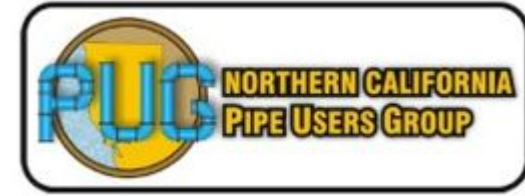


February 13, 2025

## Reducing Risk and Delivering Value:

Highlights and Lessons-Learned from 14 years of the WVSD Collection System Rehabilitation Program



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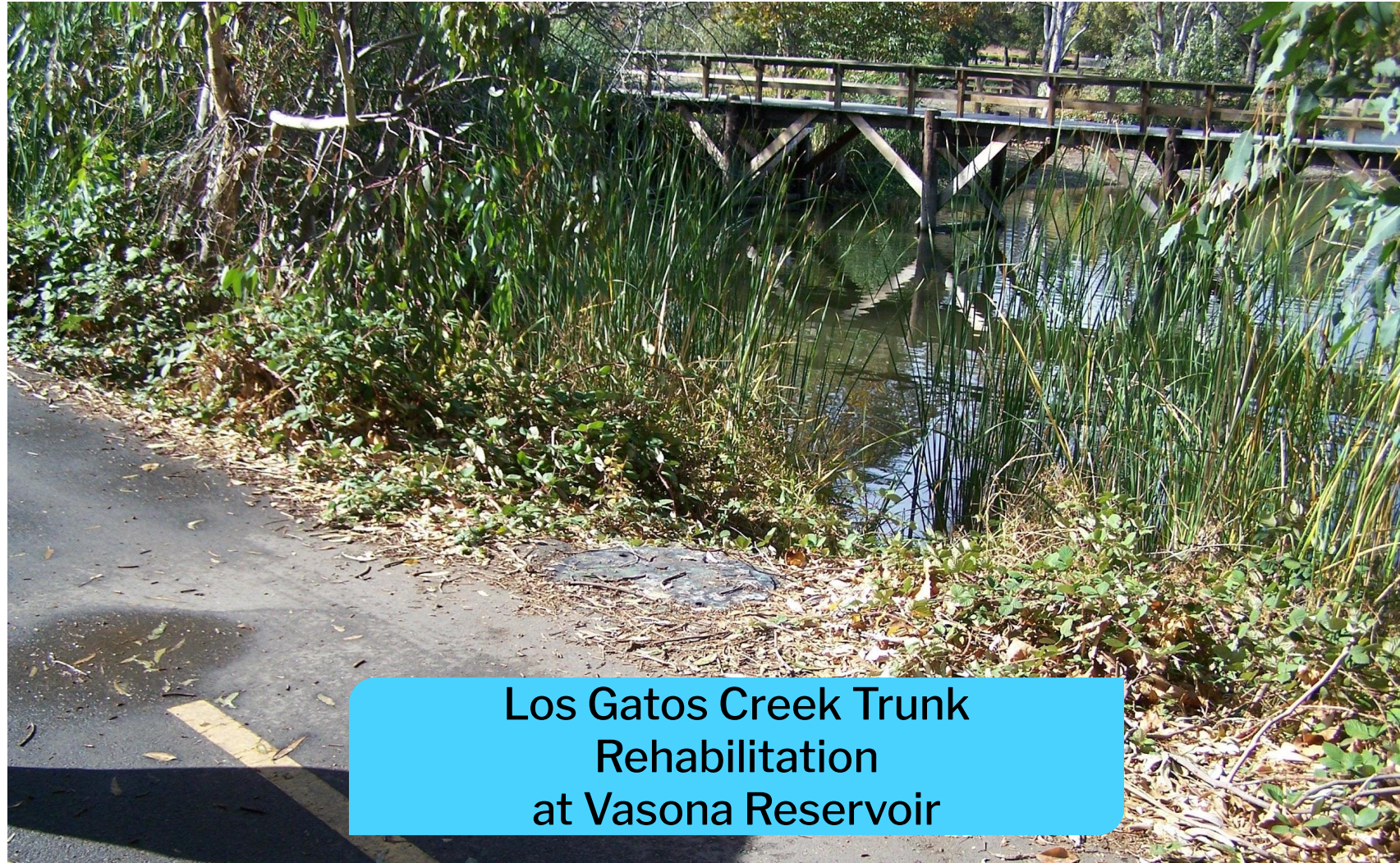
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# Agenda

- **WVSD Background**
- **Long-term Strategy to Improve System and Reduce Risk**
- **Project Implementation**
  - **Lessons Learned**
- **Program Critical Success Factors**





San  
Francisco

Oakland

San José-Santa Clara Regional Wastewater Facility

West Valley Sanitation District

- Average Dry Weather Flow of ~ 9.6 MGD
- Treated at San José-Santa Clara Regional Wastewater Facility

# West Valley Sanitation District

- Serves: Cities of Campbell, Los Gatos, Monte Sereno, portion of Saratoga and unincorporated areas of Santa Clara County
- Common collection system issues:
  - Heavy cleaning needed for siphons, roots/FOG, flat slopes
  - Corrosion in unlined ACP, RCP trunk sewers

# WVSD System



415 miles of  
mainline pipeline  
Average age of 48  
years; Oldest over  
100 years



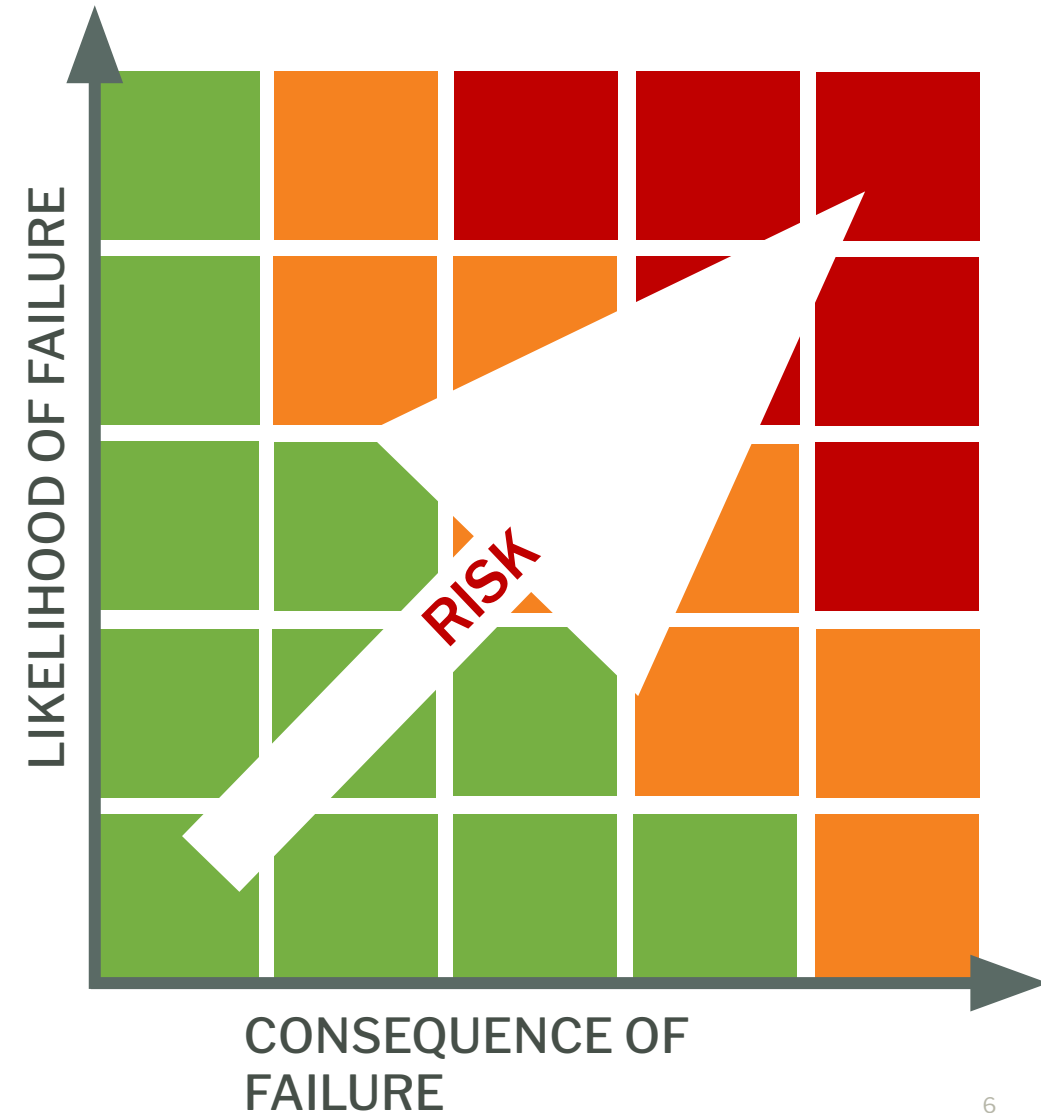
3- to 39-inch  
diameter pipe  
Materials: PVC,  
HDPE, VCP, DIP,  
RCP, ACP



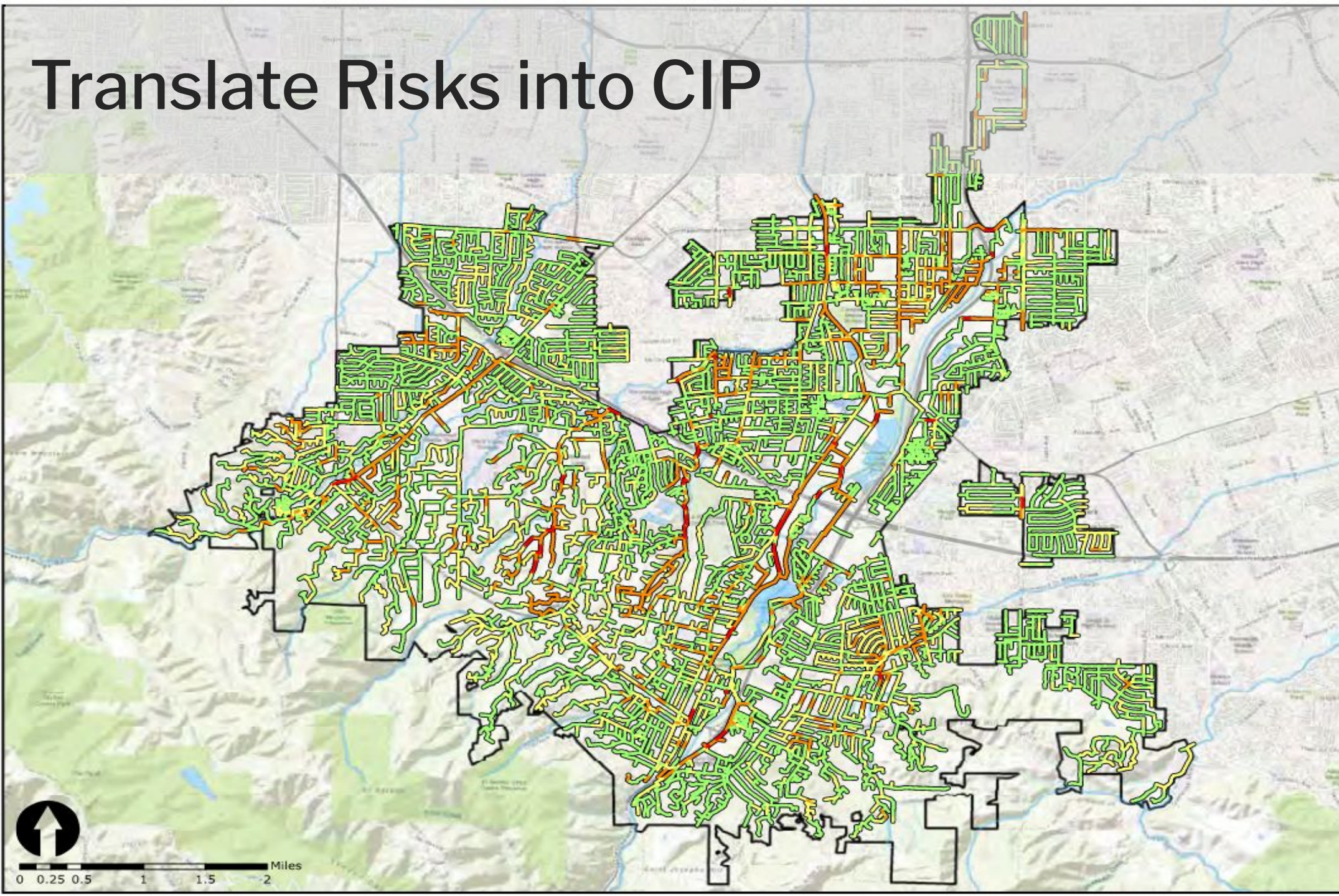
29,000/165 miles of  
lower sewer laterals

# Risk-Prioritization Model to Identify Capital Projects

- Long-term rehabilitation projects and short-term sewer repair contracts.
- Utilizes a risk-prioritization model to identify long term capital projects.
  - Likelihood of Failure (LOF): pipe condition, hydraulic capacity, maintenance history, stoppage/spill history
  - Consequence of Failure (COF): community and environmental impacts



# Translate Risks into CIP



## Legend

### Risk Score

- 1 to 13.99
- 14 to 26.99
- 27 to 44.99
- 45 to 100

### Other Features

- Waterway
- Waterbody
- District Boundary

**West Valley  
Sanitation District**

**2018 Sewer Risk  
Model Update**

**Figure A-9  
Risk Score**

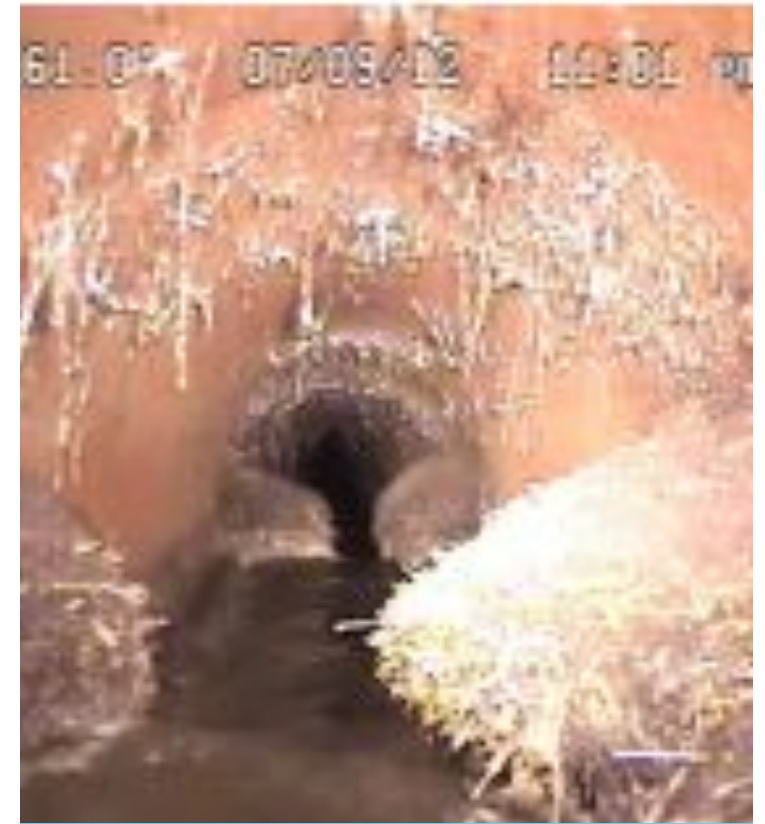
# Condition Assessment Refines Risk Model



**BROKEN PIPE**

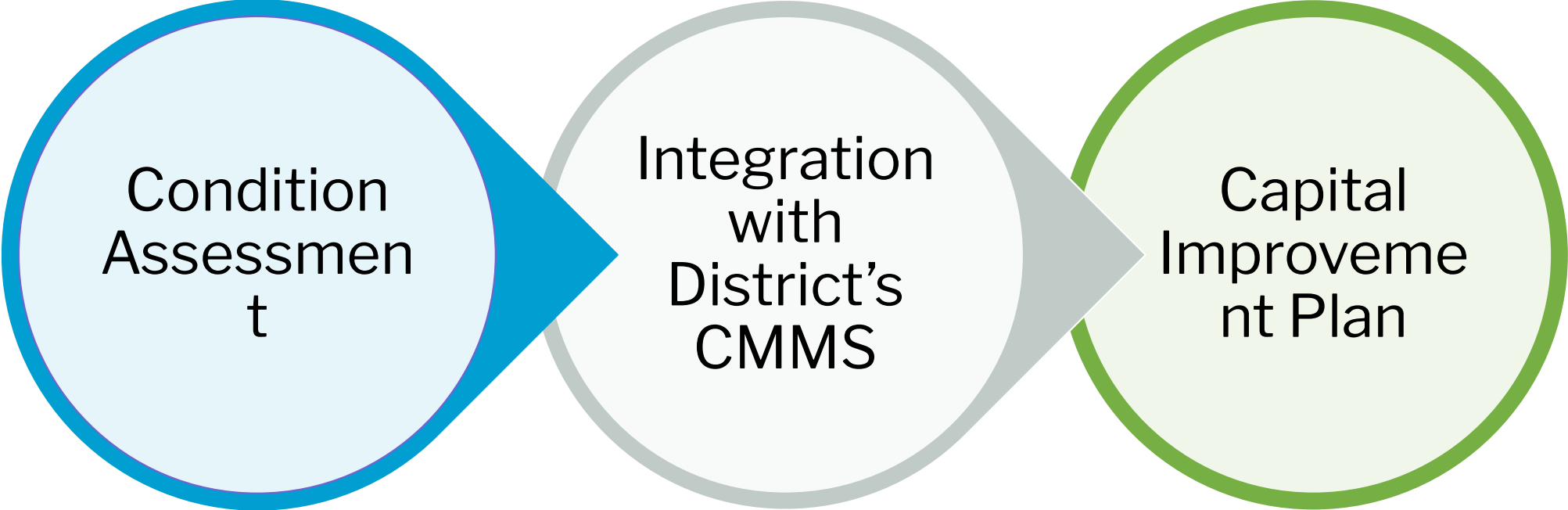


**ACP SPALLING**



**ROOT INTRUSION**

# Multi-Year Condition Assessment Program



- High Risk Inspections 2012 - 2019
- 120,000 lf & 450 MHs
- NASSCO PACP and MACP-compliant

- Identified structural and O&M defects.
- Updates to risk model

- Five CIP projects.
- Includes 42,000 lf of pipes
- Pipe diameter: 12- to 33-inches diameter

# Project Implementation Case Studies



**SAN TOMAS  
EXPRESSWAY**



**UNIVERSITY  
AVE**



**QUITO BASIN**

# San Tomas Expressway Trunk Sewer Improvements

- Trenchless Rehabilitation of 4,500 linear feet of 24-inch and 33-inch RCP
- Requires full bypass to complete rehabilitation and weekend/night work only
- 13 weeks for pipe rehabilitation work plus 4 weeks for manhole rehabilitation



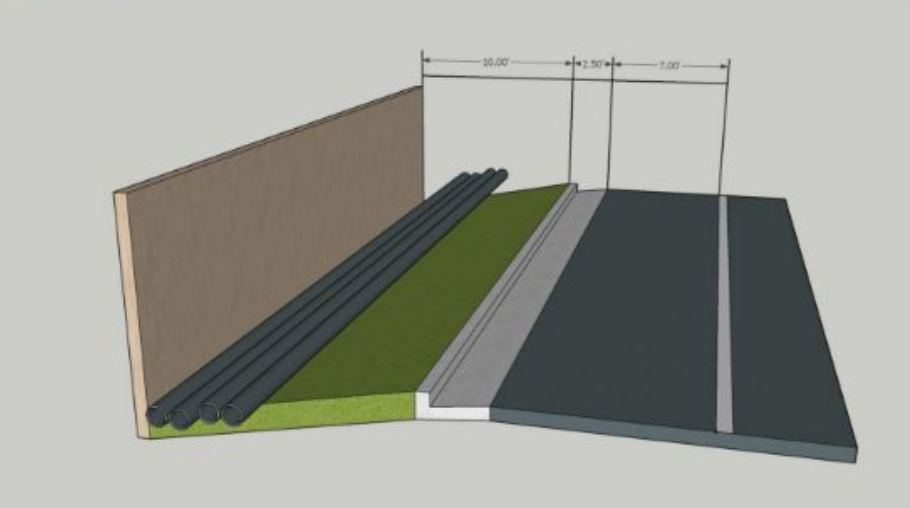
# Early and Close Design Coordination

- City of Campbell
  - Residential Area
- Valley Water
  - Groundwater Recharge Ponds
  - Canal System
  - Pump Station
- Santa Clara County
  - Night and evening work only
- Pre-encroachment permits were key
  - Defining work hours for bid
  - Expedite approvals



# Bypass Coordination and Negotiations

Bypass pipe is constructed of flexible, jointless fused HDPE to avoid obstructions like trees and poles. Pipes can be stacked or placed side by side. Number and size depends on contractor's means and methods but can range from two 10-inch diameter to three 8-inch diameter.



# San Tomas CIPP Construction Photos



# University Avenue Rehabilitation Project

- Trenchless Rehabilitation of 9,200 linear feet of 15-inch and 18-inch RCP
- Close coordination during design and construction
- Utilize existing in system diversions to reduce overland bypass
- Restricted hours due to high traffic area



# Maximize Active, In-System Bypass



SSMH 8-049-90  
PDWF: 0.384 MGD  
BYPASS FLOW FROM  
SOUTH 6" AND WEST 12"  
INLET PIPES

**Divert flow  
Eastward**

INSERT DOUBLE PLUG IN  
NORTH 12" OUTLET PIPE

BLOSSOM HILL RD

WINCHESTER BLVD

**CIPP  
Project**

SSMH 8-049-87

SSMH 8-049-85

SSMH 8-049-95

SSMH 8-048-89

SSMH 8-048-83

UNIVERSITY AVE  
SSMH 8-055-0

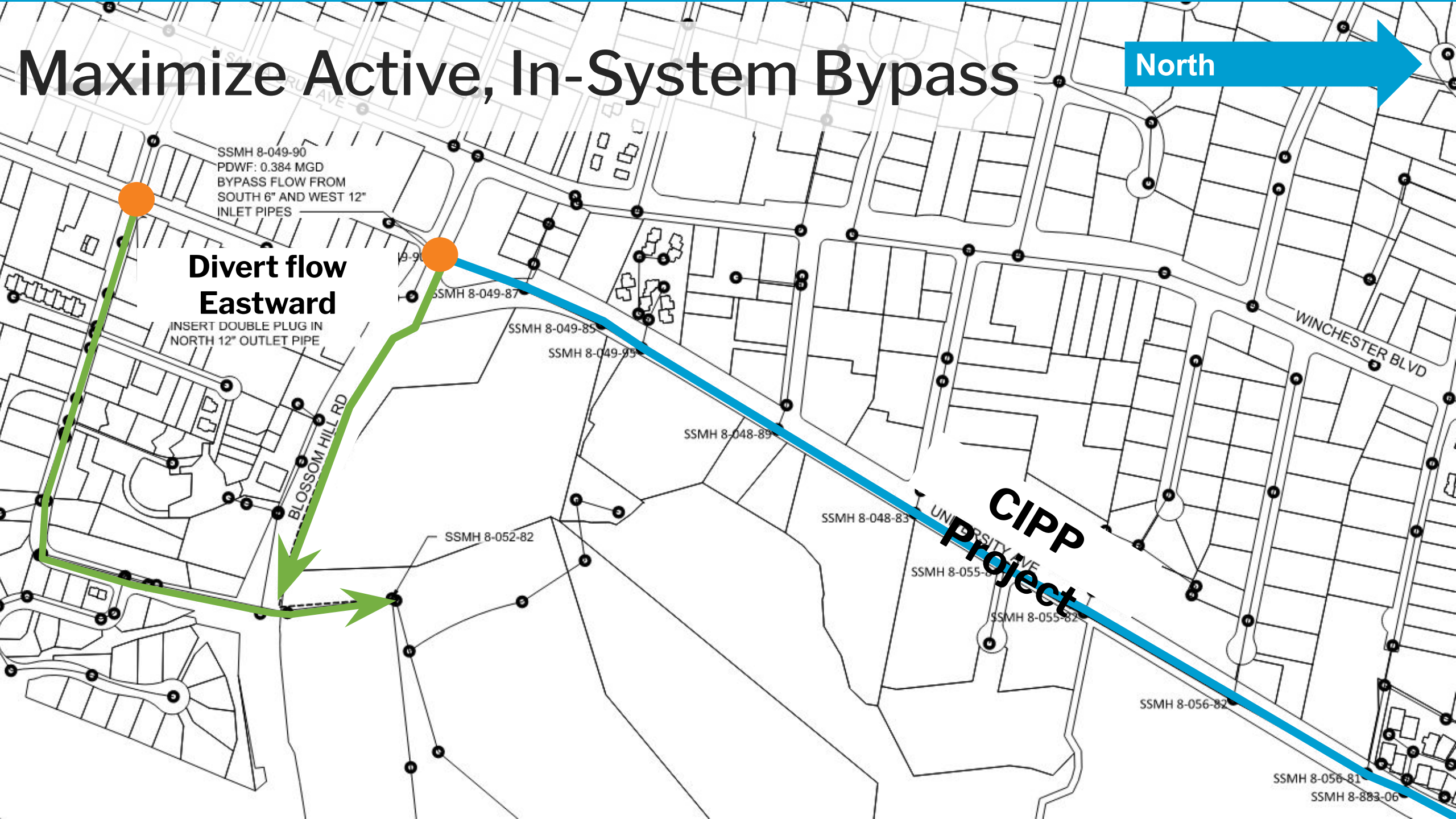
SSMH 8-055-82

SSMH 8-052-82

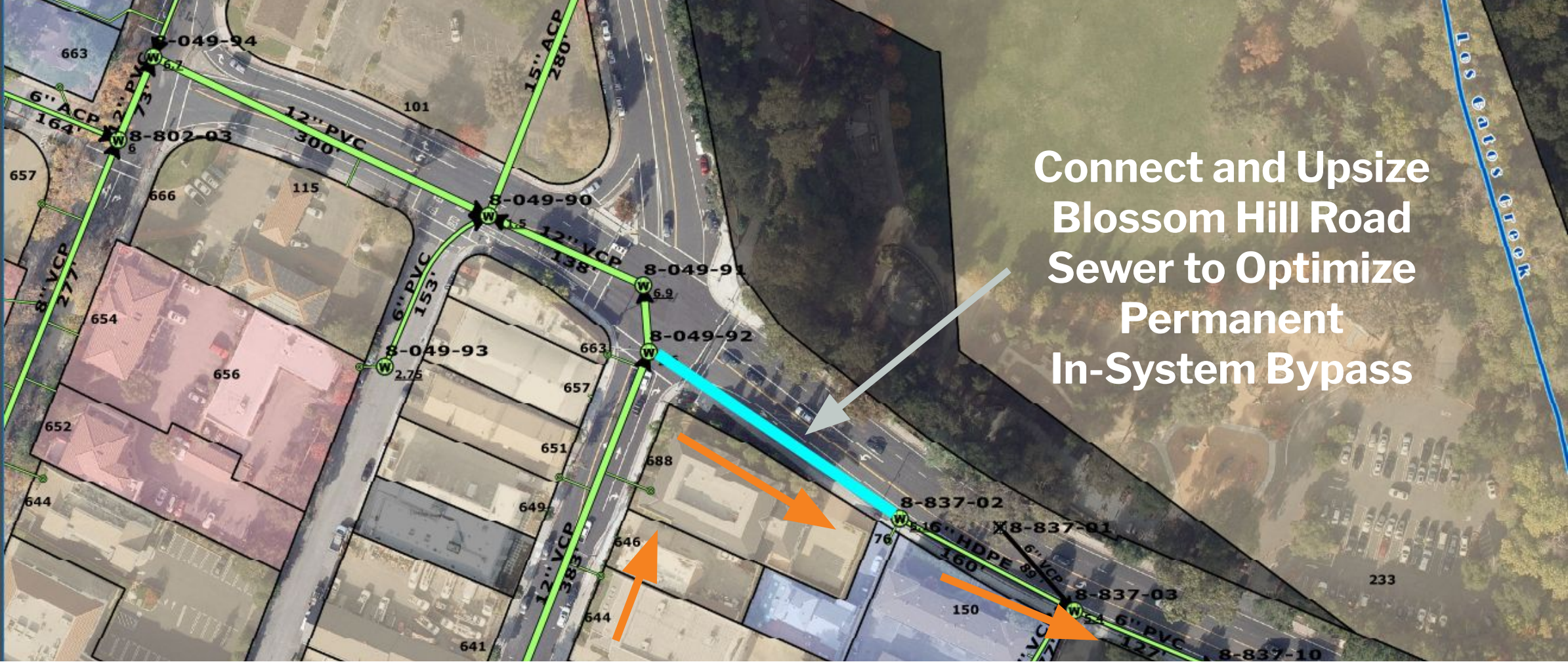
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SSMH 8-056-81

SSMH 8-883-06

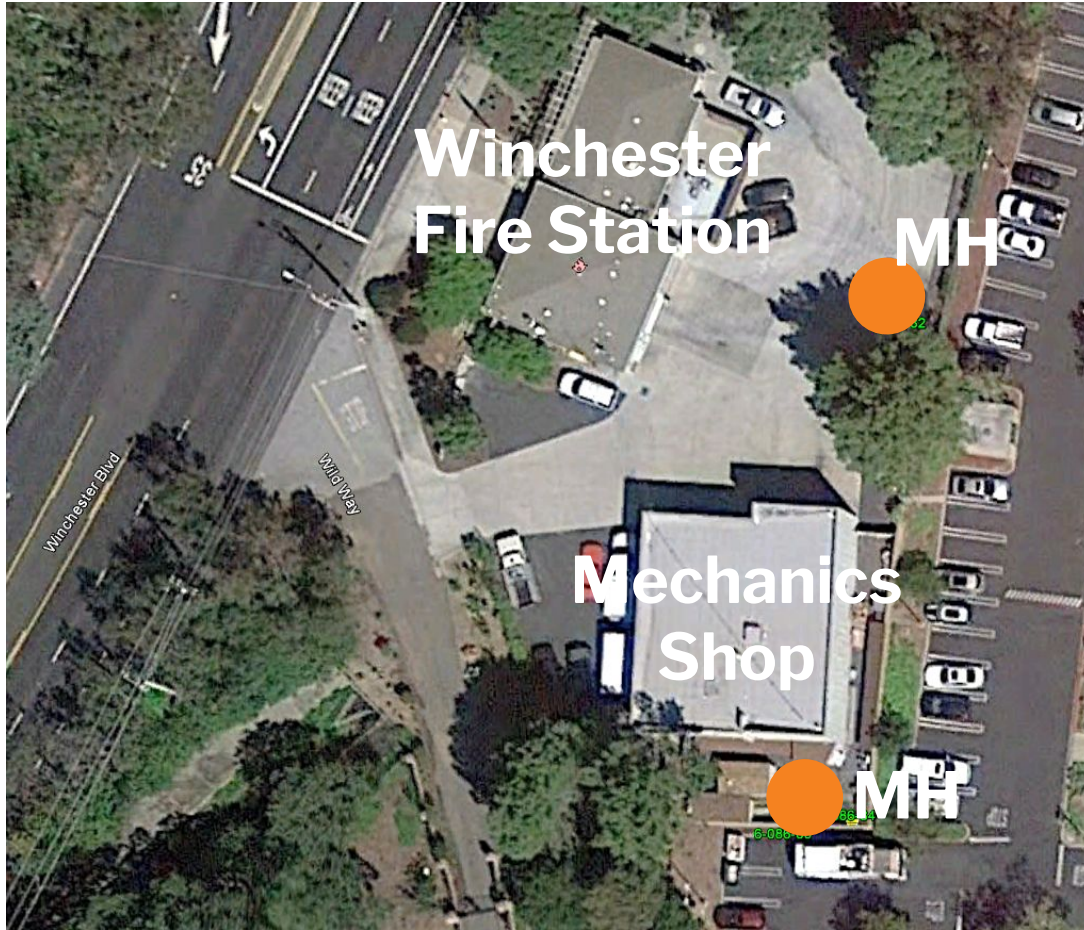


# University Avenue Bypass – Blossom Hill Road



Connect and Upsize Blossom Hill Road Sewer to Optimize Permanent In-System Bypass

# Winchester Fire Station Coordination



Plan View of Winchester Fire Station



Facing North at South End of Fire Station

# Winchester Fire Station Construction



# Quito Basin Improvement Projects

- Capacity, maintenance, structural improvements
- Risk reduction (SSOs and redundancy)

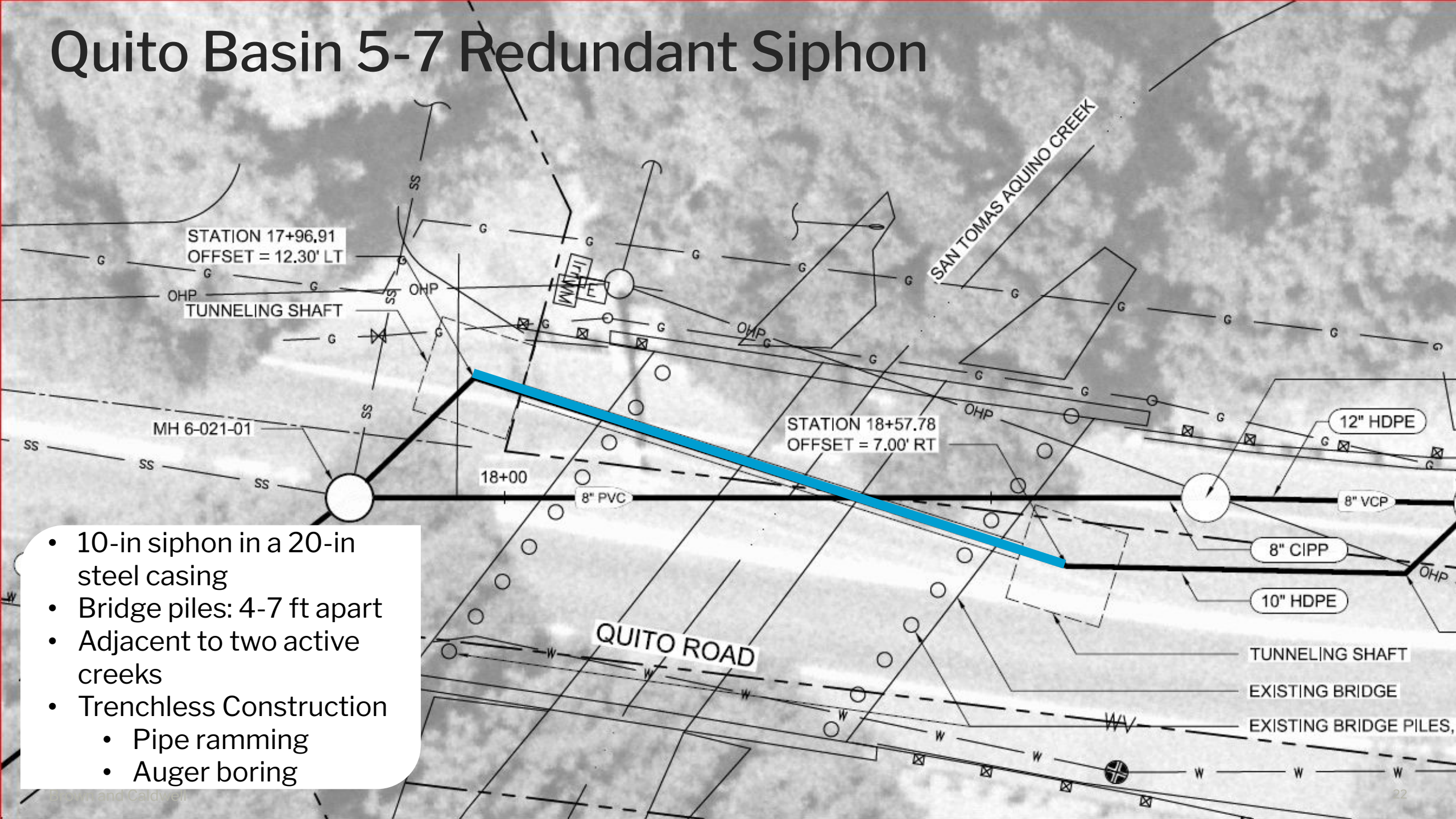
	Quito Basin 5 – 7	Quito Basin 3 – 4
Rehab/Replacement	Replacement/Upsize	Rehab/ Replacement/ upsize
Size	20,000 lf of 6- and 8-inch diameter	12,000 lf of 6- and 8-inch diameter
Materials	VCP	VCP, CIP, ACP
Construction Methods	Open cut, pipebursting, and CIPP	Open cut, pipebursting, and CIPP
Other Features	Redundant siphon	Relief sewer

# Quito Basin Improvement Projects – Key Components

- Residential; environmentally sensitive areas
- Smaller sewers; tight backyard easements; constructability challenges
- Largely trenchless construction
- Resident outreach and engagement
- Coordination with water district, permitting agencies, CEQA consultant, and contractor



# Quito Basin 5-7 Redundant Siphon



- 10-in siphon in a 20-in steel casing
- Bridge piles: 4-7 ft apart
- Adjacent to two active creeks
- Trenchless Construction
  - Pipe ramming
  - Auger boring

# Team Adjusted to Changed Conditions

- Geotechnical Design Conditions
  - High groundwater
  - Large cobbles/boulders
  - Flowing/running ground behavior
- Changed field conditions during construction – drought
- Lessons Learned
  - Close working relationships fostered a team environment and open communication
  - Team adapted to significant change in conditions



# WVSD Rehabilitation and Replacement Success

- 20-year R&R Program Summary
- 40 miles of mainline repairs
- 2,500 sewer laterals
- Hundreds of manholes



# Keys to Successful Program Execution



- Utilization of the risk model to develop Long-Term Capital Projects **AND** service repair contracts to address immediate small repairs.
- Risk Model is not static.
  - Updated O&M, condition, and capital improvement data is continually input into the Model.

# Keys to Successful Program Execution (continued)

- Project teams worked collaboratively through challenges
  - Early and often community outreach
  - Flexibility during design and construction
- Maximize in system bypass
- Procurement and repeat work of reputable Contractors
  - Solicit Contractor input during design
  - Include technology-specific experience requirements
  - Completed safely with no reportable injuries or safety incidents



Thank you.  
Questions?

