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SAN BERNARDINO MUNICIPAL WATER DEPARTMENT

2024 Water Master Plan

FEBRUARY 2025

FINAL REPORT

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2024 Water Master Plan

PROJECT NO. 1743

FEBRUARY 2025

FINAL REPORT

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Table of Contents

1. Introduction 1-1
    1.1 Background 1-2
    1.2 Purpose and Planning Horizon 1-2
    1.3 Study Area 1-3
    1.4 Land Use 1-4
2. Data Collection 2-1
3. System Understanding 3-1
    3.1 Hydraulic Schematic 3-1
    3.2 Hydraulic Design Criteria 3-1
4. Future Developments 4-1
5. Water Utility Asset Inventory 5-1
    5.1 Asset Register 5-5
    5.2 Summary 5-9
6. GIS and Hydraulic Model Update 6-1
7. Field Testing 7-1
8. Hydraulic Model Calibration 8-1
    8.1 Demand Allocation 8-1
    8.2 Hydrant Test Calibration Procedure 8-2
    8.3 Hydrant Test Calibration Results 8-3
9. Demand Projections 9-1
    9.1 Peaking Factors 9-2
10. System Evaluation 10-1
    10.1 Water Supply Facilities 10-1
    10.2 Storage Facilities 10-5
    10.3 Pump Stations 10-13
    10.4 Pressure Zone Supply 10-26
    10.5 Distribution System Pressure 10-29
    10.6 System Velocities 10-34

10.7 Fire Flow Availability 10-37
10.8 Terrace Pressure Zone Evaluation 10-41
10.9 Pressure Zone Realignment Evaluation 10-47
11. Facilities' Condition and Risk Assessment 11-1
11.1 Purpose and Objectives 11-1
11.2 Field Condition Assessment 11-1
11.3 Risk Assessment 11-37
12. Horizontal Assets Risk Assessment 12-1
12.1 Purpose and Objectives 12-1
12.2 Risk Assessment 12-1
12.3 Remaining Useful Life Assessment 12-34
13. Summary of Findings 13-1
13.1 Facilities Condition Assessment 13-1
13.2 Facilities Remaining Useful Life Assessment 13-1
13.3 Facilities Risk Assessment 13-1
13.4 Horizontal Assets Risk Result 13-2
13.5 Horizontal Assets Remaining Useful Life Result 13-2
13.6 Summary of All Assets Risk Results 13-3
14. Capital Improvement Plan 14-1
14.1 Project Type 14-1
14.2 Project Priority 14-1
14.3 Project Naming Convention 14-1
14.4 Cost Basis 14-2
14.5 Recommended Projects Based on Condition and Risk Assessment 14-3
14.6 Recommended Projects based on System Evaluation 14-15
14.7 Ongoing Projects 14-19
14.8 2024 Water Master Plan Recommended CIP Projects 14-21

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List of Tables

Table ES-1: Summary of Capital Improvement Projects - 2024 Water Master Plan xi
Table 1-1 : Existing Land Use Summary 1-4
Table 1-2 : Existing Land Use Summary by Type 1-5
Table 2-1 : Data Sources 2-2
Table 3-1: Pressure Criteria 3-1
Table 3-2: Distribution Pipeline Velocity Criteria 3-2
Table 3-3: Transmission Main Velocity Criteria 3-2
Table 3-4: Pressure Reducing Stations 3-2
Table 3-5: Pressure Zone Supply Criteria 3-3
Table 3-6: Fire Flow Criteria 3-3
Table 3-7: Pump Station Criteria 3-4
Table 3-8: Storage Criteria 3-5
Table 4-1 : Future Developments 4-1
Table 4-2 : Projected Demands from 2020 IRUWMP 4-4
Table 5-1: List of the Active and Inactive Inventoried Department Facilities 5-2
Table 5-2: Summary of the Inventoried Assets - Desktop and Field Inventories 5-6
Table 5-3: Typical Asset Attributes for Facility Assets 5-8
Table 8-1: Non-Revenue Water 8-2
Table 8-2: Typical Hazen-Williams C-factors 8-3
Table 8-3: Calibration Results 8-4
Table 8-4: Fire Flow Tests Indicating Closed Valves 8-5
Table 9-1: Projected Demands from 2020 IRUWMP 9-1
Table 9-2: Peaking Factors 9-2
Table 10-1: Domestic Water Supply Needs 10-1
Table 10-2: Current Wellhead Treatment Plant Capacities 10-2
Table 10-3: Wells Directly Serving Distribution System 10-3
Table 10-4: Inactive Wells 10-3
Table 10-5: Water Supply Analysis 10-4
Table 10-6: Pressure Zones Combined into Large Zones 10-6
Table 10-7: Storage Criteria 10-6
Table 10-8: System-wide Storage Analysis 10-7
Table 10-9: Pressure Zone Storage Analysis 10-8
Table 10-10: Pump Station Criteria 10-13
Table 10-11: Existing System Pumping Analysis Summary for Open Zones 10-15
Table 10-12: 2030 Water System Pumping Analysis Summary for Open Zones 10-18
Table 10-13: 2040 Water System Pumping Analysis Summary for Open Zones 10-21
Table 10-14: Existing Water System Pumping Analysis Summary for Closed Zones 10-24
Table 10-15: 2030 Water System Pumping Analysis Summary for Closed Zones 10-24
Table 10-16: 2040 Water System Pumping Analysis Summary for Closed Zones 10-25
Table 10-17: Pressure Zone Supply 10-26
Table 10-18: Pressure Zone and Supply Points Summary 10-26
Table 10-19: Pressure Criteria for Distribution System 10-29
Table 10-20: Distribution Pipeline Velocity Criteria 10-34

Table 10-21: Transmission Main Velocity Criteria 10-34
Table 10-22: Fire Flow Criteria 10-37
Table 11-1: Field Condition Assessment Sites and Facilities 11-2
Table 11-2: Asset Failure Modes 11-3
Table 11-3: Average Condition Score by Discipline 11-8
Table 11-4: Electrical and I&C Assets in Fair and Poor Condition 11-11
Table 11-5: Mechanical and HVAC Assets in Fair and Poor Condition 11-22
Table 11-6: Civil and Structural Assets in Fair and Poor Condition 11-25
Table 11-7: Customized Expected Useful Life Estimated for Each Asset Class and Asset Type 11-29
Table 11-8: Conversion of Condition Scores to Percent Life Consumed 11-33
Table 11-9: Asset-Level CoF Scoring Guide 11-41
Table 11-10: PoF Thresholds 11-43
Table 11-11: Consequence of Failure Thresholds 11-44
Table 11-12: Risk Thresholds 11-45
Table 12-1: Horizontal Non-Pipe Assets GIS Layers 12-1
Table 12-2: Probability of Failure Scoring Methodology for the Pipelines 12-2
Table 12-3: Nominal Useful Life of Pipe Materials 12-3
Table 12-4: Customized Useful Lives Assigned to Horizontal Non-Pipe Assets 12-3
Table 12-5: CoF Criteria and Weightings for Water Pipes 12-5
Table 12-6: Water Pipeline Probability of Failure Results Summary 12-6
Table 12-7: System Valve Probability of Failure Results Summary 12-8
Table 12-8: ACVs Probability of Failure Results Summary 12-10
Table 12-9: System Control Valve Probability of Failure Results Summary 12-12
Table 12-10: Flowmeter Probability of Failure Results Summary 12-14
Table 12-11: Hydrants Probability of Failure Results Summary 12-16
Table 12-12: Water Pipes Consequence of Failure Results Summary 12-18
Table 12-13: Pipeline Risk Results Summary 12-20
Table 12-14: System Valve Risk Results Summary 12-22
Table 12-15: Automatic Control Valve Risk Results Summary 12-24
Table 12-16: Automatic Control Valve's Risk Results 12-24
Table 12-17: System Control Valve Risk Results Summary 12-28
Table 12-18: Flowmeters Risk Results Summary 12-30
Table 12-19: Hydrants Risk Results Summary 12-32
Table 13-1: Percentages of Assets under Risk Scores 13-3
Table 14-1: CIP Naming Convention 14-2
Table 14-2: Vertical Asset R&R Projects 14-3
Table 14-3: Pipeline R&R Projects 14-13
Table 14-4: Water Supply Analysis Projects 14-15
Table 14-5: Pressure Zone Supply Analysis Projects 14-18
Table 14-6: Project Sources and Justification 14-21
Table 14-7: Predicted Fiscal Year Budget 14-22
Table 14-8: Summary of Capital Improvement Projects - 2024 Water Master Plan 14-22

List of Figures

Figure 1-1: Graphical Representation of the Department's "Roadmap" 1-1
Figure 1-2: Service Area 1-6
Figure 1-3: Existing Land Use Summary by Type 1-7
Figure 2-1: RFI Log Screenshot 2-1
Figure 5-1: Count of Assets by Site 5-7
Figure 5-2: Water System Asset Hierarchy 5-9
Figure 6-1: GIS Updates since 2014 6-2
Figure 7-1: Exhibit for Field Test Number 1 7-1
Figure 7-2: SBMWD Staff Preparing Hydrant During Field Testing 7-2
Figure 7-3: Fire Flow Test Locations 7-3
Figure 8-1: Fire Flow Test Locations with Predicted Closed Valves 8-6
Figure 10-1: Supply Source Capacity Analysis 10-5
Figure 10-2: New Ridgeline Zone Tank can be Potentially Located Adjacent to the Existing Tank 10-10
Figure 10-3: Potential Location for New Terrace Zone Tank Adjacent to the 2 Existing Tanks 10-11
Figure 10-4: Potential Location for New Terrace Zone Tank Adjacent to the Lytle Creek 2 Existing Tank 10-12
Figure 10-5: Distribution System Static Pressures 10-31
Figure 10-6: Distribution System Minimum Pressures 10-32
Figure 10-7: Distribution System Maximum Pressures 10-33
Figure 10-8: Distribution Pipelines under MDD Plus Fire Flow Conditions, Velocity >15 ft/sec 10-36
Figure 10-9: Deficient Fire Flows 10-39
Figure 10-10: Deficient Head loss (ft/1000) for Fire Flows and Head loss 10-40
Figure 10-11: Proposed Zone Realignment (2015 Facilities Master Plan) 10-42
Figure 10-12: Terrace Pressure Zone, Existing Deficiencies 10-43
Figure 10-13: Terrace Pressure Zone, Additional PRV 10-44
Figure 10-14: Terrace Area Moved to Upper 10-45
Figure 10-15: Terrace Zone Minimum Pressures, Existing vs. Modification 10-45
Figure 10-16: Terrace Zone Available Fire Flow, Existing vs. Modification 10-46
Figure 10-17: Lower Zone Deficiency 10-47
Figure 10-18: Modification of Upper Zone 10-49
Figure 10-19: 20-inch Line from Warren B. Cocke and Lytle Creek Reservoirs 10-49
Figure 10-20: MDD EPS Pressures - Existing Compared to Zone Modification 10-50
Figure 10-21 Existing Available Fire Flow vs. Available Fire Flow after Modification 10-51
Figure 10-22: Del Rosa, Minimum Pressures Existing and with Modification 10-53
Figure 11-1: Developed Condition Assessment Survey 123 Forms 11-3
Figure 11-2: Developed Condition Assessment Survey 123 Discipline Related Questions and the Applied Condition Scoring Guidelines 11-4
Figure 11-3: Inspection Checklists for Different Asset Disciplines 11-5
Figure 11-4: An Example 360-degree Photo Captured from Ogden Booster Pump Station 11-6

Figure 11-5: A Snapshot of Condition Assessment Results in the Asset Management Dashboard 11-7
Figure 11-6: Summary of the Field Condition Assessment Results 11-7
Figure 11-7: Field Condition Assessment Results by Discipline 11-8
Figure 11-8: Summary of Asset Condition Scores by Sites 11-9
Figure 11-9: Summary of Assets in Fair and Poor Conditions by Facility 11-10
Figure 11-10: Remaining Useful Life Calculation Methodology 11-32
Figure 11-11: Summary of the Remaining Useful Life Results in the Asset Management Dashboard 11-33
Figure 11-12: Remaining Useful Life Estimation, Condition vs. Age-Based Approach 11-34
Figure 11-13: Assets with Estimated Remaining Useful Life of Less than 10 years – All Facilities 11-35
Figure 11-14: Assets with Remaining Useful Life of Less than 10 years – Facilities with Field Condition Scores 11-36
Figure 11-15: Risk Assessment Methodology 11-37
Figure 11-16: Converting Condition Scores to Probability of Failure 11-38
Figure 11-17: Variable Consequences of Failure 11-39
Figure 11-18: Consequence of Failure - Multiple Levels 11-39
Figure 11-19: Criteria and Weighting for Facility-Level CoF Scoring 11-40
Figure 11-20: Final CoF Calculation 11-41
Figure 11-21: Risk Formula 11-42
Figure 11-22: Summary of the Risk Results in the Asset Management Dashboard 11-42
Figure 11-23: Summary of the Probability of Failure Results 11-44
Figure 11-24: Summary of the Consequence of Failure Results 11-45
Figure 11-25: Summary of Risk Results 11-46
Figure 11-26: Risk Matrix 11-46
Figure 12-1: Water Pipes and the Pipe Segments with Special Concern 12-4
Figure 12-2: Water Pipelines Probability of Failure Results 12-7
Figure 12-3: System Valves Probability of Failure Results 12-9
Figure 12-4: Automatic Control Valves Probability of Failure Results 12-11
Figure 12-5: System Control Valves Probability of Failure Results 12-13
Figure 12-6: Flowmeters Probability of Failure Results 12-15
Figure 12-7: Hydrants Probability of Failure Results 12-17
Figure 12-8: Water Pipeline Consequence of Failure Results 12-19
Figure 12-9: Pipeline Risk Results 12-21
Figure 12-10: System Valve Risk Results 12-23
Figure 12-11: Automatic Control Valve Risk Results 12-27
Figure 12-12: System Control Valve Risk Results 12-29
Figure 12-13: Flowmeter Risk Results 12-31
Figure 12-14: Hydrants Risk Results 12-33
Figure 12-15: Remaining Useful Life of Water Pipes 12-34
Figure 12-16: Remaining Useful Life Results for the Horizontal Non-Pipe Assets 12-35
Figure 14-1: Pipeline CIP Projects - Priority 1 14-10
Figure 14-2: Pipeline CIP Projects - Priority 2 14-11
Figure 14-3: Pipeline CIP Projects - Priority 3 14-12

List of Appendices

Appendix A: Fire Flow Test Exhibits
Appendix B: Mountain Zone Realignment Analysis
Appendix C: Condition Assessment Checklist
Appendix D: SBMWD Asset Management Dashboard
Appendix E: SBMWD Asset Register
Appendix F: Arrowhead Springs Hotel Analysis
Appendix G: Water System Hydraulic Schematic

List of Acronyms

Abbreviation	Definition
ACV	Automatic control valve
ADD	Average day demand
AF	Acre-foot
AWWA	American Water Works Association
BPS	Booster pump station
CMMS	Computerized Maintenance Management System
CoF	Consequence of failure
DWR	Department of Water Resources
EAR	Electronic annual report
EPA	Environmental Protection Agency
EPS	Extended period simulation
FFT	Fire flow test
FT	Foot
GAC	Granular activated carbon
GIS	Geographic Information System
GPM	Gallons per minute
HGL	Hydraulic grade line
HL/1000 FT	Head loss, ft per 1000 ft
HVAC	Heating, ventilation, and air conditioning
I&C	Instrumentation and control
IRUWMP	Integrated Regional Urban Water Management Plan
LIDAR	Light detection and ranging
MDD	Maximum day demand
MG	Million gallons
MGD	Million gallons per day
O&M	Operation and Maintenance
PH	Peak hour
PoF	Probability of failure
PRS	Pressure reducing station
PRV	Pressure reducing valve
PWS	Public water system
R&R	Rehabilitation & Repair
RFI	Request for information
RUL	Remaining useful life

Abbreviation	Definition
SBMWD	San Bernardino Municipal Water Department
SCADA	Supervisory Control and Data Acquisition
SFR	Single-family residential
TT	Tentative tract
UWMP	Urban Water Management Plan
VFD	Variable frequency drive

Executive Summary

The 2024 Water Master Plan has been prepared as an update to the 2015 Water Facilities Master Plan. There have been significant changes in the water landscape since 2015, particularly related to drought impacts. In the 2014/2015 timeframe, California water systems typically saw their peak demands. From the low demand periods seen during the economic downturn from 2008-2010, water demands steadily increased to their peak observed in 2014/2015. It was shortly afterwards when mandatory drought restrictions were put in place and water system demands dropped significantly starting in 2016. Current and projected demands play a pivotal role in water system master planning, both for assessing deficiencies and sizing improvements.

This report provides comprehensive documentation, analysis, and recommendations for the water system, including a calibrated InfoWater Pro hydraulic model, a thorough condition and risk assessment of system facilities, and an asset inventory of all fixed assets. The Water Master Plan serves as a roadmap, providing clear direction to the Department for implementing capital improvements, and to improve the efficiency and reliability of the Department's water system.

The primary components of the water system include:

- 51 groundwater production wells
- 5 groundwater treatment plants
- Approximately 45,000 water meter customers
- 38 reservoirs (or tanks)
- 28 pump stations, approximately 67 booster pumps
- 715 miles of distribution system piping, from 4" to 60" diameter
- Average daily demand of 35 MGD and projected to increase to 40 MGD by 2040

A summary of the capital improvement projects identified in this master plan are shown in Table ES-1.

Table ES-1: Summary of Capital Improvement Projects - 2024 Water Master Plan

CIP-ID	Name	Total Project Cost	Priority	Schedule
RR-10	16th St Booster Pump Station and Well Improvements	$910,000	1	Year 1
RR-31	Melvin Ave - BPS (#1-5) Vault Lid Replacement	$40,000	1	Year 1
RR-3	Backup Power Ridgeline Top of Hill	$460,000	1	Year 1
RR-38	Electric Dr Reservoir Electrical and Mechanical Improvements	$840,000	1	Year 1
RR-4	Mill & D St - Reservoir Roof Upgrades	$390,000	1	Year 1
RR-1	Backup Power Perris Hill Reservoir	$450,000	1	Year 1
RR-47	Water Pipeline Replacement Project 1	$7,460,000	1	Year 1
RR-48	Water Pipeline Replacement Project 2	$9,340,000	1	Year 2
RR-51	Water Pipeline Replacement Project 5	$2,500,000	1	Year 3
RR-50	Water Pipeline Replacement Project 4	$4,740,000	1	Year 3
RR-54	Water Pipeline Replacement Project 8	$4,450,000	1	Year 3
RR-49	Water Pipeline Replacement Project 3	$3,940,000	1	Year 4
RR-53	Water Pipeline Replacement Project 7	$8,540,000	1	Year 4
RR-58	Water Pipeline Replacement Project 12	$6,250,000	1	Year 5
RR-56	Water Pipeline Replacement Project 10	$4,750,000	1	Year 5
RR-57	Water Pipeline Replacement Project 11	$7,970,000	1	Year 6
RR-59	Water Pipeline Replacement Project 13	$4,710,000	1	Year 6
RR-55	Water Pipeline Replacement Project 9	$8,510,000	1	Year 7
RR-60	Water Pipeline Replacement Project 14	$5,530,000	1	Year 8
RR-64	Water Pipeline Replacement Project 18	$7,620,000	1	Year 8
RR-61	Water Pipeline Replacement Project 15	$11,430,000	1	Year 9
RR-62	Water Pipeline Replacement Project 16	$9,400,000	1	Year 10
RR-63	Water Pipeline Replacement Project 17	$10,980,000	1	Year 11
RR-65	Water Pipeline Replacement Project 19	$11,340,000	1	Year 12
RR-12	17th St Booster Pump Station Improvements	$150,000	2	Year 13
RR-13	17th St Well Upgrades	$910,000	2	Year 13
RR-14	17th & Sierra Way Plant - Common Upgrades	$1,000,000	2	Year 13
RR-15	17th & Sierra Way Plant Reservoir Improvements	$80,000	2	Year 13
RR-16	19th St Plant Booster Pump Station Improvements	$1,010,000	2	Year 13
RR-17	19th St Plant - Common Upgrades	$1,760,000	2	Year 13
RR-18	19th St Plant GAC System Improvements	$140,000	2	Year 13
RR-19	EPA Well 6 Upgrades	$1,710,000	2	Year 13
RR-20	EPA Well 7 Upgrades	$140,000	2	Year 13

CIP-ID	Name	Total Project Cost	Priority	Schedule
RR-26	Sycamore Booster Pump Station (#3-4) Improvements	$330,000	2	Year 13
RR-27	Newmark Well Upgrades	$990,000	2	Year 13
RR-25	Sycamore Booster Pump Station (#2) Improvements	$990,000	2	Year 13
RR-22	Newmark Plant - Common Upgrades	$720,000	2	Year 13
RR-23	Newmark Plant GAC System Improvements	$600,000	2	Year 13
NA-2	Needs Analysis/Study for Additional Groundwater Treatment	$550,000	2	Year 13
RR-39	Lytle Creek Booster Pump Station Upgrade	$13,020,000	2	Year 14
RR-46	Mill & D St Reservoir Electrical and Mechanical Improvements	$240,000	2	Year 15
RR-8	Permanent Generator at Daley Booster Pump Station	$580,000	2	Year 15
RR-9	Permanent Generator at Ridgeline Lower Booster Pump Station	$560,000	2	Year 15
RR-32	Waterman Ave Well Upgrades	$110,000	2	Year 15
RR-29	Waterman Ave Booster Pump Station (#2) Mechanical Improvements	$150,000	2	Year 15
RR-67	Water Pipeline Replacement Project 21	$10,950,000	2	Year 15
RR-28	Waterman Ave Booster Pump Station (#1,3,4) Mechanical Improvements	$930,000	2	Year 15
RR-5	Waterman Ave Waterman Booster Pump Station (#1,3,4) Electrical Improvements	$130,000	2	Year 15
RR-11	Waterman Ave Waterman Booster Pump Station (#2) Electrical Improvements	$120,000	2	Year 15
RR-66	Water Pipeline Replacement Project 20	$11,680,000	2	Year 15
RR-68	Water Pipeline Replacement Project 22	$11,620,000	2	Year 16
RR-69	Water Pipeline Replacement Project 23	$10,540,000	2	Year 17
RR-70	Water Pipeline Replacement Project 24	$14,660,000	2	Year 18
RR-71	Water Pipeline Replacement Project 25	$10,530,000	2	Year 19
RR-72	Water Pipeline Replacement Project 26	$11,760,000	2	Year 20
RR-73	Water Pipeline Replacement Project 27	$7,040,000	2	Future
RR-78	Water Pipeline Replacement Project 32	$3,820,000	2	Future
RR-75	Water Pipeline Replacement Project 29	$10,590,000	2	Future
RR-76	Water Pipeline Replacement Project 30	$9,810,000	2	Future
RR-77	Water Pipeline Replacement Project 31	$11,030,000	2	Future
RR-74	Water Pipeline Replacement Project 28	$10,380,000	2	Future
RR-79	Water Pipeline Replacement Project 33	$10,460,000	2	Future
RR-80	Water Pipeline Replacement Project 34	$8,380,000	2	Future
RR-30	Waterman Ave Plant GAC System Upgrades	$2,240,000	2	Future
RR-81	Water Pipeline Replacement Project 35	$8,720,000	2	Future

CIP-ID	Name	Total Project Cost	Priority	Schedule
RR-82	Water Pipeline Replacement Project 36	$10,810,000	2	Future
RR-83	Water Pipeline Replacement Project 37	$12,270,000	2	Future
RR-84	Water Pipeline Replacement Project 38	$12,250,000	2	Future
RR-85	Water Pipeline Replacement Project 39	$13,630,000	2	Future
RR-86	Water Pipeline Replacement Project 40	$10,160,000	2	Future
RR-21	Melvin Ave Booster Pump Station Improvements	$80,000	3	Future
RR-24	Newmark Plant Reservoir Upgrades	$110,000	3	Future
RR-6	Permanent Generator at Sepulveda Booster Pump Station	$460,000	3	Future
RR-105	Water Pipeline Replacement Project 59	$5,420,000	3	Future
RR-40	Lytle Creek - Common Upgrades	$1,010,000	3	Future
RR-42	Del Rosa #3 Reservoir Electrical and Mechanical Improvements	$410,000	3	Future
RR-43	Daley Canyon Reservoir Electrical and Mechanical Improvements	$410,000	3	Future
RR-33	Cajon Blvd Reservoir Electrical and Mechanical Improvements	$560,000	3	Future
RR-41	Palm #2 Reservoir Electrical and Mechanical Improvements	$790,000	3	Future
RR-106	Water Pipeline Condition Assessment Study	$1,100,000	3	Future
RR-37	Ogden Booster Pump Station Upgrade	$10,230,000	3	Future
RR-36	Palm Booster Pump Station Upgrade	$11,720,000	3	Future
RR-34	Cajon Booster Pump Station Upgrade	$13,840,000	3	Future
RR-35	Meyers Booster Pump Station Upgrade	$12,210,000	3	Future
RR-45	17th & Sierra Way Plant GAC System Improvements	$14,820,000	3	Future
RR-87	Water Pipeline Replacement Project 41	$10,330,000	3	Future
RR-88	Water Pipeline Replacement Project 42	$12,070,000	3	Future
RR-89	Water Pipeline Replacement Project 43	$10,440,000	3	Future
RR-90	Water Pipeline Replacement Project 44	$9,520,000	3	Future
RR-91	Water Pipeline Replacement Project 45	$12,400,000	3	Future
RR-92	Water Pipeline Replacement Project 46	$9,270,000	3	Future
RR-93	Water Pipeline Replacement Project 47	$9,160,000	3	Future
RR-102	Water Pipeline Replacement Project 56	$13,910,000	3	Future
RR-95	Water Pipeline Replacement Project 49	$9,350,000	3	Future
RR-96	Water Pipeline Replacement Project 50	$11,380,000	3	Future
RR-97	Water Pipeline Replacement Project 51	$12,000,000	3	Future
RR-98	Water Pipeline Replacement Project 52	$12,950,000	3	Future
RR-99	Water Pipeline Replacement Project 53	$12,730,000	3	Future
RR-100	Water Pipeline Replacement Project 54	$9,840,000	3	Future

CIP-ID	Name	Total Project Cost	Priority	Schedule
RR-101	Water Pipeline Replacement Project 55	$7,660,000	3	Future
RR-44	Devore Reservoir Electrical and Mechanical Improvements	$2,450,000	3	Future
RR-103	Water Pipeline Replacement Project 57	$11,420,000	3	Future
RR-104	Water Pipeline Replacement Project 58	$11,760,000	3	Future
RR-94	Water Pipeline Replacement Project 48	$5,900,000	3	Future
RR-52	Water Pipeline Replacement Project 6	$5,940,000	3	Future

1. Introduction

The 2024 Water Master Plan has been prepared as an update to the San Bernardino Municipal Water Department 2015 Water Master Plan. There have been significant changes in the water landscape since 2015, particularly related to drought impacts and projected demand conditions. The 2024 Water Master Plan serves as roadmap for implementing capital improvement projects to improve the efficiency and reliability of the San Bernardino Municipal Water Department (SBMWD or Department) water system.

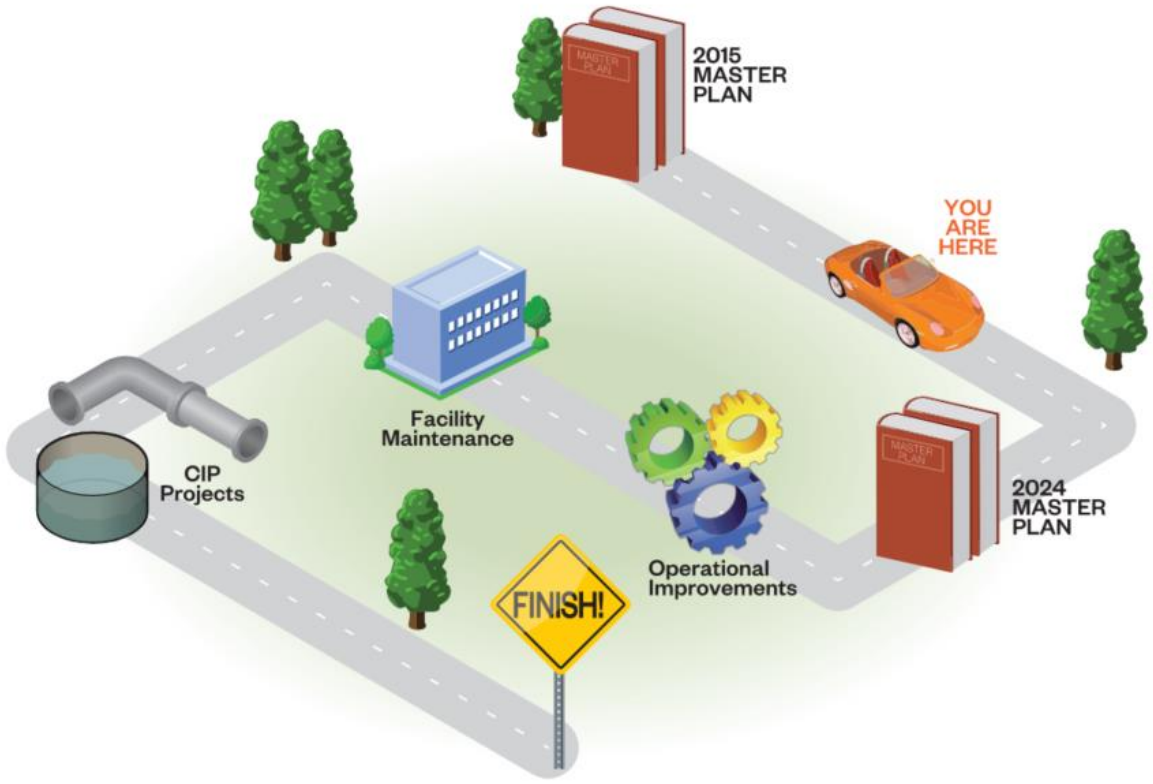

Figure 1-1: Graphical Representation of the Department's "Roadmap"

The 2024 Water Master Plan incorporates the following elements:

- Data collection and asset inventory
- GIS Update
- Hydraulic model calibration and results
- Water System Evaluation
- Condition Assessment Update
- Capital Improvement Projects

1.1 Background

The San Bernardino Municipal Water Department, located in San Bernardino County, was created as a municipal utility under Article 9 of the City of San Bernardino Charter in 1905. The Department has a service area of approximately 60 square miles and is located approximately 60 miles east of the City of Los Angeles. The Department serves a current population of 217,000. As of 2040, the Department will serve a projected population of 236,000.

1.2 Purpose and Planning Horizon

The purpose of the 2024 Water Master Plan (Master Plan) is to evaluate the Department's water system under existing conditions and through a planning horizon extending through year 2040. The Master Plan developed a Capital Improvement Program that identified the recommended projects needed to ensure that the Department continues to efficiently provide safe and reliable drinking water to its customers.

1.2.1 Scope of Work

1.2.1.1 Scope of Work

A summary of the major tasks undertaken for the development of this Master Plan is included below.

1. **Data Collection and System Understanding**

    a. Review of all available information pertinent to the development of this Master Plan including, but not limited to, previous Master Plans, Urban Water Management Plan, GIS files, as-builts, and supply source/water production data.

    b. Review of system hydraulics and development of hydraulic design criteria needed for the hydraulic model. Task includes updating the current hydraulic schematic and reviewing future developments/demands.

c. Complete a Water Utility Asset Inventory for vertical and horizontal assets. There were also a multitude of field visits to the various system facilities and correspondence with Department Engineering and Operations staff to ensure that the asset inventory accurately reflected real word conditions. All the asset information was consolidated into a centralized database referred to as an asset register.

2. GIS and Hydraulic Model

a. A thorough comparison of the GIS and the 2014 hydraulic model (InfoWater Pro) was conducted. Facility changes and pipeline improvements since 2014 were incorporated into the hydraulic model.

b. Calibration of water hydraulic model using field data and existing demands.

3. System Evaluation

a. Evaluated existing facilities and established recommendations for future improvements using criteria established under Task 1. Analyzed the adequacy and reliability of the Department's facilities for near term and future conditions. The system evaluation includes storage analysis, pumping analysis, pressure zone supply, distribution system pressure, and fire flow availability.

b. Pressure zone realignment evaluations for Terrace, Lower and Del Rosa pressure zones. These zones were identified with deficiencies per the 2015 Water Facilities Master Plan (2015 MP). The 2015 MP recommended zone realignment studies to improve operations in these three zones.

4. Condition and Risk Assessment

a. Performed a risk-based condition assessment of the Department's water distribution system and above-ground assets. Field condition assessment was conducted on select facilities or assets that have the highest criticality within the water system.

5. Capital Improvement Program Projects

a. Identify projects for the Department's CIP based on analysis and evaluations from the master planning effort. Particularly evaluations and findings from the System Evaluation and Condition and Risk Assessment tasks.

1.3 Study Area

The Department's service area is bordered on the north by the San Bernardino National Forest, on the east by the East Valley Water District and Redlands Municipal Utilities Department, on the south by the cities of Loma Linda, Colton, and Terrace Water Company, and on the west by the West Valley Water District, Rialto Municipal Water, and the Muscoy Mutual Water Company. The Department provides service for urban water uses, including residential, commercial, industrial and public properties. The topographic

elevation of the service area ranges from approximately 1,000 feet to 2,100 feet above sea level. Figure 1-2 provides a geographical overview of the study area.

1.4 Land Use

This section summarizes the existing land use. Land use is an important factor in master planning and hydraulic modeling to accurately allocate residential, commercial, and industrial water demands. Existing land use data was obtained from Department data based on polygons assigned with specific Land Use/Zoning Codes.

SBMWD primarily provides water service to single family residential customers. Table 1-1 and Table 1-2 summarize the current land use type and designation and their corresponding area and percentage. Figure 1-3 shows the various land use designations through the SBMWD service area consolidated into seven types: Single Family Residential, Multi-Family Residential, Central South City, Commercial, Industrial, Other, and Specific Plan.

Table 1-1 : Existing Land Use Summary

Type	Land Use Designation	Area (acre)	Percent (%)
Single Family Residential	Residential Estate	726	1.91%
	Residential Low	4,959	13.08%
	Residential Low 3.5	65	0.17%
	Residential Suburban	8,085	21.32%
Multi-Family Residential	Residential Student Housing	28	0.07%
	Residential High	128	0.34%
	Residential Medium	1,270	3.35%
	Residential Medium High	307	0.81%
	Residential Urban	1,703	4.49%
Central South City	Central City South	126	0.33%
Commercial	Commercial General	1,810	4.77%
	Commercial Heavy	413	1.09%
	Commercial Regional	881	2.32%
	Commercial Office	434	1.14%
Industrial	Industrial Extractive	279	0.74%
	Industrial Heavy	1,127	2.97%
	Industrial Light	2,415	6.37%
	Office Industrial Park	156	0.41%
Other	Public Commercial Recreation	405	1.07%
	Public Facilities	3,263	8.60%

Type	Land Use Designation	Area (acre)	Percent (%)
	Public Open Space	227	0.60%
	Public Park	446	1.17%
	Publicly Owned Flood Control	3,756	9.90%
	Railroad	97	0.26%
	Road Right-of-Way	62	0.16%
Specific Plan	Specific Plan Alliance California	680	1.79%
	Specific Plan Arrowhead Springs	1,902	5.01%
	Specific Plan Calmat/Cajon Creek	1,475	3.89%
	Specific Plan Paseo Las Placitas	33	0.09%
	Specific Plan Rancho Palma	41	0.11%
	Specific Plan Spring Trails	171	0.45%
	Specific Plan University Business Park	56	0.15%
	Specific Plan University Hills	404	1.07%
	TOTAL	**37,929**	**100%**

Table 1-2 : Existing Land Use Summary by Type

Land Use Type	Area (acre)	Percent (%)
Single Family Residential	13,834	36.47%
Other	8,256	21.77%
Specific Plan	4,762	12.56%
Industrial	3,978	10.49%
Commercial	3,538	9.33%
Multi-Family Residential	3,434	9.05%
Central City South	126	0.33%
TOTAL	**37,929**	**100%**

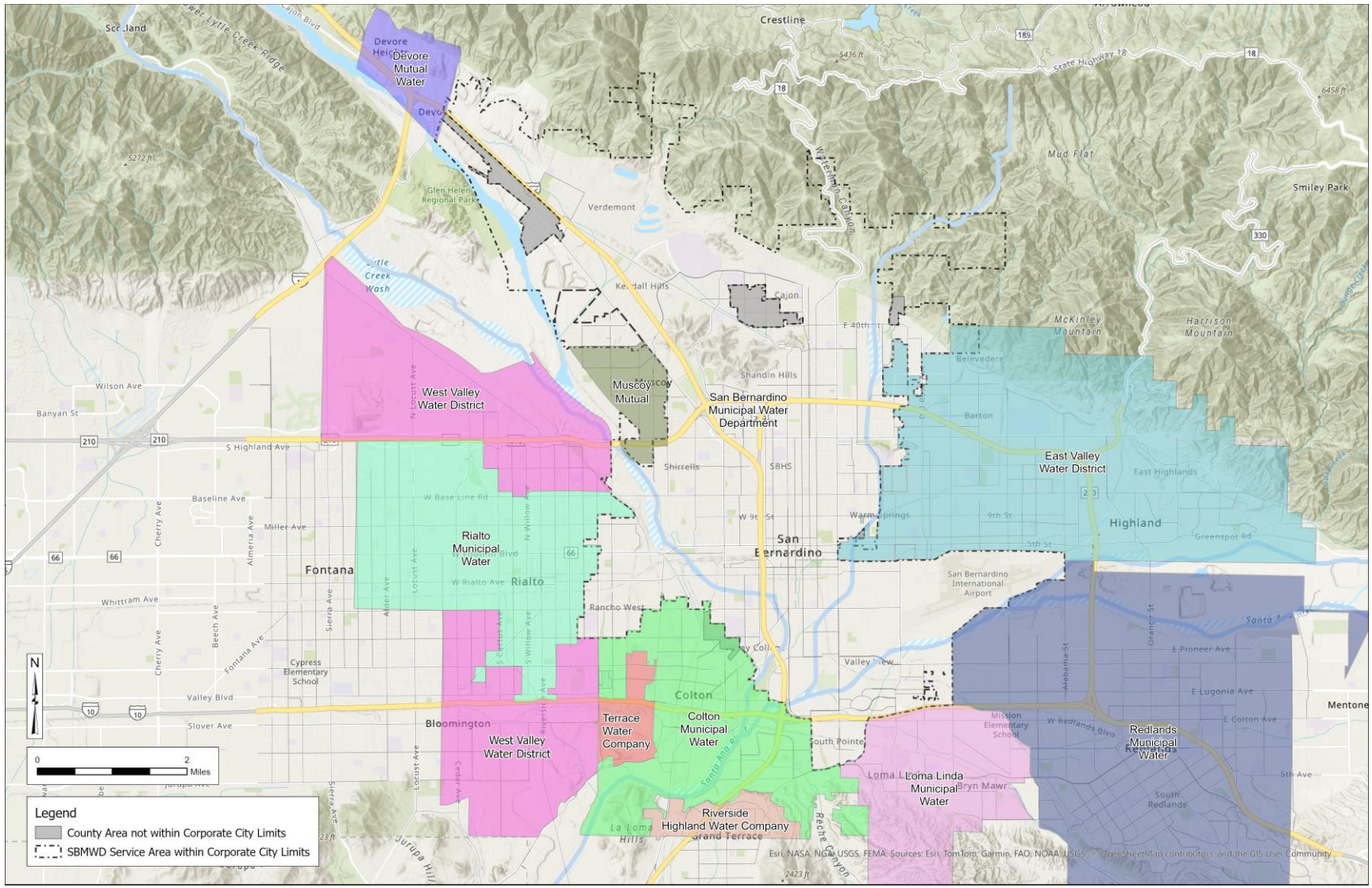

Figure 1-2: Service Area

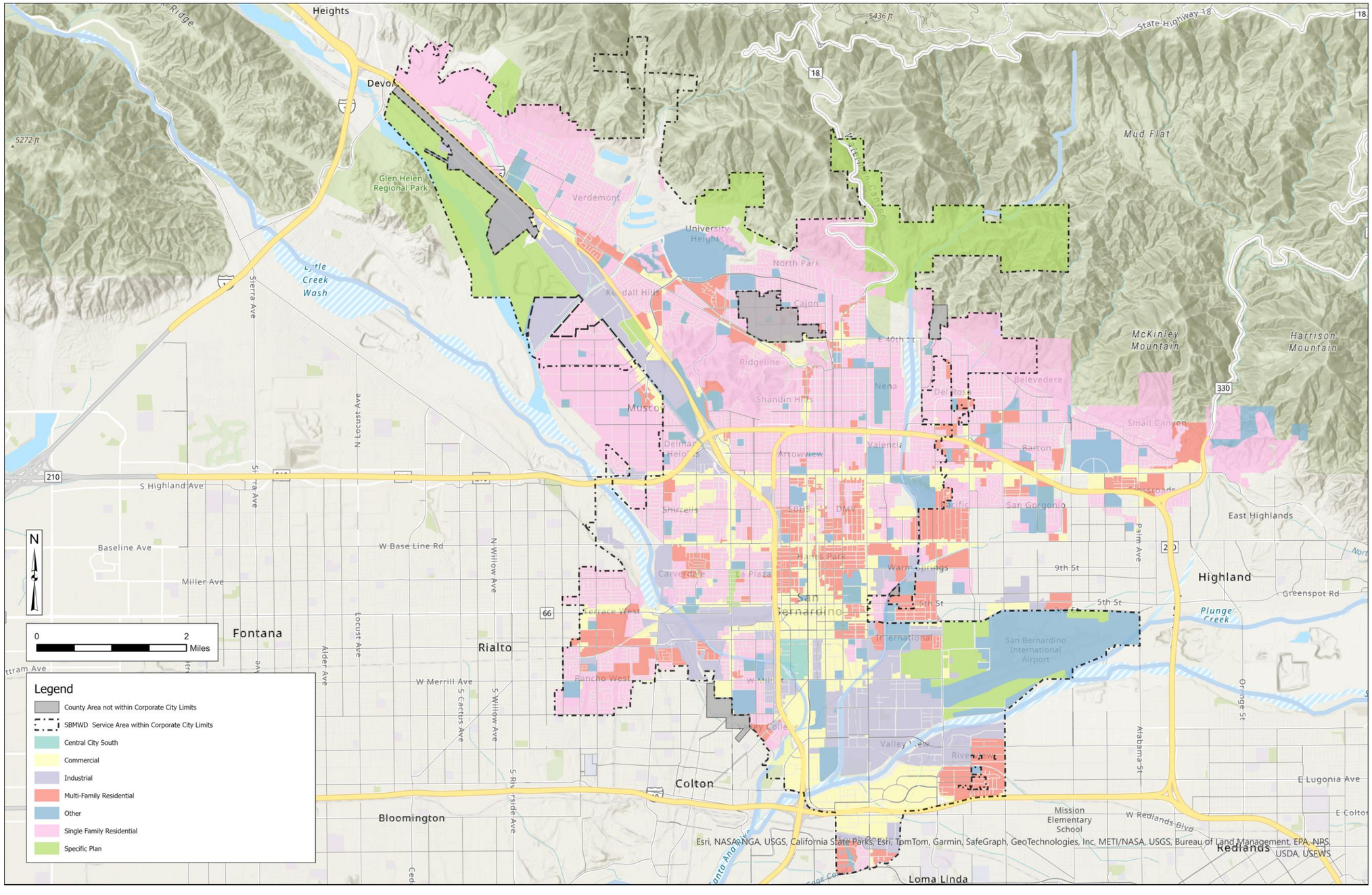

Figure 1-3: Existing Land Use Summary by Type

2. Data Collection

Thorough and accurate data are fundamental to a comprehensive master plan. Data used in the development of this master plan included the previous Master Plan, GIS files, as-builts, supplemental reports and data, and supply source/water production data. Figure 2-1 is a screenshot of the RFI log.

San Bernardino Municipal Water Department **RFI**

2024 Water System Master Plan

Request for Information Log

RFI NO.	CATEGORY	DESCRIPTION	PRIORITY	DATE REQUESTED	SBMWD RESPONSE
1	General	GIS database of water system	High	4/5/2022	Completed
2	General	GIS database of City info within your system (including parcels, streets, City property, etc.)	High	4/5/2022	Completed
3	General	Aerial imagery (geo-located tiff)	Medium	4/5/2022	Completed
4	General	Existing land use shapefile	High	4/5/2022	(5/17/22: No additonal information needed.)
5	General	Zoning shapefile	High	4/5/2022	Completed
6	General	Planned developments list/shapefile	High	4/5/2022	Completed
7	General	Most recent General Plan	Medium	4/5/2022	https://www.sbcity.org/civicax/filebank/blobdload.aspx?blobid=26199
8	General	High resolution City logo	Low	4/5/2022	Completed
9	General	Surface elevation file	High	4/5/2022	Completed; Provided LiDAR

Figure 2-1: RFI Log Screenshot

Table 2-1 summarizes the data sources received/reviewed for the development of the Master Plan.

Table 2-1 : Data Sources

Data Source	
Aerial GIS Coverage of SBMWD	Previous Capital Improvement Program
As-builts (pipelines, wells, treatment plants, pump stations)	Previous Master Plan and Urban Water Management Plan
Current and Historic Water Usage	Pump Curves
Customer Complaint Summary	Pump curves and performance test reports (performed by Southern California Edison)
Design Documents	Reports (Tank Inspection Reports, Condition Assessment Reports)
DWR Water reports	SCADA information for system facilities
Grants Received or in Progress	Surface elevation file (LIDAR data in the form of a Digital Elevation Model)
Historical water production and metered billing records	Water Supply Contracts
Land Use and Zoning Data	Water System Geodatabase (pipelines, valves, pump stations)
Operation and Maintenance Manuals	Water system hydraulic schematic
Planned developments list/shapefile	Water Use Restrictions

Additionally, several field visits to the various system facilities were conducted as part of the condition assessment of the Master Plan. The data collected during the field visits was used to develop SBMWD's water utility asset inventory and to supplement hydraulic model information.

3. System Understanding

3.1 Hydraulic Schematic

A hydraulic schematic provides an overview of the major components and hydraulic connections in a distribution system. The Department's hydraulic schematic was updated as part of the Master Plan efforts. The hydraulic schematic was updated based on GIS files, the hydraulic model, and several discussions with Department staff. The updated hydraulic schematic is shown in Appendix G.

3.2 Hydraulic Design Criteria

Design criteria are used to evaluate the performance of the existing water system, and to set requirements for the design of new facilities. Design criteria are used when evaluating existing facilities in operation and determining if they sufficiently serve the needs of the system. Design criteria for new facilities are typically more conservative than evaluation criteria for existing facilities. Design criteria for new facilities must plan for future needs including an appropriate factor of safety to account for future unknowns.

Design criteria were established drawing upon several references including industry best practices and utility regulatory requirements. Design criteria for the water system address service pressure, pipelines, pump stations, and storage. These are the criteria used to evaluate the performance of the existing system and serve as the basis for new project recommendations.

3.2.1 Pressure

Pressure criteria for a water system are based on the requirements set forth in General Order 103-A Public Utilities Commission of the State of California (Effective September 10, 2009). The identified pressure criteria for the water system incorporates the requirements of General Order 103-A, and industry best practices for operating a water system, shown in Table 3-1. Minimum service pressures are measured at the service connection to the distribution pipeline.

Table 3-1: Pressure Criteria

Demand Condition	Minimum Service Pressure (psi)	Notes
Static Pressure (No Demands)	60 psi	This is preferred, not required. Desired range is 60 to 80 psi.
Dynamic Pressure (Operating)	40 psi	This is a requirement for all demand conditions, except fire flow.
Maximum Day + Fire Flow	20 psi	This is a requirement

3.2.2 Pipelines

Distribution pipelines shall be sized for a maximum velocity of 10 ft/sec under peak hour demand or a maximum velocity of 15 ft/sec under maximum day demand plus fire flow conditions. There is no minimum velocity criterion.

Table 3-2: Distribution Pipeline Velocity Criteria

Demand Condition	Max Velocity
Peak Hour Demand	10 ft/sec
Maximum Day + Fire Flow	15 ft/sec

Transmission mains are defined as pipelines that generally do not have water service connections, often have no fire hydrant connections, and are greater than 12-inch diameter. Transmission mains shall be sized for a target velocity range of 5 to 7 ft/sec under peak hour demand, or worst-case flow conditions. Transmission mains may be sized beyond this velocity range if deemed appropriate for the application.

Table 3-3: Transmission Main Velocity Criteria

Demand Condition	Velocity Range
Peak Hour, or Worst-Case Flow Condition	5 to 7 ft/sec

3.2.3 Pressure Reducing Stations

Pressure reducing valves (PRVs) are used to transfer water from a higher pressure zone into a lower pressure zone. The function of pressure reducing valves is to modulate and maintain a set downstream pressure regardless of upstream (upper pressure zone) conditions. It is recommended that each pressure reducing station have a minimum of 2 PRVs for redundancy.

Table 3-4: Pressure Reducing Stations

Facility Type	Criteria
Pressure Reducing Station	Minimum of 2 PRVs

3.2.4 Pressure Zone Supply

Providing multiple supply points to a pressure zone increases service reliability and fire flow protection capability to the water service area. Supply points to a pressure zone can be a reservoir, pump station, pressure reducing station, imported water connection, or treatment plant supply. An analysis was conducted to verify supply points to each pressure zone, with the criteria that each pressure zone maintains a minimum of two (2) supply points for redundancy.

For pressure zones where multiple supply points are not feasible such as smaller or isolated sections of the service area, we recommend ensuring the single supply point is made as reliable and redundant as feasible. For example, if a pump station is the single supply point, the pump station should have backup pumps for redundancy, and backup power provisions.

Table 3-5: Pressure Zone Supply Criteria

Criteria Type	Criteria
Pressure Zone Supply	Pressure zone should have a minimum of two (2) supply points

3.2.5 Fire Flow

Water systems must be capable of providing sufficient fire flow for firefighting while maintaining a 20-psi residual pressure in the system. The purpose of fire flow criteria is to ensure adequate protection of buildings. The criteria listed in Table 3-6 are generalized planning-level criteria utilized for master planning purposes.

Actual fire flow requirements are subject to the requirements of the California Fire Code and San Bernardino County Fire Protection District, and are based upon building category, construction type, fire flow area, presence of hazardous materials, and high fire hazard areas. Reductions in required fire flow may be allowed by the San Bernardino County Fire Protection District where automatic sprinkler systems are provided.

Table 3-6: Fire Flow Criteria

Land Use Designation	Fire Flow Required (gpm)	Duration (hrs)
Residential	1,500	2
Commercial/Industrial (Light)	2,500	2
High Industrial	4,000	4

3.2.6 Pump Stations

Pump station criteria must consider the different types of pump stations and different operating conditions. For example, the criteria for pump stations serving open pressure zones will be different than the criteria for hydropneumatic pump stations serving a closed zone.

There are two general categories of pressure zones: “open” zones, and “closed” zones. An open zone’s HGL is controlled by a storage tank that “floats” or provides gravity service to the pressure zone that it serves. A closed zone is one that has no gravity storage and relies upon a direct pumped supply.

Firm capacity is defined as the pump station capacity with the largest pump out of service. Industry standards and best practices generally govern pump station design with the criteria being firm capacity must meet a certain demand condition. Additionally, operating pump stations during non-peak hours of the day can be advantageous as it provides the opportunity for lower tiered pricing for electrical power.

The recommended pump station criteria are shown in Table 3-7. The criteria consider how multiple pump stations pump into the same pressure zone, and this allows for the criteria to be met by the total of the pump stations serving a particular zone. The benefit of this approach is that it provides flexibility when implementing improvements. It also allows the Department to add capacity at different pump stations where it may be more feasible than in other locations. Additionally, a 16-hour window of pumping is used

in the criteria to take advantage of time of lower tiered pricing for electrical power associated with pumping during non-peak hours of the day.

Table 3-7: Pump Station Criteria

Pump Station Type	Criteria
Pumping to Open Zone	Total combined firm capacity[1] for all pump stations serving the zone shall be maximum day demand volume in a 16-hour period.
Pumping to Closed Zone	Firm capacity shall be Peak Hour Demand plus dedicated fire flow pump.

[1]Total combined firm capacity is defined by the sum of the firm capacities at each individual pump station.

3.2.7 Storage

AWWA M32 Manual – Computer Modeling of Water Distribution Systems provides guidelines on storage criteria to support normal and emergency system operation. The Manual identifies three primary storage components:

Equalization storage: Amount of water required to meet demands in excess of normal production and delivery capabilities.

Fire storage: Volume of water based on the maximum fire flow requirement in each pressure zone multiplied by the required flow duration.

Emergency storage: Amount of additional storage as determined by each individual agency necessary to provide water during emergency events such as short-term supply disruptions.

Similar to the requirement for pump stations, the criteria for storage facilities apply to the total of all reservoirs that serve a particular pressure zone, not each individual reservoir.

3.2.7.1 Equalization Storage

Equalization storage, also known as operational storage, is the amount of water required to meet demands in excess of normal production and delivery capabilities. Every water system coordinates production rates and the available storage capacity to provide a continuous supply of treated water. Often treatment systems are designed to produce the maximum day demands at a steady rate, with storage available to augment supply during the peak hour demand period, which typically occurs in the early morning and late afternoon. Equalization storage is utilized during these daily peak demand periods and is replenished during off-peak periods such as the middle of the day and at night. Equalization storage value varies from system to system, but is typically stated as a ratio of maximum day demand.

3.2.7.2 Fire Storage

Fire storage is the required volume of water needed to meet a building's fire flow demand within a specified area for the required duration. Fire flow requirements for a building are based on the California Fire Code and building use and construction type.

For the Department's system, it is appropriate to require fire storage to be maintained in each of the reservoirs. The required fire storage depends on the worst-case fire flow volume within the pressure zone – typically industrial or commercial land use types.

3.2.7.3 Emergency Storage

Emergency storage is the storage required to meet demands during a temporary interruption of the normal water supply. The duration of emergency storage is a policy-level decision based on an assessment of risk, the desired degree of emergency resiliency, and water quality considerations. The amount of emergency storage for a water system is calculated based on total storage, equalization storage, and fire storage:

- Emergency Storage = Total Storage - Equalization Storage - Fire Storage

The storage criteria are summarized in Table 3-8.

Table 3-8: Storage Criteria

Storage Component	Criteria
Equalization	25% of Maximum Day Demand
Fire	Fire Flow x Duration
Emergency	30% of Maximum Day Demand

4. Future Developments

A key component in understanding a water system involves considering future developments and their impacts to the water infrastructure, allowing water utilities to proactively plan for future developments within their system. This also ensures that necessary improvements and modifications are incorporated into the system to supply new customers. Table 4-1 contains a description of known or upcoming development projects within the SBMWD water service area. These developments will be considered when analyzing the water system under future conditions.

Table 4-1: Future Developments

No.	Development Description[1]
1	Condo Units at 4630 North F Street (Arrowhead Suburban Farms unincorporated area) – 50 Units
2	Gate Way South Building 9 – Warehouse at SE Corner of Norman & Lena Roads
3	Gate Way South Building 8 – Warehouse on North Side of Norman Road Between Waterman Avenue & Foisy Street aka 584 East Norman Road
4	Gate Way South Building 7 – Warehouse at NE Corner of Norman & Lena Roads aka 634 East Norman Road
5	Senior Center at 1819 Western Avenue (Unknown Scope)
6	Shandin Hills Tract – Vicinity of Little Mountain Drive, South of Kendall Drive (Unknown Scope – to be determined).
7	University Hills Housing Project, East of California State University San Bernardino – (437 SFRs).
8	Hospitality Lane / Hampton Inn at South Side of Hospitality Lane, Between Carnegie Drive & Tippecanoe Avenue (Unknown Scope).
9	PAMA Management Accessory Dwelling Units – 191 plus units
10	TRACT 20494 on Highland Avenue at Gardena & Madison Streets – 95 Single Family Residentials (SFRs)
11	Huizar Apartments at Newmark Avenue, North of 40th Street – 28 Units
12	Food Express at 19881 Cajon Boulevard – Warehouse
13	TT 20539 at Ohio Avenue, Magnolia Avenue, Meyers Road – 32 SFRs
14	Best Western Motel at 258 East Redlands Boulevard – 44 Rooms
15	TRACT at Inland Center Drive & Hillcrest Avenue – 102 SFRs
16	Industrial Building at Central Avenue, E/o Foisy Street (104,850 SF)
17	Sears Property Redevelopment at 100 Inland Center Drive (Unknown Scope / Residential)
18	TT 20421 at Belmont & Olive Avenues, SW Corner – 25 SFRs
19	Cajon Boulevard at 5th Street – 4 Warehouses
20	TRACT 20251 at 2578 West Rialto Avenue – 32 SFRs
21	Gate Way South Building 6 at Lena Road & Central Avenue – Warehouse
22	Verdemont 2300 Pressure Zone – 668 Dwelling Units
23	ADUs by Private Contractors / Homeowners - 126 Units
24	ADUs New Service Requests by PAMA Management - 44 Units
25	New Services and Upgrades - 52 SFRs

No.	Development Description[1]
26	Duplexes - 1 Unit
27	Additions to SFRs - 15 Units
28	Fuel Station - 847 West Highland Avenue
29	Multi -Tenant Office Park at Rialto Avenue & Sierra Way, aka 119 South Arrowhead Avenue; 3 Buildings - 230,320 SF total
30	Cajon Distribution Facility - Institution Road, West of Cajon Boulevard; 341,114 SF Warehouse
31	Men's Shelter at 1354 North G Street - 172 Units
32	SBHS Childcare Center at 17th Street & E Street; Part of San Bernardino High School
33	Warehouse at Valley View Avenue & Central Avenue
34	5th Street Gateway Project at 5th Street northside between H Street and G Street - 7/11 Convenience Store w/ Gas Station, Del Taco Restaurant, Starbucks Coffee
35	Washington Logistics at Washington Avenue & Ennis Street; Warehouse, size TBD
36	TRACT 17170-2 at Brennah Court & Foothill Boulevard - 14 SFRs
37	Restaurant at 1060 Harriman Place
38	4400 North Varsity Avenue / 4200 North University Parkway - 3 fast-food restaurants & one carwash (Chick-fil-A, Dutch Bros. Coffee, unknown others)
39	Travel Center at 20301 Kendall Drive; Truck/Trailer Stop (Pilot Fuel Station)
40	Nursery at 1040 North Mount Vernon Avenue, details unknown, small service
41	Taco Bell Restaurant at 305 East Hospitality Lane
42	San Bernardino Valley College - Allied Health Building
43	Circle K Convenience Store at 895 West Mill Street
44	Warehouse at 575 East Santa Fe Street - 77,855 SF
45	Popeyes Louisiana Kitchen Restaurant at 3255 Little League Drive
46	SBCUSD at 746 North F Street - Administration Building (58,000 SF) & School Police Building (16,800 SF)
47	TRACT 20455 at Orange Drive & 47th Street - 16 SFRs
48	TRACT XXXXX at 48 East W Street - 16 SFRs
49	TRACT 17329-4 at Ohio Avenue & Little League Drive, NW Corner - 20 SFRs
50	Co-West Commodities at 2586 Shenandoah Way - Bio-Waste Processing Expansion
51	Car Wash at 488 West Mill Street
52	Gas Station, Convenience Store, Car Wash, Drive-thru Restaurant at 1595 West Highland Avenue
53	Warehouse at 939 South Inland Center Drive - 101,464 SF
54	Sonic Restaurant at 5th Street & G Street, SW Corner
55	Car Wash at Kendall Drive & Shandin Hills Drive
56	Medical Office at Mill Street & J Street, SW Corner - 6,847 SF
57	Duplexes at 138 West 9th Street - 3 Units
58	Car Wash at 673 West 5th Street

No.	Development Description[1]
59	Multi-Family Residential Development at East Terminus of San Felipe Road - 30 Units
60	Northgate 3, 4, 5 at Street & Del Rosa Drive, SW Corner - 3 Warehouses at totaling 420,243 SF; Northgate 6 also, but no details
61	Multi-Family Residential Development at 405 & 431 East San Felipe Drive - 40 Units
62	Restaurant at 670 West Kendall Drive; Decommissioned Boeing 747 Jet Conversion
63	Town Home Development at Palm Avenue & Washington Street, NE Corner – 28 Units
64	Habit Burger Grill Restaurant at 2nd Street & Bungalow Court, SW Corner
65	Car Wash & Drive Thru Restaurants at 1214 South Waterman Avenue; 2 Drive-thrus
66	Warehouse at 305 & 333 South Waterman Avenue – 117,800 SF
67	Restaurant at 877 East Hospitality Lane – Dutch Bros. Coffee Drive-thru
68	Multi-Tenant Retail / Office at 16th Street & Mount Vernon Avenue, NE Corner - 8 Units
69	SBMWD Admin Building at 1331 South E Street – 27,812 SF
70	SBMWD Warehouse at 1331 South E Street – 13,500 SF
71	SBMWD Building Retrofit at 1331 South E Street – 26,055 SF
72	Warehouse at Washington Avenue & Orange Show Road – 225,000 SF
73	Town Homes at Pacific Street & Garden Drive, NW Corner – 9 Units
74	Motel Expansion at 111 West Redlands Boulevard – 58 Units
75	Warehouse at 791 South Waterman Avenue – 89,474 SF
76	Warehouse at 5705 North Industrial Parkway – 105,500 SF

[1]From email correspondence with SBMWD.

SBMWD categorizes water use customers into the following: single-family residential, multi-family residential, commercial/industrial, municipal/government, and landscape. Projected demands per water use type from the 2020 Integrated Regional Urban Water Management Plan (IRUWMP) are listed in Table 4-2. These demand projections will be used for future scenarios within the hydraulic model.

Table 4-2 : Projected Demands from 2020 IRUWMP

Use Type	2025 (acre-ft)	2030 (acre-ft)	2035 (acre-ft)	2040 (acre-ft)
Residential-Single Family	18,710	19,260	19,811	20,253
Residential-Multi-Family	5,832	6,004	6,175	6,313
Commercial / Institutional + Municipal	6,328	6,514	6,701	6,850
Landscape Irrigation	6,143	6,323	6,504	6,649
Fire Service	28	28	29	30
Water Losses	4,074	4,194	4,314	4,411
TOTAL	**41,115**	**42,323**	**43,534**	**44,506**

5. Water Utility Asset Inventory

The Department is taking a proactive approach in managing its water infrastructure renewal needs by evaluating the facilities condition and identifying the assets which pose the greatest risk to the operation of the facilities. The findings of the risk-based condition assessment will be incorporated into the water master planning effort to allow the Department to proactively plan for rehabilitation or replacement of the aging assets. Some of the outcomes and benefits of asset inventory and condition assessment are as follows:

- A complete asset inventory serves as a data source to update the Computerized Maintenance Management System (CMMS)
- Make rehabilitation and replacement decisions based on asset condition versus age
- Minimize the Department's business risk exposure
- Prolong the useful life of existing assets
- Project long range funding requirements
- Optimize funding expenditure

The Department owns and operates 135 major facilities across 54 unique sites, including wellhead treatment facilities, booster pump stations, wells, and reservoirs. Table 5-1 lists the active and some inactive facilities of the Department which have been inventoried.

Table 5-1: List of the Active and Inactive Inventoried Department Facilities

#	Site	Facility	Pressure Zone	Status[1]
1	10th & J St	Well	Lower	Active
2	17th & Sierra Way St	16th St Well	Lower	Active
3		16th St BPS	Lower	Active
4		17th St BPS	Intermediate	Active
5		17th St Well	Intermediate	Active
6		GAC System	Intermediate	Inactive
7		Reservoir	Intermediate	Active
8	19th St	BPS (#1-5)	Upper	Active
9		GAC System	Upper	Active
10		Reservoir	Lower	Active
11		Well #2	Upper	Active
12	25th & North E St	BPS	Upper	Inactive
13		Reservoir	Upper	Inactive
14		Well	Upper	Inactive
15	27th St	Acacia BPS	Intermediate	Active
16		Reservoir	Intermediate	Active
17	30th & Mountain View Ave	Reservoir	Lower	Active
18		Well	Lower	Active
19	31st & Mountain View Ave	Well	Lower	Active
20	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	Del Rosa	Active
21		Well	Del Rosa	Inactive
22	7th St	BPS	Lower	Inactive
23		Reservoir (Forebay)	Lower	Inactive
24		Well	Lower	Inactive
25	Antil	BPS	Lower	Inactive
26		Reservoir	Lower	Inactive
27		Well #6	Lower	Inactive
28	Baseline & California St	BPS	Lower	Active
29		Well	Lower	Active
30	Cajon Blvd	Hydro Generator	Cajon	Active
31		Reservoir	Cajon	Active
32		Well #2	Cajon	Active
33		Well #3	Cajon	Active
34		Well #4	Cajon	Active
35	Cajon Wash	Cajon Canyon Well	Devore/Meyers	Active

[1]Based on the Operator comment about the facility being active or inactive.

#	Site	Facility	Pressure Zone	Status[1]
36		Kenwood Well #1	Devore/Meyers	Active
37		Kenwood Well #2	Devore/Meyers	Active
38		Vincent Well	Devore/Meyers	Active
39	Daley Canyon	Reservoir	Daley	Active
40	Del Rosa #1	Daley BPS (#1-2)	Del Rosa	Active
41		Reservoir	Del Rosa	Active
42	Del Rosa #2	Reservoir	Del Rosa	Active
43		Ridgeview BPS (#2-3)	Ridgeview	Active
44	Del Rosa #3	Reservoir	Del Rosa	Active
45	Devil Canyon Rd	College Reservoir	College/Palm	Active
46		Devil Canyon Domestic BPS (#1-2)	Devil Canyon	Active
47		Devil Canyon Domestic Reservoir	Devil Canyon	Active
48		Devil Canyon Reservoir	Devil Canyon	Active
49		Devil Canyon Well #2	College/Palm	Active
50		Devil Canyon Well #3	Devil Canyon	Inactive
51		Devil Canyon Well #4	Devil Canyon	Active
52		Devil Canyon Well #6	Devil Canyon Domestic	Active
53		Devil Canyon Well #7	Devil Canyon Domestic	Active
54	Devil Canyon #1	College BPS (#1-3)	College/Palm	Active
55		Devil Canyon Well #1	Sycamore	Active
56		Well #1	Sycamore	Active
57	Devore	Reservoir	Devore/Meyers	Active
58	Distribution System[2]	18 Interties	-	-
59	Electric Dr	Mountain BPS (#1-3)	Mountain	Active
60		Reservoir	Upper	Active
61	Encanto	BPS (#1-3)	Lower	Active
62	EPA[3]	Well #001	Lower	Active
63		Well #002	Lower	Active
64		Well #003	Lower	Active
65		Well #004	Lower	Active
66		Well #005	Lower	Active
67		Well #006	Upper	Active
68		Well #007	Upper	Active
69		Well #108	Lower	Active
70		Well #108 S	Lower	Active
71		Well #109	Lower	Active

[2]Including all the interties, except the ones (2 count) located in fence-line of the facilities.
[3]All EPA wells are grouped under EPA name.

#	Site	Facility	Pressure Zone	Status[1]
72		Well #110	Lower	Active
73		Well #111	Lower	Active
74		Well #112	Lower	Active
75	Foothill Blvd	Terrace BPS (#3-4)	Terrace	Active
76	Gilbert St	GAC System	Lower	Active
77		Reservoir	Lower	Active
78		Well	Lower	Active
79	Highland Ave	Mt Vernon Water Company Well	Upper	Active
80	Hill Dr	BPS (#1-2)	Mountain	Active
81	Lynwood Dr	BPS	Upper	Active
82		Reservoir	Upper	Active
83		Well	Upper	Active
84	Lytle Creek	BPS	Terrace	Active
85		Reservoir #1	Lower	Active
86		Reservoir #2	Lower	Active
87		Well	Lower	Active
88	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magnolia BPS)	Cajon	Active
89	Mallory St	BPS (#1-2)	Upper	Active
90		Mallory Well #3	Upper	Active
91		Reservoir	Upper	Active
92	Medical Center	Ogden BPS	Upper	Active
93		Reservoir (B Warren Cocke)	Lower	Active
94	Melvin Ave	BPS (#1-5)	Devore/Meyers	Active
95	Meyers Canyon	Reservoir	Devore/Meyers	Active
96	Mill & D St	BPS	Lower	Active
97		Reservoir	Lower	Active
98		Well	Lower	Active
99	Mountain	Reservoir #2	Mountain	Active
100		Reservoir #3	Mountain	Active
101	Newmark	BPS	Upper	Active
102		GAC System	Upper	Active
103		Reservoir	Upper	Active
104		Sycamore BPS (#1)	Sycamore	Inactive
105		Sycamore BPS (#2)	Sycamore	Inactive
106		Sycamore BPS (#3-4)	Sycamore	Active
107		Well	Upper	Active
108	Ogden St	Palm BPS (#1-3)	College/Palm	Inactive
109		Reservoir	Upper	Active

#	Site	Facility	Pressure Zone	Status[1]
110	Olive & Garner	Well	Lower	Active
111	Palm & Kendall Dr	Cajon BPS (#2-5)	Cajon	Active
112		Palm Reservoir #2	College/Palm	Active
113		Palm Reservoir #3	College/Palm	Active
114	Perimeter Rd	BPS	Intermediate	Active
115	Perris Hill Park	Perris Hill Reservoir	Intermediate	Active
116	Quail Canyon	Reservoir	Daley	Inactive
117	Ridgeline Dr Lower	BPS (#1-2)	Ridgeline	Active
118	Ridgeline Dr Upper	Reservoir	Ridgeline	Active
119	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	Ridgeline	Active
120		Hydro Tank	Ridgeline	Active
121	Ridgeview #1	Reservoir	Ridgeview	Active
122	Sepulveda Ave	BPS (#1-2)	Mountain	Active
123	Shandin Hills North	Reservoir	Shandin Hills	Active
124	Shandin Hills South	BPS (#1-2)	Shandin Hills	Active
125	Sycamore	College BPS (#4-5)	College/Palm	Active
126		Sycamore Reservoir #1	Sycamore	Active
127	Sycamore St #2	Devil Canyon Well #5	Sycamore	Active
128		Sycamore Reservoir #2	Sycamore	Active
129		Sycamore Reservoir #3	Sycamore	Active
130	Waterman Ave	BPS (#1, 3, 4)	Lower	Active
131		BPS #2	Lower	Active
132		Leroy Well	Lower	Active
133		Well	Lower	Active
134		Reservoir	Lower	Active
135		GAC System	Lower	Active

5.1 Asset Register

The first step of the facilities condition assessment is consolidating all asset information into a centralized database referred to as an asset register. Using data from Department's existing sources such as the water system hydraulic schematic, record drawings, inventories, pictures, and O&M manuals, a preliminary asset register of the facilities was developed through a desktop inventory approach. The developed asset register was later validated through the field inventory. Pictures showing the condition of the assets were also taken and included in the asset register. Table 5-2 shows a summary of the asset inventory.

Table 5-2: Summary of the Inventoried Assets - Desktop and Field Inventories

Data Collection Methods	Percentage of Total Asset Count	Count of Assets
Desktop Inventory using Hydraulic Schematic; Facilities As-Built Record Drawings, O&M Manuals, Inventories	67%	2,070
Field Inventory	33%	1,036
TOTALS	100%	**3,106**

Figure 5-1 also shows the count of the assets inventoried at each site. Overall, 3,106 assets are inventoried in 54 sites.

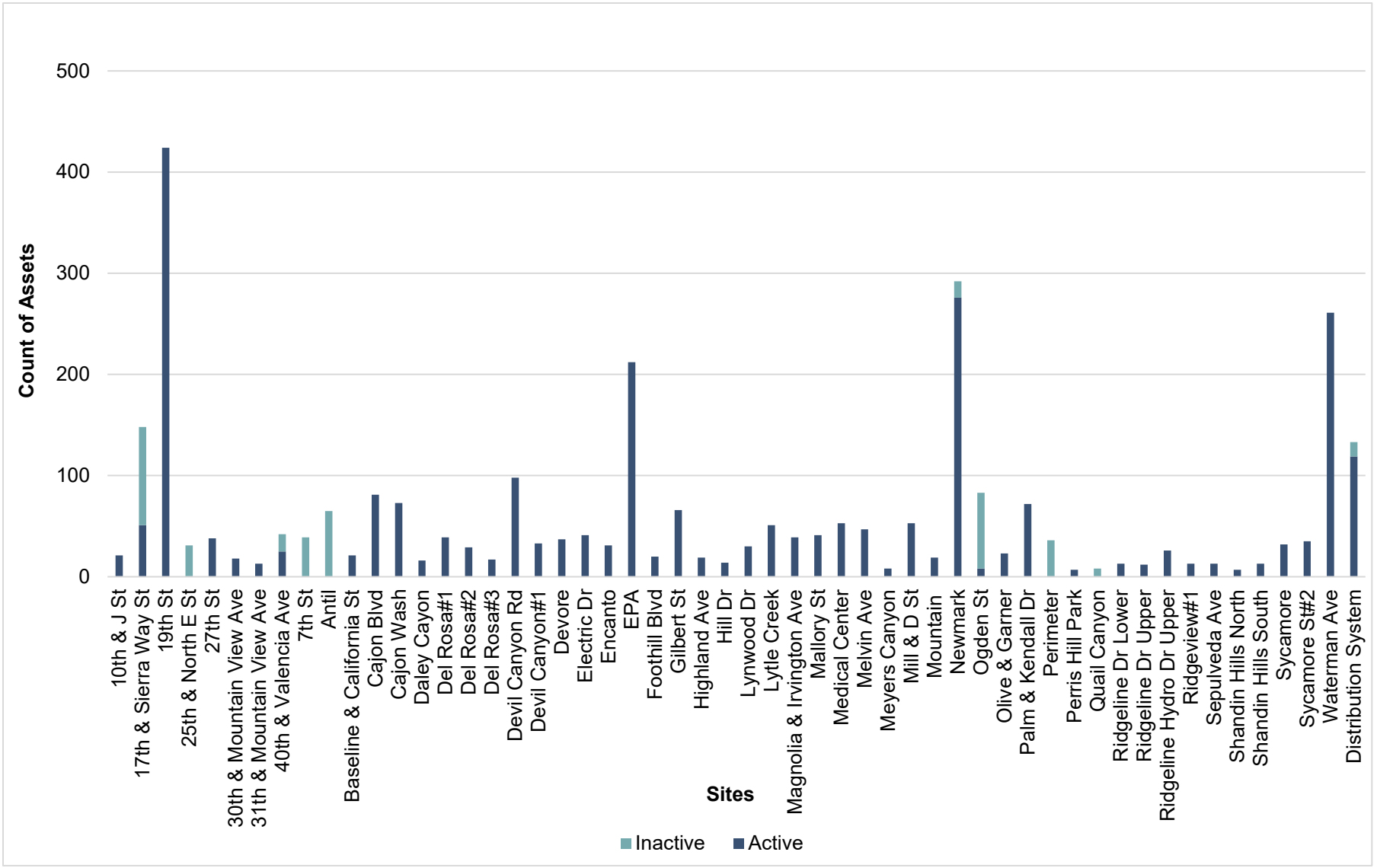

Figure 5-1: Count of Assets by Site

5.1.1 Data Attributes

A data attribute is a characteristic that sets an asset apart from other assets and is key to performing condition and risk assessment. Table 5-3 shows the typical relevant asset attributes within the Department's asset register.

Table 5-3: Typical Asset Attributes for Facility Assets

Physical	Groupings	Life Expectancy	Valuation	Risk
Size	Class	Condition Score	Unit Cost	Probability of Failure
Size Unit	Type	Useful Life	Replacement Cost	Consequence of Failure
Material	Discipline	Remaining Useful Life		Risk Score
Manufacturer		Last Rehab Year		
Serial Number		Rehab Description		
Tag ID				
Model				
Asset Description				

Prior to the field inventory of facilities, gaps in attributes such as install year were closed using the Department's institutional knowledge. The age of assets facilitated the remaining useful life and probability of failure (PoF) calculations, which combined with consequence of failure (CoF), were used to develop a list of facilities prioritized by level of risk for a focused condition assessment. Any remaining gaps in physical attributes such as manufacturer, model, serial number and size were closed during the field inventory, if information could be found on the site. Furthermore, as Table 5-2 shows, about 1,036 additional assets not identified during the development of the preliminary asset register were added to the asset register during the field inventory while attribute information for the existing assets were verified and updated as needed.

5.1.2 Asset Register Framework

An asset register is the systematic recording of all assets within the water system that the Department owns or manages. One core aspect of an asset register is an asset hierarchy, which is an intuitive way to locate an asset. It provides a structured framework for organizing assets in the asset register. A hierarchy enables Department staff to easily locate an asset and obtain data (e.g., valuation, risk, remaining useful life, etc.) required to support asset management decisions.

An asset register forms links between all asset-related applications or information systems and enables the assessment of the assets as individual components, composite assets, or groups of assets. Along with establishing the asset register hierarchy as shown in Figure 5-2, developing an asset register includes the following components:

- **Asset Definition:** Developing a definition for an asset that can be used within the Department per SBMWD Policy 51.050.

- **Asset Classification:** An asset class can be defined as a group of assets with similar type, function, useful life, and pricing attributes (e.g., size, material, power).

- **Data Standards:** Data standards identify data attributes required to support asset management decisions. There are common attributes (e.g., year of install, replacement cost, asset naming/numbering) and specific attributes (e.g., type, power, size, length, and material) for each asset class.

The water system asset register was set up using a hierarchy as shown in Figure 5-2. There are different levels of hierarchy captured in the asset register: Level 0: "Department", Level 1: "Orientation", Level 2: "Pressure Zone", Level 3: "Site", Level 4: "Facility", which in some cases is further broken down into Level 5: "Sub-Location".

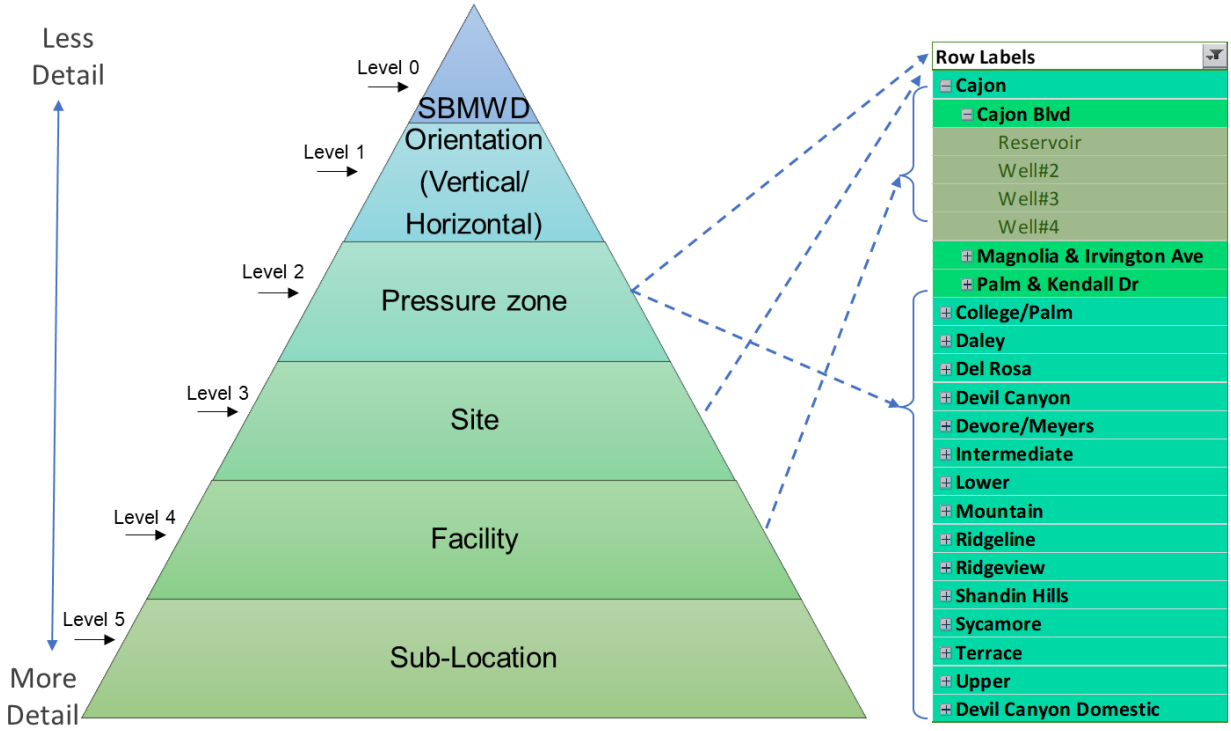

Figure 5-2: Water System Asset Hierarchy

5.2 Summary

An asset register was developed for 3,106 assets across 135 facilities located at 54 unique sites using desktop and field inventory methods. The asset register includes a hierarchy of the assets along with asset descriptions, class, type, and other key attribute information such as installation year, size, photos, and others. The asset register serves as the foundation for condition assessment, remaining useful life analysis, risk assessment, and rehabilitation and replacement projection. The asset data developed as part of this project will also support future Department asset management programs and will serve as the data source for the new Computerized Maintenance Management System.

6. GIS and Hydraulic Model Update

The hydraulic model was last updated and calibrated in 2014. Since 2014, there have been water system upgrades performed, which primarily include pipeline improvements. The GIS update process was to identify the projects implemented since 2014 and incorporate those into the hydraulic model.

Once the hydraulic model was updated, the next step was to conduct field tests for model calibration. The field tests include fire flow tests (FFTs) conducted over a two-week period with Hazen and Department staff. These FFTs were used to calibrate the hydraulic model.

This section documents the GIS update, hydraulic model update, and hydraulic model calibration process and results.

SBMWD staff regularly update and maintain the water system GIS geodatabase using as-built records, operations staff input, field verification, and routine maintenance and data cleanup. The hydraulic model represented was previously developed in 2014, and it has not been updated since then. A thorough comparison of the GIS and hydraulic model was conducted. Definition queries were used to isolate post-2014 additions to the system. Comparison of attribute tables as well as rigorous manual inspection were employed to discover facility changes since 2014.

The pipeline improvements and facilities updated in the GIS since 2014 are shown graphically in Figure 6-1.

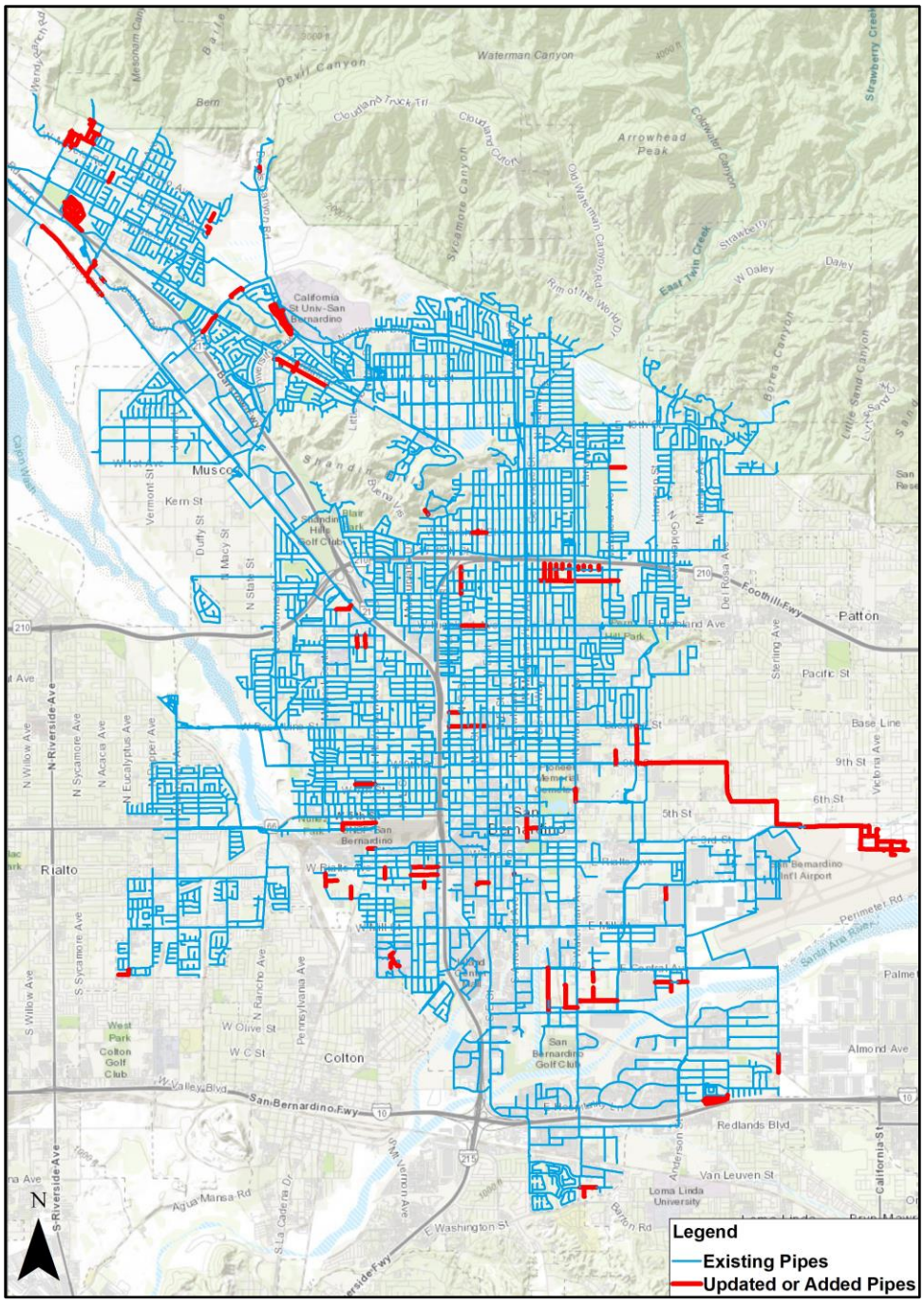

Figure 6-1: GIS Updates since 2014

The GIS updates conducted since 2014 were identified and reviewed to ensure compatibility to incorporate into the hydraulic model. The hydraulic model was updated to the water system's current state by using the latest GIS. This ensured all aspects of the SBMWD's upgrades to the water system since 2014 were incorporated into the model.

The hydraulic model was further refined with as-built records, pump curves, data collected during field visits, staff input, and other documentation provided by the Department. The new hydraulic model was updated in ArcGIS Pro 2.8.0 and InfoWater Pro. The same horizontal coordinate system as the geodatabase was used in the model: NAD 1983 (2011) State Plane California V FIPS 0405 (US Feet).

7. Field Testing

Fire flow test (FFT) locations were chosen based on industry-standard hydraulic modeling best practices. Test locations were chosen to ensure representative distribution across the system, and within each pressure zone. Land use shapefiles within the GIS were used to ensure that residential and commercial land uses were both represented in testing.

Figure 7-1 displays an example of a FFT exhibit. Following the Department's review, all FFT locations were updated and finalized.

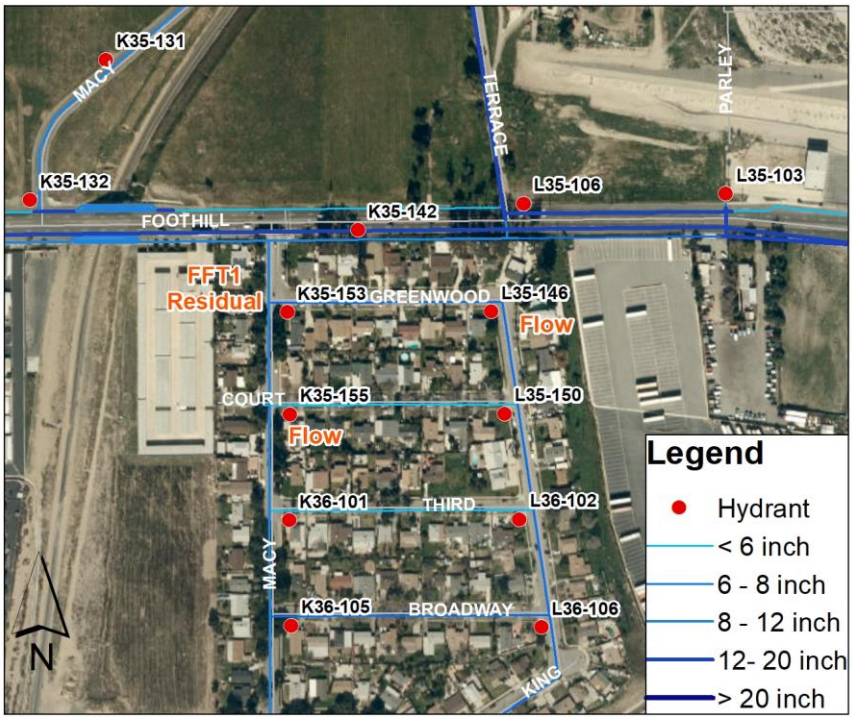

Figure 7-1: Exhibit for Field Test Number 1

Copies of FFT exhibits were distributed to SBMWD staff. Figure 7-2 captures SBMWD staff preparing a hydrant for pressure monitoring during testing. Field test data were used to calculate the flow of water through the open hydrant in each test. These test flows were used in the model calibration process.



Figure 7-2: SBMWD Staff Preparing Hydrant During Field Testing

Exhibits of all FFT locations, including static/residual and flow hydrants were created for Department review. The field test exhibits are included in Appendix A. The locations of all FFTs are shown graphically in Figure 7-3.

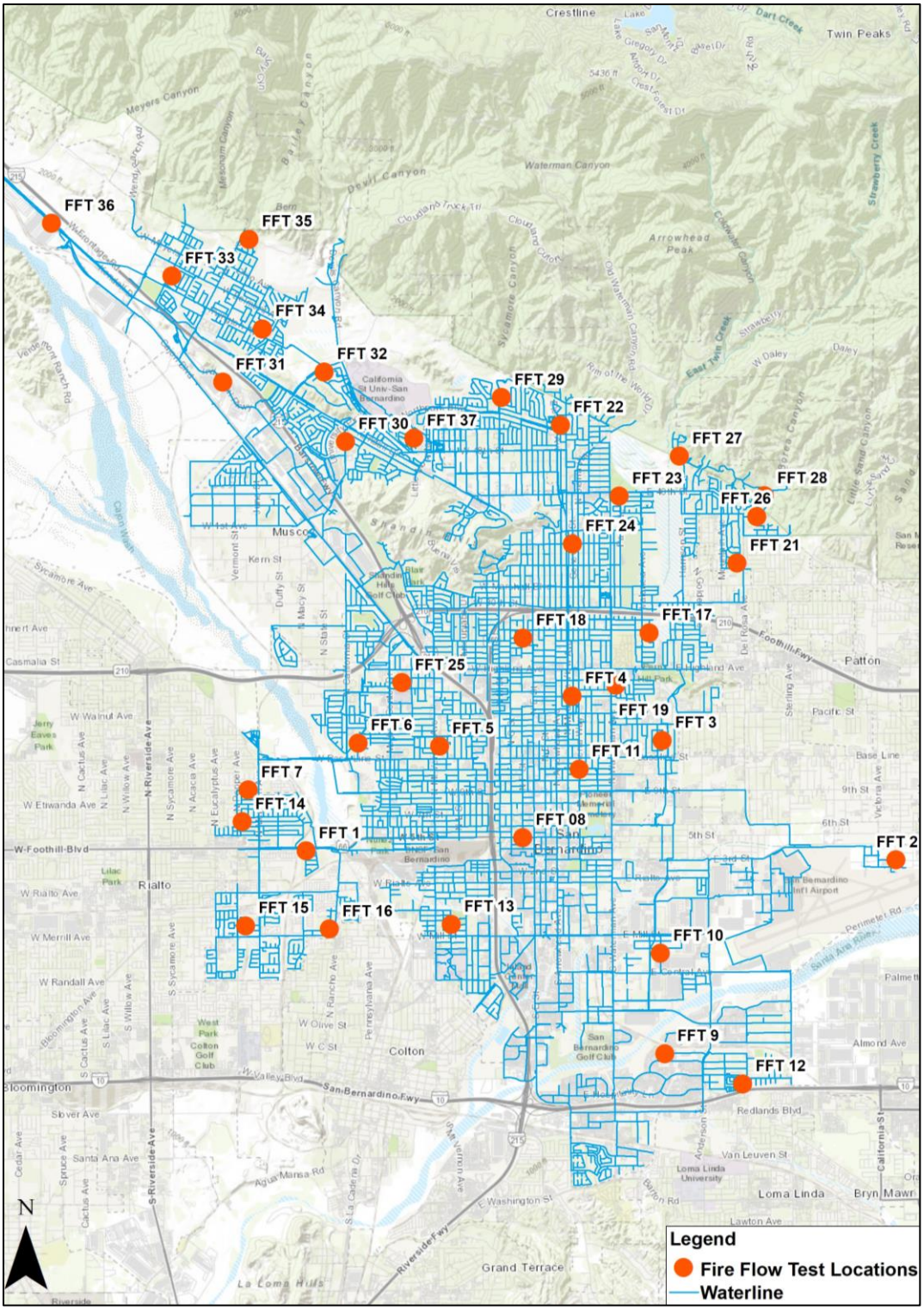

Figure 7-3: Fire Flow Test Locations

8. Hydraulic Model Calibration

8.1 Demand Allocation

Average day demands for the water system were derived from 12-months of billing data (calendar year 2021). The calculated 2021 average day demand from billing data was approximately 22,363 gpm or 32.2 mgd. The non-revenue water factor of 7.25% (discussed further in a subsequent paragraph) was applied to 2021 average day demand from billing data to yield a total system demand of 23,974 gpm or 34.52 mgd.

Average day demand of 23,974 gpm or 34.52 mgd was allocated within the model using the InfoWater Demand Allocator Extension. The Demand Allocator Extension compares meter locations and demand node coordinates in the model and uses an algorithm to assign proportionate demands from customer meter data to the nearest demand nodes to the meter location. Demand nodes are differentiated from other nodes in the model. So demands are only assigned at service locations, and not to nodes at pump stations and reservoirs, hydrants, or other locations that do not have service connections.

Creating accurate demands for use in the hydraulic model also required establishing the amount of water lost between production and consumption. This is known as non-revenue water, quantified as both a volume and as a percentage of water produced. Data from the Electronic Annual Report was obtained for 2015-2021. Table 8-1 shows the non-revenue water volumes and percentage for 2015-2021. The results show an average non-revenue percentage of 7.25%, which is consistent with the historical amount shown in the 2015 Water Facilities Master Plan of 7.74%. The non-revenue water average of 7.25% was applied to the demands allocated within the model.

Table 8-1: Non-Revenue Water

Year	Production (acre-ft)	Consumption (acre-ft)	Sold to Outside PWS (acre-ft)	Non-Revenue Water (acre-ft)	Percent
2015	35,971	32,775	1,721	1,475	4.10%
2016	35,472	33,314	216	1,942	5.47%
2017	38,479	34,536	139	3,804	9.89%
2018	38,706	36,881	78	1,748	4.52%
2019	35,967	32,602	120	3,246	9.02%
2020	40,106	35,672	337	4,096	10.21%
2021	40,394	36,084	1,280	3,031	7.40%
				Average:	
					7.25%

8.2 Hydrant Test Calibration Procedure

The FFTs were performed in July 2022. As a result, model demands for FFT scenarios were adjusted to match demand conditions observed during July 2022. The model calibration demand set utilized the average day demand allocation (23,974 gpm or 34.52 mgd) and was adjusted based on a system-wide demand multiplier to match the specific system average day demand observed in July 2022, which was approximately 26,210 gpm (37.74 mgd). In this example, the demand multiplier would be 1.09 (26,210 gpm/23,974 gpm).

During the FFT calibration, the model was reviewed for connectivity and typical operations. The prior Hazen Williams C-factors assigned were not changed. SCADA records were reviewed for system operations during the FFTs. Tank levels, well, and pump operations along with pressure reducing valve (PRV) settings were adjusted to match SCADA when it impacted FFT calibration. The static and residual pressure at the residual hydrant goal was +/- 10% (model to field). When calibration goals were not achieved, the following steps were taken:

- Connectivity and system operations reviewed
- C-factors assessed based on typical C-factors, age, and material (Table 8-2)
- Local C-factors adjusted as-needed to match fire flow tests

- Review of locations where the water lines were replaced or lined since the last Master Plan, C-factors were set to a minimum of 120 where appropriate

Table 8-2: Typical Hazen-Williams C-factors

Pipe Material	C-factor
PVC	150
HDPE	150
Ductile Iron	130-140*
Lined Cast Iron	120
Unlined Cast Iron	20-80

*120 was used as a conservative number when assigning a C-factor to new or relined pipe.

These changes were localized to an individual fire flow test location. Where a drop in pressure from static to residual in the model was still insufficient to match the field work, local pipes older than 1960 were assumed to require C-factors adjusted locally to 80. These might be lowered to 50 to determine if this brought the residual pressure closer to the field conditions observed during the FFT. If the adjustments were outside the +/-10% criteria, valve closures were reviewed. Assumed valve closures in a model reflect an area where piping connectivity needs to be confirmed. A valve sweep (physical review of the valves in the area of interest to ensure that they are operational and open) should be performed.

8.3 Hydrant Test Calibration Results

Table 8-3 compares the model data output to the field data after calibration. Except for one outlier (static pressure for the Terrance Zone), the calibration results show that the hydraulic model is within the calibration goal of +/- 10% for both static and residual pressure readings on all 36 FFTs used in this calibration. Based on these results, the hydraulic model is calibrated and ready to be used for system evaluation and analysis.

Table 8-3: Calibration Results[1]

Test Hydrant Location	Zone	Static Pressure			Residual Pressure			Test Flow (gpm)
		Field (psi)	Model (psi)	% Difference	Field (psi)	Model (psi)	% Difference	
1	Terrace	54	48	**11%**	40	37	**8%**	1,161
2	Intermediate	68	67	**1%**	30	31	**3%**	1,771
3	Intermediate	86	87	**-1%**	70	73	**-4%**	671
4	Intermediate	64	68	**-6%**	53	57	**-8%**	3,102
5	Lower	38	40	**-5%**	10	11	**-5%**	943
6	Upper	98	96	**2%**	74	76	**-3%**	1,488
7[1]	Upper	48	50	**-4%**	22	22	**2%**	1,343
8[2]	Lower	79	78	**1%**	72	72	**1%**	2,391
9[2]	Lower	92	90	**2%**	78	70	**10%**	3,916
10[2]	Lower	86	88	**-3%**	74	75	**-2%**	2,784
11[2]	Lower	66	69	**-4%**	64	68	**-6%**	1,027
12[2]	Lower	68	69	**-1%**	48	47	**3%**	1,034
13[2]	Lower	80	81	**-2%**	78	78	**0%**	750
14	Upper	60	60	**1%**	48	46	**4%**	628
15	Terrace	61	59	**4%**	40	38	**5%**	1,664
16	Terrace	82	76	**7%**	68	61	**10%**	1,876
17	Upper	94	92	**2%**	66	65	**1%**	2,648
18	Upper	90	93	**-3%**	80	84	**-5%**	1,488
19	Intermediate	68	65	**4%**	58	59	**-2%**	1,577
20	Upper	40	39	**3%**	30	31	**-4%**	1,145
21	Del Rosa	95	95	**0%**	52	53	**-1%**	628
22	Mountain	101	100	**1%**	60	59	**2%**	961
23	Mountain	124	123	**1%**	104	101	**3%**	919
24	Upper	60	59	**2%**	58	58	**-1%**	3,213
25	Upper	84	86	**-3%**	63	66	**-5%**	1,007
26	Daley	135	139	**-3%**	74	77	**-4%**	1,503
27	Ridgeview	110	110	**0%**	98	95	**3%**	1,100
28	Daley	94	98	**-4%**	80	80	**0%**	1,921
29	College / Palm	100	98	**2%**	78	85	**-9%**	2,232
30	College / Palm	100	98	**2%**	90	88	**2%**	6,428
31	Cajon	124	128	**-3%**	56	55	**1%**	4,543
32	College / Palm	60	61	**-2%**	42	43	**-2%**	3,639
33	Devore/Meyers SZ	67	64	**4%**	50	47	**6%**	2,014
34	Cajon	100	99	**1%**	78	83	**-6%**	3,037
35	2300 East	92	89	**3%**	34	34	**1%**	2,273
36	Devore/Meyers	74	71	**5%**	63	59	**7%**	4,620
37	Sycamore	57	48	**-5%**	43	47	**-9%**	1,771
			Average	**0.3%**		**Average**	**0.1%**	

[1]Fire flow test 7 was modified. It appears likely that 2 ports were operated.

[2]FFT 9&12, and 8,10,11&13 were simultaneous, FFT 11 reflects this. FFT 12 represents original data, non-simultaneous in the model. FFT 8, 9, 13 reflowed and numbers represent standalone FFT.

Table 8-4: Fire Flow Tests Indicating Closed Valves lists FFTs that require closing valves to get a reasonable match to the field work. This could be caused by single or multiple fully or partially closed valves or a misunderstanding of connectivity in the areas. The fire flow test data submitted does not reference the number of ports open when the 2.5-inch ports were used in the fire flow tests. If more than one 2.5-inch port was used on a single hydrant during a fire flow test, the increase in actual flow could cause lower residual pressures. It is recommended that field notes be reviewed and valve sweeps (physical review of the valves in the area of interest to ensure that they are operational and open), be performed in the areas near these FFTs to ensure that the system valves are operating as expected. The locations of the fire flow tests with expected connectivity or closed valves are illustrated in Figure 8-1. Figure 8-1 water lines illustrate major pressure zones to aid in understanding the locations of interest.

FFT 7 had an inadequate residual drop in the model. Assuming that two ports were flowed instead of one allowed a match between the model and field results.

Table 8-4: Fire Flow Tests Indicating Closed Valves

Test Hydrant	Zone
3	Intermediate
4	Intermediate
12	Lower
17	Upper
19	Intermediate
21	Del Rosa
25	Upper
26	Daley
33	Devore/Meyers

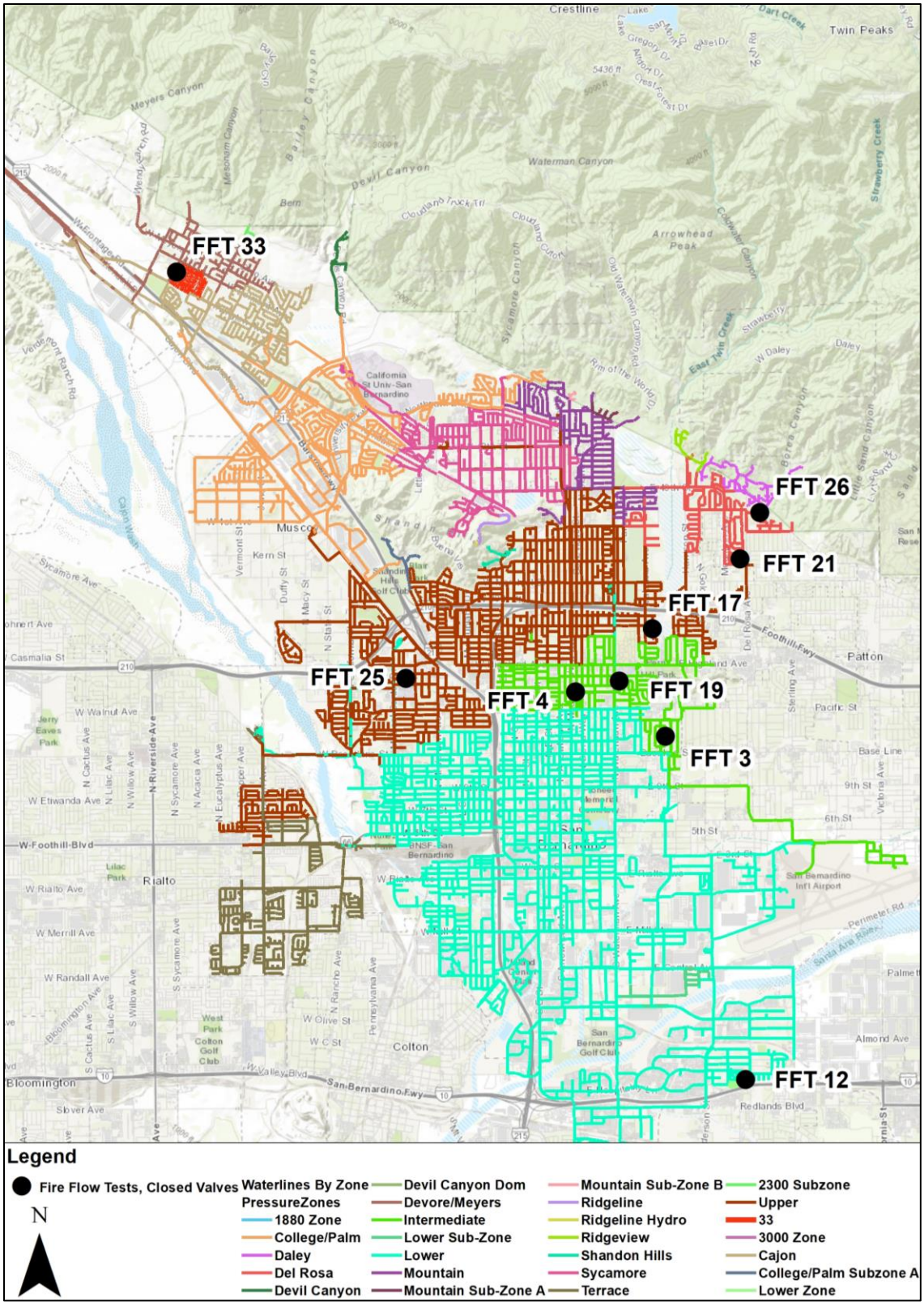

Figure 8-1: Fire Flow Test Locations with Predicted Closed Valves

9. Demand Projections

San Bernardino Municipal Water Department (SBMWD) categorizes its water use customers into the following: single-family residential, multi-family residential, commercial/industrial, municipal/ government, and landscape. Projected demands per water use type from the 2020 Integrated Regional Urban Water Management Plan (IRUWMP) are listed in Table 9-1. These demand projections will be used for future scenario analyses. SBMWD currently does not use recycled water to offset potable demand and, as a result, the projected demands include irrigation usage.

Table 9-1: Projected Demands from 2020 IRUWMP

Use Type	2025 (acre-ft)	2030 (acre-ft)	2035 (acre-ft)	2040 (acre-ft)
Residential-Single Family	18,710	19,260	19,811	20,253
Residential-Multi-Family	5,832	6,004	6,175	6,313
Commercial / Industrial + Municipal	6,328	6,514	6,701	6,850
Landscape Irrigation	6,143	6,323	6,504	6,649
Fire Service	28	28	29	30
Water Losses	4,074	4,194	4,314	4,411
TOTAL	**41,115**	**42,323**	**43,534**	**44,506**

9.1 Peaking Factors

Water demands vary throughout the year due to seasonal changes. Peaking factors are used to capture the high and low demand conditions for analysis purposes. Maximum day demand represents the day with the highest total demand during the year, which typically occurs in July through September timeframe. Minimum day demand represents the day with the lowest total demand during the year, which typically occurs in December through February.

Peaking factors used for this analysis were established based on the most current system data. Average day demand was established based on monthly customer meter data from calendar year 2021. Minimum monthly and maximum monthly demand were also established based on monthly meter data during the same period. To determine actual maximum day demand, hourly system data must be utilized. Maximum day demand was determined based on hourly system data collected from August 2022 through September 2022. Although hourly system data was not available for the minimum day, which typically occurs during winter months, an assumption of 80 percent of the minimum month was assumed for the minimum day factor. A summary of the system demands and peaking factors is shown in Table 9-2.

Table 9-2: Peaking Factors

Demand Condition	Peaking Factor	Demand (MGD)	Demand (gpm)	Demand (AFY)
Minimum Day	0.51	17.59	12,215	19,667
Minimum Monthly	0.64	21.99	15,269	24,584
Average Day	1.00	34.55	23,991	38,626
Maximum Monthly	1.28	44.10	30,628	49,311
Maximum Day	1.70	58.73	40,785	65,664
Peak Hour	3.07	105.95	73,574	118,453

Note:

1. All peaking factors are applied to Average Day Demand.
2. Minimum Monthly Demand, Average Day Demand, and Maximum Monthly Demand were determined using monthly customer meter reading data from calendar year 2021.
3. Maximum Day Demand was established using August 21, 2022, data since it was the maximum demand observed within the hottest days of 2022 (August 2022 through September 2022).
4. Peak Hour was established based on the peak hour multiplier from the diurnal curve multiplied by MDD peaking factor.

The existing maximum day peaking factor of 1.4 was calculated using August 21, 2022 data since it was the maximum demand observed within the hottest days of 2022 (August 2022 through September 2022). However, a maximum day peaking factor of 1.7 will be used for analyses conducted for this Master Plan. This is in line with historical max day peaking factors observed within the water system from 2015 to 2021 and will provide an additional level of conservatism.

10. System Evaluation

A combination of methods was used to evaluate the water system, including hydraulic model analyses, Excel-based calculations, and operational data. Using the hydraulic model, scenarios were created for different demand conditions to evaluate the existing system, and future scenarios were utilized when sizing and making recommendations.

10.1 Water Supply Facilities

An analysis was performed to determine if adequate supply is available to meet current and future demands.

10.1.1 Criteria

The Department's water supply sources must meet the existing and projected demands outlined in Table 10-1.

Table 10-1: Domestic Water Supply Needs

Existing (MGD)[1]		2040 (MGD)	
Average Day	Max Day	Average Day	Max Day
34.55	58.73[2]	39.73[3]	67.55[3,4]

[1]Existing demands based on calendar year 2021-meter demand.
[2]Existing Max day demand is existing average day demand multiplied by 1.7 peaking factor.
[3]Future demands based on 2020 Integrated Regional Urban Water Management Plan (IRUWMP) projected demands.
[4]2020 IRUWMP projected demand multiplied by 1.7 planning maximum day demand peaking factor.

A key factor in applying these criteria is the supply condition assumptions. The supply facilities include:

- Groundwater: 56.72 MGD

For this analysis we have assumed that the current and future well capacities are the same. The total well capacity is estimated to be 56.7 MGD. Additionally, the demands considered in this analysis exclude those of the Encanto Booster Station, as it functions as an intertie serving other agencies rather than customers within the SBMWD service boundary.

Table 10-2 summarizes wellhead treatment capacity at each of the plants and Table 10-3 summarizes the capacity of wells not treated at any of the five treatment plants. Well capacities were determined by calculating the average summer well capacities from 2019 through 2023. Table 10-4 summarizes inactive wells as of 2023.

Table 10-2: Current Wellhead Treatment Plant Capacities

Groundwater Treatment Plant	Active Wells	Well Capacity (gpm)[1]
17th & Sierra Way Plant - Carbon Adsorption System	• 16th Street	1,339
19th St Plant	• 19th Street Well 2 • EPA-1 • EPA -108 • EPA-108S • EPA 109 • EPA-110 • EPA-111 • EPA-112	7,083
Newmark Plant	• Newmark No. 2 • Newmark No. 3 • Newmark No. 4 • EPA-6 • EPA-7	5,133
Waterman Ave Plant	• 31st & Mt. View • 30th & Mt. View • Leroy • Waterman • EPA-2 • EPA-3 • EPA-4 • EPA-5	11,702
Gilbert St Plant	• Gilbert St	1,927
	TOTAL	**27,184 gpm 39.14 MGD**

[1]Sum of well capacities treated at plant.

Table 10-3: Wells Directly Serving Distribution System

Active Well	Treatment at Well Site?	Capacity (gpm)
10th and J Street	N	1,492
27th Acacia	Y	604
Cajon Canyon	N	855
Cajon No. 3	N	942
Cajon No. 4	N	626
Devil Canyon No. 1	N	907
Devil Canyon No. 2	N	694
Devil Canyon No. 5	N	436
Devil Canyon No. 6	N	96
Devil Canyon No. 7	Y	108
Kenwood No. 1	N	525
Kenwood No. 2	Y	1,506
Lynwood	N	1,041
Lytle Creek No. 2	N	467
Mallory	N	369
Mill S	Y	263
Vincent	Y	1,272
	TOTAL	**12,203 gpm 17.57 MGD**

Table 10-4: Inactive Wells

Well
Baseline and California
Cajon No. 2
Devil Canyon No. 3
Devil Canyon No. 4
Mt. Vernon
Olive and Garner
17th & Sierra Way 2 Well
19th St Well 1
40th & Valencia Well
Newmark 1 Well
Perris Hill 4 Well
Perris Hill 5 Well
7th Street

10.1.2 Reliability Analysis

Since groundwater is the Department's source of water, it is important that the source is made as robust as possible. On February 24, 2022, San Bernardino Municipal Water Department, East Valley Water District, and San Bernardino Valley Municipal Water District broke ground on the first phase of a regional recycled water project. The project includes a new recycled water facility, recharge basins, and construction of major pipelines. The recycled water will be used to augment local groundwater supply and to recharge local groundwater basins for future use. The project provides a new local, reliable, and drought-proof water supply that will increase long term regional water supply reliability and drought resilience.

The water supply analysis is summarized in Table 10-5 and Figure 10-1.

Table 10-5: Water Supply Analysis

Parameter	Existing (MGD)	2025 (MGD)	2030 (MGD)	2035 (MGD)	2040 (MGD)
Demand					
Average Day Demand	34.55	36.71	37.78	38.86	39.73
Max Day Demand	58.73	62.40	64.23	66.07	67.55
Supply					
Groundwater (Bunker Hill Basin)	56.72	56.72	56.72	56.72	56.72
Supply Criteria Analysis					
Total supply	56.72	56.72	56.72	56.72	56.72
Supply > Average Day Demand?	Yes	Yes	Yes	Yes	Yes
Supply - ADD (MGD)	22.17	20.01	18.93	17.85	16.98
Supply > Max Day Demand?	**No**	**No**	**No**	**No**	**No**
Supply - MDD (MGD)	-2.01	-5.68	-7.52	-9.35	-10.83

Notes:
1. Existing average day demand is from 2021 customer meter data. Max day demand is existing average day demand multiplied by 1.7 peaking factor.
2. Future average day demands are from 2020 Urban Water Management Plan. Future max day demand is average day demand multiplied by 1.7 peaking factor.
3. Demand data does not include Encanto Booster Station demands since the booster station is an intertie that serves other agencies.

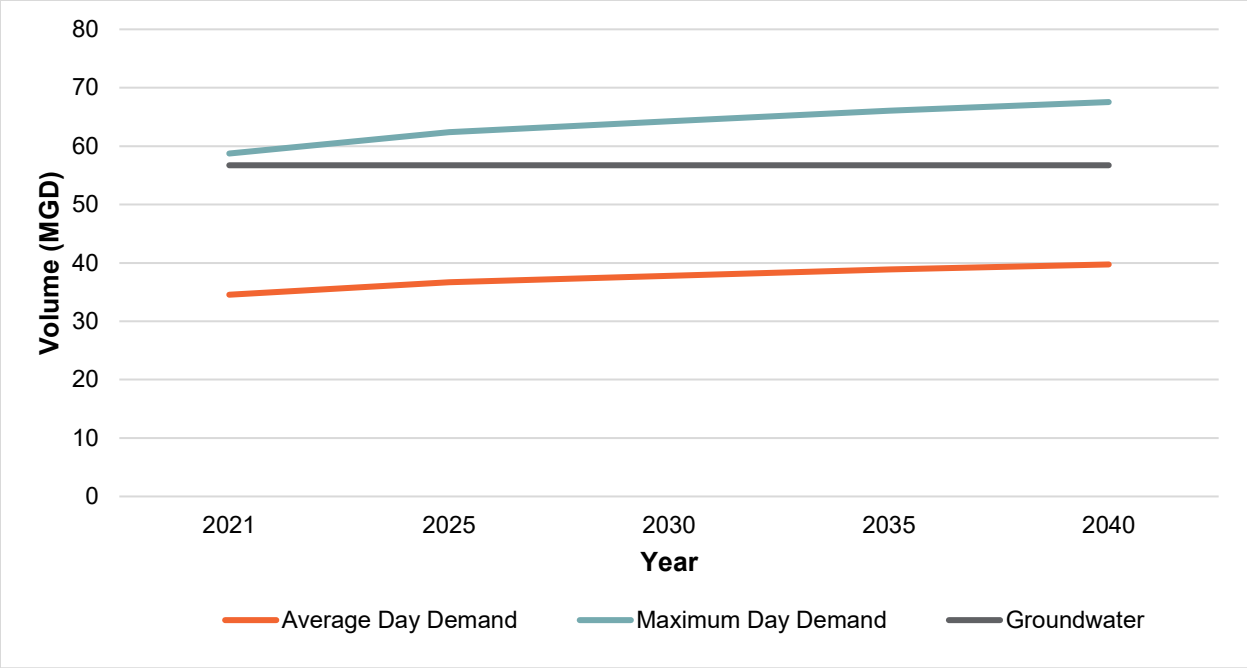

Figure 10-1: Supply Source Capacity Analysis

The analysis indicates that there is adequate water supply to meet both existing and future average day demands. However, the analysis also indicates there is inadequate water supply to meet both existing and future maximum day demands. It is recommended that supply capacity exceeds maximum day demands.

10.1.3 Recommendations

Based on the supply analysis, it is recommended that SBMWD implement new supply projects to bring their supply capacity above future maximum day demand. New supply facilities can be phased in for future year conditions. It is understood that SBMWD is taking a proactive approach and has budgeted for three new wells as part of the fiscal year 2024/2025 budget.

10.2 Storage Facilities

The existing distribution system contains storage reservoirs and forebay tanks and has a total storage volume of approximately 127 MG of tank storage. The storage analysis was analyzed on a system-wide and pressure zone basis. Sub-zones/smaller pressure zones were incorporated into the storage calculations for the major pressure zones based on the zone in which they are supplied. For example, College/Palm Sub-Zone A was incorporated into the College/Palm Zone analysis. Table 10-6 summarizes pressure zones that were combined into one larger zone. Please note that the Department has plans to realign Mountain Sub-Zone B and parts of Mountain Zone into College/Palm Zone. Please see Appendix B for more information.

Table 10-6: Pressure Zones Combined into Large Zones

Large Pressure Zone	Individual Zone
Lower	Lower
	Lower Subzone
Mountain	Mountain
	Mountain Sub-Zone A
	Mountain Sub-Zone B[1]
Devore/Meyers	Devore Meyers
	Devore/Meyers Suprazone (2300 Subzone)
	2100 Subzone
College/Palm	College/Palm
	College/Palm Sub-Zone A
Ridgeline	Ridgeline
	Ridgeline Hydro
Devil Canyon	Devil Canyon
	Devil Canyon Dom

[1]Mountain Sub-Zone B and 45.57 gpm from Mountain Zone realigned into College/Palm Zone by 2030.

10.2.1 Criteria

The storage criteria are summarized in Table 10-7. The criteria were applied system-wide and within each of the major pressure zones. Required storage is a function of equalization, fire, and emergency storage.

Table 10-7: Storage Criteria

Storage Component	Criteria
Equalization	25% of Maximum Day Demand
Fire	Fire Flow x Duration
Emergency	30% of Maximum Day Demand
Required Storage	Equalization Storage + Fire Storage + Emergency Storage

10.2.2 Analysis

10.2.2.1 System-wide Storage Analysis

A storage analysis was conducted for the entire system to determine if the storage criteria is met.

Required storage was calculated as:

- Required storage = Equalization Storage + Fire Storage + Emergency Storage

Table 10-8: System-wide Storage Analysis

Scenario	Max Day Demand (MGD)[1]	Total Storage (MG)	Equalization Storage (MG)	Fire Flow Storage (MG)	Emergency Storage (MG)	Required Storage (MG)	Surplus/ Deficiency (MG)
Existing (Groundwater only)	58.73	126.86	14.68	0.96	17.62	33.26	93.59
2030 (Groundwater only)	64.23	124.73	16.06	0.96	19.27	36.29	88.44
2040 (Groundwater only)	67.55	124.73	16.89	0.96	20.26	38.11	86.62

[1]Does not include Encanto Booster Station demands since the booster station is an intertie that serves other agencies.

The analysis shows that under all conditions the Department has sufficient storage system-wide to meet equalization, fire flow, and emergency storage demands. It should be noted that this analysis could be considered conservative because it does not include any level of demand reduction as a result of public outreach such as strict restrictions on irrigation and other non-essential water uses.

10.2.2.2 Pressure Zone Storage Analysis

A similar storage analysis was conducted for each of the major pressure zones. Subzones were incorporated into the storage calculations for the major pressure zones based on the zone in which they are supplied. See Table 10-9.

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Table 10-9: Pressure Zone Storage Analysis

Pressure Zone	Scenario	Max Day Demand (MGD)	Total Storage (MG)	Equalization Storage (MG)	Fire Flow Storage (MG)	Emergency Storage (MG)	Required Storage (MG)	Surplus/ Deficiency (MG)
Cajon	Existing	2.50	5.00	0.62	0.96	0.75	2.33	2.67
	2030	2.73		0.68	0.96	0.82	2.46	2.54
	2040	2.87		0.72	0.96	0.86	2.54	5.00
College/ Palm[3]	Existing	7.71	11.58	1.93	0.96	2.31	5.20	6.38
	2030	8.58		2.15	0.96	2.57	5.68	5.90
	2040	9.02		2.26	0.96	2.71	5.92	5.66
Daley	Existing	0.35	1.4	0.09	0.18	0.11	0.37	1.04
	2030	0.39		0.10	0.18	0.12	0.39	1.02
	2040	0.41		0.10	0.18	0.12	0.40	1.01
Del Rosa	Existing	1.49	3.65	0.37	0.30	0.45	1.12	2.53
	2030	1.63		0.41	0.30	0.49	1.20	2.45
	2040	1.72		0.43	0.30	0.52	1.24	2.41
Devore/ Meyers	Existing	1.94	4.00	0.48	0.96	0.58	2.03	1.97
	2030	2.12		0.53	0.96	0.64	2.13	1.87
	2040	2.23		0.56	0.96	0.67	2.19	1.81
Devil Canyon	Existing	0.00	0.23	0.00	0.18	0.00	0.18	0.05
	2030	0.00		0.00	0.18	0.00	0.18	0.05
	2040	0.00		0.00	0.18	0.00	0.18	0.05
Intermediate	Existing	3.60	10.36	0.90	0.96	1.08	2.94	7.42
	2030	3.94		0.98	0.96	1.18	3.12	7.23
	2040	4.14		1.03	0.96	1.24	3.24	7.12
Lower[1]	Existing	18.75	33.80	4.69	0.96	5.62	11.27	22.53
	2030	20.50		5.13	0.96	6.15	12.24	21.56
	2040	21.56		5.39	0.96	6.47	12.82	20.98
Mountain	Existing	2.41	2.23	0.60	0.30	0.72	1.62	0.61
	2030	2.48		0.62	0.30	0.74	1.67	0.57
	2040	2.61		0.65	0.30	0.78	1.74	0.50
Ridgeview	Existing	0.12	0.33	0.03	0.18	0.04	0.25	0.08
	2030	0.13		0.03	0.18	0.04	0.25	0.08
	2040	0.14		0.04	0.18	0.04	0.26	0.07
Ridgeline[2]	Existing	0.11	0.10	0.03	0.18	0.03	0.24	**-0.14**
	2030	0.12		0.03	0.18	0.03	0.24	**-0.14**
	2040	0.12		0.03	0.18	0.04	0.25	**-0.15**
Shandin Hills	Existing	0.05	0.22	0.01	0.18	0.02	0.21	0.01
	2030	0.06		0.01	0.18	0.02	0.21	0.01
	2040	0.06		0.01	0.18	0.02	0.21	0.01

Pressure Zone	Scenario	Max Day Demand (MGD)	Total Storage (MG)	Equalization Storage (MG)	Fire Flow Storage (MG)	Emergency Storage (MG)	Required Storage (MG)	Surplus/ Deficiency (MG)
Sycamore[2,3]	**Existing**	3.32	8.95	0.83	0.30	1.00	2.12	6.82
	2030	3.63	7.55	0.91	0.30	1.09	2.30	5.26
	2040	3.82		0.95	0.30	1.14	2.40	5.16
Terrace[2]	**Existing**	4.03	2.45	1.01	0.96	1.21	3.18	**-0.73**
	2030	4.41	1.71	1.10	0.96	1.32	3.39	**-1.68**
	2040	4.64		1.16	0.96	1.39	3.51	**-1.80**
Upper	**Existing**	12.36	42.56	3.09	0.96	3.71	7.76	34.80
	2030	13.51		3.38	0.96	4.05	8.39	34.17
	2040	14.21		3.55	0.96	4.26	8.78	33.78
Verdemont[4] 2300 Zone	**2030**	0.40	1.00	0.10	0.18	0.12	0.40	0.60
	2040	0.40		0.10	0.18	0.12	0.40	0.60

[1]Does not include Encanto Booster Station demands since the booster station is an intertie that serves other agencies.
[2]Reservoir seismically retrofitted in 2020 and 2024.
[3]437 single- family dwelling units proposed for the future. A study is recommended once infrastructure (tanks, pump stations, etc.) has been finalized.
[4]New pressure zone. Infrastructure includes the following to serve a maximum of 668 dwelling units: Reservoir - One (1) 1 MG Tank; Booster Pump Station – 3,500 GPM max pumping capacity; Transmission Pipeline - 1,350 feet of 20-inch ductile iron piping & 1,550 feet of 16-inch ductile iron piping.

The storage analysis based on the criteria shows a storage deficit in the Ridgeline and Terrace pressure zone under existing and future demand scenarios.

10.2.3 Reservoir Site Study

The 2015 Water Facilities Master Plan identified storage deficits in three pressure zones: Ridgeline, Shandin Hills, and Terrace. However, the pressure storage analysis above indicates that only Ridgeline and Terrace Zones have storage deficits attributed to reduced demands for existing and future projected conditions.

The storage analysis in Section 10.2 found that the Ridgeline zone requires:

- An additional 150,000 gallons of storage by 2040. This is in addition to the existing 100,000 gallons tank. This results in a total storage requirement of 250,000 gallons.

A reservoir siting study was conducted to identify potential tank sites for additional storage. It was determined that the most feasible location for additional storage in the Ridgeline Zone is at the same site as the existing Ridgeline tank. See Figure 10-2. However, seismic improvements were recently completed at Ridgeline tank, therefore, it is not desired to replace or expand on the existing Ridgeline tank at this time. It is recommended to continue to monitor demands in the Ridgeline Zone in future years and assess the need for more storage at a later time.



Figure 10-2: New Ridgeline Zone Tank can be Potentially Located Adjacent to the Existing Tank

The storage analysis in Section 10.2 found that the Terrace zone requires:

- An additional 730,000 gallons of storage under existing conditions. This is in addition to the two existing storage tanks that have a combined storage capacity of 2.45 million gallons (MG). This results in a total storage requirement of 3.2 MG.
- Seismic retrofits at Terraces 2 and 3 will lower the high-water level in both reservoirs, providing additional freeboard. As a result, the combined storage capacity will decrease from 2.45 MG to 1.71 MG.
- An additional 1.80 MG of storage is needed by 2040. This results in a total storage requirement of 3.5 MG within the Terrace Zone.

It was determined that storage within the Terrace Zone can be increased by constructing a third tank at the same site as the existing Terrace tanks or at the Lytle Creek 2 reservoir site. See Figure 10-3 and Figure 10-4. The new tank should be at least 1.8 MG in size.



Figure 10-3: Potential Location for New Terrace Zone Tank Adjacent to the 2 Existing Tanks

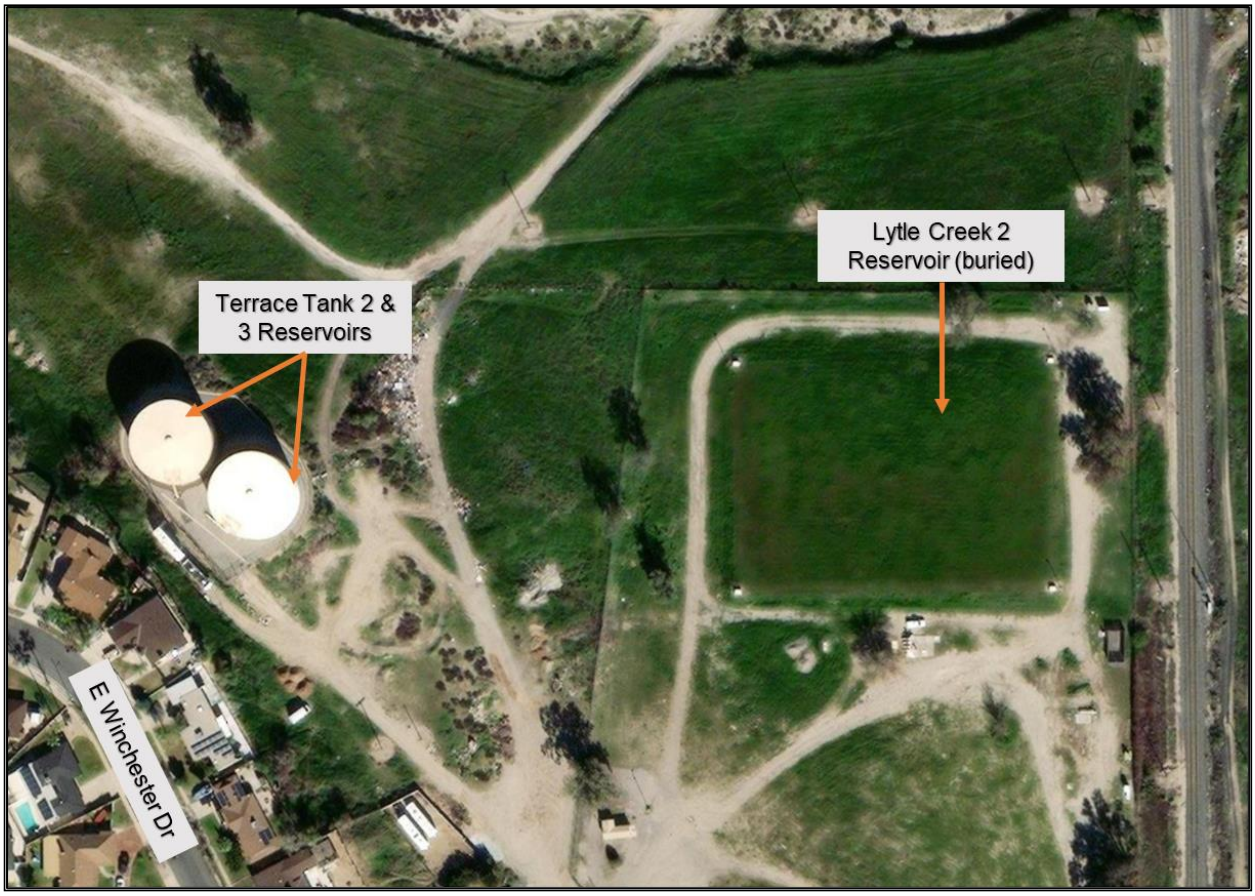

Figure 10-4: Potential Location for New Terrace Zone Tank Adjacent to the Lytle Creek 2 Existing Tank

10.2.4 Recommendations

As a result of the storage analysis, the following is recommended:

- Continue to monitor demands in the Ridgeline Zone in future years and assess the need for more storage at a later time.
- Continue to monitor demands in the Terrace Zone and assess the need for more storage at a later time, accounting for any reduced volume due to seismic improvements of existing tanks.

10.3 Pump Stations

Pump stations are typically sized to meet maximum day demands, maximum day demands plus fire flow or peak hour demands, depending on the pressure zone the pump station is supplying. Industry standards and best practices generally govern pump station design. Firm capacity is defined as the pump station's capacity with the largest pump out of service. Firm capacity is typically used to determine the adequacy of a pump station to serve each pressure zone.

10.3.1 Criteria

The recommended pump station criteria are shown in Table 10-10. The criteria consider how multiple pump stations pump into the same pressure zone, and this allows for the criteria to be met by multiple pump stations serving a particular zone. The benefit of this approach is that it provides flexibility when implementing improvements. It also allows the Department to add capacity at different pump stations where it may be more feasible than in other locations. Additionally, a 16-hour window of pumping is used in the criteria to take advantage of lower tiered pricing for electrical power during non-peak hours of the day.

There are two general categories of pressure zones: "open" zones, and "closed" zones. An open zone's HGL is controlled by a storage tank that "floats" or provides gravity service to the pressure zone that it serves. A closed zone is one that has no gravity storage and relies upon a direct pumped supply.

Table 10-10: Pump Station Criteria

Pump Station Type	Criteria
Pumping to Open Zone	Total combined firm capacity[1] for all pump stations serving the zone shall be maximum day demand volume in a 16-hour period.
Pumping to Closed Zone	Firm capacity shall be Peak Hour Demand plus have a dedicated fire flow pump OR Peak Hour Demand plus required fire flow.

[1]For zones with multiple pump stations, only the largest pump among all of the pump stations serving that zone is considered to be out of service. This is referred to as total firm capacity.

10.3.2 Analysis

The pumping analysis is divided into two sections based on the pump station criteria to be applied. The first section analyzes pressure zones and pump stations that supply a reservoir. The second section analyzes pressure zones and pump stations that directly supply the pressure zone without a reservoir.

The analysis took into account demand scenarios and total firm capacity in each zone. Within each table below, a "Yes" or "No" answers whether each relevant criterion has been met and one column indicates the amount by which a given zone was in surplus or deficit.

10.3.2.1 Open Zones

This analysis confirms whether there is adequate pumping capacity into a zone to meet demands. Therefore, wells/treatment that directly supply a zone are included in the analysis. For instance,

Table 10-11 shows a pumping capacity deficit in the Lower Zone. However, the Lower Zone has several wells/treatment plants that directly supply the zone. Therefore, this pumping capacity deficit does not inhibit the Department's ability to provide a reliable water supply to its customers. For this reason, the Lower Zone contains a "Yes" under the "Meets Criteria?" column within the analysis tables. A similar approach was applied to any zone directly served by wells/treatment plant(s) but with a pumping capacity deficit.

10.3.2.1.1 Existing Scenario

The pumping analysis results are shown in Table 10-11. Please note that demands from pressure zones or subzones supplied by PRVs were combined into the larger upstream zones served by pump stations. For example, the Lower Zone pumping analysis includes Lower Subzone demands. Refer to Table 10-6 for a summary of zones with demands incorporated into larger zones. The analysis shows a pumping capacity deficiency in the Mountain Zone. This result is in line with the 2015 MP. However, this zone has PRVs from College/Palm Zone that can supplement the supply. College/Palm Zone also has a pumping capacity surplus that can be used to supply the Mountain Zone through the PRVs.

10.3.2.1.2 2030 and 2040 Water System

A pumping analysis was conducted under the 2030 and 2040 demand conditions and the results are summarized in Table 10-12 and Table 10-13 .The Department anticipates new developments will be built since the water system has not reached buildout. The results show a pumping capacity deficit in the Mountain Zone. This is similar to the existing scenario analysis.

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Table 10-11: Existing System Pumping Analysis Summary for Open Zones

Zone Located In/From	To Zone	Max Day Demand (16-hr gpm)	Pump	Capacity[2] (gpm)	Total Zone Firm Capacity (gpm)	Wells/ Treatment Plants Directly Supply Zone?	Surplus/ Deficiency (gpm)	Meets Criteria?
17th and Sierra Way Forebay	Lower	19,526	17th Street and Sierra Booster	2,285	1,018	Yes	-18,508	Yes[3]
Mill and D Forebay			Mill & D Street Booster	1,018				
Lower	Terrace	4,201	Terrace 1	1,822	5,351	No	1,150	Yes
Lower			Terrace 2	1,846				
Lower			Terrace 3	1,821				
Lower			Terrace 4	1,708				
17th and Sierra Way Forebay	Intermediate	3,748	16th Street Booster	2,582	1,337	Yes	-2,411	Yes[3]
27th and Acacia Forebay			27th Street Booster	1,337				
Lower	Upper	12,872	Baseline and California Booster	1,695	36,880	Yes	24,008	Yes
Lynwood Forebay			Lynwood	2,753				
Upper			19th Street 1	3,197				
Upper			19th Street 2	1,890				
Upper			19th Street 3	3,065				
Upper			19th Street 4	2,533				
Upper			19th Street 5	3,000				
Upper			Mallory 1	469				
Upper			Mallory 2	499				
Lower			Ogden 1 (Medical Center 1)	4,075				
Lower			Ogden 2 (Medical Center 2)	4,075				
Upper			Ogden 3 (Medical Center 3)	4,075				
Upper			Waterman Booster 1	2,443				
Upper			Waterman Booster 2	2,767				

Zone Located In/From	To Zone	Max Day Demand (16-hr gpm)	Pump	Capacity[2] (gpm)	Total Zone Firm Capacity (gpm)	Wells/ Treatment Plants Directly Supply Zone?	Surplus/ Deficiency (gpm)	Meets Criteria?
Upper			Waterman Booster 3	2,227				
Upper			Waterman Booster 4	2,192				
Upper	Shandin Hills	54	Shandin Hill booster 1	300	300	No	246	Yes
Upper			Shandin Hill booster 2	300				
Upper	Mountain	2,509	Mountain Booster 1	755	1,539	No	-970	**No**
Upper			Mountain Booster 2	784				
Upper			Mountain Booster 3	1,623				
Upper	Del Rosa	1,555	Del Rosa Booster 1	1,846	2,094	Yes	539	Yes
Upper			Del Rosa Booster 2	1,794				
Upper			Del Rosa Booster 4	300				
Upper	Sycamore	3,456	Sycamore Booster 1	3,146	6,922	Yes	3,466	Yes
Upper			Sycamore Booster 2	1,880				
Upper			Sycamore Booster 3	1,896				
Upper			Sycamore Booster 4	3,359				
Sycamore	College/Palm	8,028	College Booster 1	2,125	17,644	Yes	9,616	Yes
Sycamore			College Booster 2	2,169				
Sycamore			College Booster 3	3,000				
Sycamore			College Booster 4	1,100				
Sycamore			College Booster 5	1,100				
Upper			Palm 1	4,075				
Upper			Palm 2	4,075				
Upper			Palm 3	4,075				
Del Rosa	Ridgeview	128	Ridgeview 2	240	178	No	50	Yes
Del Rosa			Ridgeview 3	178				
Del Rosa	Daley	369	Daley Booster 1	540	508	No	139	Yes
Del Rosa			Daley Booster 2	508				

Zone Located In/From	To Zone	Max Day Demand (16-hr gpm)	Pump	Capacity[2] (gpm)	Total Zone Firm Capacity (gpm)	Wells/ Treatment Plants Directly Supply Zone?	Surplus/ Deficiency (gpm)	Meets Criteria?
Sycamore	Ridgeline	110	Ridgeline Lower 1	747	747	No	637	Yes
Sycamore			Ridgeline Lower 2	784				
College/Palm	Cajon	2,603	Cajon Booster 2	3,500	10,500	Yes	7,897	Yes
College/Palm			Cajon Booster 3	3,500				
College/Palm			Cajon Booster 4	3,500				
College/Palm			Cajon Booster 5	3,500				
Cajon	Devore/Meyers	2,019	Meyers Booster 3	2,500	7,500	Yes	5,481	Yes
Cajon			Meyers Booster 4	2,500				
Cajon			Meyers Booster 5	2,500				
Cajon			Meyers Booster 6	2,500				
Devil Canyon	Devil Canyon Domestic	0	Devil Canyon Dom 1	117	122	Yes	122	Yes
Devil Canyon			Devil Canyon Dom 2	122				

[1]Does not include Encanto Booster Station demands since the booster station is an intertie that serves other agencies.
[2]Individual pump capacity.
[3]Zone is directly supplied by several wells/treatment plants.

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Table 10-12: 2030 Water System Pumping Analysis Summary for Open Zones

Zone Located In/From	To Zone	Max Day Demand (16-hr gpm)	Pump	Capacity[2] (gpm)	Total Zone Firm Capacity (gpm)	Wells/ Treatment Plants Directly Supply Zone?	Surplus/ Deficiency (gpm)	Meets Criteria?
17th and Sierra Way Forebay	Lower	21,355	17th Street and Sierra	2,285	1,018	Yes	-20,337	Yes[3]
Mill and D Forebay			Mill & D Street	1,018				
Lower	Terrace	4,594	Terrace 1	1,822	5,351	No	757	Yes
Lower			Terrace 2	1,846				
Lower			Terrace 3	1,821				
Lower			Terrace 4	1,708				
17th and Sierra Way Forebay	Intermediate	4,099	16th Street	2,582	1,337	Yes	-2,762	Yes[3]
27th and Acacia Forebay			27th Street	1,337				
Lower	Upper	14,077	Baseline and California	1,695	36,880	Yes	22,803	Yes
Lynwood Forebay			Lynwood	2,753				
Upper			19th Street 1	3,197				
Upper			19th Street 2	1,890				
Upper			19th Street 3	3,065				
Upper			19th Street 4	2,533				
Upper			19th Street 5	3,000				
Upper			Mallory 1	469				
Upper			Mallory 2	499				
Lower			Ogden 1 (Medical Center 1)	4,075				
Lower			Ogden 2 (Medical Center 2)	4,075				
Upper			Ogden 3 (Medical Center 3)	4,075				
Upper			Waterman 1	2,443				
Upper			Waterman 2	2,767				
Upper			Waterman 3	2,227				

Zone Located In/From	To Zone	Max Day Demand (16-hr gpm)	Pump	Capacity[2] (gpm)	Total Zone Firm Capacity (gpm)	Wells/ Treatment Plants Directly Supply Zone?	Surplus/ Deficiency (gpm)	Meets Criteria?
Upper			Waterman 4	2,192				
Upper	Shandin Hills	59	Shandin Hill 1	300	300	No	241	Yes
Upper			Shandin Hill 2	300				
Upper	Mountain	2,586	Mountain 1	755	1,539	No	-1,047	**No**
Upper			Mountain 2	784				
Upper			Mountain 3	1,623				
Upper	Del Rosa	1,701	Del Rosa 1	1,846	2,094	Yes	393	Yes
Upper			Del Rosa 2	1,794				
Upper			Del Rosa 4	300				
Upper	Sycamore	3,780	Sycamore 1	3,146	6,922	Yes	3,142	Yes
Upper			Sycamore 2	1,880				
Upper			Sycamore 3	1,896				
Upper			Sycamore 4	3,359				
Sycamore	College/Palm	8,938	College 1	2,125	17,644	Yes	8,706	Yes
Sycamore			College 2	2,169				
Sycamore			College 3	3,000				
Sycamore			College 4	1,100				
Sycamore			College 5	1,100				
Upper			Palm 1	4,075				
Upper			Palm 2	4,075				
Upper			Palm 3	4,075				
Del Rosa	Ridgeview	140	Ridgeview 2	240	178	No	38	Yes
Del Rosa			Ridgeview 3	178				
Del Rosa	Daley	403	Daley 1	540	508	No	105	Yes
Del Rosa			Daley 2	508				
Sycamore	Ridgeline	120	Ridgeline Lower 1	747	747	No	627	Yes

Zone Located In/From	To Zone	Max Day Demand (16-hr gpm)	Pump	Capacity[2] (gpm)	Total Zone Firm Capacity (gpm)	Wells/ Treatment Plants Directly Supply Zone?	Surplus/ Deficiency (gpm)	Meets Criteria?
Sycamore			Ridgeline Lower 2	784				
College/Palm	Cajon	2,847	Cajon 2	3,500	10,500	Yes	7,653	Yes
College/Palm			Cajon 3	3,500				
College/Palm			Cajon 4	3,500				
College/Palm			Cajon 5	3,500				
Cajon	Devore/Meyers	2,208	Meyers 3	2,500	7,500	Yes	5,292	Yes
Cajon			Meyers 4	2,500				
Cajon			Meyers 5	2,500				
Cajon			Meyers 6	2,500				
Devil Canyon	Devil Canyon Domestic	0	Devil Canyon Dom 1	117	122	Yes	122	Yes
Devil Canyon			Devil Canyon Dom 2	122				

[1]Does not include Encanto Booster Station demands since the booster station is an intertie that serves other agencies.
[2]Individual pump capacity.
[3]Zone is directly supplied by several wells/treatment plants.

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Table 10-13: 2040 Water System Pumping Analysis Summary for Open Zones

Zone Located In/From	To Zone	Max Day Demand (16-hr gpm)	Pump	Capacity[2] (gpm)	Total Zone Firm Capacity (gpm)	Wells/ Treatment Plants Directly Supply Zone?	Surplus/ Deficiency (gpm)	Meets Criteria?
17th and Sierra Way Forebay	Lower	22,457	17th Street and Sierra	2,285	1,018	Yes	-21,439	Yes[3]
Mill and D Forebay			Mill & D Street	1,018				
Lower	Terrace	4,831	Terrace 1	1,822	5,351	No	520	Yes
Lower			Terrace 2	1,846				
Lower			Terrace 3	1,821				
Lower			Terrace 4	1,708				
17th and Sierra Way Forebay	Intermediate	4,311	16th Street	2,582	1,337	Yes	-2,974	Yes[3]
27th and Acacia Forebay			27th Street	1,337				
Lower	Upper	14,803	Baseline and California	1,695	36,880	Yes	22,077	Yes
Lynwood Forebay			Lynwood	2,753				
Upper			19th Street 1	3,197				
Upper			19th Street 2	1,890				
Upper			19th Street 3	3,065				
Upper			19th Street 4	2,533				
Upper			19th Street 5	3,000				
Upper			Mallory 1	469				
Upper			Mallory 2	499				
Lower			Ogden 1 (Medical Center 1)	4,075				
Lower			Ogden 2 (Medical Center 2)	4,075				
Upper			Ogden 3 (Medical Center 3)	4,075				
Upper			Waterman 1	2,443				
Upper			Waterman 2	2,767				
Upper			Waterman 3	2,227				

Zone Located In/From	To Zone	Max Day Demand (16-hr gpm)	Pump	Capacity[2] (gpm)	Total Zone Firm Capacity (gpm)	Wells/ Treatment Plants Directly Supply Zone?	Surplus/ Deficiency (gpm)	Meets Criteria?
Upper			Waterman 4	2,192				
Upper	Shandin Hills	62	Shandin Hill 1	300	300	No	238	Yes
Upper			Shandin Hill 2	300				
Upper	Mountain	2,719	Mountain 1	755	1,539	No	-1,180	**No**
Upper			Mountain 2	784				
Upper			Mountain 3	1,623				
Upper	Del Rosa	1,789	Del Rosa 1	1,846	2,094	Yes	305	Yes
Upper			Del Rosa 2	1,794				
Upper			Del Rosa 4	300				
Upper	Sycamore	3,975	Sycamore 1	3,146	6,922	Yes	2,947	Yes
Upper			Sycamore 2	1,880				
Upper			Sycamore 3	1,896				
Upper			Sycamore 4	3,359				
Sycamore	College/Palm	9,400	College 1	2,125	17,644	Yes	8,244	Yes
Sycamore			College 2	2,169				
Sycamore			College 3	3,000				
Sycamore			College 4	1,100				
Sycamore			College 5	1,100				
Upper			Palm 1	4,075				
Upper			Palm 2	4,075				
Upper			Palm 3	4,075				
Del Rosa	Ridgeview	147	Ridgeview 2	240	178	No	31	Yes
Del Rosa			Ridgeview 3	178				
Del Rosa	Daley	424	Daley 1	540	508	No	84	Yes
Del Rosa			Daley 2	508				
Sycamore	Ridgeline	126	Ridgeline Lower 1	747	747	No	621	Yes

Zone Located In/From	To Zone	Max Day Demand (16-hr gpm)	Pump	Capacity[2] (gpm)	Total Zone Firm Capacity (gpm)	Wells/ Treatment Plants Directly Supply Zone?	Surplus/ Deficiency (gpm)	Meets Criteria?
Sycamore			Ridgeline Lower 2	784				
College/Palm	Cajon	2,994	Cajon 2	3,500	10,500	Yes	7,506	Yes
College/Palm			Cajon 3	3,500				
College/Palm			Cajon 4	3,500				
College/Palm			Cajon 5	3,500				
Cajon	Devore/Meyers	2,322	Meyers 3	2,500	7,500	Yes	5,178	Yes
Cajon			Meyers 4	2,500				
Cajon			Meyers 5	2,500				
Cajon			Meyers 6	2,500				
Devil Canyon	Devil Canyon Domestic	0	Devil Canyon Dom 1	117	122	Yes	122	Yes
Devil Canyon			Devil Canyon Dom 2	122				

[1]Does not include Encanto Booster Station demands since the booster station is an intertie that serves other agencies.
[2]Individual pump capacity.
[3]Zone is directly supplied by several wells/treatment plants.

10.3.2.4 Closed Zones (Pumped Supply Only)

Table 10-14 summarizes the closed zones pumping analysis. The results indicate that Devore/Meyers Suprazone is the only zone that meets the criteria. The results are similar under 2030 and 2040 demands.

Table 10-14: Existing Water System Pumping Analysis Summary for Closed Zones

Zone Located In/From	To Zone	Peak Hour Demand (gpm)	Peak Hour Demand + Required Fire flow	Pump Station(s)	Capacity (gpm)	Firm Capacity (gpm)	Surplus/ Deficiency (gpm)	Dedicated Fire Pump?	Meets Criteria?	Notes
Mountain	Mountain Subzone A	90.0	1590	Sepulveda Booster	1134	567	-1023	No	**No**	
Mountain	Mountain Subzone B	28.2	1528	Hill Drive	804	402	-1126	No	**No**	
Devore/Meyers	Devore/Meyers Suprazone (2300 Zone East)	82.9	1583	Melvin Booster	270	180	-1403	Yes	Yes	Booster station has 2 fire flow pumps each at 1,200 gpm capacity
Ridgeline	Ridgeline Hydro	1.5	1501	Ridgeline Hydro	242	131	-1370	No	**No**	

Table 10-15: 2030 Water System Pumping Analysis Summary for Closed Zones

Zone Located In/From	To Zone	Peak Hour Demand (gpm)	Peak Hour Demand + Required Fire flow	Pump Station(s)	Capacity (gpm)	Firm Capacity (gpm)	Surplus/ Deficiency (gpm)	Dedicated Fire Pump?	Meets Criteria?	Notes
Mountain	Mountain Subzone A	98	1598	Sepulveda Booster	1134	567	-1031	No	**No**	
Mountain	Mountain Subzone B	31	1531	Hill Drive	804	402	-1129	No	**No**	
Devore/Meyers	Devore/Meyers Suprazone (2300 Zone East)	91	1591	Melvin Booster	270	180	-1411	Yes	Yes	Booster station has 2 fire flow pumps each at 1,200 gpm capacity
Ridgeline	Ridgeline Hydro	2	1502	Ridgeline Hydro	242	131	-1371	No	**No**	

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Table 10-16: 2040 Water System Pumping Analysis Summary for Closed Zones

Zone Located In/From	To Zone	Peak Hour Demand (gpm)	Peak Hour Demand + Required Fire flow	Pump Station(s)	Capacity (gpm)	Firm Capacity (gpm)	Surplus/ Deficiency (gpm)	Dedicated Fire Pump?	Meets Criteria?	Notes
Mountain	Mountain Subzone A	104	1604	Sepulveda Booster	1134	567	-1037	No	**No**	
Mountain	Mountain Subzone B	32	1532	Hill Drive	804	402	-1130	No	**No**	
Devore/Meyers	Devore/Meyers Suprazone (2300 Zone East)	95	1595	Melvin Booster	270	180	-1415	Yes	Yes	Booster station has 2 fire flow pumps each 1,200 gpm capacity
Ridgeline	Ridgeline Hydro	2	1502	Ridgeline Hydro	242	131	-1371	No	**No**	There are no fire hydrants in the Ridgeline Hydro Zone. Fire protection water is supplied through connections with the Ridgeline Pressure Zone.

10.3.3 Recommendations

The pumping analyses for existing, 2030, and 2040 scenarios indicate that all pressure zones except for Mountain Zone have adequate pumping capacity. An area in the Mountain Pressure Zone will be removed with a planned Zone Realignment Project which will reduce the maximum day demands in Mountain Zone. Furthermore, there is an existing project under design for the booster station replacement/upgrade. As result, no new pump capacity projects are recommended at this time.

10.4 Pressure Zone Supply

Providing multiple supply points to a pressure zone increases service reliability and fire flow protection capability to the water service area. Supply points to a pressure zone can be a reservoir, pump station, pressure reducing station, imported water connection, or treatment plant supply. An analysis was conducted to verify supply points to each pressure zone, with the criteria that each pressure zone maintains a minimum of two (2) supply points for redundancy.

For pressure zones where multiple supply points are not feasible such as smaller or isolated sections of the service area, we recommend ensuring the single supply point is made as reliable and redundant as feasible. For example, if a pump station is the single supply point, the pump station should have backup pumps for redundancy, and backup power provisions.

10.4.1 Criteria

Table 10-17: Pressure Zone Supply

Facility Type	Criteria
Pressure Zone Supply	Pressure zone should have a minimum of two (2) supply points

10.4.2 Analysis

Table 10-18: Pressure Zone and Supply Points Summary

Pressure Zone	Existing Max Day Demand (gpm)	Supply Point #1	Supply Point #2	Meets Criteria?
Lower	12,958	19th Street Plant	10th and J Street Well	Yes
Lower Subzone	59	Norman PRS	Clevenger PRS	Yes
Terrace	2,800	Terrace 1/ Terrace 2 Booster	Terrace 3/ Terrance 4 Booster	Yes
Intermediate	2,499	17th & Sierra Way Plant	27th & Acacia Well	Yes
Upper	8,581	19th Street Plant	Lynwood Well	Yes
Shandin Hills	36	Shandin Hills Booster	-	**No**
Del Rosa	1,037	Del Rosa Booster	Echo PRS	Yes
Daley	246	Daley Booster	-	**No**
Ridgeview	85	Ridgeview Booster	Harrison PRS	Yes

Pressure Zone	Existing Max Day Demand (gpm)	Supply Point #1	Supply Point #2	Meets Criteria?
Mountain	1,594	Mountain Booster	Berkley PRS	Yes
Mountain Subzone A	60	Sepulveda Booster	-	**No**
Mountain Subzone B[1]	19	Hill Drive Booster	-	**No**
Sycamore[2]	2,304	Sycamore Booster	Devil Canyon No. 1 Well	Yes
Devore/Meyers	1,121	Meyers Booster	Cajon Canyon Well	Yes
2100 Subzone	169	Belmont PRS	Magnolia and Irvington PRS	Yes
Devore/Meyers 2300 Subzone (Suprazone)	55	Melvin Booster	-	**No**
College/Palm[2]	5,196	College Booster	Devil Canyon No. 2 Well	Yes
College/Palm Sub-Zone A	156	Bond PRS	-	**No**
Cajon	1,735	Cajon Booster	Cajon No. 3 Well	Yes
Ridgeline	72	Ridgeline Lower Booster	-	**No**
Ridgeline Hydro	1.0	Ridgeline Upper Booster	-	**No**
Devil Canyon	0.0	Devil No. 6 Well via PRS	Devil No. 7 Well via PRS	Yes
Devil Canyon Domestic	0.0	Devil Canyon Dom Booster	-	**No**

[1]Zone to be eliminated by 2030
[2]437 single- family dwelling units proposed for the future. A study is recommended once infrastructure (tanks, pump stations, etc.) has been finalized.

10.4.3 Recommendations

The pressure zones that do not meet the pressure zone supply criteria are Shandin Hills, Daley, Mountain Subzone A, Mountain Subzone B, Devore/Meyers 2300 Subzone (Suprazone), Ridgeline, Ridgeline Hydro, and Devil Canyon Domestic. Many of these zones are relatively small (demand of less than 100 gpm). A brief discussion of each zone is provided below.

- **Shandin Hills** – Located adjacent Upper Zone and along Vista Drive, with an existing maximum day demand of 36 gpm. This is a relatively small zone and relatively isolated from the rest of the system, so it is acceptable that providing a second supply point to the zone may not be feasible. However, the Department has portable generators that can provide the Shandin Hills Booster Pump Station (BPS) backup power in the event of a loss of power.

- **Daley –** Located adjacent to the Del Rosa Zone and has a maximum day demand of 246 gpm. This zone has an HGL of 1775 ft and is one of the pressure zones with the highest HGLs. As a result, the only feasible option for a second supply point is a second pump station. Although feasible, this solution is not practical. A permanent generator is recommended to provide backup power in the event of a power loss.

- **Mountain Subzone A** – This is a subzone to the Mountain Zone and has an existing maximum day demand of 60 gpm. There is a normally closed zone valve at the intersection of E Hill Dr and Park Ln. This valve creates a boundary between Mountain Zone and Mountain Subzone A. The

Mountain Zone has an HGL 1633 ft and is at a lower HGL than Mountain Subzone A, but it can provide emergency supply if needed. Preliminary analysis indicates that the zone valve can be opened to serve as an additional supply point and that customers would get a minimum service pressure of 27 psi which is adequate for fire suppression. However, a permanent generator is recommended to provide backup power in the event of a power loss and to maintain typical service pressures.

- **Mountain Subzone B** – This is a subzone to the Mountain Zone. This zone will be eliminated by 2030 and absorbed into the College/Palm Zone. As a result, recommendations for a second supply point are not necessary. See Appendix B for further details.

- **Devore/Meyers 2300 Subzone (Suprazone)** – This is a subzone to the Devore/Meyers Zone, located north of Verdemont Drive, with an existing maximum day demand of 55 gpm. Although the zone has a single supply point, the Department stores a portable generator at the Melvin BPS site that can provide backup power in the event of a loss of power.

- **College/Palm Subzone A** – This is a subzone to the College/Palm Zone, adjacent to the Upper Zone, and has a maximum day demand of 156 gpm. This zone is supplied by a single 16-inch main that cuts through the Shandin Hills Golf Club. There are two isolation valves that separate the Upper Zone from the College/Palm Subzone A. One isolation valve is along Marshall Blvd and another zone boundary valve is located at W 33rd St. Both these valves can be used to serve as additional supply points if Bond PRS is ever out of service. The Upper Zone has an HGL 1416 ft and is at a lower HGL than College/Palm Subzone, but it can provide emergency supply if needed. Preliminary analysis indicates that the zone valves can be opened to serve as an additional supply points and that customers would get a minimum service pressure of 20 psi.

- **Ridgeline** – Located adjacent to Sycamore Zone, with an existing maximum day demand of 72 gpm. This zone has an HGL of 1751.5 ft and is one of the pressure zones with the highest HGLs. As a result, the only feasible option for a second supply point is a second pump station. Although feasible, this solution is not practical. A permanent generator is recommended to provide backup power in the event of a power loss.

- **Ridgeline Hydro** – This is a subzone to the Ridgeline Zone and has an existing maximum day demand of 1 gpm. This is one of the smallest zones within the system and as a result a second supply point is not recommended.

- **Devil Canyon Domestic** – This is a subzone of the Devil Canyon Zone. There are no customers in this area, only a few services and hydrants. Most of the water here is used for chlorine injection for the wells, as a result a second supply is not warranted.

10.5 Distribution System Pressure

The pressure analysis evaluated the model's predictions of pressures at service nodes per the criteria in Table 10-19. Service nodes are defined as those nodes where customer service occurs and excludes areas such as inside system facilities and transmission mains to storage reservoirs. Areas of low and high pressure were evaluated.

10.5.1 Criteria

Table 10-19: Pressure Criteria for Distribution System

Demand Condition	Minimum Service Pressure (psi)	Notes
Static Pressure (No Demands)	60 psi	This is preferred, not required. Desired range is 60 to 80 psi.
Dynamic Pressure (Operating)	40 psi	This is a requirement for all demand conditions, except fire flow.
Maximum Day + Fire Flow	20 psi	This is a requirement

10.5.2 Analysis

All nodes were analyzed under static and dynamic conditions. The static hydraulic grade served as the basis for establishing static pressures in the service area. Simulations in the hydraulic model aided in establishing dynamic pressures according to the conditions set in Table 10-19.

10.5.2.1 Static Analysis

The service nodes were analyzed under static conditions by evaluating the difference between node elevation and existing pressure zone hydraulic grade.

10.5.2.2 Dynamic Pressure Analysis – Minimum Pressures

Minimum service node pressures for each pressure zone were evaluated during their respective hours of peak demand under maximum day demand.

10.5.2.3 Dynamic Pressure Analysis – Maximum Pressures

The service nodes were analyzed under dynamic conditions by evaluating maximum pressures, during a minimum day demand scenario in the hydraulic model.

Pressure zones in the north of the system experience higher maximum pressures under minimum day demand conditions. Areas with maximum pressures included the Mountain, Daley, College/Palm, Cajon, and Devore Meyers pressure zones. Maximum pressures above 150 psi were observed at dead-ends throughout the system.

10.5.3 Recommendations

Figure 10-5 reflects the static pressure between the zone hydraulic grade line and the elevation. The figure demonstrates potential problem areas based on minimum pressures. If the junctions are red in this figure, then it implies under the best-case scenario, the static pressures without demand are less than 40 psi. Pipe diameter changes will not improve the static pressures. System improvements would require changes to the zone itself, a change to a higher pressure zone, or the creation of a new zone or subzone. In Figure 10-6, the location at North Waterman Avenue and East 40th Street has low pressure but is adequately supplied by the Waterman and Newmark water treatment plants. The pressure issue is related to the elevation. Without a subzone and small booster station, the pressures cannot be improved.

Other areas with low pressures are addressed in other sections of this report or are generally related to an isolated high elevation.

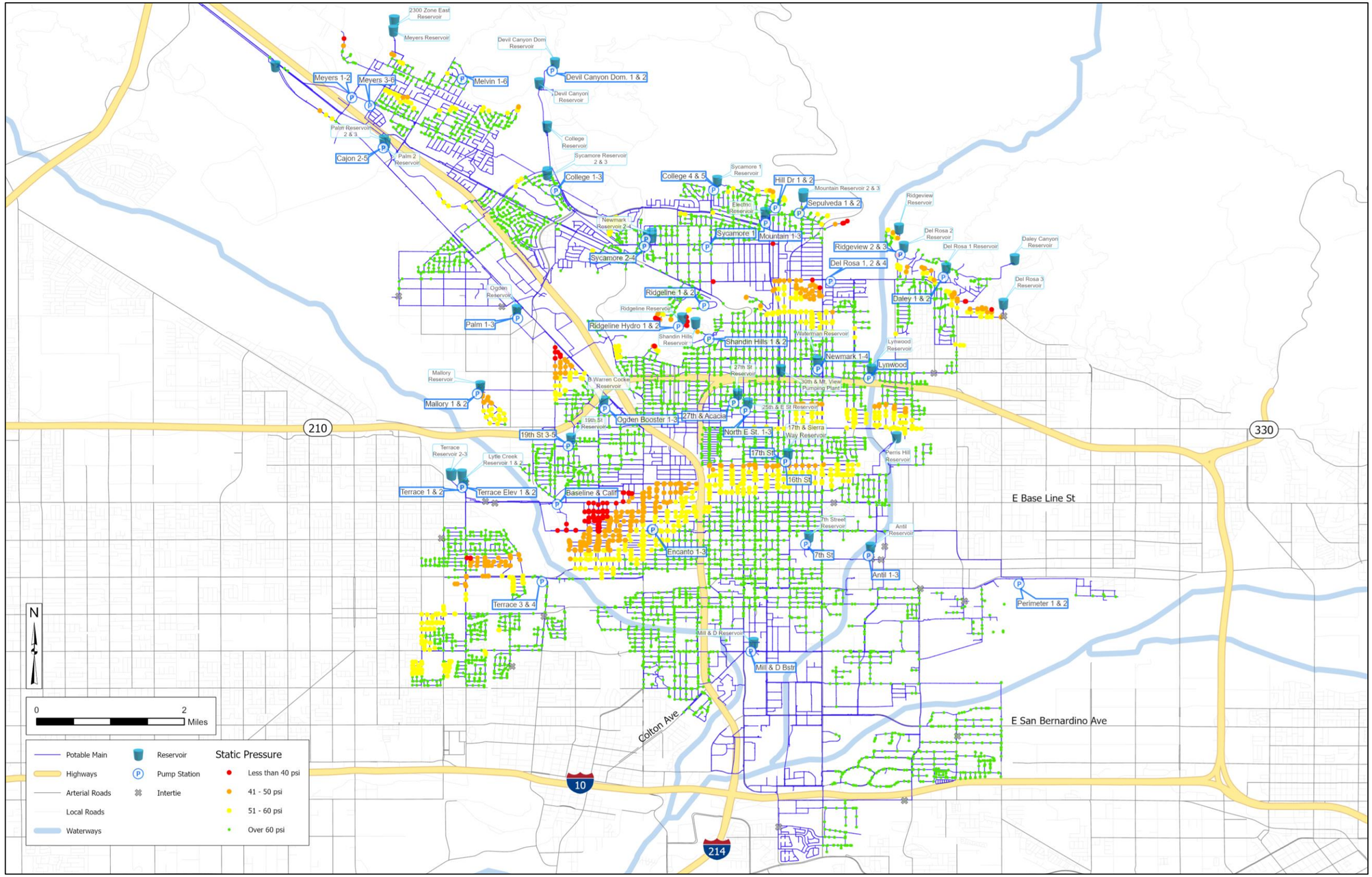


Figure 10-5: Distribution System Static Pressures

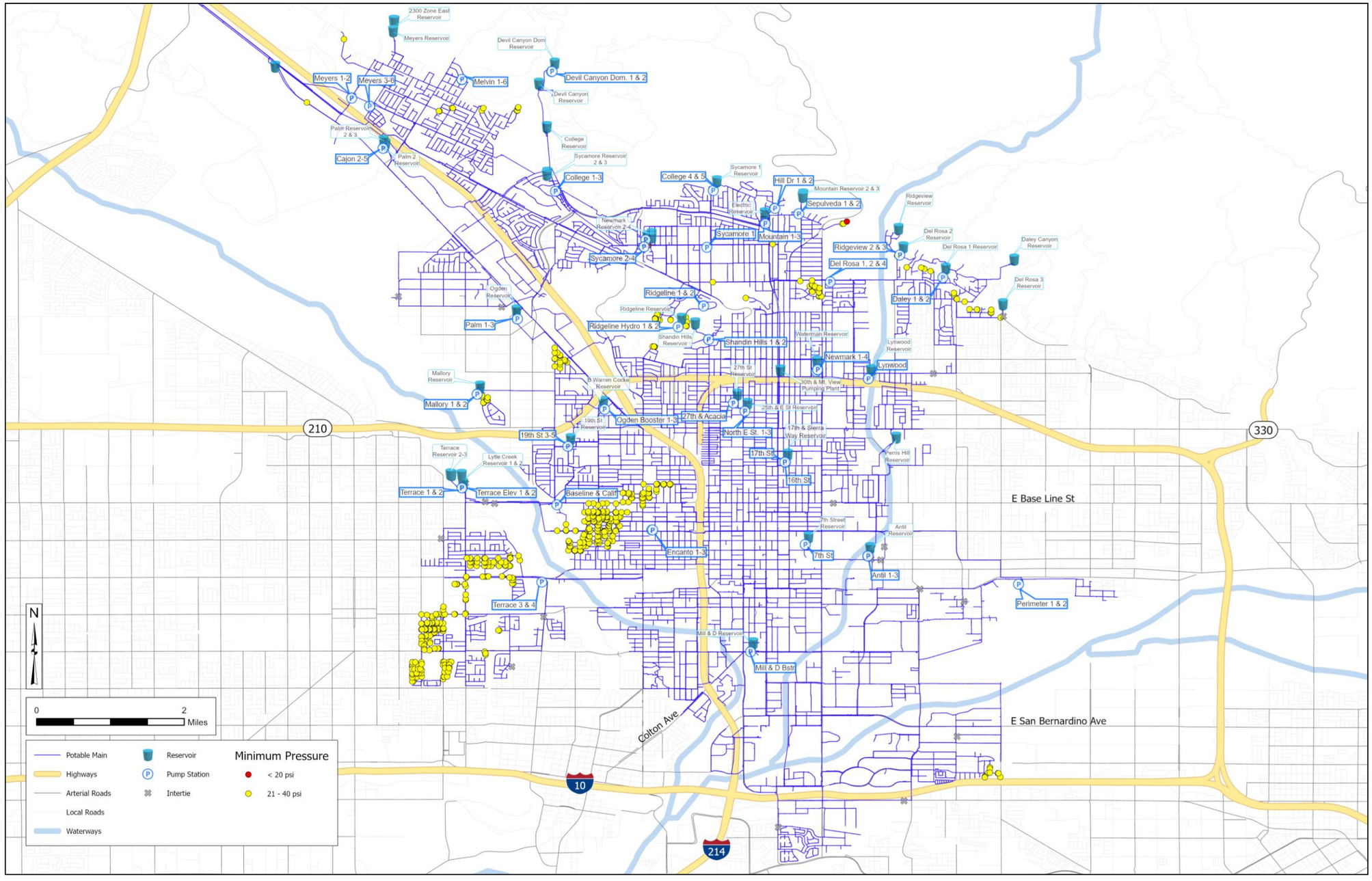


Figure 10-6: Distribution System Minimum Pressures

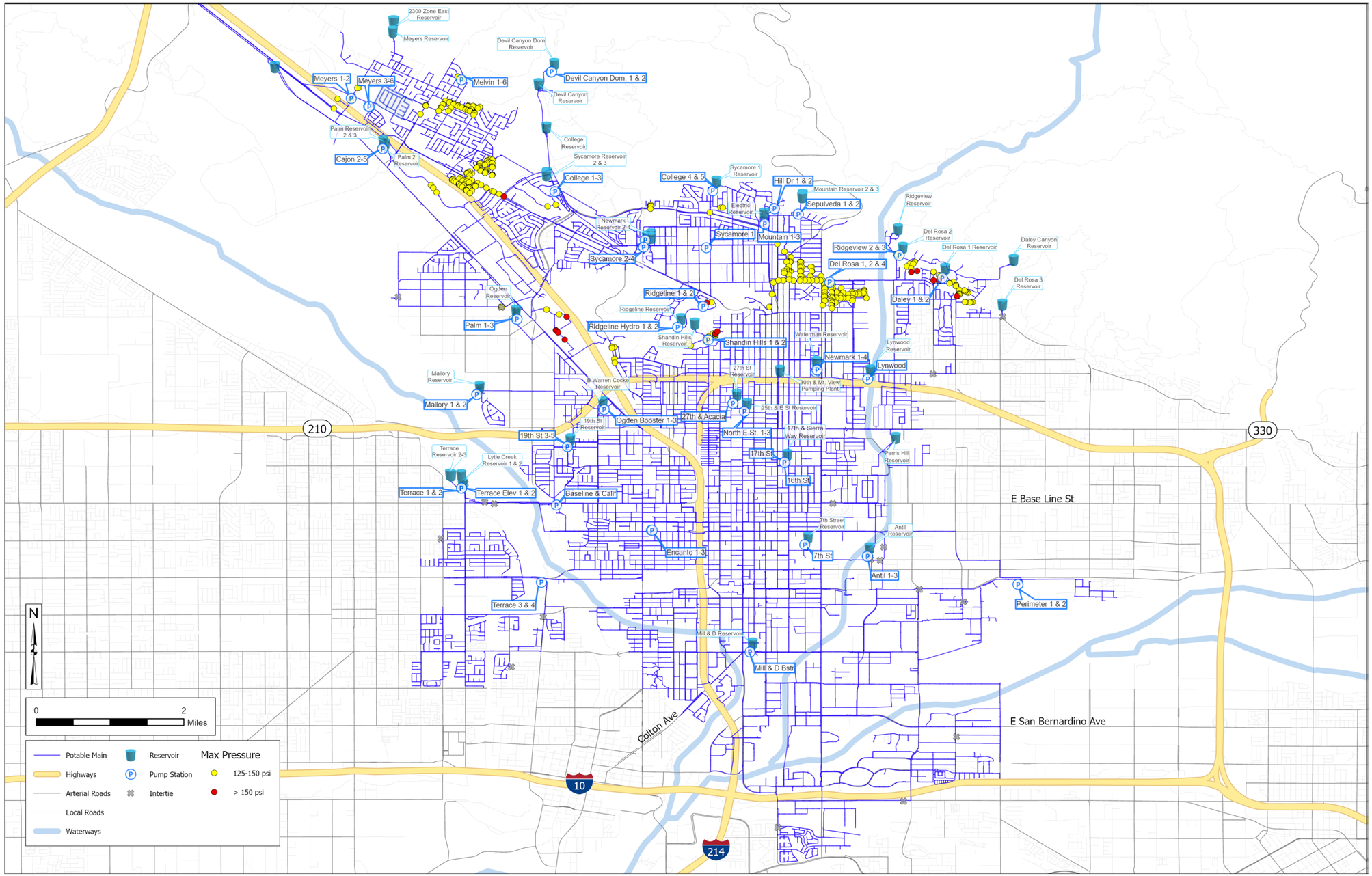


Figure 10-7: Distribution System Maximum Pressures

10.6 System Velocities

10.6.1 Criteria

Distribution pipelines shall be sized for a maximum velocity of 10 ft/sec under peak hour demand or a maximum velocity of 15 ft/sec under maximum day demand plus fire flow conditions. There is no minimum velocity criterion.

Table 10-20: Distribution Pipeline Velocity Criteria

Demand Condition	Max Velocity
Peak Hour Demand	10 ft/sec
Maximum Day + Fire Flow	15 ft/sec

Transmission mains are defined as pipelines that generally do not have water service connections, often have no fire hydrant connections, and are greater than 12-inch diameter. Transmission mains shall be sized for a target velocity range of 5 to 7 ft/sec under peak hour demand, or worst-case flow conditions. Transmission mains may be sized beyond this velocity range if deemed appropriate for the application.

Table 10-21: Transmission Main Velocity Criteria

Demand Condition	Velocity Range
Peak Hour, or Worst-Case Flow Condition	5 to 7 ft/sec

10.6.2 Analysis

10.6.2.1 Distribution pipelines

Distribution pipelines are defined as being less than or equal to 12-inch water lines. A review of distribution pipelines with a velocity of 10 ft/sec or higher demonstrated there were no distribution lines with velocities greater than 10 ft/sec under peak hour demand.

Figure 10-8 illustrates the distribution water lines identified as having greater than 15 ft/sec of velocity during any fire flow event. These results were created through the following steps:

- Applying the Zoning Required Fire Flow to the junction representing the nearest hydrant.
- Performing a fire flow analysis based on the defined needed fire flow.
- Creating a Fire flow Pipe Report in Report Manager.
- Exporting this data to a CSV file, using Power Query and Pivot Table to define impacts by pipe.

Distribution pipelines impacts in Figure 10-8 reflect the number of hydrants flowing at their needed fire flow that exceeds 15 ft/sec. If the pipe is orange, one hydrant flowing at its needed fire flow caused the

pipe to exceed 15 ft/sec. This would be expected at all hydrants where the lateral is less than 6 inches. If the line is red, more than one hydrant causes the waterline to exceed 15 ft/sec during needed fire flow demand.

These results do not assume that the hydrants can achieve the needed fire flow. In most cases, when a water line exceeded 15 ft/sec, the needed fire flow at 20 psi was not met.

10.6.2.2 Transmission mains

Transmission mains are defined as being greater than 12-inch water lines, without services. A review of transmission mains indicated there were no transmission mains with velocities greater than 7 ft/sec.

10.6.3 Recommendations

In Figure 10-8, the water lines in orange imply that one hydrant has caused the water line to exceed 15 ft/sec. This will in most cases have caused that hydrant to also be deficient for fire flow. In areas where fire flow is critical but deficient with a high-velocity pipe adjacent to it, we recommend replacing the line with a larger diameter line.

In Figure 10-8, when a line is red, more than one hydrant's needed fire flow has caused the water line to exceed 15 ft/sec. This could still be a localized issue (e.g. two hydrants on a dead-end line), however, an area with a cluster of red lines implies the issues could be more systemic, for example, a waterline that is undersized serving an area. Pipeline improvements are recommended to target these areas for available fire flow improvement.

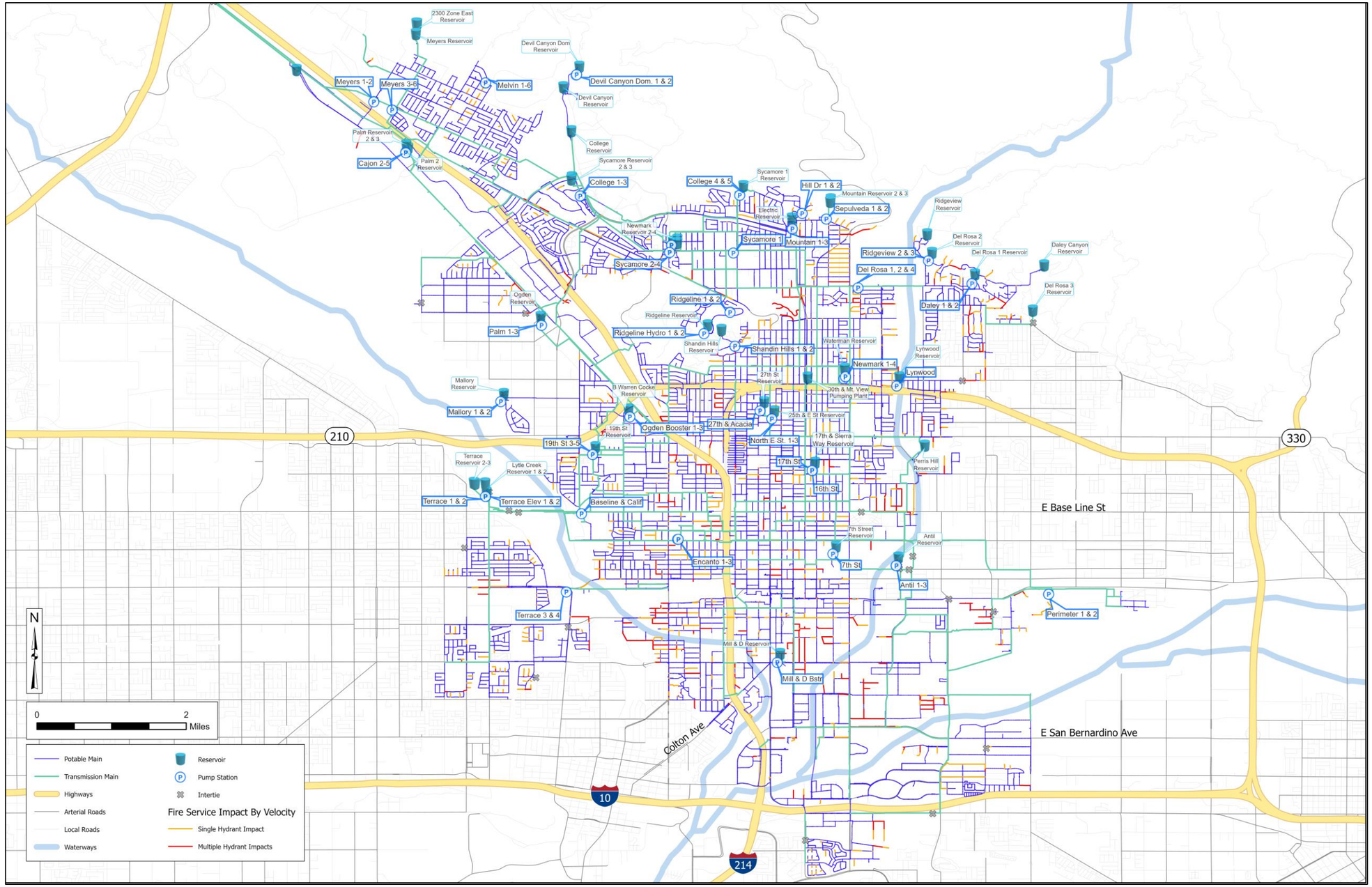


Figure 10-8: Distribution Pipelines under MDD Plus Fire Flow Conditions, Velocity >15 ft/sec

10.7 Fire Flow Availability

A fire flow analysis was performed using the criteria summarized in Table 10-22. For planning purposes, the values shown were created for this Master Plan. Actual fire flows are based on the California Fire Code, San Bernardino County Fire Protection District, and will vary on a case-by-case basis. Reductions in required fire flow may be allowed by the San Bernardino County Fire Protection District where automatic sprinkler systems are provided.

10.7.1 Criteria

Table 10-22: Fire Flow Criteria

Land Use Designation	Fire Flow Required (gpm)	Duration (hrs)
Residential	1,500	2
Commercial/Industrial (Light)	2,500	2
High Industrial	4,000	4

10.7.2 Analysis

The purpose of this analysis is to identify areas with significant deficiencies in fire flow availability. The minimum fire flow requirement used in this analysis may be more conservative than the actual fire flow required under the California Fire Code and the San Bernardino County Fire Protection District.

Figure 10-9 illustrates deficiencies in fire flow availability. The deficiencies in fire flow are generally experienced for four reasons:

1. Water lines feeding isolated areas are not adequately sized for the needed fire flow (areas fed by 4 -inch or 6-inch laterals).
2. Areas fed by long water lines with high head loss.
3. Area fed by a booster pump station that might not be adequately sized for the fire flow.
4. High fire flow requirements (i.e., 4,000 gpm).

Over 300 hydrants are fed by a 4-inch lateral. In addition, many of these areas are served by 4-inch and 6-inch laterals. If critical fire flows are needed in these areas, it is recommended to review based on local lateral sizes.

Deficient fire flow areas were reviewed against the head loss per 1,000 ft (HL/1000 ft). General design standards recommend 1.0 ft /1000 ft for the HL/1000 ft at MDD peak hour (MDD Peak Hour (PH)). This allows the ability to manage fire flow and growth in the system. The 2015 Master Plan had a maximum allowable headloss criteria of 5 ft/1000 ft under any conditions other than fire flow. Reviewing the head loss per 1000 ft using this criteria against deficient fire flow areas (Figure 10-10) does show a deficiency correlation with specific areas.

Figure 10-10 is an overlay of head loss in ft/1000 ft of waterline relative to deficient fire flow. There is a relationship between the HL/1000ft and fire flow deficiencies that can be seen in the Lower Zone, Del Rosa Zone, Terrace Zone, and portions of the more isolated sections of the Upper Zone.

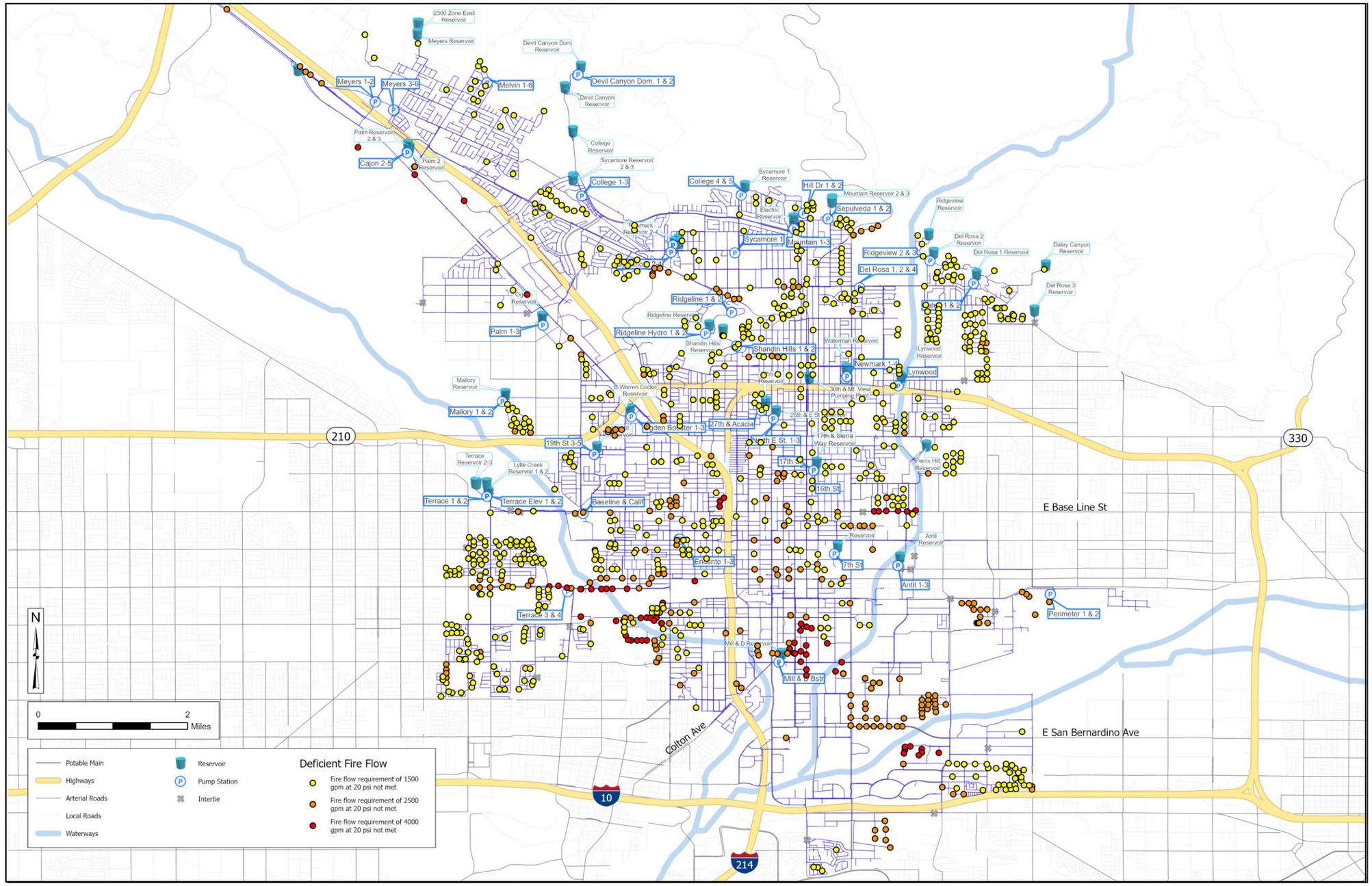


Figure 10-9: Deficient Fire Flows

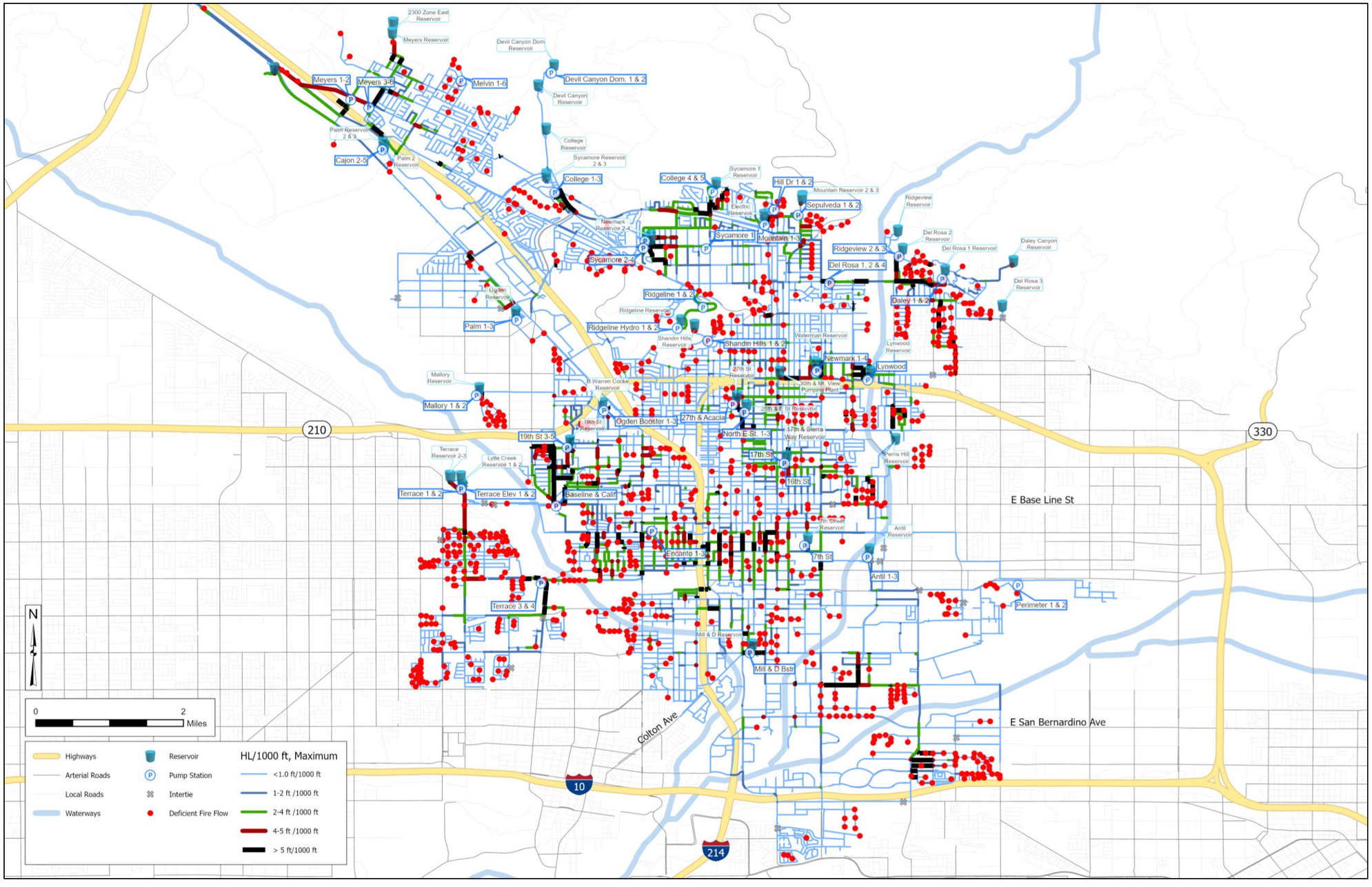


Figure 10-10: Deficient Head loss (ft/1000) for Fire Flows and Head loss

10.7.3 Recommendations

Recommended projects include implementing practical projects that will significantly increase available fire flow in deficient areas. Most projects will target the pipeline improvements where excessive head losses (greater than 5/1000 ft) are reducing available fire flow, such as:

1. Water lines feeding isolated areas are not adequately sized for the needed fire flow (areas fed by 4 -inch or 6-inch laterals).
2. Areas fed by long water lines with high head loss.

Recommended projects may also include pump station improvements, zone boundary changes, or operational changes.

10.8 Terrace Pressure Zone Evaluation

In the 2015 Facilities Master Plan, the Terrace Pressure Zone was found to be deficient for pressure and fire flow. The 2015 Facilities Master Plan recommended:

- Replacement of the existing 16-inch pipeline supplying the zone with a 5,600 linear feet 30-inch pipeline.
- Transfer portion of the Terrace zone north of Foothill Boulevard, as well as the area south of Foothill Boulevard along and between Macy Street and Terrace Street to the adjacent Upper Zone. Recommended to evaluate the effect of the transfer of the demands on the Upper zone, and to determine the facility changes that would be required. See Figure 10-11 below for proposed realignment zone (area of interest).

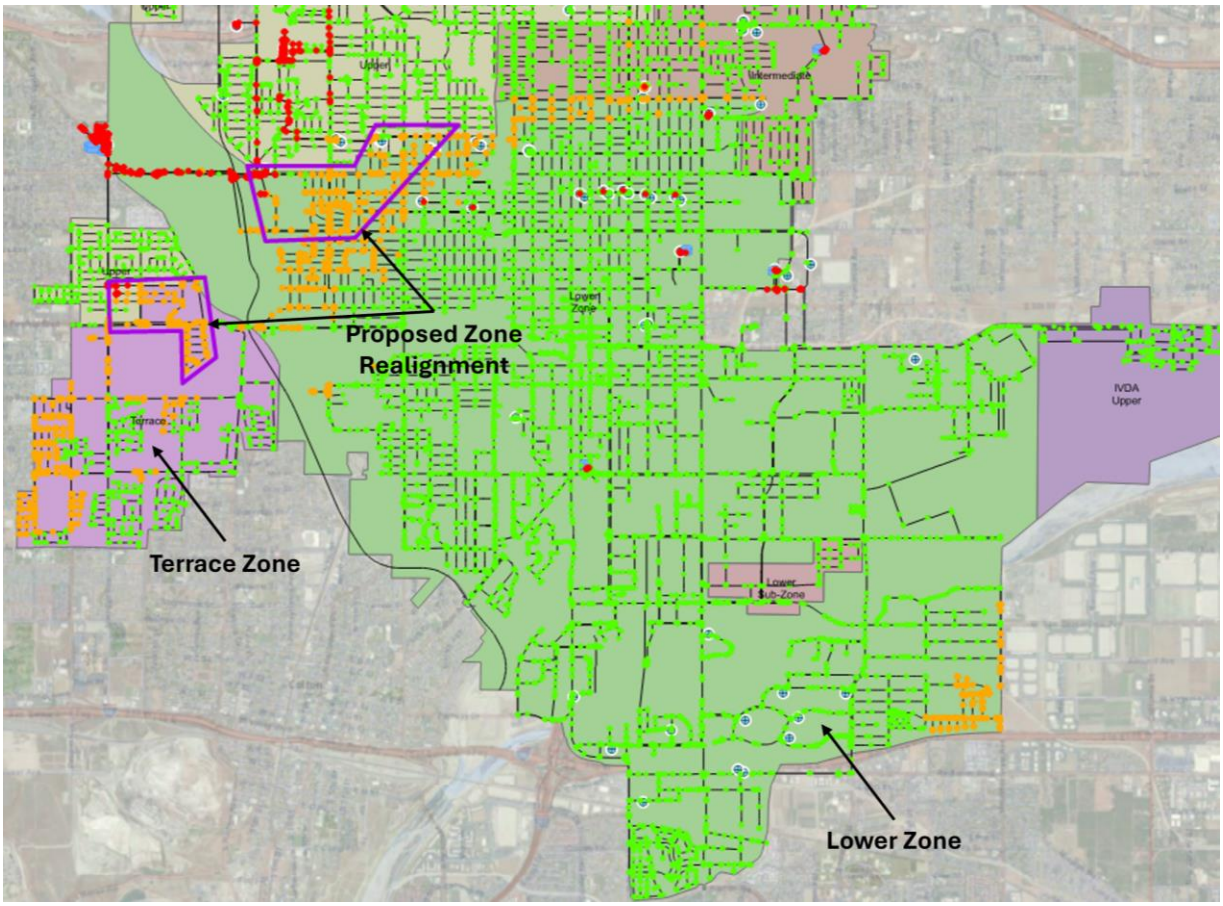


Figure 10-11: Proposed Zone Realignment (2015 Facilities Master Plan)

10.8.1 Tank Seismic Modifications

Please note Terrace Zone tanks were updated to reflect a reduction in high water levels due to the tank seismic retrofit. Modifications were made to Terrace Boosters 1, 2 and 3 operations. The tank high water level modifications do not have a significant impact on Terrace Zone system pressures.

10.8.2 Replacement of 16-inch with 30-inch

Replacement of the 16-inch with a 30-inch line from the Terrace tanks to Rialto Ave was reviewed for minimum pressure and fire flow. Although this corrects both issues, the extent of this line is excessive and will not correct deficient fire flows on undersized pipes internal to neighborhoods. The modeling results suggest that a shorter pipe run from Terrace tanks terminating at 9th Street provides a similar pressure benefit at a reduced cost. This alignment is suggested for planning-level consideration only and not as a capital improvement project.

10.8.3 Zone Realignment

The current analysis confirms that the Terrace Zone and the adjacent portion of the Upper Zone have deficiencies in pressure and available fire flow. Figure 10-12 illustrates the available fire flow versus the fire flow criteria based on zoning and the minimum pressure during the MDD extended period simulation (EPS) run.

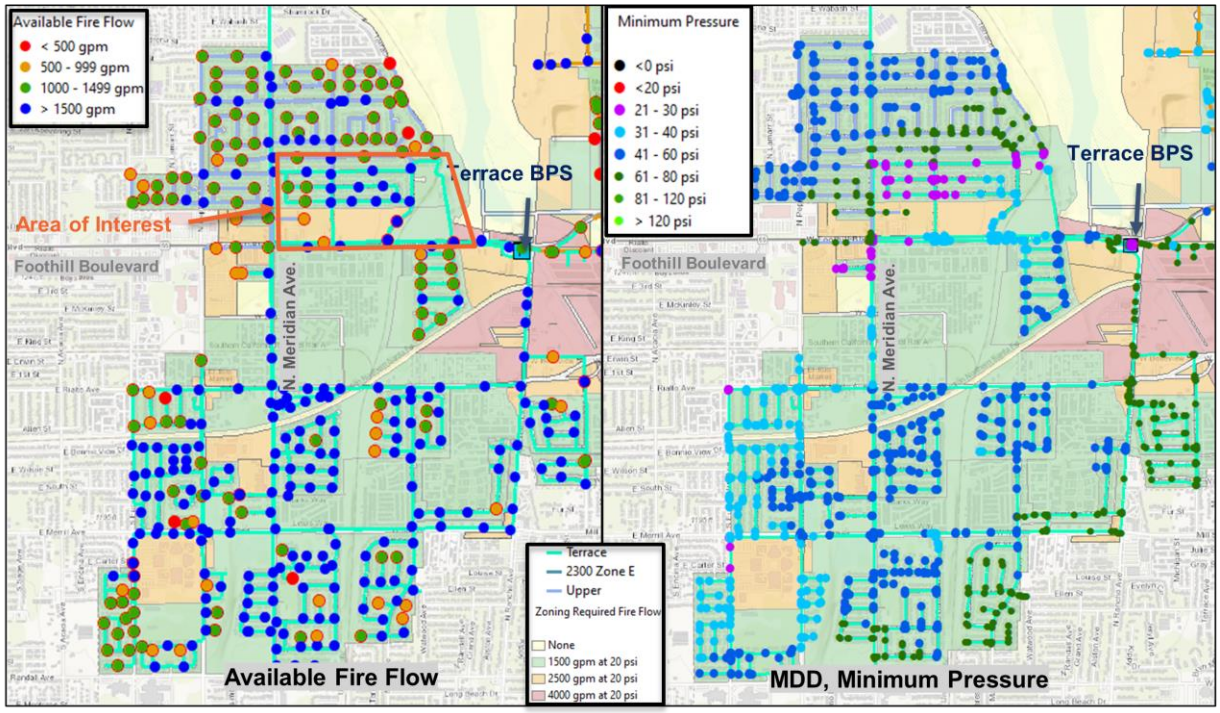


Figure 10-12: Terrace Pressure Zone, Existing Deficiencies

The majority of the Terrace Zone has a fire flow criteria of 1,500 gpm at 20 psi, represented by the green zoning polygon/shaded area on the left side of Figure 10-12. The locations that meet this requirement are represented by blue dots. All other fire flows in the Terrace Zone are deficient. The deficiency is larger when fire flow requirement is greater than 1,500 gpm at 20 psi residual pressure. These requirements are represented by orange polygons (2,500 gpm at 20 psi) and the red polygons (4,000 gpm at 20 psi). Large infrastructure improvements would need to be constructed in order to meet these fire flow requirements.

The available fire flow in the Terrace Zone improves further south in the system. This is related to higher overall pressure (see Figure 10-12, right side), allowing greater fire flow before a 20 psi residual is reached.

Maximum day demand results show a band of lower pressures from the southwest to the northeast in the area, crossing both the Lower and the Terrace Pressure Zones.

Multiple techniques were reviewed to determine cost-effective ways to improve pressure, including adjusting the pressure boundaries between the higher and lower pressure areas, opening the two zones to

each other, using the 12-inch distribution line and the 16-inch transmission lines on North Meridian Avenue to convey flow south, adding the portion of the Terrace Zone north of Foothill Boulevard to the Upper Zone and adding a pressure reducing valve (PRV) at Terrace Road and West 6th Street with a setting of 40 psi. The two more effective techniques were using a PRV to bleed pressure through to the area with lower pressures and to move the area from the Terrace Zone to the Lower Zone.

Figure 10-13 illustrates the results using a PRV with a 40 psi setting to send pressure to the area south of West Victoria Street, west of Terrace Road and north of Foothill Boulevard. This lowers the pressure north of West Victoria Street, keeping it within the 40-60 psi range, while increasing the pressures within the area of interest.

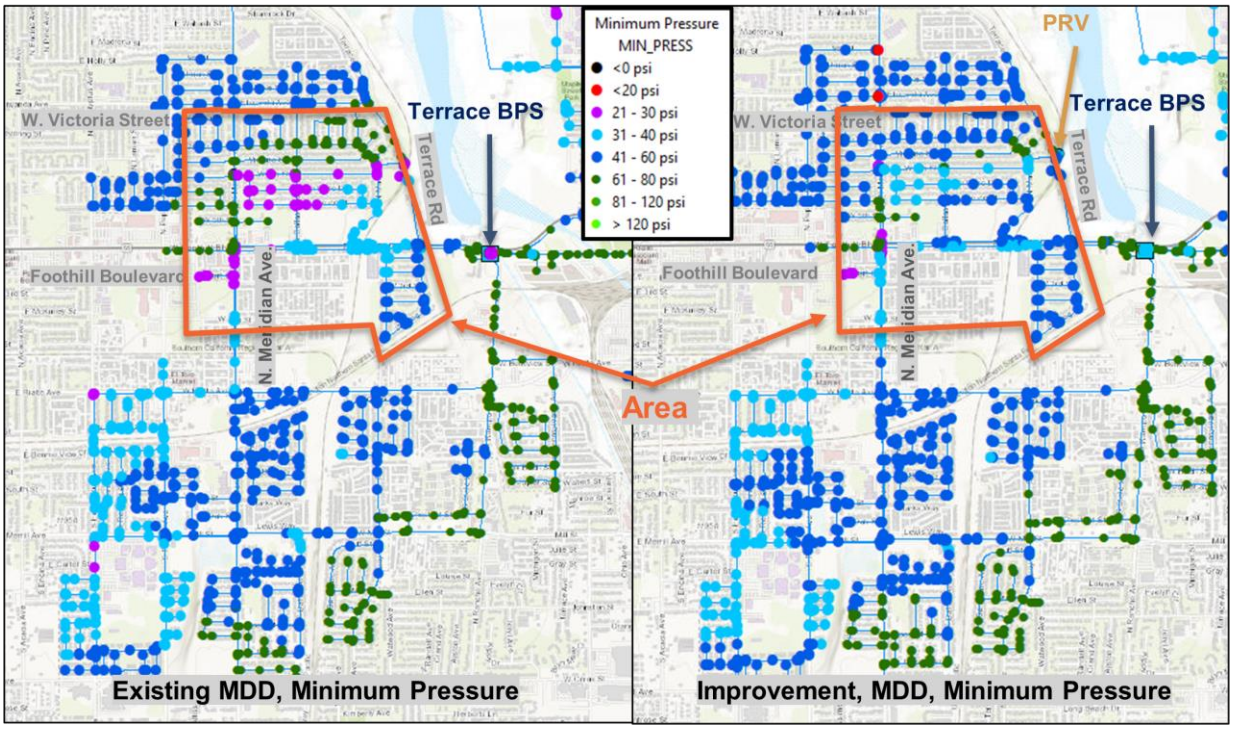


Figure 10-13: Terrace Pressure Zone, Additional PRV

The addition of the Terrace Zone north of Foothill Boulevard to the Upper Zone is the simplest solution, requiring simple field adjustments without the operation and maintenance of a PRV station. The results from this analysis are shown in Figure 10-13.

The overall improvement is isolated to the adjusted area only. This modification reduces all available fire flow in the area of interest below the required fire flow. In addition, it has an impact on the area north of it that the proposed PRV feeds through. See Figure 10-14. If this option is used, a PRV from the south during a fire event should be considered.

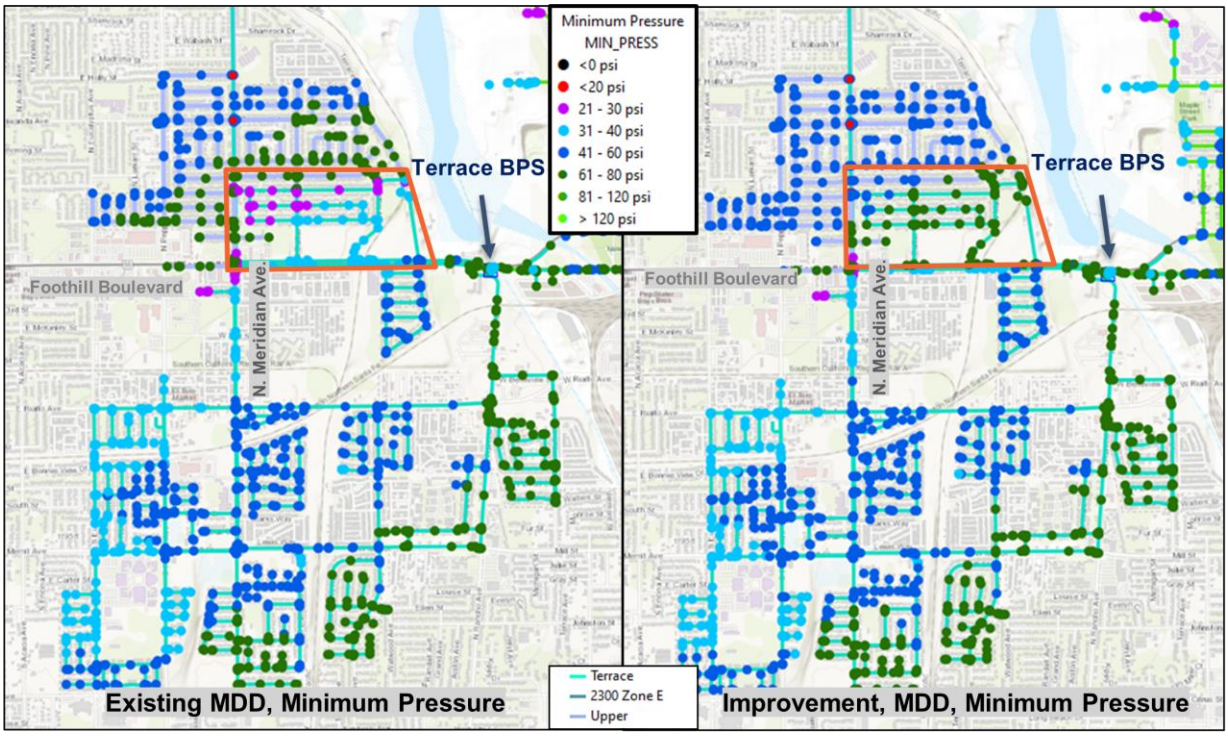


Figure 10-14: Terrace Area Moved to Upper

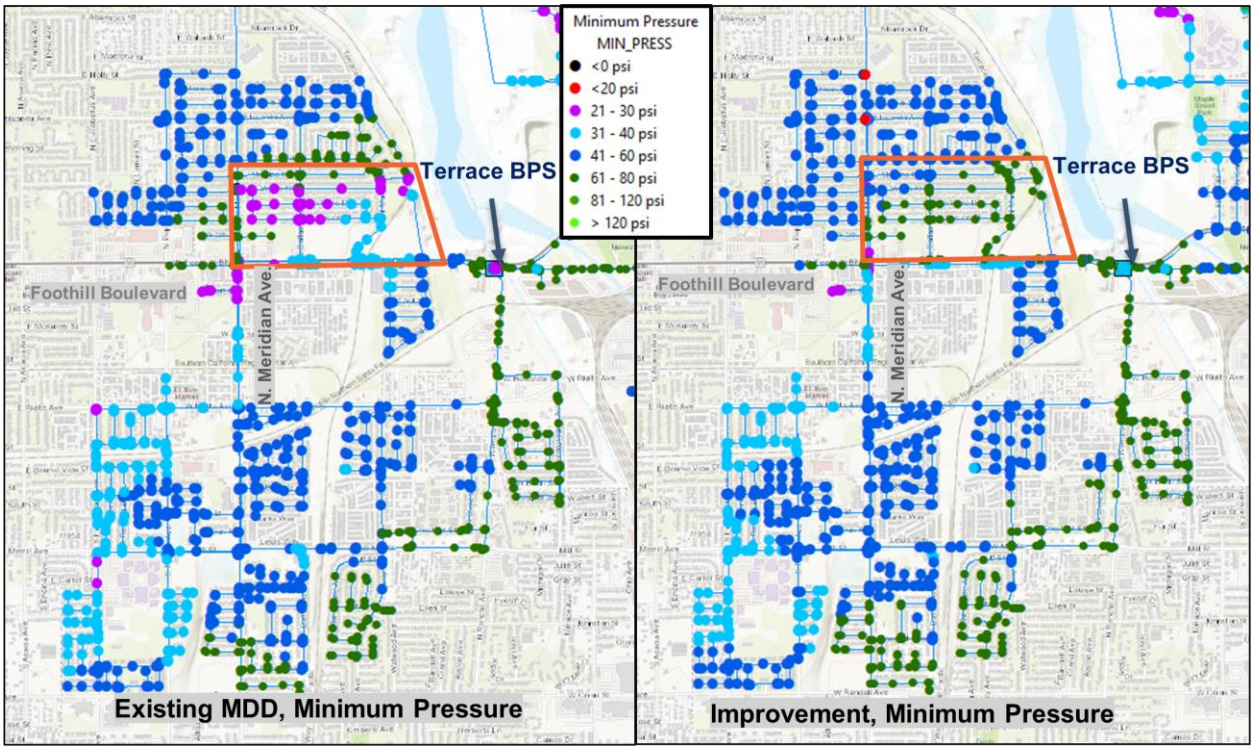


Figure 10-15: Terrace Zone Minimum Pressures, Existing vs. Modification

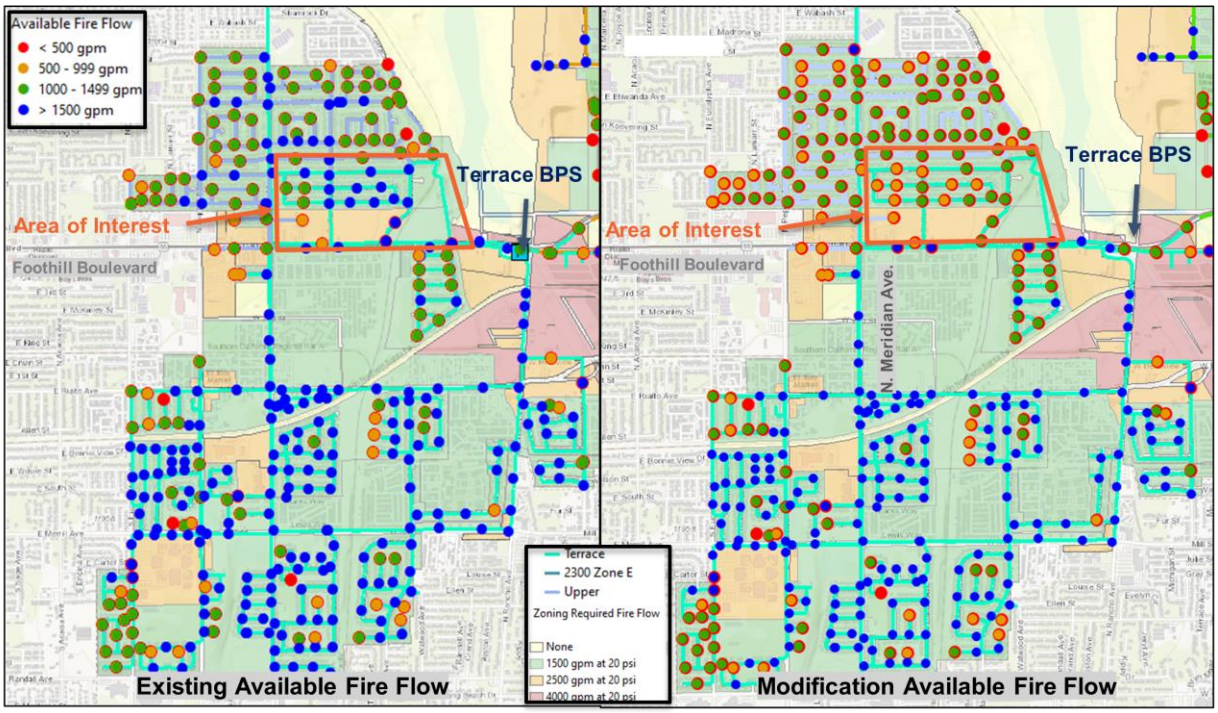


Figure 10-16: Terrace Zone Available Fire Flow, Existing vs. Modification

The conclusion of this analysis is that no system changes are recommended for this area. The pressure realignment creates localized higher pressures in the area of concern, but by isolating the area from the Terrace BPS, there is a large drop in available fire flow, which is not an acceptable outcome.

10.9 Pressure Zone Realignment Evaluation

10.9.1 Lower Zone

The Lower Zone, north of 9th Street and east of Pennsylvania Avenue has lower minimum pressures than the rest of the zone. This section reviews the ability to move this area to the Upper Zone without negatively impacting the ability of the Lytle Creek reservoirs and the B. Warren Cocke reservoirs to keep adequate storage capacity in the Lower Zone.

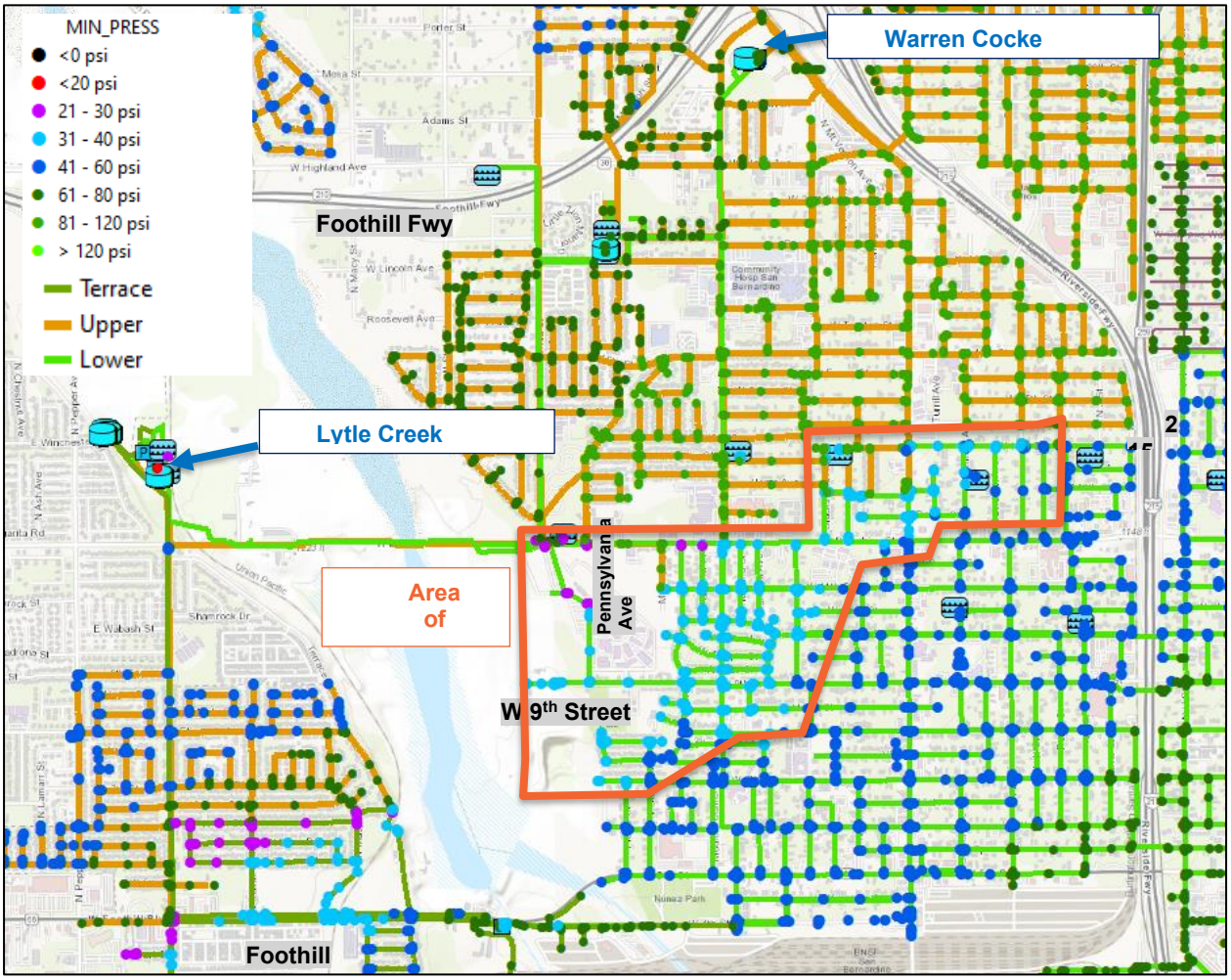


Figure 10-17: Lower Zone Deficiency

The area moved from the Lower Zone to the Upper Zone is represented in Figure 10-18. This was achieved by isolating the water lines south of West Base Line Street. In addition, two proposed jumper pipes were added to allow the flow to move south of West Base Line St. See Figure 10-19. This allows the Lytle Creek and Warren Cocke reservoirs to continue to serve the Lower Zone. This isolation does cause dead ends along the isolated water line. To minimize impacts to water quality, a secondary waterline could be used to allow the reservoirs to serve the Lower Zone.

The improvement in minimum pressure is seen in Figure 10-20. This adjustment increases the minimum pressure in this area. The area moved to the Upper Zone from the Lower Zone will experience maximum pressures greater than 80 psi, requiring a regulator in an area that did not require one before this change. There have been numerous leak reports as well as water main breaks in this area reported by SBMWD. This could require line replacement if the zone adjustment increases pressure and increases the number and volume of leaks and breaks. In addition, this modification interferes with the ability to modify the Terrace Zone described in Section 10.8.

The required fire flow in this area is 1,500 gpm at 20 psi. With this modification the available fire flow drops below 1,000 gpm at 20 psi. To correct this, the secondary waterline on West Base Line Street would need to be constructed.

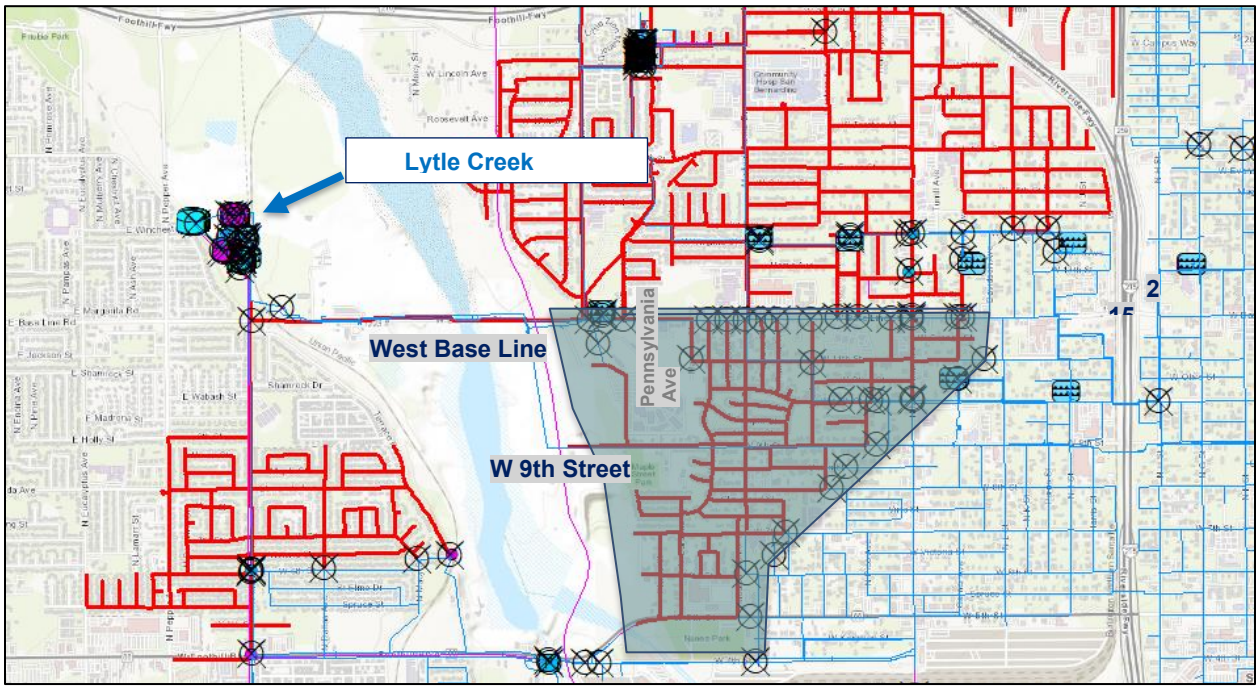


Figure 10-18: Modification of Upper Zone

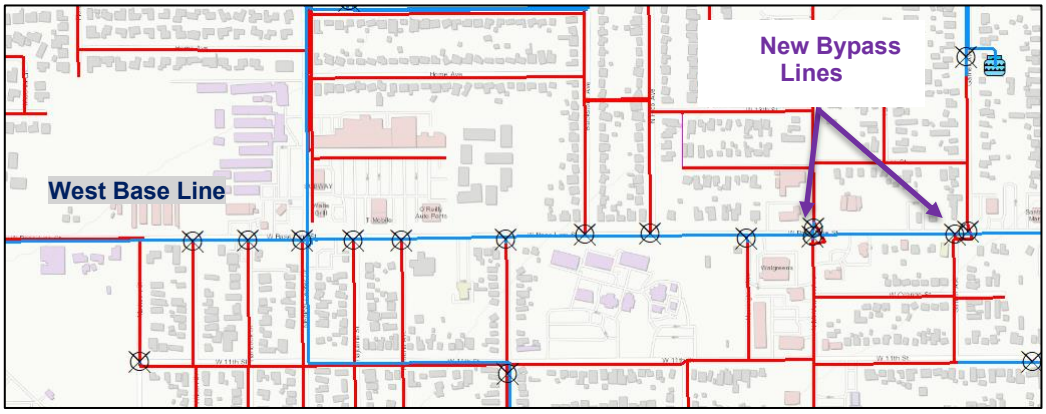


Figure 10-19: 20-inch Line from Warren B. Cocke and Lytle Creek Reservoirs

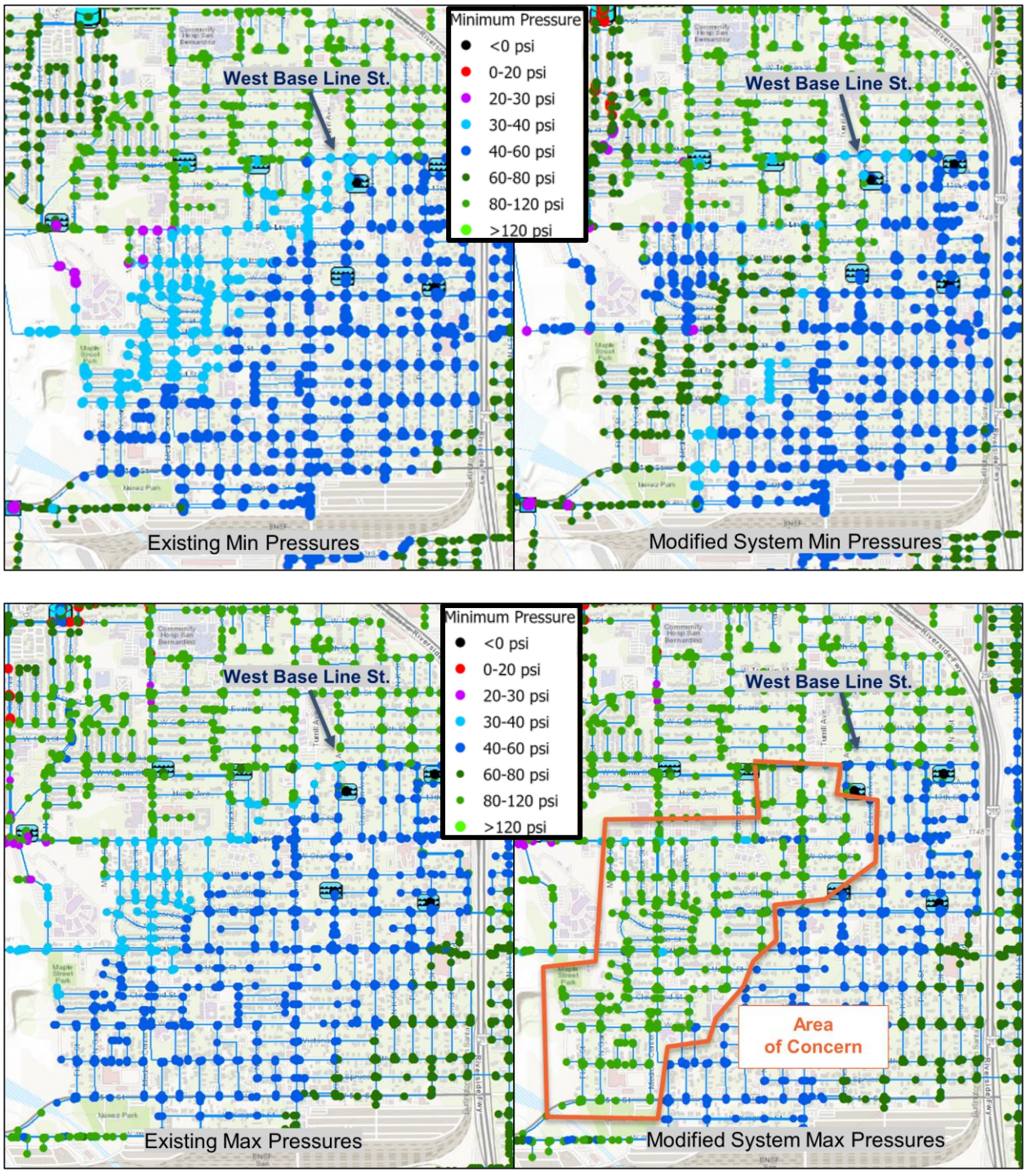


Figure 10-20: MDD EPS Pressures - Existing Compared to Zone Modification

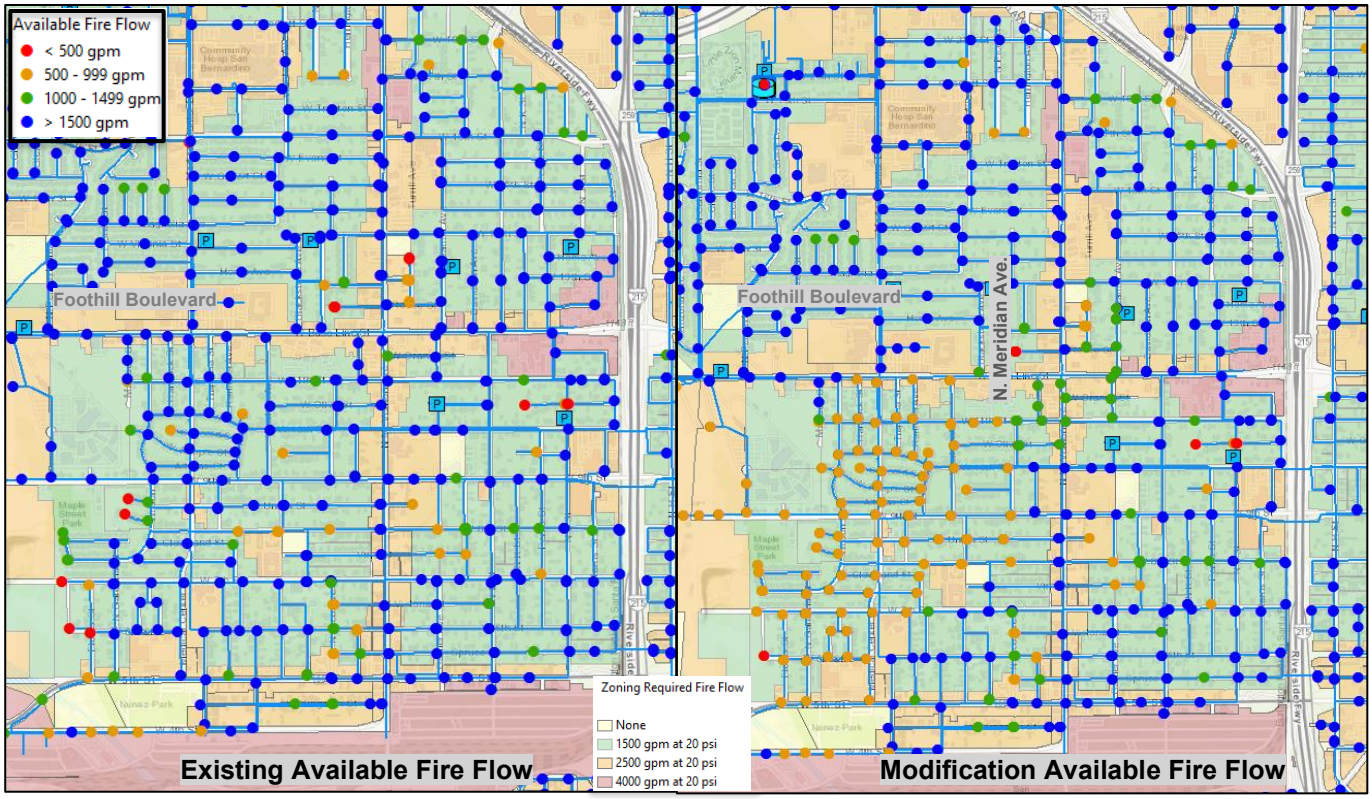


Figure 10-21 Existing Available Fire Flow vs. Available Fire Flow after Modification

The conclusion to this analysis is no system modifications are recommended. Implementing the zone realignment requires several valve closures, which either creates multiple dead ends, or requires additional looping pipelines to be constructed. The proposed project also results in a large reduction in available fire flow. Since the existing minimum pressures are generally in the 30-40 psi range and the area has adequate available fire flow, it is not recommended to make system modifications in this area.

10.9.2 Del Rosa Zone

The portion of the Del Rosa zone north of Foothill Drive between Chiquita Lane and Elm Avenue has issues with low pressures during high demand periods. This is related to the hydraulic connectivity of the area to the Del Rosa Tank 3. As long as this area is hydraulically connected to the Del Rosa Tank 3, the maximum pressure cannot exceed the hydraulic grade line (HGL) of the tank.

To allow adjustment of the pressure in this area, this portion of the Del Rosa zone would need to become a subzone of the Daley pressure zone. The Echo PRV location, which currently has no flow feeding through it in the model, is used to feed the demand from the Daley Zone at Echo Drive. To isolate the area east of Del Rosa Avenue, north of East Foothill Drive and west of the Del Rosa Tank, the following system adjustments were made in the model: a valve was closed on the 8-inch line north of Echo Drive, a valve was closed on the 6-inch line at the intersection of Elm Avenue and East Foothill Drive, the Echo PRV was used to feed the proposed Daley Subzone. Figure 10-22 illustrates the changes and the improvements in pressure. The PRV pressure setting used in the modeling was 62 psi. If higher pressure is needed in the field this can be adjusted. To maintain the same fire protection in both this area and the area west of Del Rosa Avenue, additional PRVs designed to be triggered in a fire events are necessary. Without this, there will be a significant drop in available fire flow. This should be studied in greater detail. Analysis of the available fire flow before and after this adjustment shows deficiency in fire flow under both conditions.

Based on the modeling results, it is not recommended to implement this change. The existing pressures in this area are lower than desired, but still adequate for service, and available fire flow is sufficient also.

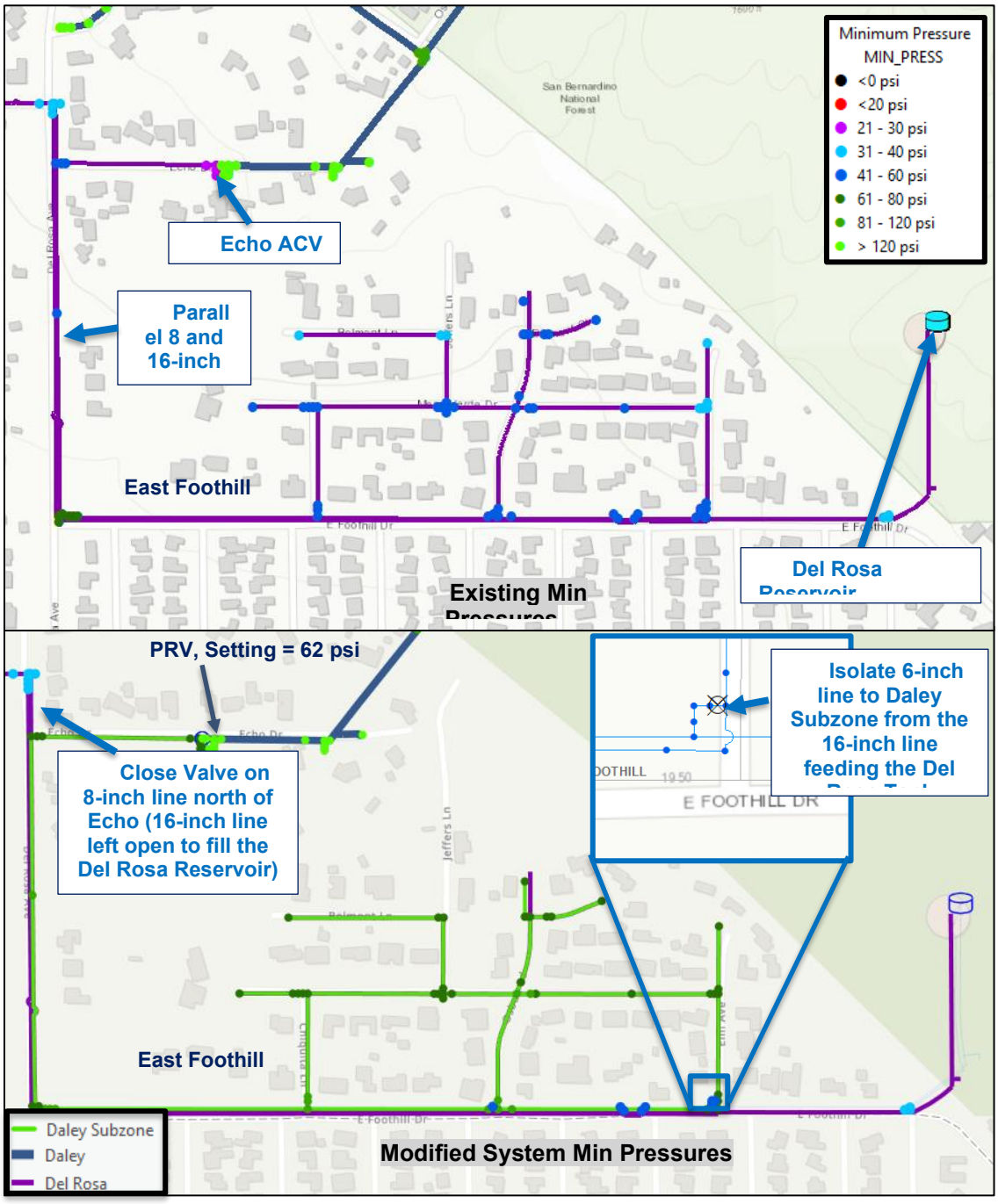


Figure 10-22: Del Rosa, Minimum Pressures Existing and with Modification

11. Facilities' Condition and Risk Assessment

11.1 Purpose and Objectives

To increase the level of confidence of the Department in identifying and validating needs for capital improvement, replacements, and maintenance programs over the short term and long term, a risk-based condition assessment of the facilities owned and managed by the Department was performed. To be most efficient and provide the best value to the Department, Hazen utilized a risk-based approach for the assessment of the most critical assets. In collaboration with the Department, a preliminary risk assessment was conducted in order to identify the facilities for field condition assessment. For the facilities selected for field condition assessment (located at seven different sites), assets were visually inspected in the field and a condition was assigned for each asset. For facilities that were not selected for the field condition assessment, a field inventory was performed to develop an asset inventory that includes the list of assets, their attribute information and the link to the photos taken during the site visit. A summary of the field inventory was provided in Sections 2 through 5. After conducting field inventory for all the facilities and field condition assessment for the facilities at high risk of failure, the risk assessment results were updated. This section includes the results of the field condition assessment and risk-based prioritization of asset replacements.

11.2 Field Condition Assessment

The field condition assessment was performed for the facilities located at seven main sites: Melvin Ave, Newmark, Waterman Ave, 19th St, 17th St, and EPA wells #6 and #7. These facilities range from BPSs and wells to Granular Activated Carbon (GAC) systems, and reservoirs (shown in Table 11-1). The objective of the visual condition assessment was to estimate asset failure or the rate of deterioration of an asset. Other benefits of a visual condition assessment include adjusting RUL, revising maintenance schedules, and updating total replacement costs and funding needs with a higher level of confidence. The likelihood of an asset failing is most dependent upon the condition of the asset. As the condition of an asset deteriorates, the likelihood of failure increases. Ultimately, the goal of any condition assessment protocol is to acquire a more accurate knowledge of the timing to asset failure. Having a higher level of confidence in renewal needs will lead to more efficient and effective use of the Department staff, resources, and funds.

Table 11-1: Field Condition Assessment Sites and Facilities

#	Site	Facilities
1	17th & Sierra Way St	16th St BPS
		17th St BPS
		17th St Well
		16th St Well
		Reservoir
2	19th St	BPS (#1-5)
		GAC System
		Reservoir
		Well #2
3	EPA[1]	Well #006
		Well #007
4	Melvin Ave	BPS (#1-5)
5	Newmark	BPS
		GAC System
		Reservoir
		Sycamore BPS (#2)
		Sycamore BPS (#3-4)
		Well
6	Waterman Ave	BPS (#1, 3, 4)
		BPS#2
		Leroy Well
		Well
		Reservoir
		GAC System

[1]All EPA wells are grouped under EPA name, although they are not at the same location.

In order to assess the current condition and the timing to asset failure, it is important to understand the ways an asset can fail. Collecting information and data about an asset will be meaningless unless it applies to the known ways an asset will fail. The performance of an asset relates to the asset's ability to meet the current and future demands placed on it. Assets can fail in four major ways (capacity, level of service, physical mortality, and financial efficiency) known as failure modes (shown in Table 11-2), which were used to assess the condition of each asset.

Table 11-2: Asset Failure Modes

Failure Mode	Definition	Tactical Aspects
Capacity	Volume of demand exceeds design capacity	Growth, system expansion
Level of Service	Functional requirements exceed design capability	Codes and permits: NPDES, OSHA, noise, odor, life safety; service level, etc.
Mortality	Consumption of asset reduces performance below acceptable level	Physical deterioration due to age, usage (including operator error), acts of nature
Efficiency	Operations costs exceed that of feasible alternatives	Pay-back period

11.2.1.1 Field Condition Assessment Methodology

Hazen performed a condition assessment of the assets located at seven sites that were selected based on their high level of risk. Level 1 (visual) condition assessment was conducted to assess the condition of mechanical, electrical, instrumentation and control (I&C), HVAC, civil, and structural assets within these facilities. Condition of assets, installation years, quantities, and Operation and Maintenance (O&M) assessment/needs were identified during the on-site condition assessment. Additionally, input from the Department staff on the date that assets have been last serviced were incorporated to complete the condition assessment. Field observations were recorded with mobile devices utilizing customized condition assessment forms (Survey 123 forms). The developed Survey 123 forms (shown in Figure 11-1), allows for validation of the preloaded asset data in the field as well as addition of missing valuable data for condition assessment and asset management purposes.

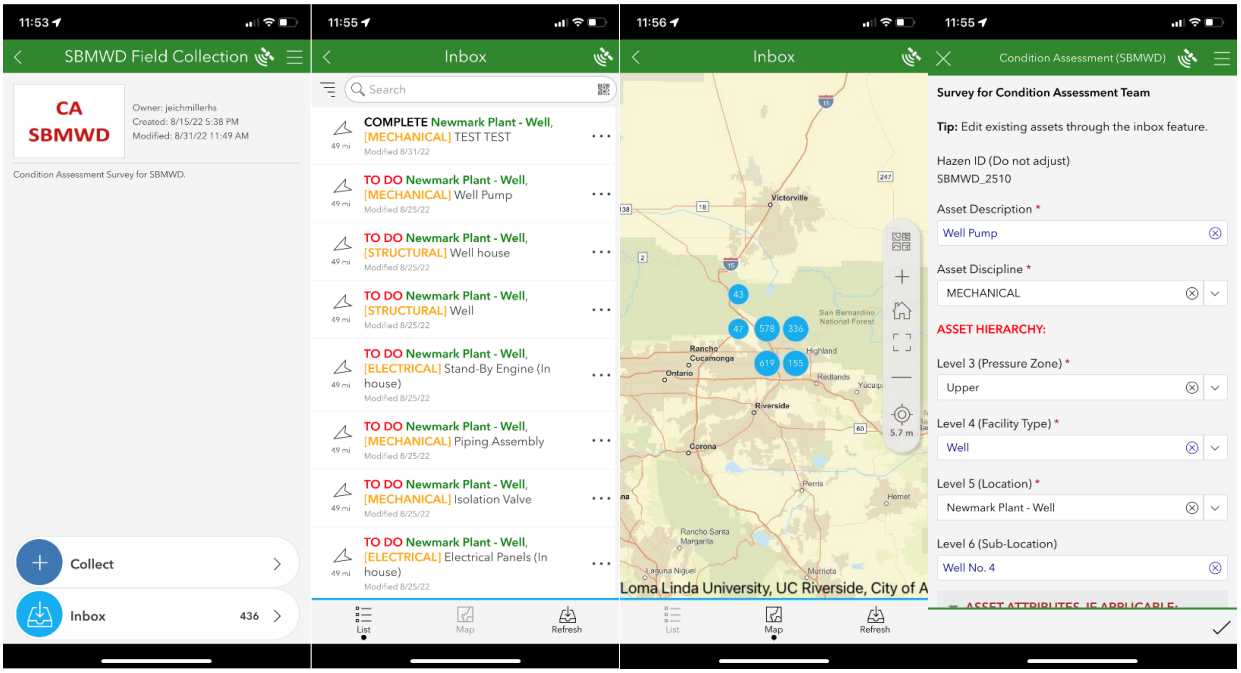


Figure 11-1: Developed Condition Assessment Survey 123 Forms

The field condition assessment included experienced technical staff in each major discipline (civil, mechanical, structural, electrical, and I&C) who assessed the condition and identified critical issues. Hazen utilized a structured condition scoring system, which is transparent, repeatable, and useful for later analysis, with each score's definition applied to all asset classes during the field condition assessment as shown in Figure 11-2. The condition assessment forms also included discipline-specific inspection checklists to support a more consistent assessment of the assets. The scoring system was based on the International Infrastructure Management Manual with a rating range from 1 (Excellent condition) to 5 (Poor condition) as presented in Figure 11-2. Descriptions for each rating in the survey enables the assessment team to assign ratings to assets in a consistent manner. All collected data for each asset, including photographs of the assets, the inspectors' notes, condition scores, specific attributes, inspection checklists, etc., are all digitally stored.

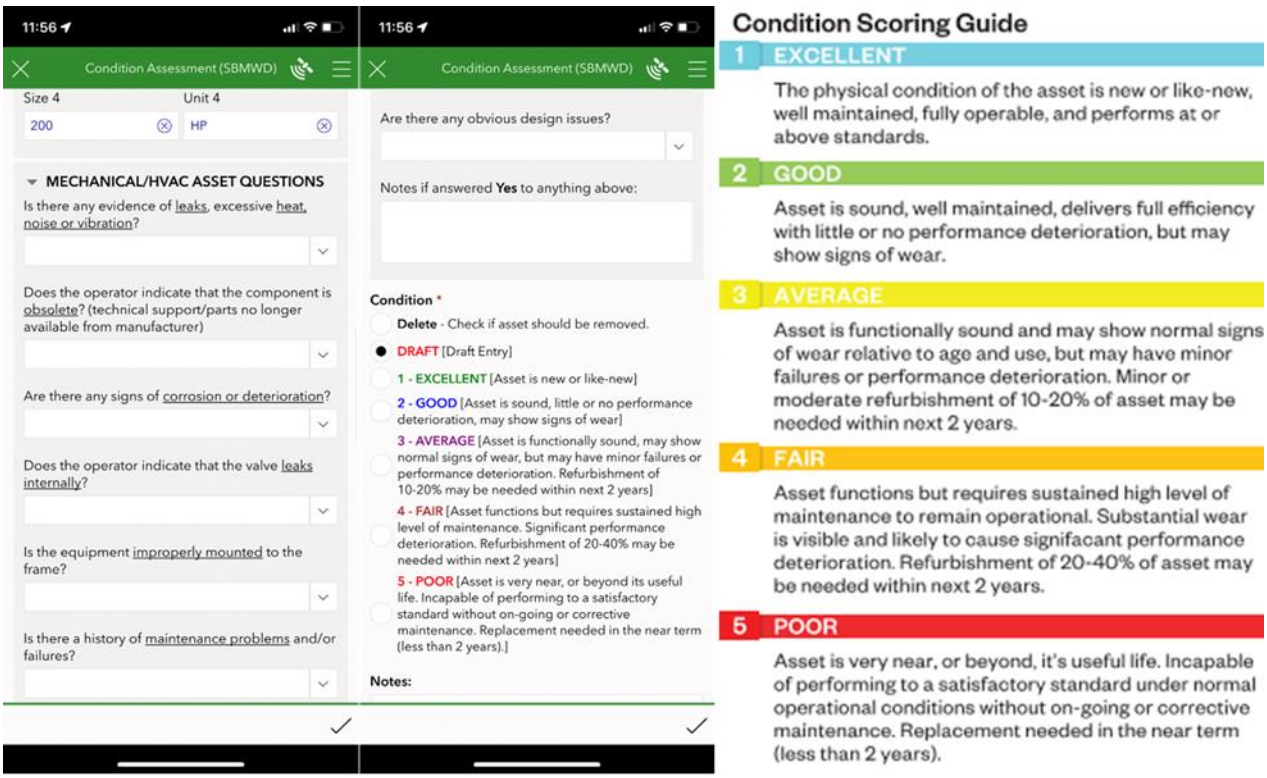


Figure 11-2: Developed Condition Assessment Survey 123 Discipline Related Questions and the Applied Condition Scoring Guidelines

Figure 11-3 shows a portion of the inspection checklists for mechanical, electrical/I&C, structural, and civil assets, which was utilized during the field condition assessment. The complete checklist for each discipline can be found in Appendix A. The team also captured 360-degree photos from each facility to create a virtual tour of the facilities with an example shown in Figure 11-4.

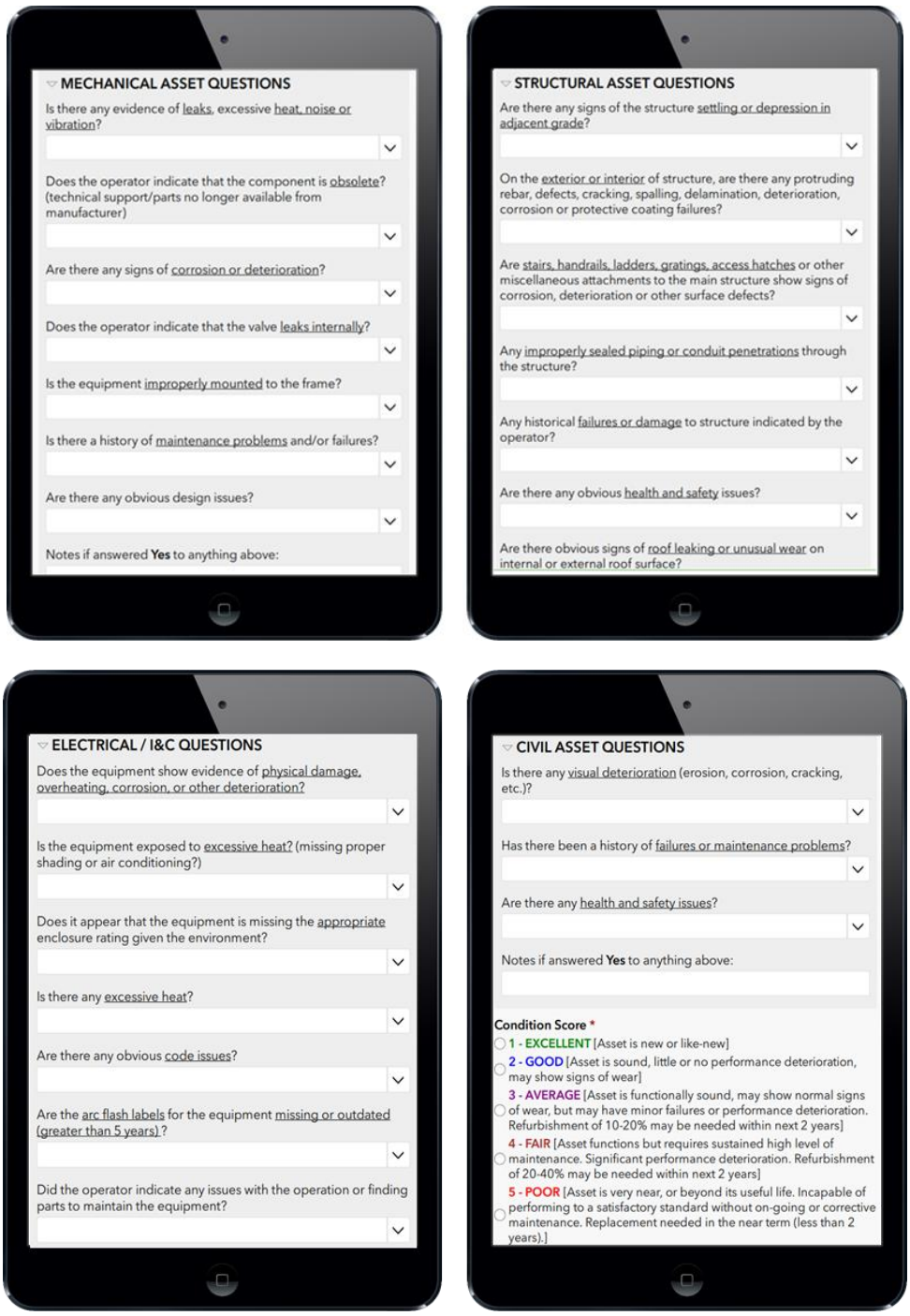


Figure 11-3: Inspection Checklists for Different Asset Disciplines



Figure 11-4: An Example 360-degree Photo Captured from Ogden Booster Pump Station

11.2.1.2 Field Condition Assessment Results

The obtained results in this study are presented in multiple ways to facilitate interpretation of the results. For instance, an interactive dashboard has been created to provide the Department staff an easy access to the results with the ability to customize filters and drill down into more details as needed. The Asset Management Dashboard has been developed as part of this condition and risk assessment effort. Figure 11-5 shows a snapshot of the condition assessment results in the dashboard. More snapshots of the dashboard are provided in Appendix B. The developed asset register of the Department Facilities' assets is provided in Appendix C.



Figure 11-5: A Snapshot of Condition Assessment Results in the Asset Management Dashboard

Figure 11-6 provides a summary of the condition assessment results in seven sites showing the distribution of condition scores ranging from condition score of 1 (Excellent condition) to condition score of 5 (Poor condition). As shown in Figure 11-6, out of the 1,105 assets inspected during the field condition assessment, 5 assets (less than 1%) were in excellent condition; 532 assets (48%) were in good condition; 514 assets (47%) were in average condition; 37 assets (3%) were deemed to be in fair condition; and 17 assets (2%) were found to be in poor condition. The Department staff were already aware of many of the assets that were determined to be in fair and poor condition and have already initiated plans for rehabilitation or replacement (R&R).

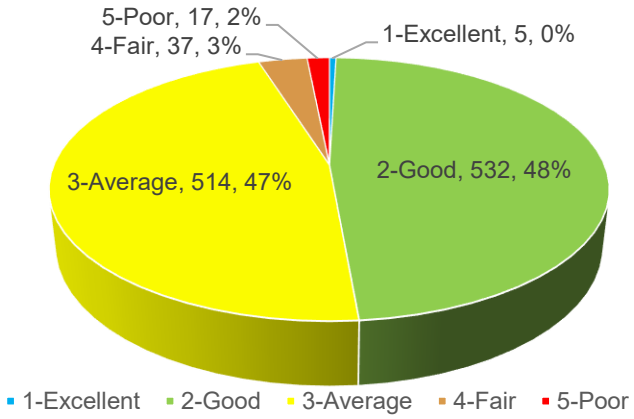


Figure 11-6: Summary of the Field Condition Assessment Results

Figure 11-7 presents a summary of condition assessment results that have been separated into six discipline categories of Mechanical, Electrical, Civil, Instrumentation and Control (I&C), Structural, and HVAC. As is evident in this figure, the majority of the assets belong to Mechanical discipline, and they are mainly in good and average condition. Furthermore, Figure 11-7 highlights a relatively significant number of electrical assets in poor and fair conditions. This is particularly noteworthy, as the Department staff have commented on similar issues with electrical assets in all the Department facilities, with the exception of the Ogden St Facility.

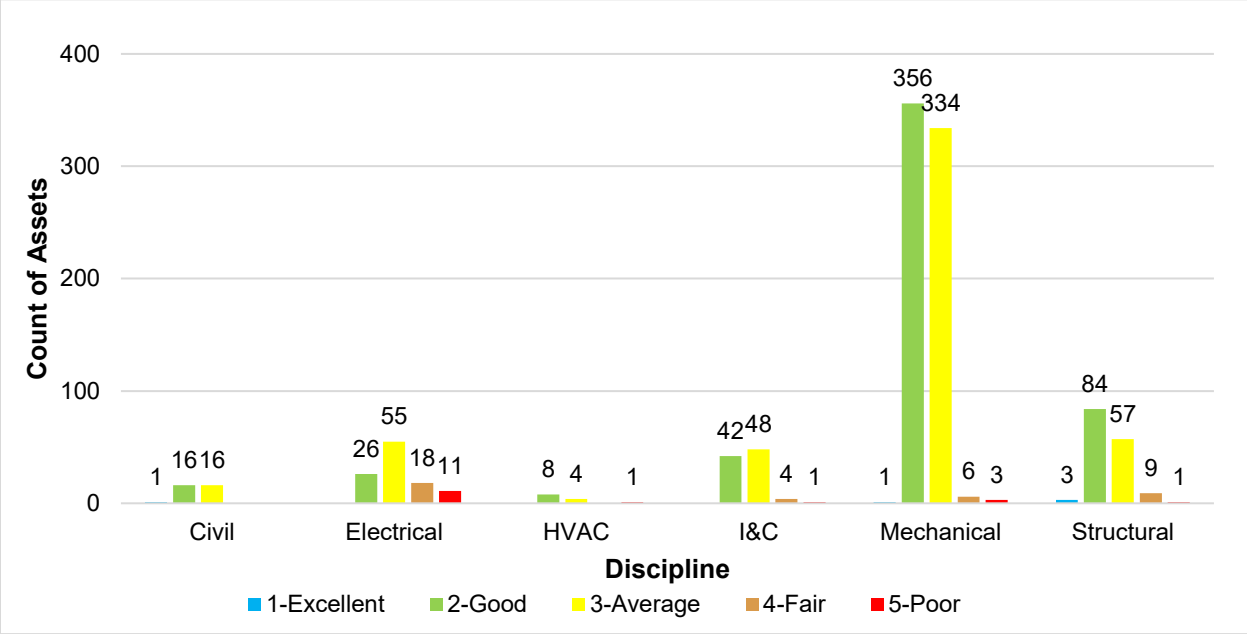


Figure 11-7: Field Condition Assessment Results by Discipline

Table 11-3 summarizes the average condition score for each discipline. The average condition score of the electrical assets is 3.1, which is more than the average condition of all the disciplines (2.6). This suggests that there might be a greater problem with the Departments electrical assets Therefore, this warrants a resultant project for a deeper electrical condition assessment for all facilities beyond a visual inspection.

Table 11-3: Average Condition Score by Discipline

Discipline	Average Condition Score
Civil	2.5
Electrical	3.1
HVAC	2.5
I&C	2.6
Mechanical	2.5
Structural	2.5
All Disciplines	2.6

The condition assessment results can also be presented by sites as shown in Figure 11-8. As is evident, a large number of the assets in good condition belong to 19th St plant while most of the assets in fair and poor condition belong to Newmark and Waterman Ave plants.

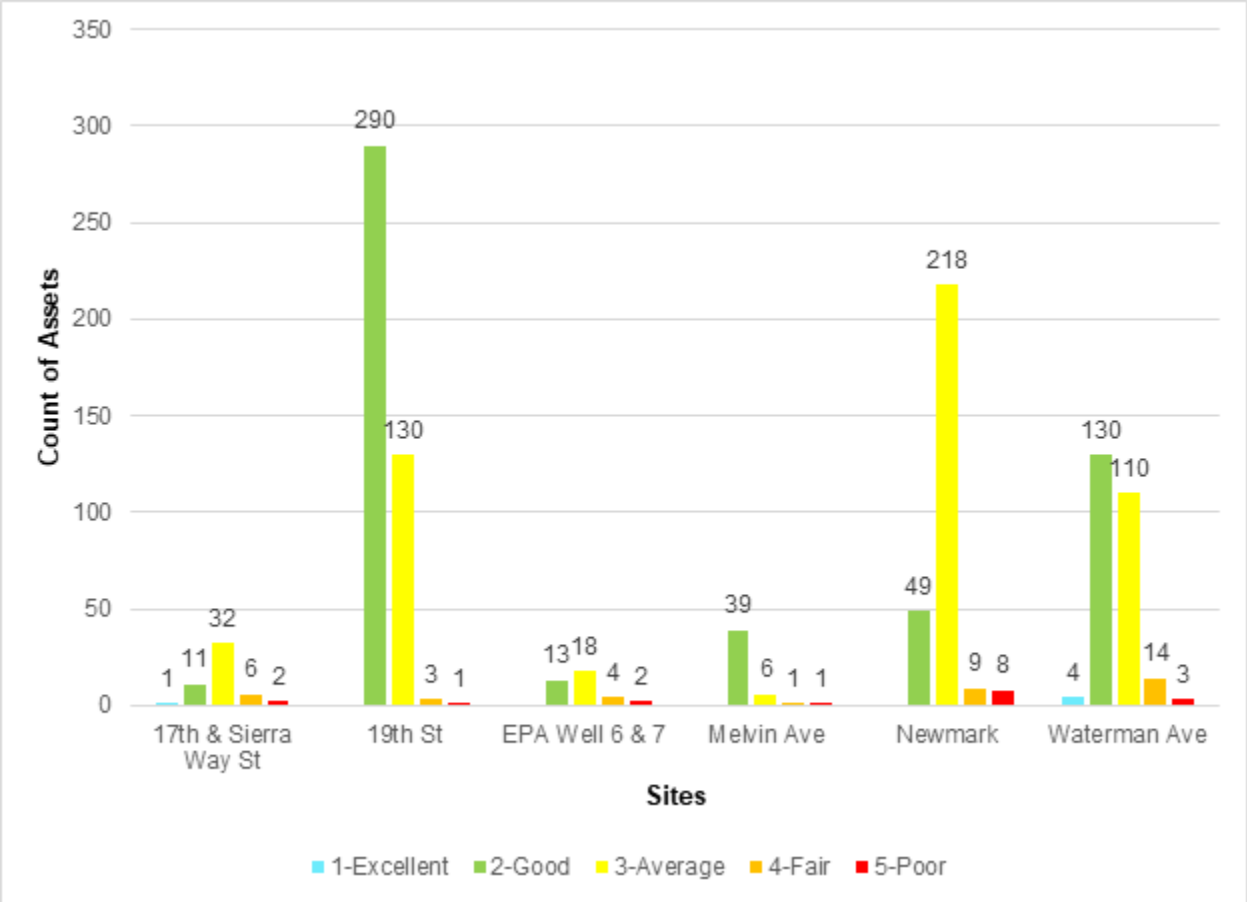


Figure 11-8: Summary of Asset Condition Scores by Sites

Figure 11-9 provides more details for each facility that has undergone a field condition assessment and has assets at poor and fair condition. It shows Waterman Ave GAC System has the highest number of assets (6 assets) in fair and poor condition and Newmark-Well has the most assets in poor condition (3 assets). Assets listed under "Common" belong to the site and are shared between the site facilities.

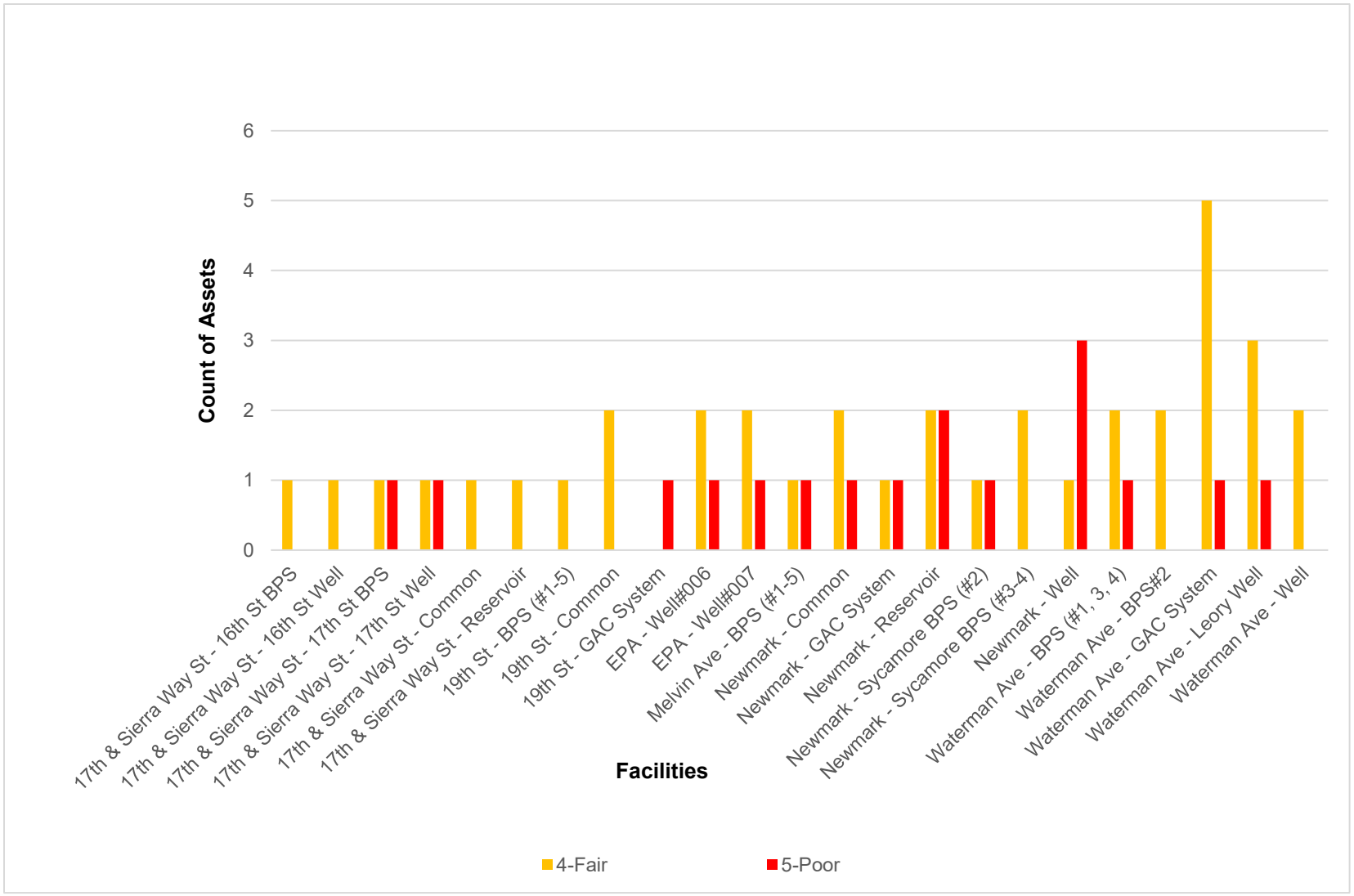
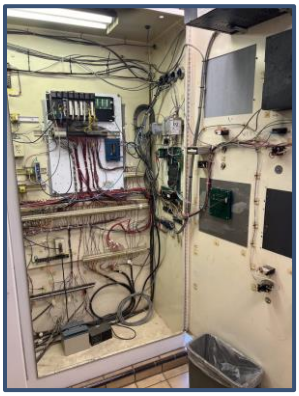


Figure 11-9: Summary of Assets in Fair and Poor Conditions by Facility

One of the primary objectives of the condition assessment is to understand which assets are in poor and fair condition for planning and budgeting purposes. A list of the assets with high condition score or in need of immediate attention can be presented for different disciplines along with a photo and a note about their condition. Table 11-4 lists the thirty-four (34) assets in poor and fair condition under Electrical and I&C disciplines.

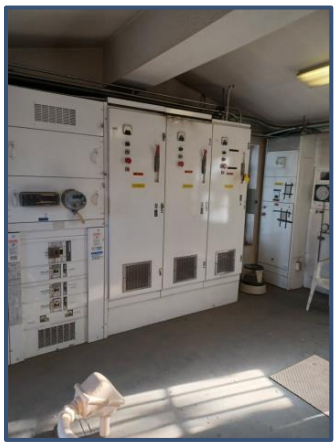
Table 11-4: Electrical and I&C Assets in Fair and Poor Condition

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
1		Newmark – MCC Room near Well #1	Telemetry and Blower Control Panel	Poor – Human machine interface screen missing (planned to be replaced in Jan 2023, this includes the HMI, programming, installation, commissioning, and testing). Majority of components are old, some components have been replaced within 15 years. This is main hub for all telemetry. PLC replacement is done in 2000.
2		Newmark – Sycamore BPS (#3,4)	Booster Pumps 3&4 Soft Starter Cabinet	Fair - Inside the enclosure is very dirty. Power cables have cracking insulation. Signs of damage and deterioration. Arc flash label issue.

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
3		Newmark – Well #3	Motor starter	Poor - Insulation cracking on main incoming cables. Unknown power load; Operator believes load is most likely 75 hp in which case 400 A MCP is oversized. Exhaust fan is disconnected. Enclosure shows signs of damage and deterioration. Code issue: Arc flash label is missing.
4		Newmark – Well #3	Termination Cabinet	Fair - Rust and corrosion present inside the enclosure. Signs of corrosion and deterioration on the enclosure.
5		Newmark - GAC System	Lighting- Vessel area	Fair - Lighting in vessel area is poor. Lights do not always work, and when they do, very little light is given.

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
6		Newmark – Reservoir – West Striping Tower	SCADA Antenna	Fair - The installation location does not allow easy maintenance. Obsolete components.
7		Newmark – Well #4	Soft starter	Poor - Operator indicated soft starter is making noise and going bad. Needs replacement. Signs of damage and deterioration. Arc flash label issue. Obsolete components.
8		EPA Well #7	PLC/SCADA - RTU	Poor - Conduit penetrations are open, and dust is coming into cabinet and damaging the internal components.

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
9		EPA Well #7	Motor starter	Fair - Circuit Breaker is Siemens. Vacuum Contactor is Allen Bradley. Typical installation is a single manufacturer. This has two manufacturers. Overheating or missing shade or air conditioning. Arc flash label issue.
10		EPA Well #6	Motor starter	Fair - Breaker is Siemens. Vacuum Contactor is Allen Bradley. Typical for one manufacturer to supply all the same parts. In this case two different manufacturers. Arc flash label issue.
11		EPA Well #6	Switchboard MSF	Fair - Minor rust on exterior of enclosure which can cause damage and deterioration of the internal components. Arc flash label issue.

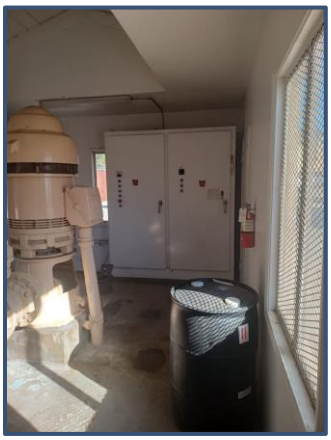
#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
12		EPA Well #6	PLC SCADA	Poor - Older model. Parts can be obsolete. Overheating due to missing shade.
13		17th & Sierra Way St-17th BPS	Main control panel 1	Poor - Working space clearance: pipe located directly below panel. Not easily accessible. Older model with obsolete parts.
14		17th & Sierra Way St-17th BPS	17th BPS Motor Starter	Fair - Arc flash label issue.

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
15		17th & Sierra Way St-16th BPS	16th BPS Motor Starter	Fair - Arc flash label issue.
16		17th & Sierra Way St-17th Well	17th Well Motor Starter	Poor - Not operating. Disconnect is in the "OFF" position and LOTO. Arc flash label issue.
17		17th & Sierra Way St -16th Well	16th Well Motor Starter	Fair - Not able to determine the starter size information. Missing cover plate on front of door. Code Issue: Working space clearance from transformer to front of 16th Well Cabinet. Signs of deterioration. Arc flash label issue.

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
18		Waterman – BPS (#1, 3, 4)	Switchboard (BPS #2, 4)	Fair - Equipment reached the end of useful life. Provides power to Booster Pumps 2&4. Signs of damage, corrosion, and deterioration. Arc flash label issue.
19		Waterman – BPS (#1, 3, 4)	Switchboard (BPS #1, 3)	Poor - Equipment reached the end of useful life. Missing cover plates, equipment has been vandalized, duct tape is used as cover plates. Provides power to Booster Pumps 1&3.
20		Waterman BPS (#1, 3, 4)	Motor starter (BPS #1)	Fair – Some components are obsolete. Arc flash label issue.

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
21		Waterman – BPS #2	Flowmeter BPS #2	Fair - Flow Transmitter is not connected to PLC/SCADA.
22		Waterman – BPS #2	Motor Starter BPS #2	Fair – Some components may be obsolete. Provides power to Booster Pump 2. Excessive heat generated within enclosure due to soft start. Overheating or missing shade or air conditioning. Arc flash label issue.
23 24 25		Waterman Ave Plant – Blower Room	MCC, Blower #1&2 Starters	Fair- Equipment reached the end of useful life. Arc flash label issue.

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
26		Waterman Ave Plant – Blower Room	Control Panel PLC	Poor - Older model. Parts may be obsolete.
27		Waterman Ave Plant – GAC System	Flowmeter in Vault – GAC System	Fair - Transmitter installed 2019. Signs of damage and deterioration.
28		Waterman Ave Plant – Blower Room	Control Panel PLC of GAC System	Fair - Older model. Parts may be obsolete.

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
29		Waterman Ave Plant – Well	Motor starter	Fair - AC Unit in well room is not working properly. Excessive heat. Arc flash label issue.
30		Waterman Ave Plant – Well	Flowmeter	Fair - Transmitter installed 2010. The transmitter is relatively new compared to the flowmeter with signs of deterioration.
31		Waterman Ave Plant – Lerory Well	Distribution Switchboard	Fair - Equipment exceeds the end of useful life. Excessive heat inside building. Poor air circulation inside building. Overheating or missing shade or air conditioning. Arc flash label issue.

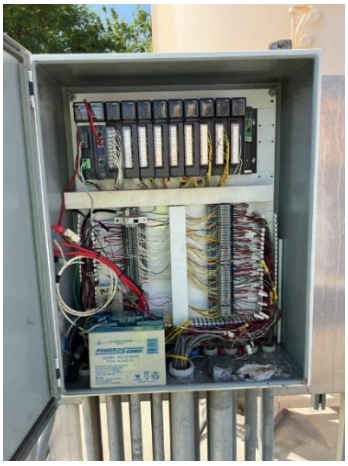
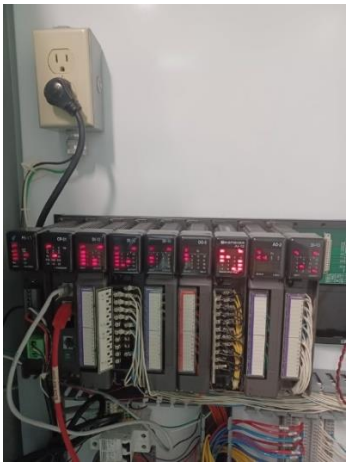
#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
32		Waterman Ave Plant – Leroy Well	Soft starter	Fair - Very unusual set up. Soft Start enclosure has circuits that provide power to the rest of the building. The building is excessively hot and has poor air circulation. Arc flash label issue.
33		19th St – GAC System - North Vessels	SCADA RTU	Poor - Older model with obsolete parts.
34		Melvin Ave – BPS (#1-5) – Pump House - Northwest Corner	Telemetry Panel	Poor – The whole panel is older model with obsolete parts. (Planned to be replaced in Jan 2023, this includes the HMI, programming, installation, commissioning, and testing).

Table 11-5 has listed the assets in poor and fair condition under Mechanical and HVAC disciplines.

Table 11-5: Mechanical and HVAC Assets in Fair and Poor Condition

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
1		Waterman – Leroy Well	Ventilator Fan	Poor - The building has poor air circulation. Fan does not move enough air to cool room despite recent repair. Excessive heat inside Building.
2		19th St Plant – BPS	Pump #4	Fair - Excessive seal leakage.
3		Melvin Ave. Plant – BPS (#1-5)	Piping - Flowmeter Vault	Fair - Coating failed. Heavily degraded.

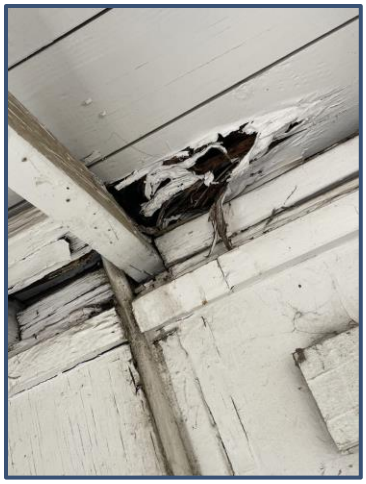
#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
4		17th & Sierra Way St Plant – 17th St Well	Piping Assembly 17th St Well	Fair - Pipes experience exterior corrosion. Coating failed.
5		17th & Sierra Way St Plant – Reservoir	Piping - reservoir outlet valve vault	Fair – Pipe is heavily deteriorated.
6		Newmark-Reservoir #3	Isolation valve - Drain vault	Poor - There is leakage from the valve. Not sure if the leakage is from the Isolation butterfly valve or gate valve next to it.

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
7		Newmark – Reservoir #2	Isolation Valve- Drain Vault	Poor - There is leakage from the valve. Not sure if the leakage is from the isolation butterfly valve or gate valve next to it.
8		Newmark – Reservoir #4	Isolation valve- Drain vault	Fair - Evidence of leakage from the valves.
9		Newmark – Common	Irrigation Valve 1 Backwash Supply Line	Fair - Evidence of leakage and corrosion.

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
10		Newmark – Well #1	Pump	Poor – The well not producing any water flow due to low water table level.

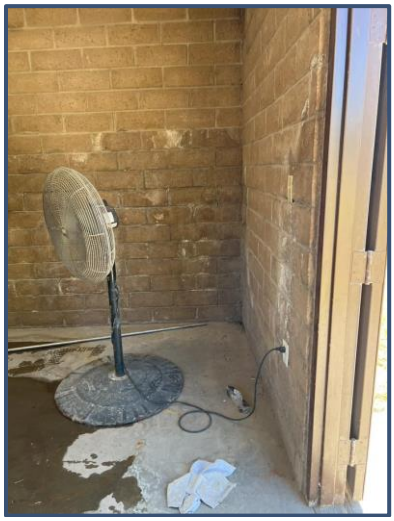
Table 11-6 has listed the assets in poor and fair conditions under Civil and Structural disciplines.

Table 11-6: Civil and Structural Assets in Fair and Poor Condition

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
1		Newmark – Sycamore BPS #2	Pump house #2	Fair - The building roof shows signs of failure in several locations. The wall also shows several signs of damage.

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
2		Newmark – Sycamore BPS #2	Flowmeter Vault - Sycamore Pump Station #2	Poor - Significant corrosion of vault structure. Signs of defects, cracking, spalling, delamination, deterioration, corrosion or protective coating failure on the structure or the components such as ladders, handrails.
3		Newmark – GAC System	GAC Assembly Effluent Flowmeter Vault	Fair - Portions of concrete on the inside of vault have failed. Evidence of concrete spalling. Corrosion observed on the hatch.
4		Newmark – Sycamore BPS (#3,4)	Electrical Vault (pump station south)	Fair - Operator can't open the access hatch. It is stuck. Access hatch bolts failed.

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
5		Newmark – Common	Control Building	Fair - The roof and fascia appear to be degraded and need repair.
6		17th & Sierra Way St Plant- 17th BPS	Pump Building – 17th &16th BPSs	Fair - The roof failed at multiple locations. Water damage to ceiling observed.
7		EPA Well #7	Isolation Valve Vault	Fair - Could not be visually inspected because the vault hatch couldn't be opened. The access hatch bolts are failed.

#	Photo	Site/Facility/ Sub Location	Asset Description	Condition/Comment
8		19th St Plant – Common	Vault - Northwest of the BPS	Fair - Corroded hatch.
9		19th St Plant – Common	South Vessels Flowmeter Vault (West of the South Vessels)	Fair - Corroded hatch.
10		Waterman – Leroy Well	Building	Fair - Roof is failing in some locations, rainwater flows into the building and causes damage, Paint is peeled off on the outside wall. No proper drainage and water accumulation on the floor damage the floor concrete.

11.2.1.3 Remaining Useful Life Assessment Methodology

To project future R&R needs, it is key to estimate the RUL of the Department assets. While condition assessment provides important insight into the current state of the assets, it does not paint the entire picture without understanding the RUL of each asset. To confidently calculate the RUL of assets, it is important to first determine the expected useful life of each asset. Useful lives are enhanced or diminished by factors such as operating environment, operational history, maintenance procedures, construction quality, material quality, external stresses, among others. Hazen started with base useful life values, obtained from the institutional knowledge and previous projects, for each asset class and asset type of the Department assets and customized them to estimate expected useful life for each asset class and asset type based on the condition assessment results and their actual performance over time. Table 11-7 shows the customized expected useful lives for the Department assets based on asset class and asset type. These useful lives are based on the observed performance of the assets during the field condition assessment.

Table 11-7: Customized Expected Useful Life Estimated for Each Asset Class and Asset Type

#	Asset Class – Asset Type	Useful Life (Year)
1	AC Unit	25
2	Access Gate-Manual	35
3	Access Gate-Motorized	35
4	Access Gate-Rolling	30
5	Access Hatch	50
6	Air Compressor	20
7	Air Ventilation System-Duct	35
8	Air Ventilation System-Exhaust Fan	35
9	Air Ventilation System-Louver	30
10	Analytical Instrument-Chlorine Analyzer	20
11	Analytical Instrument-Nitrate	20
12	Analytical Instrument-Pressure Gauge	15
13	Antenna Tower	20
14	Blower	30
15	Blower Starter	30
16	Building	60
17	Camera-Safety	25
18	Chlorine Detection System	20
19	Chlorine Injection Box	25
20	Chlorine Station	20
21	Control Panel	35
22	Controller-RTU	20
23	Crane-Bridge	40
24	Detention Basin	50
25	Drain	30

#	Asset Class – Asset Type	Useful Life (Year)
26	Engine	50
27	Fencing-Chainlink	55
28	Fencing-Iron	75
29	Flowmeter	25
30	Flowmeter-Air	25
31	Flowmeter-Magnetic	25
32	Flowmeter-Propeller	25
33	Generator	35
34	Generator Connection Box	35
35	Generator-Hydroelectric	30
36	Heat Exchanger	30
37	Hydrant	50
38	Ladder-Fixed	50
39	Level Gauge	20
40	Level Indicator	15
41	Lighting	30
42	Lighting-Pole	30
43	MCC	30
44	Motor	30
45	Motor Starter	30
46	Nitrate Detection System	15
47	Non-Process Structure	50
48	Non-Process Structure-Concrete Pad	55
49	Non-Process Structure-Dry Well	75
50	Non-Process Structure-Manhole	50
51	Non-Process Structure-Vault	70
52	Panel-Circuit Breaker	35
53	Panel-Lighting	15
54	Panel-PLC	20
55	Panel-Security	20
56	Panel-Termination	20
57	Pavement-Asphalt	55
58	Pavement-Gravel	25
59	Piping	50
60	Piping-Above Ground	50
61	Piping-In Vault	50
62	Power Panel	20
63	Pressure Indicator	20
64	Pressure Transducer	20

#	Asset Class – Asset Type	Useful Life (Year)
65	Process Structure-Basin	40
66	Process Structure-Channel	45
67	Process Structure-Stormceptor	50
68	Process Structure-Stripping Tower	50
69	Process Structure-Weir Box	25
70	Process Structure-Well Casing	50
71	Pump	35
72	Pump-Centrifugal	25
73	Pump-Chemical	20
74	Pump-Horizontal Split Case	25
75	Pump-Submersible	20
76	Pump-Sump	20
77	Pump-Vertical Turbine	30
78	Safety Shower/Eyewash	40
79	SCADA	20
80	SCADA-PLC	15
81	Solar Panel	20
82	Stairway And Catwalk	40
83	Strainer	30
84	Switch-Automatic Transfer	35
85	Switchboard	30
86	Switch-Disconnect	35
87	Switch-Transfer	35
88	Tank-Chemical	35
89	Tank-Filter	30
90	Tank-Hydropneumatic	50
91	Tank-Reservoir	50
92	Tank-Storage	35
93	Tank-Surge	40
94	Transformer	30
95	Transmitter	15
96	Transmitter-Level	20
97	Transmitter-Pressure	20
98	Valve	25
99	Valve-Air Release	25
100	Valve-Air-Vac	30
101	Valve-Altitude	30
102	Valve-Automated-Control	30
103	Valve-Backflow Preventer	30

#	Asset Class – Asset Type	Useful Life (Year)
104	Valve-Butterfly	50
105	Valve-Check	50
106	Valve-Control	50
107	Valve-Gate	50
108	Valve-Isolation	50
109	Valve-Pressure Reducing	30
110	Valve-Pressure Regulating	30
111	Valve-Pressure Relief	30
112	Valve-Sluice Gate	30
113	Valve-Solenoid	30
114	Valve-Swing Check	30
115	Vessel-GAC	50
116	Vessel-Ion Exchange	50
117	VFD	30
118	Wall-CMU	75
119	Wall-Stone	75
120	Wall-Wooden	75

For the assets with condition scores, the RUL was calculated based on the condition scores. For the assets with no condition scores, an age-based methodology was followed to calculate the RUL. The condition-based RUL for each asset is a function of the percent consumed and expected useful life for each asset type. Figure 11-10 shows the methodology for calculating RUL which aligns with the industry standards and the US EPA fundamentals of Asset Management.

Condition-Based:

Remaining Useful Life (years) = (1 - % Consumed) * Expected Useful Life (years)

$$\% \text{ Consumed} = \exp\left(\frac{\ln\left(\ln\left(\frac{1}{0.582}\left(1 - \frac{\text{Worst Condition} - \text{Condition Score}}{\text{Worst Condition} - \text{Best Condition}}\right) + 1\right)\right)}{\text{Shape Factor}}\right)$$

Where: Worst Condition = 5, Best Condition = 1, and Shape Factor = 1.1

Age-Based:

Remaining Useful Life (years) = Expected Useful Life (years) - Age (years)

Figure 11-10: Remaining Useful Life Calculation Methodology

Table 11-8 shows the conversion of condition scores into percent life consumed based on shape factor of 1.1.

Table 11-8: Conversion of Condition Scores to Percent Life Consumed

Condition Score	Percent Life Consumed
5	100%
4	84%
3	65%
2	39%
1	0%

As an example, for RUL estimation, assume a pump with a condition score of 3, which corresponds to a percent consumed life of 65% (shown in Table 11-8). The expected useful life for the pump with the type of Vertical Turbine is 30 years (shown in Table 11-7), which results in RUL of 10.5 years (35%×30 years) based on the condition-based approach (shown in Figure 11-10). For the same pump installed in 2000, if no condition data were available and an age-based approach were adopted, the RUL of the pump in year 2023 will be estimated for 7 years (30-(2023-2000)=7 years) and percent life consumed will be 77% ((2023-2000)/30=77%).

11.2.1.4 Remaining Useful Life Assessment Results

Figure 11-11 shows a summary of the RUL estimation for the assets in the Asset Management Dashboard. As is evident in Figure 11-11, there are many assets that are at the end of their useful lives (with zero RUL). However, except for the 17 assets that are in poor condition, the rest of the assets are missing condition scores, i.e., were not inspected so the RUL analysis has followed an age-based approach.

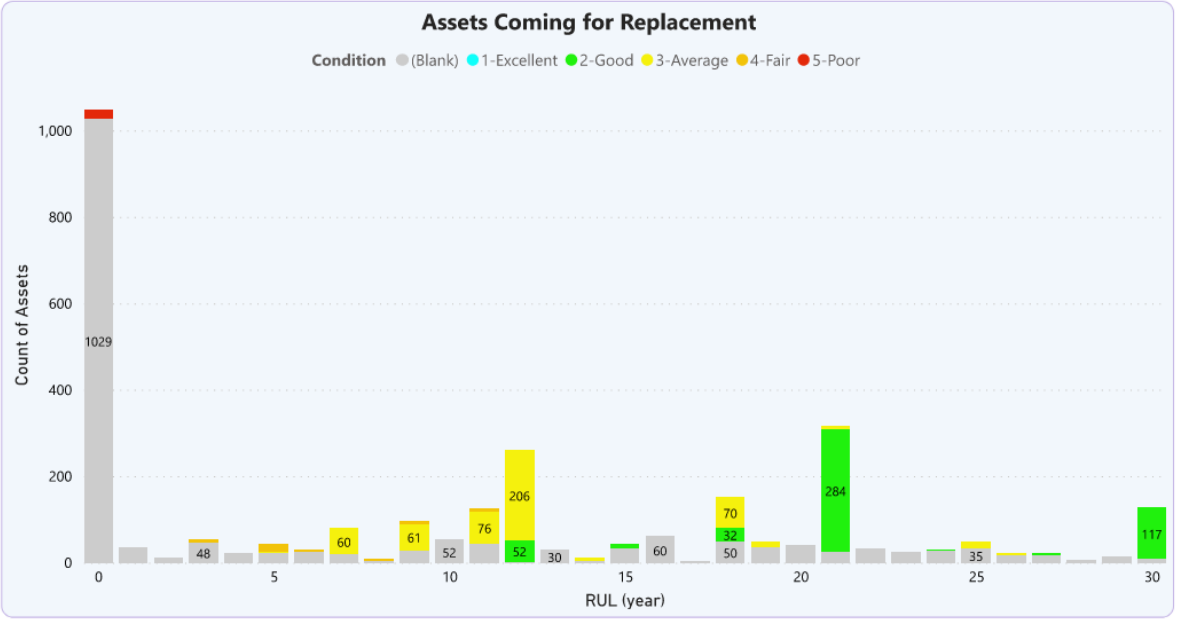


Figure 11-11: Summary of the Remaining Useful Life Results in the Asset Management Dashboard

In order to show the value of condition assessment, Figure 11-12 was developed, which shows the estimated RUL obtained from age-based vs. condition-based approach for the assets undergone a condition assessment. As it is evident in Figure 11-12, age-based approach is very conservative in estimation of the RUL. Many assets are estimated to have shorter RUL under age-based approach compared to the condition-based approach. Thus, it is recommended that the Department verify the condition of the assets which are not visually assessed, to increase the level of confidence in the RUL analysis.

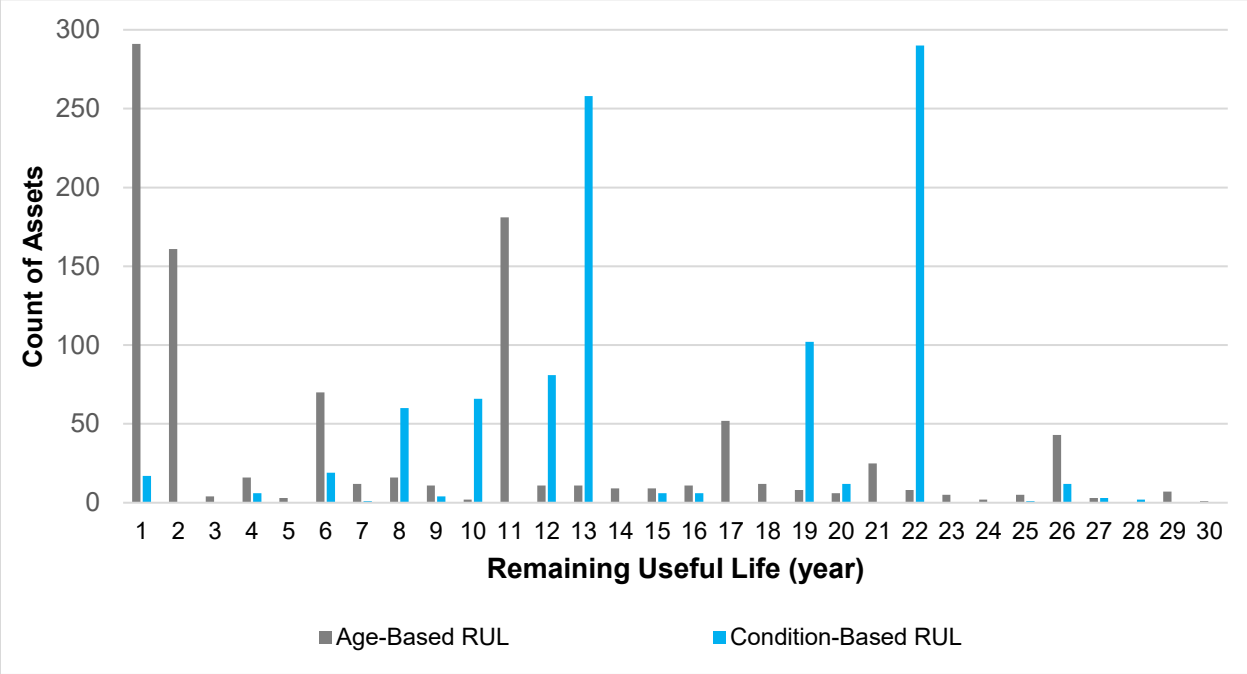


Figure 11-12: Remaining Useful Life Estimation, Condition vs. Age-Based Approach

Figure 11-13 presents the count of assets in each site coming up for replacement within the next 10 years. Out of 3,106 assets inventoried for the Department facilities, 1,472 assets need to be replaced in the next ten years. The color coding in Figure 11-13 shows the condition of the assets coming up for replacement. The assets with No Condition are related to the facilities where condition assessment is not performed. Figure 11-14 provides similar results for the facilities where condition assessment is performed. In the facilities that the condition assessment was performed, 173 assets are coming up for replacement in the next ten years, with 17 assets in poor, 32 in fair, 123 in average, and 1 in good condition. Large number of these 173 assets are related to the GAC systems in Newmark and Waterman plants followed by Newmark well and reservoir.

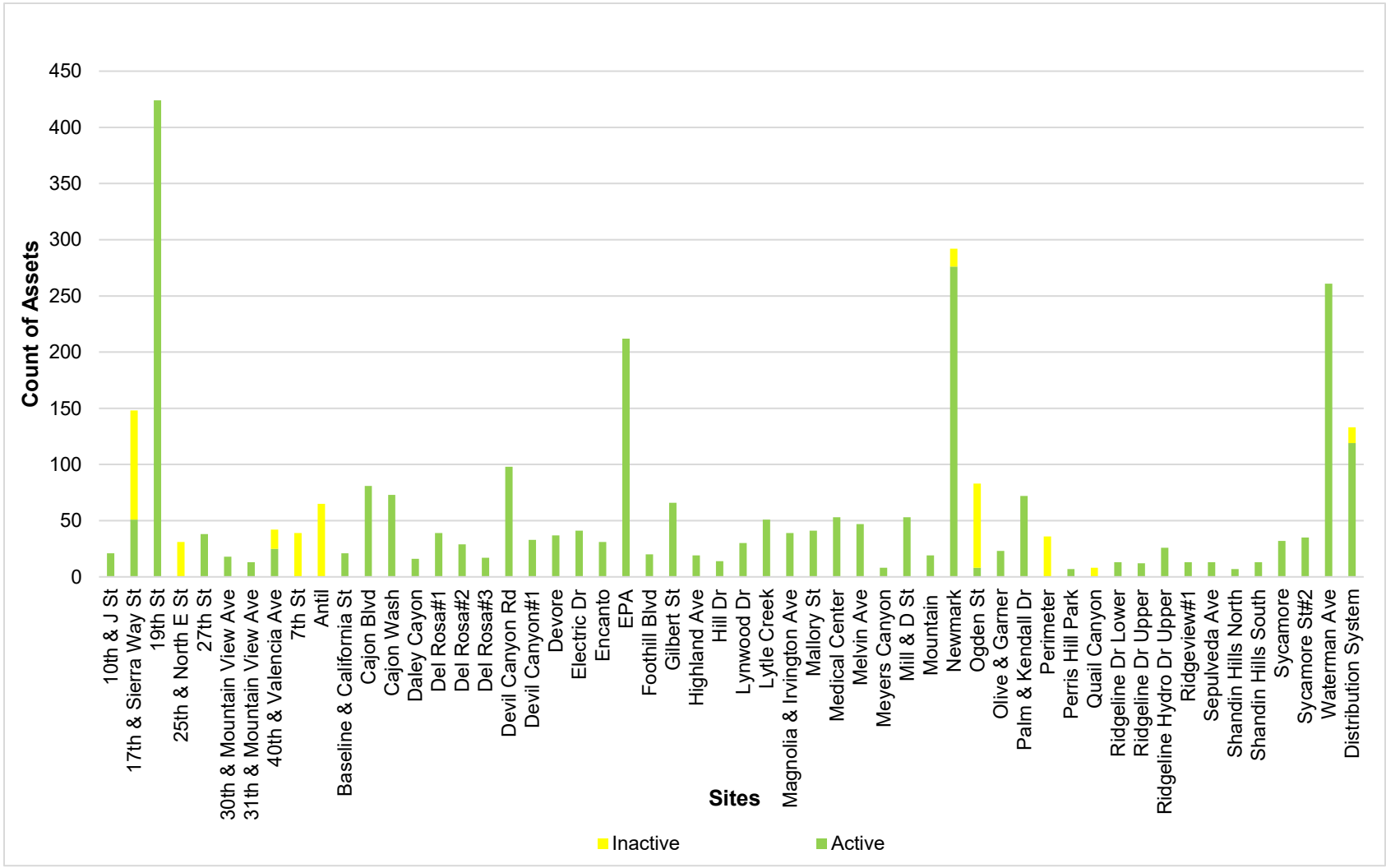


Figure 11-13: Assets with Estimated Remaining Useful Life of Less than 10 years – All Facilities

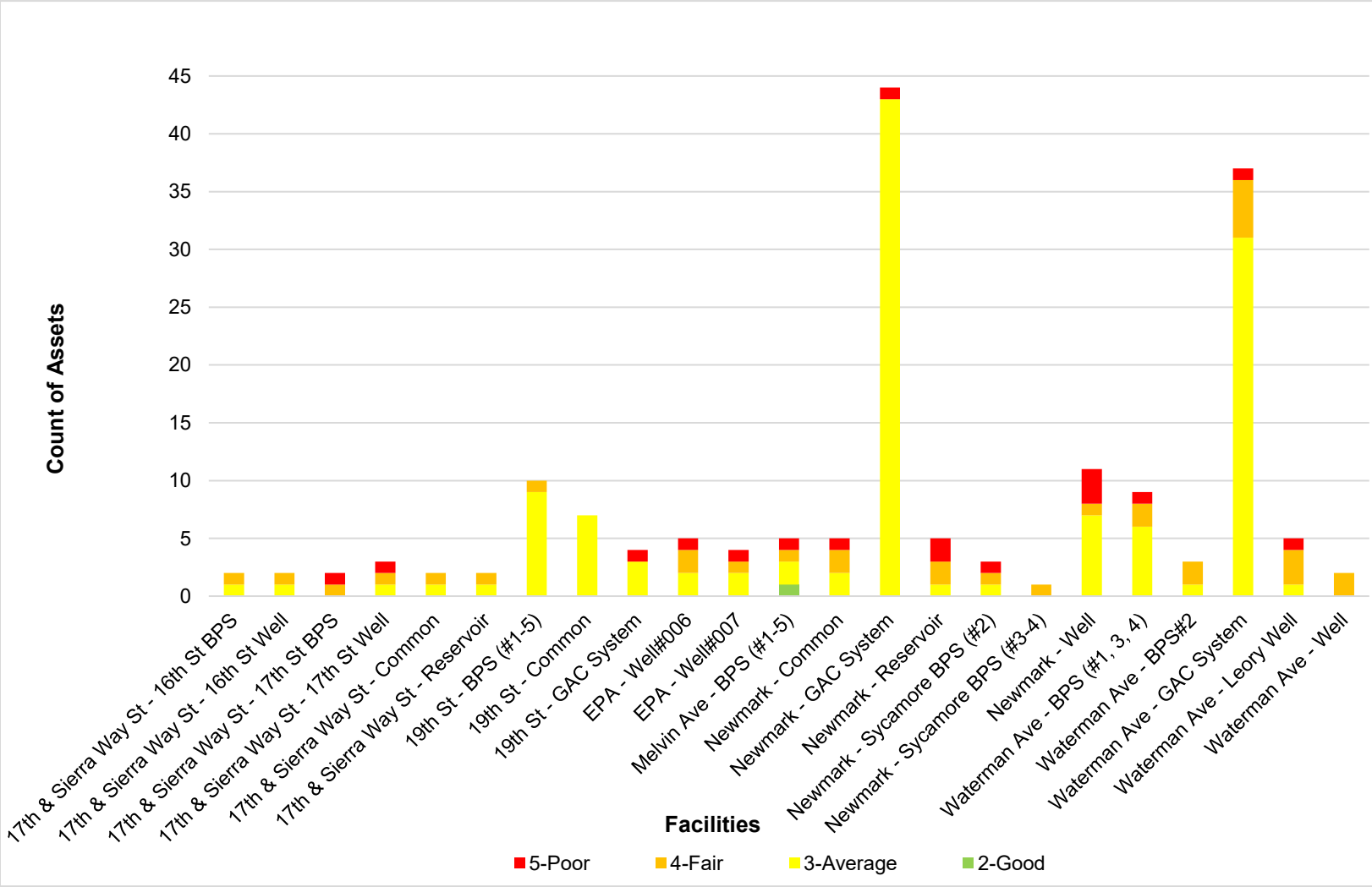


Figure 11-14: Assets with Remaining Useful Life of Less than 10 years – Facilities with Field Condition Scores

11.3 Risk Assessment

Each organization is unique, and no risk assessment model will work universally. However, each organization's risk assessment model should be built on the same basic foundation and should incorporate the same fundamental concepts. An analysis of risk commonly identifies the risk of an event, analyzes the probability of failure and the consequence of failure, calculates a risk score, ranks assets based on their risk scores, and develops risk mitigation strategies if required, to help with prioritization of R&R of high risk assets.

Risk of failure (Business Risk Exposure) can be assessed at an asset level and/or at the facility level. Risk is comprised of three major components: probability of failure (PoF), consequence of failure (CoF), and mitigation strategy as shown in Figure 11-15. The probability of failure measures an asset's likelihood of or timing to failure. The consequence of failure evaluates the direct and indirect impacts of a failure. Mitigation strategy or the presence of backup equipment, helps to decrease the overall risks and/or consequence of a failure.

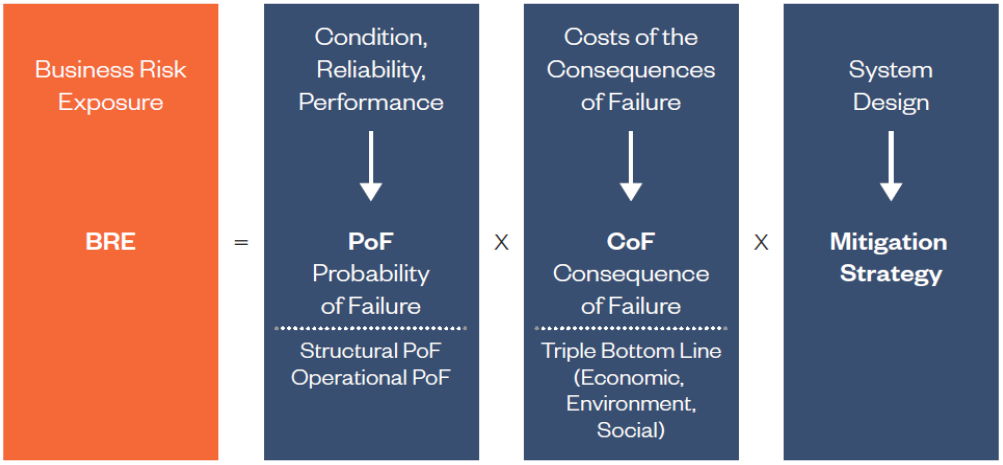


Figure 11-15: Risk Assessment Methodology

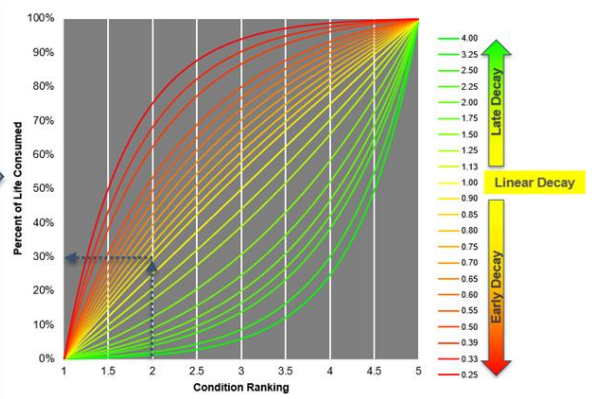
11.3.1 Risk Assessment Methodology

11.3.1.1 PoF Score

PoF measures an asset's likelihood of failure. A combination of condition-based and age-based approaches has been followed to calculate the PoF. Condition is the most important factor in determining the probability of an asset failing. As the condition of an asset deteriorates, it will become more likely to fail. Condition of the assets were determined via visual inspection of them, along with interviews with the Department operations and maintenance staff to determine a condition score as it was discussed in Section 11.2.

The obtained condition score for each individual asset was then converted into probability of failure using the deterioration curve shown in Figure 11-16. For assets with no condition scores, an age-based methodology was followed to calculate the probability of failure using age of the asset divided by its useful life.





Condition Score	PoF (%)
1	0%
2	30%
3	55%
4	77%
5	100%

Figure 11-16: Converting Condition Scores to Probability of Failure

11.3.1.2 CoF Score

Not all assets are equally important to the system's operation (see Figure 11-17). Some assets are highly critical to operations (e.g., failure of an automatic transfer switch resulting in loss of emergency power) and others are less critical (e.g., pavement, shade structure). Similarly, not all facilities are equally important to the system's operation.

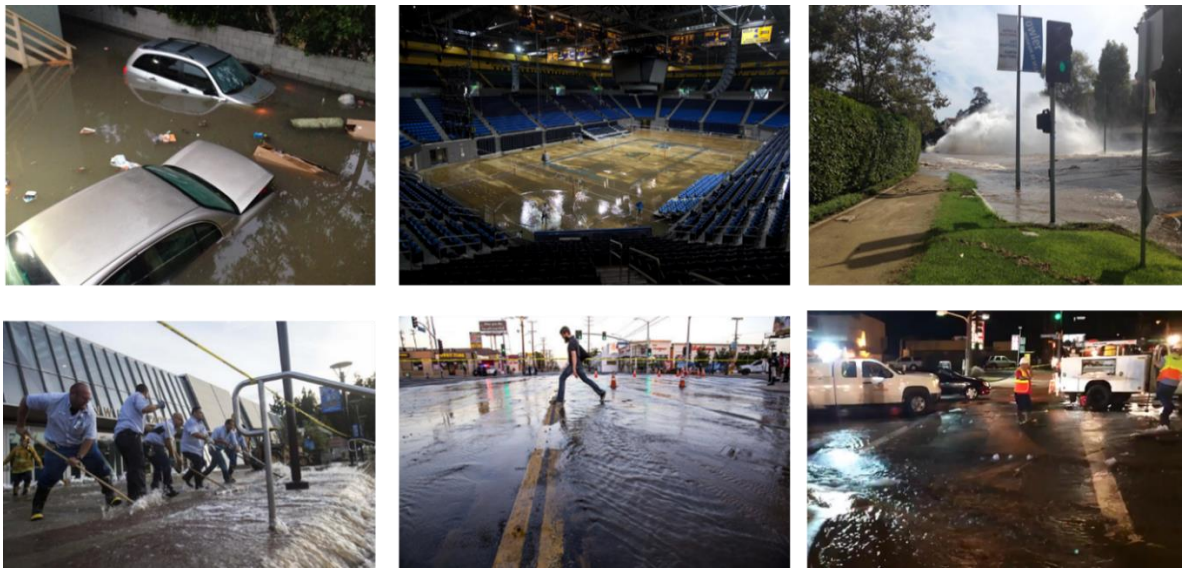


Figure 11-17: Variable Consequences of Failure

When assets fail, the consequences depend on the failure mode, existing mitigation strategies and level of redundancy. CoF can range from a minor inconvenience to a major disruption of customer service, inability to comply with operating permit, and possible endangerment of public health.

The CoF assessment methodology considers the triple bottom line factors of economy, environment, and social and it was assessed at both the facility-level and asset-level as shown in Figure 11-18.

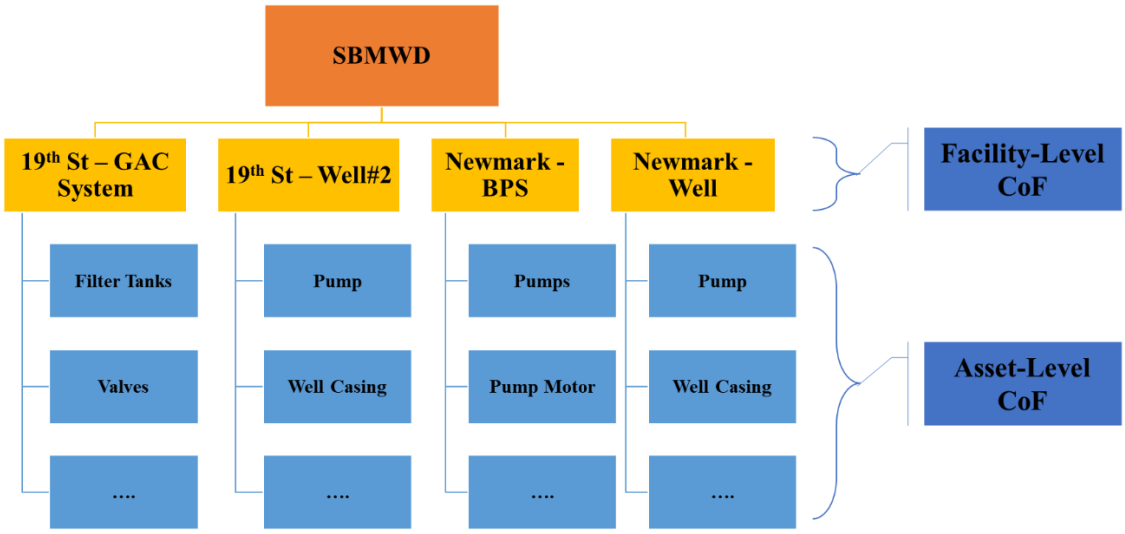


Figure 11-18: Consequence of Failure - Multiple Levels

11.3.1.2.1 Facility-Level CoF

To objectively measure the criticality of each facility, an assessment was conducted at a facility-level, considering all facilities owned or managed by the Department. Five different criteria, encompassing

economic, environment and social impacts, were used to measure the CoF at the facility-level. Each facility was assigned a score under each criterion to describe the impact of failure from negligible (score of 1) to highest impact (score of 5). Additionally, each criterion was assigned a weighting factor confirmed by the Department staff that defines the relative importance of each criterion. The weight for each factor along with scoring logics are shown in Figure 11-19.

Criteria and Weighting		CoF = 5 (Highest)	CoF = 4 (Major)	CoF = 3 (Moderate)	CoF = 2 (Low)	CoF = 1 (Negligible)
Capacity Ratio: $\frac{Capacity}{PZD*}$ *Pressure Zone Demand	40%	≥ 0.9	≥ 0.7	≥ 0.5	≥ 0.3	< 0.3
Critical Facilities	25%	Public Facilities (Hospitals, Fire Stations, Emergency Facilities, etc.); Industrial Extractive; Industrial Heavy Universities & Schools	Commercial; Industrial Light Office Industrial Park	Multi-Family Residential	Single Family Residential; Public/Commercial Recreation	Others
Pressure Zone Demand (Max Day Demand)	15%	> 13000 GPM	> 7000 GPM	> 3000 GPM	> 1000 GPM	NA
Redundancy in serving the pressure zone	10%	No redundancy		Single redundancy		Multiple redundancy
Distance to Critical Facilities (Feet)	10%	≤ 1,050		≤ 3,500		> 3,500

Figure 11-19: Criteria and Weighting for Facility-Level CoF Scoring

A facility-level CoF score for each asset was determined by multiplying the score in each criterion by the weighting factor for that criterion shown in Figure 11-19. The weighted scores are added together to estimate facility-level CoF.

11.3.1.2.2 Asset-Level CoF

At the asset-level, the impact was measured by the impact of the asset failure on the facility. Table 11-9 presents the asset-level scoring guideline for scoring each CoF parameter from Highest (score of 5) to Negligible (score of 1).

Table 11-9: Asset-Level CoF Scoring Guide

CoF	Description	Asset Classes
5	Catastrophic impact on the main functionality of facility	Pumps, Motors, Pipe, Control Panel, MCC, Transformer, Switchboard/Switchgear/Switches, Tanks, Generator, Analytical instruments, Chlorine detection system, Transformer, Chemical pumps, Process structure (e.g. well casing), SCADA, Engine, Motor starter, Hydrant, Automatic Control Valves
4	Major loss of redundancy	VFDs, Valves, Electrical Panels, Circuit Breaker, Filter Vessels, Strainer, Safety shower/eyewash station
3	Moderate loss of redundancy	AC Unit, Air ventilation system (e.g. Duct), Air Compressor, Blower, Antenna, Transducers, Transmitters, Blower starter, Controller, Flowmeter, Pressure/level indicator, Solar panel
2	Minor loss	Building, Non-Process Structures (e.g. Vault), Access Hatch, Ladder, Stairway and catwalk, Generator connection box, Drain, Crane
1	Lowest impact	Pavement, Fencing, Perimeter wall, Lighting, Camera, Access gates

11.3.1.2.3 Final CoF

Final CoF scores are calculated by multiplying the facility-level CoF and asset-level CoF and dividing by 2.5 resulting in a combined CoF score ranging from 1 to 10 as shown in Figure 11-20.

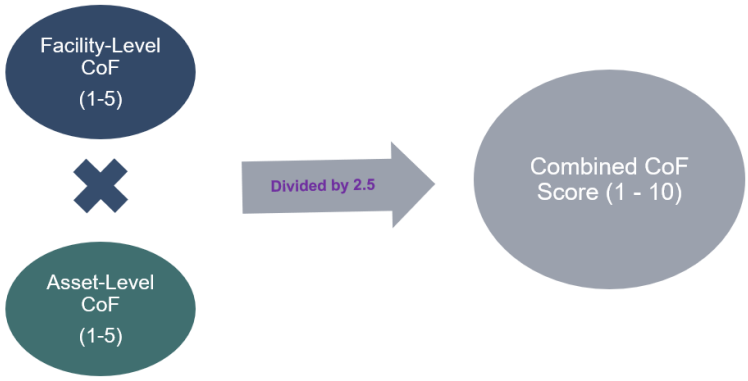


Figure 11-20: Final CoF Calculation

11.3.1.3 Risk Score

Risk score is a component of both the PoF and CoF and is estimated based on the formula presented in Figure 11-21.

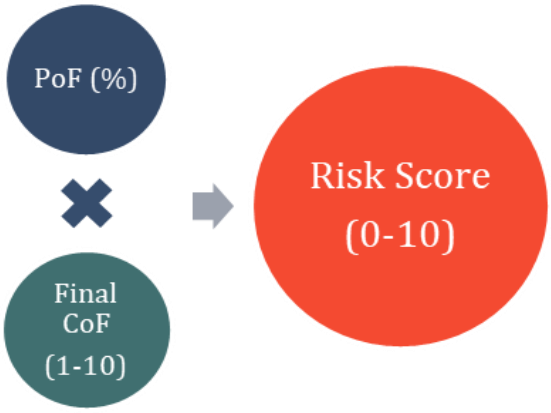


Figure 11-21: Risk Formula

11.3.2 Risk Assessment Results

The following sections summarize facilities' risk assessment results including PoF, CoF and Risk results. The results are presented in multiple ways to facilitate interpretation of the results. Figure 11-22 shows a summary of the risk results for the Facilities' assets in the Asset Management Dashboard (some snapshots available in Appendix B).

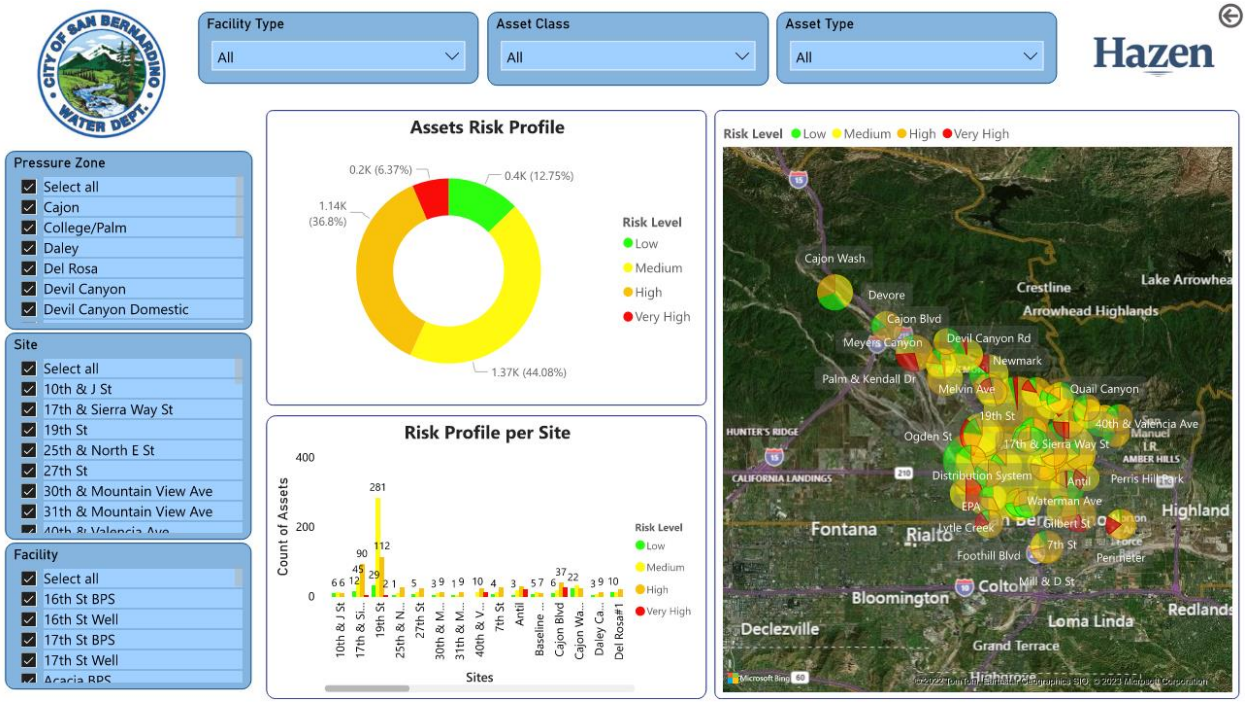


Figure 11-22: Summary of the Risk Results in the Asset Management Dashboard

11.3.2.1 PoF Results

The PoF was generated for each asset based on a combination of condition- and age-based approaches. PoF thresholds for very high, high, medium, and low levels were established as shown in Table 11-10 and the PoF was calculated for each level.

Table 11-10: PoF Thresholds

PoF Level	PoF (0%-100%)
Very High	≥ 90%
High	75% – 90%
Medium	50% – 75%
Low	< 50%

Figure 11-23 summarizes the findings of the PoF results by showing the PoF levels and the count and percentages of assets under each PoF level. This figure also differentiates between the PoF results that are based on condition scores versus those that are based on age. The results shows 36% of the assets, (1,132 count) are categorized as very high PoF, and 6% of the assets (189 count) are categorized as high PoF. However, only 2% of the assets at very high PoF level have undergone the field condition assessment. The PoF results showing the high level of PoF are more reliable compared to the very high PoF level, as 20% of the high level PoF estimations are based on condition scores rather than age. Expanding the condition assessment to all the facilities (e.g., using asset photos to assign condition scores) can significantly improve the level of confidence in estimating the PoF results.

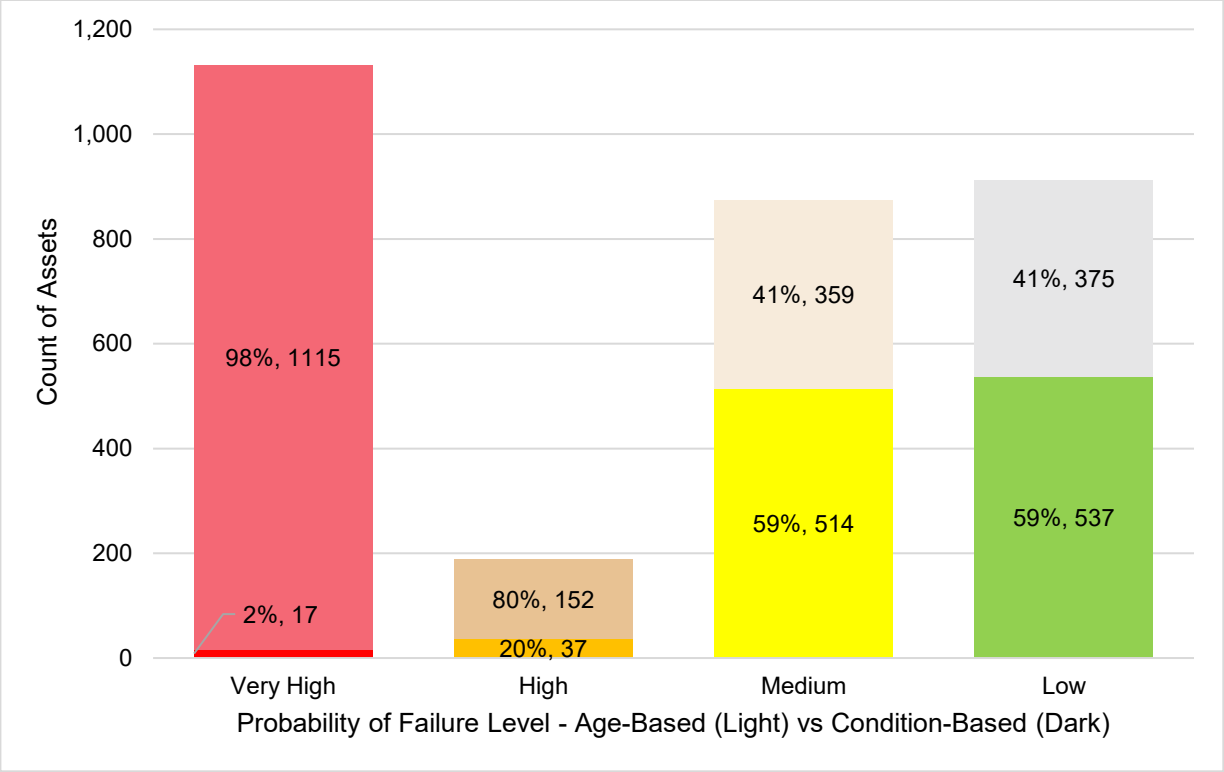


Figure 11-23: Summary of the Probability of Failure Results

11.3.2.2 CoF Results

CoF thresholds for very high, high, medium, and low levels were established as shown in Table 11-11 and the CoF was calculated for each asset. Figure 11-24 summarizes the findings of CoF by showing the CoF level and count of assets under each level. As Figure 11-24 shows, 8% of the assets (243 count) are categorized as very high CoF and 56% of the assets (1,750 count) are categorized as high CoF.

Table 11-11: Consequence of Failure Thresholds

CoF Level	CoF (1-10)
Very High	≥ 8
High	5 – 8
Medium	3 - 5
Low	< 3

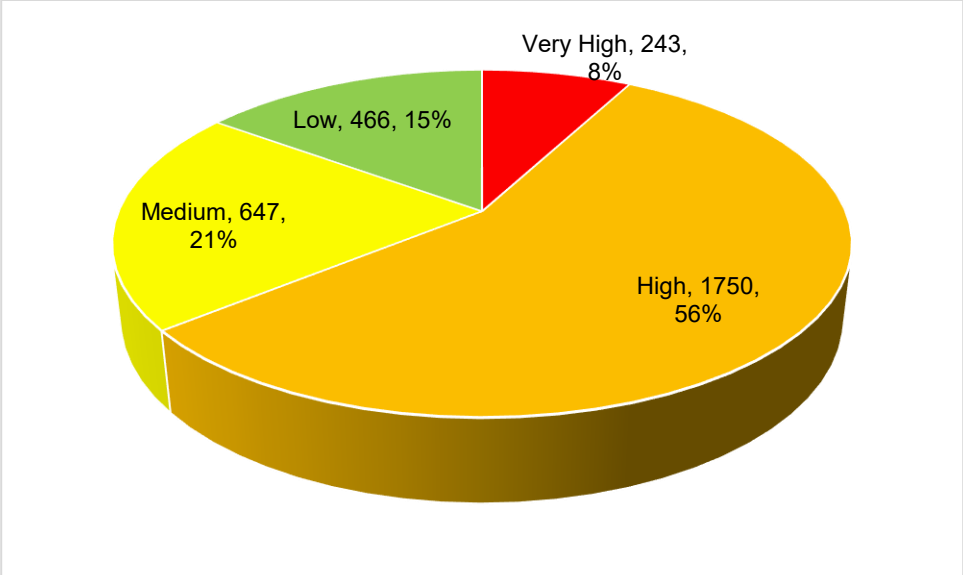


Figure 11-24: Summary of the Consequence of Failure Results

The final CoF is the product of facility-level and asset-level CoF scores. The results of the final CoF show that assets with very high final CoF, has very high facility-level CoF (facility-level CoF score of above 4) and very high asset-level CoF (asset-level CoF score of 5).

11.3.2.3 Risk Results

Table 11-12 shows the risk thresholds used to group assets into very high, high, medium, and low risk levels.

Table 11-12: Risk Thresholds

Risk Level	Risk Score (0-10)
Very High	≥ 7
High	4 – 7
Medium	1.5 - 4
Low	< 1.5

Figure 11-25 summarizes the Risk results by showing the count of assets under each risk level. Overall, the findings indicate a large number of the Facilities' assets have Medium risk scores. However, a total of 1,341 assets (43%) are at high and very high risk of failure and in need of immediate attention. Out of these, 1,341 assets recommended for immediate attention, 787 assets are recommended for replacement as their conditions have been verified during the field condition assessment. For the rest of the assets (554 assets), it is recommended that the Department verifies their condition in the field prior to R&R.

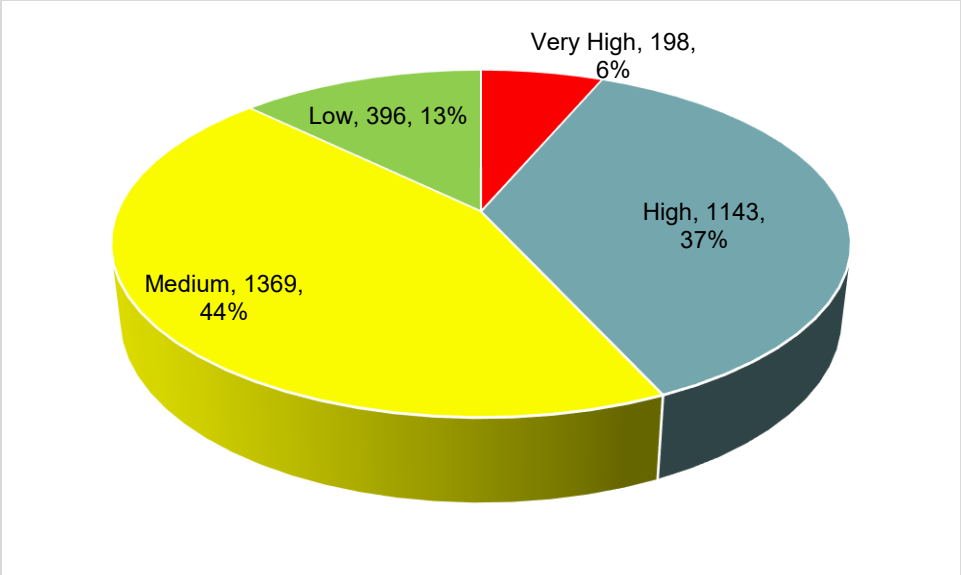


Figure 11-25: Summary of Risk Results

Mapping the risk results on a matrix is a powerful tool to visualize how each asset is scored against the main constituents of risk (PoF and CoF). The risk matrix, presented in Figure 11-26, demonstrates the CoF on the vertical axis and PoF on the horizontal axis. The numbers inside the individual cells denote the total number of assets identified in that risk level.

CoF/PoF	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
10	1			2	8	1	4	7	5		7
9		1	21	20	36	18	7	36	14	1	15
8			15	6	132	8	7	44	17	2	86
7		2	6	54	50	21	19	60	23	9	107
6	1		11	15	225	5	27	275	20	18	127
5			1	10	67	58	28	68	28	17	304
4	2		4	3	30	13	21	52	12	11	169
3		1	6	8	27	5	25	21	18	6	104
2	1	2	3	7	43	24	9	25	7	10	68
1			1	1	17	24	14	19	5	18	93

Figure 11-26: Risk Matrix

The risk matrix was categorized and color-coded into very high, high, medium, and low risk zones (red, orange, yellow, and green respectively). Assets located on the top-right corner of the risk matrix are considered very high risk and assets located on the bottom-left of the risk matrix are considered low risk assets. Amongst the assets with very high risk (114 assets), the majority (more than 108 assets) have

relatively high PoF scores (close to 100%) with CoF scores of 10, 9, and 8. Verifying the condition of very high- and high-risk assets with PoF scores of close to 100%, will improve the level of confidence in the risk results.

12. Horizontal Assets Risk Assessment

12.1 Purpose and Objectives

To increase the level of confidence of the Department in identifying and validating needs for capital improvement, replacements, and maintenance programs over the short term and to inform decision over the long term, a desktop condition and risk assessment of the Horizontal assets owned or managed by the Department were performed. Horizontal assets risk assessment covers assessment of water pipes and non-pipe assets (system valves, system control valves, flowmeters, hydrants and ACVs) installed outside of the facility fence-line. The assessment results in this section will be provided for pipes and each one of the listed non-pipe assets separately as their information were obtained from an individual GIS layer, listed in Table 12-1, received from the Department. This section discusses the methodology and results of Horizontal assets risk of failure assessment as well as RUL estimation.

Table 12-1: Horizontal Non-Pipe Assets GIS Layers

#	Non-Pipe Assets	GIS Layer Name
1	System Control Valves	ControlValve
2	System Valves	SystemValve
3	ACVs	ACV
4	Flowmeters	Meter
5	Hydrants	Hydrant

12.2 Risk Assessment

For the Horizontal assets risk assessment, similar to the Facilities' assets, two key elements of PoF and CoF needs to be estimated. Depending on the asset class, if it is a pipe or a Horizontal non-pipe asset, different methods, described in this section, are adopted to assign a PoF or CoF score. This section includes the results of PoF, CoF and risk assessment.

12.2.1 Risk Assessment Methodology

12.2.1.1 PoF Score

PoF measures an asset's likelihood of failure. PoF scoring methodology for the water pipes (including geothermal pipes and shown in Figure 12-1) includes a set of criteria selected collaboratively by working with the Department staff (Table 12-2). A percent weighting was assigned to each criterion along with a scoring guide to then assign a score of 1 to 5 to each criterion. The final PoF score for each pipe is the weighted average of the scores assigned to each criterion.

Table 12-2: Probability of Failure Scoring Methodology for the Pipelines

Criteria	Weighting	5	4	3	2	1
RUL* (year)	25%	≤ 5	5 - 15	15 - 25	25 - 35	≥ 35
Material	25%	Non-Protected Pipes with Special Concern[1]	DIP, STL, SS, GAV, D&WP, SBS, CO	PVC, PE, AC, TEMPTITE, TRANS	RCP, VCP, CL&CC, CL&S, CL&WP	CIP
Diameter (in)	10%	¾-4	6-8	10-12	15-26	27-60
Break History	25%	Three or more failures	Two failures	One failure		No failures
Soil Corrosivity	15%	High		Moderate		Low or no corrosion

*RUL: Remaining Useful Life
[1]Non-cathodically protected DIP and CL&WP susceptible to corrosion due to no installed protection or being surrounded with corrosive soil

RUL criterion in this table is estimated for each pipe segment based on the install year of the pipes. The useful lives were decided based on the values recommended by the American Water Works Association (AWWA)[4], adjusted by institutional knowledge about the performance of different pipe material in similar situation.

Table 12-3 shows the nominal useful life values assumed for each pipe material. For the pipe materials used for geothermal purposes (Temptite, DIP, PVC, AC, CI, STL), useful life is reduced by 20% to account for more corrosive environment. Also, as it is indicated in Table 12-2 and shown in Figure 12-1, some pipe segments toward the southern part of the City with special concern (non-catholically protected DIP and CL&WP susceptible to corrosion due to no installed protection or being surrounded with corrosive soil) are identified by the Department staff to get a higher PoF score. The Department provided leak data for the main pipelines dating back to 2011, which were used to assign break/leak history scores to pipe segments. The provided data was queried to only include leaks associated with main lines and 2,049 leaks were assigned to the nearest pipe segment. Soil corrosivity data from National Soil Survey Handbook was used to identify metallic pipe segments located in corrosive soil.

[4]https://www.awwa.org/Portals/0/AWWA/Government/BuriedNoLonger.pdf?ver=2013-03-29-125906-653

Table 12-3: Nominal Useful Life of Pipe Materials

#	Pipe Material	Abbreviation	Nominal Useful Life (years)
1	Copper	CO	30
2	Galvanized Steel	GAV	50
3	Polyethylene	PE	60
4	PVC	PVC	70
5	Reinforced Concrete Pipe	RCP	75
6	Asbestos Cement	AC	90
7	Ductile Iron Pipe	DIP	90
8	Insulated Asbestos Cement Pipe	TEMPTITE	90
9	Transite (Asbestos Cement)	TRANS	90
10	Dipped & Wrapped Steel	D&WP	50-95*
11	Standard Black Steel	SBS	95
12	Standard Steel Pipe	SS	95
13	Steel	STL	95
14	Cast Iron	CI	105
15	Cement Line & Cement Coated Steel	CL&CC	105
16	Cement Lined & Steel	CL&S	105
17	Cement Lined & Wrapped Steel	CL&WP	105

*For D&WP pipe segments with 12-in and smaller diameters, 50 years of nominal useful life was considered based on the Department suggestion.

For the rest of the Horizontal assets (Horizontal non-pipe assets), an age-based approach was followed (as previously discussed in Section 11.3.1.1 and the customized useful lives of the assets listed in Table 12-4 were used for the PoF estimation. The install year of the Horizontal non-pipe assets were obtained from GIS layers and if not available in the layers, the adjacent pipe install year were assigned to the asset. The consumption meter's install year in GIS layers were updated based on the Department provided consumption data.

Table 12-4: Customized Useful Lives Assigned to Horizontal Non-Pipe Assets

Asset	Customized Useful Life (Year)
Flowmeter-Consumption	20
Blow-Off Valve	30
Air Release Valve	30
Automatic Control Valve	30
Hydrant	50
System Control Valve	50
System Valve	50

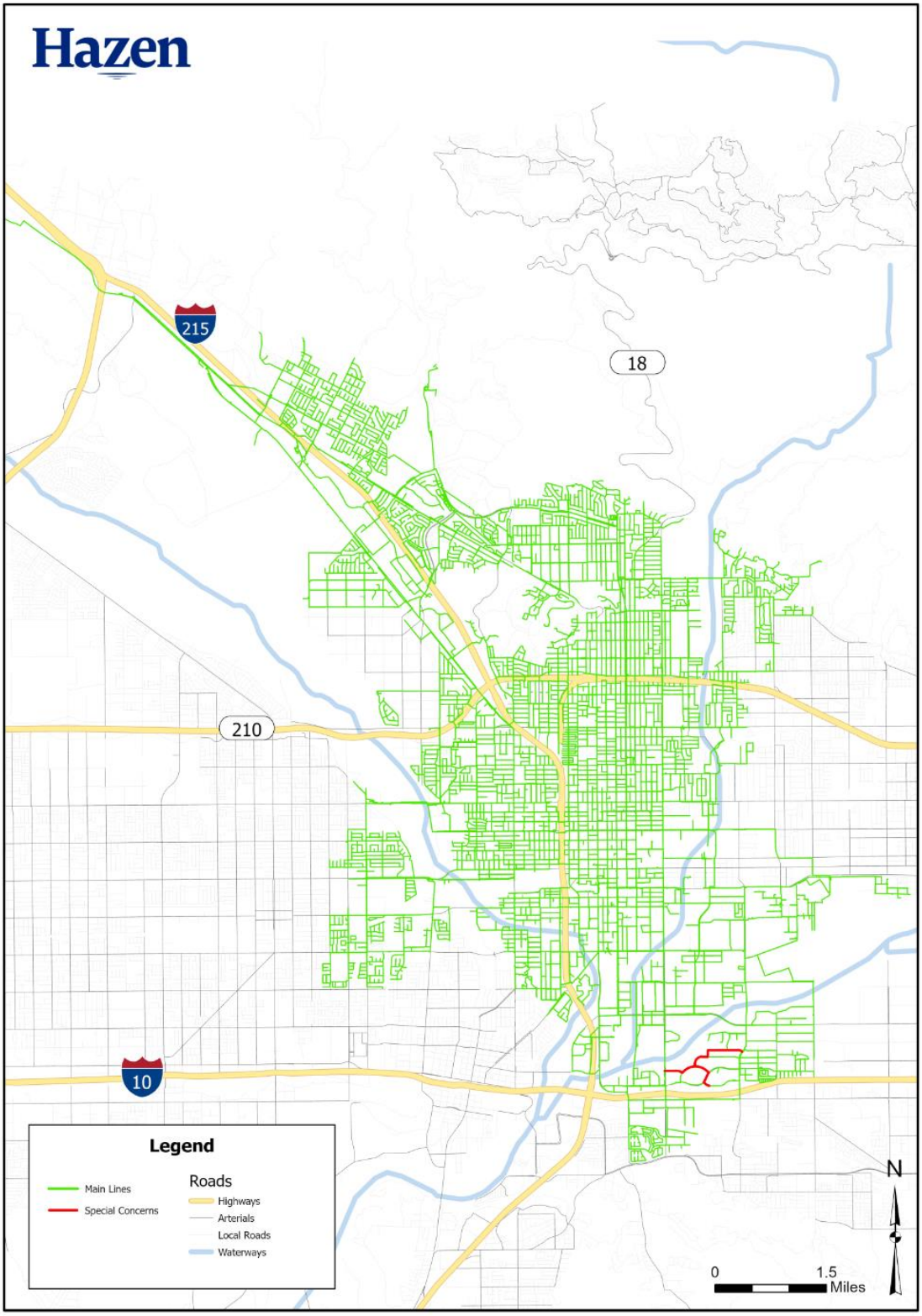


Figure 12-1: Water Pipes and the Pipe Segments with Special Concern

12.2.1.2 CoF Score

CoF evaluates the direct and indirect impacts of asset failure against triple bottom line factors (Environment, Economic, and Social). Pipelines CoF score was measured by assigning a weighted percentage to criteria selected. The weighted percentages, presented in Table 12-5, were defined and confirmed by the Department staff. In this analysis, geothermal pipes are not included as detail information about the geothermal pipes CoF were not available.

Table 12-5: CoF Criteria and Weightings for Water Pipes

Criteria	Weighting	5	4	3	2	1
Flow (GPM)	25%	>200	>50	>15	>4	≤4
Service Type	25%	Public Facilities (Hospital, Fire Station, Care Centers, Emergency Services, Government Buildings, Universities, Schools, etc.), Industrial Extractive, Industrial Heavy	Commercial, Industrial Light, Office Industrial Park	Multi-Family Residential	Single Family Residential, Public/Commercial Recreation	Others
Traffic Impact	25%	Freeway/ Interstate/ Railroad	Major Arterial	Secondary Arterial	Collector	Local
Redundancy	25%	No		Low		Some

To estimate the CoF of water pipelines, flow was considered to identify the pipe segments that carry high flows and thus can result in higher consequences, including larger amount of potable water loss upon failure. The updated hydraulic model was used for the purpose of assigning flows to the pipe segments. The model was run under the Average Day Demand Steady State Condition for this assessment. Service Type was another criterion, and it was determined by conducting a spatial analysis of the pipe segments and land use GIS data for San Bernardino County provided by the Department. This was done by applying a buffer of 100 ft to the pipe segments and intersecting them with the land use layers. Pipe segments that intersected with multiple land uses were assigned the higher CoF score. Land use types found in the attribute data were converted and consolidated to five service types. Traffic Impact criterion accounts for the negative impacts of pipe failures on the public and also for the difficulty of repair upon failure. This criterion is measured by the vicinity of the pipe segments to the roadways. This criterion was measured by applying a buffer of 60 ft to the pipe segments and intersecting them with the road centerline GIS layers. The road class was used to gauge the Traffic Impact; the major roadways (e.g., Freeways and Railroad track) were assigned higher scores and local roadways with no paving and less traffic received lower scores. Redundancy criterion accounts for the existence of redundant pipeline for the provided water services to determine redundancy of water services when a pipe has an outage.

The CoF score assigned to the adjacent pipe was applied as the CoF score of the system valves. For the rest of the Horizontal assets (i.e., hydrants, flowmeter, ACVs), similar approach as discussed in section 11.3.1.2 was used and only a constant asset-level CoF was applied (shown in Table 11-9).

12.2.2 Risk Assessment Results

12.2.2.1 PoF Results

The results of PoF assessment for pipeline as well as other assets such as valves and hydrants are provided in this section. The detailed PoF results including the scores assigned under each criterion are delivered in a map package.

12.2.2.1.1 Pipelines

The scores assigned to each pipe segment for each individual PoF criterion were multiplied by the associated weightings and added together to calculate final PoF score for each pipe segment. Table 12-6 summarizes the pipeline PoF results by showing the length and percentages of pipe segments falling under each PoF score. The PoF levels shown in Table 12-6 is used for visualizing the PoF scores and Figure 12-2 shows a color-coded map presenting the pipe segments within each PoF level.

Table 12-6: Water Pipeline Probability of Failure Results Summary

PoF Level	PoF score	Length (mi)	Length (%)
High	≥4	83	12
Medium	≥3	318	46
Low	<3	296	42

As Table 12-6 and Figure 12-2 shows, 83 miles (12%) of the water pipelines have high level of PoF and are mainly located at northeast part of the service area.

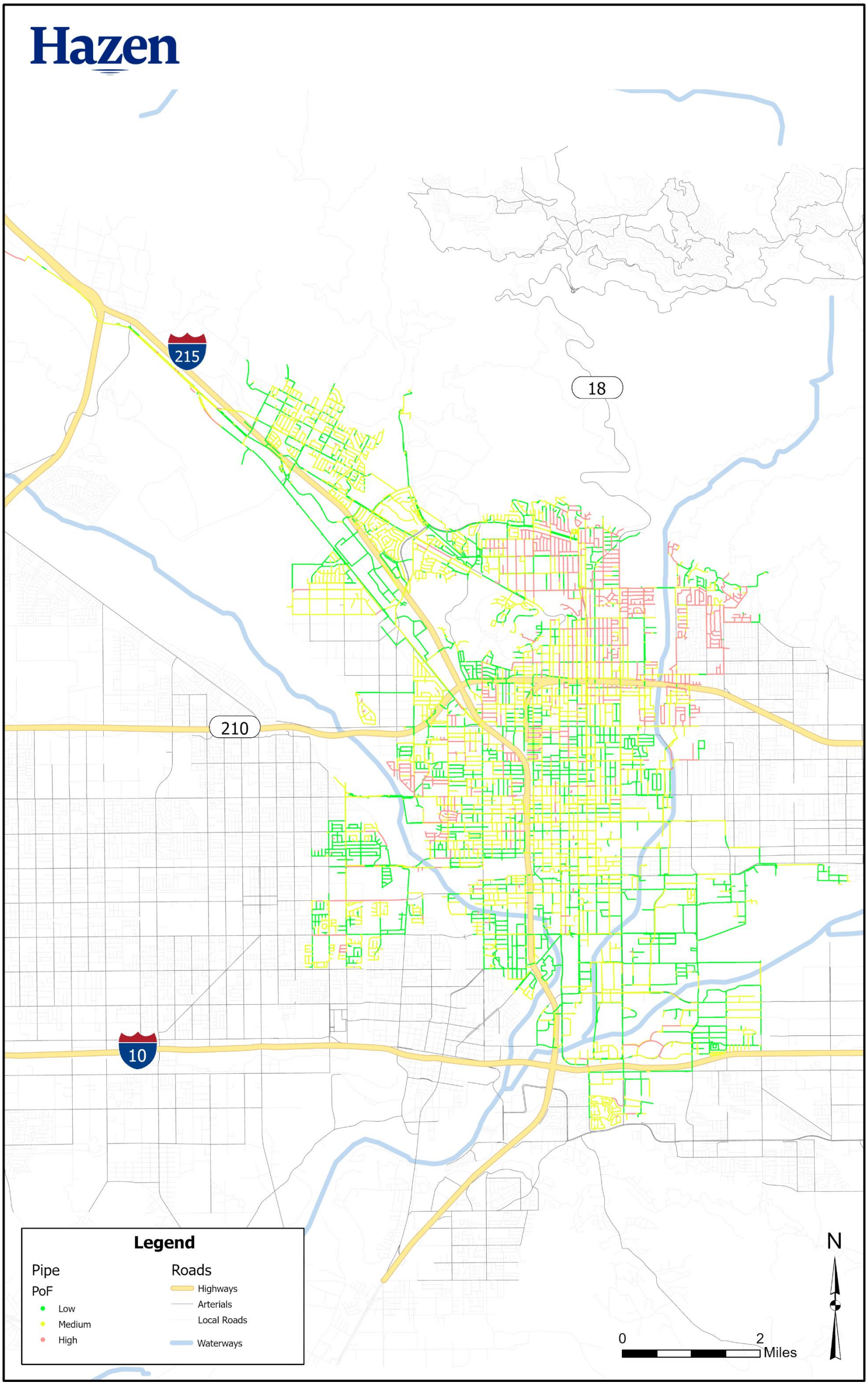


Figure 12-2: Water Pipelines Probability of Failure Results

12.2.2.1.2 System Valves

Table 12-7 summarizes the PoF results for system valves by showing the number and percentages of valves falling under each PoF level. The presented PoF thresholds in Table 12-7 is used for ranking the PoF scores.

Table 12-7: System Valve Probability of Failure Results Summary

PoF Level	PoF Score	Count	Percentage (%)
Very High	>4.99	7,079	40
High	>4	1,264	7
Medium	>3	2,603	15
Low	≤3	6,744	38

As discussed in the methodology section, PoF estimation for Horizontal non-pipe assets were mainly based on the age of the assets. The PoF results show 40% of system valves have very high PoF and recommended for further investigation. Figure 12-3 shows a color-coded map presenting the PoF results for the system valves.

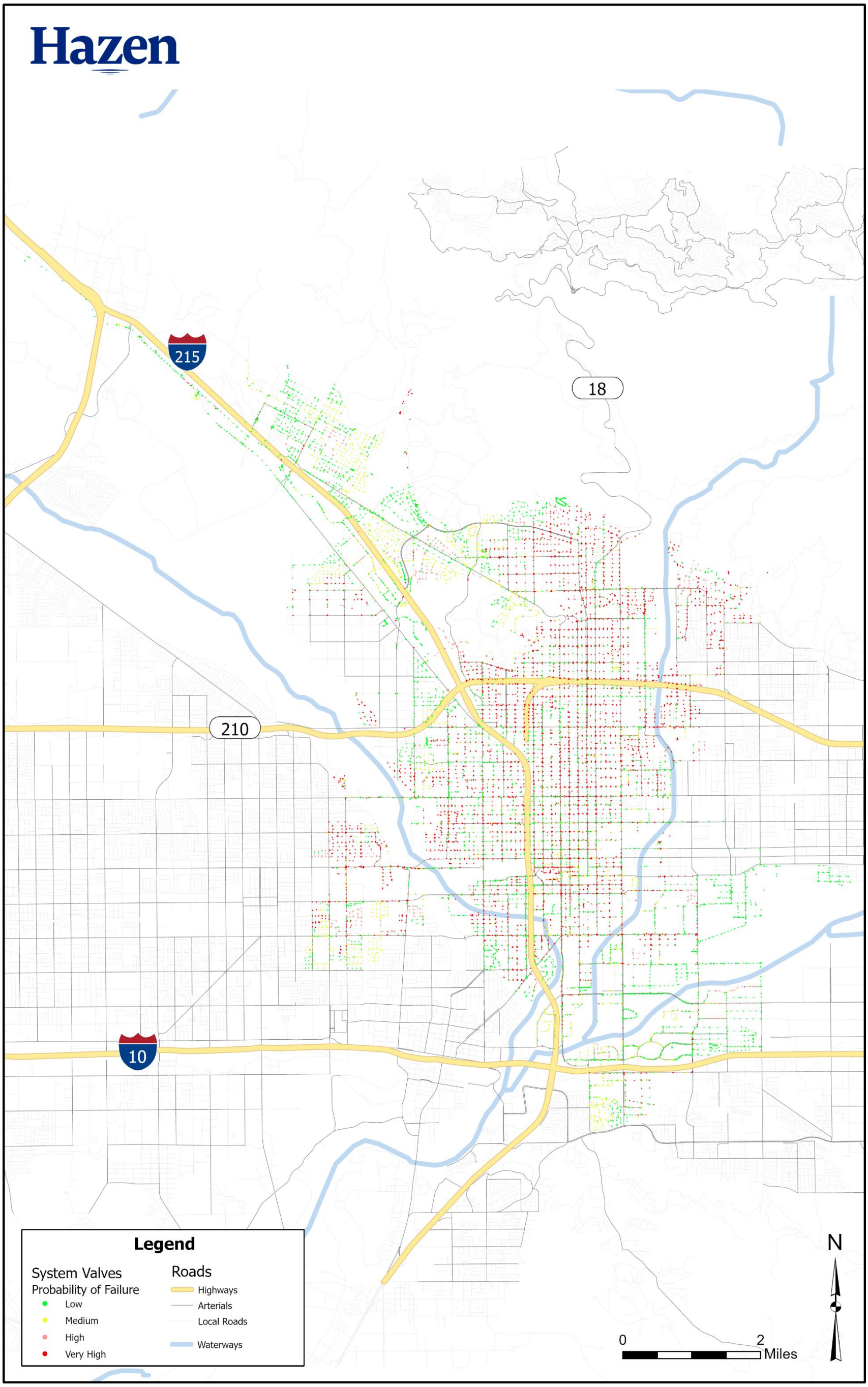


Figure 12-3: System Valves Probability of Failure Results

12.2.2.1.3 ACVs

Table 12-8 summarizes the PoF results for the ACVs by showing the number and percentages of ACVs falling under each PoF level. The ACVs which were inventoried and assessed during site visits as part of the Facilities' assets, are not included in this analysis as they were included in the previous section. The PoF thresholds shown in Table 12-8 are used for ranking the PoF scores.

Table 12-8: ACVs Probability of Failure Results Summary

PoF Level	PoF Score	Count	Percentage (%)
Very High	>4.99	24	47
High	>4	5	10
Medium	>3	3	6
Low	≤3	19	37

The PoF results show the majority of the ACVs (47%) have very high and (10%) high PoF scores and are recommended for further investigations. Figure 12-4 shows a map of the PoF results for the ACVs.

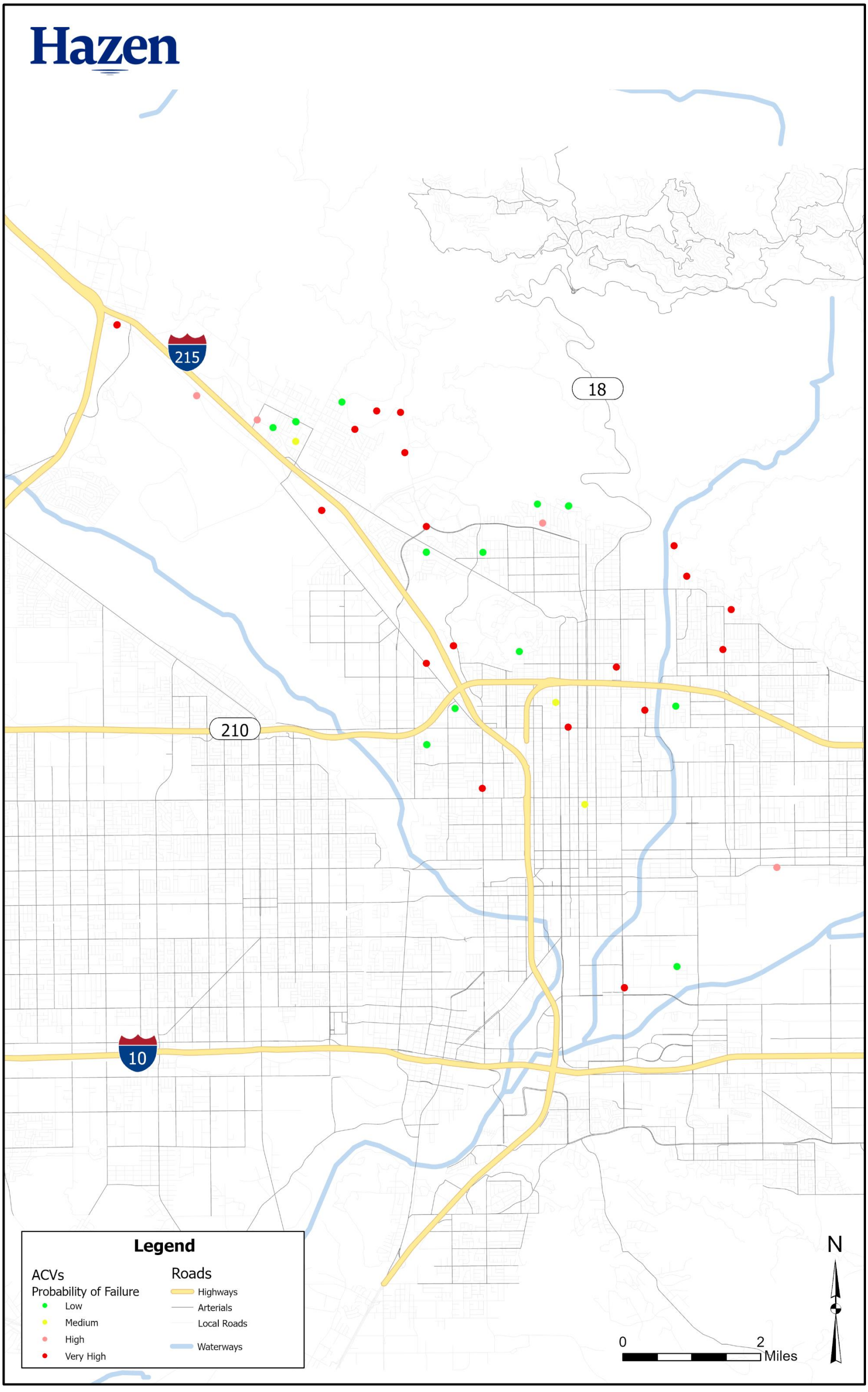


Figure 12-4: Automatic Control Valves Probability of Failure Results

12.2.2.1.4 System Control Valves

Table 12-9 summarizes the PoF results for the system control valves by showing the number and percentages of system control valves falling under each PoF level. Based on the GIS attribute data in the system control valve GIS layer, system control valves include air release/vacuum, anti-backflow, blowoff, single check, detector check, double check, pressure regulating, and pressure reducing valves. The PoF threshold shown in Table 12-9 is used for ranking the PoF scores and Figure 12-5 shows a color-coded map presenting the system control valves within each PoF level.

Table 12-9: System Control Valve Probability of Failure Results Summary

PoF Level	PoF Score	Count	Percentage (%)
Very High	>4.99	451	24
High	>4	90	5
Medium	>3	318	17
Low	≤3	1,014	54

The PoF results show 24% and 5% of the system control valves have very high and high PoF scores, respectively. Figure 12-5 shows the majority of these system control valves are located towards the south of the service area.

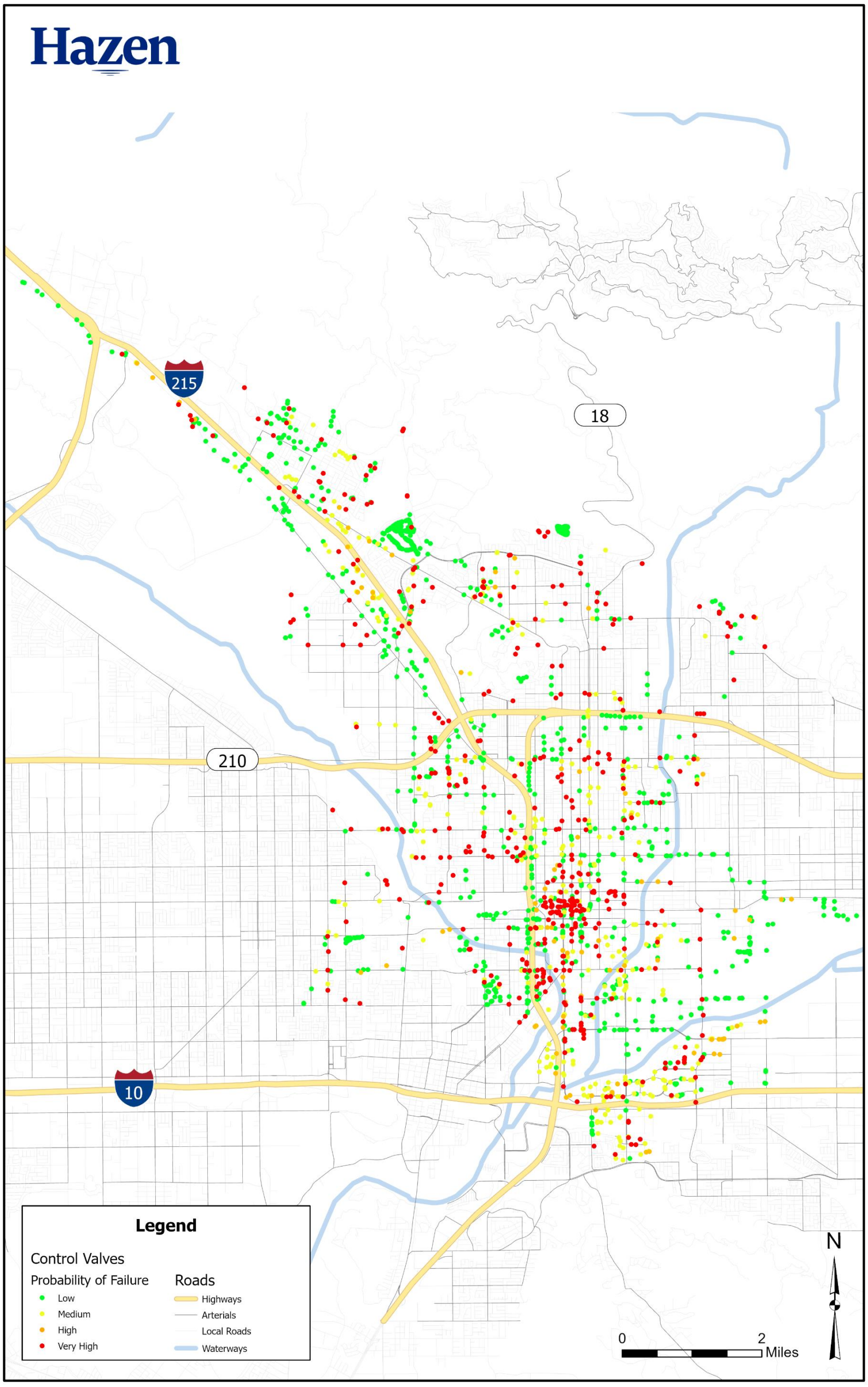


Figure 12-5: System Control Valves Probability of Failure Results

12.2.2.1.5 Flowmeters

Table 12-10 summarizes the PoF results for flowmeters by showing the number and percentages of flowmeter falling under each PoF level. The PoF thresholds shown in Table 12-10 are used for ranking the PoF scores and Figure 12-6 shows a color-coded map presenting the flowmeters within each PoF level.

Table 12-10: Flowmeter Probability of Failure Results Summary

PoF Level	PoF Score	Type	Count	Percentage (%)
Very High	>4.99	Consumption	14,091	32
High	>4	Consumption	4,220	10
Medium	>3	Consumption	2,643	6
Low	≤3	Consumption	22,763	52

The results show 32% of meters have very high PoF score. These meters are scattered throughout the service area.

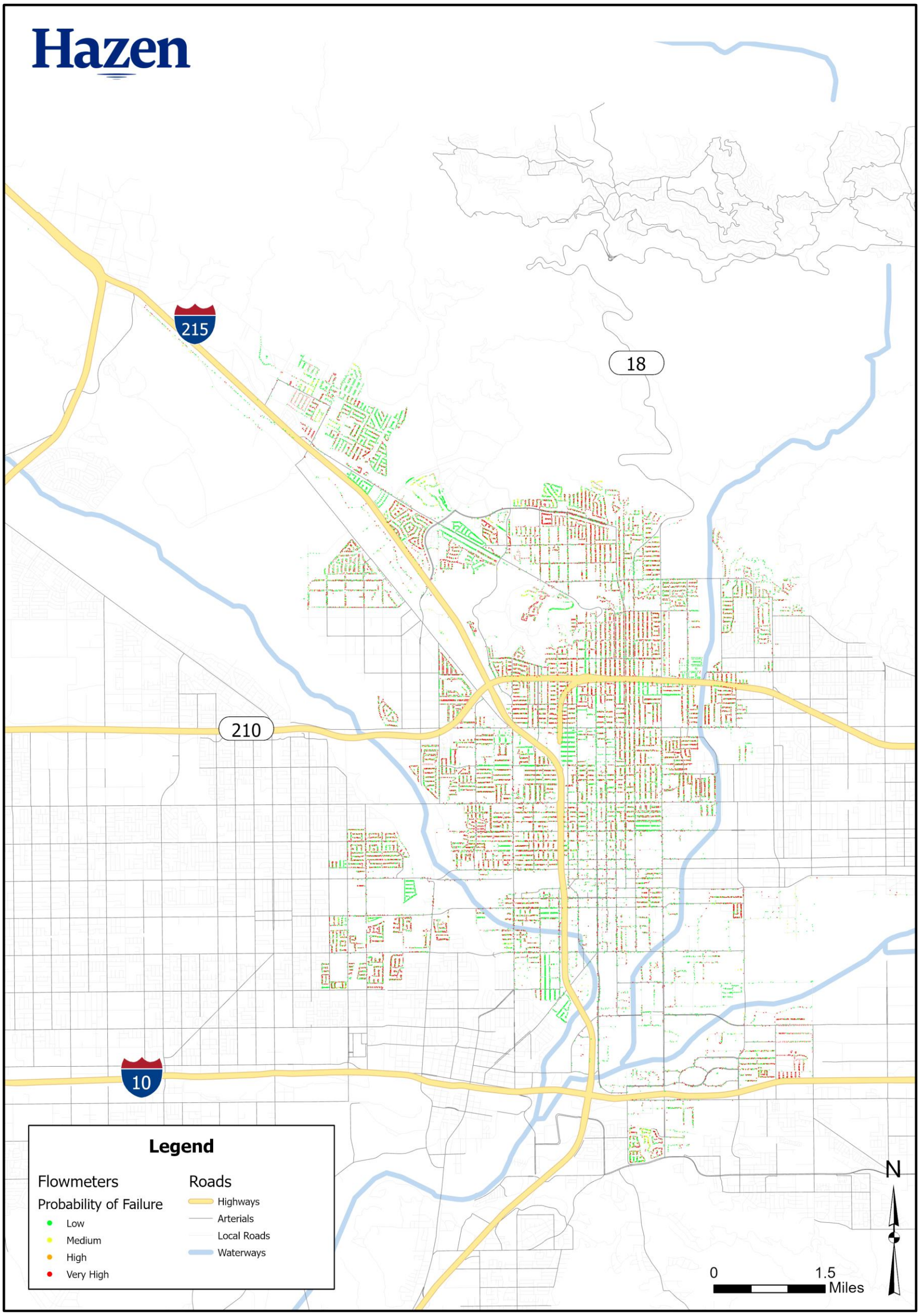


Figure 12-6: Flowmeters Probability of Failure Results

12.2.2.1.6 Hydrants

Table 12-11 summarizes the PoF results for the Hydrants by showing the number and percentages of hydrants falling under each PoF level. The PoF thresholds shown in Table 12-11 are used for ranking the PoF scores and Figure 12-7 shows a color-coded map presenting the hydrants within each PoF level.

Table 12-11: Hydrants Probability of Failure Results Summary

PoF Level	PoF Score	Count	Percentage (%)
Very High	>4.99	2,118	39
High	>4	408	8
Medium	>3	687	13
Low	≤3	2,189	41

The obtained result shows the majority of hydrants have high (8%) and very high (39%) PoF score and are scattered throughout the service area with higher density in central parts.

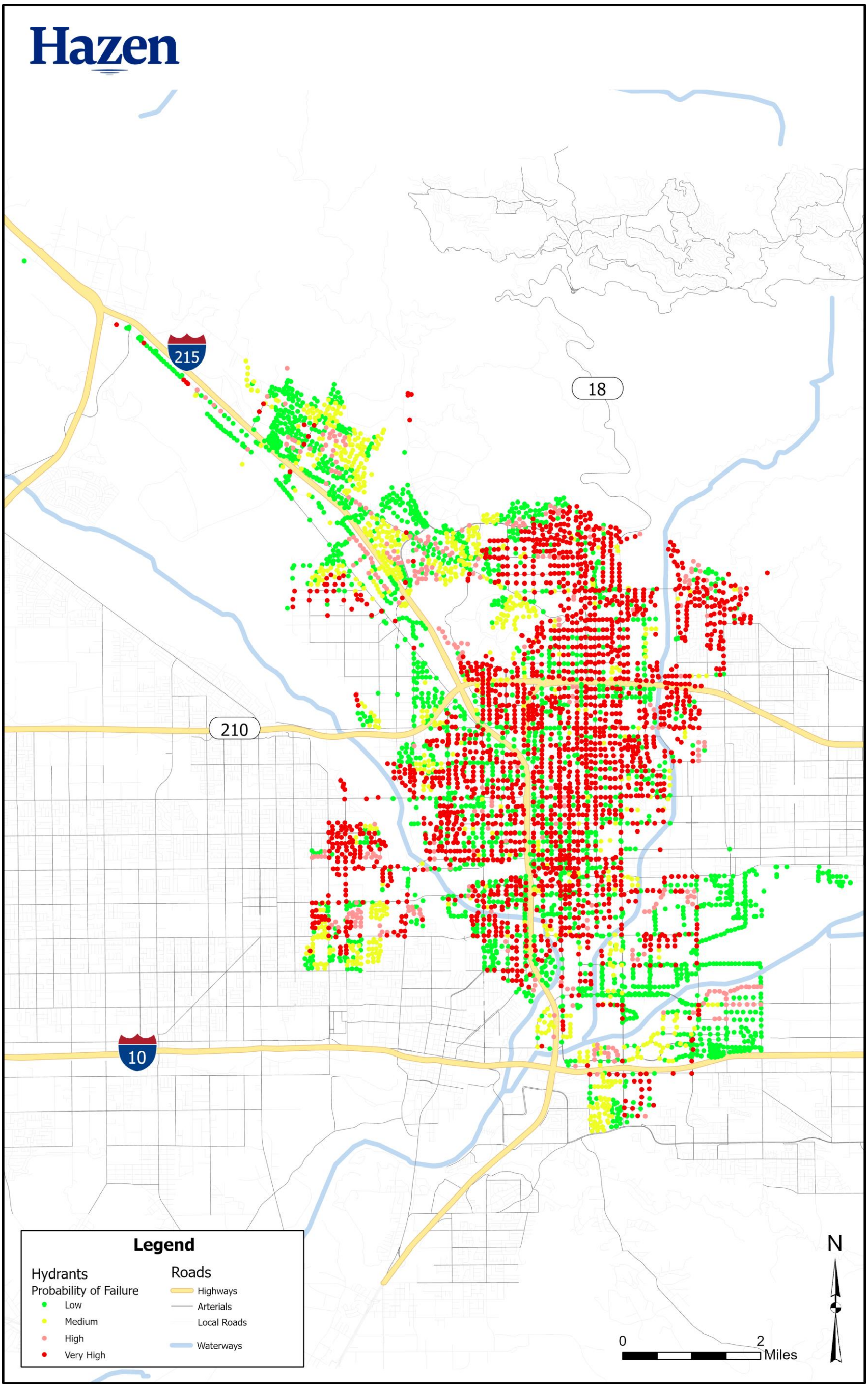


Figure 12-7: Hydrants Probability of Failure Results

12.2.2.2 CoF Results

With the methodology established for pipeline CoF scoring, the pipes were scored under each criterion and then the scores were multiplied by the weighting associated with that criterion and added together to calculate a final CoF score for each pipe segment. Table 12-12 summarizes the CoF results by showing the length and percentages of pipe segments falling under each CoF scores and the assigned CoF level. Figure 12-8 also shows a map of the CoF results. As the results shows, 118 miles (17%) of the water pipeline has high level of CoF and they are mainly located around the central part of the service area towards the south. Also, the primary distribution lines are getting higher CoF scores due to higher flow rates.

Table 12-12: Water Pipes Consequence of Failure Results Summary

CoF Level	CoF score	Length (mi)	Length (%)
High	≥4	118	17
Medium	≥3	187	27
Low	<3	379	55

As the Horizontal non-pipe assets CoF estimation is either a constant or equal to the adjacent pipeline, the Horizontal non-pipe CoF results are not presented and only shown in the risk results section.

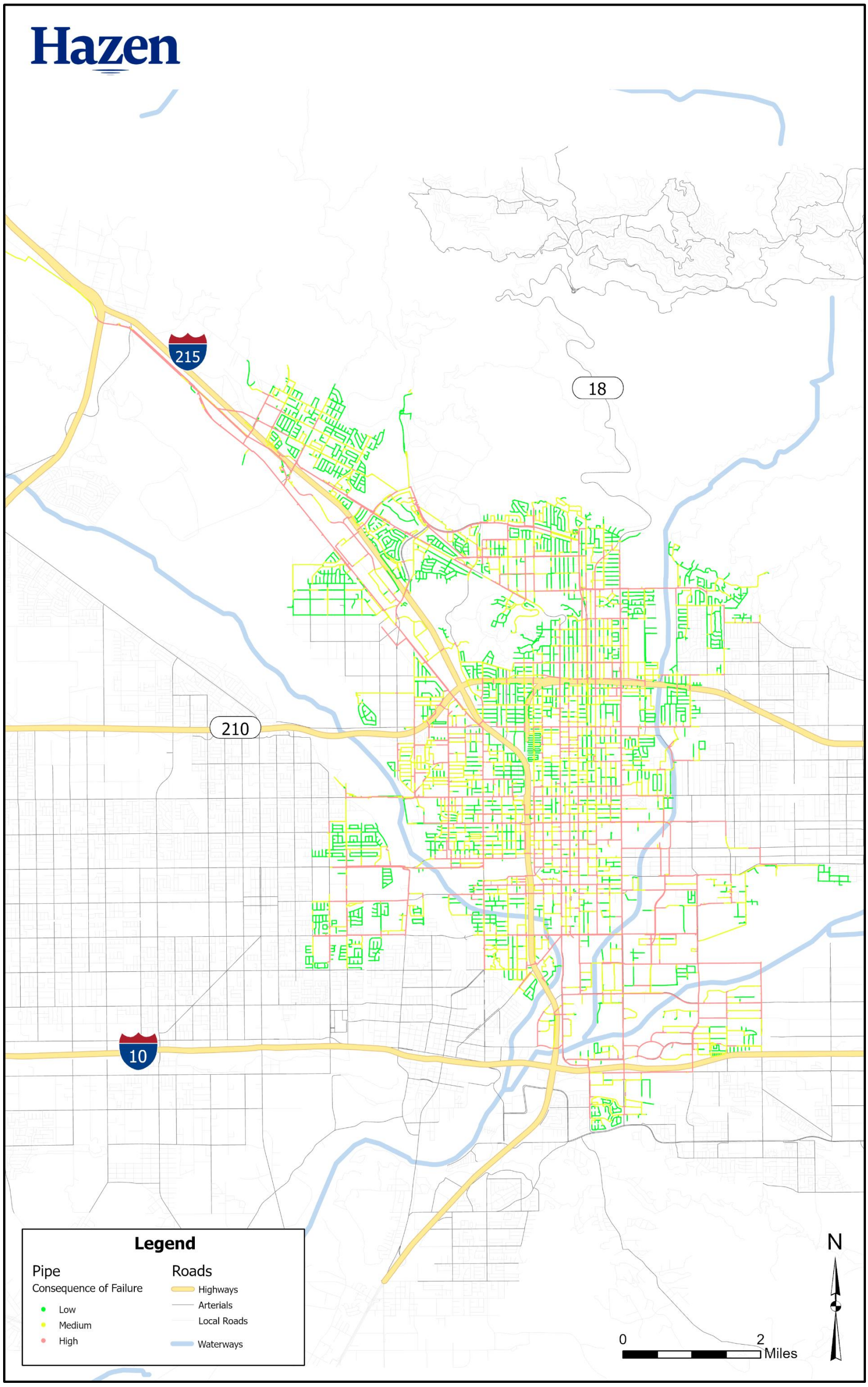


Figure 12-8: Water Pipeline Consequence of Failure Results

12.2.2.3 Risk Results

The results of risk assessment for pipelines as well as other non-pipe assets such as valves and hydrants are provided in this section individually. Similar to Facilities' assets, the PoF and CoF scores were multiplied to calculate risk scores. The risk scores range from 0 to 10 with a higher score representing a higher risk indicating that the asset has both high probability and high consequence of failure.

12.2.2.3.1 Pipelines

Table 12-13 summarizes the risk results for pipelines by showing the length and percentages of pipe segments falling under each risk scores and the assigned risk level. As shown in Table 12-13, 19 miles (3%) of the pipelines have high level of risk, 306 miles (45%) of the pipeline has received a medium level of risk and they are mainly located at the northeast part of the service area, mostly driven by higher PoF scores.

Table 12-13: Pipeline Risk Results Summary

Risk Level	Risk Score (1-10)	Length (mi)	Length (%)
High	≥5	19	3
Medium	≥3	306	45
Low	<3	359	52

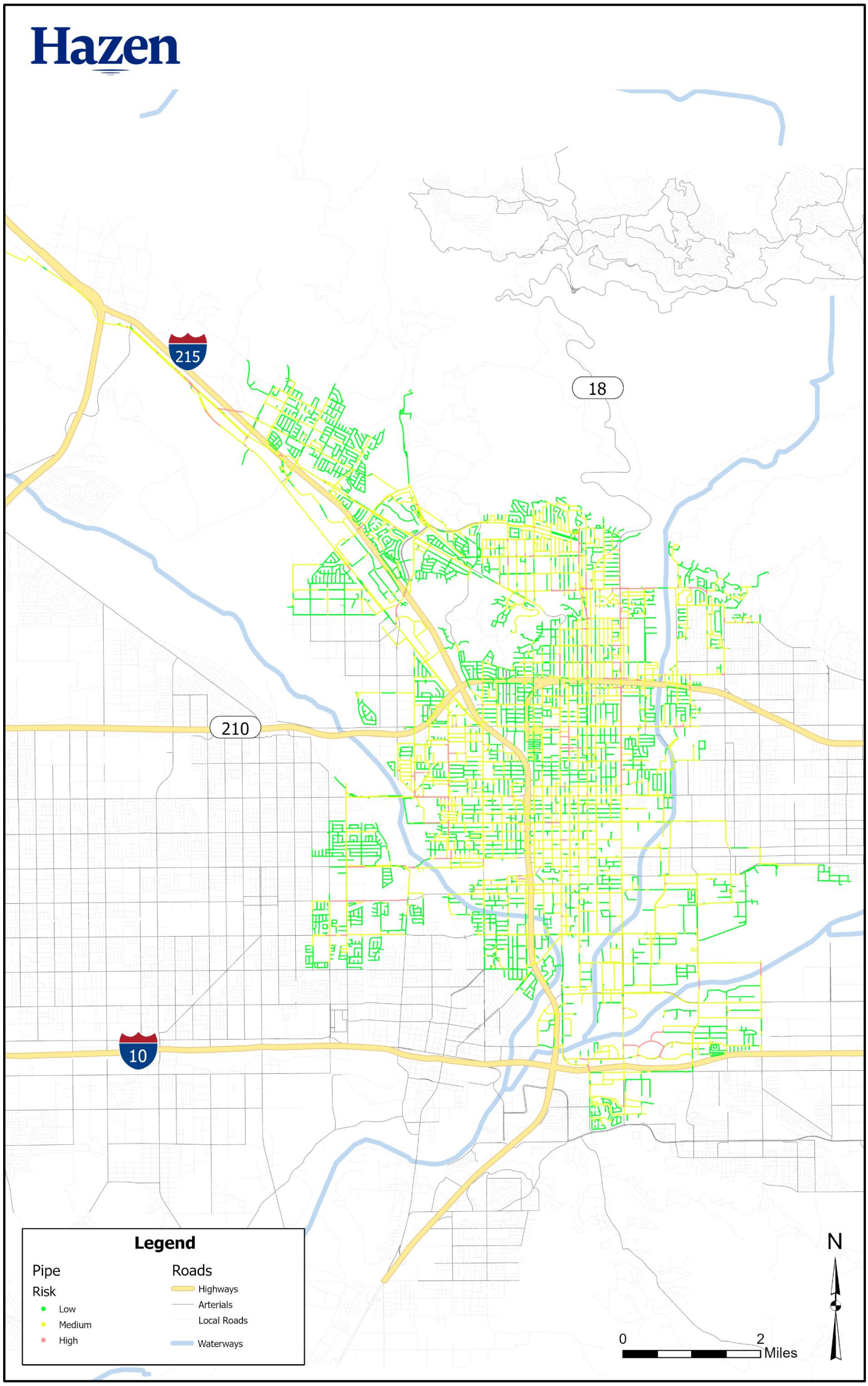


Figure 12-9: Pipeline Risk Results

12.2.2.3.2 System Valves

Table 12-14 summarizes the risk results for the system valves by showing the number and percentages of valves falling under each risk scores and the assigned risk level. Figure 12-10 also shows a map of risk results for the system valves. System valves are assigned lower risk scores mainly due to relatively lower CoF scores assigned from the adjacent pipelines. As is evident, 5,960 valves (34%) are at medium risk level and they are mainly located at central part of the service area, mainly driven by their high PoF levels.

Table 12-14: System Valve Risk Results Summary

Risk Level	Risk Score (1-10)	Count	Percentage (%)
High	>9.8	0	0
Medium	>4	5,960	34
Low	≤4	11,561	66

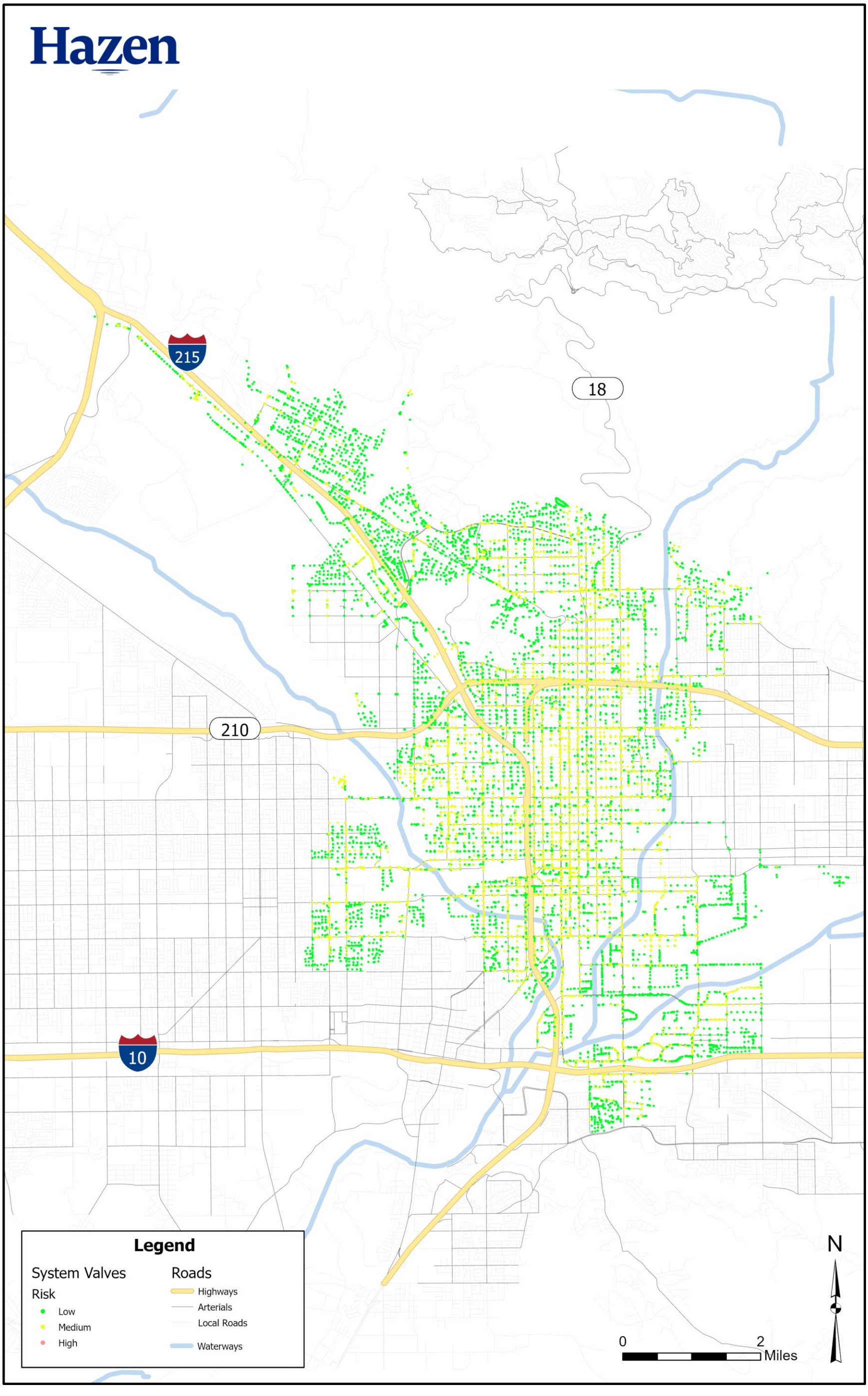


Figure 12-10: System Valve Risk Results

12.2.2.3.3 ACVs

Table 12-15 shows a summary of the risk results for the ACVs. Majority of the ACVs, (24 count, 47%) are categorized at high level of risk mainly due to their high CoF scores.

Table 12-15: Automatic Control Valve Risk Results Summary

Risk Level	Risk Score (1-10)	Count	Percentage (%)
High	>9.8	24	47
Medium	>4	23	45
Low	≤4	4	8

Table 12-16 lists the ACVs assessed through either Horizontal assets (in GIS layers) or Facilities' assets (in asset register) and detailed Horizontal assets assessment results. Figure 12-11 shows a map of ACVs with their associated risk levels.

Table 12-16: Automatic Control Valve's Risk Results

#	Object ID	Facility/ACV Name	PoF (1-5)	CoF (1-5)	Risk (1-10)
1	7	13th & Mt. Vernon	5	5	10
2	39	17th & Sierra Way ACV 1	Assessed in Asset Register		
3	82	17th & Sierra Way ACV 2	Assessed in Asset Register		
4	44	19th St ACV 1	Assessed in Asset Register		
5	43	19th St ACV 2	Assessed in Asset Register		
6	42	19th St ACV 3	Assessed in Asset Register		
7	40	19th St ACV 4	2	5	4
8	41	19th St ACV 5	2	5	4
9	34	25th & North E St.	Assessed in Asset Register		
10	26	59th & Mayfield ACV 1	3	5	6
11	76	59th & Mayfield ACV 2	3	5	6
12	38	Acacia	4	5	7
13	35	B. Warren Cocke ACV 1	3	5	5
14	36	B. Warren Cocke ACV 2	3	5	5
15	54	Baseline & California	Assessed in Asset Register		
16	3	Berkeley ACV	4	5	8
17	66	Beverly & Edgehill	1	5	2
18	4	Bond St ACV 1	5	5	10
19	8	Bond St ACV 2	5	5	10
20	9	Bond St ACV 3	5	5	10
21	5	Cajon & Penn ACV	5	5	10
22	45	Cajon ACV 1	4	5	9
23	46	Cajon ACV 2	4	5	9
24	47	Cajon ACV 3	Assessed in Asset Register		

#	Object ID	Facility/ACV Name	PoF (1-5)	CoF (1-5)	Risk (1-10)
25	24	Cajon ACV 4	3	5	6
26	25	Clevenger ACV	2	5	5
27	75	College Booster	2	5	5
28	71	College Reservoir	5	5	10
29	74	David's Way	5	5	10
30	21	DC Reservoir ACV	5	5	10
31	55	Del Rosa 2 ACV	Assessed in Asset Register		
32	60	Devore ACV 1	5	5	10
33	61	Devore ACV 2	5	5	10
34	85	Devore ACV 4	Assessed in Asset Register		
35	2	Echo ACV	5	5	10
36	72	EPA Well 3	4	5	8
37	11	Eureka ACV	5	5	10
38	15	GFR North 1	3	5	5
39	20	GFR North 2	3	5	5
40	27	GFR South 1	3	5	5
41	53	GFR South 2	3	5	5
42	31	Gilbert St ACV 1	Assessed in Asset Register		
43	23	Harrison ACV	5	5	10
44	37	Harrison ACV	2	5	3
45	18	Highland & D ACV	5	5	10
46	6	Industrial ACV 1	5	5	10
47	12	Industrial ACV 2	5	5	10
48	16	Intertie 1 W/Rialto Municipal Water	Assessed in Asset Register		
49	17	Intertie 2 W/Rialto Municipal Water	Assessed in Asset Register		
50	10	Intertie W/Colton Municipal Water	Assessed in Asset Register		
51	70	Irvington	5	5	10
52	67	Lakewood 1	2	5	3
53	68	Lakewood 2	2	5	3
54	78	Magnolia/Meyers ACV 1	4	5	9
55	84	Magnolia/Meyers ACV 2	Assessed in Asset Register		
56	58	Melvin ACV 1	3	5	6
57	79	Melvin ACV 2	3	5	6
58	83	Newmark	2	5	4
59	1	Norman ACV 1	5	5	10
60	13	Norman ACV 2	5	5	10
61	14	Norman ACV 3	5	5	10
62	28	Northpark ACV	5	5	10
63	29	Ogden ACV 1	Assessed in Asset Register		
64	30	Ogden ACV 2	Assessed in Asset Register		
65	80	Ogden ACV 3	Assessed in Asset Register		

#	Object ID	Facility/ACV Name	PoF (1-5)	CoF (1-5)	Risk (1-10)
66	81	Ogden ACV 4	Assessed in Asset Register		
67	22	Ohio	5	5	10
68	52	Palm ACV 1	Assessed in Asset Register		
69	49	Palm ACV 2	Assessed in Asset Register		
70	50	Palm ACV 3 – Palm Powerfail ACV	Assessed in Asset Register		
71	48	Palm ACV 4	Assessed in Asset Register		
72	51	Palm ACV 5	Assessed in Asset Register		
73	59	Perimeter ACV	4	5	9
74	63	Sycamore ACV 1	Assessed in Asset Register		
75	64	Sycamore ACV 2	Assessed in Asset Register		
76	65	Sycamore ACV 3	Assessed in Asset Register		
77	19	Valencia ACV	5	5	10
78	73	Waterman	5	5	10

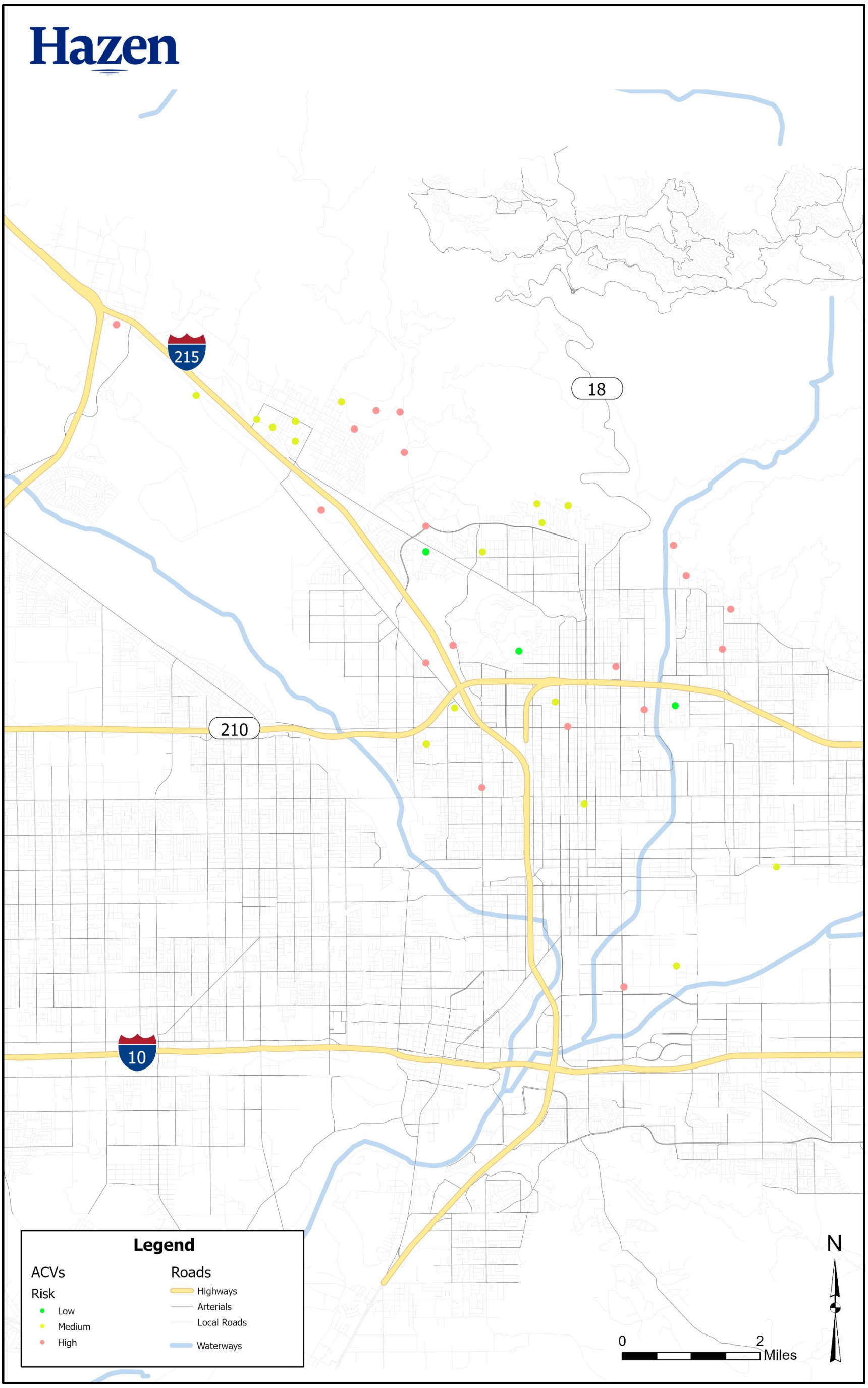


Figure 12-11: Automatic Control Valve Risk Results

12.2.2.3.4 System Control Valves

Table 12-17 shows a summary of the risk results for the system control valves. System control valves are receiving lower risk scores mainly due to low CoF scores assigned to them from the adjacent pipelines. The results show that 608 count (33%) of the system control valves have medium risk scores.

Table 12-17: System Control Valve Risk Results Summary

Risk Level	Risk Score (1-10)	Count	Percentage (%)
High	>9.8	0	0
Medium	>4	608	33
Low	≤4	1,221	67

Figure 12-12 shows a map of risk levels for system control valves.

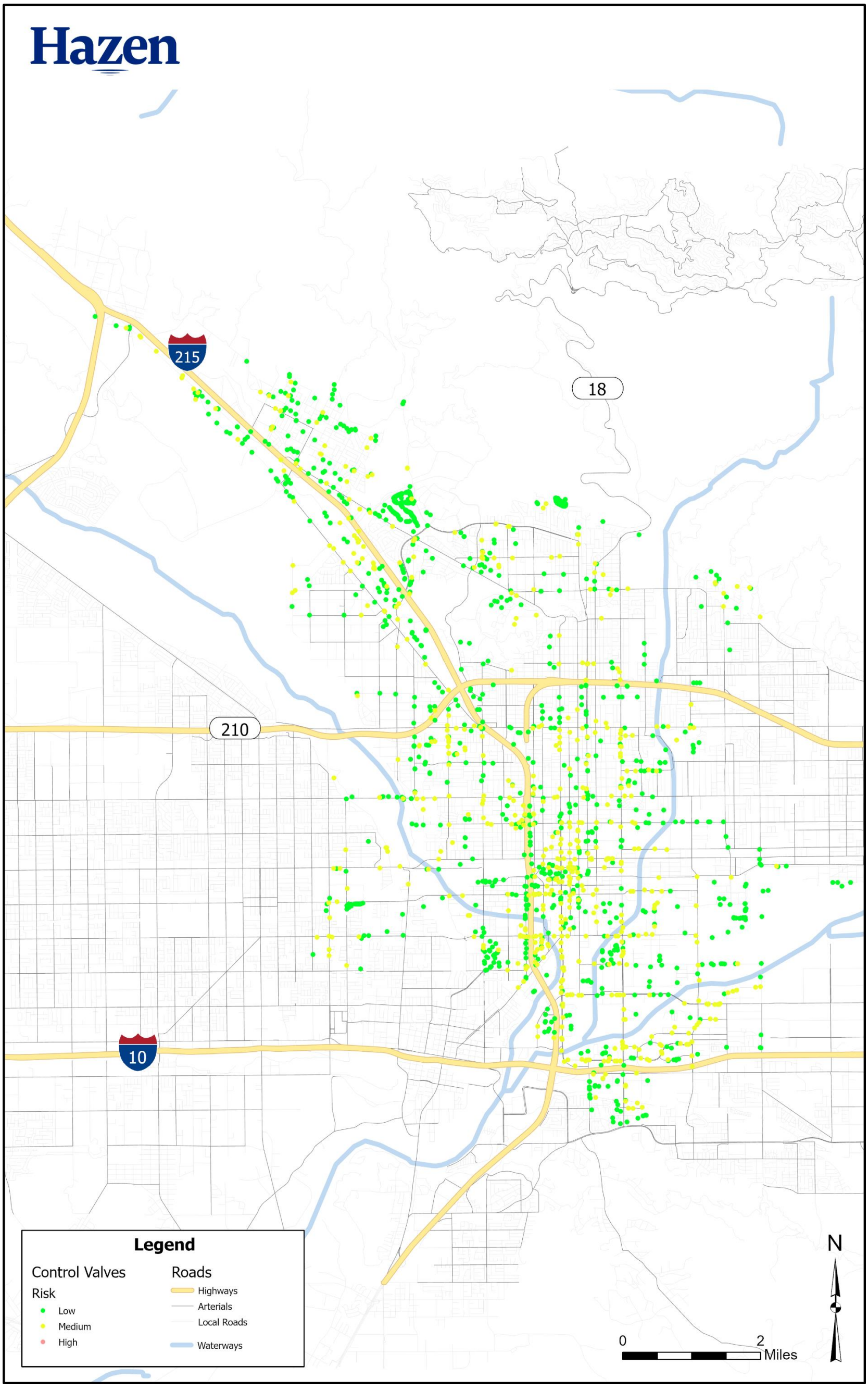


Figure 12-12: System Control Valve Risk Results

12.2.2.3.5 Flowmeters

Table 12-18 shows a summary of the risk results for the flowmeters. Flowmeters are receiving lower risk scores mainly due to lower CoF score assigned to them. The results show that 19,822 count (45%) of the flowmeters have medium risk scores.

Table 12-18: Flowmeters Risk Results Summary

Risk Level	Risk Score (1-10)	Type	Count	Percentage (%)
High	>9.8	Consumption	0	0
Medium	>4	Consumption	19,822	45
Low	≤4	Consumption	23,895	55

Figure 12-13 shows a map of risk levels for the flowmeters. Flowmeters with medium level of risk are located all around the service area with more density on the northwest part of it.

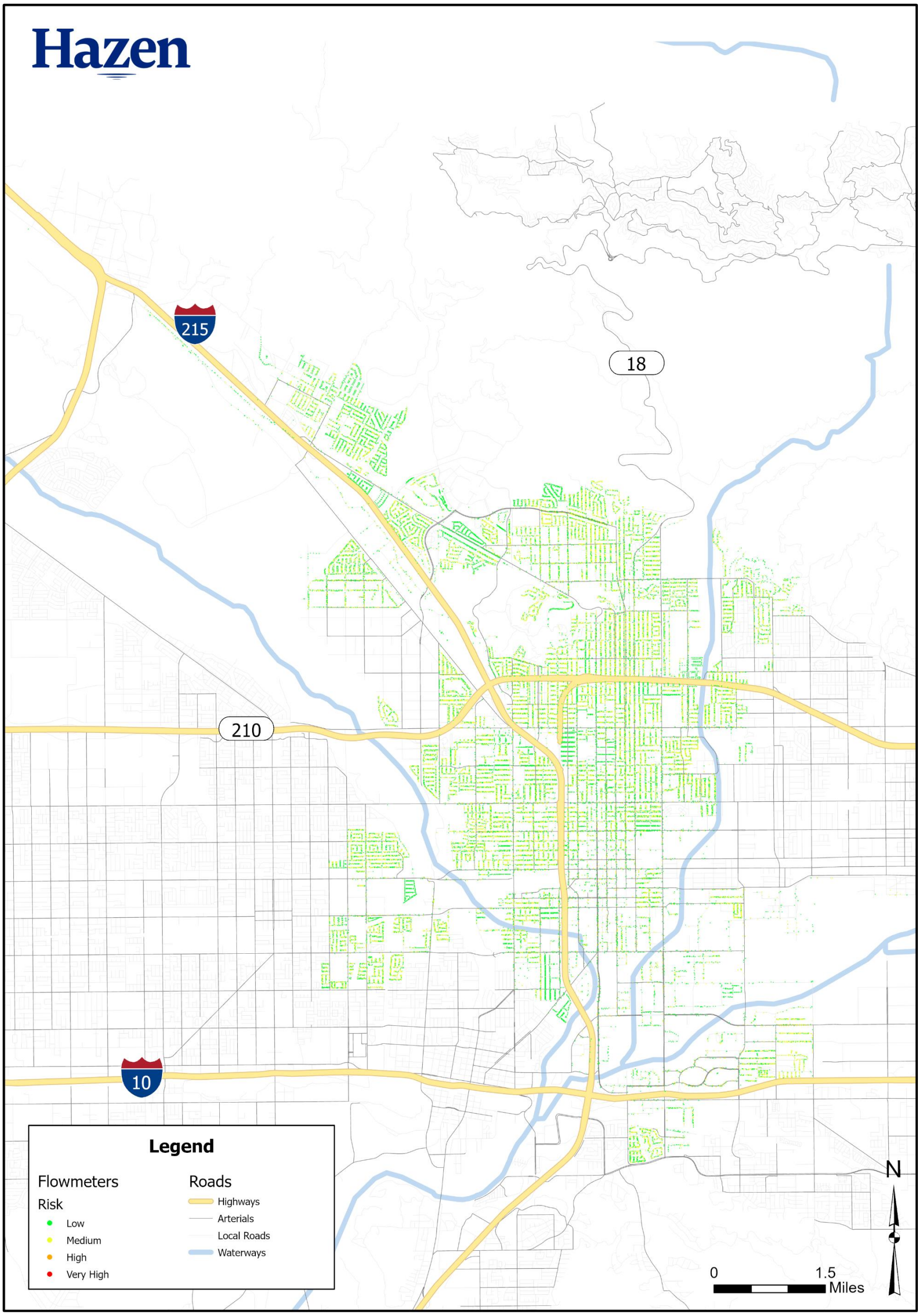


Figure 12-13: Flowmeter Risk Results

12.2.2.3.6 Hydrants

Table 12-19 shows a summary of the risk results for the hydrants. Hydrants are getting relatively higher risk scores due to their relatively high CoF scores. The results show that 2,118 count (39%) of them are at high level of CoF.

Table 12-19: Hydrants Risk Results Summary

Risk Level	Risk Score (1-10)	Count	Percentage (%)
High	>9.8	2,118	39
Medium	>4	2,581	48
Low	≤4	708	13

Figure 12-14 also shows a map of risk results for the hydrants. The hydrants with high risk scores are scattered throughout the service area with a higher density in areas with older assets.

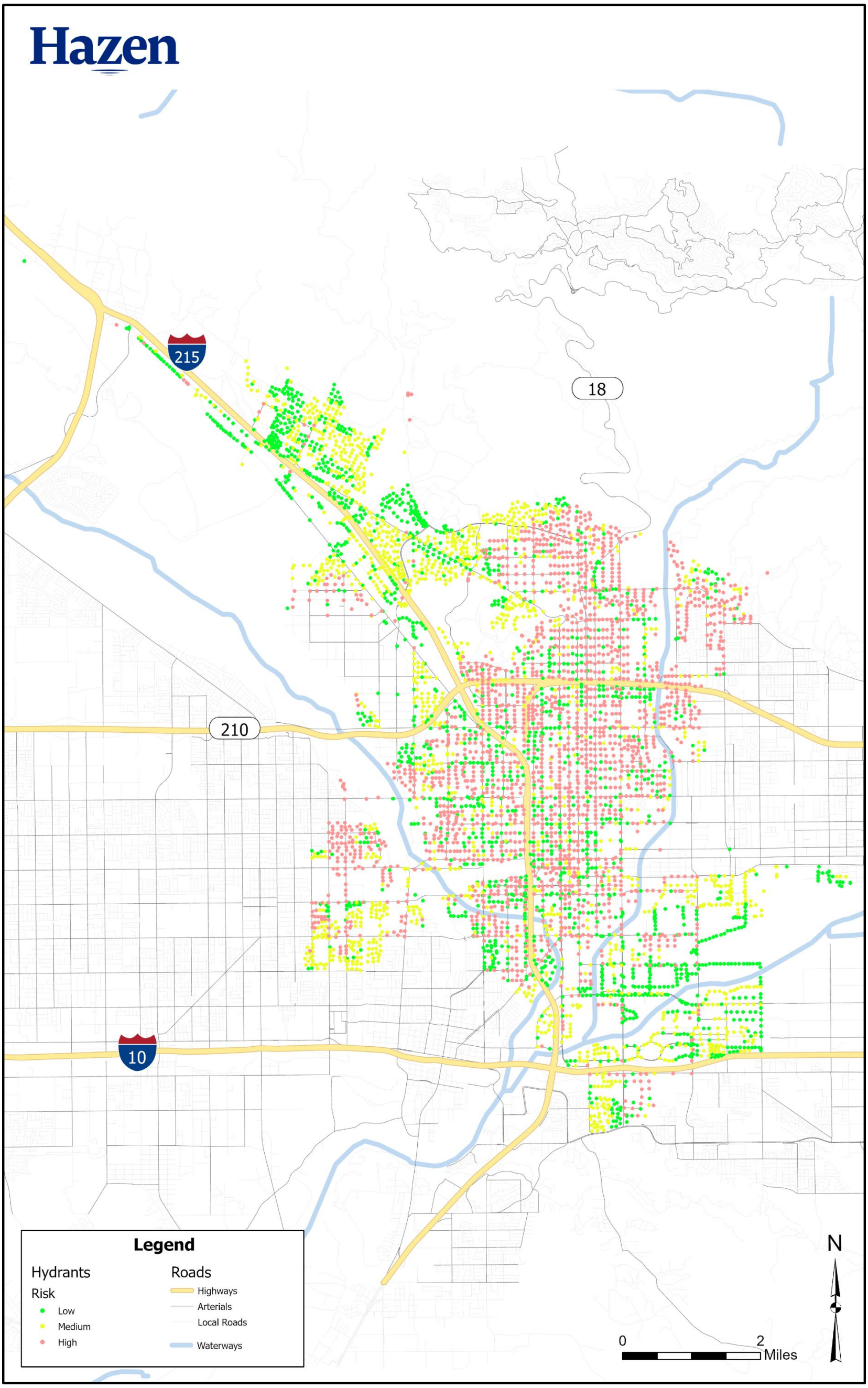


Figure 12-14: Hydrants Risk Results

12.3 Remaining Useful Life Assessment

To project future R&R needs, it is important to estimate the RUL of the Department Horizontal assets. To estimate the RULs, Hazen used the nominal useful lives assumed for the pipelines as shown in Table 12-3. For Horizontal non-pipe assets, similar to what was discussed in section 2.2.3, the customized useful lives shown in Table 12-4 were used. The result of the pipeline RUL is presented in Figure 12-15. As is evident in this figure, 90 miles of pipes (13%) have less than 5 years of RUL and, 27 miles of pipes (3%) are coming up for replacement in 5 to 10 years.

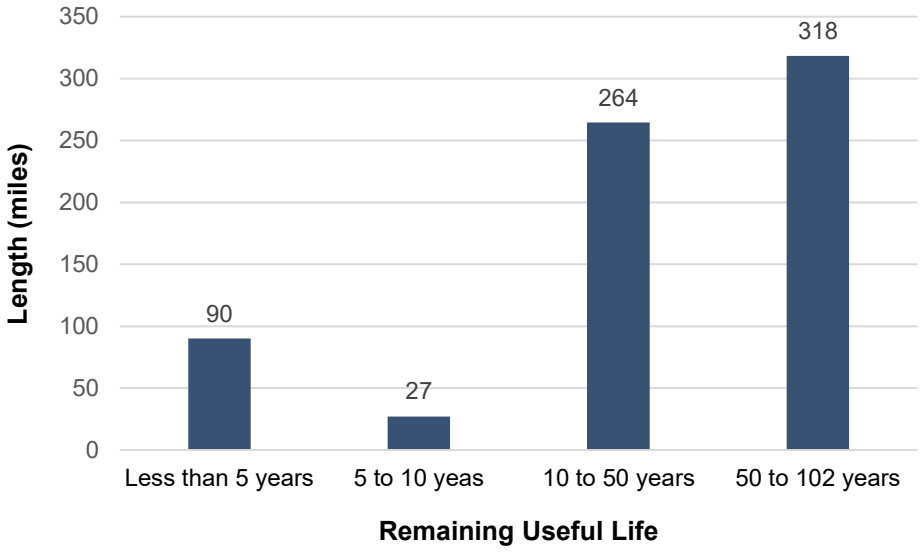


Figure 12-15: Remaining Useful Life of Water Pipes

The results of RUL analysis for Horizontal non-pipe assets that have less than 10 years of RUL are the following.

- 49% of system control valves
- 67% of ACVs
- 37% of Control valves
- 94% of flowmeters
- 49% of hydrants have less than 10 years of RUL.

A more in-depth analysis of the RUL results, presented in Figure 12-16, shows the count of assets coming for replacement in next 5 years in comparison to the count of asset coming for replacement in 5 to 10 years. For example, 2,640 hydrants have less than 10 years of RUL, with 2,307 of them having a RUL of less than 5 years. Regarding the large number of flowmeters compared to other Horizontal non-pipe assets, they are removed from the presented plot in Figure 12-16. The obtained result on the flowmeters shows 20,417 flowmeters have less than 5 years of RUL and 6,655 count of them have 5-10 years of RUL.

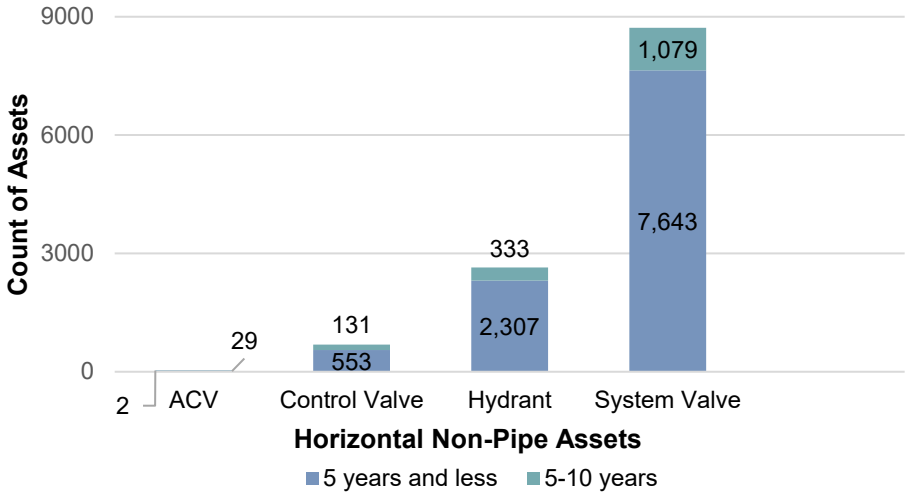


Figure 12-16: Remaining Useful Life Results for the Horizontal Non-Pipe Assets

13. Summary of Findings

The subsequent sections summarize the results of the condition and risk assessment for the Department's assets including the Facilities (assets within the fence-line of the facilities) and Horizontal assets (assets outside the fence-line of the facilities). Facilities' assets include all the assets related to the Booster Pump Stations (BPS), Wellhead Treatment Systems, Wells, Reservoirs, Interties, Hydro Electric Generation and ACVs inside the facility fence-lines. Horizontal assets include assets such as water main pipes, valves, meters, hydrants and ACVs outside the facility fence-lines.

13.1 Facilities Condition Assessment

Hazen performed a condition assessment of the assets located at seven sites (Melvin Ave, Newmark, Waterman Ave, 19th St, 17th St Plants (GAC system not included), EPA Well #6, and EPA Well #7 that were selected based on their high level of risk. Level 1 (visual) condition assessment was conducted to assess the condition of mechanical, electrical, instrumentation and control, HVAC, civil, and structural assets within these facilities. This assessment shows, out of the 1,105 assets being assessed, 532 assets (48%) were in good condition; 514 assets (47%) were in average condition; 37 assets (3%) were deemed to be in fair condition; and 17 assets (2%) were found to be in poor condition. It also shows Waterman Ave GAC System has the greatest number of assets (6 assets) in fair and poor condition and Newmark-Well has the most assets in poor condition (3 assets).

13.2 Facilities Remaining Useful Life Assessment

The RUL of the assessed assets is estimated based on its condition and for the assets not included in the field condition assessment, an age-based approach was applied. The results show that out of 3,106 assets inventoried for the facilities, 1,472 assets are approaching the end of their useful lives within the next ten years. It also shows 173 assets from the facilities included in the condition assessment are coming up for replacement in the next ten years with 17 assets in poor, 32 in fair, 123 in average, and 1 in good condition. A large number of these 173 assets are related to the GAC systems in the Newmark and Waterman plants followed by the Newmark well and reservoir.

13.3 Facilities Risk Assessment

Risk assessment is performed based on the probability of failure (PoF) and consequence of failure (CoF). PoF is estimated based on the condition of assets, if available, or the age of the assets. CoF is the product of facility-level and asset-level CoF and is estimated at both levels.

PoF results show 36% of the assets (1,132 count) are at very high PoF, and 6% of them (189 Count) are at high PoF. However, only 2% of the assets at very high PoF level have undergone the field condition assessment. The PoF results showing the high level of PoF are more reliable compared to the very high PoF level, as 20% of the high level PoF estimations are based on condition scores rather than age. Expanding the condition assessment to all the facilities (e.g., using asset photos to assign condition scores) can significantly improve the level of confidence in estimating the PoF results.

CoF results show 8% of the assets (243 count) are associated with very high CoF and 56% of the assets (1,750 count) are associated with high CoF. It also shows all the assets with very high final CoF are made up of critical assets serving critical facilities.

The risk results indicate that the majority of the Facilities' assets have medium and low risk scores. However, in total 1,341 assets (43%) are categorized as assets with high and very high risk of failure. Out of these 1,341 assets recommended for immediate attention, 787 assets are recommended for replacement as their conditions have been verified during the field condition assessment. For the rest of the assets (554 assets), it is recommended that the Department verify their condition in the field prior to R&R.

13.4 Horizontal Assets Risk Result

Similar to the Facilities' assets risk assessment, Horizontal assets risk assessment is performed based on PoF and CoF assessment. Horizontal assets risk assessment covers assessment of water pipes and non-pipe assets (system valves, system control valves, flowmeters, hydrants and ACVs) installed outside of the facility fence-line.

The pipeline PoF results show 83 miles (12%) of the pipelines are at high level of PoF which are mainly located at northeastern part of the service area. The results of PoF assessment for the Horizontal non-pipe assets show that 47% of system valves, 56% of ACVs, 29% of system control valves, 71% of flowmeters, and 47% of hydrants have high or very high PoF scores.

The pipeline CoF results show 118 miles (17%) of water pipeline has high CoF and they are mainly located at central part of the service area towards south. For the Horizontal non-pipe assets, either a constant CoF or the adjacent pipeline CoF score is considered to estimate risk score.

The pipeline risk results show 19 miles (3%) have high level of risk. Also, 306 miles (45%) of the pipelines have received a medium level of risk and they are mainly in the northeast part of the service area, mainly due to their high PoF scores driven by age of the assets.

For the system valves and system control valves, lower levels of risk are estimated due to lower levels of the adjacent pipeline CoF. 5,960 count (34%) system valves and 608 count (33%) system control valves, are assigned medium risk level. ACVs, due to their importance to the system have high risk scores (24 count, 47% of ACVs have high risk score).

Flowmeters are assigned lower risk scores mainly due to their lower assigned CoF scores. 33,797 count (71%) of the flowmeters have medium risk scores. Hydrants are getting relatively higher risk scores as they are considered to have a high CoF score. 2,118 count (39%) of them are at high level of Risk.

13.5 Horizontal Assets Remaining Useful Life Result

The results of RUL assessment for pipelines show 16% of the pipelines will pass their useful lives in less than 10 years. The results of RUL analysis for Horizontal non-pipe assets show 49% of the system control valves, 61% of ACVs, 37% of Control valves, 57% of flowmeters, and 49% of hydrants have less than 10 years of RUL.

13.6 Summary of All Assets Risk Results

Table 13-1 shows a summary of the risk scores for all the vertical and horizontal assets included in the assessment. The results are shown for assets that underwent field condition assessment as well as assets that were included in the desktop risk assessment. For each type of asset, the table shows the distribution of risk scores ranging from 1 to 10 color-coded by their levels of risk. For example, for Facilities' assets, about 7% of the assets are categorized as very high risk and in need of either further assessment of renewal. On the other hand, the risk scores associated with pipelines are slightly lower as they have a longer useful life, with only about 4% of the pipelines categorized as high risk. The high percentage of high risk ACVs and Hydrants is attributed to their relatively high CoF and age-based PoF scores, which makes them a good candidate for a more detailed condition assessment. The risk scores associated with the Facilities' assets are not entirely based on the results of field condition assessment as only about 30% of the facilities underwent a field condition assessment. Therefore, it is recommended that the Department focus the R&R activities on the high and very high risk assets that have condition scores. For Facilities' assets with no condition scores that are categorized as high and very high-risk, the recommendation would be a field condition assessment prior to any R&R activities.

Table 13-1: Percentages of Assets under Risk Scores

Orientation	Type	Risk Score (1-10)									
		1	2	3	4	5	6	7	8	9	10
		Percentages of Assets									
Vertical	Facilities	6	13	22	17	20	12	5	5	1	<1
Horizontal	Pipelines	7	45	32	13	3	<1				
	System Valves	7	20	20	19	11	10	6	4	2	<1
	ACVs		1	6	10	20	2	4	4	6	47
	System Control Valves	12	25	17	14	12	10	5	4	2	<1
	Flowmeters	28	21	9	7	3	32				
	Hydrants		13		19		18		11		39
	Low level of risk										
	Medium level of risk										
	High level of risk										
	Very high level of risk										

To ensure accurate prioritization of future R&R projects, it is recommended that risk and condition assessments be conducted on a regular basis, preferably every 3 to 5 years with the focus on assets with higher consequence of failure. The risk assessment methodology developed by Hazen provides the Department with the tools and a foundation from which future prioritization efforts can be built upon.

14. Capital Improvement Plan

The purpose of this section is to document projects identified for the Department's Capital Improvement Program (CIP) based on analysis and evaluations from the master planning effort, particularly evaluations and findings from the following:

- System Evaluation (Sections 9 through 10): Presents an evaluation of the current water system and its capability to meet current and future demands. The system evaluation included water supply analysis, storage analysis, pumping analysis, pressure zone supply, distribution system pressure, system velocities, and fire flow availability.
- Condition and Risk Assessment (Sections 11 through 13): Documents the work conducted as part of condition and risk assessment for Facilities' assets (assets within the fence-line of facilities, or Vertical assets) as well as Horizontal assets (assets outside the fence-line of the facilities). The findings and recommendations from the condition assessment are incorporated into the CIP.
- Input and direction from Department staff.

14.1 Project Type

Master Plan identified projects have been divided into two categories:

- **Replacement / Rehabilitation of System Assets** – Projects that include either replacement of existing assets, or rehabilitation of existing assets.
- **New System Assets** – Projects that create a new facility or asset that isn't replacing something existing. Examples include new reservoirs, new wells, new pump stations, and new pipelines that are not replacing an existing pipeline.

14.2 Project Priority

A prioritization was set for each project in the CIP. Projects were assigned a 1, 2, or 3 under the priority attribute. Each number corresponds to a general prioritization for when the project should be implemented. However, SBMWD could choose to implement projects in any order based on other factors such as funding. Priority 1 projects should be implemented first and planned for construction after current and planned CIP. Projects in priorities number 2 and 3 can be pursued if loan or grant funding is available or if the project need/priority changes.

14.3 Project Naming Convention

Each project is categorized with a CIP-ID. The CIP-ID consists of one abbreviation and a number. The abbreviation identifies the project type. Table 14-1 summarizes the CIP naming convention.

Table 14-1: CIP Naming Convention

CIP ID	System
RR-##	Replacement / Rehab Project
NA-##	New System Asset Project

14.4 Cost Basis

The opinion of probable costs has been prepared based on master plan level project definition. Because of the level of scope development at this stage, the opinion is an "order of magnitude" estimate. An order of magnitude estimate is one that is made without detailed engineering data and uses techniques such as cost curves, unitized pricing, and scaling factors from similar projects.

Based on the level of scope development at the master plan level, the opinion of project costs presented herein are Class 5 estimates as defined by the Association for the Advancement of Cost Engineering International (AACE International) "Recommended Practice No. 56R-08 – Cost Estimate Classification System as Applied for the Building and General Construction Industries." These opinions of probable costs have been prepared for guidance in project evaluation and implementation. More detailed estimates are typically developed as the project scopes are better defined and the design process moves forward.

The project costs include the following markups to the construction cost:

- Construction Contingency: 30%
- Engineering Design Services: 10%
- Engineering Services During Construction (ESDC): 3%
- Construction Management Services: 12%
- Admin/Legal: 2%
- To account for change orders: 10%

The costs are based on 2023 dollars and do not include escalation for inflation or potential increases in the cost of materials.

An additional 10% contingency is included in the final costs to account for change orders. This practice has been historically adopted by the Department to ensure an additional level of conservatism.

14.5 Recommended Projects Based on Condition and Risk Assessment

Sections 11 through 13 document the work conducted as part of condition and risk assessment for Facilities' assets (assets within the fence-line of facilities, or Vertical Assets) as well as Horizontal Assets (assets outside the fence-line of the facilities). Findings were grouped into rehabilitation and replacement (R&R). R&R projects included in this CIP are limited to a 20-year planning period (year 2040).

14.5.1 Vertical Assets

This section describes resultant projects from the condition and risk assessment of the Department's vertical assets. A summary of priority and cost estimates for each project is provided in Table 14-2 with more detailed cost sheets included at the end of Section 14.8.

Table 14-2: Vertical Asset R&R Projects

CIP ID	Project Name	Project Description	Project Cost	Priority
RR-10	16th St Booster Pump Station and Well Improvements	This project includes replacing the following components at 17th & Sierra Way St - 16th St BPS. • Booster Pump • Soft Start - 16th St Booster This project also includes replacing the following components at 17th & Sierra Way St - 16th St Well. • Pump • Soft Start - 16th Well The 2022 Field Condition Assessment found these items in need of replacement.	$910,000	1
RR-31	Melvin Ave - BPS (#1-5) Vault Lid Replacement	This project includes replacing vault lids at Melvin Ave - BPS (#1-5). The existing vault lid has no springs and warrants replacement to mitigate risk of injury to staff.	$40,000	1
RR-38	Electric Dr Reservoir Electrical and Mechanical Improvements	This project includes replacing the electrical and mechanical components at Electric Dr - Reservoir. The 2022 Field Condition Assessment found these items in need of replacement.	$840,000	1
RR-1	Backup Power Perris Hill Reservoir	This project includes implementation of a new backup generator at the Perris Hill Reservoir Site. The reservoir site includes radio infrastructure that is critical and must be online in the event of an emergency/disaster.	$450,000	1
RR-12	17th St Booster Pump Station Improvements	This project includes replacing the following components at 17th & Sierra Way St - 17th St BPS. • Main Control Panel 1 at BPS (17th St) • Soft Start - 17th Booster The 2022 Field Condition Assessment found these items in need of replacement.	$150,000	2
RR-13	17th St Well Upgrades	This project includes replacing the following components at 17th & Sierra Way St - 17th St Well. • Piping Assembly 17th St Well • Pump in Vault • Soft Start - 17th Well The 2022 Field Condition Assessment found these items in need of replacement.	$910,000	2

CIP ID	Project Name	Project Description	Project Cost	Priority
RR-14	17th & Sierra Way Plant - Common Upgrades	This project includes replacing the following components at 17th & Sierra Way St - Common. • Pump Building - 17th and 16th Pump Stations • Paving The 2022 Field Condition Assessment found these items in need of replacement.	$1,000,000	2
RR-15	17th & Sierra Way Plant Reservoir Improvements	This project includes replacing the following components at 17th & Sierra Way St - Reservoir. • Flow Transmitter/Meter (Between Carbon System and Booster Pump) • Piping - Reservoir Outlet Valve Vault The 2022 Field Condition Assessment found these items in need of replacement.	$80,000	2
RR-16	19th St Plant Booster Pump Station Improvements	This project includes replacing the following components at 19th St - BPS (#1-5). • Chlorine Mixing Box • Pump #4 • Suction Pump - End Suction Pump • Chlorine Injection Pump • Power Panel 120/240V The 2022 Field Condition Assessment found these items in need of replacement.	$1,010,000	2
RR-17	19th St Plant - Common Upgrades	This project includes replacing the following components at 19th St - Common. • Air Release Valve By the Building • Airvac Valve Anti Siphon • Mini Power Center (Dry Type Xfmr W/ Power Pnl) • Security Camera • Sump Pump • Vault - North West of the Building • Vault Flowmeter - North of the Building • Vessel Influent Flowmeter Vault - West of the South Vessels 24 In Valve • Vault lids (7) The 2022 Field Condition Assessment found these items in need of replacement.	$1,760,000	2
RR-18	19th St Plant GAC System Improvements	This project includes replacing the following components at 19th St - GAC System. • Backwash Piping Assembly ~1,000 LF The 2022 Field Condition Assessment found these items in need of replacement.	$140,000	2
RR-19	EPA Well 6 Upgrades	This project includes replacing the following components at EPA - Well #006. • Flowmeter • Motor Starter • PLC SCADA • Switchboard MSF • Well Pump & Motor The 2022 Field Condition Assessment found these items in need of replacement.	$1,710,000	2
RR-20	EPA Well 7 Upgrades	This project includes replacing the following components at EPA - Well #007. • Flowmeter	$140,000	2

CIP ID	Project Name	Project Description	Project Cost	Priority
		• Isolation Valve Vault • PLC SCADA • Pavement • Motor Starter The 2022 Field Condition Assessment found these items in need of replacement.		
RR-26	Sycamore Booster Pump Station (#3-4) Improvements	This project includes replacing the following components at Newmark - Sycamore BPS (#3-4). • Electrical Vault (South of Pumping Station) • Booster Pumps 3 & 4 Soft Starter Cabinet replacement with MCC The 2022 Field Condition Assessment found these items in need of replacement.	$330,000	2
RR-27	Newmark Well Upgrades	This project includes replacing the following components at Newmark Wells. • 120/240V Power Panel • Well House - Air Compressor • Well #3 - Pump • 120/240V Power Panel • Security Camera • Air Compressor Tank For Well #4 For Natural Gas Engine • Termination Cabinet By Well #3 • Motor Starter - Well #3 • Soft Starter - Well #4 The 2022 Field Condition Assessment found these items in need of replacement. Well #1 upgrades are not included since this well runs dry. Additionally, it is recommended that a new sanitary seal is implemented at Well #4 whenever it is being rehabbed.	$990,000	2
RR-25	Sycamore Booster Pump Station (#2) Improvements	This project includes replacing the following components at Newmark - Sycamore BPS (#2). • Pump House 2 Building • Air Release Valve Booster #2 • Flowmeter Vault - Sycamore BPS #2 The 2022 Field Condition Assessment found these items in need of replacement.	$990,000	2
RR-22	Newmark Plant - Common Upgrades	This project includes replacing the following components at Newmark - Common. • Control Building • Chlorine Gas Monitor • Irrigation Valve 1 Backwash Supply Line The 2022 Field Condition Assessment found these items in need of replacement.	$720,000	2
RR-23	Newmark Plant GAC System Improvements	This project includes replacing the following components at Newmark - GAC System. • Lighting - Vessel Area • Forty-two (42) Air Relief Valves • Pressure Transmitter Vessels The 2022 Field Condition Assessment found these items in need of replacement.	$600,000	2
RR-39	Lytle Creek Booster Pump Station Upgrade	This project includes complete facility replacement of the Lytle Creek Booster Pump Station.	$13,020,000	2

CIP ID	Project Name	Project Description	Project Cost	Priority
		The 2022 Field Condition Assessment found these items in need of replacement.		
RR-46	Mill & D St Reservoir Electrical and Mechanical Improvements	This project includes replacing the electrical and mechanical components at Mill & D St Reservoir. The 2022 Field Condition Assessment found these items in need of replacement.	$240,000	2
RR-28	Waterman Ave Booster Pump Station (#1,3,4) Mechanical Improvements	This project includes replacing the following mechanical components at Waterman Ave - BPS (#1, 3, 4). • Pump #1 • Pump #3 • Pump #4 The 2022 Field Condition Assessment found these items in need of replacement.	$930,000	2
RR-29	Waterman Ave Booster Pump Station (#2) Mechanical Improvements	This project includes replacing the following components at Waterman Ave - BPS #2. • Pump #2 - 10in inlet - 8 outlet The 2022 Field Condition Assessment found these items in need of replacement.	$150,000	2
RR-30	Waterman Ave Plant GAC System Upgrades	This project includes replacing the following components at Waterman Ave - GAC System. • Air Flowmeter Blower #1 • Blower #1 Starter • Blower #2 Starter • Chlorine Analyzer - 2 (Blower Chlorine Room) - SFC SC • Chlorine Analyzer - 3 (Blower Chlorine Room) - SFC SC • Chlorine Analyzer - 1 (Blower Chlorine Room) - Transmitter - SFC SC • Chlorine Analyzer - 1 (Blower Chlorine Room) - Transmitter - SFC SC • Control Panel PLC - Blower Room • Control Panel PLC - GAC Vessels (Blower Room) • Nine (9) Flowmeters • Two (2) Influent Flowmeters • Motor Control Center • Sixteen (16) Pressure Transmitter The 2022 Field Condition Assessment found these items in need of replacement.	$2,240,000	2
RR-32	Waterman Ave Well Upgrades	This project includes replacing the following components at Waterman Ave - Well. • Motor Starter (Soft Start) - Well Pump - ITT The 2022 Field Condition Assessment found these items in need of replacement.	$110,000	2
RR-5	Waterman Ave Waterman Booster Pump Station (#1,3,4) Electrical Improvements	This project includes replacing the following electrical components at Waterman Ave - BPS (#1, 3, 4). • Switchboard (Waterman BPS #1 & 3) • Switchboard (Waterman BPS #2 & 4) • Flowmeter (Waterman BP #1) • Flowmeter (Transmitter) (Waterman BP #3) • Flowmeter (Transmitter) (Waterman BP #4) The 2022 Field Condition Assessment found these items in need of replacement.	$130,000	2
RR-11	Waterman Ave Waterman Booster	This project includes replacing the following electrical components at Waterman Ave - BPS #2.	$120,000	2

CIP ID	Project Name	Project Description	Project Cost	Priority
	Pump Station (#2) Electrical Improvements	• Flowmeter (Transmitter) (Waterman BP #2) • Motor Starter - Soft Start (Waterman BP #2) The 2022 Field Condition Assessment found these items in need of replacement.		
RR-21	Melvin Ave Booster Pump Station Improvements	This project includes replacing the following components at Melvin Ave - BPS (#1-5). • Transmitter • Flow Transmitter • Pavement • Piping Flowmeter Vault Melvin BPS #1-5 The 2022 Field Condition Assessment found these items in need of replacement.	$80,000	3
RR-24	Newmark Plant Reservoir Upgrades	This project includes replacing the following components at Newmark - Reservoir. • Drain Isolation Valve - Reservoir #2 • Drain Isolation Valve - Reservoir #3 • Isolation Valve - Drain Vault Reservoir #4 The 2022 Field Condition Assessment found these items in need of replacement.	$110,000	3
RR-44	Devore Reservoir Electrical and Mechanical Improvements	This project includes replacing the electrical and mechanical components at Devore Reservoir. The 2022 Field Condition Assessment found these items in need of replacement.	$2,450,000	3
RR-40	Lytle Creek - Common Upgrades	This project includes complete facility replacement of the Lytle Creek - Common. This includes replacement of the Lytle Creek Chlorine House and Mixing Weir, Vault, West SBCWD Intertie, and Booster Station. The 2022 Field Condition Assessment found these items in need of replacement.	$1,010,000	3
RR-42	Del Rosa #3 Reservoir Electrical and Mechanical Improvements	This project includes replacing the electrical and mechanical components at Del Rosa Reservoir #3. The 2022 Field Condition Assessment found these items in need of replacement.	$410,000	3
RR-43	Daley Canyon Reservoir Electrical and Mechanical Improvements	This project includes replacing the electrical and mechanical components at Daley Canyon Reservoir. The 2022 Field Condition Assessment found these items in need of replacement.	$410,000	3
RR-45	17th & Sierra Way Plant GAC System Improvements	This project includes complete facility replacement of the 17th & Sierra Way St - GAC System. The 2022 Field Condition Assessment found these items in need of replacement.	$14,820,000	3
RR-35	Meyers Booster Pump Station Upgrade	This project includes complete facility replacement of the Meyers Booster Pump Station. The 2022 Field Condition Assessment found these items in need of replacement.	$12,210,000	3
RR-33	Cajon Blvd Reservoir Electrical and Mechanical Improvements	This project includes replacing the electrical and mechanical components at Cajon Blvd Reservoir. The 2022 Field Condition Assessment found these items in need of replacement.	$560,000	3

CIP ID	Project Name	Project Description	Project Cost	Priority
RR-37	Ogden Booster Pump Station Upgrade	This project includes complete facility replacement of the Ogden Booster Pump Station. The 2022 Field Condition Assessment found these items in need of replacement.	$10,230,000	3
RR-36	Palm Booster Pump Station Upgrade	This project includes complete facility replacement of the Palm Booster Pump Station. The 2022 Field Condition Assessment found these items in need of replacement.	$11,720,000	3
RR-34	Cajon Booster Pump Station Upgrade	This project includes complete facility replacement of the Cajon Booster Pump Station. The 2022 Field Condition Assessment found these items in need of replacement.	$13,840,000	3
RR-41	Palm #2 Reservoir Electrical and Mechanical Improvements	This project includes replacing the electrical and mechanical components at Palm Reservoir #2. The 2022 Field Condition Assessment found these items in need of replacement.	$790,000	3

14.5.2 Horizontal Assets

A significant number of projects included in the CIP are horizontal assets, also known as pipeline projects. Pipeline projects are recommended for pipelines with high risk level and a remaining useful life (RUL) less than or equal to 20 years, or pipelines with a remaining useful life less than or equal to 20 years regardless of risk level. Pipelines that fit the criteria and have diameters of 24-inches or less are recommended for full replacement. Pipelines with diameter greater than 24-inches have been recommended for pipeline condition assessment to evaluate pipeline condition and determine the best rehabilitation method. Pipeline projects were developed based on multiple levels of evaluations and analyses from Sections 9 through 13, as described below:

- **Pipe risk analysis results from desktop condition and risk assessment of the Horizontal assets.** Pipeline projects are recommended for pipelines with high risk level and a remaining useful life (RUL) less than or equal to 20 years, or pipelines with a remaining useful life less than or equal to 20 years regardless of risk level. Pipelines that fit the criteria and have diameters of 24-inches or less are recommended for full replacement. Pipelines with diameter greater than 24-inches have been recommended for pipeline condition assessment to evaluate pipeline condition and determine the best rehabilitation method.

- **Available fire flow results from hydraulic model under maximum day condition.** Pipeline projects are recommended for areas with available fire flow (AFF) deficiencies. The residential required fire flow criteria is 1,500 gpm at 20 psi residual pressure, however, the recommendations focused on areas that were significantly deficient of the fire flow criteria. The analysis shows that fire flow deficient hydrants tend to occur in clusters. Therefore, if significantly deficient areas are improved, areas with moderate fire flow deficiency will be improved as well. A project was recommended if the AFF was less than 500 gpm. Similarly, although the commercial/industrial required fire flow criteria is 2,500 gpm, a project was recommended for areas with AFF less than

1,500 gpm. Lastly, if the high industrial land use designation has a required fire low of 4,000 gpm, a project was recommended for areas with AFF less than 2,000 gpm.

- **Maximum velocity results from hydraulic model under maximum day plus fire flow condition.** The model analysis identified maximum velocity of 15 ft/sec or greater in distribution pipelines. Projects were recommended for areas with 4-inch and 6-inch pipes. These pipes will be increased to a minimum of 8-inch pipes. Additionally, any areas with maximum velocities adjacent to fire flow deficiencies were also recommended for pipeline replacement.

GIS layers of the pipeline project sources were overlaid in ArcGIS Pro. Pipelines in the same vicinity were grouped together to form projects within a geographic area. This results in cost effectiveness and minimizes repeated community impacts to neighborhoods and businesses. Pipeline projects can be found in Figure 14-1, Figure 14-2, and Figure 14-3. Pipeline projects were prioritized as follows:

- Projects containing a large number of available fire flow deficient pipelines were assigned priority 1.
- Projects containing many maximum velocity pipelines and RUL less than 0 were assigned priority 2.
- Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3.

The projects are listed in Table 14-4.

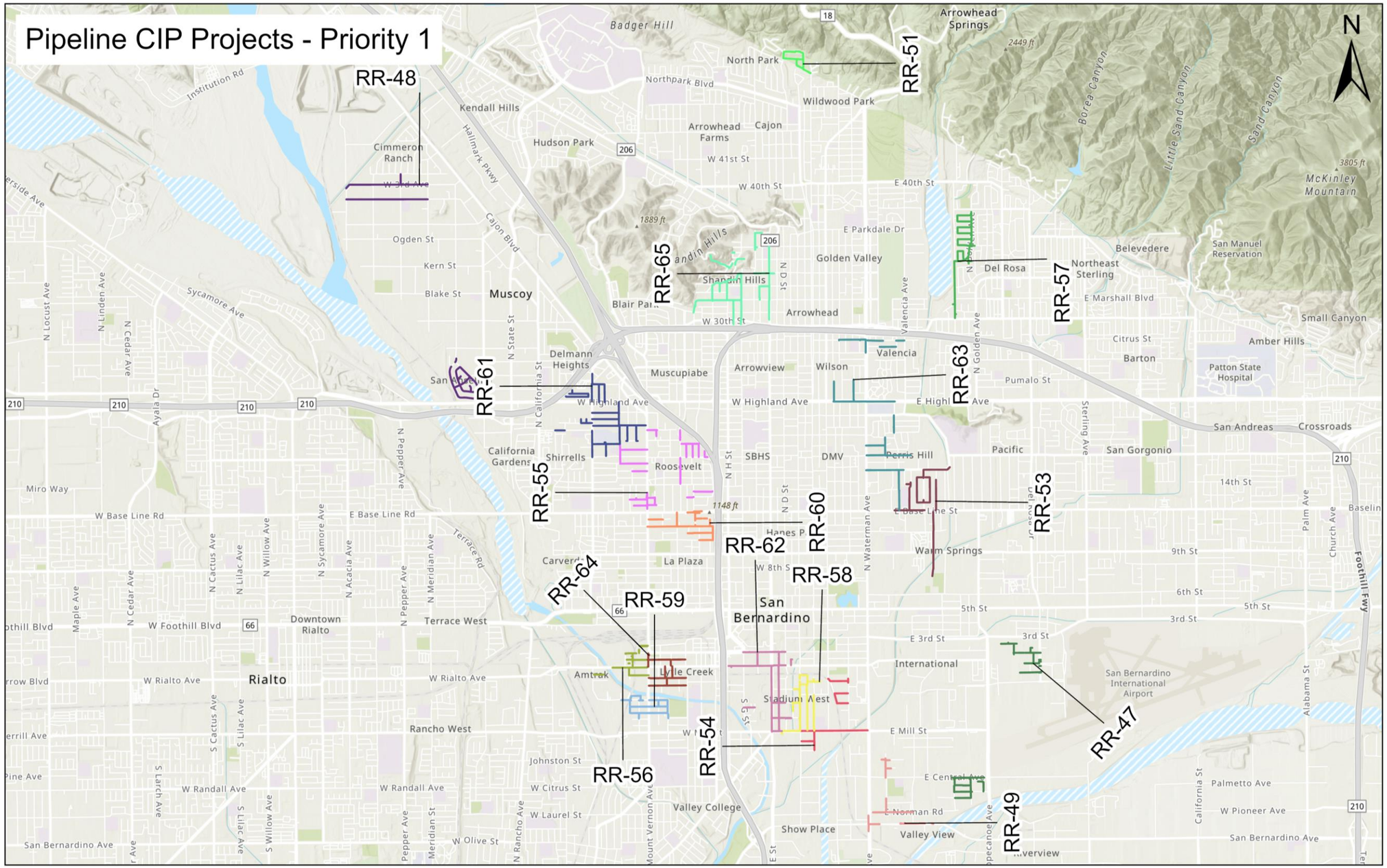


Figure 14-1: Pipeline CIP Projects - Priority 1

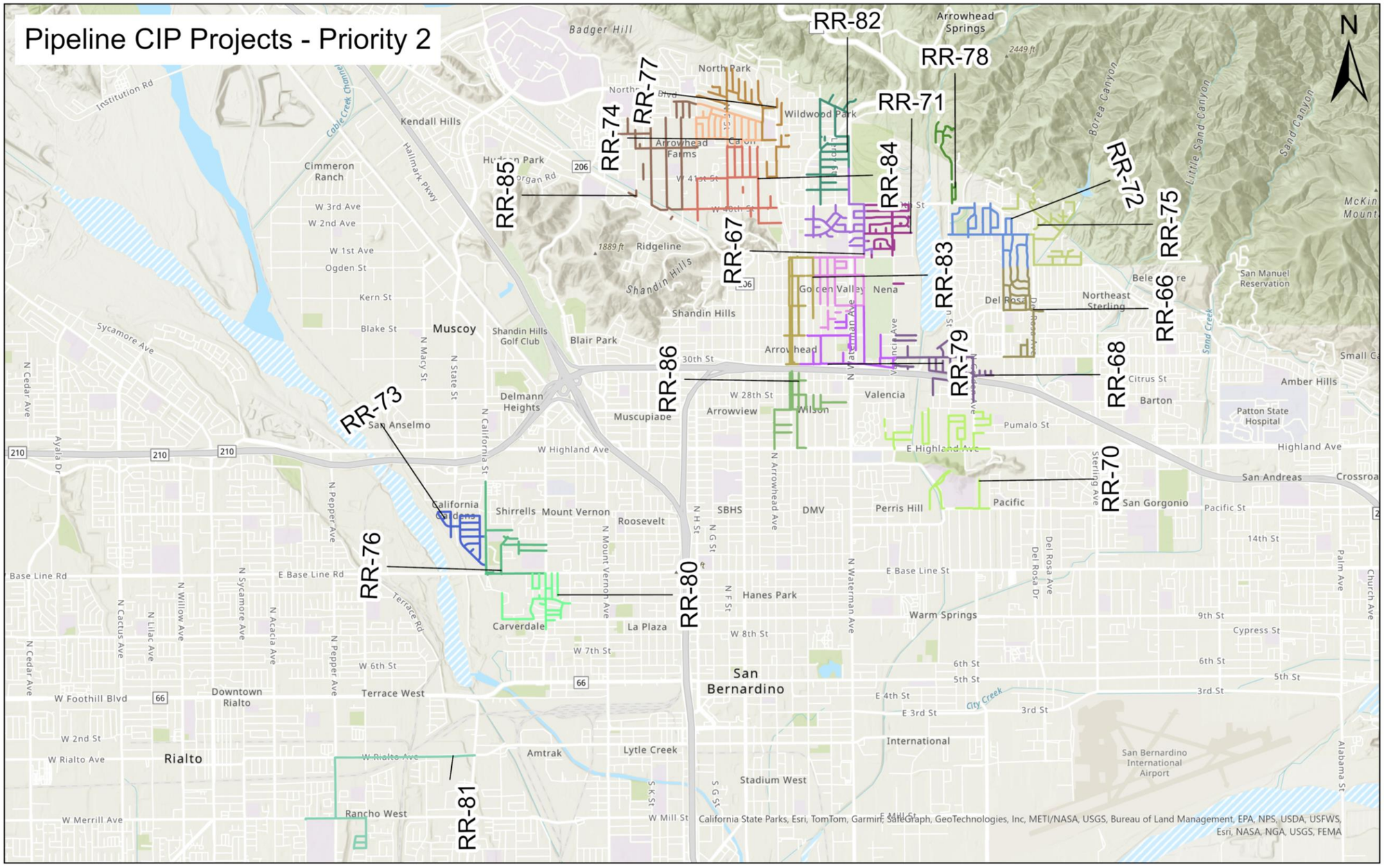


Figure 14-2: Pipeline CIP Projects - Priority 2

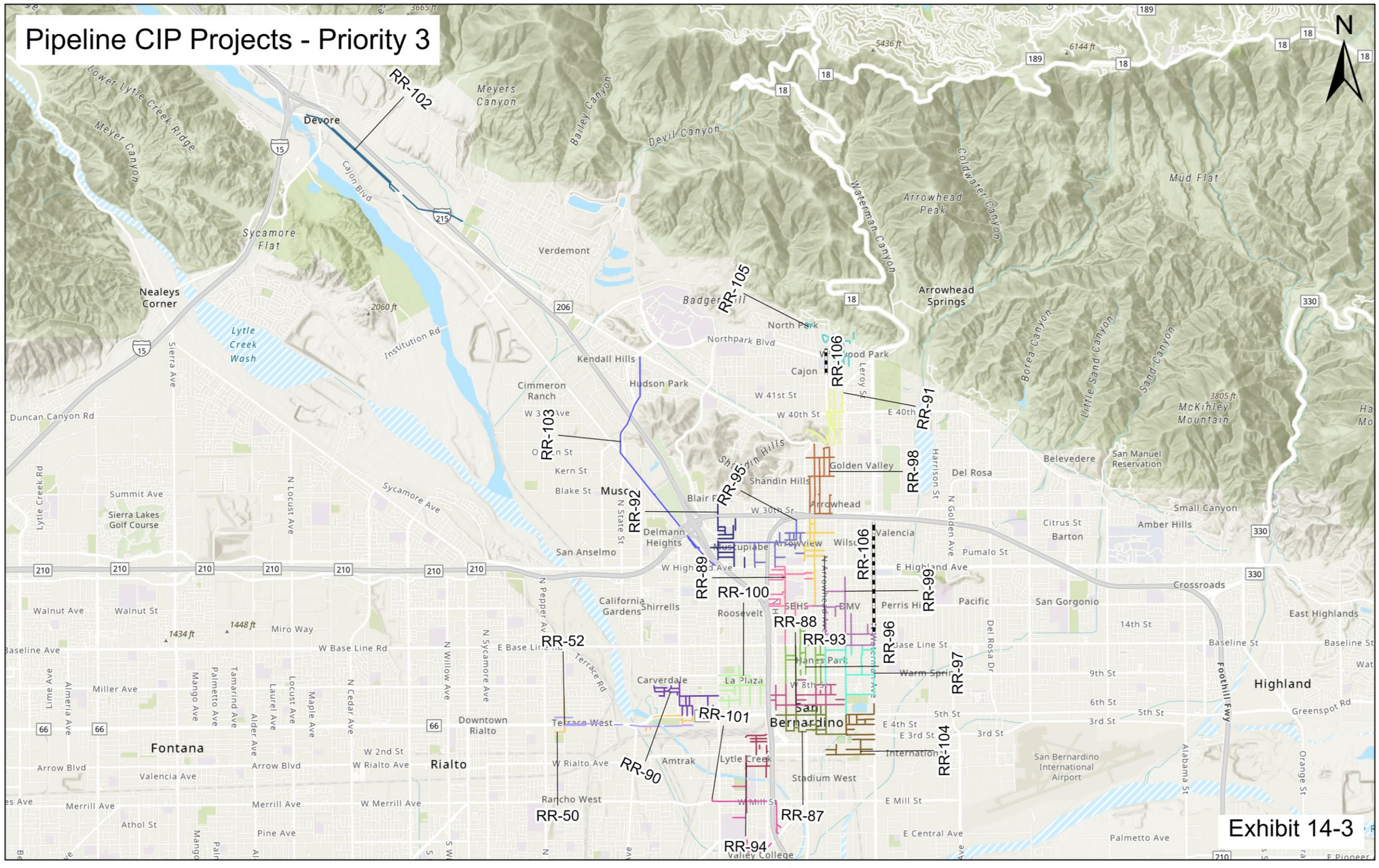


Figure 14-3: Pipeline CIP Projects - Priority 3

A summary of cost estimates for each project is provided in Table 14-3 with more detailed cost sheets included at the end of Section 14.8. Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2 Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3.

Table 14-3: Pipeline R&R Projects

CIP ID	Project Name	Project Cost	Priority
RR-47	Water Pipeline Replacement Project 1	$7,460,000	1
RR-48	Water Pipeline Replacement Project 2	$9,340,000	1
RR-49	Water Pipeline Replacement Project 3	$3,940,000	1
RR-50	Water Pipeline Replacement Project 4	$4,740,000	1
RR-51	Water Pipeline Replacement Project 5	$2,500,000	1
RR-53	Water Pipeline Replacement Project 7	$8,540,000	1
RR-54	Water Pipeline Replacement Project 8	$4,450,000	1
RR-55	Water Pipeline Replacement Project 9	$8,510,000	1
RR-56	Water Pipeline Replacement Project 10	$4,750,000	1
RR-57	Water Pipeline Replacement Project 11	$7,970,000	1
RR-58	Water Pipeline Replacement Project 12	$6,250,000	1
RR-59	Water Pipeline Replacement Project 13	$4,710,000	1
RR-60	Water Pipeline Replacement Project 14	$5,530,000	1
RR-61	Water Pipeline Replacement Project 15	$11,430,000	1
RR-62	Water Pipeline Replacement Project 16	$9,400,000	1
RR-63	Water Pipeline Replacement Project 17	$10,980,000	1
RR-64	Water Pipeline Replacement Project 18	$7,620,000	1
RR-65	Water Pipeline Replacement Project 19	$11,340,000	1
RR-66	Water Pipeline Replacement Project 20	$11,680,000	2
RR-67	Water Pipeline Replacement Project 21	$10,950,000	2
RR-68	Water Pipeline Replacement Project 22	$11,620,000	2
RR-69	Water Pipeline Replacement Project 23	$10,540,000	2
RR-70	Water Pipeline Replacement Project 24	$14,660,000	2
RR-71	Water Pipeline Replacement Project 25	$10,530,000	2
RR-72	Water Pipeline Replacement Project 26	$11,760,000	2
RR-73	Water Pipeline Replacement Project 27	$7,040,000	2
RR-74	Water Pipeline Replacement Project 28	$10,380,000	2
RR-75	Water Pipeline Replacement Project 29	$10,590,000	2
RR-76	Water Pipeline Replacement Project 30	$9,810,000	2
RR-77	Water Pipeline Replacement Project 31	$11,030,000	2
RR-78	Water Pipeline Replacement Project 32	$3,820,000	2

CIP ID	Project Name	Project Cost	Priority
RR-79	Water Pipeline Replacement Project 33	$10,460,000	2
RR-80	Water Pipeline Replacement Project 34	$8,380,000	2
RR-81	Water Pipeline Replacement Project 35	$8,720,000	2
RR-82	Water Pipeline Replacement Project 36	$10,810,000	2
RR-83	Water Pipeline Replacement Project 37	$12,270,000	2
RR-84	Water Pipeline Replacement Project 38	$12,250,000	2
RR-85	Water Pipeline Replacement Project 39	$13,630,000	2
RR-86	Water Pipeline Replacement Project 40	$10,160,000	2
RR-106	Water Pipeline Condition Assessment Study	$1,100,000	3
RR-87	Water Pipeline Replacement Project 41	$10,330,000	3
RR-88	Water Pipeline Replacement Project 42	$12,070,000	3
RR-89	Water Pipeline Replacement Project 43	$10,440,000	3
RR-90	Water Pipeline Replacement Project 44	$9,520,000	3
RR-91	Water Pipeline Replacement Project 45	$12,400,000	3
RR-92	Water Pipeline Replacement Project 46	$9,270,000	3
RR-93	Water Pipeline Replacement Project 47	$9,160,000	3
RR-94	Water Pipeline Replacement Project 48	$5,900,000	3
RR-95	Water Pipeline Replacement Project 49	$9,350,000	3
RR-96	Water Pipeline Replacement Project 50	$11,380,000	3
RR-97	Water Pipeline Replacement Project 51	$12,000,000	3
RR-98	Water Pipeline Replacement Project 52	$12,950,000	3
RR-99	Water Pipeline Replacement Project 53	$12,730,000	3
RR-100	Water Pipeline Replacement Project 54	$9,840,000	3
RR-101	Water Pipeline Replacement Project 55	$7,660,000	3
RR-102	Water Pipeline Replacement Project 56	$13,910,000	3
RR-103	Water Pipeline Replacement Project 57	$11,420,000	3
RR-104	Water Pipeline Replacement Project 58	$11,760,000	3
RR-105	Water Pipeline Replacement Project 59	$5,420,000	3
RR-52	Water Pipeline Replacement Project 6	$5,940,000	3

14.6 Recommended Projects based on System Evaluation

Sections 9 through 10 analyze the current water system and its capability to meet current and future demands. The system evaluation included water supply analysis, storage analysis, pumping analysis, pressure zone supply, distribution system pressure, maximum velocities, and fire flow availability.

Projects were recommended based on deficiencies observed in the following analyses.

- Water Supply Analysis
- Storage Analysis
- Pressure Zone Supply Analysis
- Available Fire Flow and Maximum Velocity

These projects were combined with the horizontal risk assessment projects. See Section 14.5.2 for project details.

14.6.1 Water Supply Analysis

The water supply analysis indicated that there is adequate water supply to meet both existing and future average day demands. However, the analysis also indicated there is inadequate water supply to meet both existing and future maximum day demands. A needs analysis/study is recommended to better understand the Department's existing and future groundwater treatment needs. The study will evaluate potential wells and treatment plant locations and determine when these wells and treatment plants should be constructed. See Table 14-4 for additional details.

It is understood that SBMWD is taking a proactive approach and has budgeted for three new wells as part of the fiscal year 2024/2025 budget. As a result, the needs analysis/study is designated as priority 2.

Table 14-4: Water Supply Analysis Projects

CIP ID	Project	Project Description	Project Cost	Priority
NA-2	**Needs Analysis/Study for Additional Groundwater Treatment**	Needs analysis/study for additional groundwater treatment. The 2023 Master Plan water supply analysis indicated that the Department may need additional water supply sources to meet existing and future maximum day demands. A study is recommended to determine location of new wells and new groundwater treatment plants.	$550,000	2

14.6.2 Storage Analysis

Storage analyses were conducted for the entire water system and individual pressure zones. The analysis showed that under existing and future conditions the Department has sufficient storage system-wide to meet equalization, fire flow, and emergency storage demands. However, the pressure zone analysis

identified a storage deficit in the Ridgeline and Terrace pressure zones under existing and future conditions.

The storage analysis found that the Ridgeline zone requires:

- An additional 150,000 gallons of storage by 2040. This is in addition to the existing 100,000 gallon tank. This results in a total storage requirement of 250,000 gallons.

A reservoir siting study was conducted to identify potential tank sites for additional storage. It was determined that the most feasible location for additional storage in the Ridgeline Zone is at the same site as the existing Ridgeline tank. However, seismic improvements were recently completed at Ridgeline tank, therefore, it is not desired to replace or expand on the existing Ridgeline tank at this time. It is recommended to continue to monitor demands in the Ridgeline Zone in future years and assess the need for more storage at a later time.

The storage analysis found that the Terrace zone requires:

- An additional 730,000 gallons of storage under existing conditions. This is in addition to the two existing storage tanks that have a combined storage capacity of 2.45 million gallons (MG). This results in a total storage requirement of 3.2 MG.
- Seismic retrofits at Terrace Tanks 2 and 3 will lower the high-water level in both reservoirs, providing additional freeboard. As a result, the combined storage capacity will decrease from 2.45 MG to 1.71 MG.
- An additional 1.8 MG of storage is needed by 2040. This results in a total storage requirement of 3.5 MG within the Terrace Zone.

It was determined that storage within the Terrace Zone can be increased by constructing a third tank at the same site as the existing Terrace tanks or at the Lytle Creek 2 reservoir site. However, seismic improvements were recently completed on tanks within the Terrace Zone, therefore, it is not desired to replace or expand on the existing storage tanks at this time. It is recommended to continue to monitor demands in the Terrace Zone in future years and assess the need for more storage at a later time.

There are no recommended storage projects at this time. The Department should continue to monitor demand within the Terrace and Ridgeline Zones and assess the need for additional storage periodically.

14.6.3 Pressure Zone Supply Analysis

Providing multiple supply points to a pressure zone increases service reliability and fire flow protection capability to the water service area. Supply points to a pressure zone can be a reservoir, pump station, pressure reducing station, imported water connection, or treatment plant supply. An analysis was conducted to verify supply points to each pressure zone, with the criteria that each pressure zone maintains a minimum of two (2) supply points for redundancy.

The pressure zones that do not meet the pressure zone supply criteria are Shandin Hills, Daley, Mountain Subzone A, Mountain Subzone B, Devore/Meyers 2300 Subzone (Suprazone), Ridgeline, Ridgeline

Hydro, and Devil Canyon Domestic. Many of these zones are relatively small (demand of less than 100 gpm). A brief discussion of each zone is provided below.

- **Shandin Hills** – Located adjacent Upper Zone and along Vista Drive, with an existing maximum day demand of 36 gpm. This is a relatively small zone and relatively isolated from the rest of the system, so it is acceptable that providing a second supply point to the zone may not be feasible. However, the Department has portable generators that can provide the Shandin Hills Booster Pump Station (BPS) backup power in the event of a loss of power.

- **Daley –** Located adjacent to the Del Rosa Zone and has a maximum day demand of 246 gpm. This zone has an HGL of 1775 ft and is one of the pressure zones with the highest HGLs. As a result, the only feasible option for a second supply point is a second pump station. Although feasible, this solution is not practical. A permanent generator is recommended to provide backup power in the event of a power loss.

- **Mountain Subzone A** – This is a subzone to the Mountain Zone and has an existing maximum day demand of 60 gpm. There is a normally closed zone valve at the intersection of E Hill Dr and Park Ln. This valve creates a boundary between Mountain Zone and Mountain Subzone A. The Mountain Zone has an HGL 1633 ft and is at a lower HGL than Mountain Subzone A, but it can provide emergency supply if needed. Preliminary analysis indicates that the zone valve can be opened to serve as an additional supply point and that customers would get a minimum service pressure of 27 psi which is adequate for fire suppression. However, a permanent generator is recommended to provide backup power in the event of a power loss and to maintain typical service pressures.

- **Mountain Subzone B** – This is a subzone to the Mountain Zone. This zone will be eliminated by 2035 and absorbed into the College/Palm Zone. As a result, recommendations for a second supply point are not necessary. See Appendix A for further details.

- **Devore/Meyers 2300 Subzone (Suprazone)** – This is a subzone to the Devore/Meyers Zone, located north of Verdermont Drive, with an existing maximum day demand of 55 gpm. Although the zone has a single supply point, the Department stores a portable generator at the Melvin BPS site that can provide backup power in the event of a loss of power.

- **College/Palm Subzone A** – This is a subzone to the College/Palm Zone, adjacent to the Upper Zone, and has a maximum day demand of 156 gpm. This zone is supplied by a single 16-inch main that cuts through the Shandin Hills Golf Club. There are two isolation valves that separate the Upper Zone from the College/Palm Subzone A. One isolation valve is along Marshall Blvd and another zone boundary valve is located at W 33rd St. Both these valves can be used to serve as additional supply points if Bond PRS is ever out of service. The Upper Zone has an HGL 1416 ft and is at a lower HGL than College/Palm Subzone, but it can provide emergency supply if needed. Preliminary analysis indicates that the zone valves can be opened to serve as an additional supply points and that customers would get a minimum service pressure of 20 psi.

- **Ridgeline** – Located adjacent to Sycamore Zone, with an existing maximum day demand of 72 gpm. This zone has an HGL of 1751.5 ft and is one of the pressure zones with the highest HGLs. As a result, the only feasible option for a second supply point is a second pump station.

Although feasible, this solution is not practical. A permanent generator is recommended to provide backup power in the event of a power loss.

- **Ridgeline Hydro** – This is a subzone to the Ridgeline Zone and has an existing maximum day demand of 1 gpm. This is one of the smallest zones within the system and as a result a second supply point is not recommended.
- **Devil Canyon Domestic** – This is a subzone to Devil Canyon Zone. There are no customers in this zone. The booster pump station in this zone is used to feed spreading grounds that infiltrate back into the groundwater aquifer. As a result, a second supply point is not warranted. A second supply point or permanent generator is recommended for pressure zones with only one supply point.

See Table 14-5 for pressure zone supply analysis project details.

Table 14-5: Pressure Zone Supply Analysis Projects

CIP_ID	Project	Project Description	Project Cost	Priority
RR-8	Permanent Generator at Daley Booster Pump Station	The Daley Zone has an HGL of 1775 ft and is one of the pressure zones with the highest HGLs. As a result, the only feasible option for a second supply point is a second pump station. Although feasible, this solution is not practical. A permanent generator at Daley Booster Pump Station is recommended to provide backup power in the event of a power loss. Please note that Del Rosa Booster Pump Stations would need to stay on during a power outage to support Daley Booster Pump Station during a fire event.	$580,000	2
RR-9	Permanent Generator at Ridgeline Lower Booster Pump Station	The Ridgeline Zone has an HGL of 1751.5 ft and is one of the pressure zones with the highest HGLs. As a result, the only feasible option for a second supply point is a second pump station. Although feasible, this solution is not practical. A permanent generator at Ridgeline Lower Booster Pump Station is recommended to provide backup power in the event of a power loss.	$560,000	2
RR-6	Permanent Generator at Sepulveda Booster Pump Station	Sepulveda Booster Pump Station is the only supply point to Mountain Subzone A. It is important that the station has the capability to be operational during power outages. As a result, the installation of a permanent generator is recommended.	$460,000	3

14.7 Ongoing Projects

The following water projects are slated for FY 2024-2025. Descriptions are from the *FY 2024-2025 Operating & Capital Improvement Budget* (San Bernardino Municipal Water Department, 2024).

14.7.1 Mountain Zone Pump Station Upgrade

Project involves the upgrade of the Mountain Zone pump station. The 2015 Water Facilities Master Plan identified a recommendation for pumping capacity increase in the Mountain Pressure Zone. The capacity deficit for this zone is relatively minor for existing conditions but will increase for future demands. Therefore, when this pumping capacity deficit is addressed, it is recommended that projected increases in the pumping capacity deficit for future demands be considered. Project also involves electrical and site improvements.

14.7.2 Ogden Pump Station Evaluation and Site Improvements

Project will perform a study to confirm if the mechanical equipment and piping components are at the proper pressure rating, to recommend any modifications needed, and to prepare site drainage design to properly manage any potential runoff encountered at the site.

14.7.3 Reservoir Seismic Upgrades Group 2 Steel (Devore, Del Rosa 3, Sycamore 1, Terrace 3)

Project involves the seismic retrofitting of four of the Department's welded steel water storage tanks. In 2003, a vulnerability assessment was performed that identified deficiencies that could lead to catastrophic failure of the reservoirs due to a significant seismic event. Maintaining pressure in the water distribution system is a vital component to responding to the public's needs after a seismic event including fire suppression and drinking water. If reservoirs fail, water system pressure loss will occur prompting boil alerts and significantly decreasing ability to fight fires. This project is a planned multi-year project due to the extensive scope and cost. State Revolving Fund and FEMA funding opportunities will fund this project.

14.7.4 Reservoir Seismic Upgrades Group 3A Concrete (Lytle Creek 2, Perris Hill)

Project involves the seismic retrofitting of the Department's multiple reinforced concrete and welded steel water storage tanks. In 2003, a vulnerability assessment was performed by a consultant that identified deficiencies that could lead to catastrophic failure of the reservoirs due to a significant seismic event. Maintaining pressure in the water distribution system is a vital component to responding to the public's needs after a seismic event including fire suppression and drinking water. If reservoirs fail, water system pressure loss will occur prompting boil alerts and significantly decreasing ability to fight structure fires.

In 2012, the Department's Consultant completed an evaluation and analysis of the Department's existing reservoirs to determine compliance (or non-compliance) with current regulatory design standards. This

project is a planned multi-year project due to the extensive scope and cost. The project is composed of three (3) groups which separate the reinforced concrete and the welded steel tanks.

14.7.5 Lytle Creek Reservoir 1 Structural Evaluation and Relining

Project involves the structural evaluation of the Lytle Creek Reservoir No. 1 and the potential relining of the interior concrete to address water loss and cracks.

14.7.6 17th Street Roof Replacement

Project involves updating the design and construction of the roof replacement of the existing 17th Street and Sierra Way Reservoir. Preliminary investigation and design was completed in 2016 by the Department's consultant. The roof replacement is needed due to the age of the existing structure; the reservoir was constructed in 1949. Replacement will generally include the replacement of the existing aged and cracked clay tiles and roofing, and replacement/upgrading of wood members in the roof framing.

14.7.7 19/20 Upper Zone Replacements & Mountain Sub-Zone B PZ Elimination

Project includes the combination of CO 10818 Upper Zone Replacements - Mallory, Shandin Hills area which are priority 1 and 2 proposed pipeline improvements from the 2007 Water Facilities Master Plan and CO 10819 1720' Pressure Zone Extension (Mountain Sub-Zone B Elimination). Project is under design and CO 10952 will fund design services only. Future construction, construction management and inspection will be funded through the State Revolving Fund loan in the "SRF Pipeline Replacements - Upper Zone, Mtn Sub-Zone B Elimination, Fremontia Drive" project.

14.7.8 SRF Pipeline Replacements - Upper Zone, Mtn Sub-Zone B Elimination, Fremontia Drive

Project involves the consolidation of various water pipeline replacement projects throughout SBMWD's service area. The project also involves updating "shelved" projects and completing designs. The project includes the following general pipeline replacement locations:

1. Project includes pipeline replacement in Fremontia Drive/23rd Street, from 26th Street to Valencia Avenue. Includes updating design, construction management, construction, inspection, other associated soft costs. Previously CO 10885.

2. Project includes the combination of CO 10818 Upper Zone Replacements - Mallory, Shandin Hills area which are priority 1 and 2 proposed pipeline improvements from the 2007 Water Facilities Master Plan and CO 10819 1720' Pressure Zone Extension (Mountain Sub-Zone B Elimination).

14.8 2024 Water Master Plan Recommended CIP Projects

14.8.1 Project Summary

The recommended projects fall into one of the following categories outlined in Table 14-6.

Table 14-6: Project Sources and Justification

Project Source	Project Justification
Water Supply Analysis	The water supply analysis indicates there is inadequate water supply to meet both existing and future maximum day demands. A study is recommended to determine location of new wells and new groundwater treatment plants.
Pressure Zone Supply Analysis	An analysis was conducted to verify supply points to each pressure zone, with the criteria that each pressure zone maintains a minimum of two (2) supply points for redundancy. Projects have been recommended for the Mountain Subzone A and Daley Zone to improve supply redundancy. Projects include installing a permanent generator or rehabilitating an inactive pressure-reducing station.
Available Fire Flow Analysis	The purpose of this analysis is to identify areas with significant deficiencies in fire flow availability. Pipeline projects have been recommended to improve fire flow availability.
Maximum Velocity Analysis	The purpose of this analysis is to identify areas with maximum velocity greater than 15 ft/s under maximum day plus fire flow conditions. Pipeline projects have been recommended to improve velocities in these areas.
Pipe Risk Analysis	Pipe risk analysis results from desktop condition and risk assessment of the Horizontal assets. Pipeline projects are recommended for pipelines with high risk level and a remaining useful life (RUL) less than or equal to 20 years, or pipelines with a remaining useful life less than or equal to 20 years regardless of risk level.
Condition Assessment, Tier I	Hazen performed a condition assessment of the assets located at seven sites that were selected based on their high level of risk. The seven sites were: • Melvin Ave • Newmark • Waterman Ave • 19th St • 17th St Plants (GAC system not included • EPA Well #6 • EPA Well #7 Assets found to be in Fair Condition, Poor Condition, or a RUL <=10 are recommended for full replacement.
Condition Assessment, Tier II	Age-based approach used to estimate assets RUL. Facilities with the oldest assets are recommended for major rehabilitation or replacement.
Department Staff Input	Project recommended based on input and direction from Department Staff.

A list of all capital improvement projects identified are shown in Table 14-8 along with estimated project costs, priority level, and approximate schedule. Please note that the schedule is based on an annual CIP budget of approximately $11 M. This was derived by calculating an average annual budget using 2022 Rate Study. See Table 14-7.

Table 14-7: Predicted Fiscal Year Budget

Fiscal Year	Budget
FY 2021/2022	$12,600,000
FY 2022/2023	$14,900,000
FY 2023/2024	$6,100,000
FY 2024/2025	$13,200,000
FY 2025/2026	$7,600,000
Average Budget/FY	**$10,880,000**

Table 14-8: Summary of Capital Improvement Projects - 2024 Water Master Plan

CIP-ID	Name	Total Project Cost	Priority	Schedule
RR-10	16th St Booster Pump Station and Well Improvements	$910,000	1	Year 1
RR-31	Melvin Ave - BPS (#1-5) Vault Lid Replacement	$40,000	1	Year 1
RR-3	Backup Power Ridgeline Top of Hill	$460,000	1	Year 1
RR-38	Electric Dr Reservoir Electrical and Mechanical Improvements	$840,000	1	Year 1
RR-4	Mill & D St - Reservoir Roof Upgrades	$390,000	1	Year 1
RR-1	Backup Power Perris Hill Reservoir	$450,000	1	Year 1
RR-47	Water Pipeline Replacement Project 1	$7,460,000	1	Year 1
RR-48	Water Pipeline Replacement Project 2	$9,340,000	1	Year 2
RR-51	Water Pipeline Replacement Project 5	$2,500,000	1	Year 3
RR-50	Water Pipeline Replacement Project 4	$4,740,000	1	Year 3
RR-54	Water Pipeline Replacement Project 8	$4,450,000	1	Year 3
RR-49	Water Pipeline Replacement Project 3	$3,940,000	1	Year 4
RR-53	Water Pipeline Replacement Project 7	$8,540,000	1	Year 4
RR-58	Water Pipeline Replacement Project 12	$6,250,000	1	Year 5
RR-56	Water Pipeline Replacement Project 10	$4,750,000	1	Year 5
RR-57	Water Pipeline Replacement Project 11	$7,970,000	1	Year 6
RR-59	Water Pipeline Replacement Project 13	$4,710,000	1	Year 6
RR-55	Water Pipeline Replacement Project 9	$8,510,000	1	Year 7
RR-60	Water Pipeline Replacement Project 14	$5,530,000	1	Year 8
RR-64	Water Pipeline Replacement Project 18	$7,620,000	1	Year 8

CIP-ID	Name	Total Project Cost	Priority	Schedule
RR-61	Water Pipeline Replacement Project 15	$11,430,000	1	Year 9
RR-62	Water Pipeline Replacement Project 16	$9,400,000	1	Year 10
RR-63	Water Pipeline Replacement Project 17	$10,980,000	1	Year 11
RR-65	Water Pipeline Replacement Project 19	$11,340,000	1	Year 12
RR-12	17th St Booster Pump Station Improvements	$150,000	2	Year 13
RR-13	17th St Well Upgrades	$910,000	2	Year 13
RR-14	17th & Sierra Way Plant - Common Upgrades	$1,000,000	2	Year 13
RR-15	17th & Sierra Way Plant Reservoir Improvements	$80,000	2	Year 13
RR-16	19th St Plant Booster Pump Station Improvements	$1,010,000	2	Year 13
RR-17	19th St Plant - Common Upgrades	$1,760,000	2	Year 13
RR-18	19th St Plant GAC System Improvements	$140,000	2	Year 13
RR-19	EPA Well 6 Upgrades	$1,710,000	2	Year 13
RR-20	EPA Well 7 Upgrades	$140,000	2	Year 13
RR-26	Sycamore Booster Pump Station (#3-4) Improvements	$330,000	2	Year 13
RR-27	Newmark Well Upgrades	$990,000	2	Year 13
RR-25	Sycamore Booster Pump Station (#2) Improvements	$990,000	2	Year 13
RR-22	Newmark Plant - Common Upgrades	$720,000	2	Year 13
RR-23	Newmark Plant GAC System Improvements	$600,000	2	Year 13
NA-2	Needs Analysis/Study for Additional Groundwater Treatment	$550,000	2	Year 13
RR-39	Lytle Creek Booster Pump Station Upgrade	$13,020,000	2	Year 14
RR-46	Mill & D St Reservoir Electrical and Mechanical Improvements	$240,000	2	Year 15
RR-8	Permanent Generator at Daley Booster Pump Station	$580,000	2	Year 15
RR-9	Permanent Generator at Ridgeline Lower Booster Pump Station	$560,000	2	Year 15
RR-32	Waterman Ave Well Upgrades	$110,000	2	Year 15
RR-29	Waterman Ave Booster Pump Station (#2) Mechanical Improvements	$150,000	2	Year 15
RR-67	Water Pipeline Replacement Project 21	$10,950,000	2	Year 15
RR-28	Waterman Ave Booster Pump Station (#1,3,4) Mechanical Improvements	$930,000	2	Year 15
RR-5	Waterman Ave Waterman Booster Pump Station (#1,3,4) Electrical Improvements	$130,000	2	Year 15
RR-11	Waterman Ave Waterman Booster Pump Station (#2) Electrical Improvements	$120,000	2	Year 15
RR-66	Water Pipeline Replacement Project 20	$11,680,000	2	Year 15
RR-68	Water Pipeline Replacement Project 22	$11,620,000	2	Year 16
RR-69	Water Pipeline Replacement Project 23	$10,540,000	2	Year 17

CIP-ID	Name	Total Project Cost	Priority	Schedule
RR-70	Water Pipeline Replacement Project 24	$14,660,000	2	Year 18
RR-71	Water Pipeline Replacement Project 25	$10,530,000	2	Year 19
RR-72	Water Pipeline Replacement Project 26	$11,760,000	2	Year 20
RR-73	Water Pipeline Replacement Project 27	$7,040,000	2	Future
RR-78	Water Pipeline Replacement Project 32	$3,820,000	2	Future
RR-75	Water Pipeline Replacement Project 29	$10,590,000	2	Future
RR-76	Water Pipeline Replacement Project 30	$9,810,000	2	Future
RR-77	Water Pipeline Replacement Project 31	$11,030,000	2	Future
RR-74	Water Pipeline Replacement Project 28	$10,380,000	2	Future
RR-79	Water Pipeline Replacement Project 33	$10,460,000	2	Future
RR-80	Water Pipeline Replacement Project 34	$8,380,000	2	Future
RR-30	Waterman Ave Plant GAC System Upgrades	$2,240,000	2	Future
RR-81	Water Pipeline Replacement Project 35	$8,720,000	2	Future
RR-82	Water Pipeline Replacement Project 36	$10,810,000	2	Future
RR-83	Water Pipeline Replacement Project 37	$12,270,000	2	Future
RR-84	Water Pipeline Replacement Project 38	$12,250,000	2	Future
RR-85	Water Pipeline Replacement Project 39	$13,630,000	2	Future
RR-86	Water Pipeline Replacement Project 40	$10,160,000	2	Future
RR-21	Melvin Ave Booster Pump Station Improvements	$80,000	3	Future
RR-24	Newmark Plant Reservoir Upgrades	$110,000	3	Future
RR-6	Permanent Generator at Sepulveda Booster Pump Station	$460,000	3	Future
RR-105	Water Pipeline Replacement Project 59	$5,420,000	3	Future
RR-40	Lytle Creek - Common Upgrades	$1,010,000	3	Future
RR-42	Del Rosa #3 Reservoir Electrical and Mechanical Improvements	$410,000	3	Future
RR-43	Daley Canyon Reservoir Electrical and Mechanical Improvements	$410,000	3	Future
RR-33	Cajon Blvd Reservoir Electrical and Mechanical Improvements	$560,000	3	Future
RR-41	Palm #2 Reservoir Electrical and Mechanical Improvements	$790,000	3	Future
RR-106	Water Pipeline Condition Assessment Study	$1,100,000	3	Future
RR-37	Ogden Booster Pump Station Upgrade	$10,230,000	3	Future
RR-36	Palm Booster Pump Station Upgrade	$11,720,000	3	Future
RR-34	Cajon Booster Pump Station Upgrade	$13,840,000	3	Future
RR-35	Meyers Booster Pump Station Upgrade	$12,210,000	3	Future
RR-45	17th & Sierra Way Plant GAC System Improvements	$14,820,000	3	Future
RR-87	Water Pipeline Replacement Project 41	$10,330,000	3	Future

CIP-ID	Name	Total Project Cost	Priority	Schedule
RR-88	Water Pipeline Replacement Project 42	$12,070,000	3	Future
RR-89	Water Pipeline Replacement Project 43	$10,440,000	3	Future
RR-90	Water Pipeline Replacement Project 44	$9,520,000	3	Future
RR-91	Water Pipeline Replacement Project 45	$12,400,000	3	Future
RR-92	Water Pipeline Replacement Project 46	$9,270,000	3	Future
RR-93	Water Pipeline Replacement Project 47	$9,160,000	3	Future
RR-102	Water Pipeline Replacement Project 56	$13,910,000	3	Future
RR-95	Water Pipeline Replacement Project 49	$9,350,000	3	Future
RR-96	Water Pipeline Replacement Project 50	$11,380,000	3	Future
RR-97	Water Pipeline Replacement Project 51	$12,000,000	3	Future
RR-98	Water Pipeline Replacement Project 52	$12,950,000	3	Future
RR-99	Water Pipeline Replacement Project 53	$12,730,000	3	Future
RR-100	Water Pipeline Replacement Project 54	$9,840,000	3	Future
RR-101	Water Pipeline Replacement Project 55	$7,660,000	3	Future
RR-44	Devore Reservoir Electrical and Mechanical Improvements	$2,450,000	3	Future
RR-103	Water Pipeline Replacement Project 57	$11,420,000	3	Future
RR-104	Water Pipeline Replacement Project 58	$11,760,000	3	Future
RR-94	Water Pipeline Replacement Project 48	$5,900,000	3	Future
RR-52	Water Pipeline Replacement Project 6	$5,940,000	3	Future

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-10
Project Name : 16th St Booster Pump Station and Well Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at 17th & Sierra Way St - 16th St BPS.
• Booster Pump
• Soft Start - 16th St Booster
This project also includes replacing the following components at 17th & Sierra Way St - 16th St Well.
• Pump
• Soft Start - 16th Well
The 2022 Field Condition Assessment found these items in need of replacement.





Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$97,300
Const. Mgmnt:	$77,840
Construction:	$648,665
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$823,805
Contingency (10%)	$82,380
TOTAL COSTS (ROUNDED)	$910,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

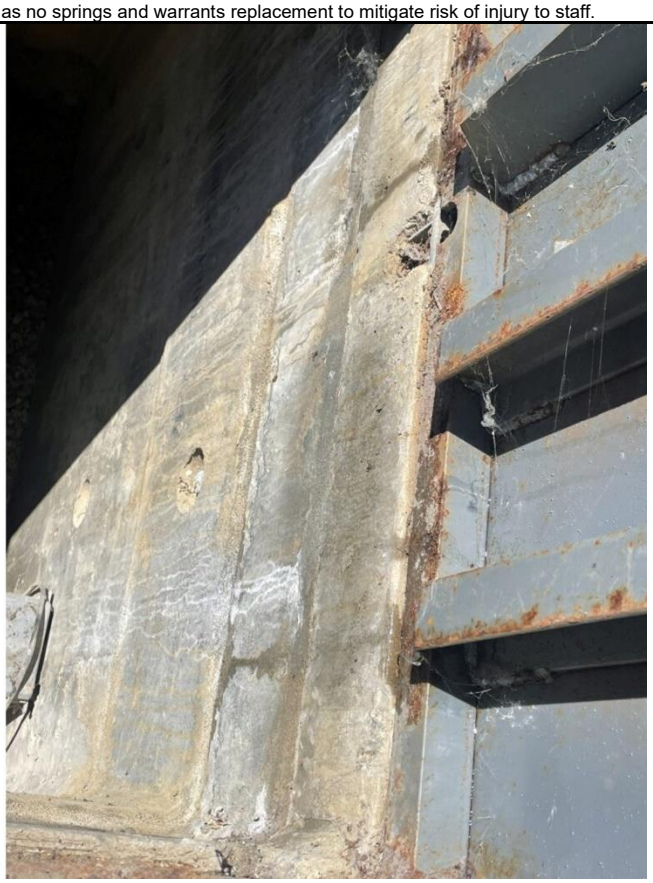
San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-31
Project Name : Melvin Ave - BPS (#1-5) Vault Lid Replacement
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at Waterman Ave - Leroy Well.
This project includes replacing vault lid at Melvin Ave - BPS (#1-5). The existing vault lid has no springs and warrants replacement to mitigate risk of injury to staff.





Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$3,447
Const. Mgmnt:	$2,757
Construction:	$22,977
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$29,181
Contingency (10%)	$2,918
TOTAL COSTS (ROUNDED)	$40,000

Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-3
Project Name : Backup Power Ridgeline Top of Hill
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes implementation of a new backup generator at the Ridgeline Reservoir Site. The reservoir site includes radio infrastructure that is critical and must be online in the event of a emergency/disaster.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$49,048
Const. Mgmnt:	$39,238
Construction:	$326,984
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$415,269
Contingency (10%)	$41,527
TOTAL COSTS (ROUNDED)	$460,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-38
Project Name : Electric Dr Reservoir Electrical and Mechanical Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the electrical and mechanical components at Electric Dr - Reservoir. The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$89,346
Const. Mgmnt:	$71,477
Construction:	$595,641
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$756,464
Contingency (10%)	$75,646
TOTAL COSTS (ROUNDED)	$840,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-4
Project Name : Mill & D St - Reservoir Roof Upgrades
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Project involves updating the design and construction of the roof replacement of the existing Mill & D St Reservoir. The roof replacement is needed due to the age of the existing structure; the reservoir was constructed in 1934.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$41,359
Const. Mgmnt:	$33,087
Construction:	$275,727
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$350,173
Contingency (10%)	$35,017
TOTAL COSTS (ROUNDED)	$390,000

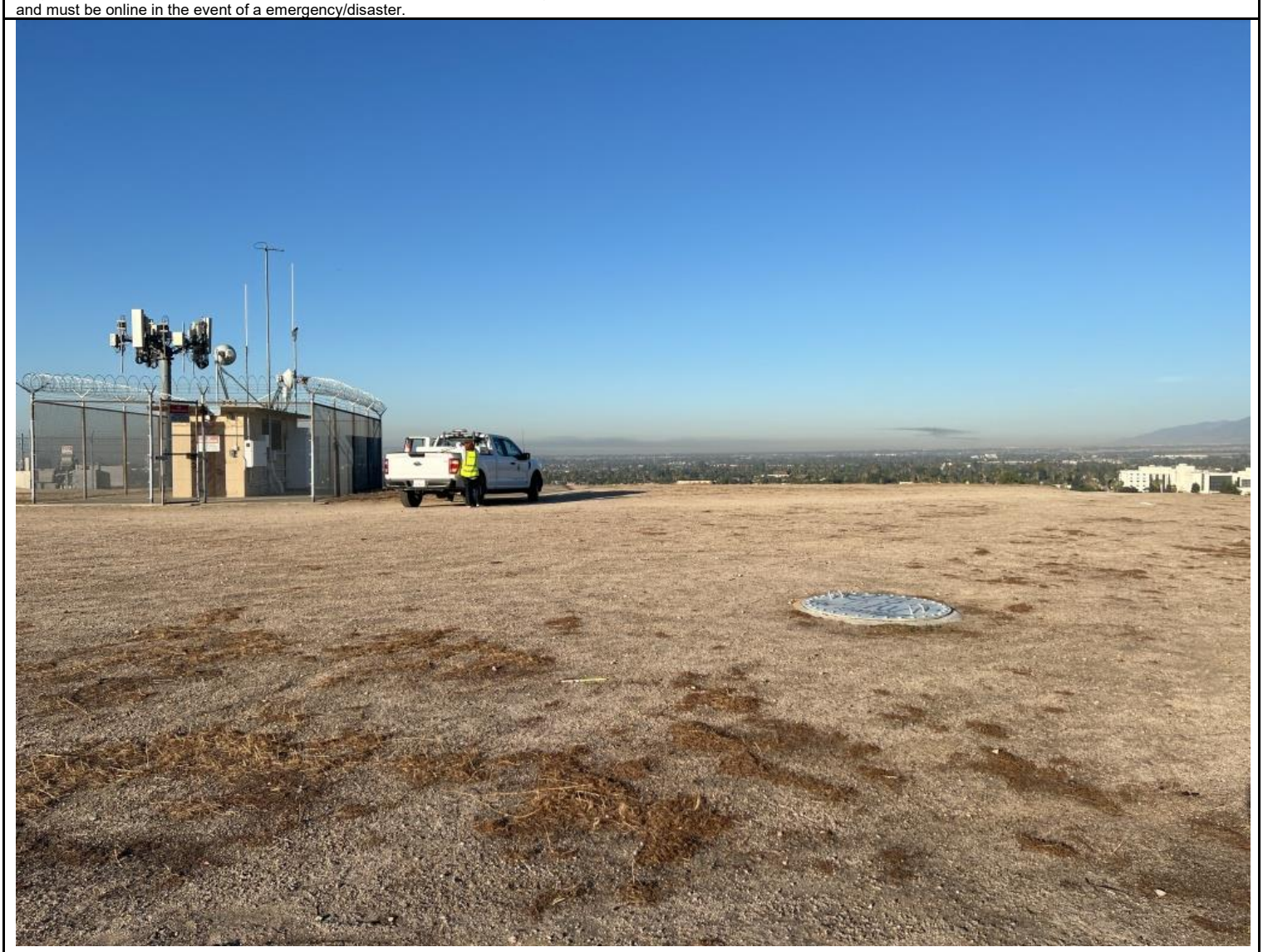
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-1
Project Name : Backup Power Perris Hill Reservoir
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes implementation of a new backup generator at the Perris Hill Reservoir Site. The reservoir site includes radio infrastructure that is critical and must be online in the event of a emergency/disaster.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$47,987
Const. Mgmnt:	$38,390
Construction:	$319,914
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$406,291
Contingency (10%)	$40,629
TOTAL COSTS (ROUNDED)	$450,000

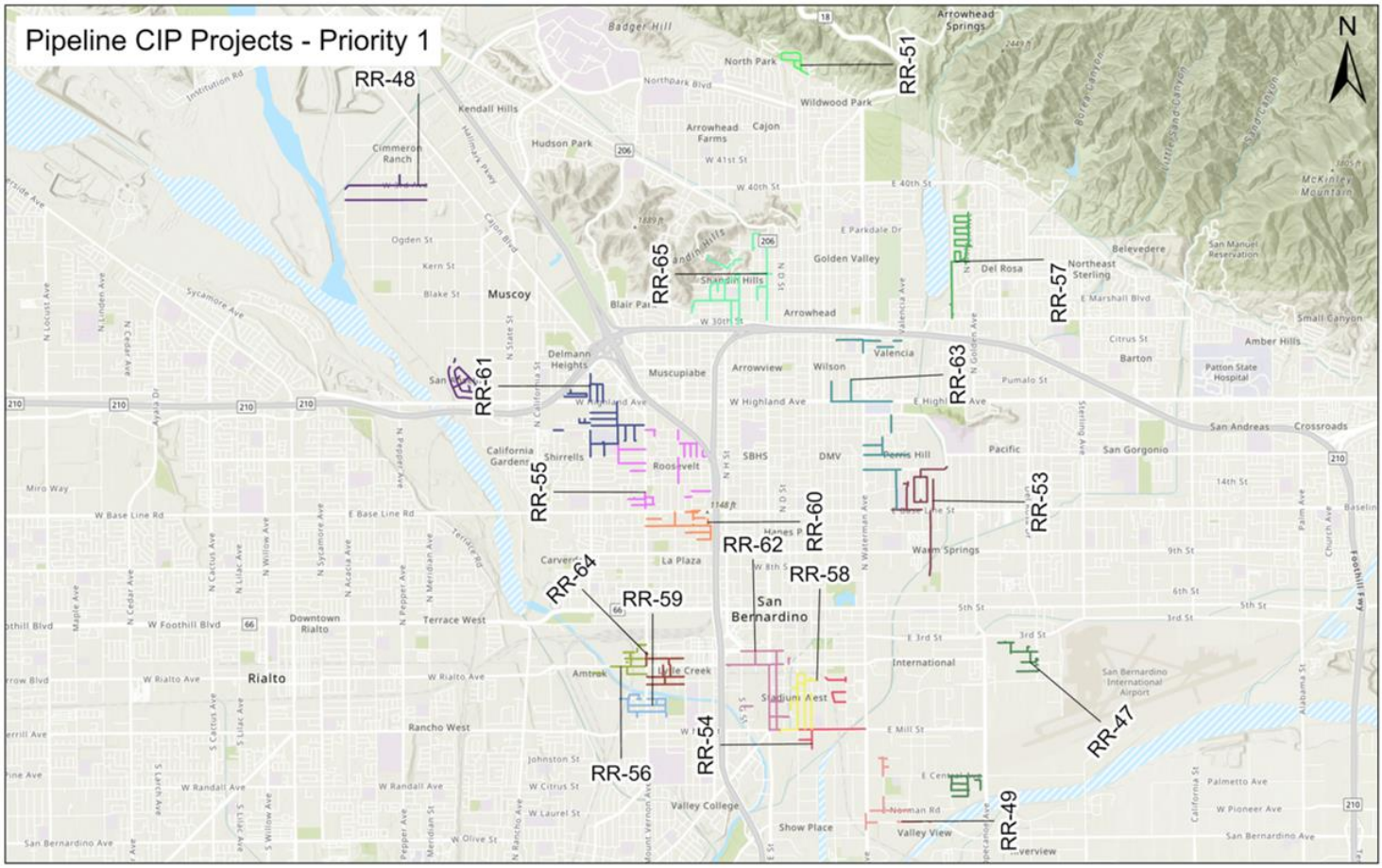
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-47
Project Name : Water Pipeline Replacement Project 1
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

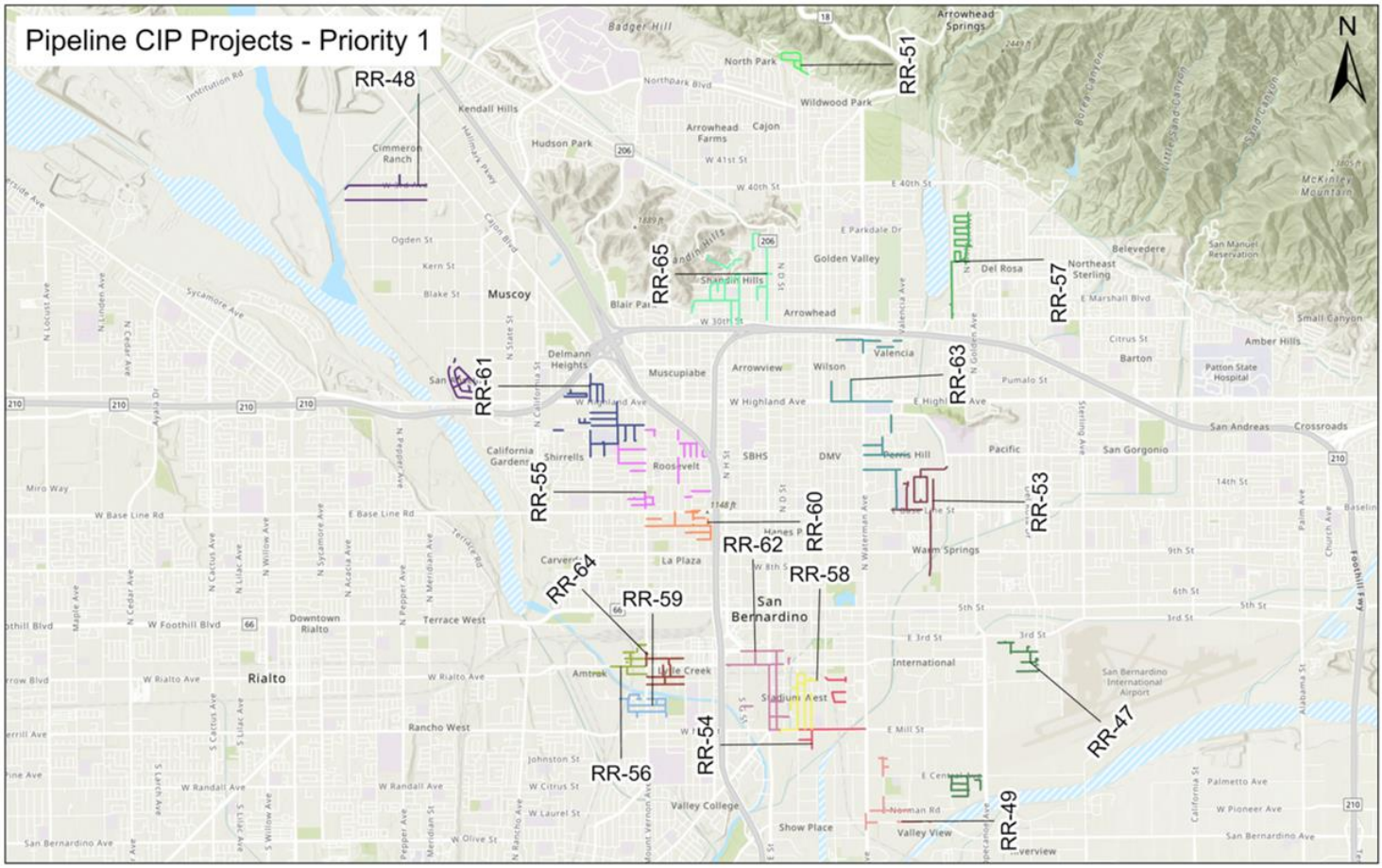
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$800,295
Const. Mgmnt:	$640,236
Construction:	$5,335,297
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$6,775,827
Contingency (10%)	$677,583
TOTAL COSTS (ROUNDED)	$7,460,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-48
Project Name : Water Pipeline Replacement Project 2
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

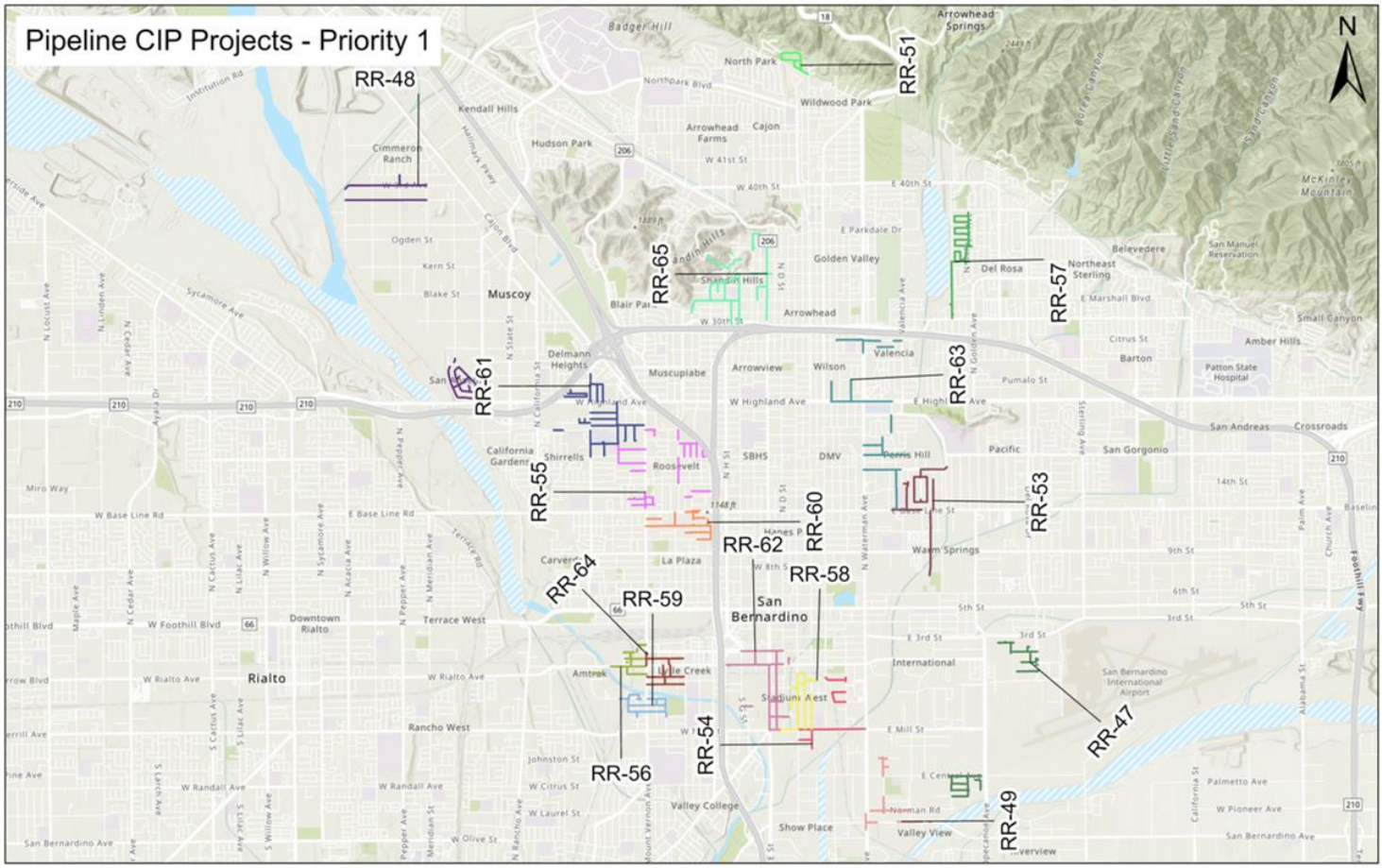
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,002,392
Const. Mgmnt:	$801,913
Construction:	$6,682,611
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$8,486,916
Contingency (10%)	$848,692
TOTAL COSTS (ROUNDED)	$9,340,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-51
Project Name : Water Pipeline Replacement Project 5
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

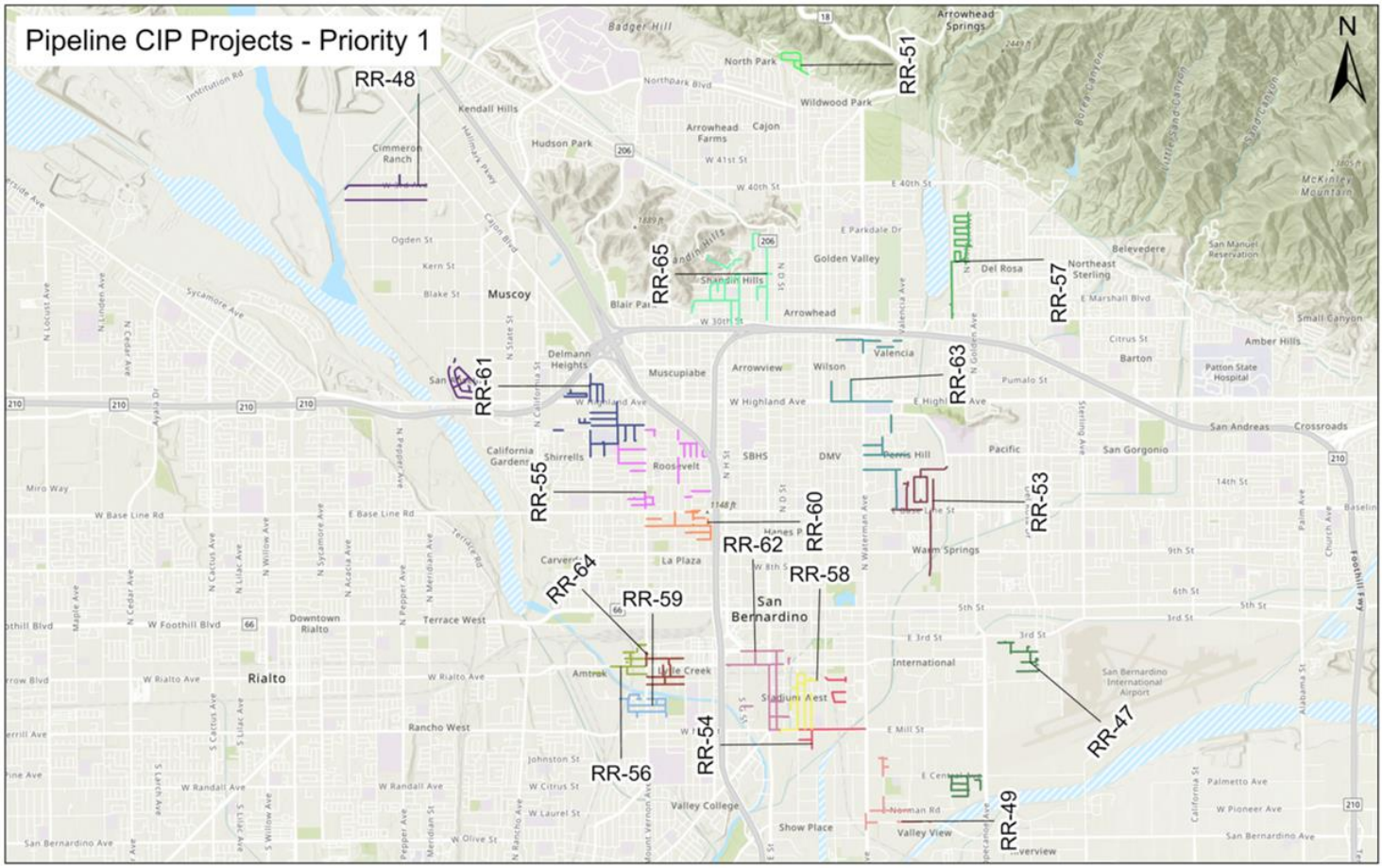
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$267,541
Const. Mgmnt:	$214,033
Construction:	$1,783,608
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$2,265,182
Contingency (10%)	$226,518
TOTAL COSTS (ROUNDED)	$2,500,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-50
Project Name : Water Pipeline Replacement Project 4
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

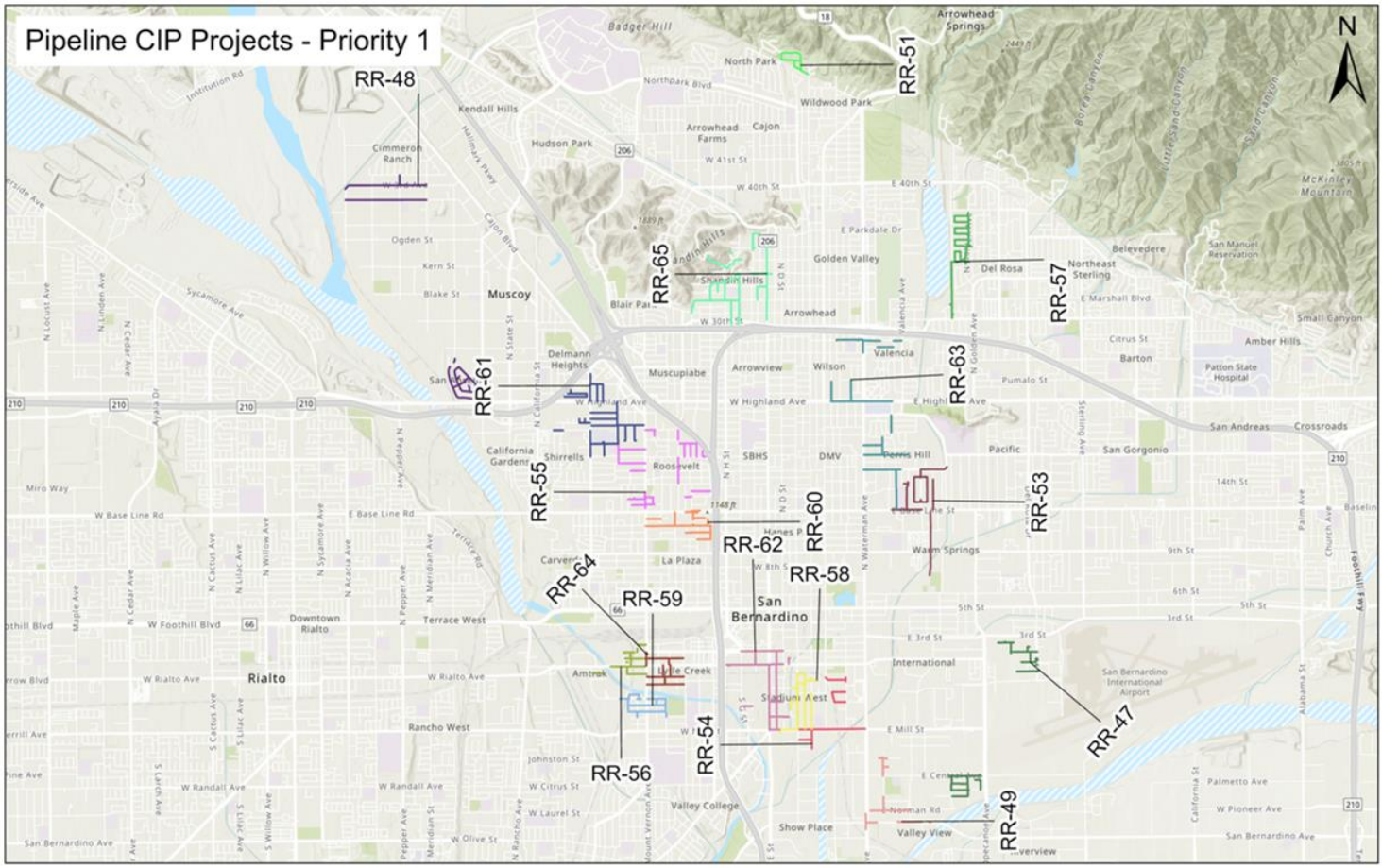
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$508,634
Const. Mgmnt:	$406,907
Construction:	$3,390,894
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$4,306,435
Contingency (10%)	$430,644
TOTAL COSTS (ROUNDED)	$4,740,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-54
Project Name : Water Pipeline Replacement Project 8
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

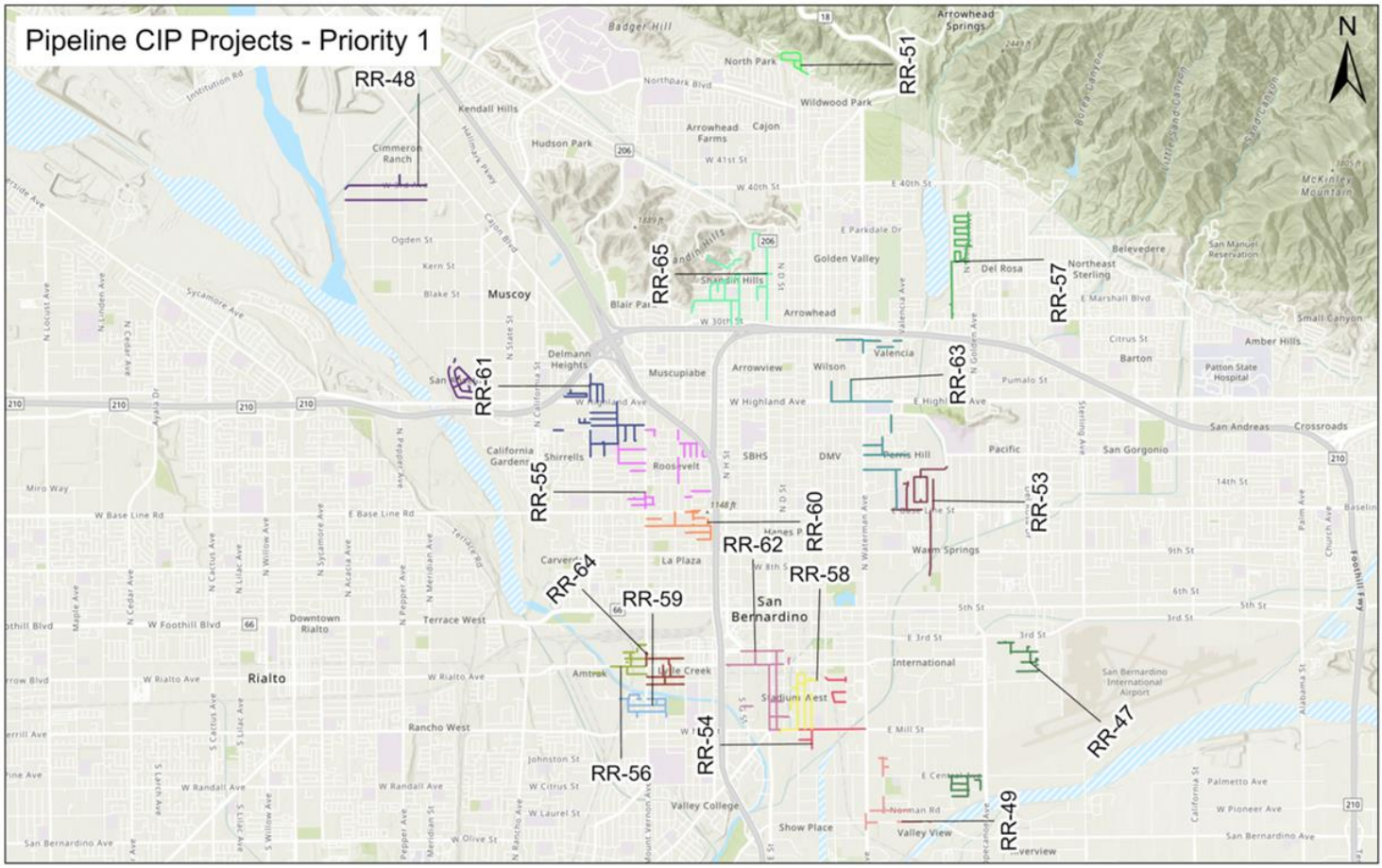
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$477,530
Const. Mgmnt:	$382,024
Construction:	$3,183,531
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$4,043,085
Contingency (10%)	$404,308
TOTAL COSTS (ROUNDED)	$4,450,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-49
Project Name : Water Pipeline Replacement Project 3
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$422,436
Const. Mgmnt:	$337,949
Construction:	$2,816,243
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$3,576,628
Contingency (10%)	$357,663
TOTAL COSTS (ROUNDED)	$3,940,000

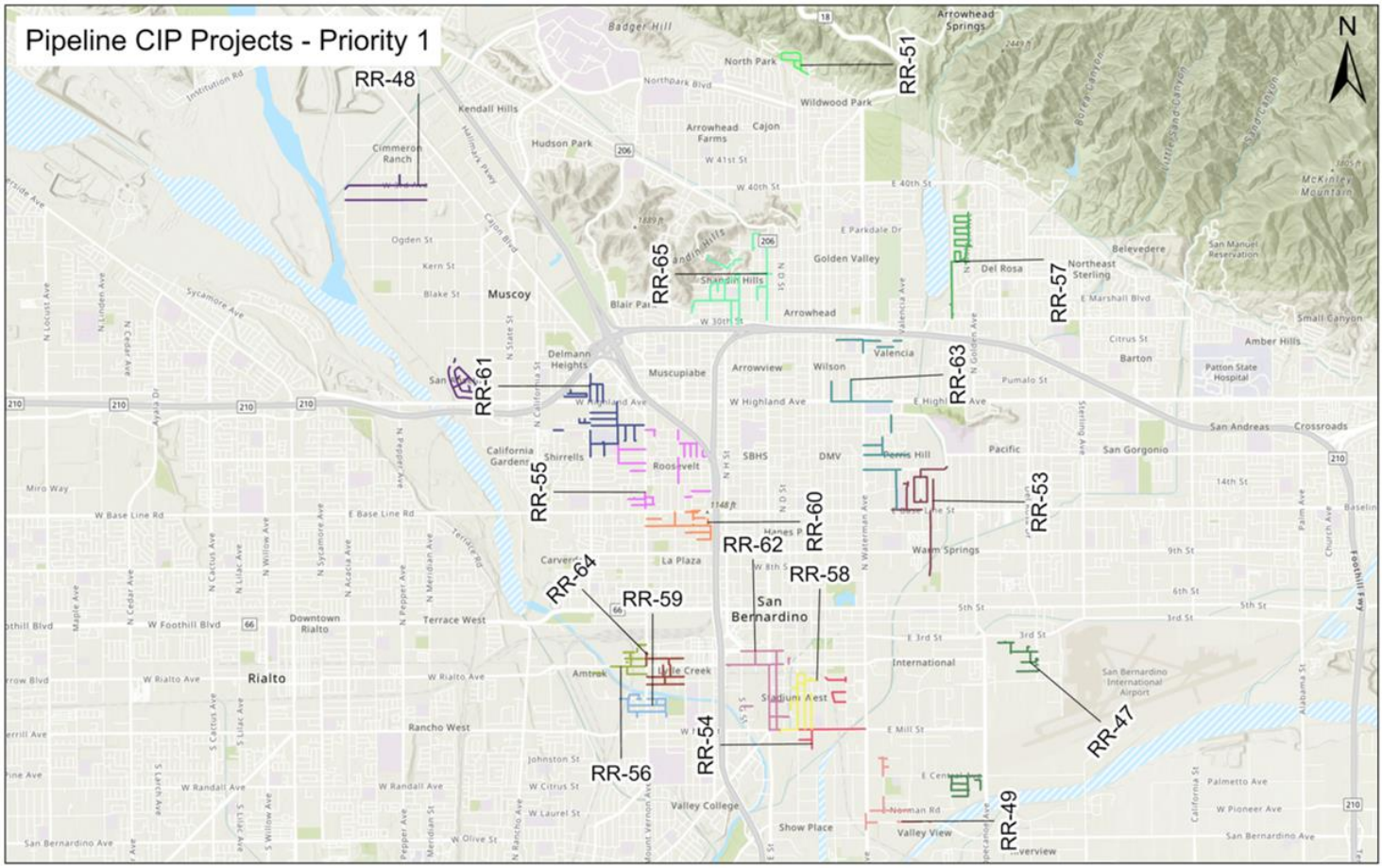
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-53
Project Name : Water Pipeline Replacement Project 7
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.

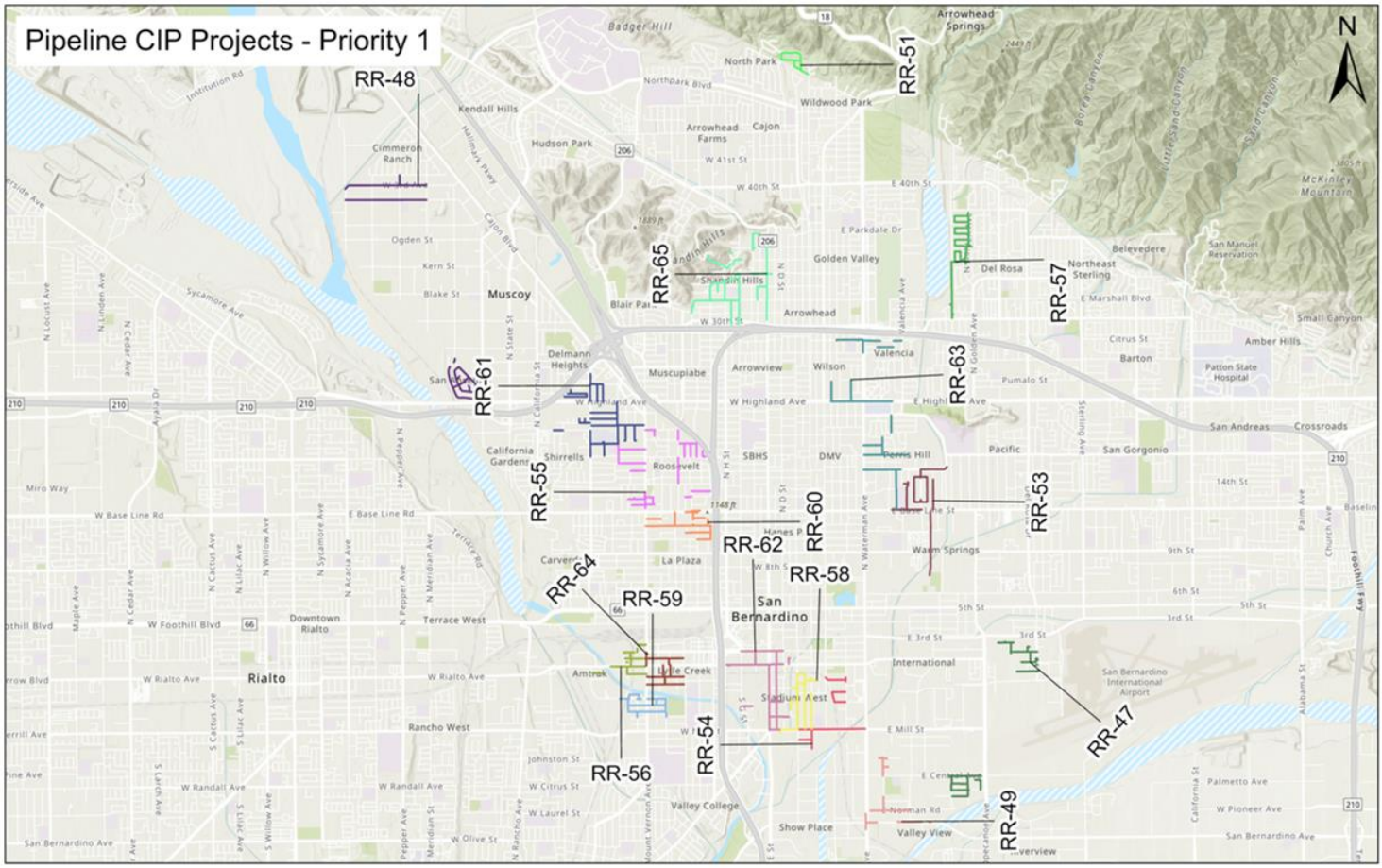

Pipeline CIP Projects - Priority 1
N
RR-48
RR-51
RR-65
RR-57
RR-61
RR-63
RR-55
RR-60
RR-62
RR-53
RR-64
RR-58
RR-59
RR-54
RR-47
RR-56
RR-49
Badger Hill
Arrowhead Springs
North Park
Wildwood Park
Kendall Hills
Cimmeron Ranch
Hudson Park
Arrowhead Farms
Cajon
Golden Valley
Del Rosa
Northeast Sterling
Belevedere
Muscoy
Shandin Hills
Arrowhead
Valencia
Barton
Delmann Heights
Muscupiabe
Arrowview
Wilson
Fumalo St
Patton State Hospital
Amber Hills
Small Canyon
San Andreas
Crossroads
San Gorgonio
California Gardens
Shirrells
Roosevelt
SBHS
DMV
Dennis Hill
Pacific
Warm Springs
La Plaza
San Bernardino
Downtown Rialto
Terrace West
Rialto
Amtrak
Lytle Creek
Rancho West
International
Stadium Aest
Valley College
Show Place
Valley View
Palmetto Ave
Palm Ave
Church Ave
Alabama St
Baseline
Foothill Fwy
Arrowhead
Institution Rd
Kendall Dr
Hillwark Pkwy
Cajon Blvd
Sycamore Ave
Ogden St
Kern St
Blake St
Northpark Blvd
Arrowhead Farms
W 41st St
W 40th St
E 40th St
E Parkdale Dr
Shandin Hills
W 30th St
N State St
N Golden Ave
E Marshall Blvd
Citrus St
Fumalo St
W Highland Ave
E Highland Ave
N California St
N H St
N D St
Miro Way
W Base Line Rd
E Base Line Rd
Carver
Manes P
W 8th St
N Waterman Ave
9th St
14th St
6th St
5th St
3rd St
E 3rd St
W Foothill Blvd
W Rialto Ave
E Rialto Ave
E Mill St
W Randall Ave
W Citrus St
W Laurel St
Johnston St
W Olive St
San Bernardino Ave
Norman Rd
Overview
Palmetto Ave
W Pioneer Ave
San Bernardino International Airport
Maple Ave
N Cedar Ave
N Cactus Ave
N Lilac Ave
N Willow Ave
N Sycamore Ave
N Acacia Ave
N Pepper Ave
N Meridian Ave
S Cactus Ave
S Lilac Ave
S Willow Ave
S Meridian Ave
S Lilac Ave
N Rancho Ave
Mount Vernon Ave
E St
Sterling Ave
Waterman Ave
Valencia Ave
Golden Ave
Pepper Ave
Meridian Ave
Cedar Ave
Linden Ave
Locust Ave
Ayala Dr
Terrace Rd
Maple Ave
Cactus Ave
Lilac Ave
Willow Ave
Sycamore Ave
Acacia

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-58
Project Name : Water Pipeline Replacement Project 12
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

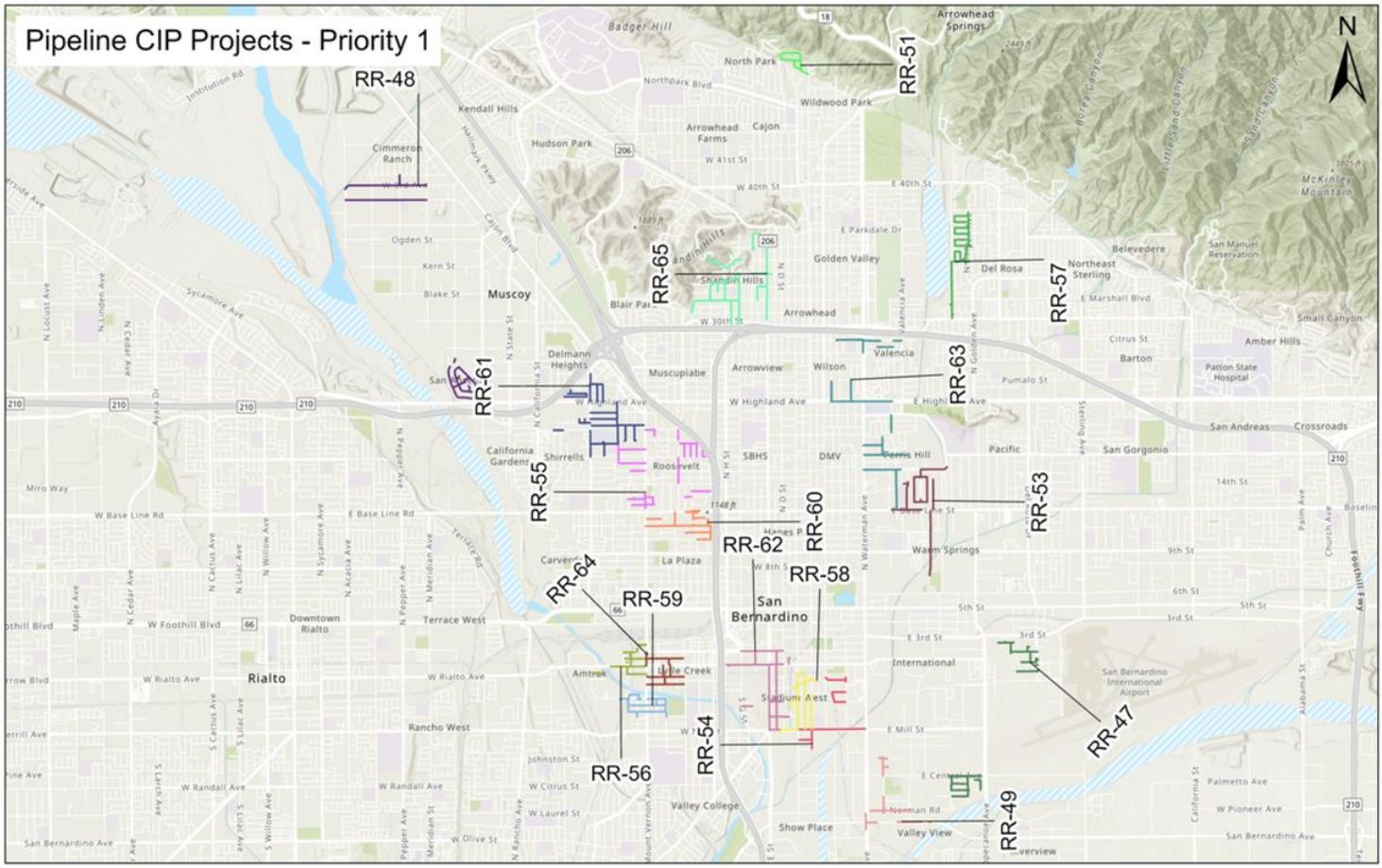
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$670,294
Const. Mgmnt:	$536,235
Construction:	$4,468,626
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$5,675,155
Contingency (10%)	$567,515
TOTAL COSTS (ROUNDED)	$6,250,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-56
Project Name : Water Pipeline Replacement Project 10
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

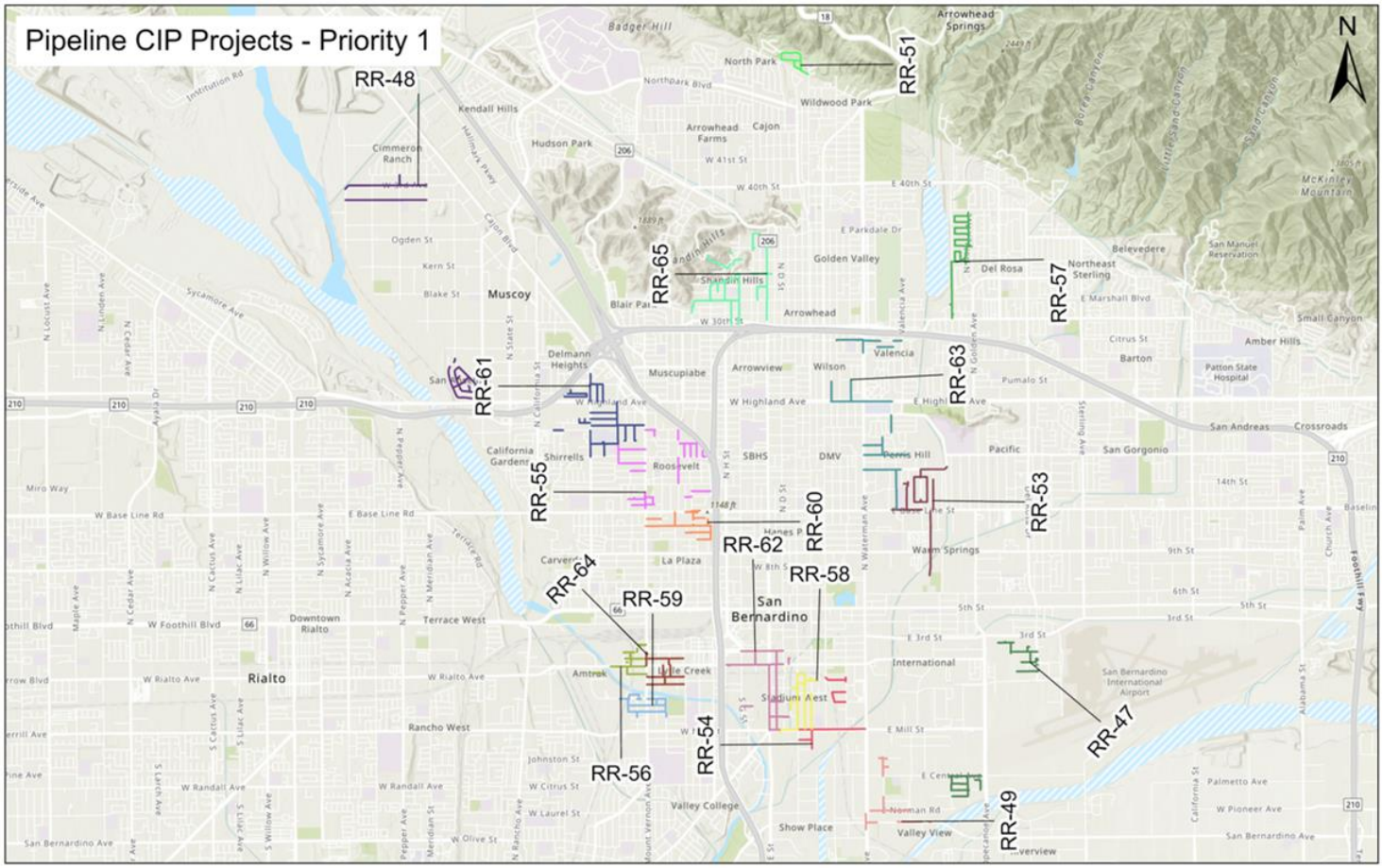
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$509,470
Const. Mgmnt:	$407,576
Construction:	$3,396,468
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$4,313,515
Contingency (10%)	$431,351
TOTAL COSTS (ROUNDED)	$4,750,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-57
Project Name : Water Pipeline Replacement Project 11
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

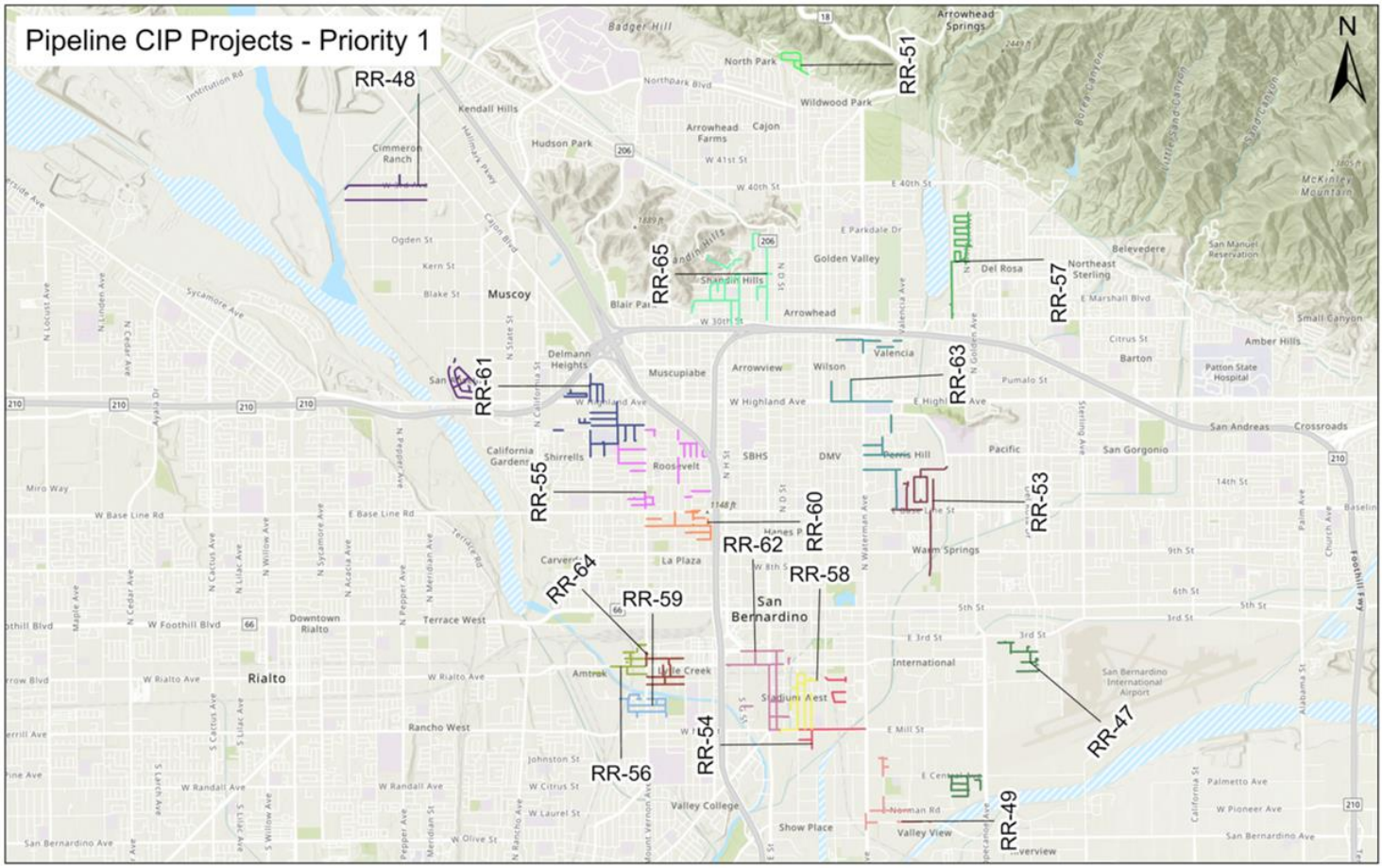
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$855,283
Const. Mgmnt:	$684,226
Construction:	$5,701,885
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$7,241,394
Contingency (10%)	$724,139
TOTAL COSTS (ROUNDED)	$7,970,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-59
Project Name : Water Pipeline Replacement Project 13
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

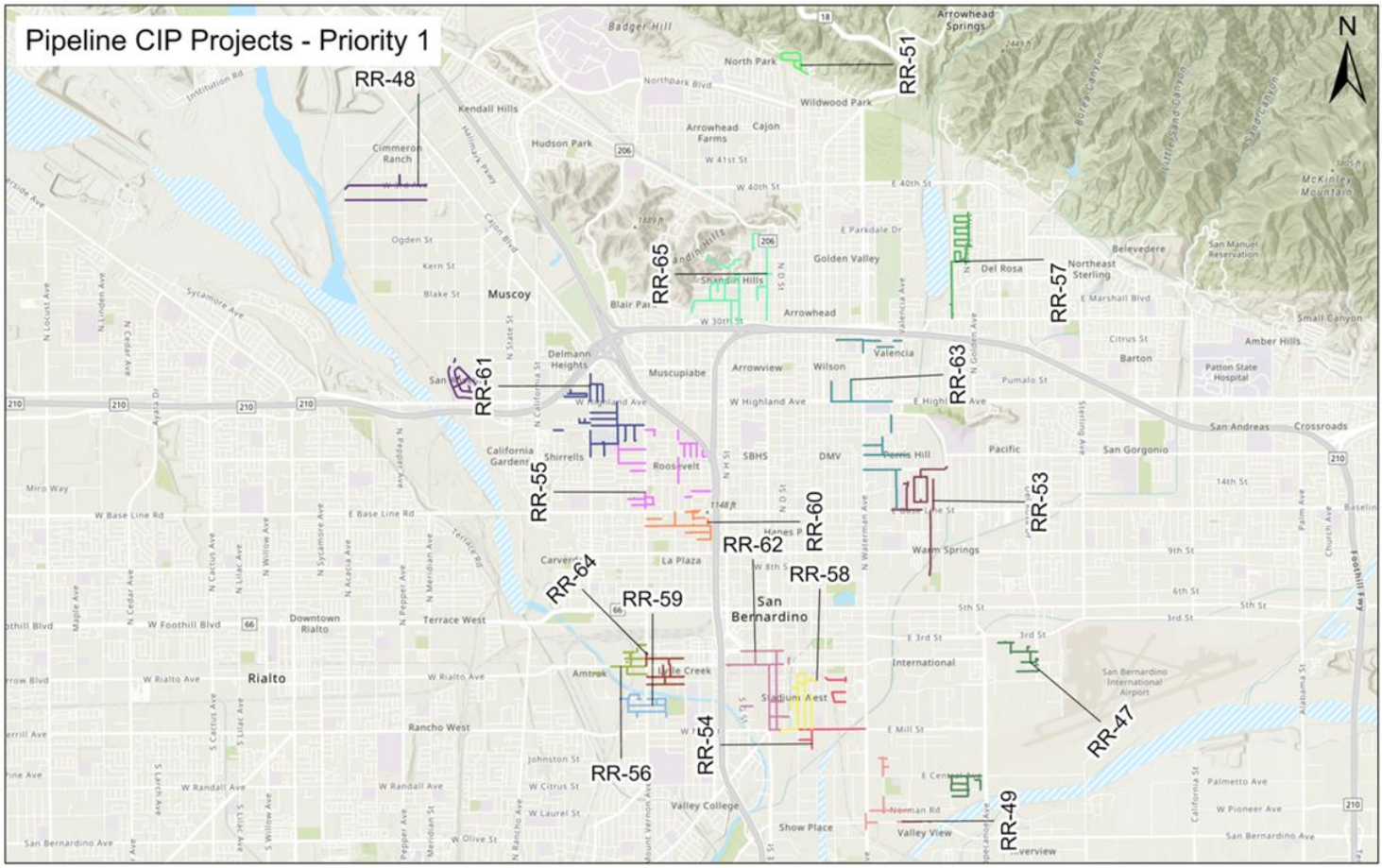
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$504,952
Const. Mgmnt:	$403,962
Construction:	$3,366,347
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$4,275,261
Contingency (10%)	$427,526
TOTAL COSTS (ROUNDED)	$4,710,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-55
Project Name : Water Pipeline Replacement Project 9
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

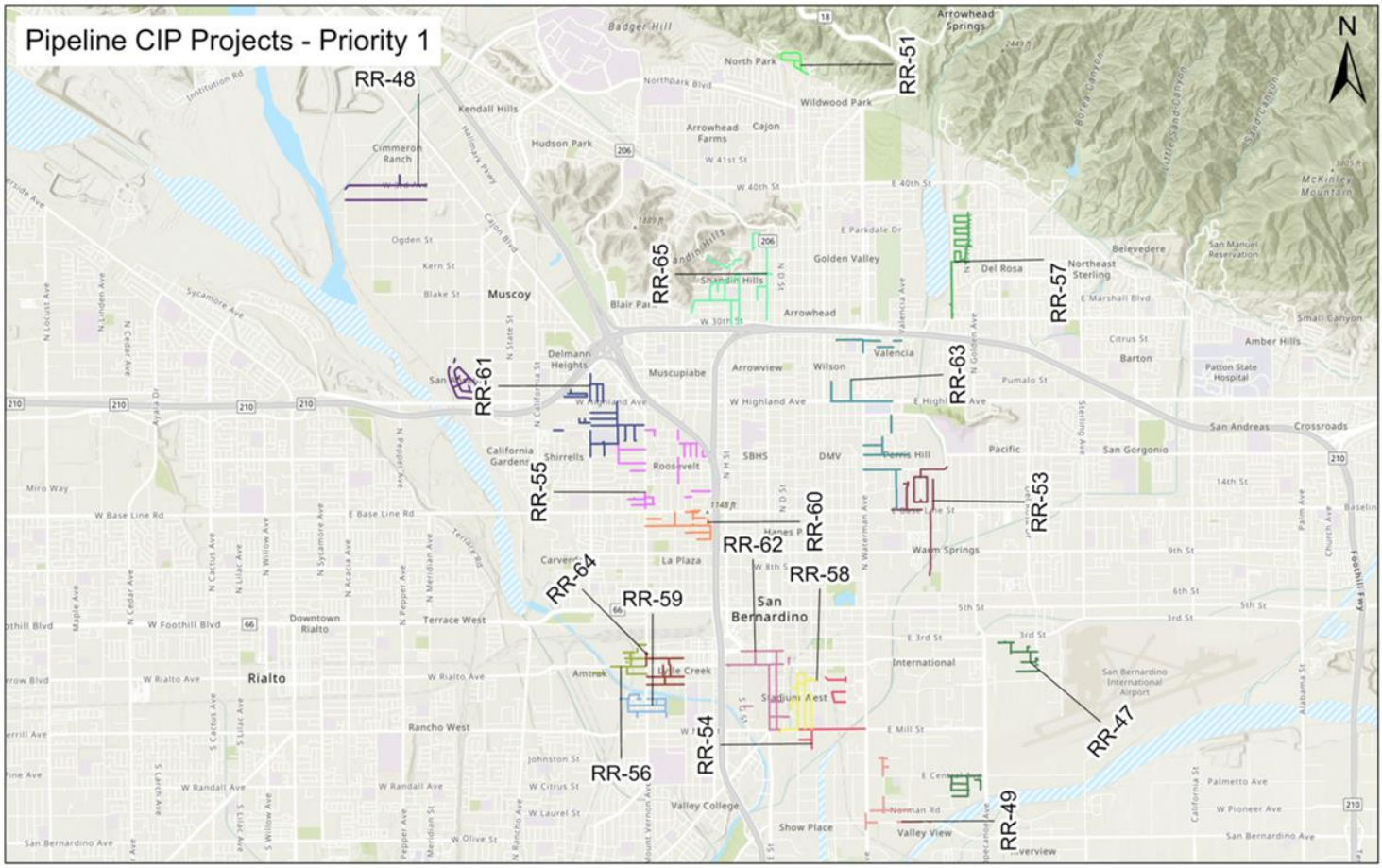
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$913,241
Const. Mgmnt:	$730,593
Construction:	$6,088,273
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$7,732,107
Contingency (10%)	$773,211
TOTAL COSTS (ROUNDED)	$8,510,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-60
Project Name : Water Pipeline Replacement Project 14
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

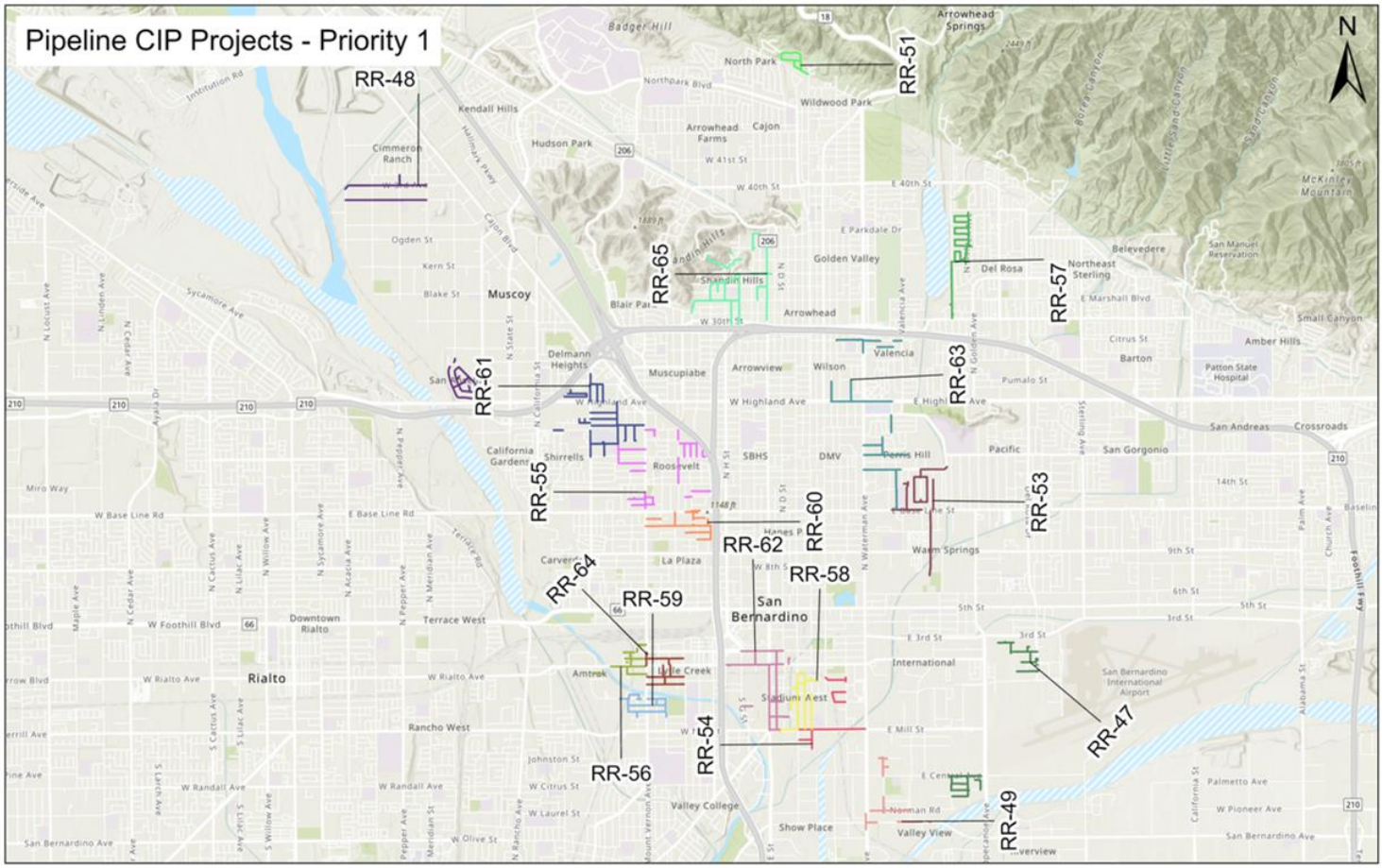
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$593,648
Const. Mgmnt:	$474,918
Construction:	$3,957,651
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$5,026,217
Contingency (10%)	$502,622
TOTAL COSTS (ROUNDED)	$5,530,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-64
Project Name : Water Pipeline Replacement Project 18
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

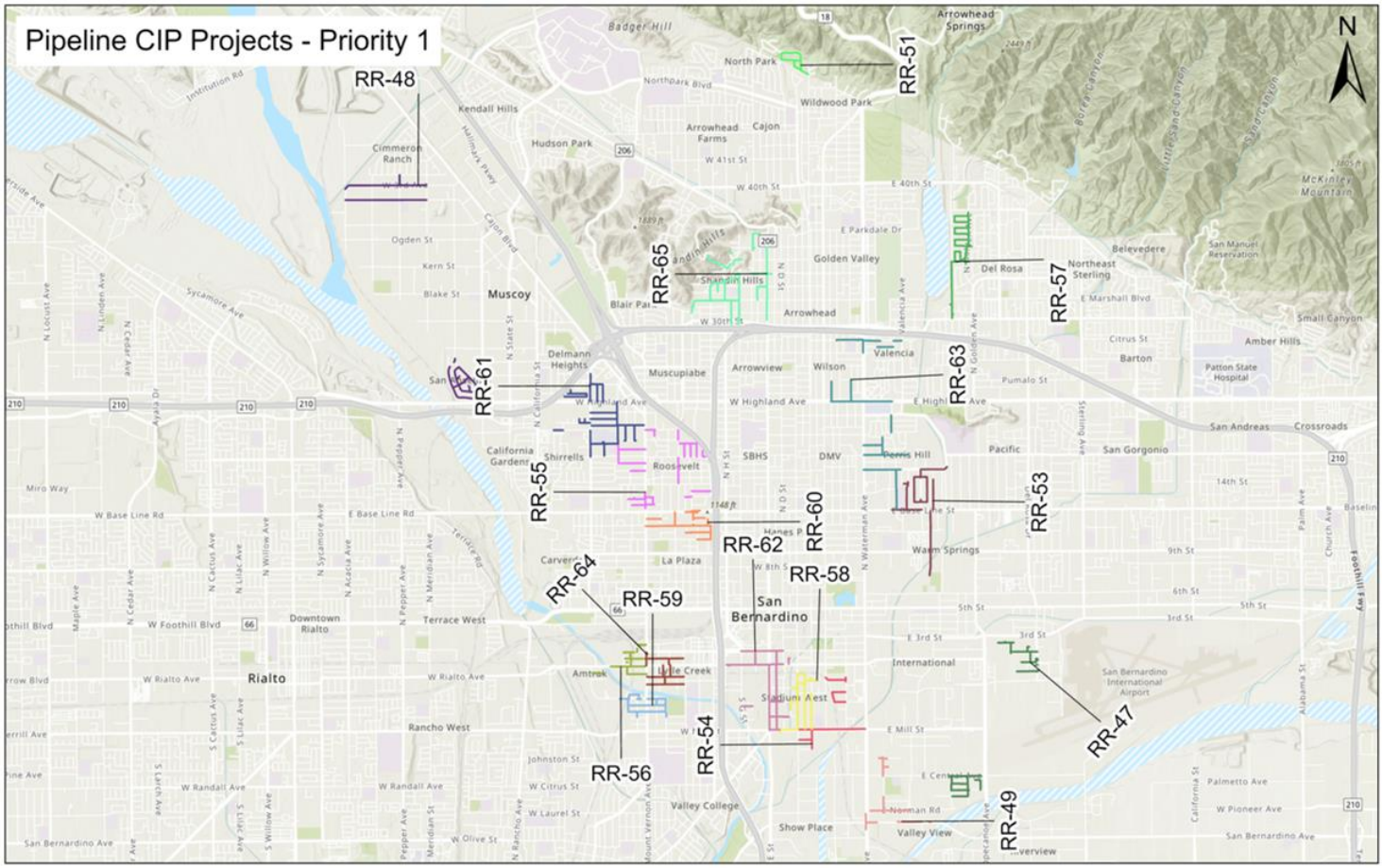
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$817,959
Const. Mgmnt:	$654,367
Construction:	$5,453,061
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$6,925,388
Contingency (10%)	$692,539
TOTAL COSTS (ROUNDED)	$7,620,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-61
Project Name : Water Pipeline Replacement Project 15
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

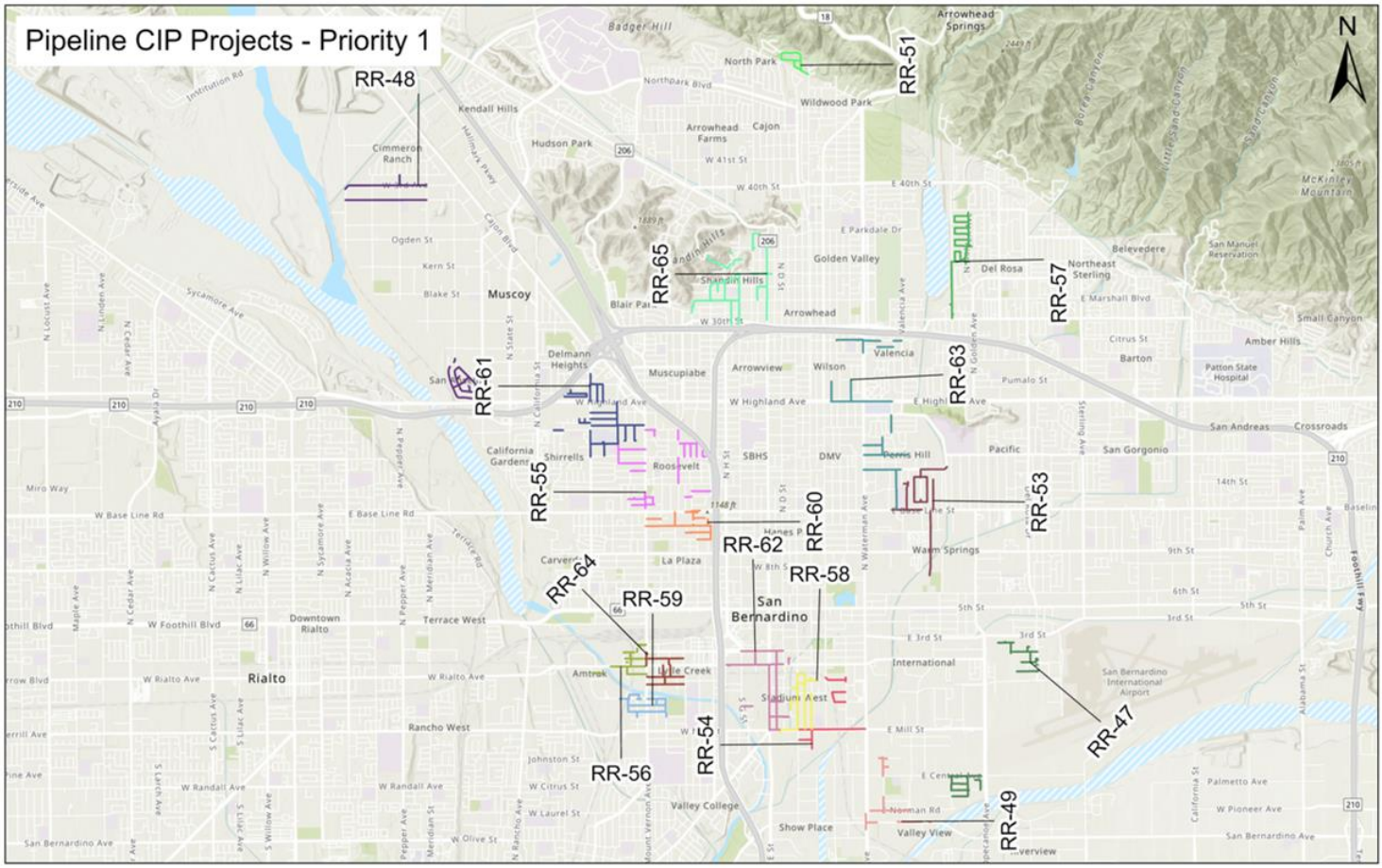
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,226,344
Const. Mgmnt:	$981,076
Construction:	$8,175,629
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$10,383,049
Contingency (10%)	$1,038,305
TOTAL COSTS (ROUNDED)	$11,430,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-62
Project Name : Water Pipeline Replacement Project 16
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

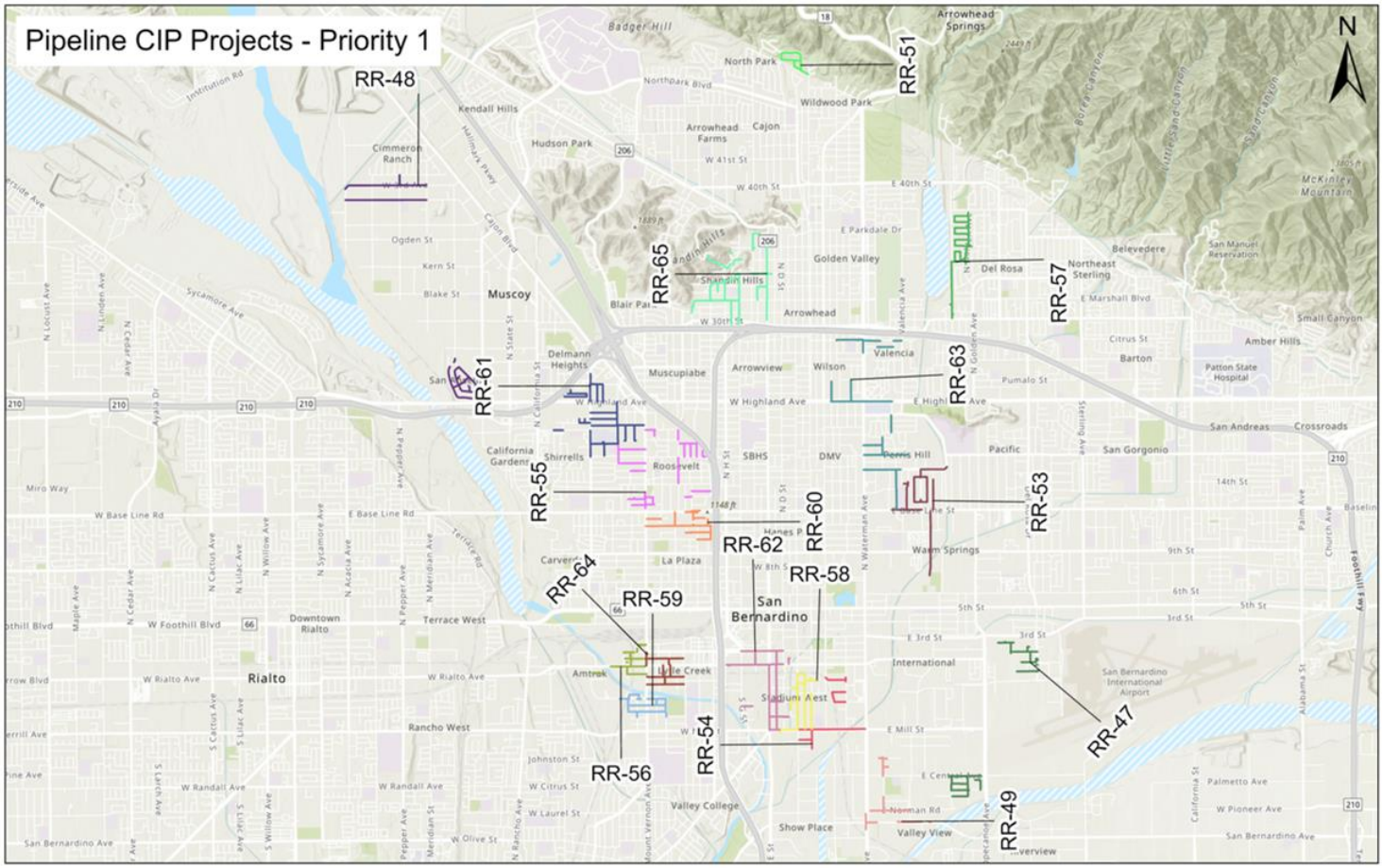
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,008,609
Const. Mgmnt:	$806,887
Construction:	$6,724,058
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$8,539,553
Contingency (10%)	$853,955
TOTAL COSTS (ROUNDED)	$9,400,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-63
Project Name : Water Pipeline Replacement Project 17
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.



Budgetary Requirements:

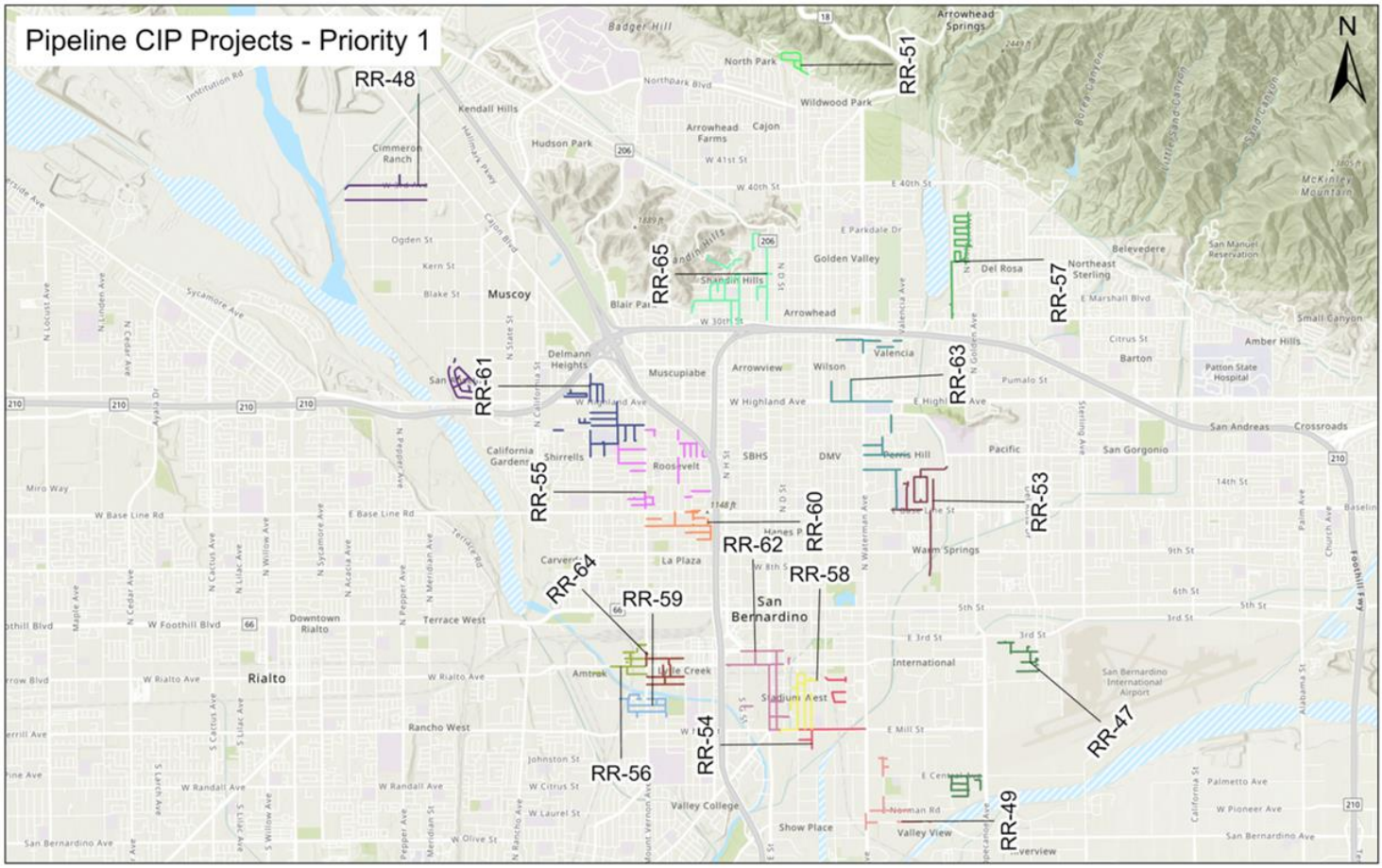
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,178,835
Const. Mgmnt:	$943,068
Construction:	$7,858,900
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$9,980,803
Contingency (10%)	$998,080
TOTAL COSTS (ROUNDED)	$10,980,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-65
Project Name : Water Pipeline Replacement Project 19
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of available fire flow deficient pipelines were assigned priority 1. See Figure 14-1 for project location.


Pipeline CIP Projects - Priority 1
N
RR-48
RR-51
RR-65
RR-57
RR-61
RR-63
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RR-60
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RR-53
RR-64
RR-58
RR-59
RR-54
RR-47
RR-56
RR-49
Muscoy
Rialto
San Bernardino
Golden Valley
Arrowhead
Wildwood Park
Hudson Park
Cimmeron Ranch
Kendall Hills
Muscupiabe
Arrowview
Wilson
Valencia
Del Rosa
Northeast Sterling
Barton
Pacific
Dennis Hill
Warm Springs
La Plaza
Roosevelt
Shirrells
Delmann Heights
California Gardens
Terrace West
Downtown Rialto
Rancho West
Valley College
Show Place
Valley View
International
Arrowhead Springs
Arrowhead Farms
Cajon
Badger Hill
North Park
Northpark Blvd
Hillmark Pkwy
Cajon Blvd
Institution Rd
Ogden St
Kern St
Blake St
Sycamore Ave
Shandin Hills
Blair Park
Belvedere
San Manuel Reservation
McKinley Mountain
Small Canyon
Amber Hills
Patton State Hospital
San Andreas
Crossroads
San Gorgonio
Citrus St
Pumalo St
E Marshall Blvd
E Highland Ave
W Highland Ave
E Base Line Rd
W Base Line Rd
Miro Way
W Foothill Blvd
W Rialto Ave
W Randall Ave
W Citrus St
W Laurel St
W Olive St
Johnston St
E Mill St
E 3rd St
W 8th St
W 30th St
W 40th St
E 40th St
E Parkdale Dr
San Bernardino Ave
W Pioneer Ave
Palmetto Ave
Amtrak
Little Creek
Stadium Aest
SBHS
DMV
Maines P
Carver
Overview
Norman Rd
Terrace Rd
Waterman Ave
Meridian Ave
Pepper Ave
Cactus Ave
Lilac Ave
Willow Ave
Sycamore Ave
Acacia Ave
Cedar Ave
Maple Ave
Linden Ave
Locust Ave
Mount Vernon Ave
Tippecanoe Ave
Sterling Ave
Palm Ave
Church Ave
Alabama St
California St
Foothill Fwy
Airport Dr
Ayala Dr
Pepper Ave
Rancho Ave
Citrus Ave
Laurel St
Olive St
Randall Ave
Foothill Blvd
Rialto Ave
Base Line Rd
Highland Ave
Mill St
3rd St
5th St
6th St
9th St
14th St
Baseline
Waterman Ave
Valencia Ave
Golden Ave
Del Rosa
Sterling Ave
Mount Vernon Ave
Tippecanoe Ave
Meridian St

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-12
Project Name : 17th St Booster Pump Station Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at 17th & Sierra Way St - 17th St BPS.
• Main Control Panel 1 at BPS (17th St)
• Soft Start - 17th Booster
The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$15,907
Const. Mgmnt:	$12,726
Construction:	$106,049
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$134,682
Contingency (10%)	$13,468
TOTAL COSTS (ROUNDED)	$150,000

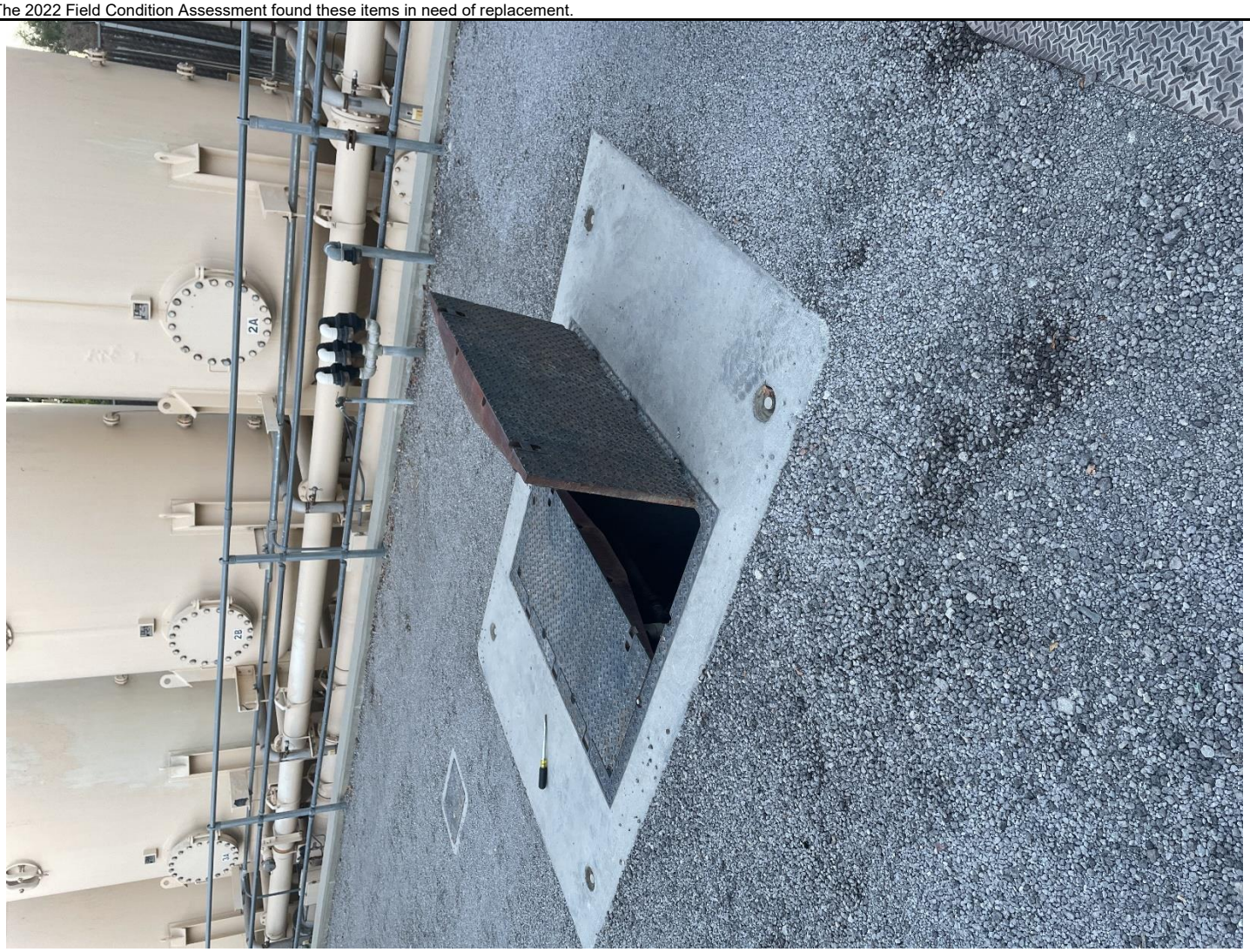
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-13
Project Name : 17th St Well Upgrades
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at 17th & Sierra Way St - 17th St Well.
• Piping Assembly 17th St Well
• Pump in Vault
• Soft Start - 17th Well
The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$97,300
Const. Mgmnt:	$77,840
Construction:	$648,665
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$823,805
Contingency (10%)	$82,380
TOTAL COSTS (ROUNDED)	$910,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-14
Project Name : 17th & Sierra Way Plant - Common Upgrades
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at 17th & Sierra Way St - Common.
• Pump Building - 17th and 16th Pump Stations
• Paving
The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$106,579
Const. Mgmnt:	$85,263
Construction:	$710,527
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$902,369
Contingency (10%)	$90,237
TOTAL COSTS (ROUNDED)	$1,000,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-15
Project Name : 17th & Sierra Way Plant Reservoir Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at 17th & Sierra Way St - Reservoir.
• Flow Transmitter/Meter (Between Carbon System and Booster Pump)
• Piping - Reservoir Outlet Valve Vault
The 2022 Field Condition Assessment found these items in need of replacement.





Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$8,219
Const. Mgmnt:	$6,575
Construction:	$54,792
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$69,586
Contingency (10%)	$6,959
TOTAL COSTS (ROUNDED)	$80,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-16
Project Name : 19th St Plant Booster Pump Station Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at 19th St - BPS (#1-5).
- Chlorine Mixing Box
- Pump#4 - Pump
- Suction Pump - End Suction Pump
- Chlorine Injection Pump
- Power Panel 120/240V

The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$107,640
Const. Mgmnt:	$86,112
Construction:	$717,597
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$911,348
Contingency (10%)	$91,135
TOTAL COSTS (ROUNDED)	$1,010,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-17
Project Name : 19th St Plant - Common Upgrades
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at 19th St - Common.
- Air Release Valve By the Building
- Airvac Valve Anti Siphon
- Mini Power Center (Dry Type Xfmr W/ Power Pnl)
- Security Camera
- Sump Pump
- Vault - North West of the Building
- Vault Flowmeter - North of the Building
- Vessel Influent Flowmeter Vault - West of the South Vessels 24 In Valve
- Vault lids (7)

The 2022 Field Condition Assessment found these items in need of replacement.





Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$188,237
Const. Mgmnt:	$150,589
Construction:	$1,254,911
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$1,593,737
Contingency (10%)	$159,374
TOTAL COSTS (ROUNDED)	$1,760,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-18
Project Name : 19th St Plant GAC System Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at 19th St - GAC System.
• Backwash Piping Assembly ~1,000 LF
The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$14,582
Const. Mgmnt:	$11,665
Construction:	$97,211
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$123,458
Contingency (10%)	$12,346
TOTAL COSTS (ROUNDED)	$140,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-19
Project Name : EPA Well 6 Upgrades
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at EPA - Well #006.
- Flowmeter
- Motor Starter
- PLC SCADA
- Switchboard MSF
- Well Pump & Motor

The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$183,464
Const. Mgmnt:	$146,772
Construction:	$1,223,096
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$1,553,332
Contingency (10%)	$155,333
TOTAL COSTS (ROUNDED)	$1,710,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-20
Project Name : EPA Well 7 Upgrades
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at EPA - Well #007.
- Flowmeter
- Isolation Valve Vault
- PLC SCADA
- Pavement
- Motor Starter

The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$14,051
Const. Mgmnt:	$11,241
Construction:	$93,676
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$118,969
Contingency (10%)	$11,897
TOTAL COSTS (ROUNDED)	$140,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

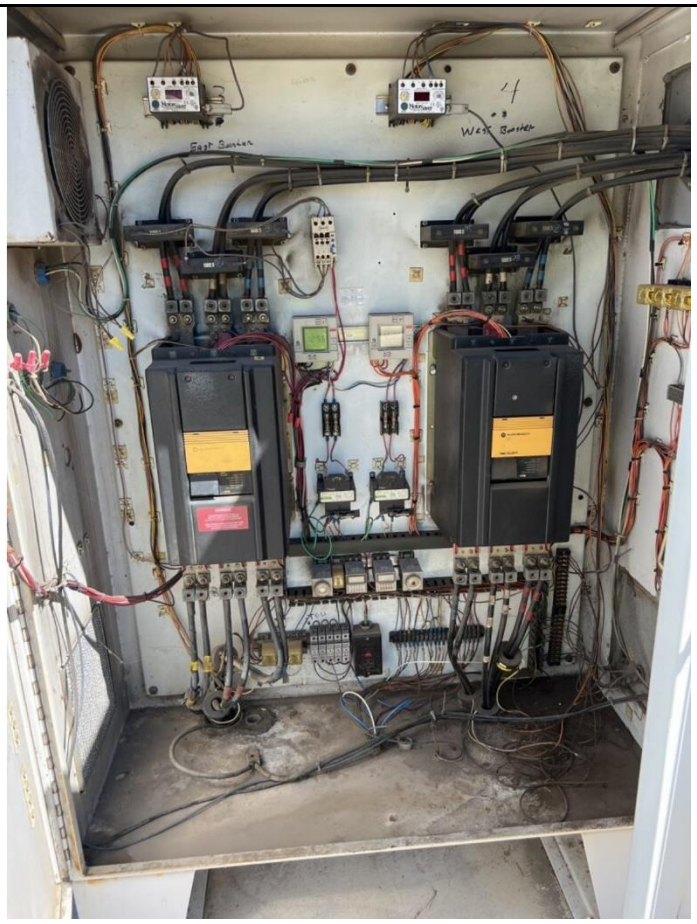
San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-26
Project Name : Sycamore Booster Pump Station (#3-4) Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at Newmark - Sycamore BPS (#3-4).
• Electrical Vault (South of Pumping Station)
• Booster Pumps 3 & 4 Soft Starter Cabinet replacement with MCC
The 2022 Field Condition Assessment found these items in need of replacement.





Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$35,261
Const. Mgmnt:	$28,209
Construction:	$235,075
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$298,545
Contingency (10%)	$29,855
TOTAL COSTS (ROUNDED)	$330,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-27
Project Name : Newmark Well Upgrades
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at Newmark Wells.
- 120/240V Power Panel
- Well House - Air Compressor
- Well #3 - Pump
- 120/240V Power Panel
- Security Camera
- Air Compressor Tank For Well #4 For Natural Gas Engine
- Termination Cabinet By Well #3
- Motor Starter - Well #3
- Soft Starter - Well #4

The 2022 Field Condition Assessment found these items in need of replacement. Well #1 upgrades are not included since this well runs dry. Additionally, it is recommended that a new sanitary seal is implemented at Well #4 whenever it is being rehabbed.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$105,519
Const. Mgmnt:	$84,415
Construction:	$703,457
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$893,390
Contingency (10%)	$89,339
TOTAL COSTS (ROUNDED)	$990,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-25
Project Name : Sycamore Booster Pump Station (#2) Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at Newmark - Sycamore BPS (#2).
• Pump House 2 Building
• Air Release Valve Booster #2
• Flowmeter Vault - Sycamore BPS #2
The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$105,784
Const. Mgmnt:	$84,627
Construction:	$705,225
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$895,635
Contingency (10%)	$89,564
TOTAL COSTS (ROUNDED)	$990,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

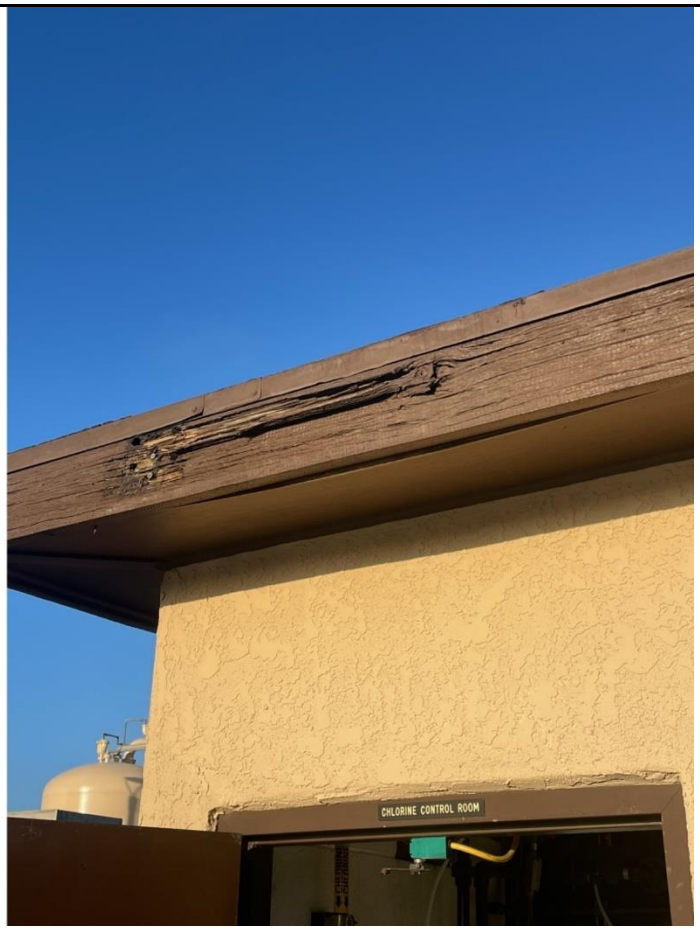
San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-22
Project Name : Newmark Plant - Common Upgrades
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at Newmark - Common.
• Control Building
• Chlorine Gas Monitor
• Irrigation Valve 1 Backwash Supply Line
The 2022 Field Condition Assessment found these items in need of replacement.





Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$76,355
Const. Mgmnt:	$61,084
Construction:	$509,034
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$646,473
Contingency (10%)	$64,647
TOTAL COSTS (ROUNDED)	$720,000

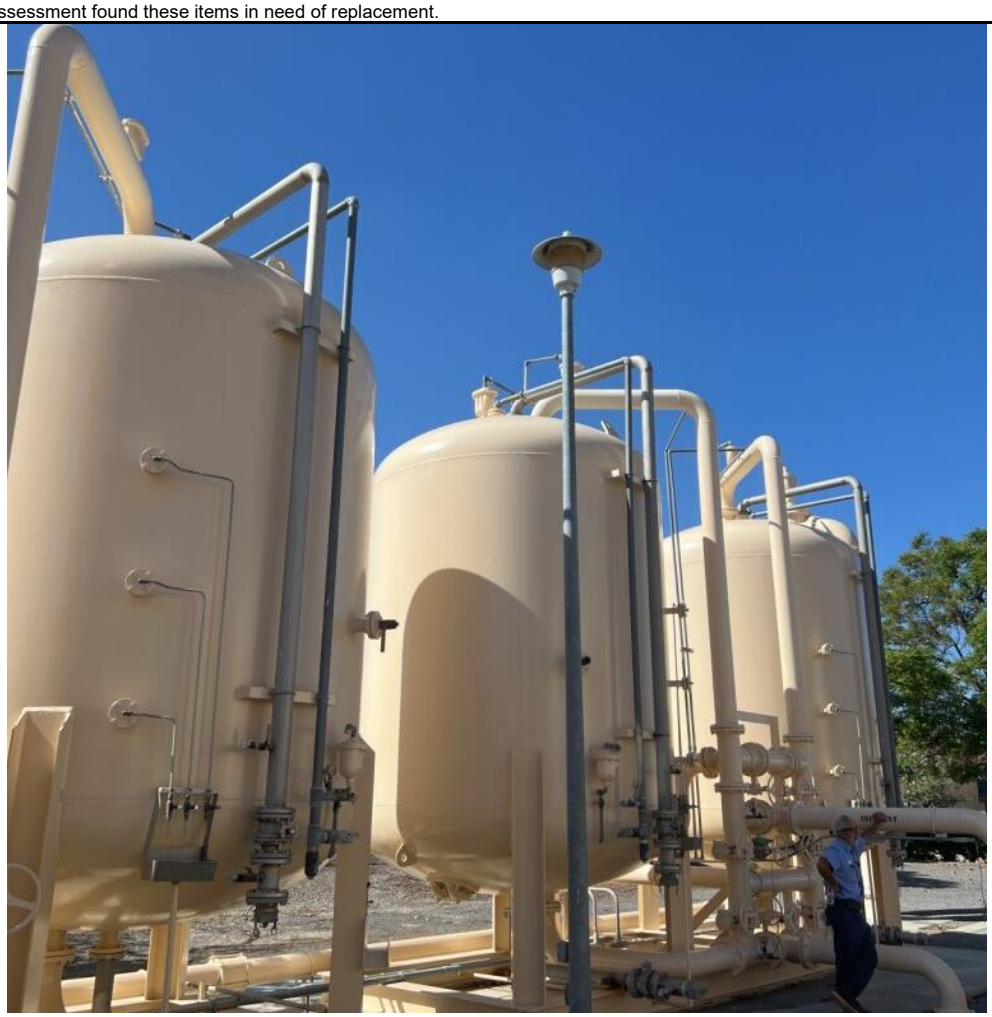
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-23
Project Name : Newmark Plant GAC System Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at Newmark - GAC System.
• Lighting - Vessel Area
• Forty two (42) Air Relief Valves
• Pressure Transmitter Vessels
The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$63,364
Const. Mgmnt:	$50,691
Construction:	$422,428
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$536,483
Contingency (10%)	$53,648
TOTAL COSTS (ROUNDED)	$600,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: NA-2
Project Name : Needs Analysis/Study for Additional Groundwater Treatment
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Needs analysis/study for additional groundwater treatment. The 2023 Master Plan water supply analysis indicated that the Department may need additional water supply sources to meet existing and future maximum day demands. A study is recommended to determine location of new wells and new groundwater treatment plants.

Table 10-5: Water Supply Analysis

Parameter	Existing (MGD)	2025 (MGD)	2030 (MGD)	2035 (MGD)	2040 (MGD)
Demand					
Average Day Demand	34.55	36.71	37.78	38.86	39.73
Max Day Demand	58.73	62.40	64.23	66.07	67.55
Supply					
Groundwater (Bunker Hill Basin)	56.72	56.72	56.72	56.72	56.72
Supply Criteria Analysis					
Total supply	56.72	56.72	56.72	56.72	56.72
Supply > Average Day Demand?	Yes	Yes	Yes	Yes	Yes
Supply - ADD (MGD)	22.17	20.01	18.93	17.85	16.98
Supply > Max Day Demand?	No	No	No	No	No
Supply - MDD (MGD)	-2.01	-5.68	-7.52	-9.35	-10.83

Notes:
1. Existing average day demand is from 2021 customer meter data. Max day demand is existing average day demand multiplied by 1.7 peaking factor.
2. Future average day demands are from 2020 Urban Water Management Plan. Future max day demand is average day demand multiplied by 1.7 peaking factor.
3. Demand data does not include Encanto Booster Station demands since the booster station is an intertie that serves other agencies.

Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$ 0
Const. Mgmnt:	$ 0
Construction:	$ 0
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$500,000
Contingency (10%)	$50,000
TOTAL COSTS (ROUNDED)	$550,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-39
Project Name : Lytle Creek Booster Pump Station Upgrade
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes complete facility replacement of the Lytle Creek Booster Pump Station. The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,396,928
Const. Mgmnt:	$1,117,542
Construction:	$9,312,852
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$11,827,322
Contingency (10%)	$1,182,732
TOTAL COSTS (ROUNDED)	$13,020,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-46
Project Name : Mill & D St Reservoir Electrical and Mechanical Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the electrical and mechanical components at Mill & D St Reservoir. The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$24,921
Const. Mgmnt:	$19,937
Construction:	$166,143
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$211,002
Contingency (10%)	$21,100
TOTAL COSTS (ROUNDED)	$240,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-8
Project Name : Permanent Generator at Daley Booster Pump Station
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: The Daley Zone has an HGL of 1775 ft and is one of the pressure zones with the highest HGLs. As a result, the only feasible option for a second supply point is a second pump station. Although feasible, this solution is not practical. A permanent generator at Daley Booster Pump Station is recommended to provide backup power in the event of a power loss. Please note that Del Rosa Booster Pump Stations would need to stay on during a power outage to support Daley Booster Pump Station during a fire event.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$62,039
Const. Mgmnt:	$49,631
Construction:	$413,590
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$525,260
Contingency (10%)	$52,526
TOTAL COSTS (ROUNDED)	$580,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-9
Project Name : Permanent Generator at Ridgeline Lower Booster Pump Station
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: The Ridgeline Zone has an HGL of 1751.5 ft and is one of the pressure zones with the highest HGLs. As a result, the only feasible option for a second supply point is a second pump station. Although feasible, this solution is not practical. A permanent generator at Ridgeline Lower Booster Pump Station is recommended to provide backup power in the event of a power loss.



Budgetary Requirements:

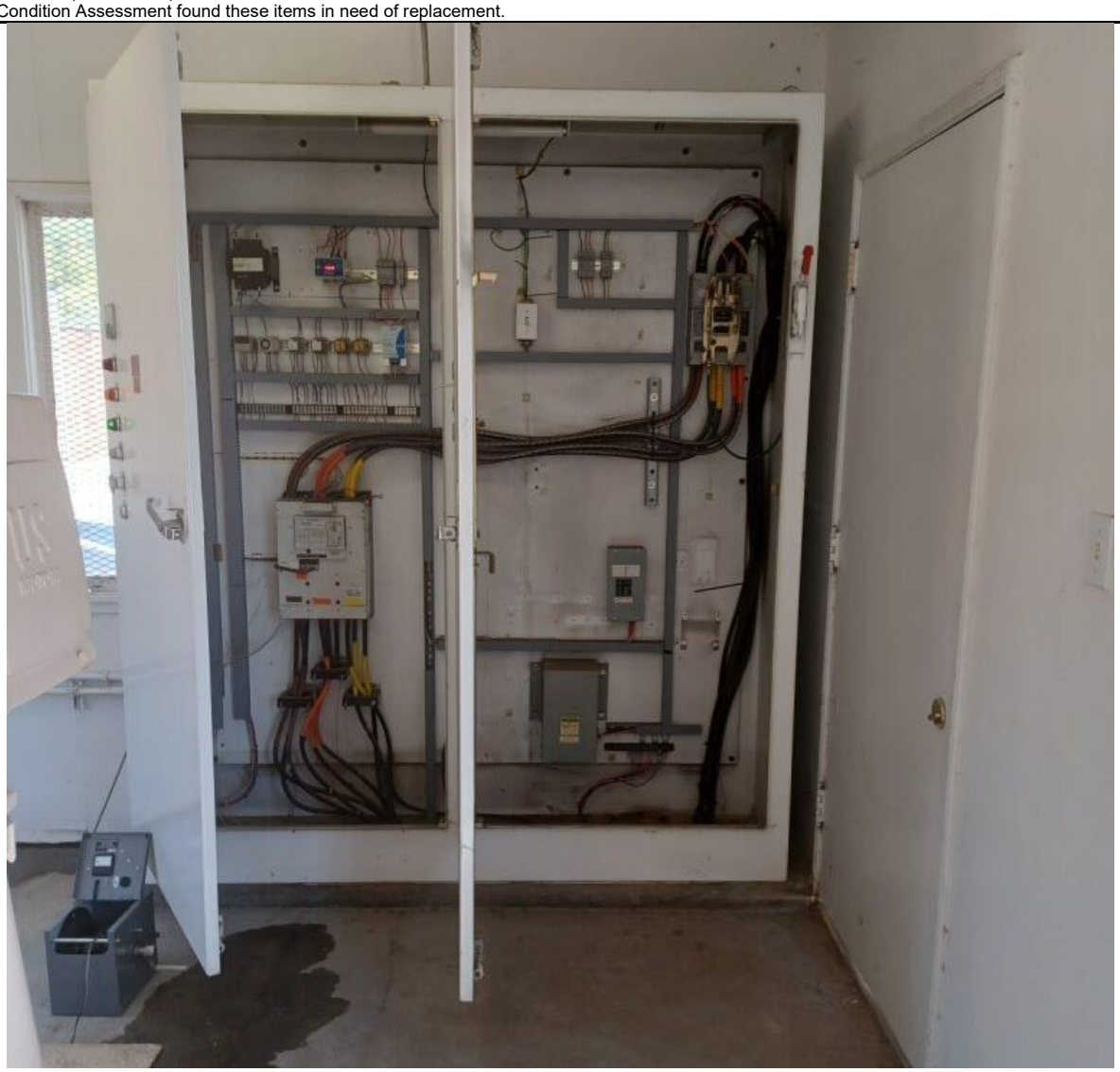
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$59,122
Const. Mgmnt:	$47,298
Construction:	$394,148
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$500,568
Contingency (10%)	$50,057
TOTAL COSTS (ROUNDED)	$560,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-32
Project Name : Waterman Ave Well Upgrades
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at Waterman Ave - Well.
• Motor Starter (Soft Start) - Well Pump - ITT
The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$11,665
Const. Mgmnt:	$9,332
Construction:	$77,769
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$98,767
Contingency (10%)	$9,877
TOTAL COSTS (ROUNDED)	$110,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-29
Project Name : Waterman Ave Booster Pump Station (#2) Mechanical Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at Waterman Ave - BPS #2.
• Pump #2 - 10in inlet - 8 outlet
The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

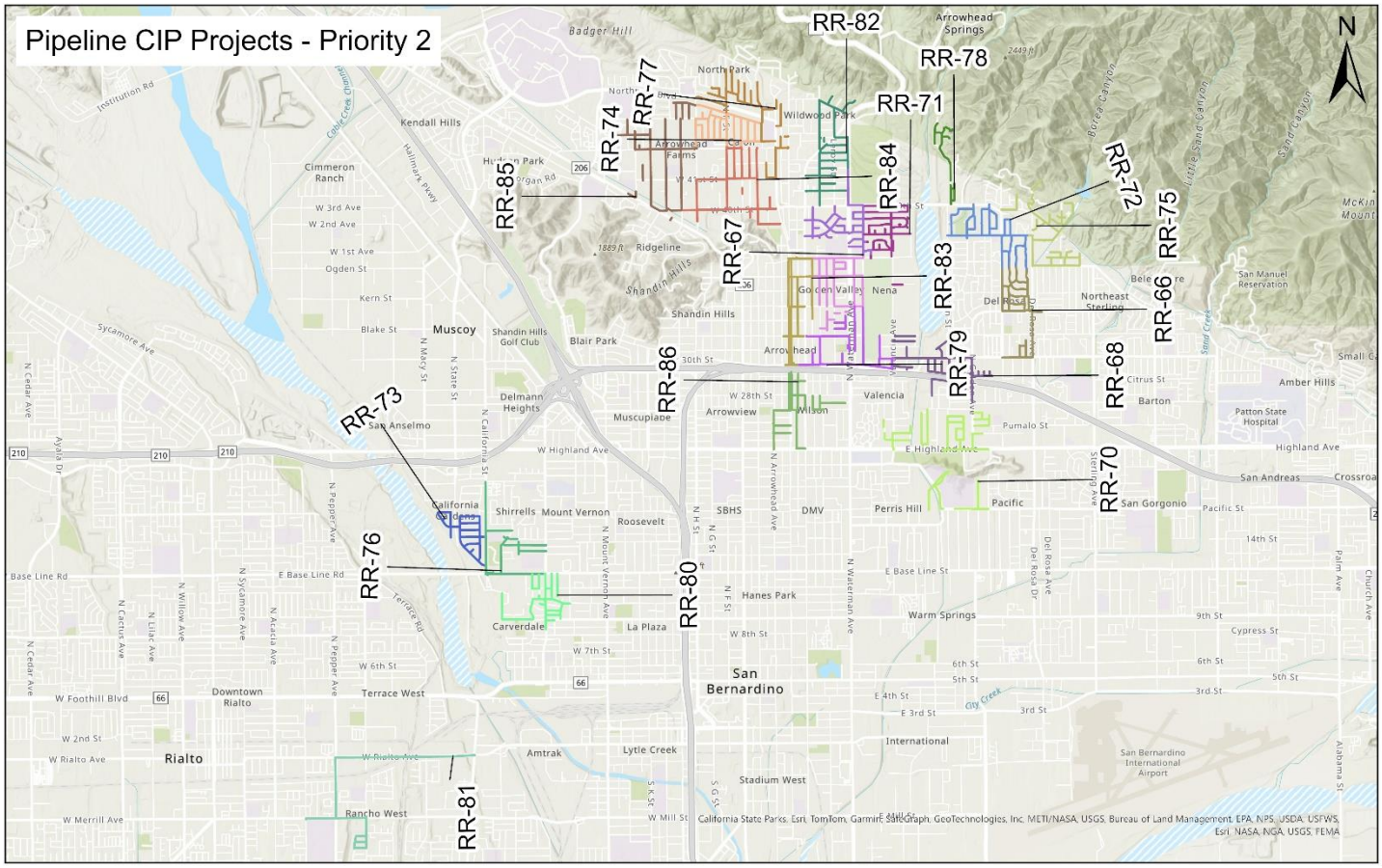
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$15,907
Const. Mgmnt:	$12,726
Construction:	$106,049
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$134,682
Contingency (10%)	$13,468
TOTAL COSTS (ROUNDED)	$150,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-67
Project Name : Water Pipeline Replacement Project 21
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,175,662
Const. Mgmnt:	$940,530
Construction:	$7,837,748
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$9,953,940
Contingency (10%)	$995,394
TOTAL COSTS (ROUNDED)	$10,950,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-28
Project Name : Waterman Ave Booster Pump Station (#1,3,4) Mechanical Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following mechanical components at Waterman Ave - BPS (#1, 3, 4).
- Pump #1
- Pump #3
- Pump #4

The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$99,421
Const. Mgmnt:	$79,537
Construction:	$662,805
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$841,762
Contingency (10%)	$84,176
TOTAL COSTS (ROUNDED)	$930,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-5
Project Name : Waterman Ave Waterman Booster Pump Station (#1,3,4) Electrical Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following electrical components at Waterman Ave - BPS (#1, 3, 4).
- Switchboard (Waterman BPS# 1 & 3)
- Switchboard (Waterman BPS# 2 & 4)
- Flowmeter (Waterman BP#1)
- Flowmeter (Transmitter) (Waterman BP #3)
- Flowmeter (Transmitter) (Waterman BP #4)

The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$13,786
Const. Mgmnt:	$11,029
Construction:	$91,909
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$116,724
Contingency (10%)	$11,672
TOTAL COSTS (ROUNDED)	$130,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-11
Project Name : Waterman Ave Waterman Booster Pump Station (#2) Electrical Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following electrical components at Waterman Ave - BPS #2.
• Flowmeter (Transmitter) (Waterman BP #2)
• Motor Starter - Soft Start (Waterman BP#2)
The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$11,930
Const. Mgmnt:	$9,544
Construction:	$79,537
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$101,011
Contingency (10%)	$10,101
TOTAL COSTS (ROUNDED)	$120,000

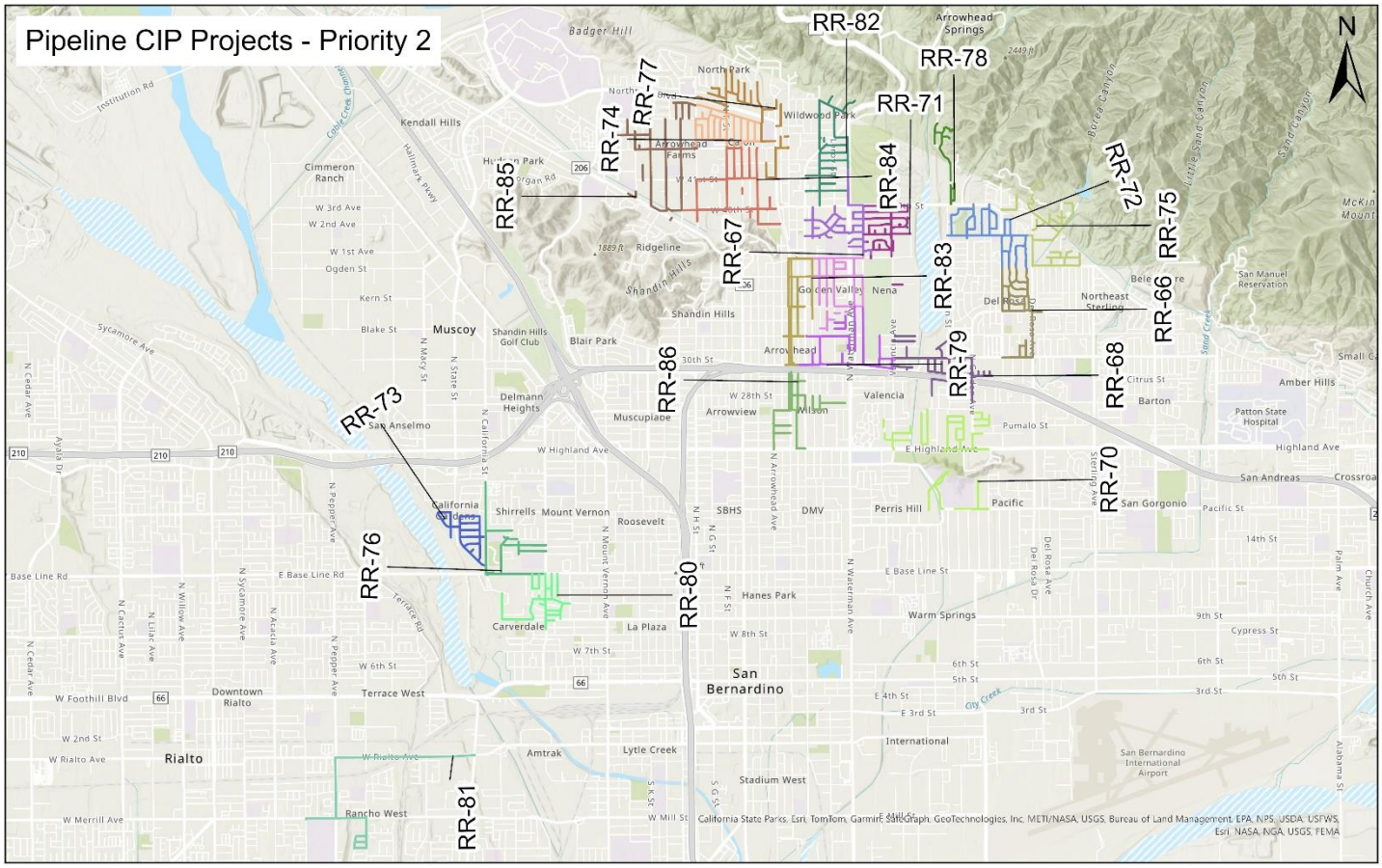
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-66
Project Name : Water Pipeline Replacement Project 20
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

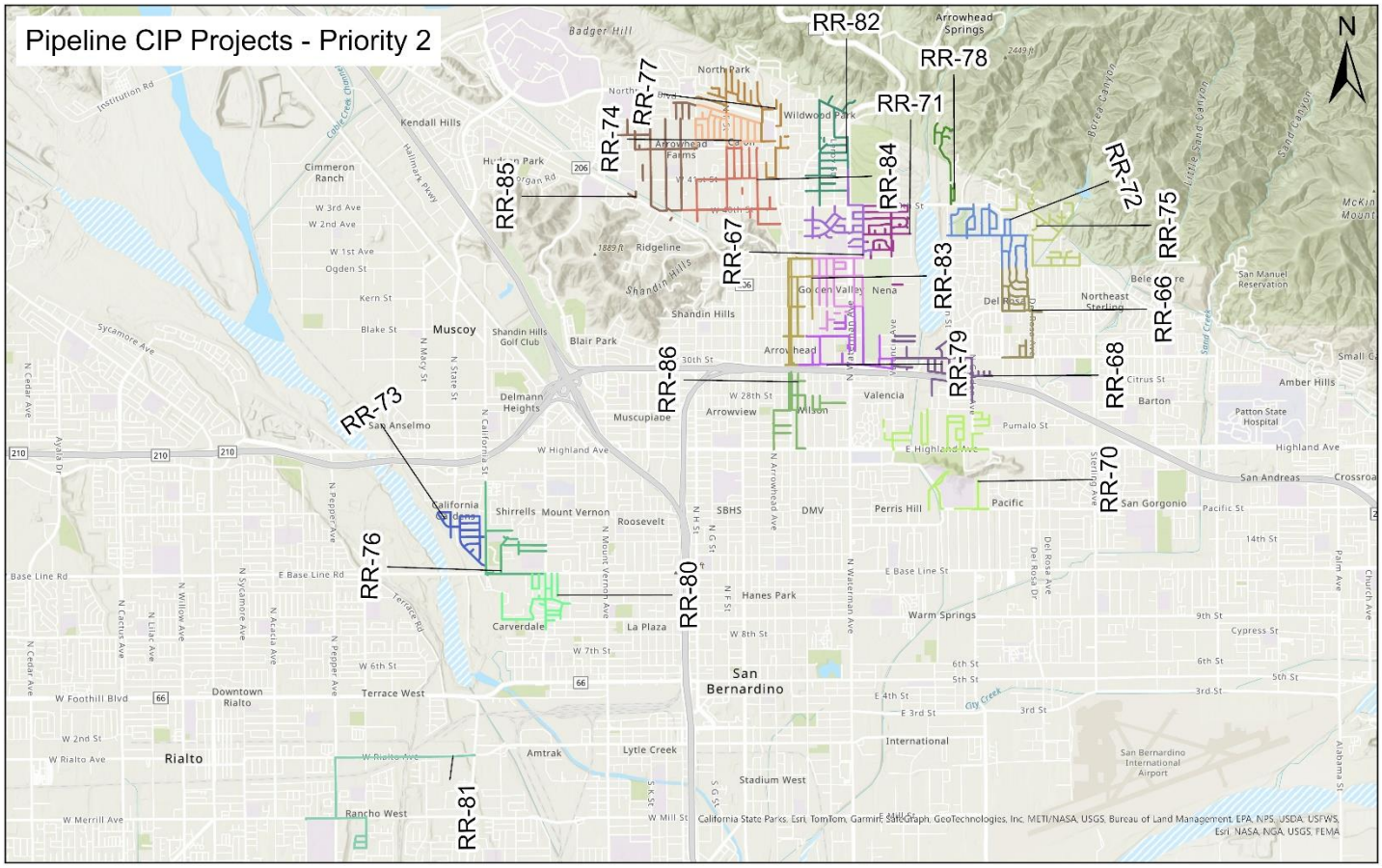
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,254,072
Const. Mgmnt:	$1,003,258
Construction:	$8,360,482
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$10,617,812
Contingency (10%)	$1,061,781
TOTAL COSTS (ROUNDED)	$11,680,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-68
Project Name : Water Pipeline Replacement Project 22
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

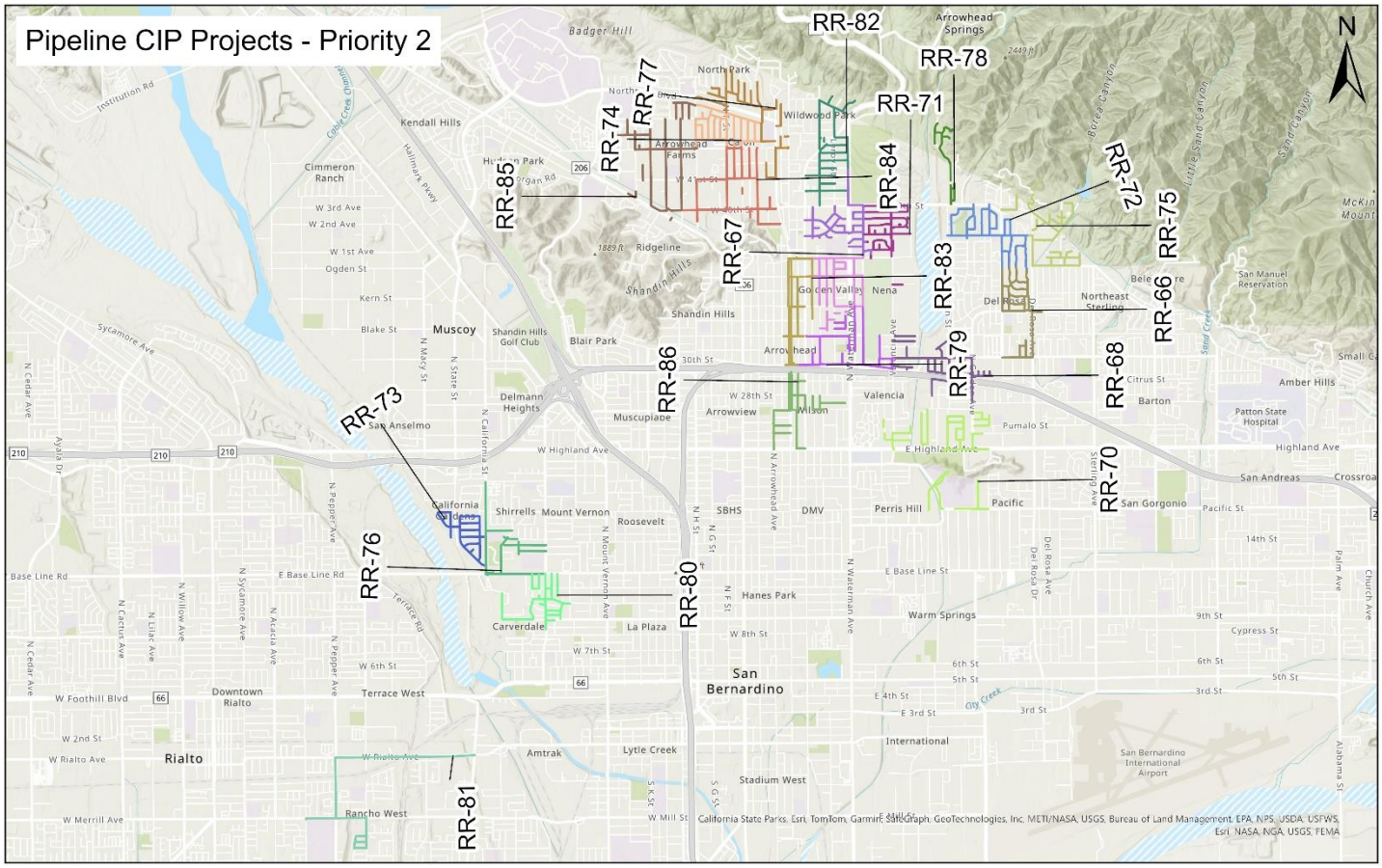
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,247,432
Const. Mgmnt:	$997,945
Construction:	$8,316,212
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$10,561,589
Contingency (10%)	$1,056,159
TOTAL COSTS (ROUNDED)	$11,620,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-69
Project Name : Water Pipeline Replacement Project 23
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,131,351
Const. Mgmnt:	$905,081
Construction:	$7,542,341
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$9,578,773
Contingency (10%)	$957,877
TOTAL COSTS (ROUNDED)	$10,540,000

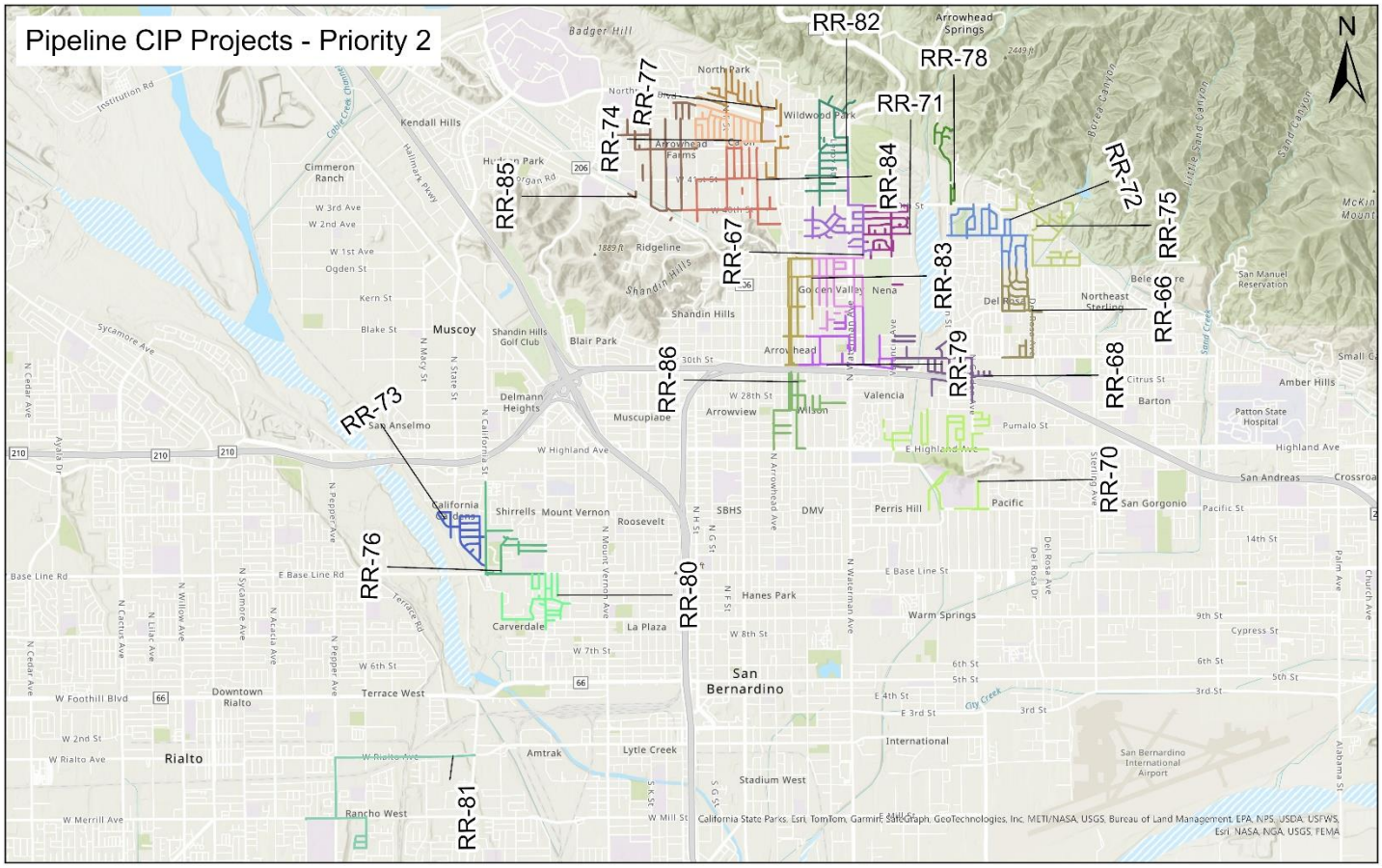
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-70
Project Name : Water Pipeline Replacement Project 24
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

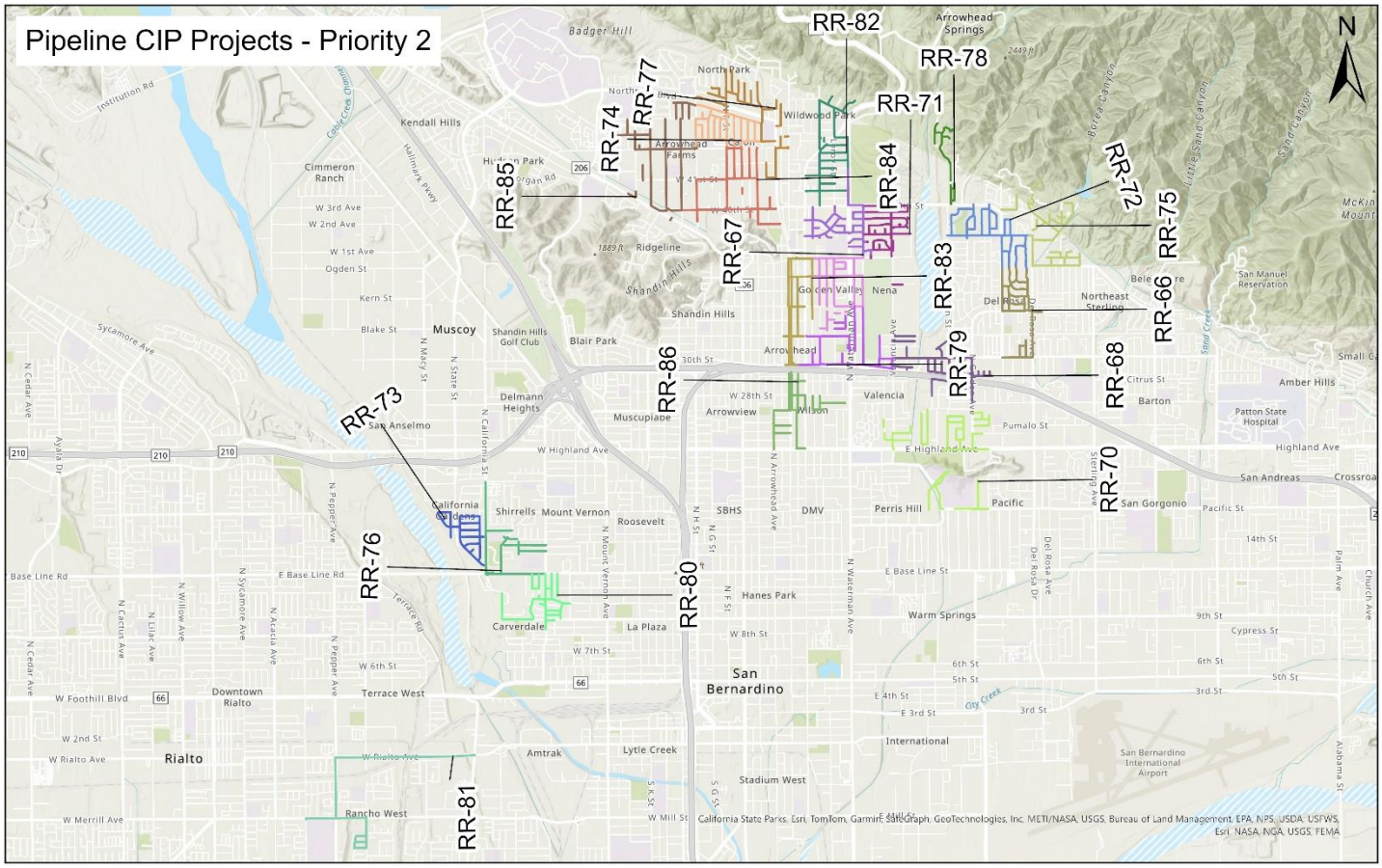
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,573,405
Const. Mgmnt:	$1,258,724
Construction:	$10,489,370
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$13,321,500
Contingency (10%)	$1,332,150
TOTAL COSTS (ROUNDED)	$14,660,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-71
Project Name : Water Pipeline Replacement Project 25
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,130,599
Const. Mgmnt:	$904,479
Construction:	$7,537,328
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$9,572,407
Contingency (10%)	$957,241
TOTAL COSTS (ROUNDED)	$10,530,000

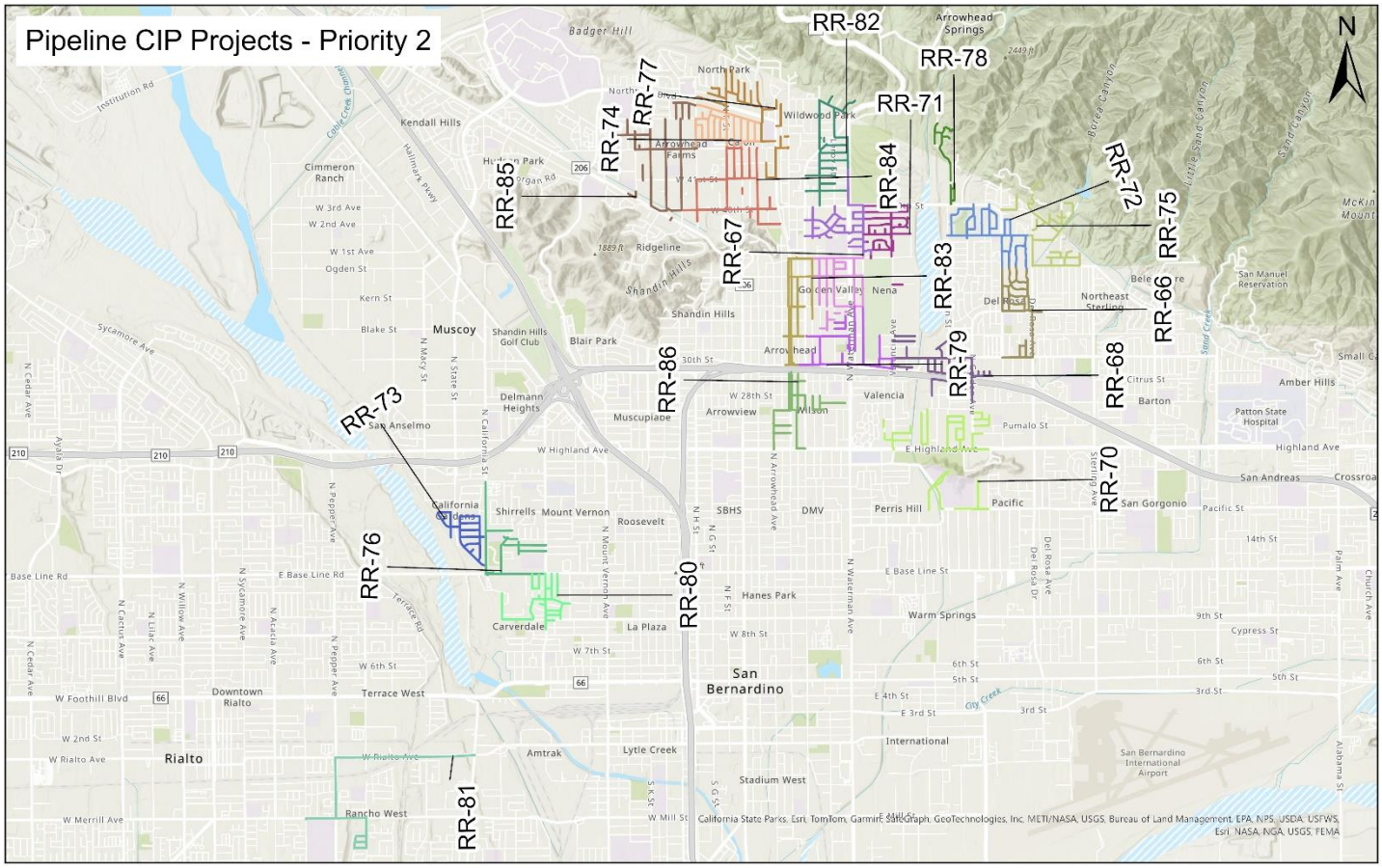
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-72
Project Name : Water Pipeline Replacement Project 26
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

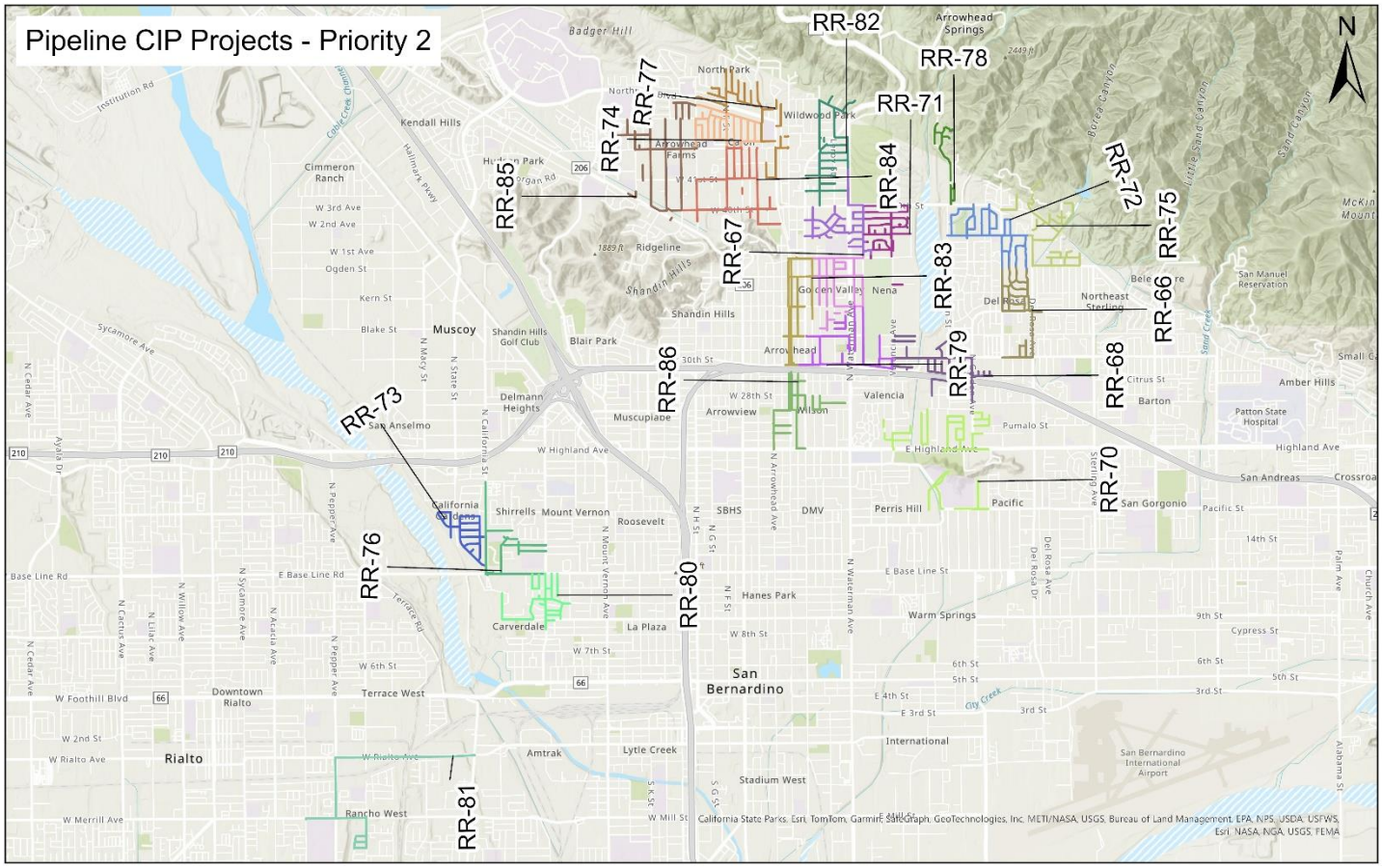
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,262,122
Const. Mgmnt:	$1,009,698
Construction:	$8,414,146
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$10,685,966
Contingency (10%)	$1,068,597
TOTAL COSTS (ROUNDED)	$11,760,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-73
Project Name : Water Pipeline Replacement Project 27
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$755,391
Const. Mgmnt:	$604,313
Construction:	$5,035,941
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$6,395,645
Contingency (10%)	$639,565
TOTAL COSTS (ROUNDED)	$7,040,000

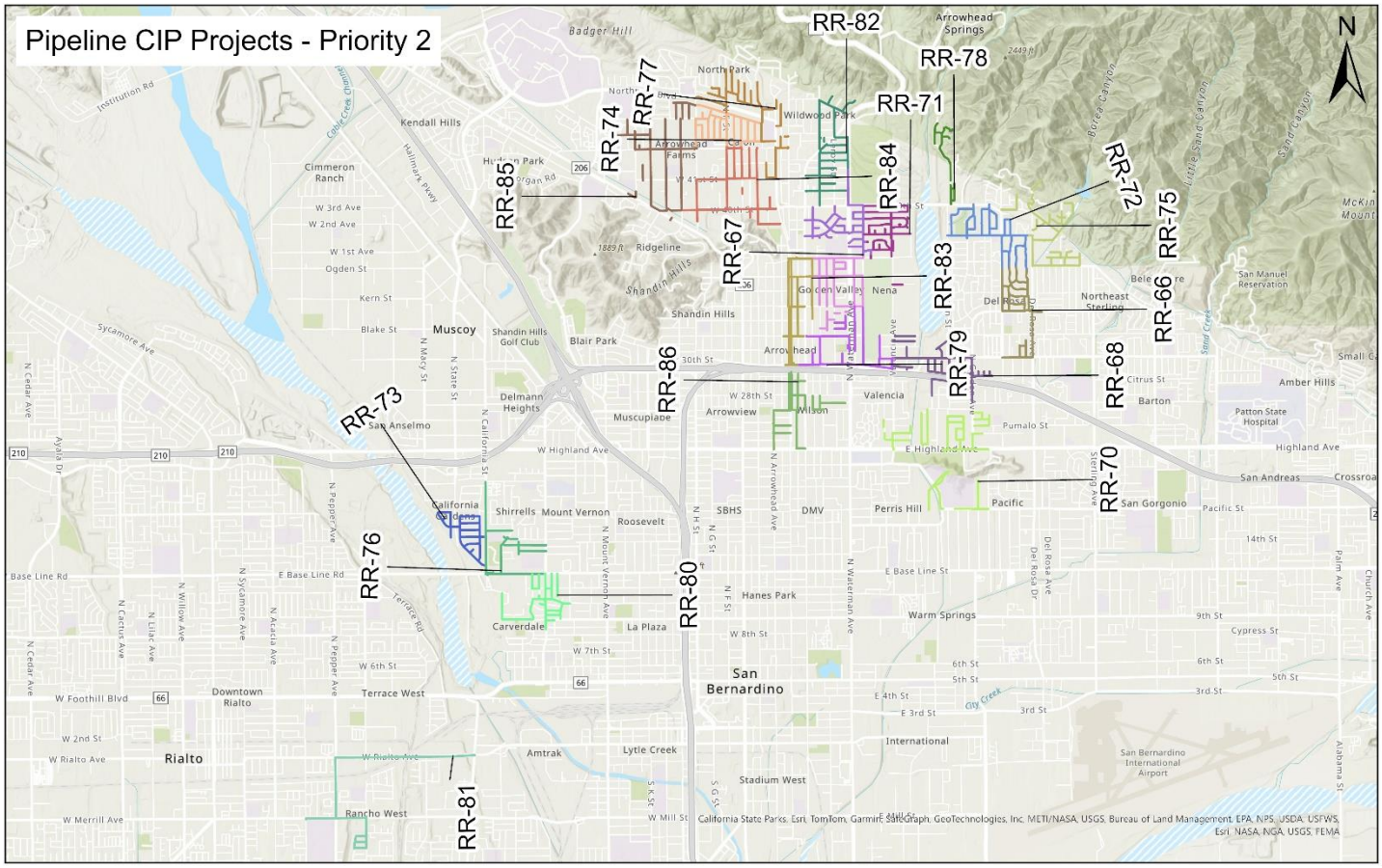
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-78
Project Name : Water Pipeline Replacement Project 32
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

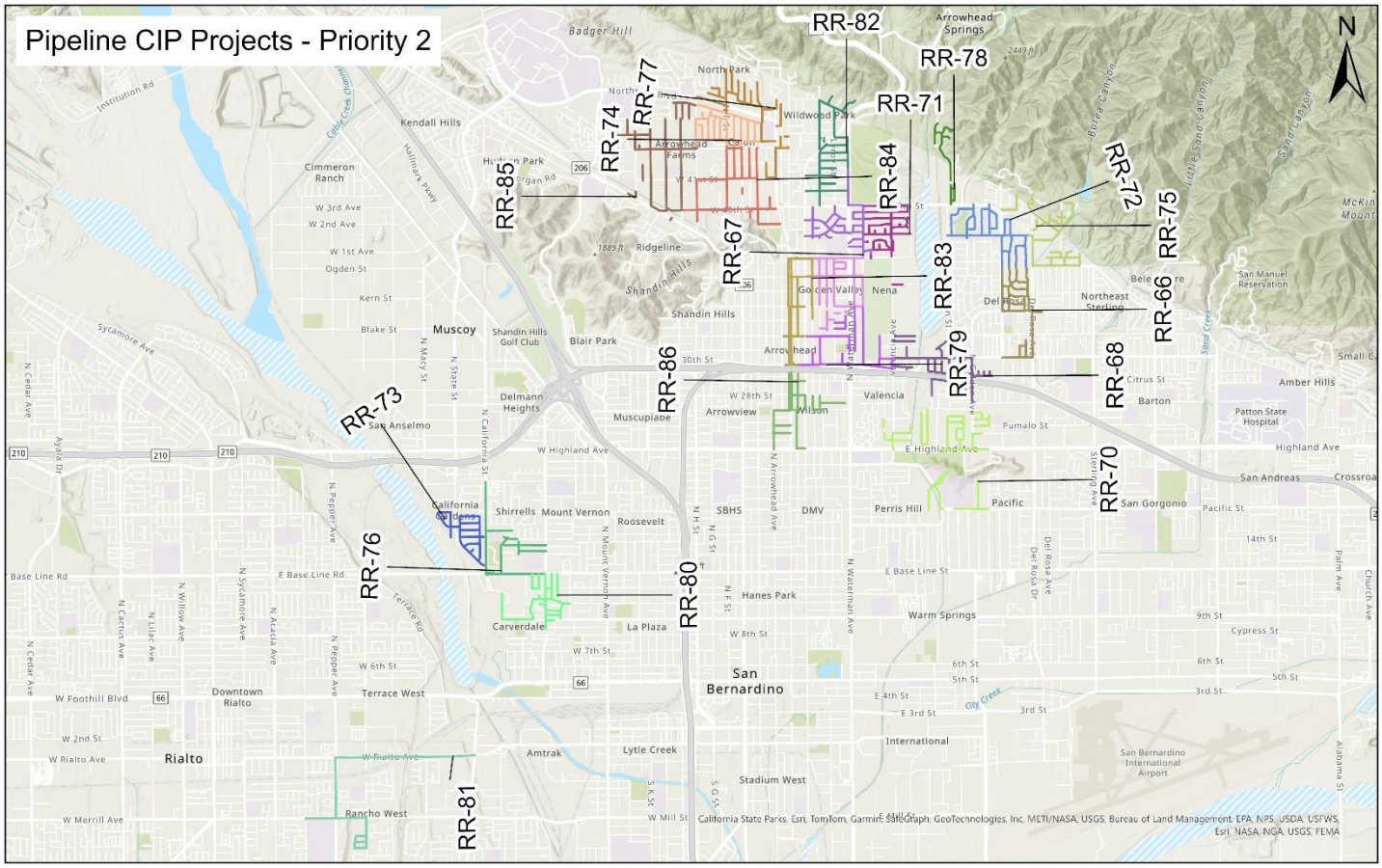
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$410,038
Const. Mgmnt:	$328,031
Construction:	$2,733,588
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$3,471,656
Contingency (10%)	$347,166
TOTAL COSTS (ROUNDED)	$3,820,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-75
Project Name : Water Pipeline Replacement Project 29
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,136,716
Const. Mgmnt:	$909,373
Construction:	$7,578,110
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$9,624,199
Contingency (10%)	$962,420
TOTAL COSTS (ROUNDED)	$10,590,000

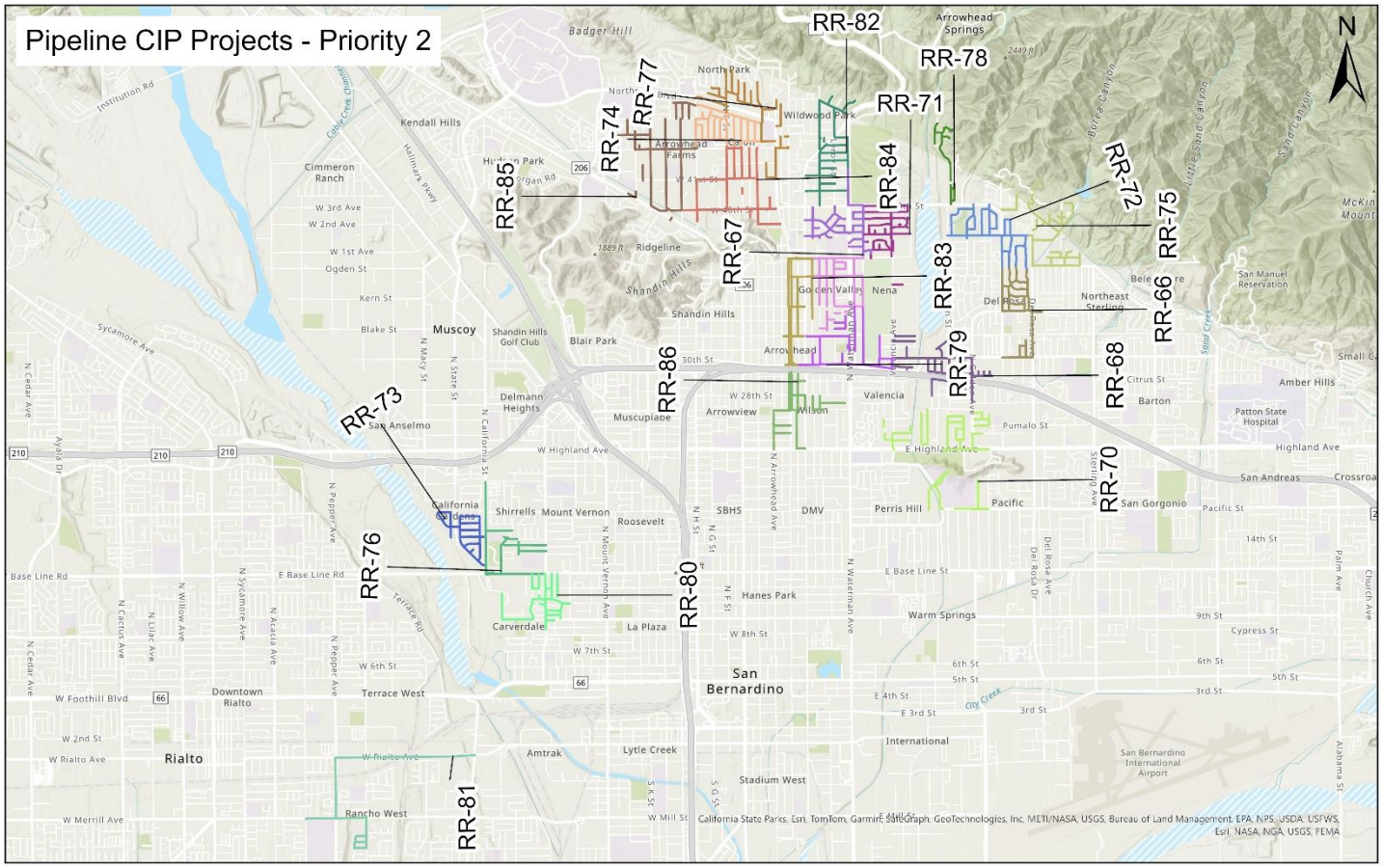
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-76
Project Name : Water Pipeline Replacement Project 30
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,052,704
Const. Mgmnt:	$842,163
Construction:	$7,018,025
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$8,912,892
Contingency (10%)	$891,289
TOTAL COSTS (ROUNDED)	$9,810,000

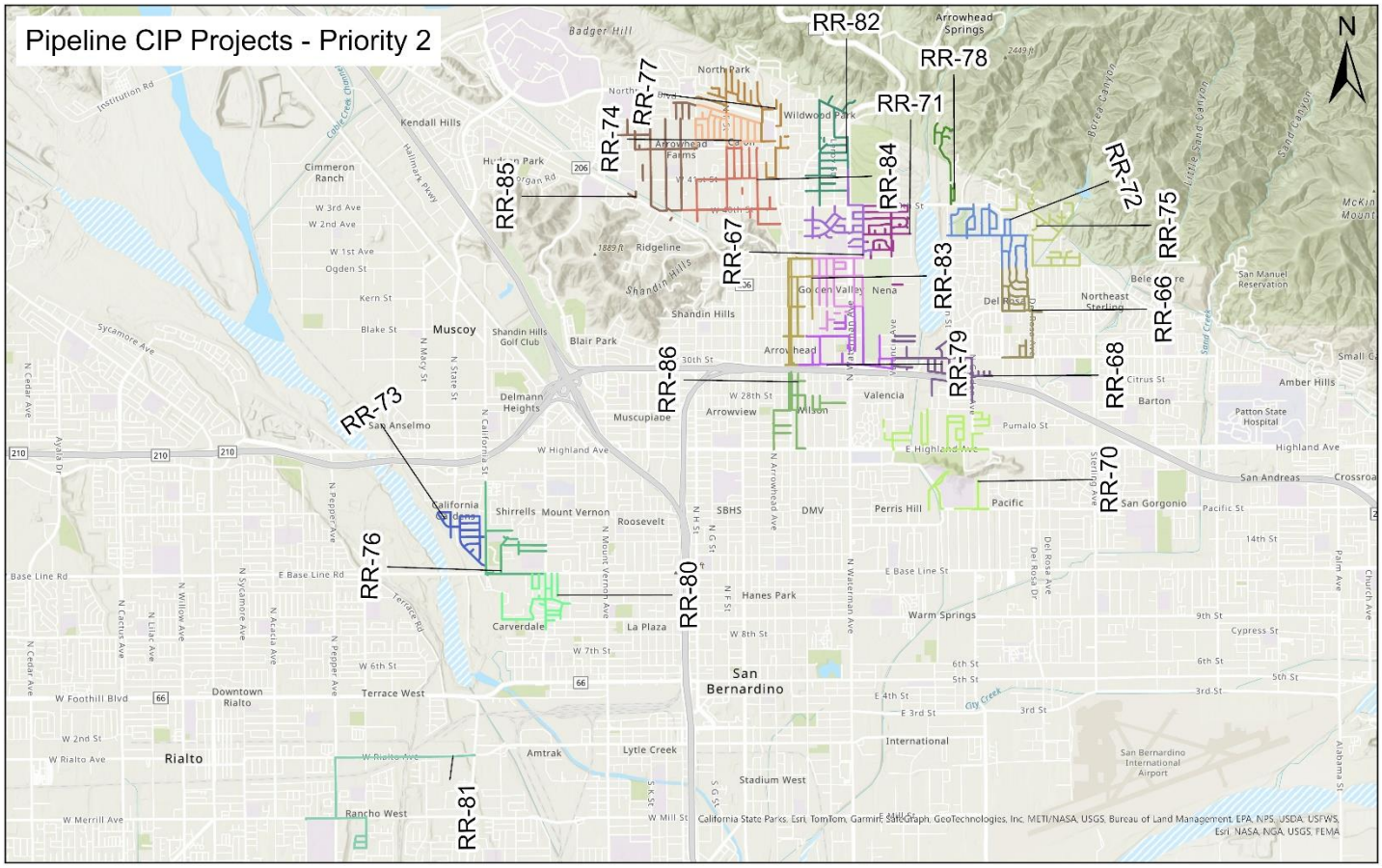
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-77
Project Name : Water Pipeline Replacement Project 31
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,183,617
Const. Mgmnt:	$946,893
Construction:	$7,890,779
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$10,021,289
Contingency (10%)	$1,002,129
TOTAL COSTS (ROUNDED)	$11,030,000

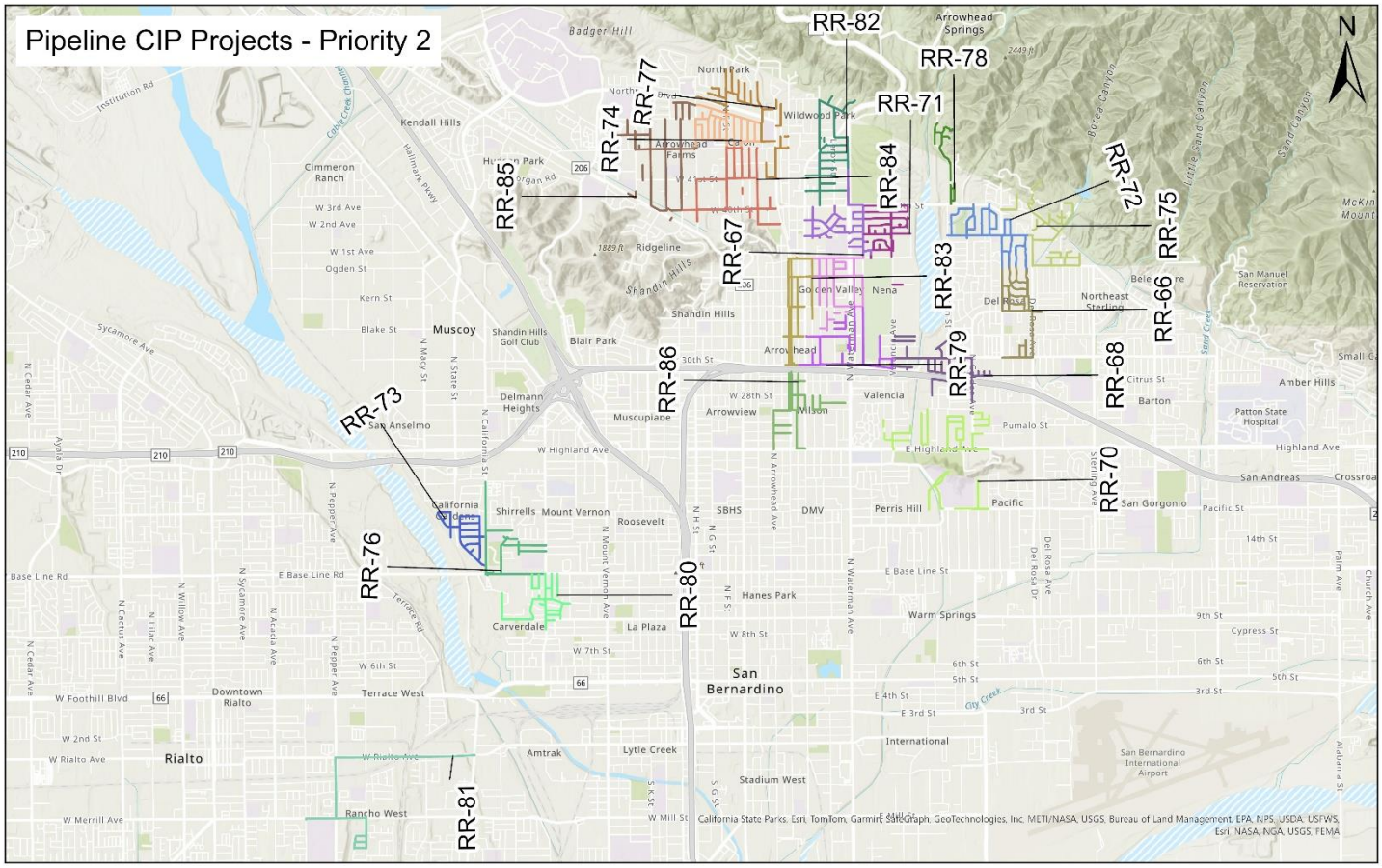
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-74
Project Name : Water Pipeline Replacement Project 28
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

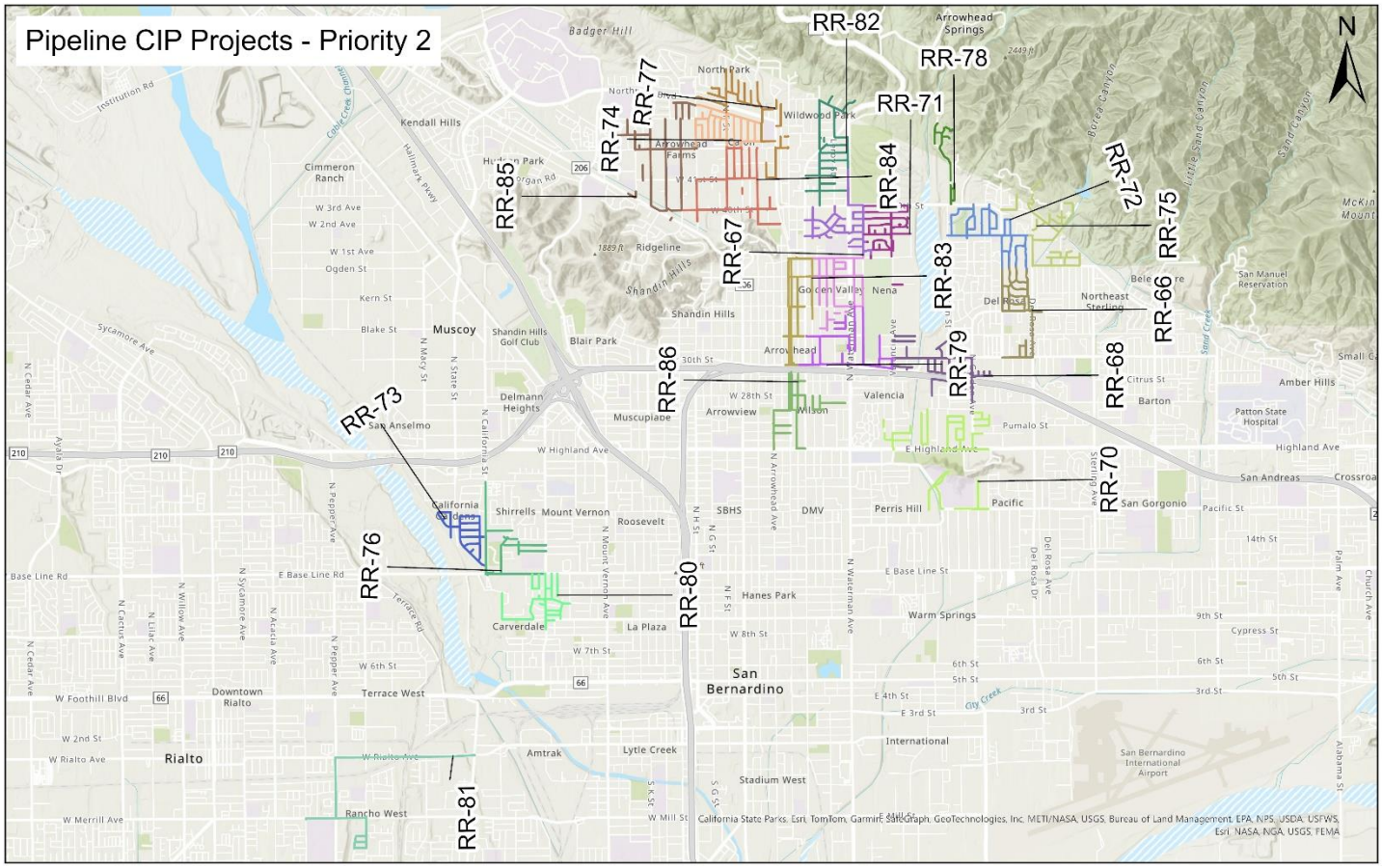
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,113,786
Const. Mgmnt:	$891,029
Construction:	$7,425,239
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$9,430,053
Contingency (10%)	$943,005
TOTAL COSTS (ROUNDED)	$10,380,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-79
Project Name : Water Pipeline Replacement Project 33
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

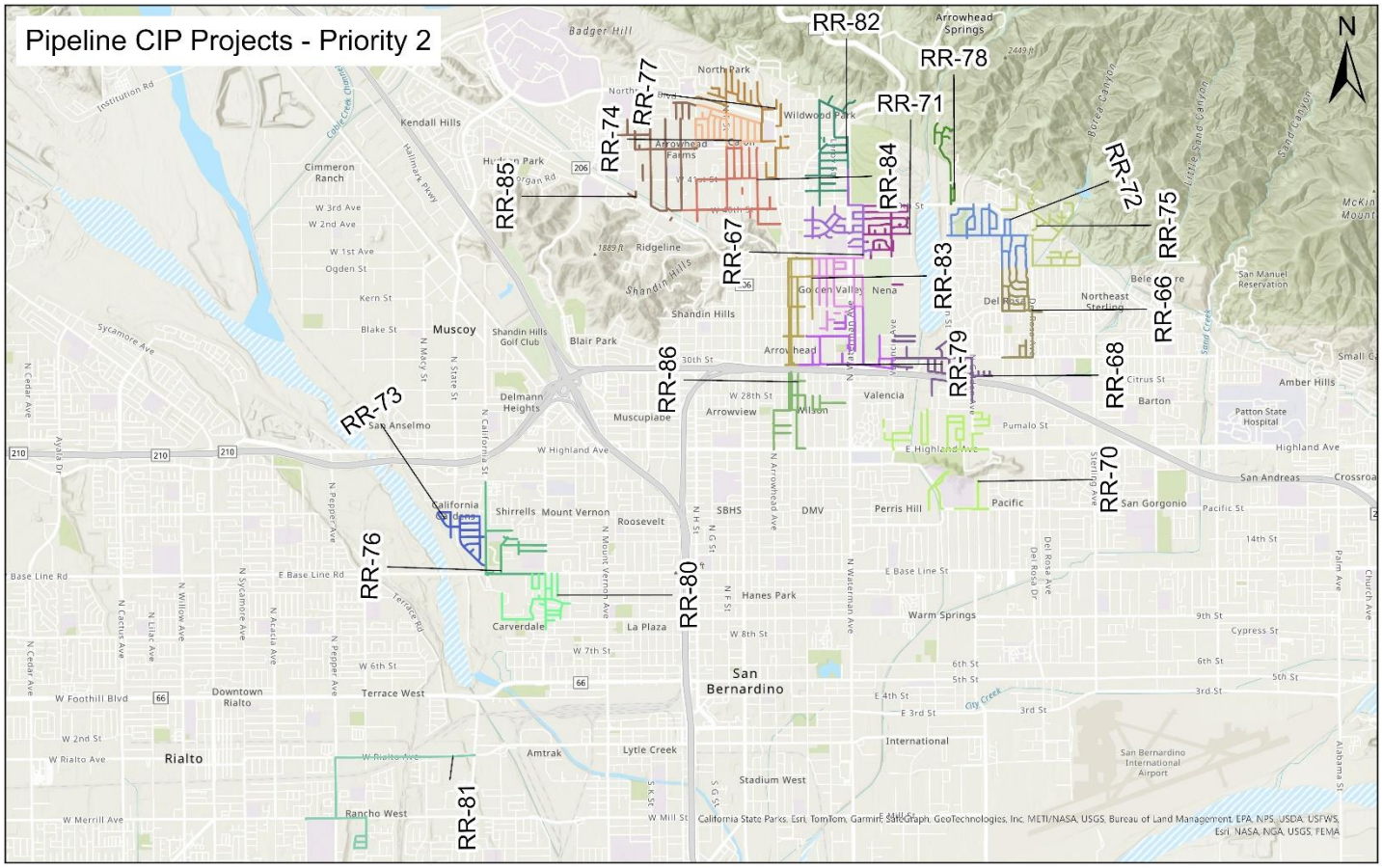
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,122,944
Const. Mgmnt:	$898,356
Construction:	$7,486,296
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$9,507,596
Contingency (10%)	$950,760
TOTAL COSTS (ROUNDED)	$10,460,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-80
Project Name : Water Pipeline Replacement Project 34
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$899,241
Const. Mgmnt:	$719,393
Construction:	$5,994,942
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$7,613,577
Contingency (10%)	$761,358
TOTAL COSTS (ROUNDED)	$8,380,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-30
Project Name : Waterman Ave Plant GAC System Upgrades
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at Waterman Ave - GAC System.
- Air Flowmeter Blower #1
- Blower #1 Starter
- Blower #2 Starter
- Chlorine Analyzer - 2 (Blower Chlorine Room) - SFC SC
- Chlorine Analyzer - 3 (Blower Chlorine Room) - SFC SC
- Chlorine Analyzer - 1 (Blower Chlorine Room) - Transmitter - SFC SC
- Chlorine Analyzer - 1 (Blower Chlorine Room) - Transmitter - SFC SC
- Control Panel PLC - Blower Room
- Control Panel PLC - GAC Vessels (Blower Room)
- Nine (9) Flowmeters
- Two (2) Influent Flowmeters
- Motor Control Center
- Sixteen (16) Pressure Transmitter

The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$239,935
Const. Mgmnt:	$191,948
Construction:	$1,599,569
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$2,031,453
Contingency (10%)	$203,145
TOTAL COSTS (ROUNDED)	$2,240,000

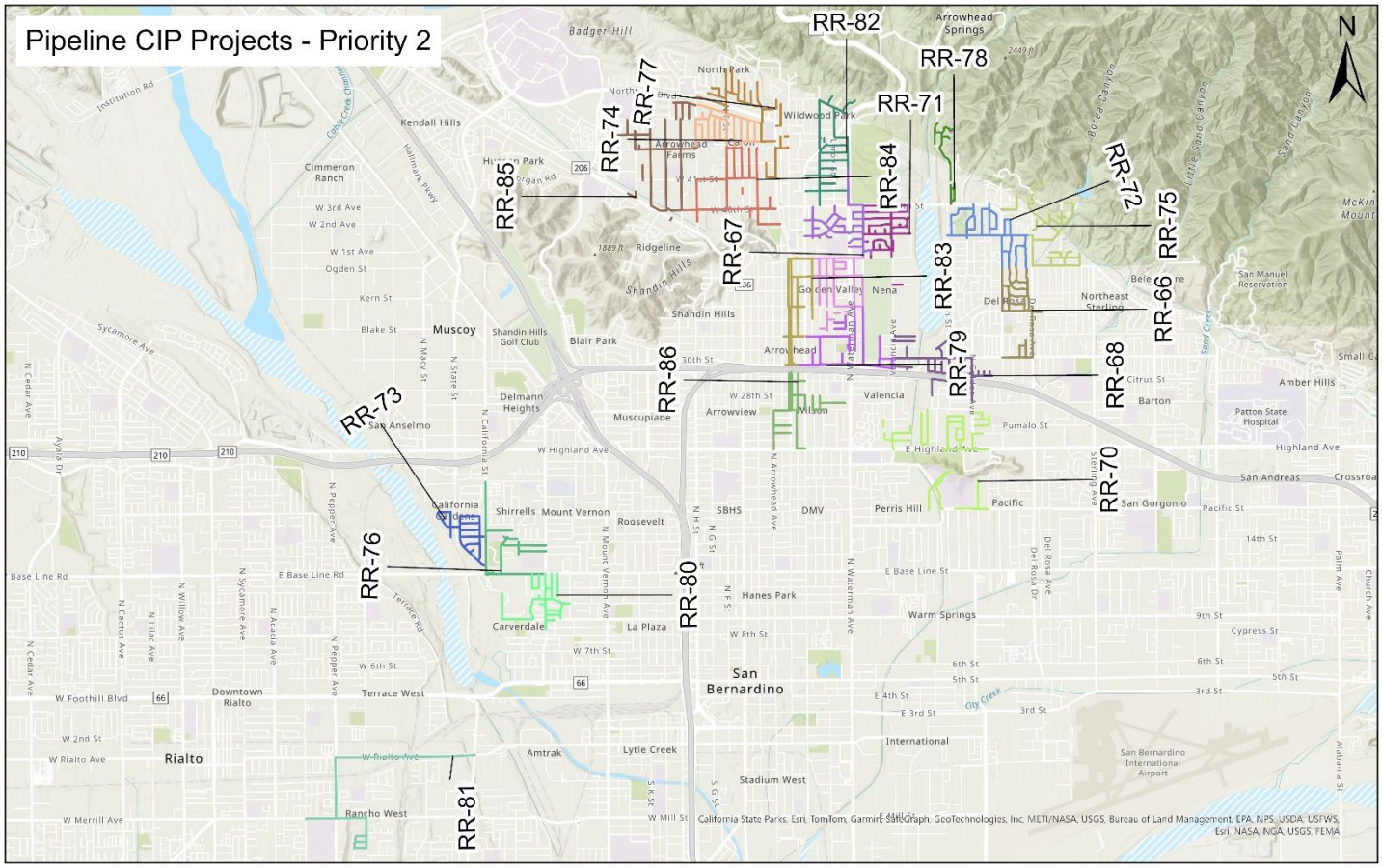
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-81
Project Name : Water Pipeline Replacement Project 35
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$935,918
Const. Mgmnt:	$748,734
Construction:	$6,239,451
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$7,924,103
Contingency (10%)	$792,410
TOTAL COSTS (ROUNDED)	$8,720,000

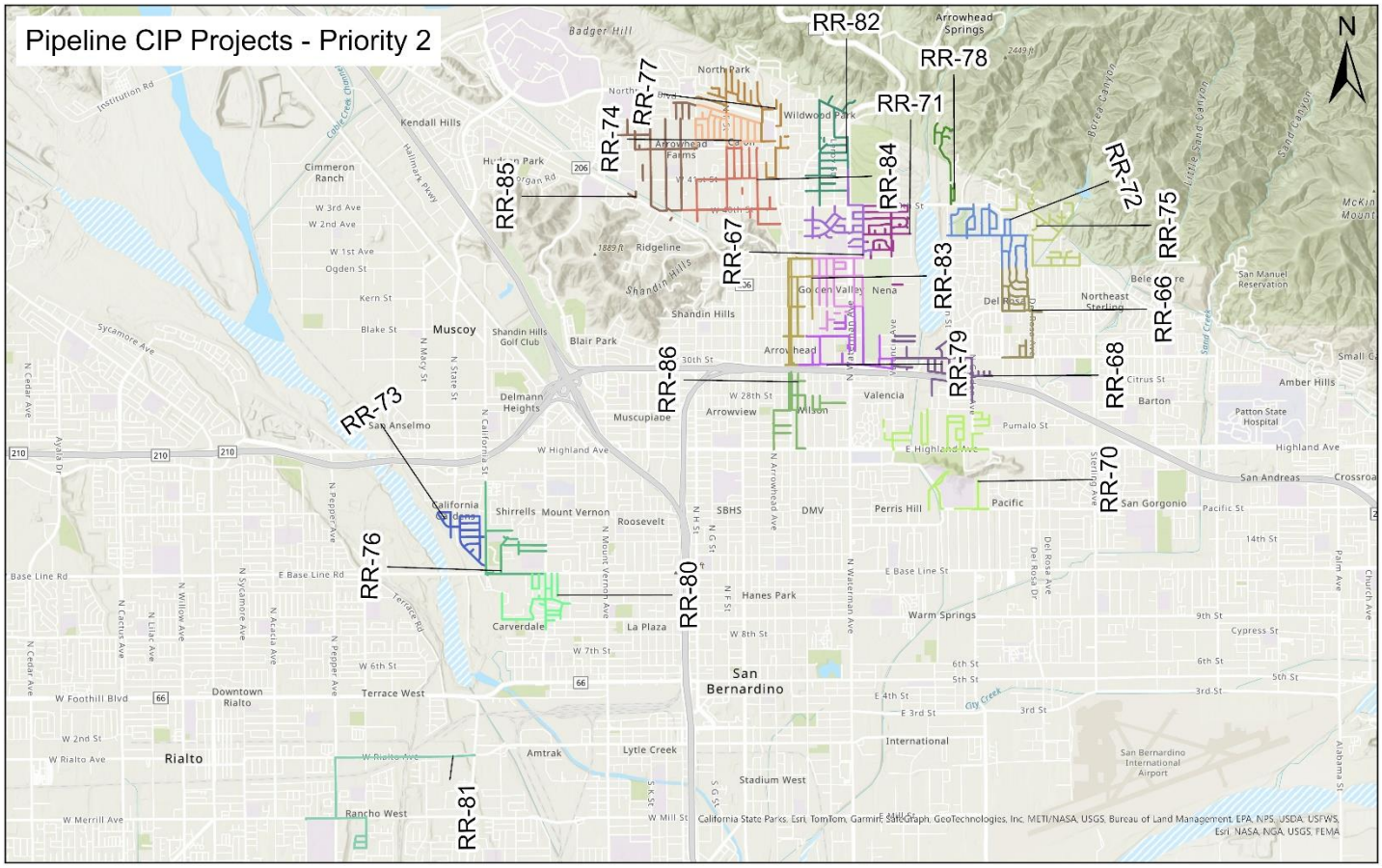
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-82
Project Name : Water Pipeline Replacement Project 36
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

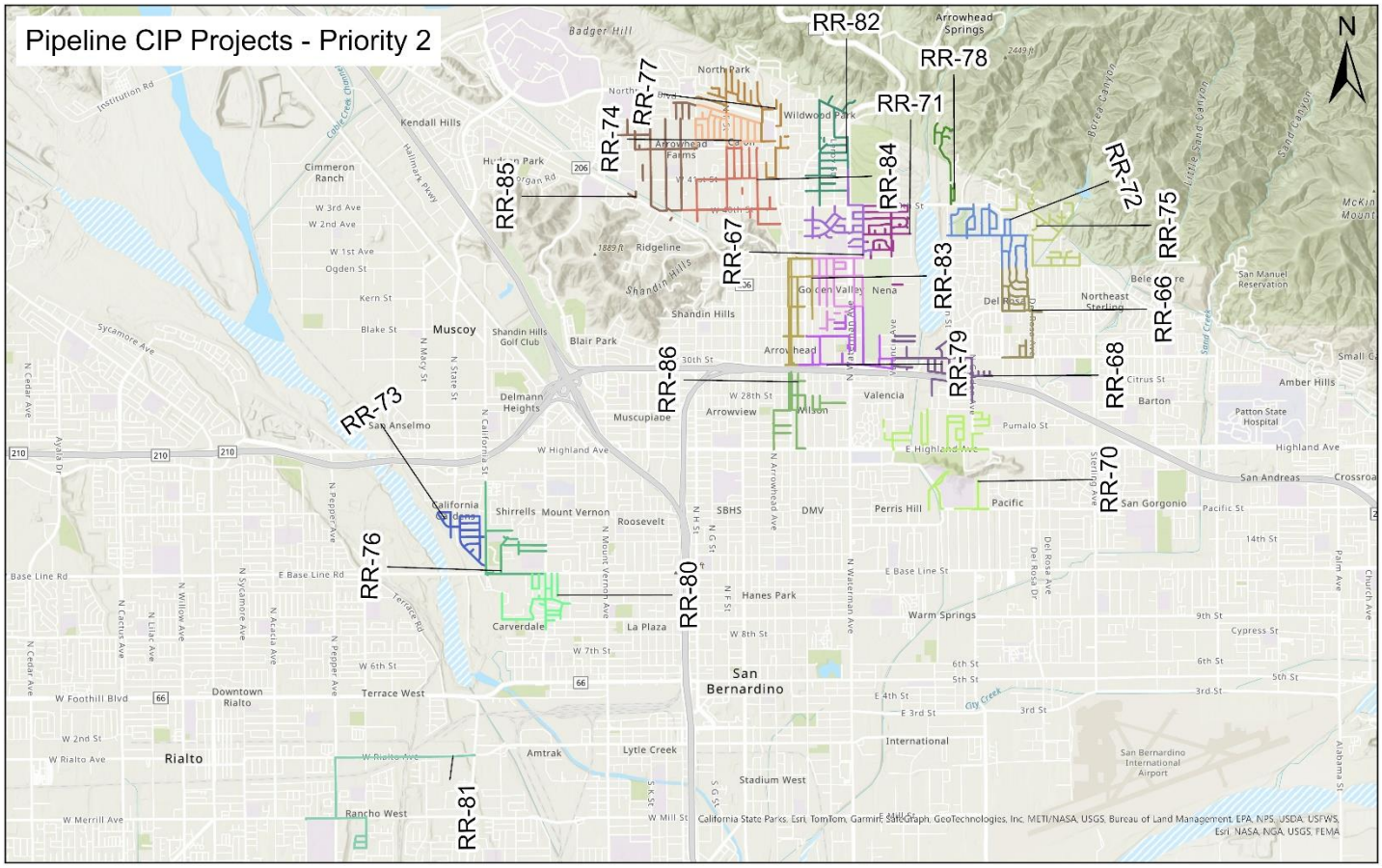
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,159,783
Const. Mgmnt:	$927,827
Construction:	$7,731,889
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$9,819,500
Contingency (10%)	$981,950
TOTAL COSTS (ROUNDED)	$10,810,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-83
Project Name : Water Pipeline Replacement Project 37
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

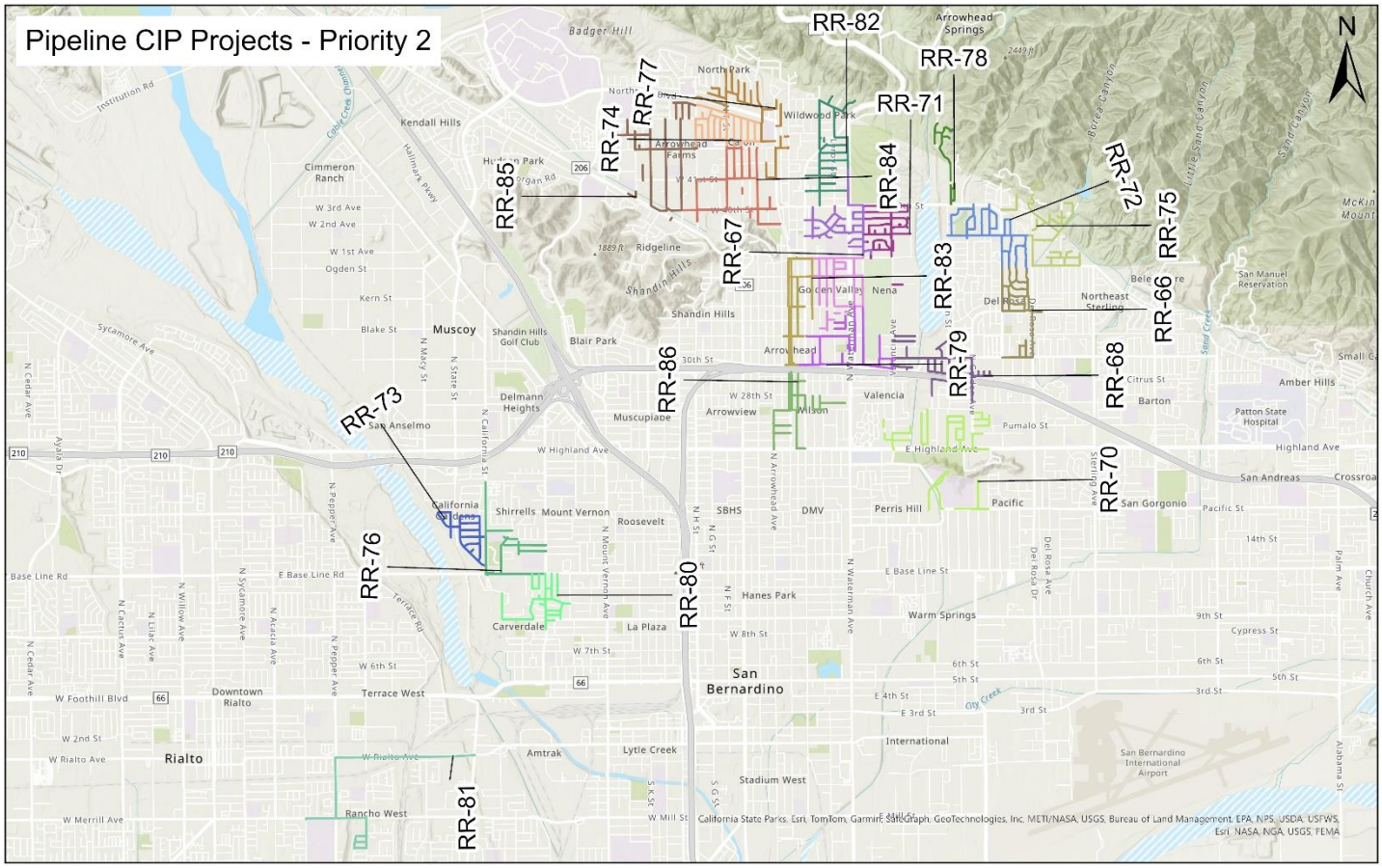
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,317,453
Const. Mgmnt:	$1,053,962
Construction:	$8,783,020
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$11,154,435
Contingency (10%)	$1,115,444
TOTAL COSTS (ROUNDED)	$12,270,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-84
Project Name : Water Pipeline Replacement Project 38
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

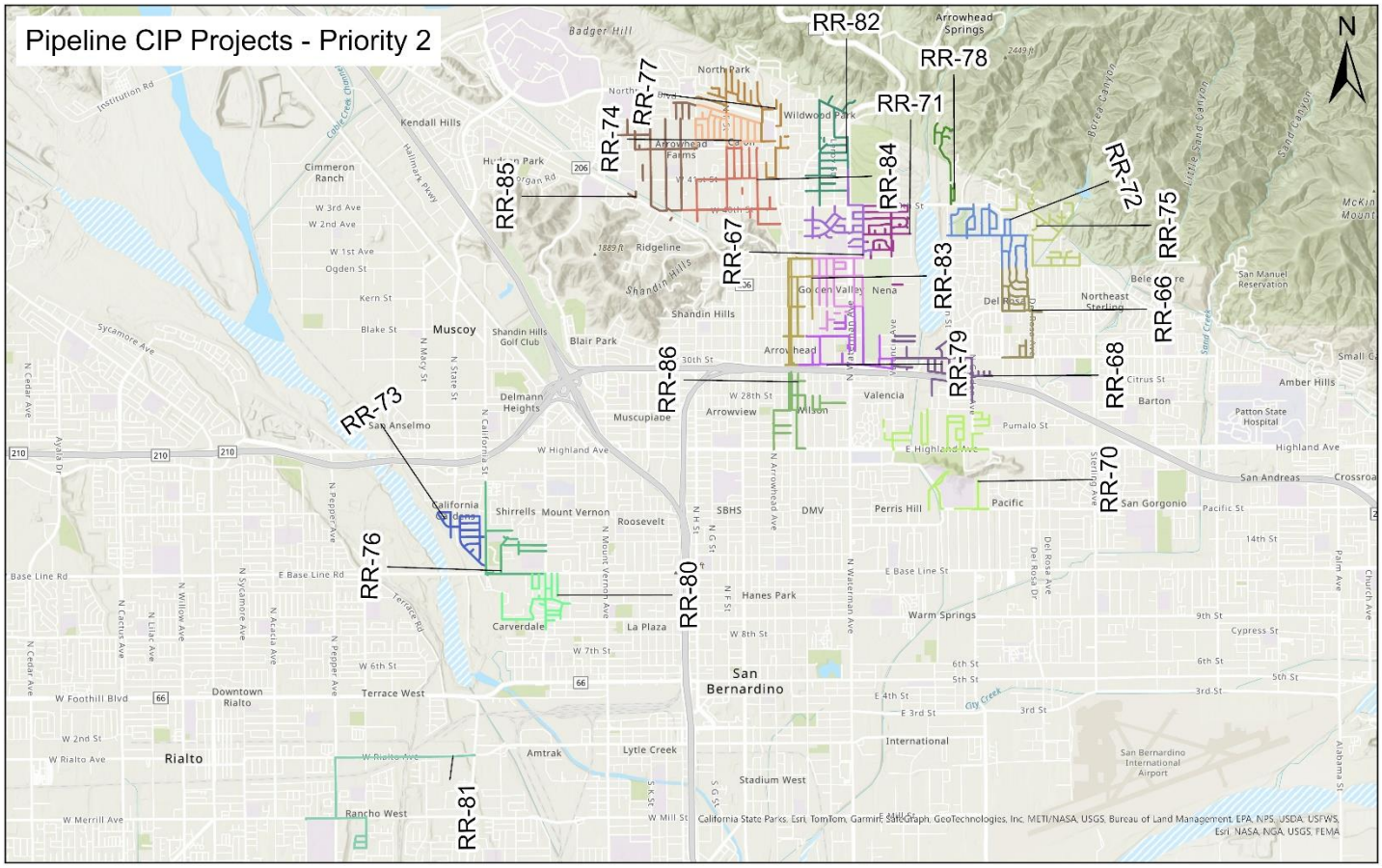
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,314,999
Const. Mgmnt:	$1,051,999
Construction:	$8,766,660
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$11,133,658
Contingency (10%)	$1,113,366
TOTAL COSTS (ROUNDED)	$12,250,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-85
Project Name : Water Pipeline Replacement Project 39
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

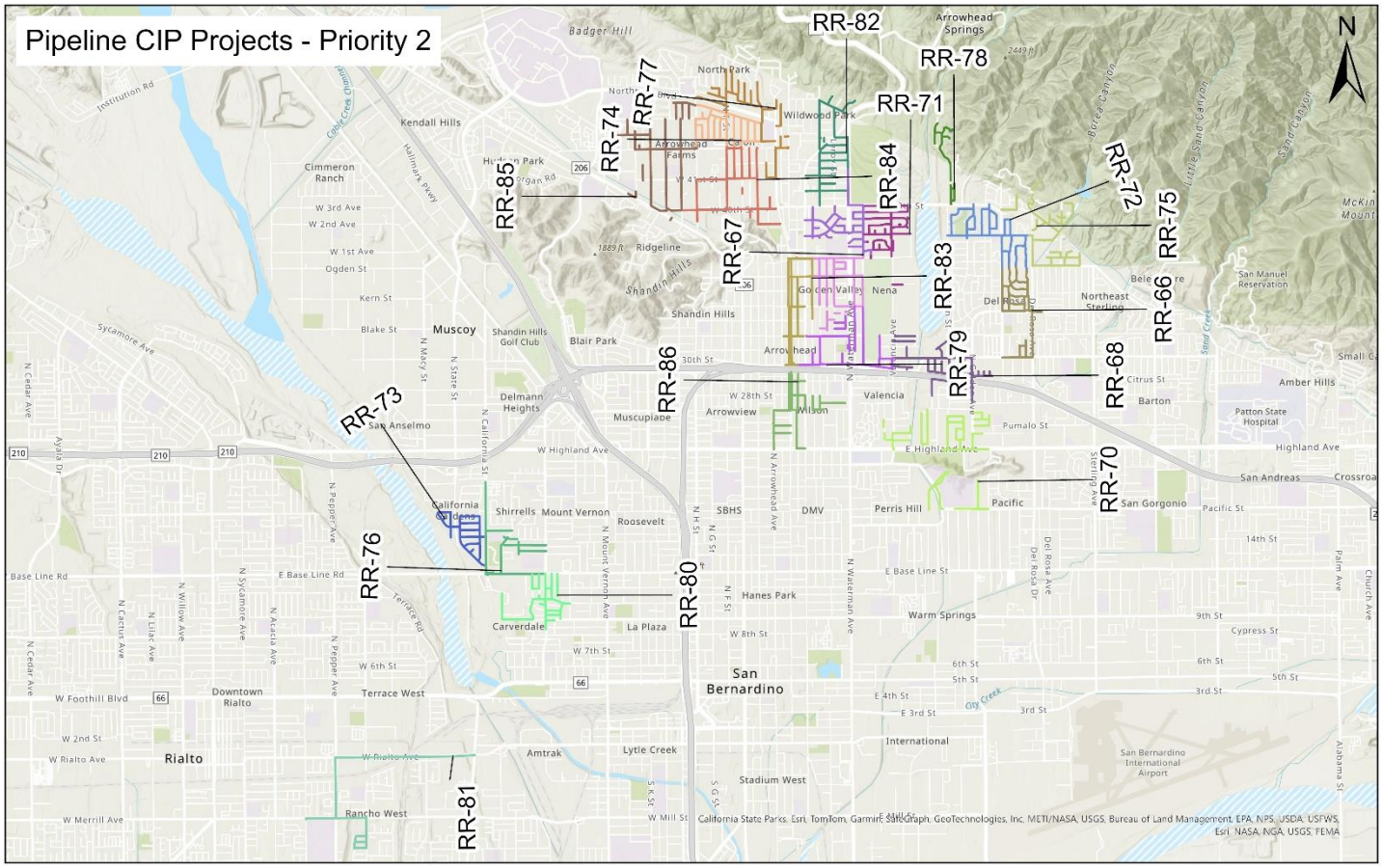
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,462,956
Const. Mgmnt:	$1,170,365
Construction:	$9,753,041
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$12,386,362
Contingency (10%)	$1,238,636
TOTAL COSTS (ROUNDED)	$13,630,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-86
Project Name : Water Pipeline Replacement Project 40
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing many maximum velocity pipelines and remaining useful life (RUL) less than 0 were assigned priority 2. See Figure 14-2 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,089,942
Const. Mgmnt:	$871,953
Construction:	$7,266,277
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$9,228,172
Contingency (10%)	$922,817
TOTAL COSTS (ROUNDED)	$10,160,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-21
Project Name : Melvin Ave Booster Pump Station Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at Melvin Ave - BPS (#1-5).
• Transmitter
• Flow Transmitter
• Pavement
• Piping Flowmeter Vault Melvin BPS 1 to 5
The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$8,219
Const. Mgmnt:	$6,575
Construction:	$54,792
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$69,586
Contingency (10%)	$6,959
TOTAL COSTS (ROUNDED)	$80,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-24
Project Name : Newmark Plant Reservoir Upgrades
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the following components at Newmark - Reservoir.
• Drain Isolation Valve - Reservoir #2
• Drain Isolation Valve - Reservoir #3
• Isolation Valve - Drain Vault Reservoir #4
The 2022 Field Condition Assessment found these items in need of replacement.





Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$10,870
Const. Mgmnt:	$8,696
Construction:	$72,467
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$92,033
Contingency (10%)	$9,203
TOTAL COSTS (ROUNDED)	$110,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-6
Project Name : Permanent Generator at Sepulveda Booster Pump Station
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Sepulveda Booster Pump Station is the only supply point to Mountain Subzone A. It is important that the station has the capability to be operational during power outages. As a result, the installation of a permanent generator is recommended.



Budgetary Requirements:

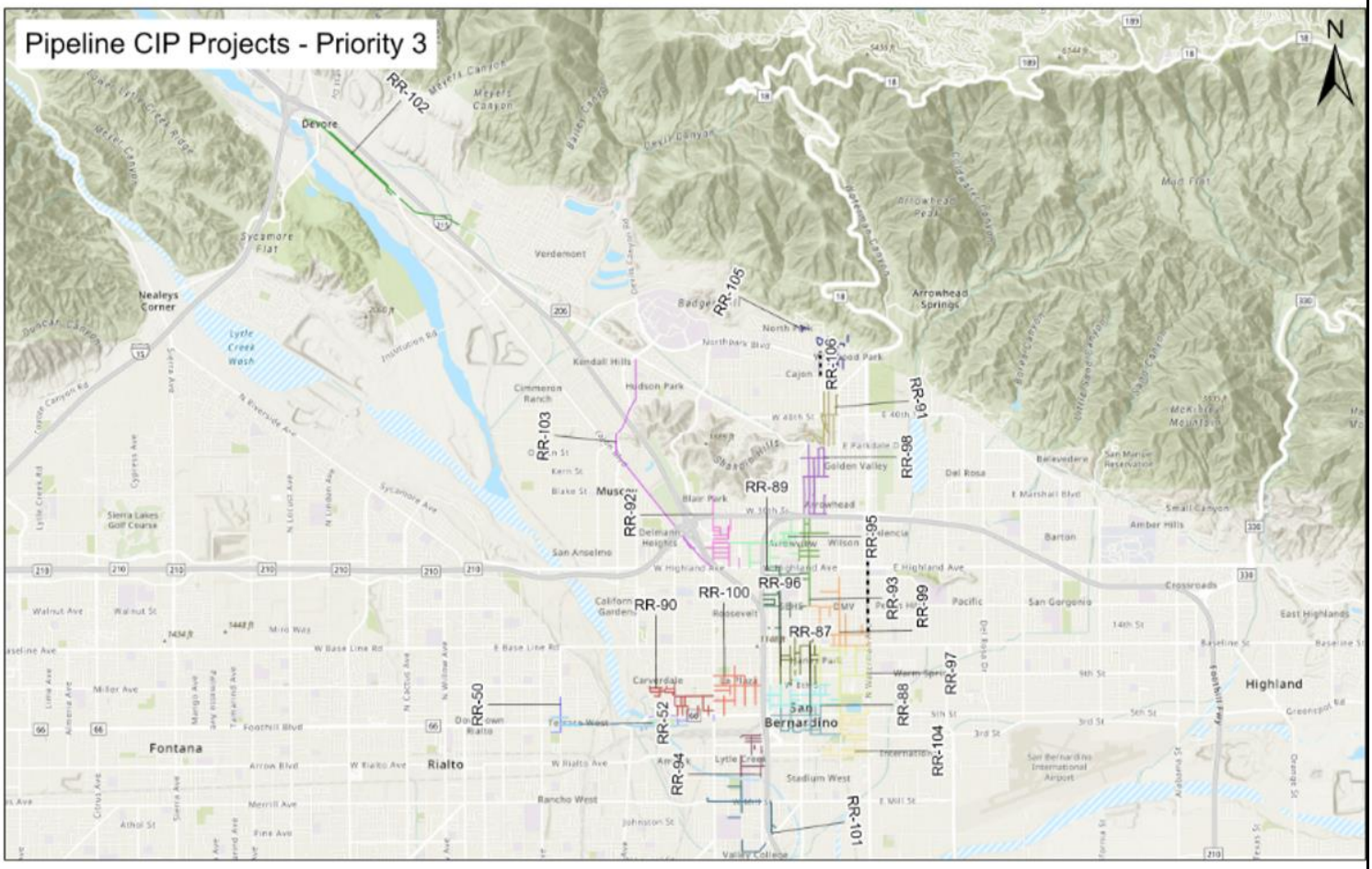
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$49,048
Const. Mgmnt:	$39,238
Construction:	$326,984
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$415,269
Contingency (10%)	$41,527
TOTAL COSTS (ROUNDED)	$460,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-105
Project Name : Water Pipeline Replacement Project 59
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$581,677
Const. Mgmnt:	$465,341
Construction:	$3,877,846
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$4,924,864
Contingency (10%)	$492,486
TOTAL COSTS (ROUNDED)	$5,420,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-40
Project Name : Lytle Creek - Common Upgrades
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes complete facility replacement of the Lytle Creek - Common. This includes replacement of the Lytle Creek Chlorine House and Mixing Weir, Vault, West SBCWD Intertie, and Booster Station.
The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$108,170
Const. Mgmnt:	$86,536
Construction:	$721,132
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$915,837
Contingency (10%)	$91,584
TOTAL COSTS (ROUNDED)	$1,010,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-42
Project Name : Del Rosa #3 Reservoir Electrical and Mechanical Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the electrical and mechanical components at Del Rosa Reservoir #3. The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$43,215
Const. Mgmnt:	$34,572
Construction:	$288,099
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$365,886
Contingency (10%)	$36,589
TOTAL COSTS (ROUNDED)	$410,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-43
Project Name : Daley Canyon Reservoir Electrical and Mechanical Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the electrical and mechanical components at Daley Canyon Reservoir. Daley Canyon Reservoir is a buried reservoir. The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$43,480
Const. Mgmnt:	$34,784
Construction:	$289,867
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$368,131
Contingency (10%)	$36,813
TOTAL COSTS (ROUNDED)	$410,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-33
Project Name : Cajon Blvd Reservoir Electrical and Mechanical Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the electrical and mechanical components at Cajon Blvd Reservoir. The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$59,652
Const. Mgmnt:	$47,722
Construction:	$397,683
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$505,057
Contingency (10%)	$50,506
TOTAL COSTS (ROUNDED)	$560,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-41
Project Name : Palm #2 Reservoir Electrical and Mechanical Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the electrical and mechanical components at Palm Reservoir #2. The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

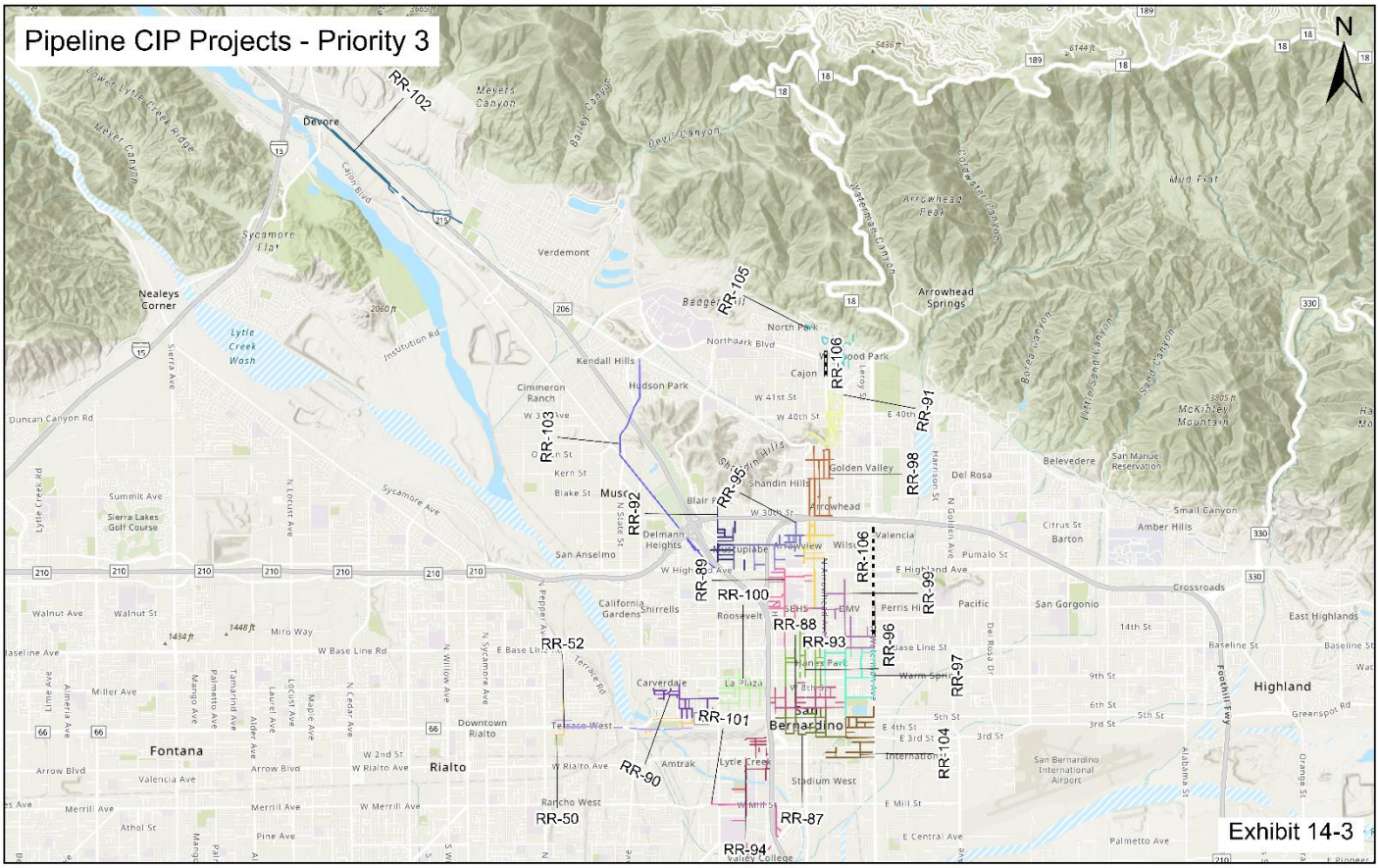
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$83,779
Const. Mgmnt:	$67,023
Construction:	$558,524
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$709,325
Contingency (10%)	$70,933
TOTAL COSTS (ROUNDED)	$790,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-106
Project Name : Water Pipeline Condition Assessment Study
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Detailed pipeline condition assessment of approximately 9,600 LF of pipe ranging from 24-inches to 30-inches in diameter along N Waterman Ave and Electric Ave. The 2022 Pipe Risk Analysis Assessment shows these pipes as having a high risk of failure.



Budgetary Requirements:

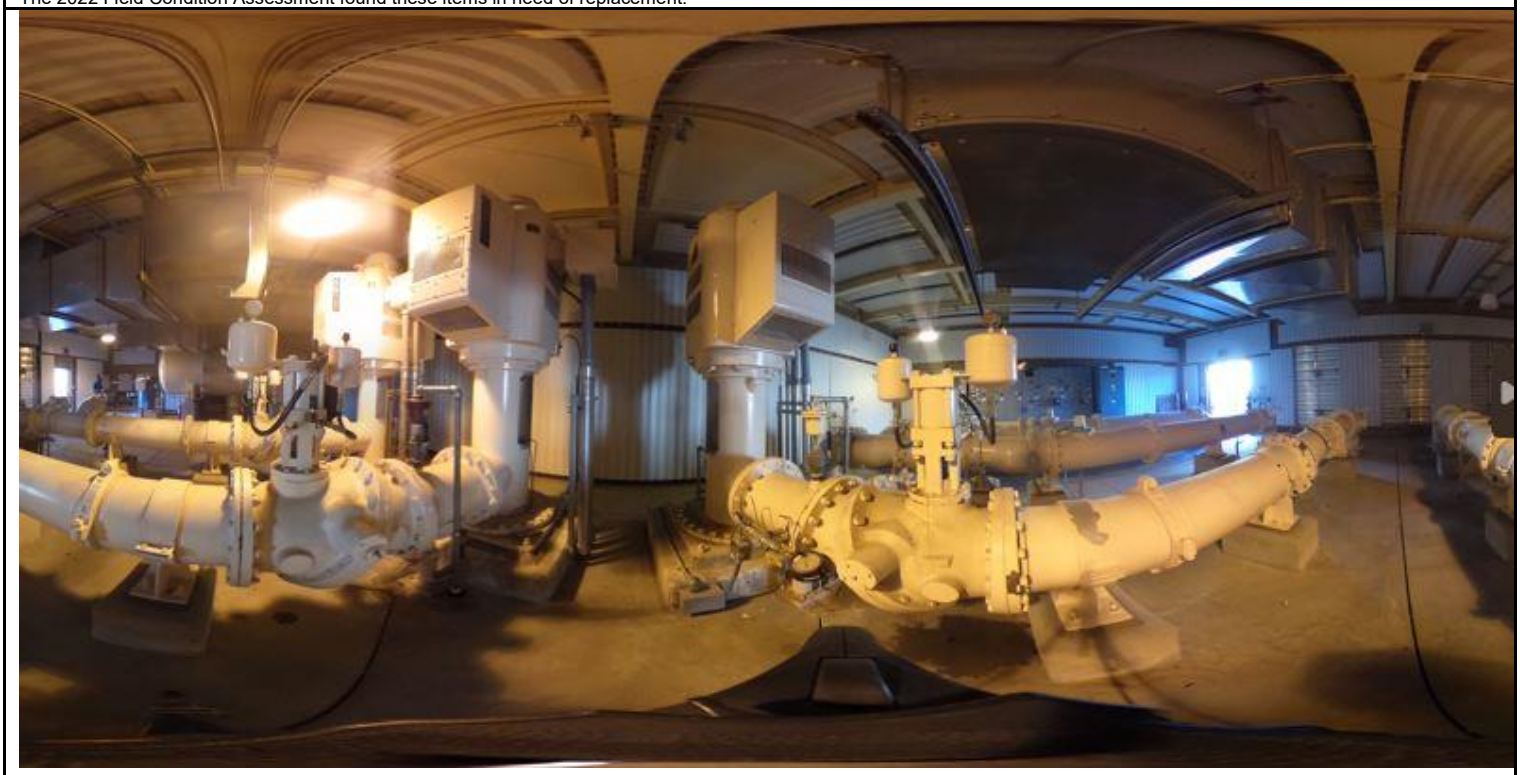
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$ 0
Const. Mgmnt:	$ 0
Construction:	$ 0
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$1,000,000
Contingency (10%)	$100,000
TOTAL COSTS (ROUNDED)	$1,100,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-37
Project Name : Ogden Booster Pump Station Upgrade
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes complete facility replacement of the Ogden Booster Pump Station. The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,098,400
Const. Mgmnt:	$878,720
Construction:	$7,322,670
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$9,299,790
Contingency (10%)	$929,979
TOTAL COSTS (ROUNDED)	$10,230,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-36
Project Name : Palm Booster Pump Station Upgrade
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes complete facility replacement of the Palm Booster Pump Station. The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,258,269
Const. Mgmnt:	$1,006,615
Construction:	$8,388,460
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$10,653,344
Contingency (10%)	$1,065,334
TOTAL COSTS (ROUNDED)	$11,720,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-34
Project Name : Cajon Booster Pump Station Upgrade
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes complete facility replacement of the Cajon Booster Pump Station. The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,486,009
Const. Mgmnt:	$1,188,807
Construction:	$9,906,725
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$12,581,541
Contingency (10%)	$1,258,154
TOTAL COSTS (ROUNDED)	$13,840,000

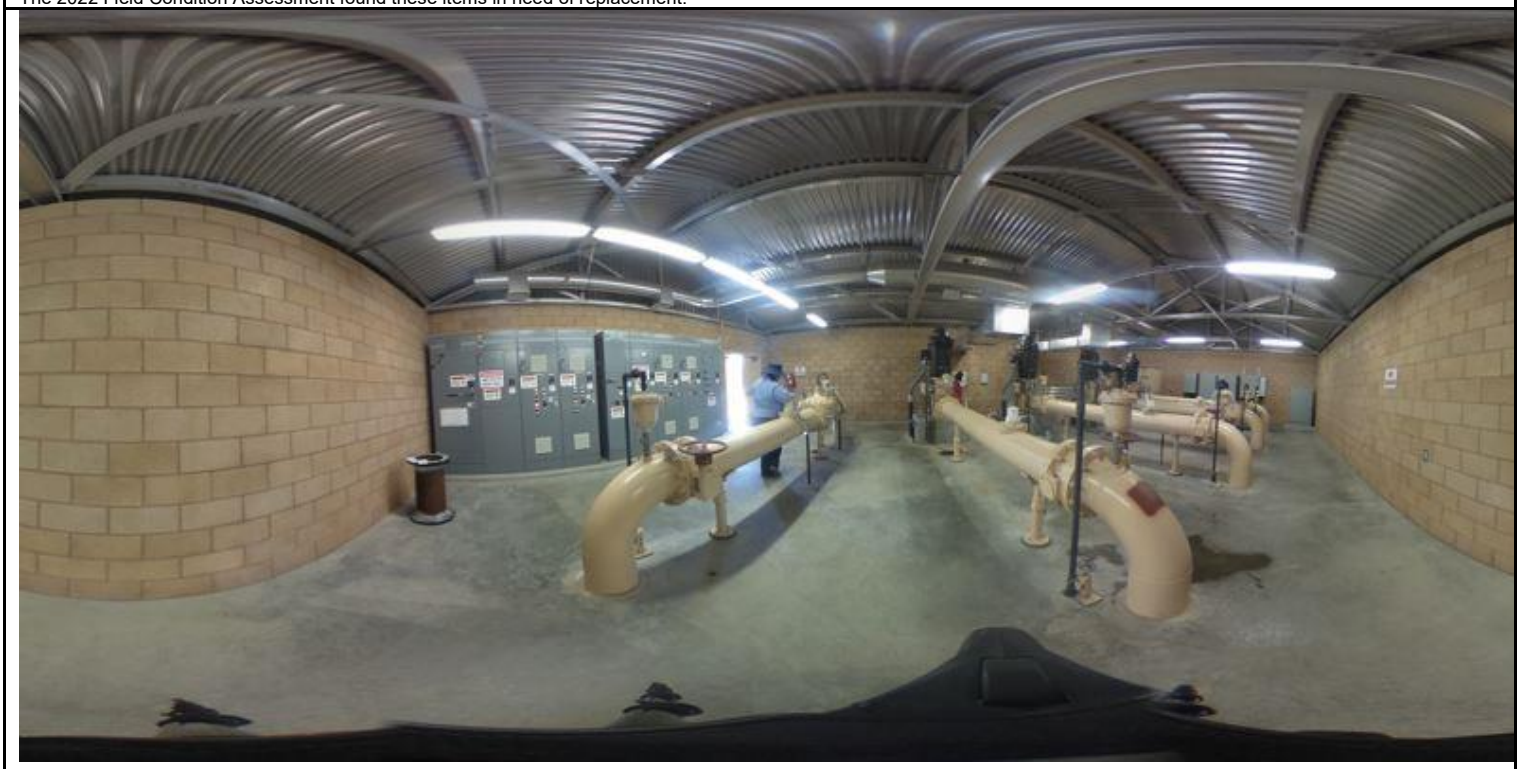
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-35
Project Name : Meyers Booster Pump Station Upgrade
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes complete facility replacement of the Meyers Booster Pump Station. The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,309,968
Const. Mgmnt:	$1,047,974
Construction:	$8,733,119
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$11,091,061
Contingency (10%)	$1,109,106
TOTAL COSTS (ROUNDED)	$12,210,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-45
Project Name : 17th & Sierra Way Plant GAC System Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes complete facility replacement of the 17th & Sierra Way St - GAC System. The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

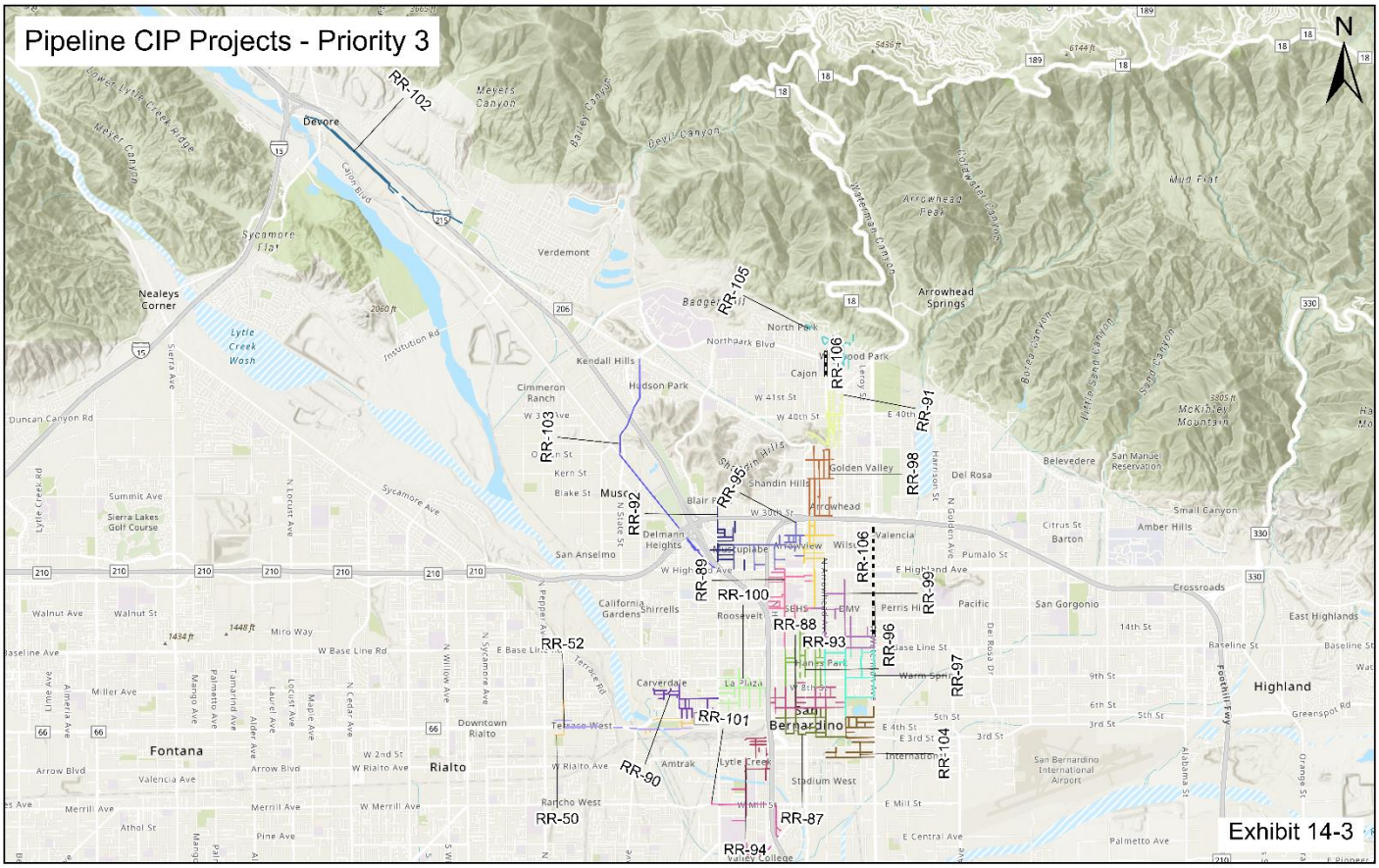
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,590,732
Const. Mgmnt:	$1,272,586
Construction:	$10,604,880
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$13,468,198
Contingency (10%)	$1,346,820
TOTAL COSTS (ROUNDED)	$14,820,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-87
Project Name : Water Pipeline Replacement Project 41
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,108,648
Const. Mgmnt:	$886,919
Construction:	$7,390,988
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$9,386,555
Contingency (10%)	$938,655
TOTAL COSTS (ROUNDED)	$10,330,000

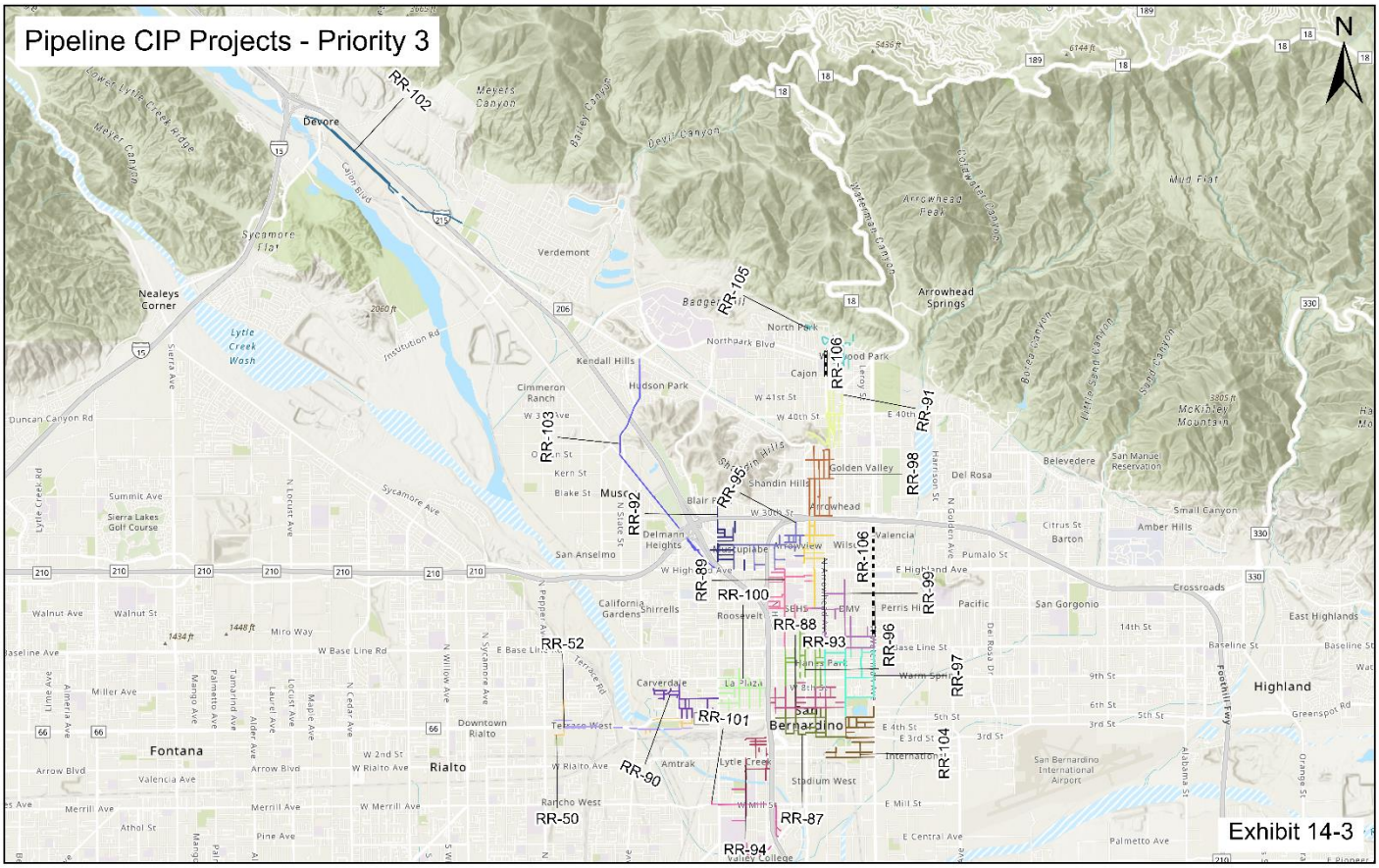
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-88
Project Name : Water Pipeline Replacement Project 42
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,295,273
Const. Mgmnt:	$1,036,219
Construction:	$8,635,156
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$10,966,649
Contingency (10%)	$1,096,665
TOTAL COSTS (ROUNDED)	$12,070,000

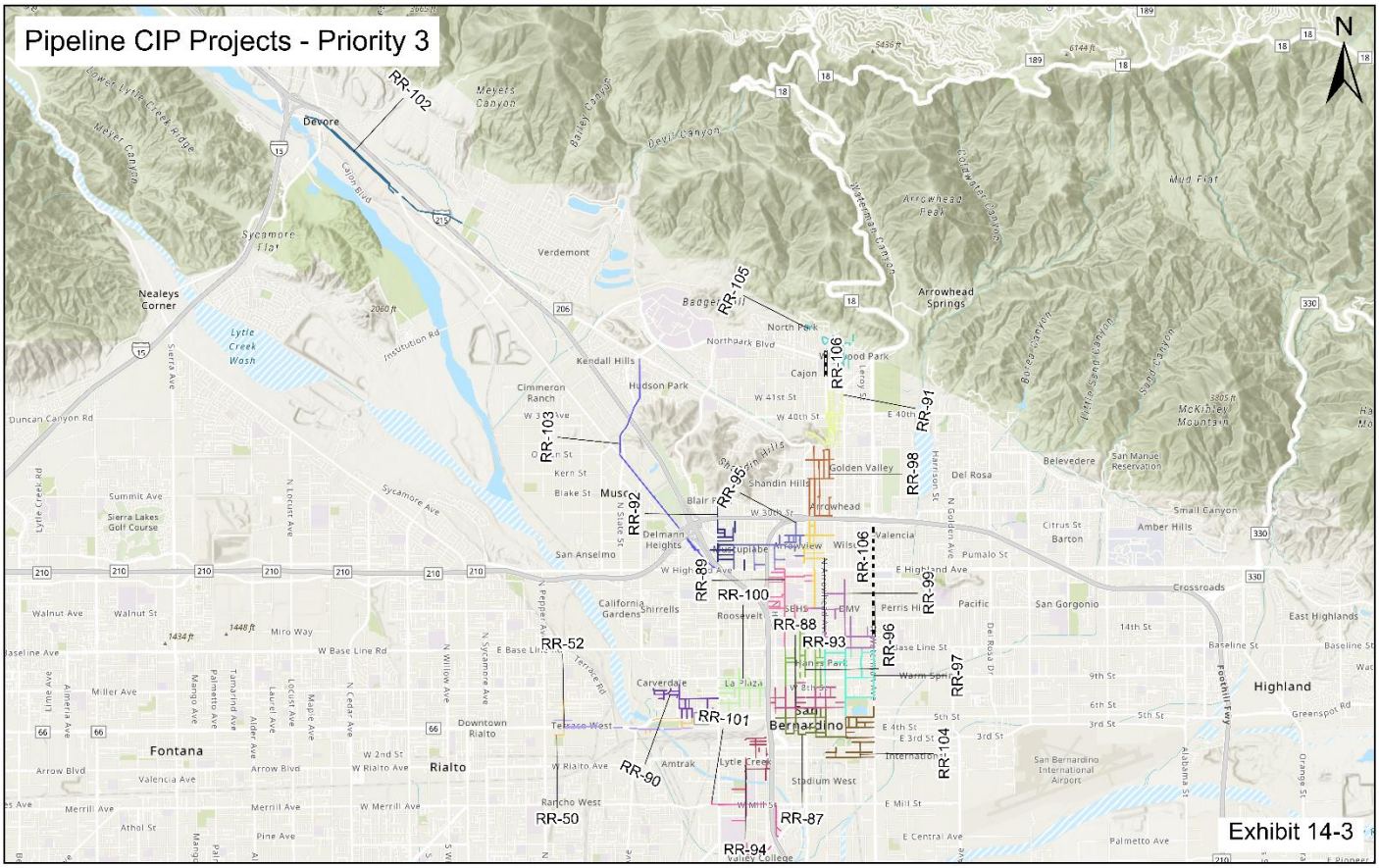
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-89
Project Name : Water Pipeline Replacement Project 43
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,120,660
Const. Mgmnt:	$896,528
Construction:	$7,471,069
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$9,488,258
Contingency (10%)	$948,826
TOTAL COSTS (ROUNDED)	$10,440,000

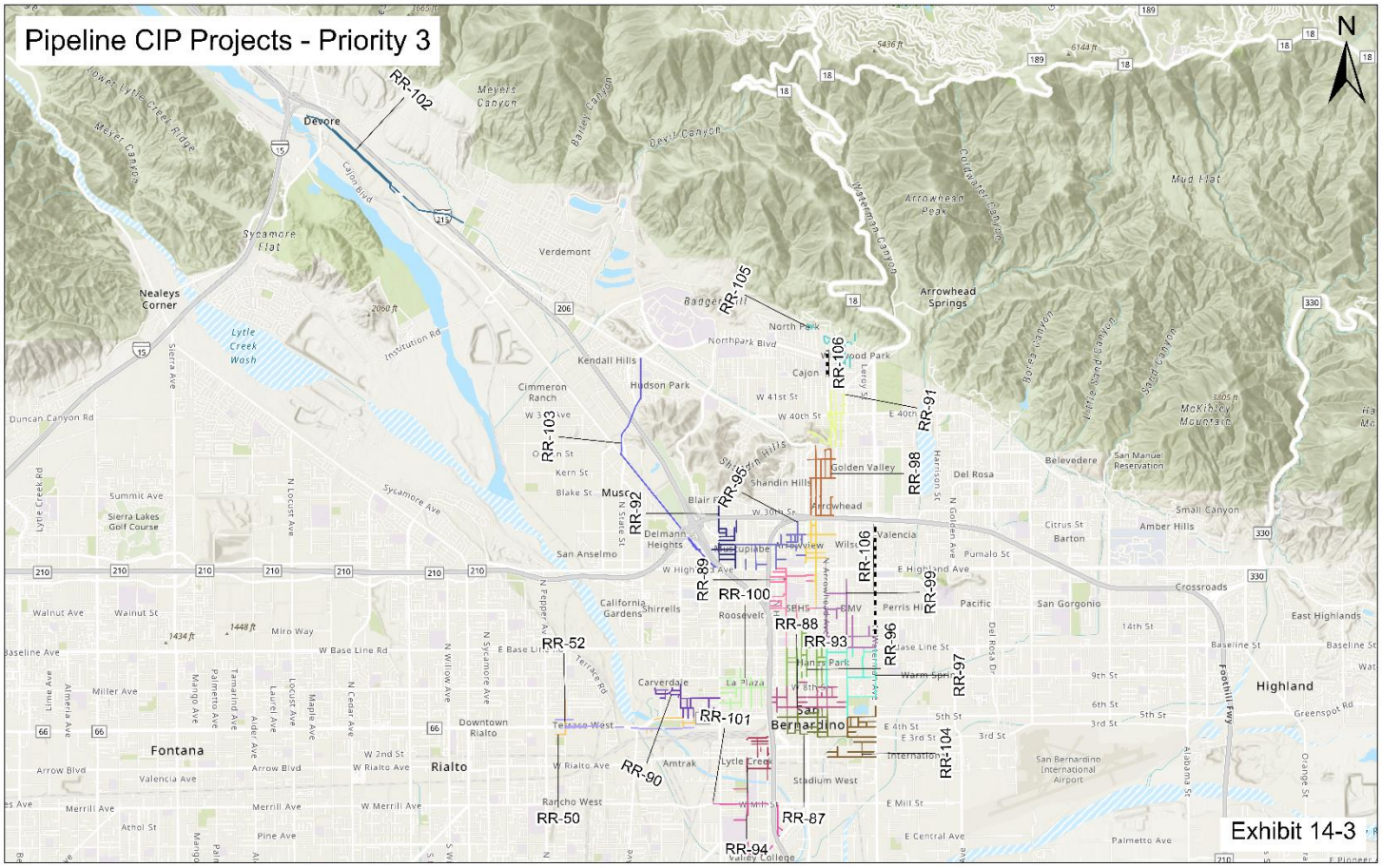
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-90
Project Name : Water Pipeline Replacement Project 44
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,021,988
Const. Mgmnt:	$817,591
Construction:	$6,813,255
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$8,652,834
Contingency (10%)	$865,283
TOTAL COSTS (ROUNDED)	$9,520,000

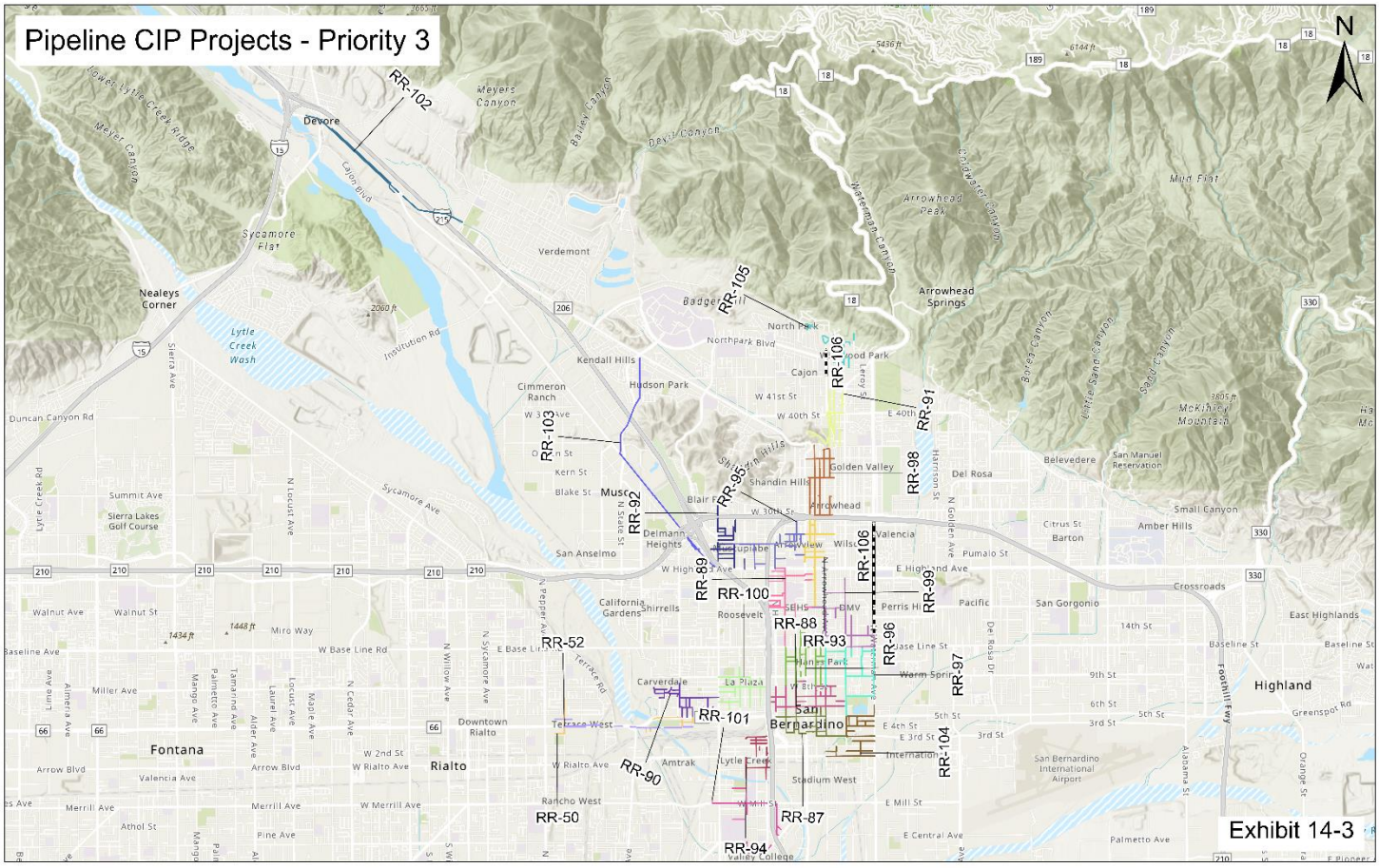
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-91
Project Name : Water Pipeline Replacement Project 45
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,331,027
Const. Mgmnt:	$1,064,822
Construction:	$8,873,515
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$11,269,364
Contingency (10%)	$1,126,936
TOTAL COSTS (ROUNDED)	$12,400,000

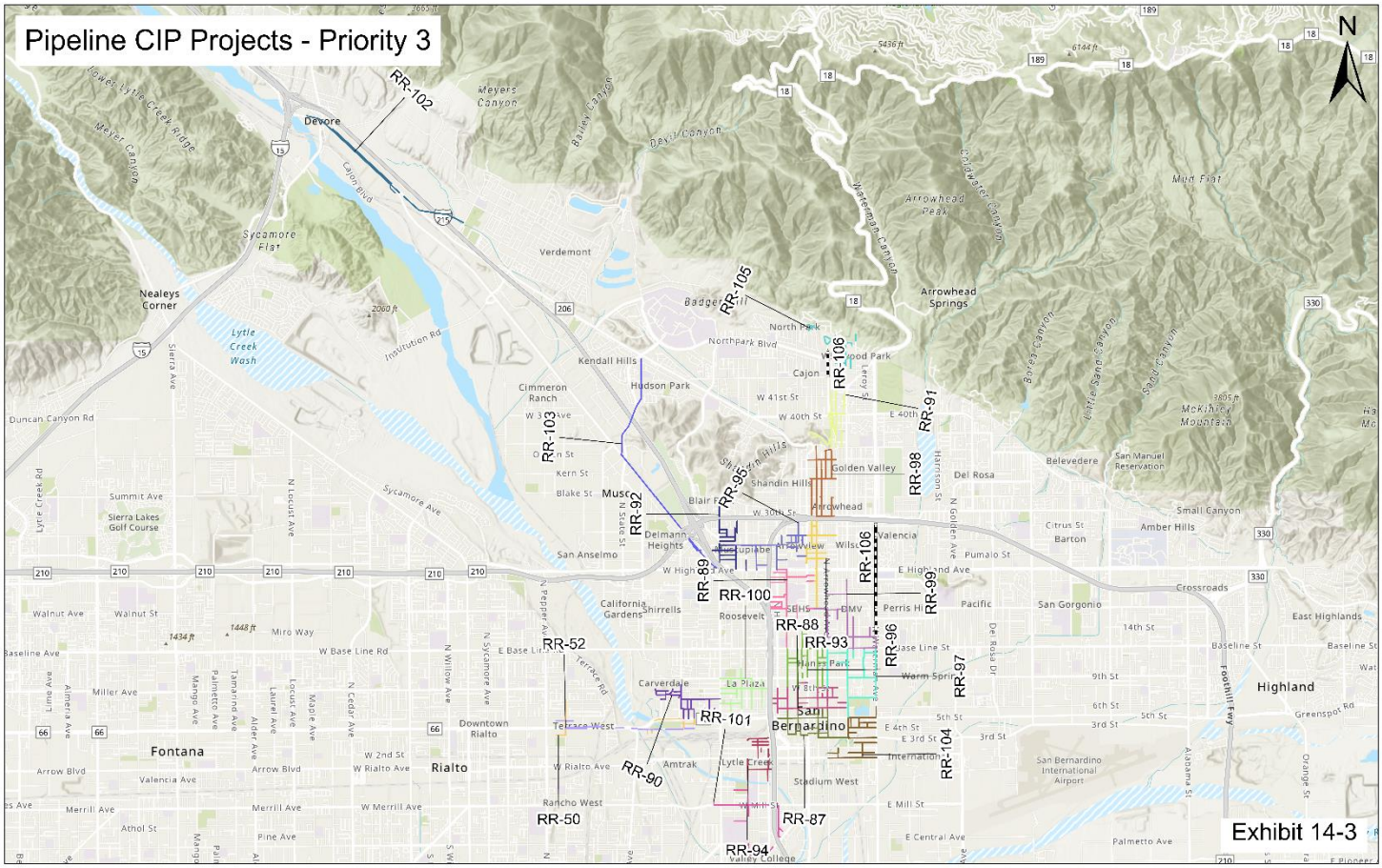
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-92
Project Name : Water Pipeline Replacement Project 46
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$994,760
Const. Mgmnt:	$795,808
Construction:	$6,631,735
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$8,422,304
Contingency (10%)	$842,230
TOTAL COSTS (ROUNDED)	$9,270,000

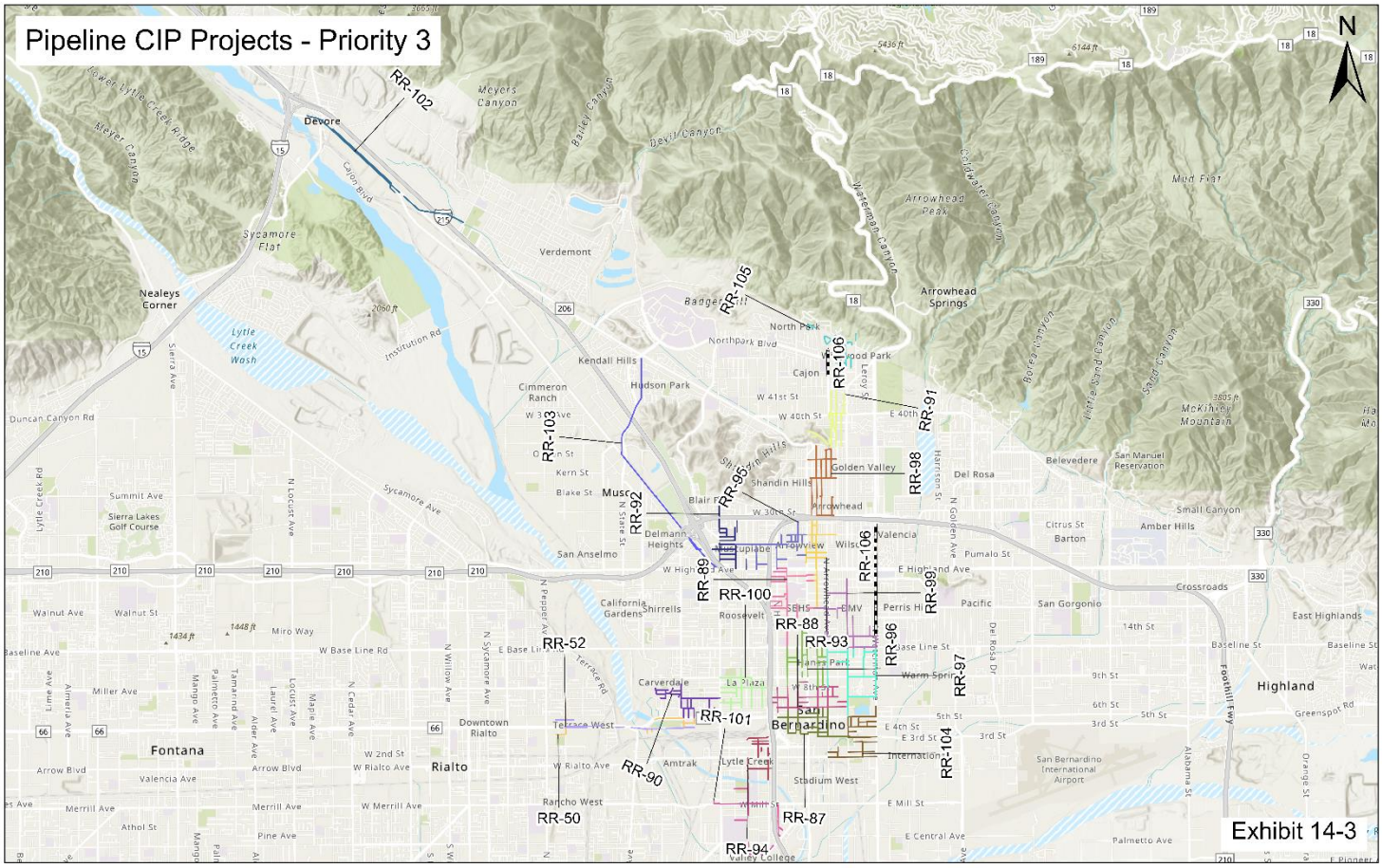
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-93
Project Name : Water Pipeline Replacement Project 47
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$982,950
Const. Mgmnt:	$786,360
Construction:	$6,552,999
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$8,322,309
Contingency (10%)	$832,231
TOTAL COSTS (ROUNDED)	$9,160,000

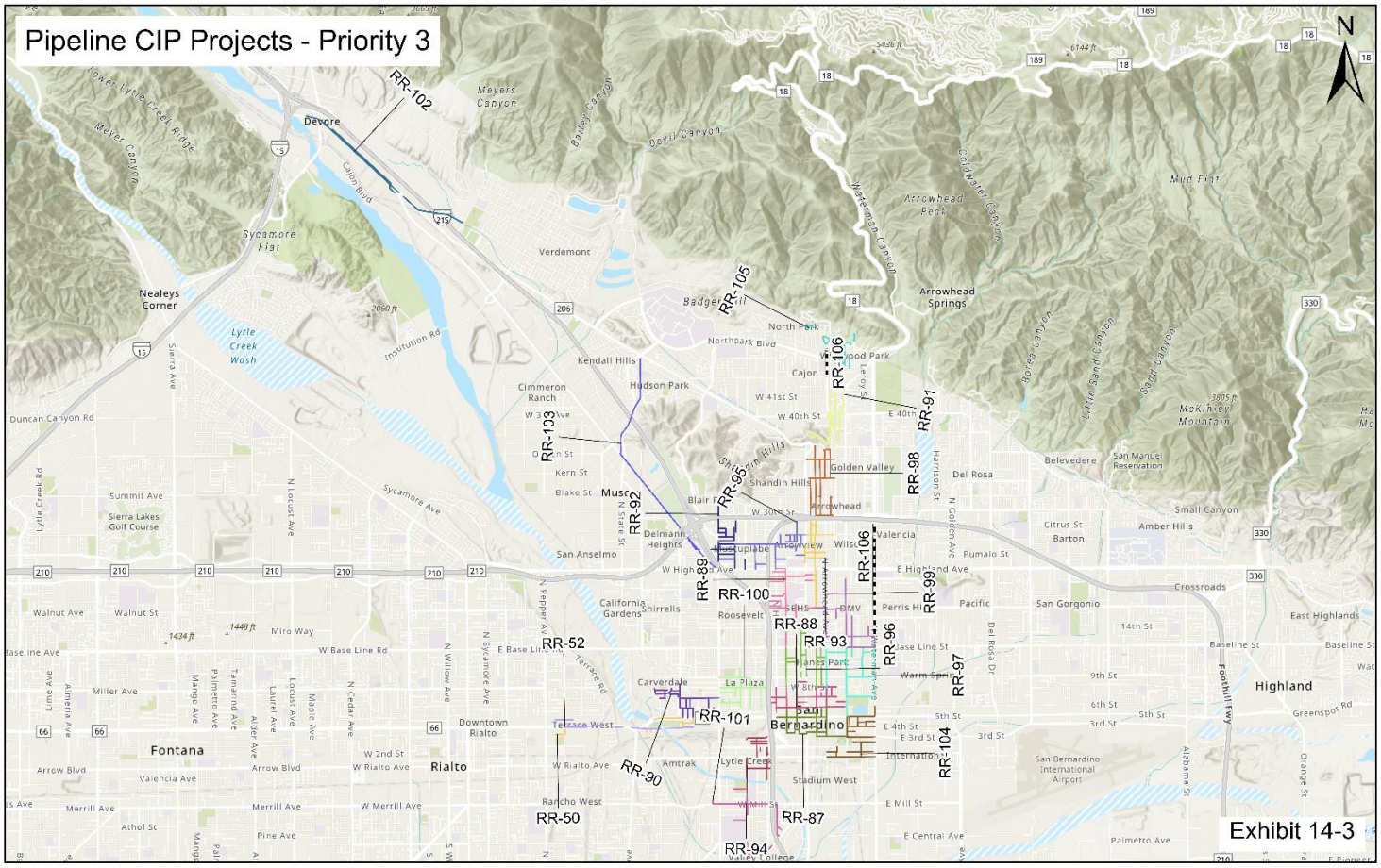
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-102
Project Name : Water Pipeline Replacement Project 56
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,493,286
Const. Mgmnt:	$1,194,629
Construction:	$9,955,238
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$12,643,152
Contingency (10%)	$1,264,315
TOTAL COSTS (ROUNDED)	$13,910,000

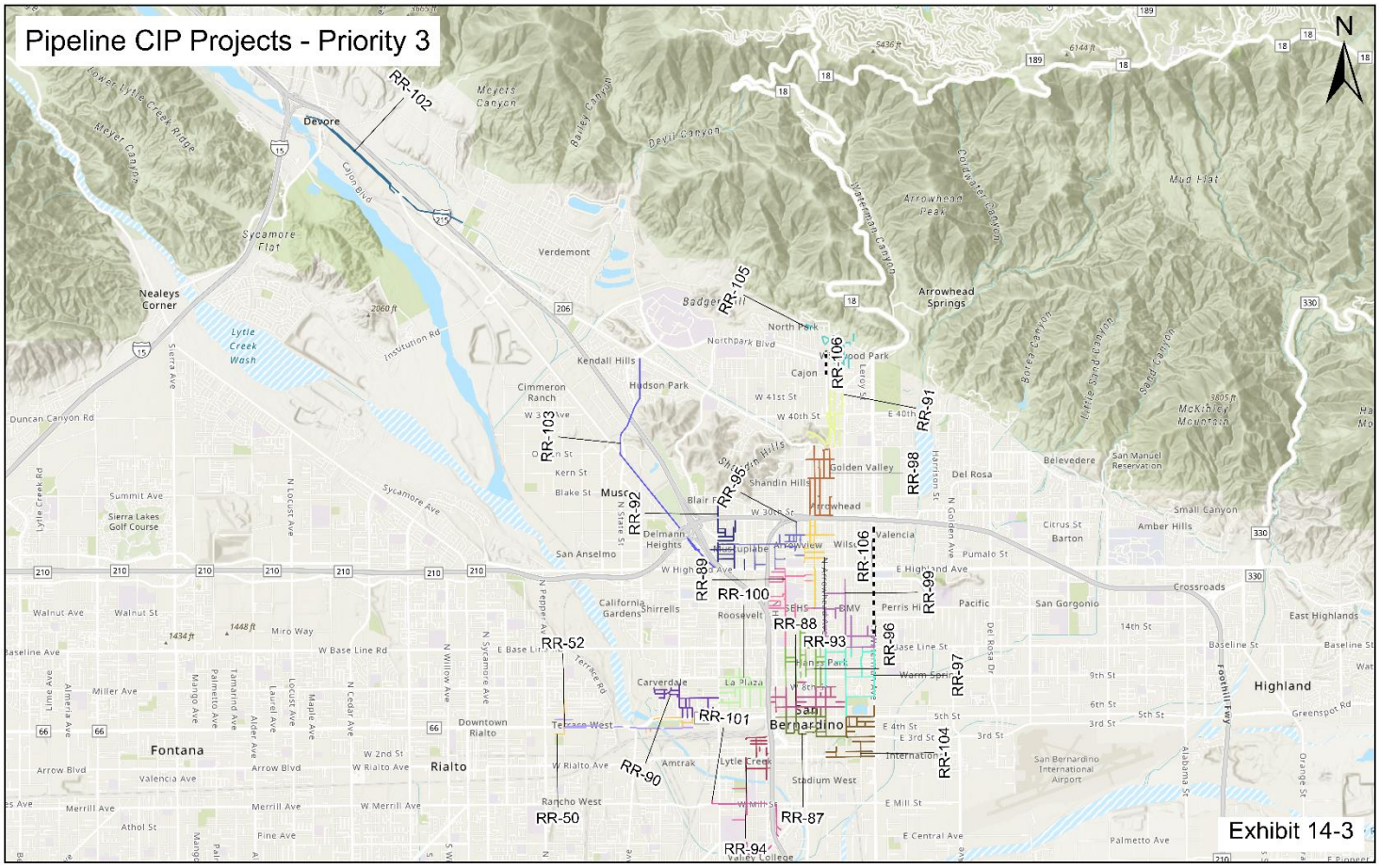
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-95
Project Name : Water Pipeline Replacement Project 49
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,002,996
Const. Mgmnt:	$802,397
Construction:	$6,686,641
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$8,492,034
Contingency (10%)	$849,203
TOTAL COSTS (ROUNDED)	$9,350,000

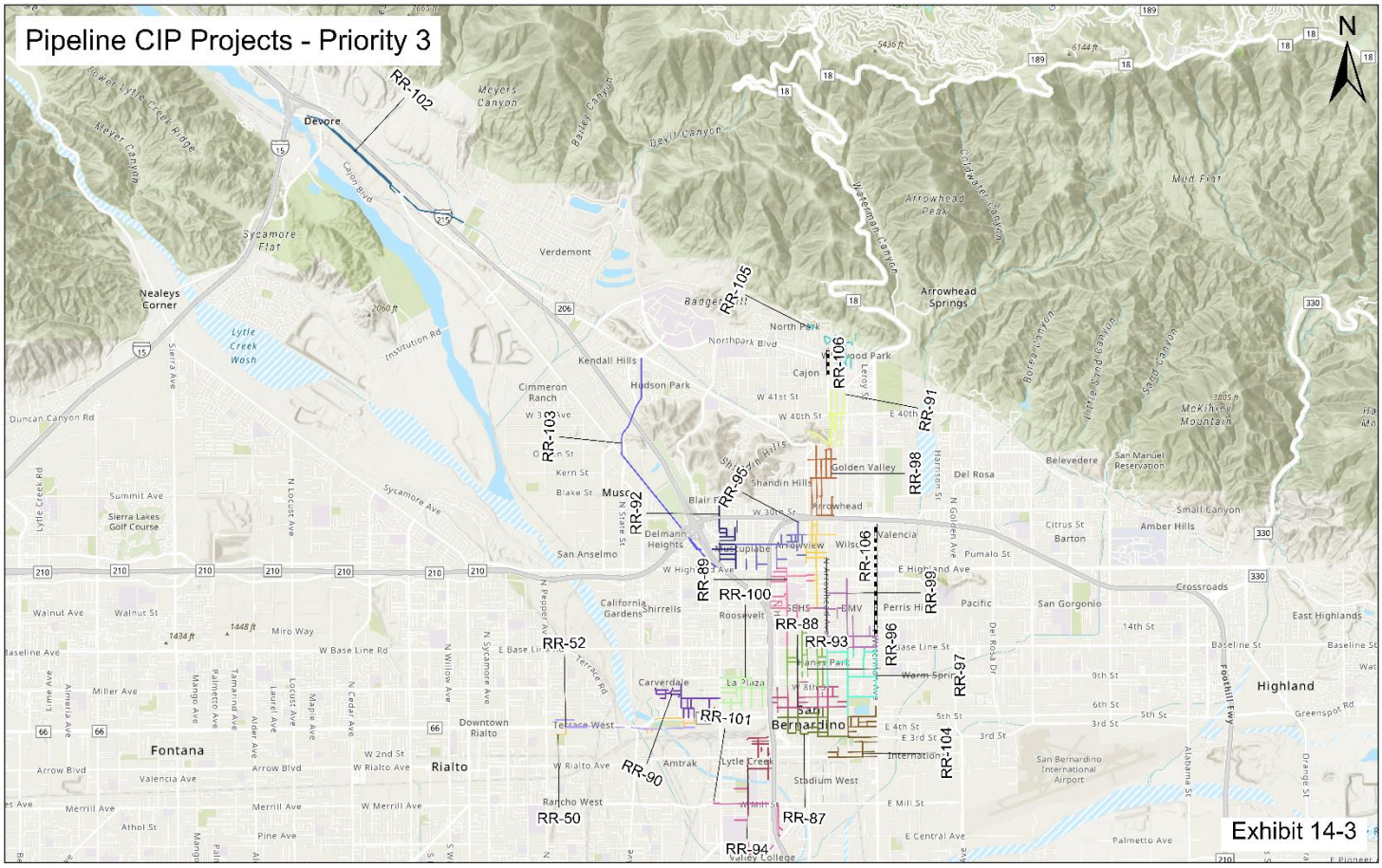
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-96
Project Name : Water Pipeline Replacement Project 50
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,221,456
Const. Mgmnt:	$977,165
Construction:	$8,143,039
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$10,341,660
Contingency (10%)	$1,034,166
TOTAL COSTS (ROUNDED)	$11,380,000

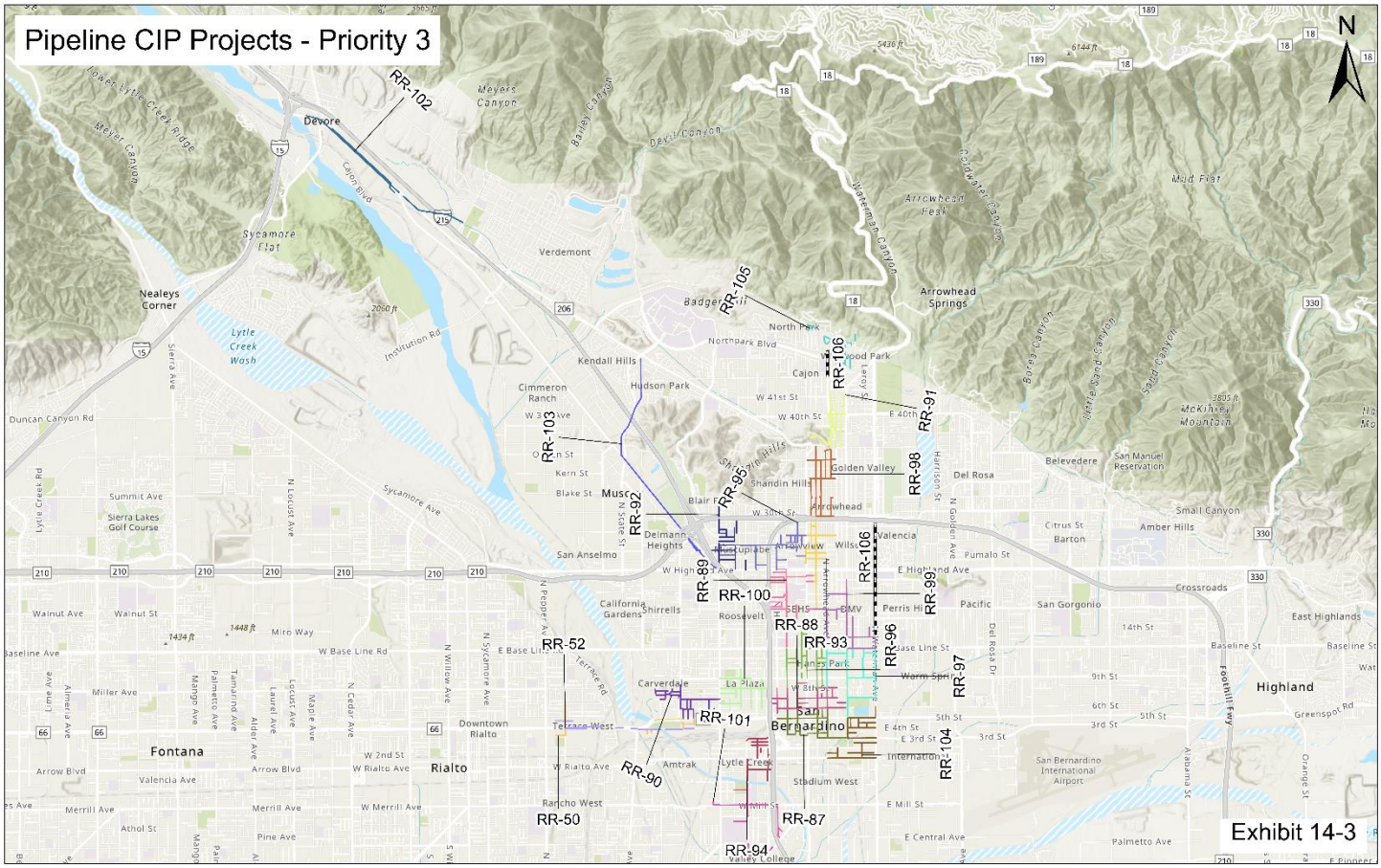
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-97
Project Name : Water Pipeline Replacement Project 51
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

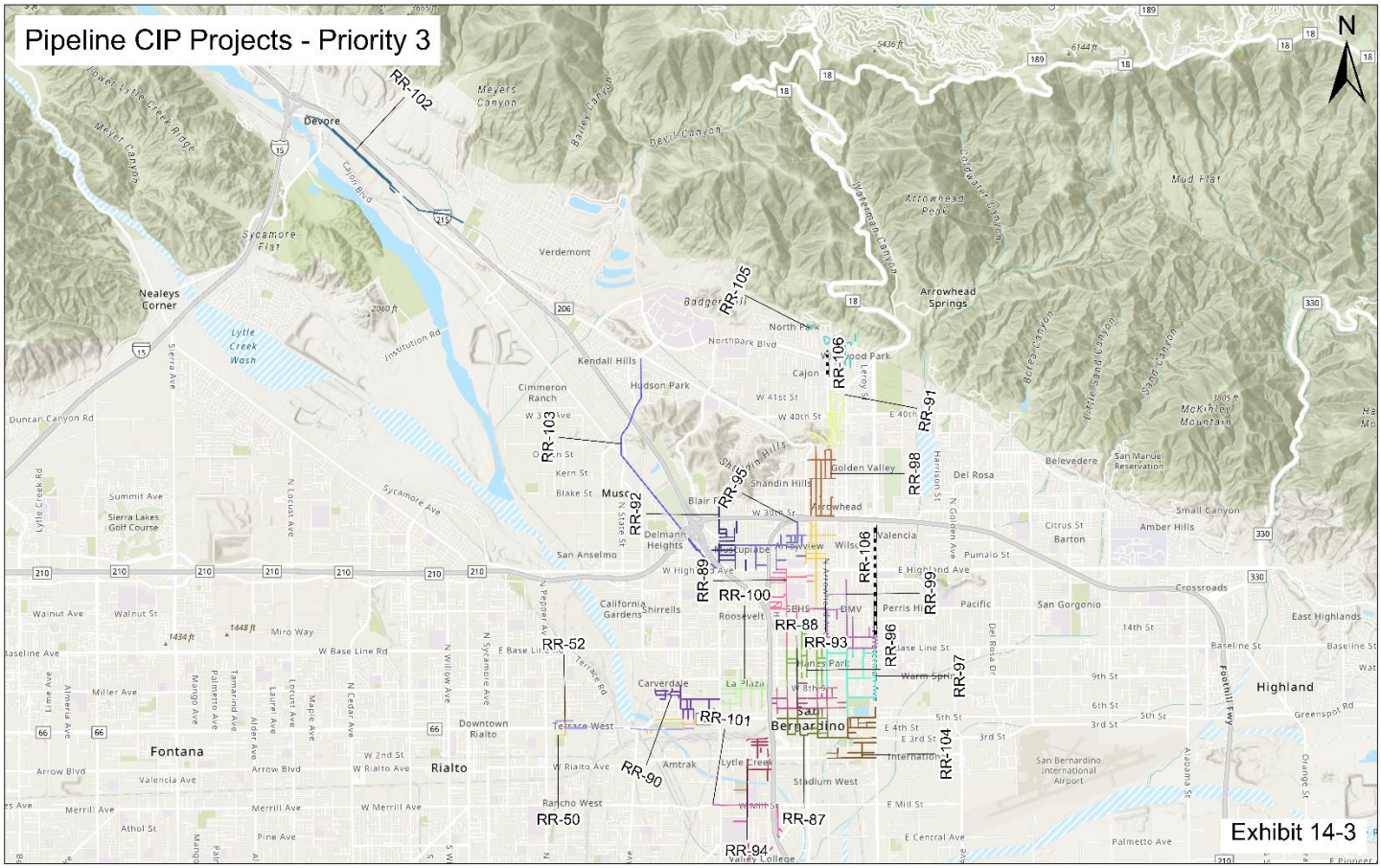
Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,288,360
Const. Mgmnt:	$1,030,688
Construction:	$8,589,067
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$10,908,115
Contingency (10%)	$1,090,812
TOTAL COSTS (ROUNDED)	$12,000,000
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-98
Project Name : Water Pipeline Replacement Project 52
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,389,882
Const. Mgmnt:	$1,111,906
Construction:	$9,265,882
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$11,767,670
Contingency (10%)	$1,176,767
TOTAL COSTS (ROUNDED)	$12,950,000

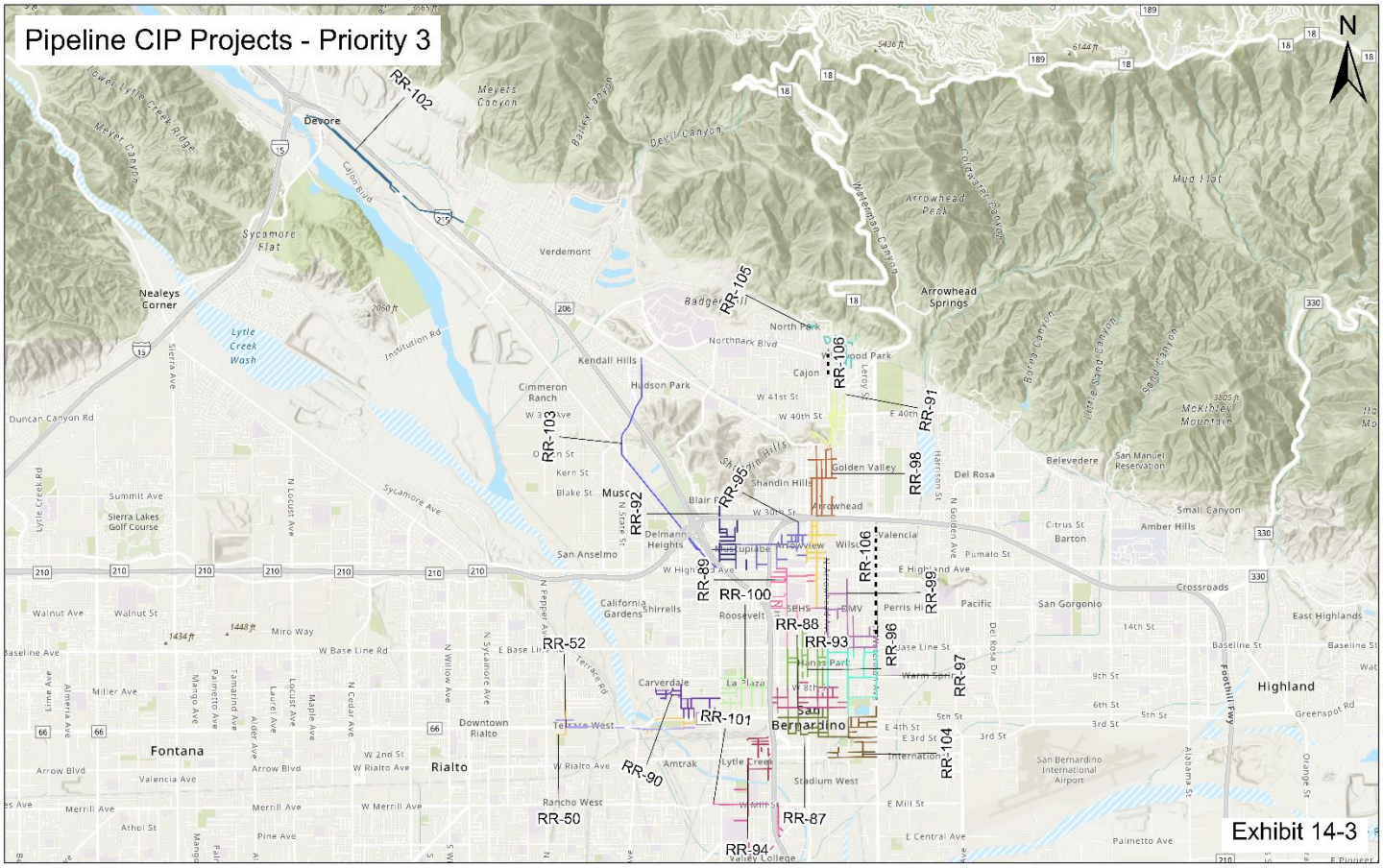
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-99
Project Name : Water Pipeline Replacement Project 53
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,366,095
Const. Mgmnt:	$1,092,876
Construction:	$9,107,301
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$11,566,272
Contingency (10%)	$1,156,627
TOTAL COSTS (ROUNDED)	$12,730,000

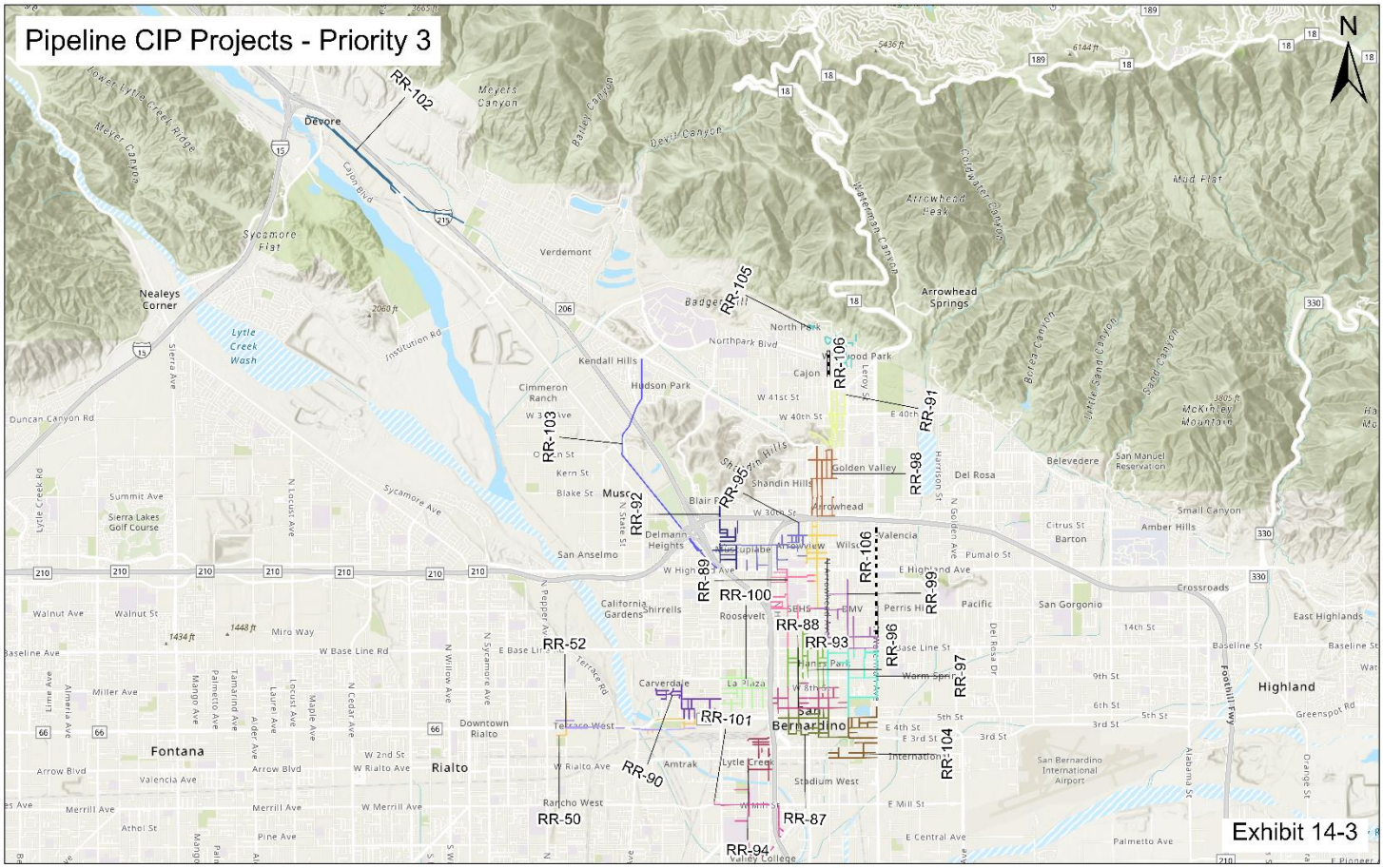
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-100
Project Name : Water Pipeline Replacement Project 54
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,056,042
Const. Mgmnt:	$844,834
Construction:	$7,040,282
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$8,941,158
Contingency (10%)	$894,116
TOTAL COSTS (ROUNDED)	$9,840,000

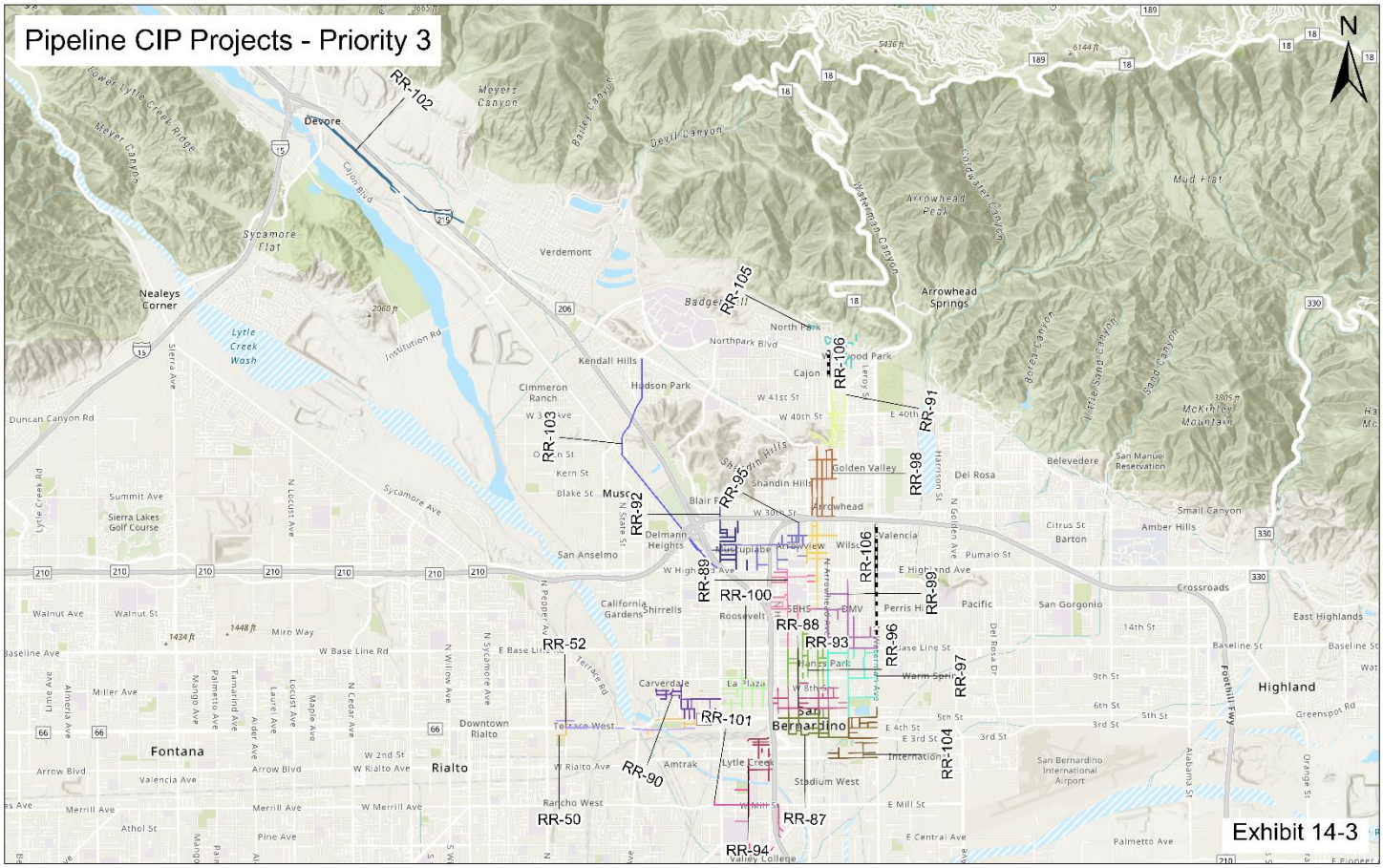
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-101
Project Name : Water Pipeline Replacement Project 55
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$821,608
Const. Mgmnt:	$657,286
Construction:	$5,477,385
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$6,956,279
Contingency (10%)	$695,628
TOTAL COSTS (ROUNDED)	$7,660,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-44
Project Name : Devore Reservoir Electrical and Mechanical Improvements
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: This project includes replacing the electrical and mechanical components at Devore Reservoir. The 2022 Field Condition Assessment found these items in need of replacement.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$262,736
Const. Mgmnt:	$210,189
Construction:	$1,751,573
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$2,224,497
Contingency (10%)	$222,450
TOTAL COSTS (ROUNDED)	$2,450,000

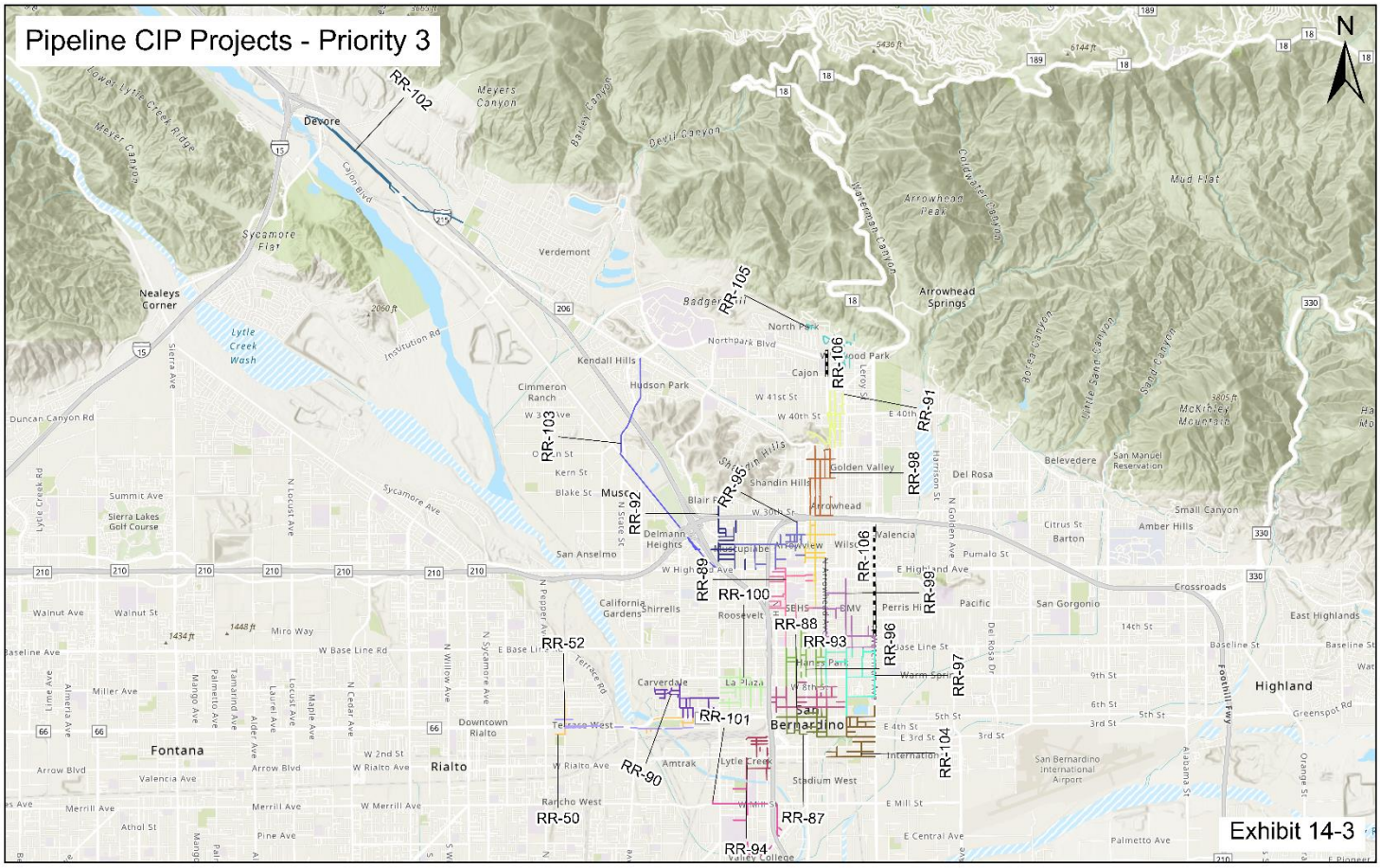
Project Funding Sources:	**Funding Amount**
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-103
Project Name : Water Pipeline Replacement Project 57
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,225,321
Const. Mgmnt:	$980,256
Construction:	$8,168,804
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$10,374,381
Contingency (10%)	$1,037,438
TOTAL COSTS (ROUNDED)	$11,420,000

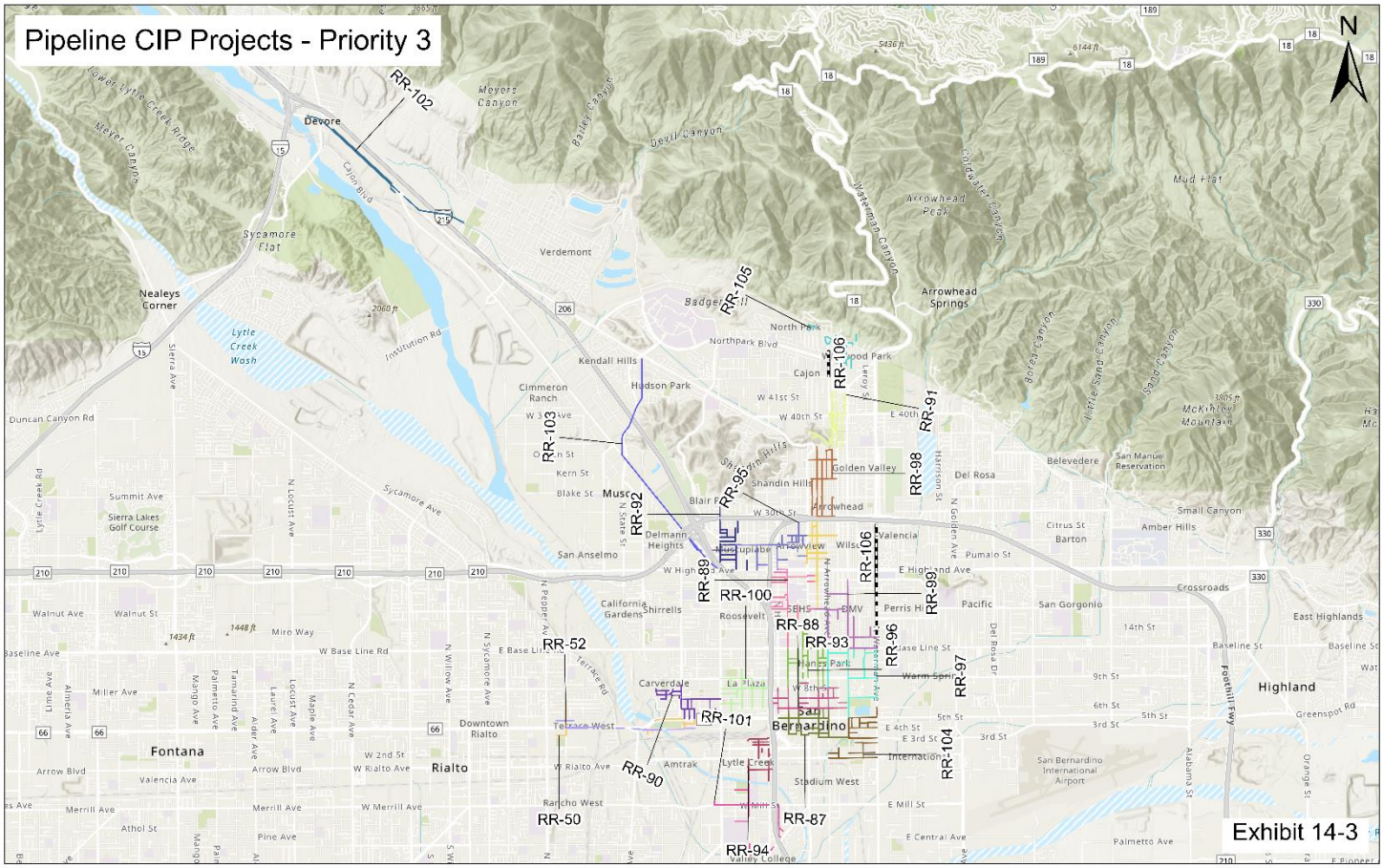
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-104
Project Name : Water Pipeline Replacement Project 58
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$1,262,405
Const. Mgmnt:	$1,009,924
Construction:	$8,416,034
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$10,688,363
Contingency (10%)	$1,068,836
TOTAL COSTS (ROUNDED)	$11,760,000

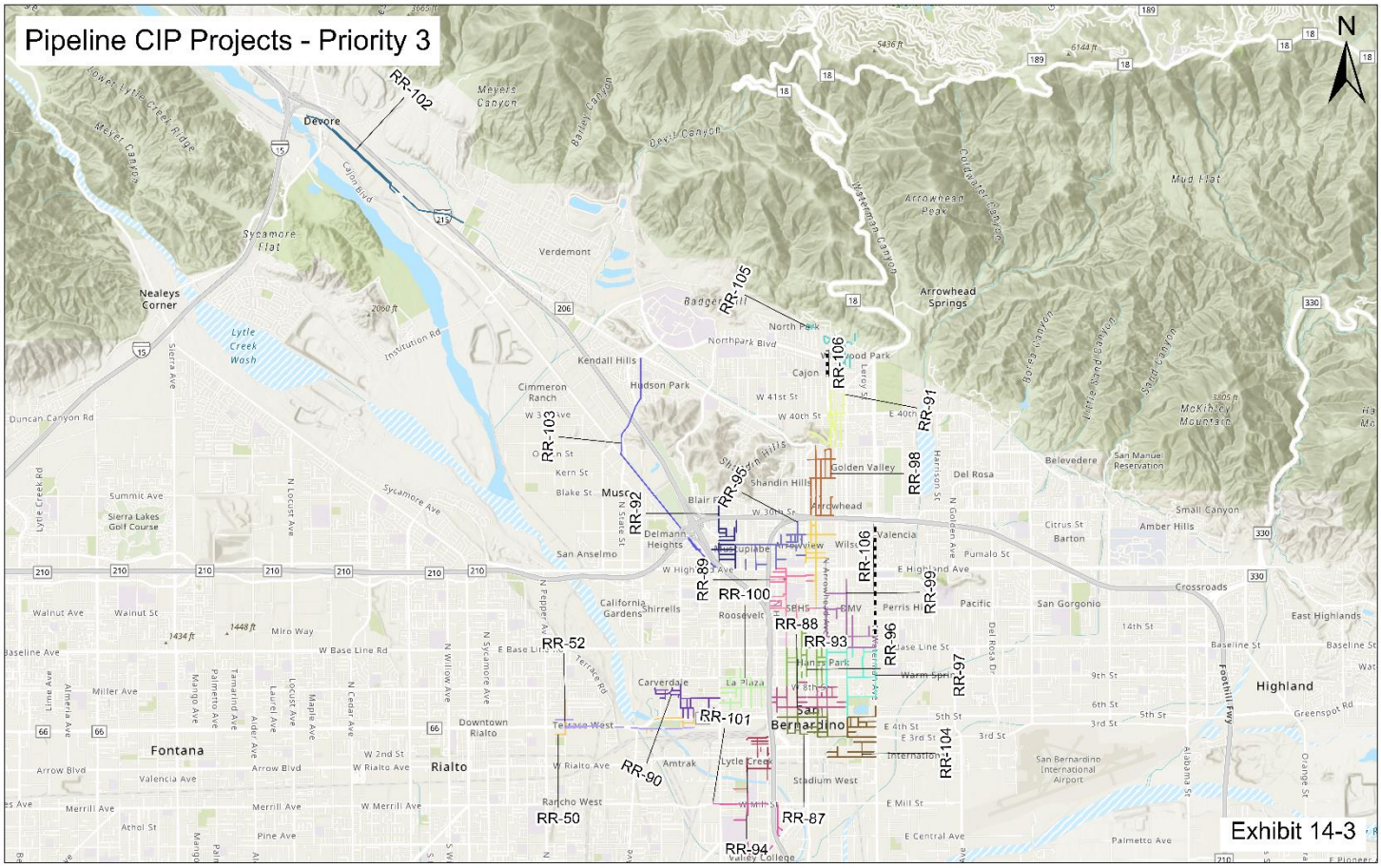
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-94
Project Name : Water Pipeline Replacement Project 48
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. Projects containing a large number of pipelines with RUL greater than 0 and less than 20 were assigned priority 3. See Figure 14-3 for project location.



Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$633,405
Const. Mgmnt:	$506,724
Construction:	$4,222,698
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$5,362,826
Contingency (10%)	$536,283
TOTAL COSTS (ROUNDED)	$5,900,000

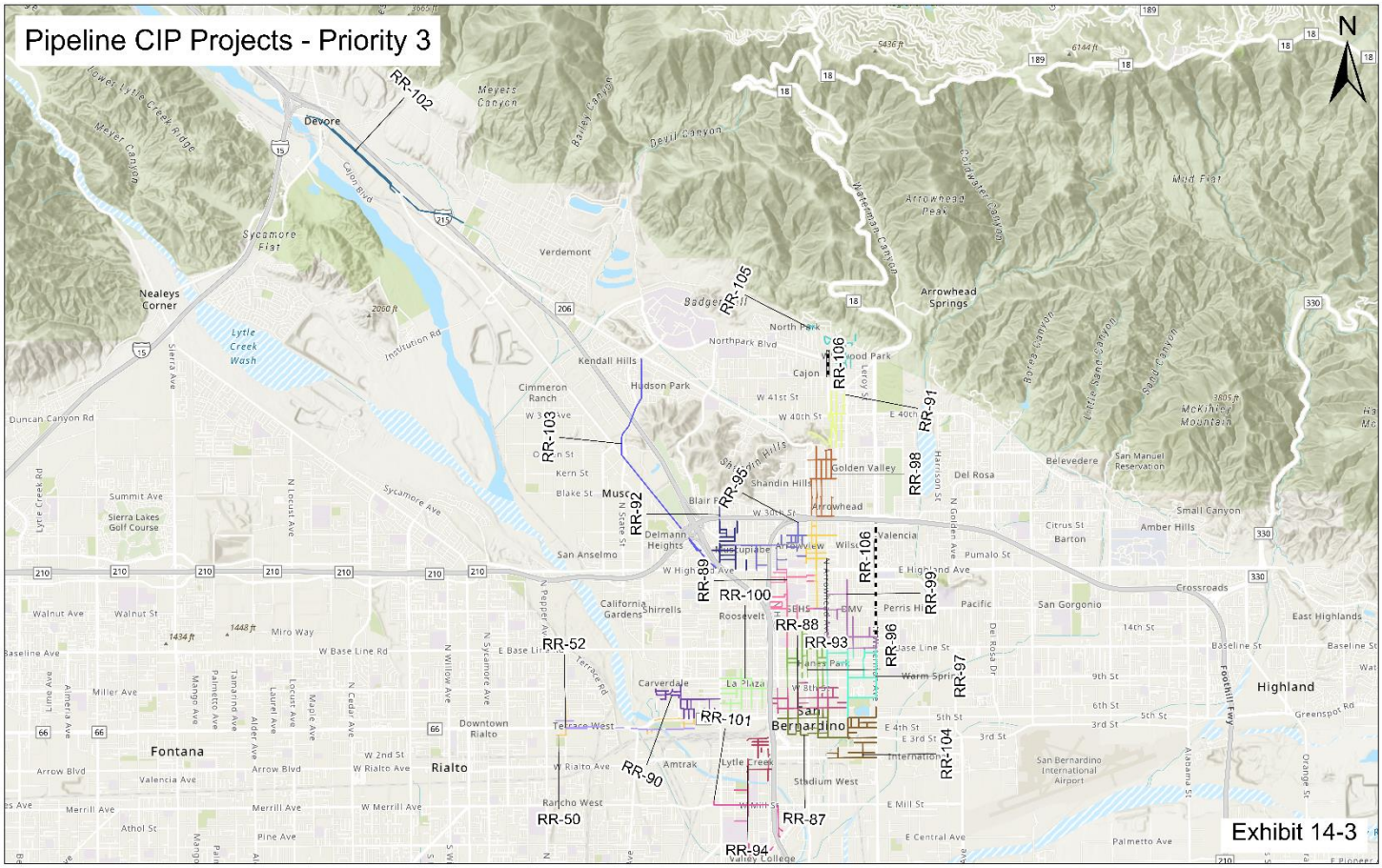
Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

San Bernardino Municipal Water Department
Water Fund Capital Projects Budget

CIP ID: RR-52
Project Name : Water Pipeline Replacement Project 6
Asset Classification: Replacement/Rehabilitation of System Assets

Budget ID No. **CO No.**

Project Description: Pipeline projects were developed based on multiple levels of evaluations and analyses such as available fire flow, maximum velocity, and high risk level. Pipelines in the same vicinity were grouped together to form projects within a geographic area. A large number of pipelines in this project are fire flow deficient. However, this project is assigned priority 3 due to a planned Caltran's street improvement project scheduled for 2024. See Figure 14-3 for project location.

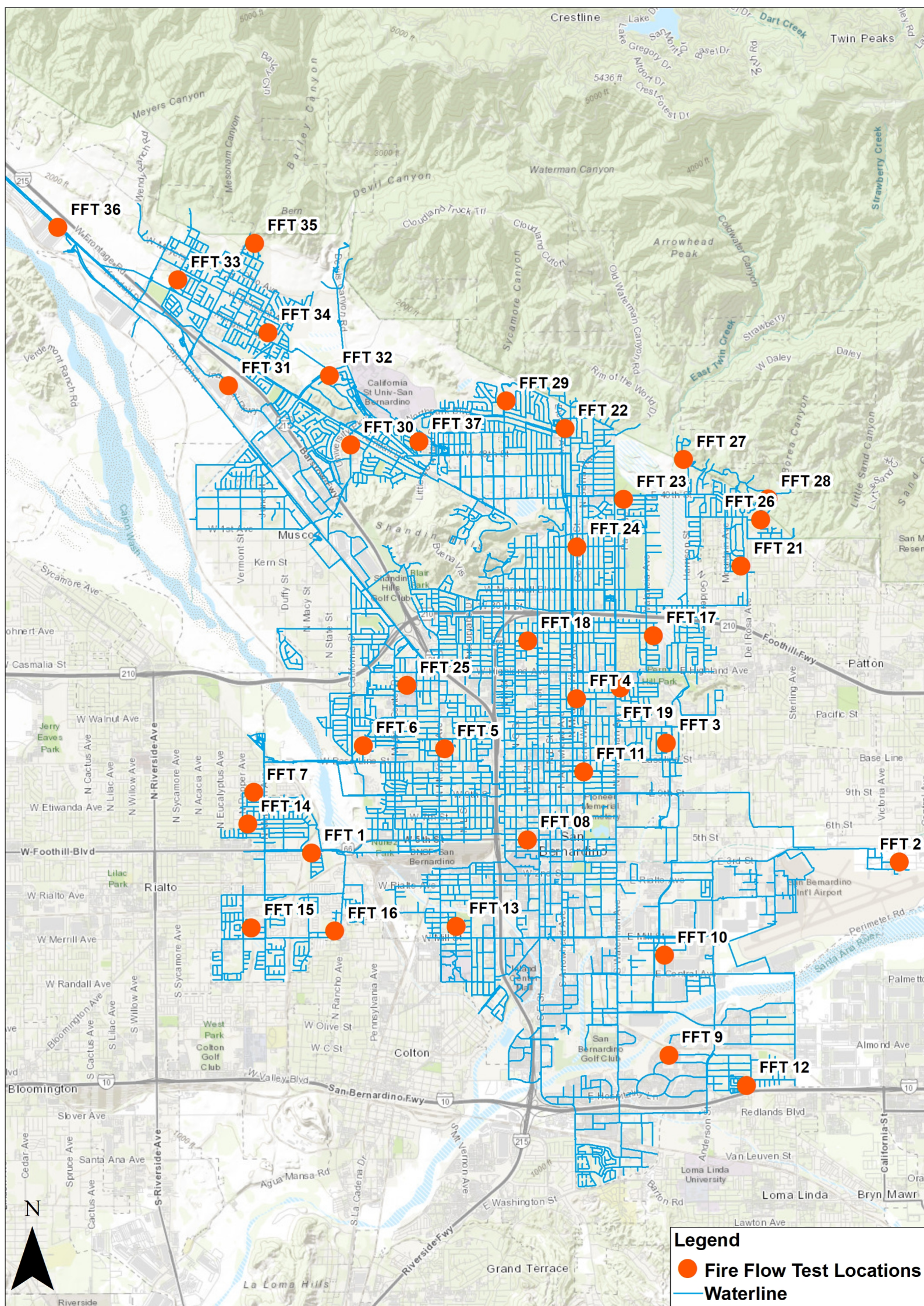


Budgetary Requirements:

Cost Category	Estimated Cost
CEQA Compliance:	$0
Design:	$637,175
Const. Mgmnt:	$509,740
Construction:	$4,247,835
SBMWD Labor & Ovhd:	$0
SBMWD Stock Issues	$0
Equipment Rental:	$0
Purchased Material:	$0
Contract Services	$0
Subtotal:	$5,394,750
Contingency (10%)	$539,475
TOTAL COSTS (ROUNDED)	$5,940,000

Project Funding Sources:	Funding Amount
Water Capital:	$0
Chartis Escrow:	$0
Water Conservation:	$0
Other:	$0
FUNDING (ROUNDED)	**$0**

Appendix A: Fire Flow Test Exhibits


FFT 36
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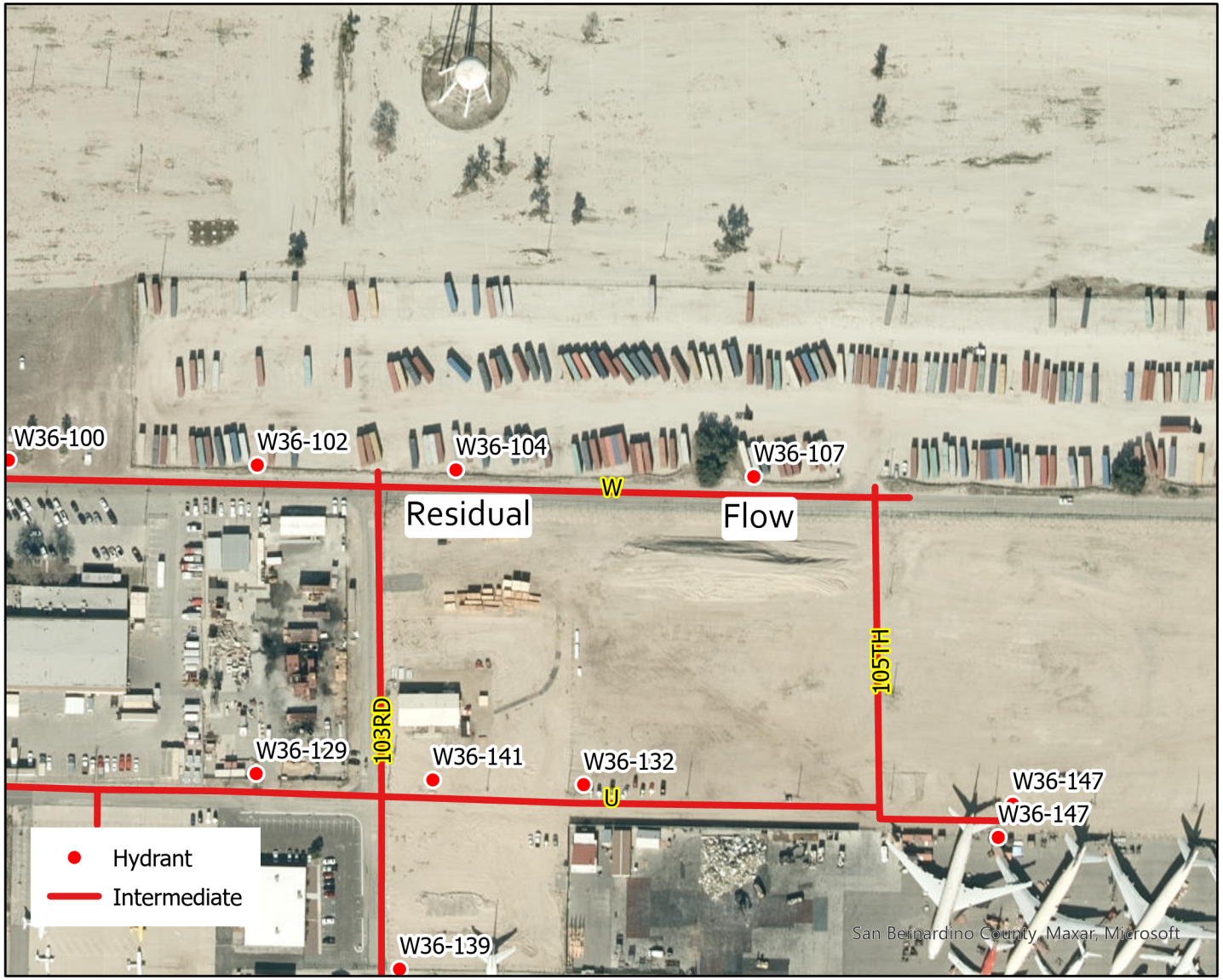
FFT 2
FFT 15
FFT 16
FFT 13
FFT 10
FFT 9
FFT 12
Crestline
Twin Peaks
Waterman Canyon
Devil Canyon
Arrowhead Peak
Muscoy
Patton
Rialto
Colton
Bloomington
Loma Linda
Grand Terrace
San Bernardino
N
Legend
Fire Flow Test Locations
Waterline



Test Number 1



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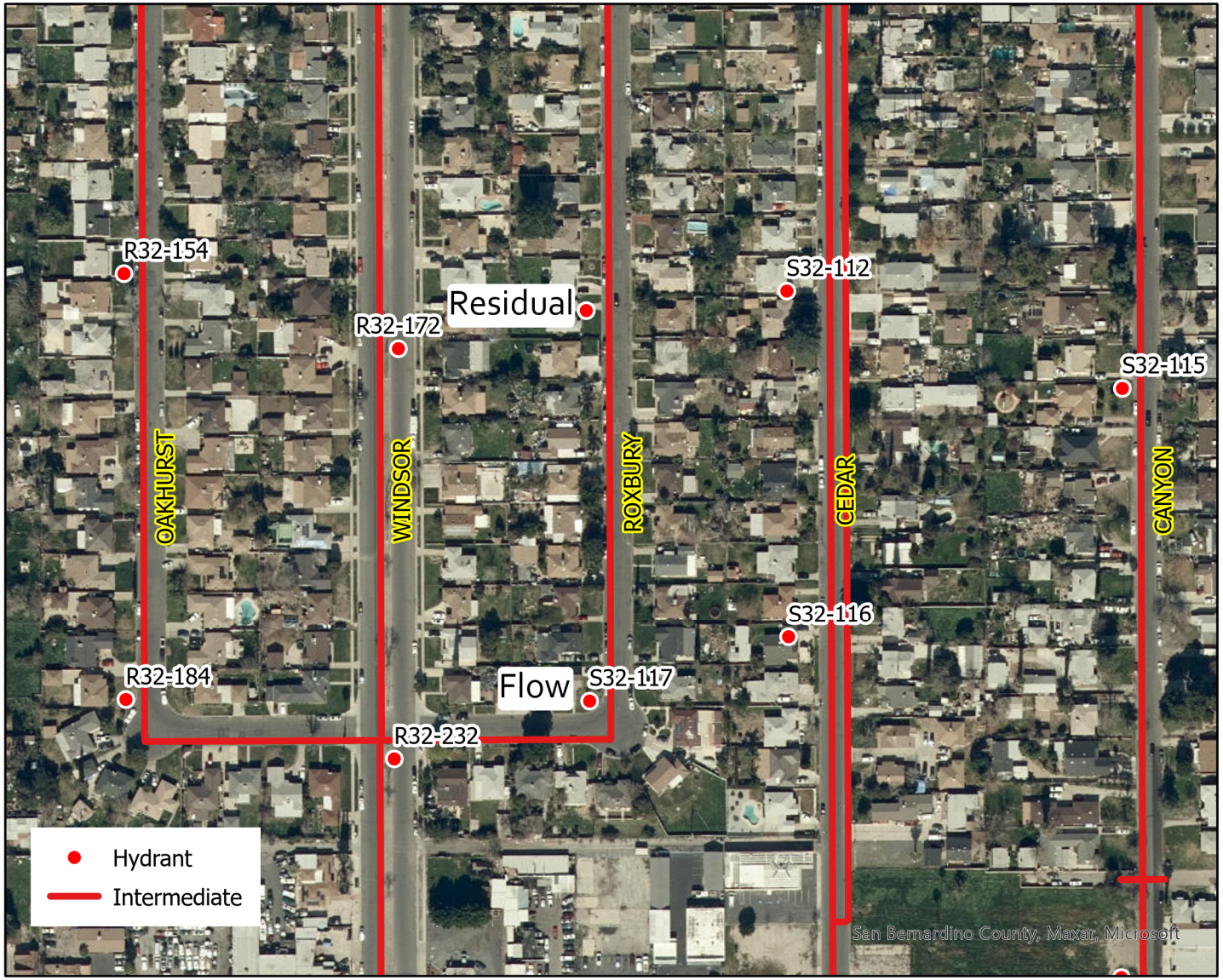

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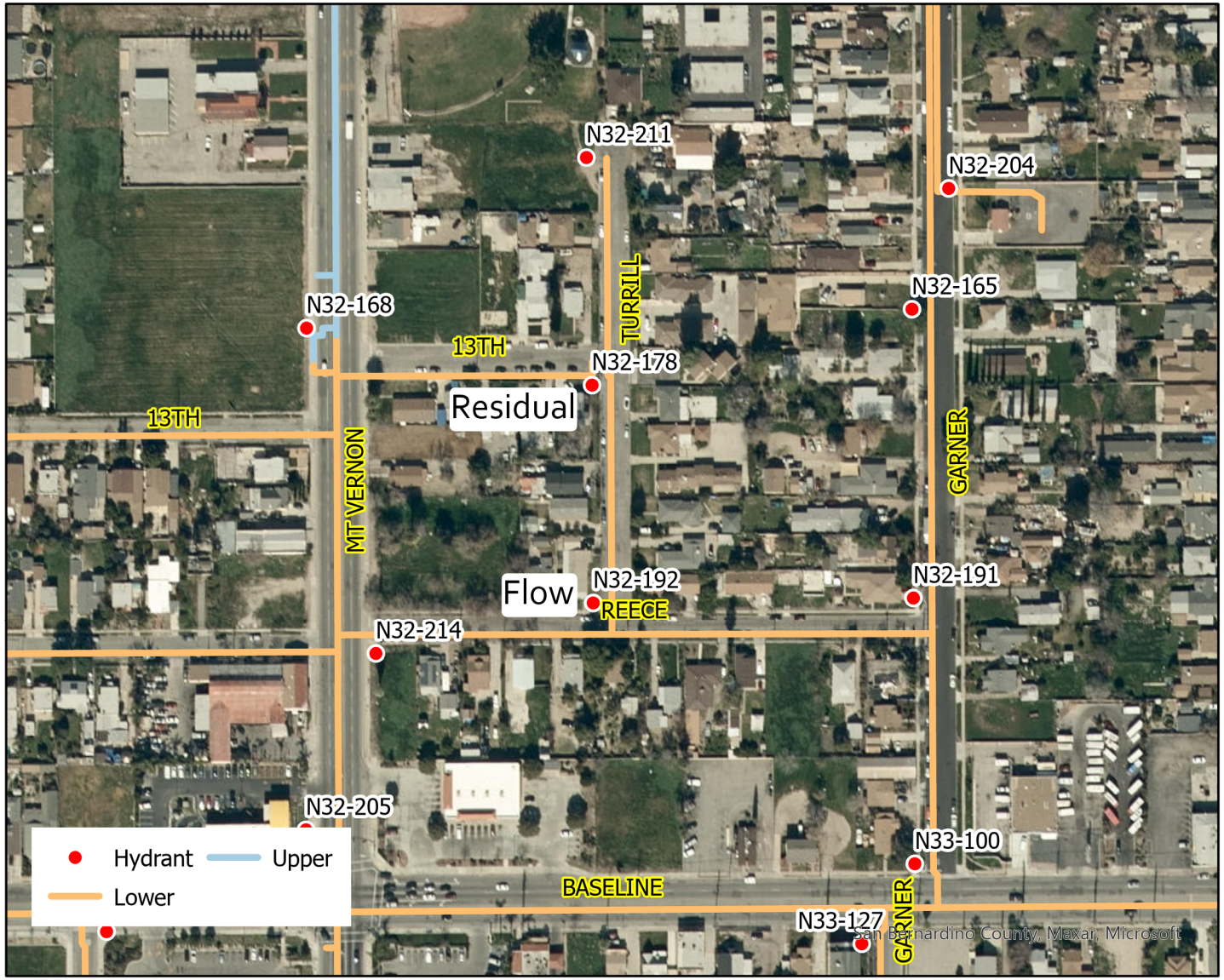
Test Number 4



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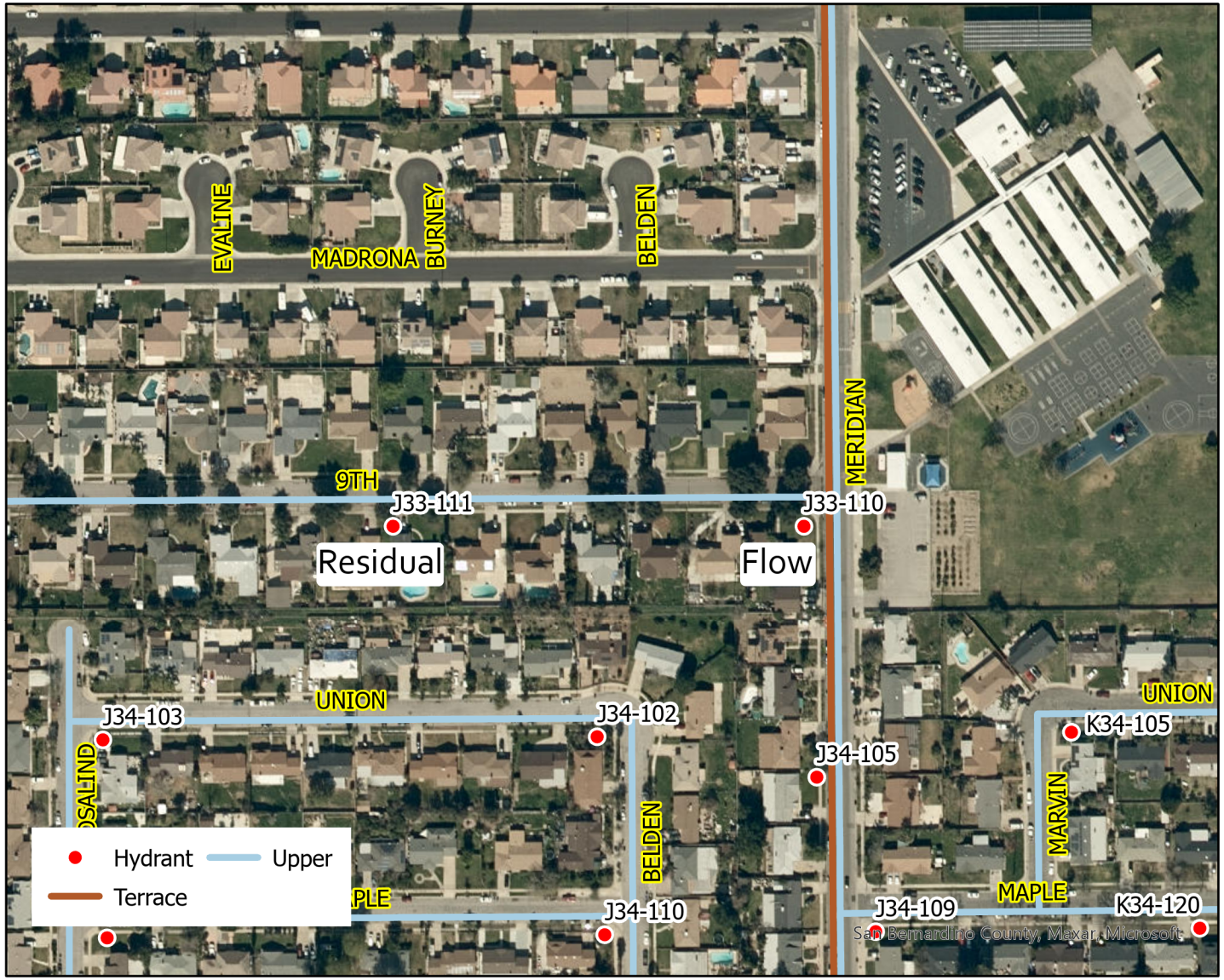
Test Number 6



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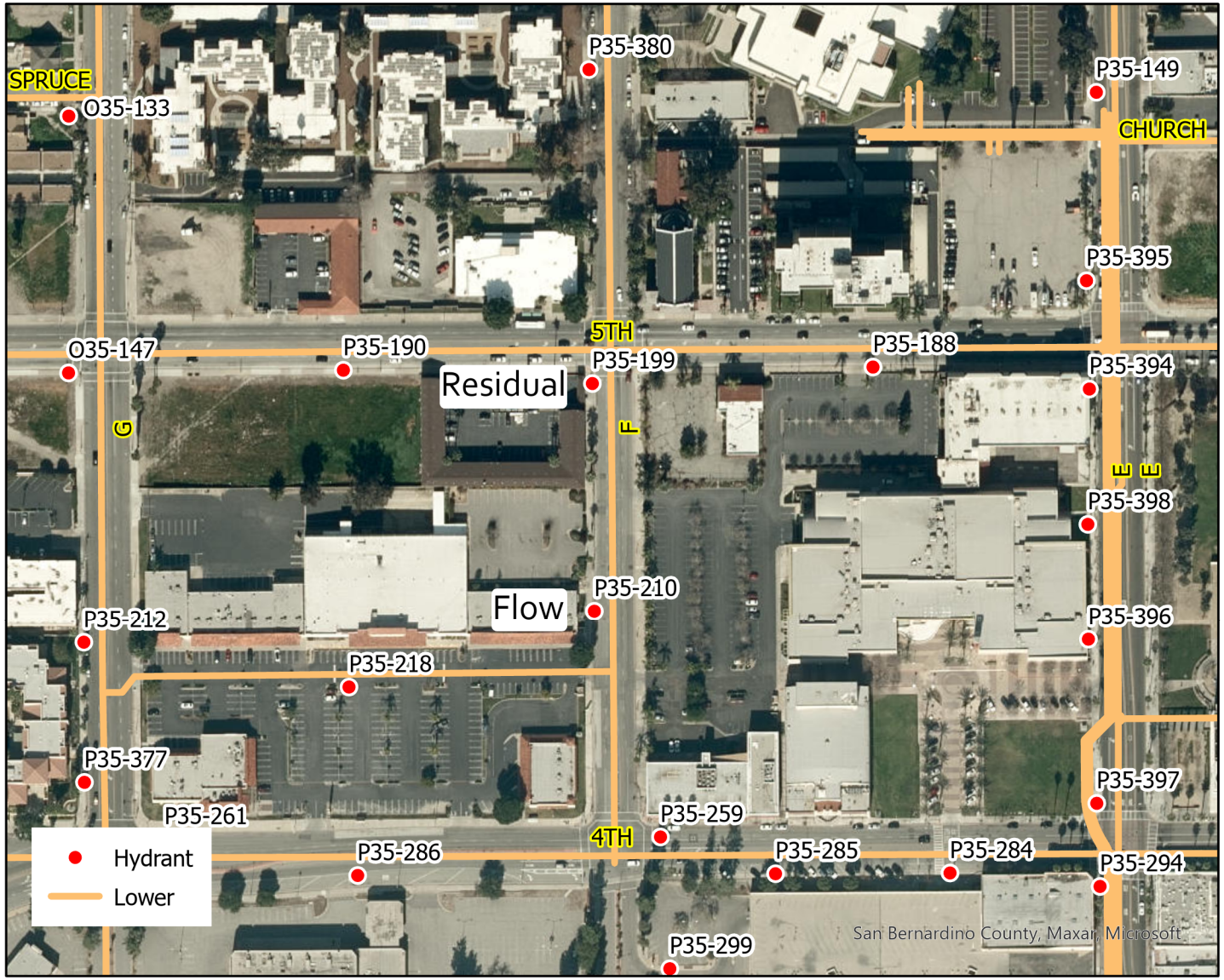


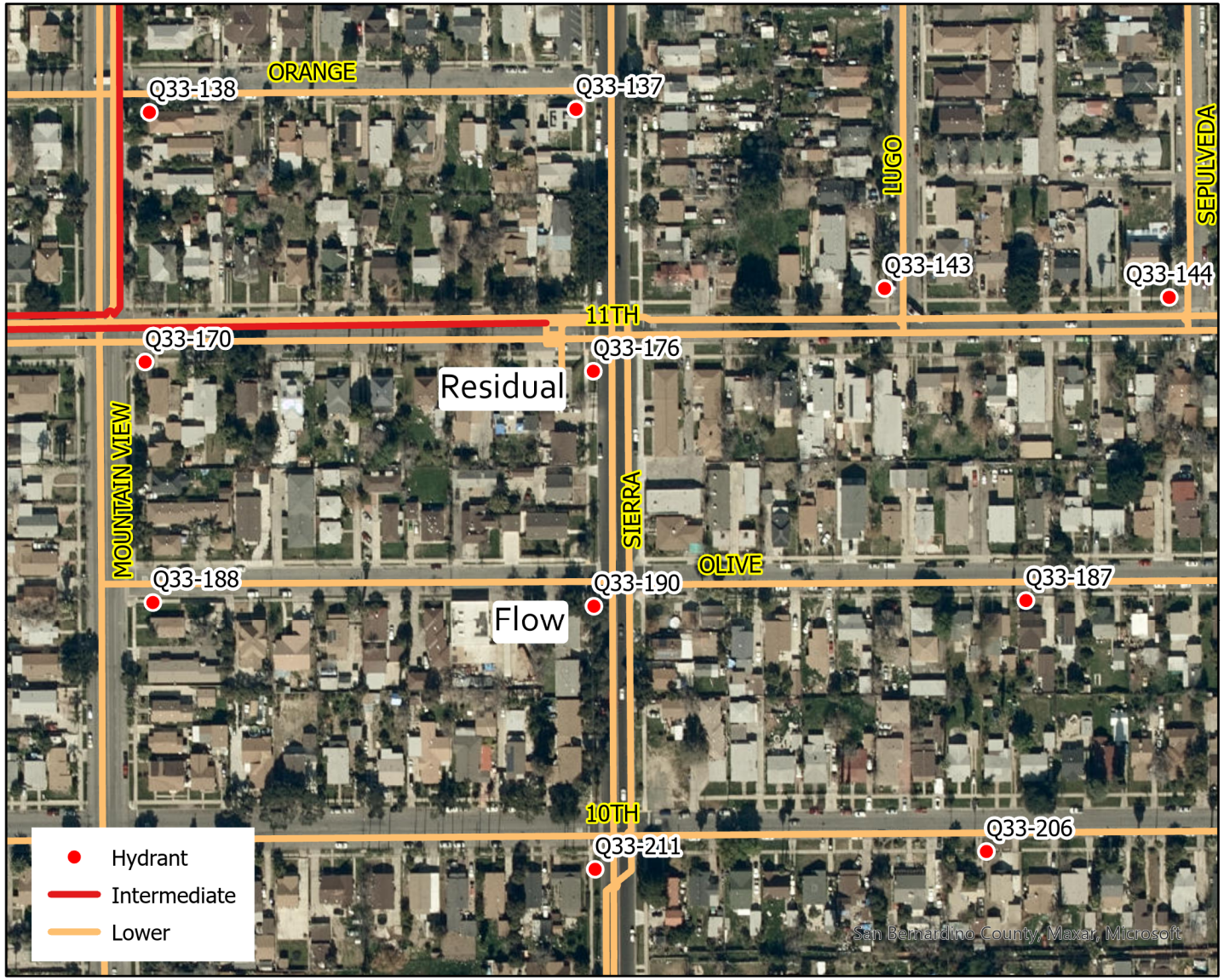
Test Number 8



Test Number 9



Test Number 10



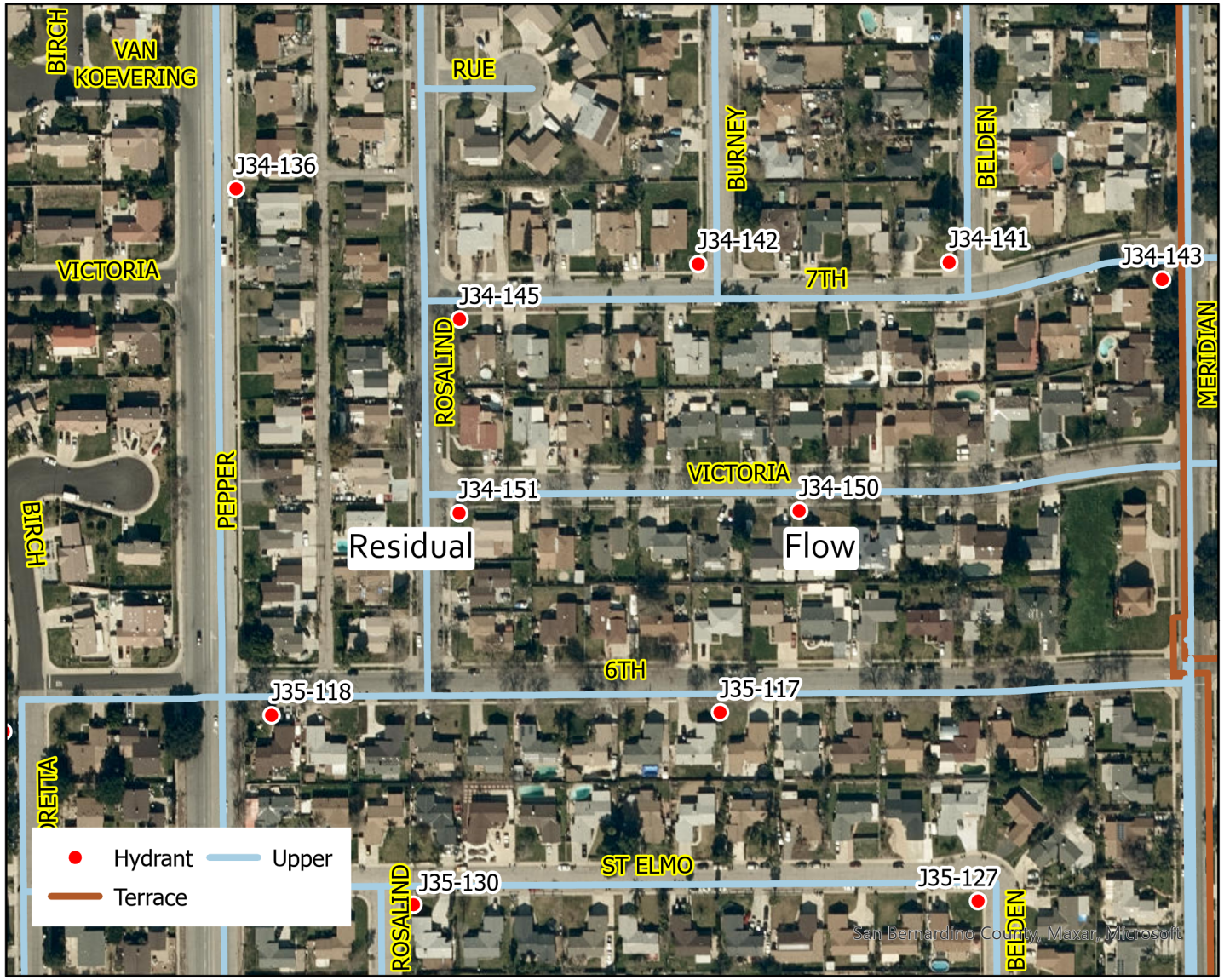
Test Number 11



Test Number 12



Test Number 13



Test Number 14



Test Number 15



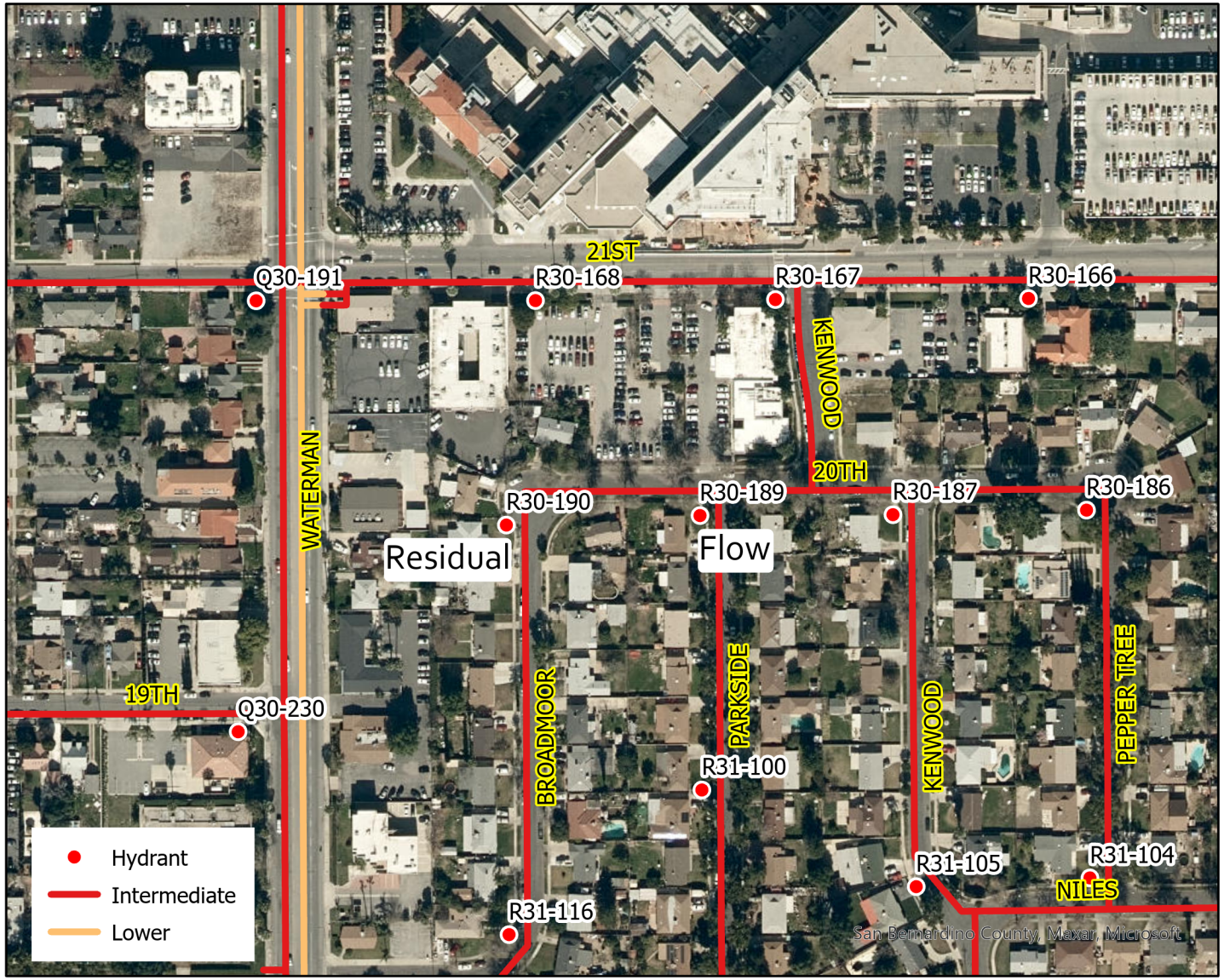
Test Number 16



Test Number 17



Test Number 18



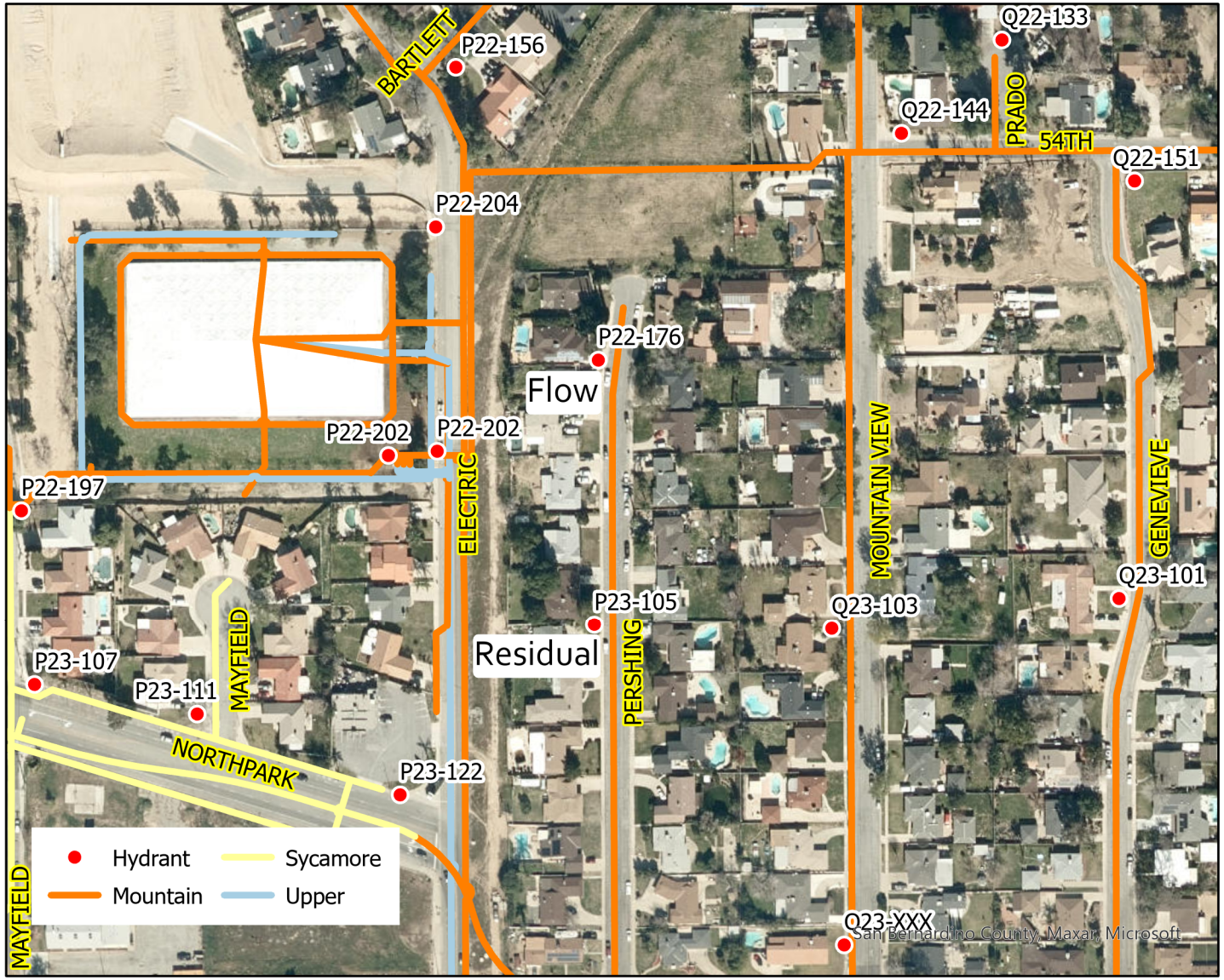
Test Number 19



Test Number 20



Test Number 21



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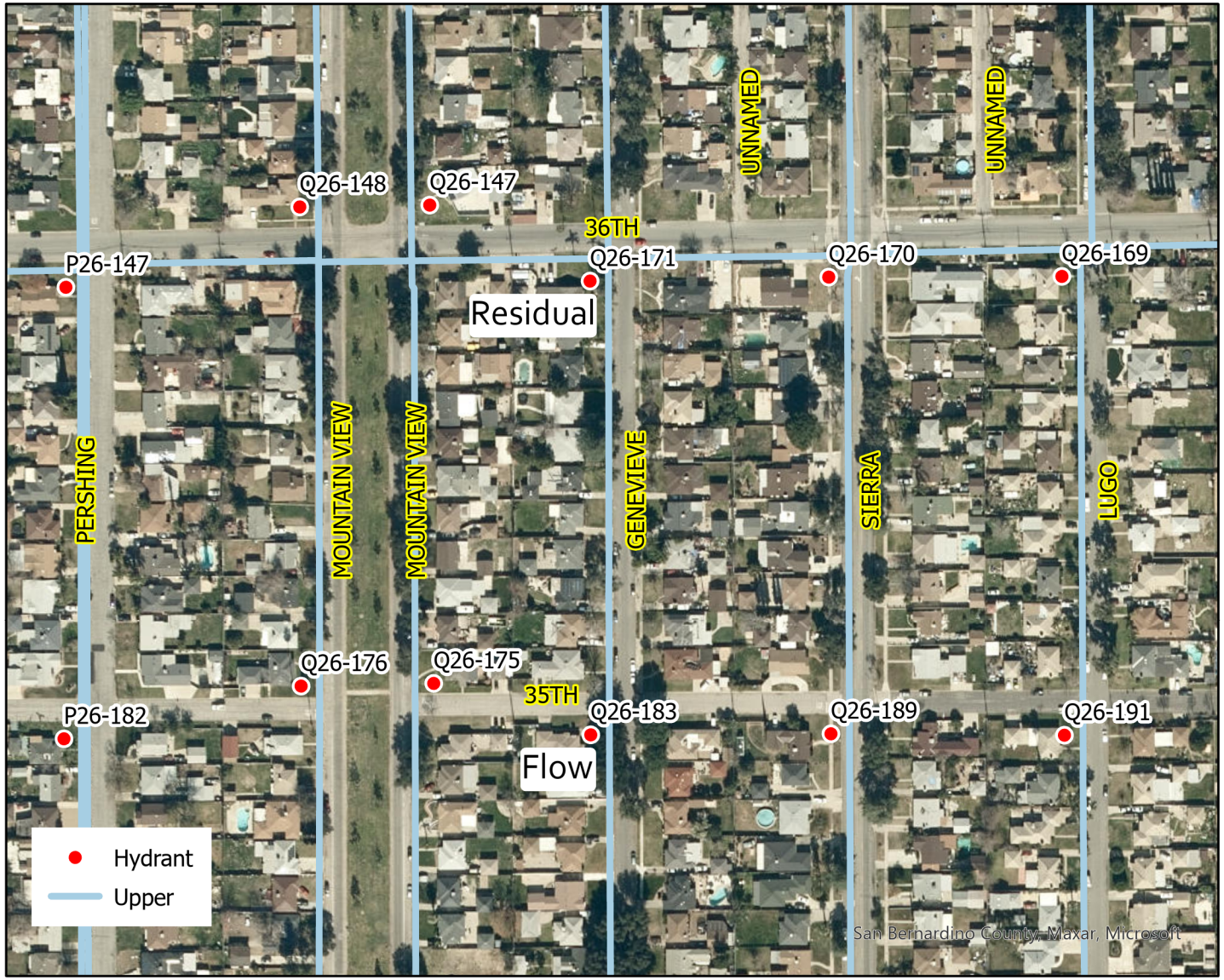
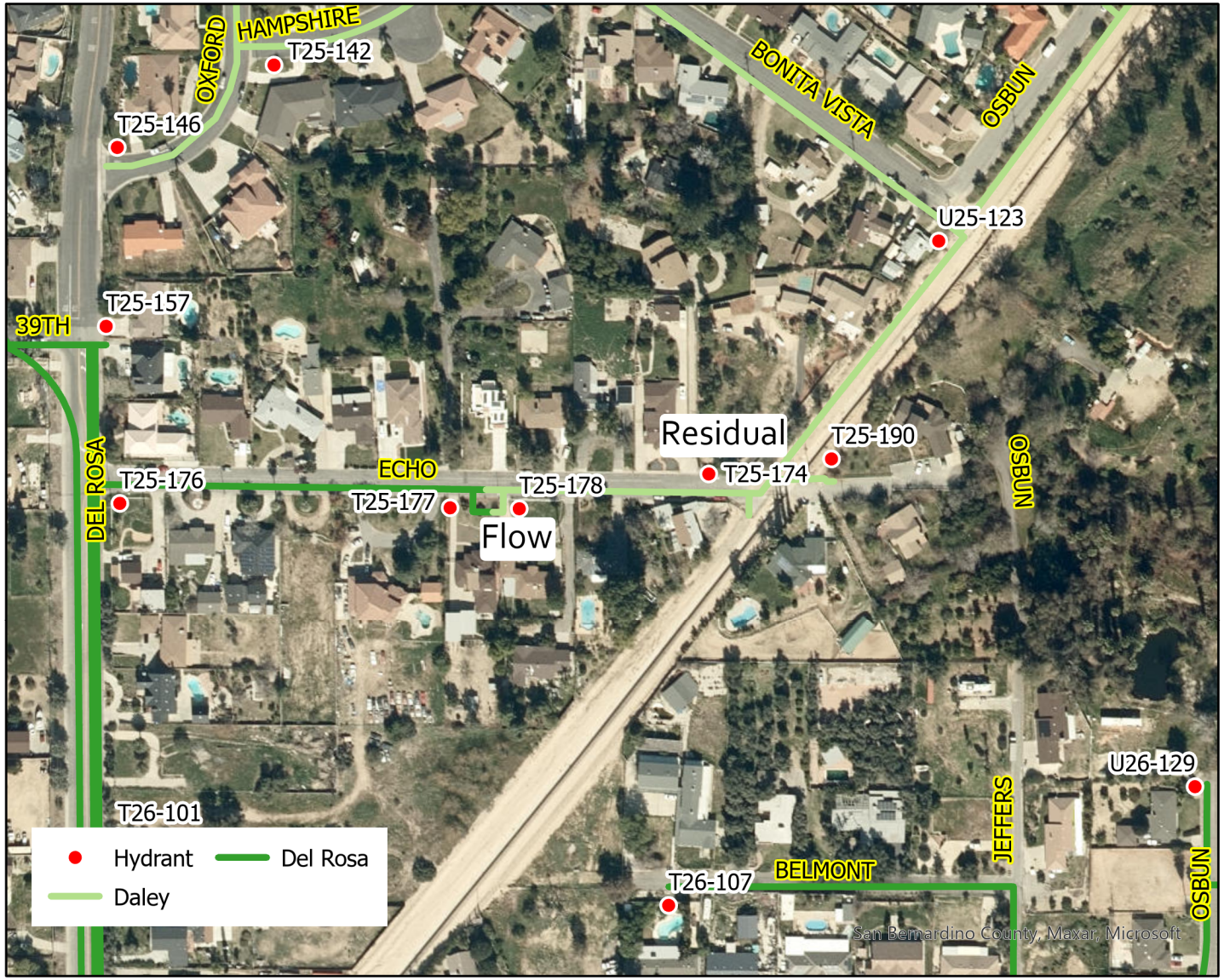
Test Number 23



Test Number 24



Test Number 25



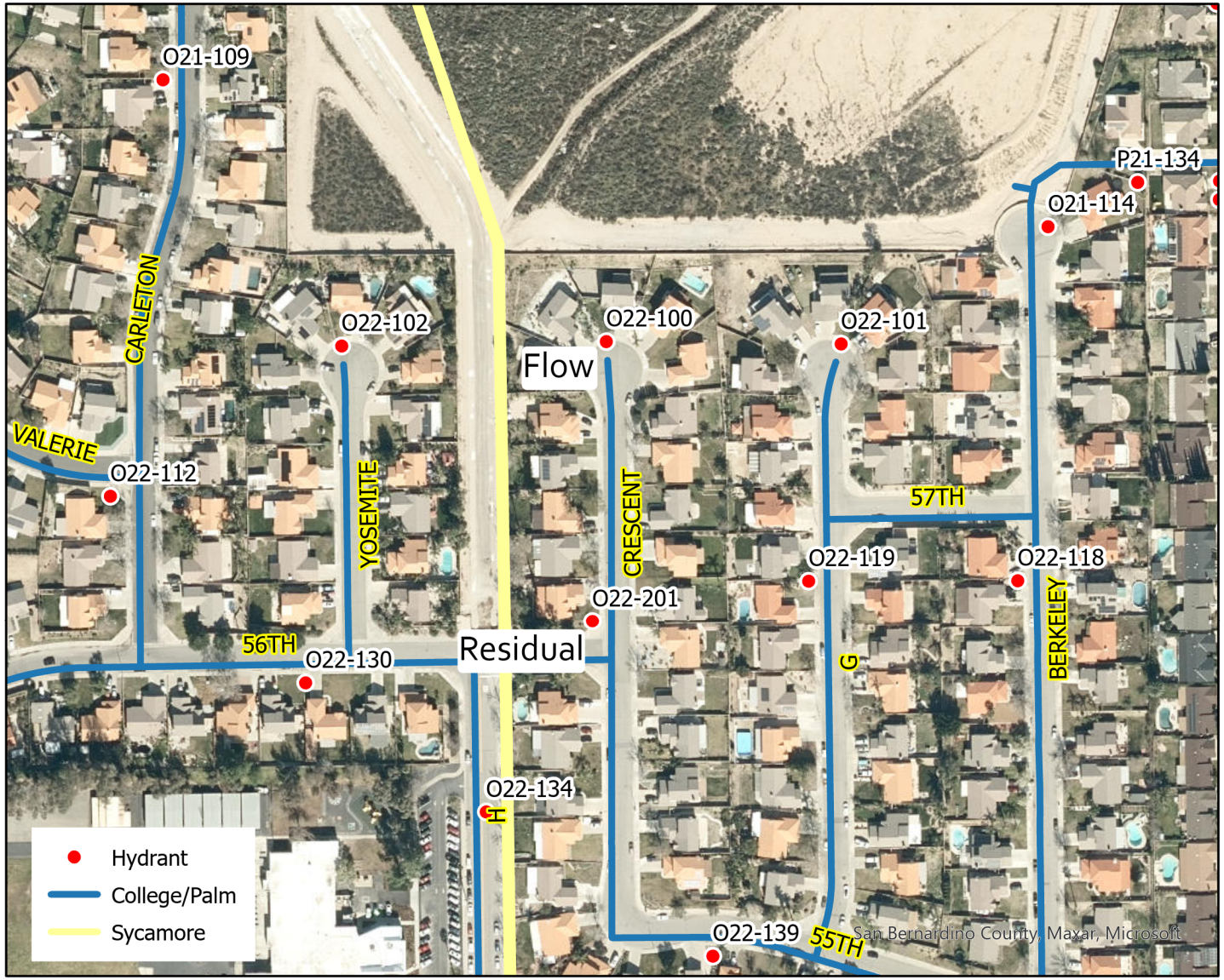
Test Number 26



Test Number 27



Test Number 28



Test Number 29



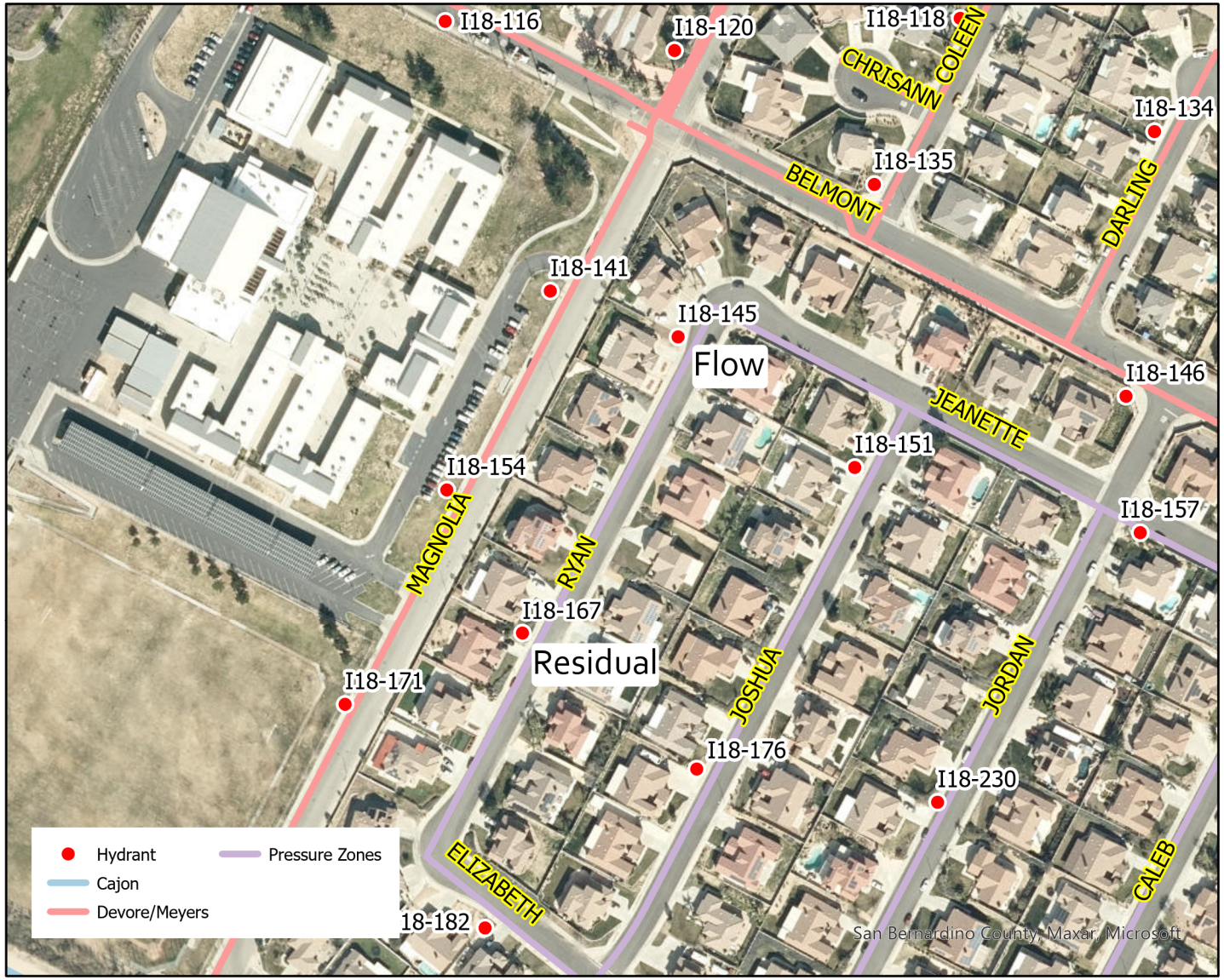
Test Number 30



Test Number 31



Test Number 32



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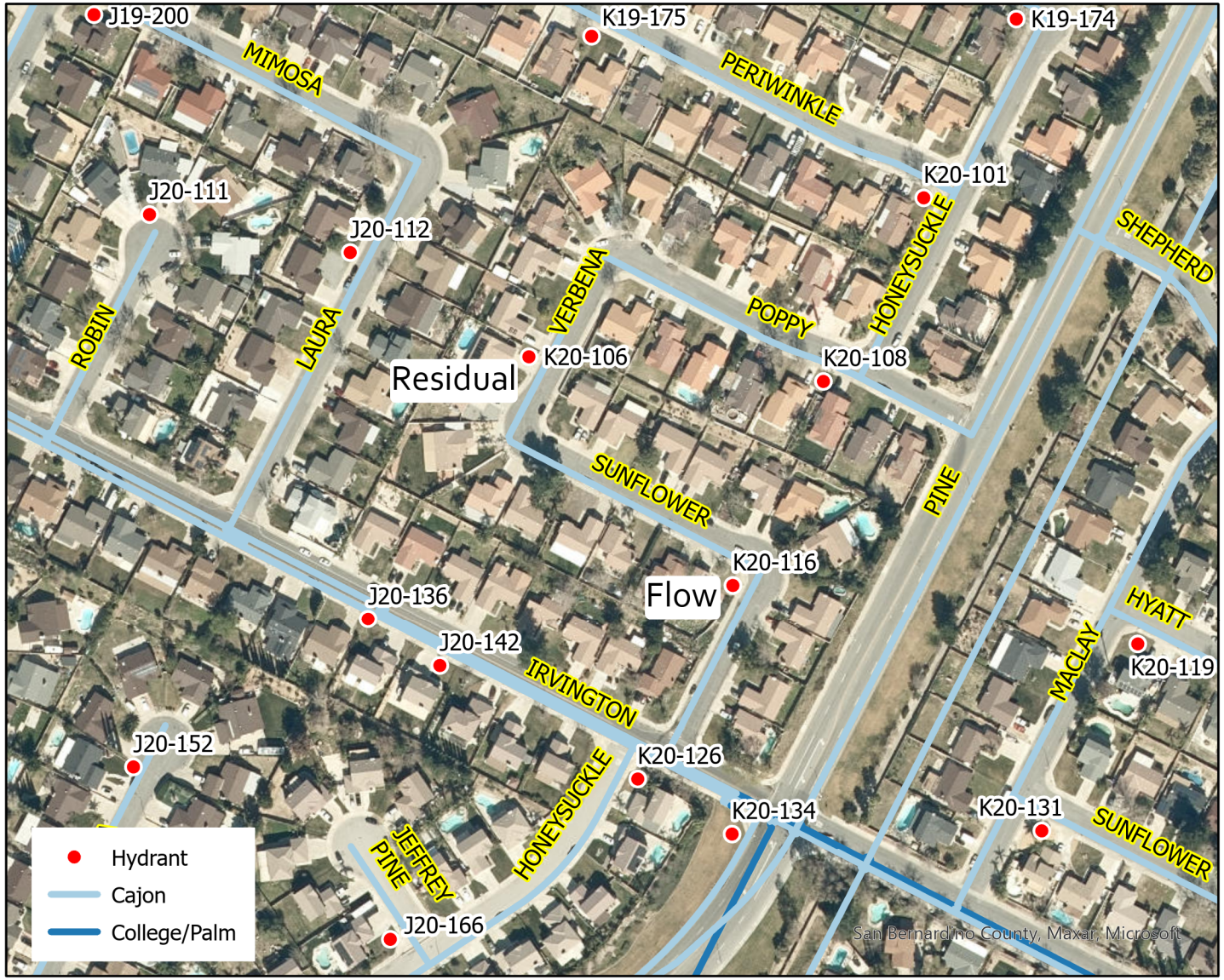

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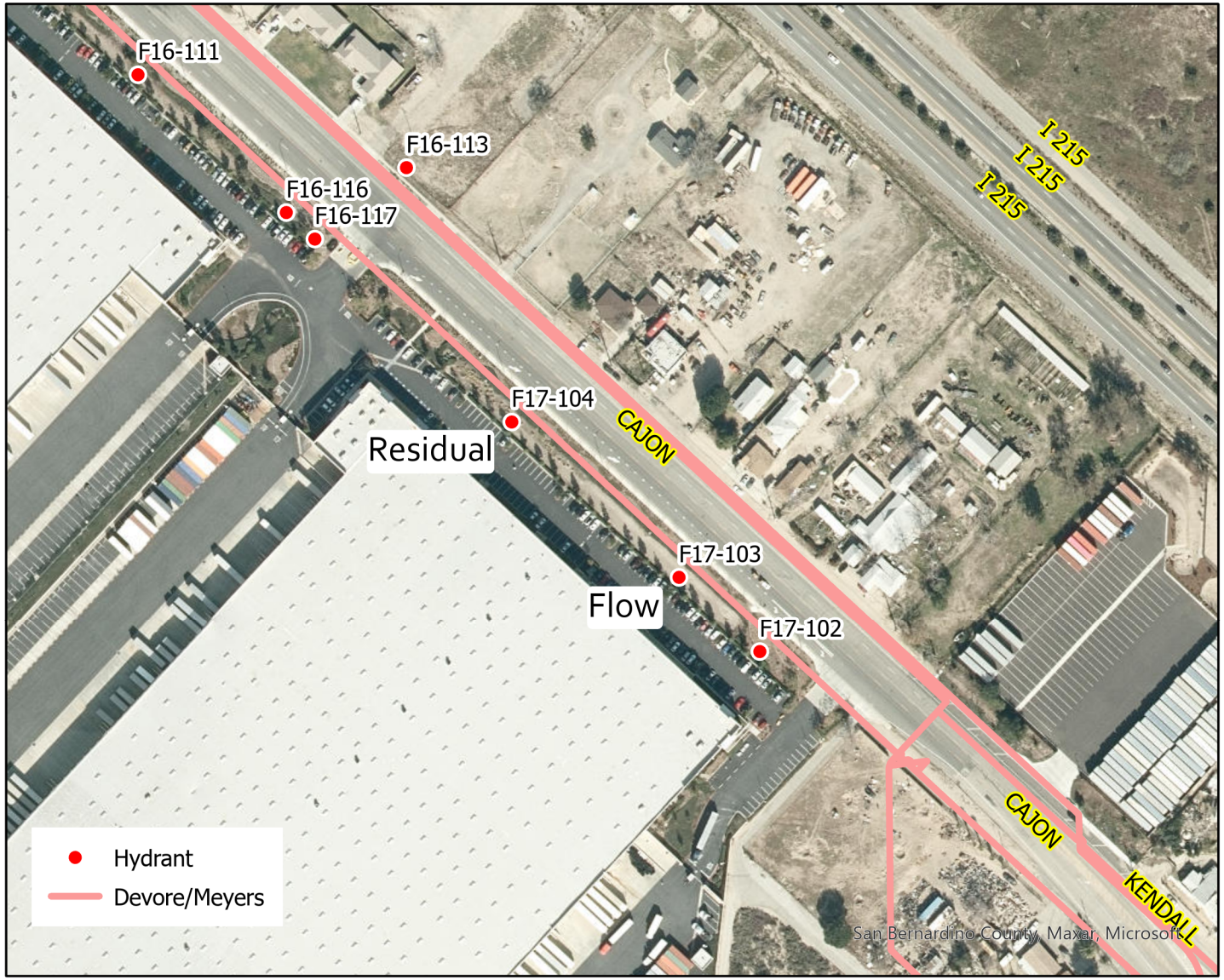
Test Number 35



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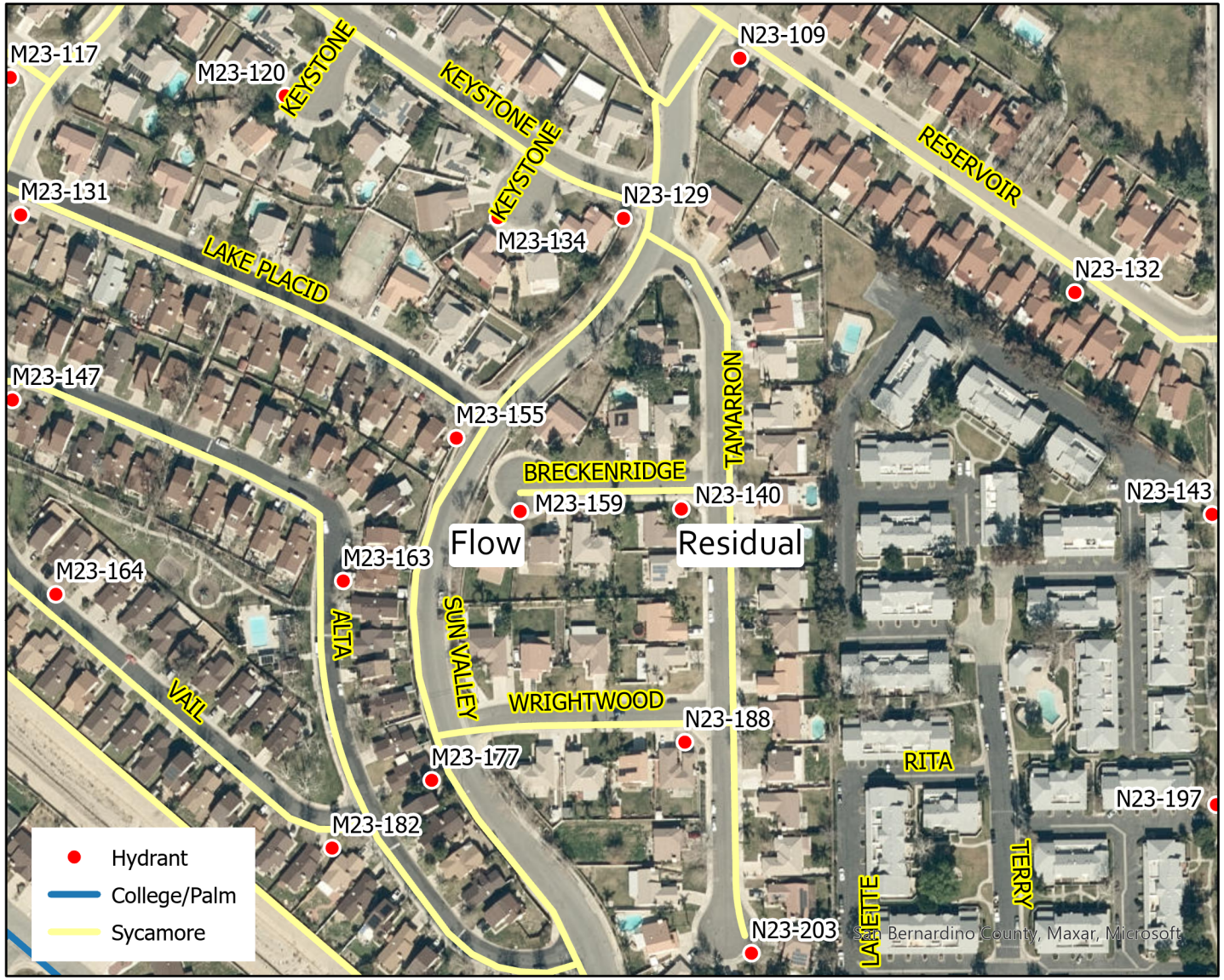


Test Number 37

Appendix B: Mountain Zone Realignment Analysis

Mountain Zone Realignment Analysis

1. Background

SBMWD has an ongoing construction project moving Mountain Zone B and a portion of the Mountain Zone into the College Palm Zone. The realignment project will remove the control valve located at 59th Street and Mayfield Avenue and the Mountain Zone Booster Subzone 1 while also isolating a portion of the Mountain Zone into the College Palm pressure zone by adding a new control valve between 58th Street and West Hill Drive on Mayfield Avenue. See Figure 1 below (received from SBMWD, June 19, 2023). This section reviews the impacts of the Mountain Zone Realignment Project. This work will be included in all future scenarios.

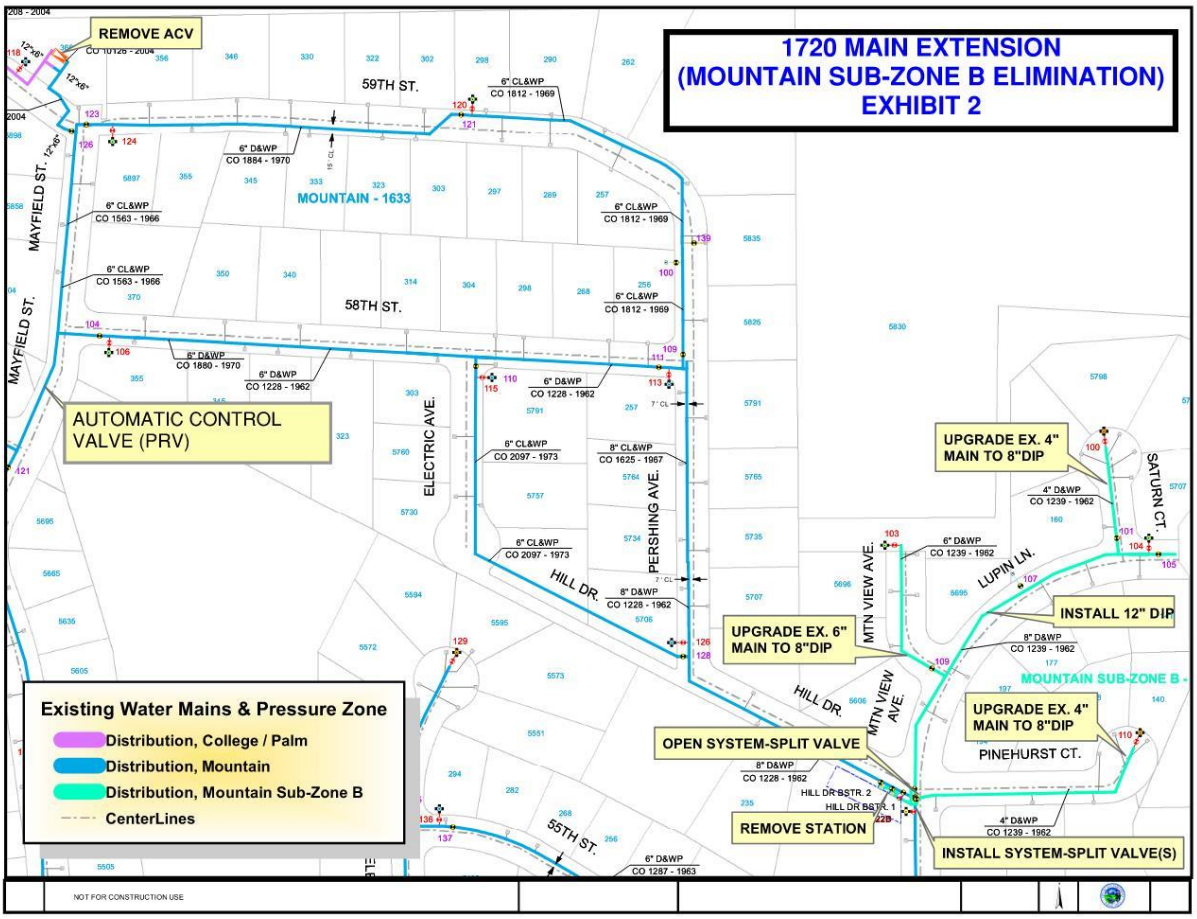


Figure 1: SBMWD Proposed Mountain Zone Realignment

2. Existing Conditions

Existing condition minimum day demand pressures are reflected in Figure 2 and Figure 3. The 58th Street and Mayfield control valve has a setting of 58 psi, keeping pressures within the area of interest consistent across the day. The area of interest represents the portion of the Mountain Zone and all of the Mountain Subzone B that is realigned into the College Palm Zone. The maximum pressure experienced within the area of interest that is currently part of the Mountain Zone (see Figure 3) is 70.5 psi, while the minimum is 45 psi. Mountain Subzone B has pressure ranges from 69.4 psi to 91.3 psi.

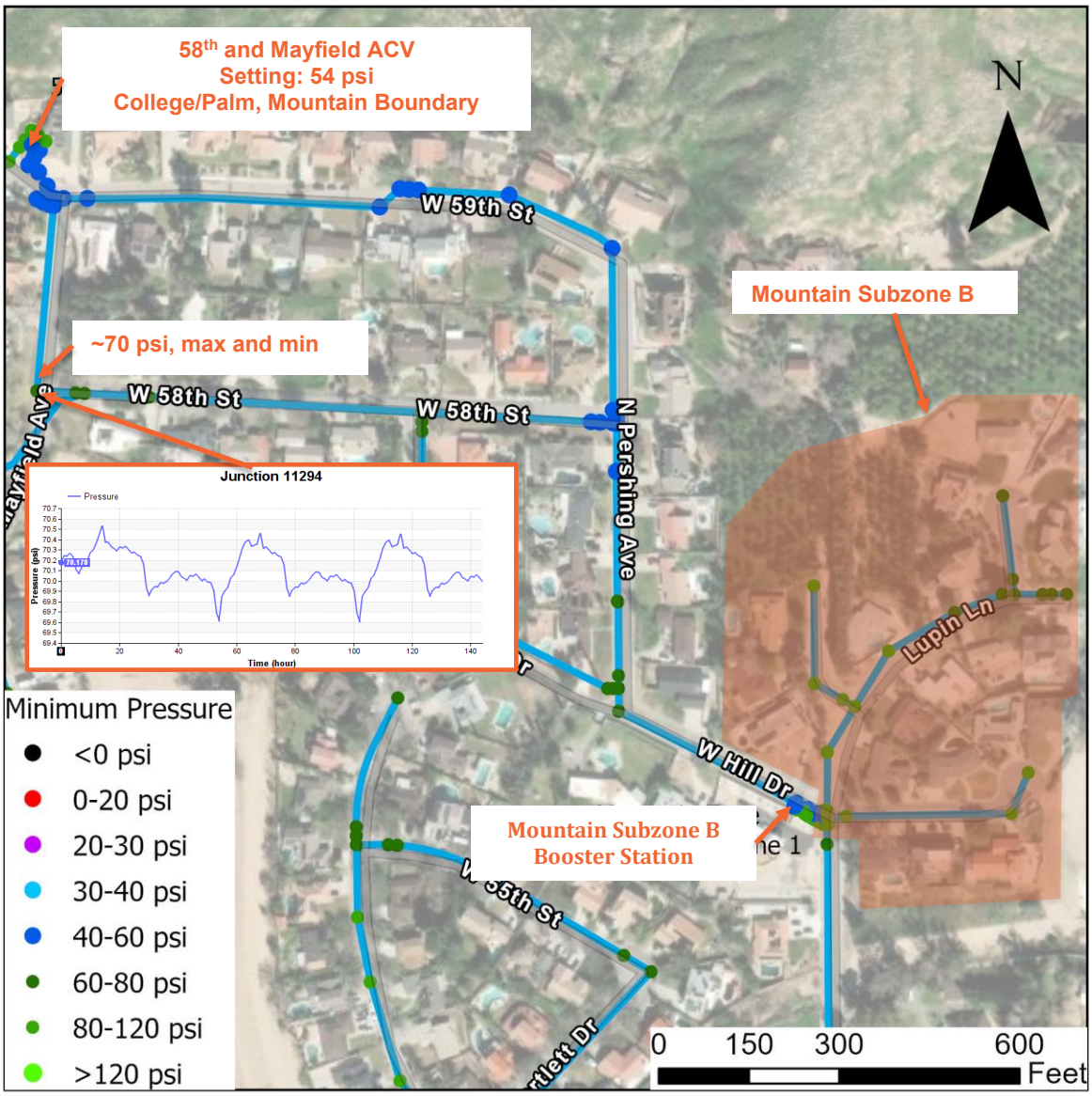


Figure 2: Existing Conditions, MDD EPS, Minimum Pressures at Mountain Subzone B

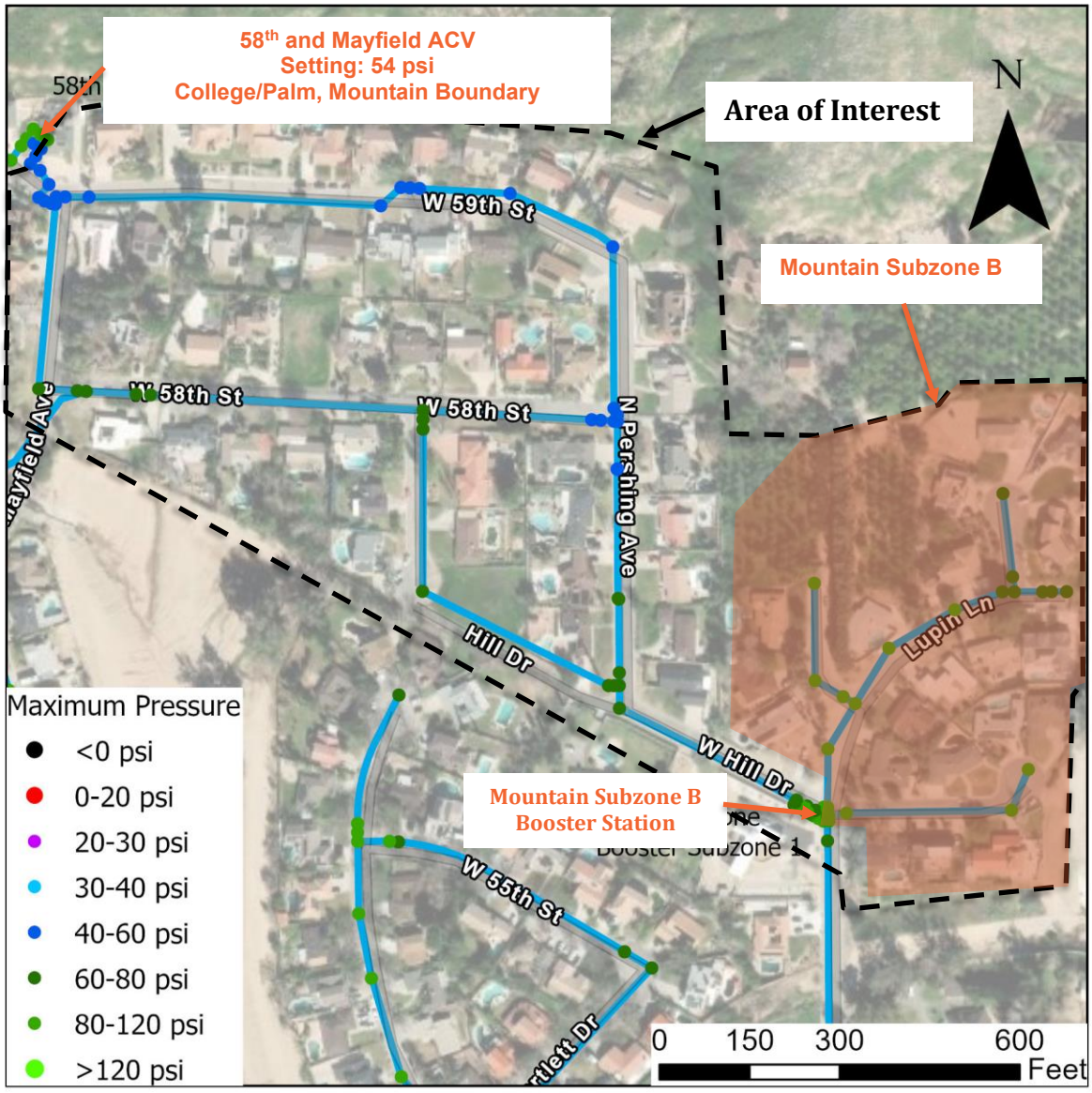


Figure 3: Existing Conditions, MDD EPS, Maximum Pressures at Mountain Subzone B

3. Proposed Mountain Subzone B Zone Elimination - Model Results

Figure 1 describes the modifications SBMWD has proposed for removal of the Mountain Subzone B. The 58th and Mayfield ACV was deactivated in the model, the Mountain Zone BPS was deactivated and piping around the booster pump station was activated to allow flow into the existing Mountain Subzone B while not allowing flow to go further south down the eight-inch line on Lupin Lane. The proposed ACV in Figure 1 south of 58th Street was not included in the analysis. Figure 4 illustrates the minimum pressures in the Area of Interest after the Zone realignment. Figure 5 illustrates the maximum pressures in the realigned area. The area from the original Mountain Subzone B has pressures ranges from 69 psi to 114 psi. The portion of the Mountain Zone realigned to the College Palm Zone has pressures ranging from 78 psi to 125 psi. The increase in maximum pressure difference is illustrated in Figure 6. The original Mountain Subzone B has a pressure increase of approximately 21 psi. The section of realigned pipes from Mountain to College/Palm has an increase in maximum day pressure greater than 50 psi. Pipes within areas of maximum day pressure with increases greater than 50 psi should be upsized.

The required fire flow for the Mountain Zone Realignment area of interest is 1,500 gpm at 20 psi. Existing conditions meet the required fire flow everywhere except in Mountain Subzone B. This area available fire flow is deficient, ranging from 500-1000 gpm at 20 psi. The realignment increases the available fire flow 100-200 gpm at 20 psi in Mountain Subzone B. The portion of the Mountain Zone realigned to the College Palm Zone, although meeting needed fire flow, has an overall decrease in available fire flow with this change. This area has changed from having two water lines feeding it to one, with the internal lines being 6-inch. See Figure 7.

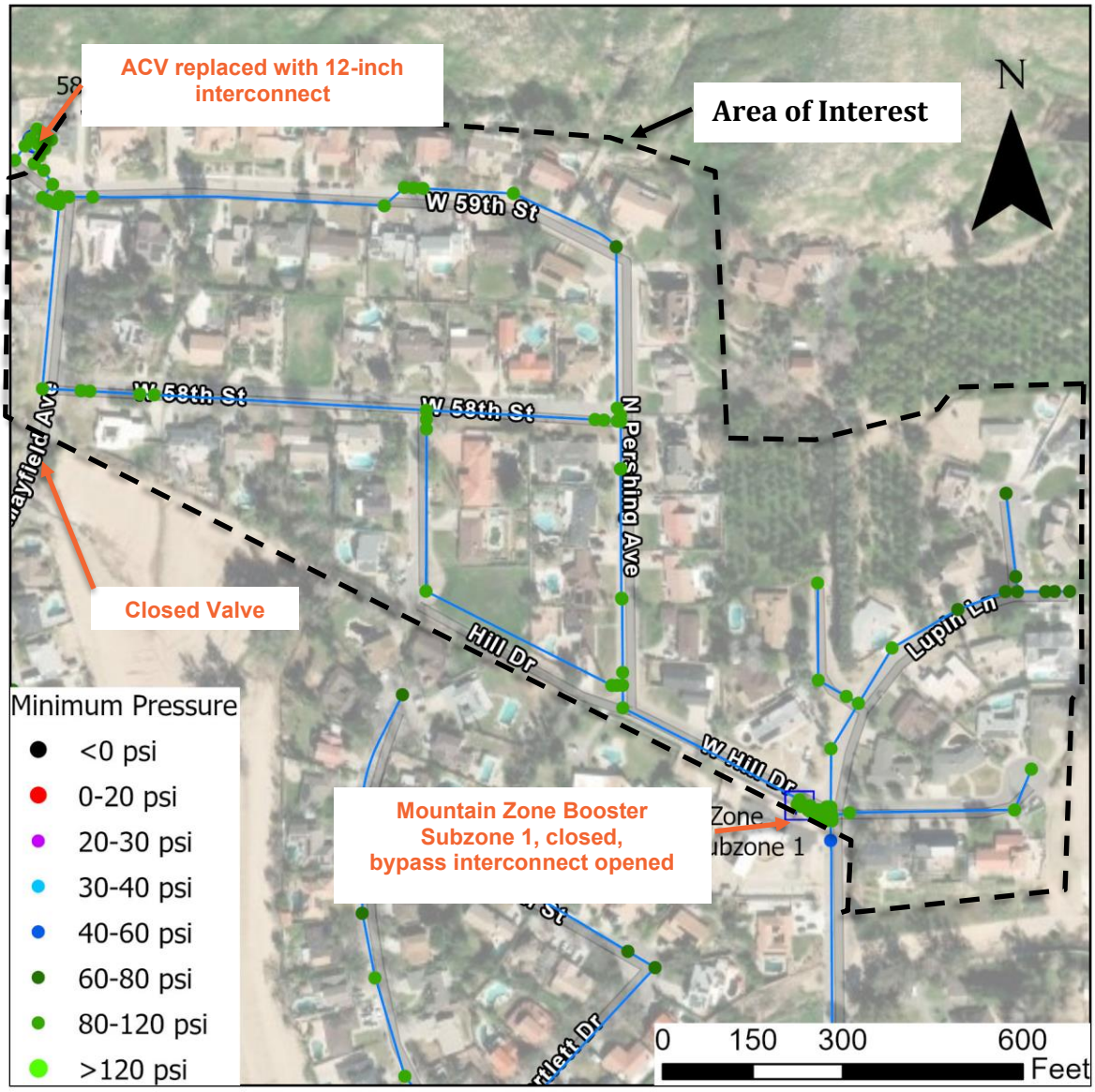


Figure 4: Minimum Pressures in Area or Interest After Zone Realignment

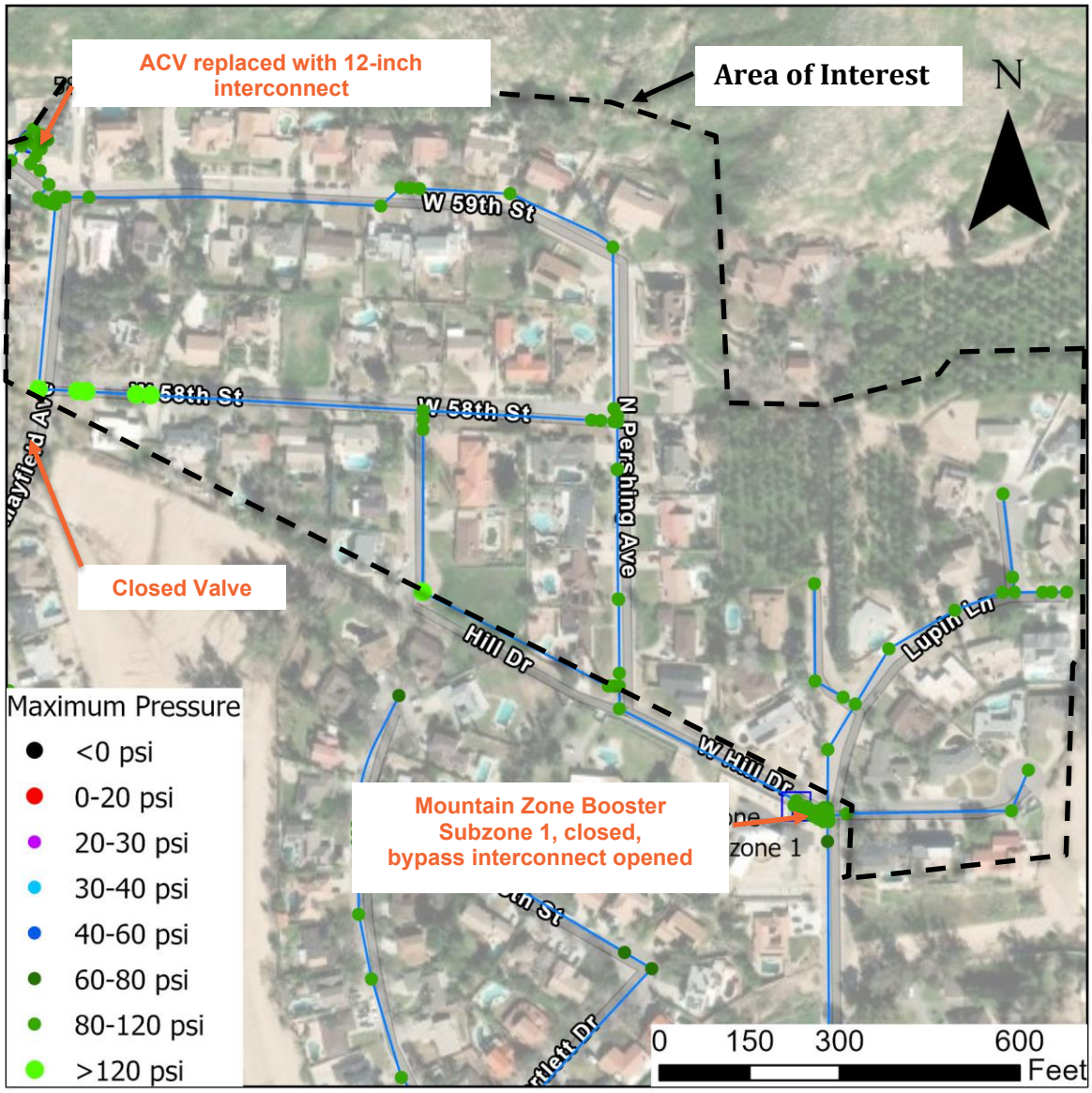


Figure 5: Maximum Pressures in Area of Interest After Zone Realignment

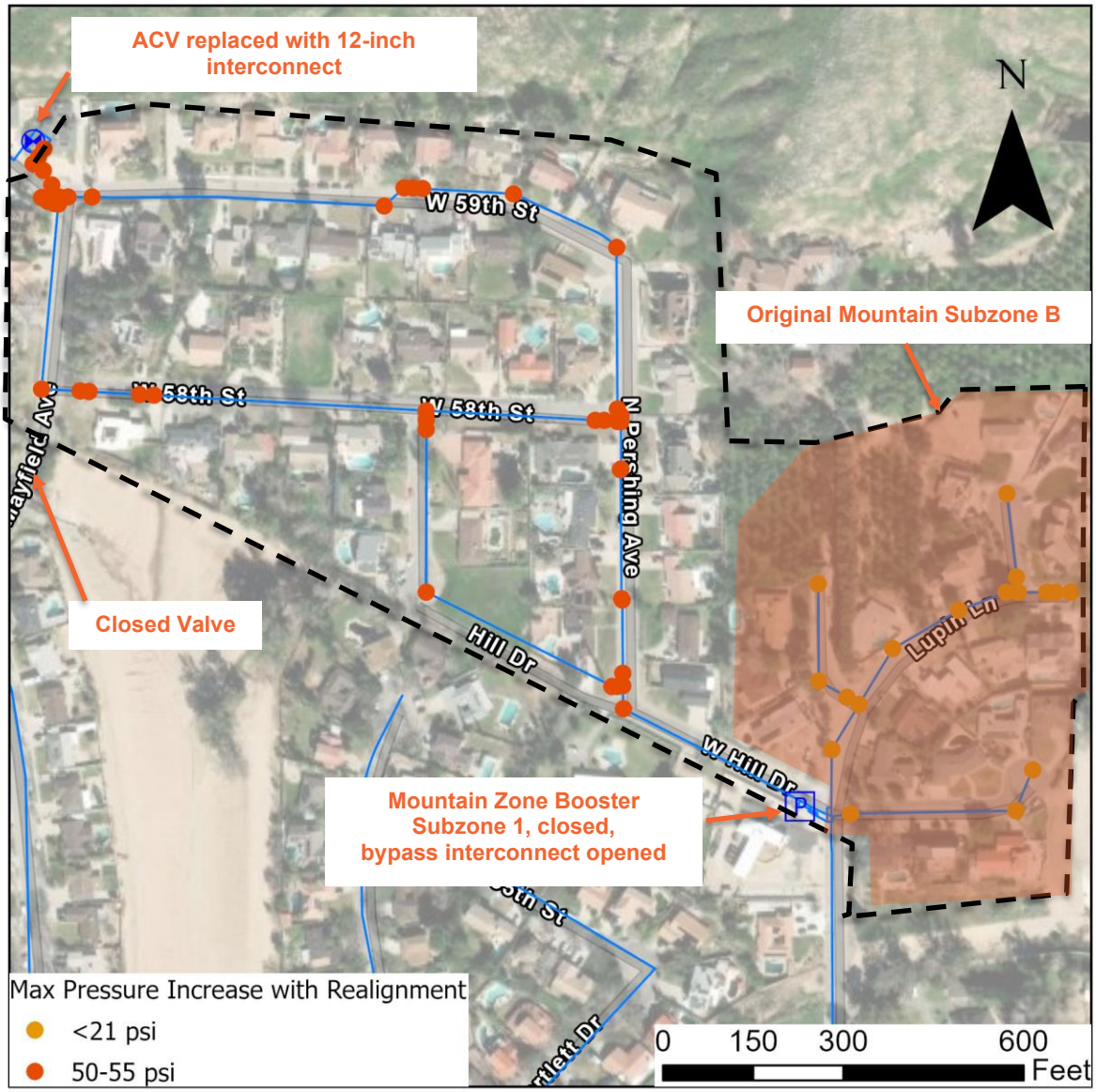


Figure 6: Maximum Pressure Difference, Existing to Realignment

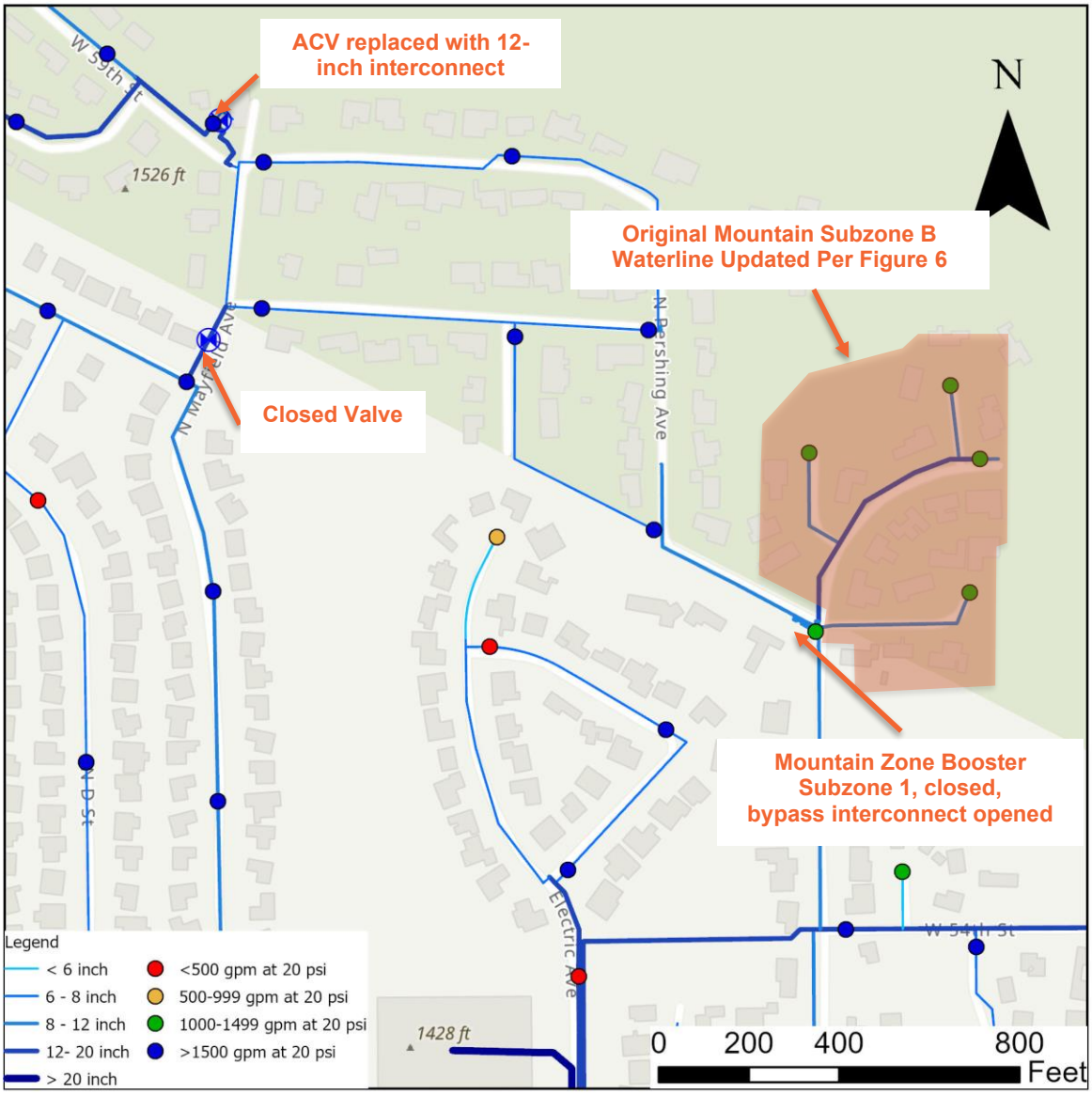


Figure 7: Mountain Zone Realignment, Available Fire Flow

Appendix C: Condition Assessment Checklist

Appendix C-Condition Assessment Checklist

Mechanical Assets – Generic

Is the equipment in use during the inspection? [Yes, No]
Is there any evidence of excessive heat, noise or vibration? [Yes, No]
Does the operator indicate component obsolete? (technical support/parts no longer available from manufacturer) [Yes, No]
Are there any signs of corrosion or deterioration? [Yes, No]
Is the asset compromised by corrosion or deterioration? [Yes, No]
Is there any evidence of leaks? [Yes, No]
Does the operator indicate that the valve leaks internally? [Yes, No]
Is the equipment improperly mounted to the frame? [Yes, No]
Is there any indication of misalignment? (cold/hot alignment performed?) [Yes, No]
Are the vibration isolation devices non-functional or needed? [Yes, No]
Is there an indication of over-greasing? [Yes, No]
Start and stop equipment. Are there any known issues of loose drive shafts, belts, and/or guards? [Yes, No, N/A]
Are there any missing or unlabeled power disconnects? [Yes, No]
Does the operator indicate any hydraulic capacity inadequacies? [Yes, No]
Is there a history of maintenance problems and/or failures? [Yes, No]
Are there any obvious design issues? [Yes, No, N/A]
Condition Rating: [1-5]
Notes if answered yes to anything above:

Electrical Assets - Generic

Does the equipment show evidence of physical damage, overheating, corrosion, or other deterioration? [Yes, No]
Is the asset compromised by deterioration? [Yes, No]
Are raceways or cables adequately fastened in place? [Yes, No]
Did you observe any issues with grounding? [Yes, No]
Is the equipment exposed to excessive heat? (missing proper shading or air conditioning) [Yes, No]
Does it appear that the equipment has the appropriate enclosure rating given the environment? [Yes, No]
Is there any excessive heat? [Yes, No]
Are there any obvious code issues? [Yes, No]
Was the equipment opened? [Yes, No]
Are the arc flash labels for the equipment missing or outdated (greater than 5 years)? [Yes, No]
Is there poor access or insufficient working space that prevents ready and safe operation and maintenance? [Yes, No]
Does the equipment show signs of accumulated dust? [Yes, No]
Did the operator indicate any issues with the operation or finding parts to maintain the equipment? [Yes, No]

Condition Rating: [1-5]
Notes if answered yes to anything above:

Instrumentation/Control Assets - Generic

Any visual deterioration? (erosion, corrosion, cracking, etc.) [Yes, No]
Is the asset compromised by deterioration? [Yes, No]
Does it appear that calibration has been overlooked, skipped or missed? [Yes, No]
Is there poor access or insufficient working space that prevents ready and safe operation and maintenance? [Yes, No]
Did the operator indicate any issues with the operation or finding parts to maintain the equipment? [Yes, No]
Condition Rating: [1-5]
Notes if answered yes to anything above:

Structural Assets - Generic

Are there any obvious code issues? [Yes, No]
Are there any signs of the structure settling or depression in adjacent grade? [Yes, No]
Is there exposed rebar in the foundation? [Yes, No]
On the visible internal and external surface, are there any protruding rebar, defects, cracking, spalling, delamination, deterioration or protective coating failures? [Yes, No]
Note any deformities, discoloration or surface defects? [Yes, No]
Are stairs, handrails, ladders, gratings, access hatches or other miscellaneous attachments to the main structure show signs of corrosion, deterioration or other surface defects? [Yes, No]
Any metal building or tank structures show signs of corrosion, deterioration, coating failures or other surface defects? [Yes, No]
Any non-metallic and non-cementitious structures show signs of deterioration or other surface defects? [Yes, No]
Any improperly sealed piping or conduit penetrations through the structure? [Yes, No]
Any historical failures or maintenance problems indicated by the operator? [Yes, No]
Are there any obvious health and safety issues? [Yes, No]
Is the space too small/inadequate or the access limited for personnel or equipment to properly operate? [Yes, No]
Is the level of housekeeping inadequate? (excess debris, dirt, ponding of water, chemical etc.) [Yes, No]
Condition Rating: [1-5]
Notes if answered yes to anything above:

Appendix D: SBMWD Asset Management Dashboard



Cover

Inventory Results

CA Results

CA Results-Facility

RUL Results

RUL-CoF Results

PoF Result

CoF Result

Risk Result

Risk Matrix

Facility CoF

Facility Type: All

Asset Class: All

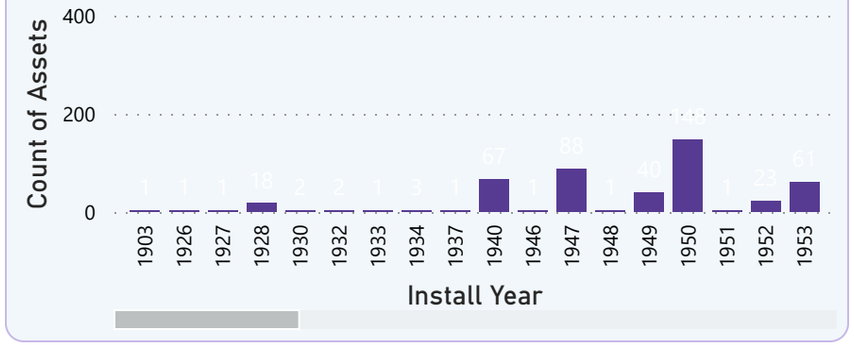
Asset Type: All

Hazen

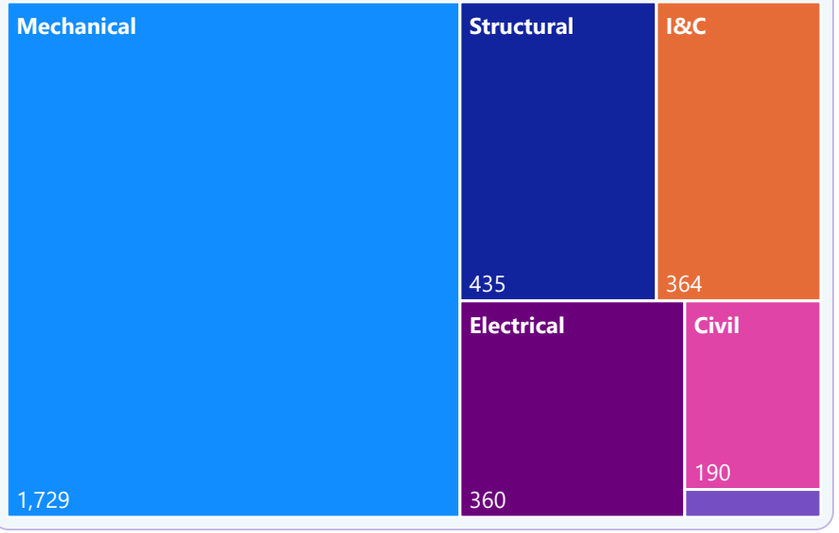
Count of Assets

3,106

Installation Profile



Asset Discipline Profile



Pressure Zone

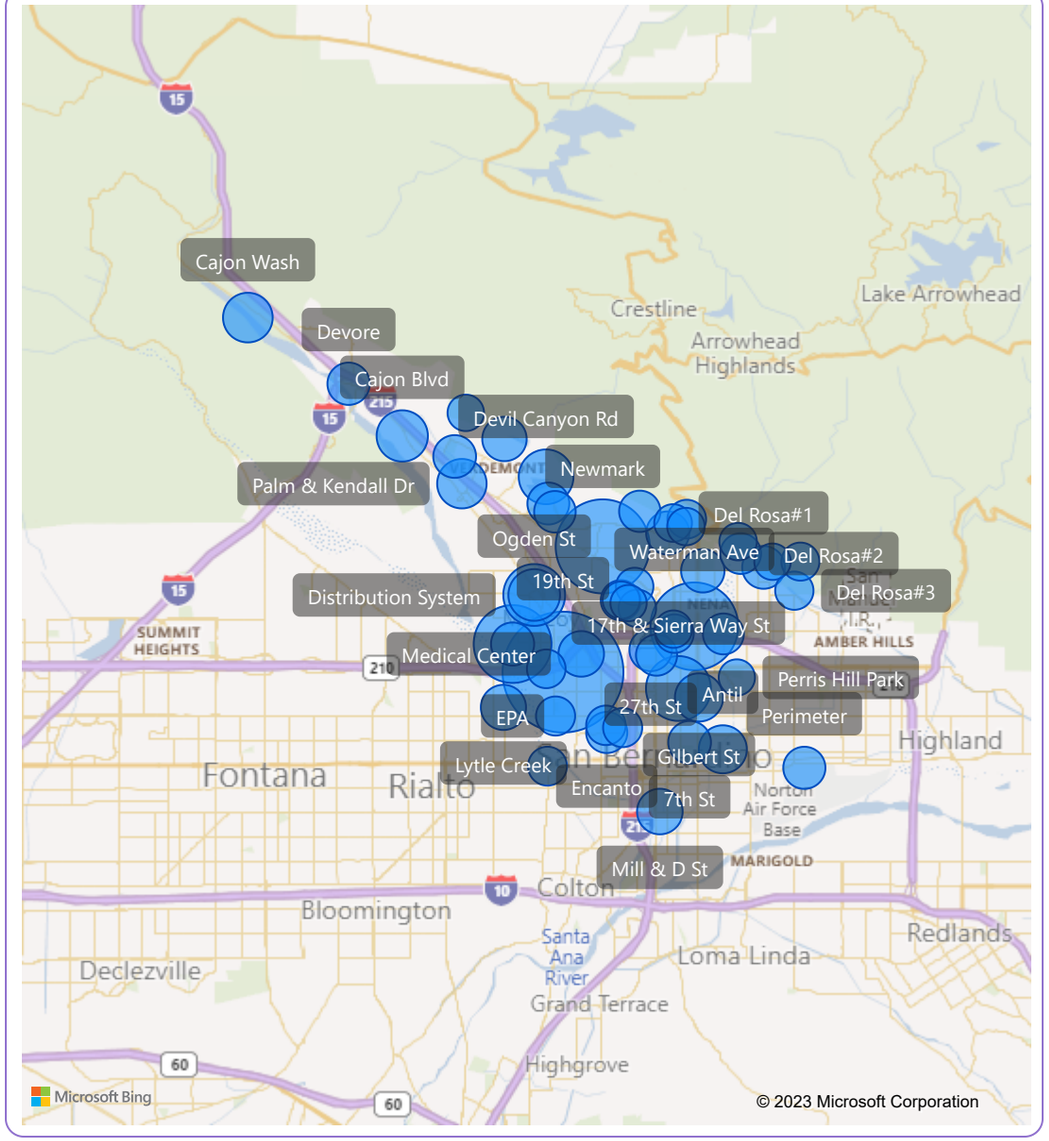
- [x] Select all
- [x] Cajon
- [x] College/Palm
- [x] Daley
- [x] Del Rosa
- [x] Devil Canyon
- [x] Devil Canyon Domestic

Site

- [x] Select all
- [x] 10th & J St
- [x] 17th & Sierra Way St
- [x] 19th St
- [x] 25th & North E St
- [x] 27th St
- [x] 30th & Mountain View Ave
- [x] 31th & Mountain View Ave
- [x] 40th & Valencia Ave

Facility

- [x] Select all
- [x] 16th St BPS
- [x] 16th St Well
- [x] 17th St BPS
- [x] 17th St Well
- [x] Acacia BPS



Facility Type: All

Asset Class: All

Asset Type: All

Condition Score: 1-Excellent | 2-Good | 3-Average | 4-Fair | 5-Poor

Hazen

Pressure Zone
- [x] Select all
- [x] Devore/Meyers
- [x] Intermediate
- [x] Lower
- [x] Sycamore
- [x] Upper

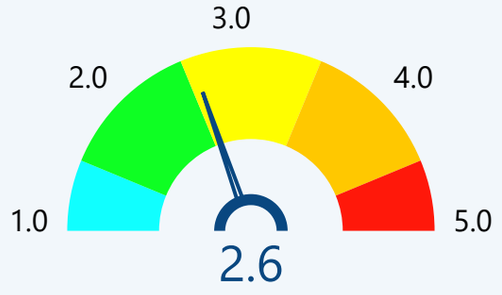
Site
- [x] Select all
- [x] 17th & Sierra Way St
- [x] 19th St
- [x] EPA
- [x] Melvin Ave
- [x] Newmark
- [x] Waterman Ave

Facility
- [x] Select all
- [x] 16th St BPS
- [x] 16th St Well
- [x] 17th St BPS
- [x] 17th St Well
- [x] BPS

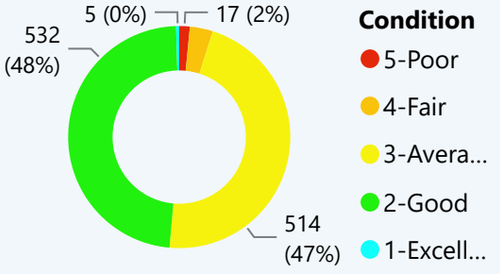
Count of Assets

1,105

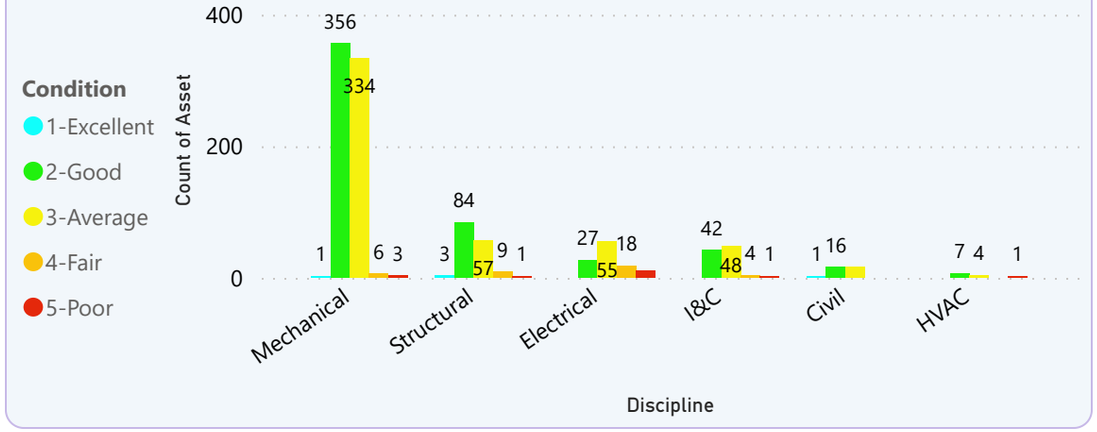
Average Condition Score (1-5)

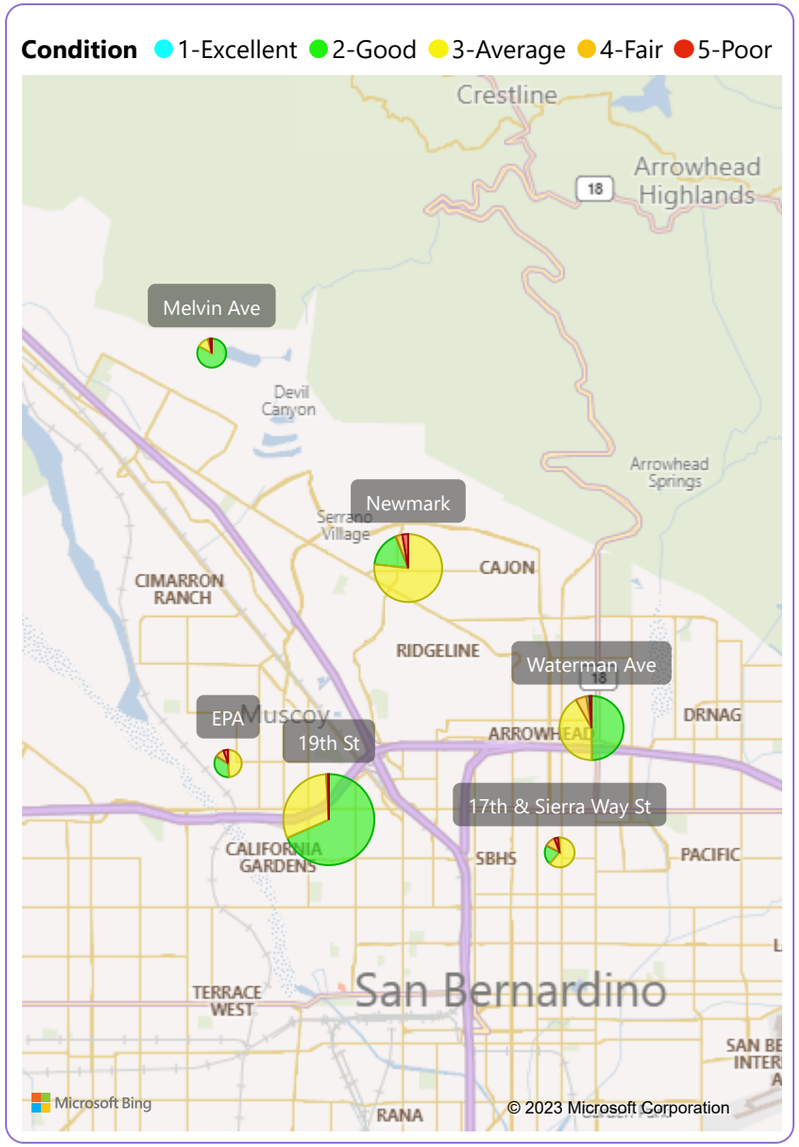


Condition Profile



Condition Profile per Discipline





Facility Type: All

Asset Class: All

Asset Type: All

Condition Score: 1-Excellent | 2-Good | 3-Average | 4-Fair | 5-Poor

Hazen

Pressure Zone

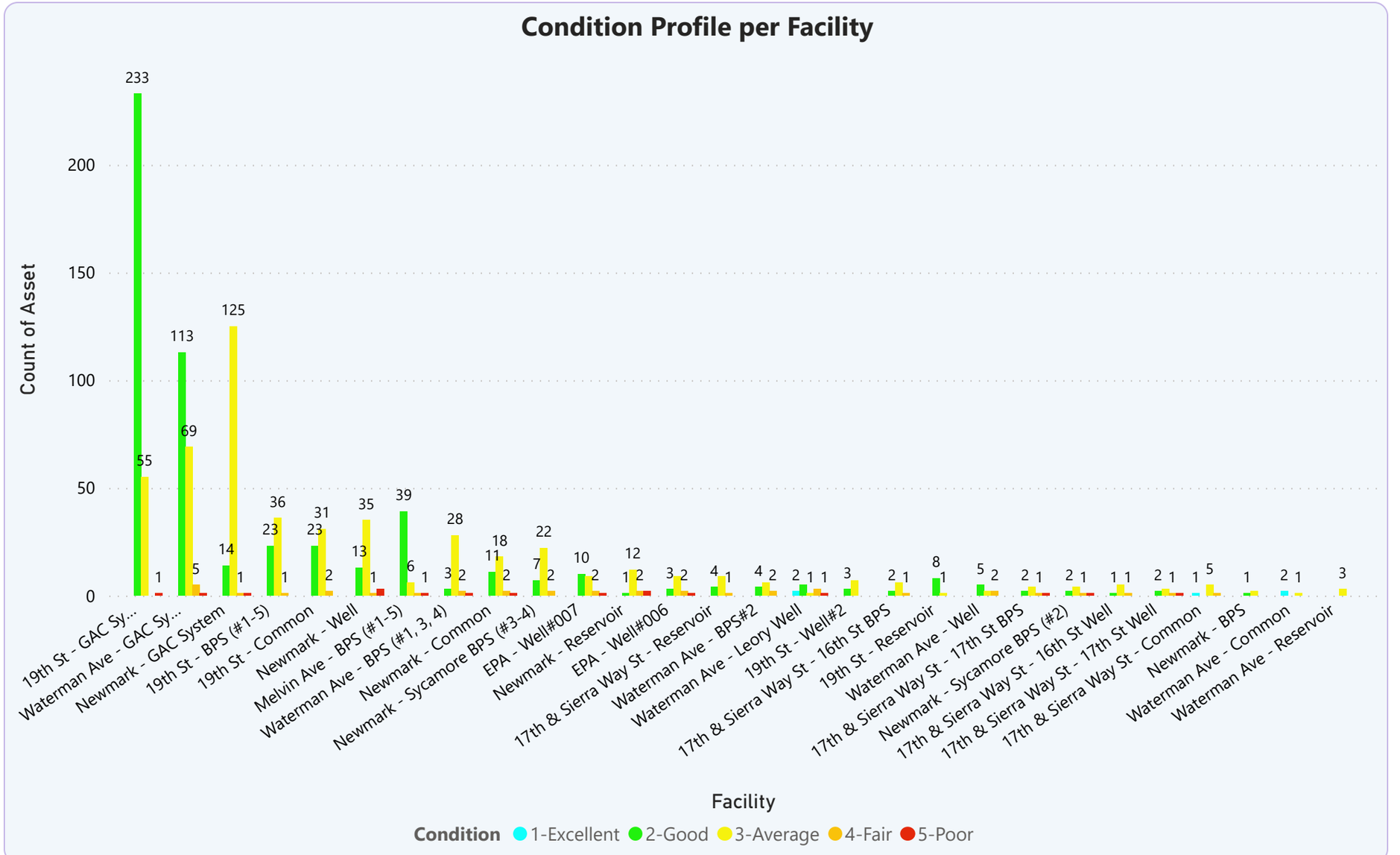
- [x] Select all
- [x] Devore/Meyers
- [x] Intermediate
- [x] Lower
- [x] Sycamore
- [x] Upper

Site

- [x] Select all
- [x] 17th & Sierra Way St
- [x] 19th St
- [x] EPA
- [x] Melvin Ave
- [x] Newmark
- [x] Waterman Ave

Facility

- [x] Select all
- [x] 16th St BPS
- [x] 16th St Well
- [x] 17th St BPS
- [x] 17th St Well
- [x] BPS



Facility Type: All

Asset Class: All

Asset Type: All

Hazen

Count of Assets

3,106

Pressure Zone

- [x] Select all
- [x] Cajon
- [x] College/Palm
- [x] Daley
- [x] Del Rosa
- [x] Devil Canyon
- [x] Devil Canyon Domestic

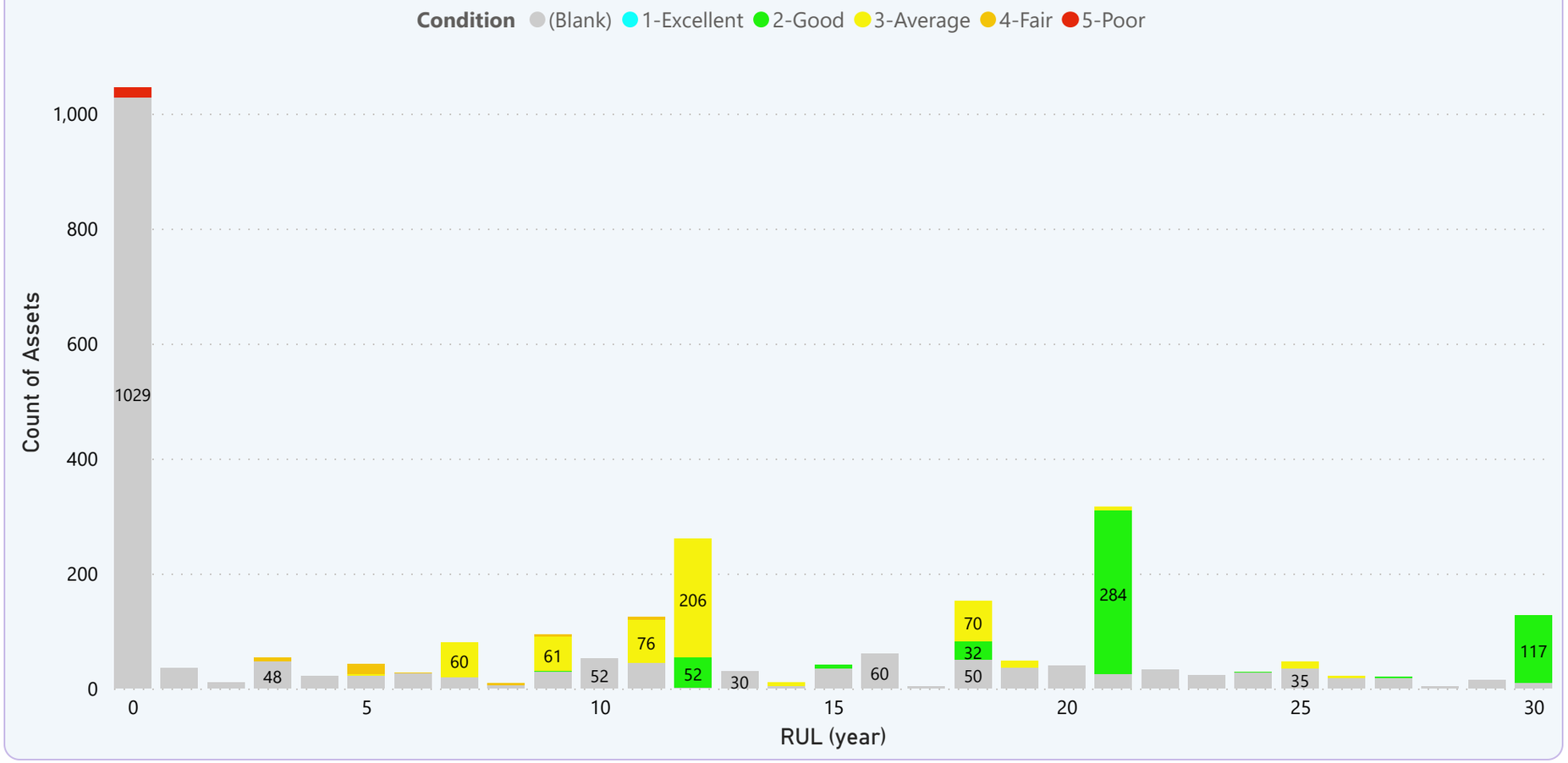
Site

- [x] Select all
- [x] 10th & J St
- [x] 17th & Sierra Way St
- [x] 19th St
- [x] 25th & North E St
- [x] 27th St
- [x] 30th & Mountain View Ave
- [x] 31th & Mountain View Ave
- [x] 40th & Valencia Ave

Facility

- [x] Select all
- [x] 16th St BPS
- [x] 16th St Well
- [x] 17th St BPS
- [x] 17th St Well
- [x] Acacia BPS

Assets Coming for Replacement



Facility Type: All

Asset Class: All

Asset Type: All

Hazen

Count of Assets

3,106

Pressure Zone

- [x] Select all
- [x] Cajon
- [x] College/Palm
- [x] Daley
- [x] Del Rosa
- [x] Devil Canyon
- [x] Devil Canyon Domestic

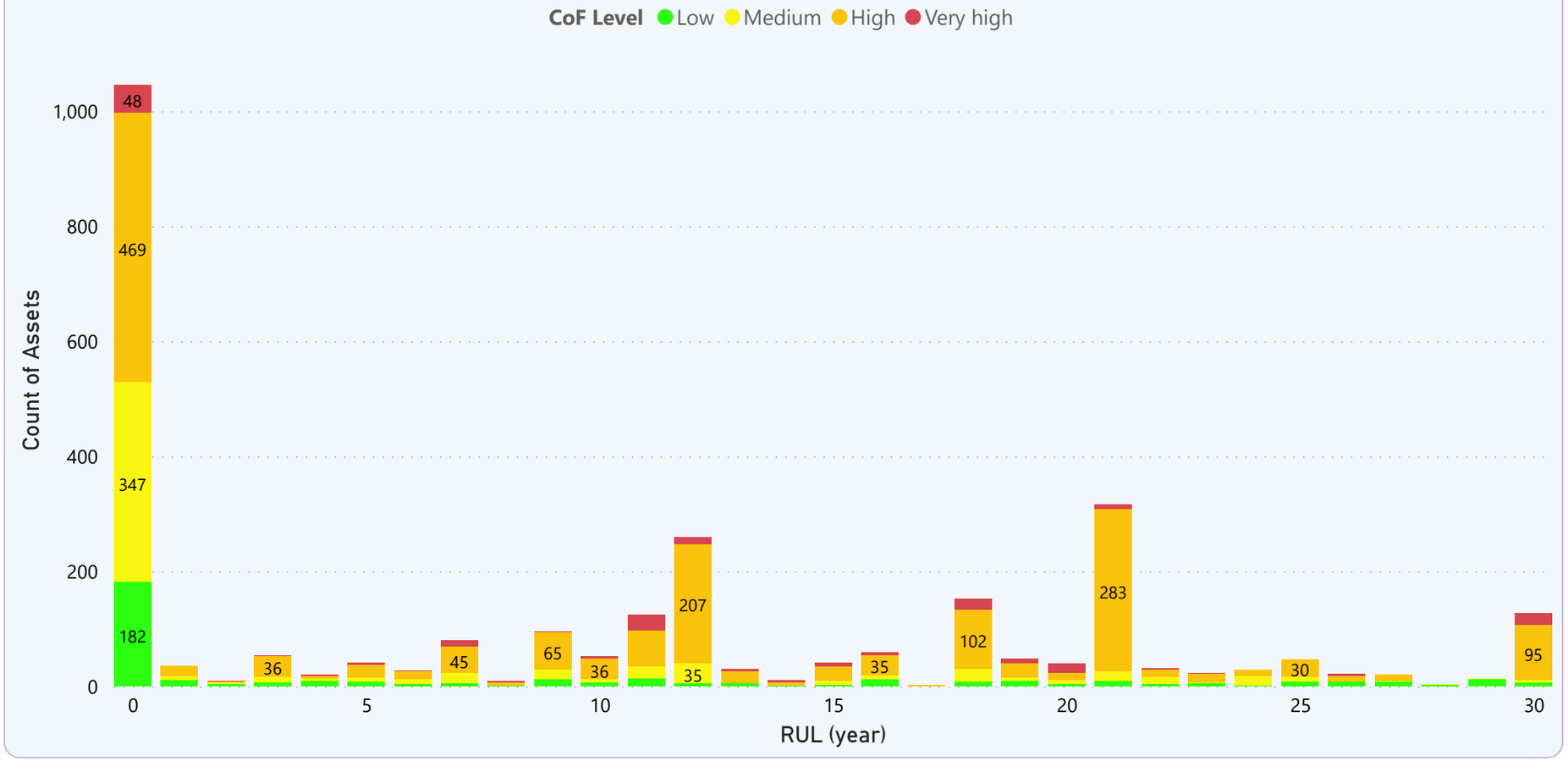
Site

- [x] Select all
- [x] 10th & J St
- [x] 17th & Sierra Way St
- [x] 19th St
- [x] 25th & North E St
- [x] 27th St
- [x] 30th & Mountain View Ave
- [x] 31th & Mountain View Ave
- [x] 40th & Valencia Ave

Facility

- [x] Select all
- [x] 16th St BPS
- [x] 16th St Well
- [x] 17th St BPS
- [x] 17th St Well
- [x] Acacia BPS

Assets Coming for Replacement



Facility Type

All

Asset Class

All

Asset Type

All

Hazen

Pressure Zone

- [x] Select all
- [x] Cajon
- [x] College/Palm
- [x] Daley
- [x] Del Rosa
- [x] Devil Canyon
- [x] Devil Canyon Domestic

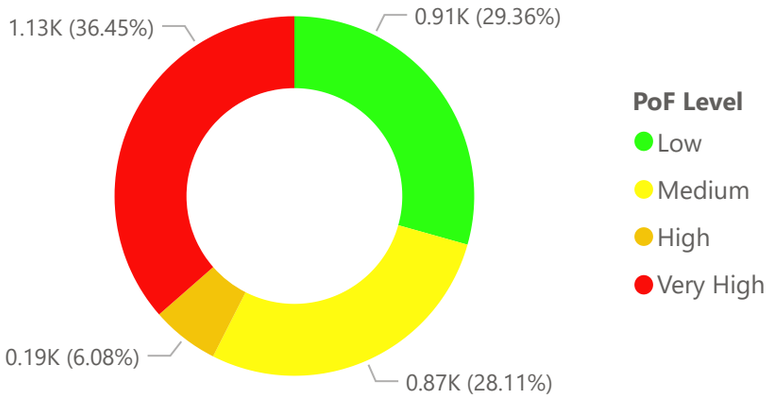
Site

- [x] Select all
- [x] 10th & J St
- [x] 17th & Sierra Way St
- [x] 19th St
- [x] 25th & North E St
- [x] 27th St
- [x] 30th & Mountain View Ave
- [x] 31th & Mountain View Ave
- [x] 40th & Valencia Ave

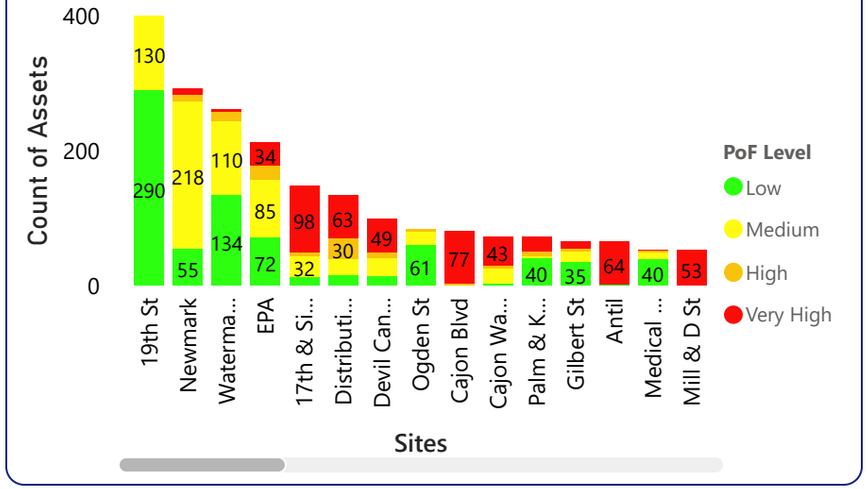
Facility

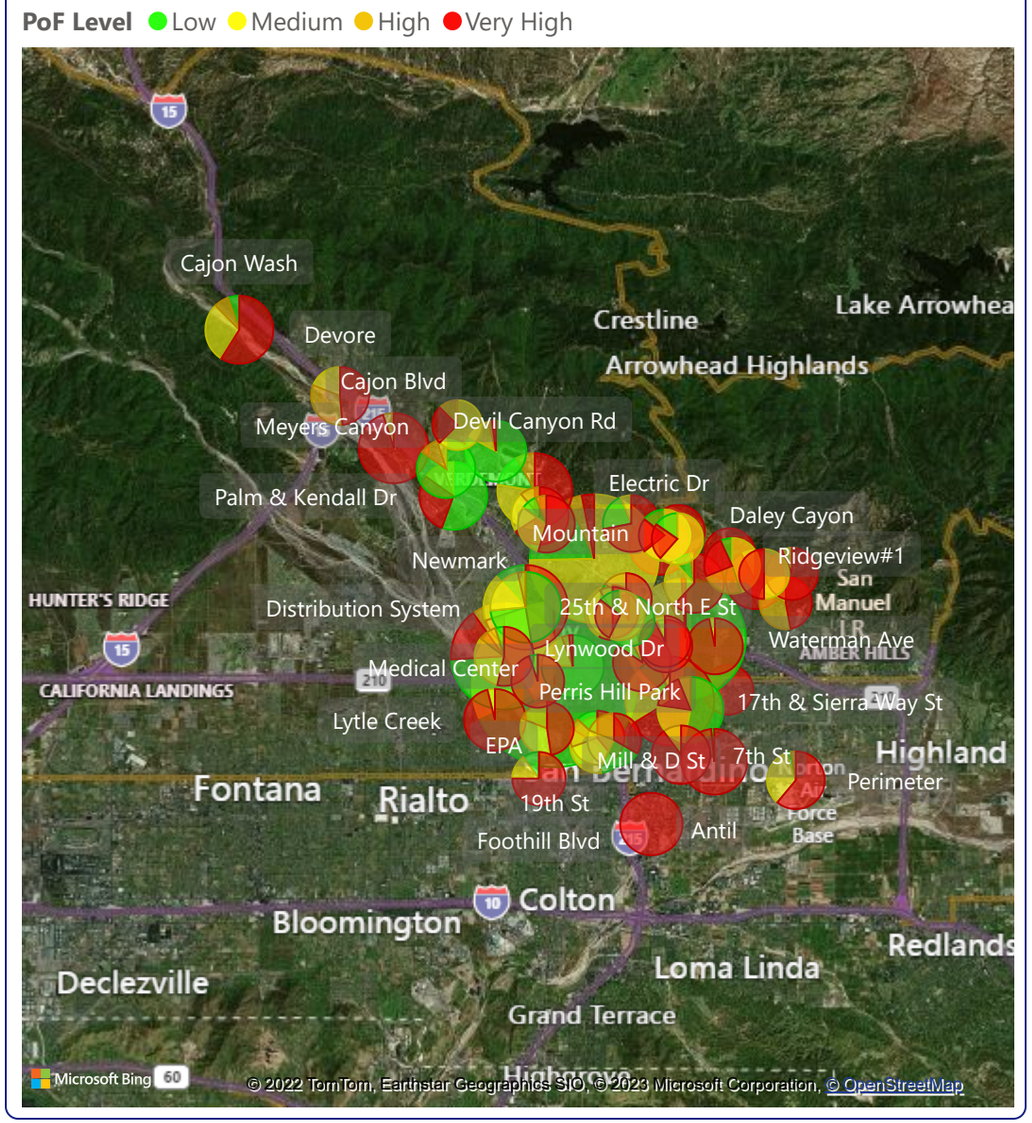
- [x] Select all
- [x] 16th St BPS
- [x] 16th St Well
- [x] 17th St BPS
- [x] 17th St Well
- [x] Acacia BPS

Asset PoF Profile



PoF Profile per Site





Facility Type: All

Asset Class: All

Asset Type: All

Hazen

Pressure Zone

- [x] Select all
- [x] Cajon
- [x] College/Palm
- [x] Daley
- [x] Del Rosa
- [x] Devil Canyon
- [x] Devil Canyon Domestic

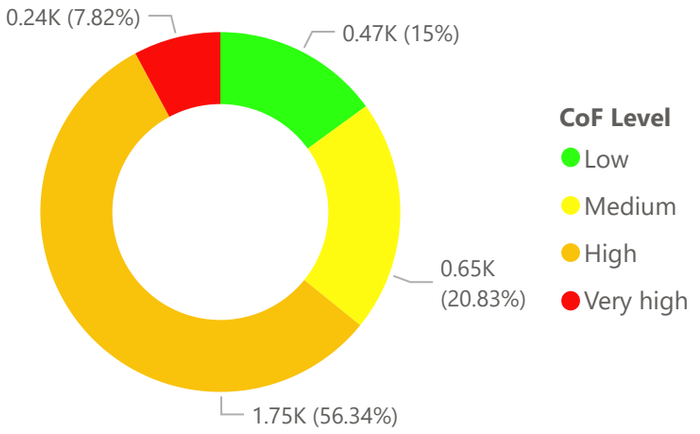
Site

- [x] Select all
- [x] 10th & J St
- [x] 17th & Sierra Way St
- [x] 19th St
- [x] 25th & North E St
- [x] 27th St
- [x] 30th & Mountain View Ave
- [x] 31th & Mountain View Ave
- [x] 40th & Valencia Ave

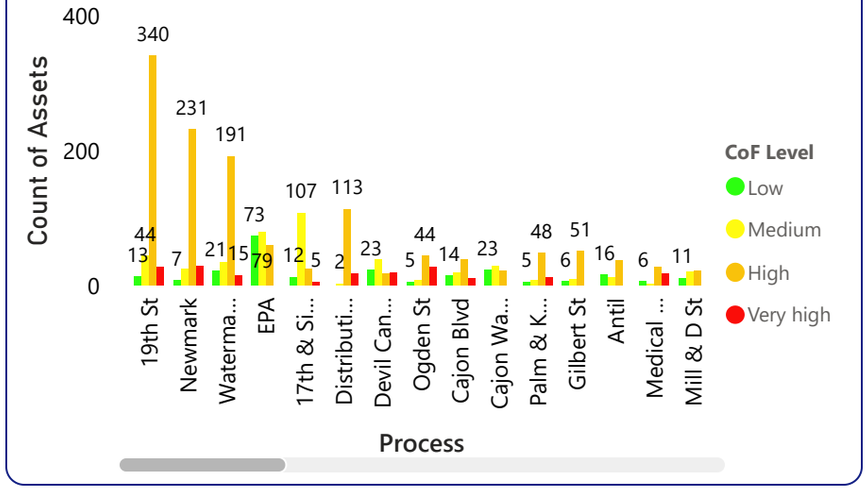
Facility

- [x] Select all
- [x] 16th St BPS
- [x] 16th St Well
- [x] 17th St BPS
- [x] 17th St Well
- [x] Acacia BPS

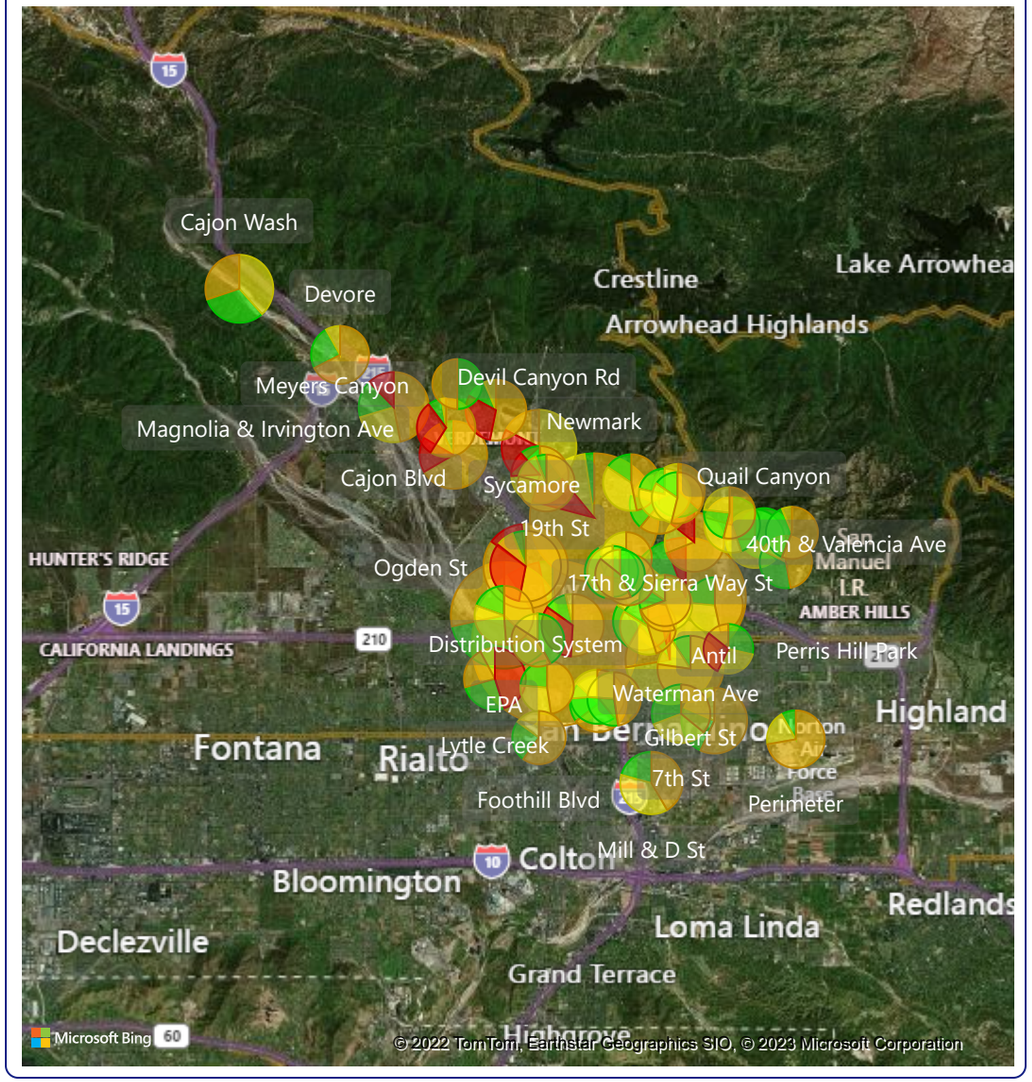
Asset CoF Profile



CoF Profile per Site



CoF Level: Low, Medium, High, Very high



Facility Type: All

Asset Class: All

Asset Type: All

Hazen

Pressure Zone

- [x] Select all
- [x] Cajon
- [x] College/Palm
- [x] Daley
- [x] Del Rosa
- [x] Devil Canyon
- [x] Devil Canyon Domestic

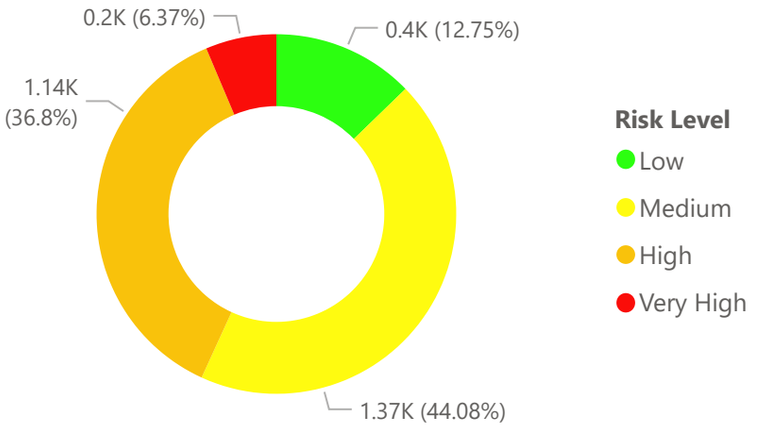
Site

- [x] Select all
- [x] 10th & J St
- [x] 17th & Sierra Way St
- [x] 19th St
- [x] 25th & North E St
- [x] 27th St
- [x] 30th & Mountain View Ave
- [x] 31th & Mountain View Ave
- [x] 40th & Valencia Ave

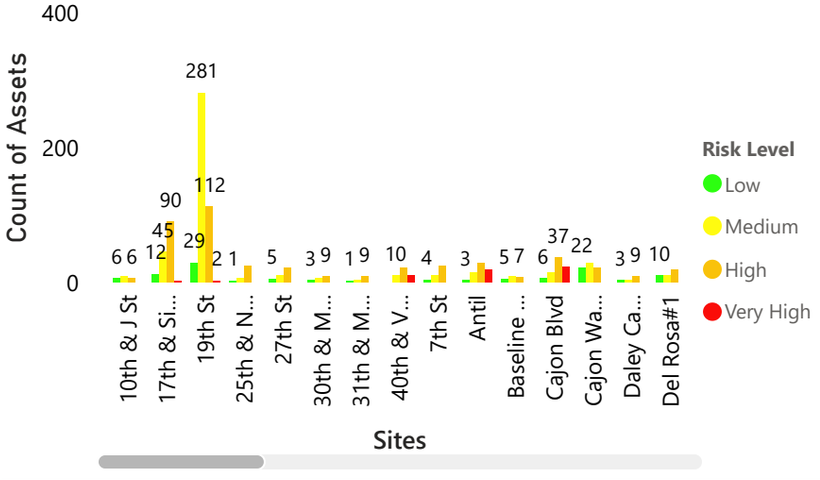
Facility

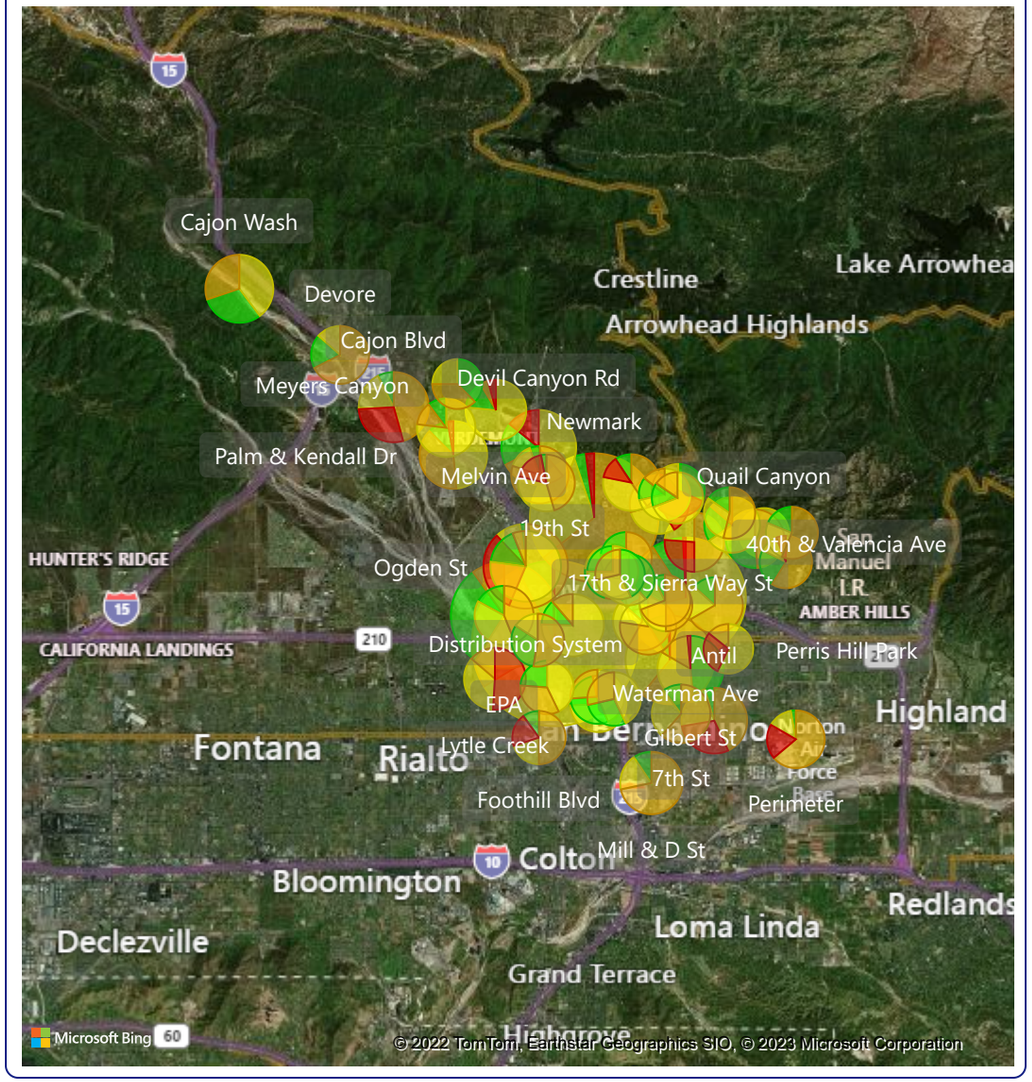
- [x] Select all
- [x] 16th St BPS
- [x] 16th St Well
- [x] 17th St BPS
- [x] 17th St Well
- [x] Acacia BPS

Assets Risk Profile



Risk Profile per Site





Facility Type: All

Asset Class: All

Asset Type: All

Hazen

Pressure Zone

- [x] Select all
- [x] Cajon
- [x] College/Palm
- [x] Daley
- [x] Del Rosa
- [x] Devil Canyon
- [x] Devil Canyon Domestic

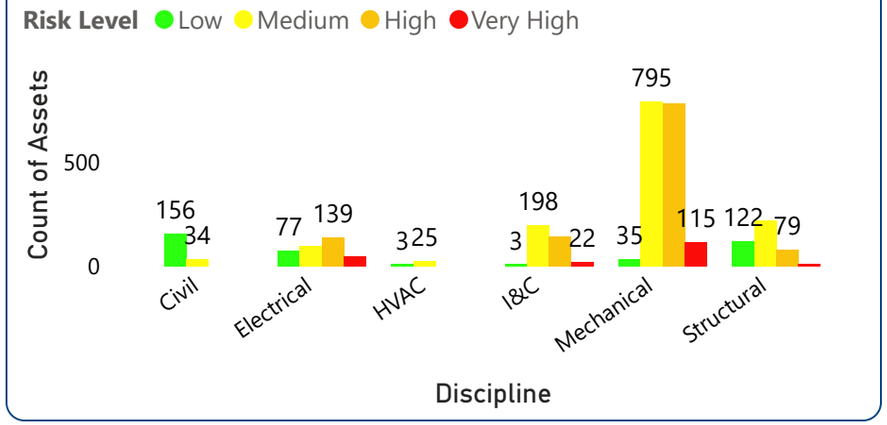
Site

- [x] Select all
- [x] 10th & J St
- [x] 17th & Sierra Way St
- [x] 19th St
- [x] 25th & North E St
- [x] 27th St
- [x] 30th & Mountain View Ave
- [x] 31th & Mountain View Ave
- [x] 40th & Valencia Ave

Location

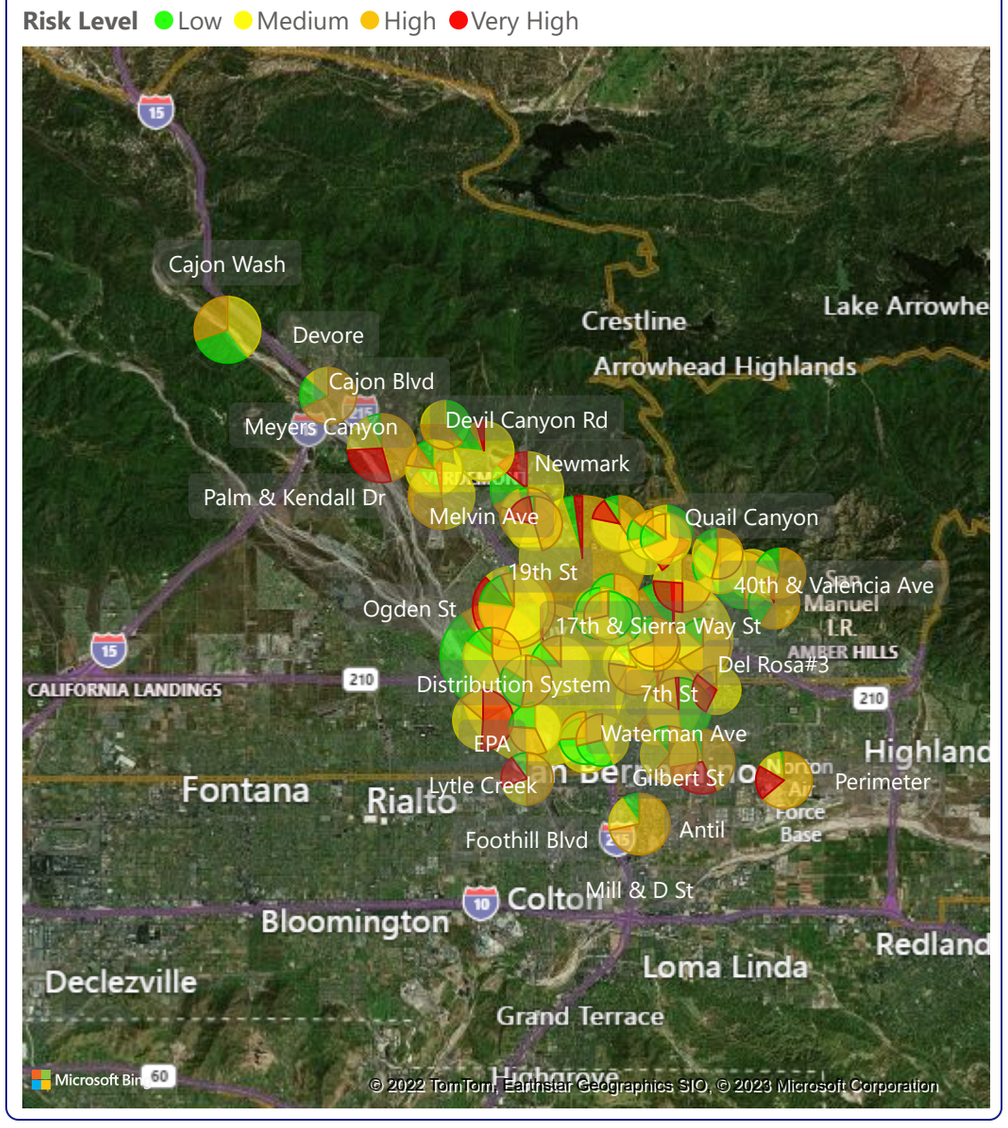
- [x] Select all
- [x] 16th St BPS
- [x] 16th St Well
- [x] 17th St BPS
- [x] 17th St Well
- [x] Acacia BPS

Risk per Discipline



Risk Matrix

CoF/PoF	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
10	1			2	8	1	4	7	5		7
9		1	21	20	36	18	7	36	14	1	15
8			15	6	132	8	7	44	17	2	86
7		2	6	54	50	21	19	60	23	9	107
6	1		11	15	225	5	27	275	20	18	127
5			1	10	67	58	28	68	28	17	304
4	2		4	3	30	13	21	52	12	11	169
3		1	6	8	27	5	25	21	18	6	104
2	1	2	3	7	43	24	9	25	7	10	68
1			1	1	17	24	14	19	5	18	93



Facility Type: All

Asset Class: All

Asset Type: All

Hazen

Pressure Zone

- [x] Select all
- [x] Cajon
- [x] College/Palm
- [x] Daley
- [x] Del Rosa
- [x] Devil Canyon
- [x] Devil Canyon Domestic

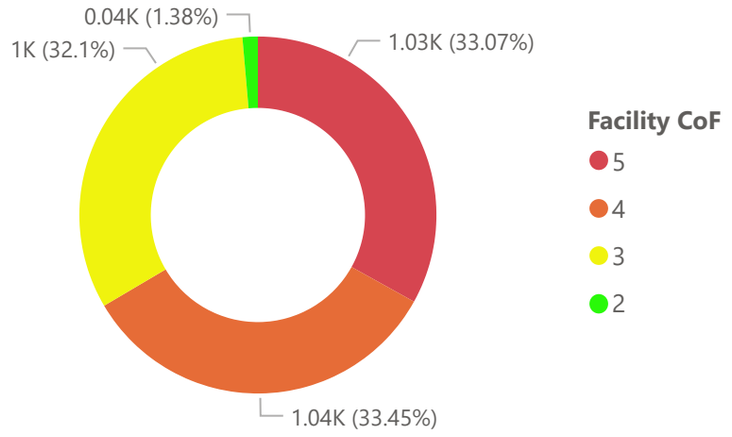
Site

- [x] Select all
- [x] 10th & J St
- [x] 17th & Sierra Way St
- [x] 19th St
- [x] 25th & North E St
- [x] 27th St
- [x] 30th & Mountain View Ave
- [x] 31th & Mountain View Ave
- [x] 40th & Valencia Ave

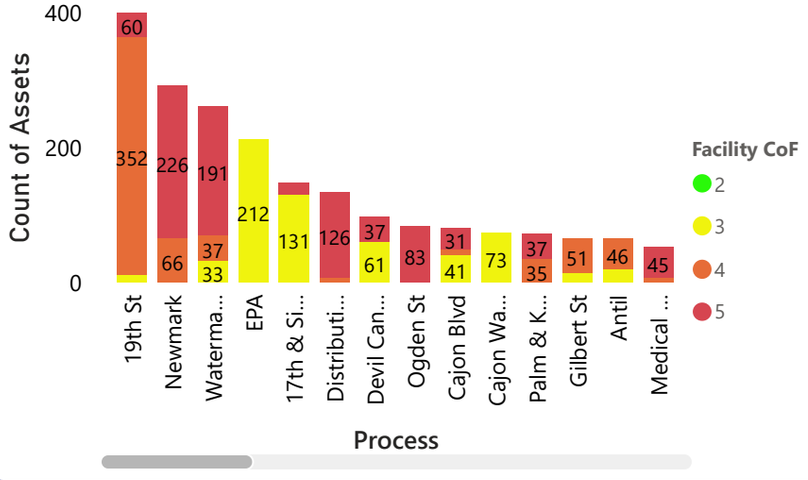
Facility

- [x] Select all
- [x] 16th St BPS
- [x] 16th St Well
- [x] 17th St BPS
- [x] 17th St Well
- [x] Acacia BPS

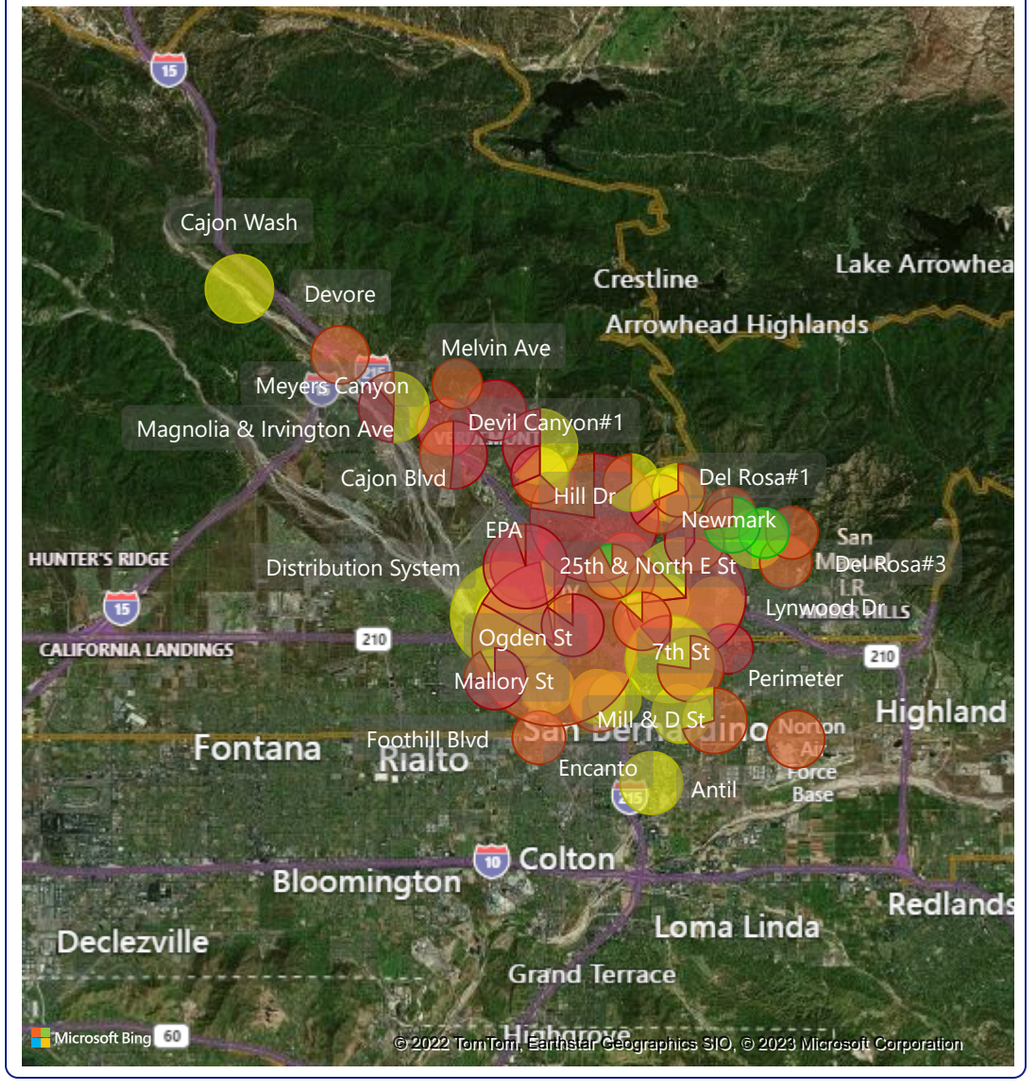
Facility CoF Profile



Facillity CoF Profile per Site



Facility CoF



Appendix E: SBMWD Asset Register

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00001	Lower	10th & J St	Well	Well	Access Gate Double Door Motorized	Access Gate	Manual	Civil	1997	33	LFT
SBMWD-A00002	Lower	10th & J St	Well	Well	AC Unit	AC Unit		HVAC	1997		
SBMWD-A00003	Lower	10th & J St	Well	Well	Building	Building		Structural	1997		
SBMWD-A00004	Lower	10th & J St	Well	Well	Fencing	Fencing	Chainlink	Civil	1997	300	LFT
SBMWD-A00005	Lower	10th & J St	Well	Well	Pump	Pump	Vertical Turbin	Mechanical	1997	402	TDHFT
SBMWD-A00006	Lower	10th & J St	Well	Well	Motor	Motor		Electrical	1997	402	TDHFT
SBMWD-A00007	Lower	10th & J St	Well	Well	Safety Shower/Eyewash	Safety Shower/Eyewash		Mechanical	1997		
SBMWD-A00008	Lower	10th & J St	Well	Well	Chlorine Injection Box	Chlorine Injection Box		Structural	1997	4	WFT
SBMWD-A00009	Lower	10th & J St	Well	Well	Well Casing	Process Structure	Well Casing	Structural	1997	20	DIN
SBMWD-A00010	Lower	17th & Sierra Way St	16th St Well	Well	Check Valve	Valve	Swing Check	Mechanical	1950	12	DIN
SBMWD-A00011	Lower	17th & Sierra Way St	16th St Well	Well	Piping Assembly	Piping	Above Ground	Mechanical	1950	12	DIN
SBMWD-A00012	Lower	17th & Sierra Way St	16th St Well	Well	Pump	Pump	Submersible	Mechanical	2009	341	TDHFT
SBMWD-A00013	Lower	17th & Sierra Way St	16th St Well	Well	Well Casing	Process Structure	Well Casing	Structural	1950	20	DIN
SBMWD-A00014	Lower	17th & Sierra Way St	16th St BPS	BPS	Booster Pump	Pump	Centrifugal	Mechanical	2011	175	TDHFT
SBMWD-A00015	Lower	17th & Sierra Way St	16th St BPS	BPS	Booster Pump - Check Valve	Valve	Swing Check	Mechanical	2011	8	DIN
SBMWD-A00016	Lower	17th & Sierra Way St	16th St BPS	BPS	Booster Pump - Isolation Valve Upstream	Valve	Butterfly	Mechanical	2011	12	DIN
SBMWD-A00017	Lower	17th & Sierra Way St	16th St BPS	BPS	Booster Pump - Piping Assembly	Piping		Mechanical	2011	12	DIN
SBMWD-A00018	Intermediate	17th & Sierra Way St	17th St BPS	BPS	Booster Pump	Pump		Mechanical	1994	110	TDHFT
SBMWD-A00019	Intermediate	17th & Sierra Way St	17th St BPS	BPS	Booster Pump - Check Valve	Valve	Swing Check	Mechanical	1994	12	DIN
SBMWD-A00020	Intermediate	17th & Sierra Way St	17th St BPS	BPS	Booster Pump - Isolation Valve Upstream	Valve	Butterfly	Mechanical	1994	12	DIN
SBMWD-A00021	Intermediate	17th & Sierra Way St	17th St BPS	BPS	Booster Pump - Piping Assembly	Piping		Mechanical	1994	12	DIN
SBMWD-A00022	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Carbon Absorber Vessel 1A	Vessel	GAC	Structural	1950	18.3	TFT
SBMWD-A00023	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Influent - Flowmeter 1A/1B	Flowmeter		I&C	1950	6	DIN
SBMWD-A00024	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Carbon Absorber Tank 1B	Vessel	GAC	Structural	1950	18.3	TFT
SBMWD-A00025	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Carbon Absorber Vessel 2A	Vessel	GAC	Structural	1950	18.3	TFT
SBMWD-A00026	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Carbon Absorber Tank 2B	Vessel	GAC	Structural	1950	18.3	TFT
SBMWD-A00027	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Carbon Absorber Vessel 3A	Vessel	GAC	Structural	1950	18.3	TFT
SBMWD-A00028	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Influent - Flowmeter 2A/2B	Flowmeter		I&C	1950	6	DIN
SBMWD-A00029	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Influent - Flowmeter 3A/3B	Flowmeter		I&C	1950	6	DIN
SBMWD-A00030	Intermediate	17th & Sierra Way St	Reservoir	Reservoir (Forebay)	Chlorine Station Cabinet (North West)	Chlorine Station		Mechanical	1950	1	DIN
SBMWD-A00031	Intermediate	17th & Sierra Way St	Reservoir	Reservoir (Forebay)	Inlet Piping Assembly	Piping		Mechanical	1950	16	DIN
SBMWD-A00032	Intermediate	17th & Sierra Way St	Reservoir	Reservoir (Forebay)	Isolation Valve (North Weir Box Drain)	Valve	Gate	Mechanical	1950	12	DIN
SBMWD-A00033	Intermediate	17th & Sierra Way St	Reservoir	Reservoir (Forebay)	Isolation Gate Valve (Reservoir Drain)	Valve	Gate	Mechanical	1950	6	DIN
SBMWD-A00034	Intermediate	17th & Sierra Way St	Reservoir	Reservoir (Forebay)	Isolation Valve (South Weir Box Drain)	Valve	Gate	Mechanical	1950	12	DIN
SBMWD-A00035	Intermediate	17th & Sierra Way St	Reservoir	Reservoir (Forebay)	Isolation Valve (South-East of Carbon)(Buried)	Valve		Mechanical	1950	16	DIN
SBMWD-A00036	Intermediate	17th & Sierra Way St	Reservoir	Reservoir (Forebay)	Rectangular Reservoir	Process Structure	Well Casing	Structural	1948	108500	GAL
SBMWD-A00037	Intermediate	17th & Sierra Way St	Common	Other	Perimiter Fence	Fencing	Chainlink	Civil	2021	470	LFT
SBMWD-A00038	Intermediate	17th & Sierra Way St	Reservoir	Reservoir (Forebay)	Flow Transmitter/Meter (Between Carbon System and Booster Pump)	Flowmeter		I&C	2008	14	DIN
SBMWD-A00039	Intermediate	17th & Sierra Way St	17th St Well	Well	Piping Assembly 17th St Well	Piping		Mechanical	1950	12	DIN
SBMWD-A00040	Intermediate	17th & Sierra Way St	17th St Well	Well	Pump in Vault	Pump	Submersible	Mechanical	1991	254	TDHFT
SBMWD-A00041	Intermediate	17th & Sierra Way St	17th St Well	Well	17Th St Well Vault	Process Structure	Well Casing	Structural	1991	20	DIN
SBMWD-A00042	Upper	19th St	Common	Piping and Appurtenances	Suction Isolation Valve of West Flowmeter Next To Well#2	Valve	Butterfly	Mechanical	2003	16	DIN
SBMWD-A00043	Upper	19th St	Common	Piping and Appurtenances	Discharge Butterfly Isolation Valve of West Flowmeter Next To Well#2	Valve	Butterfly	Mechanical	2003	16	DIN
SBMWD-A00044	Lower	19th St	Reservoir	Piping and Appurtenances	Piping Assembly ACV#5	Piping	Above Ground	Mechanical	2003	16	DIN
SBMWD-A00045	Upper	19th St	Common	Piping and Appurtenances	Suction Isolation Valve of East Flowmeter Next To Well#2	Valve	Butterfly	Mechanical	2003	16	DIN
SBMWD-A00046	Upper	19th St	Common	Piping and Appurtenances	Discharge Isolation Valve of East Flowmeter Next To Well#2	Valve	Butterfly	Mechanical	2003	16	DIN
SBMWD-A00047	Lower	19th St	Reservoir	Piping and Appurtenances	Piping Assembly ACV#4	Piping	Above Ground	Mechanical	2003	16	DIN
SBMWD-A00048	Upper	19th St	GAC System	Wellhead Treatment	Concrete Pad (East)	Non-Process Structure	Concrete Pad	Structural	2009	540	SF
SBMWD-A00049	Upper	19th St	GAC System	Wellhead Treatment	Concrete Pad (West)	Non-Process Structure	Concrete Pad	Structural	2009	540	SF
SBMWD-A00050	Upper	19th St	GAC System	Wellhead Treatment	Vessels 1 & 2 Drain Vault	Non-Process Structure	Vault	Structural	2009		
SBMWD-A00051	Upper	19th St	GAC System	Wellhead Treatment	Vessels 3 & 4 Drain Vault	Non-Process Structure	Vault	Structural	2009		
SBMWD-A00052	Upper	19th St	GAC System	Wellhead Treatment	Vessels 5 & 6 Drain Vault	Non-Process Structure	Vault	Structural	2009		
SBMWD-A00053	Upper	19th St	GAC System	Wellhead Treatment	Vessels 8 & 9 Drain Vault	Non-Process Structure	Vault	Structural	2009		
SBMWD-A00054	Upper	19th St	GAC System	Wellhead Treatment	Vessels 10 & 11 Drain Vault	Non-Process Structure	Vault	Structural	2009		
SBMWD-A00055	Upper	19th St	GAC System	Wellhead Treatment	Vessels 12 & 13 Drain Vault	Non-Process Structure	Vault	Structural	2009		
SBMWD-A00056	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 5A & Air Valves	Vessel	GAC	Structural	2009		
SBMWD-A00057	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 5B & Air Valves	Vessel	GAC	Structural	2009		
SBMWD-A00058	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 6A & Air Valves	Vessel	GAC	Structural	2009		
SBMWD-A00059	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 6B & Air Valves	Vessel	GAC	Structural	2009		
SBMWD-A00060	Upper	19th St	Common	Wellhead Treatment	Suction Isolation Valve of West Line Pressure Sustaining Apparatus (Buried)	Valve	Butterfly	Mechanical	2003	24	DIN
SBMWD-A00061	Upper	19th St	Common	Wellhead Treatment	Discharge Isolation Valve of West Line Pressure Sustaining Apparatus (Buried)	Valve	Butterfly	Mechanical	2003	24	DIN
SBMWD-A00062	Upper	19th St	Common	Wellhead Treatment	Suction Isolation Valve of East Line Pressure Sustaining Apparatus (Buried)	Valve	Butterfly	Mechanical	2003	24	DIN
SBMWD-A00063	Upper	19th St	Common	Wellhead Treatment	Discharge Isolation Valve of East Line Pressure Sustaining Apparatus (Buried)	Valve	Butterfly	Mechanical	2003	24	DIN
SBMWD-A00064	Lower	19th St	Reservoir	Wellhead Treatment	East Line Pressure Sustaining Valve#3 In Vault	Valve	Pressure Redu	Mechanical	2003	16	DIN
SBMWD-A00065	Lower	19th St	Reservoir	Wellhead Treatment	West Line Pressure Sustaining Valve#2 In Vault	Valve	Pressure Redu	Mechanical	2003	16	DIN
SBMWD-A00066	Upper	19th St	Common	Other	GAC effluent-Chlorine Injection Box (West of GAC 1A)	Chlorine Injection Box		Structural	2009	36	DIN
SBMWD-A00067	Upper	19th St	Common	Piping and Appurtenances	Water Vault - Flap Gate	Non-Process Structure	Vault	Structural	2009	12	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00068	Upper	19th St	Common	Other	Water Vault - Isolation Valve	Valve	Butterfly	Mechanical	1992	24	DIN
SBMWD-A00069	Upper	19th St	Common	Other	Water Vault - Isolation Valve	Valve	Butterfly	Mechanical	1992	16	DIN
SBMWD-A00070	Upper	19th St	Common	Piping and Appurtenances	Water Vault (West of Res)	Non-Process Structure	Vault	Structural	2009	5	WFT
SBMWD-A00071	Upper	19th St	BPS (#1-5)	BPS	Above Ground Piping - Air Release Valve	Valve	Air Release	Mechanical	2003	1	DIN
SBMWD-A00072	Upper	19th St	BPS (#1-5)	BPS	Above Ground Piping - Isolation Valve	Valve	Butterfly	Mechanical	2003	16	DIN
SBMWD-A00074	Upper	19th St	BPS (#1-5)	BPS	Chlorine Mixing Box	Chlorine Injection Box		Structural	2009	1	DIN
SBMWD-A00075	Upper	19th St	BPS (#1-5)	BPS	Flowmeter	Flowmeter		I&C	2009	5000	GPM
SBMWD-A00076	Upper	19th St	BPS (#1-5)	BPS	Pump#3 - Air Release	Valve	Air Release	Mechanical	1992	2	DIN
SBMWD-A00077	Upper	19th St	BPS (#1-5)	BPS	Pump#3 - Check Valve	Valve	Check	Mechanical	1992	12	DIN
SBMWD-A00078	Upper	19th St	BPS (#1-5)	BPS	Pump#3 - Isolation Valve	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A00079	Upper	19th St	BPS (#1-5)	BPS	Pump#3 - Isolation Valve (Buried)	Valve	Butterfly	Mechanical	1992	16	DIN
SBMWD-A00080	Upper	19th St	BPS (#1-5)	BPS	Pump#3 - Piping Assembly	Piping		Mechanical	1992	12	DIN
SBMWD-A00081	Upper	19th St	BPS (#1-5)	BPS	Pump#3 - Pump	Pump	Vertical Turbin	Mechanical	2009	220	TDHFT
SBMWD-A00082	Upper	19th St	BPS (#1-5)	BPS	Pump#4 - Air Release	Valve	Air Release	Mechanical	1992	2	DIN
SBMWD-A00083	Upper	19th St	BPS (#1-5)	BPS	Pump#4 - Check Valve	Valve	Check	Mechanical	1992	12	DIN
SBMWD-A00084	Upper	19th St	BPS (#1-5)	BPS	Pump#4 - Isolation Valve	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A00085	Upper	19th St	BPS (#1-5)	BPS	Pump#4 - Isolation Valve (Buried)	Valve	Butterfly	Mechanical	1992	16	DIN
SBMWD-A00086	Upper	19th St	BPS (#1-5)	BPS	Pump#4 - Piping Assembly	Piping		Mechanical	1992	12	DIN
SBMWD-A00087	Upper	19th St	BPS (#1-5)	BPS	Pump#4 - Pump	Pump	Vertical Turbin	Mechanical	1988	210	TDHFT
SBMWD-A00088	Upper	19th St	BPS (#1-5)	BPS	Pump#5 - Air Release	Valve	Air Release	Mechanical	1992	2	DIN
SBMWD-A00089	Upper	19th St	BPS (#1-5)	BPS	Pump#5 - Check Valve	Valve	Check	Mechanical	1992	12	DIN
SBMWD-A00090	Upper	19th St	BPS (#1-5)	BPS	Pump#5 - Isolation Valve	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A00091	Upper	19th St	BPS (#1-5)	BPS	Pump#5 - Isolation Valve (Buried)	Valve	Butterfly	Mechanical	1992	16	DIN
SBMWD-A00092	Upper	19th St	BPS (#1-5)	BPS	Pump#5 - Piping Assembly	Piping		Mechanical	1992	12	DIN
SBMWD-A00093	Upper	19th St	BPS (#1-5)	BPS	Pump#5 - Pump	Pump	Vertical Turbin	Mechanical	2006	155	TDHFT
SBMWD-A00094	Upper	19th St	BPS (#1-5)	BPS	Reservoir Building North	Building		Structural	2009	170	SF
SBMWD-A00095	Upper	19th St	BPS (#1-5)	BPS	Suction Pump - Check Valve	Valve	Check	Mechanical	1985	10	DIN
SBMWD-A00096	Upper	19th St	BPS (#1-5)	BPS	Suction Pump - End Suction Pump	Pump	Sump	Mechanical	2009	10	DIN
SBMWD-A00097	Upper	19th St	BPS (#1-5)	BPS	Suction Pump - Suction Isolation Valve	Valve	Butterfly	Mechanical	1985	10	DIN
SBMWD-A00098	Upper	19th St	BPS (#1-5)	BPS	Suction Pump - Discharge Isolation Valve	Valve	Butterfly	Mechanical	2012	10	DIN
SBMWD-A00099	Upper	19th St	BPS (#1-5)	BPS	Suction Pump - Piping Assembly	Piping		Mechanical	2009	10	DIN
SBMWD-A00100	Upper	19th St	BPS (#1-5)	BPS	Suction Pump - Check Valve	Valve	Check	Mechanical	1985	12	DIN
SBMWD-A00101	Upper	19th St	BPS (#1-5)	BPS	Suction Pump - End Suction Pump	Pump	Sump	Mechanical	2009	12	DIN
SBMWD-A00102	Upper	19th St	BPS (#1-5)	BPS	Suction Pump Suction Isolation Valve	Valve	Butterfly	Mechanical	1985	12	DIN
SBMWD-A00103	Upper	19th St	BPS (#1-5)	BPS	Suction Pump Discharge Isolation Valve	Valve	Butterfly	Mechanical	2012	12	DIN
SBMWD-A00104	Upper	19th St	BPS (#1-5)	BPS	Suction Pump - Piping Assembly	Piping		Mechanical	2009	12	DIN
SBMWD-A00105	Upper	19th St	BPS (#1-5)	BPS	Reservoir Building South	Building		Structural	2009	80	SF
SBMWD-A00106	Upper	19th St	Common	Reservoir (Forebay)	Air Release Valve By the Building	Valve	Air Release	Mechanical	2003	1	DIN
SBMWD-A00107	Upper	19th St	Common	Piping and Appurtenances	Backflow Preventer	Valve	Check	Mechanical	2003	12	DIN
SBMWD-A00108	Upper	19th St	Common	Piping and Appurtenances	Flowmeter	Flowmeter	Propeller	I&C	2003	10	DIN
SBMWD-A00109	Upper	19th St	Common	Piping and Appurtenances	Suction Isolation Valve On Backflow Preventer	Valve	Gate	Mechanical	2003	12	DIN
SBMWD-A00110	Upper	19th St	Common	Piping and Appurtenances	Suction Isolation Valve On Backflow	Valve	Gate	Mechanical	2003	10	DIN
SBMWD-A00111	Upper	19th St	Common	Piping and Appurtenances	Discharge Isolation Valve On Backflow	Valve	Gate	Mechanical	2003	10	DIN
SBMWD-A00112	Upper	19th St	Common	Piping and Appurtenances	Discharge Piping Assembly of Flowmeter	Piping		Mechanical	2003	10	DIN
SBMWD-A00113	Upper	19th St	Common	Piping and Appurtenances	Inlet Piping Assembly of Flowmeter	Piping		Mechanical	2003	12	DIN
SBMWD-A00114	Upper	19th St	Common	Wellhead Treatment	Anti Siphon Loop Piping	Piping		Mechanical	2003	20	DIN
SBMWD-A00115	Upper	19th St	Common	Wellhead Treatment	Airvac Valve Anti Siphon	Valve	Air Release	Mechanical	2003	3	DIN
SBMWD-A00116	Upper	19th St	Common	Wellhead Treatment	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	2003	75	SF
SBMWD-A00117	Lower	19th St	Reservoir	Reservoir (Forebay)	Reservoir - Rectangular	Tank	Reservoir	Structural	1952	258000	GAL
SBMWD-A00118	Lower	19th St	Reservoir	Reservoir (Forebay)	Weir Box (West)	Process Structure	Weir Box	Structural	2009	5	LFT
SBMWD-A00119	Upper	19th St	Well#2	Well	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	2009	180	SF
SBMWD-A00120	Upper	19th St	Well#2	Well	Piping Assembly	Piping		Mechanical	2009	12	DIN
SBMWD-A00121	Upper	19th St	Well#2	Well	Pump	Pump	Vertical Turbin	Mechanical	2012	385	TDHFT
SBMWD-A00122	Upper	19th St	Well#2	Well	Well Casing	Process Structure	Well Casing	Structural	1955	1238	GPM
SBMWD-A00123	Upper	25th & North E St	BPS	BPS	Booster - Check Valve	Valve	Check	Mechanical	1965	12	DIN
SBMWD-A00124	Upper	25th & North E St	BPS	BPS	Booster - Isolation Valve	Valve	Gate	Mechanical	1965	12	DIN
SBMWD-A00125	Upper	25th & North E St	BPS	BPS	Booster - Piping Assembly	Piping		Mechanical	1965	12	DIN
SBMWD-A00126	Upper	25th & North E St	BPS	BPS	Booster - Turbine Check Valve	Valve	Check	Mechanical	1965	12	DIN
SBMWD-A00127	Upper	25th & North E St	BPS	BPS	Booster - Turbine Pump	Pump	Vertical Turbin	Mechanical	1965		
SBMWD-A00128	Upper	25th & North E St	BPS	BPS	Booster - Turbine Pumping Assembly	Pump	Vertical Turbin	Mechanical	1965	12	DIN
SBMWD-A00129	Upper	25th & North E St	BPS	BPS	Booster House	Building		Structural	1950	375	SF
SBMWD-A00130	Upper	25th & North E St	BPS	BPS	Booster#1	Pump		Mechanical	1950		
SBMWD-A00131	Upper	25th & North E St	Reservoir	Reservoir (Forebay)	Cylindrical Reservoir	Tank	Reservoir	Structural	1950	122000	GAL
SBMWD-A00132	Intermediate	27th St	Acacia BPS	BPS	Combination Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	2009	1	DIN
SBMWD-A00133	Intermediate	27th St	Acacia BPS	BPS	Flowmeter	Flowmeter		I&C	2009	12	DIN
SBMWD-A00134	Intermediate	27th St	Acacia BPS	BPS	Piping Assembly	Piping		Mechanical	2009	12	DIN
SBMWD-A00135	Intermediate	27th St	Acacia BPS	BPS	Booster Pump	Pump	Vertical Turbin	Mechanical	2011	140	TDHFT

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00136	Intermediate	27th St	Acacia BPS	BPS	Check Valve (Well Pump)	Valve	Check	Mechanical	1957	12	DIN
SBMWD-A00137	Intermediate	27th St	Acacia BPS	BPS	Cla Valve	Valve		Mechanical	1957	12	DIN
SBMWD-A00138	Intermediate	27th St	Acacia BPS	BPS	Booster Piping Assembly	Piping		Mechanical	1957	12	DIN
SBMWD-A00139	Intermediate	27th St	Acacia BPS	BPS	Well Piping Assembly	Piping		Mechanical	1957	12	DIN
SBMWD-A00140	Intermediate	27th St	Acacia BPS	BPS	Transformer	Transformer		Electrical	1957		
SBMWD-A00141	Intermediate	27th St	Acacia BPS	BPS	Well Casing	Process Structure	Well Casing	Structural	1956	20	DIN
SBMWD-A00142	Intermediate	27th St	Acacia BPS	BPS	Well and Booster Vault	Non-Process Structure	Vault	Structural	1957	490	SF
SBMWD-A00143	Intermediate	27th St	Acacia BPS	BPS	Well Pump	Pump	Vertical Turbin	Mechanical	1996	258	TDHFT
SBMWD-A00144	Intermediate	27th St	Reservoir	Reservoir (Forebay)	Buried Reservoir - Rectangular	Tank	Reservoir	Structural	1956	247000	GAL
SBMWD-A00145	Intermediate	27th St	Reservoir	Reservoir (Forebay)	Piping Assembly (West)	Piping		Mechanical	1957	18	DIN
SBMWD-A00146	Intermediate	27th St	Reservoir	Reservoir (Forebay)	Weir Box - Piping Assembly (Box - East)	Piping		Mechanical	1957	12	DIN
SBMWD-A00147	Intermediate	27th St	Reservoir	Reservoir (Forebay)	Flowmeter	Flowmeter		I&C	1957	8	DIN
SBMWD-A00148	Lower	30th & Mountain View Av	Reservoir	Reservoir	Butterfly Valve Inlet Into Reservoir	Valve	Butterfly	Mechanical	1940		
SBMWD-A00149	Lower	30th & Mountain View Av	Reservoir	Reservoir	Electrical Transformer	Transformer		Electrical	1940	13	LFT
SBMWD-A00150	Lower	30th & Mountain View Av	Reservoir	Reservoir	Reservoir	Tank	Reservoir	Structural	1963	97250	GAL
SBMWD-A00151	Lower	30th & Mountain View Av	Well	Well	Booster Pump	Pump		Mechanical	1940		
SBMWD-A00152	Lower	30th & Mountain View Av	Well	Well	Building	Building		Structural	1940		
SBMWD-A00153	Lower	30th & Mountain View Av	Well	Well	Check Valve	Valve	Check	Mechanical	1940	12	DIN
SBMWD-A00154	Lower	30th & Mountain View Av	Well	Well	Flowmeter	Flowmeter		I&C	1940	12	DIN
SBMWD-A00155	Lower	30th & Mountain View Av	Well	Well	Piping Assembly	Piping		Mechanical	1940	12	DIN
SBMWD-A00156	Lower	30th & Mountain View Av	Well	Well	Well Casing	Process Structure	Well Casing	Structural	1926	20	DIN
SBMWD-A00157	Lower	30th & Mountain View Av	Well	Well	Well Pump	Pump	Vertical Turbin	Mechanical	2012	12	DIN
SBMWD-A00158	Lower	31th & Mountain View Av	Well	Well	Fence - Two double door swing gates and one access gate	Fencing	Chainlink	Civil	1962		
SBMWD-A00159	Lower	31th & Mountain View Av	Well	Well	Pipe Drain - Below ground	Piping		Mechanical	1962	12	DIN
SBMWD-A00160	Lower	31th & Mountain View Av	Well	Well	Piping Assembly	Piping		Mechanical	1962	12	DIN
SBMWD-A00161	Lower	31th & Mountain View Av	Well	Well	Downstream Isolation Valve	Valve	Gate	Mechanical	1962	12	DIN
SBMWD-A00162	Lower	31th & Mountain View Av	Well	Well	Welded T Fitting	Piping		Mechanical	1962	12	DIN
SBMWD-A00163	Lower	31th & Mountain View Av	Well	Well	Well Casing	Process Structure	Well Casing	Structural	1962	20	DIN
SBMWD-A00164	Lower	31th & Mountain View Av	Well	Well	Well Pump	Pump	Vertical Turbin	Mechanical	2007	12	DIN
SBMWD-A00165	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#1 Discharge Valve Underground	Valve	Gate	Mechanical	1990	8	DIN
SBMWD-A00166	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#1 Flowmeter	Flowmeter		I&C	1990	8	DIN
SBMWD-A00167	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#1 Suction Valve Underground	Valve	Gate	Mechanical	1990	8	DIN
SBMWD-A00168	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#2 Flowmeter	Flowmeter		I&C	1990	8	DIN
SBMWD-A00169	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#4 Flowmeter	Flowmeter		I&C	1990	8	DIN
SBMWD-A00170	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#4 Suction Valve - Buried	Valve	Gate	Mechanical	1990	8	DIN
SBMWD-A00171	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Main Disconnect - Bulldog	Switch	Disconnect	Electrical	1990	400	AMP
SBMWD-A00172	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#1	Pump	Centrifugal	Mechanical	1984	140	TDHFT
SBMWD-A00173	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#1 Motor	Motor		Electrical	1984	60	HP
SBMWD-A00174	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#1 Piping Assembly	Piping		Mechanical	1990	8	DIN
SBMWD-A00175	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#2	Pump	Centrifugal	Mechanical	1988	125	TDHFT
SBMWD-A00176	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#2 Motor	Motor		Electrical	1988	60	HP
SBMWD-A00177	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#2 Piping Assembly	Piping		Mechanical	1990	8	DIN
SBMWD-A00178	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#4	Pump	Centrifugal	Mechanical	2012	120	TDHFT
SBMWD-A00179	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#4 Motor	Motor		Electrical	2012	60	HP
SBMWD-A00180	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump#4 Piping Assembly	Piping		Mechanical	1990	8	DIN
SBMWD-A00181	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump Starter Pump#1	Motor Starter		Electrical	1990	200	AMP
SBMWD-A00182	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump Starter Pump#2	Motor Starter		Electrical	1990	75	HP
SBMWD-A00183	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	SCADA - 75 Amp load center	SCADA		I&C	1990	75	AMP
SBMWD-A00184	Del Rosa	40th & Valencia Ave	Well	Well	Air Vac Assembly Downstream	Valve	Air-Vac	Mechanical	1991	2	DIN
SBMWD-A00185	Del Rosa	40th & Valencia Ave	Well	Well	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1991	8	WFT
SBMWD-A00186	Del Rosa	40th & Valencia Ave	Well	Well	Eyewash Station	Safety Shower/Eyewash		Mechanical	1991		
SBMWD-A00187	Del Rosa	40th & Valencia Ave	Well	Well	Flowmeter	Flowmeter		I&C	1991	12	DIN
SBMWD-A00188	Del Rosa	40th & Valencia Ave	Well	Well	Piping Assembly	Piping	Above Ground	Mechanical	1991	12	DIN
SBMWD-A00189	Del Rosa	40th & Valencia Ave	Well	Well	Well Pump & Motor	Pump	Vertical Turbin	Mechanical	2013	12	DIN
SBMWD-A00190	Del Rosa	40th & Valencia Ave	Well	Well	Building	Building		Structural	1991	600	SF
SBMWD-A00191	Del Rosa	40th & Valencia Ave	Well	Well	Well Casing	Process Structure	Well Casing	Structural	1991	20	DIN
SBMWD-A00192	Lower	7th St	BPS	BPS	Booster Pump	Pump	Vertical Turbin	Mechanical	1965	200	TDHFT
SBMWD-A00193	Lower	7th St	BPS	BPS	Booster Pump - Piping Assembly	Piping		Mechanical	1966	12	DIN
SBMWD-A00194	Lower	7th St	Reservoir (Forebay)	Reservoir (Forebay)	Chlorine Detection System	Building		Structural	1966		
SBMWD-A00195	Lower	7th St	Reservoir (Forebay)	Reservoir (Forebay)	Chlorine Building (North)	Building		Structural	1966	8.7	LFT
SBMWD-A00196	Lower	7th St	Common	Other	Fencing	Fencing	Iron	Civil	1966	500	LFT
SBMWD-A00197	Lower	7th St	Common	Other	Access Gate - Motorized Rolling	Access Gate	Motorized	Civil	1966		
SBMWD-A00198	Lower	7th St	Reservoir (Forebay)	Reservoir (Forebay)	Cylindrical Reservoir	Tank	Reservoir	Structural	1965	101000	GAL
SBMWD-A00199	Lower	7th St	Reservoir (Forebay)	Reservoir (Forebay)	St. Goose Neck - Piping Assembly (South-West Corner)	Piping		Mechanical	1966	12	DIN
SBMWD-A00200	Lower	Antil	Common	Other	Fencing	Fencing	Chainlink	Civil	1953	760	LFT
SBMWD-A00201	Lower	Antil	Reservoir	Reservoir (Forebay)	Reservoir	Tank	Reservoir	Structural	1953	258000	GAL

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00202	Lower	Antil	Reservoir	Reservoir (Forebay)	Piping Assembly	Piping		Mechanical	1953	6	DIN
SBMWD-A00203	Lower	Antil	Reservoir	Reservoir (Forebay)	Vault	Non-Process Structure	Vault	Structural	1953	7.7	LFT
SBMWD-A00204	Lower	Antil	Well#6	Well	Check Valve	Valve	Check	Mechanical	1968	12	DIN
SBMWD-A00205	Lower	Antil	Well#6	Well	Piping Assembly	Piping		Mechanical	1968	12	DIN
SBMWD-A00206	Lower	Antil	Well#6	Well	Well Casing	Process Structure	Well Casing	Structural	1968	20	DIN
SBMWD-A00207	Lower	Antil	Well#6	Well	Well Pump	Pump	Vertical Turbin	Mechanical	2008	12	DIN
SBMWD-A00208	Lower	Baseline & California St	BPS	BPS	Access Gate	Access Gate	Manual	Civil	1992		
SBMWD-A00209	Lower	Baseline & California St	BPS	BPS	Fencing	Fencing	Chainlink	Civil	1992	360	LFT
SBMWD-A00210	Lower	Baseline & California St	BPS	BPS	MCC	MCC		Electrical	1992		
SBMWD-A00211	Lower	Baseline & California St	BPS	BPS	Safety Shower & Eyewash Station	Safety Shower/Eyewash		Mechanical	1992		
SBMWD-A00212	Lower	Baseline & California St	Well	Well	Automatic Control Valve	Valve	Automated-Cc	Mechanical	1992	12	DIN
SBMWD-A00213	Lower	Baseline & California St	Well	Well	Blend Piping Assembly	Piping		Mechanical	1992	12	DIN
SBMWD-A00214	Lower	Baseline & California St	Well	Well	Well Check Valve	Valve	Check	Mechanical	1992	8	DIN
SBMWD-A00215	Lower	Baseline & California St	Well	Well	Well Discharge Gate Valve	Valve	Gate	Mechanical	1992	8	DIN
SBMWD-A00216	Lower	Baseline & California St	Well	Well	Butterfly Isolation Valve at Blend Piping Bend	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A00217	Lower	Baseline & California St	Well	Well	Blend Line Flowmeter	Flowmeter		I&C	1992	8	DIN
SBMWD-A00218	Lower	Baseline & California St	Well	Well	Well Line Flowmeter	Flowmeter		I&C	1992	12	DIN
SBMWD-A00219	Lower	Baseline & California St	Well	Well	Well Casing	Process Structure	Well Casing	Structural	1946	20	DIN
SBMWD-A00220	Lower	Baseline & California St	Well	Well	Well Piping Assembly	Piping		Mechanical	1992	8	DIN
SBMWD-A00221	Lower	Baseline & California St	Well	Well	Well Pump	Pump	Submersible	Mechanical	2012	373	TDHFT
SBMWD-A00222	Cajon	Cajon Blvd	Reservoir	Reservoir	Well#2 - Check Valve	Valve	Check	Mechanical	1982	12	DIN
SBMWD-A00223	Cajon	Cajon Blvd	Reservoir	Reservoir	Piping Assembly	Piping		Mechanical	1982	12	DIN
SBMWD-A00224	Cajon	Cajon Blvd	Reservoir	Reservoir	Ladder to Level Gauge	Ladder	Fixed	Civil	1982	32	TFT
SBMWD-A00225	Cajon	Cajon Blvd	Reservoir	Reservoir	Level Gauge	Level Indicator		I&C	1982		
SBMWD-A00226	Cajon	Cajon Blvd	Reservoir	Reservoir	Piping Assembly	Piping		Mechanical	1982	12	DIN
SBMWD-A00227	Cajon	Cajon Blvd	Reservoir	Reservoir	Reservoir	Tank	Reservoir	Structural	1982	5000000	GAL
SBMWD-A00228	Cajon	Cajon Blvd	Well#3	Well	Piping Assembly	Piping		Mechanical	1957	12	DIN
SBMWD-A00229	Cajon	Cajon Blvd	Well#3	Well	Well Casing	Process Structure	Well Casing	Structural	1957		
SBMWD-A00230	Cajon	Cajon Blvd	Well#4	Well	Piping Assembly	Piping		Mechanical	1957	12	DIN
SBMWD-A00231	Cajon	Cajon Blvd	Well#4	Well	Well Casing	Process Structure	Well Casing	Structural	1957		
SBMWD-A00232	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Access Gate	Access Gate	Rolling	Civil	1993		
SBMWD-A00233	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Air Release	Valve	Air Release	Mechanical	1993		
SBMWD-A00234	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Discharge Butterfly Valve	Valve	Butterfly	Mechanical	1993		
SBMWD-A00235	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Fence	Fencing	Chainlink	Civil	1993		
SBMWD-A00236	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Flushline	Piping		Mechanical	1993		
SBMWD-A00237	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Flushline Butterfly Valve	Valve	Butterfly	Mechanical	1993		
SBMWD-A00238	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Piping Assembly	Piping		Mechanical	1993		
SBMWD-A00239	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Building	Building		Structural	1993		
SBMWD-A00240	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Check Valve	Valve	Check	Mechanical	1993	12	DIN
SBMWD-A00241	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Flowmeter	Flowmeter		I&C	1993	12	DIN
SBMWD-A00242	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	West Electrical Panel	Power Panel		Electrical	1993		
SBMWD-A00243	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Piping Assembly	Piping		Mechanical	1940	12	DIN
SBMWD-A00244	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Well Casing	Process Structure	Well Casing	Structural	1940	20	DIN
SBMWD-A00245	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Well Pump	Pump	Submersible	Mechanical	2009	60	HP
SBMWD-A00246	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Access Gate	Access Gate	Rolling	Civil	1991		
SBMWD-A00247	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Fence	Fencing	Chainlink	Civil	1991		
SBMWD-A00248	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Air Relief Manifold	Valve	Air Release	Mechanical	1991		
SBMWD-A00249	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Building	Building		Structural	1991		
SBMWD-A00250	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Check Valve	Valve	Check	Mechanical	1991	12	DIN
SBMWD-A00251	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Electrical Panel	Power Panel		Electrical	1991		
SBMWD-A00252	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Eye Wash Station	Safety Shower/Eyewash		Mechanical	1991		
SBMWD-A00253	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Flowmeter	Flowmeter		I&C	1991		
SBMWD-A00254	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Piping Assembly	Piping		Mechanical	1991	12	DIN
SBMWD-A00255	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Well Casing	Process Structure	Well Casing	Structural	1991	20	DIN
SBMWD-A00256	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Well Pump	Pump	Submersible	Mechanical	2009	75	HP
SBMWD-A00257	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Piping Assembly	Piping		Mechanical	2002	12	DIN
SBMWD-A00258	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Well Casing	Process Structure	Well Casing	Structural	2002	20	DIN
SBMWD-A00259	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Well Pump	Pump	Vertical Turbin	Mechanical	2008	150	HP
SBMWD-A00260	Devore/Meyers	Cajon Wash	Vincent Well	Well	Air Vac Assembly	Piping		Mechanical	1990	2	DIN
SBMWD-A00261	Devore/Meyers	Cajon Wash	Vincent Well	Well	Air Relief Manifold	Valve	Air Release	Mechanical	1990		
SBMWD-A00262	Devore/Meyers	Cajon Wash	Vincent Well	Well	Flowmeter	Flowmeter		I&C	1990		
SBMWD-A00263	Devore/Meyers	Cajon Wash	Vincent Well	Well	Flushline	Piping		Mechanical	1990	12	DIN
SBMWD-A00264	Devore/Meyers	Cajon Wash	Vincent Well	Well	Flushline Gate Valve	Valve	Gate	Mechanical	1990	12	DIN
SBMWD-A00265	Devore/Meyers	Cajon Wash	Vincent Well	Well	Piping Assembly	Piping		Mechanical	1990	12	DIN
SBMWD-A00266	Devore/Meyers	Cajon Wash	Vincent Well	Well	Building	Building		Structural	1990		
SBMWD-A00267	Devore/Meyers	Cajon Wash	Vincent Well	Well	Check Valve	Valve	Check	Mechanical	1990	12	DIN
SBMWD-A00268	Devore/Meyers	Cajon Wash	Vincent Well	Well	East Electrical Panel	Power Panel		Electrical	1990		

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00269	Devore/Meyers	Cajon Wash	Vincent Well	Well	Piping Assembly	Piping		Mechanical	1990	12	DIN
SBMWD-A00270	Devore/Meyers	Cajon Wash	Vincent Well	Well	Well Casing	Process Structure	Well Casing	Structural	1968	24	DIN
SBMWD-A00271	Devore/Meyers	Cajon Wash	Vincent Well	Well	Well Pump	Pump	Vertical Turbin	Mechanical	1990	75	HP
SBMWD-A00272	Devore/Meyers	Cajon Wash	Vincent Well	Well	West Electrical Panel	Power Panel		Electrical	1990		
SBMWD-A00273	Daley	Daley Cayon	Reservoir	Reservoir	Access Gate (North)	Access Gate	Manual	Civil	1972	7	TFT
SBMWD-A00274	Daley	Daley Cayon	Reservoir	Reservoir	Access Gate (West)	Access Gate	Manual	Civil	1972	7	TFT
SBMWD-A00275	Daley	Daley Cayon	Reservoir	Reservoir	Chainlink Fence	Fencing	Chainlink	Civil	1972	7	TFT
SBMWD-A00276	Daley	Daley Cayon	Reservoir	Reservoir	Manhole (North-East Corner)	Non-Process Structure	Manhole	Structural	1972	5.3	LFT
SBMWD-A00277	Daley	Daley Cayon	Reservoir	Reservoir	Manhole (South-West Corner)	Non-Process Structure	Manhole	Structural	1972	5.3	LFT
SBMWD-A00278	Daley	Daley Cayon	Reservoir	Reservoir	Reservoir (Buried) - Rectangular	Tank	Reservoir	Structural	1972	1500000	GAL
SBMWD-A00279	Daley	Daley Cayon	Reservoir	Reservoir	Drain Isolation Valve	Valve	Gate	Mechanical	1972	12	DIN
SBMWD-A00280	Daley	Daley Cayon	Reservoir	Reservoir	Drain Piping Assembly	Piping		Mechanical	1972	12	DIN
SBMWD-A00281	Daley	Daley Cayon	Reservoir	Reservoir	Outlet Isolation Valve	Valve	Gate	Mechanical	1972	16	DIN
SBMWD-A00282	Daley	Daley Cayon	Reservoir	Reservoir	Outlet Piping Assembly	Piping		Mechanical	1972	16	DIN
SBMWD-A00283	Daley	Daley Cayon	Reservoir	Reservoir	Overflow Piping Assembly	Piping		Mechanical	1972	12	DIN
SBMWD-A00284	Daley	Daley Cayon	Reservoir	Reservoir	Smaller Outlet Isolation Valve	Valve	Gate	Mechanical	1972	4	DIN
SBMWD-A00285	Daley	Daley Cayon	Reservoir	Reservoir	Smaller Outlet Piping Assembly	Piping		Mechanical	1972	4	DIN
SBMWD-A00286	Daley	Daley Cayon	Reservoir	Reservoir	Vault (West of Res)	Non-Process Structure	Vault	Structural	1972	7.3	LFT
SBMWD-A00287	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Flowmeter	Flowmeter		I&C	1956	8	DIN
SBMWD-A00288	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Isolation Valve	Valve	Gate	Mechanical	1956	8	DIN
SBMWD-A00289	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Piping Assembly	Piping		Mechanical	1956	8	DIN
SBMWD-A00290	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Pump	Pump	Submersible	Mechanical	2010	309	TDHFT
SBMWD-A00291	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Swing Check Valve	Valve	Swing Check	Mechanical	1956	8	DIN
SBMWD-A00292	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Flowmeter	Flowmeter		I&C	1956	8	DIN
SBMWD-A00293	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Isolation Valve	Valve	Gate	Mechanical	1956	8	DIN
SBMWD-A00294	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Piping Assembly	Piping		Mechanical	1956	8	DIN
SBMWD-A00295	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Pump	Pump	Submersible	Mechanical	1999	309	TDHFT
SBMWD-A00296	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Swing Check Valve	Valve	Swing Check	Mechanical	1956	8	DIN
SBMWD-A00297	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	CMU Wall	Wall	CMU	Structural	1956	16	LFT
SBMWD-A00298	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Electric Slab	Non-Process Structure	Concrete Pad	Structural	1956	25	SF
SBMWD-A00299	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	MCC	MCC		Electrical	1956		
SBMWD-A00300	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Chainlink Fence	Fencing	Chainlink	Civil	1956	550	LFT
SBMWD-A00301	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Chainlink Gate (North-East)	Access Gate	Manual	Civil	1956		
SBMWD-A00302	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Chainlink Gate (North-West)	Access Gate	Manual	Civil	1956		
SBMWD-A00303	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Chainlink Gate (South)	Access Gate	Manual	Civil	1956		
SBMWD-A00304	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	PRV	Valve	Pressure Redu	Mechanical	1956	6	DIN
SBMWD-A00305	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	PRV - Isolation Valve	Valve	Gate	Mechanical	1956	8	DIN
SBMWD-A00306	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	PRV - Piping Assembly	Piping		Mechanical	1956	8	DIN
SBMWD-A00307	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	CMU Wall	Wall	CMU	Structural	1956	12	LFT
SBMWD-A00308	Del Rosa	Del Rosa#1	Reservoir	Reservoir	Cylindrical Reservoir	Tank	Reservoir	Structural	1956	460000	GAL
SBMWD-A00309	Del Rosa	Del Rosa#1	Reservoir	Reservoir	Drain Isolation Valve	Valve	Gate	Mechanical	1956	8	DIN
SBMWD-A00310	Del Rosa	Del Rosa#1	Reservoir	Reservoir	Overflow Piping Assembly	Piping		Mechanical	1956	8	DIN
SBMWD-A00311	Del Rosa	Del Rosa#1	Reservoir	Reservoir	Level Transmitter	Transmitter	Level	I&C	1956		
SBMWD-A00312	Del Rosa	Del Rosa#1	Reservoir	Reservoir	Outlet Isolation Valve	Valve	Gate	Mechanical	1956	16	DIN
SBMWD-A00313	Del Rosa	Del Rosa#1	Reservoir	Reservoir	Outlet Piping Assembly	Piping		Mechanical	1956	16	DIN
SBMWD-A00314	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1994	11	LFT
SBMWD-A00315	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Electrical Panel	Control Panel		Electrical	1994		
SBMWD-A00316	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Cylindrical Reservoir	Tank	Reservoir	Structural	1957	190000	GAL
SBMWD-A00317	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Drain Isolation Valve	Valve	Butterfly	Mechanical	1994	8	DIN
SBMWD-A00318	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Inlet Isolation Valve	Valve	Butterfly	Mechanical	1994	6	DIN
SBMWD-A00319	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Inlet Piping Assembly	Piping		Mechanical	1994	6	DIN
SBMWD-A00320	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Outlet Piping Assembly (South-West of Res)	Piping		Mechanical	1994	12	DIN
SBMWD-A00321	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Overflow Piping Assembly	Piping		Mechanical	1994		
SBMWD-A00322	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Meter (In Vault South of Pumps)	Flowmeter		I&C	1994		
SBMWD-A00323	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Altitude Valve	Valve	Automated-Cc	Mechanical	1994	10	DIN
SBMWD-A00324	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Downstream Piping Assembly	Piping		Mechanical	1994	10	DIN
SBMWD-A00325	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Outlet Isolation Valve	Valve	Gate	Mechanical	1994	12	DIN
SBMWD-A00326	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Upstream Piping Assembly	Piping		Mechanical	1994	12	DIN
SBMWD-A00327	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Vault (South West of Res)	Non-Process Structure	Vault	Structural	1994	6.5	LFT
SBMWD-A00328	Ridgeview	Del Rosa#2	Ridgeview BPS (#2-3)	BPS	Booster#2 - Check Valve	Valve	Check	Mechanical	1994	6	DIN
SBMWD-A00329	Ridgeview	Del Rosa#2	Ridgeview BPS (#2-3)	BPS	Booster#2 - Isolation Valve	Valve	Butterfly	Mechanical	1994	6	DIN
SBMWD-A00330	Ridgeview	Del Rosa#2	Ridgeview BPS (#2-3)	BPS	Booster#2 - Piping Assembly	Piping		Mechanical	1994	6	DIN
SBMWD-A00331	Ridgeview	Del Rosa#2	Ridgeview BPS (#2-3)	BPS	Booster#3 - Check Valve	Valve	Check	Mechanical	1994	6	DIN
SBMWD-A00332	Ridgeview	Del Rosa#2	Ridgeview BPS (#2-3)	BPS	Booster#3 - Piping Assembly	Piping		Mechanical	1994	6	DIN
SBMWD-A00333	Ridgeview	Del Rosa#2	Ridgeview BPS (#2-3)	BPS	Pump Vault	Non-Process Structure	Vault	Structural	1994	5	LFT
SBMWD-A00334	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Chainlink Fence	Fencing	Chainlink	Civil	1983		
SBMWD-A00335	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Cylindrical Reservoir	Tank	Reservoir	Structural	1982	3000000	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00336	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Drain Isolation Valve	Valve	Gate	Mechanical	1983	8	DIN
SBMWD-A00337	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Drain Piping - Buried	Piping		Mechanical	1983	8	DIN
SBMWD-A00338	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Inlet/Outlet Isolation Valve	Valve	Butterfly	Mechanical	1983	16	DIN
SBMWD-A00339	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Inlet/Outlet Piping Assembly - Buried	Piping		Mechanical	1983	16	DIN
SBMWD-A00340	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Overflow Piping - Buried	Piping		Mechanical	1983	12	DIN
SBMWD-A00341	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Building South Side Electrical Panel	Power Panel		Electrical	1980		
SBMWD-A00342	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Building	Building		Structural	1980		
SBMWD-A00343	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#1	Pump	Vertical Turbin	Mechanical	1990	150	HP
SBMWD-A00344	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#1 Check Valve	Valve	Check	Mechanical	1990	12	DIN
SBMWD-A00345	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#1 Discharge Gate Valve	Valve	Gate	Mechanical	1990	12	DIN
SBMWD-A00346	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#1 Flowmeter	Flowmeter		I&C	1990	12	DIN
SBMWD-A00347	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#1 Piping Assembly	Piping		Mechanical	1990	12	DIN
SBMWD-A00348	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#1 Suction Gate Valve	Valve	Gate	Mechanical	1990	12	DIN
SBMWD-A00349	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#2	Pump	Vertical Turbin	Mechanical	1991	100	HP
SBMWD-A00350	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#2 Check Valve	Valve	Check	Mechanical	1990	12	DIN
SBMWD-A00351	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#2 Discharge Gate Valve	Valve	Gate	Mechanical	1990	12	DIN
SBMWD-A00352	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#2 Flowmeter	Flowmeter		I&C	1990	12	DIN
SBMWD-A00353	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#2 Piping Assembly	Piping		Mechanical	1991	12	DIN
SBMWD-A00354	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#2 Suction Gate Valve	Valve	Gate	Mechanical	1990	12	DIN
SBMWD-A00355	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#3	Pump	Vertical Turbin	Mechanical	2013	200	HP
SBMWD-A00356	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#3 Check Valve	Valve	Check	Mechanical	1990	12	DIN
SBMWD-A00357	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#3 Discharge Gate Valve	Valve	Gate	Mechanical	1990	12	DIN
SBMWD-A00358	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#3 Flowmeter	Flowmeter		I&C	1990	12	DIN
SBMWD-A00359	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#3 Piping Assembly	Piping		Mechanical	2013	12	DIN
SBMWD-A00360	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#3 Suction Gate Valve	Valve	Gate	Mechanical	1990	12	DIN
SBMWD-A00361	Sycamore	Devil Canyon#1	Well#1	Well	Check Valve	Valve	Check	Mechanical	1994	12	DIN
SBMWD-A00362	Sycamore	Devil Canyon#1	Well#1	Well	Piping Assembly	Piping		Mechanical	1994		
SBMWD-A00363	Sycamore	Devil Canyon#1	Well#1	Well	Well Casing	Process Structure	Well Casing	Structural	1927	24	DIN
SBMWD-A00364	Sycamore	Devil Canyon#1	Well#1	Well	Well Pump	Pump	Vertical Turbin	Mechanical	2009	12	DIN
SBMWD-A00365	College/Palm	Devil Canyon Rd	College Reservoir	Reservoir	Piping Assembly	Piping		Mechanical	1964		
SBMWD-A00366	College/Palm	Devil Canyon Rd	College Reservoir	Reservoir	Reservoir	Tank	Reservoir	Structural	1964	2500000	GAL
SBMWD-A00367	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	Booster Pump	Pump	Centrifugal	Mechanical	2010	6	DIN
SBMWD-A00368	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	Booster Pump#2	Pump	Centrifugal	Mechanical	2004	6	DIN
SBMWD-A00369	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	Piping Assembly	Piping		Mechanical	2004	6	DIN
SBMWD-A00370	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic R	Reservoir	Domestic Tank	Tank	Storage	Structural	2004	10000	GAL
SBMWD-A00371	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic R	Reservoir	Piping Assembly	Piping		Mechanical	2004	6	DIN
SBMWD-A00372	Devil Canyon	Devil Canyon Rd	Devil Canyon Reservoir	Reservoir	Overflow Box West Side of Building	Non-Process Structure	Vault	Structural	1984		
SBMWD-A00373	Devil Canyon	Devil Canyon Rd	Devil Canyon Reservoir	Reservoir	Piping Assembly	Piping		Mechanical	1932	16	DIN
SBMWD-A00374	Devil Canyon	Devil Canyon Rd	Devil Canyon Reservoir	Reservoir	Reservoir - Concrete with Aluminum Roof	Tank	Reservoir	Structural	1932	220000	GAL
SBMWD-A00375	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Flushline	Piping		Mechanical	1994		
SBMWD-A00376	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Piping Assembly	Piping		Mechanical	1994	8	DIN
SBMWD-A00377	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Stone Wall	Wall	Stone	Structural	1994		
SBMWD-A00378	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Air Release Valve	Valve	Air Release	Mechanical	1994	8	DIN
SBMWD-A00379	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Building	Building		Structural	1994		
SBMWD-A00380	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Electrical Panel	Power Panel		Electrical	1994	480	V
SBMWD-A00381	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Eye Wash Station	Safety Shower/Eyewash		Mechanical	1994		
SBMWD-A00382	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Piping Assembly	Piping		Mechanical	1930	8	DIN
SBMWD-A00383	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Well Casing	Process Structure	Well Casing	Structural	1930	26	DIN
SBMWD-A00384	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Well Pump	Pump	Vertical Turbin	Mechanical	2012	8	DIN
SBMWD-A00385	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#3	Well	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1973		
SBMWD-A00386	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#3	Well	Flowmeter - Digital	Flowmeter		I&C	1973	4	DIN
SBMWD-A00387	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#3	Well	Piping Assembly	Piping		Mechanical	1934	4	DIN
SBMWD-A00388	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#3	Well	Well Casing	Process Structure	Well Casing	Structural	1934	8	DIN
SBMWD-A00389	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#3	Well	Well Pump	Pump	Vertical Turbin	Mechanical	2013	4	DIN
SBMWD-A00390	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Fence	Fencing	Chainlink	Civil	1973		
SBMWD-A00391	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Flowmeter - Digital	Flowmeter		I&C	1973	4	DIN
SBMWD-A00392	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Piping Assembly	Piping		Mechanical	1973	4	DIN
SBMWD-A00393	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Well Pump	Pump	Vertical Turbin	Mechanical	1995	4	DIN
SBMWD-A00394	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#6	Well	Electrical Panel	Power Panel		Electrical	1994		
SBMWD-A00395	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#6	Well	Fence	Fencing	Chainlink	Civil	1994		
SBMWD-A00396	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#6	Well	Piping Assembly	Piping		Mechanical	1994	6	DIN
SBMWD-A00397	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#6	Well	Well Casing	Process Structure	Well Casing	Structural	1994	14	DIN
SBMWD-A00398	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#6	Well	Well Pump	Pump	Vertical Turbin	Mechanical	1994	6	DIN
SBMWD-A00399	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#7	Well	Electrical Panel	Power Panel		Electrical	1994		
SBMWD-A00400	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#7	Well	Fence	Fencing	Chainlink	Civil	1994		
SBMWD-A00401	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#7	Well	Piping Assembly	Piping		Mechanical	1994	6	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00402	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#7	Well	Well Pump - Exposed motor	Pump	Vertical Turbin	Mechanical	1994	6	DIN
SBMWD-A00403	Devore/Meyers	Devore	Reservoir	Reservoir	Piping Assembly	Piping		Mechanical	1987		
SBMWD-A00404	Devore/Meyers	Devore	Reservoir	Reservoir	Building	Building		Structural	1987		
SBMWD-A00405	Devore/Meyers	Devore	Reservoir	Reservoir	Cla Valve	Valve	Automated-Cc	Mechanical	1987	16	DIN
SBMWD-A00406	Devore/Meyers	Devore	Reservoir	Reservoir	Discharge Butterfly Valve	Valve	Butterfly	Mechanical	1987	16	DIN
SBMWD-A00407	Devore/Meyers	Devore	Reservoir	Reservoir	Hydrogenerator	Generator	Hydroelectric	Electrical	1987	125	HP
SBMWD-A00408	Devore/Meyers	Devore	Reservoir	Reservoir	In-Line Strainer (Outside of Building)	Strainer		Mechanical	1987	16	DIN
SBMWD-A00409	Devore/Meyers	Devore	Reservoir	Reservoir	Piping Assembly	Piping		Mechanical	1987	16	DIN
SBMWD-A00410	Devore/Meyers	Devore	Reservoir	Reservoir	Suction Butterfly Valve	Valve	Butterfly	Mechanical	1987	16	DIN
SBMWD-A00411	Devore/Meyers	Devore	Reservoir	Reservoir	Drain Isolation Valve - Buried	Valve	Gate	Mechanical	1982	8	DIN
SBMWD-A00412	Devore/Meyers	Devore	Reservoir	Reservoir	Inlet Isolation Valve (West)	Valve	Gate	Mechanical	1982	16	DIN
SBMWD-A00413	Devore/Meyers	Devore	Reservoir	Reservoir	Inlet Piping Assembly (West)	Piping		Mechanical	1982	16	DIN
SBMWD-A00414	Devore/Meyers	Devore	Reservoir	Reservoir	Outlet Isolation Valve (East)	Valve	Butterfly	Mechanical	1982	16	DIN
SBMWD-A00415	Devore/Meyers	Devore	Reservoir	Reservoir	12"" CLA Valve	Valve	Control	Mechanical	1982	12	DIN
SBMWD-A00416	Devore/Meyers	Devore	Reservoir	Reservoir	12"" Gate Valve	Valve	Gate	Mechanical	1982	12	DIN
SBMWD-A00417	Devore/Meyers	Devore	Reservoir	Reservoir	12"" BFV	Valve	Butterfly	Mechanical	1982	12	DIN
SBMWD-A00418	Devore/Meyers	Devore	Reservoir	Reservoir	8"" CLA Valve	Valve	Control	Mechanical	1982	8	DIN
SBMWD-A00419	Devore/Meyers	Devore	Reservoir	Reservoir	8"" BFV	Valve	Butterfly	Mechanical	1982	8	DIN
SBMWD-A00420	Devore/Meyers	Devore	Reservoir	Reservoir	8"" Gate Valve	Valve	Gate	Mechanical	1982	8	DIN
SBMWD-A00421	Devore/Meyers	Devore	Reservoir	Reservoir	Vault	Non-Process Structure	Vault	Structural	1982		
SBMWD-A00422	Devore/Meyers	Devore	Reservoir	Reservoir	Overflow Piping Assembly	Piping		Mechanical	1982	10	DIN
SBMWD-A00423	Devore/Meyers	Devore	Reservoir	Reservoir	Reservoir	Tank	Reservoir	Structural	1982	2000000	GAL
SBMWD-A00424	Devore/Meyers	Devore	Reservoir	Reservoir	Access Gate	Access Gate	Motorized	Civil	1982		
SBMWD-A00425	Devore/Meyers	Devore	Reservoir	Reservoir	Fence	Fencing	Chainlink	Civil	1982	700	LFT
SBMWD-A00426	Devore/Meyers	Devore	Reservoir	Reservoir	Reservoir Inlet Vault Box	Non-Process Structure	Vault	Structural	1982		
SBMWD-A00427	Devore/Meyers	Devore	Reservoir	Reservoir	Retaining Wall	Wall	CMU	Structural	1982		
SBMWD-A00428	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster House	Building		Structural	1949	376	SF
SBMWD-A00429	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster#1 - Check Valve	Valve	Check	Mechanical	1949	8	DIN
SBMWD-A00430	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster#1 - Isolation Valve	Valve	Gate	Mechanical	1949	8	DIN
SBMWD-A00431	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster#1 - Piping Assembly	Piping		Mechanical	1949	8	DIN
SBMWD-A00432	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster#1 - Pump	Pump	Centrifugal	Mechanical	1949	250	TDHFT
SBMWD-A00433	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster#2 - Check Valve	Valve	Check	Mechanical	1949	8	DIN
SBMWD-A00434	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster#2 - Isolation Valve	Valve	Gate	Mechanical	1949	8	DIN
SBMWD-A00435	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster#2 - Piping Assembly	Piping		Mechanical	1949	8	DIN
SBMWD-A00436	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster#2 - Pump	Pump	Centrifugal	Mechanical	1949	270	TDHFT
SBMWD-A00437	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster#3 - Check Valve	Valve	Check	Mechanical	1949	8	DIN
SBMWD-A00438	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster#3 - Isolation Valve	Valve	Gate	Mechanical	1949	8	DIN
SBMWD-A00439	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster#3 - Piping Assembly	Piping		Mechanical	1949	8	DIN
SBMWD-A00440	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster#3 - Pump	Pump	Centrifugal	Mechanical	1949	260	TDHFT
SBMWD-A00441	Upper	Electric Dr	Reservoir	Reservoir	Iron Fence	Fencing	Iron	Civil	1949	1600	LFT
SBMWD-A00442	Upper	Electric Dr	Reservoir	Reservoir	South Side Iron Access Gate (Manual)	Access Gate	Rolling	Civil	1949		
SBMWD-A00443	Upper	Electric Dr	Reservoir	Reservoir	Rectangular Reservoir (Partially Buried) - Rectangular	Tank	Reservoir	Structural	1937	8000000	GAL
SBMWD-A00444	Upper	Electric Dr	Reservoir	Reservoir	Vault (North-East of Booster House)	Non-Process Structure	Vault	Structural	1949	6	LFT
SBMWD-A00445	Lower	Encanto	BPS (#1-3)	BPS	Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	2005	2	DIN
SBMWD-A00446	Lower	Encanto	BPS (#1-3)	BPS	Check Valve	Valve	Check	Mechanical	2005	12	DIN
SBMWD-A00447	Lower	Encanto	BPS (#1-3)	BPS	Flowmeter	Flowmeter		I&C	2005	12	DIN
SBMWD-A00448	Lower	Encanto	BPS (#1-3)	BPS	Piping Assembly	Piping		Mechanical	2005	12	DIN
SBMWD-A00449	Lower	Encanto	BPS (#1-3)	BPS	Pump	Pump	Vertical Turbin	Mechanical	2005	154	TDHFT
SBMWD-A00450	Lower	Encanto	BPS (#1-3)	BPS	Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	2005	12	DIN
SBMWD-A00451	Lower	Encanto	BPS (#1-3)	BPS	Check Valve	Valve	Check	Mechanical	1996	12	DIN
SBMWD-A00452	Lower	Encanto	BPS (#1-3)	BPS	Flowmeter	Flowmeter		I&C	2005	12	DIN
SBMWD-A00453	Lower	Encanto	BPS (#1-3)	BPS	Piping Assembly	Piping		Mechanical	2005	12	DIN
SBMWD-A00454	Lower	Encanto	BPS (#1-3)	BPS	Pump	Pump	Vertical Turbin	Mechanical	2005	152	TDHFT
SBMWD-A00455	Lower	Encanto	BPS (#1-3)	BPS	Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	2005	2	DIN
SBMWD-A00456	Lower	Encanto	BPS (#1-3)	BPS	Check Valve	Valve	Check	Mechanical	2005	12	DIN
SBMWD-A00457	Lower	Encanto	BPS (#1-3)	BPS	Flowmeter	Flowmeter		I&C	2005	12	DIN
SBMWD-A00458	Lower	Encanto	BPS (#1-3)	BPS	Piping Assembly	Piping		Mechanical	2005	12	DIN
SBMWD-A00459	Lower	Encanto	BPS (#1-3)	BPS	Pump	Pump	Vertical Turbin	Mechanical	2005	154	TDHFT
SBMWD-A00460	Lower	Encanto	BPS (#1-3)	BPS	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	2005	1250	SF
SBMWD-A00461	Lower	Encanto	BPS (#1-3)	BPS	Main Piping Assembly	Piping		Mechanical	2005	24	DIN
SBMWD-A00462	Lower	Encanto	BPS (#1-3)	BPS	Access Gate	Access Gate	Rolling	Civil	2005		
SBMWD-A00463	Lower	Encanto	BPS (#1-3)	BPS	Perimeter Wall	Wall	CMU	Structural	2005	210	LFT
SBMWD-A00464	Lower	EPA	Well#001	Well	Air Release Valve	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A00465	Lower	EPA	Well#001	Well	Air Vac Assembly	Piping		Mechanical	1997	2	DIN
SBMWD-A00466	Lower	EPA	Well#001	Well	Check Valve	Valve	Check	Mechanical	1997	12	DIN
SBMWD-A00467	Lower	EPA	Well#001	Well	Piping Assembly	Piping		Mechanical	1997	12	DIN
SBMWD-A00468	Lower	EPA	Well#001	Well	Telemetry Post	SCADA		I&C	1997		

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00469	Lower	EPA	Well#001	Well	Well Casing	Process Structure	Well Casing	Structural	1997	16	DIN
SBMWD-A00470	Lower	EPA	Well#001	Well	Well Pump	Pump	Submersible	Mechanical	2009	507	TDHFT
SBMWD-A00471	Lower	EPA	Well#108	Well	Air Vac Assembly	Piping		Mechanical	2003	1	DIN
SBMWD-A00472	Lower	EPA	Well#108	Well	Air Vac Assembly	Piping		Mechanical	2003	2	DIN
SBMWD-A00473	Lower	EPA	Well#108	Well	Check Valve	Valve	Check	Mechanical	2003	12	DIN
SBMWD-A00474	Lower	EPA	Well#108	Well	Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	2003		
SBMWD-A00475	Lower	EPA	Well#108	Well	Control Box	Control Panel		Electrical	2003		
SBMWD-A00476	Lower	EPA	Well#108	Well	Flowmeter	Flowmeter	Magnetic	I&C	2003	12	DIN
SBMWD-A00477	Lower	EPA	Well#108	Well	Piping Assembly	Piping		Mechanical	2003	12	DIN
SBMWD-A00478	Lower	EPA	Well#108	Well	Well Casing	Process Structure	Well Casing	Structural	2003	20	DIN
SBMWD-A00479	Lower	EPA	Well#108	Well	Well Pump	Pump	Submersible	Mechanical	2005	520	TDHFT
SBMWD-A00480	Lower	EPA	Well#108 S	Well	Air Vac Assembly	Piping		Mechanical	2003	2	DIN
SBMWD-A00481	Lower	EPA	Well#108 S	Well	Air Vac Assembly	Piping		Mechanical	2003	2	DIN
SBMWD-A00482	Lower	EPA	Well#108 S	Well	Check Valve	Valve	Check	Mechanical	2003	8	DIN
SBMWD-A00483	Lower	EPA	Well#108 S	Well	Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	2003		
SBMWD-A00484	Lower	EPA	Well#108 S	Well	Control Box	Control Panel		Electrical	2003		
SBMWD-A00485	Lower	EPA	Well#108 S	Well	Flowmeter	Flowmeter	Magnetic	I&C	2003	8	DIN
SBMWD-A00486	Lower	EPA	Well#108 S	Well	Piping Assembly	Piping		Mechanical	2003	8	DIN
SBMWD-A00487	Lower	EPA	Well#108 S	Well	Well Casing	Process Structure	Well Casing	Structural	2003	16	DIN
SBMWD-A00488	Lower	EPA	Well#108 S	Well	Well Pump	Pump	Submersible	Mechanical	2007	495	TDHFT
SBMWD-A00489	Lower	EPA	Well#109	Well	Air Vac Assembly	Piping		Mechanical	2003	1	DIN
SBMWD-A00490	Lower	EPA	Well#109	Well	Air Vac Assembly	Piping		Mechanical	2003	2	DIN
SBMWD-A00491	Lower	EPA	Well#109	Well	Check Valve	Valve	Check	Mechanical	2003	12	DIN
SBMWD-A00492	Lower	EPA	Well#109	Well	Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	2003		
SBMWD-A00493	Lower	EPA	Well#109	Well	Control Box	Control Panel		Electrical	2003		
SBMWD-A00494	Lower	EPA	Well#109	Well	Flowmeter	Flowmeter	Magnetic	I&C	2003	12	DIN
SBMWD-A00495	Lower	EPA	Well#109	Well	Piping Assembly	Piping		Mechanical	2003	12	DIN
SBMWD-A00496	Lower	EPA	Well#109	Well	Pressure Transducer at 45° Bend	Pressure Transducer		I&C	2003		
SBMWD-A00497	Lower	EPA	Well#109	Well	Well Casing	Process Structure	Well Casing	Structural	2003	20	DIN
SBMWD-A00498	Lower	EPA	Well#109	Well	Well Pump	Pump	Submersible	Mechanical	2013	633	TDHFT
SBMWD-A00499	Lower	EPA	Well#110	Well	Air Vac Assembly	Piping		Mechanical	2003	1	DIN
SBMWD-A00500	Lower	EPA	Well#110	Well	Air Vac Assembly	Piping		Mechanical	2003	2	DIN
SBMWD-A00501	Lower	EPA	Well#110	Well	Check Valve	Valve	Check	Mechanical	2003	12	DIN
SBMWD-A00502	Lower	EPA	Well#110	Well	Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	2003		
SBMWD-A00503	Lower	EPA	Well#110	Well	Control Box	Control Panel		Electrical	2003		
SBMWD-A00504	Lower	EPA	Well#110	Well	Flowmeter	Flowmeter	Magnetic	I&C	2003	12	DIN
SBMWD-A00505	Lower	EPA	Well#110	Well	Piping Assembly	Piping		Mechanical	2003	12	DIN
SBMWD-A00506	Lower	EPA	Well#110	Well	Pressure Transducer at 45° Bend	Pressure Transducer		I&C	2003		
SBMWD-A00507	Lower	EPA	Well#110	Well	Well Casing	Process Structure	Well Casing	Structural	2003	20	DIN
SBMWD-A00508	Lower	EPA	Well#110	Well	Well Pump	Pump	Submersible	Mechanical	2013	540	TDHFT
SBMWD-A00509	Lower	EPA	Well#111	Well	Air Vac Assembly	Piping		Mechanical	2003	1	DIN
SBMWD-A00510	Lower	EPA	Well#111	Well	Air Vac Assembly	Piping		Mechanical	2003	2	DIN
SBMWD-A00511	Lower	EPA	Well#111	Well	Check Valve	Valve	Check	Mechanical	2003	12	DIN
SBMWD-A00512	Lower	EPA	Well#111	Well	Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	2003		
SBMWD-A00513	Lower	EPA	Well#111	Well	Flowmeter	Flowmeter	Magnetic	I&C	2003	12	DIN
SBMWD-A00514	Lower	EPA	Well#111	Well	Piping Assembly	Piping		Mechanical	2003	12	DIN
SBMWD-A00515	Lower	EPA	Well#111	Well	Pressure Transducer at 45° Bend	Pressure Transducer		I&C	2003		
SBMWD-A00516	Lower	EPA	Well#111	Well	Well Casing	Process Structure	Well Casing	Structural	2003	20	DIN
SBMWD-A00517	Lower	EPA	Well#111	Well	Well Pump	Pump	Submersible	Mechanical	2013	540	TDHFT
SBMWD-A00518	Lower	EPA	Well#112	Well	Air Vac Assembly	Piping		Mechanical	2003	1	DIN
SBMWD-A00519	Lower	EPA	Well#112	Well	Air Vac Assembly	Piping		Mechanical	2003	2	DIN
SBMWD-A00520	Lower	EPA	Well#112	Well	Check Valve	Valve	Check	Mechanical	2003	12	DIN
SBMWD-A00521	Lower	EPA	Well#112	Well	Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	2003		
SBMWD-A00522	Lower	EPA	Well#112	Well	Control Box	Control Panel		Electrical	2003		
SBMWD-A00523	Lower	EPA	Well#112	Well	Flowmeter	Flowmeter	Magnetic	I&C	2003	12	DIN
SBMWD-A00524	Lower	EPA	Well#112	Well	Piping Assembly	Piping		Mechanical	2003	12	DIN
SBMWD-A00525	Lower	EPA	Well#112	Well	Pressure Transducer at 45° Bend	Pressure Transducer		I&C	2003		
SBMWD-A00526	Lower	EPA	Well#112	Well	Well Casing	Process Structure	Well Casing	Structural	2003	20	DIN
SBMWD-A00527	Lower	EPA	Well#112	Well	Well Pump	Pump	Submersible	Mechanical	2011	587	TDHFT
SBMWD-A00528	Lower	EPA	Well#002	Well	Air Vac Assembly	Piping		Mechanical	1996	2	DIN
SBMWD-A00529	Lower	EPA	Well#002	Well	Air Vac Assembly	Piping		Mechanical	1996	2	DIN
SBMWD-A00530	Lower	EPA	Well#002	Well	Check Valve	Valve	Check	Mechanical	1996	12	DIN
SBMWD-A00531	Lower	EPA	Well#002	Well	Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	1996		
SBMWD-A00532	Lower	EPA	Well#002	Well	Control Box	Control Panel		Electrical	1996		
SBMWD-A00533	Lower	EPA	Well#002	Well	Flowmeter	Flowmeter	Magnetic	I&C	1996	12	DIN
SBMWD-A00534	Lower	EPA	Well#002	Well	Piping Assembly	Piping		Mechanical	1996	12	DIN
SBMWD-A00535	Lower	EPA	Well#002	Well	Pressure Transducer at 45° Bend	Pressure Transducer		I&C	1996		

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00536	Lower	EPA	Well#002	Well	Well Casing	Process Structure	Well Casing	Structural	1996	16	DIN
SBMWD-A00537	Lower	EPA	Well#002	Well	Well Pump	Pump	Submersible	Mechanical	1998	449	TDHFT
SBMWD-A00538	Lower	EPA	Well#003	Well	Air Vac Assembly	Piping		Mechanical	1996	2	DIN
SBMWD-A00539	Lower	EPA	Well#003	Well	Air Vac Assembly	Piping		Mechanical	1996	2	DIN
SBMWD-A00540	Lower	EPA	Well#003	Well	Check Valve	Valve	Check	Mechanical	1996	12	DIN
SBMWD-A00541	Lower	EPA	Well#003	Well	Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	1996		
SBMWD-A00542	Lower	EPA	Well#003	Well	Control Box	Control Panel		Electrical	1996		
SBMWD-A00543	Lower	EPA	Well#003	Well	Flowmeter	Flowmeter	Magnetic	I&C	1996	12	DIN
SBMWD-A00544	Lower	EPA	Well#003	Well	Piping Assembly	Piping		Mechanical	1996	12	DIN
SBMWD-A00545	Lower	EPA	Well#003	Well	Pressure Transducer at 45° Bend	Pressure Transducer		I&C	1996		
SBMWD-A00546	Lower	EPA	Well#003	Well	Well Casing	Process Structure	Well Casing	Structural	1996	16	DIN
SBMWD-A00547	Lower	EPA	Well#003	Well	Well Pump	Pump	Submersible	Mechanical	2005	544	TDHFT
SBMWD-A00548	Lower	EPA	Well#004	Well	Air Vac Assembly	Piping		Mechanical	1996	2	DIN
SBMWD-A00549	Lower	EPA	Well#004	Well	Air Vac Assembly	Piping		Mechanical	1996	2	DIN
SBMWD-A00550	Lower	EPA	Well#004	Well	Check Valve	Valve	Check	Mechanical	1996	12	DIN
SBMWD-A00551	Lower	EPA	Well#004	Well	Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	1996		
SBMWD-A00552	Lower	EPA	Well#004	Well	Control Box	Control Panel		Electrical	1996		
SBMWD-A00553	Lower	EPA	Well#004	Well	Flowmeter	Flowmeter	Magnetic	I&C	1996	12	DIN
SBMWD-A00554	Lower	EPA	Well#004	Well	Piping Assembly	Piping		Mechanical	1996	12	DIN
SBMWD-A00555	Lower	EPA	Well#004	Well	Pressure Transducer at 45° Bend	Pressure Transducer		I&C	1996		
SBMWD-A00556	Lower	EPA	Well#004	Well	Well Casing	Process Structure	Well Casing	Structural	1996	16	DIN
SBMWD-A00557	Lower	EPA	Well#004	Well	Well Pump	Pump	Submersible	Mechanical	1998	449	TDHFT
SBMWD-A00558	Lower	EPA	Well#005	Well	Air Vac Assembly	Piping		Mechanical	1996	2	DIN
SBMWD-A00559	Lower	EPA	Well#005	Well	Air Vac Assembly	Piping		Mechanical	1996	2	DIN
SBMWD-A00560	Lower	EPA	Well#005	Well	Check Valve	Valve	Check	Mechanical	1996	12	DIN
SBMWD-A00561	Lower	EPA	Well#005	Well	Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	1996		
SBMWD-A00562	Lower	EPA	Well#005	Well	Control Box	Control Panel		Electrical	1996		
SBMWD-A00563	Lower	EPA	Well#005	Well	Flowmeter	Flowmeter	Magnetic	I&C	1996	12	DIN
SBMWD-A00564	Lower	EPA	Well#005	Well	Piping Assembly	Piping		Mechanical	1996	12	DIN
SBMWD-A00565	Lower	EPA	Well#005	Well	Pressure Transducer at 45° Bend	Pressure Transducer		I&C	1996		
SBMWD-A00566	Lower	EPA	Well#005	Well	Well Casing	Process Structure	Well Casing	Structural	1996	16	DIN
SBMWD-A00567	Lower	EPA	Well#005	Well	Well Pump	Pump	Submersible	Mechanical	2013	403	TDHFT
SBMWD-A00568	Upper	EPA	Well#006	Well	Well Casing	Process Structure	Well Casing	Structural	1996	16	DIN
SBMWD-A00569	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Access Gate	Access Gate	Motorized	Civil	1990		
SBMWD-A00570	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Perimeter Wall	Wall	CMU	Structural	1990	180	LFT
SBMWD-A00571	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1990	530	SF
SBMWD-A00572	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	MCC	MCC		Electrical	1990		
SBMWD-A00573	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	1990	2	DIN
SBMWD-A00574	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Check Valve	Valve	Check	Mechanical	1990	12	DIN
SBMWD-A00575	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Flowmeter	Flowmeter		I&C	1990	12	DIN
SBMWD-A00576	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Isolation Valve	Valve	Butterfly	Mechanical	1990	12	DIN
SBMWD-A00577	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Piping Assembly	Piping		Mechanical	1990	12	DIN
SBMWD-A00578	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Pump	Pump	Vertical Turbin	Mechanical	1990	76	TDHFT
SBMWD-A00579	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	1990	2	DIN
SBMWD-A00580	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Check Valve	Valve	Check	Mechanical	1990	12	DIN
SBMWD-A00581	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Flowmeter	Flowmeter		I&C	1990	12	DIN
SBMWD-A00582	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Isolation Valve	Valve	Butterfly	Mechanical	1990	12	DIN
SBMWD-A00583	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Piping Assembly	Piping		Mechanical	1990	12	DIN
SBMWD-A00584	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Pump	Pump	Vertical Turbin	Mechanical	1990	95	TDHFT
SBMWD-A00585	Lower	Gilbert St	GAC System	Wellhead Treatment	Drain Piping	Piping		Mechanical	2014		
SBMWD-A00586	Lower	Gilbert St	GAC System	Wellhead Treatment	Inlet Piping	Piping		Mechanical	2014		
SBMWD-A00587	Lower	Gilbert St	GAC System	Wellhead Treatment	Ion Exchange Vessel	Vessel	Ion Exchange	Structural	2014	12	DFT
SBMWD-A00588	Lower	Gilbert St	GAC System	Wellhead Treatment	Outlet Piping	Piping		Mechanical	2014		
SBMWD-A00589	Lower	Gilbert St	GAC System	Wellhead Treatment	Drain Piping	Piping		Mechanical	2014		
SBMWD-A00590	Lower	Gilbert St	GAC System	Wellhead Treatment	Inlet Piping	Piping		Mechanical	2014		
SBMWD-A00591	Lower	Gilbert St	GAC System	Wellhead Treatment	Ion Exchange Vessel	Vessel	Ion Exchange	Structural	2014		
SBMWD-A00592	Lower	Gilbert St	GAC System	Wellhead Treatment	Outlet Piping	Piping		Mechanical	2014		
SBMWD-A00593	Lower	Gilbert St	GAC System	Wellhead Treatment	Down Stream Isolation Valve	Valve	Butterfly	Mechanical	2014	10	DIN
SBMWD-A00594	Lower	Gilbert St	GAC System	Wellhead Treatment	Particulate Filter	Tank	Filter	Structural	2014		
SBMWD-A00595	Lower	Gilbert St	GAC System	Wellhead Treatment	Piping Assembly	Piping		Mechanical	2014	10	DIN
SBMWD-A00596	Lower	Gilbert St	GAC System	Wellhead Treatment	Up Stream Isolation Valve	Valve	Butterfly	Mechanical	2014	10	DIN
SBMWD-A00597	Lower	Gilbert St	GAC System	Wellhead Treatment	Down Stream Isolation Valve	Valve	Butterfly	Mechanical	2014	10	DIN
SBMWD-A00598	Lower	Gilbert St	GAC System	Wellhead Treatment	Particulate Filter	Tank	Filter	Structural	2014		
SBMWD-A00599	Lower	Gilbert St	GAC System	Wellhead Treatment	Piping Assembly	Piping		Mechanical	2014	10	DIN
SBMWD-A00600	Lower	Gilbert St	GAC System	Wellhead Treatment	Up Stream Isolation Valve	Valve	Butterfly	Mechanical	2014	10	DIN
SBMWD-A00601	Lower	Gilbert St	GAC System	Wellhead Treatment	Back Flow Preventor Distribution - 2 QTY	Valve	Backflow Prev	Mechanical	2014	10	DIN
SBMWD-A00602	Lower	Gilbert St	GAC System	Wellhead Treatment	Back Flow Preventor Reservoir	Valve	Backflow Prev	Mechanical	2014	10	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00603	Lower	Gilbert St	GAC System	Wellhead Treatment	Basket Strainer Down Stream Isolation Valve	Valve	Butterfly	Mechanical	2014	12	DIN
SBMWD-A00604	Lower	Gilbert St	GAC System	Wellhead Treatment	Basket Strainer Up Stream Isolation Valve	Valve	Butterfly	Mechanical	2014	12	DIN
SBMWD-A00605	Lower	Gilbert St	GAC System	Wellhead Treatment	Chlorine Building	Building		Structural	2014	53	SF
SBMWD-A00606	Lower	Gilbert St	GAC System	Wellhead Treatment	Distribution Check Valve	Valve	Check	Mechanical	2014	12	DIN
SBMWD-A00607	Lower	Gilbert St	GAC System	Wellhead Treatment	Inlet Piping Assembly	Piping		Mechanical	2014	12	DIN
SBMWD-A00608	Lower	Gilbert St	GAC System	Wellhead Treatment	Inlet Piping Flowmeter	Flowmeter	Propeller	I&C	2014	12	DIN
SBMWD-A00609	Lower	Gilbert St	GAC System	Wellhead Treatment	Ion Exchange Inlet Piping Assembly	Piping		Mechanical	2014	12	DIN
SBMWD-A00610	Lower	Gilbert St	GAC System	Wellhead Treatment	Reservoir Piping Assembly	Piping		Mechanical	2014	12	DIN
SBMWD-A00611	Lower	Gilbert St	GAC System	Wellhead Treatment	Treatment To Distribution Basket Strainer	Strainer		Mechanical	2014	12	DIN
SBMWD-A00612	Lower	Gilbert St	GAC System	Wellhead Treatment	Treatment To Distribution Check Valve	Valve	Check	Mechanical	2014	12	DIN
SBMWD-A00613	Lower	Gilbert St	Reservoir	Reservoir	Rectangular Reservoir	Tank	Reservoir	Structural	2014	108000	GAL
SBMWD-A00614	Lower	Gilbert St	Reservoir	Reservoir	Reservoir Building	Building		Structural	2014	1900	SF
SBMWD-A00615	Lower	Gilbert St	Well	Well	Check Valve	Valve	Check	Mechanical	1952	12	DIN
SBMWD-A00616	Lower	Gilbert St	Well	Well	Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	1952		
SBMWD-A00617	Lower	Gilbert St	Well	Well	Control Box	Control Panel		Electrical	1952		
SBMWD-A00618	Lower	Gilbert St	Well	Well	Piping Assembly	Piping		Mechanical	1952	12	DIN
SBMWD-A00619	Lower	Gilbert St	Well	Well	Well Casing	Process Structure	Well Casing	Structural	1952	20	DIN
SBMWD-A00620	Lower	Gilbert St	Well	Well	Well Isolation Valve To Distribution	Valve	Butterfly	Mechanical	2014	12	DIN
SBMWD-A00621	Lower	Gilbert St	Well	Well	Well Isolation Valve To Treatment	Valve	Butterfly	Mechanical	2014	12	DIN
SBMWD-A00622	Lower	Gilbert St	Well	Well	Well Pump	Pump	Vertical Turbin	Mechanical	2013	435	TDHFT
SBMWD-A00623	Upper	Highland Ave	Mt Vernon Water Compa	Well	Air Vac Assembly	Piping		Mechanical	1928	1	DIN
SBMWD-A00624	Upper	Highland Ave	Mt Vernon Water Compa	Well	Air Vac Assembly	Piping		Mechanical	1928	2	DIN
SBMWD-A00625	Upper	Highland Ave	Mt Vernon Water Compa	Well	Check Valve	Valve	Check	Mechanical	1928	12	DIN
SBMWD-A00626	Upper	Highland Ave	Mt Vernon Water Compa	Well	Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	1928		
SBMWD-A00627	Upper	Highland Ave	Mt Vernon Water Compa	Well	Flowmeter	Flowmeter	Magnetic	I&C	1928	12	DIN
SBMWD-A00628	Upper	Highland Ave	Mt Vernon Water Compa	Well	Piping Assembly	Piping		Mechanical	1928	12	DIN
SBMWD-A00629	Mountain	Hill Dr	BPS (#1-2)	BPS	Booster Pump	Pump	Submersible	Mechanical	1996	70	TDHFT
SBMWD-A00630	Mountain	Hill Dr	BPS (#1-2)	BPS	Check Valve	Valve	Check	Mechanical	1996	8	DIN
SBMWD-A00631	Mountain	Hill Dr	BPS (#1-2)	BPS	Piping Assembly	Piping		Mechanical	1996	8	DIN
SBMWD-A00632	Mountain	Hill Dr	BPS (#1-2)	BPS	Vault	Non-Process Structure	Vault	Structural	1996	6	LFT
SBMWD-A00633	Mountain	Hill Dr	BPS (#1-2)	BPS	Booster Pump	Pump	Submersible	Mechanical	1996	70	TDHFT
SBMWD-A00634	Mountain	Hill Dr	BPS (#1-2)	BPS	Check Valve	Valve	Check	Mechanical	1996	8	DIN
SBMWD-A00635	Mountain	Hill Dr	BPS (#1-2)	BPS	Isolation Valve	Valve	Gate	Mechanical	1996	8	DIN
SBMWD-A00636	Mountain	Hill Dr	BPS (#1-2)	BPS	Piping Assembly	Piping		Mechanical	1996	8	DIN
SBMWD-A00637	Mountain	Hill Dr	BPS (#1-2)	BPS	Vault	Non-Process Structure	Vault	Structural	1996	6	LFT
SBMWD-A00638	Upper	Lynwood Dr	BPS	BPS	Building	Building		Structural	1955	20	LFT
SBMWD-A00639	Upper	Lynwood Dr	BPS	BPS	Booster Pump	Pump	Centrifugal	Mechanical	1994	210	TDHFT
SBMWD-A00640	Upper	Lynwood Dr	BPS	BPS	Check Valve	Valve	Check	Mechanical	1955	12	DIN
SBMWD-A00641	Upper	Lynwood Dr	BPS	BPS	Isolation Valve	Valve	Gate	Mechanical	1955	12	DIN
SBMWD-A00642	Upper	Lynwood Dr	BPS	BPS	Piping Assembly	Piping	Above Ground	Mechanical	1955	10	LFT
SBMWD-A00643	Upper	Lynwood Dr	Reservoir	Reservoir (Forebay)	Cylindrical Reservoir	Tank	Reservoir	Structural	1955	233000	GAL
SBMWD-A00644	Upper	Lynwood Dr	Reservoir	Reservoir (Forebay)	Reservoir - Outlet Piping Assembly	Piping	Above Ground	Mechanical	1955	12	DIN
SBMWD-A00645	Upper	Lynwood Dr	Well	Well	Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	1955	2	DIN
SBMWD-A00646	Upper	Lynwood Dr	Well	Well	Check Valve	Valve	Check	Mechanical	1955	12	DIN
SBMWD-A00647	Upper	Lynwood Dr	Well	Well	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1955	14.7	LFT
SBMWD-A00648	Upper	Lynwood Dr	Well	Well	Electrical Control Box	Control Panel		Electrical	1955		
SBMWD-A00649	Upper	Lynwood Dr	Well	Well	Piping Assembly	Piping	Above Ground	Mechanical	1955	10	LFT
SBMWD-A00650	Upper	Lynwood Dr	Well	Well	Well Casing	Process Structure	Well Casing	Structural	1954	20	DIN
SBMWD-A00651	Upper	Lynwood Dr	Well	Well	Well Pump	Pump	Submersible	Mechanical	2012	316	TDHFT
SBMWD-A00652	Lower	Lytle Creek	Common	Other	Chlorine House	Building		Structural	1957	300	SF
SBMWD-A00653	Terrace	Lytle Creek	BPS	BPS	Motor starter	Motor starter		Electrical	1957		
SBMWD-A00654	Terrace	Lytle Creek	BPS	BPS	Piping Assembly	Piping		Mechanical	1957	12	DIN
SBMWD-A00655	Terrace	Lytle Creek	BPS	BPS	Pump#1 Motor	Motor		Electrical	1957		
SBMWD-A00656	Terrace	Lytle Creek	BPS	BPS	Pump#1	Pump	Vertical Turbin	Mechanical	1957		
SBMWD-A00657	Terrace	Lytle Creek	BPS	BPS	Motor starter	Motor starter		Electrical	1957		
SBMWD-A00658	Terrace	Lytle Creek	BPS	BPS	Piping Assembly	Piping		Mechanical	1957	12	DIN
SBMWD-A00659	Terrace	Lytle Creek	BPS	BPS	Pump#2 Motor	Motor		Electrical	1957		
SBMWD-A00660	Terrace	Lytle Creek	BPS	BPS	Pump Discharge Valve (Buried)	Valve	Gate	Mechanical	1957	10	DIN
SBMWD-A00661	Terrace	Lytle Creek	BPS	BPS	Pump#2	Pump	Vertical Turbin	Mechanical	1957		
SBMWD-A00662	Terrace	Lytle Creek	BPS	BPS	Motor starter	Motor starter		Electrical	1957		
SBMWD-A00663	Terrace	Lytle Creek	BPS	BPS	Piping Assembly	Piping		Mechanical	1957	12	DIN
SBMWD-A00664	Terrace	Lytle Creek	BPS	BPS	Pump#3 Motor	Motor		Electrical	1952		
SBMWD-A00665	Terrace	Lytle Creek	BPS	BPS	Pump Discharge Valve (Buried)	Valve	Gate	Mechanical	1957	10	DIN
SBMWD-A00666	Terrace	Lytle Creek	BPS	BPS	Pump#3	Pump	Vertical Turbin	Mechanical	1957		
SBMWD-A00667	Terrace	Lytle Creek	BPS	BPS	Motor starter	Motor starter		Electrical	1957		
SBMWD-A00668	Terrace	Lytle Creek	BPS	BPS	Piping Assembly	Piping		Mechanical	1957	12	DIN
SBMWD-A00669	Terrace	Lytle Creek	BPS	BPS	Pump#4 Motor	Motor		Electrical	1957		

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00670	Terrace	Lytle Creek	BPS	BPS	Pump#4	Pump	Vertical Turbin	Mechanical	1957		
SBMWD-A00671	Lower	Lytle Creek	Reservoir#2	Reservoir	Concrete Pad (South-East Corner of Reservoir#2)	Non-Process Structure	Concrete Pad	Structural	1950	30	SF
SBMWD-A00672	Lower	Lytle Creek	Reservoir#1	Reservoir	Reservoir#1	Tank	Reservoir	Structural	1903	3500000	GAL
SBMWD-A00673	Lower	Lytle Creek	Reservoir#2	Reservoir	Reservoir#2 - 7.5 Mg Rectangular Reservoir (Buried)	Tank	Reservoir	Structural	1957	7500000	GAL
SBMWD-A00674	Lower	Lytle Creek	Common	Reservoir	Gate (South of Chlorine House)	Access Gate	Manual	Civil	1957		
SBMWD-A00675	Lower	Lytle Creek	Well#2	Well	Electrical Vault (Well#1)	Non-Process Structure	Vault	Structural	1950		
SBMWD-A00676	Lower	Lytle Creek	Common	Reservoir	Water Vault (Midway Between Well#1 and Reservoir#1)	Non-Process Structure	Vault	Structural	1950		
SBMWD-A00677	Lower	Lytle Creek	Common	Reservoir	Water Vault (South-East of Intertie)	Non-Process Structure	Vault	Structural	1950		
SBMWD-A00678	Lower	Lytle Creek	Intertie - West Valley Wa	Intertie	Inlet Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1957	12	DIN
SBMWD-A00679	Lower	Lytle Creek	Intertie - West Valley Wa	Intertie	Piping Assembly	Piping	Above Ground	Mechanical	1957	12	DIN
SBMWD-A00680	Lower	Lytle Creek	Common	Other	Water Vault	Non-Process Structure	Vault	Structural	1957		
SBMWD-A00681	Lower	Lytle Creek	Well#2	Well	Piping Assembly	Piping		Mechanical	1957	12	DIN
SBMWD-A00682	Lower	Lytle Creek	Well#2	Well	Pump	Pump	Vertical Turbin	Mechanical	2007	700	GPM
SBMWD-A00683	Lower	Lytle Creek	Well#2	Well	Well Casing	Process Structure	Well Casing	Structural	1988	20	DIN
SBMWD-A00684	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	AC Unit	AC Unit		HVAC	2010		
SBMWD-A00685	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	2010	1	DIN
SBMWD-A00686	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	2010	1	DIN
SBMWD-A00687	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	2010	1	DIN
SBMWD-A00688	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	2010	1	DIN
SBMWD-A00689	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	2010	1	DIN
SBMWD-A00690	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Booster Pump	Pump	Vertical Turbin	Mechanical	2010	207	TDHFT
SBMWD-A00691	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Booster Pump	Pump	Vertical Turbin	Mechanical	2010	207	TDHFT
SBMWD-A00692	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Booster Pump	Pump	Vertical Turbin	Mechanical	2010	207	TDHFT
SBMWD-A00693	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Booster Pump	Pump	Vertical Turbin	Mechanical	2010	207	TDHFT
SBMWD-A00694	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Building	Building		Structural	2013	1560	SF
SBMWD-A00695	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Downstream Isolation Valve	Valve	Butterfly	Mechanical	2010	12	DIN
SBMWD-A00696	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Downstream Isolation Valve	Valve	Butterfly	Mechanical	2010	12	DIN
SBMWD-A00697	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Downstream Isolation Valve	Valve	Butterfly	Mechanical	2010	12	DIN
SBMWD-A00698	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Downstream Isolation Valve	Valve	Butterfly	Mechanical	2010	12	DIN
SBMWD-A00699	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Flowmeter	Flowmeter	Propeller	I&C	2010	12	DIN
SBMWD-A00700	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Flowmeter	Flowmeter	Propeller	I&C	2010	12	DIN
SBMWD-A00701	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Flowmeter	Flowmeter	Propeller	I&C	2010	12	DIN
SBMWD-A00702	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Flowmeter	Flowmeter	Propeller	I&C	2010	12	DIN
SBMWD-A00703	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Piping Assembly	Piping		Mechanical	2010	12	DIN
SBMWD-A00704	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Piping Assembly	Piping		Mechanical	2010	12	DIN
SBMWD-A00705	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Piping Assembly	Piping		Mechanical	2010	12	DIN
SBMWD-A00706	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Piping Assembly	Piping		Mechanical	2010	12	DIN
SBMWD-A00707	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Piping Assembly	Piping		Mechanical	2010	12	DIN
SBMWD-A00708	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Surge Anticipator and Pressure Release Valve	Valve	Pressure Relie	Mechanical	2010	12	DIN
SBMWD-A00709	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Upstream Isolation Valve	Valve	Butterfly	Mechanical	2010	12	DIN
SBMWD-A00710	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Wafer Check Valve	Valve	Check	Mechanical	2010	12	DIN
SBMWD-A00711	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Wafer Check Valve	Valve	Check	Mechanical	2010	12	DIN
SBMWD-A00712	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Wafer Check Valve	Valve	Check	Mechanical	2010	12	DIN
SBMWD-A00713	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Wafer Check Valve	Valve	Check	Mechanical	2010	12	DIN
SBMWD-A00714	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Access Gate	Access Gate	Motorized	Civil	2013		
SBMWD-A00715	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Fencing	Fencing	Chainlink	Civil	2013	230	LFT
SBMWD-A00716	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	MCC	MCC		Electrical	2010		
SBMWD-A00717	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Service Panels	Control Panel		Electrical	2010		
SBMWD-A00718	Upper	Mallory St	BPS (#1-2)	BPS	Booster#1	Pump	Submersible	Mechanical	2005	75	TDHFT
SBMWD-A00719	Upper	Mallory St	BPS (#1-2)	BPS	Booster#1 - Check Valve	Valve	Check	Mechanical	1987	6	DIN
SBMWD-A00720	Upper	Mallory St	BPS (#1-2)	BPS	Booster#1 - Isolation Valve	Valve	Gate	Mechanical	1987	8	DIN
SBMWD-A00721	Upper	Mallory St	BPS (#1-2)	BPS	Booster#1 - Piping Assembly	Piping		Mechanical	1987	6	DIN
SBMWD-A00722	Upper	Mallory St	BPS (#1-2)	BPS	Booster#2	Pump	Submersible	Mechanical	2005	75	TDHFT
SBMWD-A00723	Upper	Mallory St	BPS (#1-2)	BPS	Booster#2 - Check Valve	Valve	Check	Mechanical	1987	6	DIN
SBMWD-A00724	Upper	Mallory St	BPS (#1-2)	BPS	Booster#2 - Isolation Valve	Valve	Gate	Mechanical	1987	8	DIN
SBMWD-A00725	Upper	Mallory St	BPS (#1-2)	BPS	Booster#2 - Piping Assembly	Piping		Mechanical	1987	6	DIN
SBMWD-A00726	Upper	Mallory St	BPS (#1-2)	BPS	Electrical Panel	Control Panel		Electrical	1987		
SBMWD-A00727	Upper	Mallory St	BPS (#1-2)	BPS	Electrical Panel - Pump#1	Control Panel		Electrical	1987		
SBMWD-A00728	Upper	Mallory St	Mallory Well#3	Well	Upstream Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	1987	2	DIN
SBMWD-A00729	Upper	Mallory St	Mallory Well#3	Well	Check Valve	Valve	Check	Mechanical	1987	8	DIN
SBMWD-A00730	Upper	Mallory St	Mallory Well#3	Well	Electric Control Panel	Control Panel		Electrical	1987	480	V
SBMWD-A00731	Upper	Mallory St	Mallory Well#3	Well	Piping Assembly	Piping		Mechanical	1987	8	DIN
SBMWD-A00732	Upper	Mallory St	Mallory Well#3	Well	Propeller Flowmeter	Flowmeter	Propeller	I&C	1987	8	DIN
SBMWD-A00733	Upper	Mallory St	Mallory Well#3	Well	Well Casing	Process Structure	Well Casing	Structural	1959	16	DIN
SBMWD-A00734	Upper	Mallory St	Mallory Well#3	Well	Well Pump	Pump	Vertical Turbin	Mechanical	2012	415	TDHFT
SBMWD-A00735	Upper	Mallory St	Reservoir	Reservoir (Forebay)	Isolation Valve	Valve	Butterfly	Mechanical	1987	12	DIN
SBMWD-A00736	Upper	Mallory St	Reservoir	Reservoir (Forebay)	Piping Assembly	Piping		Mechanical	1987	12	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00737	Upper	Mallory St	Reservoir	Reservoir (Forebay)	Iron Fence	Fencing	Iron	Civil	1987	600	LFT
SBMWD-A00738	Upper	Mallory St	Reservoir	Reservoir (Forebay)	Iron Fence Gate	Access Gate	Motorized	Civil	1987	600	LFT
SBMWD-A00739	Upper	Mallory St	Reservoir	Reservoir (Forebay)	Cylindrical Reservoir	Tank	Reservoir	Structural	1959	169000	GAL
SBMWD-A00740	Upper	Medical Center	Ogden BPS	BPS	Air Compressor	Air Compressor		Mechanical	2012	5	KVA
SBMWD-A00741	Upper	Medical Center	Ogden BPS	BPS	Booster Station Wall	Wall	CMU	Structural	2012	220	LFT
SBMWD-A00742	Upper	Medical Center	Ogden BPS	BPS	Main Switchboard	Switchboard		Electrical	2012	480	VAC
SBMWD-A00743	Upper	Medical Center	Ogden BPS	BPS	Motor Control Center	MCC		Electrical	2012	480	VAC
SBMWD-A00744	Upper	Medical Center	Ogden BPS	BPS	Perimeter Fence - With double door swing gate for access	Fencing	Chainlink	Civil	2012	3000	LFT
SBMWD-A00745	Upper	Medical Center	Ogden BPS	BPS	Surge Tank	Tank	Surge	Structural	2012	2500	GAL
SBMWD-A00746	Upper	Medical Center	Ogden BPS	BPS	Surge Tank Isolation Valve	Valve	Butterfly	Mechanical	2012	20	DIN
SBMWD-A00747	Upper	Medical Center	Ogden BPS	BPS	Flowmeter	Flowmeter		I&C	2012	18	DIN
SBMWD-A00748	Upper	Medical Center	Ogden BPS	BPS	Inlet Av / Ar Valve	Valve	Air-VAC	Mechanical	2012	2	DIN
SBMWD-A00749	Upper	Medical Center	Ogden BPS	BPS	Inlet Isolation Valve	Valve	Butterfly	Mechanical	2012	18	DIN
SBMWD-A00750	Upper	Medical Center	Ogden BPS	BPS	Outlet Isolation Valve	Valve	Butterfly	Mechanical	2012	18	DIN
SBMWD-A00751	Upper	Medical Center	Ogden BPS	BPS	Piping Assembly	Piping		Mechanical	2012	18	DIN
SBMWD-A00752	Upper	Medical Center	Ogden BPS	BPS	ACV#1	Valve	Automated-Cc	Mechanical	2012	14	DIN
SBMWD-A00753	Upper	Medical Center	Ogden BPS	BPS	Flowmeter	Flowmeter		I&C	2012	18	DIN
SBMWD-A00754	Upper	Medical Center	Ogden BPS	BPS	Inlet Av / Ar Valve	Valve	Air-VAC	Mechanical	2012	2	DIN
SBMWD-A00755	Upper	Medical Center	Ogden BPS	BPS	Outlet Isolation Valve	Valve	Butterfly	Mechanical	2012	18	DIN
SBMWD-A00756	Upper	Medical Center	Ogden BPS	BPS	Inlet Isolation Valve	Valve	Butterfly	Mechanical	2012	18	DIN
SBMWD-A00757	Upper	Medical Center	Ogden BPS	BPS	Piping Assembly	Piping		Mechanical	2012	18	DIN
SBMWD-A00758	Upper	Medical Center	Ogden BPS	BPS	ACV#2	Valve	Automated-Cc	Mechanical	2012	14	DIN
SBMWD-A00759	Upper	Medical Center	Ogden BPS	BPS	Av / Ar Valve	Valve	Air-VAC	Mechanical	2012	2	DIN
SBMWD-A00760	Upper	Medical Center	Ogden BPS	BPS	Check Valve	Valve	Check	Mechanical	2012	16	DIN
SBMWD-A00761	Upper	Medical Center	Ogden BPS	BPS	Flowmeter	Flowmeter		I&C	2012		
SBMWD-A00762	Upper	Medical Center	Ogden BPS	BPS	Outlet Isolation Valve	Valve	Butterfly	Mechanical	2012	16	DIN
SBMWD-A00763	Upper	Medical Center	Ogden BPS	BPS	Pipe Assembly	Piping		Mechanical	2012	16	DIN
SBMWD-A00764	Upper	Medical Center	Ogden BPS	BPS	Vertical Turbine Can Pump	Pump	Vertical Turbir	Mechanical	2006	191	TDHFT
SBMWD-A00765	Upper	Medical Center	Ogden BPS	BPS	Av / Ar Valve	Valve	Air-VAC	Mechanical	2012	2	DIN
SBMWD-A00766	Upper	Medical Center	Ogden BPS	BPS	Check Valve	Valve	Check	Mechanical	2012	16	DIN
SBMWD-A00767	Upper	Medical Center	Ogden BPS	BPS	Flowmeter	Flowmeter		I&C	2012		
SBMWD-A00768	Upper	Medical Center	Ogden BPS	BPS	Outlet Isolation Valve	Valve	Butterfly	Mechanical	2012	16	DIN
SBMWD-A00769	Upper	Medical Center	Ogden BPS	BPS	Pipe Assembly	Piping		Mechanical	2012	16	DIN
SBMWD-A00770	Upper	Medical Center	Ogden BPS	BPS	Vertical Turbine Can Pump	Pump	Vertical Turbir	Mechanical	2006	191	TDHFT
SBMWD-A00771	Upper	Medical Center	Ogden BPS	BPS	Av / Ar Valve	Valve	Air-VAC	Mechanical	2012	2	DIN
SBMWD-A00772	Upper	Medical Center	Ogden BPS	BPS	Check Valve	Valve	Check	Mechanical	2012	16	DIN
SBMWD-A00773	Upper	Medical Center	Ogden BPS	BPS	Flowmeter	Flowmeter		I&C	2012		
SBMWD-A00774	Upper	Medical Center	Ogden BPS	BPS	Outlet Isolation Valve	Valve	Butterfly	Mechanical	2012	16	DIN
SBMWD-A00775	Upper	Medical Center	Ogden BPS	BPS	Pipe Assembly	Piping		Mechanical	2012	16	DIN
SBMWD-A00776	Upper	Medical Center	Ogden BPS	BPS	Vertical Turbine Can Pump	Pump	Vertical Turbir	Mechanical	2006	191	TDHFT
SBMWD-A00777	Lower	Medical Center	Reservoir (B Warren Cocl	Reservoir	Cylindrical Reservoir	Tank	Reservoir	Structural	2006	12000000	GAL
SBMWD-A00778	Lower	Medical Center	Reservoir (B Warren Cocl	Reservoir	Reservoir Exterior Stairway	Ladder	Fixed	Civil	2006		
SBMWD-A00779	Lower	Medical Center	Reservoir (B Warren Cocl	Reservoir	Reservoir Overflow Pipe	Piping		Mechanical	2006	24	DIN
SBMWD-A00780	Lower	Medical Center	Reservoir (B Warren Cocl	Reservoir	Water Level - Digital Level	Level Indicator		I&C	2006		
SBMWD-A00781	Lower	Medical Center	Reservoir (B Warren Cocl	Reservoir	Percolation Basin	Process Structure	Basin	Structural	2006		
SBMWD-A00782	Lower	Medical Center	Reservoir (B Warren Cocl	Reservoir	Percolation Basin Inlet Pipe (Reservoir Overflow Discharge Outlet)	Piping		Mechanical	2006	24	DIN
SBMWD-A00783	Lower	Medical Center	Reservoir (B Warren Cocl	Reservoir	Percolation Basin Inlet Pipe Concrete Pad	Non-Process Structure	Concrete Pad	Structural	2006	6	LFT
SBMWD-A00784	Lower	Medical Center	Reservoir (B Warren Cocl	Reservoir	Percolation Basin Overflow Pipe Assembly	Piping		Mechanical	2006	30	DIN
SBMWD-A00785	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Check Valve 1	Valve	Check	Mechanical	2004	3	DIN
SBMWD-A00786	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Flowmeter and Transmitter	Flowmeter		I&C	2004	6	DIn
SBMWD-A00787	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Inlet Isolation Valve 1	Valve	Gate	Mechanical	2004	3	DIN
SBMWD-A00788	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Outlet Isolation Valve 1	Valve	Gate	Mechanical	2004	3	DIN
SBMWD-A00789	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Pump#1 - Vertical Multistage	Pump	Vertical Turbir	Mechanical	2004	265	TDHFT
SBMWD-A00790	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Check Valve 2	Valve	Check	Mechanical	2004	3	DIN
SBMWD-A00791	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Flow Transmitter	Transmitter		I&C	2004	24	VDC
SBMWD-A00792	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Inlet Isolation Valve 2	Valve	Gate	Mechanical	2004	3	DIN
SBMWD-A00793	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Outlet Isolation Valve 2	Valve	Gate	Mechanical	2004	3	DIN
SBMWD-A00794	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Pump#2 - Vertical Multistage	Pump	Vertical Turbir	Mechanical	2004	265	TDHFT
SBMWD-A00795	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Check Valve Pump#3	Valve	Check	Mechanical	2004	3	DIN
SBMWD-A00796	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Pressure Transmitter - Invensys	Transmitter	Pressure	I&C	2004	300	PSI
SBMWD-A00797	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Inlet Isolation Valve 3	Valve	Gate	Mechanical	2004	3	DIN
SBMWD-A00798	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Outlet Isolation Valve 3	Valve	Gate	Mechanical	2004	3	DIN
SBMWD-A00799	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Pump#3 - Vertical Multistage	Pump	Vertical Turbir	Mechanical	2004	265	TDHFT
SBMWD-A00800	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Check Valve 4	Valve	Swing Check	Mechanical	2004	8	DIN
SBMWD-A00801	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Inlet Isolation Valve 4	Valve	Gate	Mechanical	2004	8	DIN
SBMWD-A00802	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Pump#4	Pump	Horizontal Spli	Mechanical	2004	138	TDHFT
SBMWD-A00803	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Main Piping Assembly	Piping		Mechanical	2006	8	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00804	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Pressure Transmitter - Invensys	Transmitter	Pressure	I&C	2006	300	PSI
SBMWD-A00805	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Check Valve 5	Valve	Swing Check	Mechanical	2004	8	DIN
SBMWD-A00806	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Inlet Isolation Valve 5	Valve	Gate	Mechanical	2004	8	DIN
SBMWD-A00807	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Pump#5 - Horizontal Split Case	Pump	Horizontal Spli	Mechanical	2004	138	TDHFT
SBMWD-A00808	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Access Gate	Access Gate	Motorized	Civil	2006	16	LFT
SBMWD-A00809	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Perimeter Iron Fencing	Fencing	Iron	Civil	2006	60	LFT
SBMWD-A00810	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Automatic Transfer Switch (West Wall)	Switch	Automatic Tra	Electrical	2005	225	AMP
SBMWD-A00811	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Fluorescent Light Fixture	Lighting	Pole	Electrical	2006	6	QTY
SBMWD-A00812	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Main Service Distribution Board (277/480V) - Speed-D	Switchboard		Electrical	2006	480	V
SBMWD-A00813	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	North Wall Circuit Panel (North-West Corner) - A-Series	Power Panel		Electrical	2005	225	AMP
SBMWD-A00814	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	North Wall Telemetry Panel (North-West Corner)	Control Panel		Electrical	2006	1	Each
SBMWD-A00815	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Portable Generator	Generator		Electrical	2006	300	KW
SBMWD-A00816	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Pump House	Building		Structural	2006	440	SF
SBMWD-A00817	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	VFD (Pump#1 VFD) North-West Wall	VFD		Electrical	2006	7.5	HP
SBMWD-A00818	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	West Wall Control Panel (North-West Corner)	Control Panel		Electrical	2005	155	AMP
SBMWD-A00819	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	West Wall Transformer (480V-120/240V) - SR	Transformer		Electrical	2006	7.5	KVA
SBMWD-A00820	Devore/Meyers	Meyers Canyon	Reservoir	Reservoir	Chain-Link Access Gate	Access Gate	Manual	Civil	1993	14	LFT
SBMWD-A00821	Devore/Meyers	Meyers Canyon	Reservoir	Reservoir	Chain-Link Fencing	Fencing	Chainlink	Civil	1993	1100	LFT
SBMWD-A00822	Devore/Meyers	Meyers Canyon	Reservoir	Reservoir	Cylindrical Reservoir	Tank	Reservoir	Structural	1992	2000000	GAL
SBMWD-A00823	Devore/Meyers	Meyers Canyon	Reservoir	Reservoir	Lighting	Lighting	Pole	Electrical	1990		
SBMWD-A00824	Devore/Meyers	Meyers Canyon	Reservoir	Reservoir	Reservoir Access Hatch (West Side of Res.)	Access Hatch		Civil	1990	4.7	LFT
SBMWD-A00825	Devore/Meyers	Meyers Canyon	Reservoir	Reservoir	Standpipe and Gate Valve	Valve	Gate	Mechanical	1993	6	DIN
SBMWD-A00826	Lower	Mill & D St	BPS	BPS	Drain Piping Assembly in Black	Piping		Mechanical	1940	2	DIN
SBMWD-A00827	Lower	Mill & D St	BPS	BPS	Flowmeter	Flowmeter		I&C	1940	6	DIN
SBMWD-A00828	Lower	Mill & D St	BPS	BPS	Isolation Butterfly Check Valve	Valve	Check	Mechanical	1940	6	DIN
SBMWD-A00829	Lower	Mill & D St	BPS	BPS	Isolation Butterfly Valve	Valve	Butterfly	Mechanical	1940	6	DIN
SBMWD-A00830	Lower	Mill & D St	BPS	BPS	Piping Assembly Connected Gate Pit	Piping		Mechanical	1940	12	DIN
SBMWD-A00831	Lower	Mill & D St	BPS	BPS	Booster Piping Assembly	Piping		Mechanical	1940	6	DIN
SBMWD-A00832	Lower	Mill & D St	BPS	BPS	Pump Pit	Non-Process Structure	Vault	Structural	1940	102	LFT
SBMWD-A00833	Lower	Mill & D St	BPS	BPS	Suction Valve - Buried	Valve		Mechanical	1940	12	DIN
SBMWD-A00834	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Drain Pit	Non-Process Structure	Vault	Structural	1940	48	LFT
SBMWD-A00835	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Gate Pit	Non-Process Structure	Vault	Structural	1940	50	LFT
SBMWD-A00836	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Inlet Isolation Valve	Valve	Gate	Mechanical	1940	8	DIN
SBMWD-A00837	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Outlet Isolation Valve	Valve	Gate	Mechanical	1940	6	DIN
SBMWD-A00838	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Weir Box Drain Isolation Valve	Valve	Gate	Mechanical	1940	6	DIN
SBMWD-A00839	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Weir Box Drain Piping Assembly	Piping		Mechanical	1940	6	DIN
SBMWD-A00840	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Well Discharge Piping Assembly	Piping		Mechanical	1940	8	DIN
SBMWD-A00841	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Well Discharge Valve	Valve	Gate	Mechanical	1940	8	DIN
SBMWD-A00842	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Solenoid Valve	Valve	Solenoid	Mechanical	1940		
SBMWD-A00843	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Pressure Gauge	Analytical Instrument	Pressure Gaug	I&C	1940		
SBMWD-A00844	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Rectangular-Above Ground Reservoir	Tank	Reservoir	Structural	1934	437250	GAL
SBMWD-A00845	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Reservoir Drain Valve	Valve	Butterfly	Mechanical	1940	6	DIN
SBMWD-A00846	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Sump	Pump	Sump	Mechanical	1940		
SBMWD-A00847	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Outlet Isolation Valve	Valve	Gate	Mechanical	1940	12	DIN
SBMWD-A00848	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Piping Assembly	Piping		Mechanical	1940	12	DIN
SBMWD-A00849	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Vault (East of Pump Pit)	Non-Process Structure	Vault	Structural	1940	5	LFT
SBMWD-A00850	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Weir Box	Process Structure	Weir Box	Structural	1940		
SBMWD-A00851	Lower	Mill & D St	Reservoir	Reservoir (Forebay)	Weir Box - 24"" Cipoletti Weir	Process Structure	Weir Box	Structural	1940	2	LFT
SBMWD-A00852	Lower	Mill & D St	Well	Well	Well Casing	Process Structure	Well Casing	Structural	1933	12	DIN
SBMWD-A00853	Lower	Mill & D St	Well	Well	Well Pump	Pump	Vertical Turbir	Mechanical	1991	160	TDHFT
SBMWD-A00854	Lower	Mill & D St	Well	Well	Well Pump - Check Valve	Valve	Check	Mechanical	1940	8	DIN
SBMWD-A00855	Lower	Mill & D St	Well	Well	Well Pump - Piping Assembly	Piping		Mechanical	1940	8	DIN
SBMWD-A00856	Mountain	Mountain	Reservoir#2	Reservoir	Cylindrical Reservoir - Domed Aluminum Roof - Extra Capacity to Res 3	Tank	Reservoir	Structural	1952	233000	GAL
SBMWD-A00857	Mountain	Mountain	Reservoir#2	Reservoir	Drain Isolation Valve	Valve	Gate	Mechanical	1952	6	DIN
SBMWD-A00858	Mountain	Mountain	Reservoir#2	Reservoir	Drain Piping Assembly (South-East)	Piping		Mechanical	1952	6	DIN
SBMWD-A00859	Mountain	Mountain	Reservoir#2	Reservoir	Outlet Isolation Valve	Valve	Check	Mechanical	1952	12	DIN
SBMWD-A00860	Mountain	Mountain	Reservoir#2	Reservoir	Overflow Piping Assembly (South-East)	Piping		Mechanical	1952	6	DIN
SBMWD-A00861	Mountain	Mountain	Reservoir#3	Reservoir	Cylindrical Reservoir	Tank	Reservoir	Structural	1964	1902000	GAL
SBMWD-A00862	Mountain	Mountain	Reservoir#3	Reservoir	Outlet Isolation Valve	Valve	Gate	Mechanical	1964	16	DIN
SBMWD-A00863	Mountain	Mountain	Reservoir#3	Reservoir	Outlet Piping Assembly	Piping		Mechanical	1964	16	DIN
SBMWD-A00864	Upper	Newmark	Common	Wellhead Treatment	Stripping Tower#1 Outlet Isolation Valve	Valve	Butterfly	Mechanical	1987	16	DIN
SBMWD-A00865	Upper	Newmark	Common	Wellhead Treatment	Stripping Tower#2 Outlet Isolation Valve	Valve	Butterfly	Mechanical	1987	16	DIN
SBMWD-A00866	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly Piping	Piping		Mechanical	2008	8	DIN
SBMWD-A00867	Upper	Newmark	GAC System	Wellhead Treatment	Tank	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A00868	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly 1B	Vessel	GAC	Structural	1997	12	DFT

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00869	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly 2A	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A00870	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly 2B	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A00871	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly 3A	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A00872	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly 3B	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A00873	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly 4A	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A00874	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly 4B	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A00875	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly 5A	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A00876	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly 5B	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A00877	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly 6A	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A00878	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly 6B	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A00879	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly 7A	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A00880	Upper	Newmark	GAC System	Wellhead Treatment	GAC Assembly 7B	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A00881	Upper	Newmark	Common	Wellhead Treatment	Stripping Tower#1 Inlet Isolation Valve (Upstream of Flowmeter)	Valve	Butterfly	Mechanical	2008	16	DIN
SBMWD-A00882	Upper	Newmark	Common	Wellhead Treatment	Stripping Tower#2 Inlet Isolation Valve (Upstream of Flowmeter)	Valve	Butterfly	Mechanical	2008	16	DIN
SBMWD-A00883	Upper	Newmark	Common	Wellhead Treatment	Stripping Tower	Process Structure	Stripping Tow	Structural	2008	12.3	DFT
SBMWD-A00884	Upper	Newmark	Common	Wellhead Treatment	Stripping Tower West	Process Structure	Stripping Tow	Structural	2008	12.3	DFT
SBMWD-A00885	Upper	Newmark	GAC System	Wellhead Treatment	Pressure Reducing Valve GAC Effluent	Valve	Pressure Redu	Mechanical	2008	12	DIN
SBMWD-A00886	Upper	Newmark	Common	Other	Effluent Flowmeter	Flowmeter		I&C	2008	24	DIN
SBMWD-A00887	Upper	Newmark	Reservoir	Reservoir	Drain Isolation Valve - Reservoir#3	Valve	Butterfly	Mechanical	2008	24	DIN
SBMWD-A00888	Upper	Newmark	Reservoir	Reservoir	Reservoir#3 Drain Gate Valve 1	Valve	Gate	Mechanical	2008	24	DIN
SBMWD-A00889	Upper	Newmark	Reservoir	Reservoir	Drain Isolation Valve - Reservoir#2	Valve	Butterfly	Mechanical	2008	24	DIN
SBMWD-A00890	Upper	Newmark	Reservoir	Reservoir	Reservoir#2 Drain Gate Valve 1	Valve	Gate	Mechanical	2008	24	DIN
SBMWD-A00891	Upper	Newmark	Common	Other	Vault	Non-Process Structure	Vault	Structural	2008		
SBMWD-A00892	Upper	Newmark	Reservoir	Reservoir	Isolation Valve - Drain Vault Reservoir#4	Valve	Butterfly	Mechanical	2008	24	DIN
SBMWD-A00893	Upper	Newmark	GAC System	Wellhead Treatment	Vault GAC Assembly Effluent Flowmeter	Non-Process Structure	Vault	Structural	2008	40	SF
SBMWD-A00894	Sycamore	Newmark	Sycamore BPS (#1)	BPS	Check Valve	Valve	Check	Mechanical	2005	12	DIN
SBMWD-A00895	Sycamore	Newmark	Sycamore BPS (#1)	BPS	Discharge Gate Valve - Buried	Valve	Gate	Mechanical	2005	12	DIN
SBMWD-A00896	Sycamore	Newmark	Sycamore BPS (#1)	BPS	Booster Vault	Non-Process Structure	Vault	Structural	2005	7	WFT
SBMWD-A00897	Sycamore	Newmark	Sycamore BPS (#1)	BPS	Piping Assembly	Piping	In vault	Mechanical	2005		
SBMWD-A00898	Sycamore	Newmark	Sycamore BPS (#1)	BPS	Booster Pump	Pump	Submersible	Mechanical	2005	12	DIN
SBMWD-A00899	Sycamore	Newmark	Sycamore BPS (#1)	BPS	Piping Assembly	Piping	In vault	Mechanical	2005		
SBMWD-A00900	Sycamore	Newmark	Sycamore BPS (#1)	BPS	Check Valve Vault	Non-Process Structure	Vault	Structural	2005	5	WFT
SBMWD-A00901	Sycamore	Newmark	Sycamore BPS (#2)	BPS	Check-Swing Valve	Valve	Swing Check	Mechanical	2009	12	DIN
SBMWD-A00902	Sycamore	Newmark	Sycamore BPS (#2)	BPS	Piping Assembly	Piping		Mechanical	2009	12	DIN
SBMWD-A00903	Sycamore	Newmark	Sycamore BPS (#2)	BPS	Pump	Pump	Vertical Turbir	Mechanical	1971	185	TDHFT
SBMWD-A00904	Sycamore	Newmark	Sycamore BPS (#2)	BPS	Pump House 2 Building	Building		Structural	2009		
SBMWD-A00905	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	ACV#1 - Cla-Val	Valve	Automated-Cc	Mechanical	1990	12	DIN
SBMWD-A00906	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	ACV#1 - Isolation Valve - Upstream	Valve	Butterfly	Mechanical	1990	12	DIN
SBMWD-A00907	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	ACV#1 - Isolation Valve - Downstream	Valve	Butterfly	Mechanical	1990	12	DIN
SBMWD-A00908	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	ACV#2 - Cla-Val	Valve	Automated-Cc	Mechanical	1990	12	DIN
SBMWD-A00909	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	ACV#2 - Isolation Valve - Upstream	Valve	Butterfly	Mechanical	1990	12	DIN
SBMWD-A00910	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	ACV#2 - Isolation Valve - Downstream	Valve	Butterfly	Mechanical	1990	12	DIN
SBMWD-A00911	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	ACV#3 - Cla-Val	Valve	Automated-Cc	Mechanical	1990	12	DIN
SBMWD-A00912	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	ACV#3 - Isolation Valve - Upstream	Valve	Butterfly	Mechanical	1990	12	DIN
SBMWD-A00913	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	ACV#3 - Isolation Valve- Downstream	Valve	Butterfly	Mechanical	1990	12	DIN
SBMWD-A00914	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Air Vac Assembly	Valve	Air-VAC	Mechanical	1990	2	DIN
SBMWD-A00915	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Check-Wafer Valve	Valve	Check	Mechanical	1990	12	DIN
SBMWD-A00916	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Concrete Pad For Booster Station	Non-Process Structure	Concrete Pad	Structural	1990		
SBMWD-A00917	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Discharge Butterfly Valve	Valve	Butterfly	Mechanical	1990	12	DIN
SBMWD-A00918	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Pump#3	Pump	Vertical Turbir	Mechanical	2012	170	TDHFT
SBMWD-A00919	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Air Vac Assembly	Valve	Air-VAC	Mechanical	1990	2	DIN
SBMWD-A00920	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Check-Wafer Valve	Valve	Check	Mechanical	1990	12	DIN
SBMWD-A00921	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Discharge Butterfly Valve	Valve	Butterfly	Mechanical	1990	12	DIN
SBMWD-A00922	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Piping Assembly Sycamore Ps	Piping		Mechanical	1990	12	DIN
SBMWD-A00923	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Pump#4	Pump	Vertical Turbir	Mechanical	2012	170	TDHFT
SBMWD-A00924	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Electrical Vault (South of Pumping Station)	Non-Process Structure	Vault	Structural	2008	50	SF
SBMWD-A00925	Upper	Newmark	Common	Other	Main Access Gate	Access Gate	Motorized	Civil	2000	7	HFT
SBMWD-A00926	Upper	EPA	Well#007	Well	Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	2000	2	DIN
SBMWD-A00927	Upper	EPA	Well#007	Well	Check Valve	Valve	Swing Check	Mechanical	2000	12	DIN
SBMWD-A00928	Upper	EPA	Well#007	Well	Flowmeter	Flowmeter		I&C	2000	12	DIN
SBMWD-A00929	Upper	Newmark	Common	Other	Perimeter Fence	Fencing	Chainlink	Civil	2000	230	LFT
SBMWD-A00930	Upper	EPA	Well#007	Well	Isolation Valve Buried	Valve	Gate	Mechanical	2000	12	DIN
SBMWD-A00931	Upper	Highland Ave	Mt Vernon Water Compa	Well	Concrete Pad Under Electrical Assets	Non-Process Structure	Concrete Pad	Structural	2000		
SBMWD-A00932	Upper	EPA	Well#007	Well	Switchboard	MCC		Electrical	2000	400	AMP
SBMWD-A00933	Upper	EPA	Well#007	Well	Piping Assembly	Piping		Mechanical	2000	12	DIN
SBMWD-A00934	Upper	Newmark	Well	Well	120/240V Power Panel	Power Panel		Electrical	2000	240	V
SBMWD-A00935	Upper	Newmark	Well	Well	Vault Piping Assembly	Piping		Mechanical	2000	24	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A00936	Upper	Newmark	Well	Well	Well 3	Process Structure	Well Casing	Structural	1997	16	DIN
SBMWD-A00937	Upper	EPA	Well#007	Well	Well Isolation Valve Buried	Valve	Gate	Mechanical	2000	12	DIN
SBMWD-A00938	Upper	EPA	Well#007	Well	Well Pump	Pump	Vertical Turbin	Mechanical	1997	276	TDHFT
SBMWD-A00939	Upper	Newmark	Well	Well	Monitoring Well	Process Structure	Well Casing	Structural	2008	20	SF
SBMWD-A00940	Upper	Newmark	Well	Well	Well House - Air Compressor	Air Compressor		Mechanical	2008	5	hp
SBMWD-A00941	Upper	Newmark	Well	Well	Well#1 - Isolation Valve	Valve	Butterfly	Mechanical	1997	12	DIN
SBMWD-A00942	Upper	Newmark	Well	Well	Well#1 - Piping Assembly	Piping		Mechanical	2008	12	DIN
SBMWD-A00943	Upper	Newmark	Common	Other	Control Building	Building		Structural	2008	360	SF
SBMWD-A00944	Upper	Newmark	Well	Well	Pump - Well#1	Pump	Submersible	Mechanical	2009	239	TDHFT
SBMWD-A00945	Upper	Newmark	Well	Well	Well#2 - Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	1990	2	DIN
SBMWD-A00946	Upper	Newmark	Well	Well	Well#2 - Check Valve	Valve	Check	Mechanical	1990	12	DIN
SBMWD-A00947	Upper	Newmark	Well	Well	Well#2 - Isolation Valve	Valve	Butterfly	Mechanical	1990	12	DIn
SBMWD-A00948	Upper	Newmark	Well	Well	Well#2 - Piping Assembly	Piping		Mechanical	1990	12	DIN
SBMWD-A00949	Upper	Newmark	Well	Well	Well#2 - Pump	Pump	Vertical Turbin	Mechanical	2007	260	TDHFT
SBMWD-A00950	Upper	Newmark	Well	Well	Well#3 - Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	1990	2	DIN
SBMWD-A00951	Upper	Newmark	Well	Well	Well#3 - Check Valve	Valve	Check	Mechanical	1990	12	DIN
SBMWD-A00952	Upper	Newmark	Well	Well	Well#3 - Isolation Valve	Valve	Butterfly	Mechanical	1990	12	DIN
SBMWD-A00953	Upper	Newmark	Well	Well	Well#3 - Piping Assembly	Piping		Mechanical	1990	12	DIN
SBMWD-A00954	Upper	Newmark	Well	Well	Well#3 - Pump	Pump	Submersible	Mechanical	2009	8	DIN
SBMWD-A00955	Upper	Newmark	Well	Well	Air Release and Vacuum Valve	Valve	Air-VAC	Mechanical	2008	2	DIN
SBMWD-A00956	Upper	Newmark	Well	Well	Isolation Valve - buried	Valve	Gate	Mechanical	2008	12	DIN
SBMWD-A00957	Upper	Newmark	Well	Well	Piping Assembly	Piping		Mechanical	2008	12	DIN
SBMWD-A00958	Upper	Newmark	Well	Well	Stand-By Gas Engine (In House)	Engine		Electrical	2008		
SBMWD-A00959	Upper	Newmark	Common	Other	Generator Storage Building	Building		Structural	2015		
SBMWD-A00960	Upper	Newmark	Well	Well	Well Pump	Pump	Vertical Turbin	Mechanical	2009	320	TDHFT
SBMWD-A00961	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Av / Ar Valve Assembly	Piping		Mechanical	2012	2	DIN
SBMWD-A00962	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Check Valve	Valve	Check	Mechanical	2012	16	DIN
SBMWD-A00963	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Flowmeter	Flowmeter		I&C	2012	16	DIN
SBMWD-A00964	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Outlet Isolation Valve	Valve	Butterfly	Mechanical	2012	16	DIN
SBMWD-A00965	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Pipe Assembly	Piping		Mechanical	2012	16	DIN
SBMWD-A00966	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Vertical Turbine Can Pump	Pump	Vertical Turbin	Mechanical	2007	335	TDHFT
SBMWD-A00967	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Av / Ar Valve Assembly	Piping		Mechanical	2012	2	DIN
SBMWD-A00968	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Check Valve	Valve	Check	Mechanical	2012	16	DIN
SBMWD-A00969	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Flowmeter	Flowmeter		I&C	2012	16	DIN
SBMWD-A00970	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Outlet Isolation Valve	Valve	Butterfly	Mechanical	2012	16	DIN
SBMWD-A00971	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Pipe Assembly	Piping		Mechanical	2012	16	DIN
SBMWD-A00972	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Vertical Turbine Can Pump	Pump	Vertical Turbin	Mechanical	2007	335	TDHFT
SBMWD-A00973	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Av / Ar Valve Assembly	Valve		Mechanical	2012	2	DIN
SBMWD-A00974	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Check Valve	Valve	Check	Mechanical	2012	16	DIN
SBMWD-A00975	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Flowmeter	Flowmeter		I&C	2012	16	DIN
SBMWD-A00976	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Outlet Isolation Valve	Valve	Butterfly	Mechanical	2012	16	DIN
SBMWD-A00977	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Pipe Assembly	Piping		Mechanical	2012	16	DIN
SBMWD-A00978	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Vertical Turbine Can Pump	Pump	Vertical Turbin	Mechanical	2007	335	TDHFT
SBMWD-A00979	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Air Compressor	Air Compressor		Mechanical	2012	5	KVA
SBMWD-A00980	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Building	Building		Structural	2012	2600	SF
SBMWD-A00981	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Surge Tank	Tank	Surge	Structural	2012	2500	GAL
SBMWD-A00982	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Surge Tank Isolation Valve	Valve	Butterfly	Mechanical	2012	20	DIN
SBMWD-A00983	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Flowmeter	Flowmeter		I&C	2012	18	DIN
SBMWD-A00984	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Inlet Av / Ar Valve Assembly	Piping		Mechanical	2012	2	DIN
SBMWD-A00985	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Inlet Isolation Valve	Valve	Butterfly	Mechanical	2012	18	DIN
SBMWD-A00986	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Outlet Isolation Valve	Valve	Butterfly	Mechanical	2012	18	DIN
SBMWD-A00987	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Piping Assembly	Piping		Mechanical	2012	18	DIN
SBMWD-A00988	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Pressure Reducing Valve	Valve	Automated-Co	Mechanical	2012	14	DIN
SBMWD-A00989	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Flowmeter	Flowmeter		I&C	2012	18	DIN
SBMWD-A00990	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Inlet Av / Ar Valve Assembly	Piping		Mechanical	2012	2	DIN
SBMWD-A00991	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Inlet Isolation Valve	Valve	Butterfly	Mechanical	2012	18	DIN
SBMWD-A00992	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Outlet Isolation Valve	Valve	Butterfly	Mechanical	2012	18	DIN
SBMWD-A00993	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Piping Assembly	Piping		Mechanical	2012	18	DIN
SBMWD-A00994	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Pressure Reducing Valve	Valve	Automated-Co	Mechanical	2012	14	DIN
SBMWD-A00995	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Main Switchboard	Switchboard		Electrical	2012	480	VAC
SBMWD-A00996	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Motor Control Center	MCC		Electrical	2012	480	VAC
SBMWD-A00997	Upper	Ogden St	Reservoir	Reservoir	Percolation Basin Inlet Piping (Reservoir Overflow Outlet)	Piping		Mechanical	2012	24	DIN
SBMWD-A00998	Upper	Ogden St	Reservoir	Reservoir	Percolation Basin Overflow Air-Vac Valve	Valve	Air-VAC	Mechanical	2008	4	DIN
SBMWD-A00999	Upper	Ogden St	Reservoir	Reservoir	Percolation Basin Overflow Assembly	Piping		Mechanical	2008		
SBMWD-A01000	Upper	Ogden St	Reservoir	Reservoir	Reservoir	Tank	Reservoir	Structural	2013	12000000	GAL
SBMWD-A01001	Lower	Olive & Garner	Well	Well	Access Gate	Access Gate	Rolling	Civil	1993		
SBMWD-A01002	Lower	Olive & Garner	Well	Well	Chainlink Fence	Fencing	Chainlink	Civil	1993	50	LFT

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01003	Lower	Olive & Garner	Well	Well	CMU Wall	Wall	CMU	Structural	1993	290	LFT
SBMWD-A01004	Lower	Olive & Garner	Well	Well	Chlorine Injection Box (South of Building)	Chlorine Injection Box		Structural	1993	2	WFT
SBMWD-A01005	Lower	Olive & Garner	Well	Well	Piping Assembly	Piping		Mechanical	1993	16	DIN
SBMWD-A01006	Lower	Olive & Garner	Well	Well	Air Relief Valve	Valve	Air Release	Mechanical	1993		
SBMWD-A01007	Lower	Olive & Garner	Well	Well	Check Valve	Valve	Check	Mechanical	1993	16	DIN
SBMWD-A01008	Lower	Olive & Garner	Well	Well	Clorine Pump	Pump		Mechanical	1993		
SBMWD-A01009	Lower	Olive & Garner	Well	Well	Electrical Panels (In House)	Control Panel		Electrical	1993		
SBMWD-A01010	Lower	Olive & Garner	Well	Well	Eyewash Station (North-East Corner)	Safety Shower/Eyewash		Mechanical	1993		
SBMWD-A01011	Lower	Olive & Garner	Well	Well	Flowmeter	Flowmeter		I&C	1993	16	DIN
SBMWD-A01012	Lower	Olive & Garner	Well	Well	Piping Assembly	Piping		Mechanical	1993	16	DIN
SBMWD-A01013	Lower	Olive & Garner	Well	Well	Well Casing	Process Structure	Well Casing	Structural	1990	20	DIN
SBMWD-A01014	Lower	Olive & Garner	Well	Well	Well House	Building		Structural	2012	400	SF
SBMWD-A01015	Lower	Olive & Garner	Well	Well	Well Pump	Pump	Vertical Turbin	Mechanical	1993	430	TDHFT
SBMWD-A01016	Lower	Olive & Garner	Well	Well	Well Motor	Motor		Electrical	1993	430	TDHFT
SBMWD-A01017	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Wafer Check Valve	Valve	Check	Mechanical	2008	16	DIN
SBMWD-A01018	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Combination Air Release and Vacuum Valve (Near Pump Motor)	Valve	Air-VAC	Mechanical	2008	1	DIN
SBMWD-A01019	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Concrete Support Pad	Non-Process Structure	Concrete Pad	Structural	2008	4	LFT
SBMWD-A01020	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Discharge Butterfly Valve	Valve	Butterfly	Mechanical	2008	16	DIN
SBMWD-A01021	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Discharge Combination Air Release and Vacuum Valve (Downstream End)	Valve	Air-VAC	Mechanical	2008	1	DIN
SBMWD-A01022	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Flowmeter	Flowmeter	Propeller	I&C	2008		
SBMWD-A01023	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Pump	Pump	Vertical Turbin	Mechanical	2008	206	TDHFT
SBMWD-A01024	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Pump Piping Assembly	Piping		Mechanical	2008	16	DIN
SBMWD-A01025	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Wafer Check Valve	Valve	Check	Mechanical	2008	16	DIN
SBMWD-A01026	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Combination Air Release and Vacuum Valve (Near Pump Motor)	Valve	Air-VAC	Mechanical	2008	1	DIN
SBMWD-A01027	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Discharge Butterfly Valve	Valve	Butterfly	Mechanical	2008	16	DIN
SBMWD-A01028	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Discharge Combination Air Release and Vacuum Valve (Downstream End)	Valve	Air-VAC	Mechanical	2008	1	DIN
SBMWD-A01029	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Flowmeter	Flowmeter	Propeller	I&C	2008		
SBMWD-A01030	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Pump	Pump	Vertical Turbin	Mechanical	2008	206	TDHFT
SBMWD-A01031	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Pump Piping Assembly	Piping		Mechanical	2008	16	DIN
SBMWD-A01032	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Wafer Check Valve	Valve	Check	Mechanical	2008	16	DIN
SBMWD-A01033	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Combination Air Release and Vacuum Valve (Near Pump Motor)	Valve	Air-VAC	Mechanical	2008	1	DIN
SBMWD-A01034	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Discharge Butterfly Valve	Valve	Butterfly	Mechanical	2008	16	DIN
SBMWD-A01035	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Discharge Combination Air Release and Vacuum Valve (Downstream End)	Valve	Air-VAC	Mechanical	2008	1	DIN
SBMWD-A01036	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Flowmeter	Flowmeter	Propeller	I&C	2008		
SBMWD-A01037	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Pump	Pump	Vertical Turbin	Mechanical	2008	206	TDHFT
SBMWD-A01038	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Pump Piping Assembly	Piping		Mechanical	2008	16	DIN
SBMWD-A01039	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Wafer Check Valve	Valve	Check	Mechanical	2008	16	DIN
SBMWD-A01040	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Combination Air Release and Vacuum Valve (Near Pump Motor)	Valve	Air-VAC	Mechanical	2008	1	DIN
SBMWD-A01041	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Discharge Butterfly Valve	Valve	Butterfly	Mechanical	2008	16	DIN
SBMWD-A01042	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Discharge Combination Air Release and Vacuum Valve (Downstream End)	Valve	Air-VAC	Mechanical	2008	1	DIN
SBMWD-A01043	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Flowmeter	Flowmeter	Propeller	I&C	2008		
SBMWD-A01044	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Pump	Pump	Vertical Turbin	Mechanical	2008	206	TDHFT
SBMWD-A01045	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Pump Piping Assembly	Piping		Mechanical	2008	16	DIN
SBMWD-A01046	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Surge Tank - Bladder Type	Tank	Surge	Structural	2008	9	DIN
SBMWD-A01047	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Building	Building		Structural	2008	90	LFT
SBMWD-A01048	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Motor Control Center	MCC		Electrical	2008	480	V
SBMWD-A01049	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Remote Terminal Unit	Controller	RTU	I&C	2008		
SBMWD-A01050	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Service Panels	Control Panel		Electrical	2008		
SBMWD-A01051	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	ACV 1	Valve	Automated-Cc	Mechanical	2008	12	DIN
SBMWD-A01052	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	ACV 2	Valve	Automated-Cc	Mechanical	2008	12	DIN
SBMWD-A01053	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	ACV 3	Valve	Automated-Cc	Mechanical	2008	8	DIN
SBMWD-A01054	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	ACV 4	Valve	Automated-Cc	Mechanical	2008	12	DIN
SBMWD-A01055	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	ACV 5	Valve	Automated-Cc	Mechanical	2008	8	DIN
SBMWD-A01056	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Isolation Butterfly Valve - Reservoir	Valve	Butterfly	Mechanical	1982	24	DIN
SBMWD-A01057	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Piping Assembly - Reservoir	Piping		Mechanical	1982	24	DIN
SBMWD-A01058	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Building	Building		Structural	2008		
SBMWD-A01059	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Generator 1	Generator	Hydroelectric	Electrical	2008	12	DIN
SBMWD-A01060	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Generator 2	Generator	Hydroelectric	Electrical	2008	12	DIN
SBMWD-A01061	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Meter Vault (Outside, South Side of Building)	Non-Process Structure	Vault	Structural	2008		
SBMWD-A01062	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Fixed Ladder	Ladder	Fixed	Civil	1982		
SBMWD-A01063	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Reservoir	Tank	Reservoir	Structural	1982	5000000	GAL
SBMWD-A01064	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Detention Basin	Process Structure	Basin	Structural	1982	404000	GAL
SBMWD-A01065	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Detention Basin Overflow Structure Pipe Drain	Piping		Mechanical	1982	3	LFT
SBMWD-A01066	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Detention Basin Stormceptor	Process Structure	Stormceptor	Structural	1982	72	DIN
SBMWD-A01067	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Fencing - Iron	Fencing	Iron	Civil	1982	930	LFT
SBMWD-A01068	College/Palm	Palm & Kendall Dr	Palm Reservoir#3	Reservoir	Ladder	Ladder	Fixed	Civil	2010		
SBMWD-A01069	College/Palm	Palm & Kendall Dr	Palm Reservoir#3	Reservoir	Reservoir	Tank	Reservoir	Structural	2010	4000000	GAL

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01070	Intermediate	Perris Hill Park	Perris Hill Reservoir	Reservoir	Chainlink Fence	Fencing	Chainlink	Civil	1962	120	LFT
SBMWD-A01071	Intermediate	Perris Hill Park	Perris Hill Reservoir	Reservoir	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1962	880	SF
SBMWD-A01072	Intermediate	Perris Hill Park	Perris Hill Reservoir	Reservoir	Control Building	Building		Structural	1962	200	SF
SBMWD-A01073	Intermediate	Perris Hill Park	Perris Hill Reservoir	Reservoir	SCADA	SCADA		I&C	1962	240	V
SBMWD-A01074	Intermediate	Perris Hill Park	Perris Hill Reservoir	Reservoir	Buried Reservoir - Rectangular	Tank	Storage	Structural	1962	10000000	GAL
SBMWD-A01075	Ridgeline	Ridgeline Dr Lower	BPS (#1-2)	BPS	Piping Assembly	Piping		Mechanical	1991	8	DIN
SBMWD-A01076	Ridgeline	Ridgeline Dr Lower	BPS (#1-2)	BPS	Booster Pump	Pump	Submersible	Mechanical	1991	8	DIN
SBMWD-A01077	Ridgeline	Ridgeline Dr Lower	BPS (#1-2)	BPS	Piping Assembly	Piping		Mechanical	1991	8	DIN
SBMWD-A01078	Ridgeline	Ridgeline Dr Lower	BPS (#1-2)	BPS	Fence	Fencing	Iron	Civil	1991		
SBMWD-A01079	Ridgeline	Ridgeline Dr Upper	Reservoir	Reservoir	Drain Port On Reservoir Next To SCADA	Piping		Mechanical	1990		
SBMWD-A01080	Ridgeline	Ridgeline Dr Upper	Reservoir	Reservoir	Inlet Piping Assembly	Piping		Mechanical	1990	12	DIN
SBMWD-A01081	Ridgeline	Ridgeline Dr Upper	Reservoir	Reservoir	Light Above SCADA	Lighting	Pole	Electrical	1990		
SBMWD-A01082	Ridgeline	Ridgeline Dr Upper	Reservoir	Reservoir	Liquid Level Gauge	Level Indicator		I&C	1990		
SBMWD-A01083	Ridgeline	Ridgeline Dr Upper	Reservoir	Reservoir	Reservoir	Tank	Reservoir	Structural	1990	100000	GAL
SBMWD-A01084	Ridgeline	Ridgeline Dr Upper	Reservoir	Reservoir	SCADA Panel	SCADA		I&C	1990		
SBMWD-A01085	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	1990		
SBMWD-A01086	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Pump#1	Pump	Centrifugal	Mechanical	1990	3	DIN
SBMWD-A01087	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Pump#1 Air-Vac Assembly	Piping		Mechanical	1990	1	DIN
SBMWD-A01088	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Pump#1 Discharge Butterfly Valve	Valve	Butterfly	Mechanical	1990	3	DIN
SBMWD-A01089	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Pump#1 Piping Assembly	Piping		Mechanical	1990	3	DIN
SBMWD-A01090	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Pump#1 Suction Butterfly Valve	Valve	Butterfly	Mechanical	1990	3	DIN
SBMWD-A01091	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Pump#2	Pump	Centrifugal	Mechanical	1990	3	DIN
SBMWD-A01092	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Pump#2 Air-Vac Assembly	Piping		Mechanical	1990	1	DIN
SBMWD-A01093	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Pump#2 Discharge Butterfly Valve	Valve	Butterfly	Mechanical	1990	3	DIN
SBMWD-A01094	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Pump#2 Piping Assembly	Piping		Mechanical	1990	3	DIN
SBMWD-A01095	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Pump#2 Suction Butterfly Valve	Valve	Butterfly	Mechanical	1990	3	DIN
SBMWD-A01096	Ridgeline	Ridgeline Hydro Dr Upper	Hydro Tank	Reservoir	Hydropneumatic Tank	Tank	Hydropneuma	Structural	1991	2000	GAL
SBMWD-A01097	Ridgeline	Ridgeline Hydro Dr Upper	Hydro Tank	Reservoir	Outlet Valve	Valve		Mechanical	1991		
SBMWD-A01098	Ridgeview	Ridgeview#1	Reservoir	Reservoir	Electrical Panel Rtu	Power Panel		Electrical	1963		
SBMWD-A01099	Ridgeview	Ridgeview#1	Reservoir	Reservoir	Fence	Fencing	Chainlink	Civil	1963		
SBMWD-A01100	Ridgeview	Ridgeview#1	Reservoir	Reservoir	Inlet Piping Assembly	Piping		Mechanical	1963		
SBMWD-A01101	Ridgeview	Ridgeview#1	Reservoir	Reservoir	Ladder	Ladder	Fixed	Civil	1963		
SBMWD-A01102	Ridgeview	Ridgeview#1	Reservoir	Reservoir	Liquid Level Gauge	Level Indicator		I&C	1963		
SBMWD-A01103	Ridgeview	Ridgeview#1	Reservoir	Reservoir	Overflow Piping Assembly	Piping		Mechanical	1963		
SBMWD-A01104	Ridgeview	Ridgeview#1	Reservoir	Reservoir	Reservoir	Tank	Reservoir	Structural	1963	330000	GAL
SBMWD-A01105	Mountain	Sepulveda Ave	BPS (#1-2)	BPS	Booster Pump#1	Pump	Submersible	Mechanical	1996	70	TDHFT
SBMWD-A01106	Mountain	Sepulveda Ave	BPS (#1-2)	BPS	Booster Pump#2 Submersible	Pump	Submersible	Mechanical	1996	70	TDHFT
SBMWD-A01107	Mountain	Sepulveda Ave	BPS (#1-2)	BPS	Pump#1 Discharge Valve	Valve	Check	Mechanical	1996	8	DIN
SBMWD-A01108	Mountain	Sepulveda Ave	BPS (#1-2)	BPS	Pump#1 Piping Assembly	Piping		Mechanical	1996	8	DIN
SBMWD-A01109	Mountain	Sepulveda Ave	BPS (#1-2)	BPS	Pump#2 Discharge Valve	Valve	Check	Mechanical	1996	8	DIN
SBMWD-A01110	Mountain	Sepulveda Ave	BPS (#1-2)	BPS	Pump#2 Piping Assembly	Piping		Mechanical	1996	8	DIN
SBMWD-A01111	Mountain	Sepulveda Ave	BPS (#1-2)	BPS	Vault Pump#1	Non-Process Structure	Vault	Structural	1996	6	LFT
SBMWD-A01112	Shandin Hills	Shandin Hills North	Reservoir	Reservoir	Reservoir With Rectangular Steel Roof-Reservoir	Tank	Reservoir	Structural	1997	50	WFT
SBMWD-A01113	Shandin Hills	Shandin Hills North	Reservoir	Reservoir	Tank-Reservoir	Tank	Storage	Structural	1997		
SBMWD-A01114	Shandin Hills	Shandin Hills South	BPS (#1-2)	BPS	Discharge Gate Valve	Valve	Gate	Mechanical	1997	8	DIN
SBMWD-A01115	Shandin Hills	Shandin Hills South	BPS (#1-2)	BPS	Motor#1	Motor		Electrical	1997	25	HP
SBMWD-A01116	Shandin Hills	Shandin Hills South	BPS (#1-2)	BPS	Motor#2	Motor		Electrical	1997	25	HP
SBMWD-A01117	Shandin Hills	Shandin Hills South	BPS (#1-2)	BPS	Pump#1	Pump	Centrifugal	Mechanical	1997	300	GPM
SBMWD-A01118	Shandin Hills	Shandin Hills South	BPS (#1-2)	BPS	Pump#2	Pump	Centrifugal	Mechanical	1997		
SBMWD-A01119	Shandin Hills	Shandin Hills South	BPS (#1-2)	BPS	SCADA	SCADA		I&C	1997		
SBMWD-A01120	Shandin Hills	Shandin Hills South	BPS (#1-2)	BPS	Suction Butterfly Valve Pump#1	Valve	Butterfly	Mechanical	1997	6	DIN
SBMWD-A01121	Shandin Hills	Shandin Hills South	BPS (#1-2)	BPS	Suction Butterfly Valve Pump#2	Valve	Butterfly	Mechanical	1997	6	DIN
SBMWD-A01122	College/Palm	Sycamore	College BPS (#4-5)	BPS	Booster Pump#4	Pump	Vertical Turbir	Mechanical	2007	16	DIN
SBMWD-A01123	College/Palm	Sycamore	College BPS (#4-5)	BPS	Booster Pump#5	Pump	Vertical Turbir	Mechanical	2007	16	DIN
SBMWD-A01124	College/Palm	Sycamore	College BPS (#4-5)	BPS	Building	Building		Structural	2007		
SBMWD-A01125	College/Palm	Sycamore	College BPS (#4-5)	BPS	Pump#4 Discharge Valve	Valve	Butterfly	Mechanical	2007		
SBMWD-A01126	College/Palm	Sycamore	College BPS (#4-5)	BPS	Pump#4 Piping Assembly	Piping		Mechanical	2007		
SBMWD-A01127	College/Palm	Sycamore	College BPS (#4-5)	BPS	Pump#4 Suction Valve	Valve	Butterfly	Mechanical	2007		
SBMWD-A01128	College/Palm	Sycamore	College BPS (#4-5)	BPS	Pump#5 Discharge Valve	Valve	Butterfly	Mechanical	2007		
SBMWD-A01129	College/Palm	Sycamore	College BPS (#4-5)	BPS	Pump#5 Piping Assembly	Piping		Mechanical	2007		
SBMWD-A01130	College/Palm	Sycamore	College BPS (#4-5)	BPS	Pump#5 Suction Valve	Valve	Butterfly	Mechanical	2007		
SBMWD-A01131	Sycamore	Sycamore	Sycamore Reservoir#1	Reservoir	Electrical Panel	Power Panel		Electrical	1959		
SBMWD-A01132	Sycamore	Sycamore	Sycamore Reservoir#1	Reservoir	Fence	Fencing	Chainlink	Civil	1959		
SBMWD-A01133	Sycamore	Sycamore	Sycamore Reservoir#1	Reservoir	Ladder	Ladder	Fixed	Civil	1959		
SBMWD-A01134	Sycamore	Sycamore	Sycamore Reservoir#1	Reservoir	Liquid Level Gauge	Level Indicator		I&C	1959		
SBMWD-A01135	Sycamore	Sycamore	Sycamore Reservoir#1	Reservoir	Outlet Butterfly Valve	Valve	Butterfly	Mechanical	1959	24	DIN
SBMWD-A01136	Sycamore	Sycamore	Sycamore Reservoir#1	Reservoir	Outlet Piping Assembly	Piping		Mechanical	1959	24	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01137	Sycamore	Sycamore	Sycamore Reservoir#1	Reservoir	Overflow Piping Assembly	Piping		Mechanical	1959	16	DIN
SBMWD-A01138	Sycamore	Sycamore	Sycamore Reservoir#1	Reservoir	Reservoir	Tank	Reservoir	Structural	1959	2500000	GAL
SBMWD-A01139	Sycamore	Sycamore	Sycamore Reservoir#1	Reservoir	Reservoir Drain Port Next To Ladder	Piping		Mechanical	1959		
SBMWD-A01140	Sycamore	Sycamore St#2	Devil Canyon Well#5	Well	Discharge Air Vac	Valve	Air-Vac	Mechanical	1985		
SBMWD-A01141	Sycamore	Sycamore St#2	Devil Canyon Well#5	Well	Electrical Panel	Power Panel		Electrical	1985		
SBMWD-A01142	Sycamore	Sycamore St#2	Devil Canyon Well#5	Well	Flowmeter	Flowmeter	Propeller	I&C	1985	10	DIN
SBMWD-A01143	Sycamore	Sycamore St#2	Devil Canyon Well#5	Well	Piping Assembly	Piping		Mechanical	1985	10	DIN
SBMWD-A01144	Sycamore	Sycamore St#2	Devil Canyon Well#5	Well	Suction Air Vac	Valve	Air-Vac	Mechanical	1985		
SBMWD-A01145	Sycamore	Sycamore St#2	Devil Canyon Well#5	Well	Well Casing	Process Structure	Well Casing	Structural	1985	16	DIN
SBMWD-A01146	Sycamore	Sycamore St#2	Devil Canyon Well#5	Well	Well Pump	Pump	Submersible	Mechanical	2006	10	DIN
SBMWD-A01147	Sycamore	Sycamore St#2	Sycamore Reservoir#2	Reservoir	Flushline Isolation Butterfly Valve	Valve	Butterfly	Mechanical	1965	8	DIN
SBMWD-A01148	Sycamore	Sycamore St#2	Sycamore Reservoir#2	Reservoir	Piping Assembly	Piping		Mechanical	1965	12	DIN
SBMWD-A01149	Sycamore	Sycamore St#2	Sycamore Reservoir#2	Reservoir	Reservoir Isolation Butterfly Valve	Valve	Butterfly	Mechanical	1965	12	DIN
SBMWD-A01150	Sycamore	Sycamore St#2	Sycamore Reservoir#2	Reservoir	Butterfly Valve	Valve	Butterfly	Mechanical	1965	16	DIN
SBMWD-A01151	Sycamore	Sycamore St#2	Sycamore Reservoir#2	Reservoir	Piping Assembly	Piping		Mechanical	1965	16	DIN
SBMWD-A01152	Sycamore	Sycamore St#2	Sycamore Reservoir#2	Reservoir	Chlorination Building	Building		Structural	1965		
SBMWD-A01153	Sycamore	Sycamore St#2	Sycamore Reservoir#2	Reservoir	Chlorine Injection Box Near Eye Wash Station	Chlorine Injection Box		Structural	1965		
SBMWD-A01154	Sycamore	Sycamore St#2	Sycamore Reservoir#2	Reservoir	Eye Wash Station	Safety Shower/Eyewash		Mechanical	1965		
SBMWD-A01155	Sycamore	Sycamore St#2	Sycamore Reservoir#2	Reservoir	Ladder	Ladder	Fixed	Civil	1965		
SBMWD-A01156	Sycamore	Sycamore St#2	Sycamore Reservoir#2	Reservoir	Liquid Level Gauge	Level Indicator		I&C	1965		
SBMWD-A01157	Sycamore	Sycamore St#2	Sycamore Reservoir#2	Reservoir	Overflow Piping Assembly	Piping		Mechanical	1965		
SBMWD-A01158	Sycamore	Sycamore St#2	Sycamore Reservoir#2	Reservoir	Reservoir	Tank	Reservoir	Structural	1965	448000	GAL
SBMWD-A01159	Sycamore	Sycamore St#2	Sycamore Reservoir#3	Reservoir	Butterfly Valve - 8"" Drainline	Valve	Butterfly	Mechanical	1992	8	DIN
SBMWD-A01160	Sycamore	Sycamore St#2	Sycamore Reservoir#3	Reservoir	Piping Assembly - 8"" Drainline	Piping		Mechanical	1992	8	DIN
SBMWD-A01161	Sycamore	Sycamore St#2	Sycamore Reservoir#3	Reservoir	Butterfly Valve	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01162	Sycamore	Sycamore St#2	Sycamore Reservoir#3	Reservoir	Piping Assembly	Piping		Mechanical	1992	12	DIN
SBMWD-A01163	Sycamore	Sycamore St#2	Sycamore Reservoir#3	Reservoir	Butterfly Valve	Valve	Butterfly	Mechanical	1992	24	DIN
SBMWD-A01164	Sycamore	Sycamore St#2	Sycamore Reservoir#3	Reservoir	Piping Assembly	Piping		Mechanical	1992	24	DIN
SBMWD-A01165	Sycamore	Sycamore St#2	Sycamore Reservoir#3	Reservoir	Electrical Panel	Power Panel		Electrical	1992		
SBMWD-A01166	Sycamore	Sycamore St#2	Sycamore Reservoir#3	Reservoir	Ladder	Ladder	Fixed	Civil	1992		
SBMWD-A01167	Sycamore	Sycamore St#2	Sycamore Reservoir#3	Reservoir	Liquid Level Gauge	Level Indicator		I&C	1992		
SBMWD-A01168	Sycamore	Sycamore St#2	Sycamore Reservoir#3	Reservoir	Overflow Piping Assembly	Piping		Mechanical	1992		
SBMWD-A01169	Sycamore	Sycamore St#2	Sycamore Reservoir#3	Reservoir	Reservoir	Tank	Reservoir	Structural	1992	6000000	GAL
SBMWD-A01170	Lower	Waterman Ave	GAC System	Wellhead Treatment	Backflow Preventer	Valve	Backflow Prev	Mechanical	1997	10	DIN
SBMWD-A01171	Lower	Waterman Ave	GAC System	Wellhead Treatment	Flowmeter	Flowmeter		I&C	1997	8	DIN
SBMWD-A01172	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Plant Piping	Piping		Mechanical	1997	8	DIN
SBMWD-A01173	Lower	Waterman Ave	GAC System	Wellhead Treatment	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1987	2300	SF
SBMWD-A01174	Lower	Waterman Ave	GAC System	Wellhead Treatment	Safety Shower & Eyewash Station	Safety Shower/Eyewash		Mechanical	1987		
SBMWD-A01175	Lower	Waterman Ave	GAC System	Wellhead Treatment	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1997	50	SF
SBMWD-A01176	Lower	Waterman Ave	GAC System	Wellhead Treatment	Piping Assembly Antisiphon	Piping		Mechanical	1997	20	DIN
SBMWD-A01177	Lower	Waterman Ave	GAC System	Wellhead Treatment	Blower Building	Building		Structural	1987	1800	SF
SBMWD-A01178	Upper	Newmark	Well	Well	120/240V Power Panel	Power Panel		Electrical	1991	240	V
SBMWD-A01179	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	480 V Switchboard - Boosters 3&4	Switchboard		Electrical	1991	480	V
SBMWD-A01180	Upper	19th St	BPS (#1-5)	BPS	480V Disconnect Switch	Switch	Disconnect	Electrical	2009	600	V
SBMWD-A01181	Lower	Waterman Ave	GAC System	Wellhead Treatment	Motor Control Center	MCC		Electrical	1987	800	AMP
SBMWD-A01182	Lower	Waterman Ave	GAC System	Wellhead Treatment	Air Ducting (Inside) North Tower	Air Ventilation System	Duct	HVAC	1987	54	DIN
SBMWD-A01183	Lower	Waterman Ave	GAC System	Wellhead Treatment	Air Ducting (Outside) North Tower	Air Ventilation System	Duct	HVAC	1987	54	DIN
SBMWD-A01184	Lower	Waterman Ave	GAC System	Wellhead Treatment	Blower#1 North	Blower		Mechanical	1987	75	HP
SBMWD-A01185	Lower	Waterman Ave	GAC System	Wellhead Treatment	Air Flowmeter Blower#1	Flowmeter	Air	I&C	1989	54	DIN
SBMWD-A01186	Lower	Waterman Ave	GAC System	Wellhead Treatment	Air Ducting (Inside) South Tower	Air Ventilation System	Duct	HVAC	1987	54	DIN
SBMWD-A01187	Lower	Waterman Ave	GAC System	Wellhead Treatment	Air Ducting (Outside) South Tower	Air Ventilation System	Duct	HVAC	1987	54	DIN
SBMWD-A01188	Lower	Waterman Ave	GAC System	Wellhead Treatment	Blower#2 South	Blower		Mechanical	1987	75	HP
SBMWD-A01189	Lower	Waterman Ave	GAC System	Wellhead Treatment	Flowmeter	Flowmeter	Air	I&C	2014	120	V
SBMWD-A01190	Lower	Waterman Ave	GAC System	Wellhead Treatment	Flowmeter - Near GAC System	Flowmeter		I&C	1997	24	DIN
SBMWD-A01191	Lower	Waterman Ave	GAC System	Wellhead Treatment	Flowmeter Vault	Non-Process Structure	Vault	Structural	1997	10	LFT
SBMWD-A01192	Lower	Waterman Ave	GAC System	Wellhead Treatment	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1997	1500	SF
SBMWD-A01193	Lower	Waterman Ave	GAC System	Wellhead Treatment	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1997	1500	SF
SBMWD-A01194	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 1A & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01195	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 2A & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01196	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 1B & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01197	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 2B & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01198	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 8B & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01199	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 3A & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01200	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 8A & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01201	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 3B & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01202	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 7B & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01203	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 7A & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01204	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 6B & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01205	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 6A & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01206	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 5B & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01207	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 5A & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01208	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 4B & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01209	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Vessel 4A & Air Vacuum valves	Vessel	GAC	Structural	1997	12	DFT
SBMWD-A01210	Lower	Waterman Ave	GAC System	Wellhead Treatment	Access Gate Motorized Double Door - Waterman Av.	Access Gate	Motorized	Civil	1987	20	LFT
SBMWD-A01211	Lower	Waterman Ave	GAC System	Wellhead Treatment	Chainlink Fencing	Fencing	Chainlink	Civil	1987	810	LFT
SBMWD-A01212	Lower	Waterman Ave	GAC System	Wellhead Treatment	Concrete Pad For Transformer (South of Blower Building)	Non-Process Structure	Concrete Pad	Structural	1987	92	SF
SBMWD-A01213	Lower	Waterman Ave	GAC System	Wellhead Treatment	Air Stripping Tower	Process Structure	Stripping Tow	Structural	1987	16	DFT
SBMWD-A01214	Lower	Waterman Ave	GAC System	Wellhead Treatment	Effluent Piping Assembly	Piping		Mechanical	1987	18	DIN
SBMWD-A01215	Lower	Waterman Ave	GAC System	Wellhead Treatment	Influent Flowmeter	Flowmeter		I&C	1987	16	DIN
SBMWD-A01216	Lower	Waterman Ave	GAC System	Wellhead Treatment	Influent Isolation Valve	Valve	Butterfly	Mechanical	1987	18	DIN
SBMWD-A01217	Lower	Waterman Ave	GAC System	Wellhead Treatment	Influent Piping Assembly	Piping		Mechanical	1987	18	DIN
SBMWD-A01218	Lower	Waterman Ave	GAC System	Wellhead Treatment	Air Stripping Tower	Process Structure	Stripping Tow	Structural	1987	16	DFT
SBMWD-A01219	Lower	Waterman Ave	GAC System	Wellhead Treatment	Effluent Piping Assembly	Piping		Mechanical	1987	18	DIN
SBMWD-A01220	Lower	Waterman Ave	GAC System	Wellhead Treatment	Influent Flowmeter	Flowmeter		I&C	1987	16	DIN
SBMWD-A01221	Lower	Waterman Ave	GAC System	Wellhead Treatment	Influent Isolation Valve	Valve	Butterfly	Mechanical	1987	18	DIN
SBMWD-A01222	Lower	Waterman Ave	GAC System	Wellhead Treatment	Influent Piping Assembly	Piping		Mechanical	1987	18	DIN
SBMWD-A01223	Lower	Waterman Ave	Reservoir	Reservoir	Ventilation Vault (North-East Corner)	Non-Process Structure	Vault	Structural	1947	3.7	TFT
SBMWD-A01224	Lower	Waterman Ave	Reservoir	Reservoir	Ventilation Vault (North-West Corner)	Non-Process Structure	Vault	Structural	1947	3.7	TFT
SBMWD-A01225	Lower	Waterman Ave	Reservoir	Reservoir	Ventilation Vault (South-East Corner)	Non-Process Structure	Vault	Structural	1947	3.7	TFT
SBMWD-A01226	Mountain	Sepulveda Ave	BPS (#1-2)	BPS	Control Panel	Control Panel		Electrical	1996	230	V
SBMWD-A01227	Mountain	Sepulveda Ave	BPS (#1-2)	BPS	SCADA	SCADA		I&C	1996		
SBMWD-A01228	Mountain	Sepulveda Ave	BPS (#1-2)	BPS	Vault For Booster Pump#2	Non-Process Structure	Vault	Structural	1996	6	LFT
SBMWD-A01229	Mountain	Hill Dr	BPS (#1-2)	BPS	Control Panel	Control Panel		Electrical	1996	15	HP
SBMWD-A01230	Mountain	Hill Dr	BPS (#1-2)	BPS	SCADA	SCADA		I&C	1996		
SBMWD-A01231	Mountain	Hill Dr	BPS (#1-2)	BPS	Check Valve Second	Valve	Check	Mechanical	1996		
SBMWD-A01232	Mountain	Sepulveda Ave	BPS (#1-2)	BPS	Flowmeter Pump#1,2	Flowmeter		I&C	1996		
SBMWD-A01233	Mountain	Sepulveda Ave	BPS (#1-2)	BPS	Breaker Switch Between Two Pumps	Control Panel		Electrical	1996		
SBMWD-A01234	Mountain	Sepulveda Ave	BPS (#1-2)	BPS	Suction Valve on Pipeline Parallel to the Pump Assembly	Valve		Mechanical	1996	8	DIN
SBMWD-A01235	Mountain	Hill Dr	BPS (#1-2)	BPS	Flowmeter Pump#1&2	Flowmeter		I&C	1996		
SBMWD-A01236	Mountain	Hill Dr	BPS (#1-2)	BPS	Breaker To Switch Between Pumps	Control Panel		Electrical	1996		
SBMWD-A01237	Mountain	Mountain	Reservoir#3	Reservoir	Overflow Piping Assembly (South-East)	Piping		Mechanical	1952	6	DIN
SBMWD-A01238	Mountain	Mountain	Reservoir#3	Reservoir	Rolling Gate	Access Gate	Rolling	Civil	1952		
SBMWD-A01239	Mountain	Mountain	Reservoir#3	BPS	Control Panel	Control Panel		Electrical	1952	230	V
SBMWD-A01240	Mountain	Mountain	Reservoir#3	Reservoir	SCADA	SCADA		I&C	1952		
SBMWD-A01241	Mountain	Mountain	Reservoir#3	Reservoir	Fencing	Fencing	Chainlink	Civil	1952	6	LFT
SBMWD-A01242	Mountain	Mountain	Reservoir#3	BPS	Transducer	Pressure Transducer		I&C	1952	30	PSIG (Proc
SBMWD-A01243	Mountain	Mountain	Reservoir#3	Reservoir	Asphalt	Pavement	Asphalt	Civil	1952		
SBMWD-A01244	Mountain	Mountain	Reservoir#2	Reservoir	Double Door Gate	Access Gate	Manual	Civil	1952		
SBMWD-A01245	Mountain	Mountain	Reservoir#3	Reservoir	Lighting	Lighting	Pole	Electrical	1952		
SBMWD-A01246	Mountain	Mountain	Reservoir#3	Reservoir	SCADA	SCADA		I&C	1952		
SBMWD-A01247	Sycamore	Sycamore	Sycamore Reservoir#1	Reservoir	Entrance Gate	Access Gate	Motorized	Civil	1959		
SBMWD-A01248	College/Palm	Sycamore	College BPS (#4-5)	BPS	Pump#4 Check Valve	Valve	Check	Mechanical	1959		
SBMWD-A01249	College/Palm	Sycamore	College BPS (#4-5)	BPS	A C Unit	AC Unit		HVAC	1959		
SBMWD-A01250	College/Palm	Sycamore	College BPS (#4-5)	BPS	Pump#5 Check Valve	Valve	Check	Mechanical	1959		
SBMWD-A01251	Mountain	Mountain	Reservoir#3	Reservoir	Single Door Gate	Access Gate	Manual	Civil	1952		
SBMWD-A01252	College/Palm	Sycamore	College BPS (#4-5)	BPS	Valve	Valve		Mechanical	1959	8	DIN
SBMWD-A01253	College/Palm	Sycamore	College BPS (#4-5)	BPS	Control Panel	Control Panel		Electrical	1959	480	V
SBMWD-A01254	College/Palm	Sycamore	College BPS (#4-5)	BPS	Flowmeter	Flowmeter		I&C	1959	10000	GPM
SBMWD-A01255	College/Palm	Sycamore	College BPS (#4-5)	BPS	Pump#5 Control	Control Panel		Electrical	1959		
SBMWD-A01256	College/Palm	Sycamore	College BPS (#4-5)	BPS	Pump#4 Control	Control Panel		Electrical	1959		
SBMWD-A01257	College/Palm	Sycamore	College BPS (#4-5)	BPS	Pump#5 SCADA	SCADA		I&C	1959		
SBMWD-A01258	College/Palm	Sycamore	College BPS (#4-5)	BPS	Pump#4 SCADA	SCADA		I&C	1959		
SBMWD-A01259	College/Palm	Sycamore	College BPS (#4-5)	BPS	Valve On the Suction Pipeline Coming From the Colleg Reservoir	Valve		Mechanical	1959	16	DIN
SBMWD-A01260	Sycamore	Sycamore	Sycamore Reservoir#1	Reservoir	Transducer	Pressure Transducer		I&C	1959		
SBMWD-A01261	College/Palm	Sycamore	College BPS (#4-5)	BPS	Generator Receptacle	Generator Connection Box		Electrical	1959		
SBMWD-A01262	Sycamore	Devil Canyon#1	Well#1	Well	Flowmeter	Flowmeter		I&C	1980		
SBMWD-A01263	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	SCADA	SCADA		I&C	1980		
SBMWD-A01264	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Pump#1 Control Panel	Motor Starter		Electrical	1980	480	V
SBMWD-A01265	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Control Valve	Valve		Mechanical	1980	12	DIN
SBMWD-A01266	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Bfv Downstream the Control Valve	Valve	Butterfly	Mechanical	1980	12	DIN
SBMWD-A01267	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Flowmeter By the Control Valve	Flowmeter		I&C	1980	12	DIN
SBMWD-A01268	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Motorized Gate	Access Gate	Motorized	Civil	1980		
SBMWD-A01269	College/Palm	Devil Canyon#1	College BPS (#1-3)	BPS	Bfv Upstream Control Valve	Valve	Butterfly	Mechanical	1980	12	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01270	Upper	Newmark	Well	Well	480V Distribution Panel	Power Panel		Electrical	2013	480	V
SBMWD-A01271	Upper	Newmark	BPS	BPS	480V MCC	MCC		Electrical	1980	480	V
SBMWD-A01272	Sycamore	Sycamore St#2	Devil Canyon Well#5	Well	Fencing	Fencing	Chainlink	Civil	1965		
SBMWD-A01273	Sycamore	Sycamore St#2	Devil Canyon Well#5	Well	Well 5 Check Valve	Valve	Check	Mechanical	1965		
SBMWD-A01274	Sycamore	Devil Canyon#1	Devil Canyon Well#1	Well	Chlorine Injection Box	Chlorine Injection Box		Structural	1980		
SBMWD-A01275	Upper	Newmark	Well	Well	480V Service Entrance Breaker	Panel	Circuit Breaker	Electrical	1971	480	V
SBMWD-A01276	College/Palm	Devil Canyon Rd	College Reservoir	Reservoir	Fence	Fencing	Chainlink	Civil	1964		
SBMWD-A01277	College/Palm	Devil Canyon Rd	College Reservoir	Reservoir	Electrical Panel	Power Panel		Electrical	1964		
SBMWD-A01278	College/Palm	Devil Canyon Rd	College Reservoir	Reservoir	Valve Unknown	Valve		Mechanical	1964		
SBMWD-A01279	College/Palm	Devil Canyon Rd	College Reservoir	Reservoir	Butterfly Valve	Valve	Butterfly	Mechanical	1964		
SBMWD-A01280	College/Palm	Devil Canyon Rd	College Reservoir	Reservoir	Ladder	Ladder	Fixed	Civil	1964		
SBMWD-A01281	College/Palm	Devil Canyon Rd	College Reservoir	Reservoir	Liquid Level Gauge	Level Indicator		I&C	1964		
SBMWD-A01282	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	SCADA	SCADA		I&C	1994		
SBMWD-A01283	Sycamore	Newmark	Sycamore BPS (#2)	BPS	480V Soft Starter Booster Pump#2	Motor Starter		Electrical	1971	480	V
SBMWD-A01284	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Chlorine Gas Monitor	Chlorine Detection System		I&C	1994		DIN
SBMWD-A01285	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Chain Link Fence	Fencing	Chainlink	Civil	1994		
SBMWD-A01286	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Chlorine Injection Pump	Pump	Chemical	Mechanical	1994		
SBMWD-A01287	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	SCADA#2	SCADA		I&C	1994		
SBMWD-A01288	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Discharge Check Valve	Valve	Check	Mechanical	1994		
SBMWD-A01289	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Chlorine Injection Box	Chlorine Injection Box		Structural	1994		
SBMWD-A01290	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Chlorine Room	Building		Structural	1994		
SBMWD-A01291	College/Palm	Devil Canyon Rd	Devil Canyon Well#2	Well	Flowmeter	Flowmeter	Propeller	I&C	1994		DIN
SBMWD-A01292	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#7	Well	Check Valve	Valve	Check	Mechanical	1994		
SBMWD-A01293	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#7	Well	Flowmeter	Flowmeter		I&C	1994		
SBMWD-A01294	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#7	Well	Lighting	Lighting	Pole	Electrical	1994	3	QTY
SBMWD-A01295	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#7	Well	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1994		
SBMWD-A01296	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#6	Well	Air Release Valve - Pump	Valve	Air Release	Mechanical	1994		
SBMWD-A01297	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#6	Well	Rolling Gate	Access Gate	Rolling	Civil	1994		
SBMWD-A01298	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#6	Well	Air Release Valve - Pipe	Valve	Air Release	Mechanical	1994		
SBMWD-A01299	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#6	Well	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1994		
SBMWD-A01300	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#7	Well	Electrical Panel 6&7	Power Panel		Electrical	1994		
SBMWD-A01301	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#6	Well	SCADA 6&7	SCADA		I&C	1994		
SBMWD-A01302	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic R	Reservoir	Overflow	Piping		Mechanical	1994		
SBMWD-A01303	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic R	Reservoir	Gate Valve Outlet	Valve	Gate	Mechanical	1994	6	DIN
SBMWD-A01304	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic R	Reservoir	Gate Valve Inlet	Valve	Gate	Mechanical	1994		
SBMWD-A01305	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#3	Well	Vault	Non-Process Structure	Vault	Structural	1994		
SBMWD-A01306	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#3	Well	Air Release Valve For Pipe	Valve	Air Release	Mechanical	1994		
SBMWD-A01307	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#3	Well	Air Release Valve For Pump	Valve	Air Release	Mechanical	1994		
SBMWD-A01308	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Control Panel - Starter	Motor Starter		Electrical	1994	no	
SBMWD-A01309	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Concrete Slab	Non-Process Structure		Structural	1994		
SBMWD-A01310	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Check Valve	Valve	Check	Mechanical	1994		
SBMWD-A01311	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#3	Well	Electrical Box	Power Panel		Electrical	1994		
SBMWD-A01312	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#3	Well	Valve	Valve		Mechanical	1994		
SBMWD-A01313	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Waste Valve	Valve		Mechanical	1994		
SBMWD-A01314	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Office Trailer	Building		Structural	1994		
SBMWD-A01315	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Vault	Non-Process Structure		Structural	1994		
SBMWD-A01316	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#3	Well	Valve To Waste	Valve		Mechanical	1994		
SBMWD-A01317	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Outdoor Lighting	Lighting	Pole	Electrical	1994	3	QTY
SBMWD-A01318	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Flowmeter	Flowmeter		I&C	1994		
SBMWD-A01319	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Electrical Box	Power Panel		Electrical	1994		
SBMWD-A01320	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Breaker Box	Power Panel		Electrical	1994		
SBMWD-A01321	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Chlorine Building	Building		Structural	1994		
SBMWD-A01322	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Eye Wash Station	Safety Shower/Eyewash		Mechanical	1994		
SBMWD-A01323	Devil Canyon Domestic	Devil Canyon Rd	Devil Canyon Well#7	Well	Chlorine Injection Vault	Non-Process Structure	Vault	Structural	1994		
SBMWD-A01324	Devil Canyon	Devil Canyon Rd	Devil Canyon Reservoir	Reservoir	Valve Reservoir Overflow	Valve		Mechanical	1994	12	DIN
SBMWD-A01325	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	Booster 1 Isolation Valve	Valve	Isolation	Mechanical	1994	6	DIN
SBMWD-A01326	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	Booster 2 Isolation Bfv	Valve	Butterfly	Mechanical	1994	6	DIN
SBMWD-A01327	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	Flowmeter	Flowmeter		I&C	1994		
SBMWD-A01328	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	SCADA West	SCADA		I&C	1994		
SBMWD-A01329	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	SCADA East	SCADA		I&C	1994		
SBMWD-A01330	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	MCC	MCC		Electrical	1994		
SBMWD-A01331	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	Sump Pump	Pump		Mechanical	1994		
SBMWD-A01332	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	Pump Room Building	Building		Structural	1994		
SBMWD-A01333	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	Lighting	Lighting	Pole	Electrical	1994	4	QTY
SBMWD-A01334	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	Steps	Non-Process Structure		Structural	1994		
SBMWD-A01335	Devil Canyon	Devil Canyon Rd	Devil Canyon Domestic B	BPS	Building Chlorine Room	Building		Structural	1994		

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01336	Upper	Newmark	Well	Well	480V Soft Starter Well 2	Motor Starter		Electrical	1971	600	V
SBMWD-A01337	Devil Canyon	Devil Canyon Rd	Devil Canyon Well#4	Well	Gate	Access Gate	Manual	Civil	1994		
SBMWD-A01338	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Level Gauge	Level Gauge		Mechanical	1982		
SBMWD-A01339	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Piping Assembly	Piping		Mechanical	1982		
SBMWD-A01340	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Butterfly Valve	Valve	Butterfly	Mechanical	1982		
SBMWD-A01341	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Overflow Structure Pipe Drain	Piping		Mechanical	1982	3	LFT
SBMWD-A01342	Upper	Newmark	BPS	BPS	480V Switchboard	Switchboard		Electrical	1980	480	V
SBMWD-A01343	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	BFV-ACV	Valve	Butterfly	Mechanical	1982	12	DIN
SBMWD-A01344	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Bfv Control Valve 1	Valve	Butterfly	Mechanical	1982		
SBMWD-A01345	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	BFV-ACV 2	Valve	Butterfly	Mechanical	1982	12	DIN
SBMWD-A01346	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	BFV-ACV 2 - Upstream Genetator	Valve	Butterfly	Mechanical	1982	12	DIN
SBMWD-A01347	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	BFV Control Valve 2 , 8 In, Bypass, Isolation of Control Valve - Upstream	Valve	Butterfly	Mechanical	1982		
SBMWD-A01348	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	BFV-ACV 2 - Downstream of the Control Valve	Valve	Butterfly	Mechanical	1982	8	DIN
SBMWD-A01349	Upper	Newmark	Well	Well	480V Switchboard Well 2	Switchboard		Electrical	2004	480	V
SBMWD-A01350	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Bfv Upstream Control Valve 4, 12 Inch	Valve	Butterfly	Mechanical	1982		
SBMWD-A01351	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	BFV-ACV 4 - Downstream	Valve	Butterfly	Mechanical	1982	12	DIN
SBMWD-A01352	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Bfv Control Valve 5, 8 In Upstream and Down Stream	Valve	Butterfly	Mechanical	1982		
SBMWD-A01353	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	480V Switchboard Well 3	Switchboard		Electrical	1971	480	V
SBMWD-A01354	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Lighting	Lighting	Pole	Electrical	1982	3	Pole
SBMWD-A01355	Cajon	Cajon Blvd	Reservoir	Reservoir	6" PRV	Valve	Pressure Redu	Mechanical	1957	6	DIN
SBMWD-A01356	Lower	EPA	Well#112	Well	AC Unit	AC Unit		HVAC	2003		
SBMWD-A01357	Lower	Waterman Ave	Well	Well	AC Unit	AC Unit		HVAC	1947	460	VAC
SBMWD-A01358	Lower	Olive & Garner	Well	Well	AC Unit	AC Unit		HVAC	1993		
SBMWD-A01359	Shandin Hills	Shandin Hills North	Reservoir	Reservoir	Access Door Gate	Access Gate	Manual	Civil	1997		
SBMWD-A01360	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Air Ventilation System - Duct	Air Ventilation System	Duct	HVAC	2010		
SBMWD-A01361	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Outdoor Lightning	Lighting	Pole	Electrical	2010		
SBMWD-A01362	Lower	EPA	Well#004	Well	Access Gate	Access Gate	Manual	Civil	1996		
SBMWD-A01363	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Isolation Valve ACV#1	Valve	Butterfly	Mechanical	2010		
SBMWD-A01364	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	Flowmeter - ACV (Water Comes From Mayer)	Flowmeter		I&C	2010		
SBMWD-A01365	Lower	EPA	Well#002	Well	Access Gate	Access Gate	Manual	Civil	1996		
SBMWD-A01366	Ridgeline	Ridgeline Dr Upper	Reservoir	Reservoir	Access Gate	Access Gate	Manual	Civil	1990		
SBMWD-A01367	Devore/Meyers	Meyers Canyon	Reservoir	Reservoir	Reservoir Overflow	Piping		Mechanical	1990		
SBMWD-A01368	Devore/Meyers	Cajon Wash	Vincent Well	Well	Lighting	Lighting	Pole	Electrical	1990		
SBMWD-A01369	Devore/Meyers	Cajon Wash	Vincent Well	Well	Concrete Slab	Non-Process Structure	Concrete Pad	Structural	1990		
SBMWD-A01370	Devore/Meyers	Cajon Wash	Vincent Well	Well	Air Relief Valve	Valve	Air Release	Mechanical	1990		
SBMWD-A01371	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Roll Up Door	Access Gate	Rolling	Civil	1990		
SBMWD-A01372	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Security Camera	Camera	Safety	Electrical	1990		
SBMWD-A01373	Devore/Meyers	Cajon Wash	Cajon Canyon Well	Well	Light	Lighting	Pole	Electrical	1990		
SBMWD-A01374	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Entry Gates	Access Gate	Manual	Civil	1990		
SBMWD-A01375	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Building	Building		Structural	1990		
SBMWD-A01376	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Pipe Assembly	Piping		Mechanical	1990		
SBMWD-A01377	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Detention Basin	Process Structure	Basin	Structural	1982		GAL
SBMWD-A01378	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Well Generator	Generator		Electrical	1990		DIN
SBMWD-A01379	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Air Release	Valve	Air Release	Mechanical	1990		
SBMWD-A01380	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Lighting	Lighting	Pole	Electrical	1990		
SBMWD-A01381	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Fence	Fencing	Chainlink	Civil	1990		
SBMWD-A01382	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Roll Up Door (Chain Operated)	Access Gate	Rolling	Civil	1990		
SBMWD-A01383	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	SCADA	SCADA		I&C	1990		
SBMWD-A01384	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Electrical Panel	Power Panel		Electrical	1990		
SBMWD-A01385	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Control Panel	Control Panel		Electrical	1990	480	V
SBMWD-A01386	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Portable Generator	Generator		Electrical	1990	400	Kw
SBMWD-A01387	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Discharge Air Valves	Valve	Air Release	Mechanical	1990		
SBMWD-A01388	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Chlorinated Water Distribution	Chlorine Station		Mechanical	1990		
SBMWD-A01389	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Discharge Pipe Assembly	Piping		Mechanical	1990		
SBMWD-A01390	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Chlorine Room	Building		Structural	1991		
SBMWD-A01391	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	SCADA	SCADA		I&C	1990		
SBMWD-A01392	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Outdoor Lighting	Lighting	Pole	Electrical	1990		
SBMWD-A01393	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Security Camera	Camera	Safety	Electrical	1990		
SBMWD-A01394	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Pump Check Valve	Valve	Check	Mechanical	1990	12	DIN
SBMWD-A01395	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Flowmeter	Flowmeter		I&C	1990		
SBMWD-A01396	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Security Camera	Camera	Safety	Electrical	1990		
SBMWD-A01397	Devore/Meyers	Cajon Wash	Kenwood Well#2	Well	Lighting	Lighting	Pole	Electrical	1990		
SBMWD-A01398	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Butterfly Valve	Valve	Butterfly	Mechanical	1990	12	DIN
SBMWD-A01399	Devore/Meyers	Cajon Wash	Kenwood Well#1	Well	Chlorine Mixer Pump	Pump	Chemical	Mechanical	1990	2	HP
SBMWD-A01400	Devore/Meyers	Devore	Reservoir	Reservoir	Ladder	Ladder	Fixed	Civil	1982		
SBMWD-A01401	Devore/Meyers	Devore	Reservoir	Reservoir	Level Gauge	Level Gauge		Mechanical	1982		
SBMWD-A01402	Devore/Meyers	Devore	Reservoir	Reservoir	Inflow Pipe Assembly	Piping		Mechanical	1982		

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01403	Devore/Meyers	Devore	Reservoir	Reservoir	Control Valve	Valve		Mechanical	1982	16	DIN
SBMWD-A01404	Devore/Meyers	Devore	Reservoir	Reservoir	Air Release Valve	Valve	Air Release	Mechanical	1982	2	DIN
SBMWD-A01405	Devore/Meyers	Devore	Reservoir	Reservoir	Transducer	Pressure Transducer		I&C	1982		
SBMWD-A01406	Devore/Meyers	Devore	Reservoir	Reservoir	Flowmeter - Inside Inlet Vault	Flowmeter		I&C	1982		
SBMWD-A01407	Devore/Meyers	Devore	Reservoir	Reservoir	Security Camera	Camera	Safety	Electrical	1982	4	QTY
SBMWD-A01408	Devore/Meyers	Devore	Reservoir	Reservoir	Lighting	Lighting	Pole	Electrical	1982	4	QTY
SBMWD-A01409	Devore/Meyers	Devore	Reservoir	Reservoir	SCADA	SCADA		I&C	1982		
SBMWD-A01410	Devore/Meyers	Devore	Reservoir	Reservoir	SCADA 2	SCADA		I&C	1982		
SBMWD-A01411	Devore/Meyers	Devore	Reservoir	Reservoir	MCC	MCC		Electrical	1982		
SBMWD-A01412	Lower	Gilbert St	Common	Other	Eye Wash Station	Safety Shower/Eyewash		Mechanical	1991		
SBMWD-A01413	Lower	Gilbert St	Well	Well	Security Camera	Camera	Safety	Electrical	1991	2	QTY
SBMWD-A01414	Lower	Gilbert St	Well	Well	Lighting	Lighting	Pole	Electrical	1991	2	QTY
SBMWD-A01415	Lower	Gilbert St	Well	Well	Fence - Chain link with wood	Fencing	Chainlink	Civil	1991		LFT
SBMWD-A01416	Lower	Gilbert St	Well	Well	Access Gate	Access Gate	Motorized	Civil	1991	2	QTY
SBMWD-A01417	Lower	Gilbert St	Reservoir	Reservoir	Overflow Piping Assembly	Piping		Mechanical	1991		DIN
SBMWD-A01418	Ridgeline	Ridgeline Dr Lower	BPS (#1-2)	Other	Access Gate	Access Gate	Manual	Civil	1991		
SBMWD-A01419	Lower	Gilbert St	Common	Other	Flow Control Panel	Control Panel		Electrical	1991	120	V
SBMWD-A01420	Lower	Gilbert St	GAC System	Wellhead Treatment	Overflow Piping	Piping		Mechanical	2014		
SBMWD-A01421	Lower	Gilbert St	GAC System	Wellhead Treatment	Overflow Piping	Piping		Mechanical	2014		
SBMWD-A01422	Lower	Gilbert St	GAC System	Wellhead Treatment	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1991		
SBMWD-A01423	Lower	Gilbert St	GAC System	Well	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1991		
SBMWD-A01424	Lower	Gilbert St	Common	Well	Backflip Isolation Valve Upstream	Valve		Mechanical	1991		
SBMWD-A01425	Lower	Gilbert St	Common	Well	Backflip Isolation Valve Downstream	Valve		Mechanical	1991		
SBMWD-A01426	Lower	Gilbert St	Common	Wellhead Treatment	Raw Blend Flowmeter	Flowmeter		I&C	1991		
SBMWD-A01427	Lower	Gilbert St	GAC System	Well	Butterfly Valve A1	Valve		Mechanical	1991		
SBMWD-A01428	Lower	Gilbert St	GAC System	Well	Butterfly Valve A2	Valve		Mechanical	1991		
SBMWD-A01429	Lower	Gilbert St	GAC System	Well	Butterfly Valve A3	Valve		Mechanical	1991		
SBMWD-A01430	Lower	Gilbert St	GAC System	Well	Butterfly Valve A4	Valve		Mechanical	1991		
SBMWD-A01431	Lower	Gilbert St	GAC System	Well	Butterfly Valve B1	Valve		Mechanical	1991		
SBMWD-A01432	Lower	Gilbert St	Common	Wellhead Treatment	BFV on Raw Blend Upstream	Valve	Butterfly	Mechanical	2013		
SBMWD-A01433	Lower	Gilbert St	Common	Wellhead Treatment	BFV on Raw Blend Upstream	Valve	Butterfly	Mechanical	1991		
SBMWD-A01434	Lower	Gilbert St	Common	Well	Butterfly Valve System Effluent	Valve		Mechanical	1991		
SBMWD-A01435	Shandin Hills	Shandin Hills North	Reservoir	Reservoir	Access Gate	Access Gate	Manual	Civil	1997	20	LFT
SBMWD-A01436	Lower	Gilbert St	GAC System	Well	Butterfly Valve B2	Valve		Mechanical	1991		
SBMWD-A01437	Lower	Gilbert St	GAC System	Well	Butterfly Valve B3	Valve		Mechanical	1991		
SBMWD-A01438	Lower	Gilbert St	GAC System	Well	Butterfly Valve B4	Valve		Mechanical	1991		
SBMWD-A01439	Lower	Gilbert St	GAC System	Well	Ix Effluent Piping Flowmeter	Flowmeter		I&C	1991		
SBMWD-A01440	Lower	EPA	Well#005	Well	Eyewash Station	Safety Shower/Eyewash		Mechanical	1996		
SBMWD-A01441	Cajon	Cajon Blvd	Reservoir	Reservoir	Access Gate	Access Gate	Manual	Civil	1957		
SBMWD-A01442	Lower	EPA	Well#005	Well	Chlorine Building	Chlorine Station		Mechanical	1996		
SBMWD-A01443	Lower	EPA	Well#005	Well	Fence - Chain link with wood	Fencing	Chainlink	Civil	1996		
SBMWD-A01444	Lower	EPA	Well#005	Well	Access Gate	Access Gate	Motorized	Civil	1996		
SBMWD-A01445	Intermediate	Perimeter	BPS	BPS	Access Gate	Access Gate	Manual	Civil	1988	4	LFT
SBMWD-A01446	Lower	Waterman Ave	GAC System	Wellhead Treatment	Access Gate Double Door - Waterman Av.	Access Gate	Motorized	Civil	1947	25	LFT
SBMWD-A01447	Lower	EPA	Well#004	Well	Fence	Fencing	Chainlink	Civil	1996		
SBMWD-A01448	Upper	Ogden St	Reservoir	Reservoir	Access Gate Double Door Motorized	Access Gate	Motorized	Civil	2007	25	LFT
SBMWD-A01449	Lower	EPA	Well#004	Well	Lighting	Lighting	Pole	Electrical	1996	1	QTY
SBMWD-A01450	Lower	EPA	Well#004	Well	Communication Antenna	Antenna Tower		I&C	1996	1	QTY
SBMWD-A01451	Upper	Ogden St	Reservoir	Reservoir	Access Gate Motorized Double Door 2	Access Gate	Motorized	Civil	2007	23	LFT
SBMWD-A01452	Lower	Lytle Creek	Common	Well	Access Gates Manual	Access Gate	Manual	Civil	1957		
SBMWD-A01453	Lower	Lytle Creek	Reservoir#1	Reservoir	Access Hatch of the Reservoir#1	Access Hatch		Civil	1957	2	QTY
SBMWD-A01454	Lower	EPA	Well#004	Well	Concrete Pad By the Backflow Preventor	Non-Process Structure	Concrete Pad	Structural	1996		
SBMWD-A01455	Cajon	Magnolia & Irvington Ave	Meyers BPS (#3-6) (Magr	BPS	ACV - Line Leaving the Reservoir	Valve	Automated-Cc	Mechanical	2010	12	DIN
SBMWD-A01456	Lower	EPA	Well#003	Well	Fence	Fencing	Chainlink	Civil	1996		
SBMWD-A01457	Lower	EPA	Well#003	Well	Access Gate	Access Gate	Motorized	Civil	1996		
SBMWD-A01458	Upper	EPA	Well#007	Well	Air Assembly	Valve	Air-VAC	Mechanical	2000	1	DIN
SBMWD-A01459	Upper	EPA	Well#007	Well	Air Assembly	Valve	Air-Vac	Mechanical	2000	2	DIN
SBMWD-A01460	Lower	Encanto	BPS (#1-3)	BPS	Air Compressor	Air Compressor		Mechanical	2005		
SBMWD-A01461	Lower	EPA	Well#003	Well	Lighting	Lighting	Pole	Electrical	1996	1	QTY
SBMWD-A01462	Lower	EPA	Well#003	Well	Communication Antenna	Antenna Tower		I&C	1996	1	QTY
SBMWD-A01463	Cajon	Cajon Blvd	Well#2	Well	Air Compressor	Air Compressor		Mechanical	1957	950	RPM
SBMWD-A01464	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Air Conditioner	AC Unit		HVAC	1990		
SBMWD-A01465	Lower	EPA	Well#002	Well	Fence	Fencing	Chainlink	Civil	1996		
SBMWD-A01466	Lower	EPA	Well#001	Well	SCADA	SCADA		I&C	1997		
SBMWD-A01467	Lower	EPA	Well#001	Well	Control Box	Control Panel		Electrical	1997		
SBMWD-A01468	Lower	EPA	Well#002	Well	Lighting	Lighting	Pole	Electrical	1996	2	QTY

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01469	Lower	EPA	Well#002	Well	Communication Antenna	Antenna Tower		I&C	1996	2	QTY
SBMWD-A01470	Lower	EPA	Well#001	Well	Access Gate	Access Gate	Motorized	Civil	1997		
SBMWD-A01471	Lower	Gilbert St	Well	Well	Air Release	Valve	Air-VAC	Mechanical	1991		
SBMWD-A01472	Lower	EPA	Well#001	Well	Lighting	Lighting	Pole	Electrical	1997		
SBMWD-A01473	Lower	EPA	Well#001	Well	Fence	Fencing	Chainlink	Civil	1997		
SBMWD-A01474	Cajon	Cajon Blvd	Well#3	Well	Air Release (Well)	Valve	Air-VAC	Mechanical	1957		
SBMWD-A01475	Lower	EPA	Well#108	Well	Lighting	Lighting	Pole	Electrical	2003		
SBMWD-A01476	Lower	EPA	Well#108	Well	Gate	Access Gate	Manual	Civil	2003		
SBMWD-A01477	Lower	EPA	Well#108	Well	Motorized Gate	Access Gate	Motorized	Civil	2003		
SBMWD-A01478	Lower	EPA	Well#108	Well	Fence	Fencing	Chainlink	Civil	2003		
SBMWD-A01479	Lower	EPA	Well#001	Well	Pavement	Non-Process Structure		Structural	1997		
SBMWD-A01480	Lower	EPA	Well#108	Well	SCADA	SCADA		I&C	2003		
SBMWD-A01481	Lower	EPA	Well#108 S	Well	Concrete Slab - Under Control Box	Non-Process Structure	Concrete Pad	Structural	2003		
SBMWD-A01482	Lower	EPA	Well#108	Well	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	2003		
SBMWD-A01483	Lower	EPA	Well#109	Well	Motorized Double Door Access Gate	Access Gate	Motorized	Civil	2003		
SBMWD-A01484	Lower	EPA	Well#109	Well	Fence	Fencing	Chainlink	Civil	2003		
SBMWD-A01485	Lower	EPA	Well#109	Well	Electrical Building	Non-Process Structure		Structural	2003		
SBMWD-A01486	Lower	EPA	Well#109	Well	Lighting	Lighting	Pole	Electrical	2003		
SBMWD-A01487	Lower	EPA	Well#109	Well	SCADA	SCADA		I&C	2003		
SBMWD-A01488	Lower	EPA	Well#109	Well	AC Unit	AC Unit		HVAC	2003		
SBMWD-A01489	Lower	EPA	Well#110	Well	SCADA	SCADA		I&C	2003		
SBMWD-A01490	Lower	EPA	Well#110	Well	Building	Building		Structural	2003		
SBMWD-A01491	Lower	EPA	Well#110	Well	AC Unit	AC Unit		HVAC	2003		
SBMWD-A01492	Lower	EPA	Well#110	Well	Fence	Fencing	Chainlink	Civil	2003		
SBMWD-A01493	Lower	EPA	Well#110	Well	Lighting	Lighting	Pole	Electrical	2003		
SBMWD-A01494	Lower	EPA	Well#110	Well	Double Door Motorized Gate	Access Gate	Motorized	Civil	2003		
SBMWD-A01495	Lower	EPA	Well#110	Well	Double Door Motorized Gate	Access Gate	Motorized	Civil	2003		
SBMWD-A01496	Lower	EPA	Well#111	Well	Building	Building		Structural	2003		
SBMWD-A01497	Lower	EPA	Well#111	Well	Double Door Motorized Gate	Access Gate	Motorized	Civil	2003		
SBMWD-A01498	Lower	EPA	Well#111	Well	Lighting	Lighting	Pole	Electrical	2003		
SBMWD-A01499	Lower	EPA	Well#111	Well	Fence	Fencing	Chainlink	Civil	2003		
SBMWD-A01500	Lower	EPA	Well#112	Well	Building	Non-Process Structure		Structural	2003		
SBMWD-A01501	Lower	EPA	Well#112	Well	Double Door Motorized Gate	Access Gate	Motorized	Civil	2003		
SBMWD-A01502	Lower	EPA	Well#112	Well	Fence	Fencing	Chainlink	Civil	2003		
SBMWD-A01503	Lower	EPA	Well#111	Well	SCADA	SCADA		I&C	2003		
SBMWD-A01504	Lower	EPA	Well#112	Well	Lighting	Lighting	Pole	Electrical	2003		
SBMWD-A01505	Lower	EPA	Well#111	Well	AC Unit	AC Unit		HVAC	2003		
SBMWD-A01506	Lower	EPA	Well#111	Well	Concrete Pad Front Door	Non-Process Structure	Concrete Pad	Structural	2003		
SBMWD-A01507	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Air Release Valve (Fill Line) - 1A	Valve	Air-Vac	Mechanical	1950		
SBMWD-A01508	Upper	EPA	Well#006	Well	Double Door Gate	Access Gate	Manual	Civil	1996		
SBMWD-A01509	Upper	EPA	Well#007	Well	Access Gate Single Door	Access Gate	Manual	Civil	2000	14	LFT
SBMWD-A01510	Upper	EPA	Well#007	Well	Concrete Foundation Well	Non-Process Structure	Concrete Pad	Structural	2000		
SBMWD-A01511	Upper	EPA	Well#007	Well	Double Door Gate	Access Gate	Manual	Civil	2000		
SBMWD-A01512	Upper	EPA	Well#007	Well	Isolation Valve Vault	Non-Process Structure	Vault	Structural	2000	7.5	LFT
SBMWD-A01513	Upper	EPA	Well#007	Well	Lighting	Lighting	Pole	Electrical	2000	1	Each
SBMWD-A01514	Upper	EPA	Well#007	Well	MCC Concrete Pad	Non-Process Structure	Concrete Pad	Structural	2000	40	SF
SBMWD-A01515	Lower	EPA	Well#110	Well	Water Testing Vault	Non-Process Structure	Vault	Structural	2003		
SBMWD-A01516	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Air Release Valve (Fill Line) - 1B	Valve	Air-Vac	Mechanical	1950		
SBMWD-A01517	Lower	31th & Mountain View Av	Well	Well	Flowmeter	Flowmeter		I&C	1962		
SBMWD-A01518	Lower	30th & Mountain View Av	Well	Well	Access Gate	Access Gate	Manual	Civil	1940		
SBMWD-A01519	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Air Release Valve (Fill Line) - 2A	Valve	Air-Vac	Mechanical	1950		
SBMWD-A01520	Lower	30th & Mountain View Av	Well	Well	Booster Pump Butterfly Valve	Valve	Butterfly	Mechanical	1940	12	DIN
SBMWD-A01521	Lower	30th & Mountain View Av	Well	Well	Air Conditioning System	AC Unit		HVAC	1940		
SBMWD-A01522	Lower	Waterman Ave	BPS#2	BPS	Air Ventilation Fan and Duct	Air Ventilation System	Duct	HVAC	1947		
SBMWD-A01523	Lower	30th & Mountain View Av	Well	Well	Outside Fencing	Fencing	Chainlink	Civil	1940		
SBMWD-A01524	Lower	30th & Mountain View Av	Well	Well	Fence	Fencing	Chainlink	Civil	1940		
SBMWD-A01525	Lower	30th & Mountain View Av	Reservoir	Reservoir	Reservoir Drain Bfv	Valve	Butterfly	Mechanical	1940		
SBMWD-A01526	Lower	31th & Mountain View Av	Well	Well	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1962		
SBMWD-A01527	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	AC Unit - on Roof	AC Unit		HVAC	2007		
SBMWD-A01528	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Air Ventilation System - Duct	Air Ventilation System	Duct	HVAC	2007		
SBMWD-A01529	Upper	Medical Center	Ogden BPS	BPS	Lighting	Lighting	Pole	Electrical	2006	7	QTY
SBMWD-A01530	Ridgeline	Ridgeline Dr Upper	Reservoir	Reservoir	Antena Main For the Whole System	Antenna Tower		I&C	1990		
SBMWD-A01531	Ridgeview	Ridgeview#1	Reservoir	Reservoir	Arv	Valve	Air-VAC	Mechanical	1963	2	
SBMWD-A01532	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Air Valve	Valve	Air-VAC	Mechanical	2007		
SBMWD-A01533	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Arv	Valve	Air-VAC	Mechanical	2007		
SBMWD-A01534	Cajon	Cajon Blvd	Well#3	Well	Arv	Valve	Air-VAC	Mechanical	1957	2	

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01535	Cajon	Cajon Blvd	Well#3	Well	Arv	Valve	Air-VAC	Mechanical	1957		
SBMWD-A01536	Upper	Medical Center	Ogden BPS	BPS	Generator Fence	Fencing	Chainlink	Civil	2006		
SBMWD-A01537	Cajon	Cajon Blvd	Well#3	Well	Arv	Valve	Air-VAC	Mechanical	1957		
SBMWD-A01538	Cajon	Cajon Blvd	Well#4	Well	Arv	Valve	Air-VAC	Mechanical	1957	2	DIN
SBMWD-A01539	Cajon	Cajon Blvd	Well#4	Well	Arv	Valve	Air-VAC	Mechanical	1957		
SBMWD-A01540	Lower	Lytle Creek	Well#2	Well	Flowmeter	Flowmeter		I&C	1957		
SBMWD-A01541	Lower	Lytle Creek	Common	Well	Eyewash Station	Safety Shower/Eyewash		Mechanical	1957		
SBMWD-A01542	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Arv (Pump)	Valve	Air-VAC	Mechanical	2007		
SBMWD-A01543	Ridgeview	Ridgeview#1	Reservoir	Reservoir	Asphalt	Pavement	Asphalt	Civil	1963		
SBMWD-A01544	Lower	Waterman Ave	Common	Other	Asphalt	Pavement	Asphalt	Civil	1947		
SBMWD-A01545	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Automated Ventilation System - Louver	Air Ventilation System	Louver	HVAC	2007		
SBMWD-A01546	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Back Up Generator Connection Box	Generator Connection	Box	Electrical	1971	480	V
SBMWD-A01547	Lower	Lytle Creek	Common	Well	Internal Camera	Camera	Safety	Electrical	1957		
SBMWD-A01548	Lower	Lytle Creek	Common	Well	External Camera	Camera	Safety	Electrical	1957	3	QTY
SBMWD-A01549	Lower	Lytle Creek	Common	Well	Lighting	Lighting	Pole	Electrical	1957	6	QTY
SBMWD-A01550	Lower	Lytle Creek	Common	Other	Generator Fence	Fencing	Chainlink	Civil	1957		
SBMWD-A01551	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Backwash Manifold	Piping	Above Ground	Mechanical	1950	10	DIN
SBMWD-A01552	Terrace	Lytle Creek	BPS	BPS	Pump Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1957		
SBMWD-A01553	Lower	Lytle Creek	Common	Other	Flowmeter For Booster Station (Under Ground)	Flowmeter		I&C	1957		
SBMWD-A01554	Terrace	Lytle Creek	BPS	BPS	Butterfly Valve Between Pumps 2 and 3	Valve		Mechanical	1957		
SBMWD-A01555	Lower	Lytle Creek	Common	Other	Fencing	Fencing	Chainlink	Civil	1957	8	LFT
SBMWD-A01556	Lower	Waterman Ave	GAC System	Wellhead Treatment	Blower Metal Duct - North Tower	Air Ventilation System	Duct	HVAC	1947		
SBMWD-A01557	Lower	Waterman Ave	GAC System	Wellhead Treatment	Blower Outlet Structure - South	Air Ventilation System	Duct	HVAC	1947		
SBMWD-A01558	Lower	Waterman Ave	GAC System	Wellhead Treatment	Blower#1 Starter	Blower Starter		Electrical	1987	800	AMP
SBMWD-A01559	Lower	Waterman Ave	GAC System	Wellhead Treatment	Blower#2 Starter	Blower Starter		Electrical	1987	480	V
SBMWD-A01560	Upper	Mallory St	Reservoir	Reservoir	Eyewash Station	Safety Shower/Eyewash		Mechanical	1987		
SBMWD-A01561	Upper	25th & North E St	BPS	BPS	Booster 2 Control Panel - Starter	Motor Starter		Electrical	1950	480	V
SBMWD-A01562	Upper	Mallory St	Reservoir	Reservoir	Inlet Gate Valve	Valve	Gate	Mechanical	1987		
SBMWD-A01563	Upper	Mallory St	Mallory Well#3	Well	Downstream Air Release and Vacuum Valve	Valve		Mechanical	1987	2	DIN
SBMWD-A01564	Upper	Mallory St	Reservoir	Reservoir	Gate Valve Drain	Valve	Gate	Mechanical	1987		
SBMWD-A01565	Lower	Mill & D St	BPS	BPS	Booster Pump	Pump		Mechanical	1940		
SBMWD-A01566	Lower	7th St	BPS	BPS	Booster Pump - Flowmeter - Underground	Flowmeter		I&C	1965		
SBMWD-A01567	Intermediate	27th St	Acacia BPS	BPS	Booster Pump Breaker	Panel	Circuit Breaker	Electrical	1957		
SBMWD-A01568	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster Pump Control Panel#1 - Starter	Motor Starter		Electrical	1949	480	V
SBMWD-A01569	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster Pump House Transformer	Transformer		Electrical	1949		
SBMWD-A01570	Intermediate	27th St	Acacia BPS	BPS	Booster Pump MCC	MCC		Electrical	1957		
SBMWD-A01571	Upper	Mallory St	Mallory Well#3	Well	Security Camera	Camera	Safety	Electrical	1987		
SBMWD-A01572	Upper	Mallory St	Mallory Well#3	Well	Security Camera	Camera	Safety	Electrical	1987	2	QTY
SBMWD-A01573	Upper	Mallory St	Mallory Well#3	Well	Lighting	Lighting	Pole	Electrical	1987	2	QTY
SBMWD-A01574	Upper	Mallory St	BPS (#1-2)	BPS	Concrete Pad Under the Pumps	Non-Process Structure	Concrete Pad	Structural	1987		
SBMWD-A01575	Upper	Mallory St	BPS (#1-2)	BPS	Concrete Pad Under Entrance Gate	Non-Process Structure	Concrete Pad	Structural	1987		
SBMWD-A01576	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster Pump Motor	Motor		Electrical	1949		
SBMWD-A01577	Upper	Highland Ave	Mt Vernon Water Compa	Well	Butterfly Valve Waste Line	Valve		Mechanical	1928		
SBMWD-A01578	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster Pump Motor#2	Motor		Electrical	1949		
SBMWD-A01579	Upper	Highland Ave	Mt Vernon Water Compa	Well	Iron Gate Fence (Motorized)	Access Gate	Motorized	Civil	1928		
SBMWD-A01580	Upper	Highland Ave	Mt Vernon Water Compa	Well	Fence	Fencing	Chainlink	Civil	1928		
SBMWD-A01581	Upper	Highland Ave	Mt Vernon Water Compa	Well	Chainlink Fence	Fencing	Chainlink	Civil	1928		
SBMWD-A01582	Upper	Highland Ave	Mt Vernon Water Compa	Well	Security Camera	Camera	Safety	Electrical	1928	1	QTY
SBMWD-A01583	Upper	Highland Ave	Mt Vernon Water Compa	Well	Lighting	Lighting	Pole	Electrical	1928	1	QTY
SBMWD-A01584	Intermediate	Perimeter	BPS	BPS	Booster Pump #1 Flowmeter	Flowmeter		I&C	1988		
SBMWD-A01585	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster Pump Piping Outside of Building	Piping		Mechanical	1949		
SBMWD-A01586	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster Pump Piping Outside of Building - BFV	Valve	Butterfly	Mechanical	1949		
SBMWD-A01587	Intermediate	Perimeter	BPS	BPS	Booster Pump#1 Arv	Valve	Air-VAC	Mechanical	1988		
SBMWD-A01588	Lower	Baseline & California St	Well	Well	Lighting	Lighting	Pole	Electrical	1992		
SBMWD-A01589	Intermediate	Perimeter	BPS	BPS	Booster Pump#1 Piping Assembly	Piping	Above Ground	Mechanical	1988	12	DIN
SBMWD-A01590	Lower	Baseline & California St	Well	Well	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1992		
SBMWD-A01591	Upper	19th St	BPS (#1-5)	BPS	Booster Pump#1 Starter	Motor Starter		Electrical	2009	480	V
SBMWD-A01592	Intermediate	Perimeter	BPS	BPS	Booster Pump#2 Arv	Valve	Air-VAC	Mechanical	1988		
SBMWD-A01593	Intermediate	Perimeter	BPS	BPS	Booster Pump#2 Flowmeter	Flowmeter		I&C	1988		
SBMWD-A01594	Lower	Baseline & California St	Well	Well	Concrete Pad Under Pumping Assembly	Non-Process Structure	Concrete Pad	Structural	1992		
SBMWD-A01595	Upper	25th & North E St	BPS	BPS	Booster Pump#2 Motor	Motor		Electrical	1950		
SBMWD-A01596	Upper	25th & North E St	BPS	BPS	Booster Pump#2 Pipe Assembly	Piping	Above Ground	Mechanical	1950		
SBMWD-A01597	Intermediate	Perimeter	BPS	BPS	Booster Pump#2 Piping Assembly	Piping	Above Ground	Mechanical	1988	12	DIN
SBMWD-A01598	Upper	25th & North E St	BPS	BPS	Booster Pump#2 Pump	Piping	Above Ground	Mechanical	1950		
SBMWD-A01599	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Booster Pump#3 Or 4 Manual Transfer Switch	Switch	Transfer	Electrical	1971	480	V
SBMWD-A01600	Upper	19th St	Common	BPS	480V Switchboard	Switchboard		Electrical	2003	480	V
SBMWD-A01601	Upper	19th St	Well#2	Well	Check Valve	Valve	Check	Mechanical	2003	12	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01602	Lower	19th St	Reservoir	Piping and Appurtenances	ACV#5	Valve	Automated-Cc	Mechanical	2003	16	DIN
SBMWD-A01603	Lower	19th St	Reservoir	Piping and Appurtenances	ACV#4	Valve	Automated-Cc	Mechanical	2003	16	DIN
SBMWD-A01604	Upper	19th St	Common	Piping and Appurtenances	Isolation Valve PRV#5	Valve	Butterfly	Mechanical	2003	16	DIN
SBMWD-A01605	Upper	19th St	Common	Piping and Appurtenances	Isolation Valve PRV#4	Valve	Butterfly	Mechanical	2003	16	DIN
SBMWD-A01606	Upper	19th St	Common	BPS	480V MCC With Automatic Transfer Switch	MCC		Electrical	2003	480	V
SBMWD-A01607	Upper	19th St	Common	BPS	MCC 480V	MCC		Electrical	2004	480	V
SBMWD-A01608	Upper	19th St	Common	BPS	Dry Type Transformer 15 Kva	Transformer		Electrical	2003	15	KVA
SBMWD-A01609	Upper	19th St	Common	BPS	Dry Type Transformer 7.5Kva	Transformer		Electrical	2003	7.5	kva
SBMWD-A01610	Lower	19th St	Reservoir	Piping and Appurtenances	ACV#1	Valve	Automated-Cc	Mechanical	2003	16	DIN
SBMWD-A01611	Upper	19th St	Common	Piping and Appurtenances	Isolation Valve Psv1	Valve	Butterfly	Mechanical	2003	16	DIN
SBMWD-A01612	Upper	19th St	BPS (#1-5)	BPS	Booster Pump Motor#3	Motor		Electrical	2009	200	HP
SBMWD-A01613	Upper	19th St	BPS (#1-5)	BPS	Booster Pump Motor#4	Motor		Electrical	2009	460	V
SBMWD-A01614	Upper	19th St	BPS (#1-5)	BPS	Booster Pump#5	Pump		Mechanical	2009	460	V
SBMWD-A01615	Upper	19th St	BPS (#1-5)	BPS	Booster Pump#3 Line Flowmeter	Flowmeter		I&C	2015	4000	GPM
SBMWD-A01616	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Booster Pumps 3&4 Soft Starter Cabinet	Motor Starter		Electrical	1971	480	V
SBMWD-A01617	Upper	19th St	BPS (#1-5)	BPS	Control Panel	Control Panel		Electrical	2015	120	V
SBMWD-A01618	Upper	19th St	BPS (#1-5)	BPS	Booster Pump#4 Flowmeter	Flowmeter		I&C	2015	4000	GPM
SBMWD-A01619	Upper	19th St	BPS (#1-5)	BPS	Booster Pump#5 Flowmeter	Flowmeter		I&C	2015	4000	GPM
SBMWD-A01620	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster Pumps Flowmeter	Flowmeter		I&C	1949		
SBMWD-A01621	Upper	19th St	BPS (#1-5)	BPS	Alarm Control Panel - Security	Panel	Security	Electrical	2009		
SBMWD-A01622	Upper	19th St	BPS (#1-5)	BPS	CCTV Control Panel	Panel	Security	Electrical	2009		
SBMWD-A01623	Upper	19th St	BPS (#1-5)	BPS	Flowmeter	Flowmeter		I&C	2009	10000	GPM
SBMWD-A01624	Upper	19th St	Common	BPS	Emergency Generator - Natural Gas	Generator		Electrical	2003	30	KW
SBMWD-A01625	Upper	19th St	BPS (#1-5)	BPS	Flowmeter	Flowmeter		I&C	2015	5000	GPM
SBMWD-A01626	Upper	19th St	BPS (#1-5)	BPS	Chlorine Injection Pump	Pump	Chemical	Mechanical	1988	460	V
SBMWD-A01627	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 1V-2	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01628	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 1V-4	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01629	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 1V-10	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01630	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 1V-6	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01631	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 1V-8	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01632	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 1V-12	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01633	Upper	19th St	GAC System	Wellhead Treatment	Check Valve Backwash Supply	Valve	Check	Mechanical	1992	12	DIN
SBMWD-A01634	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 2V-5	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01635	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 2V-7	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01636	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 2V-11	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01637	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 2V-9	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01638	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 2V-1	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01639	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 2V-2	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01640	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 4V-1	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01641	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 4V-3	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01642	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 4V-9	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01643	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 4V-5	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01644	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 4V-7	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01645	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 4V-11	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01646	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 3V-2	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01647	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Booster#3 - Motor - SC	Motor		Electrical	1949	60	HP
SBMWD-A01648	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 3V-4	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01649	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 3V-10	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01650	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 3V-6	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01651	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 3V-8	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01652	Intermediate	27th St	Acacia BPS	BPS	Breaker (Well)	Panel	Circuit Breaker	Electrical	1957		
SBMWD-A01653	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 3V-12	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01654	Lower	Mill & D St	BPS	BPS	Building	Building		Structural	1940	1	Story
SBMWD-A01655	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 5V-2	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01656	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 5V-4	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01657	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 5V-10	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01658	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 5V-6	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01659	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 5V-8	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01660	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 5V-12	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01661	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 6V-5	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01662	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 6V-7	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01663	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 6V-11	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01664	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 6V-1	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01665	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 6V-3	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01666	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 6V-9	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01667	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 8V-1	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01668	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 8V-3	Valve	Butterfly	Mechanical	1992	12	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01669	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 8V-9	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01670	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 8V-5	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01671	Upper	19th St	Well#2	Well	Pump Motor	Motor		Electrical	1992	100	HP
SBMWD-A01672	Upper	19th St	Well#2	Well	Flowmeter	Flowmeter		I&C	1992		
SBMWD-A01673	Upper	19th St	Well#2	Well	Motor Control Panel	Control Panel		Electrical	1992	480	V
SBMWD-A01674	Upper	19th St	Well#2	Well	480V Switchboard	Switchboard		Electrical	2005	480	V
SBMWD-A01675	Shandin Hills	Shandin Hills South	BPS (#1-2)	BPS	Building	Building		Structural	1997		
SBMWD-A01676	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Double Access Gate	Access Gate	Manual	Civil	1947	20	LFT
SBMWD-A01677	Lower	Waterman Ave	Leory Well	Well	Building	Building		Structural	1947	20	LFT
SBMWD-A01678	Del Rosa	40th & Valencia Ave	Well	Well	Motor Starter	Motor Starter		Electrical	1990	480	V
SBMWD-A01679	Lower	Waterman Ave	BPS#2	BPS	Building	Building		Structural	1947	13	LFT
SBMWD-A01680	Cajon	Cajon Blvd	Hydro Generator	Hydro Generator	Calla Val	Valve		Mechanical	1957	10	DIN
SBMWD-A01681	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Carbon Absorber Pit	Non-Process Structure	Vault	Structural	1950		
SBMWD-A01682	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Carbon Absorber Tank 3B	Vessel	GAC	Structural	1950	18.3	TFT
SBMWD-A01683	Upper	Newmark	BPS	BPS	Carbon Filter Monitor Panel	Control Panel		Electrical	1971	120	V
SBMWD-A01684	Upper	19th St	GAC System	Wellhead Treatment	Drain Piping Assembly	Piping		Mechanical	1992	12	DIN
SBMWD-A01685	Upper	19th St	GAC System	Wellhead Treatment	Effluent Manifold	Piping		Mechanical	1992	12	DIN
SBMWD-A01686	Upper	19th St	GAC System	Wellhead Treatment	Effluent Manifold	Piping		Mechanical	1992	16	DIN
SBMWD-A01687	Upper	19th St	GAC System	Wellhead Treatment	Effluent Manifold	Piping		Mechanical	1992	18	DIN
SBMWD-A01688	Upper	19th St	GAC System	Wellhead Treatment	Effluent Manifold	Piping		Mechanical	1992	20	DIN
SBMWD-A01689	Upper	19th St	GAC System	Wellhead Treatment	Effluent Manifold	Piping		Mechanical	1992	24	DIN
SBMWD-A01690	Upper	19th St	GAC System	Wellhead Treatment	Influent Manifold	Piping		Mechanical	1992	12	DIN
SBMWD-A01691	Upper	19th St	GAC System	Wellhead Treatment	Influent Manifold	Piping		Mechanical	1992	16	DIN
SBMWD-A01692	Upper	19th St	GAC System	Wellhead Treatment	Influent Manifold	Piping		Mechanical	1992	18	DIN
SBMWD-A01693	Upper	19th St	GAC System	Wellhead Treatment	Influent Manifold	Piping		Mechanical	1992	20	DIN
SBMWD-A01694	Upper	19th St	GAC System	Wellhead Treatment	Influent Manifold	Piping		Mechanical	1992	24	DIN
SBMWD-A01695	Upper	19th St	GAC System	Wellhead Treatment	Influent Piping Assembly	Piping		Mechanical	1992	12	DIN
SBMWD-A01696	Upper	19th St	GAC System	Wellhead Treatment	Effluent Piping Assembly	Piping		Mechanical	1992	12	DIN
SBMWD-A01697	Upper	19th St	GAC System	Wellhead Treatment	Backwash Piping Assembly	Piping		Mechanical	1992	12	DIN
SBMWD-A01698	Upper	19th St	GAC System	Wellhead Treatment	Backwash Manifold	Piping		Mechanical	1992	16	DIN
SBMWD-A01699	Upper	19th St	GAC System	Wellhead Treatment	Effluent Piping Assembly	Piping		Mechanical	1992	24	DIN
SBMWD-A01700	Upper	19th St	Common	Other	Fence	Fencing	Chainlink	Civil	1992	100	LFT
SBMWD-A01701	Upper	19th St	Common	Other	Motorized Double Door Access Gate	Access Gate	Motorized	Civil	1992		
SBMWD-A01702	Upper	19th St	Common	Other	Asphalt	Pavement	Asphalt	Civil	1992		
SBMWD-A01703	Upper	19th St	Common	Other	Wooden Wall	Wall	Wooden	Structural	1992	3000	LFT
SBMWD-A01704	Upper	19th St	Common	Piping and Appurtenances	Chain Link Fence	Fencing	Chainlink	Civil	1992	100	LFT
SBMWD-A01705	Upper	19th St	Common	Wellhead Treatment	Chlorine Injection Vault-North Vessels Effluent	Non-Process Structure	Vault	Structural	1992 a5		LFT
SBMWD-A01706	Upper	19th St	Common	Other	Fence North	Fencing	Chainlink	Civil	1992	250	LFT
SBMWD-A01707	Upper	19th St	Common	Other	North Motorized Double Door Access Gate	Access Gate	Motorized	Civil	1992	33	LFT
SBMWD-A01708	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 8V-5	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01709	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 8V-7	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01710	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 8V-11	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01711	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve7V-2	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01712	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 7V-4	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01713	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve7V-10	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01714	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 7V-6	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01715	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 7V-8	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01716	Upper	19th St	GAC System	Wellhead Treatment	Isolation Valve 7V-12	Valve	Butterfly	Mechanical	1992	12	DIN
SBMWD-A01717	Upper	19th St	BPS (#1-5)	BPS	Flowmeter	Flowmeter		I&C	2010	5000	GPM
SBMWD-A01718	Upper	Newmark	Well	Well	Security Camera	Camera	Safety	Electrical	1971	4	QTY
SBMWD-A01719	Upper	19th St	BPS (#1-5)	BPS	Motor Starter - Booster Pump#2	Motor Starter		Electrical	2010	480	V
SBMWD-A01720	Upper	Newmark	Reservoir	Reservoir	Chlorine Analyzer - Transmitter	Analytical Instrument	Chlorine Analy	I&C	1971		
SBMWD-A01721	Lower	Waterman Ave	Common	Other	Chlorine Room	Building		Structural	1947	15	WFT
SBMWD-A01722	Upper	Mallory St	Mallory Well#3	Well	Chlorine Cabin	Chlorine Station		Mechanical	1987		
SBMWD-A01723	Upper	19th St	BPS (#1-5)	BPS	Booster Pump#2 Motor	Motor		Electrical	2010	440	V
SBMWD-A01724	Upper	19th St	BPS (#1-5)	BPS	Booster Pump Motor 1	Motor		Electrical	2010	440	V
SBMWD-A01725	Lower	Baseline & California St	Well	Well	Chlorine Cabin	Chlorine Station		Mechanical	1992		
SBMWD-A01726	Lower	Mill & D St	Well	Well	Chlorine Cabin	Chlorine Station		Mechanical	1940		
SBMWD-A01727	Lower	Antil	Reservoir	Reservoir (Forebay)	Chlorine Cabin - Not in Use	Chlorine Station		Mechanical	1953		
SBMWD-A01728	Upper	Mallory St	Mallory Well#3	Well	Chlorine Detection System	Chlorine Detection System		I&C	1987		
SBMWD-A01729	Upper	19th St	BPS (#1-5)	BPS	Chlorine Detection System	Chlorine Detection System		I&C	2010		
SBMWD-A01730	Lower	Mill & D St	Well	Well	Chlorine Detection System	Chlorine Detection System		I&C	1940		
SBMWD-A01731	Upper	19th St	GAC System	Wellhead Treatment	SCADA RTU - North Vessel Area	SCADA		I&C	1988		
SBMWD-A01732	Lower	Baseline & California St	Well	Well	Chlorine Detection System	Chlorine Detection System		I&C	1992		
SBMWD-A01733	Upper	19th St	Common	Wellhead Treatment	Reducing Piping Vault - North Vessels Sides	Non-Process Structure	Vault	Structural	1988	15	LFT
SBMWD-A01734	Upper	19th St	Common	Other	Bypass Vault	Non-Process Structure	Vault	Structural	1988	12	LFT
SBMWD-A01735	Upper	19th St	Common	Wellhead Treatment	Eyewash	Safety Shower/Eyewash		Mechanical	1988	1	QTY

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01736	Upper	19th St	Common	Other	Chlorine Tank	Tank	Chemical	Structural	1988		
SBMWD-A01737	Upper	19th St	Common	Other	Sump Pump	Pump	Sump	Mechanical	1988		
SBMWD-A01738	Upper	19th St	Common	Other	Eyewash	Safety Shower/Eyewash		Mechanical	1988		
SBMWD-A01739	Upper	19th St	GAC System	Wellhead Treatment	Influent Piping Assembly	Piping		Mechanical	1988	12	DIN
SBMWD-A01740	Upper	19th St	GAC System	Wellhead Treatment	Effluent Piping Assembly	Piping		Mechanical	1988	12	DIN
SBMWD-A01741	Upper	19th St	GAC System	Wellhead Treatment	Drain Piping Assembly	Piping		Mechanical	1988	12	DIN
SBMWD-A01742	Upper	19th St	GAC System	Wellhead Treatment	Backwash Piping Assembly	Piping		Mechanical	1988	12	DIN
SBMWD-A01743	Upper	19th St	GAC System	Wellhead Treatment	Concrete Pad Under South Vessels	Non-Process Structure	Concrete Pad	Structural	1988	165	LFT
SBMWD-A01744	Upper	19th St	GAC System	Wellhead Treatment	Backwash Piping Assembly	Piping		Mechanical	1988	12	DIN
SBMWD-A01745	Upper	19th St	GAC System	Wellhead Treatment	Vessel 6B Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01746	Upper	19th St	GAC System	Wellhead Treatment	Vessel 6B Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01747	Upper	19th St	GAC System	Wellhead Treatment	Vessel 6B Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01748	Upper	19th St	GAC System	Wellhead Treatment	Vessel 6B Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01749	Upper	19th St	GAC System	Wellhead Treatment	Vessel 6B Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01750	Upper	19th St	GAC System	Wellhead Treatment	Vessel 6A Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01751	Upper	19th St	GAC System	Wellhead Treatment	Vessel 6A Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01752	Upper	19th St	GAC System	Wellhead Treatment	Vessel 6A Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01753	Upper	19th St	GAC System	Wellhead Treatment	Vessel 6A Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01754	Upper	19th St	GAC System	Wellhead Treatment	Vessel 6A Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01755	Upper	19th St	GAC System	Wellhead Treatment	Vessel 5B Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01756	Upper	19th St	GAC System	Wellhead Treatment	Vessel 5B Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01757	Upper	19th St	GAC System	Wellhead Treatment	Vessel 5B Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01758	Upper	19th St	GAC System	Wellhead Treatment	Vessel 5B Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01759	Upper	19th St	GAC System	Wellhead Treatment	Vessel 5B Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01760	Upper	19th St	GAC System	Wellhead Treatment	Vessel 5A Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01761	Upper	19th St	GAC System	Wellhead Treatment	Vessel 5A Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01762	Upper	19th St	GAC System	Wellhead Treatment	Vessel 5A Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01763	Upper	19th St	GAC System	Wellhead Treatment	Vessel 5A Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01764	Upper	19th St	GAC System	Wellhead Treatment	Vessel 5A Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01765	Upper	19th St	GAC System	Wellhead Treatment	Vessel 4B Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01766	Upper	19th St	GAC System	Wellhead Treatment	Vessel 4B Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01767	Upper	19th St	GAC System	Wellhead Treatment	Vessel 4B Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01768	Upper	19th St	GAC System	Wellhead Treatment	Vessel 4B Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01769	Upper	19th St	GAC System	Wellhead Treatment	Vessel 4B Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01770	Upper	19th St	GAC System	Wellhead Treatment	Vessel 4A Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01771	Upper	19th St	GAC System	Wellhead Treatment	Vessel 4A Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01772	Upper	19th St	GAC System	Wellhead Treatment	Vessel 4A Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01773	Upper	19th St	GAC System	Wellhead Treatment	Vessel 4A Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01774	Upper	19th St	GAC System	Wellhead Treatment	Vessel 4A Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01775	Upper	19th St	GAC System	Wellhead Treatment	Vessel 3B Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01776	Upper	19th St	GAC System	Wellhead Treatment	Vessel 3B Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01777	Upper	19th St	GAC System	Wellhead Treatment	Vessel 3B Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01778	Upper	19th St	GAC System	Wellhead Treatment	Vessel 3B Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01779	Upper	19th St	GAC System	Wellhead Treatment	Vessel 3B Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01780	Upper	19th St	GAC System	Wellhead Treatment	Vessel 3A Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01781	Upper	19th St	GAC System	Wellhead Treatment	Vessel 3A Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01782	Upper	19th St	GAC System	Wellhead Treatment	Vessel 3A Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01783	Upper	19th St	GAC System	Wellhead Treatment	Vessel 3A Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01784	Upper	19th St	GAC System	Wellhead Treatment	Vessel 3A Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01785	Upper	19th St	GAC System	Wellhead Treatment	Vessel 2B Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01786	Upper	19th St	GAC System	Wellhead Treatment	Vessel 2B Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01787	Upper	19th St	GAC System	Wellhead Treatment	Vessel 2B Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01788	Upper	19th St	GAC System	Wellhead Treatment	Vessel 2B Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01789	Upper	19th St	GAC System	Wellhead Treatment	Vessel 2B Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01790	Upper	19th St	GAC System	Wellhead Treatment	Vessel 2A Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01791	Upper	19th St	GAC System	Wellhead Treatment	Vessel 2A Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01792	Upper	19th St	GAC System	Wellhead Treatment	Vessel 2A Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01793	Upper	19th St	GAC System	Wellhead Treatment	Vessel 2A Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01794	Upper	19th St	GAC System	Wellhead Treatment	Vessel 2A Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01795	Upper	19th St	GAC System	Wellhead Treatment	Vessel 1B Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01796	Upper	19th St	GAC System	Wellhead Treatment	Vessel 1B Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01797	Upper	19th St	GAC System	Wellhead Treatment	Vessel 1B Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01798	Upper	19th St	GAC System	Wellhead Treatment	Vessel 1B Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01799	Upper	19th St	GAC System	Wellhead Treatment	Vessel 1B Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01800	Upper	19th St	GAC System	Wellhead Treatment	Vessel 1A Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01801	Upper	19th St	GAC System	Wellhead Treatment	Vessel 1A Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01802	Upper	19th St	GAC System	Wellhead Treatment	Vessel 1A Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01803	Upper	19th St	GAC System	Wellhead Treatment	Vessel 1A Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01804	Upper	19th St	GAC System	Wellhead Treatment	Vessel 1A Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01805	Upper	19th St	GAC System	Wellhead Treatment	Vessel 8A Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01806	Upper	19th St	GAC System	Wellhead Treatment	Vessel 8A Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01807	Upper	19th St	GAC System	Wellhead Treatment	Vessel 8A Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01808	Upper	19th St	GAC System	Wellhead Treatment	Vessel 8A Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01809	Upper	19th St	GAC System	Wellhead Treatment	Vessel 8A Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01810	Upper	19th St	GAC System	Wellhead Treatment	Vessel 8B Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01811	Upper	19th St	GAC System	Wellhead Treatment	Vessel 8B Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01812	Upper	19th St	GAC System	Wellhead Treatment	Vessel 8B Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01813	Upper	19th St	GAC System	Wellhead Treatment	Vessel 8B Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01814	Upper	19th St	GAC System	Wellhead Treatment	Vessel 8B Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01815	Upper	19th St	GAC System	Wellhead Treatment	Vessel 9A Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01816	Upper	19th St	GAC System	Wellhead Treatment	Vessel 9A Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01817	Upper	19th St	GAC System	Wellhead Treatment	Vessel 9A Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01818	Upper	19th St	GAC System	Wellhead Treatment	Vessel 9A Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01819	Upper	19th St	GAC System	Wellhead Treatment	Vessel 9A Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01820	Upper	19th St	GAC System	Wellhead Treatment	Vessel 9B Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01821	Upper	19th St	GAC System	Wellhead Treatment	Vessel 9B Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01822	Upper	19th St	GAC System	Wellhead Treatment	Vessel 9B Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01823	Upper	19th St	GAC System	Wellhead Treatment	Vessel 9B Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01824	Upper	19th St	GAC System	Wellhead Treatment	Vessel 9B Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01825	Upper	19th St	GAC System	Wellhead Treatment	Vessel 10A Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01826	Upper	19th St	GAC System	Wellhead Treatment	Vessel 10A Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01827	Upper	19th St	GAC System	Wellhead Treatment	Vessel 10A Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01828	Upper	19th St	GAC System	Wellhead Treatment	Vessel 10A Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01829	Upper	19th St	GAC System	Wellhead Treatment	Vessel 10A Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01830	Upper	19th St	GAC System	Wellhead Treatment	Vessel 10B Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01831	Upper	19th St	GAC System	Wellhead Treatment	Vessel 10B Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01832	Upper	19th St	GAC System	Wellhead Treatment	Vessel 10B Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01833	Upper	19th St	GAC System	Wellhead Treatment	Vessel 10B Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01834	Upper	19th St	GAC System	Wellhead Treatment	Vessel 10B Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01835	Upper	19th St	GAC System	Wellhead Treatment	Vessel 11A Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01836	Upper	19th St	GAC System	Wellhead Treatment	Vessel 11A Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01837	Upper	19th St	GAC System	Wellhead Treatment	Vessel 11A Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01838	Upper	19th St	GAC System	Wellhead Treatment	Vessel 11A Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01839	Upper	19th St	GAC System	Wellhead Treatment	Vessel 11A Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01840	Upper	19th St	GAC System	Wellhead Treatment	Vessel 11B Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01841	Upper	19th St	GAC System	Wellhead Treatment	Vessel 11B Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01842	Upper	19th St	GAC System	Wellhead Treatment	Vessel 11B Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01843	Upper	19th St	GAC System	Wellhead Treatment	Vessel 11B Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01844	Upper	19th St	GAC System	Wellhead Treatment	Vessel 11B Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01845	Upper	19th St	GAC System	Wellhead Treatment	Vessel 12A Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01846	Upper	19th St	GAC System	Wellhead Treatment	Vessel 12A Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01847	Upper	19th St	GAC System	Wellhead Treatment	Vessel 12A Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01848	Upper	19th St	GAC System	Wellhead Treatment	Vessel 12A Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01849	Upper	19th St	GAC System	Wellhead Treatment	Vessel 12A Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01850	Upper	19th St	GAC System	Wellhead Treatment	Vessel 12B Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01851	Upper	19th St	GAC System	Wellhead Treatment	Vessel 12B Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01852	Upper	19th St	GAC System	Wellhead Treatment	Vessel 12B Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01853	Upper	19th St	GAC System	Wellhead Treatment	Vessel 12B Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01854	Upper	19th St	GAC System	Wellhead Treatment	Vessel 12B Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01855	Upper	19th St	GAC System	Wellhead Treatment	Vessel 13A Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01856	Upper	19th St	GAC System	Wellhead Treatment	Vessel 13A Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01857	Upper	19th St	GAC System	Wellhead Treatment	Vessel 13A Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01858	Upper	19th St	GAC System	Wellhead Treatment	Vessel 13A Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01859	Upper	19th St	GAC System	Wellhead Treatment	Vessel 13A Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01860	Upper	19th St	GAC System	Wellhead Treatment	Vessel 13B Drain Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01861	Upper	19th St	GAC System	Wellhead Treatment	Vessel 13B Influent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01862	Upper	19th St	GAC System	Wellhead Treatment	Vessel 13B Effluent Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01863	Upper	19th St	GAC System	Wellhead Treatment	Vessel 13B Backwash Up Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01864	Upper	19th St	GAC System	Wellhead Treatment	Vessel 13B Backwash Down Isolation Valve	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01865	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 1A & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01866	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 2A & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01867	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 3A & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01868	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 4A & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01869	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 8A & Air Valves	Vessel	GAC	Structural	1988		

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01870	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 9A & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01871	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 10A & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01872	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 11A & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01873	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 12A & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01874	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 13A & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01875	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 1B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01876	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 2B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01877	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 3B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01878	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 4B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01879	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 8B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01880	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 9B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01881	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 10B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01882	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 11B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01883	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 12B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01884	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 13B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01885	Upper	19th St	GAC System	Wellhead Treatment	Influent Distribution Valve - Vessle 13A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01886	Upper	19th St	GAC System	Wellhead Treatment	Effluent Collection Valve - Vessle 13A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01887	Upper	19th St	GAC System	Wellhead Treatment	Backwash Distribution Valve Vessle 13A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01888	Upper	19th St	GAC System	Wellhead Treatment	Influent Distribution Valve - Vessle 12A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01889	Upper	19th St	GAC System	Wellhead Treatment	Effluent Collection Valve - Vessle 12A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01890	Upper	19th St	GAC System	Wellhead Treatment	Backwash Distribution Valve Vessle 12A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01891	Upper	19th St	GAC System	Wellhead Treatment	Influent Distribution Valve - Vessle 11A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01892	Upper	19th St	GAC System	Wellhead Treatment	Effluent Collection Valve - Vessle 11A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01893	Upper	19th St	GAC System	Wellhead Treatment	Backwash Distribution Valve Vessle 11A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01894	Upper	19th St	GAC System	Wellhead Treatment	Influent Distribution Valve - Vessle 10A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01895	Upper	19th St	GAC System	Wellhead Treatment	Effluent Collection Valve - Vessle 10A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01896	Upper	19th St	GAC System	Wellhead Treatment	Backwash Distribution Valve Vessle 10A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01897	Upper	19th St	GAC System	Wellhead Treatment	Influent Distribution Valve - Vessle 9A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01898	Upper	19th St	GAC System	Wellhead Treatment	Effluent Collection Valve - Vessle 9A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01899	Upper	19th St	GAC System	Wellhead Treatment	Backwash Distribution Valve Vessle 9A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01900	Upper	19th St	GAC System	Wellhead Treatment	Influent Distribution Valve - Vessle 8A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01901	Upper	19th St	GAC System	Wellhead Treatment	Effluent Collection Valve - Vessle 8A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01902	Upper	19th St	GAC System	Wellhead Treatment	Backwash Distribution Valve Vessle 8A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01903	Upper	19th St	GAC System	Wellhead Treatment	Influent Distribution Valve - Vessle 1A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01904	Upper	19th St	GAC System	Wellhead Treatment	Effluent Collection Valve - Vessle 1A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01905	Upper	19th St	GAC System	Wellhead Treatment	Backwash Distribution Valve Vessle 1A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01906	Upper	19th St	GAC System	Wellhead Treatment	Influent Distribution Valve - Vessle 2A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01907	Upper	19th St	GAC System	Wellhead Treatment	Effluent Collection Valve - Vessle 2A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01908	Upper	19th St	GAC System	Wellhead Treatment	Backwash Distribution Valve Vessle 2A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01909	Upper	19th St	GAC System	Wellhead Treatment	Influent Distribution Valve - Vessle 3A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01910	Upper	19th St	GAC System	Wellhead Treatment	Effluent Collection Valve - Vessle 3A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01911	Upper	19th St	GAC System	Wellhead Treatment	Backwash Distribution Valve Vessle 3A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01912	Upper	19th St	GAC System	Wellhead Treatment	Influent Distribution Valve - Vessle 4A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01913	Upper	19th St	GAC System	Wellhead Treatment	Effluent Collection Valve - Vessle 4A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01914	Upper	19th St	GAC System	Wellhead Treatment	Backwash Distribution Valve Vessle 4A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01915	Upper	19th St	GAC System	Wellhead Treatment	Influent Distribution Valve - Vessle 5A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01916	Upper	19th St	GAC System	Wellhead Treatment	Effluent Collection Valve - Vessle 5A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01917	Upper	19th St	GAC System	Wellhead Treatment	Backwash Distribution Valve Vessle 5A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01918	Upper	19th St	GAC System	Wellhead Treatment	Influent Distribution Valve - Vessle 6A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01919	Upper	19th St	GAC System	Wellhead Treatment	Effluent Collection Valve - Vessle 6A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01920	Upper	19th St	GAC System	Wellhead Treatment	Backwash Distribution Valve Vessle 6A/B	Valve	Butterfly	Mechanical	1988	12	DIN
SBMWD-A01921	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 1A & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01922	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 1B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01923	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 2A & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01924	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 2B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01925	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 3A & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01926	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 3B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01927	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 4A & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01928	Upper	19th St	GAC System	Wellhead Treatment	GAC Vessel 4B & Air Valves	Vessel	GAC	Structural	1988		
SBMWD-A01929	Upper	19th St	Common	Other	Concrete Pad Near Well#2	Non-Process Structure	Concrete Pad	Structural	1988	7	LFT
SBMWD-A01930	Upper	19th St	Common	Wellhead Treatment	Sluice Gate Valve	Valve	Sluice Gate	Mechanical	1988		
SBMWD-A01931	Upper	19th St	Common	Wellhead Treatment	Vault - North West of the Building	Non-Process Structure	Vault	Structural	1988	9	LFT
SBMWD-A01932	Upper	19th St	Common	Wellhead Treatment	Vault Flowmeter - North of the Building	Flowmeter		I&C	1988	6	LFT
SBMWD-A01933	Upper	19th St	Common	Wellhead Treatment	Vessel Influent Flowmeter Vault - West of the South Vessels 24 In Valve	Non-Process Structure	Vault	Structural	1988	24	DIN
SBMWD-A01934	Lower	Lytle Creek	Common	Well	Chlorine Gas Dectection	Chlorine Detection System		I&C	1957		
SBMWD-A01935	Cajon	Cajon Blvd	Well#2	Well	Chlorine Gas Detector	Chlorine Detection System		I&C	1957		
SBMWD-A01936	Intermediate	Perimeter	BPS	BPS	Chlorine Injection Pump	Pump	Chemical	Mechanical	1988		

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A01937	Upper	19th St	GAC System	Wellhead Treatment	Lighting - South Vessels	Lighting	Pole	Electrical	1988		
SBMWD-A01938	Upper	19th St	Common	Other	Security Camera	Camera	Safety	Electrical	1988	3	QTY
SBMWD-A01939	Upper	19th St	GAC System	Wellhead Treatment	Lighting - North Vessels	Lighting	Pole	Electrical	1988	8	QTY
SBMWD-A01940	Upper	19th St	Common	Other	Lighting - Street Lights	Lighting	Pole	Electrical	1988	8	QTY
SBMWD-A01941	Upper	19th St	Common	Piping and Appurtenances	Flowmeter	Flowmeter		I&C	1988		
SBMWD-A01942	Upper	19th St	BPS (#1-5)	BPS	Wall Mounted Light-North Building	Lighting	Pole	Electrical	1988	6	QTY
SBMWD-A01943	Lower	Mill & D St	Well	Well	Access Gate (Motorized) Metal Single Door	Access Gate	Motorized	Civil	1940		
SBMWD-A01944	Del Rosa	40th & Valencia Ave	Well	Well	Chlorine Injection Pump	Pump	Chemical	Mechanical	1990	0.75	HP
SBMWD-A01945	Lower	Mill & D St	Reservoir	Well	Eyewash Station	Safety Shower/Eyewash		Mechanical	1940		
SBMWD-A01946	Intermediate	27th St	Acacia BPS	BPS	Chlorine Detection System	Chlorine Detection System		I&C	1957		
SBMWD-A01947	Lower	Mill & D St	Well	Well	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1940		
SBMWD-A01948	Lower	Mill & D St	Well	Well	Internal Camera	Camera	Safety	Electrical	1940		
SBMWD-A01949	Upper	Mallory St	Mallory Well#3	Well	Chlorine Gas Detector	Chlorine Detection System		I&C	1987		
SBMWD-A01950	Lower	Mill & D St	Well	Well	Lighting	Lighting	Pole	Electrical	1940	3	QTY
SBMWD-A01951	Lower	Mill & D St	Well	Well	External Camera	Camera	Safety	Electrical	1940	4	QTY
SBMWD-A01952	Lower	Mill & D St	Well	Well	Flowmeter	Flowmeter		I&C	1940		
SBMWD-A01953	Lower	Baseline & California St	Well	Well	Chlorine Gas Detector - Not in Used	Chlorine Detection System		I&C	1992		
SBMWD-A01954	Lower	Mill & D St	BPS	BPS	Butterfly 6" Valve In Vault	Valve		Mechanical	1940	6	DIN
SBMWD-A01955	Lower	Mill & D St	Well	Well	Chlorine Gas Detector	Chlorine Detection System		I&C	1940		
SBMWD-A01956	Lower	10th & J ST	Well	Well	Chlorine Pump	Pump	Chemical	Mechanical	1997		
SBMWD-A01957	Lower	Waterman Ave	Common	Other	Chlorine Tank	Tank	Storage	Structural	1947		
SBMWD-A01958	Upper	25th & North E St	BPS	BPS	Circuit Breaker	Panel	Circuit Breaker	Electrical	1950		
SBMWD-A01959	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Communication Tower	Antenna Tower		I&C	1990		
SBMWD-A01960	Lower	Mill & D St	Well	Well	Check Valve	Valve	Check	Mechanical	1940		
SBMWD-A01961	Lower	Mill & D St	Well	Well	Well Discharge - Butterfly Valve	Valve		Mechanical	1940		
SBMWD-A01962	Lower	Mill & D St	Well	Well	Well Butterfly Valve - Discharge To Waste	Valve		Mechanical	1940		
SBMWD-A01963	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Chainlink Swing Gate	Access Gate	Manual	Civil	1983		
SBMWD-A01964	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Pressure Transmitter	Pressure Indicator		I&C	1983		
SBMWD-A01965	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Air Release Valve	Valve	Air Release	Mechanical	1983	2	DIN
SBMWD-A01966	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Asphalt	Pavement	Asphalt	Civil	1983		
SBMWD-A01967	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Level Gauge	Level Indicator		I&C	1983		
SBMWD-A01968	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Ladder	Ladder	Fixed	Civil	1983		
SBMWD-A01969	Del Rosa	Del Rosa#3	Reservoir	Reservoir	SCADA	SCADA		I&C	1983		
SBMWD-A01970	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Access Gate - Double Door Swing Manual Gate	Access Gate	Manual	Civil	1983		
SBMWD-A01971	Upper	Medical Center	Ogden BPS	BPS	Compressor Cp	Control Panel		Electrical	2006		
SBMWD-A01972	Del Rosa	Del Rosa#1	Reservoir	Reservoir	Level Gauge	Level Indicator		I&C	1956		
SBMWD-A01973	Del Rosa	Del Rosa#1	Reservoir	Reservoir	Ladder	Ladder	Fixed	Civil	1956		
SBMWD-A01974	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Vault - Treated Water	Non-Process Structure	Vault	Structural	1983		
SBMWD-A01975	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	SCADA	SCADA		I&C	1956		
SBMWD-A01976	Del Rosa	Del Rosa#1	Reservoir	Reservoir	Chain Link Fence	Fencing	Chainlink	Civil	1956		
SBMWD-A01977	Del Rosa	Del Rosa#1	Reservoir	Reservoir	Access Gate - Double Door Swing Gate	Access Gate	Manual	Civil	1956		
SBMWD-A01978	Del Rosa	Del Rosa#1	Reservoir	Reservoir	Lighting	Lighting	Pole	Electrical	1956	1	QTY
SBMWD-A01979	Del Rosa	Del Rosa#1	Reservoir	Reservoir	Security Camera	Camera	Safety	Electrical	1956	1	QTY
SBMWD-A01980	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Arv	Valve	Air Release	Mechanical	1956	1	DIN
SBMWD-A01981	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1956		
SBMWD-A01982	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Chainlink Fence and Gate	Fencing	Chainlink	Civil	1994		
SBMWD-A01983	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Level Gauge	Level Indicator		I&C	1994		
SBMWD-A01984	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Ladder	Ladder	Fixed	Civil	1994		
SBMWD-A01985	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Chainlink Gate Fence	Fencing	Chainlink	Civil	1994		
SBMWD-A01986	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	SCADA	SCADA		I&C	1956		
SBMWD-A01987	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	SCADA Other Side of the Pumps	SCADA		I&C	1956		
SBMWD-A01988	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Reservoir Fill Pipe	Piping		Mechanical	1994	12	
SBMWD-A01989	Del Rosa	Del Rosa#1	Daley BPS (#1-2)	BPS	Control Panel - Switch on/off	Control Panel		Electrical	1956	no	
SBMWD-A01990	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Reservoir Inlet Butterfly Valve	Valve	Butterfly	Mechanical	1994		
SBMWD-A01991	Ridgeview	Del Rosa#2	Ridgeview BPS (#2-3)	BPS	Flowmeter	Flowmeter		I&C	1994		
SBMWD-A01992	Ridgeview	Del Rosa#2	Ridgeview BPS (#2-3)	BPS	SCADA	SCADA		I&C	1994		
SBMWD-A01993	Upper	Medical Center	Ogden BPS	BPS	Concrete Floor	Non-Process Structure	Concrete Pad	Structural	2006		
SBMWD-A01994	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Concrete Foundation of Hy Tank	Non-Process Structure	Concrete Pad	Structural	1990		
SBMWD-A01995	Del Rosa	Del Rosa#2	Reservoir	Reservoir	Pressure Transmitter	Pressure Indicator		I&C	1994		
SBMWD-A01996	Lower	10th & J ST	Well	Well	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1997	23	LFT
SBMWD-A01997	Upper	Electric Dr	Reservoir	Reservoir	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1949	10	LFT
SBMWD-A01998	Ridgeview	Ridgeview#1	Reservoir	Reservoir	Butterfly Valve	Valve		Mechanical	1963	12	
SBMWD-A01999	Ridgeview	Ridgeview#1	Reservoir	Reservoir	Drain Isolation Valve	Valve		Mechanical	1963		
SBMWD-A02000	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump House	Building		Structural	1990	900	SF
SBMWD-A02001	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Check Valve Pump#1	Valve	Check	Mechanical	1990	8	DIN
SBMWD-A02002	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Check Valve Pump#4	Valve	Check	Mechanical	1990		
SBMWD-A02003	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Check Valve Pump#2	Valve	Check	Mechanical	1990	8	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02004	Lower	Antil	Reservoir	Reservoir (Forebay)	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1953		
SBMWD-A02005	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Pump Starter Pump#4	Valve	Check	Mechanical	1990		
SBMWD-A02006	Del Rosa	40th & Valencia Ave	Del Rosa BPS (#1-2, 4)	BPS	Transformer	Transformer		Electrical	1990		
SBMWD-A02007	Lower	7th St	BPS	BPS	Concrete Pad - Booster Pump	Non-Process Structure	Concrete Pad	Structural	1965	7	WFT
SBMWD-A02008	Lower	7th St	Reservoir (Forebay)	Reservoir (Forebay)	Concrete Pad - Electrical Equipment	Non-Process Structure	Concrete Pad	Structural	1965	7	WFT
SBMWD-A02009	Cajon	Cajon Blvd	Well#2	Well	Concrete Pad Around Building	Non-Process Structure	Concrete Pad	Structural	1957		
SBMWD-A02010	Shandin Hills	Shandin Hills South	BPS (#1-2)	BPS	Flowmeter Vault Outside the Pump Room	Non-Process Structure	Vault	Structural	1997	7	LFT
SBMWD-A02011	Shandin Hills	Shandin Hills South	BPS (#1-2)	BPS	Flowmeter	Flowmeter		I&C	1997		
SBMWD-A02012	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Concrete Pad In Front of Door	Non-Process Structure	Concrete Pad	Structural	2007		
SBMWD-A02013	Lower	Olive & Garner	Well	Well	Concrete Pad Infront of the Building Is	Non-Process Structure	Concrete Pad	Structural	1993	13	LFT
SBMWD-A02014	Ridgeline	Ridgeline Dr Lower	BPS (#1-2)	BPS	Flowmeter - Pump#1	Flowmeter		I&C	1991		
SBMWD-A02015	Ridgeline	Ridgeline Dr Lower	BPS (#1-2)	BPS	Flowmeter	Flowmeter		I&C	1991		
SBMWD-A02016	Lower	Antil	BPS	BPS	Concrete Pad of Yard Boosters	Non-Process Structure	Concrete Pad	Structural	1953	43	LFT
SBMWD-A02017	Cajon	Cajon Blvd	Reservoir	Reservoir	Concrete Pad PRV	Non-Process Structure	Concrete Pad	Structural	1957	17	LFT
SBMWD-A02018	Ridgeline	Ridgeline Dr Lower	BPS (#1-2)	BPS	Air Release Valves	Valve		Mechanical	1991		
SBMWD-A02019	Ridgeline	Ridgeline Dr Lower	BPS (#1-2)	BPS	Flowmeter Vault	Flowmeter		I&C	1991		
SBMWD-A02020	Shandin Hills	Shandin Hills North	Reservoir	Reservoir	Fence	Fencing	Chainlink	Civil	1997		
SBMWD-A02021	Ridgeline	Ridgeline Dr Lower	BPS (#1-2)	BPS	Pump Vault	Non-Process Structure	Vault	Structural	1991		
SBMWD-A02022	Intermediate	Perimeter	BPS	BPS	Chlorine Detection System	Chlorine Detection System		I&C	1988		
SBMWD-A02023	Intermediate	Perimeter	BPS	BPS	Concrete Pad Under Electricals	Non-Process Structure	Concrete Pad	Structural	1988	50	LFT
SBMWD-A02024	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Concrete Pad Under Generator Hook	Non-Process Structure	Concrete Pad	Structural	2007	7	LFT
SBMWD-A02025	Intermediate	Perimeter	BPS	BPS	Concrete Pad Under Pumps	Non-Process Structure	Concrete Pad	Structural	1988	33	LFT
SBMWD-A02026	Lower	Encanto	BPS (#1-3)	BPS	Concrete Pad Under Surge Tank and Electrical Panels	Non-Process Structure	Concrete Pad	Structural	2005	10	LFT
SBMWD-A02027	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Motorized Double Door Gate	Access Gate	Motorized	Civil	1990		
SBMWD-A02028	Lower	Waterman Ave	GAC System	Wellhead Treatment	Concrete Slab Under the Blower South	Non-Process Structure	Concrete Pad	Structural	1947	13	LFT
SBMWD-A02029	Lower	EPA	Well#004	Well	Concrete Under the Empty SCADA Case	Non-Process Structure	Concrete Pad	Structural	1996		
SBMWD-A02030	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Fence	Fencing	Chainlink	Civil	1990		
SBMWD-A02031	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Security Camera	Camera	Safety	Electrical	1990	4	QTY
SBMWD-A02032	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Lighting	Lighting	Pole	Electrical	1990	2	QTY
SBMWD-A02033	Lower	Lytle Creek	Common	Well	Control Panel - Switch on/off	Control Panel		Electrical	1957	no	
SBMWD-A02034	Upper	Mallory St	BPS (#1-2)	BPS	Control Panel - Switch on/off	Control Panel		Electrical	1987	no	
SBMWD-A02035	Ridgeline	Ridgeline Dr Upper	Reservoir	Reservoir	Butterfly Valve, Booster Pump Inlet Pipe	Valve		Mechanical	1990		
SBMWD-A02036	Lower	7th St	Reservoir (Forebay)	Reservoir (Forebay)	Control Panel	Control Panel		Electrical	1965	100	AMP
SBMWD-A02037	Lower	Waterman Ave	GAC System	Wellhead Treatment	Control Panel - Security System	Control Panel		Electrical	1947	1	Each
SBMWD-A02038	Lower	Antil	BPS	BPS	Control Panel Boosters Outside 1, 2, 3 - Starter	Motor Starter		Electrical	1953	no	
SBMWD-A02039	Cajon	Cajon Blvd	Well#2	Well	Control Panel Well 3, Generator - Starter - MCC	Motor Starter		Electrical	1957	120/240	V
SBMWD-A02040	Cajon	Cajon Blvd	Well#2	Well	Control Panel Well 4 and Transformer - Starter - MCC	Motor Starter		Electrical	1957	480	V
SBMWD-A02041	Cajon	Cajon Blvd	Well#2	Well	MCC-Well No2	Control Panel		Electrical	1957	480	V
SBMWD-A02042	Upper	Highland Ave	Mt Vernon Water Compa	Well	Detention Basin	Detention Basin		Structural	1928		
SBMWD-A02043	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Concrete Pad of SCADA Room	Non-Process Structure	Concrete Pad	Structural	1990		
SBMWD-A02044	Ridgeline	Ridgeline Dr Upper	Reservoir	Reservoir	Overflow Pipe	Piping		Mechanical	1990		
SBMWD-A02045	Upper	Newmark	Well	Well	Well#1 - Check Valve	Valve	Swing Check	Mechanical	1971	12	DIN
SBMWD-A02046	Upper	Ogden St	Reservoir	Reservoir	Detention Basin	Detention Basin		Structural	2007		
SBMWD-A02047	Lower	31th & Mountain View Av	Well	Well	Disconnect - Not in Use	Switch	Disconnect	Electrical	1962		
SBMWD-A02048	Upper	Newmark	Well	Well	Well#1 - Air Vac Valve Right	Valve	Air-VAC	Mechanical	1971	2	DIN
SBMWD-A02049	Upper	Newmark	Well	Well	Well#1 - Air Vac Valve Left	Valve	Air-VAC	Mechanical	1971	2	DIN
SBMWD-A02050	Upper	Newmark	Well	Well	Well#1 - Combination Air Valve	Valve	Air-VAC	Mechanical	1971	1	DIN
SBMWD-A02051	Upper	Newmark	Well	Well	Well#4 Check Valve	Valve	Swing Check	Mechanical	1971	12	DIN
SBMWD-A02052	Upper	Newmark	Well	Well	Well#4 - Combination Air Valve	Valve	Air-VAC	Mechanical	1971	1	DIN
SBMWD-A02053	Lower	Antil	BPS	BPS	Dl Booster Pump#3	Pump		Mechanical	1953	2100	GPM
SBMWD-A02054	Upper	Newmark	Common	Other	Safety Shower For Chlorine Room	Safety Shower/Eyewash		Mechanical	1971	1	Each
SBMWD-A02055	Lower	Antil	BPS	BPS	Dl Booster Pump Motor	Motor		Electrical	1953		
SBMWD-A02056	Lower	Antil	BPS	BPS	Dl Booster Pump Pipe Assembly	Piping	Above Ground	Mechanical	1953		
SBMWD-A02057	Upper	Newmark	Common	Other	Chlorine Gas Monitor	Chlorine Detection System		I&C	2000	120	V
SBMWD-A02058	Intermediate	Perimeter	BPS	BPS	Double Door Access Gate	Access Gate	Manual	Civil	1988	13	LFT
SBMWD-A02059	Upper	Newmark	Well	Well	Air Compressor Tank For Well#4 For Natural Gas Engine	Air Compressor		Mechanical	1987	200	Psi
SBMWD-A02060	Upper	Newmark	Common	Other	Compressor Motor	Motor		Electrical	1971	5	HP
SBMWD-A02061	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Fence	Fencing	Chainlink	Civil	1947		
SBMWD-A02062	Sycamore	Sycamore St#2	Devil Canyon Well#5	Well	Double Door Motorized Access Gate	Access gate	Motorized	Civil	1965		
SBMWD-A02063	Upper	Newmark	Well	Well	Well 4 Motor	Motor		Electrical	1983	200	HP
SBMWD-A02064	Upper	Newmark	Well	Well	Well 4 Flowmeter	Flowmeter		I&C	1971		
SBMWD-A02065	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Floor Drain	Drain		Civil	1982		
SBMWD-A02066	Lower	EPA	Well#005	Well	Drain on the floor	Drain		Civil	1996		
SBMWD-A02067	Lower	Waterman Ave	GAC System	Wellhead Treatment	Drain Chanel	Process Structure	Chanel	Structural	1947		
SBMWD-A02068	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Drain Chanel	Process Structure	Chanel	Structural	1950		
SBMWD-A02069	Upper	Highland Ave	Mt Vernon Water Compa	Well	Drain Pipe	Piping		Mechanical	1928		
SBMWD-A02070	Sycamore	Newmark	Sycamore BPS (#2)	BPS	Booster Pump#2 Motor	Motor		Electrical	1971	460	V

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02071	Upper	Newmark	Well	Well	Well#1 Flowmeter	Flowmeter		I&C	1971		
SBMWD-A02072	Upper	Ogden St	Reservoir	Reservoir	Drain Piping Assembly	Piping	Above Ground	Mechanical	2007	8	DIN
SBMWD-A02073	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 1A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02074	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 1A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02075	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 1A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02076	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 1A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02077	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 1B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02078	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 1B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02079	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 1B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02080	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 1B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02081	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 1B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02082	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 1A-1B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02083	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 2A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02084	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 2A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02085	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 2A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02086	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 2A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02087	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 2A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02088	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 2A-2B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02089	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 2B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02090	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 2B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02091	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 2B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02092	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 2B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02093	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 2B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02094	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 3A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02095	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 3A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02096	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 3A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02097	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 3A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02098	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 3A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02099	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 3A-3B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02100	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 3B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02101	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 3B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02102	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 3B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02103	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 3B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02104	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 3B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02105	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 4A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02106	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 4A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02107	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 4A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02108	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 4A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02109	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 4A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02110	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 4A-4B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02111	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 4B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02112	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 4B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02113	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 4B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02114	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 4B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02115	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 4B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02116	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 5A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02117	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 5A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02118	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 5A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02119	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 5A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02120	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 5A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02121	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 5A-5B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02122	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 5B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02123	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 5B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02124	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 5B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02125	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 5B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02126	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 5B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02127	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 6A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02128	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 6A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02129	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 6A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02130	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 6A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02131	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 6A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02132	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 6A-6B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02133	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 6B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02134	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 6B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02135	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 6B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02136	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 6B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02137	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 6B-5	Valve	Butterfly	Mechanical	1997	8	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02138	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 7A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02139	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 7A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02140	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 7A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02141	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 7A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02142	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 7A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02143	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 7A-7B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02144	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 7B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02145	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 7B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02146	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 7B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02147	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 7B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02148	Upper	Newmark	GAC System	Wellhead Treatment	Isolation Valve 7B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02149	Upper	19th St	BPS (#1-5)	BPS	Dry Type Transformer	Transformer		Electrical	1988	3	KVA
SBMWD-A02150	Upper	Newmark	Common	Other	Dry Type Transformer - 10Kva	Transformer		Electrical	1971	480	V primary
SBMWD-A02151	Upper	Newmark	GAC System	Wellhead Treatment	Lighting - Vessel Area	Lighting	Pole	Electrical	1990	3	QTY
SBMWD-A02152	Upper	Newmark	Well	Well	Dry Type Transformer 15Kva	Transformer		Electrical	1971	480	V
SBMWD-A02153	Lower	Lytle Creek	Intertie - West Valley Wa	Intertie	Flowmeter	Flowmeter		I&C	1957	12	DIN
SBMWD-A02154	College/Palm	Ogden St	Intertie - Muscoy Mutual	Intertie	Backflow Preventor Valve	Valve	Backflow Prev	Mechanical	2013	10	DIN
SBMWD-A02155	Upper	Newmark	Well	Well	Generator Warehouse Lighting	Lighting	Pole	Electrical	1971	2	QTY
SBMWD-A02156	Sycamore	Newmark	Sycamore BPS (#2)	BPS	Air Release Valve Booster#2	Valve	Air Release	Mechanical	2009	2	DIN
SBMWD-A02157	Upper	Newmark	Reservoir	Reservoir	Backwash Supply Line Flowmeter	Flowmeter		I&C	1971		
SBMWD-A02158	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Eastern Assembly - Arv	Valve	Air-VAC	Mechanical	2007	10	DIN
SBMWD-A02159	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Eastern Assembly - Concrete Pad	Non-Process Structure	Concrete Pad	Structural	2007		
SBMWD-A02160	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Eastern Assembly - Flowmeter	Flowmeter		I&C	2013	10	DIN
SBMWD-A02161	Upper	Newmark	Well	Well	Well 2 Motor	Motor		Electrical	1971	460	V
SBMWD-A02162	Upper	Newmark	Well	Well	Well 2 Flowmeter	Flowmeter		I&C	1971		
SBMWD-A02163	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Eastern Assembly - Piping Assembly	Piping	Above Ground	Mechanical	2007	10	DIN
SBMWD-A02164	College/Palm	Ogden St	Intertie - Muscoy Mutual	Intertie	Isolation Gate Valve - Downstream	Valve	Gate	Mechanical	2013	10	DIN
SBMWD-A02165	Upper	Newmark	Well	Well	Well 3 Motor	Motor		Electrical	1971	480	V
SBMWD-A02166	Upper	Newmark	Well	Well	Well 3 Flowmeter	Flowmeter		I&C	1971		
SBMWD-A02167	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Effluent Manifold	Piping	Above Ground	Mechanical	1950	12	DIN
SBMWD-A02168	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Electrical Room	Building		Structural	1990	15	WFT
SBMWD-A02169	Upper	Newmark	Well	Well	Well#3 - Air Release and Vacuum Valve After Check Valve	Valve	Air-VAC	Mechanical	1990	2	DIN
SBMWD-A02170	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Air Vac Assembly - Suction	Valve	Air-VAC	Mechanical	1990	0.5	DIN
SBMWD-A02171	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Air Vac Assembly - Suction	Valve	Air-VAC	Mechanical	1990	0.5	DIN
SBMWD-A02172	Upper	Ogden St	Reservoir	Reservoir	Electrical By the Reservoir Drain	Control Panel		Electrical	2007		
SBMWD-A02173	Upper	Newmark	Common	Other	Pavement of the Newmark Facility	Pavement	Asphalt	Civil	1971		
SBMWD-A02174	Upper	Newmark	GAC System	Wellhead Treatment	Concrete Pad For Vessels	Non-Process Structure	Concrete Pad	Structural	1997		
SBMWD-A02175	Upper	Newmark	Common	Other	Generator Building	Building		Structural	1987		
SBMWD-A02176	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Booster Motor 3	Motor		Electrical	1971	200	HP
SBMWD-A02177	Upper	Newmark	GAC System	Wellhead Treatment	Vault Pressure Reducing Valve GAC Assembly Effluent	Non-Process Structure	Vault	Structural	2008	40	SF
SBMWD-A02178	Sycamore	Newmark	Sycamore BPS (#2)	BPS	Flowmeter Vault - Sycamore BPS#2	Non-Process Structure	Vault	Structural	1987	16	SF
SBMWD-A02179	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 1A_1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02180	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 1A_2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02181	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 1A_3	Valve	Air Release	Mechanical	1997	2	DIN
SBMWD-A02182	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 1B_1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02183	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 1B_2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02184	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 1B_3	Valve	Air Release	Mechanical	1997	2	DIN
SBMWD-A02185	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 2A-1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02186	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 2A-2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02187	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 2A-3	Valve	Air Release	Mechanical	1997	2	DIN
SBMWD-A02188	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 2B-1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02189	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 2B-2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02190	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 2B-3	Valve	Air Release	Mechanical	1997	2	DIN
SBMWD-A02191	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 3A-1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02192	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 3A-2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02193	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 3A-3	Valve	Air Release	Mechanical	1997	2	DIN
SBMWD-A02194	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 3B-1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02195	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Booster Pump#4 Motor	Motor		Electrical	1971	200	HP
SBMWD-A02196	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 3B-2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02197	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 3B-3	Valve	Air Release	Mechanical	1997	2	DIN
SBMWD-A02198	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 4A-1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02199	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 4A-2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02200	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 4A-3	Valve	Air Release	Mechanical	1997	2	DIN
SBMWD-A02201	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 4B-1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02202	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 4B-2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02203	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 4B-3	Valve	Air Release	Mechanical	1997	2	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02204	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 7B-1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02205	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 7B-2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02206	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 7B-3	Valve	Air Release	Mechanical	1997	2	DIN
SBMWD-A02207	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 7A-1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02208	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 7A-2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02209	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 7A-3	Valve	Air Release	Mechanical	1997	2	DIN
SBMWD-A02210	Upper	Newmark	Common	Other	Irrigation Valve 1 Bakcwash Supply Line	Valve	Gate	Mechanical	1997	10	DIN
SBMWD-A02211	Upper	Newmark	Common	Other	Irrigation Valve 2 Bakcwash Supply Line	Valve	Gate	Mechanical	1997	10	DIN
SBMWD-A02212	Upper	Newmark	Common	Other	Backflow Preventer#1 Bakcwash Supply Line	Valve	Backflow Prev	Mechanical	1997	10	DIN
SBMWD-A02213	Upper	Newmark	Common	Other	Backflow Preventer#2 Bakcwash Supply Line	Valve	Backflow Prev	Mechanical	1997	10	DIN
SBMWD-A02214	Upper	Newmark	Reservoir	Reservoir	Drain Vault Reservoir#2	Non-process structure	Vault	Structural	1971	50	SF
SBMWD-A02215	Upper	Newmark	Reservoir	Reservoir	Drain Vault Reservoir#3	Non-process structure	Vault	Structural	1971	50	SF
SBMWD-A02216	Upper	Newmark	Reservoir	Reservoir	Reservoir#2 Drain Gate Valve#2	Valve	Gate	Mechanical	2008	24	DIN
SBMWD-A02217	Upper	Newmark	Reservoir	Reservoir	Reservoir#3 Drain Gate Valve#2	Valve	Gate	Mechanical	2008	24	DIN
SBMWD-A02218	Lower	31th & Mountain View Av	Well	Well	Motor Starter	Motor Starter		Electrical	1962	480	V
SBMWD-A02219	Lower	31th & Mountain View Av	Well	Well	Motor Starter	Motor Starter		Electrical	1962	480	V
SBMWD-A02220	Lower	30th & Mountain View Av	Well	Well	SCADA	Motor Starter		ELECTRICAL	1940	120	V
SBMWD-A02221	Lower	30th & Mountain View Av	Well	Well	Motor Starter	Motor Starter		Electrical	1940	480	V
SBMWD-A02222	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Magnetic Flowmeter	Flowmeter	Magnetic	I&C	1971	24	DIN
SBMWD-A02223	Upper	Newmark	Reservoir	Reservoir	Gate Valve 1 - Drain Vault Reservoir#4	Valve	Gate	Mechanical	2008	24	DIN
SBMWD-A02224	Upper	Newmark	Reservoir	Reservoir	Gate Valve 2 - Drain Vault Reservoir#4	Valve	Gate	Mechanical	2008	24	DIN
SBMWD-A02225	Upper	Newmark	Common	Reservoir	Flowmeter - East Tower Line	Flowmeter		I&C	1971	5000	GPM
SBMWD-A02226	Upper	Newmark	Common	Reservoir	Flowmeter - West Tower Line	Flowmeter		I&C	1971		
SBMWD-A02227	Upper	Newmark	Common	Wellhead Treatment	Stripping Tower#2 Inlet Isolation Valve (Downstream of Flowmeter)	Valve	Butterfly	Mechanical	1971	16	DIN
SBMWD-A02228	Upper	Newmark	Common	Wellhead Treatment	Stripping Tower#1 Inlet Isolation Valve (Downstream of Flowmeter)	Valve	Butterfly	Mechanical	2008	16	DIN
SBMWD-A02229	Upper	Newmark	Common	Wellhead Treatment	Stripping Tower#2 Bypass Isolation Valve	Valve	Butterfly	Mechanical	1971	12	DIN
SBMWD-A02230	Upper	Newmark	Common	Wellhead Treatment	Stripping Tower#1 Bypass Isolation Valve	Valve	Butterfly	Mechanical	1971	12	DIN
SBMWD-A02231	Lower	Antil	BPS	BPS	Electrical Control Panel For Pac and Fm Boosters - Starter	Motor Starter		Electrical	1953	80	AMP
SBMWD-A02232	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 6B-1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02233	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 6B-2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02234	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 6B-3	Valve	Air Release	Mechanical	1997	2	DIN
SBMWD-A02235	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 6A-1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02236	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 6A-2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02237	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 6A-3	Valve	Air Release	Mechanical	1997	2	DIN
SBMWD-A02238	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 5B-1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02239	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 5B-2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02240	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 5B-3	Valve	Air Release	Mechanical	1997	2	DIN
SBMWD-A02241	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 5A-1	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02242	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 5A-2	Valve	Air Release	Mechanical	1997	1	DIN
SBMWD-A02243	Upper	Newmark	GAC System	Wellhead Treatment	Air Relief Valve - 5A-3	Valve	Air Release	Mechanical	1997	2	DIN
SBMWD-A02244	Lower	17th & Sierra Way St	16th St BPS	BPS	Flowmeter BPS (16Th St)	Flowmeter		I&C	2016	5000	GPM
SBMWD-A02245	Intermediate	17th & Sierra Way St	17th St BPS	BPS	Booster Pump - Isolation Valve Downstream	Valve	Butterfly	Mechanical	1994	12	DIN
SBMWD-A02246	Lower	17th & Sierra Way St	16th St BPS	BPS	Booster Pump - Isolation Valve Downstream	Valve	Butterfly	Mechanical	2011	8	DIN
SBMWD-A02247	Intermediate	17th & Sierra Way St	17th St BPS	Well	Flowmeter Well (17Th St)	Flowmeter		I&C	2010	5000	GPM
SBMWD-A02248	Intermediate	17th & Sierra Way St	Reservoir	Reservoir (Forebay)	Inlet PRV	Valve	Automated-Cc	Mechanical	1950	10	DIN
SBMWD-A02249	Intermediate	17th & Sierra Way St	17Th St Well	Well	Isolation Valve	Valve	Butterfly	Mechanical	1950	12	DIN
SBMWD-A02250	Intermediate	17th & Sierra Way St	17Th St Well	Well	Isolation Valve 17Th St Well Waste Valve	Valve	Butterfly	Mechanical	1950	8	DIN
SBMWD-A02251	Lower	17th & Sierra Way St	16th St BPS	BPS	Switchboard	Switchboard		Electrical	2007	480	V
SBMWD-A02252	Intermediate	17th & Sierra Way St	17th St BPS	BPS	Main Control Panel 1 at BPS (17th St)	Control Panel		Electrical	2011	1	Each
SBMWD-A02253	Lower	Antil	BPS	BPS	Electrical Control Panels For Ph and Dl Booster Pumps - Starter	Motor Starter		Electrical	1953	no	
SBMWD-A02254	Intermediate	17th & Sierra Way St	17th St BPS	BPS	Soft Start - 17th Booster	Motor Starter		Electrical	1950	100	HP
SBMWD-A02255	Lower	17th & Sierra Way St	16th St BPS	BPS	Soft Start - 16th Booster	Motor Starter		Electrical	1950	100	HP
SBMWD-A02256	Intermediate	17th & Sierra Way St	17th St Well	Well	Soft Start - 17th Well	Motor Starter		Electrical	1950	100	HP
SBMWD-A02257	Lower	17th & Sierra Way St	16th St Well	Well	Soft Start - 16th Well	Motor Starter		Electrical	1950	1	Each
SBMWD-A02258	Lower	17th & Sierra Way St	16th St Well	Well	Lighting Panel	Panel	Circuit Breake	Electrical	1950	1	Each
SBMWD-A02259	Intermediate	17th & Sierra Way St	Reservoir	Reservoir	Pressure Reducing Valve in Vault (East of Entrance)	Valve	Automated-Cc	Mechanical	1950	8	DIN
SBMWD-A02260	Lower	17th & Sierra Way St	16th St Well	Well	Air Vacuum Valve	Valve	Swing Check	Mechanical	1950	2	DIN
SBMWD-A02261	Upper	EPA	Well#006	Well	Access Gate - Single Door	Access Gate	Manual	Civil	1996	7	HFT
SBMWD-A02262	Upper	EPA	Well#006	Well	Air Vacuum Valve Upstream	Valve	Air-VAC	Mechanical	1998	2	DIN
SBMWD-A02263	Upper	EPA	Well#006	Well	Check Valve	Valve	Swing Check	Mechanical	1998	12	DIN
SBMWD-A02264	Upper	EPA	Well#006	Well	Air Vacuum Valve Downstream	Valve	Air-VAC	Mechanical	1998	2	DIN
SBMWD-A02265	Upper	EPA	Well#006	Well	Concrete Pad - Electrical	Non-Process Structure	Concrete Pad	Structural	1996	42	SF
SBMWD-A02266	Intermediate	17th & Sierra Way St	17Th St Well	Well	Valve Vault 17Th St Well	Non-Process Structure	Vault	Structural	1991	8	LFT
SBMWD-A02267	Intermediate	17th & Sierra Way St	Common	BPS	Pump Building - 17th and 16th Pump Stations	Building		Structural	1994		
SBMWD-A02268	Intermediate	17th & Sierra Way St	Common	BPS	Safety Shower Chlorine Station - 17th and 16th Pump Stations	Safety Shower/Eyewash		Mechanical	1994	1	Each
SBMWD-A02269	Intermediate	17th & Sierra Way St	Common	BPS	Access Gate Rolling Motorized	Access Gate	Motorized	Civil	1994	18	LFT
SBMWD-A02270	Intermediate	17th & Sierra Way St	Common	BPS	Paving	Pavement	Gravel	Civil	1994		

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02271	Intermediate	17th & Sierra Way St	Common	BPS	Chlorine Station Cabinet	Building		Structural	2011	45	SF
SBMWD-A02272	Intermediate	17th & Sierra Way St	Reservoir	Reservoir (Forebay)	Inlet Isolation Valve Vault	Non-Process Structure		Structural	1951	40	SF
SBMWD-A02273	Intermediate	17th & Sierra Way St	Reservoir	Reservoir (Forebay)	Site Lighting Poles	Lighting	Pole	Electrical	1950	2	Each
SBMWD-A02274	Intermediate	17th & Sierra Way St	Common	BPS	Lighting Pump Room - 16Th and 17Th Booster Ps	Lighting	Pole	Electrical	1994	4	Each
SBMWD-A02275	Intermediate	17th & Sierra Way St	Reservoir	Reservoir (Forebay)	Reservoir Outlet Valve Vault	Non-Process Structure	Vault	Structural	1950	20	SF
SBMWD-A02276	Intermediate	17th & Sierra Way St	Reservoir	Reservoir (Forebay)	Piping - Reservoir Outlet Valve Vault	Piping	In vault	Mechanical	1950	5	LFT
SBMWD-A02277	Upper	EPA	Well#006	Well	Flowmeter	Flowmeter		I&C	1998	12	DIN
SBMWD-A02278	Upper	EPA	Well#006	Well	Lighting	Lighting	Pole	Electrical	1996	20	HFT
SBMWD-A02279	Upper	EPA	Well#006	Well	Motor Starter	Motor Starter		Electrical	1998	250	AMP
SBMWD-A02280	Upper	EPA	Well#006	Well	Perimeter Fences	Fencing	Iron	Civil	1996	7	HFT
SBMWD-A02281	Upper	EPA	Well#006	Well	Piping Assembly	Piping		Mechanical	1998	12	DIN
SBMWD-A02282	Upper	EPA	Well#006	Well	PLC SCADA	SCADA	PLC	Electrical	1996	1	Each
SBMWD-A02283	Upper	EPA	Well#006	Well	Switchboard MSF	Switchboard		Electrical	1998	480	V
SBMWD-A02284	Upper	EPA	Well#006	Well	Well Pump & Motor	Pump	Submersible	Mechanical	1998		
SBMWD-A02285	Upper	EPA	Well#007	Well	Combination Air Valve	Valve	Air-VAC	Mechanical	2000	2	DIN
SBMWD-A02286	Upper	EPA	Well#007	Well	PLC SCADA	SCADA	PLC	Electrical	2000	1	Each
SBMWD-A02287	Upper	EPA	Well#007	Well	Pavement	Pavement	Gravel	Civil	2000		
SBMWD-A02288	Upper	EPA	Well#007	Well	Perimeter Fencing	Fencing	Chainlink	Civil	2000	280	LFT
SBMWD-A02289	Cajon	Cajon Blvd	Well#4	Well	Electrical Panels	Control Panel		Electrical	1957		
SBMWD-A02290	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Outlet Isolation Valve 5	Valve	Gate	Mechanical	2004	8	DIN
SBMWD-A02291	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Outlet Isolation Valve 4	Valve	Gate	Mechanical	2004	8	DIN
SBMWD-A02292	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Pressure Relief Valve	Valve	Pressure Relie	Mechanical	2004	3	DIN
SBMWD-A02293	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Inlet Isolation Valve Pressure Relief	Valve	Butterfly	Mechanical	2004	3	DIN
SBMWD-A02294	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Outlet Isolation Valve Pressure Relief	Valve	Butterfly	Mechanical	2004	3	DIN
SBMWD-A02295	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	VFD (Pump#2 VFD) North-West Wall	VFD		Electrical	2006	7.5	HP
SBMWD-A02296	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Hydro Tank	Tank	Surge	Structural	2005	125	PSI
SBMWD-A02297	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Pavement	Pavement	Gravel	Civil	2004		
SBMWD-A02298	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Lighting-wall mounted	Lighting		Electrical	2004	6	Each
SBMWD-A02299	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Bridge Crane Melvin Booster Pump Station 1 To 5	Crane	Bridge	Civil	2004	1000	LBS
SBMWD-A02300	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Flowmeter Vault Melvin Booster Pump Station 1 To 5	Non-Process Structure	Vault	Structural	2004	18	SF
SBMWD-A02301	Devore/Meyers	Melvin Ave	BPS (#1-5)	BPS	Piping Flowmeter Vault Melvin BPS 1 To 5	Piping		Mechanical	2004	5	LFT
SBMWD-A02302	Lower	Waterman Ave	GAC System	Wellhead Treatment	Iron Fence	Fencing	Iron	Civil	1947		
SBMWD-A02303	Lower	Waterman Ave	GAC System	Wellhead Treatment	Access Gate Motorized Double Door	Access Gate	Motorized	Civil	1947	23	LFT
SBMWD-A02304	Lower	Antil	Well#6	Well	Electrical Panels	Control Panel		Electrical	1953		
SBMWD-A02305	Lower	Antil	Well#6	Well	Electrical Panels Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1953		
SBMWD-A02306	Intermediate	27th St	Acacia BPS	BPS	Entrance Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1957		
SBMWD-A02307	Lower	Waterman Ave	Leory Well	Well	Exhaust Fan	Air Ventilation System	Exhaust Fan	HVAC	1947	1	QTY
SBMWD-A02308	Lower	Mill & D St	Well	Well	Fence (Gate)	Fencing	Chainlink	Civil	1940		
SBMWD-A02309	Lower	Waterman Ave	GAC System	Wellhead Treatment	Air Vacuum Valve - Antisiphon	Valve	Air-Vac	Mechanical	1997	3	DIN
SBMWD-A02310	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 1A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02311	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 1A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02312	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 1A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02313	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 1A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02314	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 1A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02315	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 1A-1B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02316	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 1B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02317	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 1B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02318	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 1B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02319	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 1B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02320	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 1B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02321	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 8B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02322	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 8B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02323	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 8B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02324	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 8B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02325	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 8B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02326	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 8A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02327	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 8A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02328	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 8A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02329	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 8A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02330	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 8A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02331	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 8A-8B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02332	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 7A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02333	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 7A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02334	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 7A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02335	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 7A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02336	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 7A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02337	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 7A-7B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02338	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 7B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02339	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 7B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02340	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 7B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02341	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 7B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02342	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 7B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02343	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 6B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02344	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 6B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02345	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 6B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02346	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 6B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02347	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 6B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02348	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 6A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02349	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 6A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02350	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 6A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02351	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 6A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02352	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 6A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02353	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 6A-6B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02354	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 5A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02355	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 5A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02356	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 5A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02357	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 5A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02358	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 5A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02359	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 5A-5B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02360	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 5B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02361	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 5B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02362	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 5B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02363	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 5B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02364	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 5B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02365	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 4B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02366	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 4B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02367	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 4B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02368	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 4B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02369	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 4B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02370	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 4A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02371	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 4A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02372	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 4A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02373	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 4A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02374	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 4A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02375	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 4A-4B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02376	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 3A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02377	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 3A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02378	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 3A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02379	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 3A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02380	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 3A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02381	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 3B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02382	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 3B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02383	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 3B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02384	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 3B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02385	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 3B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02386	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 3A-3B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02387	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 2A-2B Backwash	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02388	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 2A-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02389	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 2A-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02390	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 2A-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02391	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 2A-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02392	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 2A-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02393	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 2B-1	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02394	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 2B-2	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02395	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 2B-3	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02396	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 2B-4	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02397	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve 2B-5	Valve	Butterfly	Mechanical	1997	8	DIN
SBMWD-A02398	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Reducing Valve GAC Effluent To Reservoir	Valve	Pressure Redu	Mechanical	1947	12	DIN
SBMWD-A02399	Lower	Waterman Ave	GAC System	Wellhead Treatment	Flowmeter	Flowmeter		I&C	1947	8	DIN
SBMWD-A02400	Lower	Waterman Ave	GAC System	Wellhead Treatment	Flowmeter	Flowmeter		I&C	1947	8	DIN
SBMWD-A02401	Lower	Waterman Ave	GAC System	Wellhead Treatment	Flowmeter	Flowmeter		I&C	1947	8	DIN
SBMWD-A02402	Lower	Waterman Ave	GAC System	Wellhead Treatment	Flowmeter	Flowmeter		I&C	1947	8	DIN
SBMWD-A02403	Lower	Waterman Ave	GAC System	Wellhead Treatment	Flowmeter	Flowmeter		I&C	1947	8	DIN
SBMWD-A02404	Lower	Waterman Ave	GAC System	Wellhead Treatment	Flowmeter	Flowmeter		I&C	1947	8	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02405	Lower	Waterman Ave	GAC System	Wellhead Treatment	Flowmeter	Flowmeter		I&C	1947	8	DIN
SBMWD-A02406	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	1947	50	PSI
SBMWD-A02407	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	1947	50	PSI
SBMWD-A02408	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	1947	50	PSI
SBMWD-A02409	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	1947	50	PSI
SBMWD-A02410	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	1947	50	PSI
SBMWD-A02411	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	1947	50	PSI
SBMWD-A02412	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	1947	50	PSI
SBMWD-A02413	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	1947	50	PSI
SBMWD-A02414	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	2003	43	PSI
SBMWD-A02415	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	1947	50	PSI
SBMWD-A02416	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	2003	43	PSI
SBMWD-A02417	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	2003	50	PSI
SBMWD-A02418	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter	Transmitter		I&C	2017	300	PSI
SBMWD-A02419	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	1947	50	PSI
SBMWD-A02420	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	1947	43	PSI
SBMWD-A02421	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Transmitter - STX2100	Transmitter	Pressure	I&C	2003	50	PSI
SBMWD-A02422	Lower	Waterman Ave	GAC System	Wellhead Treatment	Pressure Reducing Valve Vault - South of the Plant	Non-Process Structure	Vault	Structural	1947	10	WFT
SBMWD-A02423	Lower	Waterman Ave	Well	Well	Well Flowmeter Vault	Non-Process Structure	Vault	Structural	1947	5	LFT
SBMWD-A02424	Upper	25th & North E St	Reservoir	Reservoir	Flowmeter	Flowmeter		I&C	1950		
SBMWD-A02425	Cajon	Cajon Blvd	Well#4	Well	Flowmeter	Flowmeter		I&C	1957		
SBMWD-A02426	Cajon	Cajon Blvd	Reservoir	Reservoir	Flowmeter	Flowmeter		I&C	1957		
SBMWD-A02427	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter - All North Vessels	Flowmeter		I&C	2019	1500	GPM
SBMWD-A02428	Lower	Waterman Ave	GAC System	Wellhead Treatment	GAC Influent Air Valve	Valve		Mechanical	1947	1	Din
SBMWD-A02429	Lower	Waterman Ave	GAC System	Wellhead Treatment	Air Release Valve Combined Tower Influent	Valve		Mechanical	1947	2	Din
SBMWD-A02430	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter - South Vessel 1A/1B	Flowmeter		I&C	2012	2000	GPM
SBMWD-A02431	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter - South Vessel 2A/2B	Flowmeter		I&C	2010	2000	GPM
SBMWD-A02432	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter - South Vessel 3A/3B	Flowmeter		I&C	2012	2000	GPM
SBMWD-A02433	Lower	Waterman Ave	GAC System	Wellhead Treatment	Concrete Pad North Blower	Non-Process Structure	Concrete Pad	Structural	1947		
SBMWD-A02434	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve Tower Bypass Upstream	Valve	Butterfly	Mechanical	2002	12	DIN
SBMWD-A02435	Lower	Waterman Ave	GAC System	Wellhead Treatment	Isolation Valve Tower Bypass Downstream	Valve	Butterfly	Mechanical	2002	12	DIN
SBMWD-A02436	Lower	Waterman Ave	GAC System	Wellhead Treatment	Control Valve Tower Bypass	Valve	Control	Mechanical	2002	12	DIN
SBMWD-A02437	Lower	Waterman Ave	Well	Well	Waterman Well Pump	Pump	Vertical Turbin	Mechanical	1947		
SBMWD-A02438	Lower	Waterman Ave	Well	Well	Check Valve	Valve	Check	Mechanical	1947	12	DIN
SBMWD-A02439	Lower	Waterman Ave	Well	Well	Air Vacuum	Valve	Air-Vac	Mechanical	1947	2	DIN
SBMWD-A02440	Lower	Waterman Ave	Well	Well	Combination Air Valve	Valve	Air-Vac	Mechanical	1947	2	DIN
SBMWD-A02441	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter - South Vessel 4A/4B	Flowmeter		I&C	2012	2000	GPM
SBMWD-A02442	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Switchboard (Waterman BPS# 2 & 4)	Switchboard		Electrical	1983	480	V
SBMWD-A02443	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter - Vessel 11A/B	Flowmeter		I&C	2012	1500	GPM
SBMWD-A02444	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Switchboard (Waterman BPS# 1 & 3)	Switchboard		Electrical	1983	480	V
SBMWD-A02445	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter - Vessel 13A/B	Flowmeter		I&C	2012	1500	GPM
SBMWD-A02446	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter - Vessel 1A/B	Flowmeter		I&C	2012	1500	GPM
SBMWD-A02447	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter - Vessel 2A/B	Flowmeter		I&C	2012	1500	GPM
SBMWD-A02448	Lower	Waterman Ave	BPS#2	BPS	Fence and Access Gate	Fencing	Chainlink	Civil	1947	99	LFT
SBMWD-A02449	Lower	Waterman Ave	BPS#2	BPS	Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1947	1090	SF
SBMWD-A02450	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter - Vessel 8A/B	Flowmeter		I&C	2012	1500	GPM
SBMWD-A02451	Lower	Waterman Ave	BPS#2	BPS	Pump#2 - 10in inlet - 8 outlet	Pump	Horizontal Spli	Mechanical	1947		
SBMWD-A02452	Lower	Waterman Ave	BPS#2	BPS	Isolation Valve Inlet Pump#2	Valve	Butterfly	Mechanical	2003	12	DIN
SBMWD-A02453	Lower	Waterman Ave	BPS#2	BPS	Isolation Valve Outlet Pump#2	Valve	Butterfly	Mechanical	1947	12	DIN
SBMWD-A02454	Lower	Waterman Ave	BPS#2	BPS	Check Valve Pump#2	Valve	Swing Check	Mechanical	1947	12	DIN
SBMWD-A02455	Lower	Waterman Ave	BPS#2	BPS	Sump Pump	Pump	Submersible	Mechanical	1947	0.75	DIN
SBMWD-A02456	Lower	Waterman Ave	Leory Well	Well	Isolation Valve Outlet 1	Valve	Butterfly	Mechanical	1947	12	DIN
SBMWD-A02457	Lower	Waterman Ave	Leory Well	Well	Isolation Valve Outlet 2	Valve	Butterfly	Mechanical	1947	12	DIN
SBMWD-A02458	Lower	Waterman Ave	Leory Well	Well	Check Valve	Valve	Swing Check	Mechanical	1947	12	DIN
SBMWD-A02459	Lower	Waterman Ave	Leory Well	Well	Air Vacuum Valves	Valve	Air-Vac	Mechanical	1947	2	DIN
SBMWD-A02460	Lower	Waterman Ave	Leory Well	Well	Pump Leroy Well	Valve	Butterfly	Mechanical	1947	12	DIN
SBMWD-A02461	Lower	Waterman Ave	Leory Well	Well	Ventilator	Air Ventilation System	Exhaust Fan	HVAC	1947	12	DIN
SBMWD-A02462	Lower	Waterman Ave	Well	Well	Flowmeter	Flowmeter		I&C	1947	12	DIN
SBMWD-A02463	Lower	Waterman Ave	Well	Well	Motor Starter (Soft Start) - Well Pump - ITT	Motor Starter		Electrical	1947	350	HP
SBMWD-A02464	Lower	Waterman Ave	GAC System	Wellhead Treatment	Chlorine Analyzer -1 (Blower Chlorine Room) - Transmitter - SFC SC	Analytical Instrument	Chlorine Analy	I&C	1947	120	V
SBMWD-A02465	Lower	Waterman Ave	GAC System	Wellhead Treatment	Chlorine Analyzer - 2 (Blower Chlorine Room) - SFC SC	Analytical Instrument	Chlorine Analy	I&C	1947	120	V
SBMWD-A02466	Lower	Waterman Ave	GAC System	Wellhead Treatment	Chlorine Analyzer - 3 (Blower Chlorine Room) - SFC SC	Analytical Instrument	Chlorine Analy	I&C	1947	120	V
SBMWD-A02467	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter - Vessel 9A/B	Flowmeter		I&C	2012	1500	GPM
SBMWD-A02468	Lower	Waterman Ave	GAC System	Wellhead Treatment	Control Panel PLC - Blower Room	Panel	PLC	Electrical	1947	1	Each
SBMWD-A02469	Lower	Waterman Ave	GAC System	Wellhead Treatment	Control Panel PLC - GAC Vessels (Blower Room)	Panel	PLC	Electrical	1947	1	Each
SBMWD-A02470	Lower	Waterman Ave	GAC System	Wellhead Treatment	Chlorine Analyzer -1 (Blower Chlorine Room) - Transmitter - SFC SC	Analytical Instrument	Chlorine Analy	I&C	1947	120	V
SBMWD-A02471	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Motor Starter - Soft Start (Waterman BP#4)	Motor Starter		Electrical	1947	480	V

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02472	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Motor Starter - Soft Start (Waterman BP#3)	Motor Starter		Electrical	1947	480	V
SBMWD-A02473	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Motor Starter - Soft Start (Waterman BP#1)	Motor Starter		Electrical	1947	480	V
SBMWD-A02474	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Ventilation Duct	Air Ventilation System	Duct	HVAC	1947	4778	QTY
SBMWD-A02475	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Ventilation Fan	Air Ventilation System	Exhaust Fan	HVAC	1947		
SBMWD-A02476	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Flowmeter (Waterman BP#1)	Flowmeter		I&C	1947	8	DIN
SBMWD-A02477	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Flowmeter (Transmitter) (Waterman BP#3)	Flowmeter		I&C	1947	1	Each
SBMWD-A02478	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Flowmeter (Transmitter) (Waterman BP#4)	Flowmeter		I&C	1947	1000	GPM
SBMWD-A02479	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Pump#3	Pump	Centrifugal	Mechanical	1990	185	TDHFT
SBMWD-A02480	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Pump#1	Pump	Horizontal Spli	Mechanical	2013	186	TDHFT
SBMWD-A02481	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Pump#4	Pump	Centrifugal	Mechanical	2011	185	TDHFT
SBMWD-A02482	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Check Valve - Pump#1	Valve	Check	Mechanical	2018		
SBMWD-A02483	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Check Valve - Pump#3	Valve	Check	Mechanical	2018		
SBMWD-A02484	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Check Valve - Pump#4	Valve	Check	Mechanical	2018		
SBMWD-A02485	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Inlet Isolation Valve (South)	Valve	Check	Mechanical	2018		
SBMWD-A02486	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Outlet Check Valve	Valve	Check	Mechanical	2018		
SBMWD-A02487	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Pressure Reducing Valve (South)	Valve	Pressure Redu	Mechanical	2018		
SBMWD-A02488	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Drain Line Isolation Valve	Valve	Gate	Mechanical	2018		
SBMWD-A02489	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Inlet Isolation Valve (North)	Valve	Gate	Mechanical	2018		
SBMWD-A02490	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Inlet Piping Assembly (South)	Piping	In Vault	Mechanical	2018		
SBMWD-A02491	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Outlet Isolation Valve	Valve	Gate	Mechanical	2018		
SBMWD-A02492	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Isolation Valve - Pump#1	Valve	Gate	Mechanical	2018		
SBMWD-A02493	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Drain Line Piping Assembly	Piping	In Vault	Mechanical	2018		
SBMWD-A02494	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Inlet Piping Assembly (North)	Piping	In Vault	Mechanical	2018		
SBMWD-A02495	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Outlet Piping Assembly	Piping	In Vault	Mechanical	2018		
SBMWD-A02496	Lower	Waterman Ave	BPS#2	BPS	Motor Starter - Soft Start (Waterman BP#2)	Motor Starter		Electrical	1947	480	V
SBMWD-A02497	Lower	Waterman Ave	Leory Well	Well	Motor Starter - Soft Start	Motor Starter		Electrical	1947	480	V
SBMWD-A02498	Lower	Waterman Ave	Leory Well	Well	Distribution Switchboard	Switchboard		Electrical	1990	600	AMP
SBMWD-A02499	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Piping Assembly - Pump#1	Piping	In Vault	Mechanical	2018		
SBMWD-A02500	Intermediate	27th St	Acacia BPS	BPS	Flowmeter (Booster)	Flowmeter		I&C	1957		
SBMWD-A02501	Lower	Waterman Ave	BPS#2	BPS	Flowmeter (Transmitter) (Waterman BP#2)	Flowmeter		I&C	1947	5000	GPM
SBMWD-A02502	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Piping Assembly - Pump#3	Piping	In Vault	Mechanical	2018		
SBMWD-A02503	Lower	Waterman Ave	Leory Well	Well	Flowmeter	Flowmeter		I&C	1947	8	DIN
SBMWD-A02504	Lower	Waterman Ave	BPS#2	BPS	Lighting	Lighting	Pole	Electrical	1947		
SBMWD-A02505	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Piping Assembly - Pump#4	Piping	In Vault	Mechanical	2018		
SBMWD-A02506	Upper	25th & North E St	BPS	BPS	Flowmeter After the Booster	Flowmeter		I&C	1950		
SBMWD-A02507	Lower	Antil	BPS	BPS	Flowmeter For Pumps In the Room	Flowmeter		I&C	1953		
SBMWD-A02508	Upper	Ogden St	Reservoir	Reservoir	Lighting	Lighting	Pole	Electrical	2007	21	QTY
SBMWD-A02509	Lower	Antil	Common	Other	Flowmeter In Big Vault	Flowmeter		I&C	1953	10	LFT
SBMWD-A02510	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter -Vessel 10A/B	Flowmeter		I&C	2012	1500	GPM
SBMWD-A02511	Upper	Ogden St	Reservoir	Reservoir	Security Camera	Camera	Safety	Electrical	2007	5	QTY
SBMWD-A02512	Upper	Ogden St	Reservoir	Reservoir	Fence	Fencing	Chainlink	Civil	2007		
SBMWD-A02513	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter Vessel 12A/B	Flowmeter		I&C	2012	1500	GPM
SBMWD-A02514	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter -Vessel 3A/B	Flowmeter		I&C	2012	1500	GPM
SBMWD-A02515	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter Vessel 4A/B	Flowmeter		I&C	2012	1500	GPM
SBMWD-A02516	Upper	19th St	GAC System	Wellhead Treatment	Flowmeter Vessel 6A/B	Flowmeter		I&C	2012	1500	GPM
SBMWD-A02517	Upper	Newmark	GAC System	Wellhead Treatment	Flowmeters - Vessels	Flowmeter		I&C	1971	7	QTY
SBMWD-A02518	Intermediate	27th St	Acacia BPS	BPS	Flowmeters (Well)	Flowmeter		I&C	1957		
SBMWD-A02519	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Upstream Pressure (Pressure Reducing Valve Piping)	Valve		Mechanical	2007		
SBMWD-A02520	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Down Stream Pressure (Pressure Reducing Valve Piping)	Valve		Mechanical	2007		
SBMWD-A02521	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Blow Off Valve 3	Valve		Mechanical	2007	10	DIN
SBMWD-A02522	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Air Release Valve Back of the Building	Valve		Mechanical	2007		
SBMWD-A02523	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Blowoff Valve Back of Building	Valve		Mechanical	2007	10	DIN
SBMWD-A02524	Lower	Antil	BPS	BPS	FM Booster Pump#2	Pump		Mechanical	1953		
SBMWD-A02525	Lower	Antil	BPS	BPS	FM Booster Pump Motor	Motor		Electrical	1953		
SBMWD-A02526	Lower	Antil	BPS	BPS	FM Booster Pump Pipe Assembly	Piping	Above Ground	Mechanical	1953		
SBMWD-A02527	Cajon	Cajon Blvd	Well#2	Well	Gas Generator	Generator		Electrical	1957		
SBMWD-A02528	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Gate	Access Gate	Manual	Civil	1990		
SBMWD-A02529	Cajon	Cajon Blvd	Hydro Generator	Hydro Generator	Generation Panel	Control Panel		Electrical	1957		
SBMWD-A02530	College/Palm	Ogden St	Intertie - Muscoy Mutual	Intertie	Isolation Gate Valve - Upstream	Valve	Gate	Mechanical	2013	10	DIN
SBMWD-A02531	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Generator / Utility Control Panel - Potable Generator Starter	Motor Starter		Electrical	1949	no	
SBMWD-A02532	College/Palm	Ogden St	Intertie - Muscoy Mutual	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	2007	8	DIN
SBMWD-A02533	College/Palm	Ogden St	Intertie - Muscoy Mutual	Intertie	Piping Assembly	Piping	Above Ground	Mechanical	2007	10	DIN
SBMWD-A02534	College/Palm	Ogden St	Intertie - Muscoy Mutual	Intertie	Flowmeter	Flowmeter		I&C	2007	10	DIN
SBMWD-A02535	College/Palm	Ogden St	Intertie - Muscoy Mutual	Intertie	Gate Valve	Valve	Gate	Mechanical	2007	10	DIN
SBMWD-A02536	Cajon	Cajon Blvd	Well#2	Well	Generator Building	Building		Structural	1957		
SBMWD-A02537	Lower	Olive & Garner	Well	Well	Back Up Generator Connection Box	Generator Connection Box		Electrical	1993		
SBMWD-A02538	Cajon	Cajon Blvd	Well#2	Well	Back Up Generator Connection Box	Generator Connection Box		Electrical	1957		

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02539	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Back Up Generator Connection Box	Generator Connection Box		Electrical	2007	480	V
SBMWD-A02540	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Generator In Box	Generator		Electrical	1990		
SBMWD-A02541	Upper	Newmark	Common	Other	Generator Storage Fan Motors	Motor		Electrical	1971	480	V
SBMWD-A02542	Upper	Medical Center	Ogden BPS	BPS	Generator Transfer Switch	Switch	Transfer	Electrical	2006	480	V
SBMWD-A02543	Lower	Mill & D St	BPS	BPS	Geothermal Control Panel - Starter	Motor Starter		Electrical	1940	480	V
SBMWD-A02544	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Northern Assembly - Pressure Reducing Valve	Valve		Mechanical	2007	4	DIN
SBMWD-A02545	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Northern Assembly - Air Release Valve	Valve		Mechanical	2007	4	DIN
SBMWD-A02546	Intermediate	27th St	Acacia BPS	BPS	Chain Link Fencing	Fencing	Chainlink	Civil	1957		
SBMWD-A02547	Lower	7th St	Well	Well	Gooseneck Air Release Valve	Valve	Air-Vac	Mechanical	1965		
SBMWD-A02548	Intermediate	27th St	Acacia BPS	BPS	Iron Fencing	Fencing	Iron	Civil	1957		
SBMWD-A02549	Intermediate	27th St	Acacia BPS	BPS	Eyewash Station	Safety Shower/Eyewash		Mechanical	1957		
SBMWD-A02550	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Influent Manifold	Piping	Above Ground	Mechanical	1950	12	DIN
SBMWD-A02551	Intermediate	27th St	Acacia BPS	BPS	Security Camera	Camera	Safety	Electrical	1957	3	QTY
SBMWD-A02552	Daley	Quail Canyon	Reservoir	Reservoir	Inlet & Outlet Piping - South Tank	Piping	Above Ground	Mechanical	1957		
SBMWD-A02553	Upper	Mallory St	Reservoir	Reservoir	Inlet Piping Assembly	Piping	Above Ground	Mechanical	1987		
SBMWD-A02554	Intermediate	27th St	Acacia BPS	BPS	Check Valve (Booster Pump)	Valve	Check	Mechanical	1957		
SBMWD-A02555	Upper	Mallory St	Reservoir	Reservoir	Ladder	Stairway and Catwalk		Civil	1987		
SBMWD-A02556	Ridgeline	Ridgeline Dr Upper	Reservoir	Reservoir	Ladder	Stairway and Catwalk		Civil	1990		
SBMWD-A02557	Upper	Mallory St	Reservoir	Reservoir	Level Gauge	Level Gauge		Mechanical	1987		
SBMWD-A02558	Intermediate	27th St	Acacia BPS	BPS	Light Posts	Lighting	Pole	Electrical	1957	4	QTY
SBMWD-A02559	Lower	EPA	Well#005	Well	Lighting	Lighting	Pole	Electrical	1996	1	QTY
SBMWD-A02560	Lower	EPA	Well#005	Well	Communication Antenna	Antenna Tower		I&C	1996	1	QTY
SBMWD-A02561	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Lighting	Lighting	Pole	Electrical	1990	1	QTY
SBMWD-A02562	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Lighting Contactor Box	Panel	Lighting	Electrical	1949		
SBMWD-A02563	Shandin Hills	Shandin Hills South	BPS (#1-2)	BPS	Main Disconnect	Switch	Disconnect	Electrical	1997		
SBMWD-A02564	Lower	Antil	BPS	BPS	Manhole East of the Reservoir	Non-Process Structure	Manhole	Structural	1953	3	DIN
SBMWD-A02565	Intermediate	27th St	Acacia BPS	BPS	Air Release Valve On the Pump Dry Pit	Valve		Mechanical	1957		
SBMWD-A02566	Upper	25th & North E St	Well	Well	Manhole for Flowmeter	Non-Process Structure	Manhole	Structural	1950	7	DIN
SBMWD-A02567	Upper	Ogden St	Reservoir	Reservoir	Manhole Near the Basin	Non-Process Structure	Manhole	Structural	2007	3	LFT
SBMWD-A02568	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	MCC	MCC		Electrical	1982		
SBMWD-A02569	Lower	Mill & D St	BPS	BPS	MCC	MCC		Electrical	1940		
SBMWD-A02570	Upper	25th & North E St	Reservoir	Reservoir	Fencing	Fencing	Chainlink	Civil	1950		
SBMWD-A02571	Shandin Hills	Shandin Hills South	BPS (#1-2)	BPS	MCC	MCC		Electrical	1997		
SBMWD-A02572	Intermediate	27th St	Acacia BPS	BPS	MCC (Well)	MCC		Electrical	1957		
SBMWD-A02573	Upper	19th St	BPS (#1-5)	BPS	Metering Panel - Nitrate Concentration	Analytical Instrument	Nitrate	I&C	1988		
SBMWD-A02574	Upper	19th St	BPS (#1-5)	BPS	Metering Pump	Pump	Chemical	Mechanical	1988	120	V
SBMWD-A02575	Upper	25th & North E St	BPS	BPS	Booster Pump#2 Check Valve	Valve	Check	Mechanical	1950		
SBMWD-A02576	Upper	25th & North E St	BPS	BPS	Booster Pump#2 Gate Valve	Valve	Gate	Mechanical	1950		
SBMWD-A02577	Upper	19th St	BPS (#1-5)	BPS	Metering Pump	Pump	Chemical	Mechanical	1988	120	V
SBMWD-A02578	Upper	19th St	BPS (#1-5)	BPS	Metering Pump	Pump	Chemical	Mechanical	1988	120	V
SBMWD-A02579	Upper	19th St	Common	Wellhead Treatment	Mini Power Center (Dry Type Xfmr W/ Power Pnl)	Power Panel		Electrical	1988	480	V
SBMWD-A02580	Upper	25th & North E St	Reservoir	Reservoir	Check Valve	Valve	Check	Mechanical	1950	8	DIN
SBMWD-A02581	Upper	25th & North E St	Reservoir	Reservoir	Wetwell Vault	Non-Process Structure	Vault	Structural	1950	2	LFT
SBMWD-A02582	Upper	25th & North E St	BPS	BPS	Pump Vault	Non-Process Structure	Vault	Structural	1950	10	LFT
SBMWD-A02583	Cajon	Cajon Blvd	Hydro Generator	Hydro Generator	Motor	Motor		Electrical	1957	75	Hp
SBMWD-A02584	Upper	EPA	Well#007	Well	Motor Starter	Motor Starter		Electrical	2000	250	AMP
SBMWD-A02585	Intermediate	27th St	Acacia BPS	BPS	Motorized Entrance Gate	Access Gate	Motorized	Civil	1957		
SBMWD-A02586	Lower	Baseline & California St	Well	Well	Nitrate Detection System	Nitrate Detection System		I&C	1992		
SBMWD-A02587	Intermediate	27th St	Acacia BPS	BPS	Nitrogen Analyzer	Analytical Instrument	Nitrate	I&C	1957		
SBMWD-A02588	Upper	25th & North E St	Well	Well	Well Check Valve	Valve	Check	Mechanical	1950	12	DIN
SBMWD-A02589	Upper	25th & North E St	Well	Well	Well Air Pipe (Not Valves)	Valve		Mechanical	1950		
SBMWD-A02590	Upper	25th & North E St	Well	Well	Air Release Valve 2	Valve		Mechanical	1950	2	DIN
SBMWD-A02591	Upper	Electric Dr	Reservoir	Reservoir	North Iron Access Gate (Electric)	Access Gate	Motorized	Civil	1949		
SBMWD-A02592	Upper	Electric Dr	Reservoir	Reservoir	Solar Panel - North Side	Solar Panel		Electrical	1949		
SBMWD-A02593	Lower	Waterman Ave	GAC System	Wellhead Treatment	North Vessels Drain Channel	Process Structure	Chanel	Structural	1947		
SBMWD-A02594	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Northern Assembly - Arv	Valve	Air-VAC	Mechanical	2007	4	DIN
SBMWD-A02595	Intermediate	Perimeter	BPS	BPS	Perimeter Booster Pump#2	Pump		Mechanical	1988	75	HP
SBMWD-A02596	Intermediate	Perimeter	BPS	BPS	Perimeter Booster Pump#1	Pump		Mechanical	1988	75	HP
SBMWD-A02597	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Northern Assembly - Downstream Bv	Valve	Butterfly	Mechanical	2012	4	DIN
SBMWD-A02598	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Northern Assembly - Flowmeter	Flowmeter		I&C	2007		
SBMWD-A02599	Lower	Olive & Garner	Well	Well	Security Camera	Camera	Safety	Electrical	1993		
SBMWD-A02600	Lower	Olive & Garner	Well	Well	Site Lighting	Lighting	Pole	Electrical	1993		
SBMWD-A02601	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Northern Assembly - Piping Assembly	Piping	Above Ground	Mechanical	2007		
SBMWD-A02602	Lower	Olive & Garner	Well	Well	Air Relief Valve (Attached To Well)	Valve		Mechanical	1993		
SBMWD-A02603	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Northern Assembly - Upstream Bv	Valve	Butterfly	Mechanical	2012	4	DIN
SBMWD-A02604	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Ogden Booster Rtu	SCADA		I&C	2007	120	VAC

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02605	Cajon	Cajon Blvd	Hydro Generator	Hydro Generator	Outside Building	Building		Structural	1957		
SBMWD-A02606	Lower	10th & J ST	Well	Well	Well Check Valve	Valve	Check	Mechanical	1997		
SBMWD-A02607	Upper	Mallory St	Reservoir	Reservoir	Overflow Pipe	Piping	Above Ground	Mechanical	1987		
SBMWD-A02608	Lower	Antil	BPS	BPS	PAC Booster Pump	Pump		Mechanical	1953		
SBMWD-A02609	Lower	Antil	BPS	BPS	PAC Booster Pump Motor	Motor		Electrical	1953		
SBMWD-A02610	Upper	Newmark	Common	Other	Panel Board 120/240V	Power Panel		Electrical	1971	240	V
SBMWD-A02611	Lower	Antil	BPS	BPS	PH Booster Pump Motor	Motor		Electrical	1953		
SBMWD-A02612	Lower	Antil	BPS	BPS	PH Booster Pumps	Pump		Mechanical	1953	2	QTY
SBMWD-A02613	Lower	10th & J ST	Well	Well	Security Camera	Camera	Safety	Electrical	1997	3	QTY
SBMWD-A02614	Lower	10th & J ST	Well	Well	Site Lighting	Lighting	Pole	Electrical	1997		
SBMWD-A02615	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Piping Assembly	Piping	Above Ground	Mechanical	1950	8	DIN
SBMWD-A02616	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Piping Assembly	Piping	Above Ground	Mechanical	1950	6	DIN
SBMWD-A02617	Lower	Encanto	BPS (#1-3)	BPS	Surge Tank Isolation Valve	Valve	Isolation	Mechanical	2005	8	Din
SBMWD-A02618	Daley	Quail Canyon	Reservoir	Reservoir	Piping Assembly 8 In	Piping	Above Ground	Mechanical	1988		
SBMWD-A02619	Lower	Encanto	BPS (#1-3)	BPS	Well Pump#1 Isolation Valve	Valve		Mechanical	2005		
SBMWD-A02620	Cajon	Cajon Blvd	Well#2	Well	Piping Assembly Generator	Piping	Above Ground	Mechanical	1957	6	DIN
SBMWD-A02621	Lower	Encanto	BPS (#1-3)	BPS	Site Lighting	Lighting	Pole	Electrical	2005		
SBMWD-A02622	Lower	Encanto	BPS (#1-3)	BPS	Lighting	Lighting	Pole	Electrical	2005	2	QTY
SBMWD-A02623	Lower	Encanto	BPS (#1-3)	BPS	Booster Pump#3 Isolation Valve	Valve		Mechanical	2005		
SBMWD-A02624	Lower	Encanto	BPS (#1-3)	BPS	Booster Pump#2 Isolation Valve	Valve		Mechanical	2005		
SBMWD-A02625	Lower	7th St	Common	Other	Plant SCADA	SCADA		I&C	1965		
SBMWD-A02626	Lower	Encanto	BPS (#1-3)	BPS	Fence	Fencing	Chainlink	Civil	2005	66	LFT
SBMWD-A02627	Cajon	Cajon Blvd	Well#3	Well	Fencing	Fencing	Chainlink	Civil	1957		
SBMWD-A02628	Cajon	Cajon Blvd	Well#3	Well	Light Post	Lighting	Pole	Electrical	1957	1	QTY
SBMWD-A02629	Cajon	Cajon Blvd	Well#3	Well	Security Camera	Camera	Safety	Electrical	1957	1	QTY
SBMWD-A02630	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	PLC Panel SCADA	SCADA		I&C	1949		
SBMWD-A02631	Upper	19th St	Well#2	Well	Power Distribution Panel 120/240	Power Panel		Electrical	1988	240	V
SBMWD-A02632	Cajon	Cajon Blvd	Well#3	Well	Check Valve	Valve	Check	Mechanical	1957	12	
SBMWD-A02633	Upper	19th St	BPS (#1-5)	BPS	Power Panel 120/240V	Power Panel		Electrical	1988	240	V
SBMWD-A02634	Upper	Newmark	Well	Well	Power Panel 208/120V	Power Panel		Electrical	2013	208	V
SBMWD-A02635	Intermediate	Perimeter	BPS	BPS	Pressure Reducing Pipe - Cal Val	Piping		Mechanical	1988	8	DIN
SBMWD-A02636	Intermediate	Perimeter	BPS	BPS	Pressure Reducing Pipe - Flowmeter	Flowmeter		I&C	1988	10	DIN
SBMWD-A02637	Intermediate	Perimeter	BPS	BPS	Pressure Reducing Pipe - Piping Assembly	Piping	Above Ground	Mechanical	1988	10	DIN
SBMWD-A02638	Intermediate	Perimeter	BPS	BPS	Pressure Reducing Pipe - Upstream Arv	Valve	Air-VAC	Mechanical	1988		
SBMWD-A02639	Intermediate	Perimeter	BPS	BPS	Pressure Reducing Pipe Assembly - Arv Downstream	Valve	Air-VAC	Mechanical	1988		
SBMWD-A02640	Intermediate	27th St	Reservoir	Reservoir (Forebay)	Pressure Transducer	Pressure Transducer		I&C	1957		
SBMWD-A02641	Upper	19th St	GAC System	Reservoir	Pressure Transmitter	Transmitter	Pressure	I&C	1988	140	BAR
SBMWD-A02642	Ridgeview	Ridgeview#1	Reservoir	Reservoir	Pressure Transmitter	Transmitter	Pressure	I&C	1963		
SBMWD-A02643	Ridgeline	Ridgeline Dr Upper	Reservoir	Reservoir	Pressure Transmitter	Transmitter	Pressure	I&C	1990		
SBMWD-A02644	Cajon	Cajon Blvd	Hydro Generator	Hydro Generator	Isolation Valve	Valve		Mechanical	1957	14	DIN
SBMWD-A02645	Cajon	Cajon Blvd	Hydro Generator	Hydro Generator	Cal Valve	Valve		Mechanical	1957	14	DIN
SBMWD-A02646	Cajon	Cajon Blvd	Hydro Generator	Hydro Generator	Isolation Valve	Valve		Mechanical	1957	14	DIN
SBMWD-A02647	Cajon	Cajon Blvd	Hydro Generator	Hydro Generator	Isolation Valve	Valve		Mechanical	1957	10	DIN
SBMWD-A02648	Upper	Newmark	GAC System	Wellhead Treatment	Pressure Transmitter Vessel 1A	Transmitter	Pressure	I&C	2015	300	Psi
SBMWD-A02649	Cajon	Cajon Blvd	Hydro Generator	Hydro Generator	Isolation Valve	Valve		Mechanical	1957	10	DIN
SBMWD-A02650	Upper	Newmark	GAC System	Wellhead Treatment	Pressure Transmitter Vessels	Transmitter	Pressure	I&C	1971	50	Psi
SBMWD-A02651	Cajon	Cajon Blvd	Reservoir	Reservoir	PRV	Valve	Automated-Cc	Mechanical	1957	12	DIN
SBMWD-A02652	Cajon	Cajon Blvd	Reservoir	Reservoir	PRV Station Piping Assembly	Piping	Above Ground	Mechanical	1957	12	DIN
SBMWD-A02653	Upper	Highland Ave	Mt Vernon Water Compa	Well	Pump Control Panel - Starter	Motor Starter		Electrical	1928	no	
SBMWD-A02654	Cajon	Cajon Blvd	Hydro Generator	Hydro Generator	Building Lighting	Lighting	Pole	Electrical	1957		
SBMWD-A02655	Cajon	Cajon Blvd	Common	Other	Security Camera	Camera	Safety	Electrical	1957		
SBMWD-A02656	Lower	Encanto	BPS (#1-3)	BPS	Pump Control Panel - MCC - Starter	Motor Starter		Electrical	2005	480	V
SBMWD-A02657	Cajon	Cajon Blvd	Well#3	Well	Pump Control Panel - Starter	Motor Starter		Electrical	1957	no	
SBMWD-A02658	Lower	7th St	BPS	BPS	Pump Control Panel - Starter	Motor Starter		Electrical	1965	no	
SBMWD-A02659	Cajon	Cajon Blvd	Well#4	Well	Check Valve	Valve	Check	Mechanical	1957	12	DIN
SBMWD-A02660	Intermediate	Perimeter	BPS	BPS	Pump Control Panel & SCADA - MCC	SCADA		I&C	1988	480	V
SBMWD-A02661	Upper	25th & North E St	BPS	BPS	Pump Control Panel (Booster#1) - Starter	Motor Starter		Electrical	1950	no	
SBMWD-A02662	Upper	25th & North E St	BPS	BPS	Pump Control Panel (Turbine) - Starter	Motor Starter		Electrical	1950	no	
SBMWD-A02663	Cajon	Cajon Blvd	Reservoir	Reservoir	Butterfly Valve	Valve	Butterfly	Mechanical	1957	12	DIN
SBMWD-A02664	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Pump Control Panel 1&2 - Starter	Motor Starter		Electrical	1990	480	V
SBMWD-A02665	Cajon	Cajon Blvd	Reservoir	Reservoir	Butterfly Valve West Side of Reservoir	Valve	Butterfly	Mechanical	1957	16	DIN
SBMWD-A02666	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Pump#2 - Electrical Control Panel	Control Panel		Electrical	1949	480	V
SBMWD-A02667	Intermediate	Perimeter	BPS	BPS	Pump#3	Pump		Mechanical	1988	1780	RPM
SBMWD-A02668	Cajon	Cajon Blvd	Reservoir	Reservoir	Upstream Butterfly Valve	Valve	Butterfly	Mechanical	1957	12	DIN
SBMWD-A02669	Mountain	Electric Dr	Mountain BPS (#1-3)	BPS	Pump#3 - Electrical Control Panel	Control Panel		Electrical	1949	480	V
SBMWD-A02670	Intermediate	Perimeter	BPS	BPS	Pump#3 - Piping Assembly	Piping	Above Ground	Mechanical	1988		
SBMWD-A02671	Intermediate	Perimeter	BPS	BPS	Pump#3 Arv	Valve	Air-VAC	Mechanical	1988	2	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02672	Intermediate	Perimeter	BPS	BPS	Pump#3 Flowmeter	Flowmeter		I&C	1988	12	DIN
SBMWD-A02673	Ridgeline	Ridgeline Dr Lower	BPS (#1-2)	BPS	Pump#1 Control Panel	Control Panel		Electrical	1991		
SBMWD-A02674	Cajon	Cajon Blvd	Reservoir	Reservoir	Butterfly Valve - PRV Station Downstream	Valve	Butterfly	Mechanical	1957	12	DIN
SBMWD-A02675	Ridgeline	Ridgeline Dr Lower	BPS (#1-2)	BPS	Pump#2 Control Panel - Starter	Motor Starter		Electrical	1991	no	
SBMWD-A02676	Upper	25th & North E St	Reservoir	Reservoir	Reservoir Above Ground Piping	Piping	Above Ground	Mechanical	1950		
SBMWD-A02677	Upper	Electric Dr	Reservoir	Reservoir	Reservoir Level Panel	Level Indicator		I&C	1949		
SBMWD-A02678	Daley	Quail Canyon	Reservoir	Reservoir	Reservoir North Side Water Holding Tank - Reservoir Tank	Tank	Storage	Structural	1988	40000	GAL
SBMWD-A02679	Cajon	Cajon Blvd	Well#2	Well	Air Release Valve	Valve		Mechanical	1957	2	DIN
SBMWD-A02680	Cajon	Cajon Blvd	Well#2	Well	Eyewash Station	Safety Shower/Eyewash		Mechanical	1957		
SBMWD-A02681	Daley	Quail Canyon	Reservoir	Reservoir	Reservoir North Water Holding Tank - Reservoir Tank	Tank	Storage	Structural	1988	40000	GAL
SBMWD-A02682	Lower	7th St	Reservoir (Forebay)	Reservoir (Forebay)	Reservoir Pipe - Air Release Valve	Valve	Air-Vac	Mechanical	1965		
SBMWD-A02683	Cajon	Cajon Blvd	Reservoir	Reservoir	Reservoir Piping (North Side)	Piping	Above Ground	Mechanical	1957	24	DIN
SBMWD-A02684	Cajon	Cajon Blvd	Well#2	Well	Well 2 Sucction Air Release Valve	Valve		Mechanical	1957	2	Din
SBMWD-A02685	Cajon	Cajon Blvd	Reservoir	Reservoir	Reservoir Piping Assembly West Side	Piping	Above Ground	Mechanical	1957	16	DIN
SBMWD-A02686	Cajon	Cajon Blvd	Well#2	Well	Fence For Generator	Fencing	Chainlink	Civil	1957		
SBMWD-A02687	Cajon	Cajon Blvd	Well#2	Well	Security Camera	Camera	Safety	Electrical	1957	6	QTY
SBMWD-A02688	Cajon	Cajon Blvd	Well#2	Well	Lighting	Lighting	Pole	Electrical	1957	4	QTY
SBMWD-A02689	Lower	Waterman Ave	GAC System	Wellhead Treatment	Rolling Door Manual	Access Gate	Manual	Civil	1947	13	LFT
SBMWD-A02690	Cajon	Cajon Blvd	Well#2	Well	Well 2 Dishcharge Valve Vault	Non-Process Structure	Vault	Structural	1957	6	WFT
SBMWD-A02691	Cajon	Cajon Blvd	Well#2	Well	Bfv Well 2 Discharge - In Vault	Valve	Butterfly	Mechanical	1957	12	Din
SBMWD-A02692	Cajon	Cajon Blvd	Well#3	Well	Vault Chlorine Injection Well#3	Non-Process Structure	Vault	Structural	1957	7	LFT
SBMWD-A02693	College/Palm	Palm & Kendall Dr	Palm Reservoir#2	Reservoir	Rolling Motorized Gate	Access Gate	Motorized	Civil	1982	3	QTY
SBMWD-A02694	Cajon	Cajon Blvd	Reservoir	Reservoir	Air Release Valve Befor PRV	Valve	Air Release	Mechanical	1957	2	DIN
SBMWD-A02695	Sycamore	Sycamore St#2	Devil Canyon Well#5	Well	SCADA	SCADA		I&C	1965		
SBMWD-A02696	Upper	Electric Dr	Reservoir	Reservoir	Inlet Outlet Vault - Gate valve	Valve	Gate	Mechanical	1949	24	DIN
SBMWD-A02697	Upper	Electric Dr	Reservoir	Reservoir	Inlet Outlet Vault - Butterfly Valve	Valve	Butterfly	Mechanical	1949	24	DIN
SBMWD-A02698	Upper	Electric Dr	Reservoir	Reservoir	Inlet Outlet Vault	Non-Process Structure	Vault	Structural	1949	27	LFT
SBMWD-A02699	Sycamore	Sycamore St#2	Sycamore Reservoir#2	Reservoir	SCADA	SCADA		I&C	1965		
SBMWD-A02700	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	SCADA	SCADA		I&C	2008		
SBMWD-A02701	Devore/Meyers	Meyers Canyon	Reservoir	Reservoir	SCADA	SCADA		I&C	1990		
SBMWD-A02702	Lower	Gilbert St	Common	Other	SCADA	SCADA		I&C	1991		
SBMWD-A02703	Upper	Electric Dr	Reservoir	Other	South Side Chainlink Fence	Fencing	Chainlink	Civil	1949		
SBMWD-A02704	Lower	EPA	Well#005	Well	SCADA	SCADA		I&C	1996		
SBMWD-A02705	Lower	EPA	Well#002	Well	SCADA	SCADA		I&C	1996		
SBMWD-A02706	Lower	EPA	Well#112	Well	SCADA	SCADA		I&C	2003		
SBMWD-A02707	Upper	Medical Center	Ogden BPS	BPS	SCADA	SCADA		I&C	2006		
SBMWD-A02708	Upper	Highland Ave	Mt Vernon Water Compa	Well	SCADA	SCADA		I&C	1928		
SBMWD-A02709	Upper	Highland Ave	Mt Vernon Water Compa	Well	SCADA	SCADA		I&C	1928		
SBMWD-A02710	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	SCADA	SCADA		I&C	1990		
SBMWD-A02711	Lower	Mill & D St	BPS	BPS	SCADA	SCADA		I&C	1940		
SBMWD-A02712	Upper	Electric Dr	Reservoir	Reservoir	North Side Chainlink Fence	Fencing	Chainlink	Civil	1949		
SBMWD-A02713	Ridgeline	Ridgeline Dr Lower	BPS (#1-2)	BPS	SCADA	SCADA		I&C	1991		
SBMWD-A02714	Upper	Electric Dr	Reservoir	Reservoir	Lighting	Lighting	Pole	Electrical	1949	7	QTY
SBMWD-A02715	Shandin Hills	Shandin Hills North	Reservoir	Reservoir	SCADA	SCADA		I&C	1997		
SBMWD-A02716	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	SCADA	SCADA		I&C	1990		
SBMWD-A02717	Lower	Olive & Garner	Well	Well	SCADA	SCADA		I&C	1993		
SBMWD-A02718	Upper	Electric Dr	Reservoir	Reservoir	Security Camera	Camera	Safety	Electrical	1949		
SBMWD-A02719	Lower	10th & J ST	Well	Well	SCADA	SCADA		I&C	1997		
SBMWD-A02720	Lower	Encanto	BPS (#1-3)	BPS	SCADA	SCADA		I&C	2005		
SBMWD-A02721	Cajon	Cajon Blvd	Hydro Generator	Hydro Generator	SCADA	SCADA		I&C	1957		
SBMWD-A02722	Cajon	Cajon Blvd	Well#3	Well	SCADA	SCADA		I&C	1957		
SBMWD-A02723	Daley	Quail Canyon	Reservoir	Reservoir	Drain Valve	Valve	Gate	Mechanical	1988	12	Din
SBMWD-A02724	Daley	Quail Canyon	Reservoir	Reservoir	Tank South Gate Drain Valve	Valve		Mechanical	1988	8	DIN
SBMWD-A02725	Daley	Daley Cayon	Reservoir	Reservoir	SCADA	SCADA		I&C	1972		
SBMWD-A02726	Del Rosa	40th & Valencia Ave	Well	Well	SCADA	SCADA		I&C	1990		
SBMWD-A02727	Daley	Quail Canyon	Reservoir	Reservoir	South Tank - Inlet and Outlet Gate Valve	Valve	Gate	Mechanical	1988		
SBMWD-A02728	Lower	EPA	Well#003	Well	SCADA	SCADA		I&C	1996		
SBMWD-A02729	Intermediate	27th St	Acacia BPS	BPS	SCADA (Well)	SCADA		I&C	1957		
SBMWD-A02730	Intermediate	Perimeter	BPS	BPS	Booster Pump#1 Check Valve	Valve	Check	Mechanical	1988	12	DIN
SBMWD-A02731	Lower	Lytle Creek	Common	Well	SCADA#1	SCADA		I&C	1957		
SBMWD-A02732	Lower	Lytle Creek	Common	Well	SCADA#2	SCADA		I&C	1957		
SBMWD-A02733	Intermediate	Perimeter	BPS	BPS	Booster Pump#1 Butterfly Valve	Valve		Mechanical	1988	12	DIN
SBMWD-A02734	Lower	Lytle Creek	Common	Well	SCADA#3	SCADA		I&C	1957		
SBMWD-A02735	Intermediate	Perimeter	BPS	BPS	Booster Pump#2 Check Valve	Valve	Check	Mechanical	1988	12	DIN
SBMWD-A02736	Upper	Newmark	Reservoir	Reservoir	Buried Reservoir - Rectangular	Tank	Reservoir	Structural	1955	7500000	GAL
SBMWD-A02737	Upper	Newmark	Reservoir	Reservoir	Buried Reservoir - Rectangular	Tank	Reservoir	Structural	1963	5500000	GAL
SBMWD-A02738	Upper	Newmark	Reservoir	Reservoir	Buried Reservoir - Rectangular	Tank	Reservoir	Structural	1968	8900000	GAL

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02739	Upper	Newmark	Reservoir	Reservoir	SCADA Antenna	SCADA		I&C	1971	1	QTY
SBMWD-A02740	Lower	Mill & D St	BPS	BPS	SCADA By the Door	SCADA		I&C	1940		
SBMWD-A02741	Intermediate	Perimeter	BPS	BPS	Booster Pump#2 Butterfly Valve	Valve		Mechanical	1988	12	DIN
SBMWD-A02742	Upper	Highland Ave	Mt Vernon Water Compa	Well	SCADA Facing the Detention Basin	SCADA		I&C	1928		
SBMWD-A02743	Intermediate	Perimeter	BPS	BPS	Pressure Reducing Piping - Butterfly Valve Downstream	Valve		Mechanical	1988		
SBMWD-A02744	Cajon	Cajon Blvd	Well#2	Well	SCADA Generatorr Building Inside	SCADA		I&C	1957		
SBMWD-A02745	Upper	Mallory St	BPS (#1-2)	BPS	SCADA Near Pump#1	SCADA		I&C	1987		
SBMWD-A02746	Intermediate	Perimeter	BPS	BPS	Pump#3 - Check Valve	Valve	Check	Mechanical	1988	12	DIN
SBMWD-A02747	Upper	Mallory St	BPS (#1-2)	BPS	SCADA Near Pump#2	SCADA		I&C	1987		
SBMWD-A02748	Intermediate	27th St	Acacia BPS	BPS	SCADA On Top of the Well Pit	SCADA		I&C	1957		
SBMWD-A02749	Intermediate	Perimeter	BPS	BPS	Pump#3 - Butterfly Valve	Valve	Butterfly	Mechanical	1988		
SBMWD-A02750	Upper	Medical Center	Ogden BPS	BPS	Second SCADA	SCADA		I&C	2006		
SBMWD-A02751	Intermediate	27th St	Acacia BPS	BPS	Security Cabine	Panel	Security	Electrical	1957		
SBMWD-A02752	Upper	Newmark	Common	Other	Security Cabinet CCTV - SCADA	Panel	Security	Electrical	1971	120	V
SBMWD-A02753	Intermediate	Perimeter	BPS	BPS	Pressure Reducing Pipe - Butterfly Valve	Valve		Mechanical	1988	10	DIN
SBMWD-A02754	Intermediate	17th & Sierra Way St	Common	Other	Security Camera	Camera	Safety	Electrical	1950		
SBMWD-A02755	Lower	17th & Sierra Way St	16th St BPS	BPS	Security Panel - BPS	Control Panel		Electrical	2011	1	Each
SBMWD-A02756	Intermediate	Perimeter	BPS	BPS	Small Chlorine Room	Building		Structural	1988	10	LFT
SBMWD-A02757	Lower	7th St	Well	Well	Well - Lake Pipe Isolation Valve	Valve		Mechanical	1965	12	DIN
SBMWD-A02758	Lower	EPA	Well#004	Well	Solar Panel	Solar Panel		Electrical	1996		
SBMWD-A02759	Lower	EPA	Well#005	Well	Solar Panel	Solar Panel		Electrical	1996		
SBMWD-A02760	Lower	EPA	Well#005	Well	Solar Panel	Solar Panel		Electrical	1996		
SBMWD-A02761	Lower	7th St	Reservoir (Forebay)	Reservoir (Forebay)	Reservoir Piping Assembly (From Reservoir Into Ground)	Piping		Mechanical	1965	12	DIN
SBMWD-A02762	Lower	EPA	Well#003	Well	Solar Panel	Solar Panel		Electrical	1996		
SBMWD-A02763	Lower	EPA	Well#002	Well	Solar Panel	Solar Panel		Electrical	1996		
SBMWD-A02764	Lower	EPA	Well#001	Well	Solar Panel	Solar Panel		Electrical	1997		
SBMWD-A02765	Ridgeview	Ridgeview#1	Reservoir	Reservoir	Solar Panel	Solar Panel		Electrical	1963		
SBMWD-A02766	Daley	Daley Cayon	Reservoir	Reservoir	Solar Panel	Solar Panel		Electrical	1972		
SBMWD-A02767	Lower	7th St	Well	Well	Well Check Valve	Valve	Check	Mechanical	1965	12	DIN
SBMWD-A02768	Intermediate	17th & Sierra Way St	Common	Other	Solar Panel	Solar Panel		Electrical	1950		
SBMWD-A02769	Shandin Hills	Shandin Hills North	Reservoir	Reservoir	Solar Panel	Solar Panel		Electrical	1997		
SBMWD-A02770	Lower	7th St	Common	Other	Eyewash Station	Safety Shower/Eyewash		Mechanical	1965		
SBMWD-A02771	Daley	Quail Canyon	Reservoir	Reservoir	South Tank - Arv	Valve	Air-VAC	Mechanical	1988		
SBMWD-A02772	Lower	7th St	Common	Other	Security Camera	Camera	Safety	Electrical	1965	5	QTY
SBMWD-A02773	Lower	Antil	Reservoir	Reservoir (Forebay)	Stairs	Stairway and Catwalk		Civil	1953		
SBMWD-A02774	Lower	7th St	Common	Other	Site Lighting	Lighting	Pole	Electrical	1965	4	QTY
SBMWD-A02775	Lower	Encanto	BPS (#1-3)	BPS	Surge Tank - not in Use	Tank	Surge	Structural	2005		
SBMWD-A02776	Upper	Medical Center	Ogden BPS	BPS	Surge Tank Panel	Control Panel		Electrical	2006		
SBMWD-A02777	College/Palm	Ogden St	Palm BPS (#1-3)	BPS	Surge Tank Panel	Control Panel		Electrical	2007	120	V
SBMWD-A02778	Upper	Newmark	Well	Well	Switchboard- 480V Outdoor	Switchboard		Electrical	2007	480	V
SBMWD-A02779	Upper	Newmark	Common	Other	Telemetry and Blower Control Panel	Control Panel		Electrical	1980	120	V
SBMWD-A02780	Intermediate	Perimeter	BPS	BPS	Eyewash Station	Safety Shower/Eyewash		Mechanical	1988		
SBMWD-A02781	Upper	Newmark	Well	Well	Termination Cabinet By Well#3	Panel	Termination	Electrical	1971		
SBMWD-A02782	Ridgeline	Ridgeline Hydro Dr Upper	Hydro BPS (#1-2)	BPS	Transfer Switch	Switch	Transfer	Electrical	1990		
SBMWD-A02783	Intermediate	Perimeter	BPS	BPS	Transfer Switch	Switch	Transfer	Electrical	1988		
SBMWD-A02784	Cajon	Cajon Blvd	Well#2	Well	Transfer Switch Edison	Switch	Transfer	Electrical	1957		
SBMWD-A02785	Lower	7th St	Reservoir (Forebay)	Reservoir (Forebay)	Transferswitch	Switch	Transfer	Electrical	1965		
SBMWD-A02786	Lower	Lytle Creek	Common	Well	Transformer	Transformer		Electrical	1957		
SBMWD-A02787	Upper	25th & North E St	BPS	BPS	Transformer	Transformer		Electrical	1950		
SBMWD-A02788	Lower	31th & Mountain View Av	Well	Well	Upgraded Disconnect	Switch	Disconnect	Electrical	1962		
SBMWD-A02789	Intermediate	27th St	Acacia BPS	BPS	Vault Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1957		
SBMWD-A02790	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Building	Building		Structural	1947	33	LFT
SBMWD-A02791	Lower	7th St	BPS	BPS	Booster Pump Check Valve	Valve	Check	Mechanical	1965	12	DIN
SBMWD-A02792	Lower	7th St	BPS	BPS	Pressure Reducing Valve	Valve	Automated-Cc	Mechanical	1965	12	DIN
SBMWD-A02793	Lower	7th St	Common	Other	Vault Pressure Reducing Valve	Non-Process Structure	Vault	Structural	1965	7	WFT
SBMWD-A02794	Lower	7th St	BPS	BPS	Check Valve Vault - Discharge of the Booster	Non-Process Structure	Vault	Structural	1965		
SBMWD-A02795	Lower	7th St	BPS	BPS	Booster Meter Vault	Non-Process Structure	Vault	Structural	1965		
SBMWD-A02796	Del Rosa	40th & Valencia Ave	Well	Well	Well - Discharge Valve	Valve	Butterfly	Mechanical	1990	12	DIN
SBMWD-A02797	Del Rosa	40th & Valencia Ave	Well	Well	Vault For Outlet Piping - No Valve	Non-Process Structure	Vault	Structural	1990	5	WFT
SBMWD-A02798	Lower	Waterman Ave	BPS (#1, 3, 4)	BPS	Dry Well structure	Non-Process Structure	Dry Well	Structural	1947	40	LFT
SBMWD-A02799	Lower	Mill & D St	BPS	BPS	Ventilation System - Duct	Air Ventilation System	Duct	HVAC	1940		
SBMWD-A02800	Lower	Mill & D St	BPS	BPS	AC Unit	AC Unit		HVAC	1940		
SBMWD-A02801	Del Rosa	40th & Valencia Ave	Well	Well	Well Check Valve	Valve	Check	Mechanical	1990	12	DIN
SBMWD-A02802	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Vessel 1A Differential Pressure Transmitter	Transmitter	Pressure	I&C	1950		
SBMWD-A02803	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Vessel 1B Differential Pressure Transmitter	Transmitter	Pressure	I&C	1950		
SBMWD-A02804	Del Rosa	40th & Valencia Ave	Well	Well	Chlorine Pump Air Vac Assembly	Valve	Air-Vac	Mechanical	1990	1	DIN
SBMWD-A02805	Del Rosa	40th & Valencia Ave	Well	Well	Air Vac Assembly - Suction	Valve	Air-Vac	Mechanical	1990	2	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02806	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Vessel 2A Differential Pressure Transmitter	Transmitter	Pressure	I&C	1950		
SBMWD-A02807	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Vessel 2B Differential Pressure Transmitter	Transmitter	Pressure	I&C	1950		
SBMWD-A02808	Lower	Antil	Well#6	Well	Well Piping Arv Before Check Valve	Valve	Air-VAC	Mechanical	1953	2	DIN
SBMWD-A02809	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Vessel 3A Differential Pressure Transmitter	Transmitter	Pressure	I&C	1950		
SBMWD-A02810	Lower	Antil	Well#6	Well	Well Piping Arv After Check Valve	Valve	Air-VAC	Mechanical	1953		
SBMWD-A02811	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Vessel 3B Differential Pressure Transmitter	Transmitter	Pressure	I&C	1950		
SBMWD-A02812	Upper	19th St	GAC System	Wellhead Treatment	Vessel 5A/B Flowmeter	Flowmeter		I&C	2012	1500	GPM
SBMWD-A02813	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Vessels Backwash Flowmeter (North)	Flowmeter		I&C	1950		
SBMWD-A02814	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Vessels Electrical Panels	Control Panel		Electrical	1950	480	V
SBMWD-A02815	Lower	Antil	Reservoir	Reservoir (Forebay)	Eyewash Station	Safety Shower/Eyewash		Mechanical	1953		
SBMWD-A02816	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Vessels Influent Arv (North)	Valve	Air-VAC	Mechanical	1950		
SBMWD-A02817	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Vessels Influent Flowmeter (North)	Flowmeter		I&C	1950		
SBMWD-A02818	Lower	Antil	Common	Other	Double Door Swing Gate	Access Gate	Manual	Civil	1953	3	QTY
SBMWD-A02819	Lower	Antil	BPS	BPS	Booster Pump#1 - Piping Assembly	Piping	Above Ground	Mechanical	1953		
SBMWD-A02820	Lower	Antil	BPS	BPS	Booster Pump #1 - Flowmeter	Flowmeter		I&C	1953		
SBMWD-A02821	Lower	Antil	BPS	BPS	Booster Pump#1 & Motor	Pump		Mechanical	1953		
SBMWD-A02822	Lower	Antil	BPS	BPS	Booster Pump #2 - Piping Assembly	Piping	Above Ground	Mechanical	1953		
SBMWD-A02823	Lower	Antil	BPS	BPS	Booster Pump #2 - Air Release Valve	Valve	Air-VAC	Mechanical	1953		
SBMWD-A02824	Lower	Antil	BPS	BPS	Booster Pump #2 - Air Release Valve	Valve	Air-VAC	Mechanical	1953		
SBMWD-A02825	Lower	Antil	BPS	BPS	Booster Pump #2 - Flowmeter	Flowmeter		I&C	1953		
SBMWD-A02826	Lower	Antil	BPS	BPS	Booster Pump#2 & Motor	Pump		Mechanical	1953	1780	RPM
SBMWD-A02827	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Vessels Influent Flowmeter (South)	Flowmeter		I&C	1950		
SBMWD-A02828	Lower	Antil	BPS	BPS	Booster Pump#3 - Piping Assembly	Piping	Above Ground	Mechanical	1953		
SBMWD-A02829	Intermediate	Perimeter	BPS	BPS	Wall	Wall	CMU	Structural	1988		
SBMWD-A02830	Terrace	Foothill Blvd	Terrace BPS (#3-4)	BPS	Walls	Wall	CMU	Structural	1990		
SBMWD-A02831	Lower	Antil	BPS	BPS	Booster Pump #2 - Flowmeter	Flowmeter		I&C	1953		
SBMWD-A02832	Lower	Antil	BPS	BPS	Dl Booster Pump Butterfly Valve	Valve		Mechanical	1953		
SBMWD-A02833	Del Rosa	Del Rosa#3	Reservoir	Reservoir	Water Meter - To Distribution	Flowmeter		I&C	1983		
SBMWD-A02834	Lower	Antil	BPS	BPS	Booster Pump #2 - Air Release Valve	Valve	Air-VAC	Mechanical	1953		
SBMWD-A02835	Upper	EPA	Well#007	Well	Well Casing	Process Structure	Well Casing	Structural	2000		
SBMWD-A02836	Lower	Antil	BPS	BPS	Booster Pump#3 & Motor	Pump		Mechanical	1953	1780	RPM
SBMWD-A02837	Lower	Antil	BPS	BPS	PH Booster Pump Gate Valve	Valve	Gate	Mechanical	1953		
SBMWD-A02838	Lower	7th St	Well	Well	Well Casing	Process Structure	Well Casing	Structural	1965		
SBMWD-A02839	Lower	7th St	Well	Well	Well - Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1965		
SBMWD-A02840	Lower	Antil	Common	Other	Fence	Fencing	Chainlink	Civil	1953	7	Lft
SBMWD-A02841	Lower	Antil	BPS	BPS	Vault	Non-Process Structure	Vault	Structural	1953	10	LFT
SBMWD-A02842	Lower	7th St	Well	Well	Well - Piping Assembly	Piping	Above Ground	Mechanical	1965	12	DIN
SBMWD-A02843	Lower	Antil	BPS	BPS	FM Booster Pump Butterfly Valve	Valve		Mechanical	1953		
SBMWD-A02844	Lower	Antil	BPS	BPS	Gate Valve In Flowmeter Vault	Valve	Gate	Mechanical	1953	8	DIN
SBMWD-A02845	Lower	Antil	BPS	BPS	Big Flowmeter Vault	Non-Process Structure	Vault	Structural	1953		
SBMWD-A02846	Sycamore	Newmark	Sycamore BPS (#3-4)	BPS	Well 3 Manual Transfer Switch	Switch	Transfer	Electrical	1971	480	V
SBMWD-A02847	Lower	Antil	BPS	BPS	Check Valve	Valve	Check	Mechanical	1953	6	DIN
SBMWD-A02848	Lower	Antil	BPS	BPS	Check Valve In Flowmeter Vault	Valve	Check	Mechanical	1953	12	DIN
SBMWD-A02849	Upper	Newmark	Well	Well	Motor Starter - Well#3	Motor Starter		Electrical	1985	480	V
SBMWD-A02850	Upper	Newmark	Well	Well	Soft Starter - Well#4	Motor Starter		Electrical	1971	480	V
SBMWD-A02851	Lower	Antil	BPS	BPS	Eyewash Station	Safety Shower/Eyewash		Mechanical	1953		
SBMWD-A02852	Lower	7th St	Well	Well	Well Air Release	Valve	Air-VAC	Mechanical	1965		
SBMWD-A02853	Lower	Antil	BPS	BPS	Building	Building		Structural	1953		
SBMWD-A02854	Lower	Antil	Well#6	Well	Well Air Release	Valve	Air-VAC	Mechanical	1953		
SBMWD-A02855	Lower	Antil	Common	Other	Vault North of the Reservoir	Non-Process Structure	Vault	Structural	1953		
SBMWD-A02856	Lower	Antil	Common	Other	Flometer Vault East of the Pump Room	Non-Process Structure	Vault	Structural	1953	10	LFT
SBMWD-A02857	Lower	Antil	Common	Other	Flowmeter In East Vault	Flowmeter		I&C	1953		
SBMWD-A02858	Lower	Antil	BPS	BPS	Check Valve	Valve	Check	Mechanical	1953		
SBMWD-A02859	Lower	7th St	Well	Well	Well Air Release Valve - Downstream	Valve	Air-Vac	Mechanical	1965		
SBMWD-A02860	Del Rosa	40th & Valencia Ave	Well	Well	Well Air Vac Assembly Upstream	Valve	Air-VAC	Mechanical	1990	2	DIN
SBMWD-A02861	Lower	10th & J ST	Well	Well	Well Air Release Valve	Valve	Air-VAC	Mechanical	1997		
SBMWD-A02862	Intermediate	Perris Hill Park	Perris Hill Reservoir	Reservoir	Single Swing Gate	Access Gate	Manual	Civil	1962		
SBMWD-A02863	Intermediate	Perris Hill Park	Perris Hill Reservoir	Reservoir	Ultrasonic Level Transmitter In Box	Transmitter	Level	I&C	1962		
SBMWD-A02864	Upper	25th & North E St	Well	Well	Well Casing	Process Structure	Well Casing	Structural	1950	12	DIN
SBMWD-A02865	Lower	EPA	Well#003	Well	Well Concrete Foundation	Non-Process Structure	Concrete Pad	Structural	1996		
SBMWD-A02866	Lower	Waterman Ave	Leory Well	Well	Well Concrete Foundation	Process Structure	Well Casing	Structural	1947	5	LFT
SBMWD-A02867	Lower	Antil	Well#6	Well	Well Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1953		
SBMWD-A02868	Lower	10th & J ST	Well	Well	Well Pump Sarter	Motor Starter		Electrical	1997	480	V
SBMWD-A02869	Lower	10th & J ST	Well	Well	Chlorine Detector	Chlorine Detection System		I&C	1997		
SBMWD-A02870	Lower	10th & J ST	Well	Well	Well Electrical Panels	Switchboard		Electrical	1997	480	V
SBMWD-A02871	Lower	10th & J ST	Well	Well	Well Flowmeter	Flowmeter		I&C	1997		
SBMWD-A02872	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 10 - Vessel 1A	Valve	Butterfly	Mechanical	1950	8	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02873	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 11 - Vessel 1A	Valve	Butterfly	Mechanical	1950	8	DIN
SBMWD-A02874	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 1 - Vessel 1A	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02875	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 2 - Vessel 1A	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02876	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 3 - Vessel 1A	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02877	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve vessel 1A-1B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02878	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Drain valve 1 vessel 1B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02879	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Drain valve 2 vessel 1B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02880	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 10- Vessel 1B	Valve	Butterfly	Mechanical	1950	8	DIN
SBMWD-A02881	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 11 - Vessel 1B	Valve	Butterfly	Mechanical	1950	8	DIN
SBMWD-A02882	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 1 - Vessel 1B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02883	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 2 - Vessel 1B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02884	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 3 - Vessel 1B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02885	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 10 - Vessel 2A	Valve	Butterfly	Mechanical	1950	8	DIN
SBMWD-A02886	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 11 - Vessel 2A	Valve	Butterfly	Mechanical	1950	8	DIN
SBMWD-A02887	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 1 - Vessel 2A	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02888	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 2 - Vessel 2A	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02889	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 3 - Vessel 2A	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02890	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve vessel 2A-2B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02891	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 10 - Vessel 2B	Valve	Butterfly	Mechanical	1950	8	DIN
SBMWD-A02892	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 11 - Vessel 2B	Valve	Butterfly	Mechanical	1950	8	DIN
SBMWD-A02893	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 1 - Vessel 2B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02894	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 2 - Vessel 2B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02895	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 3 - Vessel 2B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02896	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Drain valve 1 vessel 2B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02897	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Drain valve 2 vessel 2B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02898	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 10 - Vessel 3A	Valve	Butterfly	Mechanical	1950	8	DIN
SBMWD-A02899	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 11 - Vessel 3A	Valve	Butterfly	Mechanical	1950	8	DIN
SBMWD-A02900	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 1 - Vessel 3A	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02901	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 2 - Vessel 3A	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02902	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 3 - Vessel 3A	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02903	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve vessel 3A-3B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02904	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 10 - Vessel 3B	Valve	Butterfly	Mechanical	1950	8	DIN
SBMWD-A02905	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 11 - Vessel 3B	Valve	Butterfly	Mechanical	1950	8	DIN
SBMWD-A02906	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 1 - Vessel 3B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02907	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 2 - Vessel 3B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02908	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve 3 - Vessel 3B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02909	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Drain valve 1 vessel 3B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02910	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Drain valve 2 vessel 3B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02911	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve vessel 1A-1B up	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02912	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve vessel 1A-1B down	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02913	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve vessel 1B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02914	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve vessel 2A-2B up	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02915	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve vessel 2A-2B down	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02916	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve vessel 2B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02917	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve vessel 3A-3B up	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02918	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve vessel 3A-3B down	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02919	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Isolation valve vessel 3B	Valve	Butterfly	Mechanical	1950	6	DIN
SBMWD-A02920	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Air Release Valve - 3B	Valve		Mechanical	1950		
SBMWD-A02921	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Air Release Valve - 3A	Valve		Mechanical	1950		
SBMWD-A02922	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Air Release Valve - 2B	Valve		Mechanical	1950		
SBMWD-A02923	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Air Release Valve - 2A	Valve		Mechanical	1950		
SBMWD-A02924	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Air Release Valve - 1B	Valve		Mechanical	1950		
SBMWD-A02925	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Air Release Valve - 1A	Valve		Mechanical	1950		
SBMWD-A02926	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Influent Butterfly Valve (South)	Valve		Mechanical	1950		
SBMWD-A02927	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Effluent Butterfly Valve (South)	Valve		Mechanical	1950		
SBMWD-A02928	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Air Release Valve (Fill Line) - 3B	Valve		Mechanical	1950		
SBMWD-A02929	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Back Wash Bfv	Valve	Butterfly	Mechanical	1950	10	DIN
SBMWD-A02930	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Influent North Bfv	Valve	Butterfly	Mechanical	1950	12	DIN
SBMWD-A02931	Lower	7th St	Well	Well	Well Flowmeter	Flowmeter		I&C	1965		
SBMWD-A02932	Lower	Antil	Well#6	Well	Well Flowmeter	Flowmeter		I&C	1953		
SBMWD-A02933	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Air Release Valve (Fill Line) - 3A	Valve		Mechanical	1950		
SBMWD-A02934	Lower	7th St	Well	Well	Well Lake Pipe - Air Release Valve	Valve	Air-Vac	Mechanical	1965		
SBMWD-A02935	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Lighting - Wall Mounted	Lighting	Pole	Electrical	1950	4	QTY
SBMWD-A02936	Lower	7th St	Well	Well	Well Lake Pipe - Flowmeter	Flowmeter		I&C	1965	12	DIN
SBMWD-A02937	Lower	7th St	Well	Well	Well Pipe Air Release	Valve	Air-VAC	Mechanical	1965	2	DIN
SBMWD-A02938	Lower	Antil	Well#6	Well	Well Pipe Support Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1953		
SBMWD-A02939	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Air Release Valve (Fill Line) - 2B	Valve		Mechanical	1950		

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A02940	Cajon	Cajon Blvd	Well#4	Well	Well Piping	Piping	Above Ground	Mechanical	1957		
SBMWD-A02941	Lower	10th & J ST	Well	Well	Well Piping Assembly	Piping	Above Ground	Mechanical	1997		
SBMWD-A02942	Cajon	Cajon Blvd	Well#3	Well	Well Pump	Pump		Mechanical	1957		
SBMWD-A02943	Cajon	Cajon Blvd	Well#4	Well	Well Pump	Pump		Mechanical	1957		
SBMWD-A02944	Lower	7th St	Well	Well	Well Pump	Pump		Mechanical	1965		
SBMWD-A02945	Lower	Waterman Ave	Well	Well	Well Pump Building	Building		Structural	1947	23	LFT
SBMWD-A02946	Lower	7th St	Well	Well	Well SCADA	SCADA		I&C	1965		
SBMWD-A02947	Cajon	Cajon Blvd	Well#2	Well	Well#2 - Flowmeter	Flowmeter		I&C	1957		
SBMWD-A02948	Cajon	Cajon Blvd	Well#2	Well	Well#2 - Pump	Pump		Mechanical	1957		
SBMWD-A02949	Intermediate	17th & Sierra Way St	GAC System	Wellhead Treatment	Vessels Influent Butterfly Valve (North)	Valve		Mechanical	1950		
SBMWD-A02950	Cajon	Cajon Blvd	Well#2	Well	Well#2 - Heat Exchanger	Heat Exchanger		Mechanical	1957		
SBMWD-A02951	Cajon	Cajon Blvd	Well#2	Well	Well#2 - Well Casing	Process Structure	Well Casing	Structural	1957		
SBMWD-A02952	Cajon	Cajon Blvd	Well#2	Well	Well#2 Arv (Toward Pipe Knee)	Valve	Air-VAC	Mechanical	1957	1	DIN
SBMWD-A02953	Cajon	Cajon Blvd	Well#2	Well	Well#2 Discharge Arv	Valve	Air-VAC	Mechanical	1957	2	DIN
SBMWD-A02954	Cajon	Cajon Blvd	Well#3	Well	Well#3 - Flowmeter	Flowmeter		I&C	1957		
SBMWD-A02955	Upper	Newmark	Well	Well	Well#4 - Heat Exchanger	Heat Exchanger		Mechanical	1971	12	DIN
SBMWD-A02956	Upper	Lynwood Dr	Well	Well	Well Flowmeter	Flowmeter		I&C	1955		
SBMWD-A02957	Upper	Lynwood Dr	Well	Well	Well Arv Downstream of Check Valve	Valve	Air-VAC	Mechanical	1955		
SBMWD-A02958	Upper	Lynwood Dr	Well	Well	Well Air Release	Valve	Air-VAC	Mechanical	1955		
SBMWD-A02959	Upper	Lynwood Dr	Common	Other	Lighting Pole	Lighting	Pole	Electrical	1955	1	QTY
SBMWD-A02960	Upper	Lynwood Dr	Well	Well	Eyewash	Safety Shower/Eyewash		Mechanical	1955		
SBMWD-A02961	Upper	Lynwood Dr	BPS	BPS	SCADA	Scada		I&C	1955		
SBMWD-A02962	Upper	Lynwood Dr	BPS	Other	Pump Controler - Well and the Booster	Motor starter		Electrical	1955	480	V
SBMWD-A02963	Upper	Lynwood Dr	BPS	BPS	SCADA In the Pump Pit	Scada		I&C	1955		
SBMWD-A02964	Upper	Lynwood Dr	BPS	BPS	Transformer	Transformer		Electrical	1955		
SBMWD-A02965	Upper	Lynwood Dr	BPS	BPS	Chlorine Detection System	Chlorine Detection System		I&C	1955		
SBMWD-A02966	Upper	Lynwood Dr	Common	Other	Security Camera	Camera	Safety	Electrical	1955	1	QTY
SBMWD-A02967	Upper	Lynwood Dr	Common	Other	Fence	Fencing	Chainlink	Civil	1955	490	LFT
SBMWD-A02968	Upper	Lynwood Dr	Well	Well	Access Gate	Access Gate	Manual	Civil	1955		
SBMWD-A02969	Upper	Lynwood Dr	BPS	BPS	Booster Pump Motor	Motor		Electrical	1955		
SBMWD-A02970	Upper	Lynwood Dr	BPS	BPS	Booster Pump Concrete Pad	Non-Process Structure	Concrete Pad	Structural	1955		
SBMWD-A02971	Upper	Lynwood Dr	Reservoir	BPS	Level Gauge	Level Gauge		Mechanical	1955		
SBMWD-A02972	Sycamore	Newmark	Sycamore BPS (#1)	BPS	Pump Starter	Motor starter		Electrical	1971	480	V
SBMWD-A02973	Cajon	Palm & Kendall Dr	Cajon BPS (#2-5)	BPS	Fencing - Chainlink	Fencing	Chainlink	Civil	1982	2400	LFT
SBMWD-A02974	Intermediate	17th & Sierra Way St	Common	Other	Iron Fencing	Fencing	Iron	Civil	1950	400	LFT
SBMWD-A02975	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1983	8	DIN
SBMWD-A02976	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	8	DIN
SBMWD-A02977	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	8	DIN
SBMWD-A02978	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1983	8	DIN
SBMWD-A02979	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1983	8	DIN
SBMWD-A02980	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Flowmeter	Flowmeter		I&C	1983	8	DIN
SBMWD-A02981	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1983	8	DIN
SBMWD-A02982	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1983	12	DIN
SBMWD-A02983	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	12	DIN
SBMWD-A02984	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	12	DIN
SBMWD-A02985	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1983	12	DIN
SBMWD-A02986	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1983	12	DIN
SBMWD-A02987	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Flowmeter	Flowmeter		I&C	1983	12	DIN
SBMWD-A02988	Lower	Distribution System	Intertie - City of Loma Lin	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1983	12	DIN
SBMWD-A02989	Del Rosa	Distribution System	Intertie - East Valley Wat	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1983	12	DIN
SBMWD-A02990	Del Rosa	Distribution System	Intertie - East Valley Wat	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	12	DIN
SBMWD-A02991	Del Rosa	Distribution System	Intertie - East Valley Wat	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	12	DIN
SBMWD-A02992	Del Rosa	Distribution System	Intertie - East Valley Wat	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1983	12	DIN
SBMWD-A02993	Del Rosa	Distribution System	Intertie - East Valley Wat	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1983	12	DIN
SBMWD-A02994	Del Rosa	Distribution System	Intertie - East Valley Wat	Intertie	Flowmeter	Flowmeter		I&C	1983	12	DIN
SBMWD-A02995	Del Rosa	Distribution System	Intertie - East Valley Wat	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1983	12	DIN
SBMWD-A02996	Upper	Distribution System	Intertie - East Valley Wat	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1987	8	DIN
SBMWD-A02997	Upper	Distribution System	Intertie - East Valley Wat	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1987	8	DIN
SBMWD-A02998	Upper	Distribution System	Intertie - East Valley Wat	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1987	8	DIN
SBMWD-A02999	Upper	Distribution System	Intertie - East Valley Wat	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1987	8	DIN
SBMWD-A03000	Upper	Distribution System	Intertie - East Valley Wat	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1987	8	DIN
SBMWD-A03001	Upper	Distribution System	Intertie - East Valley Wat	Intertie	Flowmeter	Flowmeter		I&C	1987	8	DIN
SBMWD-A03002	Upper	Distribution System	Intertie - East Valley Wat	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1987	8	DIN
SBMWD-A03003	Lower	Distribution System	Intertie - East Valley Wat	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1983	12	DIN
SBMWD-A03004	Lower	Distribution System	Intertie - East Valley Wat	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	12	DIN
SBMWD-A03005	Lower	Distribution System	Intertie - East Valley Wat	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	12	DIN
SBMWD-A03006	Lower	Distribution System	Intertie - East Valley Wat	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1983	12	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A03007	Lower	Distribution System	Intertie - East Valley Wat	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1983	12	DIN
SBMWD-A03008	Lower	Distribution System	Intertie - East Valley Wat	Intertie	Flowmeter	Flowmeter		I&C	1983	12	DIN
SBMWD-A03009	Lower	Distribution System	Intertie - East Valley Wat	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1983	12	DIN
SBMWD-A03010	Ridgeline	Distribution System	Intertie - City of Colton	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1985	6	DIN
SBMWD-A03011	Ridgeline	Distribution System	Intertie - City of Colton	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1985	6	DIN
SBMWD-A03012	Ridgeline	Distribution System	Intertie - City of Colton	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1985	6	DIN
SBMWD-A03013	Ridgeline	Distribution System	Intertie - City of Colton	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1985	6	DIN
SBMWD-A03014	Ridgeline	Distribution System	Intertie - City of Colton	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1985	6	DIN
SBMWD-A03015	Ridgeline	Distribution System	Intertie - City of Colton	Intertie	Flowmeter	Flowmeter		I&C	1985	6	DIN
SBMWD-A03016	Ridgeline	Distribution System	Intertie - City of Colton	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1985	6	DIN
SBMWD-A03017	Lower	Distribution System	Intertie - City of Colton	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1985	8	DIN
SBMWD-A03018	Lower	Distribution System	Intertie - City of Colton	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1985	8	DIN
SBMWD-A03019	Lower	Distribution System	Intertie - City of Colton	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1985	8	DIN
SBMWD-A03020	Lower	Distribution System	Intertie - City of Colton	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1985	8	DIN
SBMWD-A03021	Lower	Distribution System	Intertie - City of Colton	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1985	8	DIN
SBMWD-A03022	Lower	Distribution System	Intertie - City of Colton	Intertie	Flowmeter	Flowmeter		I&C	1985	8	DIN
SBMWD-A03023	Lower	Distribution System	Intertie - City of Colton	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1985	8	DIN
SBMWD-A03024	Lower	Distribution System	Intertie - City of Rialto	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1985	12	DIN
SBMWD-A03025	Lower	Distribution System	Intertie - City of Rialto	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1985	12	DIN
SBMWD-A03026	Lower	Distribution System	Intertie - City of Rialto	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1985	12	DIN
SBMWD-A03027	Lower	Distribution System	Intertie - City of Rialto	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1985	12	DIN
SBMWD-A03028	Lower	Distribution System	Intertie - City of Rialto	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1985	12	DIN
SBMWD-A03029	Lower	Distribution System	Intertie - City of Rialto	Intertie	Flowmeter	Flowmeter		I&C	1985	12	DIN
SBMWD-A03030	Lower	Distribution System	Intertie - City of Rialto	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1985	12	DIN
SBMWD-A03031	Devore/Meyers	Distribution System	Intertie - City of Rialto	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1985	8	DIN
SBMWD-A03032	Devore/Meyers	Distribution System	Intertie - City of Rialto	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1985	8	DIN
SBMWD-A03033	Devore/Meyers	Distribution System	Intertie - City of Rialto	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1985	8	DIN
SBMWD-A03034	Devore/Meyers	Distribution System	Intertie - City of Rialto	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1985	8	DIN
SBMWD-A03035	Devore/Meyers	Distribution System	Intertie - City of Rialto	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1985	8	DIN
SBMWD-A03036	Devore/Meyers	Distribution System	Intertie - City of Rialto	Intertie	Flowmeter	Flowmeter		I&C	1985	8	DIN
SBMWD-A03037	Devore/Meyers	Distribution System	Intertie - City of Rialto	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1985	8	DIN
SBMWD-A03038	Terrace	Distribution System	Intertie - Riverside	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1991	8	DIN
SBMWD-A03039	Terrace	Distribution System	Intertie - Riverside	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1991	8	DIN
SBMWD-A03040	Terrace	Distribution System	Intertie - Riverside	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1991	8	DIN
SBMWD-A03041	Terrace	Distribution System	Intertie - Riverside	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1991	8	DIN
SBMWD-A03042	Terrace	Distribution System	Intertie - Riverside	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1991	8	DIN
SBMWD-A03043	Terrace	Distribution System	Intertie - Riverside	Intertie	Flowmeter	Flowmeter		I&C	1991	8	DIN
SBMWD-A03044	Terrace	Distribution System	Intertie - Riverside	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1991	8	DIN
SBMWD-A03045	Lower	Distribution System	Intertie - Riverside	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1991	12	DIN
SBMWD-A03046	Lower	Distribution System	Intertie - Riverside	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1991	12	DIN
SBMWD-A03047	Lower	Distribution System	Intertie - Riverside	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1991	12	DIN
SBMWD-A03048	Lower	Distribution System	Intertie - Riverside	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1991	12	DIN
SBMWD-A03049	Lower	Distribution System	Intertie - Riverside	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1991	12	DIN
SBMWD-A03050	Lower	Distribution System	Intertie - Riverside	Intertie	Flowmeter	Flowmeter		I&C	1991	12	DIN
SBMWD-A03051	Lower	Distribution System	Intertie - Riverside	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1991	12	DIN
SBMWD-A03052	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1998	6	DIN
SBMWD-A03053	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1998	6	DIN
SBMWD-A03054	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1998	6	DIN
SBMWD-A03055	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1998	6	DIN
SBMWD-A03056	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1998	6	DIN
SBMWD-A03057	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Flowmeter	Flowmeter		I&C	1998	6	DIN
SBMWD-A03058	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1998	6	DIN
SBMWD-A03059	Upper	Distribution System	Intertie - Muscoy Mutual	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1998	8	DIN
SBMWD-A03060	Upper	Distribution System	Intertie - Muscoy Mutual	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1998	8	DIN
SBMWD-A03061	Upper	Distribution System	Intertie - Muscoy Mutual	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1998	8	DIN
SBMWD-A03062	Upper	Distribution System	Intertie - Muscoy Mutual	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1998	8	DIN
SBMWD-A03063	Upper	Distribution System	Intertie - Muscoy Mutual	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1998	8	DIN
SBMWD-A03064	Upper	Distribution System	Intertie - Muscoy Mutual	Intertie	Flowmeter	Flowmeter		I&C	1998	8	DIN
SBMWD-A03065	Upper	Distribution System	Intertie - Muscoy Mutual	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1998	8	DIN
SBMWD-A03066	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1998	6	DIN
SBMWD-A03067	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1998	6	DIN
SBMWD-A03068	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Backflow Preventer Valve	Valve	Backflow Previ	Mechanical	1998	6	DIN
SBMWD-A03069	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1998	6	DIN
SBMWD-A03070	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1998	6	DIN
SBMWD-A03071	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Flowmeter	Flowmeter		I&C	1998	6	DIN
SBMWD-A03072	Devore/Meyers	Distribution System	Intertie - Muscoy Mutual	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1998	6	DIN
SBMWD-A03073	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1983	6	DIN

Appendix E

ID	Level 2 (Pressure_Zone)	Level 3 (Site)	Level 4 (Facility)	Level 6 (Facility_Type)	Asset_Description	Asset_Class	Asset_Type	Discipline	Install Year	Size_1	Unit_1
SBMWD-A03074	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	6	DIN
SBMWD-A03075	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	6	DIN
SBMWD-A03076	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1983	6	DIN
SBMWD-A03077	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1983	6	DIN
SBMWD-A03078	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Flowmeter	Flowmeter		I&C	1983	6	DIN
SBMWD-A03079	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1983	6	DIN
SBMWD-A03080	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1983	6	DIN
SBMWD-A03081	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	6	DIN
SBMWD-A03082	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	6	DIN
SBMWD-A03083	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1983	6	DIN
SBMWD-A03084	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1983	6	DIN
SBMWD-A03085	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Flowmeter	Flowmeter		I&C	1983	6	DIN
SBMWD-A03086	Upper	Distribution System	Intertie - Baseline Garder	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1983	6	DIN
SBMWD-A03087	Lower	Distribution System	Intertie - City of Riverside	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1983	12	DIN
SBMWD-A03088	Lower	Distribution System	Intertie - City of Riverside	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	12	DIN
SBMWD-A03089	Lower	Distribution System	Intertie - City of Riverside	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1983	12	DIN
SBMWD-A03090	Lower	Distribution System	Intertie - City of Riverside	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1983	12	DIN
SBMWD-A03091	Lower	Distribution System	Intertie - City of Riverside	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1983	12	DIN
SBMWD-A03092	Lower	Distribution System	Intertie - City of Riverside	Intertie	Flowmeter	Flowmeter		I&C	1983	12	DIN
SBMWD-A03093	Lower	Distribution System	Intertie - City of Riverside	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1983	12	DIN
SBMWD-A03094	Lower	Distribution System	Intertie - San Bernardino	Intertie	Piping assembly	Piping	Above Ground	Mechanical	1991	20	DIN
SBMWD-A03095	Lower	Distribution System	Intertie - San Bernardino	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1991	20	DIN
SBMWD-A03096	Lower	Distribution System	Intertie - San Bernardino	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	1991	20	DIN
SBMWD-A03097	Lower	Distribution System	Intertie - San Bernardino	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	1991	20	DIN
SBMWD-A03098	Lower	Distribution System	Intertie - San Bernardino	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	1991	20	DIN
SBMWD-A03099	Lower	Distribution System	Intertie - San Bernardino	Intertie	Flowmeter	Flowmeter		I&C	1991	20	DIN
SBMWD-A03100	Lower	Distribution System	Intertie - San Bernardino	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	1991	20	DIN
SBMWD-A03101	Devore/Meyers	Distribution System	Intertie - Devore Water C	Intertie	Piping assembly	Piping	Above Ground	Mechanical	2015	4	DIN
SBMWD-A03102	Devore/Meyers	Distribution System	Intertie - Devore Water C	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	2015	4	DIN
SBMWD-A03103	Devore/Meyers	Distribution System	Intertie - Devore Water C	Intertie	Backflow Preventer Valve	Valve	Backflow Prev	Mechanical	2015	4	DIN
SBMWD-A03104	Devore/Meyers	Distribution System	Intertie - Devore Water C	Intertie	Gate Valve - Upstream	Valve	Gate	Mechanical	2015	4	DIN
SBMWD-A03105	Devore/Meyers	Distribution System	Intertie - Devore Water C	Intertie	Gate Valve - Downstream	Valve	Gate	Mechanical	2015	4	DIN
SBMWD-A03106	Devore/Meyers	Distribution System	Intertie - Devore Water C	Intertie	Flowmeter	Flowmeter		I&C	2015	4	DIN
SBMWD-A03107	Devore/Meyers	Distribution System	Intertie - Devore Water C	Intertie	Pressure Reducing Valve	Valve	Pressure Redu	Mechanical	2015	4	DIN

Appendix F: Arrowhead Springs Hotel Analysis

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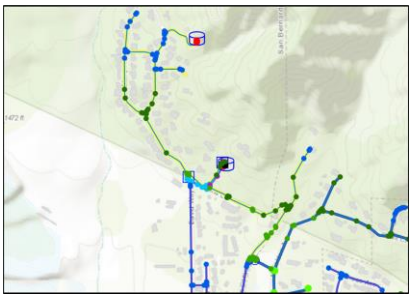



San Bernardino Municipal Water Department

Water Master Plan

Technical Memorandum #6

Arrowhead Springs Hotel Analysis

Final Report
June 20, 2024
Hazen No. 20137-005

Hazen

List of Acronyms

Abbreviation	Definition
AHS	Arrowhead Springs
BPS	Booster Pump Station
DIP	Ductile Iron Pipe
FF	Fire Flow
fps	Feet per Second
GPM/gpm	Gallons Per Minute
hr(s)	Hour(s)
max	Maximum
MG	Million Gallons
MGD	Million Gallons per Day
min	Minimum
PRV	Pressure Reducing Valve
psi	Pounds per Square Inch
PVC	Polyvinyl Chloride (pipe)
PZ	Pressure Zone
SBMWD	San Bernardino Municipal Water Department

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1. Introduction and Background

Hazen and Sawyer is under contract with the San Bernardino Municipal Water Department (Department or SBMWD) to prepare the 2024 Water Master Plan. Technical Memorandum #6 – Arrowhead Springs Hotel Analysis, is built upon previous technical memorandums that were also created as part of the master planning effort. The previous technical memorandums are listed below.

- Technical Memorandum #1 – Data Collection and System Understanding
- Technical Memorandum #2 – GIS and Hydraulic Model Update
- Technical Memorandum #3 – System Evaluation
- Technical Memorandum #4 – Condition and Risk Assessment
- Technical Memorandum #5 – Capital Improvement Plan

The purpose of this memorandum is to present the findings from a system evaluation of the water system with the proposed Arrowhead Springs Hotel (AHS) and associated development. This analysis does not evaluate the proposed on-site (private-side) improvements identified for the AHS development. This analysis evaluates the impact to SBMWD's system based on the additional 500 gpm demand from AHS, in addition to the proposed off-site improvements identified in "Water Distribution Analysis for Arrowhead Springs" (Kimley Horn, December 2023). This includes Ridgeview Pump Station upgrades and pipeline improvements near Ridgeview Reservoir and Del Rosa Reservoir #2.

1.1 AHS Proposed Private-Side Conditions

Based on "Water Distribution Analysis for Arrowhead Springs" (Kimley Horn, December 2023)**,** the proposed on-site (private-side) improvements for the AHS include:

- One (1) buried 800,000-gallon pre-stressed concrete water storage tank.
- Approximately 14,500 linear feet of eight-inch to twelve-inch diameter PVC water transmission and distribution main piping.
- Includes fittings, isolation valves, fire hydrant assemblies, combination air release/air vacuum valves, etc.
- One (1) Booster Pump Station sited roughly 500-feet north of Parcel 0155482060000.
- One (1) Flow Control Valve located upstream of the proposed booster pump station.
- Flow through flow control valve not to exceed 500 gpm as discussed above.

It should be noted that the proposed on-site facilities are all located on the private side of the meter, and therefore privately owned and maintained by AHS (not by SBMWD). The on-site water tank, pumping, and associated facilities are not proposed to be part of the SBMWD water system.

1.2 AHS Proposed Off-Site (SBMWD-Owned) Conditions

Based on "Water Distribution Analysis for Arrowhead Springs" (Kimley Horn, December 2023)**,** the proposed off-site (SBMWD-owned) improvements for the AHS include:

- Replacement of approximately 450 linear feet of an eight-inch waterline from the Ridgeview Reservoir to David Way with 12-inch DIP.

- Replacement of approximately 560 linear feet of a six-inch waterline from the Del Rosa Reservoir #2 to David Way with 12-inch DIP.
- Upgrades to the existing Ridgeview Booster Pump Station.
- 500 gpm of constant demand applied to the AHS/SBMWD Service Connection Point

It should be noted that the proposed off-site facilities are all located on the SBMWD side of the meter, and therefore proposed to be owned and maintained by SBMWD.

2. Supply

2.1 Water Demand Summary

With the addition of 500 gpm (0.72 MGD) of demand to the system, Table 2-1 summarizes the updated water demands.

Table 2-1: Water Demand Summary

Parameter	Existing (MGD)		2040 (MGD)	
	Average Day	Max Day	Average Day	Max Day
Demand (Without AHS)	34.55	58.73	39.73	67.55
Demand (With AHS)[1]	35.27	59.45	40.45	68.27

1. Arrowhead demand at 500 gpm (0.72 MGD) is constant for Average day and Max day demand scenarios.

2.2 Supply Analysis

Table 2-2 shows the supply analysis without the AHS demand. Table 2-3 shows the supply analysis with the AHS demand. The results show that deficiencies increase by 0.72 MGD with the AHS demand.

Table 2-2: Supply Capacity Summary – Without AHS

Parameter	Existing (MGD)	2025 (MGD)	2030 (MGD)	2035 (MGD)	2040 (MGD)
Demand					
Average Day Demand	34.55	36.71	37.78	38.86	39.73
Max Day Demand	58.73	62.4	64.23	66.07	67.55
Produced Supply					
Groundwater (Bunker Hill Basin)	56.72	56.72	56.72	56.72	56.72
Recycled Water (Direct use)	0	1.01	1.01	1.01	1.01
Supply Criteria Analysis					
Total supply	56.72	57.73	57.73	57.73	57.73
Supply > Average Day Demand?	Yes	Yes	Yes	Yes	Yes
Supply - ADD (MGD)	22.17	21.02	19.94	18.86	18
Supply > Max Day Demand?	**No**	**No**	**No**	**No**	**No**
Supply - MDD (MGD)	-2.01	-4.67	-6.5	-8.34	-9.82

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Table 2-3: Supply Capacity Summary – With AHS

Parameter	Existing (MGD)	2025 (MGD)	2030 (MGD)	2035 (MGD)	2040 (MGD)
Demand					
Average Day Demand	35.27	37.43	38.5	39.58	40.45
Max Day Demand	59.45	63.12	64.95	66.79	68.27
Produced Supply					
Groundwater (Bunker Hill Basin)	56.72	56.72	56.72	56.72	56.72
Recycled Water (Direct use)	0	1.01	1.01	1.01	1.01
Supply Criteria Analysis					
Total supply	56.72	57.73	57.73	57.73	57.73
Supply > Average Day Demand?	Yes	Yes	Yes	Yes	Yes
Supply - ADD (MGD)	21.45	20.3	19.22	18.14	17.28
Supply > Max Day Demand?	**No**	**No**	**No**	**No**	**No**
Supply - MDD (MGD)	-2.73	-5.39	-7.22	-9.06	-10.54

3. Storage

3.1 Storage Analysis (System-wide)

With the additional demand from AHS, the system-wide storage analysis saw insignificant change. There is still ample surplus of storage system-wide.

Table 3-1: Storage Analysis Summary – System-Wide with AHS

Scenario	Local Supply (MGD)	Average Day Demand (MGD)	Max Day Demand (MGD)	Total Storage (MG)	Equalization Storage (MG) [1]	Fire Flow Storage (MG) [2]	Emergency Storage (MG) [3]	Required Storage (MG)	Surplus/ Deficiency (MG)
Existing (Groundwater only)	56.72	35.27	59.45	126.95	14.86	0.48	17.84	33.18	93.77
2030 (Groundwater + Bunker Hill - Recycled Water Recharge)	57.73	38.50	64.95	124.82	16.24	0.48	19.49	36.20	88.61
2040 (Groundwater + Bunker Hill - Recycled Water Recharge)	57.73	40.45	68.27	124.82	17.07	0.48	20.48	38.03	86.79

[1] 25% of Maximum Day Demand
[2] Fire flow demand of 4,000 gpm for 2 hours
[3] 30% of Maximum Day Demand

3.2 Storage Analysis (Ridgeview Pressure Zone)

With the additional demand from AHS, the individual pressure zone storage analysis results show a deficiency in storage for the Ridgeview Zone.

Table 3-2: Pressure Zone Storage Analysis Summary – with AHS

Pressure Zone	Scenario	Average Day Demand (MGD)	Max Day Demand (MGD)	Total Storage (MG)	Equalization Storage (MG)	Fire Flow Storage (MG)	Emergency Storage (MG)	Required Storage (MG)	Surplus/ Deficiency (MG)
Ridgeview (without AHS)	Existing	0.07	0.12	0.33	0.03	0.18	0.04	0.25	0.08
	2030	0.08	0.13		0.03	0.18	0.04	0.25	0.08
	2040	0.08	0.14		0.04	0.18	0.04	0.26	0.07
Ridgeview (w/ AHS)	Existing	0.79	0.84	0.33	0.21	0.18	0.25	0.64	-0.31
	2030	0.80	0.86		0.21	0.18	0.26	0.65	-0.32
	2040	0.80	0.86		0.21	0.18	0.26	0.65	-0.32

3.2.1 Tank Operations

With the additional 500 gpm of demand, the Ridgeview Tank doubles its cycle time from two times per day to four times per day. Figure 3-1 illustrates the existing scenario, while Figure 3-2 illustrates the change in tank operation.

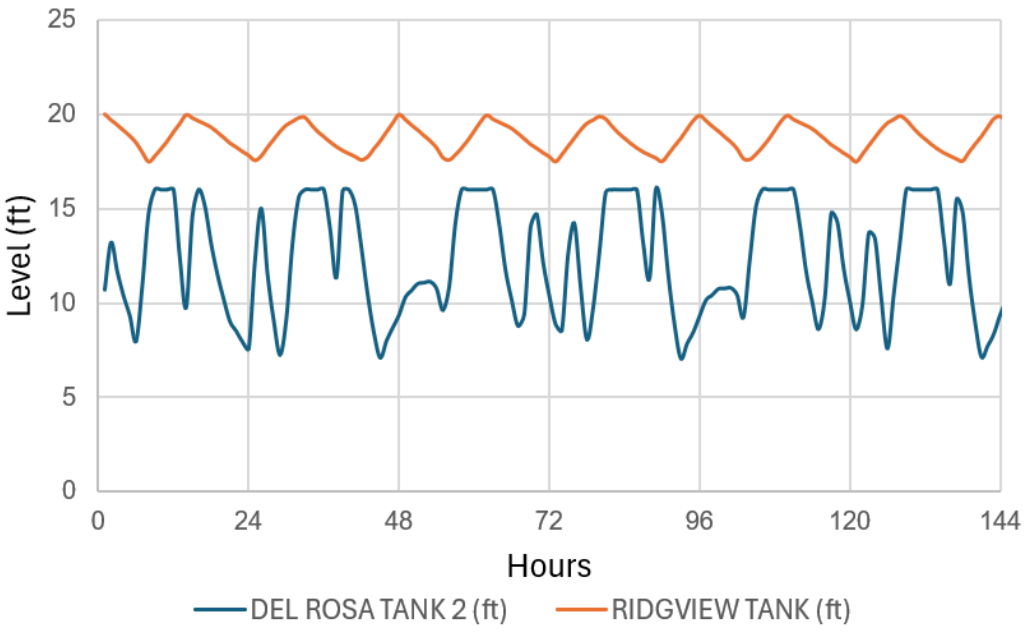

Figure 3-1: Tank Operations – Existing Scenario (without AHS)

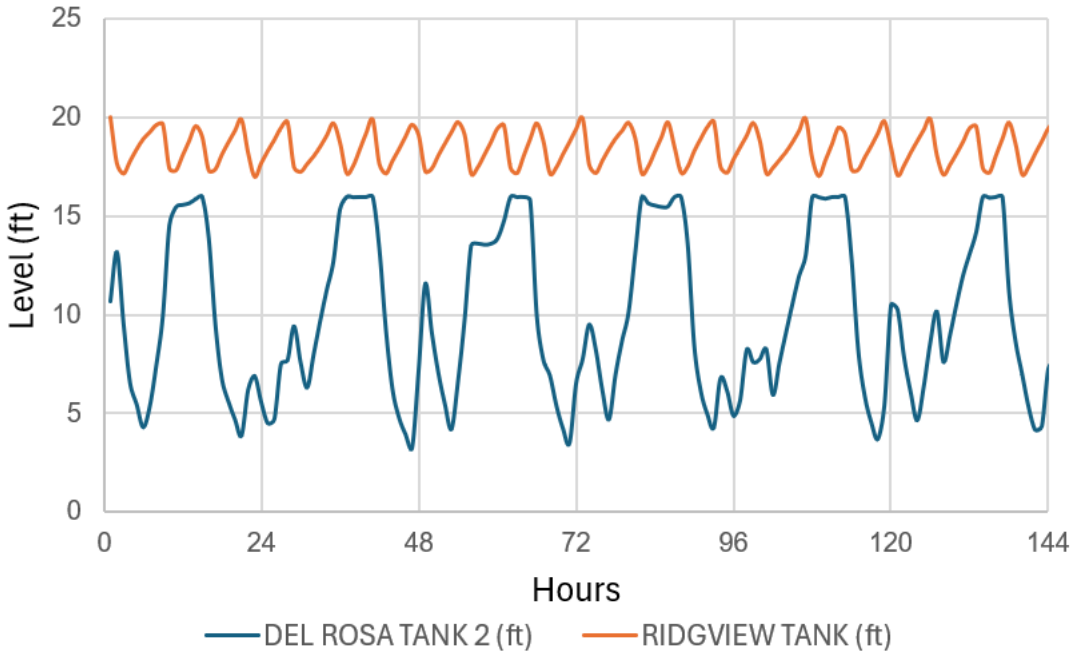

Figure 3-2: Tank Operations – with AHS Demand

4. Pumping

4.1 Pumping Scenarios

Table 4-1 summarizes the pumping scenarios used in this system evaluation.

Table 4-1: Pumping Scenario Summary – with AHS

Pumping Scenario	(gpm)
Existing Ridgeview Pressure Zone, MDD	83
Existing Ridgeview Pumping Firm Capacity[1]	178
Proposed Ridgeview Pressure Zone (with AHS), MDD	583
Required Ridgeview Firm Pumping Capacity[2]	874

[1] Assumes Ridgeview 1 is inactive per SBMWD staff

[2] Minimum Firm Capacity is maximum day demand for zone over 16 hour period

4.2 Pumping Analysis

The pumping analysis results indicate a deficiency due to the AHS additional demand. The Kimley Horn Report identified a proposed firm capacity of 350 gpm at the Ridgeview Pump Station. However, the Ridgeview Pump Station requires a firm capacity of 874 gpm with the additional AHS demand. Furthermore, the analysis indicates that Del Rosa Pressure Zone needs additional pumping capacity in order to supply the Ridgeview Zone with the required 500 gpm AHS demand.

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Table 4-2: Pumping Capacity Summary

Scenario	Zone Located In/From	To Zone	Max Day Demand (16-hr gpm)	Pump	Capacity (gpm)	Total Zone Firm Capacity (gpm)	Wells/ Treatment Plants Directly Supply Zone?	Surplus/ Deficiency (gpm)	Meets Criteria?
Existing	Upper	Del Rosa	2,429[1]	Del Rosa 1	1,846	2,094	Yes	-335	No
	Upper			Del Rosa 2	1,794				
	Upper			Del Rosa 4	300				
	Del Rosa	Ridgeview	874	Ridgeview 2	350	350	No	-524	No
	Del Rosa			Ridgeview 3	350				
2030	Upper	Del Rosa	2,590[1]	Del Rosa 1	1,846	2,094	Yes	-496	No
	Upper			Del Rosa 2	1,794				
	Upper			Del Rosa 4	300				
	Del Rosa	Ridgeview	892	Ridgeview 2	350	350	No	-542	No
	Del Rosa			Ridgeview 3	350				
2040	Upper	Del Rosa	2,676[1]	Del Rosa 1	1,846	2,094	Yes	-582	No
	Upper			Del Rosa 2	1,794				
	Upper			Del Rosa 4	300				
	Del Rosa	Ridgeview	892	Ridgeview 2	350	350	No	-542	No

[1] Demand includes Ridgeview Pressure Zone demands

5. System Pressure and Velocity Impacts

5.1 Minimum Pressure

No significant changes in minimum pressures arise in the addition of AHS demands, as shown by Figure 5-1 and Figure 5-2.

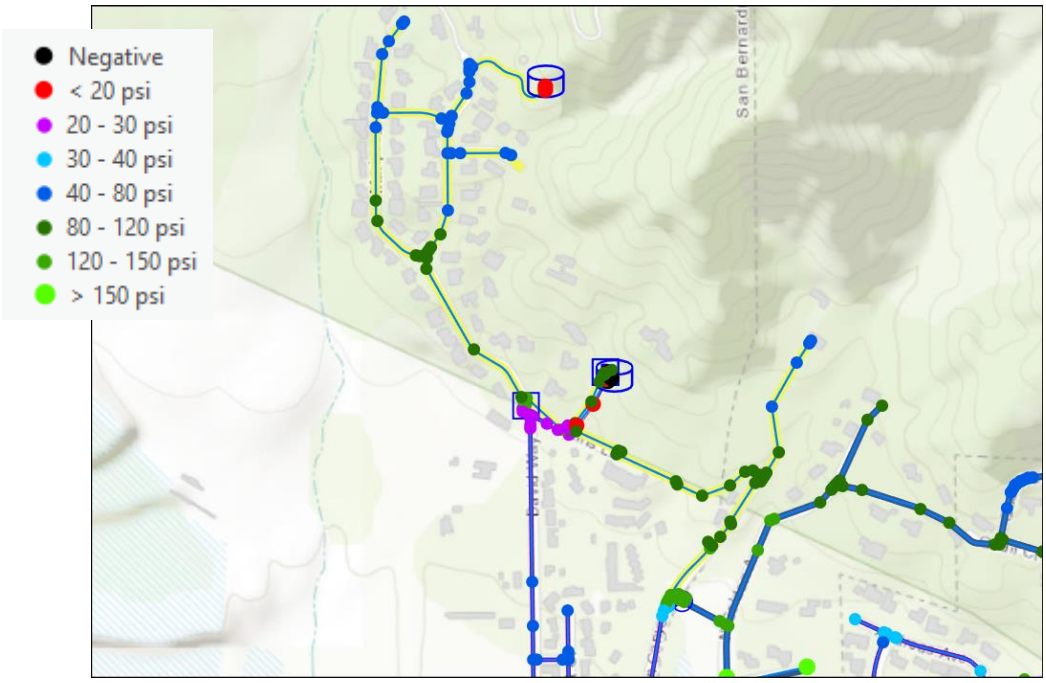

Figure 5-1: Minimum Pressure – Existing

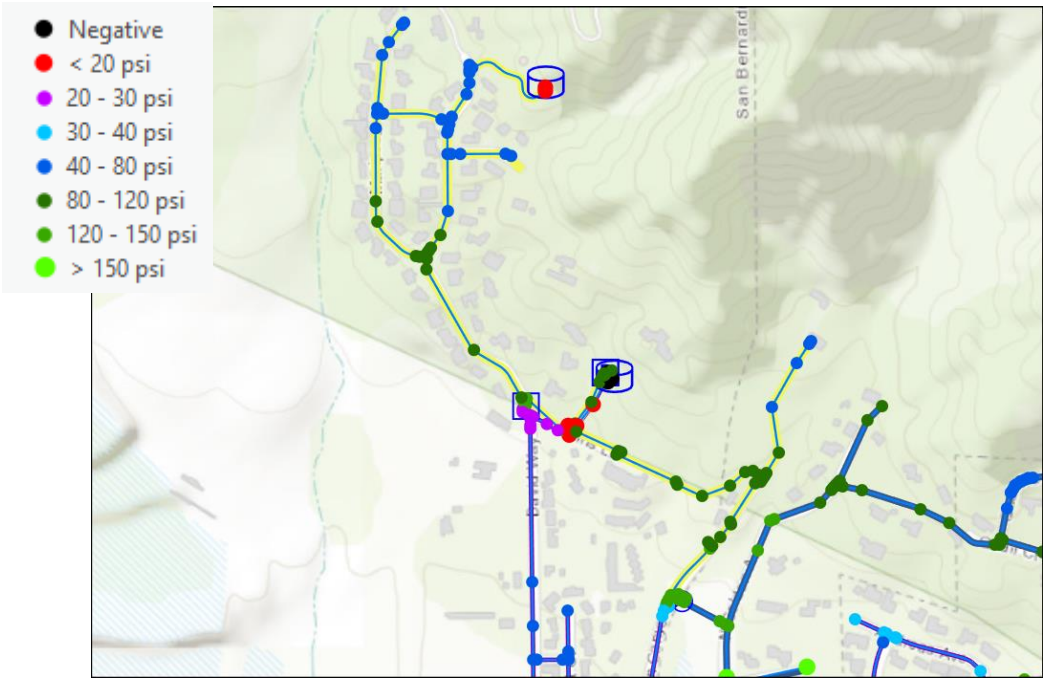

Figure 5-2: Minimum Pressure – with AHS

5.2 Maximum Pressure

No significant changes in maximum pressures arise in the addition of AHS demands, as shown by Figure 5-3 and Figure 5-4.

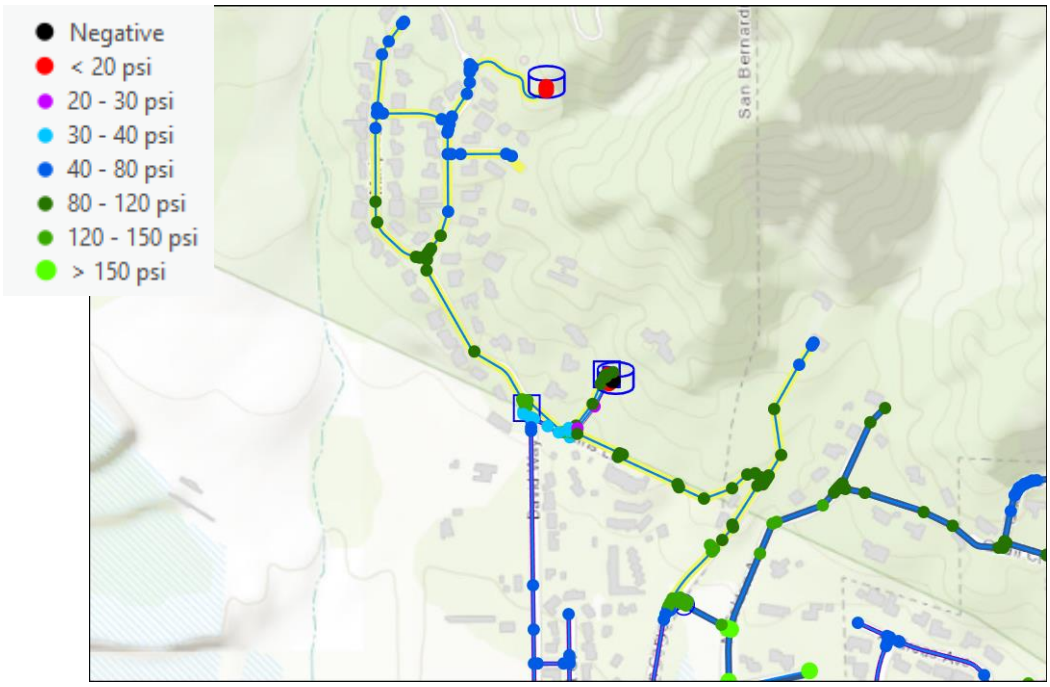

Figure 5-3: Maximum Pressure – Existing

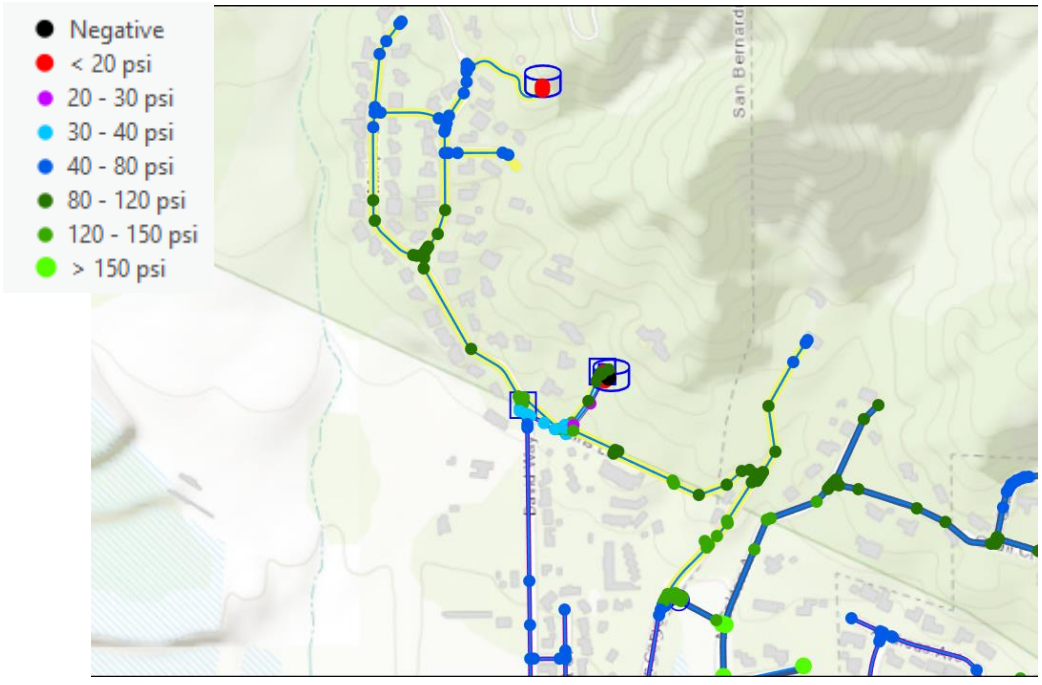

Figure 5-4: Maximum Pressure – with AHS

5.3 Maximum Velocity

Pipe velocities increase but are still within an acceptable range (less than 10 ft/s), as shown in Figure 5-5 and Figure 5-6.

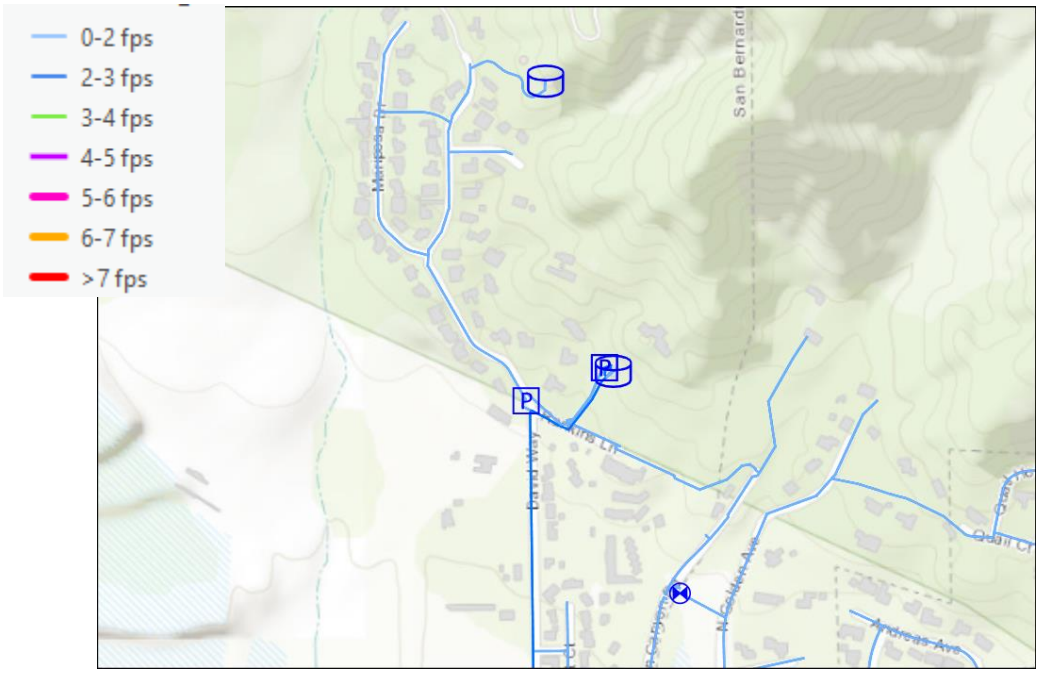

Figure 5-5: Maximum Velocity – Existing

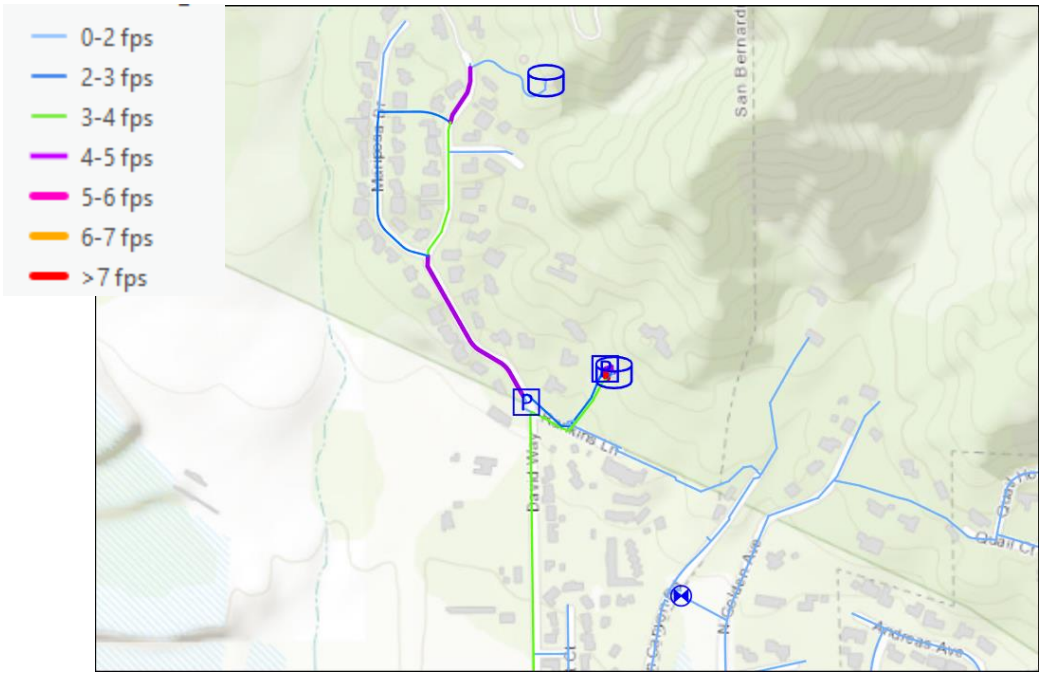

Figure 5-6: Maximum Velocity – with AHS

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6. Fire Flow

6.1 Available Fire Flow

With the additional AHS demands and the proposed Ridgeview Pump Station improvements and pipeline improvements identified in the Kimley Horn Report modeled, the changes in available fire flow are insignificant. Decreases in fire flow availability are seen in adjacent zones; although, the available fire flow decrease is either by negligible amount, or there is still ample available fire flow. Figure 6-1 illustrates the fire flow summary, with green indicating an increase of available fire flow and red indicating a decrease in available fire flow.

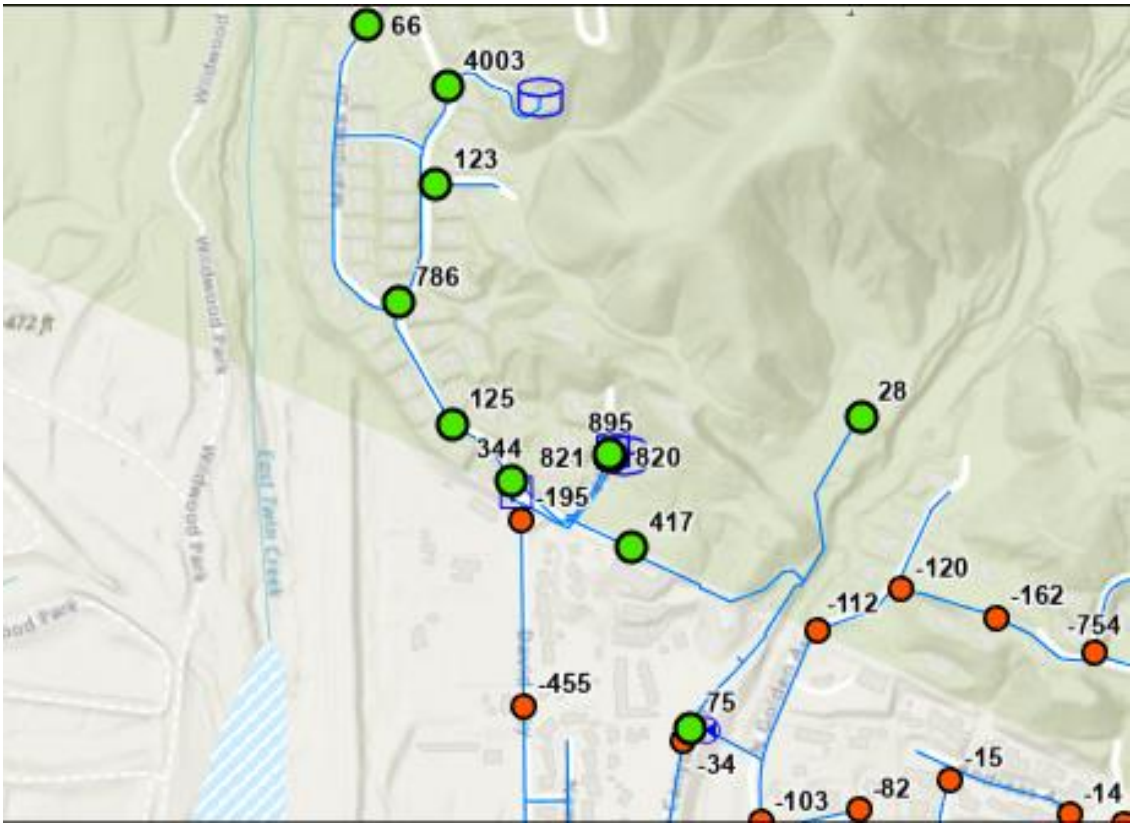

Figure 6-1: Change in Available Fire Flow with AHS

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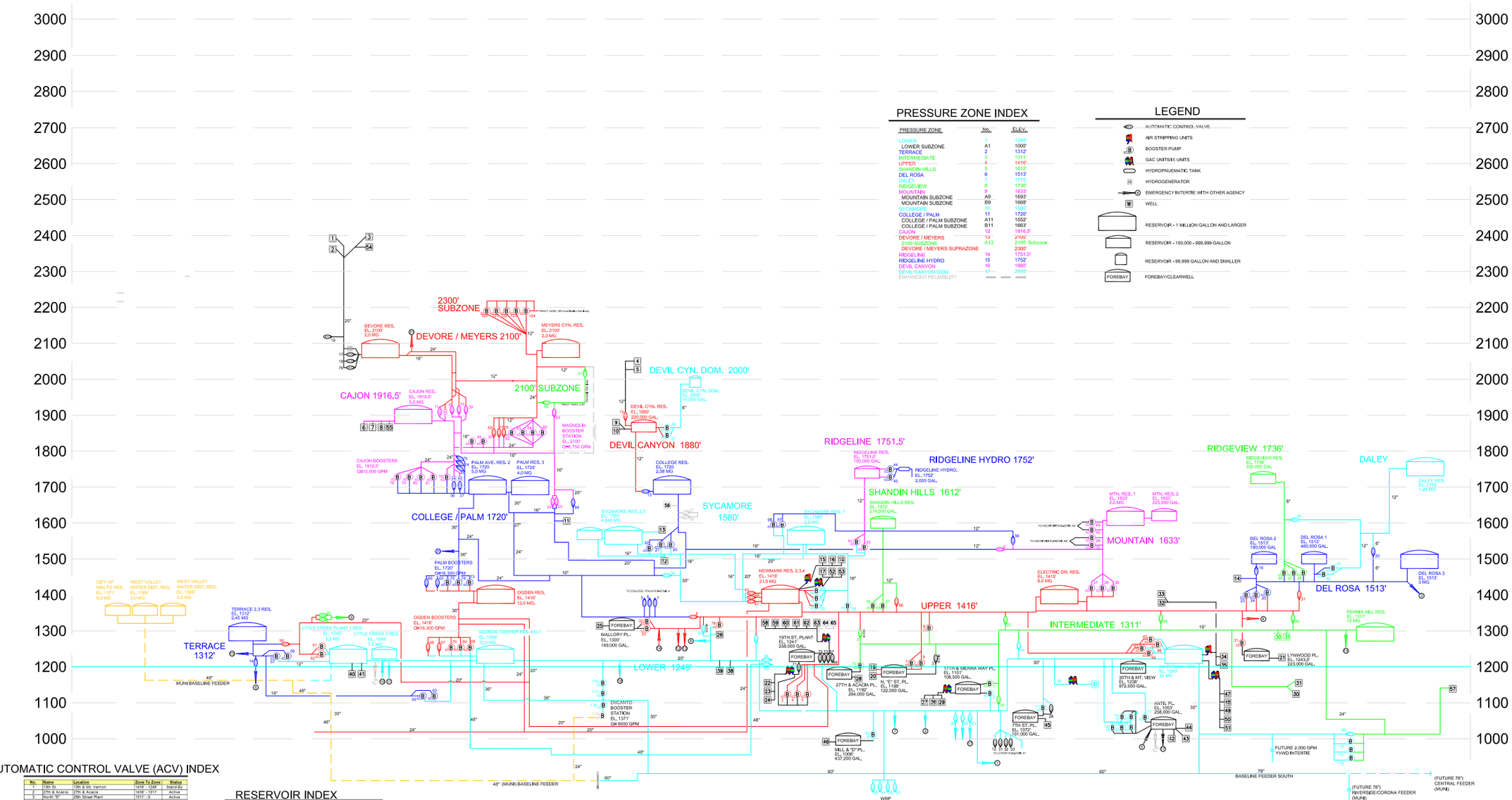
7. Conclusion and Summary

A system evaluation was conducted for the proposed AHS development and the associated impact to SBMWD's system, based on a demand of 500 gpm and implementing proposed improvements identified in the Kimley Horn Report. The evaluation included an analysis of supply, storage, pumping, pressure, velocity, and fire flow. The analysis found that there was negligible impact to SBMWD's system related to pressure, velocity, and fire flow. However, the analysis found deficiencies in supply, pumping and storage as described further below.

- **Supply Analysis:** The analysis found the additional demand adds to the existing supply deficiency for the overall system by 0.72 MGD (500 gpm demand). This additional demand should be considered when evaluating future supply facilities for SBMWD's system.
- **Pumping Analysis:** The analysis found the additional demand creates a pumping deficiency in the Ridgeview Zone. The improvements identified in the Kimley Horn Report to upgrade the Ridgeview Pump Station to a firm capacity of 350 gpm are not sufficient to meet SBMWD's criteria. With the demand from AHS, the required firm capacity at Ridgeview Pump Station is a minimum of 874 gpm. It is recommended to upgrade the Ridgeview Pump Station to provide a minimum of 874 gpm firm capacity.
- **Storage Analysis:** The analysis found the additional demand creates a storage deficiency in the Ridgeview Pressure Zone. However, both system-wide and the adjacent pressure zones have an overall storage surplus. Based on implementing the pumping improvements to provide a minimum 874 gpm firm capacity at Ridgeview Pump Station and the storage surplus system-wide and in the adjacent zones, it is not required to construct additional SBMWD-owned storage based on the demand from AHS.

Appendix G: Water System Hydraulic Schematic

SBMWD SYSTEM SCHEMATIC



PRESSURE ZONE INDEX

PRESSURE ZONE	No.	ELEV.
LOWER	1	1249'
LOWER SUBZONE	A1	1000'
TERRACE	2	1312'
INTERMEDIATE	3	1311'
UPPER	4	1416'
SHANDIN HILLS	5	1612'
DEL ROSA	6	1513'
DALEY	7	1775'
RIDGEVIEW	8	1736'
MOUNTAIN	9	1633'
MOUNTAIN SUBZONE	A9	1693'
MOUNTAIN SUBZONE	B9	1668'
SYCAMORE	10	1580'
COLLEGE / PALM	11	1720'
COLLEGE / PALM SUBZONE	A11	1552'
COLLEGE / PALM SUBZONE	B11	1663'
CAJON	12	1916.5'
DEVORE / MEYERS	13	2100'
2100 SUBZONE	A13	2100' Subzone
DEVORE / MEYERS SUPRAZONE		2300'
RIDGELINE	14	1751.5'
RIDGELINE HYDRO	15	1752'
DEVIL CANYON	16	1880'
DEVIL CANYON DOM.	17	2000'
ENHANCED RELIABILITY		

LEGEND

- AUTOMATIC CONTROL VALVE
- AIR STRIPPING UNITS
- BOOSTER PUMP
- GAC UNITS/SX UNITS
- HYDROPNUEMATIC TANK
- HYDROGENERATOR
- EMERGENCY INTERTIE WITH OTHER AGENCY
- WELL
- RESERVOIR - 1 MILLION GALLON AND LARGER
- RESERVOIR - 100,000 - 999,999 GALLON
- RESERVOIR - 99,999 GALLON AND SMALLER
- FOREBAY/CLEARWELL

AUTOMATIC CONTROL VALVE (ACV) INDEX

No.	Name	Location	Zone To Zone	Status
1	13th St	13th & Mt. Vernon	1416' - 1249'	Stand-By
2	27th & Acacia	27th & Acacia	1416' - 1311'	Active
3	North Main	24th Street Plant	1311' - 0	Active
4	Berkley	55th & Berkley	1720' - 1633'	Active
5	Bond 1	S.W. Bond St. & Little Mtn. Dr.	1720' - 1523'	Active
6	Bond 2	S.W. Bond St. & Little Mtn. Dr.	1720' - 1523'	Active
7	Bond 3	S.W. Bond St. & Little Mtn. Dr.	1523' - 0'	Active
8	Cajon & Penn	Cajon Blvd and Pennsylvania Ave	1920' - 1416'	Inactive
9	Cajon 1	N. of Generator Bldg. Cajon Plant	2100' - 1916'	Active
10	Cajon 2	N. of Generator Bldg. Cajon Plant	2100' - 1916'	Active
11	Cajon 3	Cajon Generator Bypass	2100' - 1916'	Active
12	Cleveger	Cleveger & Central	1840' - 1760'	Inactive
13	D.C.	N.W. College Reservoir	1680' - 1720'	Active
14				
15	D.C. Reservoir	Devil Canyon Reservoir	1880' -	Active
16	Del Rosa 1	Del Rosa 2 Reservoir	1529' - 1513'	Active
17	Devore 1	S. Devore Generator Bldg.	2300' - 2100'	Active
18	Devore 2	S. Devore Generator Bldg.	2300' - 2100'	Active
19				
20	Echo	1645 Echo	1775' - 1513'	Inactive
21	Eureka	N.W. Eureka & Del Rosa	1513' - 1416'	Stand-By
22	Harrison	42nd & Harrison Canyon	1775' - 1736'	Stand-By
23	Highland	N.W. Highland & "D" St.	1416' - 1311'	Active
24	Industrial 1	5545 W. Industrial	1916' - 1720'	Active
25	Industrial 2	5545 W. Industrial	1916' - 1720'	Active
26				
27				
28	7th St. Plant		1249' - 0	Inactive
29				
30	Mt. View	S.W. Mt. View & Riverview	1249' -	Inactive
31	Norman 3	Norman & Waterman	1249' - 1141'	Active
32	Norman 4	Norman & Waterman	1249' - 1141'	Active
33	Norman 5	Norman & Waterman	1249' - 1141'	Active
34	Northpark	S.W. Northpark & University	1720' - 1580'	Active
35	Palm 1	Palm Plant In Vault	1916' - 1720'	Stand-By
36	Palm 2	Generator Building/Bypass	1916' - 1720'	Active
37	Palm 3	Generator Building/Bypass	1916' - 1720'	Active
38	Rialto Intertie	N.W. Corner Pepper & Etiwanda	1416' - Rialto	Intertie
39	Rialto Intertie	N.W. Corner Pepper & Etiwanda	1416' - Rialto	Intertie
40				
41				
42				
43	Sierra Way	17th & Sierra Way Plant	1311' - 1249'	Inactive
44	Sycamore 1	South Side Newmark Plant	1580' - 1416'	Inactive
45	Sycamore 2	South Side Newmark Plant	1580' - 1416'	Inactive
46	Sycamore 3	South Side Newmark Plant	1580' - 1416'	Inactive
47	Terrace Elev.	Booster Pedestal Lytle Creek Plant	1312' - 1311'	Stand-By
48	Valencia	2616 Valencia	1416' - 1311'	Active
49	WRP 1	North of Maint. Shop in Plant	1249' - 1203'	Intertie
50	WRP 2	North of Maint. Shop in Plant	1249' - 1203'	Intertie
51	WRP 3	North of Maint. Shop in Plant	1249' - 1203'	Intertie
52	WRP 4	Century Road at Gate of Plant	1249' - 1203'	Intertie
53	Zuniga	D.C. #1	1720' - 1576'	Active
54	Baseline Blend	Baseline and California	1416' - 1249'	Active
55	39th	39th & Mayfield	1720' - 1633'	Stand-By
56	Proposed		1680' - 1720'	Active
57	Proposed		1680' - 1720'	Active
58				
59	Perimeter	Perimeter Booster Station	1311' - 1249'	Stand-By
60	TR18443 No	Belmont	2100' - 1928'	Active
61	TR18443 Ea	Magnolia and Irvington	2100' - 1928'	Active
62				
63				
64				
65	Ogden 1	Ogden Reservoir Site	1720' - 1416'	Inactive
66	Ogden 2	Ogden Reservoir Site	1720' - 1416'	Active
67	Medical Ctr 1	Medical Center Reservoir Site	1416' - 1249'	Active
68	Medical Ctr. 2	Medical Center Reservoir Site	1416' - 1249'	Active
69	Orvis Ave.	Orvis Avenue	2100' - 1916'	Inactive
70	17th Street	17th & Sierra Way Plant	1311' - 1249'	Inactive
71	19th 1	19th Street Plant	1249' - 1241'	Active
72	19th 2	19th Street Plant	1292' - 1241'	Active
73	19th 3	19th Street Plant	1292' - 1241'	Active
74	Palm 4	Generator Building/Bypass	1916' - 1720'	Active
75	Palm 5	Generator Building/Bypass	1916' - 1720'	Active
76	Devore 4	Generator Building	2300' - 2100'	Active
77	Magnolia 1	Magnolia Booster	2100' - 1916'	Active
78	Magnolia 2	Magnolia Booster	1916' - 0	Active
79				
80				
81				
82				
			Sub-Zone	
83	Irvington	Irvington and Escene	2100' - 1916'	Stand-By
84	Irvington 2	Irvington and Pine	1916' - 1720'	Stand-By
85	Hermosa	Harrison and 27th	1416' - 1311'	Stand-By
86	Beverly Drive	Beverly Dr north of Edgehill Dr	1612' - 1416'	Active
87	19th 4	19th Street Plant	1250' - 1241'	Active
88	19th 5	19th Street Plant	1250' - 1241'	Active

RESERVOIR INDEX

Zone / Plant	Elevation	Capacity MG	Dimensions (L x W x H)	High Level	Low Level	Operating Level	Type Const
Lower Pressure Zone							
Lytle Creek No. 1	1249'	3.500	195x195'x18'	14	0	11	Concrete
Lytle Creek No. 2	1249'	7.500	234'x234'x18'	14	0	11	Concrete
Waterman Ave.	1249'	10.000	234'x234'x18'	14.5	0	11	Concrete
Medical Ctr. Dr.	1249'	12.000	307'x 83' Dia.	19	4	16	Concrete
Terrace Pressure Zone							
Terrace No. 2	1312'	1.100	97'-6 x 97' Dia.	32	12	28	Steel Tank
Terrace No. 3	1312'	2.500	145'-6 x 98' Dia.	32	12	28	Steel Tank
Intermediate Pressure Zone							
Perris Hill (Zero)	1311'	10.000	245'x245'x30'	28	16.5	24	Concrete
Upper Pressure Zone							
Newmark No. 2	1416'	7.500	234'x234'x18'	14	7	16	Concrete
Newmark No. 3	1416'	7.500	234'x234'x18'	14	7	16	Concrete
Newmark No. 4	1416'	5.000	234'x234'x14'	10	3	12	Concrete
Electric Dr.	1410'	6.000	240'x240'x20'	20	11	14	Concrete
Ogden	1416'	12.000	274'x 274' Dia.	23	5	19	Concrete
Shandin Hills Pressure Zone							
Shandin Hills	1612'	0.219	80'x80'x12'	11	6	10	Concrete
Del Rosa Pressure Zone							
Del Rosa No. 1	1513'	0.460	68'-6 x 68' Dia.	33	17	25	Steel Tank
Del Rosa No. 2	1513'	0.130		18	3	12	Steel Tank
Del Rosa No. 3	1513'	3.000	97'-4 x 98' Dia.	28	5	22	Steel Tank
Daley Canyon Pressure Zone							
Daley Canyon	1775'	1.500	134'x90'x18'	13.5	6	11	Concrete
Ridgeview Pressure Zone							
Ridgeview	1736'	0.330	52'-4 x 52' Dia.	29	12	18	Steel Tank
Mountain Pressure Zone							
Mountain No. 1	1633'	2.000	137'-4 x 137' Dia.	28	7	24	Concrete
Mountain No. 2	1633'	2.000	137'-4 x 137' Dia.	22	12	16	Steel Tank
Sycamore Pressure Zone							
Sycamore No. 1	1580'	2.500	137'-4 x 138' Dia.	38	17	26	Steel Tank
Sycamore No. 2,3	1580'	4.945	137'-4 x 138' Dia.	37	12	25	Steel Tank
College / Palm Pressure Zone							
Palm 2	1720'	5.000	137'-4 x 138' Dia.	22	12	18	Steel Tank
Palm 3	1720'	4.000	137'-4 x 138' Dia.	22	12	18	Steel Tank
College	1720'	2.580	137'-4 x 138' Dia.	29	13	22	Steel Tank
Cajon Pressure Zone							
Cajon	1916'	5.000	137'-4 x 138' Dia.	29	13	24	Steel Tank
Devore / Meyers Pressure Zone							
Devore	2100'	2.000	97'-4 x 98' Dia.	21	12	18	Steel Tank
Meyers Cyn.	2100'	2.000	97'-4 x 98' Dia.	21	12	18	Steel Tank
Ridgeline Pressure Zone							
Ridgeline	1751.5'	0.150	67'x 59' Dia.				
Ridgeline Hydro	1752'	0.001	12' x 4' Dia.	NA	NA	NA	Steel Tank
Devil Canyon Pressure Zone							
Devil Canyon	1880'	0.220	76' x 42' x 13'	10	5	8	Concrete
Devil Cyn Dom.	2017'	0.001	8'W x 8' Dia.	7.5	4	6	Steel Tank

FOREBAY INDEX

Zone / Plant	Elevation	Capacity MG	Dimensions (L x W x H)	High Level	Low Level	Operating Level	Type Const
Forebays in the Lower Pressure Zone							
Mill & "D"	1003'	0.431"	150'x90'x12'	10	4	9	Concrete
19th Street	1252'	0.500	137'-4 x 138' Dia.	12	4.5	9	Concrete
No. "E" Street	1192'	0.150	137'-4 x 48' Dia.	8.5	4.5	6.5	Concrete
17th & Sierra Way	1364'	0.106	47x27x12.5'	11.5	5.5	8.5	Concrete
Forebays in the Intermediate Pressure Zone							
27th & Acacia	1192'	0.257	89'x51.8'x12'	10.5	6.5	9	Concrete
Forebays in the Upper Pressure Zone							
Lynwood	1243'	0.223	137'-4 x 62' Dia.	9	3.5	6	Concrete
No. "E" (29th St.)	1169'	0.122	137'-4 x 52' Dia.	NA	NA	NA	Concrete
30th & Mt. View	1236'	0.972	137'-4 x 137' Dia.	29	12	24	Steel Tank
Mill Street	1241'	0.258	137'-4 x 73' Dia.	13.5	4	11	Concrete

WELL INDEX

WELL NO.	NAME OF WELL	PRESSURE ZONE	AVG. SUMMER CAPACITY (GPM)
	CAJON ZONE		
6	CAJON NO. 1	1913'	INACTIVE
7	CAJON NO. 2	1913	609
8	CAJON NO. 3	1913	702
58	CAJON NO. 4	1913	1,225
	DEVIL CANYON DOMESTIC ZONE		
4	D.C. NO. 6	2041	240
5	D.C. NO. 7	2041	209
	DEVIL CANYON ZONE		
9	D.C. NO. 3	1880	560
10	D.C. NO. 4	1880	87
	COLLEGE ZONE		
11	D.C. NO. 2	1720	995
56	FUT. CAMPUS PKWY WELL	1720	TBD
	DEL ROSA ZONE		
14	407TH & VALENCIA	1513	INACTIVE
	DEVORE ZONE		
1	CAJON CANYON	2100	667
2	VINCENT	2100	1,391
3	KENWOOD #1	2100	792
54	KENWOOD #2	2100	1,500
66	KENWOOD #3 (FUTURE)	2100	2,000
	INTERMEDIATE ZONE		
*27	17TH STREET #1	1312	INACTIVE
* 28	27TH & ACACIA	1312	756
29	17TH STREET #2	1312	INACTIVE
30	PERRIS HILL NO. 4	1312	INACTIVE
31	PERRIS HILL NO. 5	1312	INACTIVE
	RIDA UPPER		
57	RIDA WELL # 11	1294	INACTIVE
	LOWER ZONE		
*26	BASELINE & CALIFORNIA	1416	564
*32	31ST & MT. VIEW	1249	1,738
*33	30TH & MT. VIEW	1249	2,379
*34	LEROY	1249	2,488
*35	WATERMAN	1249	1,753
*36	16TH STREET	1249	2,290
*37	GILBERT	1249	2,700
38	10TH & E	1249	2,536
39	ARTS & GARNER	1249	2,400
40	LYTLE CREEK NO. 1	1249	INACTIVE
41	LYTLE CREEK NO. 2	1249	2,267
42	ANTIL NO. 1	1249	INACTIVE
43	ANTIL NO. 2	1249	INACTIVE
44	7TH STREET	1249	INACTIVE
46	MILL & "D"	1249	316
*47	EPA-1	1249	1,255
*48	EPA-2	1249	1,074
*49	EPA-3	1249	1,753
*50	EPA-4	1249	1,301
*51	EPA-5	1249	1,346
*52	EPA-105	1249	1,483
*59	EPA-1065	1249	603
*60	EPA-106	1249	267
*61	EPA-107	1249	1,788
*62	EPA-110	1249	1,755
*63	EPA-112	1249	1,048
64	EPA-1095 (FUTURE)	1249	600
65	EPA-1125 (FUTURE)	1249	600
	SYCAMORE ZONE		
12	D.C. NO. 1	1580	1,268
13	D.C. NO. 5	1580	583
	UPPER ZONE		
* 15	NEWMARK NO. 1	1415	961
* 16	NEWMARK NO. 2	1415	1,379
* 17	NEWMARK NO. 3	1415	974
* 18	NEWMARK NO. 4	1415	1,764
* 19	No. "E" STREET	1415	INACTIVE
* 20	23RD STREET	1415	INACTIVE
* 21	LYNWOOD	1415	2,121
* 22	MT. VERNON	1415	1,989
* 23	19TH ST. NO. 1	1415	INACTIVE
* 24	19TH ST. NO. 2	1415	1,255
* 25	MALLORY	1415	588
* 52	EPA-6	1415	482
* 53	EPA-7	1415	1,074

* NOTE WELLS SHOWN W/ * ARE CONTAMINATED AND CURRENTLY RECEIVE WELLHEAD TREATMENT.

PUMP/BOOSTER STATION INDEX

No.	Name	Location	Stds.	HP	Zone To Zone	Status
1	16th Street	17th & Sierra Way Plant	2582	125	1151' - 1311'	Active
2	17th Street	17th & Sierra Way Plant	2582	125	1151' - 1249'	Active
3	19th Street 1	19th Street Plant Site	3197	150	1241' - 1416'	Active
4	19th Street 2	19th Street Plant Site	1890	100	1241' - 1416'	Active
5	19th Street 3	19th Street Plant Site	3065	200	1241' - 1416'	Active
6	19th Street 4	19th Street Plant Site	2533	200	1241' - 1416'	Active
64	19th Street 5	19th Street Plant Site	3000	200	1198' - 1416'	Active
7	25th and "E" 1	"E" St. So.in 25th St	2177	150	1198' - 1416'	Inactive
8	25th and "E" 2	"E" St. So.in 25th St	1081	75	1198' - 1416'	Stand-By
9	25th and "E" 3	"E" St. So.in 25th St	514	75	1198' - 1416'	Inactive
10	27th Street	27th & Acacia Plant	1337	75	1192' - 1311'	Active
11	7th Street	N/o 7th St. W/o Waterman Ave.	3461	250	1072' - 1249'	Inactive
12	Antil	Antil Plant - 6th Street	2375	150	1053' - 1249'	Active
13	Antil	Antil Plant - 6th Street	2951	200	1053' - 1249'	Active
14	Antil	Antil Plant - 6th Street	2624	200	1053' - 1249'	Inactive
15	Antil DL	Antil Plant - 6th Street	2250	125	1053' - 1249'	Inactive
16	Antil FM	Antil Plant - 6th Street	1728	100	1053' - 1249'	Inactive
17	Antil PAC	Antil Plant - 6th Street	N/A	40	1053' - 1249'	Inactive
18	Baseline & California	Baseline St. & California St.	1895	150	1249' - 1416'	Stand-By
19						
20	College 1	NorthPark Blvd. W/o Univ. Pkwy.	2125	150	1576' - 1720'	Active
21	College 2	NorthPark Blvd. W/o Univ. Pkwy.	2169	100	1576' - 1720'	Active
22	College 3	University Parkway	3000	200	1576' - 1720'	Active
23	Del Rosa 1	40th and Valencia	1846	60	1415' - 1513'	Active
24	Del Rosa 2	40th and Valencia	1794	60	1415' - 1513'	Active
25	Del Rosa 4	40th and Valencia	1300	60	1415' - 1513'	Active
26	Devil Canyon Dom. 1	Devil Canyon Road South of DWR	117	15	1880' - 2011'	Active
27	Devil Canyon Dom. 2	Devil Canyon Road South of DWR	117	15	1880' - 2011'	Active
28						
29	Hill Drive	Hill Drive and Mountain View Ave.	402	15	1633' - 1668'	Active
30	Hill Drive #2	Hill Drive and Mountain View Ave.	402	15	1633' - 1668'	Active
31	Lynwood	Lynwood East of Valencia	2753	200	1243' - 1311'	Active
32	Mallory 1	Mallory Street West of Duffy	469	15	1300' - 1416'	Active
33	Mallory 2	Mallory Street West of Duffy	469	20	1300' - 1416'	Active
34	Meyers Canyon 1	Little League Drive East of I-215	1448	100	1916' - 2100'	Inactive
35	Meyers Canyon 2	Little League Drive East of I-215	1448	100	1916' - 2100'	Inactive
36	Mill & D Street	Mill & "D" Park Site - "D" Street	1018	100	1009' - 1249'	Active
37	Mountain 1	Electric Drive North of Northpark	795	60	1416' - 1633'	Active
38	Mountain 2	Electric Drive North of Northpark	784	60	1416' - 1633'	Active
39	Mountain 3	Electric Drive North of Northpark	1623	150	1416' - 1633'	Active
40	Oatey 1	Shahen Drive North of Bonita Vista	540	50	1513' - 1781'	Active
41	Oatey 2	Shahen Drive North of Bonita Vista	508	60	1513' - 1781'	Active
42	Ridgeline Lower 1	Ridgeline Dr/Elo Shandin Hills Cir (Halfway up the hill)	747	50	1580' - 1751'	Active
43	Ridgeline Lower 2	Ridgeline Dr/Elo Shandin Hills Cir (Halfway up the hill)	784	50	1580' - 1751'	Active
44	Ridgeline Upper 1	Ridgeline Drive at the Res. Site	111	7.5	1751' - 1843'	Active
45	Ridgeline Upper 2	Ridgeline Drive at the Res. Site	131	7.5	1751' - 1843'	Active

No.	Name	Location	Stds.	HP	Zone To Zone	Status
46	Ridgeview 1	North Deord Way and Hill Drive	424	40	1513' - 1736'	Inactive
47	Ridgeview 2	Del Rosa No. 2 Reservoir Site	240	20	1513' - 1736'	Active
48	Ridgeview 3	Del Rosa No. 2 Reservoir Site	178	15	1513' - 1736'	Active
49	Sepulveda	Sepulveda Ave. & Hill Dr.	567	15	1633' - 1693'	Active
50	Sepulveda #2	651 Sepulveda Ave. & Hill Dr.	567	15	1633' - 1693'	Active
51	Shandin Hill 1	Circle Road and G Street	300	25	1416' - 1612'	Active
52	Shandin Hill 2	Circle Road and G Street	300	25	1416' - 1612'	Active
53	Sycamore 2	Newmark Plant Site - 48th Street	1880	199	1416' - 1580'	Active
54	Sycamore 3	Newmark Plant Site - 48th Street	1896	199	1416' - 1580'	Active
55	Sycamore 4	Newmark Plant Site - 48th Street	3359	200	1416' - 1580'	Active
56	Sycamore 1	Newmark Plant Site - 48th Street	3416	200	1416' - 1580'	Active
57	Terrace 1	Lytle Creek Plant Site	1822	40	1249' - 1312'	Active
58	Terrace 2	Lytle Creek Plant Site	1846	40	1249' - 1312'	Active
59	Terrace 3	Foothill Blvd. & Rancho Ave.	1821	75	1249' - 1312'	Active
60	Terrace 4	Foothill Blvd. & Rancho Ave.	1708	75	1249' - 1312'	Active
61						
62						
63	Waterman 1	Waterman Reservoir Site	3443	125	1249' - 1416'	Active
64	Waterman 2	Waterman Reservoir Site	2767	150	1249' - 1416'	Active
65	Waterman 3	Waterman Reservoir Site	2227	125	1249' - 1416'	Active
66	Waterman 4	Waterman Reservoir Site	2162	125	1249' - 1416'	Active
67						
68	Ogden 1	Medical Center Reservoir Site	4075	250	1249' - 1416'	Active
69	Ogden 2	Medical Center Reservoir Site	4075	250	1249' - 1416'	Active
70	Ogden 3	Medical Center Reservoir Site	4075	250	1249' - 1416'	Active
71						
72	Palm 1	Ogden Reservoir Site	4075	450	1416' - 1720'	Active
73	Palm 2	Ogden Reservoir Site	4075	450	1416' - 1720'	Active
74	Palm 3	Ogden Reservoir Site	4075	450	1416' - 1720'	Active
75						
76						
77	Cajon 2	Palm Plant	3000	300	1720' - 1916'	Active
78	Cajon 3	Palm Plant	3000	300	1720' - 1916'	Active
79	Cajon 4	Palm Plant	3000	300	1720' - 1916'	Active
81	Cajon 5	Palm Plant	3500	300	1720' - 1916'	Active
82	Meyers Booster 3	Magnolia Booster Station	2500	200	1916' - 2100'	Active
83	Meyers Booster 4	Magnolia Booster Station	2500	200	1916' - 2100'	Active
84	Meyers Booster 5	Magnolia Booster Station	2500	200	1916' - 2100'	Active
85	Meyers Booster 6	Magnolia Booster Station	2500	200	1916' - 2100'	Active
86						
87						
88						
89						
90						
91						

No.	Name	Location	Stds.	HP	Zone To Zone	Status
92						
93						
94						
95						
96						
97	College 4	Sycamore Reservoir 1	1100	75	1580' - 1720'	In-place
98	College 5	Sycamore Reservoir 1	1100	75	1580' - 1720'	In-place
99						
100						
101						
102						
103						
104						
105						
106						
107						
108						
109						
110	IVDA Perimeter Booster 1	22225 Perimeter Rd. San Bernardino	2200	75	1249' - 1311'	Stand-By
111	IVDA Perimeter Booster 2	22225 Perimeter Rd. San Bernardino	2200	75	1249' - 1311'	Stand-By
112	IVDA Perimeter Booster 3	22225 Perimeter Rd. San Bernardino	1800	100	1249' - 1311'	Stand-By
113						
114						
115						
116	Encanto 1	Encanto Park (9th & Davidson)	2500	125/1249'	V/D	Active
117	Encanto 2	Encanto Park (9th & Davidson)	2500	125/1249'	V/D	Active
118	Encanto 3	Encanto Park (9th & Davidson)	2500	125/1249'	V/D	Active
119						
120	Melvin Booster 1	Melvin Booster Station	90	7.5/1200'	2300'	Active
121	Melvin Booster 2	Melvin Booster Station	90	7.5/1200'	2300'	Active
122	Melvin Booster 3	Melvin Booster Station	90	7.5/1200'	2300'	Active
123	Melvin Booster 4	Melvin Booster Station	1200	60/1200'	2300'	Active
124	Melvin Booster 5	Melvin Booster Station	1200	60/1200'	2300'	Active
125						
126						
127						
128						
129						
130						
131						
132						
133						
134	



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