Collection System Master Plan (CSMP)

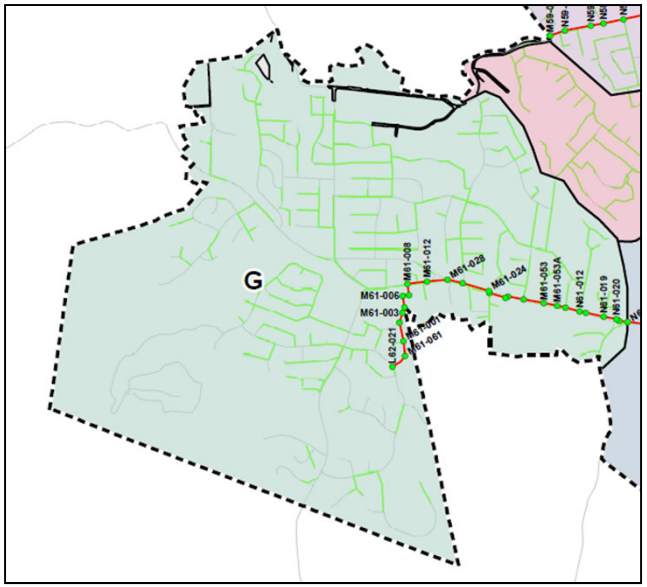
NapaSan Board of Directors Meeting

February 17, 2021

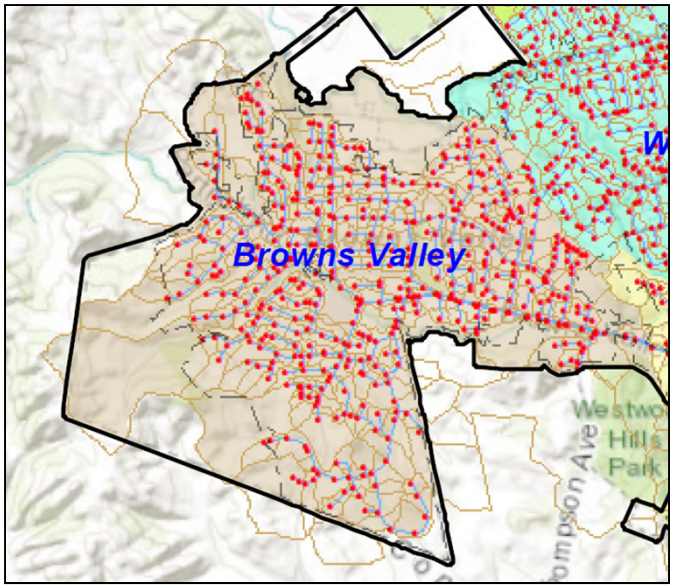
Goals

- Develop a new, all-pipes hydraulic model
- Evaluate growth projections and hydraulic capacity
- Evaluate the success of the I/I reduction program
- Recommend capital improvements to reduce the risk of Sanitary Sewer Overflows (SSOs)

Develop a new, all-pipes hydraulic model



2007 Model

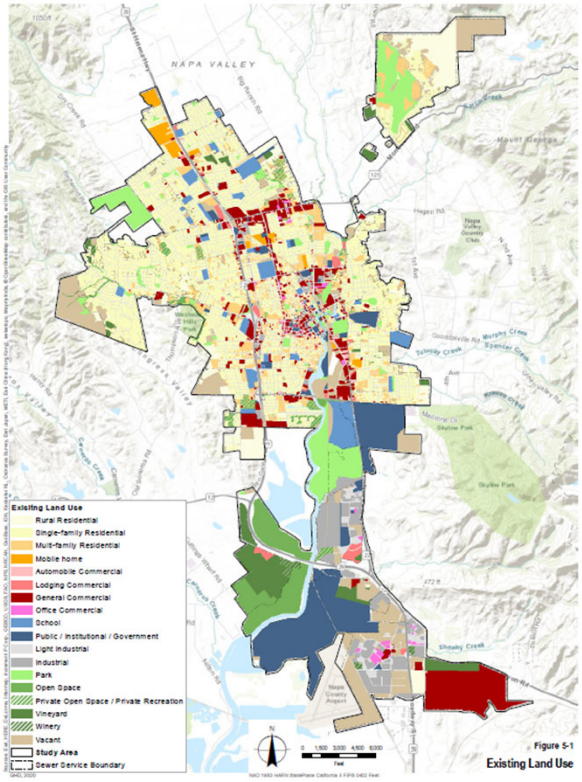


2021 Model

- The new model more accurately represents the system

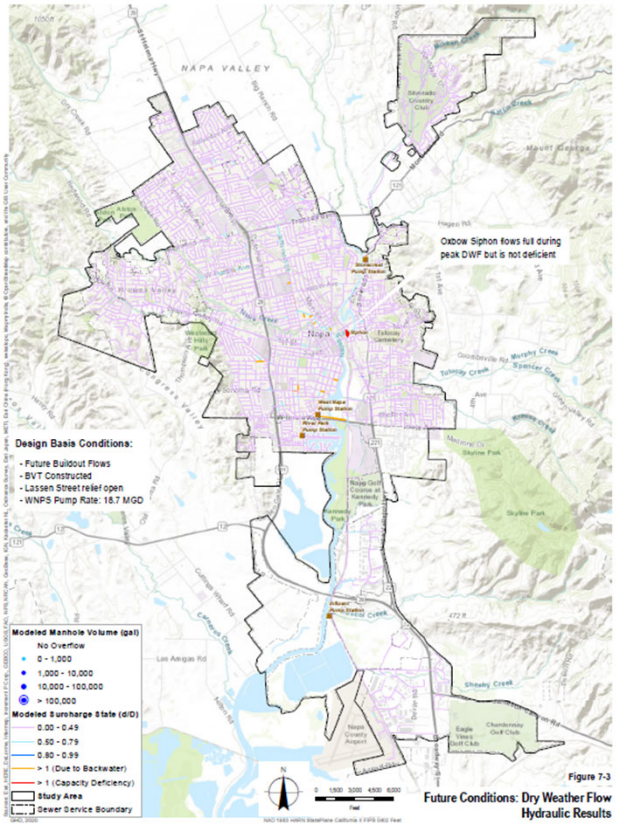
Evaluate growth projections

- 2040 planning horizon
- Consistent with anticipated City of Napa 2040 General Plan
- Consistent with 2009 County of Napa General Plan



Evaluate hydraulic capacity – Dry Weather

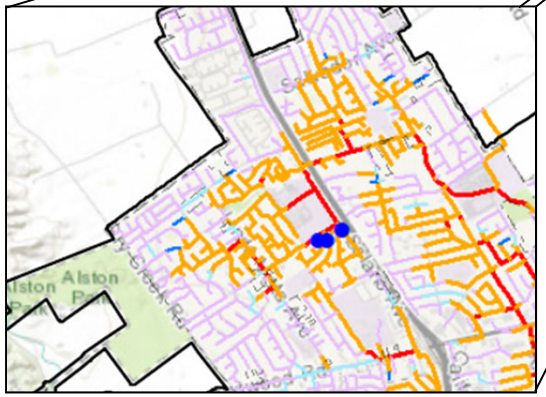
- No capacity deficiencies in the dry weather scenario
- Analysis assumes 2040 buildout conditions consistent with general plans

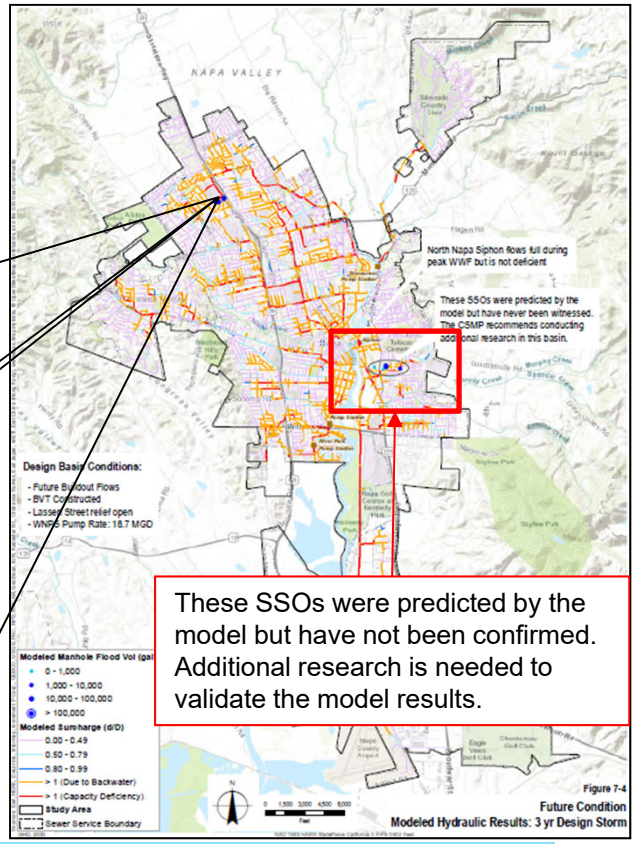


Evaluate hydraulic capacity: 3-Year Storm

- Total modeled SSO: 171,000 gallons
- Highest priority (most frequently occurring)

Near the Raleigh/Trower intersection

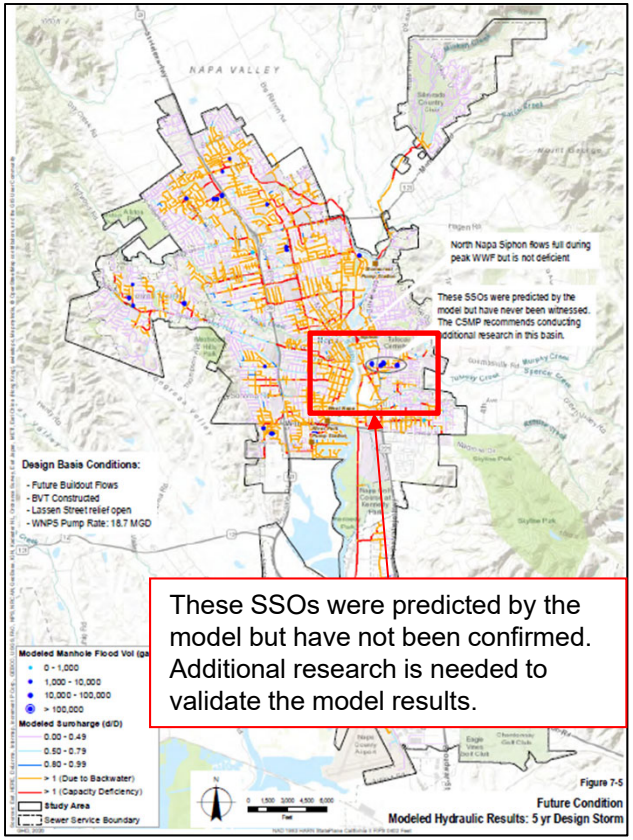




These SSOs were predicted by the model but have not been confirmed. Additional research is needed to validate the model results.

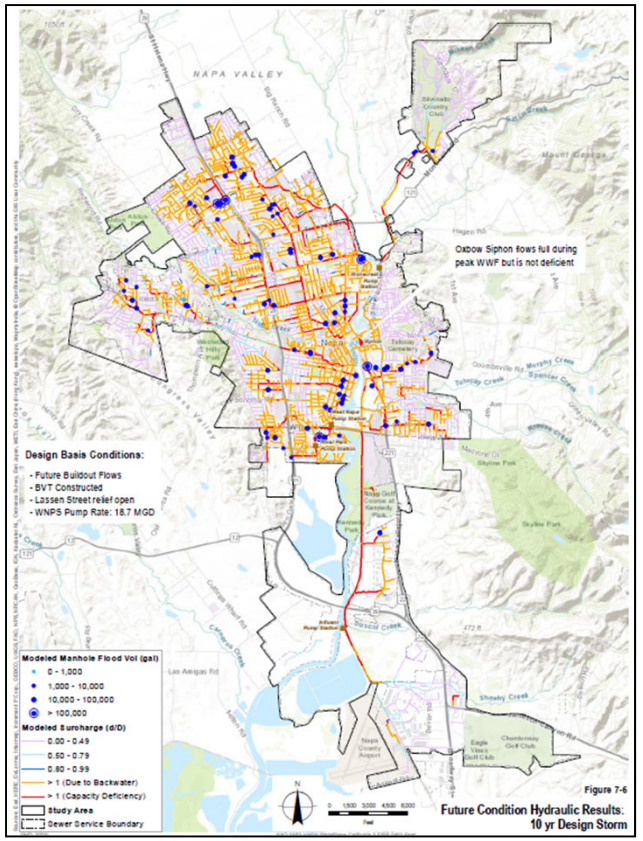
Evaluate hydraulic capacity: 5-Year Storm

- Total modeled SSO: 788,000 gallons
- More widespread
- Primary issue still near the Raleigh/Trower intersection



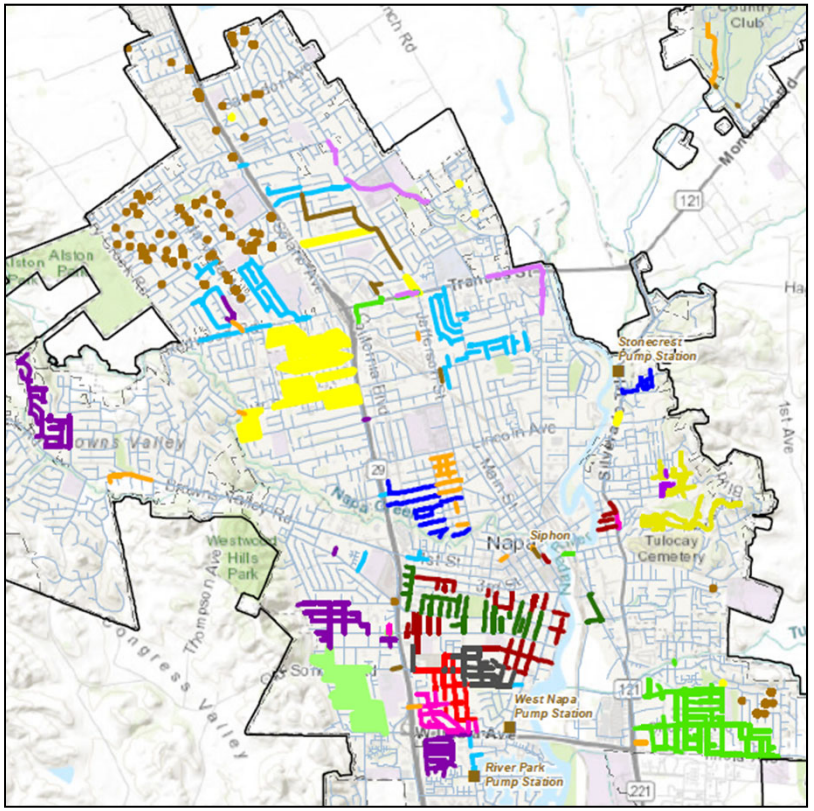
Evaluate hydraulic capacity: 10-Year Storm

- Numerous SSO locations



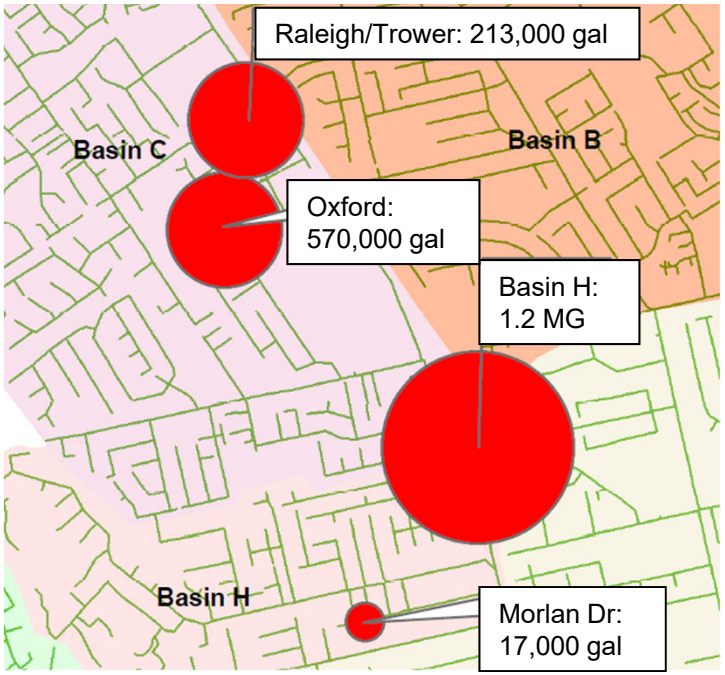
Evaluate the success of the I/I program

- Many successful projects completed
- SSO reductions observed between the 2017 to 2019 storms



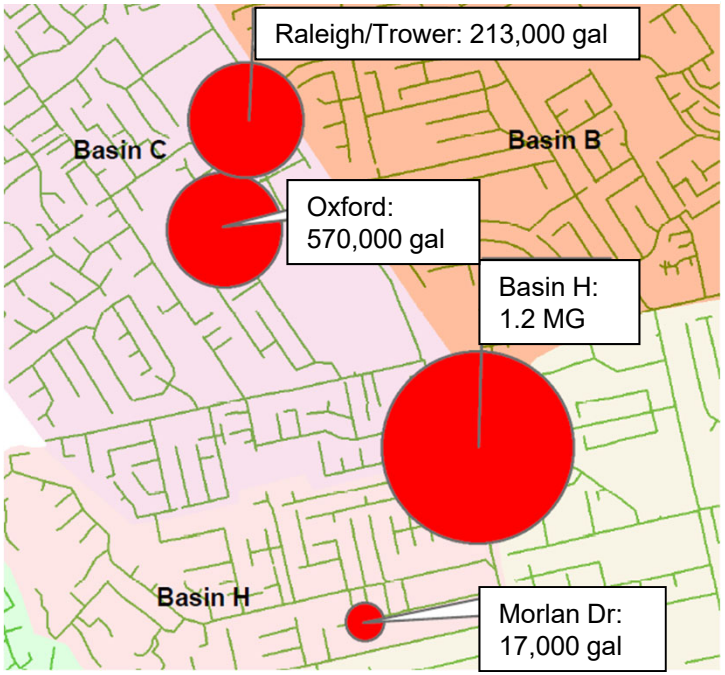
Evaluate the success of the I/I program

Winter 2017 SSO+Bypass Volumes

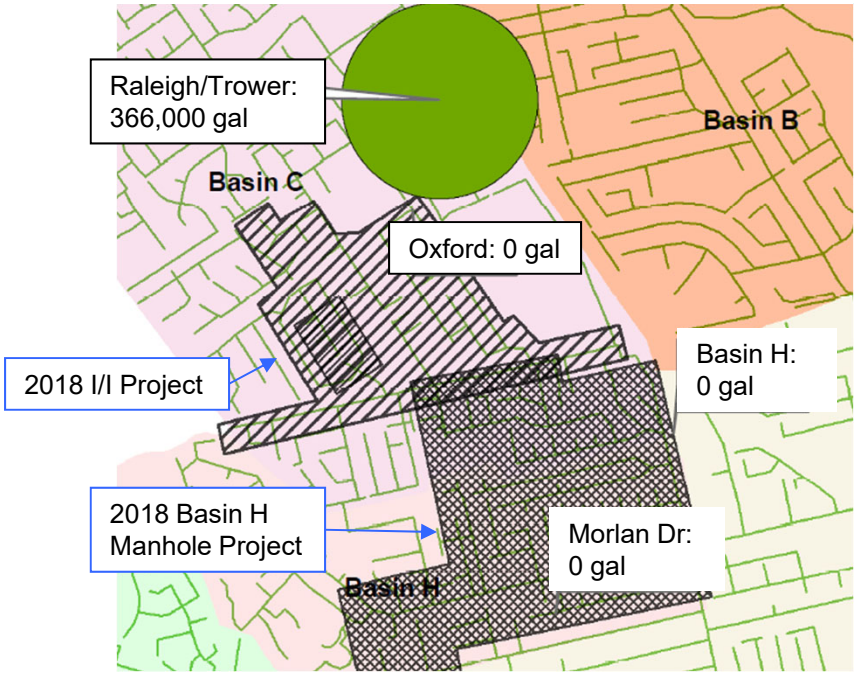


Evaluate the success of the I/I program

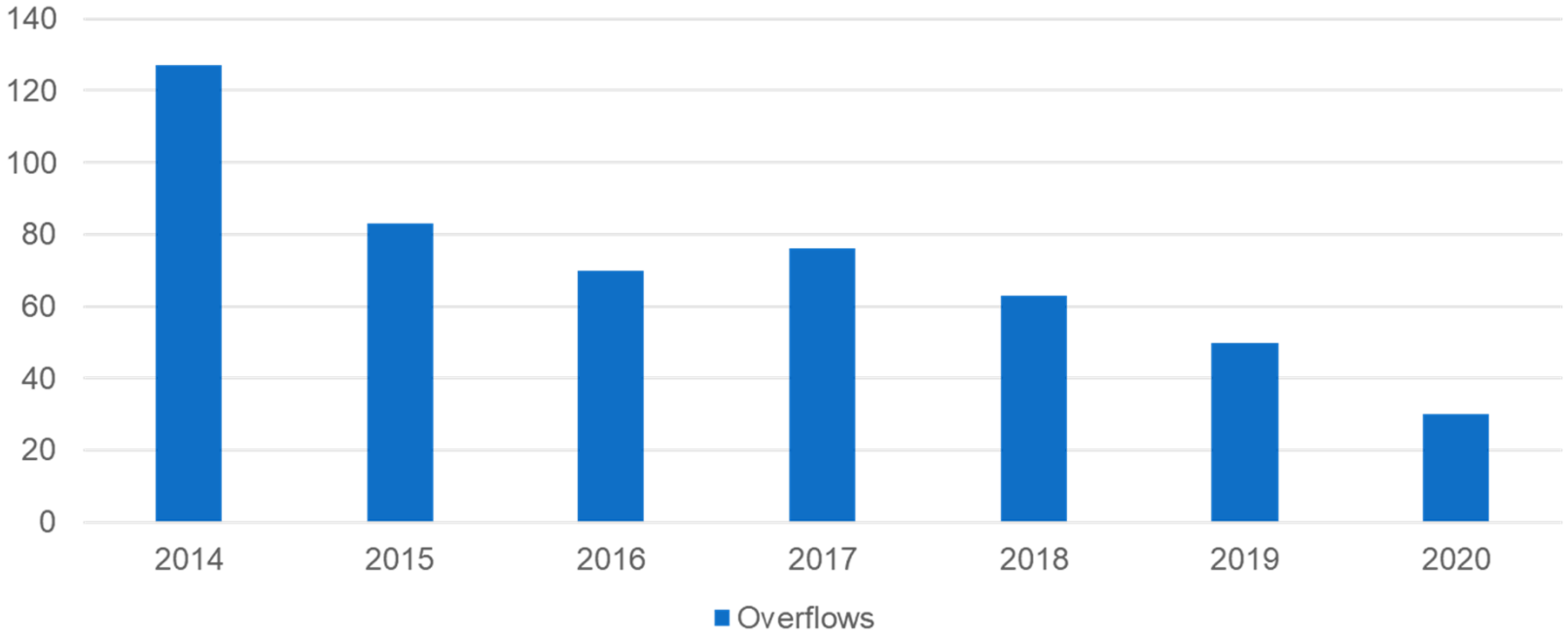
Winter 2017 SSO+Bypass Volumes



Winter 2019 SSO+Bypass Volumes

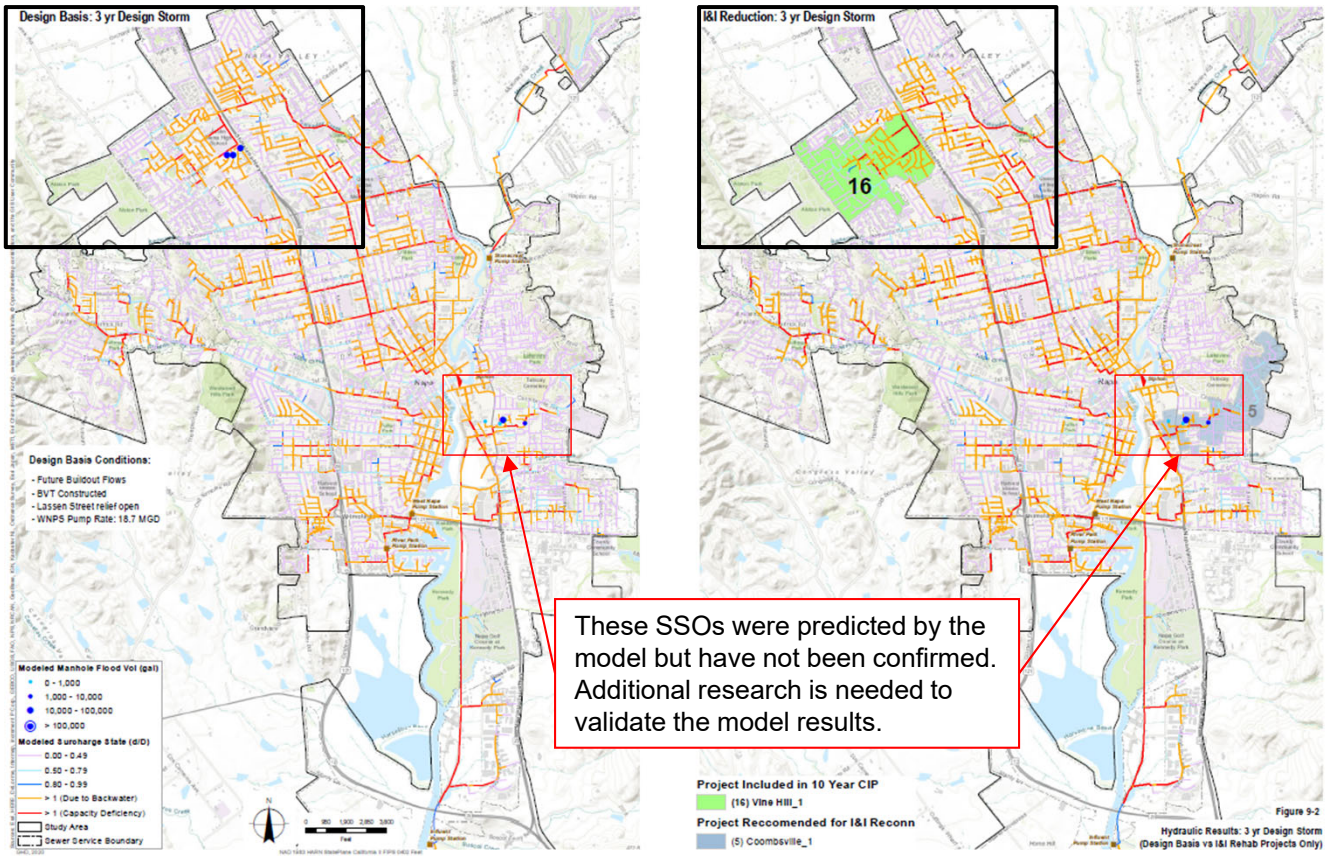


Number of SSOs per Year



- Most SSOs are minor and occur at laterals
- The total number of SSOs decreases as more of the system is rehabilitated

Capital Improvements for 3-Year Storm



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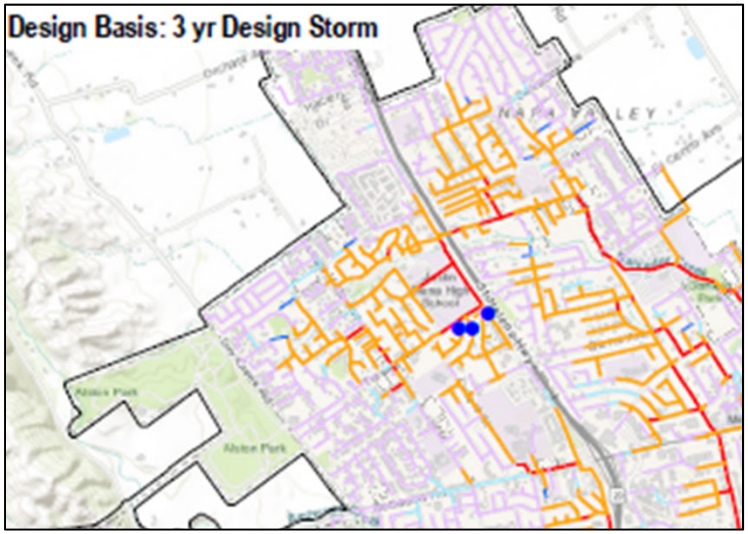
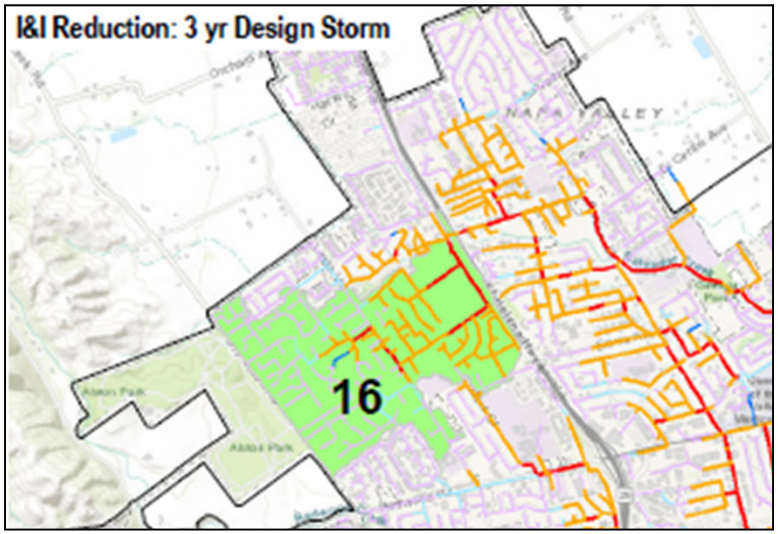
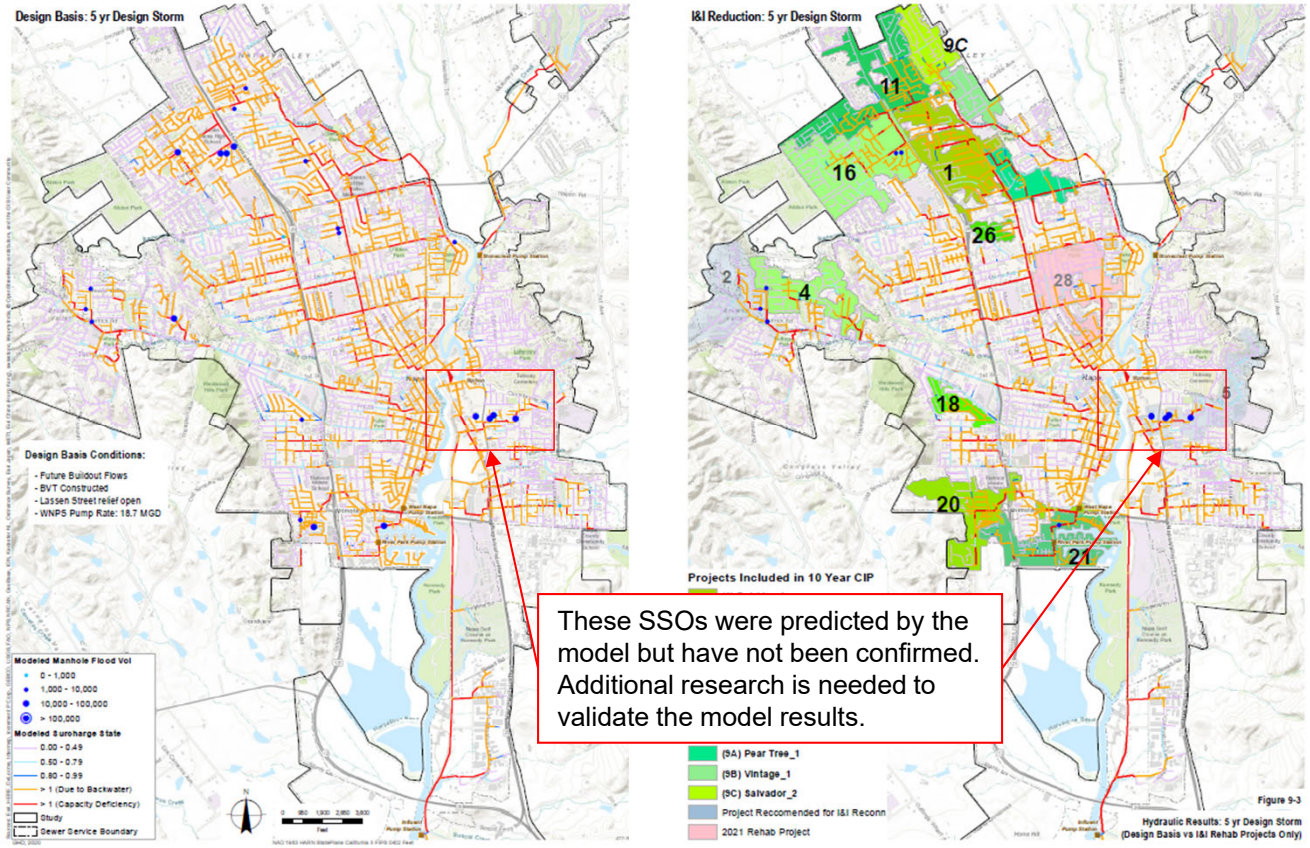




Capital Improvements for 5-Year Storm



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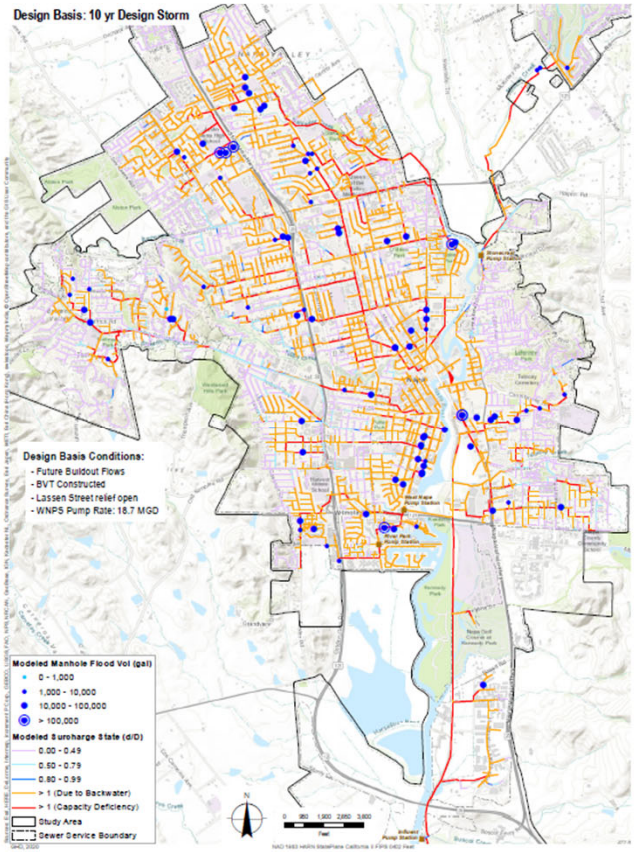
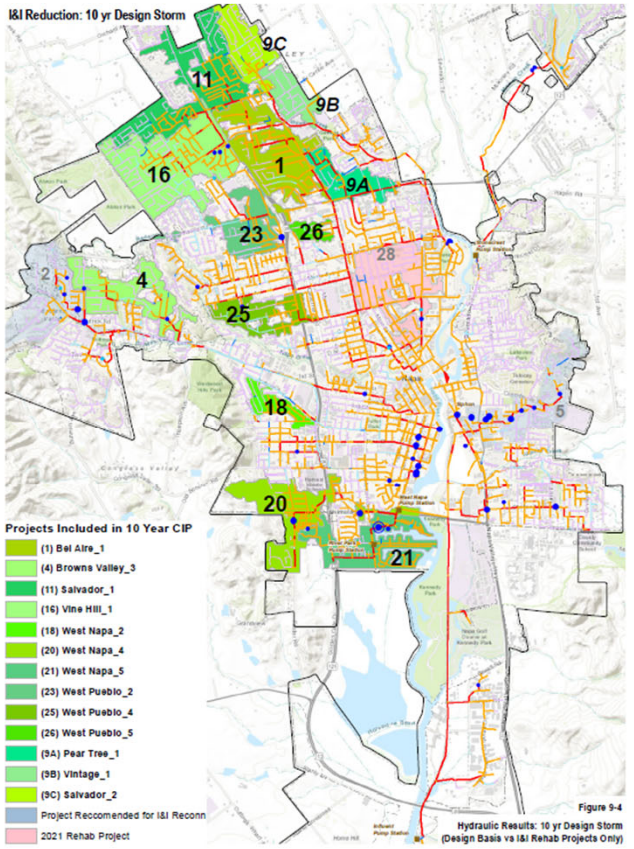
Capital Improvements for 10-Year Storm





CIP Summary

- The CIP focuses on I&I reduction rather than capacity improvements
- Project priorities are based on modeled hydraulics
- The priorities are flexible based on other factors:
  - Condition assessment
  - Risk evaluation
  - Other projects (City/County paving, etc.)
- The CIP fits into the existing budget for the 2% program. Capacity Improvements would cost much more.

Project Summary

- ✓ Develop a new, all-pipes hydraulic model
- ✓ Evaluate growth projections and hydraulic capacity
- ✓ Evaluate the success of the I/I reduction program
- ✓ Recommend capital improvements to reduce the risk of SSOs

Questions/Discussion

Recommendation

Accept the Collection System Master Plan dated February 2021.