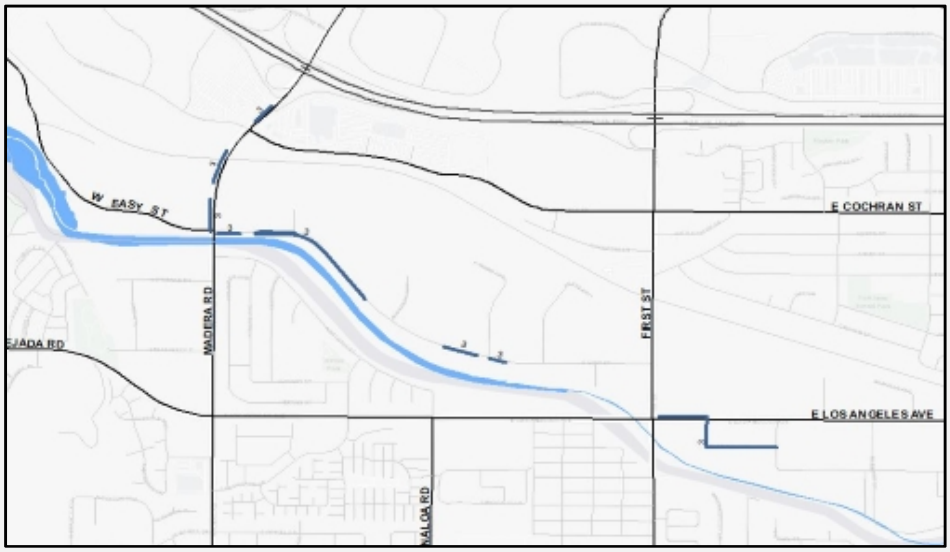
RISK SCORE:	25	**PROBABILITY OF FAILURE:**	**5**	*ENVIRONMENTAL COF:*	*5*
RISK RANK:	1	**CONSEQUENCE OF FAILURE:**	**5**	*SOCIAL COF:*	*5*
				FIANCIAL COF:	*5*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:		$ 563,788					
Construction:			2,823,106	2,823,106			
Construction Services:							
	-	***563,788***	***2,823,106***	***2,823,106***	-	-	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-			***6,210,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Major		
PROJECT TITLE :	Easy-Arroyo Simi		
PROJECT NO.:	CS03		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe		LF	$ 65	$ -
	8" Host Pipe	485	LF	$ 65	$ 31,633
	10" Host Pipe		LF	$ 78	$ -
	12" Host Pipe	200	LF	$ 85	$ 16,953
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe		LF	$ 157	$ -
	16" Host Pipe		LF	$ 167	$ -
	18" Host Pipe		LF	$ 188	$ -
	20" Host Pipe		LF	$ 209	$ -
	21" Host Pipe		LF	$ 219	$ -
	24" Host Pipe		LF	$ 251	$ -
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe	1,462	LF	$ 470	$ 687,146
	39" Host Pipe	2,651	LF	$ 509	$ 1,349,817
	Total Length	*4,797*	*LF*	***Subtotal***	***$ 2,085,549***
2	**Point Repairs**				
	Internal/External Repair	4	EA	$ 20,000	$ 80,000
				Subtotal	***$ 80,000***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	684	LF	15%	$ 7,288
	≤ 16" Pipe	-	LF	30%	$ -
	≤ 24" Pipe	-	LF	60%	$ -
	≤ 30" Pipe	-	LF	70%	$ -
	> 30" Pipe	4,113	LF	80%	$ 1,629,570
	Traffic Control			15%	$ 312,832
				Subtotal	***$ 1,949,691***
4	**Allowances**				
	General Conditions			12%	$ 493,829
	Contingency			15%	$ 617,286
	Contractor Overhead & Profit			10%	$ 411,524
				Subtotal	***$ 5,637,878***
	Engineering, Legal, & Admin			10%	$ 563,787.84
				Total Project Cost	***$ 6,201,666***
			Rounded Project Cost		***$ 6,210,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	Mountain Valley/Justin El
PROJECT NO.:	CS04
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 6,713 feet and 4 point repairs of 8 to 33-inch, primarily asbestos cement pipes located in the north-central portion of the City's service area near Mountain Valley and Justin Elementary. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: Acton Ct, Agnew St, Cloud Ct, Denham Ct, E. Brower Ave, E. Larch St, Hawk St, Lee St, Marvel Ave, N. Fernwood Ct, Ysrella Ave.

STARTING YEAR:	2025	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1 year	**FOLLOWING PROJECT:**	none

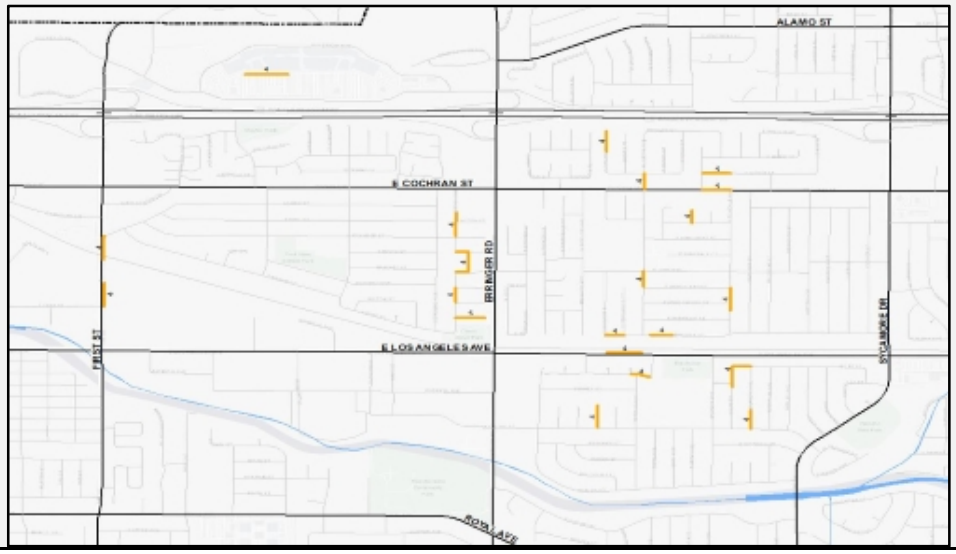
RISK SCORE:	12.5	**PROBABILITY OF FAILURE:**	**5**	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	10	**CONSEQUENCE OF FAILURE:**	**2.5**	*SOCIAL COF:*	*3*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:						$ 115,292	
Construction:						1,154,708	
Construction Services:							
	-	-	-	-	-	***1,270,000***	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-			***1,270,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Typical		
PROJECT TITLE :	Mountain Valley/Justin El		
PROJECT NO.:	CS04		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe		LF	$ 65	$ -
	8" Host Pipe	4,365	LF	$ 65	$ 284,977
	10" Host Pipe	520	LF	$ 78	$ 40,735
	12" Host Pipe	1,350	LF	$ 85	$ 114,581
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe		LF	$ 157	$ -
	16" Host Pipe		LF	$ 167	$ -
	18" Host Pipe		LF	$ 188	$ -
	20" Host Pipe		LF	$ 209	$ -
	21" Host Pipe		LF	$ 219	$ -
	24" Host Pipe		LF	$ 251	$ -
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe	478	LF	$ 345	$ 164,654
	36" Host Pipe		LF	$ 470	$ -
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*6,713*	*LF*	***Subtotal***	***$ 604,946***
2	**Point Repairs**				
	Internal/External Repair	4	EA	$ 20,000	$ 80,000
				Subtotal	***$ 80,000***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	6,235	LF	10%	$ 44,029
	≤ 16" Pipe	-	LF	20%	$ -
	≤ 24" Pipe	-	LF	40%	$ -
	≤ 30" Pipe	-	LF	40%	$ -
	> 30" Pipe	478	LF	50%	$ 82,327
	Traffic Control			5%	$ 30,247
				Subtotal	***$ 156,603***
4	**Allowances**				
	General Conditions			12%	$ 100,986
	Contingency			15%	$ 126,232
	Contractor Overhead & Profit			10%	$ 84,155
				Subtotal	***$ 1,152,922***
	Engineering, Legal, & Admin			10%	$ 115,292.23
				Total Project Cost	***$ 1,268,214***
			Rounded Project Cost		***$ 1,270,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	Royal-Arroyo Simi
PROJECT NO.:	CS05
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 9,665 feet and 7 point repairs of 10 to 36-inch, primarily asbestos cement pipes located in south-central portion of the City's service area around Royal Ave and Arroyo Simi. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: Cavalier Ave, Corto Ave, Crosby Ave, Royal Ave, Sycamore Dr.

STARTING YEAR:	2024	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1 year	**FOLLOWING PROJECT:**	none

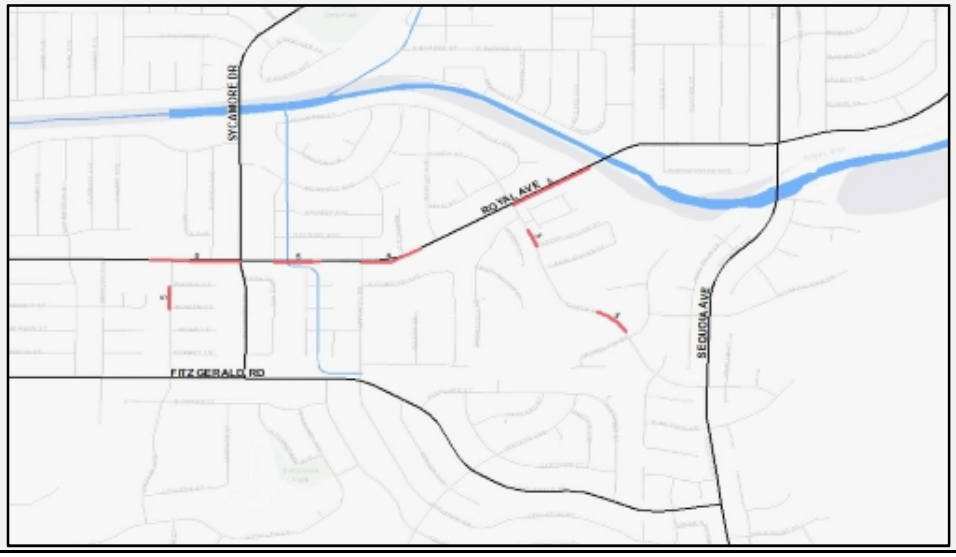
RISK SCORE:	16	**PROBABILITY OF FAILURE:**	**4**	*ENVIRONMENTAL COF:*	*3*
RISK RANK:	4	**CONSEQUENCE OF FAILURE:**	**4**	*SOCIAL COF:*	*5*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:					$ 94,650		
Construction:					955,350		
Construction Services:							
	-	-	-	-	***1,050,000***	-	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-			***1,050,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Typical		
PROJECT TITLE :	Royal-Arroyo Simi		
PROJECT NO.:	CS05		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe		LF	$ 65	$ -
	8" Host Pipe		LF	$ 65	$ -
	10" Host Pipe		LF	$ 78	$ -
	12" Host Pipe	368	LF	$ 85	$ 31,211
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe		LF	$ 157	$ -
	16" Host Pipe		LF	$ 167	$ -
	18" Host Pipe		LF	$ 188	$ -
	20" Host Pipe	1,634	LF	$ 209	$ 341,366
	21" Host Pipe		LF	$ 219	$ -
	24" Host Pipe		LF	$ 251	$ -
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe		LF	$ 470	$ -
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*2,002*	*LF*	***Subtotal***	***$ 372,577***
2	**Point Repairs**				
	Internal/External Repair	8	EA	$ 20,000	$ 160,000
				Subtotal	***$ 160,000***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	368	LF	10%	$ 3,121
	≤ 16" Pipe	-	LF	20%	$ -
	≤ 24" Pipe	1,634	LF	40%	$ 136,546
	≤ 30" Pipe	-	LF	40%	$ -
	> 30" Pipe	-	LF	50%	$ -
	Traffic Control			5%	$ 18,629
				Subtotal	***$ 158,296***
4	**Allowances**				
	General Conditions			12%	$ 82,905
	Contingency			15%	$ 103,631
	Contractor Overhead & Profit			10%	$ 69,087
				Subtotal	***$ 946,496***
	Engineering, Legal, & Admin			10%	$ 94,649.63
				Total Project Cost	***$ 1,041,146***
			Rounded Project Cost		***$ 1,050,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment

Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM

COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	E Los Angeles Ave Trunk
PROJECT NO.:	CS06
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 2,002 feet and 8 point repairs of 12 to 20-inch, primarily asbestos cement pipes spanning from north-central to west-central portion of the City's service area along E. Los Angeles Ave. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: E. Los Angeles Ave, Hidden Ranch Dr, Sequoia Ave, Stearns St, Stow St, Suede St, Tapo St, Tinkerman St, Yosemite Ave.

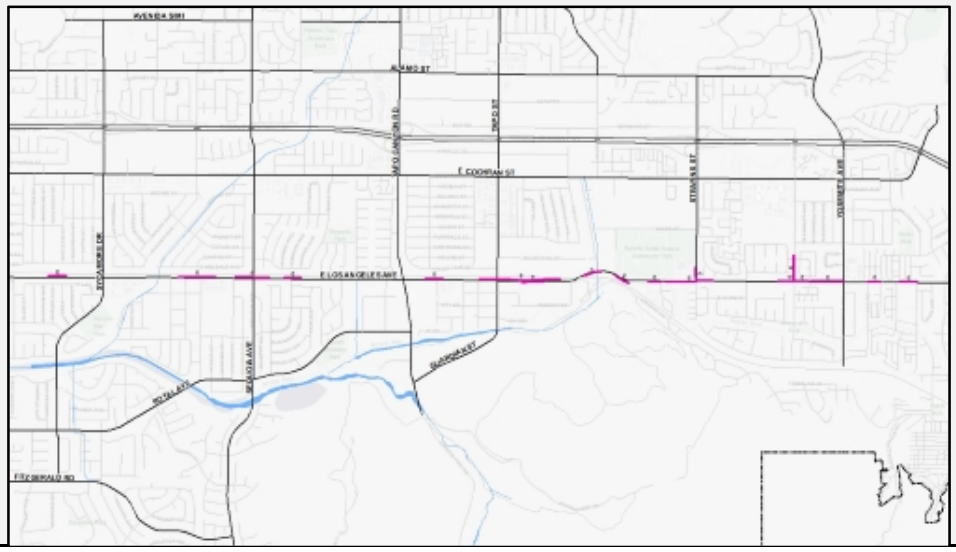
STARTING YEAR:	2024		**PRECEEDING PROJECT:**	none	
PROJECT DURATION:	3 years		**FOLLOWING PROJECT:**	none	
RISK SCORE:	16	**PROBABILITY OF FAILURE:**	**4**	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	4	**CONSEQUENCE OF FAILURE:**	**4**	*SOCIAL COF:*	*5*
				FIANCIAL COF:	*5*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:					$ 587,627		
Construction:						2,941,187	
Construction Services:							
	-	-	-	-	***587,627***	***2,941,187***	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:	2,941,187						
Construction Services:							
	2,941,187	-	-	-			***6,470,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Major		
PROJECT TITLE :	E Los Angeles Ave Trunk		
PROJECT NO.:	CS06		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe		LF	$ 65	$ -
	8" Host Pipe		LF	$ 65	$ -
	10" Host Pipe	1,299	LF	$ 78	$ 101,795
	12" Host Pipe		LF	$ 85	$ -
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe	405	LF	$ 157	$ 63,477
	16" Host Pipe		LF	$ 167	$ -
	18" Host Pipe	2,171	LF	$ 188	$ 408,186
	20" Host Pipe		LF	$ 209	$ -
	21" Host Pipe	414	LF	$ 219	$ 90,801
	24" Host Pipe	3,924	LF	$ 251	$ 983,825
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe	1,451	LF	$ 470	$ 682,025
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*9,665*	*LF*	***Subtotal***	***$ 2,330,110***
2	**Point Repairs**				
	Internal/External Repair	7	EA	$ 20,000	$ 140,000
				Subtotal	***$ 140,000***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	1,299	LF	15%	$ 15,269
	≤ 16" Pipe	405	LF	30%	$ 19,043
	≤ 24" Pipe	6,509	LF	60%	$ 889,687
	≤ 30" Pipe	-	LF	70%	$ -
	> 30" Pipe	1,451	LF	80%	$ 545,620
	Traffic Control			15%	$ 349,516
				Subtotal	***$ 1,819,136***
4	**Allowances**				
	General Conditions			12%	$ 514,710
	Contingency			15%	$ 643,387
	Contractor Overhead & Profit			10%	$ 428,925
				Subtotal	***$ 5,876,267***
	Engineering, Legal, & Admin			10%	$ 587,626.72
				Total Project Cost	***$ 6,463,894***
			Rounded Project Cost		***$ 6,470,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	Civic Center-Alamo St
PROJECT NO.:	CS07
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 2,971 feet and 1 point repair of 8 to 18-inch, primarily PVC, partially continuous pipe segments located in northcentral portion of the City's service area around Civic Center and Alamo St. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: Ave Simi, El Prado St, Lathrop Ave, Saphire Ave, Texas Ave.

STARTING YEAR:	2024	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1 year	**FOLLOWING PROJECT:**	none

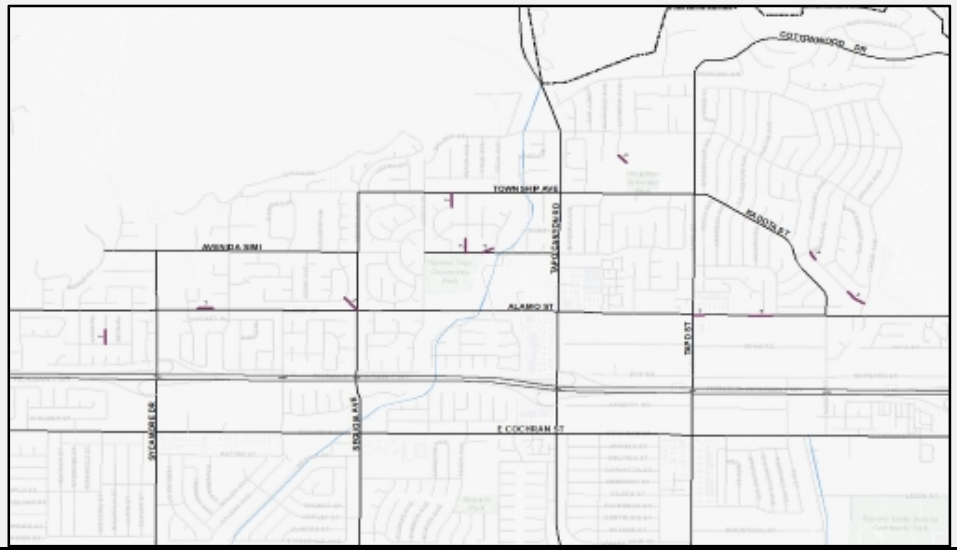
RISK SCORE:	5	**PROBABILITY OF FAILURE:**	**5**	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	27	**CONSEQUENCE OF FAILURE:**	**1**	*SOCIAL COF:*	*1*
				FIANCIAL COF:	*1*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:					$ 51,368		
Construction:					518,632		
Construction Services:							
	-	-	-	-	***570,000***	-	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-			***570,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Typical		
PROJECT TITLE :	Civic Center-Alamo St		
PROJECT NO.:	CS07		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe		LF	$ 65	$ -
	8" Host Pipe	1,916	LF	$ 65	$ 125,066
	10" Host Pipe	419	LF	$ 78	$ 32,863
	12" Host Pipe		LF	$ 85	$ -
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe		LF	$ 157	$ -
	16" Host Pipe		LF	$ 167	$ -
	18" Host Pipe	636	LF	$ 188	$ 119,540
	20" Host Pipe		LF	$ 209	$ -
	21" Host Pipe		LF	$ 219	$ -
	24" Host Pipe		LF	$ 251	$ -
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe		LF	$ 470	$ -
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*2,971*	*LF*	***Subtotal***	***$ 277,469***
2	**Point Repairs**				
	Internal/External Repair	1	EA	$ 20,000	$ 20,000
				Subtotal	***$ 20,000***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	2,335	LF	10%	$ 15,793
	≤ 16" Pipe	-	LF	20%	$ -
	≤ 24" Pipe	636	LF	40%	$ 47,816
	≤ 30" Pipe	-	LF	40%	$ -
	> 30" Pipe	-	LF	50%	$ -
	Traffic Control			5%	$ 13,873
				Subtotal	***$ 77,482***
4	**Allowances**				
	General Conditions			12%	$ 44,994
	Contingency			15%	$ 56,243
	Contractor Overhead & Profit			10%	$ 37,495
				Subtotal	***$ 513,683***
	Engineering, Legal, & Admin			10%	$ 51,368.35
				Total Project Cost	***$ 565,052***
			Rounded Project Cost		***$ 570,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	East Simi-Indian Hills Ridge
PROJECT NO.:	CS08
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 5,126 feet of 8 to 10-inch, primarily PVC pipes located in eastern portion of the City's service area around Indian Hills Ridge. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: Amondo Cir, E. Aurelia Ct, Fearing St, Katey Ln, Katy Ln, Klamath Ave, Kuehner Dr, Red Bluff Ct, Sandalwood Dr, Sitting Bull Pl, Stow St, Wisteria St.

STARTING YEAR:	2027	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1 year	**FOLLOWING PROJECT:**	none

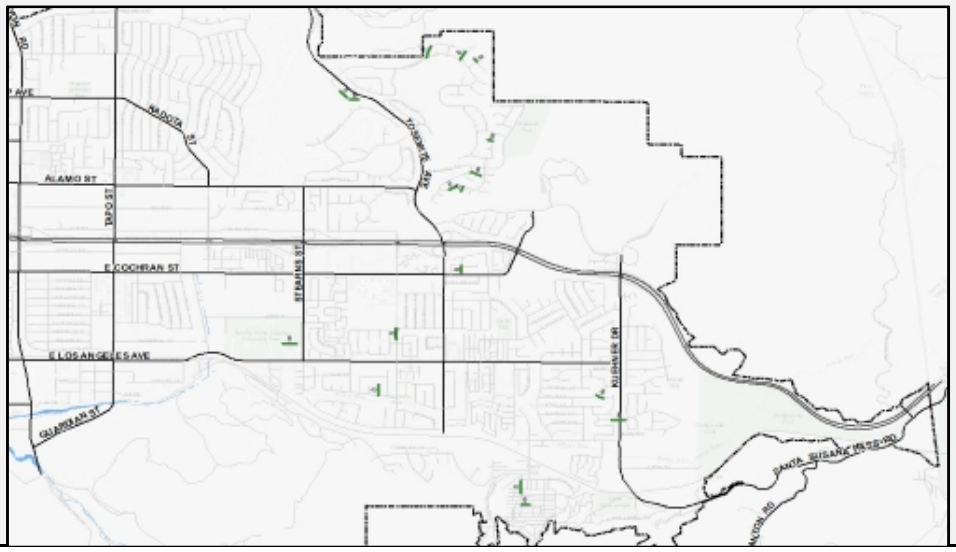
RISK SCORE:	5	**PROBABILITY OF FAILURE:**	**5**	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	27	**CONSEQUENCE OF FAILURE:**	**1**	*SOCIAL COF:*	*1*
				FIANCIAL COF:	*1*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-	-	-	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:		$ 54,086					
Construction:		545,914					
Construction Services:							
	-	***600,000***	-	-			***600,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Typical		
PROJECT TITLE :	East Simi-Indian Hills Ridge		
PROJECT NO.:	CS08		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe	331	LF	$ 65	$ 21,578
	8" Host Pipe	4,134	LF	$ 65	$ 269,902
	10" Host Pipe	661	LF	$ 78	$ 51,815
	12" Host Pipe		LF	$ 85	$ -
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe		LF	$ 157	$ -
	16" Host Pipe		LF	$ 167	$ -
	18" Host Pipe		LF	$ 188	$ -
	20" Host Pipe		LF	$ 209	$ -
	21" Host Pipe		LF	$ 219	$ -
	24" Host Pipe		LF	$ 251	$ -
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe		LF	$ 470	$ -
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*5,126*	*LF*	***Subtotal***	***$ 343,294***
2	**Point Repairs**				
	Internal/External Repair		EA	$ 20,000	$ -
				Subtotal	***$ -***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	5,126	LF	10%	$ 34,329
	≤ 16" Pipe	-	LF	20%	$ -
	≤ 24" Pipe	-	LF	40%	$ -
	≤ 30" Pipe	-	LF	40%	$ -
	> 30" Pipe	-	LF	50%	$ -
	Traffic Control			5%	$ 17,165
				Subtotal	***$ 51,494***
4	**Allowances**				
	General Conditions			12%	$ 47,375
	Contingency			15%	$ 59,218
	Contractor Overhead & Profit			10%	$ 39,479
				Subtotal	***$ 540,860***
	Engineering, Legal, & Admin			10%	$ 54,085.99
				Total Project Cost	***$ 594,946***
			Rounded Project Cost		***$ 600,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	Arelia-Arroyo Simi
PROJECT NO.:	CS09
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 4,163 feet and 9 point repairs of 8 to 10-inch, primarily asbestos cement pipes located in eastern portion of the City's service area near Aurelia St and Arroyo Simi. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: Aurelia St, Cory St, Cynthia St, Dana Ave, Hidden Ranch Dr, Hope St, Katherine Rd, Melia St, Metro Station St, Stow St, Yosemite Ave.

STARTING YEAR:	2024	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1 year	**FOLLOWING PROJECT:**	none

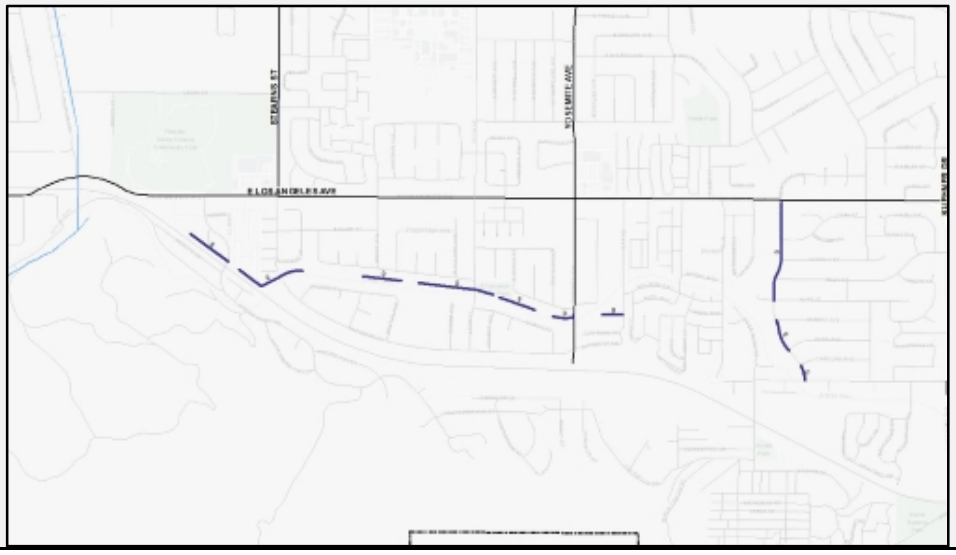
RISK SCORE:	15	**PROBABILITY OF FAILURE:**	**5**	*ENVIRONMENTAL COF:*	*5*
RISK RANK:	8	**CONSEQUENCE OF FAILURE:**	**3**	*SOCIAL COF:*	*1*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:					$ 135,519		
Construction:					1,364,481		
Construction Services:							
	-	-	-	-	***1,500,000***	-	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-			***1,500,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Typical		
PROJECT TITLE :	Arelia-Arroyo Simi		
PROJECT NO.:	CS09		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe		LF	$ 65	$ -
	8" Host Pipe		LF	$ 65	$ -
	10" Host Pipe		LF	$ 78	$ -
	12" Host Pipe	919	LF	$ 85	$ 78,015
	14" Host Pipe	1,107	LF	$ 146	$ 161,827
	15" Host Pipe		LF	$ 157	$ -
	16" Host Pipe	1,029	LF	$ 167	$ 171,999
	18" Host Pipe	1,108	LF	$ 188	$ 208,408
	20" Host Pipe		LF	$ 209	$ -
	21" Host Pipe		LF	$ 219	$ -
	24" Host Pipe		LF	$ 251	$ -
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe		LF	$ 470	$ -
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*4,163*	*LF*	***Subtotal***	***$ 620,250***
2	**Point Repairs**				
	Internal/External Repair	9	EA	$ 20,000	$ 180,000
				Subtotal	***$ 180,000***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	919	LF	10%	$ 7,802
	≤ 16" Pipe	2,136	LF	20%	$ 66,765
	≤ 24" Pipe	1,108	LF	40%	$ 83,363
	≤ 30" Pipe	-	LF	40%	$ -
	> 30" Pipe	-	LF	50%	$ -
	Traffic Control			5%	$ 31,013
				Subtotal	***$ 188,943***
4	**Allowances**				
	General Conditions			12%	$ 118,703
	Contingency			15%	$ 148,379
	Contractor Overhead & Profit			10%	$ 98,919
				Subtotal	***$ 1,355,194***
	Engineering, Legal, & Admin			10%	$ 135,519.41
				Total Project Cost	***$ 1,490,714***
			Rounded Project Cost		***$ 1,500,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	Sebring-Santa Susana
PROJECT NO.:	CS10
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 6,432 feet and 7 point repairs of 8 to 21-inch, primarily asbestos cement pipes located in eastern portion of the City's service area around Sebring and Santa Susana. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: Burrell Ave, Darrah Ave, Galena Ave, Heritage Oak Ct, Hilldale Ave, Hurles Ave, Lindale Ave, Rosalie St, Royal Ave, Sebring St, Tapo Canyon Rd.

STARTING YEAR:	2021	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1 year	**FOLLOWING PROJECT:**	none

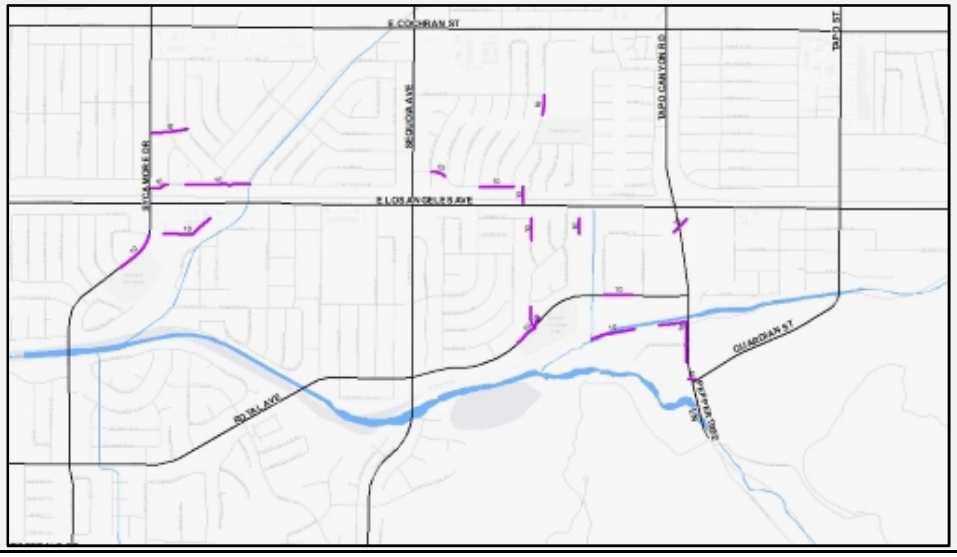
RISK SCORE:	20	**PROBABILITY OF FAILURE:**	**5**	*ENVIRONMENTAL COF:*	*5*
RISK RANK:	3	**CONSEQUENCE OF FAILURE:**	**4**	*SOCIAL COF:*	*3*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:		$ 143,186					
Construction:		1,436,814					
Construction Services:							
	-	***1,580,000***	-	-	-	-	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-			***1,580,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Typical		
PROJECT TITLE :	Sebring-Santa Susana		
PROJECT NO.:	CS10		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe		LF	$ 65	$ -
	8" Host Pipe	1,363	LF	$ 65	$ 89,005
	10" Host Pipe	2,305	LF	$ 78	$ 180,594
	12" Host Pipe	1,217	LF	$ 85	$ 103,312
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe		LF	$ 157	$ -
	16" Host Pipe		LF	$ 167	$ -
	18" Host Pipe		LF	$ 188	$ -
	20" Host Pipe	1,030	LF	$ 209	$ 215,159
	21" Host Pipe	517	LF	$ 219	$ 113,327
	24" Host Pipe		LF	$ 251	$ -
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe		LF	$ 470	$ -
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*6,432*	*LF*	***Subtotal***	***$ 701,397***
2	**Point Repairs**				
	Internal/External Repair	7	EA	$ 20,000	$ 140,000
				Subtotal	***$ 140,000***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	4,886	LF	10%	$ 37,291
	≤ 16" Pipe	-	LF	20%	$ -
	≤ 24" Pipe	1,547	LF	40%	$ 131,395
	≤ 30" Pipe	-	LF	40%	$ -
	> 30" Pipe	-	LF	50%	$ -
	Traffic Control			5%	$ 35,070
				Subtotal	***$ 203,755***
4	**Allowances**				
	General Conditions			12%	$ 125,418
	Contingency			15%	$ 156,773
	Contractor Overhead & Profit			10%	$ 104,515
				Subtotal	***$ 1,431,859***
	Engineering, Legal, & Admin			10%	$ 143,185.90
				Total Project Cost	***$ 1,575,045***
			Rounded Project Cost		***$ 1,580,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	Wright Ranch-Cochran
PROJECT NO.:	CS11
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 6,467 feet and 1 point repair of 8 to 18-inch, primarily PVC pipes located in eastern portion of the City's service area near Wright Ranch and Cochran St. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: Alan Ct, Alpine St, Belinda St, Gertrude St, Industrial St, Ralston St, Vanessa St, Workman Ave.

STARTING YEAR:	2027	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1 year	**FOLLOWING PROJECT:**	none

RISK SCORE:	5	**PROBABILITY OF FAILURE:**	**5**	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	27	**CONSEQUENCE OF FAILURE:**	**1**	*SOCIAL COF:*	*1*
				FIANCIAL COF:	*1*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-	-	-	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:		$ 69,259					
Construction:		700,741					
Construction Services:							
	-	***770,000***	-	-			***770,000***

OVERVIEW IMAGE:

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Typical		
PROJECT TITLE :	Wright Ranch-Cochran		
PROJECT NO.:	CS11		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe		LF	$ 65	$ -
	8" Host Pipe	6,467	LF	$ 65	$ 422,210
	10" Host Pipe		LF	$ 78	$ -
	12" Host Pipe		LF	$ 85	$ -
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe		LF	$ 157	$ -
	16" Host Pipe		LF	$ 167	$ -
	18" Host Pipe		LF	$ 188	$ -
	20" Host Pipe		LF	$ 209	$ -
	21" Host Pipe		LF	$ 219	$ -
	24" Host Pipe		LF	$ 251	$ -
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe		LF	$ 470	$ -
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*6,467*	*LF*	***Subtotal***	***$ 422,210***
2	**Point Repairs**				
	Internal/External Repair	1	EA	$ 20,000	$ 20,000
				Subtotal	***$ 20,000***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	6,467	LF	10%	$ 42,221
	≤ 16" Pipe	-	LF	20%	$ -
	≤ 24" Pipe	-	LF	40%	$ -
	≤ 30" Pipe	-	LF	40%	$ -
	> 30" Pipe	-	LF	50%	$ -
	Traffic Control			5%	$ 21,110
				Subtotal	***$ 63,331***
4	**Allowances**				
	General Conditions			12%	$ 60,665
	Contingency			15%	$ 75,831
	Contractor Overhead & Profit			10%	$ 50,554
				Subtotal	***$ 692,592***
	Engineering, Legal, & Admin			10%	$ 69,259.16
				Total Project Cost	***$ 761,851***
			Rounded Project Cost		***$ 770,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	Madera-Woodranch
PROJECT NO.:	CS12
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 554 feet and 4 point repairs of 8 to 18-inch, primarily VCP pipes located in southwestern portion of the City's service area around Madera Rd and Woodranch. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: Country Club Dr, Country Villas Townhomes, Mahogany Ln, Royal Ave, Wood Ranch Pkwy.

STARTING YEAR:	2027	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1 year	**FOLLOWING PROJECT:**	none

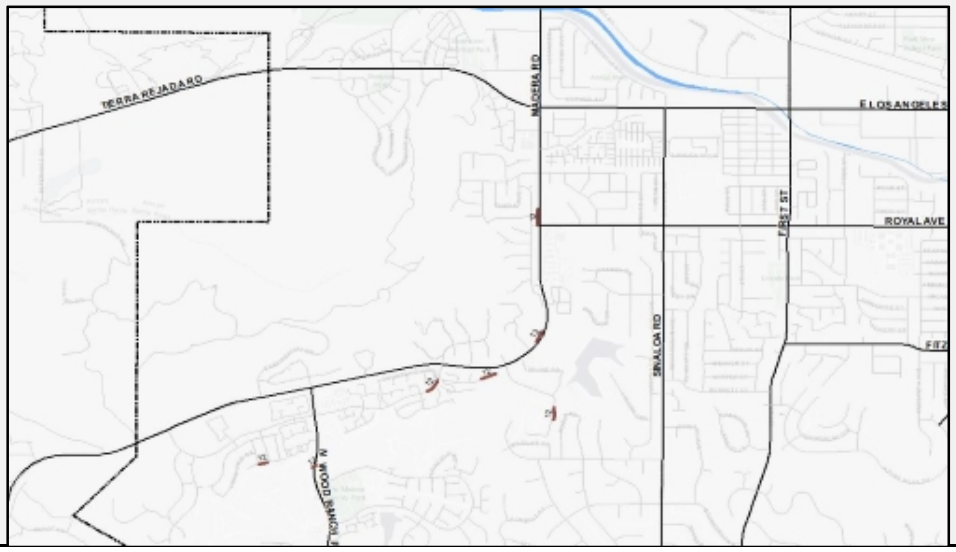
RISK SCORE:	10	**PROBABILITY OF FAILURE:**	**5**	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	14	**CONSEQUENCE OF FAILURE:**	**2**	*SOCIAL COF:*	*3*
				FIANCIAL COF:	*1*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-	-	-	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:		$ 26,213					
Construction:		263,787					
Construction Services:							
	-	***290,000***	-	-			***290,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Typical		
PROJECT TITLE :	Madera-Woodranch		
PROJECT NO.:	CS12		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe		LF	$ 65	$ -
	8" Host Pipe		LF	$ 65	$ -
	10" Host Pipe	180	LF	$ 78	$ 14,086
	12" Host Pipe		LF	$ 85	$ -
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe		LF	$ 157	$ -
	16" Host Pipe	108	LF	$ 167	$ 18,052
	18" Host Pipe	266	LF	$ 188	$ 50,051
	20" Host Pipe		LF	$ 209	$ -
	21" Host Pipe		LF	$ 219	$ -
	24" Host Pipe		LF	$ 251	$ -
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe		LF	$ 470	$ -
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*554*	*LF*	***Subtotal***	***$ 82,189***
2	**Point Repairs**				
	Internal/External Repair	4	EA	$ 20,000	$ 80,000
				Subtotal	***$ 80,000***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	180	LF	10%	$ 1,409
	≤ 16" Pipe	108	LF	20%	$ 3,610
	≤ 24" Pipe	266	LF	40%	$ 20,020
	≤ 30" Pipe	-	LF	40%	$ -
	> 30" Pipe	-	LF	50%	$ -
	Traffic Control			5%	$ 4,109
				Subtotal	***$ 29,149***
4	**Allowances**				
	General Conditions			12%	$ 22,961
	Contingency			15%	$ 28,701
	Contractor Overhead & Profit			10%	$ 19,134
				Subtotal	***$ 262,133***
	Engineering, Legal, & Admin			10%	$ 26,213.28
				Total Project Cost	***$ 288,346***
			Rounded Project Cost		***$ 290,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	Sinaloa-Royal-Long Canyon
PROJECT NO.:	CS13
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 4,365 feet and 11 point repairs of 12 to 27-inch, primarily asbestos cement pipes located in southwestern portion of the City's service area around Sinaloa Rd, Royal Ave, and Long Canyon Rd. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: 1st St, California Ave, Dennis Ave, Elizondo Ave, Erringer Rd, Fitzgerald Rd, Madera Rd, Pacific Ave, Royal Ave, Sinaloa Rd.

STARTING YEAR:	2021	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	2 years	**FOLLOWING PROJECT:**	none

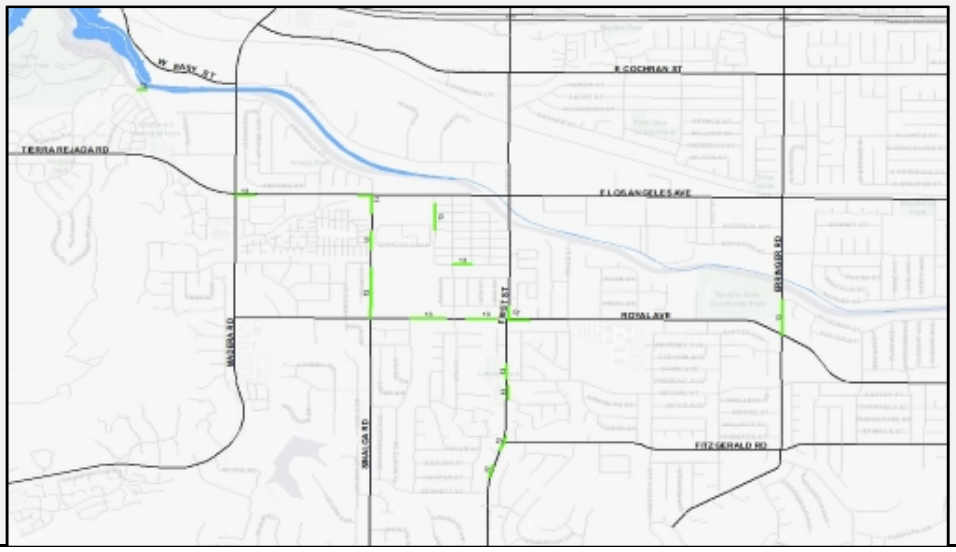
RISK SCORE:	22.5	**PROBABILITY OF FAILURE:**	**5**	*ENVIRONMENTAL COF:*	*3*
RISK RANK:	2	**CONSEQUENCE OF FAILURE:**	**4.5**	*SOCIAL COF:*	*5*
				FIANCIAL COF:	*5*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:		$ 190,339					
Construction:			1,909,661				
Construction Services:							
	-	***190,339***	***1,909,661***	-	-	-	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-			***2,100,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Typical		
PROJECT TITLE :	Sinaloa-Royal-Long Canyon		
PROJECT NO.:	CS13		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe		LF	$ 65	$ -
	8" Host Pipe		LF	$ 65	$ -
	10" Host Pipe		LF	$ 78	$ -
	12" Host Pipe	168	LF	$ 85	$ 14,294
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe	1,594	LF	$ 157	$ 249,765
	16" Host Pipe		LF	$ 167	$ -
	18" Host Pipe	1,036	LF	$ 188	$ 194,751
	20" Host Pipe	376	LF	$ 209	$ 78,626
	21" Host Pipe		LF	$ 219	$ -
	24" Host Pipe	933	LF	$ 251	$ 233,819
	27" Host Pipe	257	LF	$ 282	$ 72,591
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe		LF	$ 470	$ -
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*4,365*	*LF*	***Subtotal***	***$ 843,846***
2	**Point Repairs**				
	Internal/External Repair	11	EA	$ 20,000	$ 220,000
				Subtotal	***$ 220,000***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	168	LF	10%	$ 1,429
	≤ 16" Pipe	1,594	LF	20%	$ 49,953
	≤ 24" Pipe	2,345	LF	40%	$ 202,878
	≤ 30" Pipe	257	LF	40%	$ 29,036
	> 30" Pipe	-	LF	50%	$ -
	Traffic Control			5%	$ 42,192
				Subtotal	***$ 325,489***
4	**Allowances**				
	General Conditions			12%	$ 166,720
	Contingency			15%	$ 208,400
	Contractor Overhead & Profit			10%	$ 138,933
				Subtotal	***$ 1,903,389***
	Engineering, Legal, & Admin			10%	$ 190,338.88
				Total Project Cost	***$ 2,093,728***
			Rounded Project Cost		***$ 2,100,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	Stearns
PROJECT NO.:	CS14
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 1,016 feet and 2 point repairs of 12 to 18-inch, primarily asbestos cement pipes located in southwestern portion of the City's service area near Stearns St. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: Cochran St, Stearsn St.

STARTING YEAR:	2027	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1 year	**FOLLOWING PROJECT:**	none

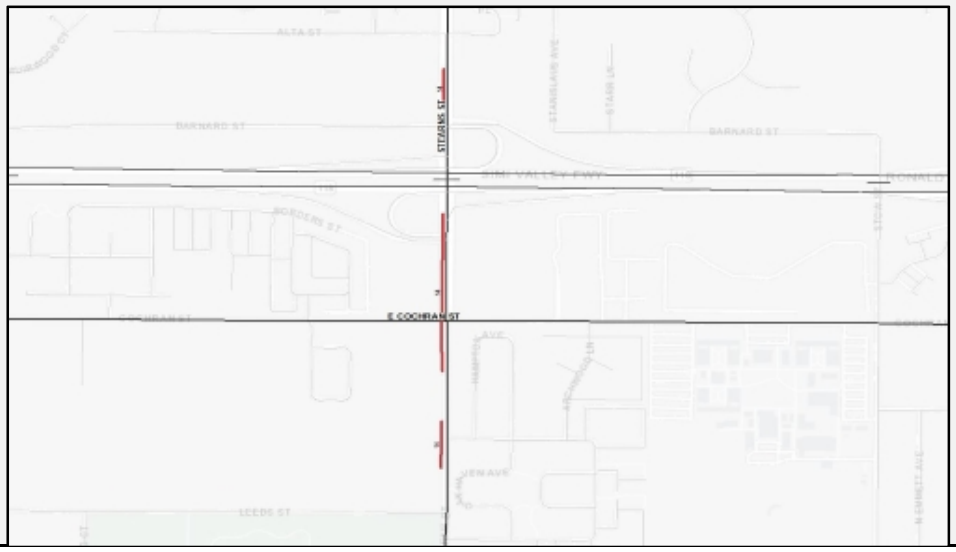
RISK SCORE:	8	**PROBABILITY OF FAILURE:**	**4**	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	20	**CONSEQUENCE OF FAILURE:**	**2**	*SOCIAL COF:*	*3*
				FIANCIAL COF:	*1*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-	-	-	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:		$ 43,444					
Construction:		436,556					
Construction Services:							
	-	***480,000***	-	-			***480,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Typical		
PROJECT TITLE :	Stearns		
PROJECT NO.:	CS14		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe		LF	$ 65	$ -
	8" Host Pipe		LF	$ 65	$ -
	10" Host Pipe		LF	$ 78	$ -
	12" Host Pipe		LF	$ 85	$ -
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe		LF	$ 157	$ -
	16" Host Pipe		LF	$ 167	$ -
	18" Host Pipe	1,016	LF	$ 188	$ 191,111
	20" Host Pipe		LF	$ 209	$ -
	21" Host Pipe		LF	$ 219	$ -
	24" Host Pipe		LF	$ 251	$ -
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe		LF	$ 470	$ -
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*1,016*	*LF*	***Subtotal***	***$ 191,111***
2	**Point Repairs**				
	Internal/External Repair	2	EA	$ 20,000	$ 40,000
				Subtotal	***$ 40,000***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	-	LF	10%	$ -
	≤ 16" Pipe	-	LF	20%	$ -
	≤ 24" Pipe	1,016	LF	40%	$ 76,444
	≤ 30" Pipe	-	LF	40%	$ -
	> 30" Pipe	-	LF	50%	$ -
	Traffic Control			5%	$ 9,556
				Subtotal	***$ 86,000***
4	**Allowances**				
	General Conditions			12%	$ 38,053
	Contingency			15%	$ 47,567
	Contractor Overhead & Profit			10%	$ 31,711
				Subtotal	***$ 434,442***
	Engineering, Legal, & Admin			10%	$ 43,444.22
				Total Project Cost	***$ 477,886***
			Rounded Project Cost		***$ 480,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TWENTY-YEAR CAPITAL IMPROVEMENT PROGRAM
COLLECTION SYSTEM PROJECT SUMMARY SHEET

PROJECT TITLE:	Tapo Canyon-Rebecca
PROJECT NO.:	CS15
LEAD DEPARTMENT:	Public Works
PROJECT MANAGER:	Michael Kang

PROJECT DESCRIPTION:

This project includes the rehabilitation of 1,404 feet and 7 point repairs of 12 to 21-inch, primarily asbestos cement pipes located in southwestern portion of the City's service area along Tapo Canyon and Rebecca St. The primary rehabilitation mode will be cured-in-place slipliner.

IMPACTED STREETS: Angela St, Cochran St, Deborah St, Eileen St, Florence St, Gertrude St, Helene St, Rebecca St, Ronald R

STARTING YEAR:	2026	**PRECEEDING PROJECT:**	none
PROJECT DURATION:	1 year	**FOLLOWING PROJECT:**	none

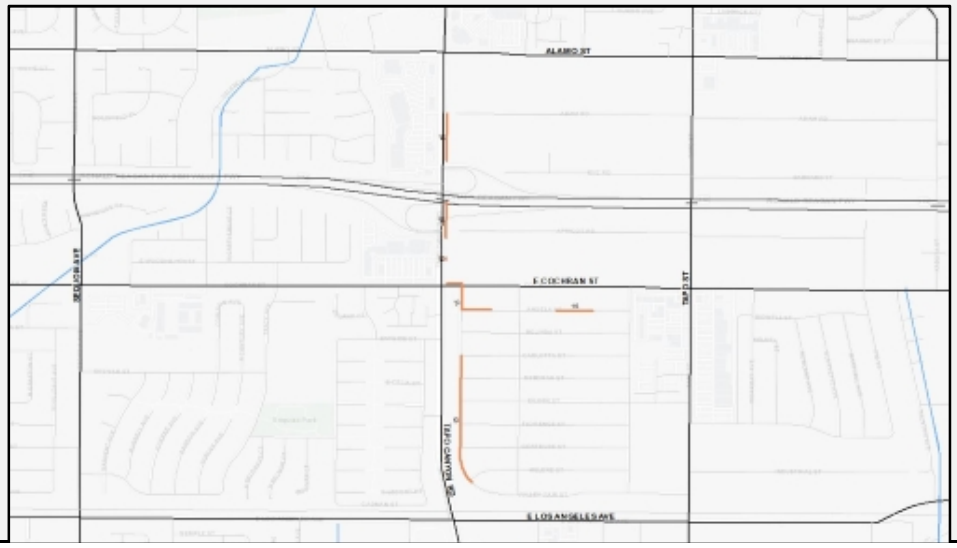
RISK SCORE:	12.5	**PROBABILITY OF FAILURE:**	**5**	*ENVIRONMENTAL COF:*	*1*
RISK RANK:	10	**CONSEQUENCE OF FAILURE:**	**2.5**	*SOCIAL COF:*	*3*
				FIANCIAL COF:	*3*

EXPENDITURE PLAN:

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	Total
Consultant Services:							
Construction:							
Construction Services:							
	-	-	-	-	-	-	

	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-34	FY 2035-39	
Consultant Services:	$ 65,418						
Construction:	654,582						
Construction Services:							
	720,000	-	-	-			***720,000***

OVERVIEW IMAGE:



Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

CITY OF SIMI VALLEY:

Sewer System Reliability Assessment
Financial Plan Update

TASK :	Collection System	ESTIMATE PREPARATION DATE :	6/25/2019
JOB # :	11317A.60	PREPARED BY :	Andew Burton
LOCATION :	Simi Valley ,CA	REVIEWED BY :	David Baranowski
STREET TYPE:	Typical		
PROJECT TITLE :	Tapo Canyon-Rebecca		
PROJECT NO.:	CS15		

ITEM NO.	PROJECT COMPONENT	QTY	UNIT	UNIT COST	TOTAL COST
1	**Pipe Rehabilitation**				
	Cured-In-Place Slipliner:				
	6" Host Pipe		LF	$ 65	$ -
	8" Host Pipe		LF	$ 65	$ -
	10" Host Pipe		LF	$ 78	$ -
	12" Host Pipe	495	LF	$ 85	$ 42,040
	14" Host Pipe		LF	$ 146	$ -
	15" Host Pipe		LF	$ 157	$ -
	16" Host Pipe		LF	$ 167	$ -
	18" Host Pipe		LF	$ 188	$ -
	20" Host Pipe		LF	$ 209	$ -
	21" Host Pipe	909	LF	$ 219	$ 199,420
	24" Host Pipe		LF	$ 251	$ -
	27" Host Pipe		LF	$ 282	$ -
	30" Host Pipe		LF	$ 313	$ -
	33" Host Pipe		LF	$ 345	$ -
	36" Host Pipe		LF	$ 470	$ -
	39" Host Pipe		LF	$ 509	$ -
	Total Length	*1,404*	*LF*	***Subtotal***	***$ 241,460***
2	**Point Repairs**				
	Internal/External Repair	7	EA	$ 20,000	$ 140,000
				Subtotal	***$ 140,000***
3	**Bypass Pumping and Traffic Control**				
	Bypass Pumping:				
	≤ 12" Pipe	495	LF	10%	$ 4,204
	≤ 16" Pipe	-	LF	20%	$ -
	≤ 24" Pipe	909	LF	40%	$ 79,768
	≤ 30" Pipe	-	LF	40%	$ -
	> 30" Pipe	-	LF	50%	$ -
	Traffic Control			5%	$ 12,073
				Subtotal	***$ 96,045***
4	**Allowances**				
	General Conditions			12%	$ 57,301
	Contingency			15%	$ 71,626
	Contractor Overhead & Profit			10%	$ 47,751
				Subtotal	***$ 654,183***
	Engineering, Legal, & Admin			10%	$ 65,418.28
				Total Project Cost	***$ 719,601***
			Rounded Project Cost		***$ 720,000***

Note: Cost Estimates are for planning purposes only. The accuracy of any estimates will be impacted by the design, mobilization, economies of scale, and phasing.

Appendix B

THERMAL IMAGING REPORT

INFRARED THERMOGRAPHIC REPORT

Prepared For:

Taft Electric Company

Simi Valley Waste Water

600 West Los Angeles Ave

Simi Valley, California

Requested By:	**Mark Tovias**	**Inspection Dates:**	**2/26/2019 – 2/28/2019**
Title:	**Service Manager**	**Number Of Days:**	**3**
Technician:	**Esnayra Jr, Gary**	**Inspection #:**	**17774**

GEORGIA
3745 Cherokee Street
Suite 303 and 304
Kennesaw, GA 30144
P: 770.590.7449

GLOBAL HEADQUARTERS
4200 Faber Place Drive
Charleston, SC 29405
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CALIFORNIA
1891 North Gaffey Street, Suite 217
San Pedro, CA 90731
P: 800.640.3133

SEVERITY LEGEND

INFRARED ELECTRICAL INSPECTION

Corrective measures requiring **HIGHEST PRIORITY**: 91° – Above **Fahrenheit**	Critical
Corrective measures requiring **HIGHER PRIORITY**: 46° – 90° **Fahrenheit**	Serious
Corrective measures requiring **HIGH PRIORITY**: 21° - 45° **Fahrenheit**	Important
Corrective measures requiring **MEDIUM PRIORITY**: 1° - 20° **Fahrenheit**	Minor
Corrective measures requiring **LOWER PRIORITY**: **0° Fahrenheit**	Normal

Allied RELIABILITY GROUP

Priority Maintenance Checklist

Inspection # : 17774

Sorted by Repair Priority then by Problem Type

Inspection Date: 2/26/2019

Site: 600 West Los Angeles Ave Simi Valley Waste Water

Problem Type Key

E	= Electrical
M	= Mechanical
V	= Visual

Location \ Equipment	Problem Number		Repair Priority
Dewatering Building \ MCC-N \ Section 7 \ #35 Screen Sludge Circ Pump #2	Problem #	E 7	Critical
East B.N.R. MCC \ MCC-D1 \ Section 4 \ BNR Tank #3 Mixer A	Problem #	E 4	Important
West BNR MCC Building \ MCC Room \ MCC-P \ Section 5 \ Process Blower 2ME-01	Problem #	E 5	Important
West BNR MCC Building \ MCC Room \ MCC-P \ Section 14 \ Process Blower 2ME-03A	Problem #	E 6	Important
Main MCC Building \ Main Electrical Room \ MSB \ Section 3 \ Bus Load Out (Top)	Problem #	E 1	Minor
Main MCC Building \ Switchboard MCC-3 \ Large Room \ MCC-1 \ Section 3 \ 40506B Blower 6	Problem #	E 2	Minor
Main MCC Building \ Switchboard MCC-3 \ Large Room \ MCC-1 \ Section 3 \ 40506B Blower 6	Problem #	E 3	Minor

Client Taft Electric Company **Inspection No:** 17774 **Inspection Dates:** **2/26/2019 – 2/28/2019**

Site Name: 600 West Los Angeles Ave Simi Valley Waste Water

Electrical Problem: # E 1

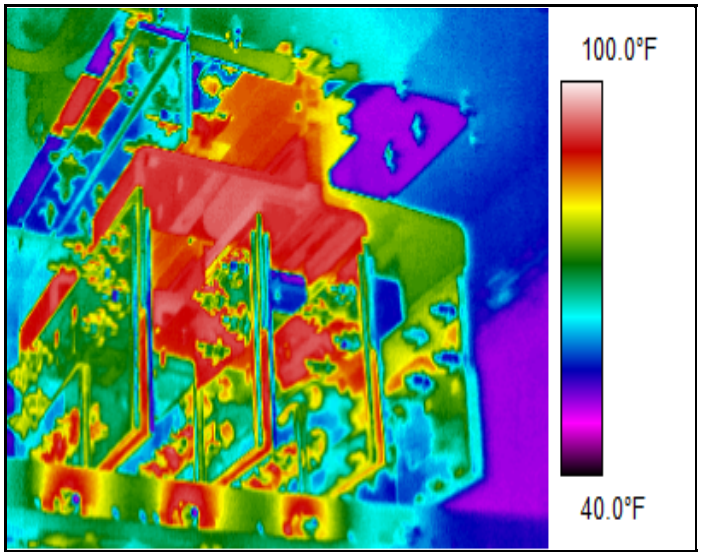
Severity Minor

Location / Equipment Information

Main MCC Building
Main Electrical Room
MSB
Section 3
Bus Load Out (Top)

Center phase bolted lug connections on outgoing Bus

Barcode:



Component Temperatures:

Component Temperature On Center phase:	**89 F**
Right phase Reference Temperature:	**78 F**
Temperature Rise Above Reference:	**11 F**

True RMS Amp Readings:

Component Amps		**Main Amps:**
Center phase:	**Amps**	
Right phase:	**Amps**	
Left phase:	**Amps**	

Equipment Information

Manufacturer:	**Eaton**
Model No:	
Rated Load:	**3000A**
Circuit Voltage:	**480 Volts**
KVA Rating:	

Root Cause and Recommendations:

Poor connection - Poor contact

Disassemble, clean all contacts, inspect for damage, replace components if damaged, then reassemble the unit.

GEORGIA
3745 Cherokee St, Ste 303 304
Kennesaw, GA 30144
P: 770.590.7449

GLOBAL HEADQUARTERS
4200 Faber Place Drive
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CALIFORNIA
1891 North Gaffey Street, Suite 217
San Pedro, CA 90731
P: 800.640.3133

Client Taft Electric Company **Inspection No:** 17774 **Inspection Dates:** **2/26/2019 – 2/28/2019**

Site Name: 600 West Los Angeles Ave Simi Valley Waste Water

Electrical Problem: # E 2

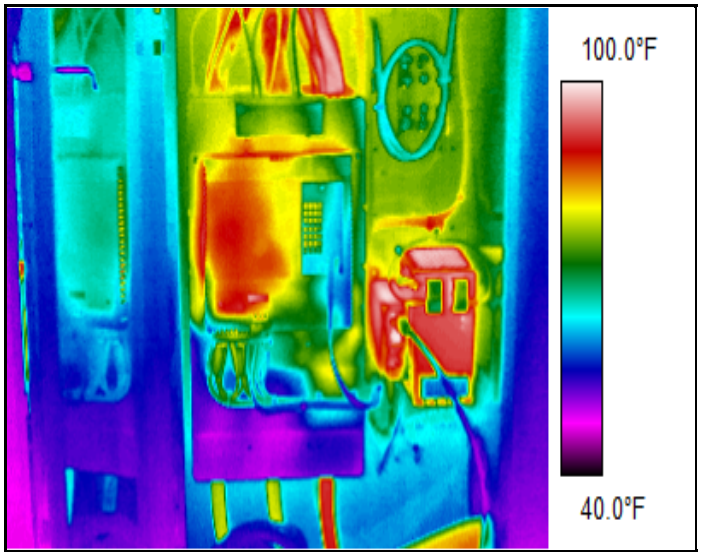
Severity Minor

Location / Equipment Information

Main MCC Building
Switchboard MCC-3
Large Room
MCC-1
Section 3
40506B Blower 6

Right phase line & load side connections on Slow Starter

Barcode:

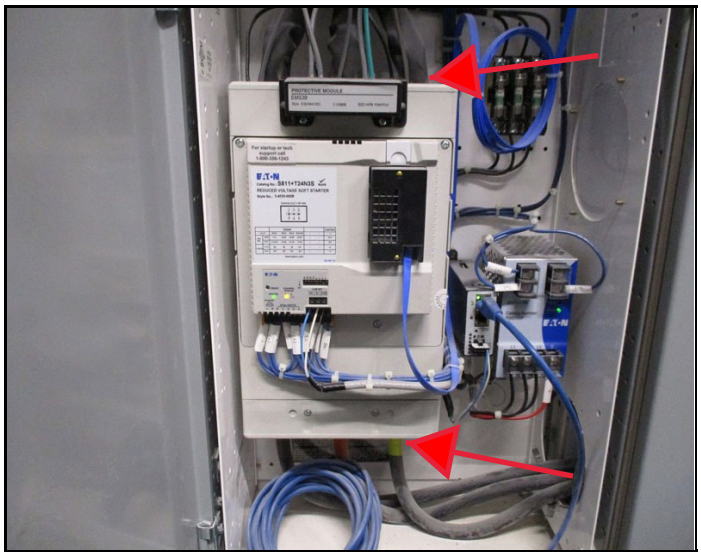


Component Temperatures:

Component Temperature On Right phase:	**94 F**
Left phase Reference Temperature:	**81 F**
Temperature Rise Above Reference:	**13 F**

True RMS Amp Readings:

Component Amps		Main Amps:
Right phase:	**121 Amps**	
Left phase:	**119 Amps**	
Center phase:	**120 Amps**	



Equipment Information

Manufacturer:	**Eaton**
Model No:	
Rated Load:	
Circuit Voltage:	**480 Volts**
KVA Rating:	

Root Cause and Recommendations:

Poor connection - Poor contact

Disassemble, clean all contacts, inspect for damage, replace components if damaged, then reassemble the unit.

GEORGIA
3745 Cherokee St, Ste 303 304
Kennesaw, GA 30144
P: 770.590.7449

GLOBAL HEADQUARTERS
4200 Faber Place Drive
Charleston, SC 29405
P: 843.414.5760 | F: 843.414.5779

CALIFORNIA
1891 North Gaffey Street, Suite 217
San Pedro, CA 90731
P: 800.640.3133

Client Taft Electric Company **Inspection No:** 17774 **Inspection Dates:** **2/26/2019 – 2/28/2019**

Site Name: 600 West Los Angeles Ave Simi Valley Waste Water

Electrical Problem: # E 3

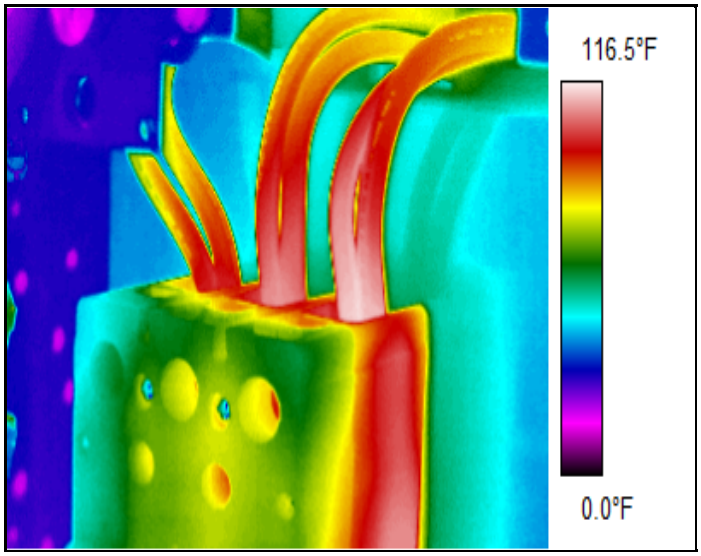
Severity Minor

Location / Equipment Information

Main MCC Building
Switchboard MCC-3
Large Room
MCC-1
Section 3
40506B Blower 6

Right & Center phases line side lug connections on 250A 3P circuit breaker

Barcode:

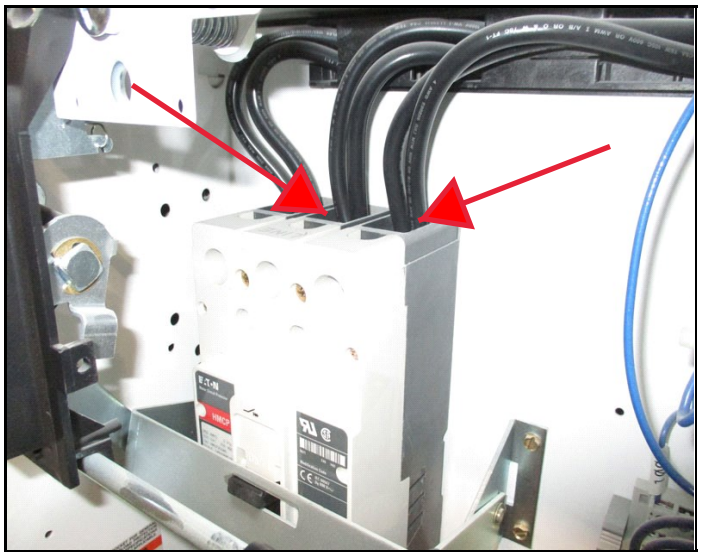


Component Temperatures:

Component Temperature On Right phase:	**110 F**
Left phase Reference Temperature:	**98 F**
Temperature Rise Above Reference:	**12 F**

True RMS Amp Readings:

Component Amps		Main Amps:
Right phase:	**Amps**	
Left phase:	**Amps**	
Center phase:	**Amps**	



Equipment Information

Manufacturer:	**Eaton**
Model No:	
Rated Load:	**250A**
Circuit Voltage:	**480 Volts**
KVA Rating:	

Root Cause and Recommendations:

Poor connection - Poor contact.

Disassemble, clean all contacts, inspect for damage, replace components if damaged, then reassemble the unit. Check current for imbalance or overloading.

GEORGIA
3745 Cherokee St, Ste 303 304
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4200 Faber Place Drive
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CALIFORNIA
1891 North Gaffey Street, Suite 217
San Pedro, CA 90731
P: 800.640.3133

Client Taft Electric Company **Inspection No:** 17774 **Inspection Dates:** **2/26/2019 – 2/28/2019**

Site Name: 600 West Los Angeles Ave Simi Valley Waste Water

Electrical Problem: # E 4

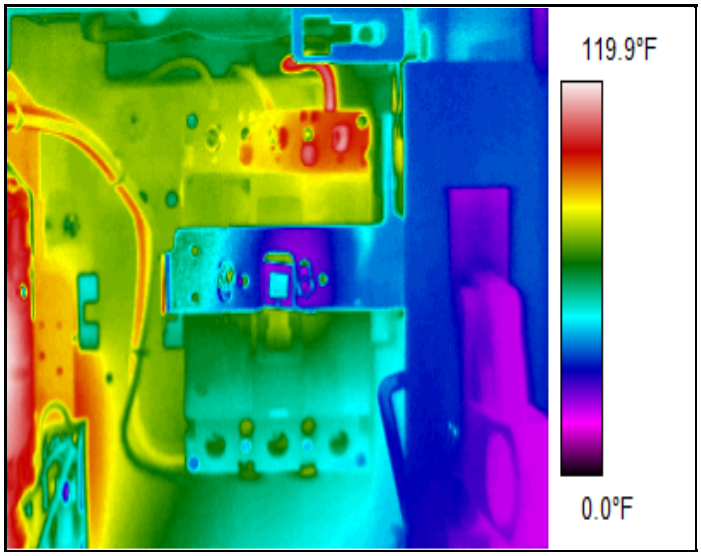
Severity Important

Location / Equipment Information

East B.N.R. MCC
MCC-D1
Section 4
BNR Tank #3 Mixer A

Right phase line side lug connection on 15A 3P circuit breaker. Unsafe to take amp reading.

Barcode:

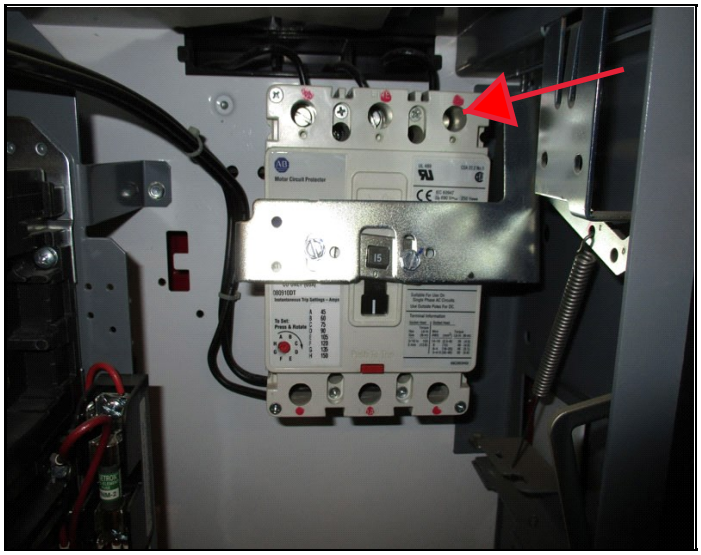


Component Temperatures:

Component Temperature On Right phase:	**113 F**
Left phase Reference Temperature:	**83 F**
Temperature Rise Above Reference:	**30 F**

True RMS Amp Readings:

Component Amps		Main Amps:
Right phase:	**Amps**	
Left phase:	**Amps**	
Center phase:	**Amps**	



Equipment Information

Manufacturer:	**(Allen Bradly) A.B.**
Model No:	
Rated Load:	**15A**
Circuit Voltage:	**480 Volts**
KVA Rating:	

Root Cause and Recommendations:

Poor connection - Poor contact

Disassemble, clean all contacts, inspect for damage, replace components if damaged, then reassemble the unit. Check current for imbalance or overloading.

GEORGIA
3745 Cherokee St, Ste 303 304
Kennesaw, GA 30144
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GLOBAL HEADQUARTERS
4200 Faber Place Drive
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CALIFORNIA
1891 North Gaffey Street, Suite 217
San Pedro, CA 90731
P: 800.640.3133

Client Taft Electric Company **Inspection No:** 17774 **Inspection Dates:** **2/26/2019 – 2/28/2019**

Site Name: 600 West Los Angeles Ave Simi Valley Waste Water

Electrical Problem: # E 5

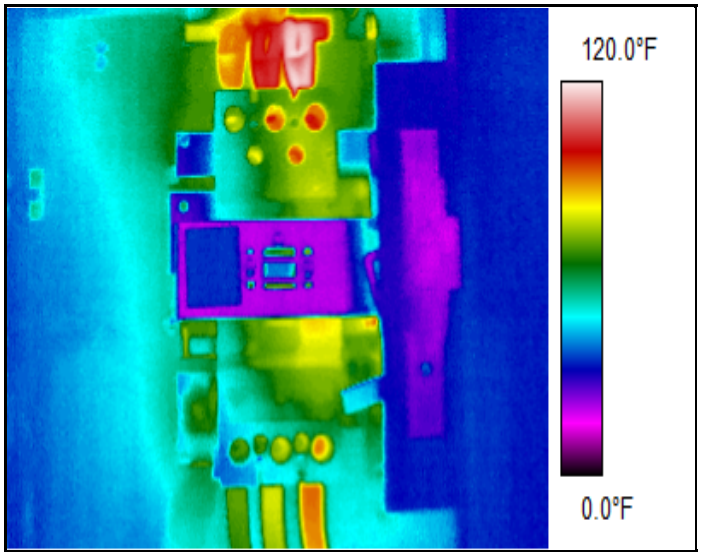
Severity Important

Location / Equipment Information

West BNR MCC Building
MCC Room
MCC-P
Section 5
Process Blower 2ME-01

Right & Center phase line side & Right phase load side lug connections on 225A 3P circuit breaker. Unsafe to take amp readings.

Barcode:

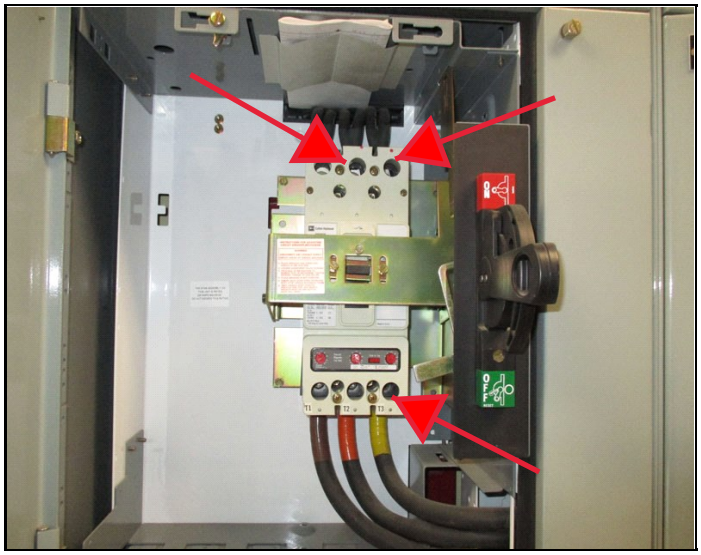


Component Temperatures:

Component Temperature On Right phase:	**120 F**
Left phase Reference Temperature:	**84 F**
Temperature Rise Above Reference:	**36 F**

True RMS Amp Readings:

Component Amps		Main Amps:
Right phase:	**Amps**	
Left phase:	**Amps**	
Center phase:	**Amps**	



Equipment Information

Manufacturer:	**Cutler Hammer**
Model No:	
Rated Load:	**225A**
Circuit Voltage:	**480 Volts**
KVA Rating:	

Root Cause and Recommendations:

Poor connection - Poor contact

Disassemble, clean all contacts, inspect for damage, replace components if damaged, then reassemble the unit. Check current for imbalance or overloading.

GEORGIA
3745 Cherokee St, Ste 303 304
Kennesaw, GA 30144
P: 770.590.7449

GLOBAL HEADQUARTERS
4200 Faber Place Drive
Charleston, SC 29405
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CALIFORNIA
1891 North Gaffey Street, Suite 217
San Pedro, CA 90731
P: 800.640.3133

Client Taft Electric Company **Inspection No:** 17774 **Inspection Dates:** **2/26/2019 – 2/28/2019**

Site Name: 600 West Los Angeles Ave Simi Valley Waste Water

Electrical Problem: # E 6

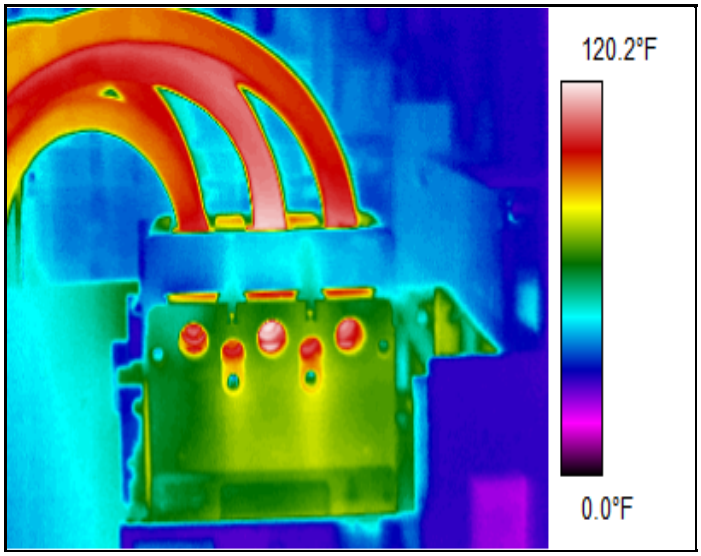
Severity Important

Location / Equipment Information

West BNR MCC Building
MCC Room
MCC-P
Section 14
Process Blower 2ME-03A

Center phase line side lug connection on 400A 3P circuit breaker

Barcode:



Component Temperatures:

Component Temperature On Center phase:	**124 F**
Left phase Reference Temperature:	**99 F**
Temperature Rise Above Reference:	**25 F**

True RMS Amp Readings:

Component Amps		Main Amps:
Center phase:	**Amps**	
Left phase:	**Amps**	
Right phase:	**Amps**	

Equipment Information

Manufacturer:	**Eaton**
Model No:	
Rated Load:	**400A**
Circuit Voltage:	**480 Volts**
KVA Rating:	

Root Cause and Recommendations:

Poor connection - Poor contact

Disassemble, clean all contacts, inspect for damage, replace components if damaged, then reassemble the unit. Check current for imbalance or overloading.

GEORGIA
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Kennesaw, GA 30144
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GLOBAL HEADQUARTERS
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CALIFORNIA
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Client Taft Electric Company **Inspection No:** 17774 **Inspection Dates:** **2/26/2019 – 2/28/2019**

Site Name: 600 West Los Angeles Ave Simi Valley Waste Water

Electrical Problem: # E 7

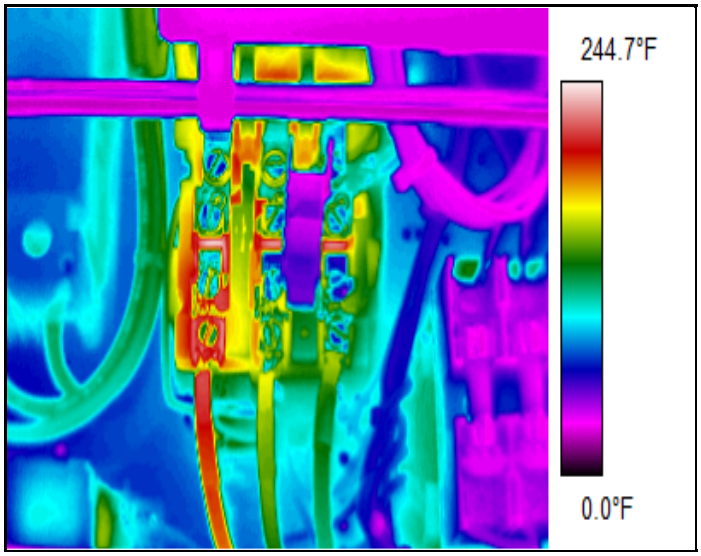
Severity Critical

Location / Equipment Information

Dewatering Building
MCC-N
Section 7
#35 Screen Sludge Circ Pump #2

Left phase load side lug connections on thermal overload

Barcode:

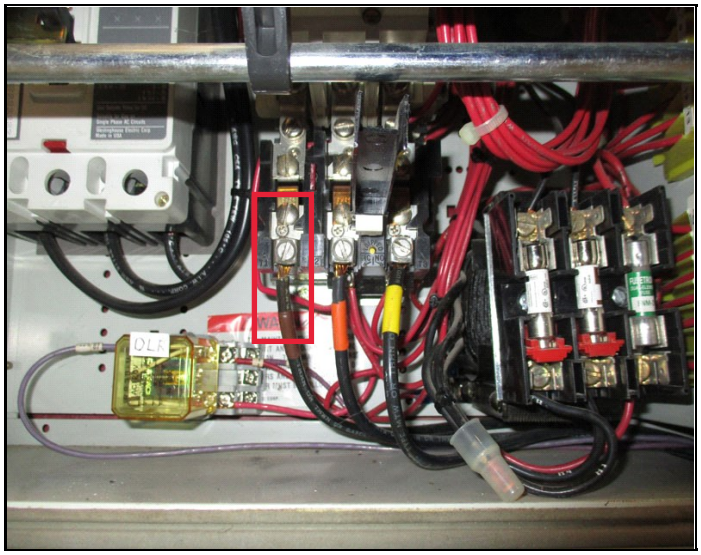


Component Temperatures:

Component Temperature On Left phase:	**220 F**
Right phase Reference Temperature:	**115 F**
Temperature Rise Above Reference:	**105 F**

True RMS Amp Readings:

Component Amps		Main Amps:
Left phase:	**24 Amps**	
Right phase:	**25 Amps**	
Center phase:	**25 Amps**	



Equipment Information

Manufacturer:	**Westinghouse**
Model No:	
Rated Load:	
Circuit Voltage:	**480 Volts**
KVA Rating:	

Root Cause and Recommendations:

Poor connection - Poor contact

Recommend replacing affected components.

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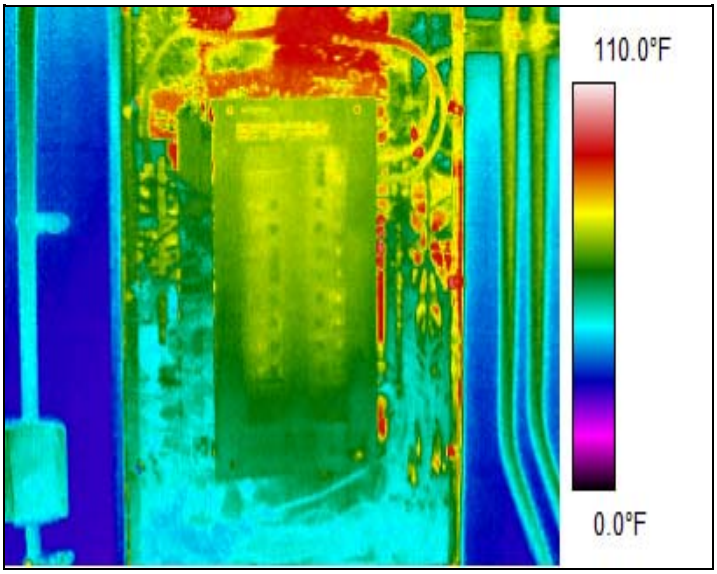
DOCUMENTATION PAGES

Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Digester Control Room \ Breaker Panel DLP2

Barcode: 254828



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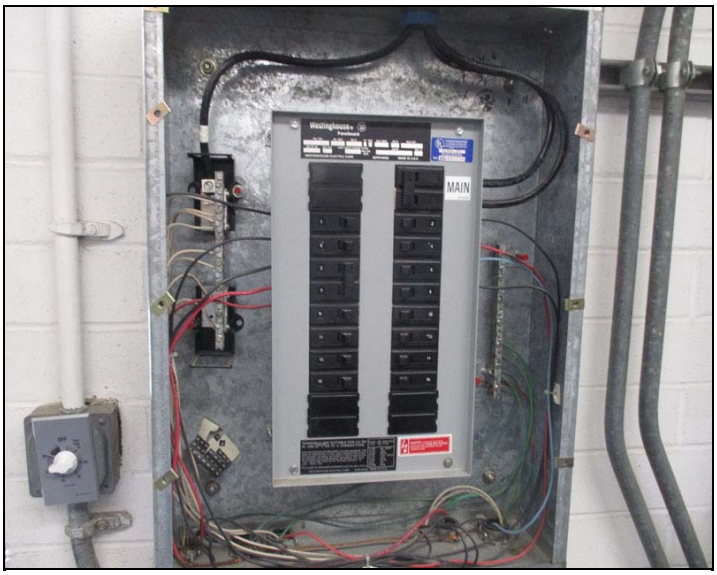

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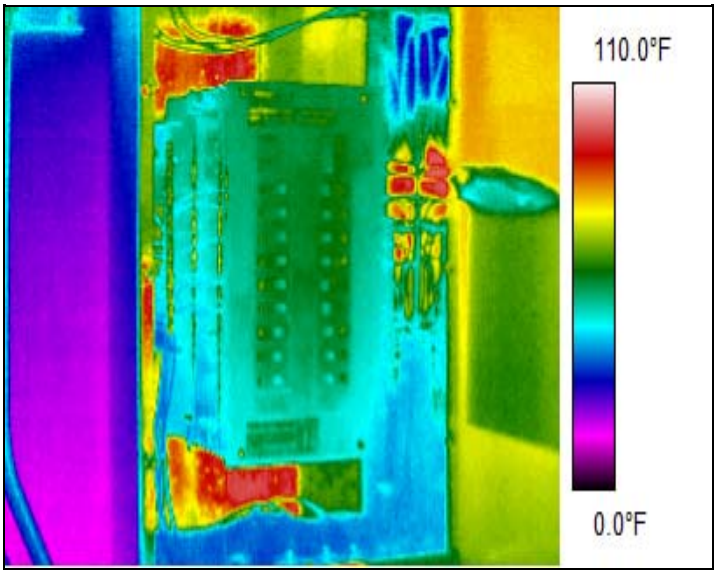
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Digester Control Room \ Breaker Panel DPC 2

Barcode: 254836



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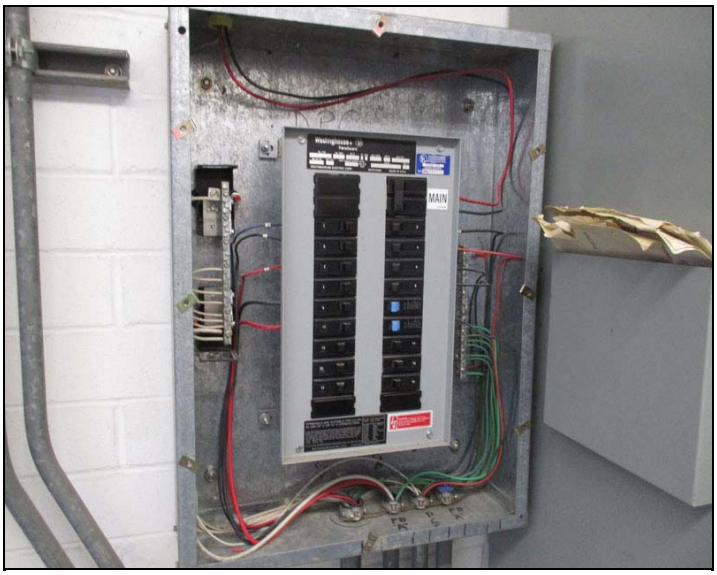

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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Digester Control Room \ DCC MCC \ Section 2 \ #9 Main Breaker

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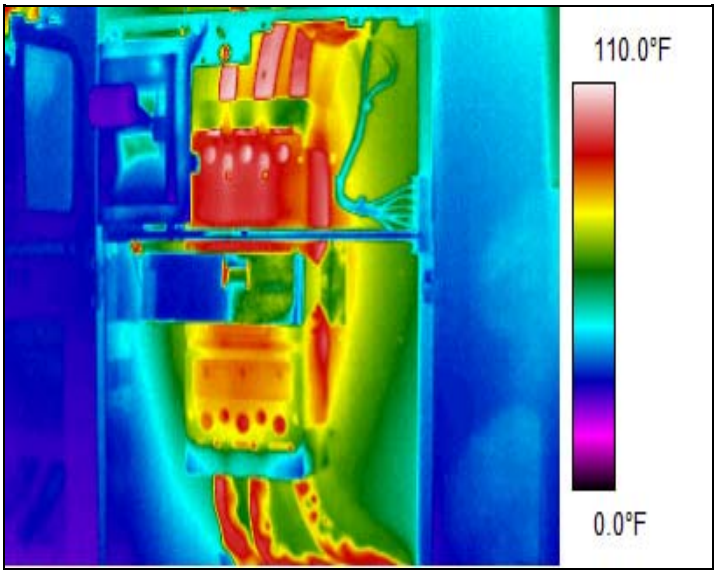

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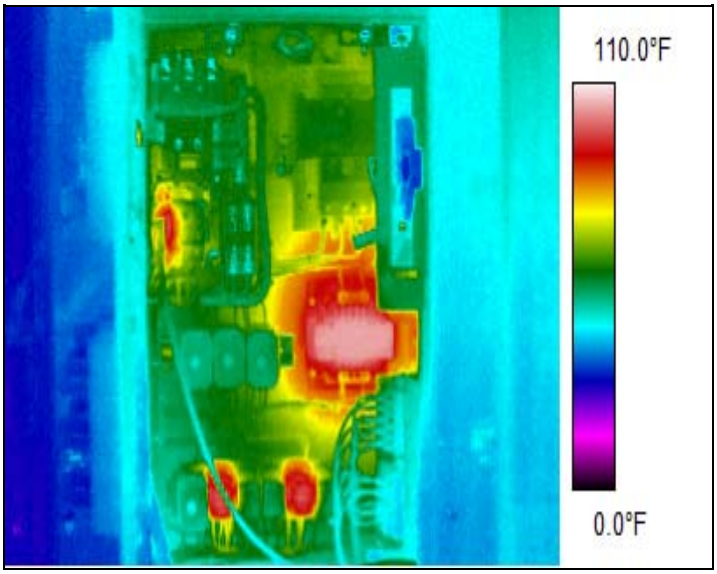
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Filter MCC Building \ MCC-G \ Section 2 \ Waste Backwash #1 2D

Barcode:



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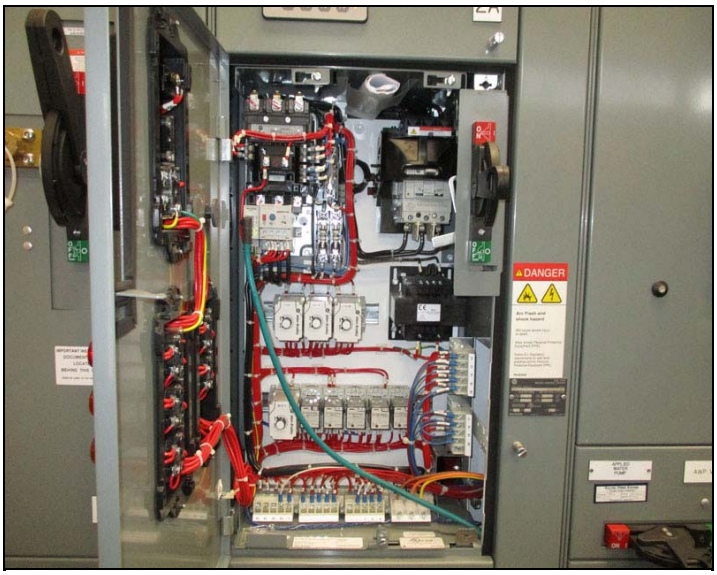

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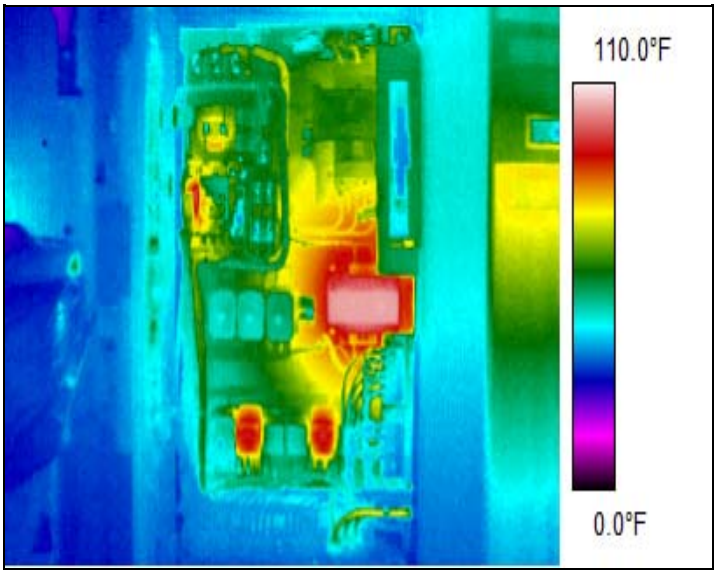
Inspection Date: 2/26/2019 **Inspection Number: 17774**

Filter MCC Building \ MCC-G \ Section 2 \ Waste Backwash #2 2J

Barcode:



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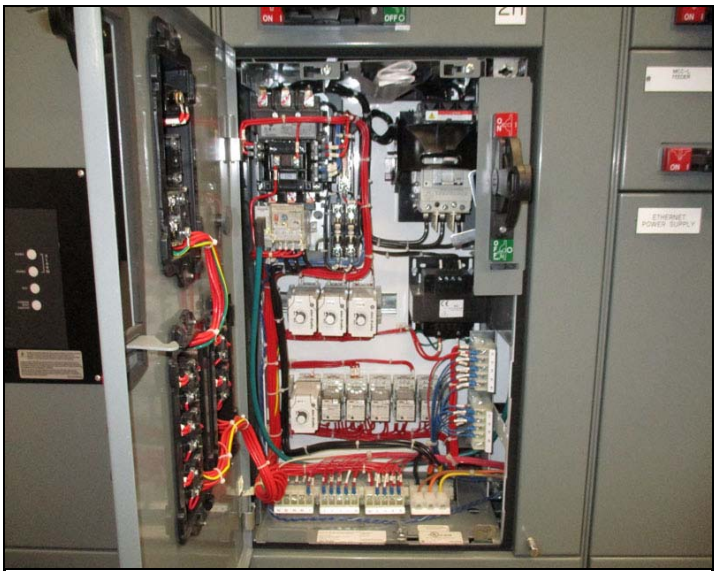

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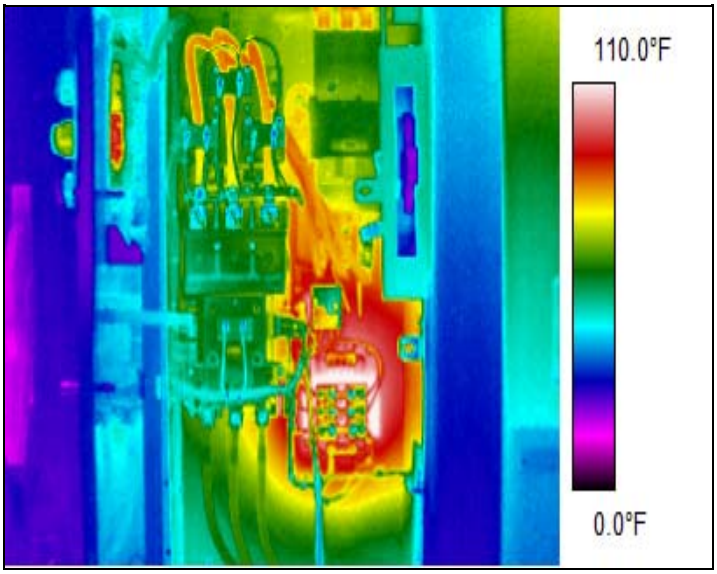
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Filter MCC Building \ MCC-G \ Section 5 \ Air Scour #1 5A

Barcode:



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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Filter MCC Building \ MCC-G \ Section 5 \ Waste Backwash #3

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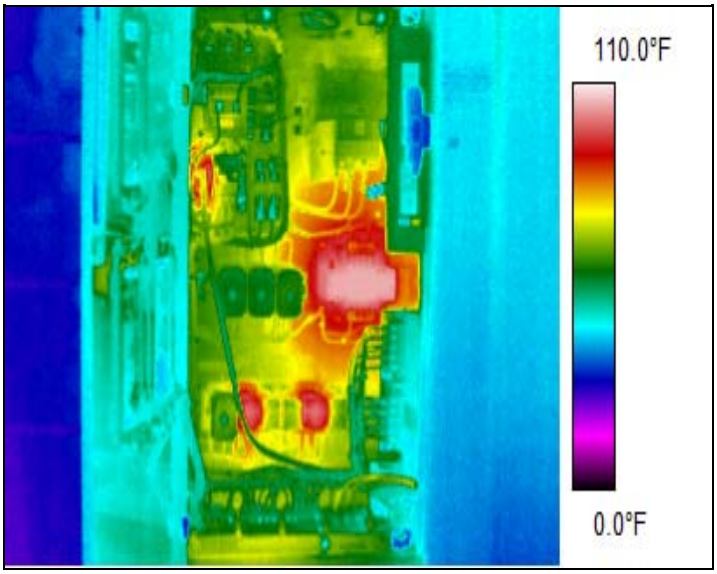

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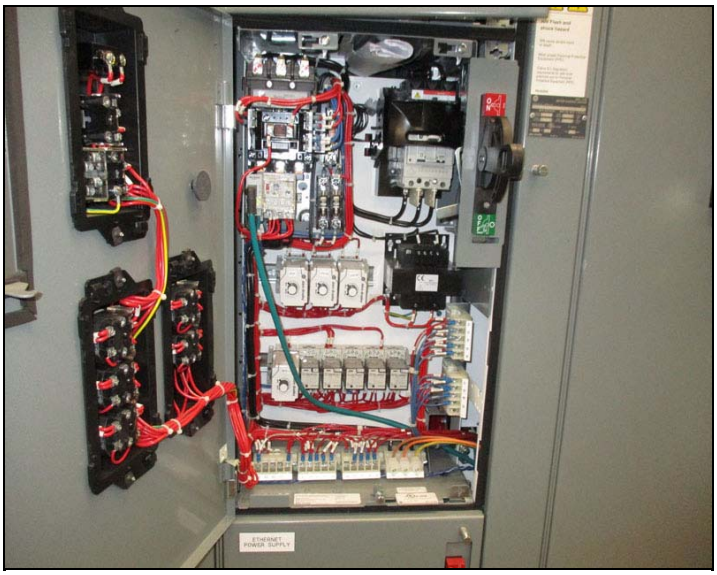

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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Filter MCC Building \ MCC-G \ Section 6 \ F. Backwash #1

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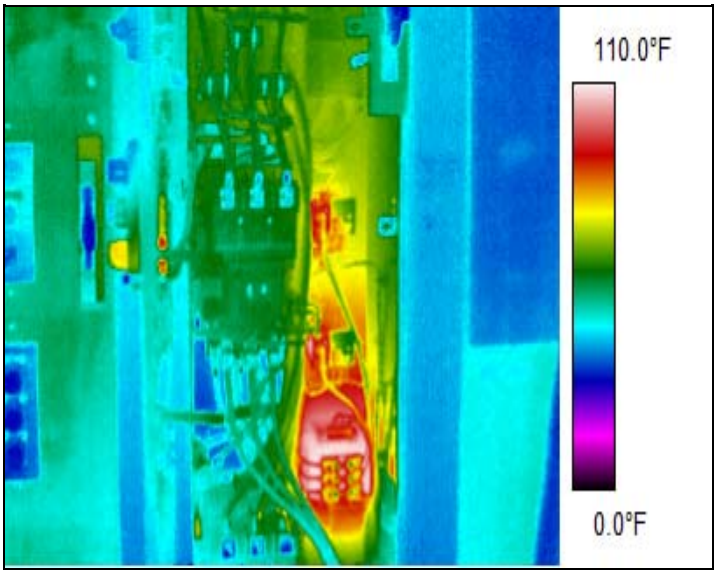

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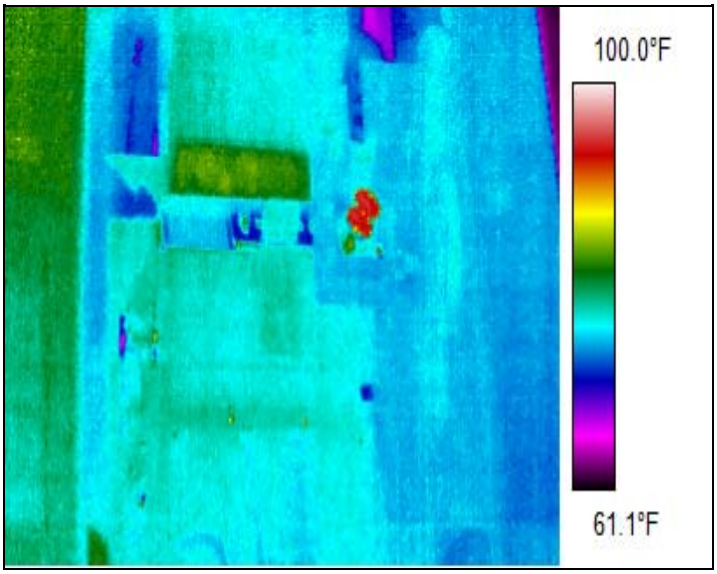
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Filter MCC Building \ MCC-G \ Section 7 \ Main Circuit Breaker 7A

Barcode:



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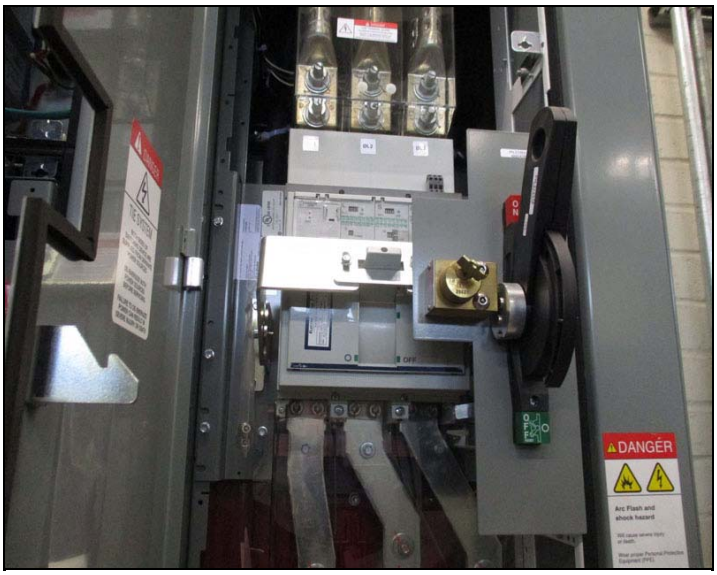

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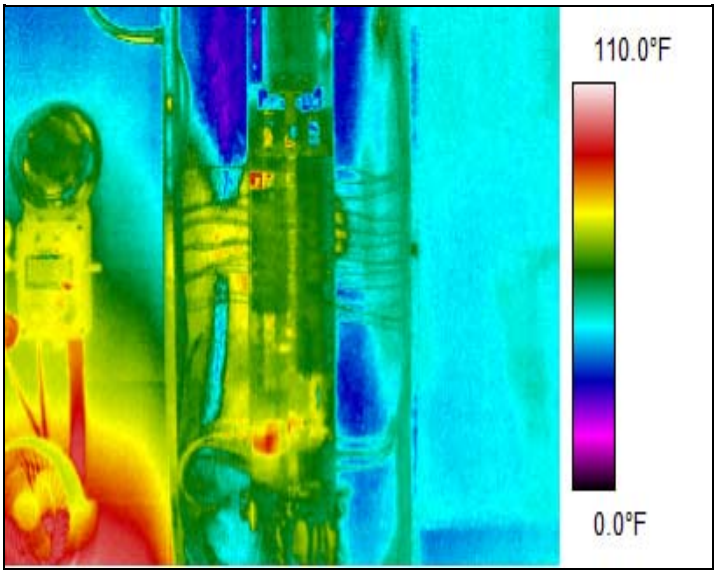
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Filter MCC Building \ MCC-J

Barcode:



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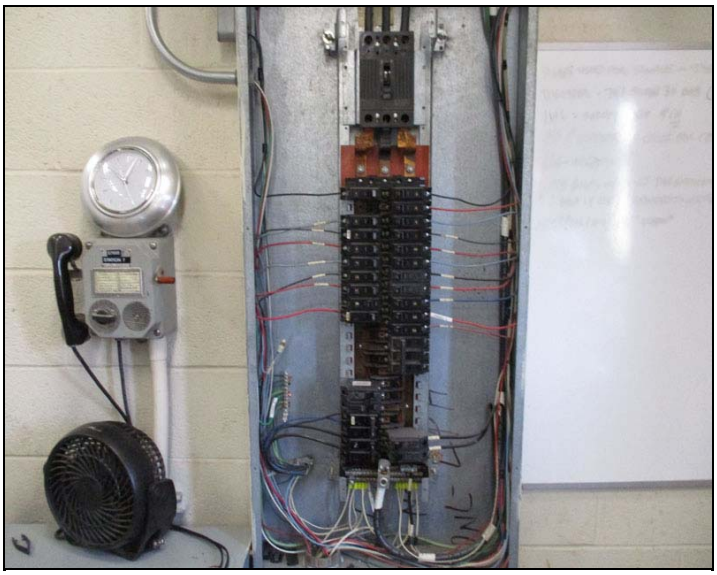

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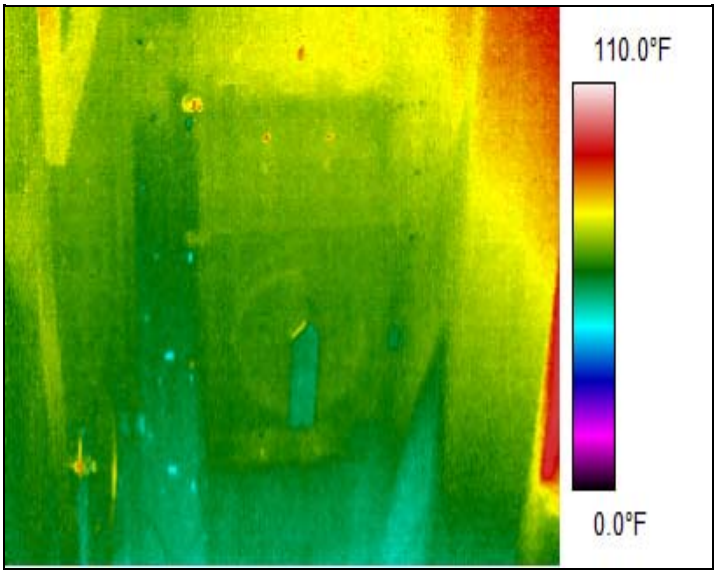
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Filter MCC Building \ MCC-J \ Section 3 \ #6 Main Breaker

Barcode:



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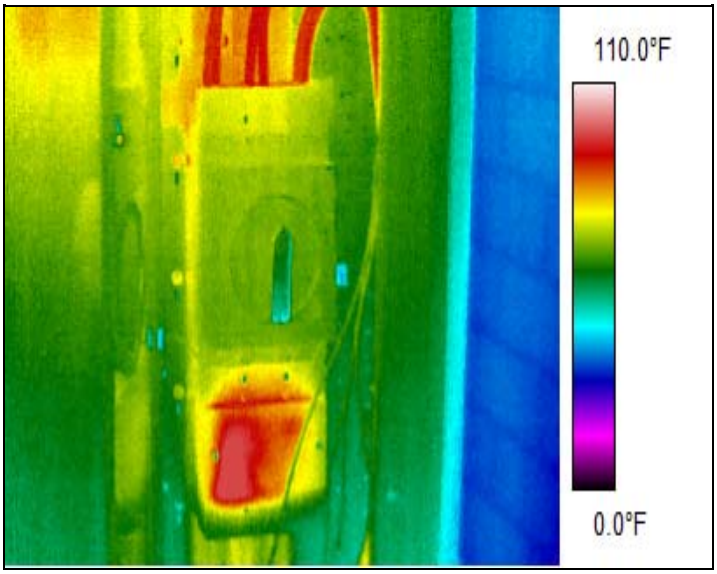
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Filter MCC Building \ MCC-H \ Section 5 \ #15 Main Breaker H Panel

Barcode:



NOTES:

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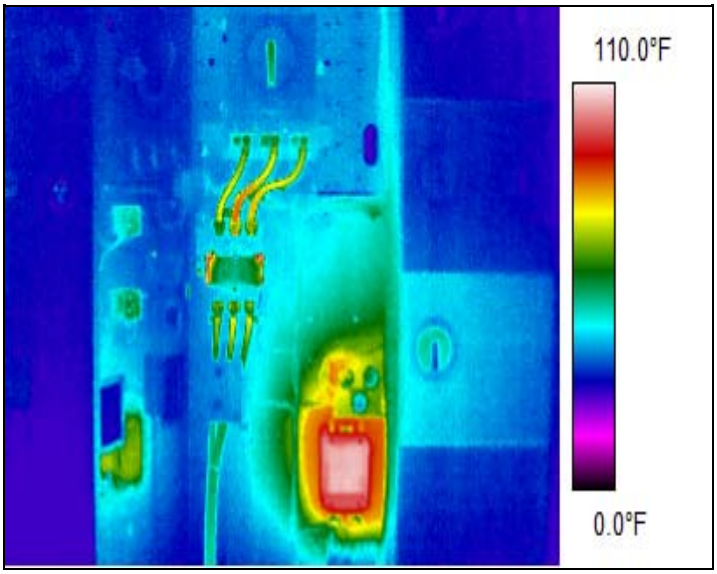
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Filter MCC Building \ MCC-H \ Section 4 \ #11Backwash Air Blower #2

Barcode:



NOTES:

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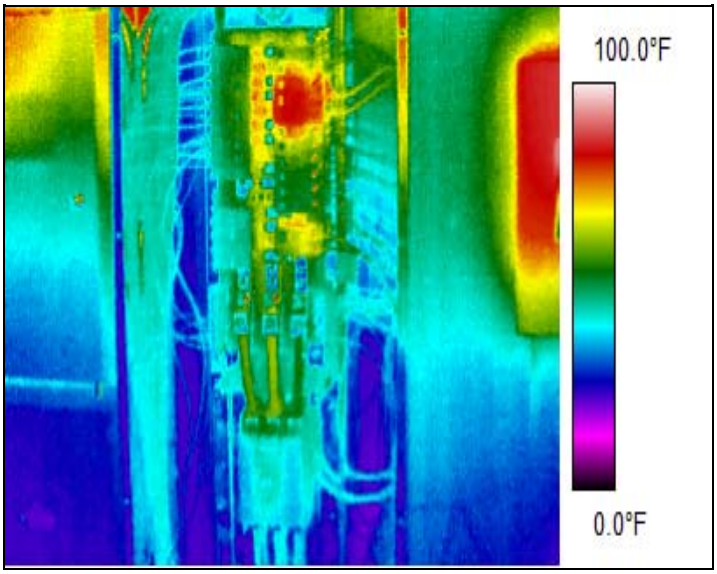
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Generator Area \ Breaker Panel P1

Barcode: 254943



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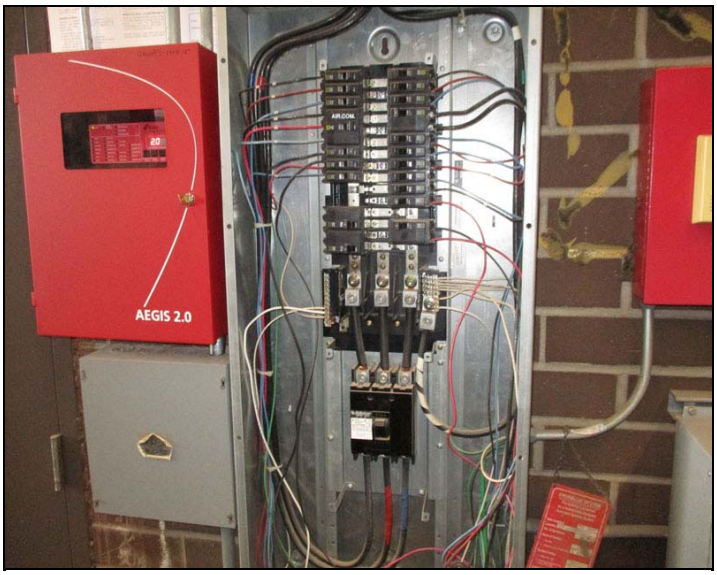

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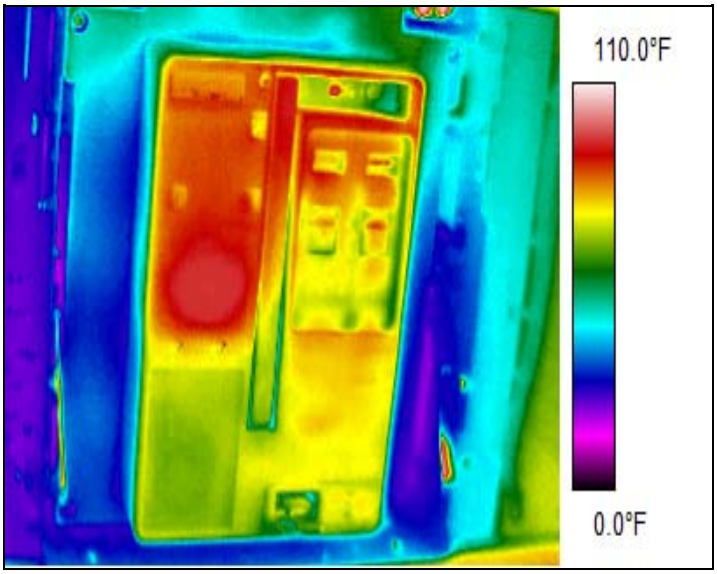
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Generator Area \ Generator Switchboard \ Generator 3200A Breaker (Front)

Barcode:



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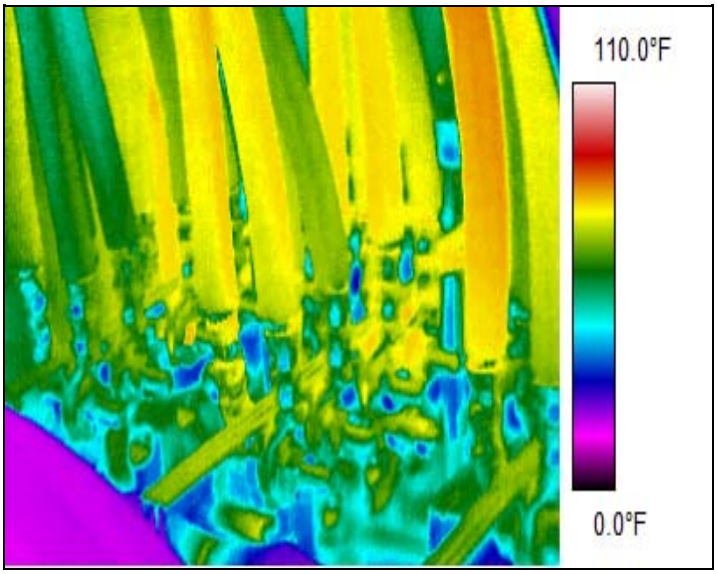
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Generator Area \ Generator Switchboard \ Generator 3200A Breaker (Back)

Barcode: 254848



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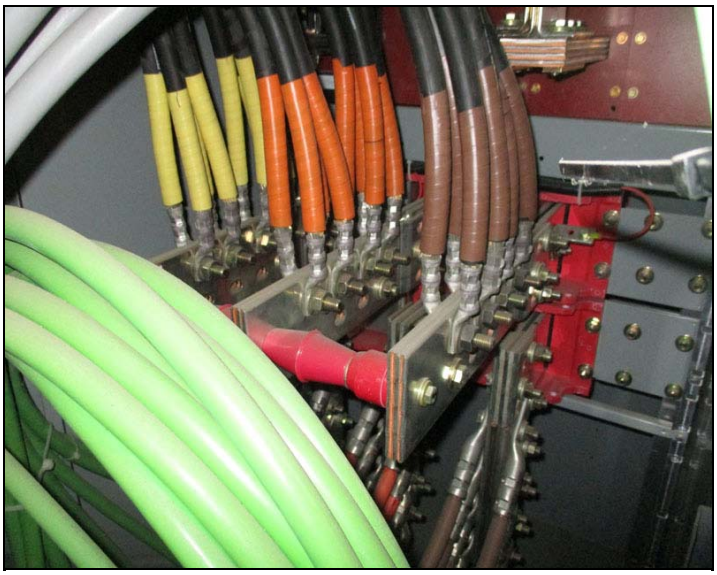

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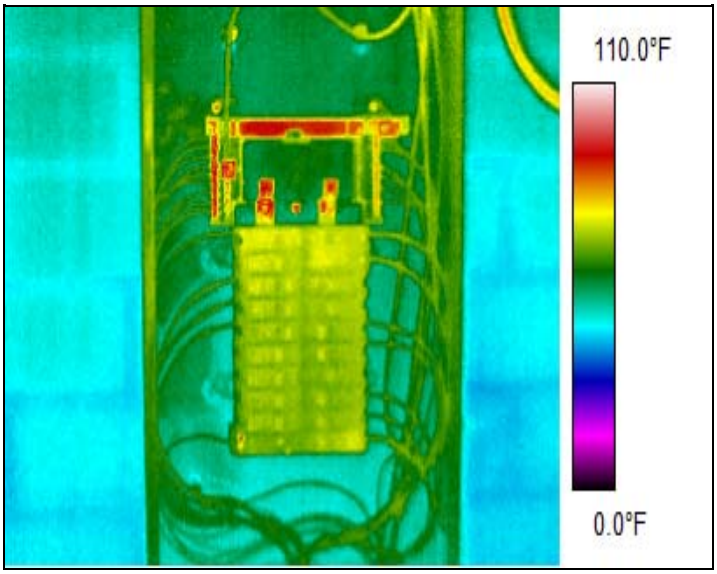
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Small Room \ Breaker Panel CA

Barcode: 254855



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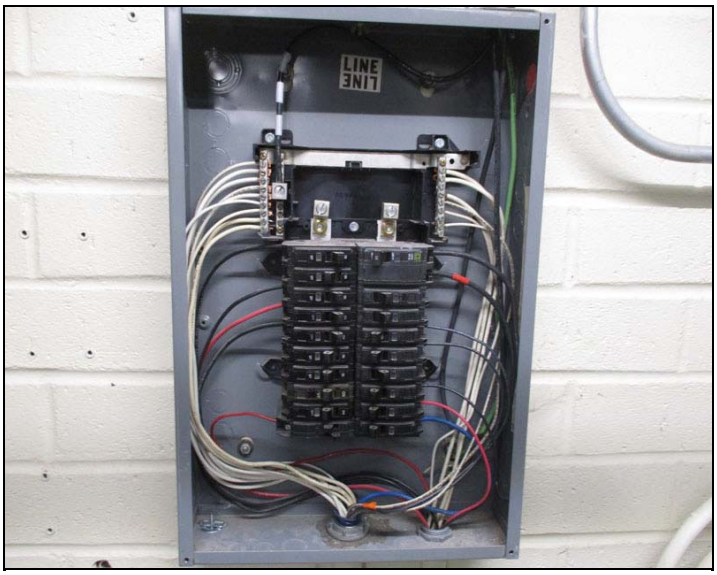

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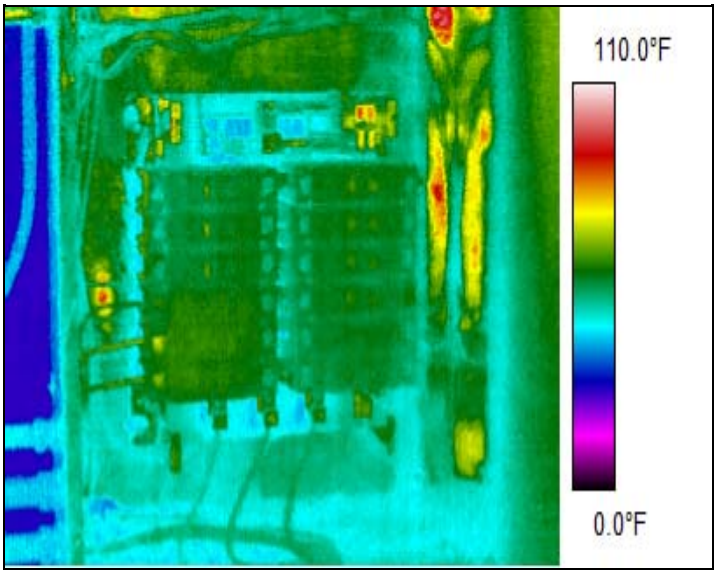
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Small Room \ Breaker Panel LD

Barcode: 254856



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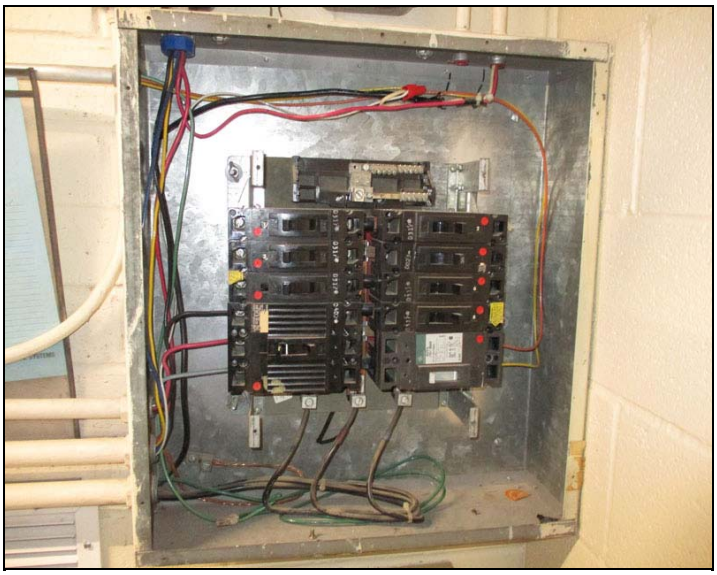

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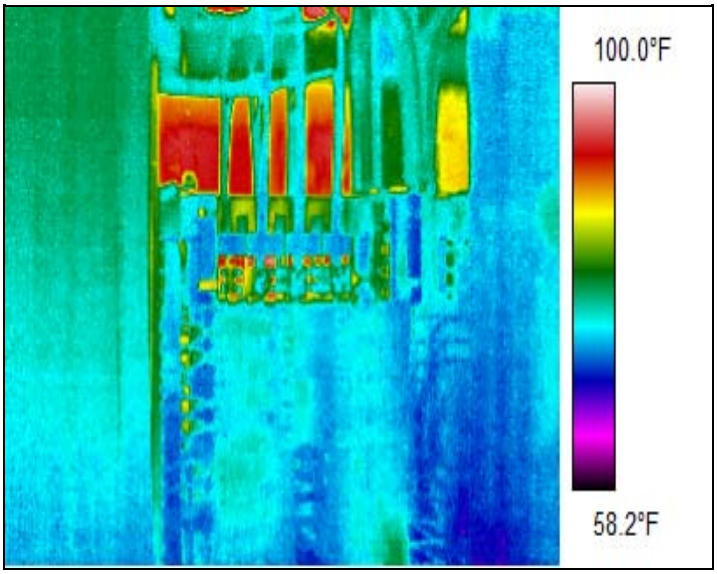
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Small Room \ Distribution Panel DP-2

Barcode: 254857



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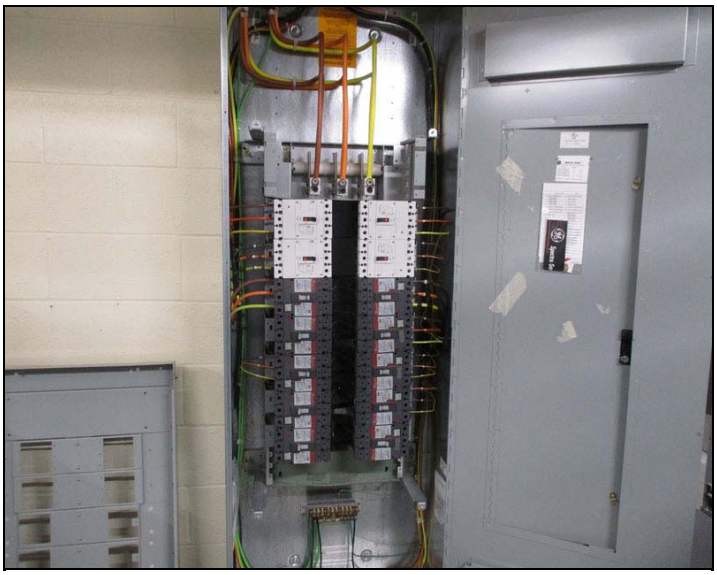

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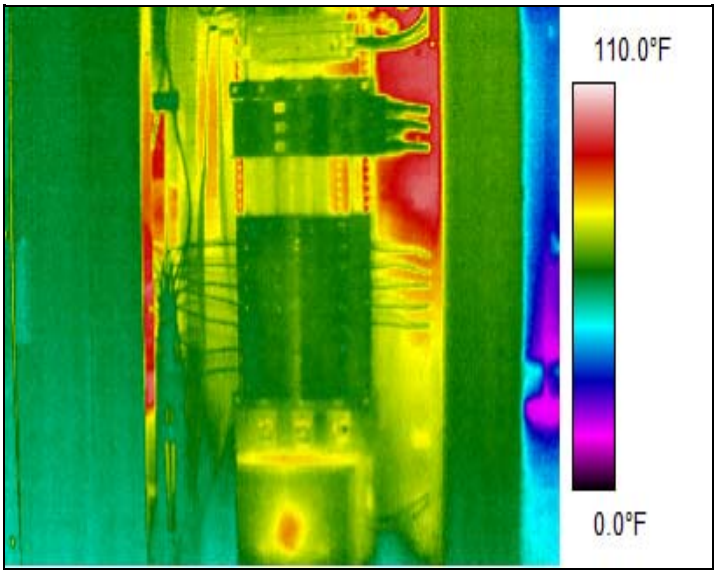
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Small Room \ Breaker Panel LP-3

Barcode: 254858



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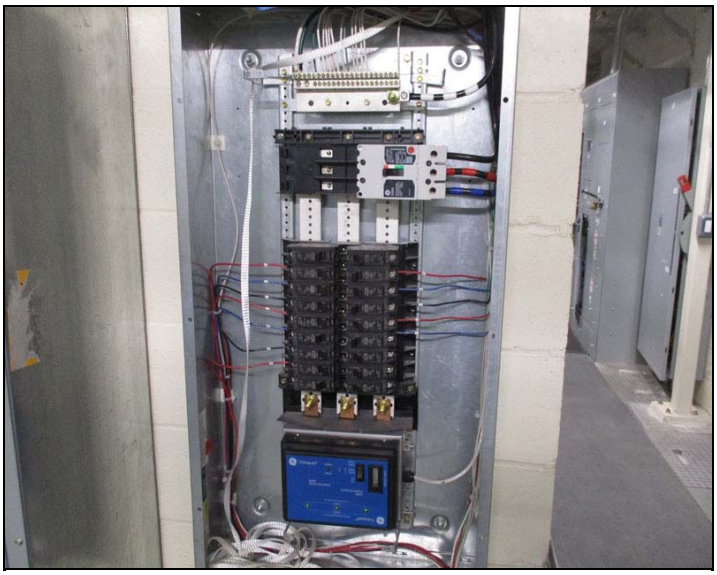

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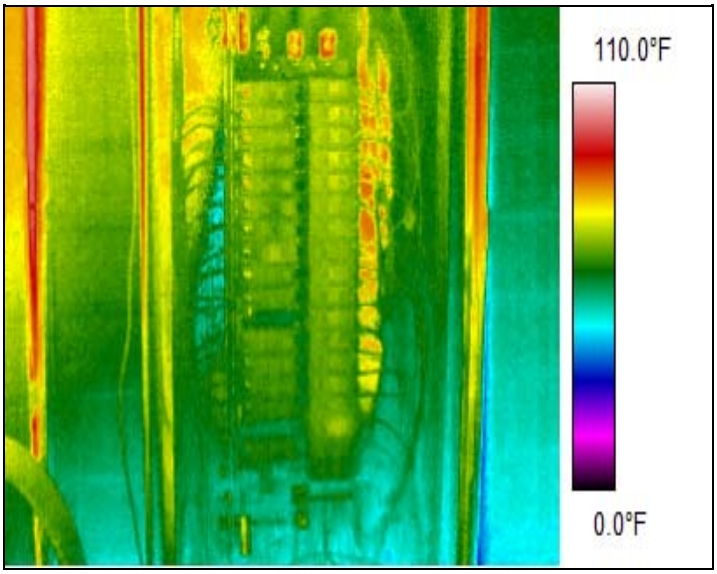
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Small Room \ Breaker Panel E

Barcode: 254860



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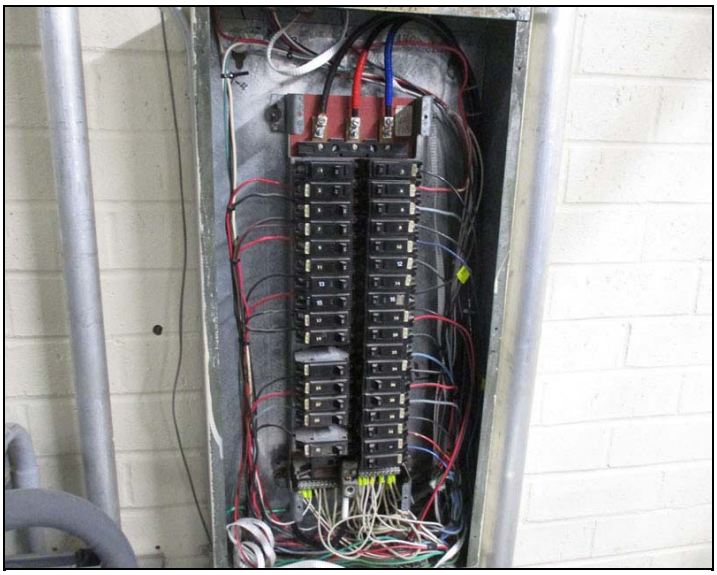

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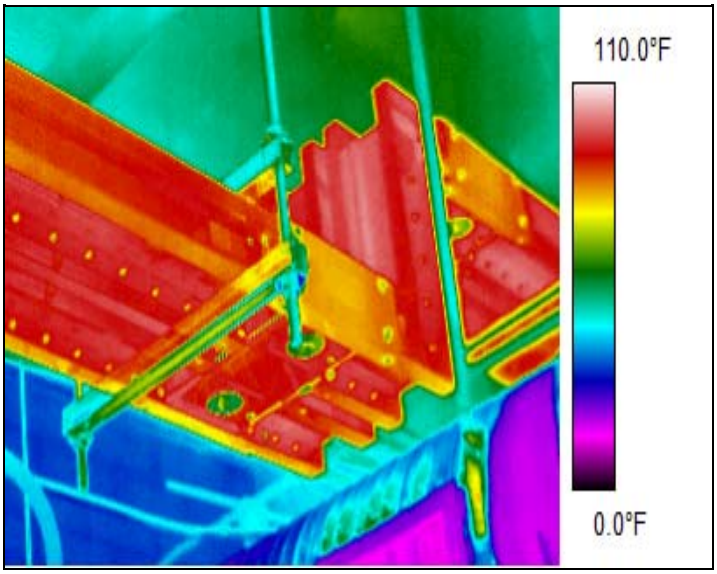
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Small Room \ Main Bus (Overhead)

Barcode:



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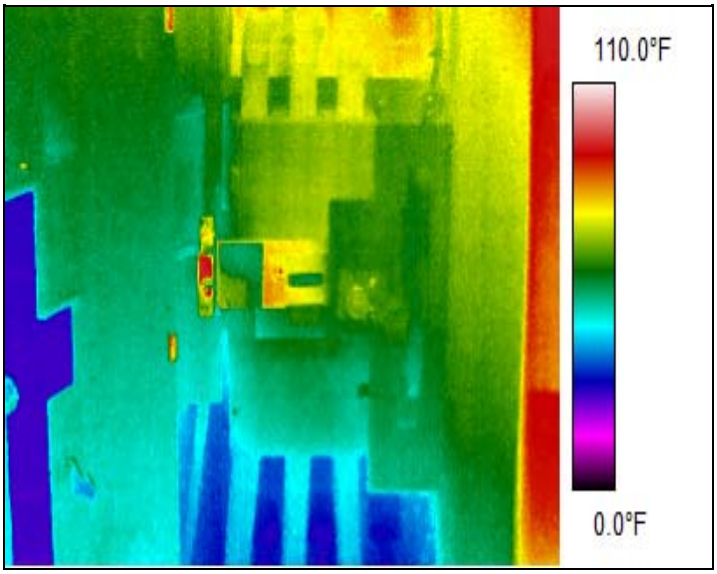
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Small Room \ MCC-3 \ Section 1 \ Main Breaker

Barcode:



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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Small Room \ MCC-3 \ Section 3 \ E Blower 4ME1

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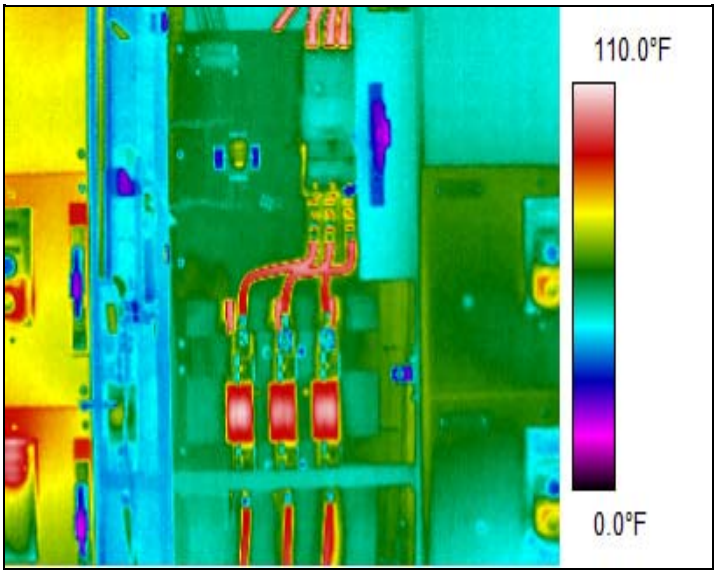

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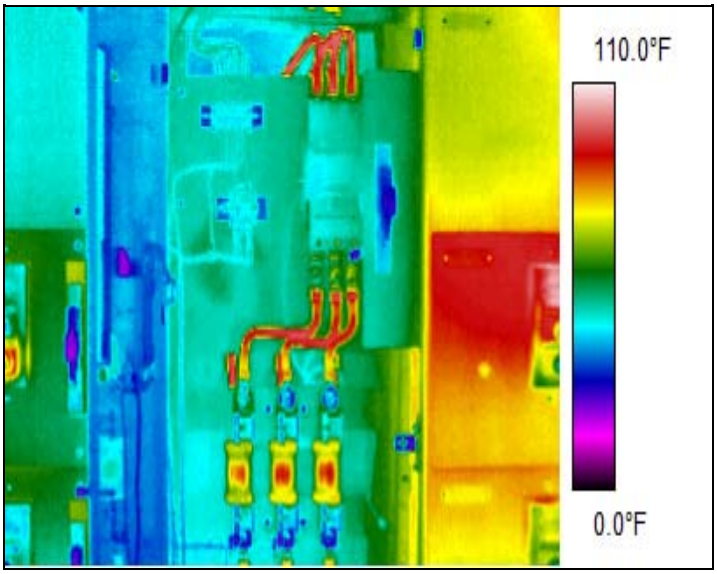
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Small Room \ MCC-3 \ Section 5 \ E Blower 2 4ME2

Barcode:



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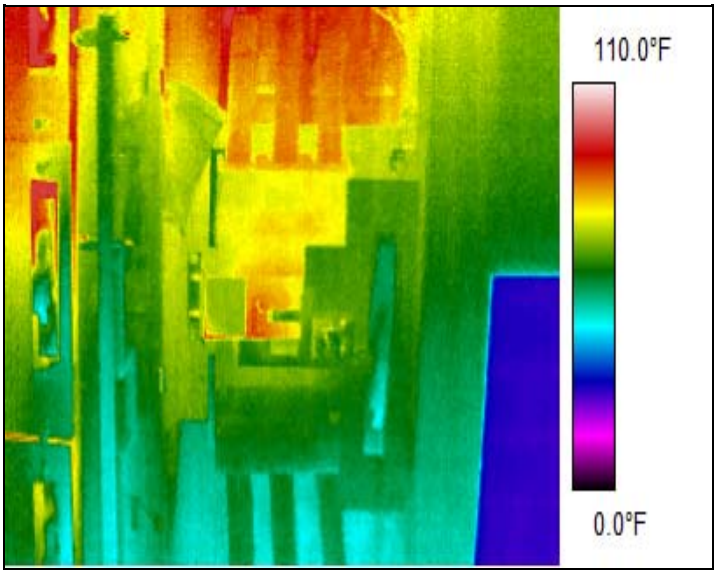
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Small Room \ MCC-3 \ Section 7 \ Main Breaker

Barcode:



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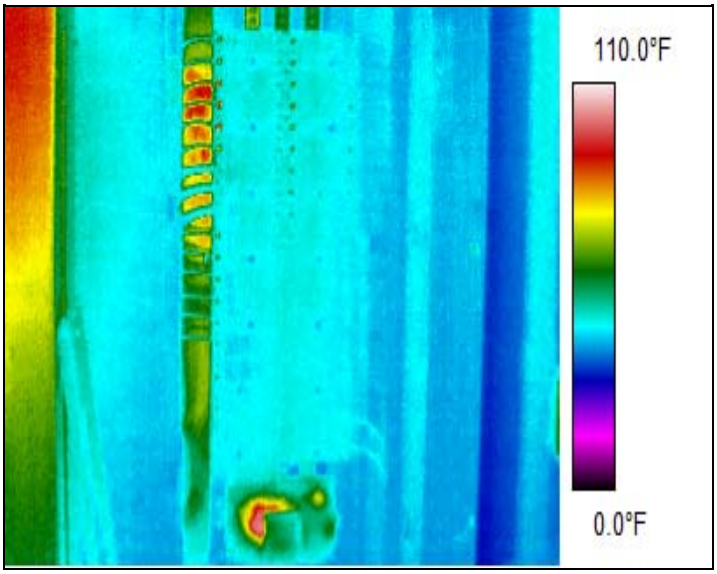
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Breaker Panel DP-1

Barcode:



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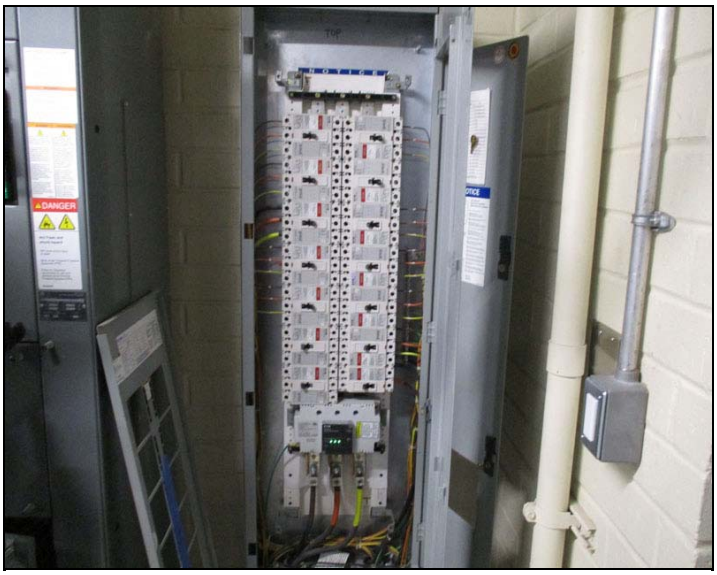

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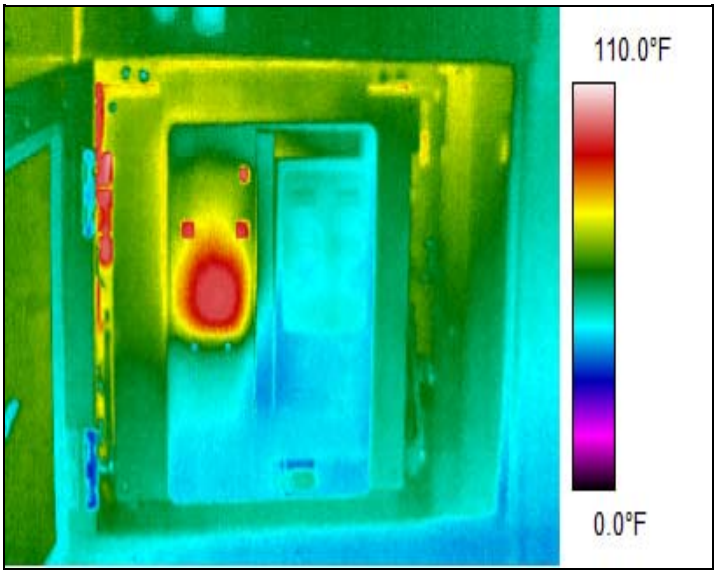
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Section 8 \ 52-LB 3200A Breaker (Front)

Barcode: 254839



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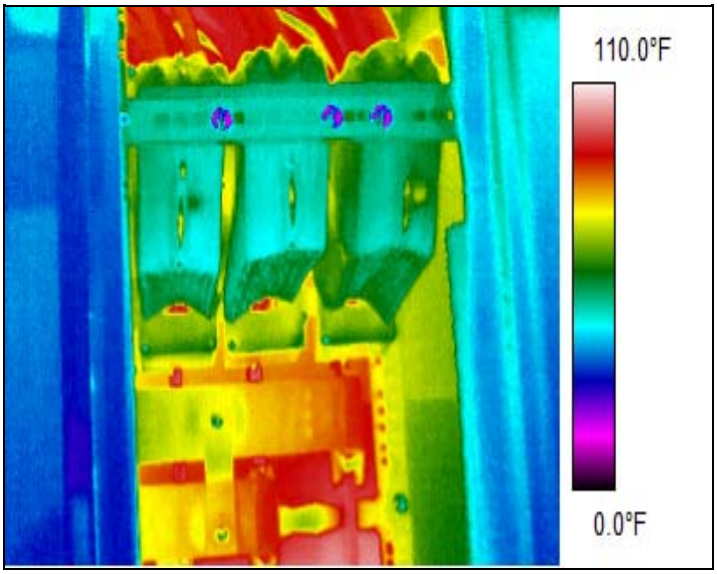
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Section 8 \ 52-LB 3200A Breaker (Back) \ Top

Barcode:



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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Section 8 \ 52-LB 3200A Breaker (Back) \ Middle

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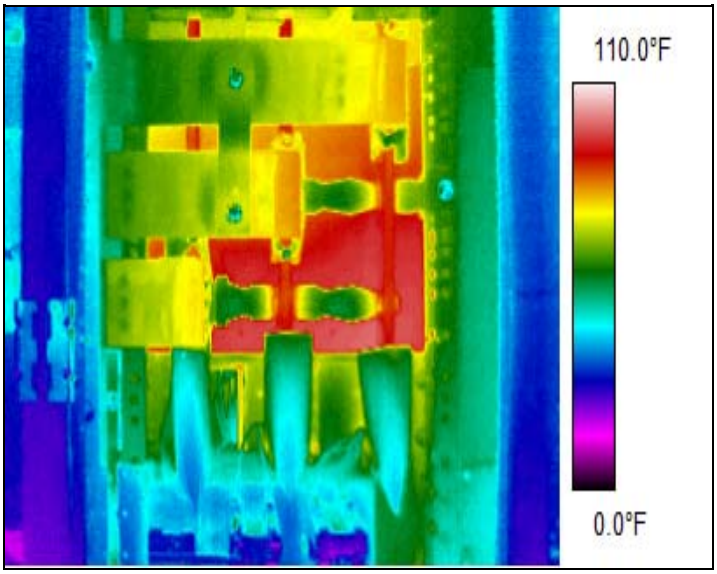

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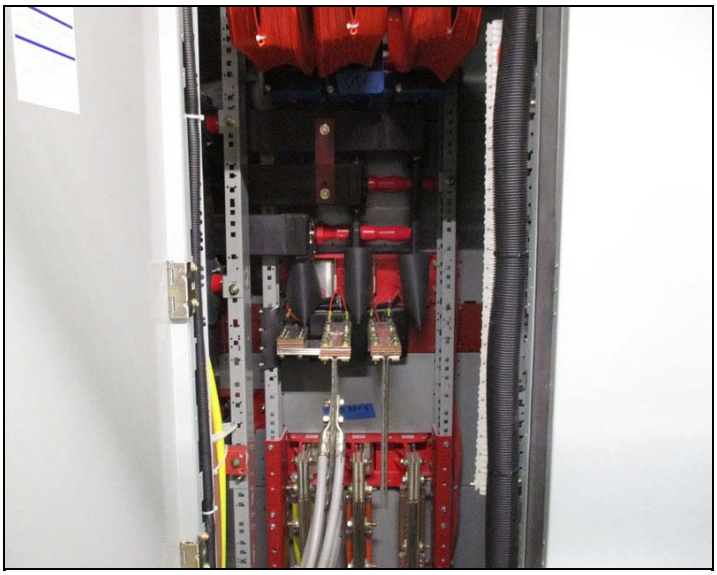

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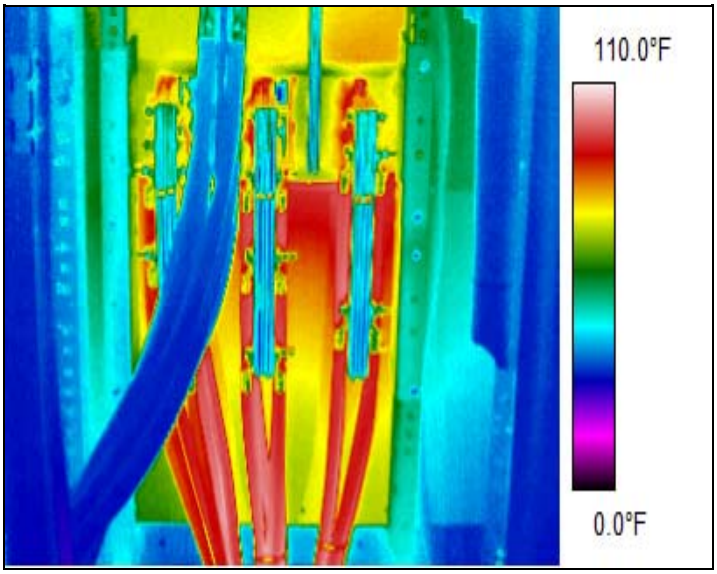
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Section 8 \ 52-LB 3200A Breaker (Back) \ Bottom

Barcode:



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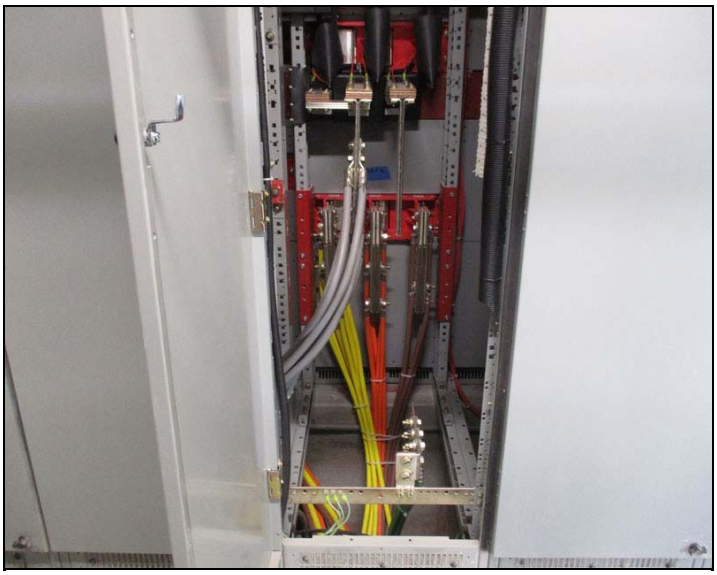

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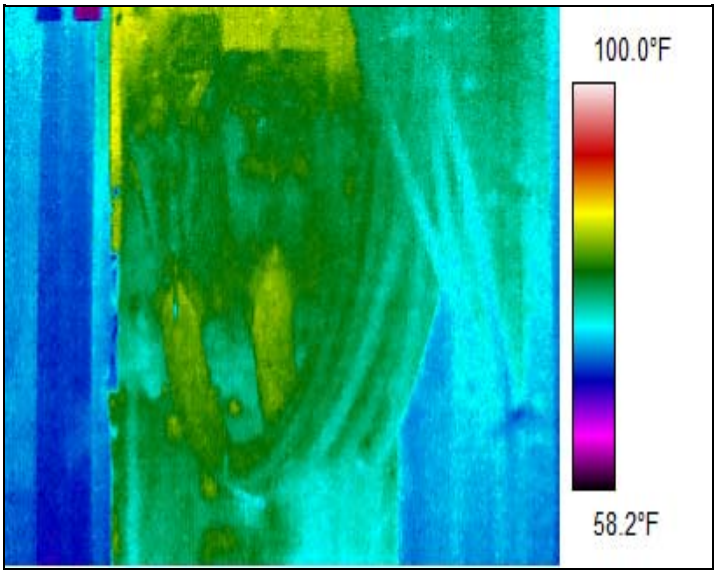
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 1 \ MCC-P 1600 A Breaker

Barcode:



NOTES:

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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 1 \ MCC-3 800 A Breaker

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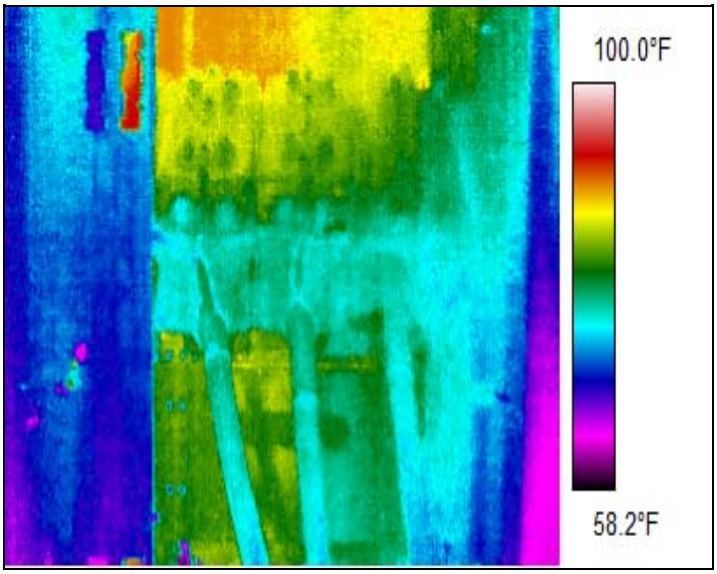

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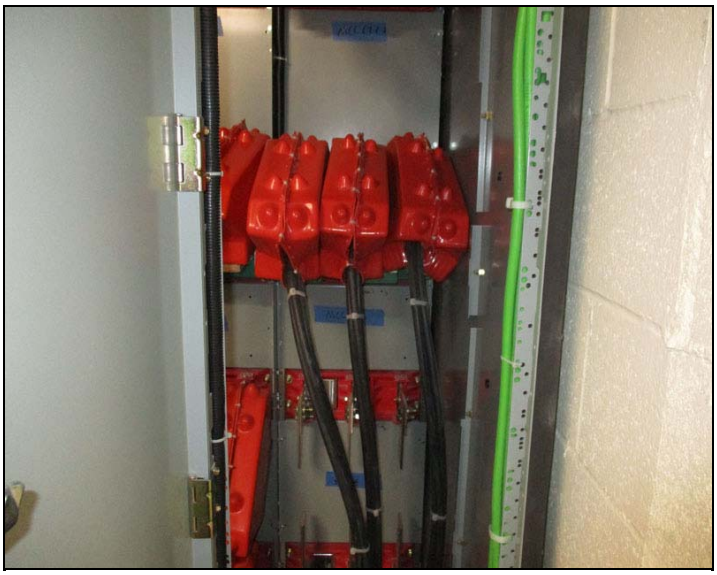

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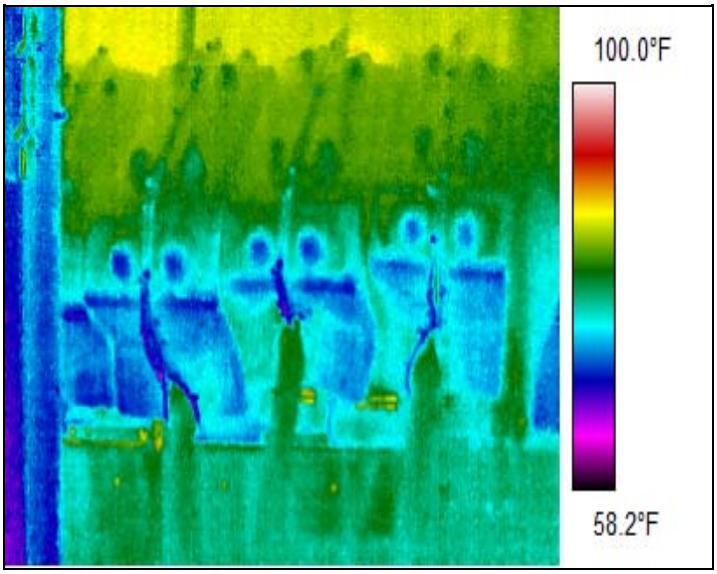
Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 2 \ MCC-A 800 A Breaker

Barcode:



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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 2 \ MCC-BD 800 A Breaker

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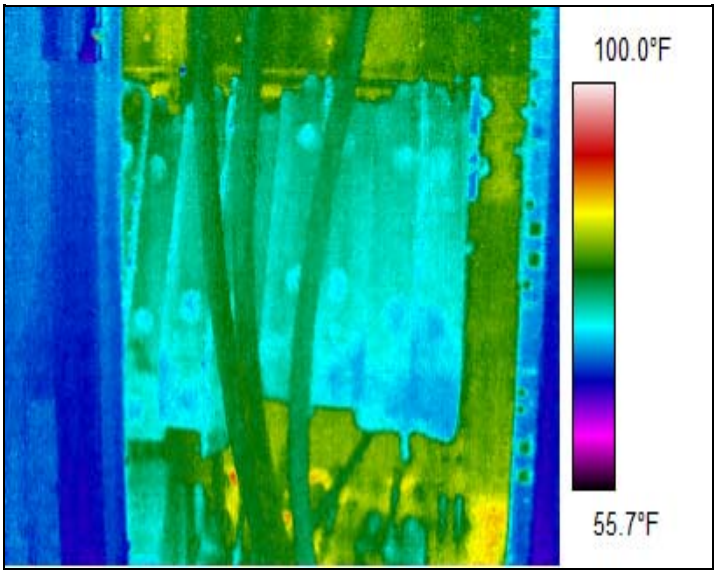

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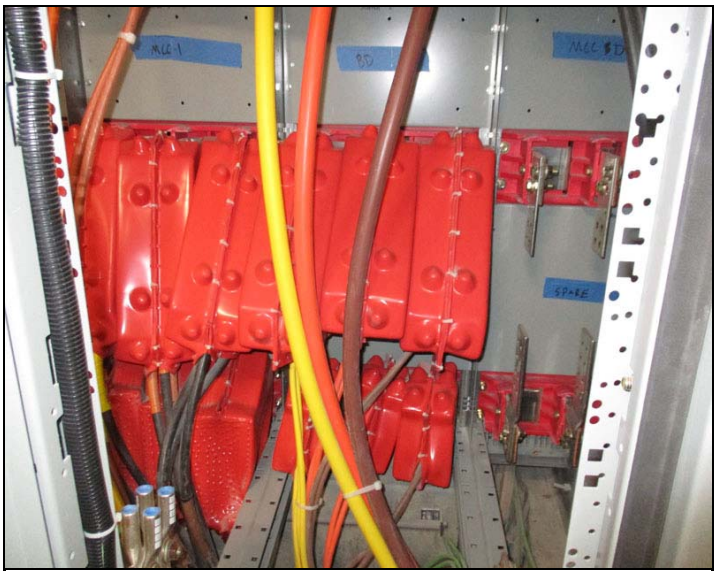

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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 2 \ MCC-DCC 800A Breaker

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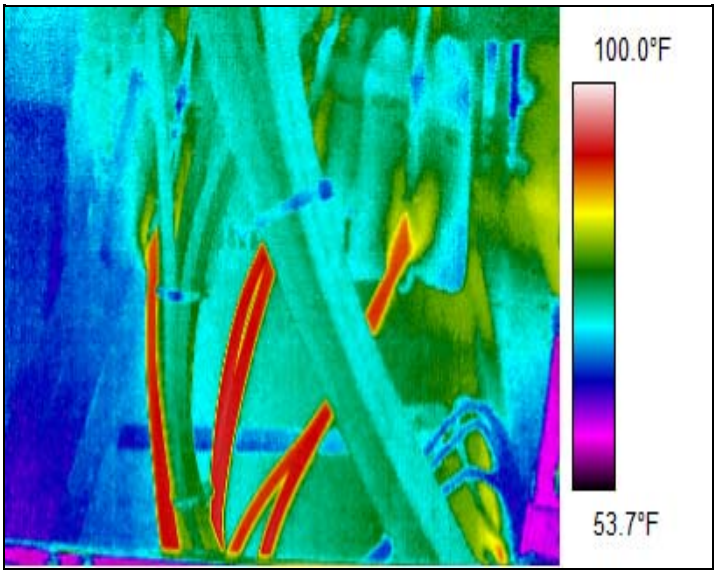

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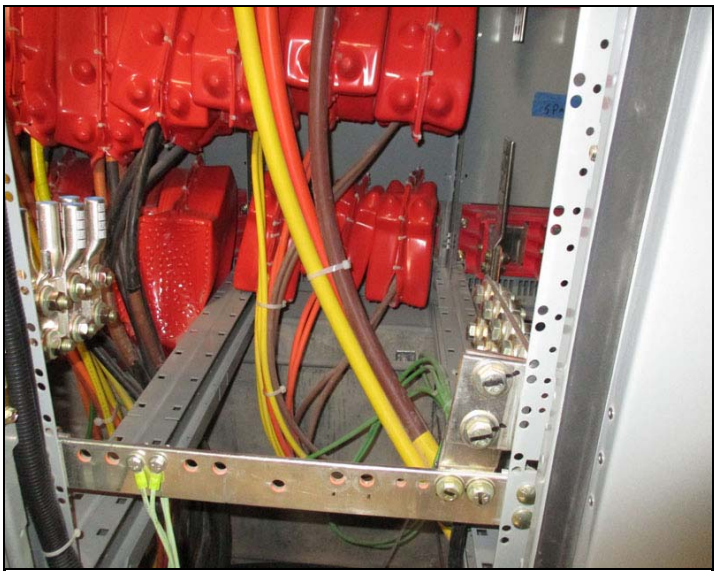

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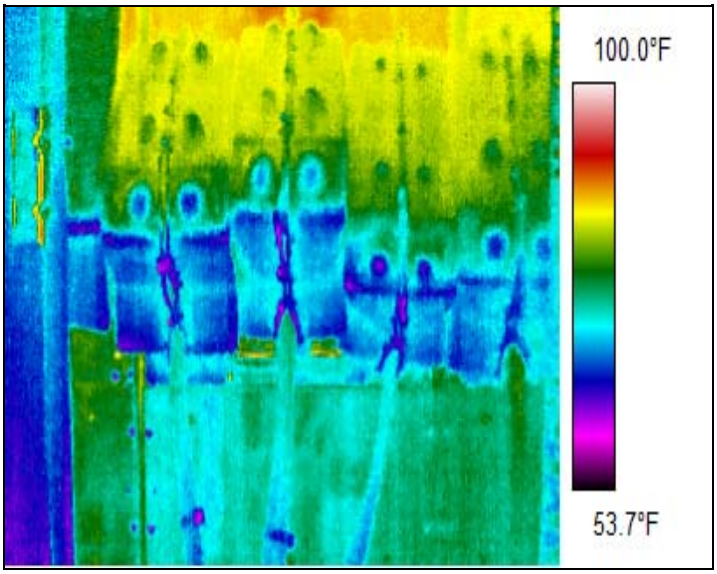
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 3 \ Panel DP-2 800 A Breaker

Barcode:



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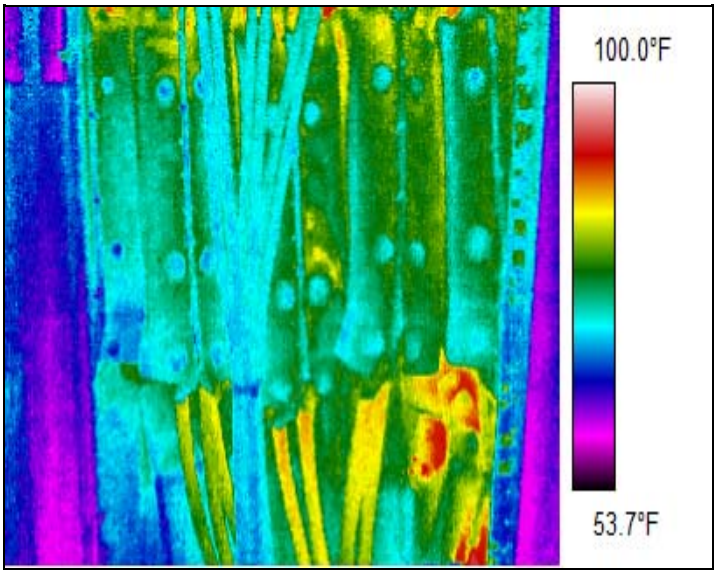
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 3 \ MCC-1A 1600 A Breaker

Barcode:



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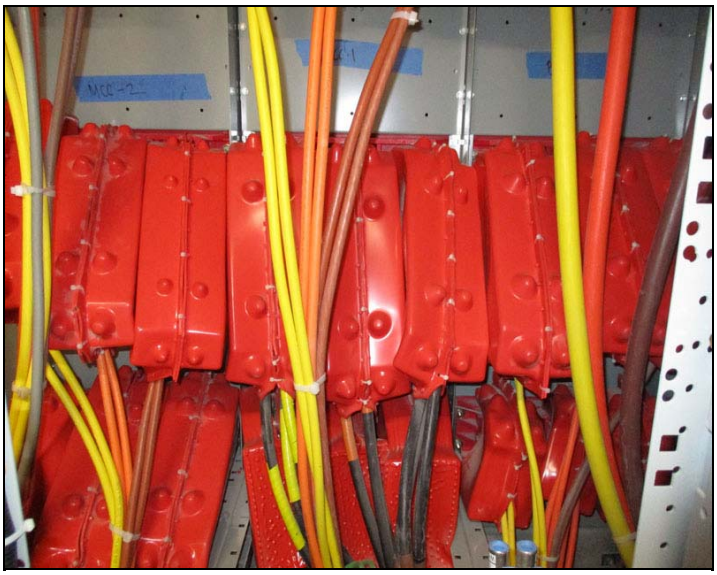

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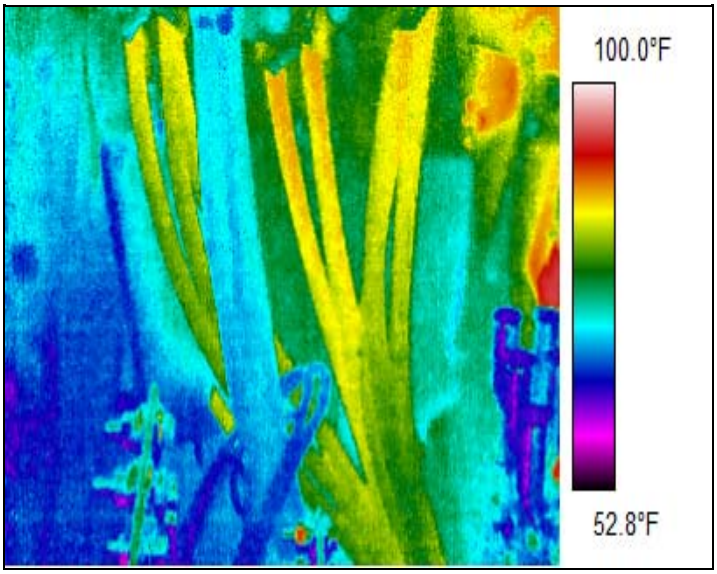
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 3 \ MCC-D1 800 A Breaker

Barcode:



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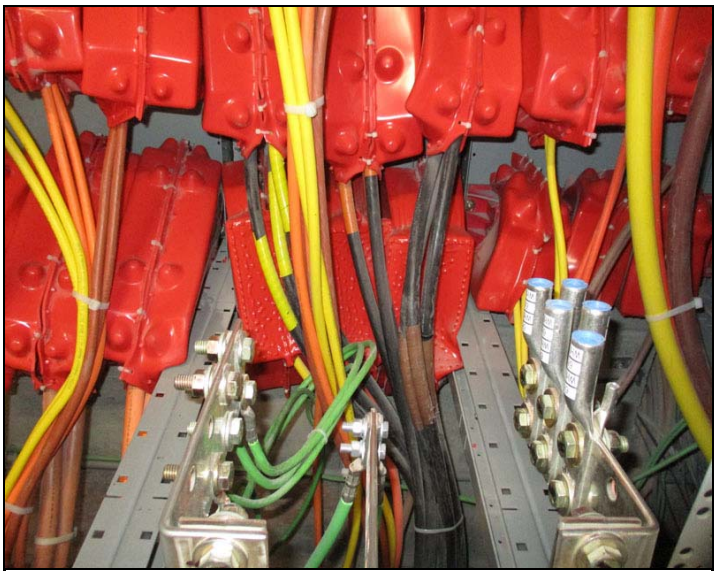

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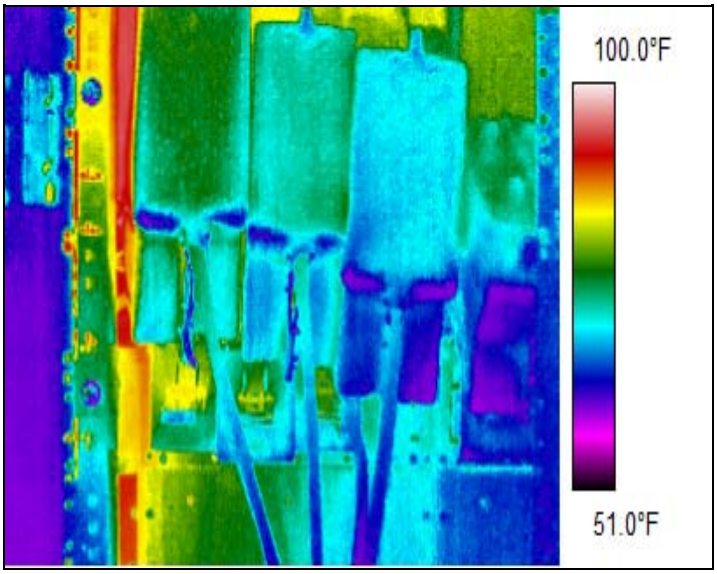
Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 4 \ MCC-J 800A Breaker

Barcode:



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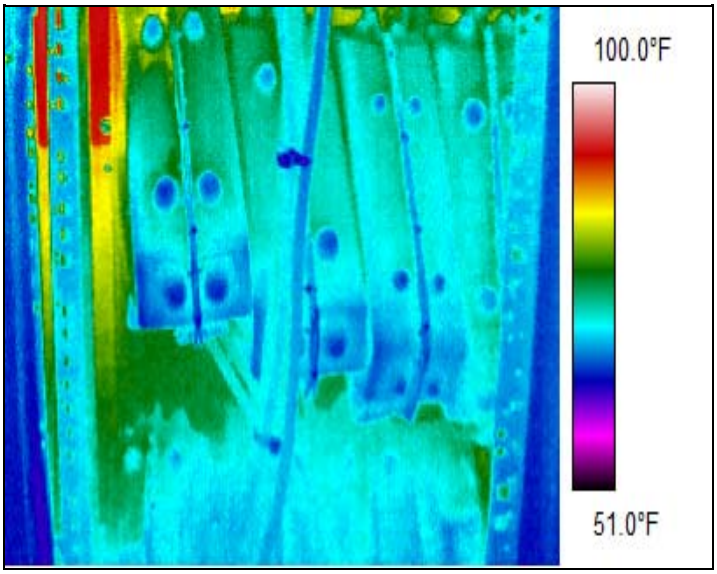
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 4 \ MCC-2 800 A Breaker

Barcode:



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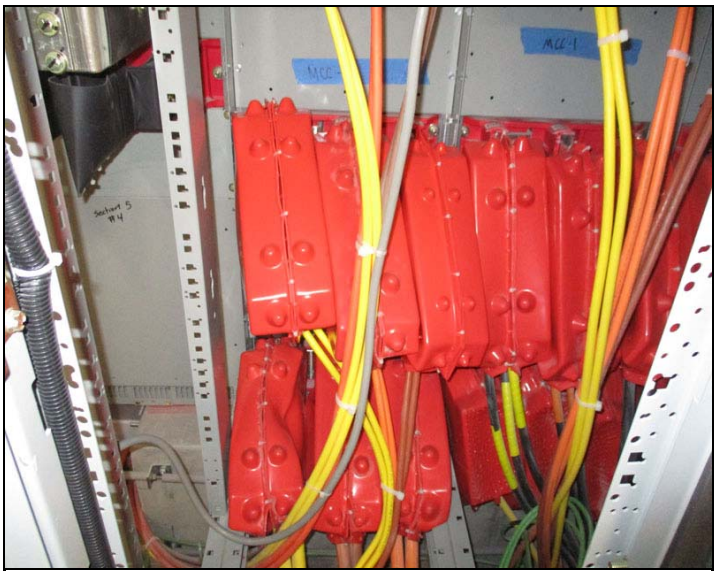

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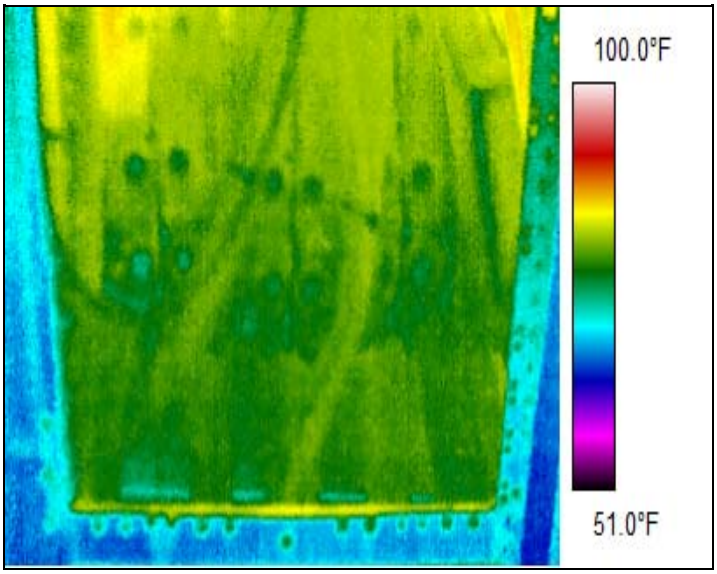
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 4 \ MCC-G 800 A Breaker

Barcode:



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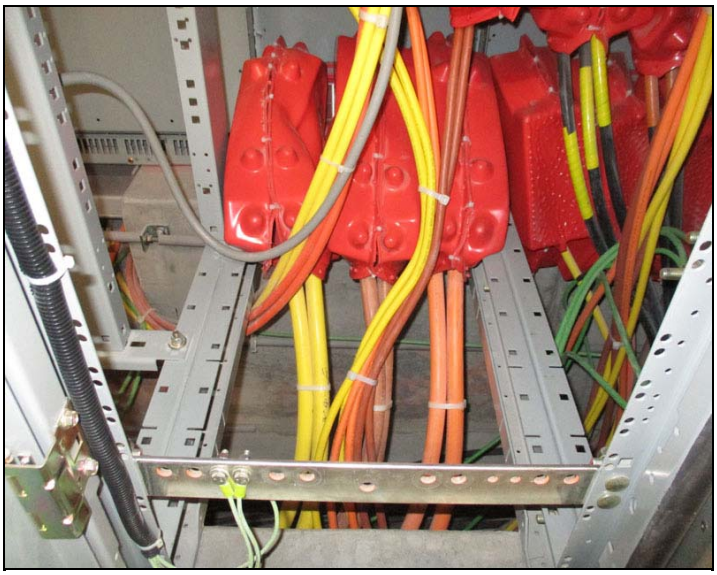

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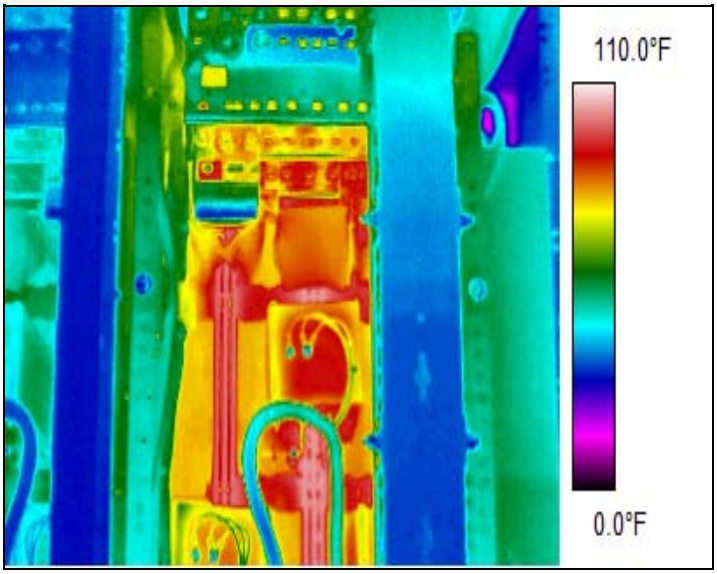
Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 5 \ Main 2000A Breaker

Barcode:



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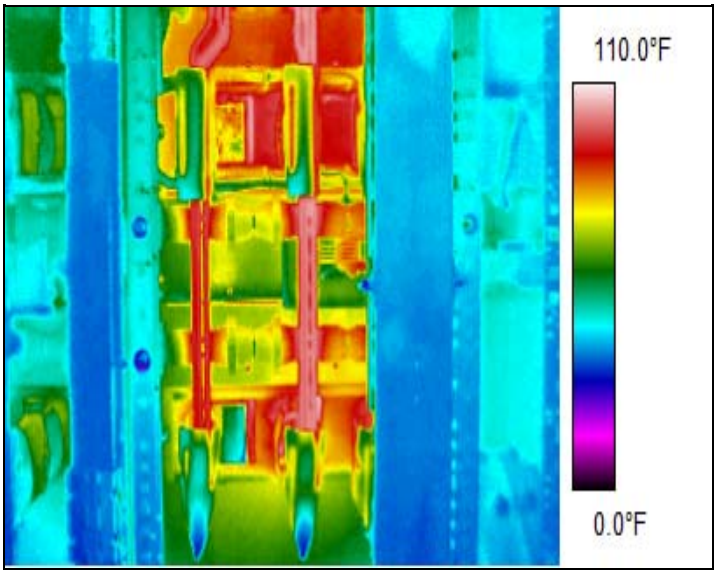
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 5 \ 52-U2 2000A Breaker

Barcode:



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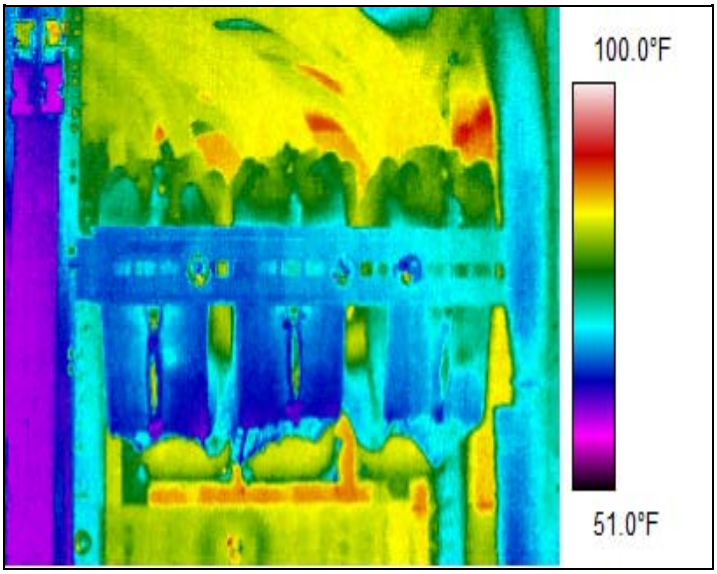
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 8 \ Generator Bus Meter

Barcode:



NOTES:

EQUIPMENT PHOTO IS NOT AVAILABLE

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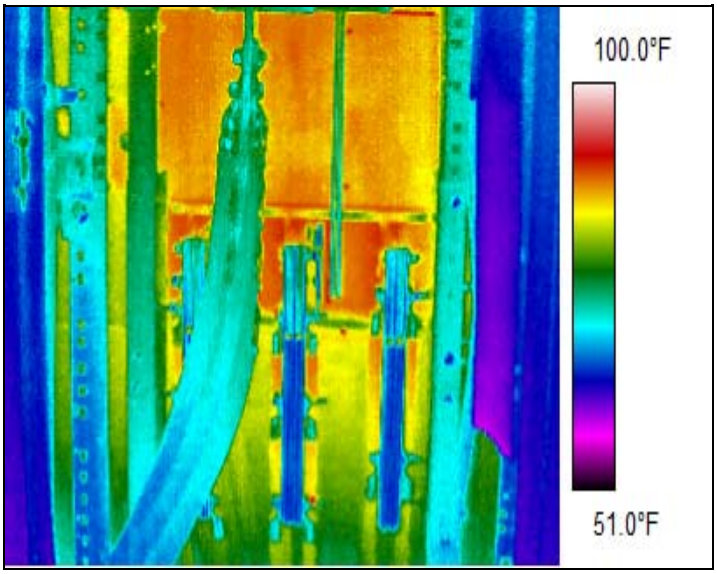
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 8 \ 52-LB 3200A Breaker

Barcode:



NOTES:

EQUIPMENT PHOTO IS NOT AVAILABLE

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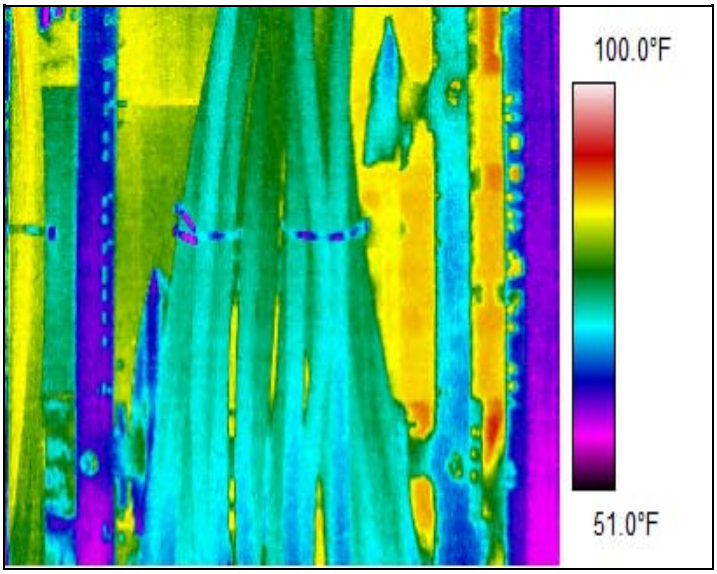
Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 9 \ Main 52-G1 2000A Breaker

Barcode:



NOTES:

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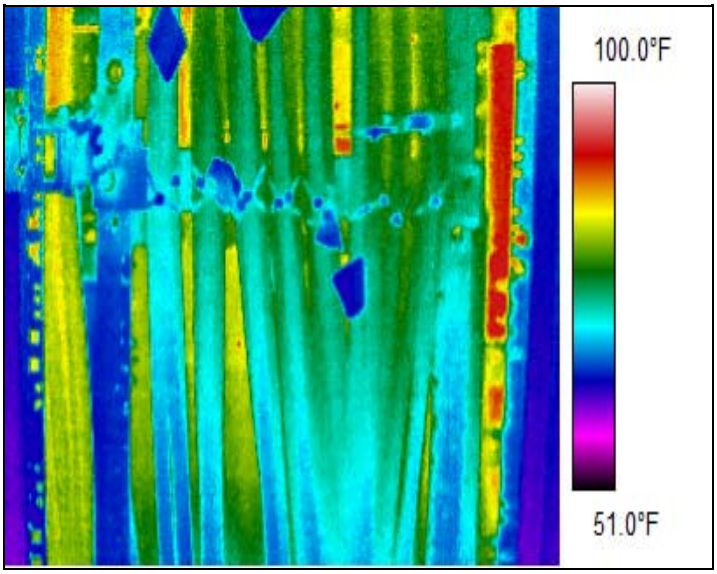
Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 9 \ 52-G2 2000A Breaker

Barcode:



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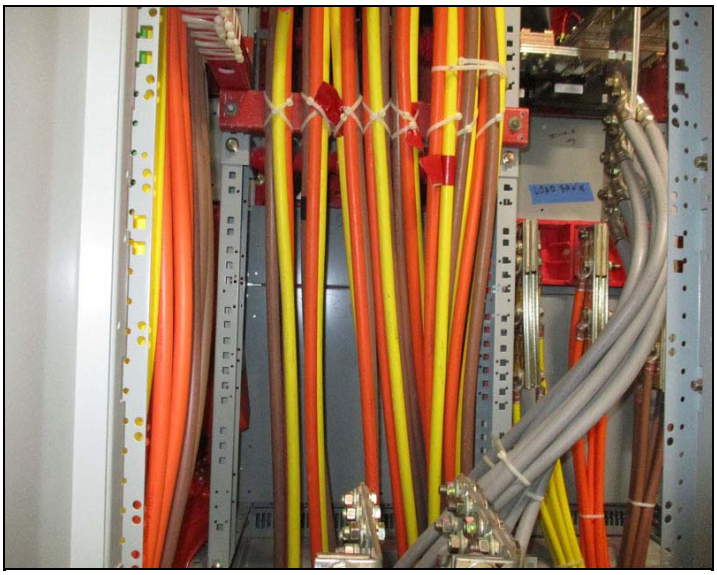

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Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 10 \ PSC 800A Breaker

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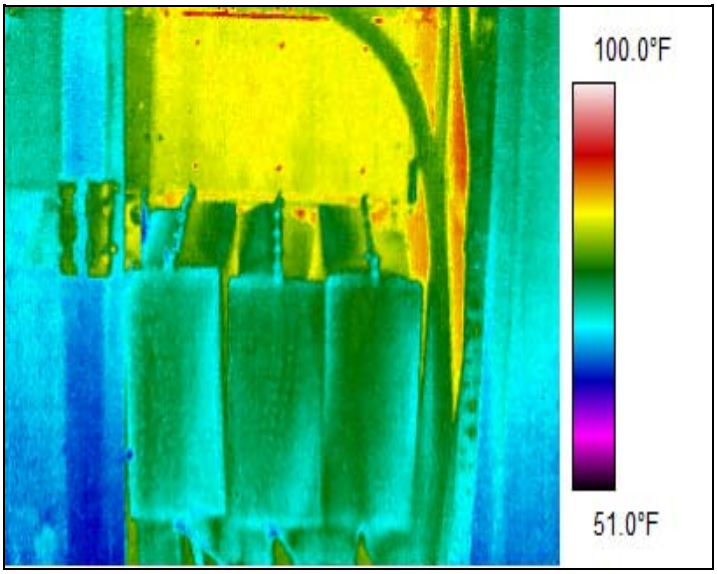

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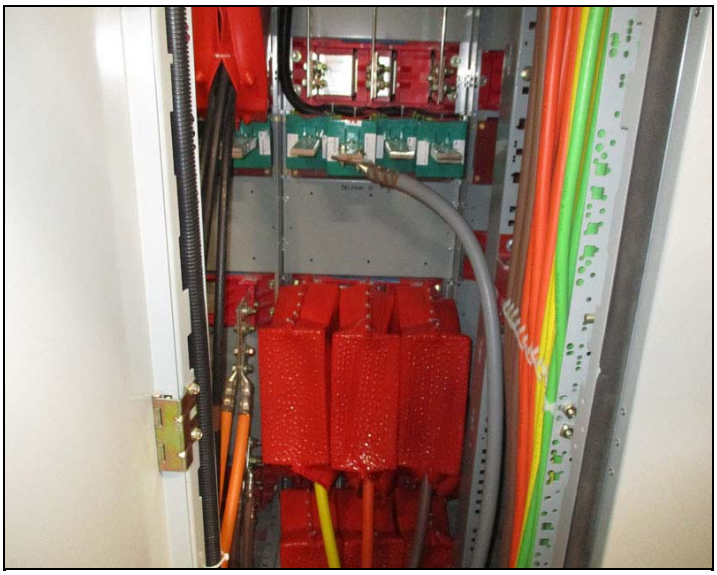

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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 10 \ Panel 8-6-1 800A Breaker

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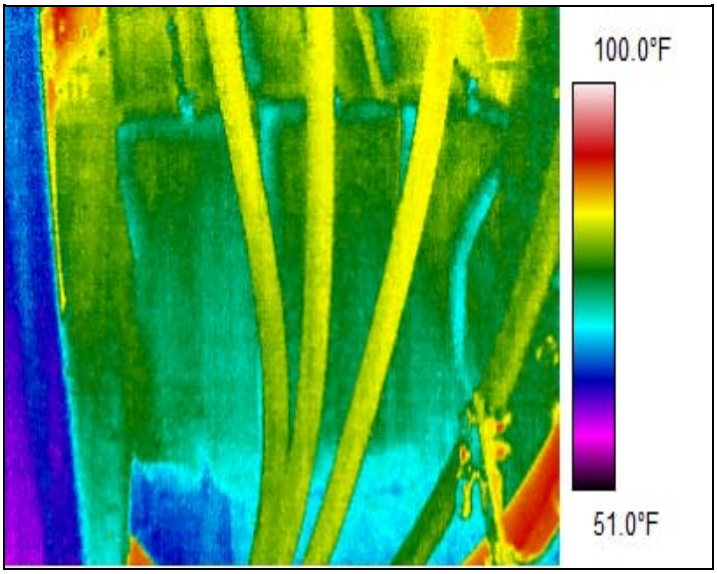

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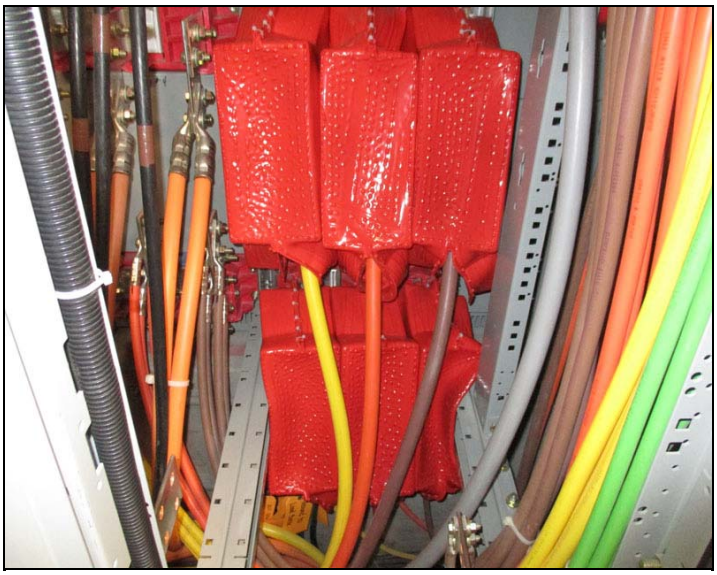

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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 11 \ MCC-1B 1600A Breaker

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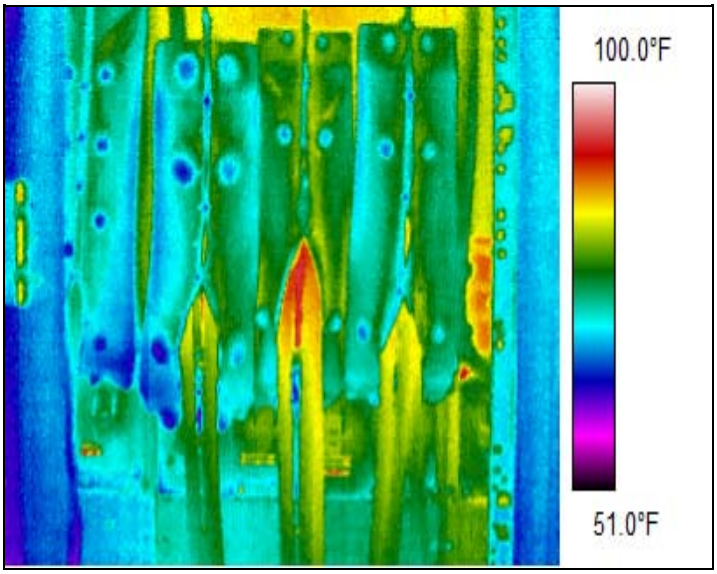

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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 11 \ MCC-G 800A Breaker

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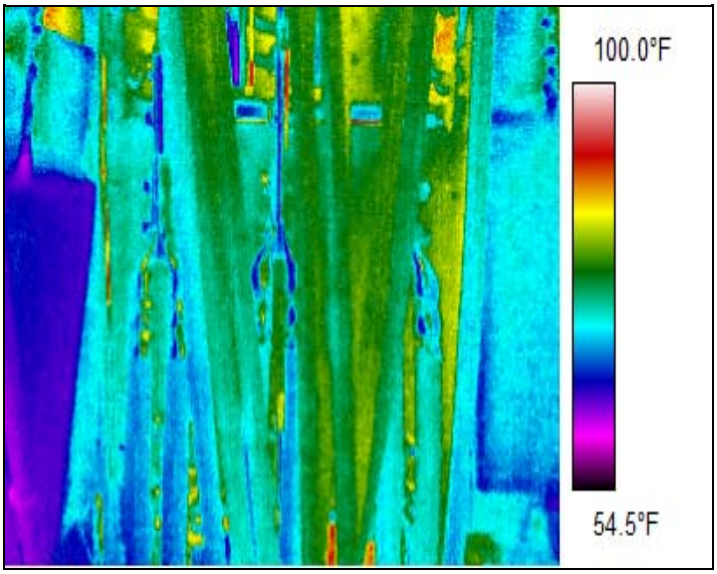

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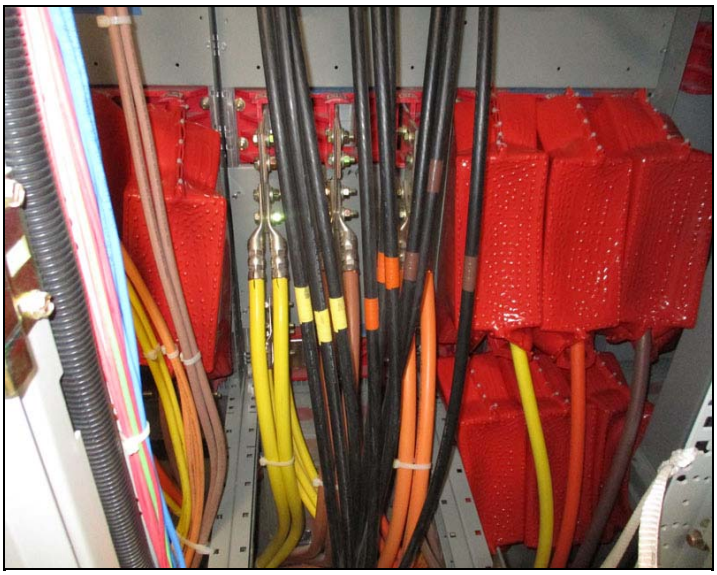

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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 11 \ MCC-P B 800A Breaker

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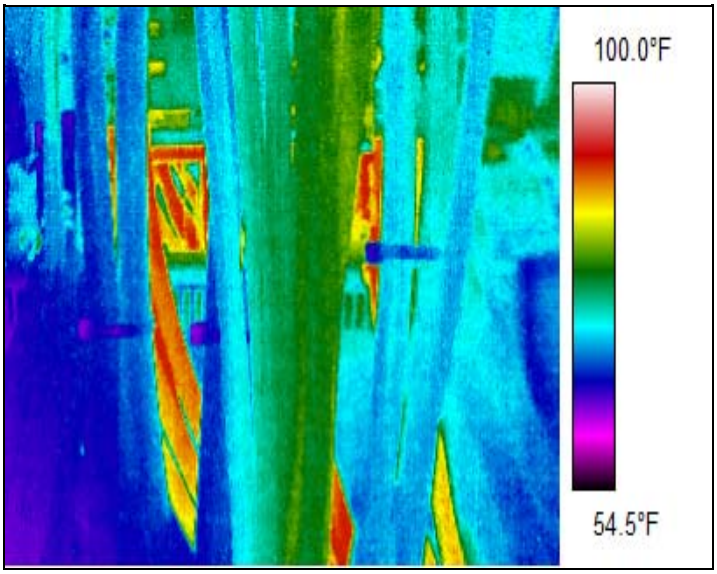

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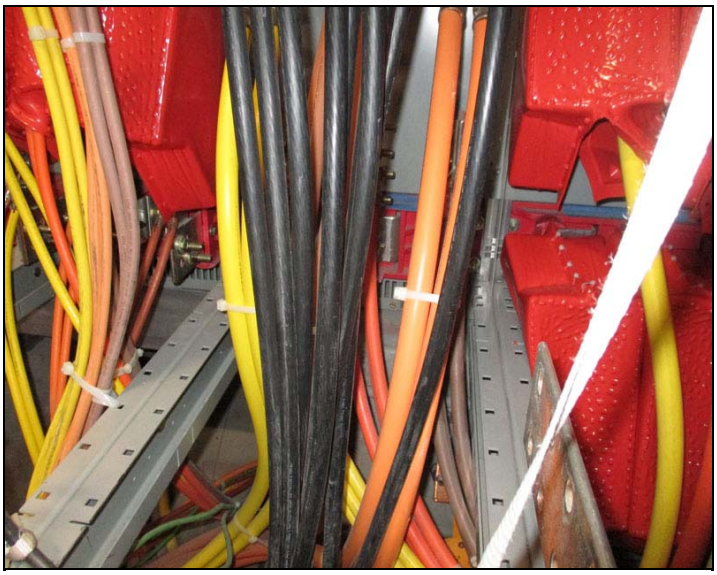

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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 12 \ MCC-3 800A Breaker

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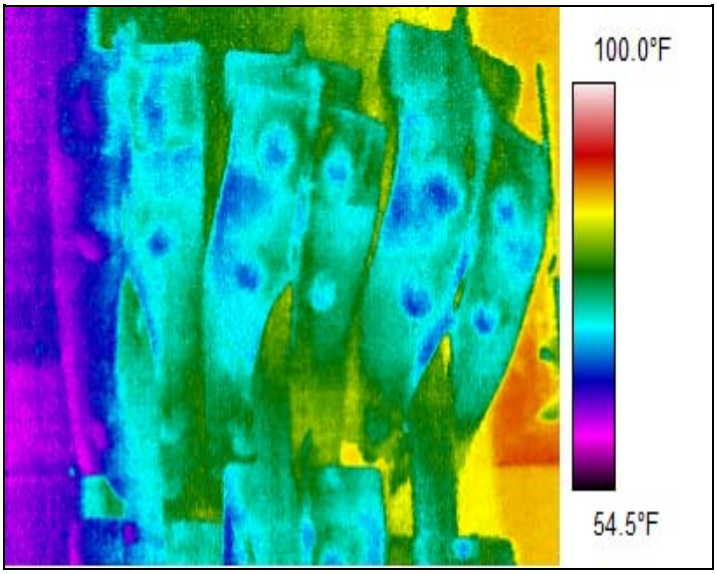

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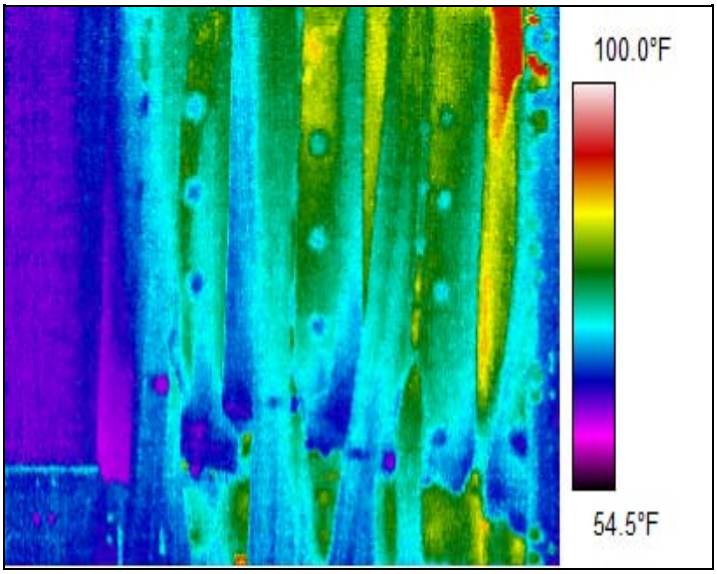
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 12 \ MCC-2 800A Breaker

Barcode:



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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 12 \ MCC-H 800A Breaker

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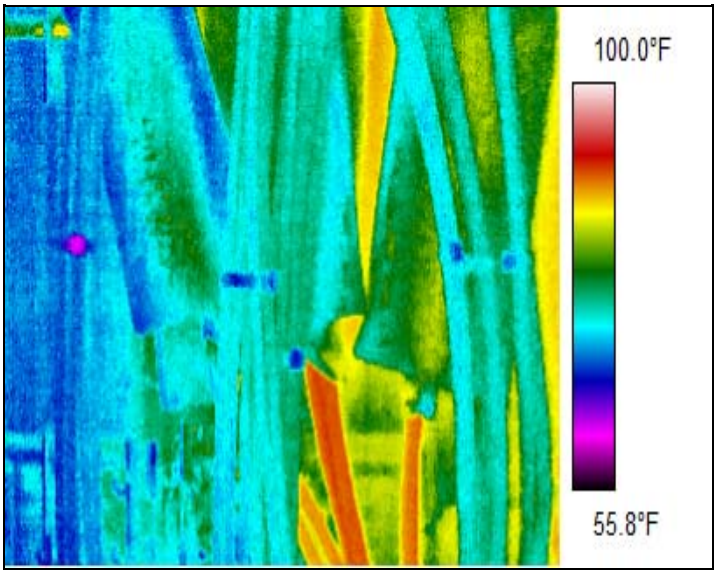

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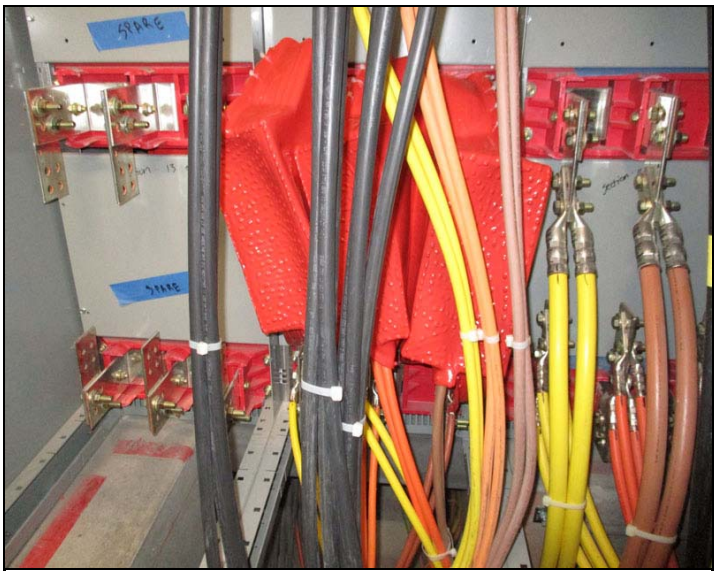

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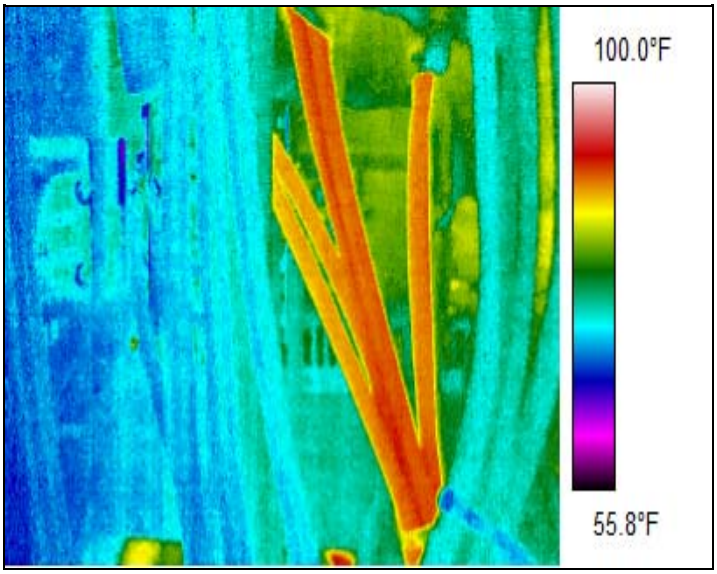
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ Main Line Up Switchboard \ Section 12 \ Panel DP-2 800A Breaker

Barcode:



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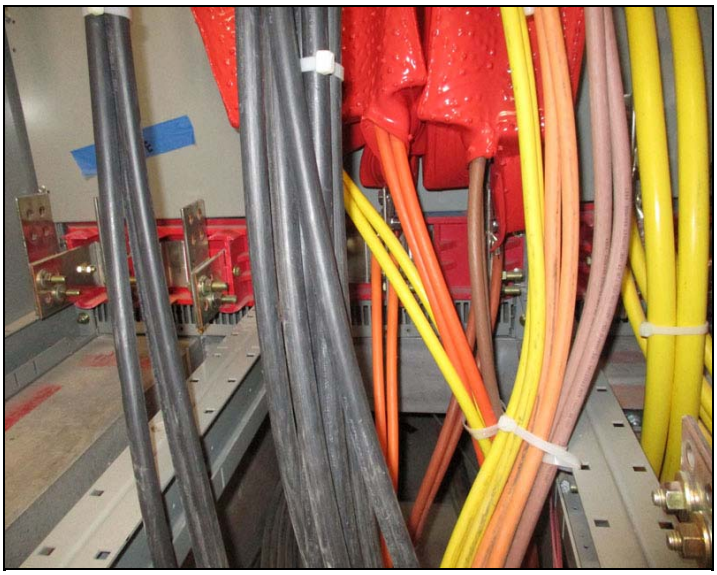

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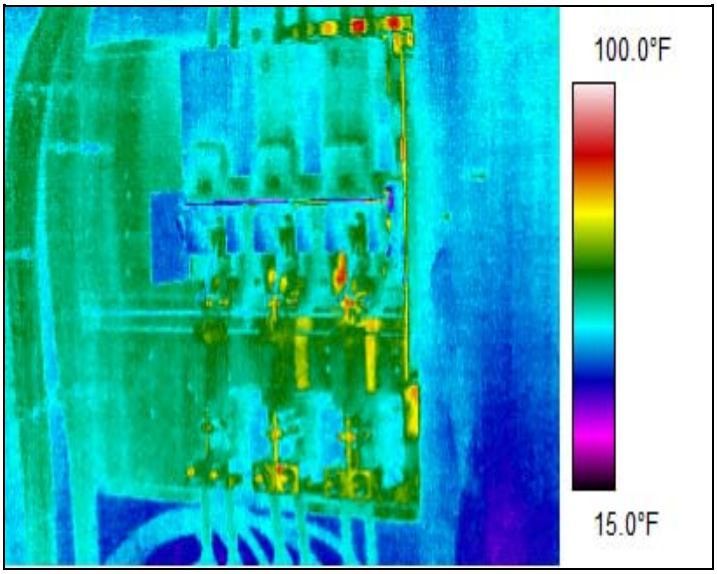
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ MTS Feeding Panel DP-2 400A Double Trow Switch \ Top

Barcode:



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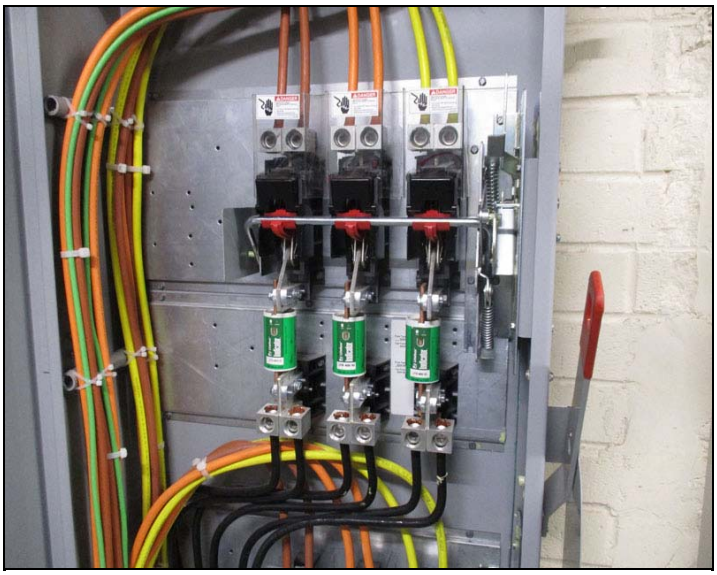

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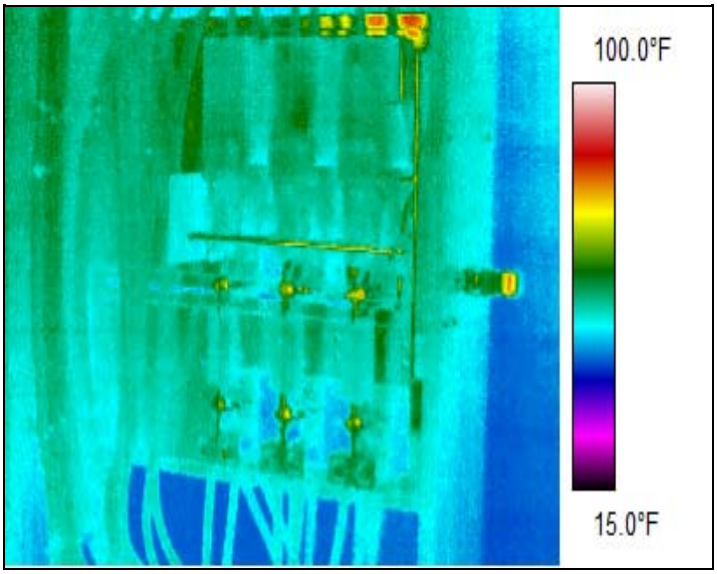
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ MTS Feeding Panel DP-2 400A Double Trow Switch \ Bottom

Barcode:



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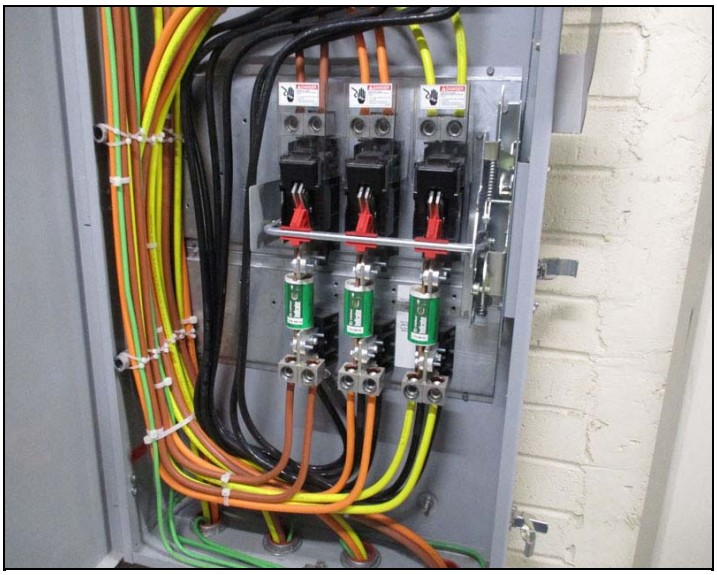

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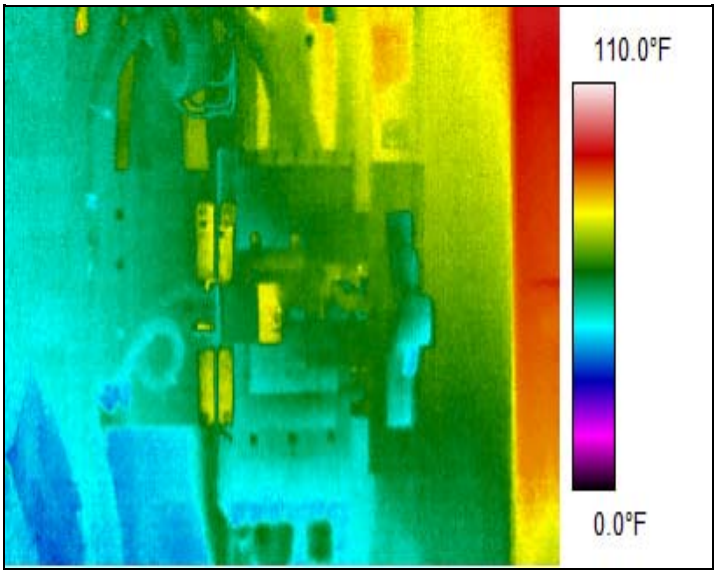
Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ MCC-2 \ Section 1 \ Main400A Breaker

Barcode:



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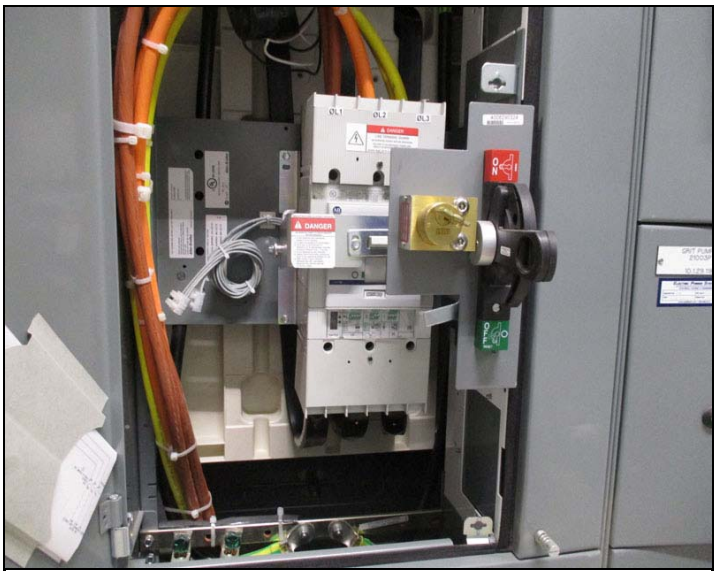

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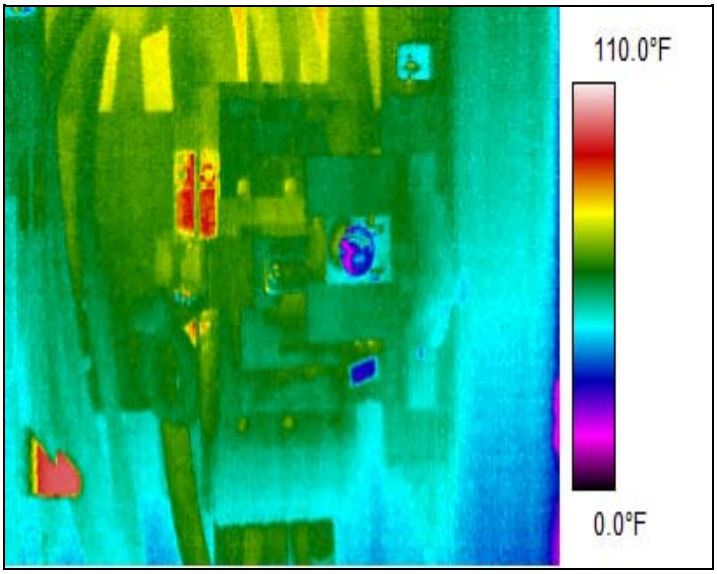
Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Switchboard MCC-3 \ Large Room \ MCC-2 \ Section 7 \ Main 400A Breaker

Barcode:



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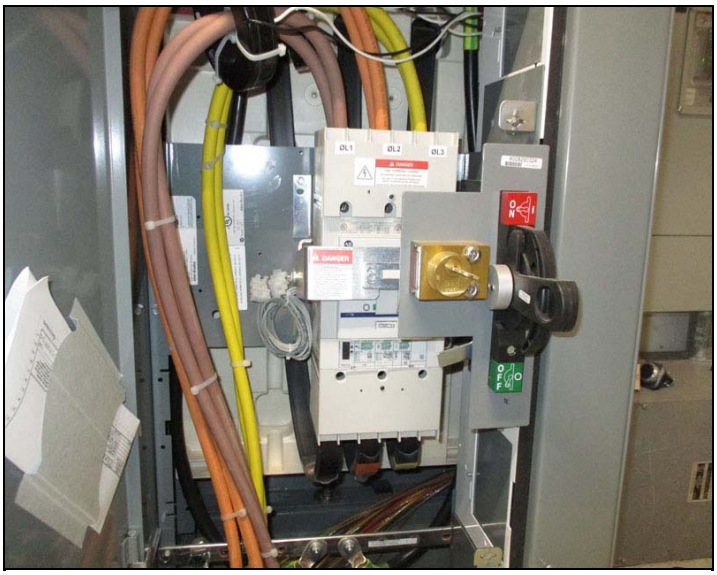

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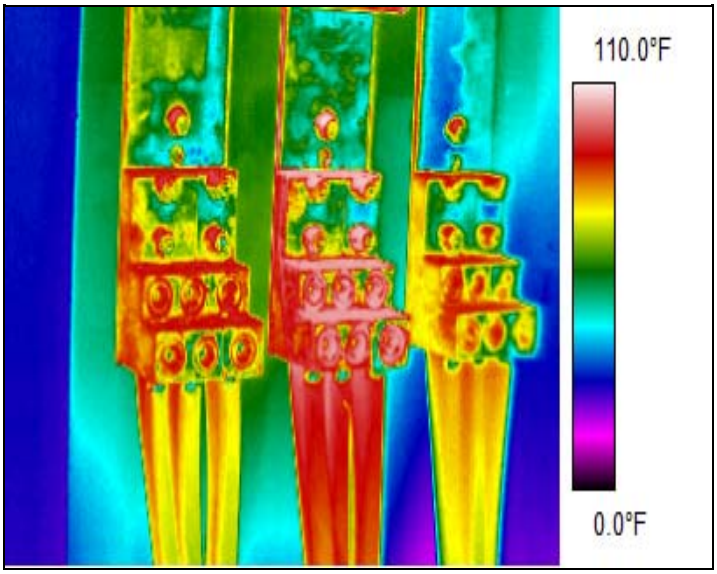
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Outside \ Load Bank
Main Lug Connections

Barcode: 254849



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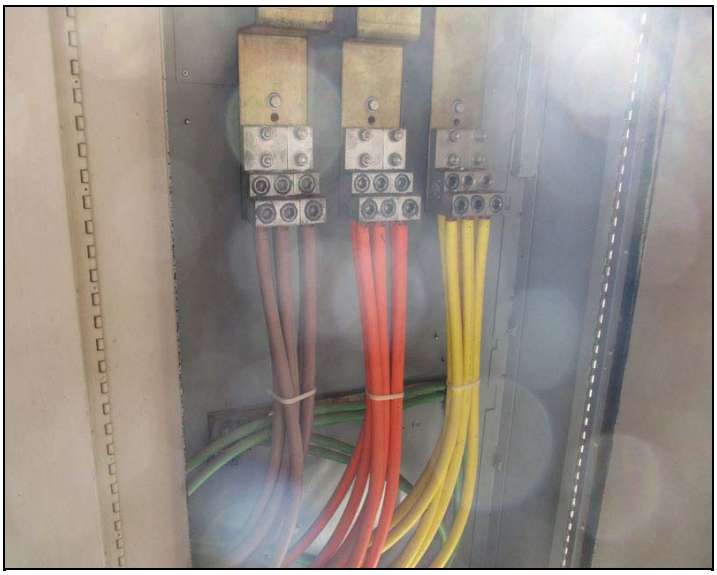

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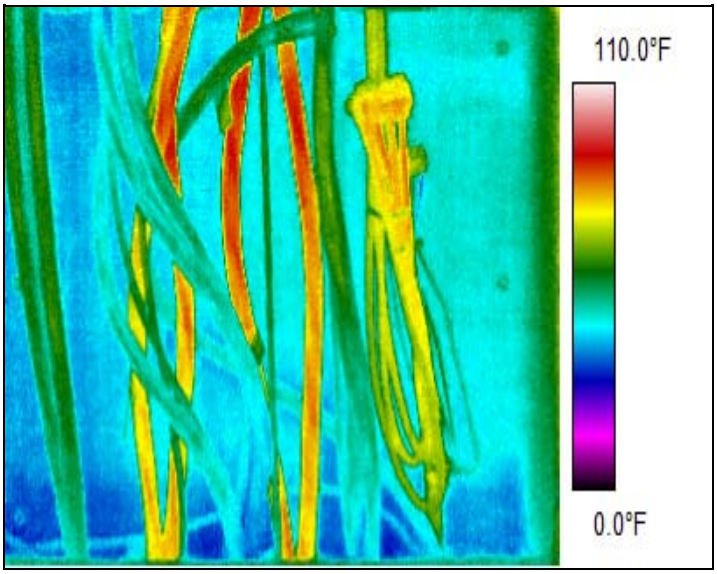
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Outside \ Blower Splice Box

Barcode: 254944



NOTES:

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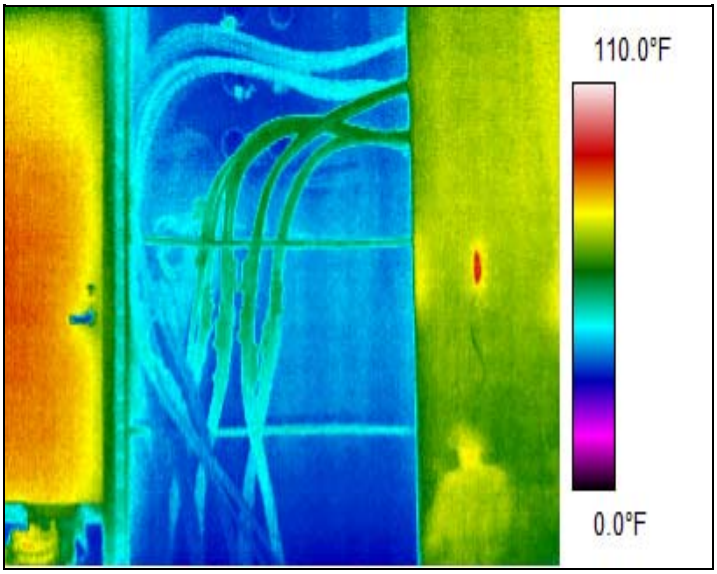
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Outside \ P.B. 30 Splice Box

Barcode: 254951



NOTES:

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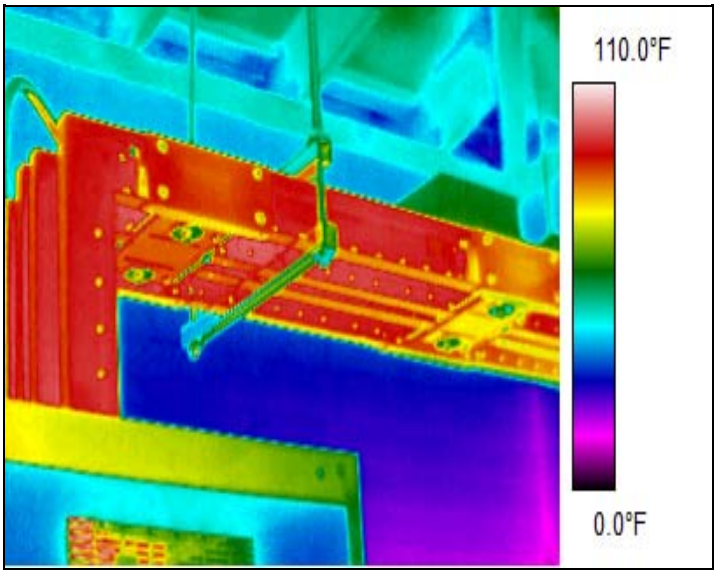
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Main Electrical Room \ Overhead Bus

Barcode:



NOTES:

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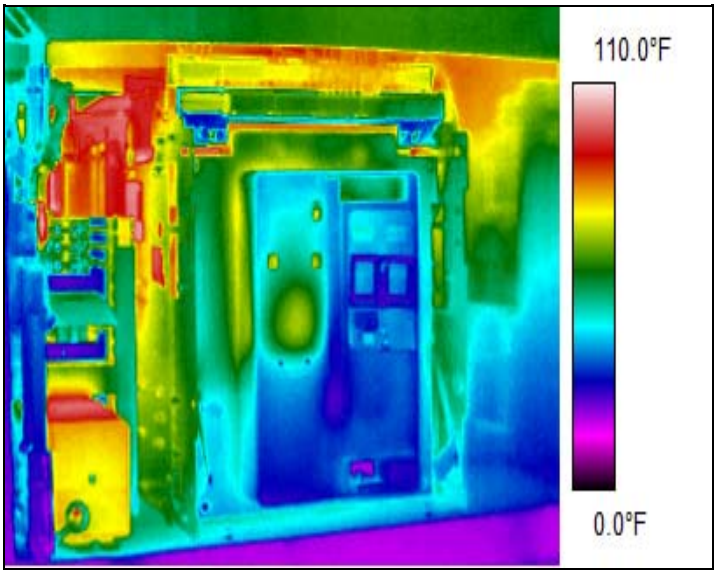
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Main Electrical Room \ MSB \ Section 2 \ Main 3000 Amp Breaker

Barcode:



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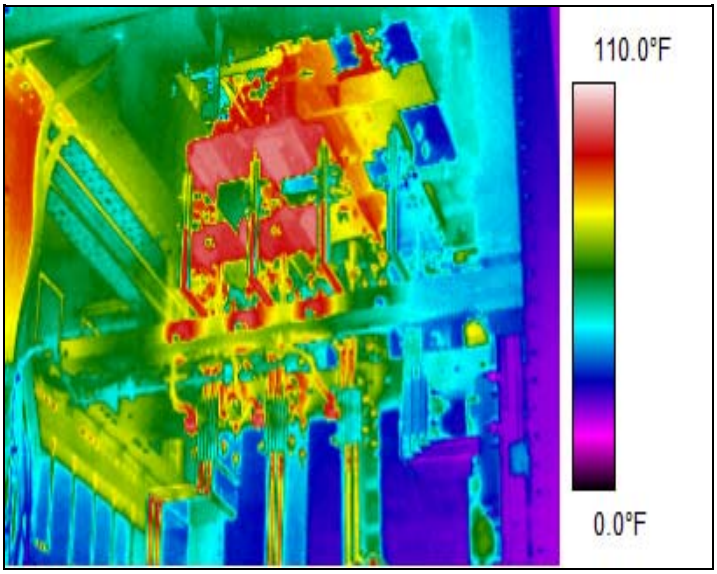
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Main Electrical Room \ MSB \ Section 3 \ Bus Load Out (Top)

Barcode:



NOTES:

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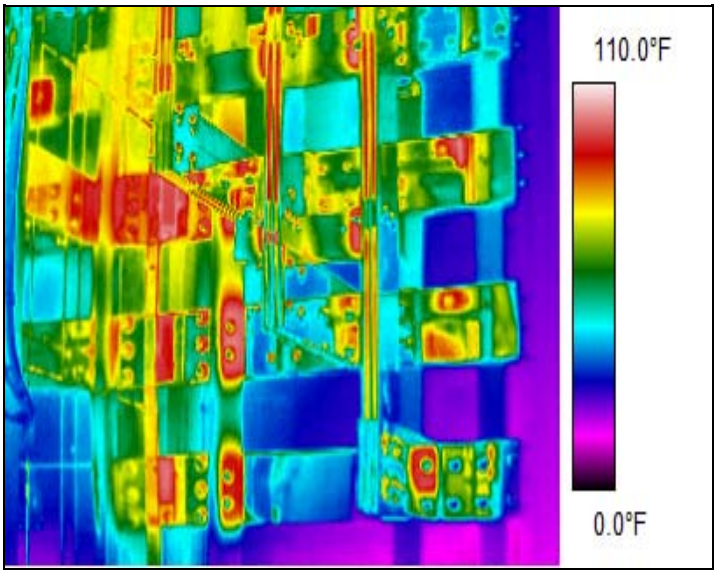
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Main MCC Building \ Main Electrical Room \ MSB \ Section 3 \ Bus Load Out (Bottom)

Barcode:



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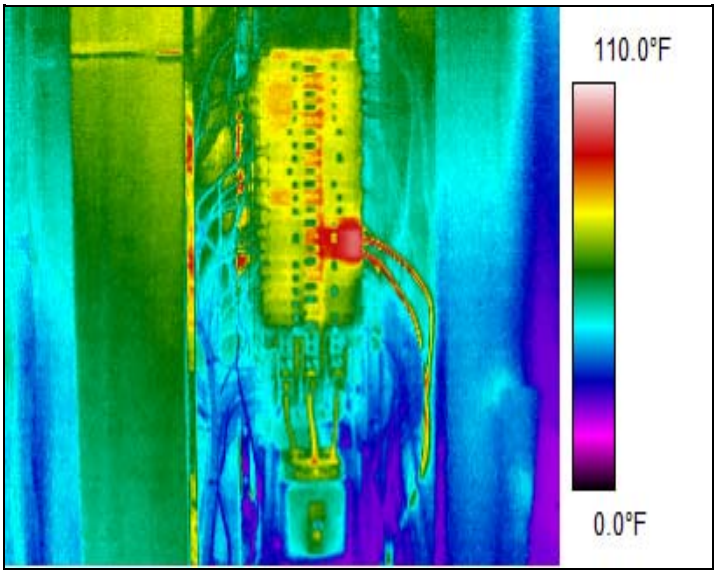
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Ras Control Building \ Breaker Panel DPC 3

Barcode: 254875



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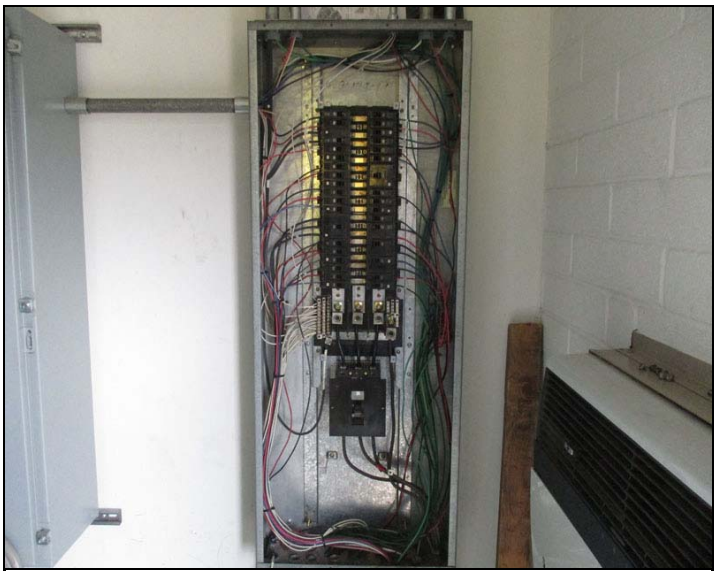

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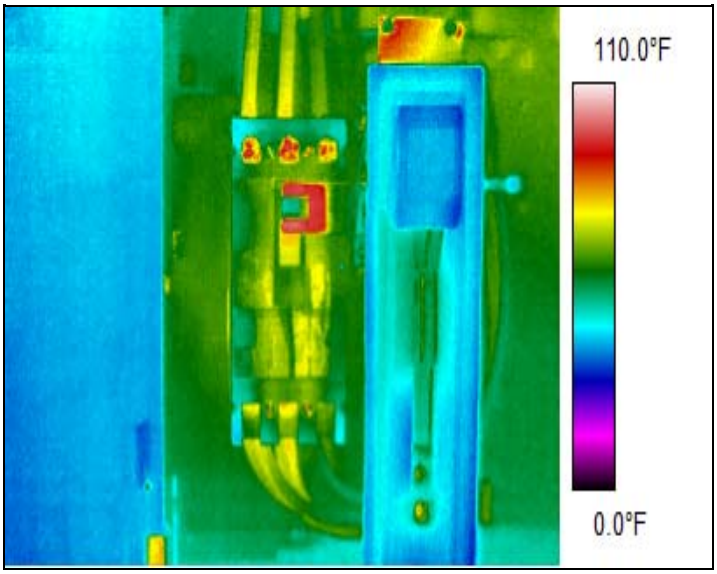
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Ras Control Building \ MCC-L \ #5 Main Disconnect

Barcode:



NOTES:

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Inspection Date: 2/26/2019 **Inspection Number: 17774**

Ras Control Building \ MCC-LA \ #5 Main Disconnect

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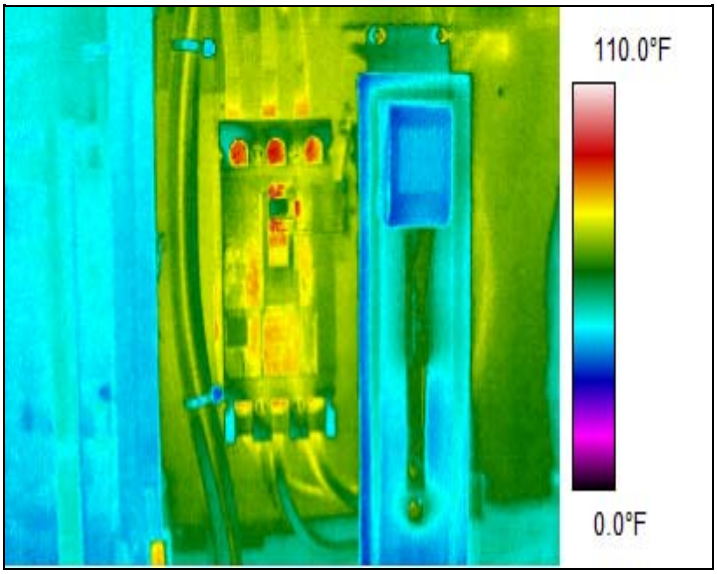

NOTES:

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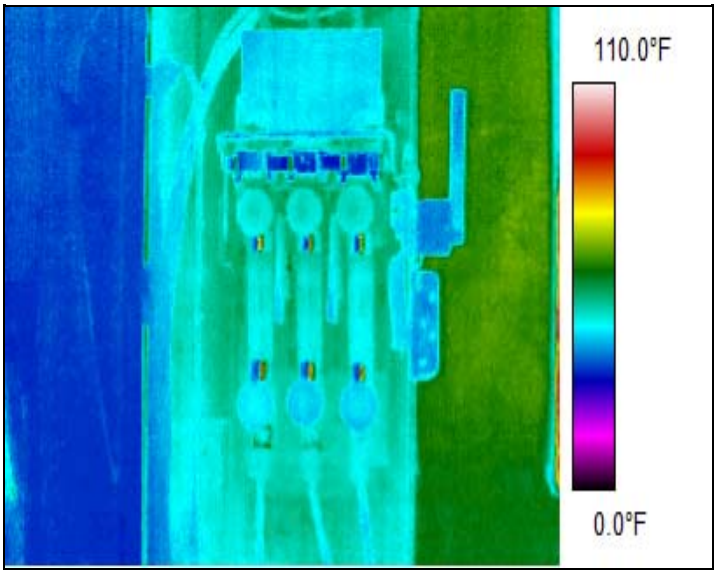
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

East B.N.R. MCC \ Panel B-6-1 200A Fused Disconnect

Barcode: 254874



NOTES:

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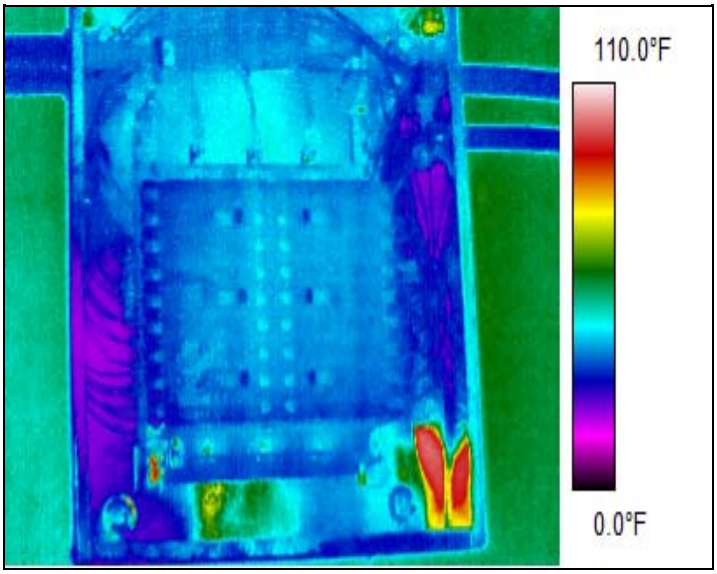
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

East B.N.R. MCC \ Breaker Panel B-6-1

Barcode: 254886



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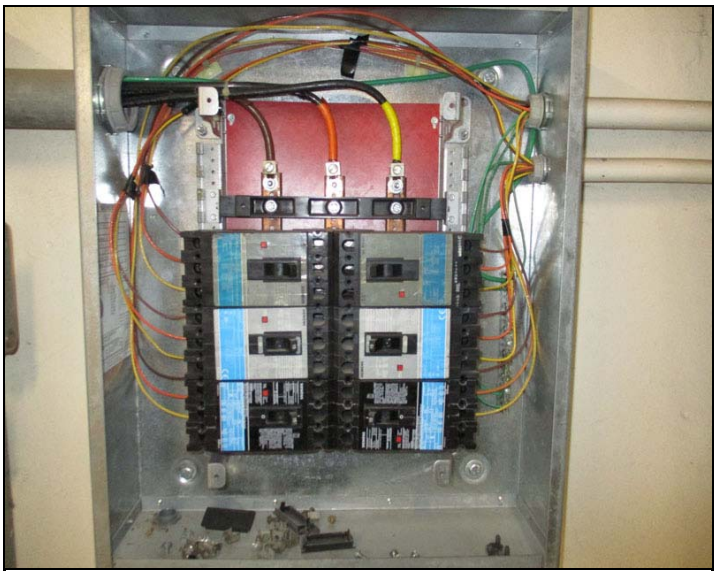

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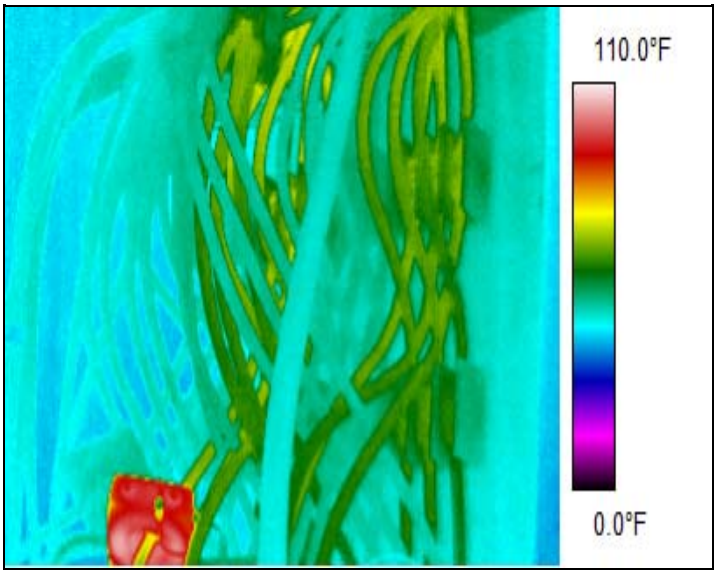
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

East B.N.R. MCC \ East BNR Lower Splice Box

Barcode: 254888



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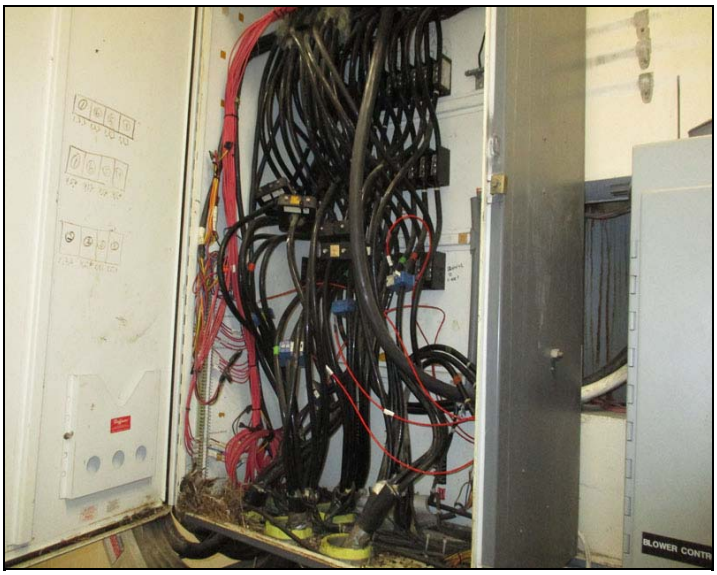

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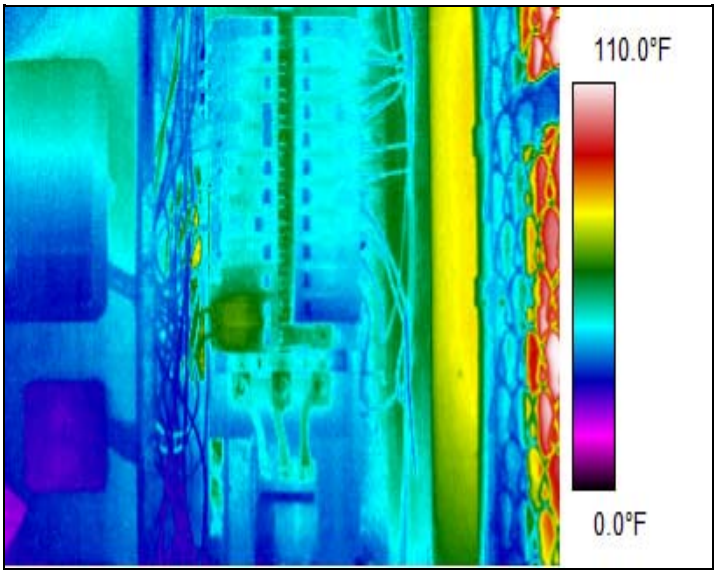
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

East B.N.R. MCC \ Breaker Panel F-1

Barcode: 254894



NOTES:

AMPS:

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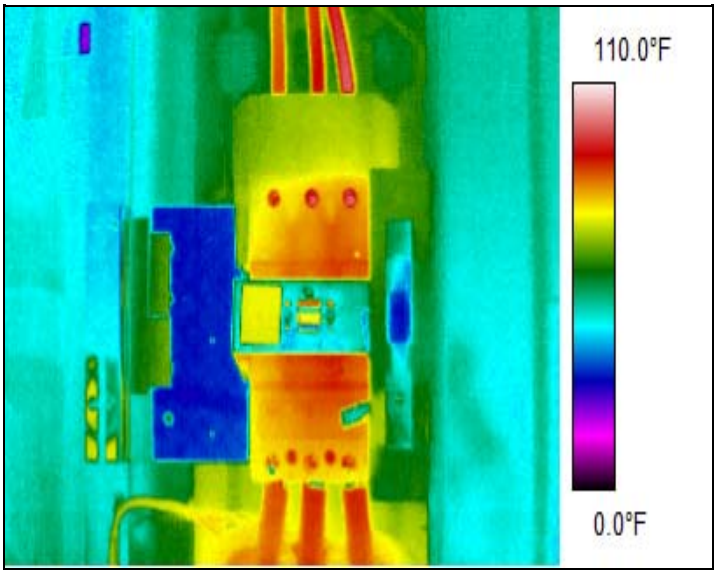
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

East B.N.R. MCC \ MCC-D1 \ Section 1 \ MCC D1 Main

Barcode:



NOTES:

AMPS:

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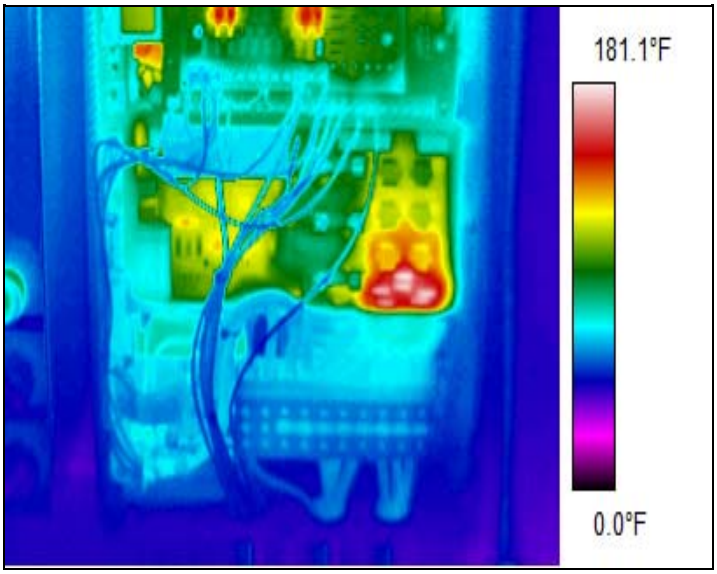
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

FEB Control Room \ Feb Pump #3 VFD

Barcode: 254891



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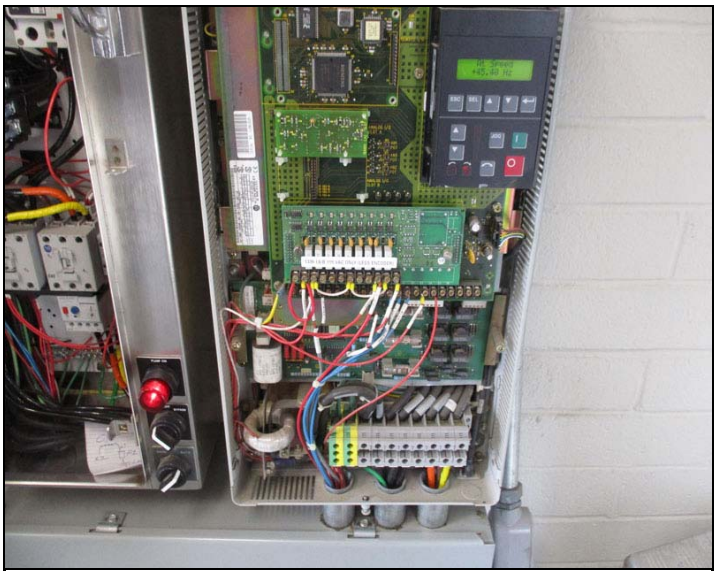

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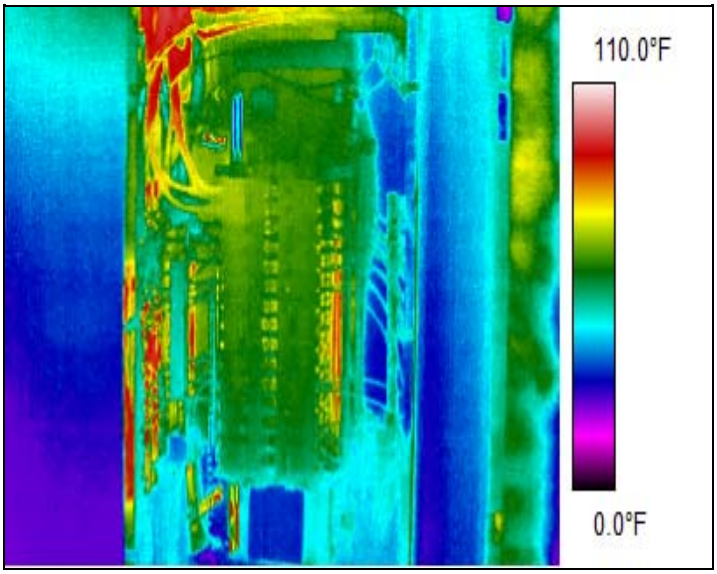
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

FEB Control Room \ Breaker Panel DPC1A

Barcode: 254894



NOTES:

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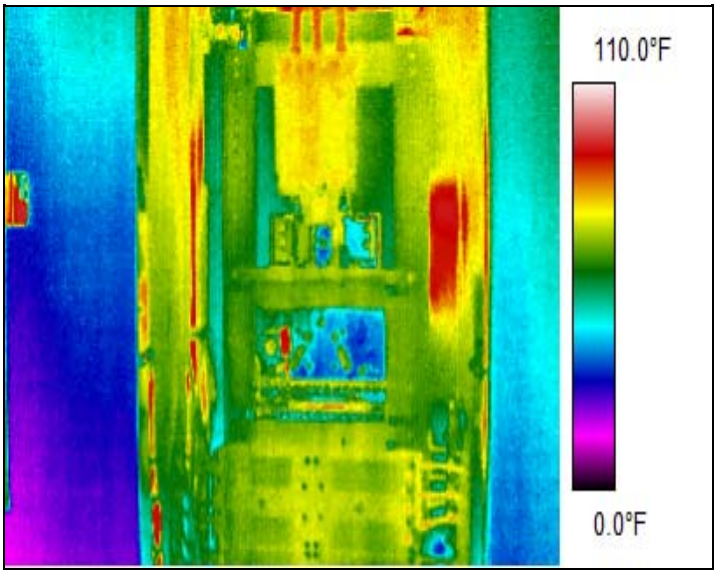
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

FEB Control Room \ Breaker Panel DPP1A

Barcode: 254893



NOTES:

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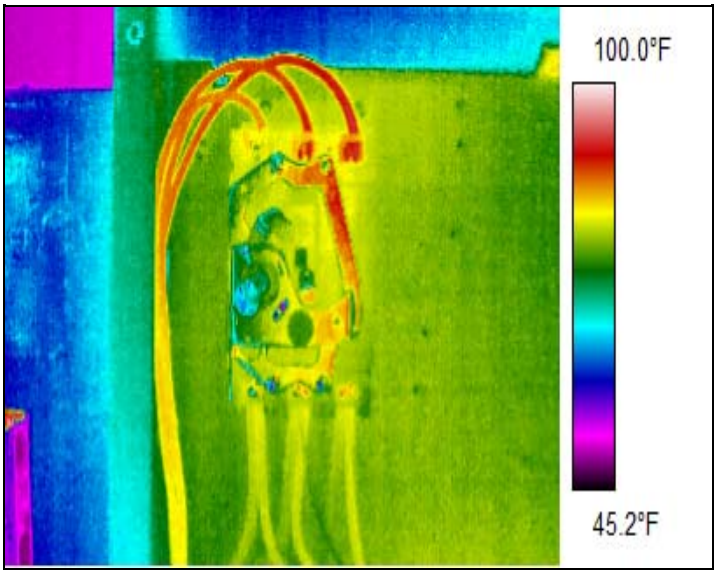
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

FEB Control Room \ Feb Pump VFD #1

Barcode:



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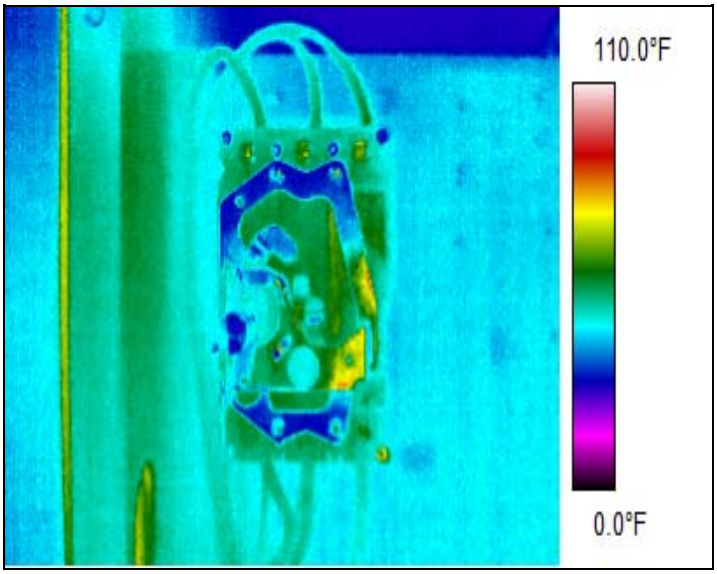
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

FEB Control Room \ Feb Pump VFD #2

Barcode: 254884



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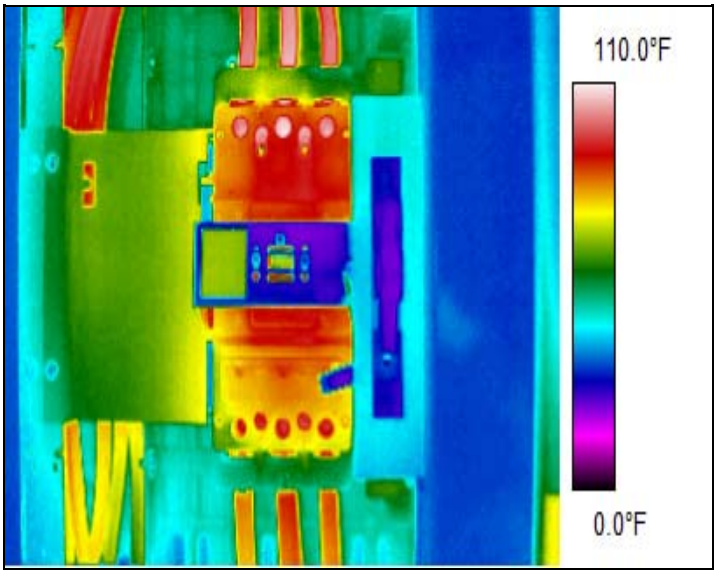
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

West BNR MCC Building \ MCC Room \ Process Blower 2ME-04A

Barcode:



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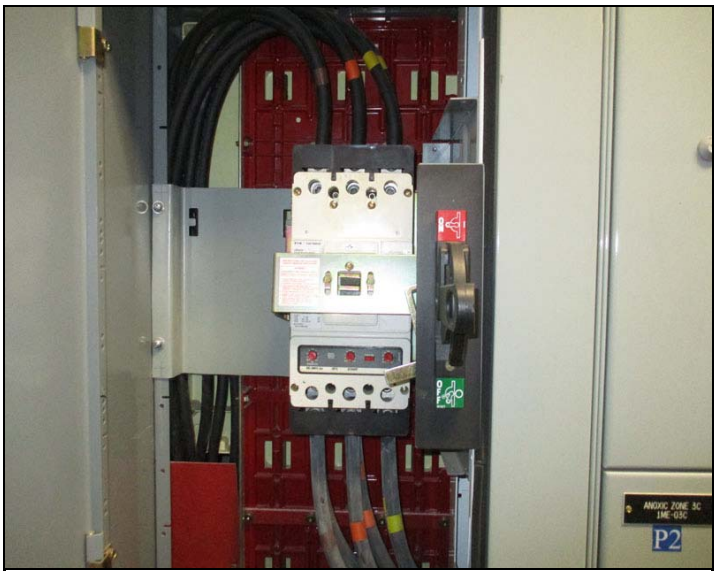

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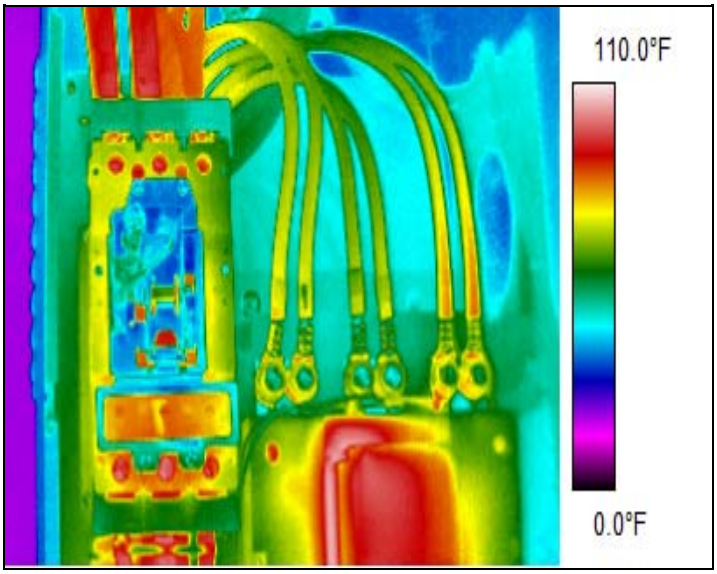
Inspection Date: 2/26/2019 **Inspection Number: 17774**

West BNR MCC Building \ MCC Room \ RVSS-690 2ME-04A Control Panel

Barcode: 254904



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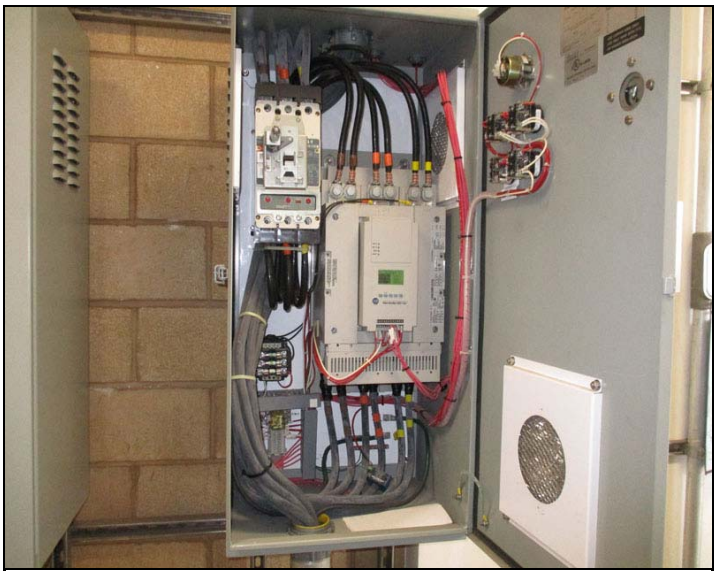

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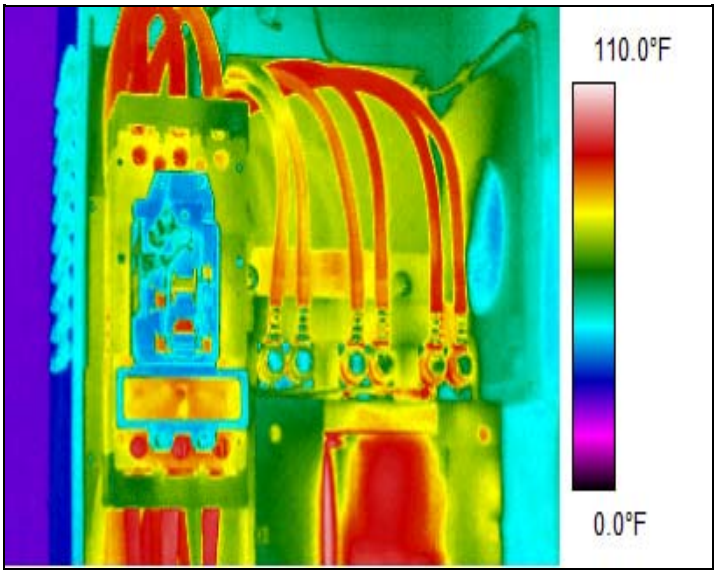
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

West BNR MCC Building \ MCC Room \ RVSS-680 2ME-03A Control Panel

Barcode: 254899



NOTES:

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P: 770.590.7449

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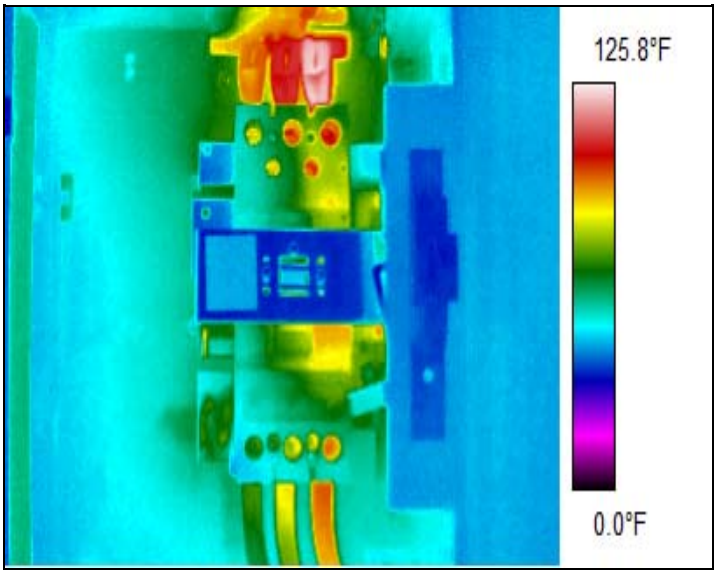
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

West BNR MCC Building \ MCC Room \ MCC-P \ Section 5 \ Process Blower 2ME-01

Barcode:



NOTES:

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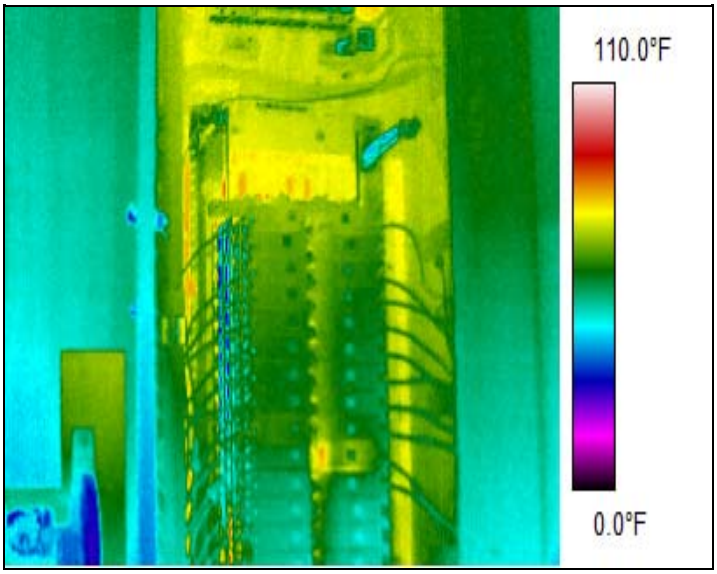
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

West BNR MCC Building \ MCC Room \ MCC-P \ Section 10 \ 125AMP Panel LP-1

Barcode: 254902



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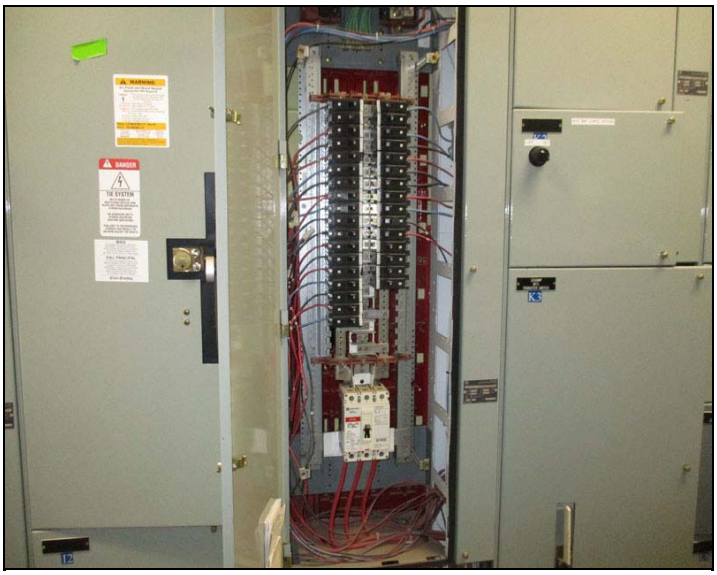

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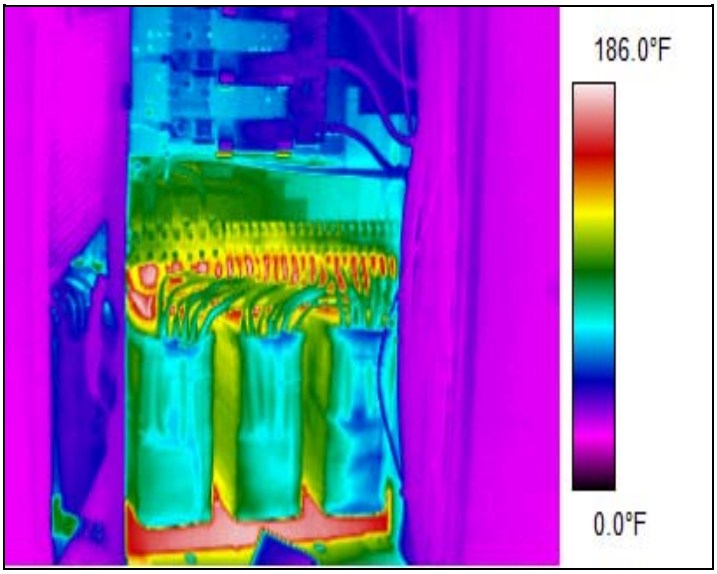
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

West BNR MCC Building \ MCC Room \ MCC-P \ Section 10 \ XFMR LP-1 37.5 kVA

Barcode:



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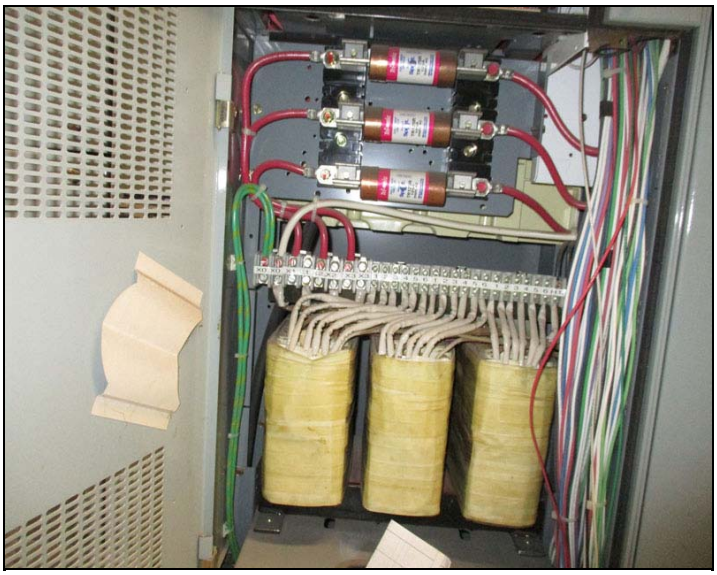

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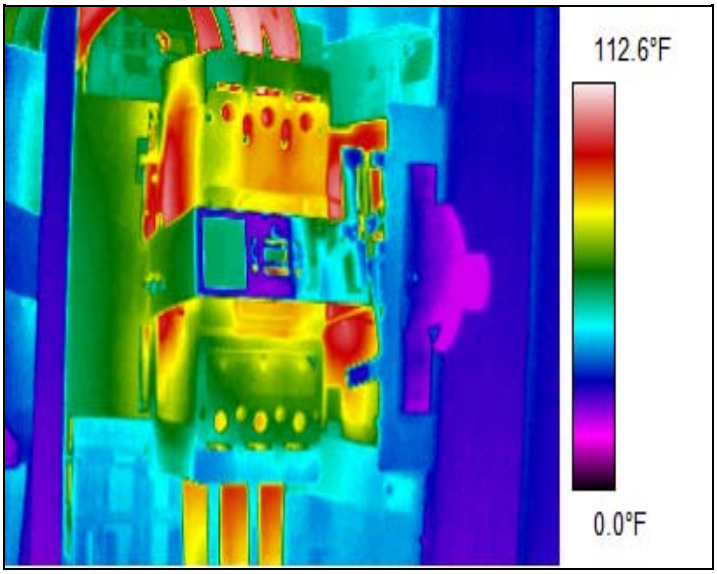
Inspection Date: 2/26/2019 **Inspection Number: 17774**

West BNR MCC Building \ MCC Room \ MCC-P \ Section 14 \ Process Blower 2ME-03A

Barcode:



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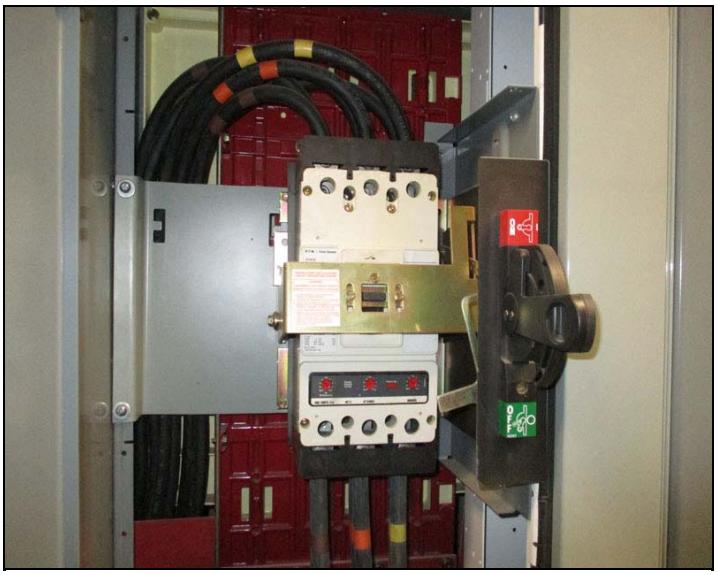

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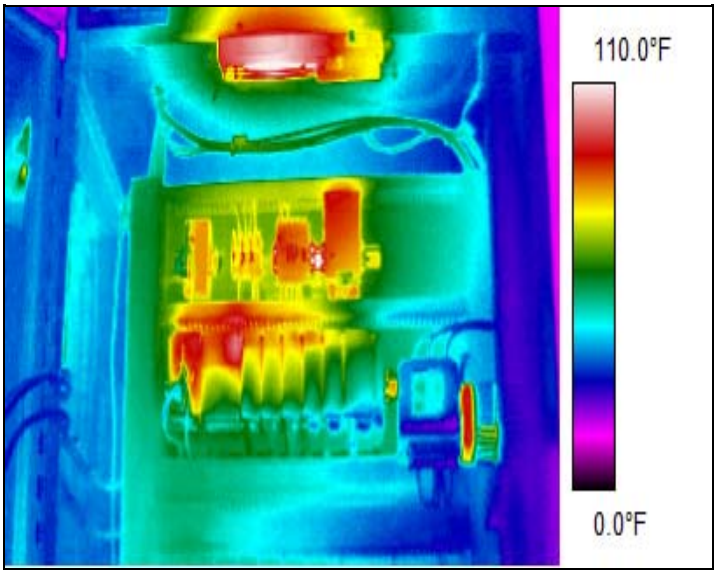
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

West BNR MCC Building \ Blower Room \ LCP-1 Control Panel

Barcode: 254903



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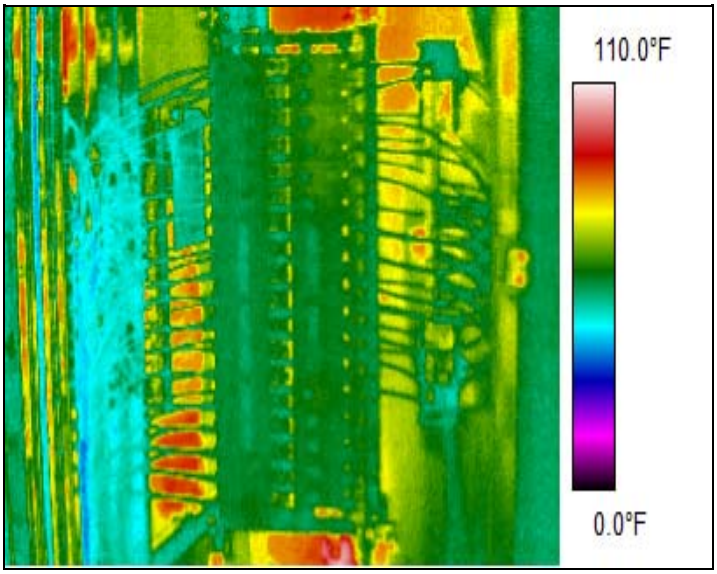
Inspection Date: 2/26/2019 **Inspection Number: 17774**

Dewatering Building \ Breaker Panel DPC 4

Barcode: 254926



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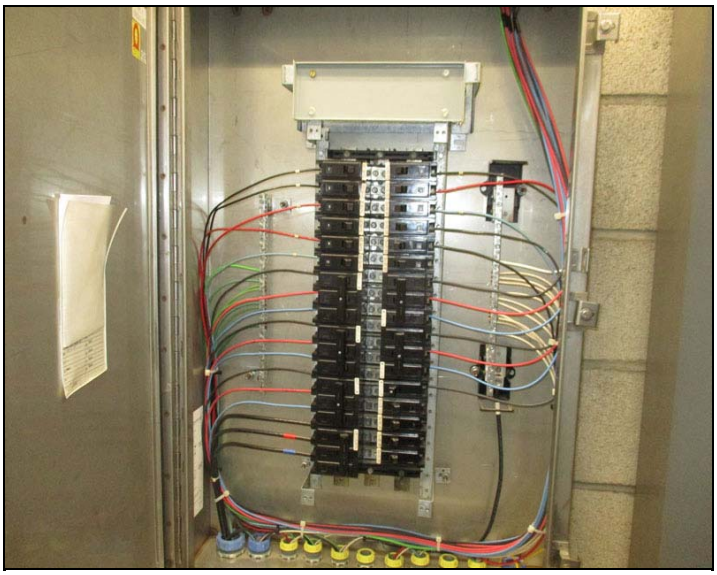

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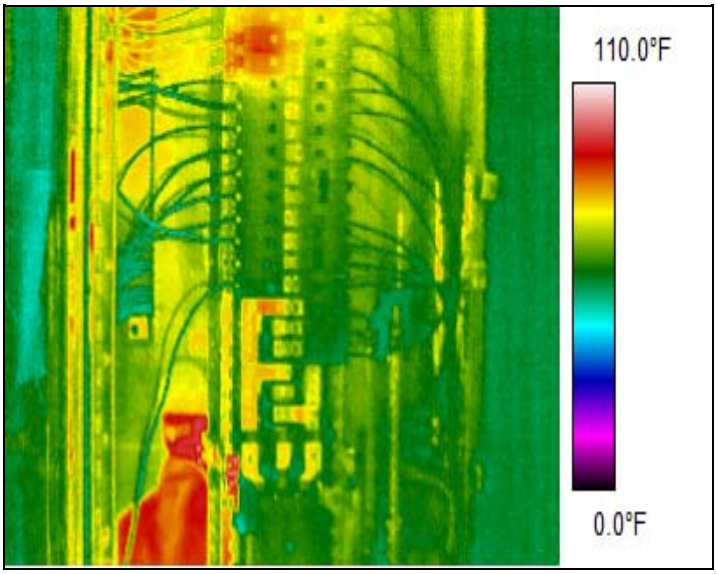
Inspection Date: 2/26/2019 **Inspection Number: 17774**

Dewatering Building \ Breaker Panel DPL 4

Barcode: 254920



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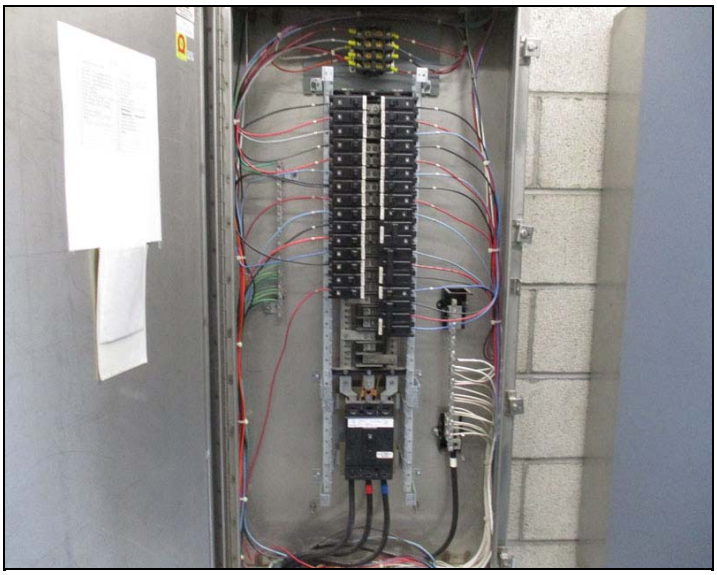

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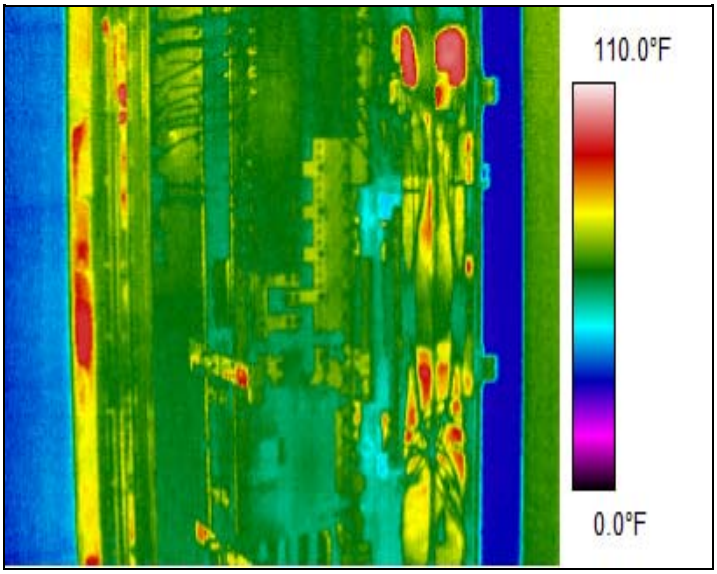
Inspection Date: 2/26/2019 **Inspection Number: 17774**

Dewatering Building \ Breaker Panel DMP 2

Barcode: 254919



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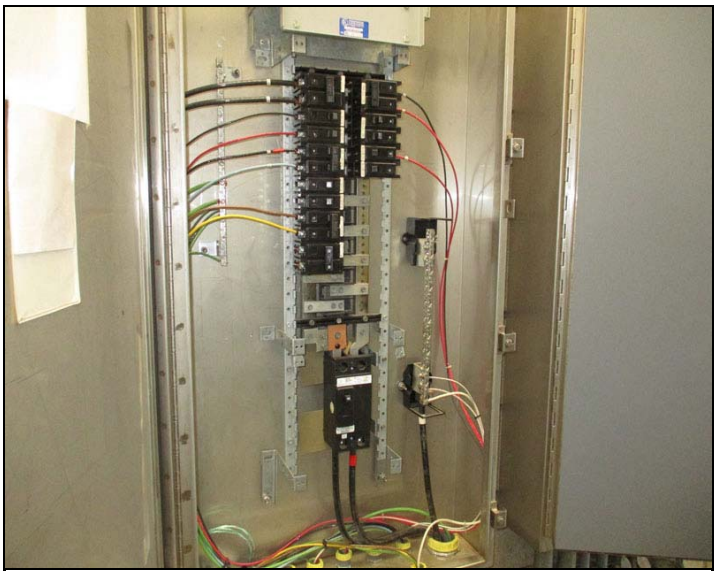

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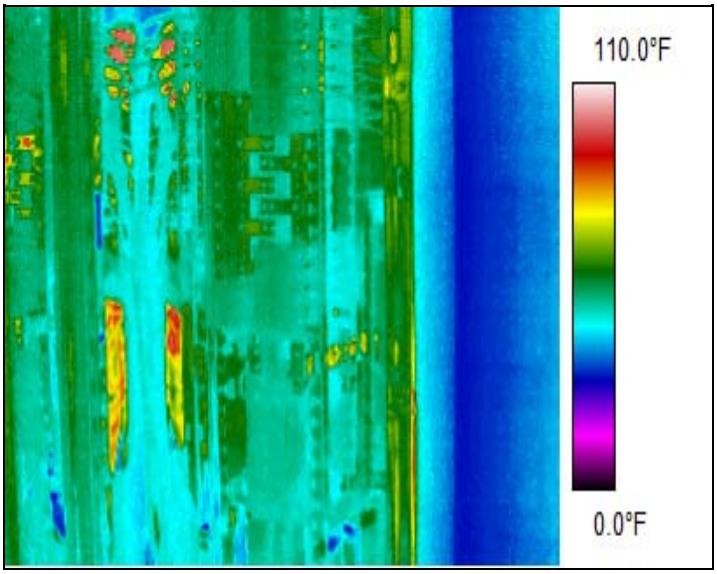
Inspection Date: 2/26/2019 **Inspection Number: 17774**

Dewatering Building \ Breaker Panel DPM-1

Barcode: 254918



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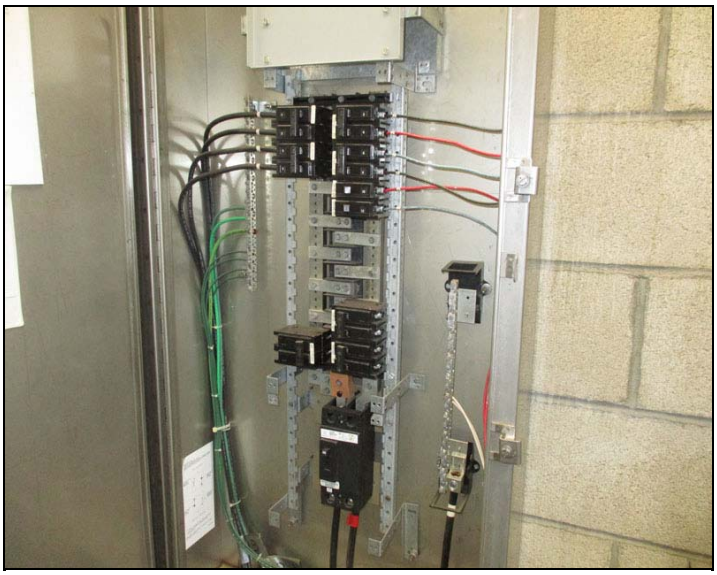

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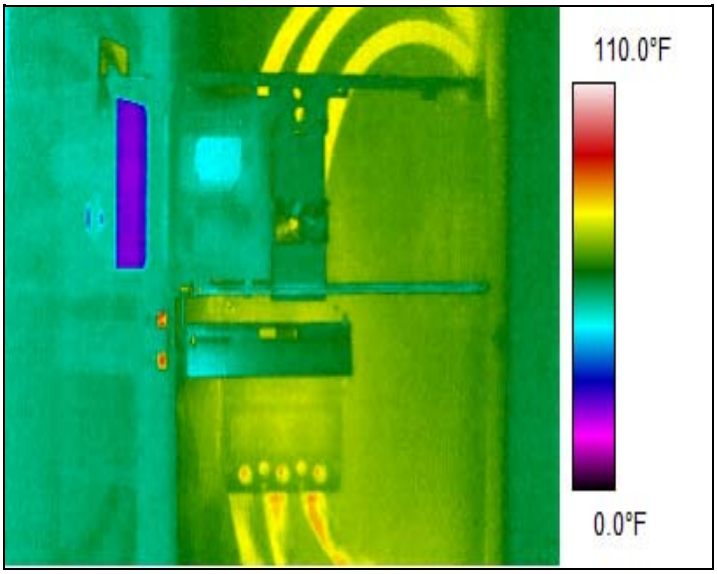
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Dewatering Building \ MCC-N \ Section 1 \ Main 400A Breaker

Barcode:



NOTES:

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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Dewatering Building \ MCC-N \ Section 8 \ #36 Main 400A Breaker #2

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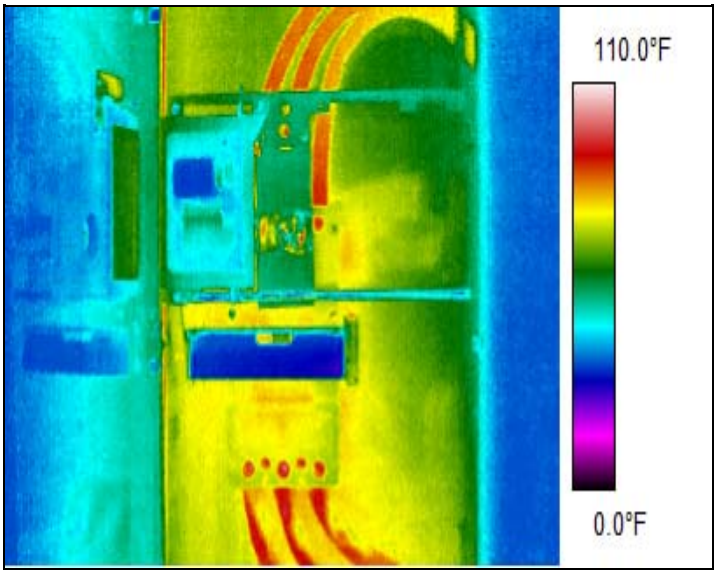

NOTES:

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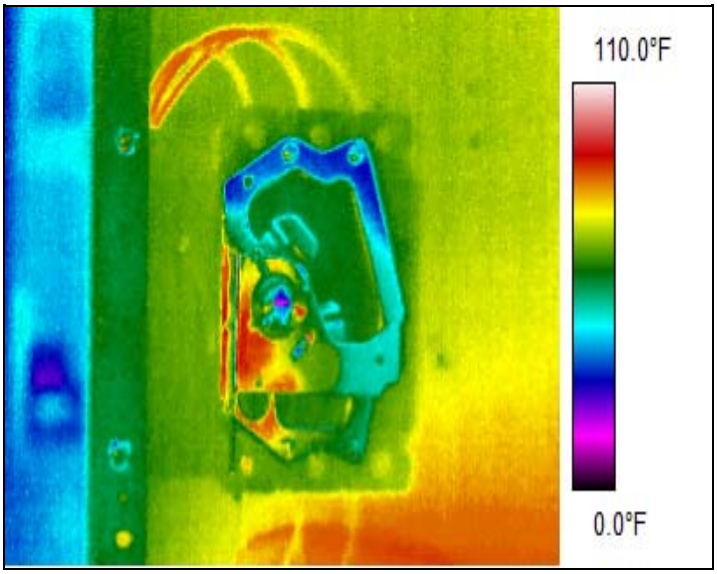
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Dewatering Building \ Sludge Feed Pump Cabinet \ Section 1 \ Sludge Feed Pump 1

Barcode: 254916



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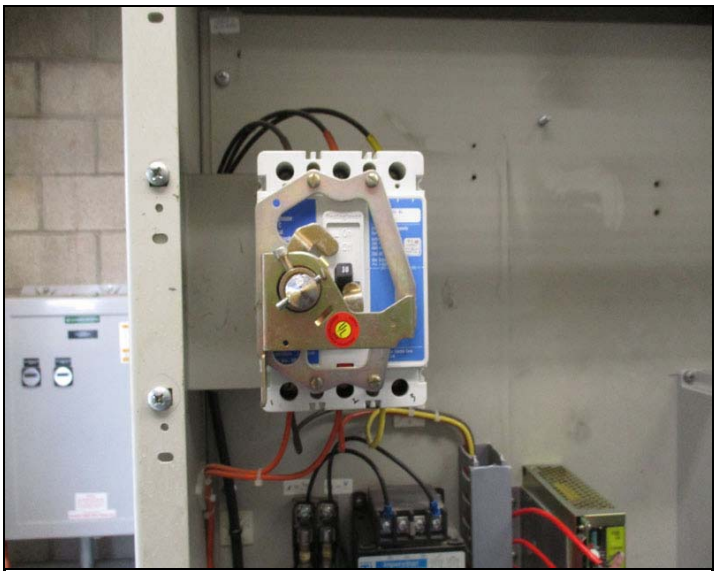

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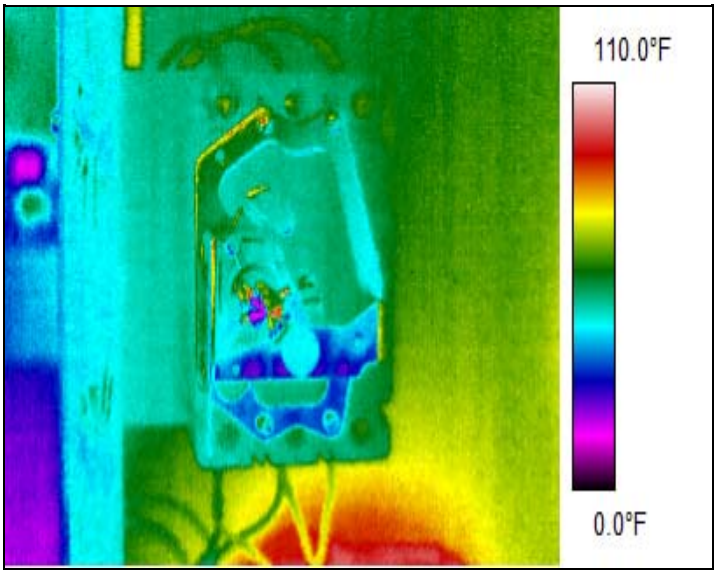
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Dewatering Building \ Sludge Feed Pump Cabinet \ Section 1 \ Sludge Feed Pump 2

Barcode: 254915



NOTES:

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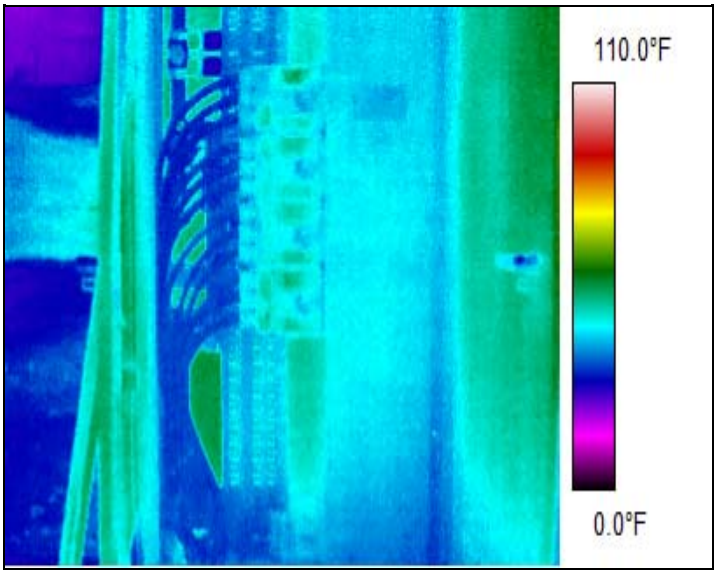
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Solar Array \ Solar Array Switchgear \ Section 1

Barcode:



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Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Solar Array \ Solar Array Switchgear \ Section 3 \ Breaker Panel

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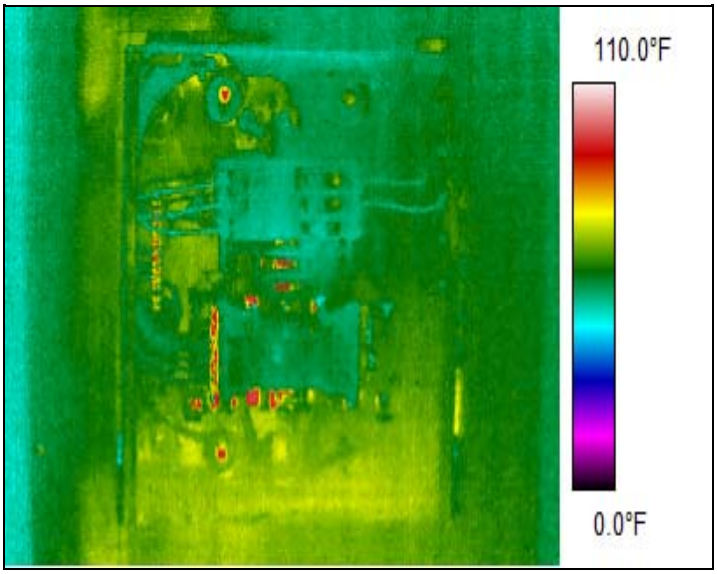

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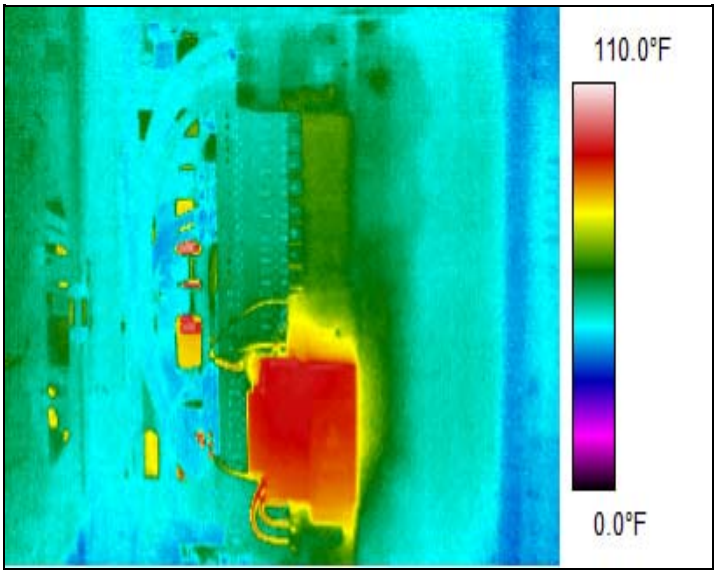
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Solar Array \ Solar Array Switchgear \ Section 4 \ Distribution Switchboard

Barcode: 254923



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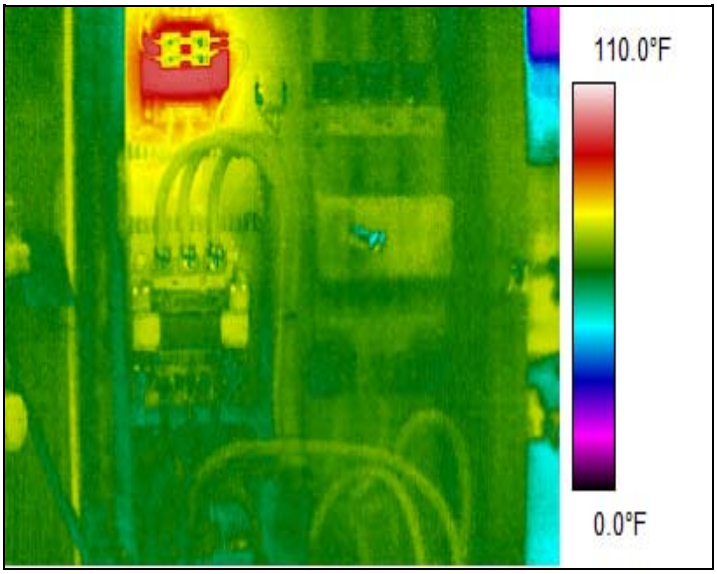
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Reclaim Station \ MP-1 Water Pump Starter

Barcode: 254929



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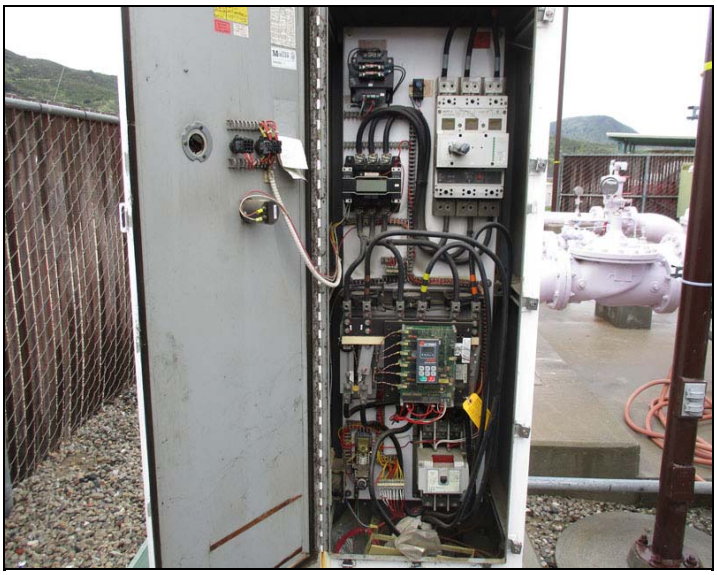

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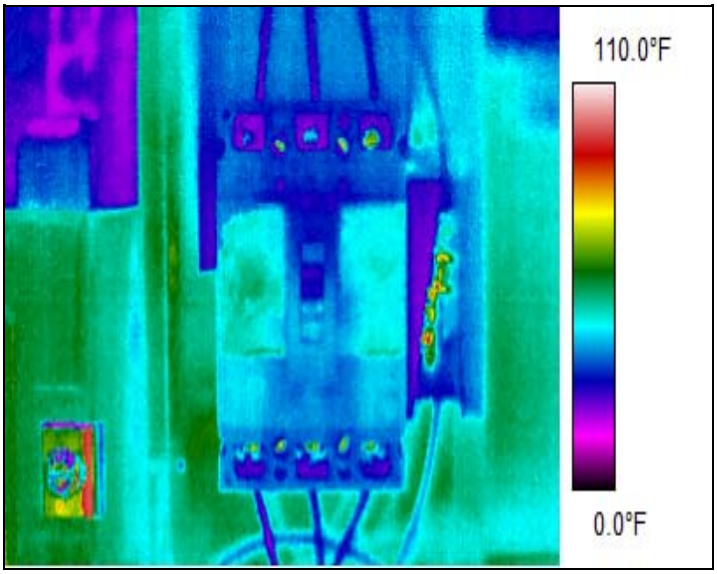
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Reclaim Station \ MG-1 15A Breaker

Barcode: 254932



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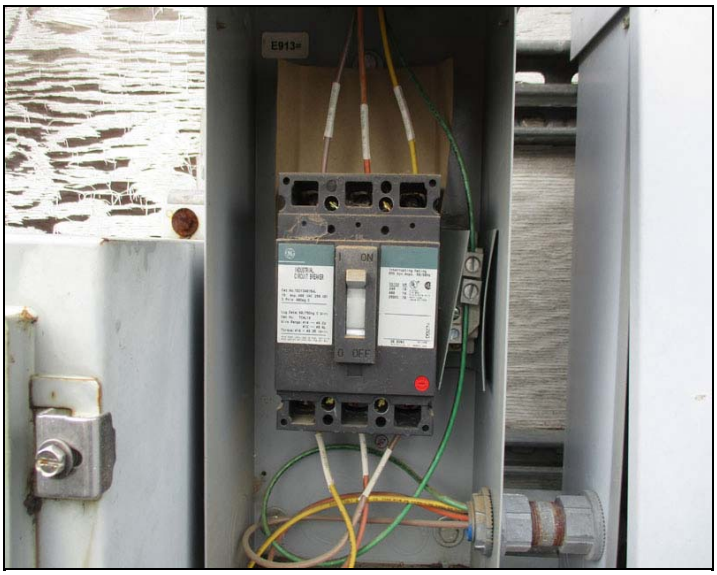

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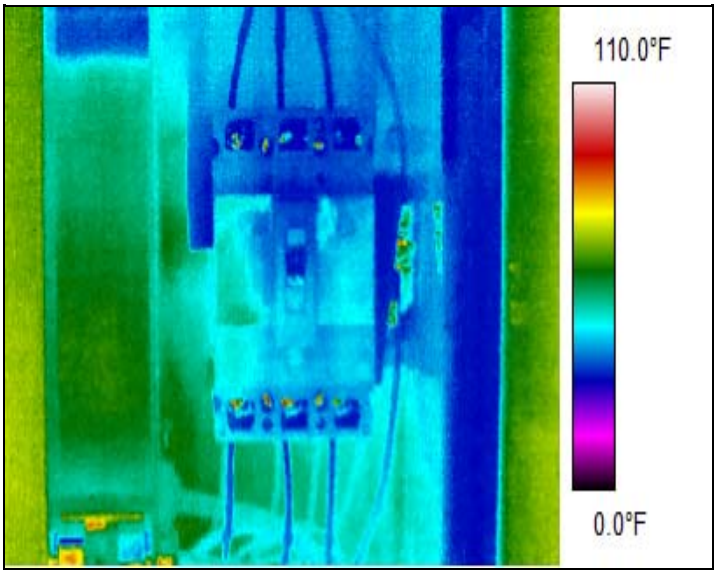
Inspection Date: 2/26/2019 **Inspection Number: 17774**

Reclaim Station \ MV-1 15A Breaker

Barcode: 254931



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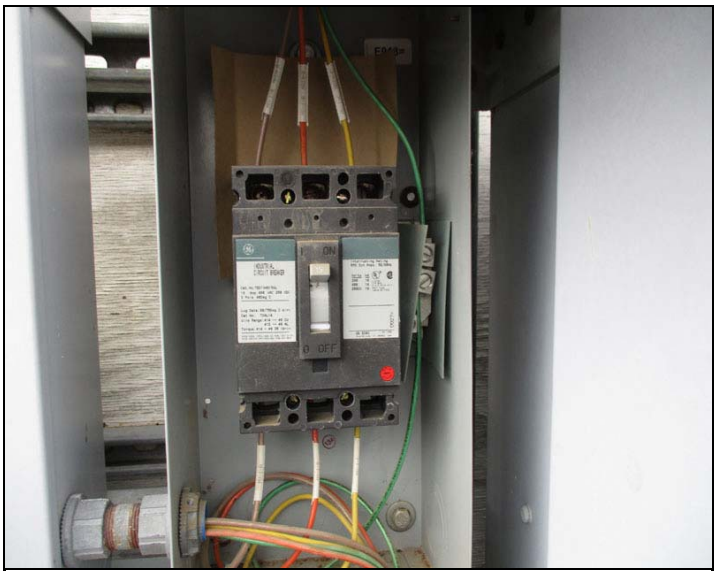

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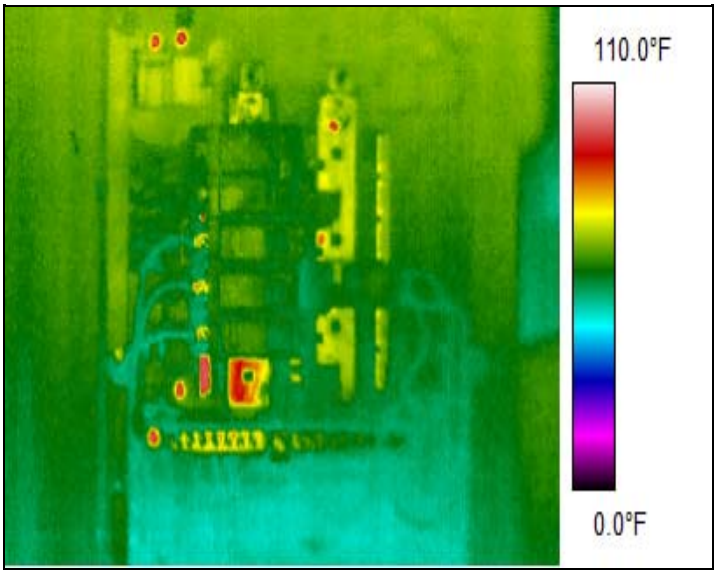
Reclaim Station \ MCP Breaker Panel

Barcode: 254933



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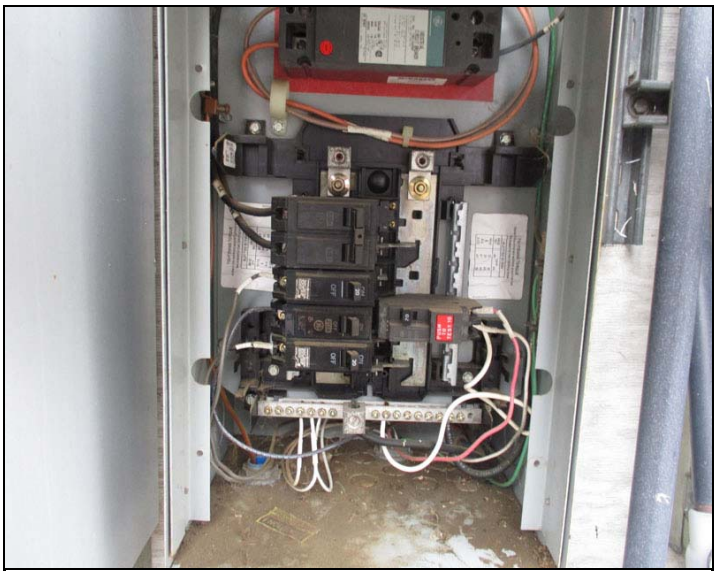

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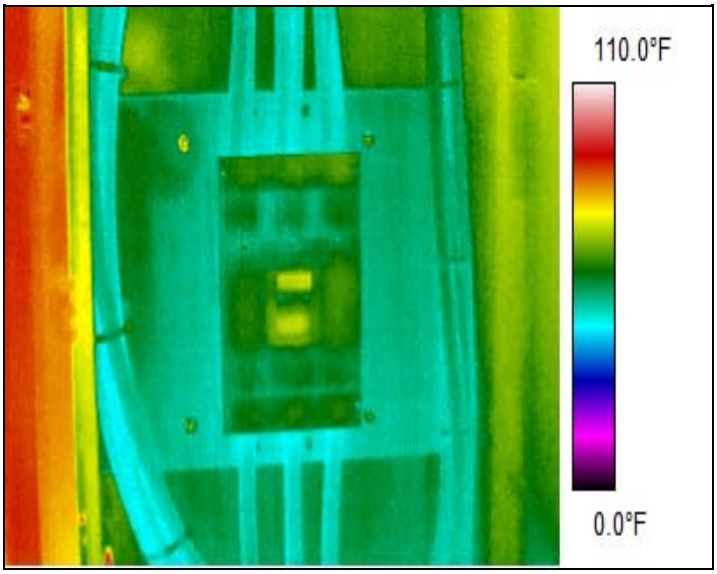
Reclaim Station \ Main 400A Breaker

Barcode: 254927



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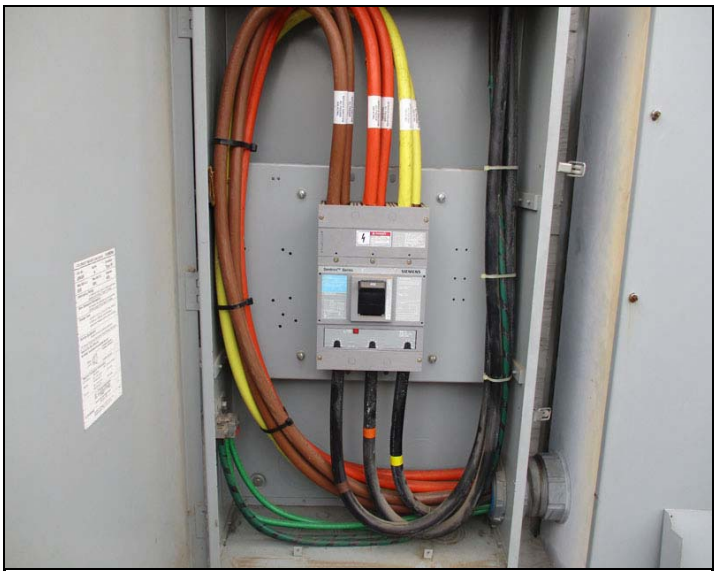

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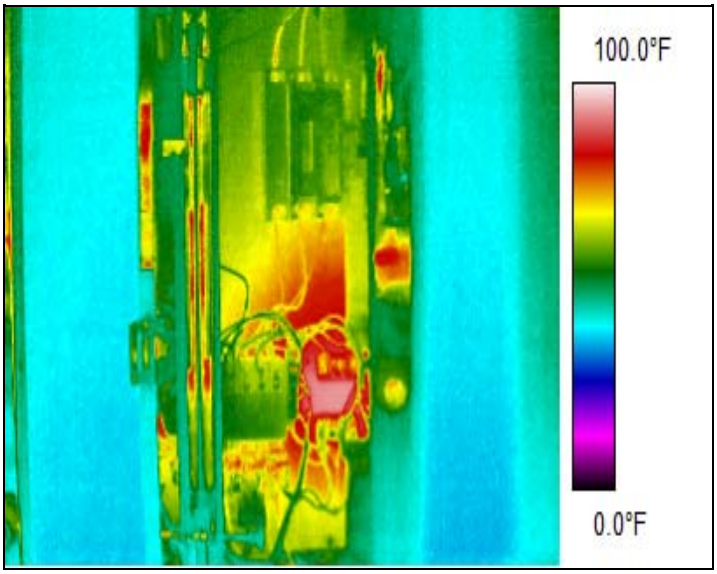
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Primary Basement \ Primary Sludge Pump #1 Controller

Barcode: 254939



NOTES:

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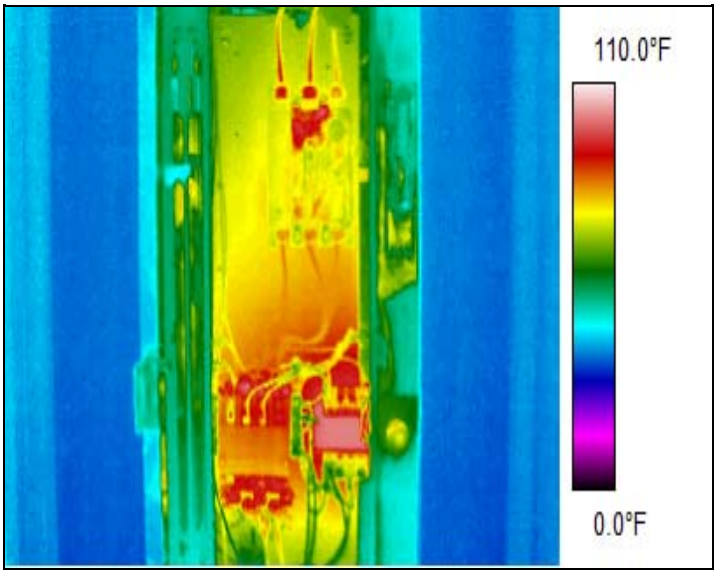
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Primary Basement \ Primary Sludge Pump #2 Controller

Barcode: 254938



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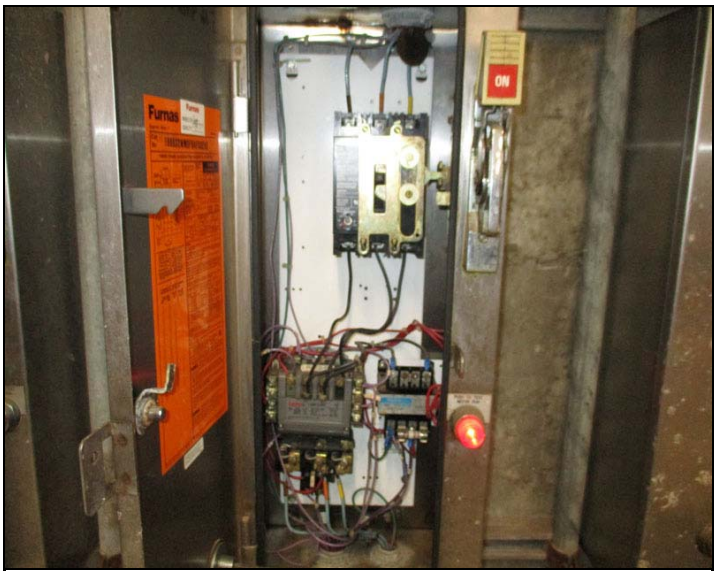

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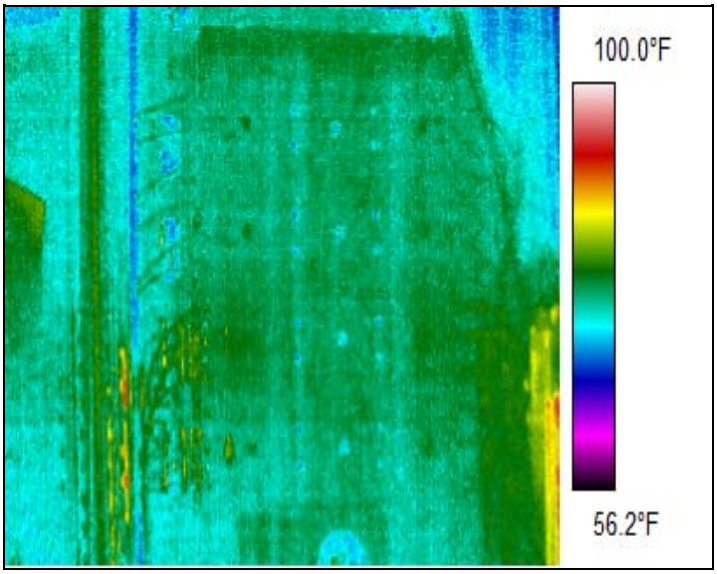
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Primary Basement \ Breaker Panel DPP

Barcode: 254940



NOTES:

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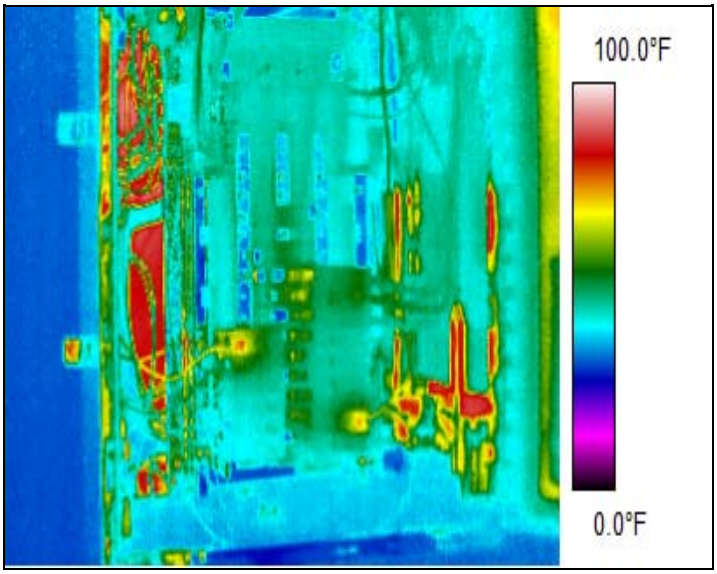
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Primary Basement \ Breaker Panel DPLC6

Barcode: 254935



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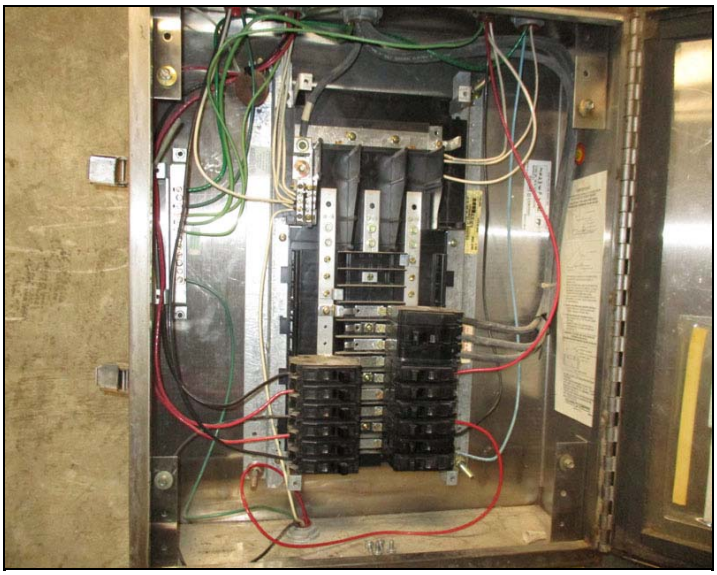

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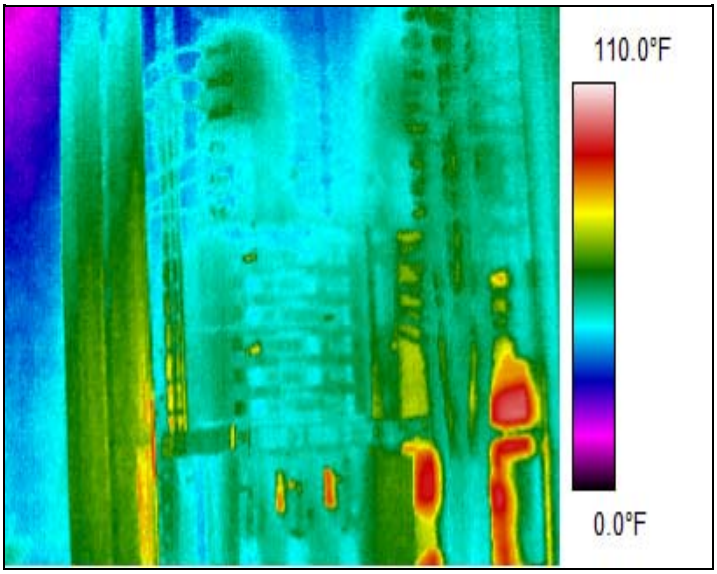
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Headworks Building \ Breaker Panel BD

Barcode: 254949



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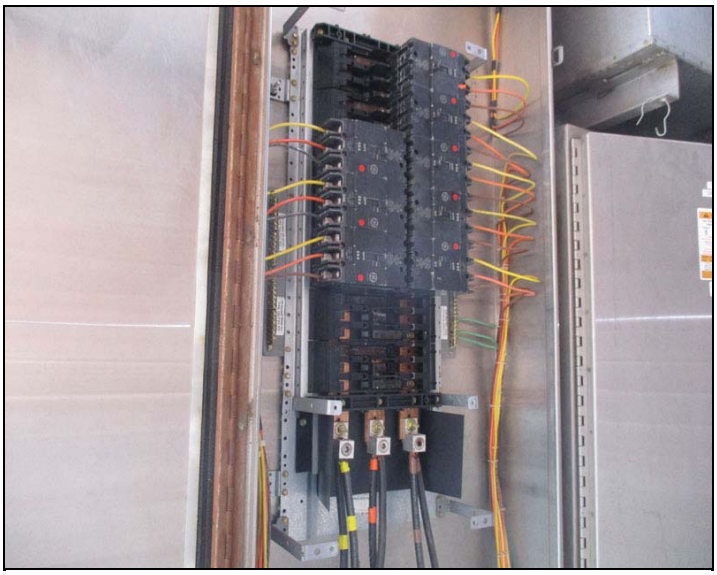

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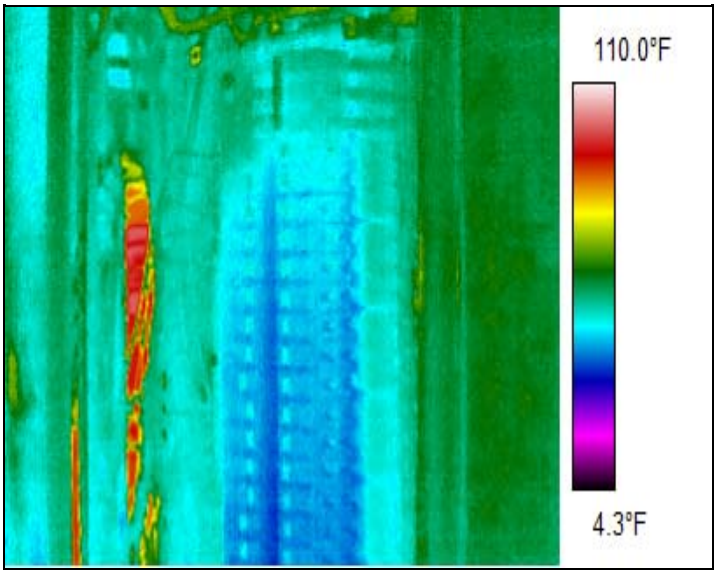
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Headworks Building \ Breaker Panel BS

Barcode: 254948



NOTES:

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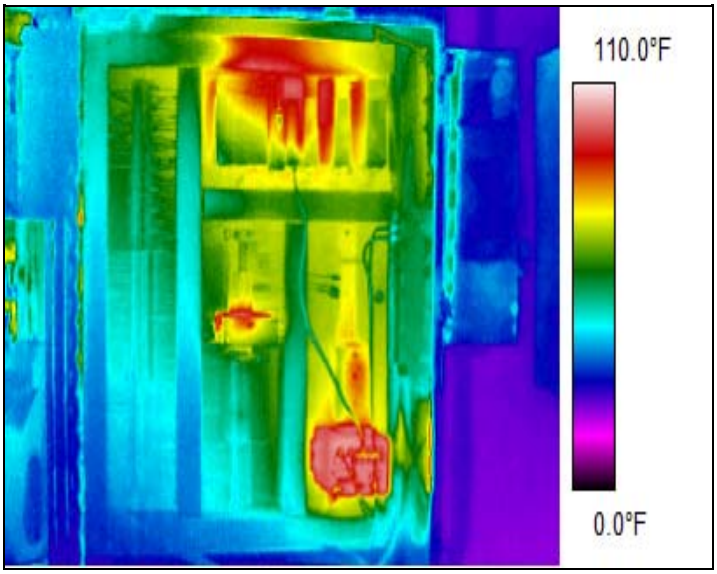
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Headworks Building \ PLC-2 Control Panel

Barcode: 254960



NOTES:

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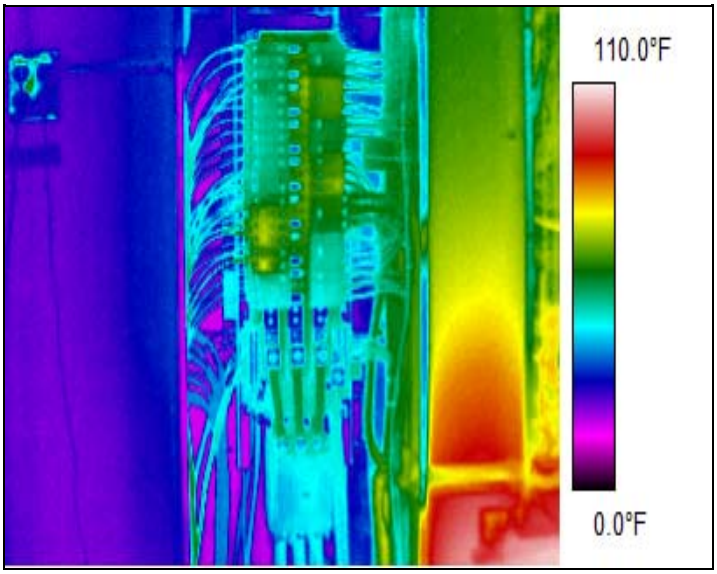
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Operations Building \ Maintenance Shop \ Breaker Panel LPA3

Barcode: 254956



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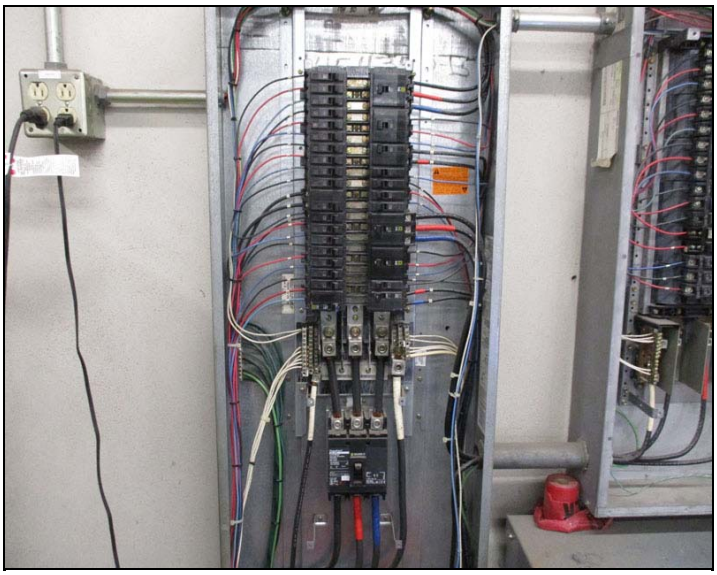

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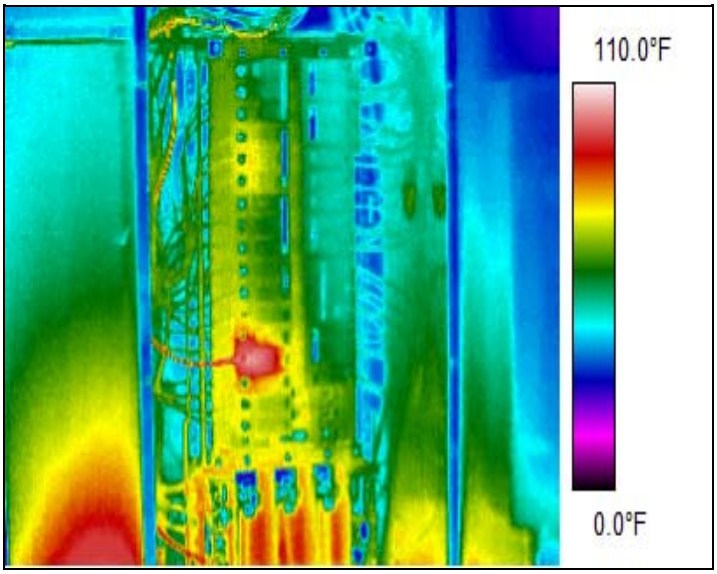
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Operations Building \ Maintenance Shop \ Breaker Panel LPA3 A

Barcode: 254957



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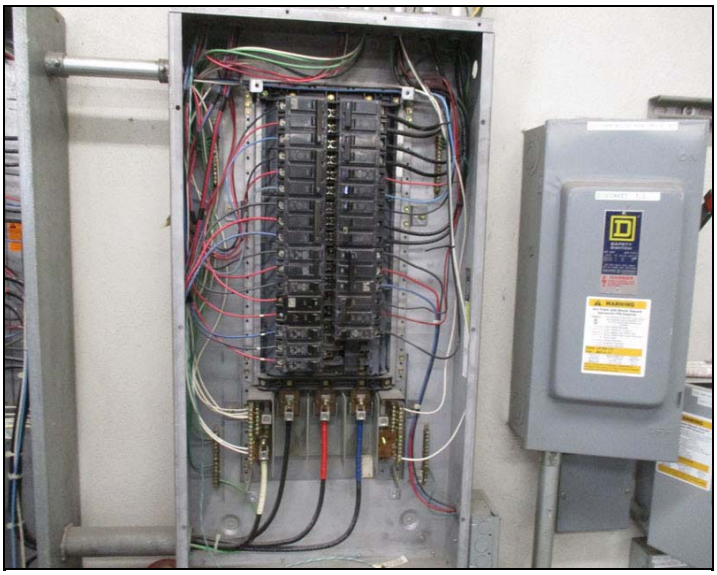

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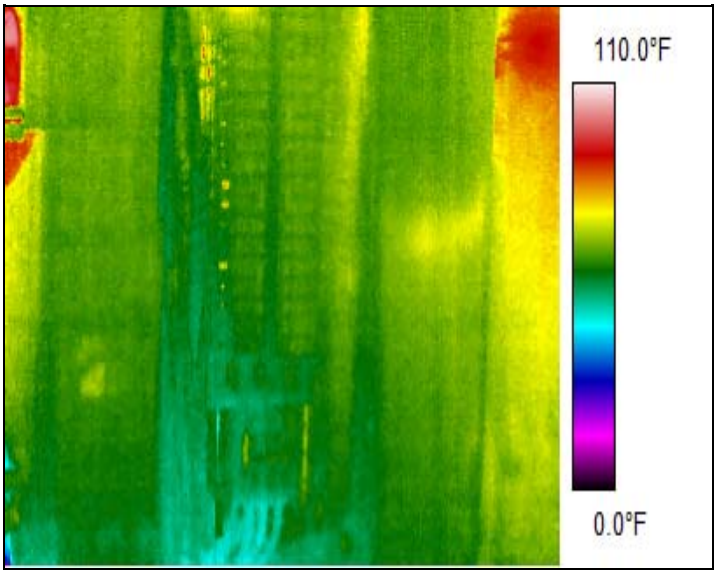
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Operations Building \ Sample Room \ Breaker Panel LPA-2

Barcode: 254963



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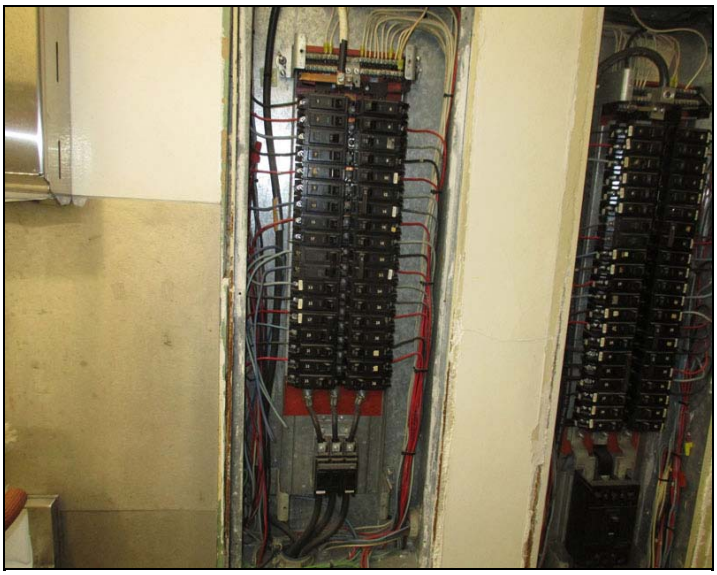

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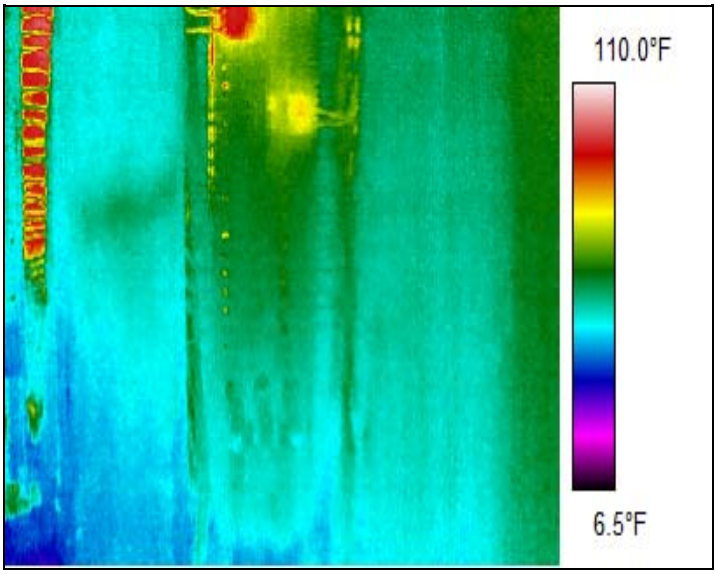
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Operations Building \ Sample Room \ Breaker Panel LPA-1

Barcode: 254954



NOTES:

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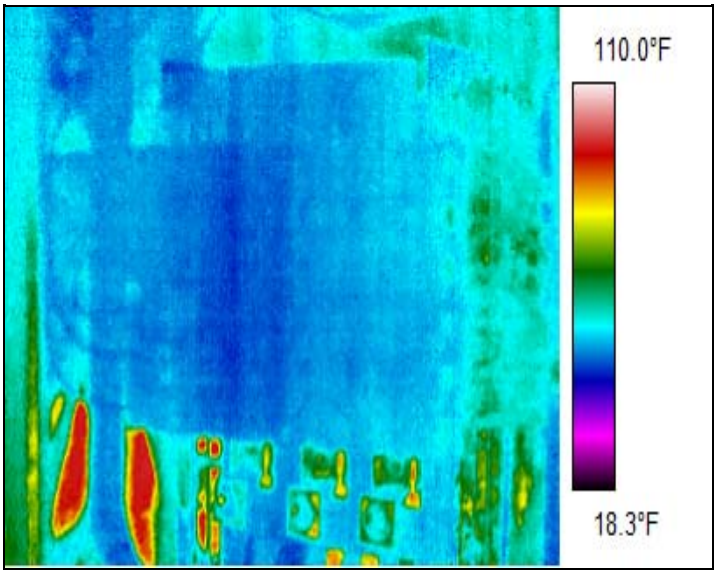
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Operations Building \ Storage Site #22 \ Breaker Panel DEP

Barcode: 254970



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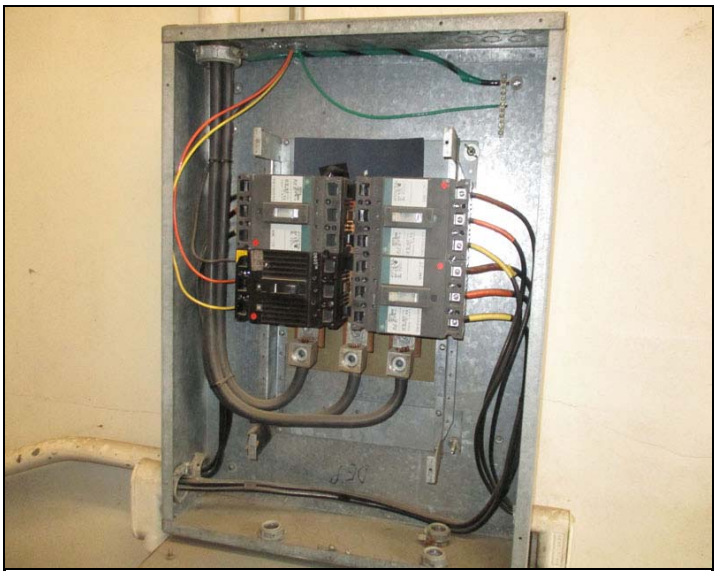

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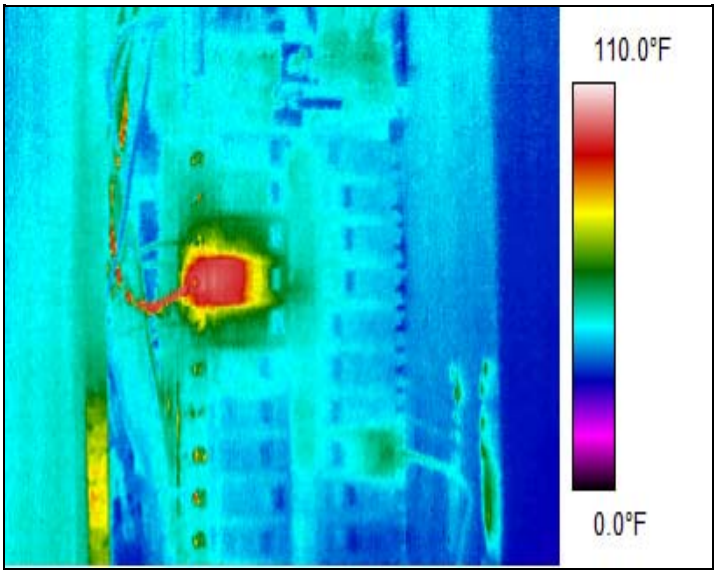
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Operations Building \ Storage Site #22 \ Breaker Panel EP

Barcode:



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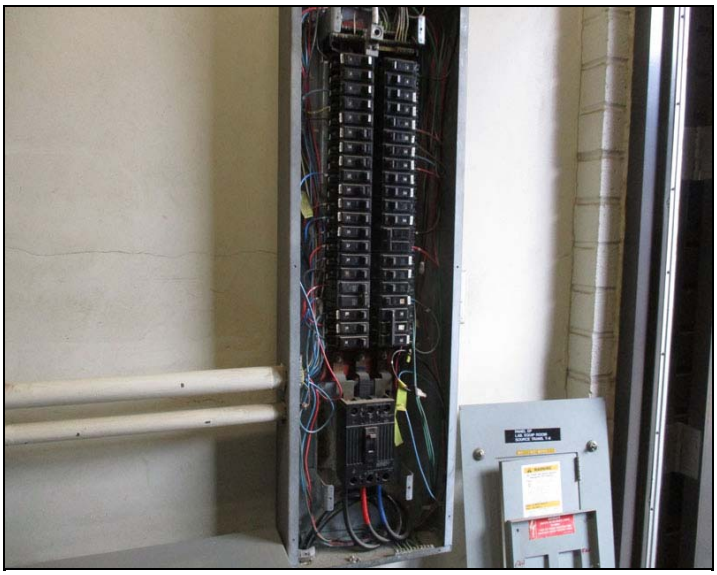

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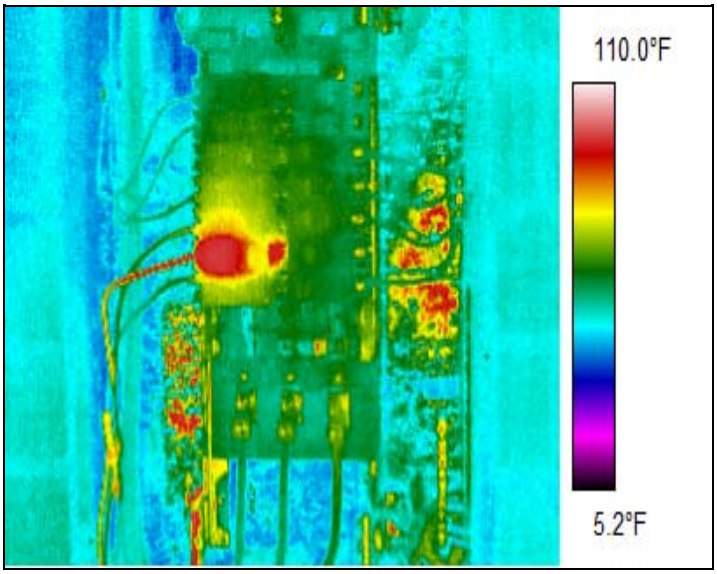
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Operations Building \ Helm \ Breaker Panel C

Barcode: 254964



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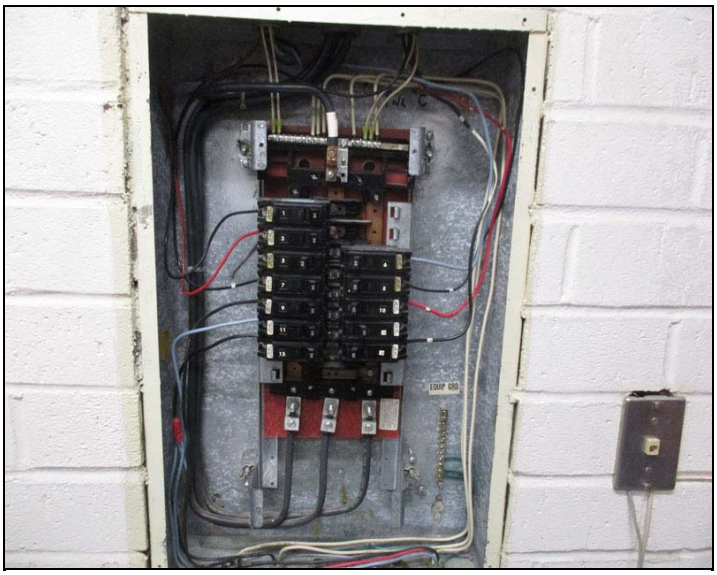

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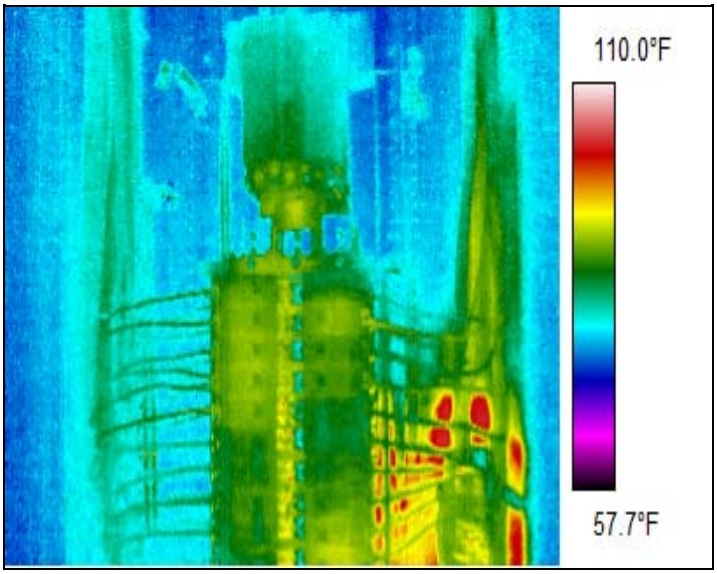
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Operations Building \ Laboratory Lab Offices \ Breaker Panel LPL

Barcode: 254973



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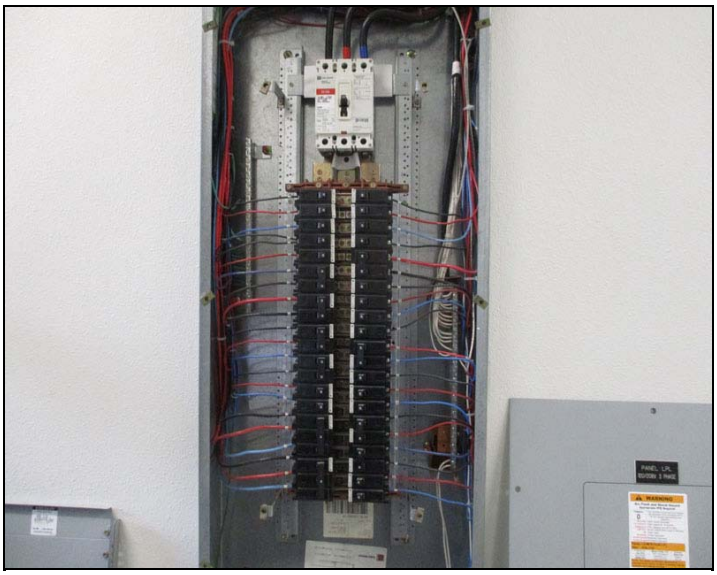

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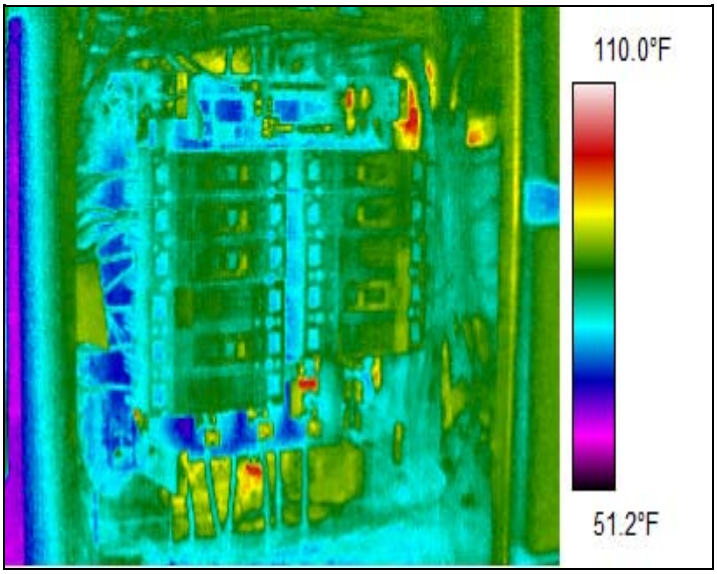
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Operations Building \ I/E Office \ Breaker Panel A

Barcode:



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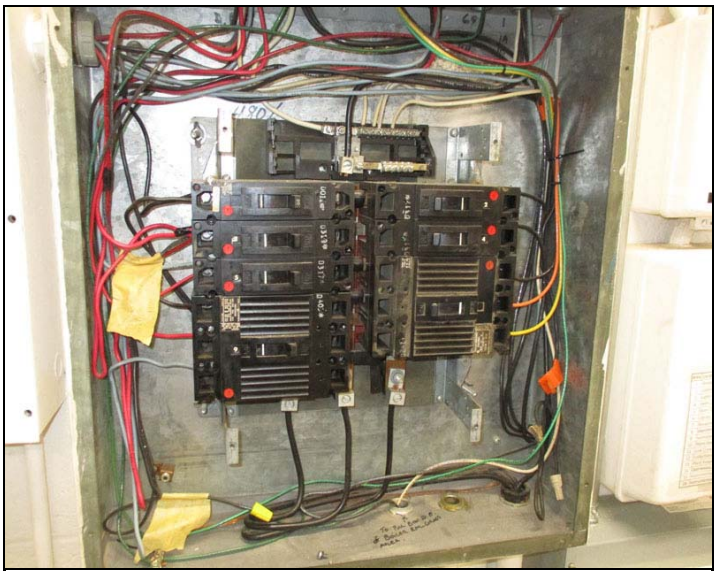

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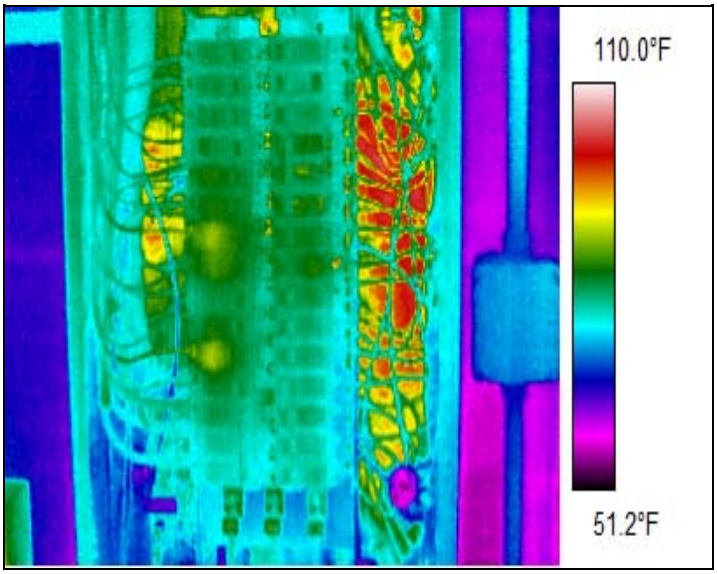
Baseline Trending - Documentation Image

Inspection Date: 2/26/2019 **Inspection Number: 17774**

Operations Building \ I/E Office \ Breaker Panel B

Barcode: 254978



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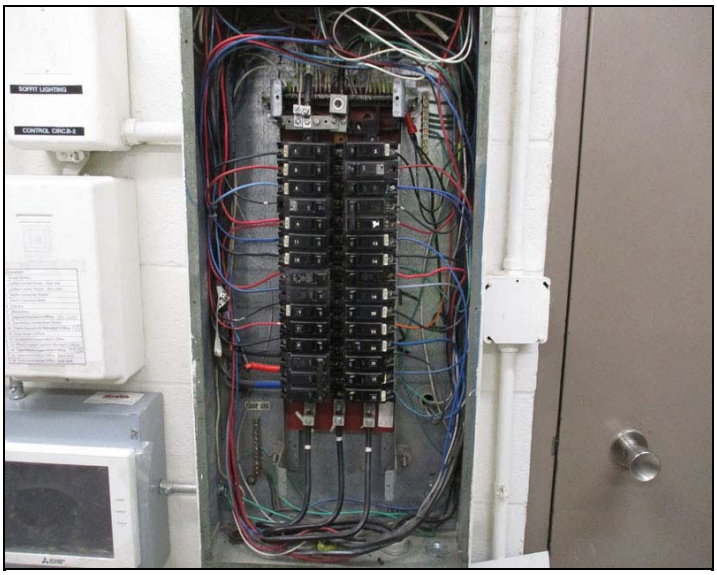

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Taft Electric Company

600 West Los Angeles Ave
Simi Valley, California 93065

Inspection Date: 2/26/2019 **Inspection #: 17774**

Problem Type Key

E	= Electrical
M	= Mechanical
V	= Visual Inspection

Equipment Test Status Key

TBT	= To Be Tested
NT/NL	= Not Tested/No Load
NT/TC	= Not Tested/Time Constraint
NT/UR	= Not Tested/Under Repair
NT/LO	= Not Tested/Locked Out
NT/NA	= Not Tested/Not Available
NT/NS	= Not Tested/Not Specified
NSFI	= Not Selected for this insp.

Inventory of Inspected Items

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Boiler Room		TESTED	
Transformer LP-Scada 75 kVA	254827	TESTED	
Breaker Panel LP-SCADA	254831	TESTED	
Transformer T-26 and Panel LPA-4 75 kVA	254830	TESTED	
Slice Pull Box	254829	TESTED	
MCC-A		TESTED	
Section 1	254832	TESTED	
Main Breaker		TESTED	
Metering		TESTED	
SPD		TESTED	
Ethernet Power Supply		TESTED	
Section 2		TESTED	
10901 Boiler #1		TESTED	
10902 Boiler #2		TESTED	
10903 Boiler #3		TESTED	
Boiler Control Loop Power		TESTED	
T-1 & Panel J		TESTED	
T-26 & Panel LPA-4		TESTED	
T-3 & Panel LPA3 & Roll Up Door		TESTED	
Panel A		TESTED	
T-2 & Panel B		TESTED	
T-27 For Conex		TESTED	
Section 3		TESTED	
10904P Boiler Circ Pump #1		TESTED	
10905P Boiler Circ Pump #2		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Panel DEP		TESTED	
Circ Pump Relay Cabinet		TESTED	
AC Condenser #2		TESTED	
AC Condenser #1		TESTED	
T-33 & Panel LPL		TESTED	
T-SCADA & LP SCADA		TESTED	
Digester Control Room		TESTED	
Breaker Panel DLP2	254828	TESTED	
Breaker Panel DPC 2	254836	TESTED	
T-12 Transformer 15kVA	254837	TESTED	
T-13 Transformer 15 kVA	254838	TESTED	
DCC MCC		TESTED	
Section 1	254835	TESTED	
Section 2		TESTED	
#6 H.W. HexCirc Pump No. 3		TESTED	
#7 H.W. HexCirc Pump No. 4		TESTED	
#8 Meter Section		TESTED	
#9 Main Breaker		TESTED	
Section 3		TESTED	
#10 Control Section		TESTED	
#11 Gas Circ Compressor		TESTED	
#12 Gas Circ Compressor No.2		TESTED	
#13 Gas Circ Compressor 03		TESTED	
Section 4		TESTED	
#14 Transformer TL2		TESTED	
#15 Sludge Feed Valve #1, 2		TESTED	
#16 Sludge Feed Valve #3, 4		TESTED	
#17 Sludge Pump #3		TESTED	
#18 Sludge Pump #4		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Filter MCC Building		TESTED	
T-15 30 kVA Transformer	254845	TESTED	
Breaker Panel LPH	254846	TESTED	
T-14 45 kVA Transformer (Above)	245844	TESTED	
MCC-G		TESTED	
Section 1	254842	TESTED	
Main Circuit Breaker 1A		TESTED	
Surge Protection Device 1H		TESTED	
Section 2		TESTED	
Power Monitor 2A		TESTED	
Waste Backwash #1 2D		TESTED	
Washdown MOV 2H		TESTED	
Waste Backwash #2 2J		TESTED	
Section 3		TESTED	
Floway Pump 3C		TESTED	
AWP VFD #1 3F		TESTED	
Utility Crane 3G		TESTED	
MCC-L 3H		TESTED	
Section 4		TESTED	
AWP VFD #2 4E		TESTED	
Transformer T-30 4F		TESTED	
Backwash Underdrain 4G		TESTED	
Section 5		TESTED	
Air Scour #1 5A		TESTED	
Waste Backwash #3		TESTED	
Ethernet Power Supply		TESTED	
Section 6		TESTED	
Power Monitor 6A		TESTED	
F. Backwash #1		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Section 7		TESTED	
Main Circuit Breaker 7A		TESTED	
Surge Protection Device 7H		TESTED	
Applied Water Pump Switchboard		TESTED	
Section 1		TESTED	
Applied Water Pump #1 VFD 57010P	254843	TESTED	
Section 2		TESTED	
Applied Water Pump #2 VFD 57020P		TESTED	
Section 3		TESTED	
Applied Water Pump #3 VFD 57030P		TESTED	
MCC-J		TESTED	
Section 1		TESTED	
3WHP Pump #5 60630P J1		TESTED	
Section 2		TESTED	
3WHP Pump #6 60640P J3		TESTED	
Filter Backwash #3		TESTED	
Section 3		TESTED	
Filter Backwash #2		TESTED	
#6 Main Breaker		TESTED	
MCC-H		TESTED	
Section 5		TESTED	
#12 Transformer T-14 & T-15		TESTED	
#13 Power Panel PPH-1		TESTED	
#14 MCC/LA		TESTED	
#15 Main Breaker H Panel		TESTED	
Section 4		TESTED	
#11Backwash Air Blower #2		TESTED	
Section 3		NTNL	
#10 Spare		NTNL	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Section 2		TESTED	
#6 Filter Gallery Sump Pump #2		TESTED	
#7 Filter Gallery Exhaust Fan		TESTED	
Section 1		TESTED	
#1Filter Gallery Sump Pump #1		TESTED	
#2 Filter Gallery Air Handling Unit		TESTED	
3W HP Pump #4		TESTED	
#4 AWP VFD #3		TESTED	
#5 Backwash H20		TESTED	
Main MCC Building		TESTED	
Generator Area		TESTED	
T-29 45 kVA Transformer (Overhead)		TESTED	
Breaker Panel P1	254943	TESTED	
Generator Switchboard		TESTED	
Generator 3200A Breaker (Front)		TESTED	
Generator 3200A Breaker (Back)	254848	TESTED	
Switchboard MCC-3		TESTED	
Small Room		TESTED	
Breaker Panel CA	254855	TESTED	
Breaker Panel LD	254856	TESTED	
T-10 10 kVA Transformer		TESTED	
Distribution Panel DP-2	254857	TESTED	
Breaker Panel LP-3	254858	TESTED	
T-9 30 kVA Transformer	254861	TESTED	
LP-3 30 kVA Transformer	254862	TESTED	
Breaker Panel E	254860	TESTED	
Panel E 100A Fused Disconnect		TESTED	
T-8 30kVA Transformer		TESTED	
Main Bus (Overhead)		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
MCC-3		TESTED	
Section 1	254854	TESTED	
Power Supply		TESTED	
Power Monitoring		TESTED	
Main Breaker		TESTED	
Section 2		TESTED	
Tank Drain 1 56001P		TESTED	
CL2 Gas Master Mixer 6300 MX		TESTED	
SEC Sludge Col 4		TESTED	
GRT Class 1 20302		TESTED	
Grit Pump 1 20303P		TESTED	
Section 3		TESTED	
E Blower 4ME1		TESTED	
Section 4		TESTED	
3WP 3 60203P		TESTED	
Comp Rm Sump 40308SP		TESTED	
Tie Breaker		TESTED	
Section 5		TESTED	
E Blower 2 4ME2		TESTED	
Section 6		TESTED	
Grit Class 3 20322C		TESTED	
Grit Class 2 20304P		TESTED	
Sludge Trans 2 89001P		TESTED	
Samp Drain 2 92001P		TESTED	
Rot Screen 2 88105		TESTED	
Section 7		TESTED	
Power Monitor		TESTED	
Main Breaker		TESTED	
Large Room		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Breaker Panel DP-1		TESTED	
Section 8		TESTED	
52-LB 3200A Breaker (Front)	254839	TESTED	
52-LB 3200A Breaker (Back)	254847	TESTED	
Top		TESTED	
Middle		TESTED	
Bottom		TESTED	
Main Line Up Switchboard		TESTED	
Section 1		TESTED	
MCC-P 1600 A Breaker		TESTED	
MCC-3 800 A Breaker		TESTED	
Section 2		TESTED	
MCC-A 800 A Breaker		TESTED	
MCC-BD 800 A Breaker		TESTED	
MCC-DCC 800A Breaker		TESTED	
Section 3		TESTED	
Panel DP-2 800 A Breaker		TESTED	
MCC-1A 1600 A Breaker		TESTED	
MCC-D1 800 A Breaker		TESTED	
Section 4		TESTED	
MCC-J 800A Breaker		TESTED	
MCC-2 800 A Breaker		TESTED	
MCC-G 800 A Breaker		TESTED	
Section 5		TESTED	
Main 2000A Breaker		TESTED	
52-U2 2000A Breaker		TESTED	
Section 6		TESTED	
Utility Bus Meter		TESTED	
Section 7		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Ethernet Port		TESTED	
Section 8		TESTED	
Generator Bus Meter		TESTED	
52-LB 3200A Breaker		TESTED	
Section 9		TESTED	
Main 52-G1 2000A Breaker		TESTED	
52-G2 2000A Breaker		TESTED	
Section 10		TESTED	
PSC 800A Breaker		TESTED	
Panel 8-6-1 800A Breaker		TESTED	
Section 11		TESTED	
MCC-1B 1600A Breaker		TESTED	
MCC-G 800A Breaker		TESTED	
MCC-P B 800A Breaker		TESTED	
Section 12		TESTED	
MCC-3 800A Breaker		TESTED	
MCC-2 800A Breaker		TESTED	
MCC-H 800A Breaker		TESTED	
Panel DP-2 800A Breaker		TESTED	
Section 13		NTNL	
Spare 800A Breaker		NTNL	
MCC-1		TESTED	
Section 1	254866	TESTED	
MCC-1(A) Main Breaker		TESTED	
Section 2		TESTED	
PXM Meter		TESTED	
Ethernet Switch		TESTED	
40505B Blower 5		TESTED	
Section 3		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Air Compressor Daft #2 (7200 C)		TESTED	
Sample Drainage Pump #1		TESTED	
40506B Blower 6		TESTED	E2, E3
Section 4		TESTED	
Tie Breaker		TESTED	
Section 5		TESTED	
53001SSC Sludge Collecter 3		TESTED	
72005P Pressurization Pump #2		TESTED	
72001 Skim 2		TESTED	
Tank Dran Pump 3		TESTED	
DP-1		TESTED	
Section 6		TESTED	
40504B Blower 4		TESTED	
Section 7		TESTED	
Power Supply		TESTED	
MCC-1(B) Main Breaker		TESTED	
MTS Feeding Panel DP-2 400A Double Trow Switch	254865	TESTED	
Top		TESTED	
Bottom		TESTED	
MCC-2		TESTED	
Section 1		TESTED	
Power Monitor		TESTED	
Main400A Breaker		TESTED	
Section 2		TESTED	
Rot Screen 1 88100		TESTED	
3WP 1 60201P		TESTED	
Grit Class 2 20312		TESTED	
Grit Class 3 21003P		TESTED	
Section 3		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Sludge Trans 1 8900P		TESTED	
Sec Sludge Col 1 51001SSC		TESTED	
Grease Pit 2100P		TESTED	
Grit Pump 4 21004P		TESTED	
Section 4		TESTED	
Tie Breaker		TESTED	
Section 5		TESTED	
Flas Mixer 60101		TESTED	
3WP 2 60202P		TESTED	
Daft 1 AC 71000C		TESTED	
Blower Rm Sump 40307SP		TESTED	
Section 6		TESTED	
Tank Drain 2 56002P		TESTED	
Sec Sludge Col 2 51002SSC		TESTED	
Was Press 1 71002P		TESTED	
Section 7		TESTED	
Power Monitor		TESTED	
Main 400A Breaker		TESTED	
Outside		TESTED	
Load Bank Main Lug Connections	254849	TESTED	
Blower Splice Box	254944	TESTED	
P.B. 30 Splice Box	254951	TESTED	
Main Electrical Room		TESTED	
Overhead Bus		TESTED	
MSB		TESTED	
Section 1		TESTED	
Incoming Lines		TESTED	
Section 2		TESTED	
Meter Head SCE V349N-004971		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Main 3000 Amp Breaker		TESTED	
Section 3		TESTED	
Bus Load Out (Top)		TESTED	E1
Bus Load Out (Bottom)		TESTED	
Ras Control Building		TESTED	
Ras Pump VFD #1		TESTED	
Ras Pump VFD #2		TESTED	
Ras Pump VFD #3		TESTED	
Ras Pump VFD #4		TESTED	
Ras Pump VFD #5		TESTED	
Ras Pump VFD #6		TESTED	
Breaker Panel DPC 3	254875	TESTED	
MCC-L		TESTED	
#1 T-16 15kVA Transformer		TESTED	
#2 Panel DEC		NTLO	
#3T-28 at Outfall		TESTED	
#4 Ras 3 / Ras 4		TESTED	
#5 Main Disconnect		TESTED	
MCC-LA		TESTED	
#1 Compost Sump Pump		TESTED	
#2 Ras 1 / Ras 2		TESTED	
#3 CL2 Exhaust Fan #2		TESTED	
#4 Ras 5 / Ras 6		TESTED	
#5 Main Disconnect		TESTED	
East B.N.R. MCC		TESTED	
T-11 Transformer Double Throw Switch	254871	TESTED	
Panel B-6-1 200A Fused Disconnect	254874	TESTED	
Breaker Panel B-6-1	254886	TESTED	
PLC-06 Control Panel	254887	TESTED	

Inventory of Inspected Items

Taft Electric Company

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LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
East BNR Lower Splice Box	254888	TESTED	
Breaker Panel F-1	254894	TESTED	
MCC-D1		TESTED	
Section 1		TESTED	
MCC D1 Main		TESTED	
A2 Meter		TESTED	
Section 2		TESTED	
Inlet Valve 4V-03		TESTED	
Bypass Valve 4V-04		TESTED	
Bypass Valve 4V-08		TESTED	
Section 3		TESTED	
BNR Tank #1 Mixer A		TESTED	
BNR Tank #1 Mixer B		TESTED	
BNR Tank #1 Mixer C		TESTED	
BNR Tank #2 Mixer A		TESTED	
Section 4		TESTED	
BNR Tank #2 Mixer B		TESTED	
BNR Tank #2 Mixer C		TESTED	
BNR Tank #3 Mixer A		TESTED	E4
BNR Tank #3 Mixer B		TESTED	
Section 5		TESTED	
BNR Tank #3 Mixer C		TESTED	
BNR Tank #1		TESTED	
E3		TESTED	
Section 6		TESTED	
BNR Tank #2		TESTED	
F2		TESTED	
Section 7		TESTED	
BNR Tank #3		TESTED	

Inventory of Inspected Items

Taft Electric Company

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LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
G2		TESTED	
Section 8		TESTED	
Panel LP-4		TESTED	
Transformer LP-4 15kVA		TESTED	
Transformer LP-4		TESTED	
FEB Control Room		TESTED	
Feb Pump #3 Controller	254889	TESTED	
Feb Pump #3 VFD	254891	TESTED	
Breaker Panel DPC1A	254894	TESTED	
Metering Sump Pump Controller	254890	TESTED	
Breaker Panel DPP1A	254893	TESTED	
Feb Pump VFD #1		TESTED	
Feb Pump VFD #2	254884	TESTED	
XFMR T-17 10 kVA Transformer	254892	TESTED	
West BNR MCC Building		TESTED	
MCC Room		TESTED	
Process Blower 2ME-04A		TESTED	
RVSS-690 2ME-04A Control Panel	254904	TESTED	
RVSS-680 2ME-03A Control Panel	254899	TESTED	
MCC-P		TESTED	
Section 1		TESTED	
PS	254900	TESTED	
Section 2		TESTED	
225A Feeder MB DPP1A (TVSS)		TESTED	
Power Meter MB		TESTED	
MCC-P (A)		TESTED	
Section 3		TESTED	
Anoxic Zone 1D 1ME-01D		TESTED	
Anoxic Zone 1C 1ME-01C		TESTED	

Inventory of Inspected Items

Taft Electric Company

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LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Anoxic Zone 1B 1ME-01B		TESTED	
Anoxic Zone 1A 1ME-01A		TESTED	
Section 4		TESTED	
Anoxic Zone 2D 1ME-02D		TESTED	
Anoxic Zone 2C 1ME-02C		TESTED	
Anoxic Zone 2B 1ME-02B		TESTED	
Anoxic Zone 2A 1ME-02A		TESTED	
Section 5		TESTED	
Process Blower 2ME-01		TESTED	E5
A/C Unit 2AC-01 E2		TESTED	
Mixed Liquor Rec. Pump 01		TESTED	
Section 6		TESTED	
Process Blower 2ME-02		TESTED	
Mixed Liquor Rec Pump 03		TESTED	
Section 7		TESTED	
NITR Basin 1B MOV 1V-04/NITR Basin 1A MOV 1V-02		TESTED	
Exhaust Fan 2EF-01		TESTED	
Mixed Liquor Rec Pump Future		TESTED	
Section 8		TESTED	
NITR Basin 2B MOV 1V-08/NITR Basin 2A MOV 1V-06		TESTED	
NITR Basin 5A/NITR Basin 5A FUTURE		TESTED	
40AMP Feeder MB MTS LP-1 H6		TESTED	
400AMP Feeder MB MCC-N		TESTED	
Section 9		TESTED	
1200AMP TIE Breaker		TESTED	
Section 10		TESTED	
125AMP Panel LP-1	254902	TESTED	
XFMR LP-1 37.5 kVA		TESTED	
Section 11		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
100AMP MTS Transfer Switch		TESTED	
Section 12		TESTED	
40AMP Feeder MA MTS LP-1		TESTED	
LCP 2ME-04A / LCP 2ME-03A		TESTED	
225A Feeder MA MTS-H DPP1A		TESTED	
Section 13		TESTED	
MITR Basin 3B MOV 1V-12 / MITR Basin 3A MOV 1V-10		TESTED	
MITR Basin 4B MOV 1V-16 / MITR Basin 4A MOV 1V-14		TESTED	
Bridge Crane 2ME-05		TESTED	
Exhaust Fan 2EF-02		TESTED	
400AMP Feeder MA MCC-N		TESTED	
Section 14		TESTED	
Process Blower 2ME-03A		TESTED	E6
Mixed Liquor Rec. Pump 02		TESTED	
Section 15		TESTED	
Process Blower 2ME-04A		TESTED	
Mixed Liquor Rec. Pump 04		TESTED	
Section 16		TESTED	
Anoxic Zone 3D 1ME-03D		NTLO	
Anoxic Zone 3C 1ME-03C		TESTED	
Anoxic Zone 3B 1ME-03B		TESTED	
Anoxic Zone 3A 1ME-03A		TESTED	
Section 17		TESTED	
Anoxic Zone 4D 1ME-04D		NTLO	
Anoxic Zone 4C 1ME-04C		TESTED	
Anoxic Zone 4B 1ME-04B		TESTED	
Anoxic Zone 4A 1ME-04A		TESTED	
Section 18		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Power Meter MA		TESTED	
MCC-P(B)		TESTED	
Section 19		TESTED	
S1	254901	TESTED	
VFD 660 #1		TESTED	
Section 1		TESTED	
Section 2		TESTED	
VFD 670 #2		TESTED	
Section 1		TESTED	
Section 2		TESTED	
Blower Room		TESTED	
LCP-1 Control Panel	254903	TESTED	
LCP #670 Mach #803413 Control Panel	254905	TESTED	
LCP #660 Mach #803412 Control Panel	254906	TESTED	
M.T.S. H Tranfer Switch	254908	TESTED	
LCP-2 Control Panel	254909	TESTED	
Dewatering Building		TESTED	
Breaker Panel DPC 4	254926	TESTED	
Breaker Panel DPL 4	254920	TESTED	
Breaker Panel DMP 2	254919	TESTED	
Breaker Panel DPM-1	254918	TESTED	
T-23 15kVA Transformer	254911	TESTED	
T-24 45 kVA Transformer	254910	TESTED	
T-22 25kVA Transformer	254907	TESTED	
T-21 25kVA Transformer	254896	TESTED	
MCC-N		TESTED	
Section 1		TESTED	
Main 400A Breaker		TESTED	
#2 Air Compressor A11000C		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
#3FilteratecSump Pump #1 A118010		TESTED	
Section 2		TESTED	
#6 Polymer Mixer		TESTED	
#7 Bulk Polymer Transformer Pump		TESTED	
#8 Sludge Feed Pump 1& 2		TESTED	
#9 Screen Sludge Circ Pump 1		TESTED	
Section 3		TESTED	
#10 Horizontal Conv. #1		TESTED	
#11 Belt Press 1 & 2		TESTED	
#12 Filterate Pump #2		TESTED	
#13 Air Handling Unit		TESTED	
#14 Exhaust Fan Sludge Holding Tank		TESTED	
Section 4		TESTED	
#15 Tie Breaker		TESTED	
#16 Transformer DPM-1 T-21		TESTED	
#17 3W HP Booster Pump #1		TESTED	
#18 3W HP Booster Pump #2		TESTED	
Section 5		TESTED	
#21 Filterate Return Pump #1		TESTED	
#22 Transformer T-DPM2		TESTED	
#23 Transformer T-DPC4		TESTED	
Section 6		TESTED	
#26 Feb Under-Drain Control Panel		TESTED	
#27 Beltpress #3		TESTED	
#28 3W HP Booster Pump 3		TESTED	
#29 Horizontal Conveyor #2		TESTED	
Section 7		TESTED	
#31 Roof Vent Fan #1		TESTED	
#32 Roof Vent Fan #2		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
#34 Sludge Feed Pump 3		TESTED	
#35 Screen Sludge Circ Pump #2		TESTED	E7
Section 8		TESTED	
#36 Main 400A Breaker #2		TESTED	
#37 Vehicle Wash Pump		TESTED	
#38 Filerate Sump Pump		TESTED	
Sludge Feed Pump Cabinet		TESTED	
Section 1		TESTED	
Sludge Feed Pump 1	254916	TESTED	
Sludge Feed Pump 2	254915	TESTED	
Section 2		TESTED	
Sludge Feed Pump 3	254914	NTNL	
Solar Array		TESTED	
Solar Array Switchgear		TESTED	
Section 1		TESTED	
PV-5 400A Breaker		TESTED	
PV-4 400A Breaker		TESTED	
PV-3 400A Breaker		TESTED	
PV-2 400A Breaker		TESTED	
PV-1 250A Breaker		TESTED	
Section 2		TESTED	
Main 1600A Fused Disconnect	254921	TESTED	
Section 3		TESTED	
Breaker Panel	254922	TESTED	
Section 4		TESTED	
M1 2000A Breaker	254925	TESTED	
Distribution Switchboard	254923	TESTED	
Pump Main 400A Breaker		TESTED	
Control Transformer 20A Breaker		TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Section 5		NTNS	
Meter Head SCE 259000-081683		NTNS	
Incoming Lines		NTNS	
Reclaim Station		TESTED	
MP-1 Water Pump Starter	254929	TESTED	
PLC-Panel	254928	TESTED	
MG-1 15A Breaker	254932	TESTED	
MV-1 15A Breaker	254931	TESTED	
MCP Breaker Panel	254933	TESTED	
Main 400A Breaker	254927	TESTED	
Pump ! & 2 Control Panel	254917	TESTED	
MK-1 Compressor 1 Control Panel	254934	TESTED	
Primary Basement		TESTED	
Sump Pump Controller	254930	NTNL	
Primary Sludge Pump #1 Controller	254939	TESTED	
Primary Sludge Pump #2 Controller	254938	TESTED	
Collector Drive Control Panel	254937	NTNL	
Breaker Panel DPP	254940	TESTED	
PST #3 Controller	254936	TESTED	
T-19 15 kVA Transformer (Overhead)		TESTED	
Breaker Panel DPLC6	254935	TESTED	
Headworks Building		TESTED	
Breaker Panel BD	254949	TESTED	
Breaker Panel BS	254948	TESTED	
Exhaust Fan Overhead Unit	254946	NTLO	
Odor Blower Controller	254947	TESTED	
PLC-2 Control Panel	254960	TESTED	
Re-Circ Fan Controller	254945	TESTED	
Exhaust Fan East Wall	254950	TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
Compacter Control Panel	254941	TESTED	
Barscreen #2 Control Panel	254942	TESTED	
Barscreen #1 Control Panel	254952	TESTED	
Operations Building		TESTED	
Maintenance Shop		TESTED	
Breaker Panel LPA3	254956	TESTED	
Breaker Panel LPA3 A	254957	TESTED	
T-3 75 kVA Transformer	254955	TESTED	
Disconnect T-3 90A Fused Disconnect	254962	TESTED	
T-3 30A Fused Disconnect	254958	TESTED	
Sample Room		TESTED	
Breaker Panel LPA-2	254963	TESTED	
Breaker Panel LPA-1	254954	TESTED	
Storage Site #22		TESTED	
T-4 75kVA Transformer		TESTED	
T-5 75kVA Transformer	254969	TESTED	
Breaker Panel DEP	254970	TESTED	
T-6 30kVA Transformer	254971	TESTED	
Breaker Panel EP		TESTED	
Helm		TESTED	
Breaker Panel C	254964	TESTED	
Storage Room Behind Helm		TESTED	
Breaker Panel J	254967	TESTED	
T-1 Transformer 30A Disconnect	254965	TESTED	
Panel J Fused Disconnect	254966	TESTED	
Laboratory Lab Offices		TESTED	
Breaker Panel LPL	254973	TESTED	
Outside		TESTED	
TL 60A Fused Disconnect	254981	TESTED	

Inventory of Inspected Items

Taft Electric Company

600 West Los Angeles Ave Simi Valley Waste Water

LOCATION / EQUIPMENT:	Barcode:	Test Status:	Problem #:
TL 45 kVA Transformer	254980	NTNA	
I/E Office		TESTED	
Breaker Panel A		TESTED	
Breaker Panel B	254978	TESTED	
Panel B 100A Fused Disconnect	254976	NTNA	

Appendix C

ORDINANCE NO. 926 MEMORANDUM

PROJECT MEMORANDUM

SEWER SYSTEM RELIABILITY ASSESSMENT AND FINANCIAL PLAN UPDATE

Date: June 28, 2019
Project No.: 11317A.00

City of Simi Valley

Prepared By:	Alexander Bugbee
Reviewed By:	Dan Baker; David Baranowski
Subject:	Ordinance 926 Revision Recommendations

Purpose

As a component of the Sewer System Reliability Assessment, Carollo Engineers, Inc. (Carollo) performed a review of the City of Simi Valley's (City) Ordinance 926 (Ordinance), which governs how the City assesses connection fees for sanitation services. The Ordinance was last modified in 1998 and the City intends to update the ordinance based on the current Sewer Rate Study being completed by Black and Veatch (Black and Veatch Study).

Carollo worked with City staff to identify issues with the connection fee structure and guidelines set forth by the existing ordinance. This memorandum presents proposed recommendations to modify and update the Ordinance according to Carollo's review and conversations with City Staff. It is intended to serve as a guide for Black and Veatch as they undertake a detailed analysis to update the connection fees as a component of the Sewer Rate Study. As that study is completed, the recommended updates to the ordinance will likely be refined by the analysis results, availability of data, and fee impacts.

Equivalent Dwelling Units

Wastewater connection fees are typically assessed based on the number of equivalent dwelling units of a new or modified connection to the system. An equivalent-dwelling unit (EDU) represents the typical volumetric wastewater flow and mass loading associated with a single-family residential connection.

EDU Definition

The current EDU definition in the Ordinance accounts for the wastewater flow in gallons per day, biochemical oxygen demand (BOD) in milligrams per liter (mg/l), and suspended solids (SS) in mg/l, of a representative single-family customer. There is inconsistency in the current Ordinance regarding the assumed SS concentration per EDU: definition 2-5 states a concentration of 200 mg/l, while Section 3 uses a concentration of 220 mg/l. As the City updates its documents, these inconsistencies should be addressed.

Table 1 shows the assumptions in the current EDU definition.

Table 1 Current EDU Definition

Component	Amount per EDU	
Flow (gallons per day)	275	
	Concentration	Pounds per Day
BOD (mg/L)	230	0.53
SS (mg/L) (Ordinance 926 Section 3)	220	0.50

The EDU definition in the Ordinance was last modified in 1998, and the methodology used to determine the flows and loads per EDU is unknown. Since that time, changes in indoor water consumption habits, updated building codes, and other factors have led to decreases in the amount of flow per EDU (as evidenced in the City's 2015 Sewer Rate Study). However, a commensurate decrease in mass loading of biochemical oxygen demand (BOD) and total suspended solids (TSS) has likely not occurred since water-use efficiency gains do not affect the amount of pollutants added to the system by a typical residential customer.

As a component of the Black and Veatch Study, the City should update the EDU definition included in the Ordinance according to current flow and loads per EDU. Ideally, such an update would complete the following tasks:

1. **Confirm flow assumptions**: the assumed flow per EDU should be confirmed through an analysis of water-billing data that incorporates other flow monitoring or SCADA data to compare billed water usage in winter months to actual flows within the system.

2. **Confirm loading concentration assumptions**: ideally, residential loadings concentrations and mass loading (pounds per day) could be updated according to a sampling study of the City's residential areas. At a minimum, the concentration assumptions should be updated proportionally to the decrease in the flow assumption so that the mass loading in pounds per day is maintained at the current level.

3. **Perform a mass balance**: concurrently with confirming flow and loading assumptions, the City should perform a mass balance calculation to determine whether the updated flow and loading assumptions match the actual flow and loading that is measured at the plant. The results of this analysis could be used to further modify flow and loading assumptions at an aggregate level.

4. **Confirm the multi-family flow ratio**: the Ordinance currently assigns multiple-family residences, including condominiums, apartments, and townhouses, 0.75 EDUs per dwelling unit. Low discharge-type housing units and mobile homes are assigned 0.6 EDUs per dwelling unit. An analysis of water usage and customer data similar to those discussed above could be completed to confirm or modify EDU assumptions for each type of non-single-family residential unit.

EDU Equation

An EDU equation is used to determine the number of EDUs for industrial, commercial, and institutional users not specifically defined in the Ordinance. The equation calculates EDUs by comparing the flow and loading expected from a customer to that of a single EDU. It also includes weighting factors for flow, BOD, and suspended solids (SS), presumably based on the cost allocation structure of the sanitation system at the time the equation was developed. The current EDU equation is shown below:

$$Number\ of\ EDUs = \frac{Q}{275} \times \left(0.54 + \frac{0.23 \times BOD}{230} + \frac{0.23 \times SS}{220}\right)$$

Where: *BOD = Biochemical oxygen demand in mg/l for the extra strength discharger*

SS = Suspended Solids in mg/l for the extra strength discharger

Q = Average daily flow in gallons for the extra strength discharger

The EDU equation should be updated to reflect any changes made to the EDU definition. Furthermore, weighting factors for flow, BOD, and SS should also be updated according to Black and Veatch's upcoming allocation analysis of the sanitation systems assets and capital program.

Connection Fee Update

According to the Ordinance, the connection fee was last calculated in March 1997. Since that time, fees assessed for new users have been escalated using the Engineering News Record Construction Cost Index (ENR CCI) for Los Angeles.

Connection Fee per EDU

The City should determine and adopt an updated connection fee per EDU based on the Black and Veatch Study. Since the last update over twenty years ago, conditions have changed significantly. Furthermore, many of the assets and capital improvements that likely served as the basis for the current fee may now be fully depreciated and replaced with newer systems.

Inflationary Adjustments

Similar to the current Ordinance, any updated ordinance should include provisions to adjust the assessed fee per EDU based on the ENR CCI or another applicable escalation factor. This provision is beneficial to the City since it allows the flexibility to adjust fees to reflect escalated costs without the need for a comprehensive study.

Fee Methodology Updates

Exhibit A of the Ordinance details the current method used to assign EDUs to each type of customer that connects to the system or modifies their connection. The current methodology relies on EDU factors and specific account metrics to determine the number of EDUs for each connection. More specifically, the factors are intended to account for the specific flow and loading that are typical of each type of customer compared to that of one EDU. For example, restaurants with 42 seats or less are assigned 2.60 EDUs with an additional 0.0625 EDUs per additional seat. Non-medical office buildings are assigned 0.22 EDUs per 1,000 square feet of area. The full listing of EDU factors is shown in Exhibit A of the current Ordinance 926, which is attached for reference.

The City has expressed several concerns with the current methodology and structure related to its intrinsic assumptions and administration. No study has been completed to update the assumptions and EDU factors

since the structure was adopted in 1998, and it is unclear how valid the assumptions are at this time, given the changes in usage patterns, building codes, and the type of development occurring within the City. Furthermore, the current structure leads to difficulties in assigning EDUs to customers who don't fit neatly into one of the existing categories. Finally, the complexity of the current structure leads to a significant administrative burden when tracking the number of EDUs assigned to each connection and modifying those EDUs when connections are modified, or the type of business at a location changes.

Given these concerns, the City would like to explore potential options to update or replace the current methodology as a component of the Black and Veatch Study. Depending on the availability of data, as well as the envisioned scope of that project, the specific methodology and structure that is implemented as a result of the Black and Veatch study may differ from those discussed in this document. Three potential options for updating the methodology and structure were discussed with the City and are detailed in the following sections.

Option 1 – Update the Current Structure

An update of the current structure would include confirming or modifying each of the EDU factors included in Exhibit A based on current usage characteristics. If the City were to update the fee based on its own data, the update would entail an extensive flow and loading study to reassess the EDU factors. A study and analysis of that magnitude would likely be cost prohibitive and may not provide ideal data since the number of customers in some categories is limited. Furthermore, this type of study and analysis would take a significant amount of time to complete.

As an alternative to undertaking its own study, the City could wait for the results of a study being completed by the California Association of Sanitation Industries (CASA), which aims to develop standard flow and loading assumptions for different types of wastewater customers using extensive sampling and analysis of multiple agencies. However, it is unclear at this time when the CASA study will be completed, and it will likely be after the Completion of the Black and Veatch Study.

While updating the current structure could address concerns related to the validity of the assumptions, it would not address administrative issues. Additionally, performing an extensive update of the current structure would require substantial financial and time commitments.

Option 2 – Meter Size and Loading Based Fees

An alternative option to updating the current structure would be to develop fees according to water meter size, with an adjustment for the typical loading from each type of customer. To simplify the structure, customers with similar loading concentrations could be grouped into a limited number of strength categories, i.e. low strength, standard strength (equivalent to residential strength), medium strength, and high strength. EDUs for each customer would be determined by using the water-meter equivalents ratio to represent the flow EDUs then applying a strength adjustment based on the customer type.

Developing and implementing this type of fee would require the following steps:

1. **Determine the number of meter equivalent units (MEUs) connected to the sanitation system:** to define the existing customer base in MEUs, an analysis of water customer data would be required to determine the number of water meters by size that are connected to the wastewater system. The analysis should include adjustments for connections whose water meter size may not be indicative of their wastewater flows, such as those without separate irrigation meters. Additionally, single-

family residential customers with 5/8-inch, ¾-inch, or 1-inch meters should all be considered as 1 MEU or EDU since the City mandates 1-inch meters for new houses with sprinkler systems.

2. **Confirm the applicability of MEUs as a measure of wastewater flow:** an analysis of winter water usage by meter size and customer type should be completed to confirm that the water meter size correlates sufficiently with estimated wastewater discharges. Specific return to sewer (RTS) assumptions could be determined for different types of customers depending on how they use water and discharge it to the sewer system. The structure could also include a provision to allow specific RTS assumptions to be applied for users who can exhibit very low rates of wastewater discharge for their meter size. Use of such a provision should be backed up by flow monitoring, water usage analysis, or other means, on a case-by-case basis.

3. **Assign customer types to strength classes:** each type of customer that the City anticipates connecting to the system (other than special industrial customers who would be assigned a specific number of EDUs using the EDU equation) should be assigned into a strength class. The assignment should reflect how the loading concentrations of each type of customer relate to those of a residential EDU.

4. **Develop a strength adjustment for each strength class:** using assumed loading for each strength class, strength adjustment factors should be calculated based on how the assumed BOD and SS-loading concentrations for each class compare to those of a residential EDU.

5. **Determine the customer base:** once the MEUs (with RTS) and strength categories are defined, they should be applied to the customer data to determine the existing customer base in EDUs. Expected future users should be determined in the same manner. The connection fee calculation should use this calculation of the existing and/or future customer base so that calculated fees per unit are in alignment with the fee assessment methodology.

6. **Develop separate EDU connection fees for flow, BOD, and SS:** using this fee structure would require that the connection fee be split into flow, BOD, and TSS components based on the system's cost allocation structure. The information required to do so should be readily available since it will be needed to update the EDU equation.

Finally, under this type of structure, connection fees for each user would be determined using the following equation:

$$Connection\ Fee = MEUs\ \times RTS\ \times (Flow\ Fee +\ BOD\ Factor \times BOD\ Fee + SS\ Factor \times SS\ Fee)$$

Option 3 – Meter Size Based Fees

A third option discussed with the City would be to assess fees based on water meter size without an adjustment for loading. The development of this fee structure could follow a similar approach to the one discussed above for meter size and loading-based fees, but removes the need to assign strength classes, develop strength factors, and calculate fees by component. The simplified fee development steps are shown below.

1. **Determine the number of MEUs connected to the sanitation system:** as mentioned above, to define the existing customer base in MEUs, an analysis of water customer data would be required to determine the number of water meters by size that are connected to the wastewater system. The analysis should include adjustments for connections whose water meter size may not be indicative of their wastewater flows, such as those without separate irrigation meters. Additionally, single-family residential customers with 5/8-inch, ¾-inch, or 1-inch meters should all be considered as 1 MEU or EDU since the City mandates 1-inch meters for new houses with sprinkler systems.

2. **Confirm the applicability of MEUs as a measure of wastewater flow:** an analysis of winter water usage by meter size and customer type should be completed to confirm that water meter size correlates sufficiently with estimated wastewater discharges. RTS assumptions could be determined for different types of customers depending on how they use water and discharge it to the sewer system. The structure could also include a provision to allow specific RTS assumptions to be applied for users who can exhibit very low rates of wastewater discharge for their meter size. Use of such a provision should be backed up by flow monitoring, water usage analysis, or other means, on a case-by-case basis.

3. **Determine Customer Base:** the existing and future customer base in EDUs would be determined based on existing and expected MEUs, adjusted based on RTS assumptions.

Under this type of structure, connection fees for each user would be determined using the following equation:

$$Connection\ Fee = MEUs\ \times RTS\ \times Fee\ per\ EDU$$

Though this structure provides a simplified and easily implementable approach, it may not accurately reflect the capacity needed to serve each customer, since it only accounts for wastewater flow and ignores loading. This issue could become more relevant if the City determines that its treatment systems are limited by mass loadings rather than by volumetric flow, which is the case for many other agencies.

If the City opts to implement a fee that does not consider loadings, it should make an effort to show that there is an adequate nexus between wastewater flow (absent of loading concentrations) and the costs of investment in the system needed to serve future users.

Other Ordinance Considerations

Additional considerations for the Ordinance update are discussed below.

Customer Specific Fees

The updated Ordinance should include provisions that allow for the department to develop one-off fees for specific customers on an as-needed basis. This type of provision could be used for customers who are not easily characterized into standard categories, or those whose use of the system warrants individual consideration. If implemented, the City should take care to keep good records of these situations.

EDU Credits

The Ordinance should provide clarity on how owned EDUs and credits are tracked within the billing system and then set forth a standard practice for implementing these methods.

Removal of Unused Ordinance Sections

The Ordinance currently contains several sections that are no longer in use or have been superseded. Unused or outdated sections of the Ordinance should be removed to provide clarity to the City's sanitation customers and project developers.

Attachment: Ordinance 926 with Exhibit A and Exhibit B

Effective: 7-30-98

ORDINANCE NO. 926

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SIMI VALLEY REPEALING ORDINANCE NO. SD-50 AND SETTING CERTAIN PROVISIONS RELATING TO THE COLLECTION OF FEES FOR THE PROVISION OF SEWERAGE AND RELATED SERVICES, AND AUTHORITY FOR EVALUATING THE ENVIRONMENTAL IMPACTS OF PROJECTS, AND PROVIDING FOR OTHER CITY SANITATION ACTIVITIES

THE CITY COUNCIL OF THE CITY OF SIMI VALLEY, COUNTY OF VENTURA, STATE OF CALIFORNIA, DOES ORDAIN AS FOLLOWS:

SECTION 1: INTENT

Pursuant to Section 5471 of the California Health and Safety Code, it is intended that this ordinance of the City of Simi Valley repeal existing ordinance numbered SD- 50 and set provisions for the establishment and collection of rates and charges for services related to the use of sewers, and the authority for evaluating the environmental impacts of projects, and for providing for other City's Sanitation activities. Ordinance No. SD- 50 is hereby repealed as of the date of implementation of this ordinance.

SECTION 2: DEFINITIONS

For the purposes of this ordinance, the following words have the meanings respectively ascribed to them by this section:

2-1 CITY

"City" shall mean the City of Simi Valley .

2-2 ENGINEER

" Engineer" shall mean the person filling the position of Deputy Director of Public Works/District Engineer, or his/her authorized agent or representative.

2-3 BIOCHEMICAL OXYGEN DEMAND

"Biochemical Oxygen Demand" (BOD) shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five days at 20 degrees centigrade, expressed in milligrams per liter (mg/1) by weight.

2-4 COMMERCIAL USER

"Commercial User" shall mean any business enterprise, office, or church, and all other non-residential, non-industrial, and non-institutional users.

2-5 EQUIVALENT DWELLING UNIT

"Equivalent Dwelling Unit" (EDU) shall mean the unit of measure which is based on the flow characteristics of a typical average single family residence having a wastewater flow of 275 gallons per day with BOD and SS strengths of 230 and 200 mg/l, respectively.

2-6 INDUSTRIAL USER

"Industrial user" shall mean:

(1) Any user who discharges wastewater (or wastes) into the City's sewerage system of which the solid, liquid, or gaseous waste discharge has the pollutants different than or stronger than or with constituents other than those defined for domestic sewage; or

(2) Any user discharging industrial wastes including those subject to regulations under Section 307(b) and/or (c) et.seq., of the Clean Water Act of 1977 (PL 95-217) no matter what the volume; or

(3) Any user identified in the Standard Industrial Classification Manual, 1972, Office of Management and Budget, as amended and supplemented under the Divisions A,B,C,D,E, and I.

2-7 INSTITUTIONAL USER

"Institutional user" shall mean a hospital, school, church, lodge, club, fire department, library, memorial building, or any governmental facility, discharging into the sewerage system.

2-8 RESIDENTIAL USER

"Residential User" shall mean all dwellings including single family detached structures, single family attached structures (apartments and condominiums) and mobile homes.

2-9 SUSPENDED SOLIDS

"Suspended Solids" (SS) shall mean the solid matter suspended in sewage as determined by accepted analytical methods.

2-10 STRENGTH FACTOR

"Strength Factor" (SF) shall mean a factor which, when multiplied by actual flow, will relate high strength (biochemical oxygen demand and suspended solids) wastewater discharges to equivalent dwelling units.

SECTION 3: EQUIVALENT DWELLING UNIT

For the purposes of this ordinance, the discharge characteristics of an equivalent dwelling unit shall be composed of a wastewater flow of 275 gallons per day and constituent levels of 220 parts per million suspended solids and 230 parts per million biochemical oxygen demand. The number of equivalent dwelling units assigned to a particular sewer use shall be used in computing the connection fees and user charges. The assignment of equivalent dwelling units shall be as described in Exhibit A, attached to and made a part of this ordinance.

For industrial, commercial, and institutional users, not specifically identified in Exhibit A, and with a discharge having constituent levels greater than those specified for an equivalent dwelling unit, the number of equivalent dwelling units assigned shall be determined by the following formula:

$$\text{Number of EDU's} = \frac{Q}{275}\left(0.54 + 0.23\,\frac{BOD}{230} + 0.23\,\frac{SS}{220}\right)$$

Where: BOD = Biochemical oxygen demand loading in mg/l for the extra strength discharger

SS = Suspended solids loading in mg/l for the extra strength discharger

Q = Average daily wastewater flow in gallons for the extra strength discharger

SECTION 4: IMPROVEMENT PLAN PROCESSING FEE

The fee for the processing of sewer improvement plans shall be equal to the rates established by the City of Simi Valley for processing public improvement plans and are hereby adopted by reference.

SECTION 5: PERMIT AND INSPECTION FEE

Prior to either commencement of construction or receipt of zoning clearance, a permit and construction inspection fee shall be paid. The permit and construction inspection fee shall be equal to the rates established by the City of Simi Valley for a permit and providing construction inspection for public improvements and are hereby adopted by reference.

In the event that completion of sewer improvements is delayed past nine months after payment of the inspection fee is due, the fee shall be recomputed on the basis of the Engineer's current estimate of costs, and the permittee shall pay any increase in the inspection fee before a time extension is granted, or further work is done.

In the event the permittee chooses to work at a time other than during normal working hours, such as at night or on a holiday, Saturday, or Sunday, an additional fee shall be paid, as determined by the Engineer, in an amount sufficient to cover additional costs to the City.

When an offsite sewer is installed by other than the District, credit against connection fees shall be allowed. Said credit shall be based on the construction cost of the offsite, oversized portion of the trunk sewer. Oversizing credit shall be computed based on the difference in cost between the actual construction cost of the offsite trunk sewer and what a 10 inch diameter offsite sewer line or the size of the line needed to serve the property receiving the credit would have cost to be constructed, whichever sewerline size is greater.

SECTION 6: CONNECTION FEE

6-1 CONNECTION FEE DETERMINATION

Prior to either connection to the City's sewerage system or receipt of zoning clearance, a fee representing a share of the cost of capacity in the City's trunk and treatment facilities and subject to credit as hereinafter provided shall be paid. Said fee shall be the equivalent dwelling unit assignment, as determined under Section 3, times the connection fee per equivalent dwelling unit as provided for and adopted by an ordinance of the City Council of the City.

The connection fee shall be indexed to an Engineering News Record Construction Cost Index for Los Angeles (ENR). The connection fee shall be adjusted annually by the City Council of the City, to be effective July 1 and based on the change between March of the effective year and March of the previous year. The adjusted connection fee shall be determined by the following formula:

$$\text{Adjusted Fee} = \frac{\text{Connection Fee} \times \text{ENR (Current)}}{\text{ENR (Previous)}}$$

Where: ENR (Current) = The Engineering News Record Construction Cost Index for Los Angeles for the year of adjustment.

ENR (Previous) = The Engineering News Record Construction Cost Index for Los Angeles which is tied to the Connection Fee being adjusted.

The base ENR index is 6535.38 (March 1997) and corresponds to a Connection Fee of $2,572.

6-2 CONNECTION FEE CREDIT

Where property has been assessed in confirmed special assessment proceedings for treatment plant expansion and trunk line construction, such as Assessment District 3B, credit against the connection fee for capacity units of benefit shall be allowed as set forth below. "Unit of Benefit Assessed" refers to the rate assessed in special assessment proceedings for said capacity improvements for each existing single family residence site, but does not include any portion of any assessment for local collector improvements.

For the purpose of this section, each Unit of Benefit Assessed shall be as set forth below:

Connection Description	Capacity Unit of Benefit Factor
1. Single Family Residence	1.00
2. Multiple Family Residence, Condominium or Apartment per Dwelling Unit	0.70
3. Mobile Home Park, per Unit	0.70
4. Commercial, Industrial and Institutional Uses, per Fixture Unit (as set forth in Chapter 4 of the Uniform Plumbing Code)	0.04
With a minimum per connection of	1.00
Provided that commercial and industrial facilities shall pay not less than a proportionate cost of capacity in City's sewer trunk and treatment facilities, considering flow and composition of sewage generated, as determined by the Engineer.	

Credit Determination	Benefit Allowed
1. Structures and uses previously served by private septic tank systems, which conformed to applicable codes at time of installation.	Confirmed special assessment for capacity divided by unit of benefit assessed.

2.	Other Structures and uses after allowance of deduction for 1 above. Credits may be fractions	Confirmed special assessment for capacity divided by $370.

Upon written application and approval of the Engineer, a property owner may transfer a credit to which a parcel he owns is entitled, to any other parcel subject to a connection fee, provided the special assessment for which credit is allowed has been paid in full.

Said connection fees shall be used to pay for capital outlays for system treatment plant and trunk line through acquisition or construction.

6-3 REFUND OF FEES

Upon written application by the original payer and/or property owner, not later than 180 days after the date of payment of the sewer connection fee and/or the frontage fee as described under Section 7, the Engineer may authorize the refunding of said fees less the administrative costs as determined by the Engineer to prepare and process said fees and refund of said fees. The original payer of said fees and/or the property owner will not be entitled to interests earned on said fees. Prior to refunding of said fees, the original "Will-Serve" letter and other documents issued at the time of payment of said fees shall be returned to the City.

6-4 DEFERRED PAYMENT OF FEES

Business customers planning to expand their existing business may defer payment of additional sewer connection fees subject to the following terms and conditions of the City:

The expanding business enter into an agreement with the City to either defer payment of the required additional sewer connection fees for 90 calendar days without any interest charges at the time of receipt of a "will- serve letter" or make amortized monthly payments including interest over a 24-month period starting at a time of receipt of a "will-serve letter". The rate of interest charged for the first 12-month period will be based on the weighted average rate of return on investments by the City of Simi Valley as published at the time the subject agreement is executed. The interest rate for the next 12-month period shall be adjusted to reflect the latest weighted average rate of return on investments by the City as published in the monthly investment report issued by the City of Simi Valley at that time. For the purpose of this Ordinance an existing business is defined as a commercial or industrial enterprise which currently has a valid business tax receipt.

SECTION 7: FRONTAGE FEE

Where the property to be served has not fully participated in the cost of an existing collection or trunk sewer to which the lateral sewer serving that property is or will be connected, a frontage fee equal to the current cost of providing collection sewers for like property under assessment district proceedings, as estimated by the Engineer, shall be paid at the time the connection fee is due. "Participation" may be through payment of a share of the cost at the time of original construction, under a reimbursement agreement, or through assessment district proceedings, and shall represent a share as if all property in the vicinity is provided with access to collection sewers. In addition, if sewer service laterals have been provided, the cost of these laterals shall be reimbursed to the City by the benefiting parcels at the current cost of providing such laterals.

SECTION 8: SERVICE FEE

The service fee shall be assessed against each user of the sewage treatment and collection system. The service fee rate shall be that provided for and adopted by a resolution or an ordinance of the City Council of the City of Simi Valley. The service fee shall be indexed to the "Urban Consumer Index" for Los Angeles-Long Beach-Anaheim (CPI). The service fee shall be adjusted annually, to be effective July 1 and based on the change between March of the effective year and March of the previous year, by the City Council of the City of Simi Valley. The adjusted service fee shall be determined either by a direct analysis of City's Sanitation revenue needs or by the following formula:

$$\text{Adjusted Fee} = \frac{\text{Service Fee} \times \text{CPI (Current)}}{\text{CPI (Previous)}}$$

Where: CPI (Current) = The Urban Consumer Index for Los Angeles-Long Beach-Anaheim currently in effect at the time of the fee adjustment.

CPI (Previous) = The Urban Consumer Index for Los Angeles- Long Beach-Anaheim which is tied to the Service Fee being adjusted.

The CPI as of the date of adoption of the monthly Service Fee of $ 16.10 for a single-family residence is 472.2 (March 199 7). Sewer service charges that are applicable to commercial, industrial, and institutional users shall be billed separately (not collected on the tax rolls).

All other sewer service charges shall be collected each fiscal year pursuant to City's election as allowed for in Section 5473 of the California Health and Safety Code to have said service fees collected on the tax roll in the same manner and at the same time as are general taxes for all accounts for which a monthly fee is provided and the account may be identified with a parcel shown on maps on file in the office of the County Assessor. Said collection shall follow the procedures set forth in Section 5473 et seq. of the California Health and Safety Code. Future service fees may be collected following the notice procedure, as provided in Section 5473 (1) of the Health and Safety Code.

Separately billed service fees shall be due at the beginning of each month and delinquent if not paid within thirty days. The City, at its option, may use bimonthly billing. If billed bimonthly, service fees shall be delinquent if not paid by the fifteen day of the second month.

Service fees not paid within fifteen days after becoming delinquent shall have added a basic penalty of 10 percent and in addition a penalty on one-half of one percent per month following the date of delinquency.

Where use of the system is commenced on or before the fifteenth of the month, a service fee shall be due for the entire month. Where use is commenced on or after the sixteenth of the month, the service fee shall commence the first of the next month.

For multiple family residences and mobile home parks, credit shall be allowed for dwelling units that are vacant for not less than 30 days for each calendar month that an individual dwelling unit remains vacant, provided further that the minimum fee per account shall be equal to the single family residence fee. Said credit shall be subject to the filing of a statement by the owner or manager of the premises and is subject to verification by the District through examination of occupancy records and utility bills.

SECTION 9: SPECIAL DISPOSAL FEE

The Engineer shall determine, considering volume and composition, the cost of handling any liquid wastes accepted for disposal at the treatment plant. The person disposing of said wastes shall pay said cost to the City as Special Disposal Fee as set forth in the City ordinance establishing the schedule of fees and charges. Potential Dischargers must conform to all requirements of the City's latest adopted Source Control Ordinance.

SECTION 10: ANNEXATION FEE

The owner of land annexed to the City shall pay an annexation fee equal to the prorate share of the City Sanitation facilities on an acreage basis. Said value shall be established by the Engineer based on the value of the City's fixed assets for the year preceding annexation or in the last published year-end figures, whichever is most current and available. The annexation fee shall be computed in accordance with the following formula:

$$\text{Annexation Fee (Per Acre)} = \frac{\text{City's Sanitation Net Fixed Assets}}{\text{Total City's Sanitation Area in Acres}} \times 0.4$$

Acreage of the City's Sanitation service area shall be established each year by the Engineer and kept constant throughout the fiscal year. The acreage calculations shall be on a gross acre basis.

SECTION 11: SEWER LIFT STATION OPERATION AND MAINTENANCE FEE

The annual cost of operation and maintenance of the Lake Park Area Sewer Lift Station, which serves a portion of the Wood Ranch Development and is shown as Exhibit B to this ordinance, shall be borne by those system users and potential system users who directly benefit from the pumping station.

Ultimately, all property which shall benefit from the subject lift station will be developed. Until such time that all properties are developed the following shall apply:

1. Lots that are built upon and occupied will pay according to the number and type of dwelling units on each lot.

2. Parcels that are not developed will be assessed in accordance with the number of dwelling units planned for those parcels.

3. Lots that are sold but not built upon or occupied will be assessed, as if they were occupied.

The benefitting properties shall pay charges as provided for and adopted by the City Council of the City of Simi Valley. Said charges shall be updated annually in accordance with changes in the CPI. Updated fees shall be determined using the method specified in Section 8.

The CPI as of the date of adoption of this ordinance is 476.8(March 1998); and corresponds to a Pumping Station Operation and Maintenance Annual Fee of $ 52.03 per equivalent dwelling unit.

SECTION 12: INDUSTRIAL WASTE DISCHARGE AND PERMIT FEE

The City shall collect fees and charges for the discharge of industrial wastes in accordance with the City's latest adopted Source Control Ordinance. Such fees and charges shall be as specified in and adopted by an ordinance of the City Council of the City of Simi Valley.

The Industrial Waste Discharge and Permit Fees shall be updated annually in the same manner as that specified for the Service Fee in Section 8 of this ordinance.

SECTION 13: AUTHORITY FOR EVALUATING THE ENVIRONMENTAL IMPACT OF PROJECTS, FOR PREPARATION OF ENVIRONMENTAL IMPACT REPORTS AND FOR MAKING FINDING OF CATEGORICAL EXEMPTION

13-1 CALIFORNIA ENVIRONMENTAL QUALITY ACT REQUIREMENTS

The City Council of the City of Simi Valley hereby finds and declares that the adoption of this ordinance is categorically exempt from the California Environmental Quality Act, pursuant to 14 CCR 15273, relating to rates, tolls, fares, and charges.

SECTION 14: PUBLICATION

The City Clerk shall cause a summary of this ordinance or a summary hereof to be published in a newspaper of general circulation published in the County of Ventura and circulated in the City, and if applicable to be posted, in accordance with Section 36933 of the California Government Code; shall certify to the adoption of this ordinance and shall cause a certified copy of this ordinance, together with proof of publication, to be filed in the Office of the Clerk of this City.

SECTION 15: EFFECTIVE DATE

This ordinance shall go into effect and be in full force and effect at 12:01 a.m. on the thirty-first (31st) day after its passage.

PASSED and ADOPTED this 29 day of June, 1998.

ATTEST:

Alice K. Redondo
Assistant City Clerk

Gregory Stratton, Mayor of the City of Simi Valley

APPROVED AS TO FORM:

David H. Hirsch, City Attorney

APPROVED AS TO CONTENT:

Mike Sedell, City Manager

Ronald C. Coons, Director
Department of Public Works

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ORD. NO. 926

I, Assistant City Clerk of the City of Simi Valley, California, do hereby certify that the foregoing Ordinance No. 926 was regularly introduced and adopted by the City Council of the City of Simi Valley, California, at a regular meeting thereof held on the 29th day of June, 1998 by the following vote of the City Council:

AYES:	Council Members Miller, Williamson, Webb, Mayor Pro Tem Davis, and Mayor Stratton
NAYS:	None
ABSENT:	None
ABSTAINED:	None

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the City of Simi Valley, California, this 1st day of July, 1998.

Alice K. Redondo

Alice K. Redondo
Assistant City Clerk of the City of
Simi Valley, California

EXHIBIT A

EQUIVALENT DWELLING UNIT ASSIGNMENT (EDU)

CATEGORY	EDU'S
Residential	
Single Family Residence (Detached/Attached)	1.00
Multiple Family (Condos, Apts., Airspace Townhouses)	0.75
Low Discharge Type Housing (as defined in California Civil Code Section 51.3(c)(3), consisting of at least 35 dwelling units)	0.60
Mobile Home (per unit)	0.60
Commercial	
Hotel/Motel	
per Unit without kitchen	0.33
per Unit with kitchen	0.55
Churches/Theaters/Auditoriums (7)	
110 seats or less	1.00
Each additional seat	0.0091
Restaurants (7)	
42 seats or less	2.60
Each additional seat	0.0625
Bars, Cocktail Lounge per seat (7)	0.06
Automobile Service Stations	
per restroom	0.33
Auto service & repair shops (Additional)	0.34
Comfort Station	
per water closet or urinal	0.33
Self-Service Laundry/car wash per washer/bay	0.40
Shop and Store buildings (1)	
10,000 sq. ft. or less - per 1,000 sq. ft.	0.33
Each additional area - per 1, 000 sq. ft.	0.22
Office buildings	
Medical - per 1000 sq. ft.	0.60
All other - per 1,000 sq. ft.	0.33
Other commercials, case-by-case determination (see Note 6, next page)	--
Industrial/Manufacturing (2)	
Dry Industry, per 1,000 sq. ft.*	0.36
Wet Industry, case-by-case determination*	--
Warehouse, per 1,000 sq. ft.	0.08

* Initial determination may be made on a case-by-case basis if adequate data such as water consumption data for the last 12 months for an almost identical facility is provided.

EXHIBIT A
Page 2 of 2

CATEGORY	EDU'S
Institutional	
Schools:	
Elementary/Nursery, Etc. - 60 Students or Less	1.00
Ea. Additional Student	0.0167
Junior High School - 50 Students or Less	1.00
Ea. Additional Student	0.02
High School - 30 Students or Less	1.00
Ea. Additional Student	0.033
Hospitals, per bed	0.60

NOTE:

1) Square footage refers to gross building square footage.

2) The equivalent dwelling unit (EDU) assessment determined at the time of payment of connection fees may be subject to City review after a period of one year from the date of discharge to the City's sewerage system and thereafter as may be necessary to confirm the actual discharge to the system. At the City's option, such determination shall be made by actual measurement of the discharge or by estimation of the discharge using the dischargers' water consumption as a guideline. Should any differences be determine, the discharger shall be assessed or refunded connection fees as appropriate. After this one year determination, should any subsequent discharge measurement increases determine the need for an additional assessment, it will be made; however, no such subsequent measurements shall entitle the discharger to a refund.

3) Additional sewer connection fees are due when a building's use changes from a lower EDU category to a higherEDU category. No refund will be made when the use changes the buildings EDU category to a lower EDU category .

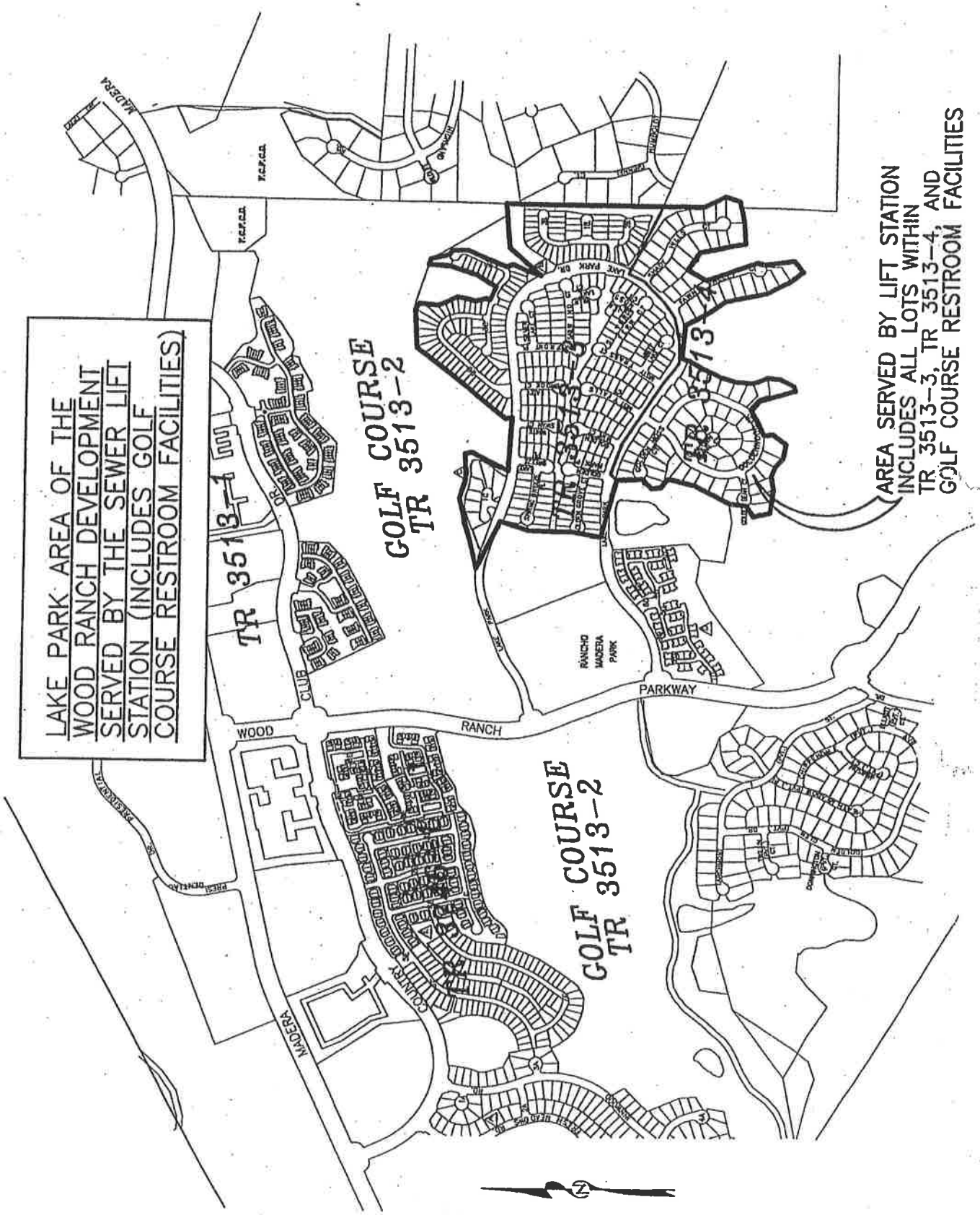
4) The EDU values contained herein represent the relative proportion of sewage contributed by the various categories to one Equivalent Dwelling Unit (EDU).

5) Use of this table bases the calculation of the sewer connection fee on the estimated quantity of sewage generated .

6) If an establishment does not fall into any one of the above indicated categories it shall be: a) placed into the most similar category, or b) broken down into several similar categories, or c) if none of these methods apply then a case-by-case determination based on the estimated quantity of water used shall be used.

7) The number of seats refers to the number of seats approved by the Planning Division of the Department of Environmental Services for the proposed establishment.

EXHIBIT B


LAKE PARK AREA OF THE
WOOD RANCH DEVELOPMENT
SERVED BY THE SEWER LIFT
STATION (INCLUDES GOLF
COURSE RESTROOM FACILITIES)
GOLF COURSE
TR 3513-2
TR 3513-1
TR 3513-3
TR 3513-4
AREA SERVED BY LIFT STATION
INCLUDES ALL LOTS WITHIN
TR 3513-3, TR 3513-4, AND
GOLF COURSE RESTROOM FACILITIES
WOOD RANCH PARKWAY
CLUB
MADERA
RANCHO MADERA PARK
COUNTRY
LAKE PARK DR.
LAKE PARK
GOLF COURSE
TR 3513-2
N