



I/I Reduction Flow Monitoring Results FY 15/16

Napa Sanitation District
Board of Directors Meeting



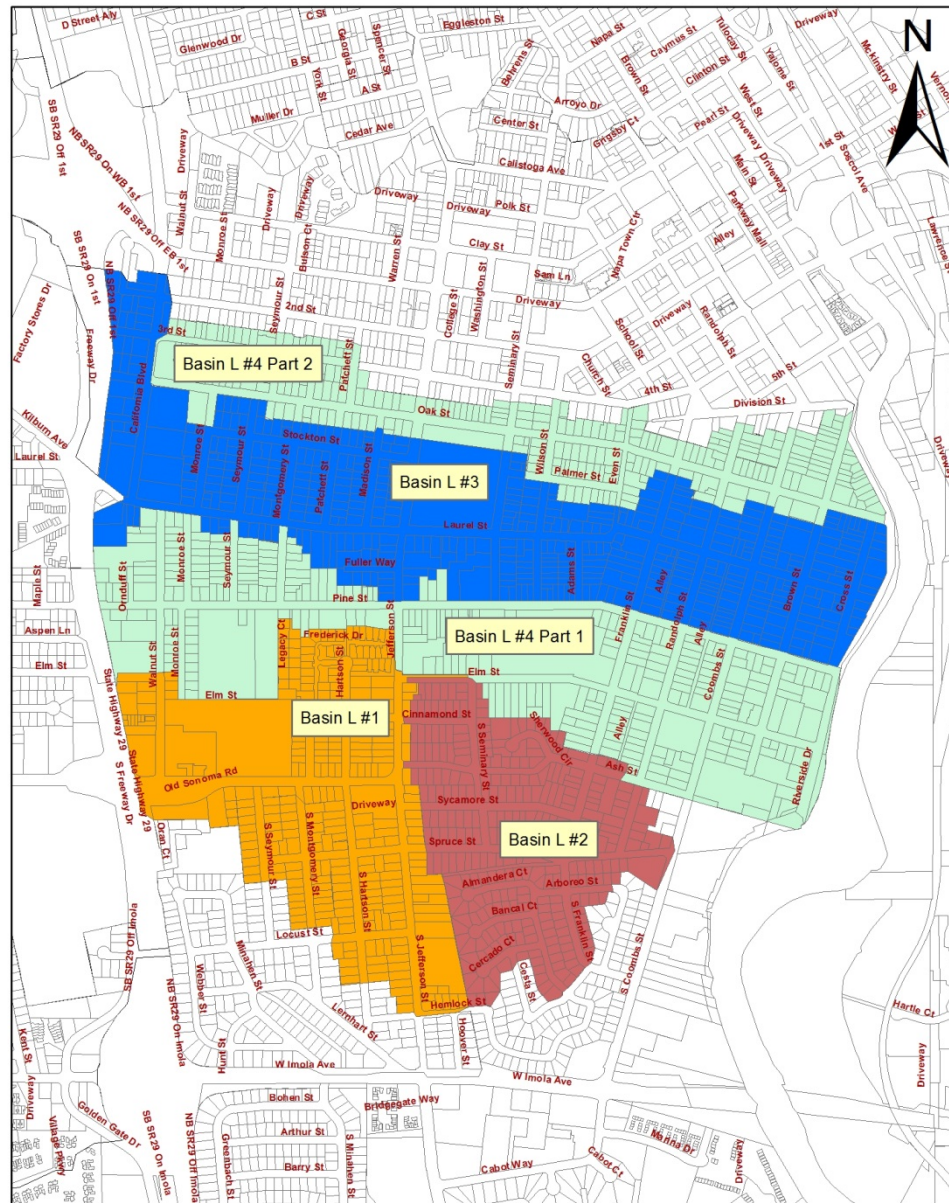
CSMP Overview

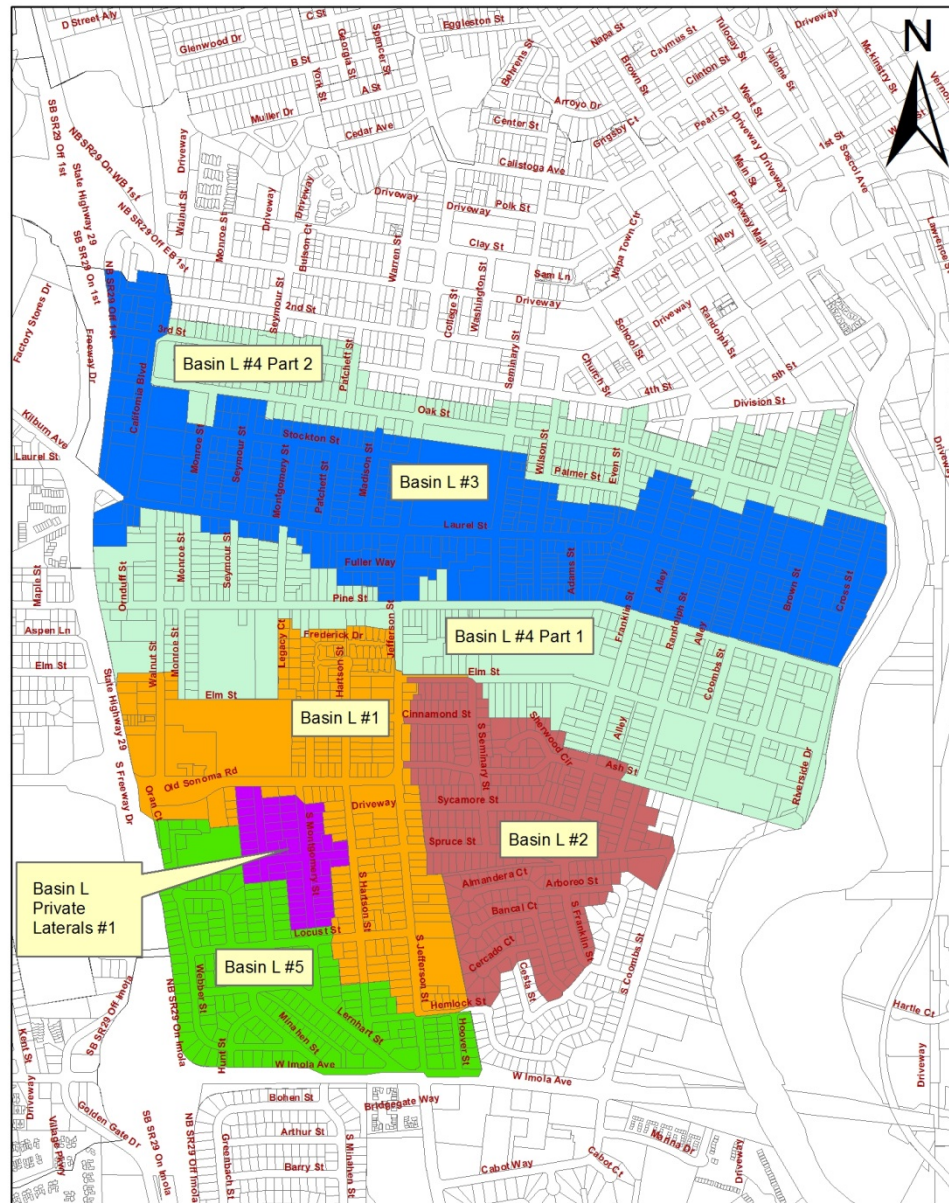
- Collection System Master Plan (CSMP) 2007
- \$120 million in capacity expansion projects
- Recommendation of a 5-year I&I Reduction Program
- Results of the 5-year program delayed by lack of rainfall



I/I Reduction Program

- 5 major rehabilitation projects completed
- Pre- and Post-construction flow monitoring to determine reduction in I&I.
 - 15/16 monitoring
 - Post-construction – Summer 2015 projects
 - Pre-construction – Summer 2016 & 2017 projects







Flow Monitoring Results

I/I Reduction Project	Basin Evaluated	Type of Rehabilitation	Total % of Basin Rehabilitated	Peak Flow Reduction, mgd (%)
Upper Alphabet	Basin 9B	Mains, Structures and Public Laterals	Unknown	1.52 (37%)
Stonecrest	Basin 4	Mains, Structures and Public Laterals	81%	2.03 (80%)
Spring St (Pvt Lats)	Basin 1	Upper (Private) Laterals	46%	0.06 (27%)
Project L #1	Basin 6B	Mains, Structures and Public Laterals	85%	1.40 (34%)
Project L #2	Basin 6A	Mains, Structures and Public Laterals	67%	0.11 (11%)
Project L #3	Basin 8A	Mains, Structures and Public Laterals	73%	1.45 (26%)
Project L #4	Basin 8A	Mains, Structures and Public Laterals	70%	2.18 (41%)
Basin L (Pvt Lats)	Basin 6B	Upper (Private) Laterals	92%	0.10 (58%)



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Weighted Average				8.69 (38%)



Analysis

- Variables that impact results:
 - Percentage of system rehab
 - Age of system
 - Pipe material
 - Soil conditions
 - Topography
 - Groundwater
 - Inflow



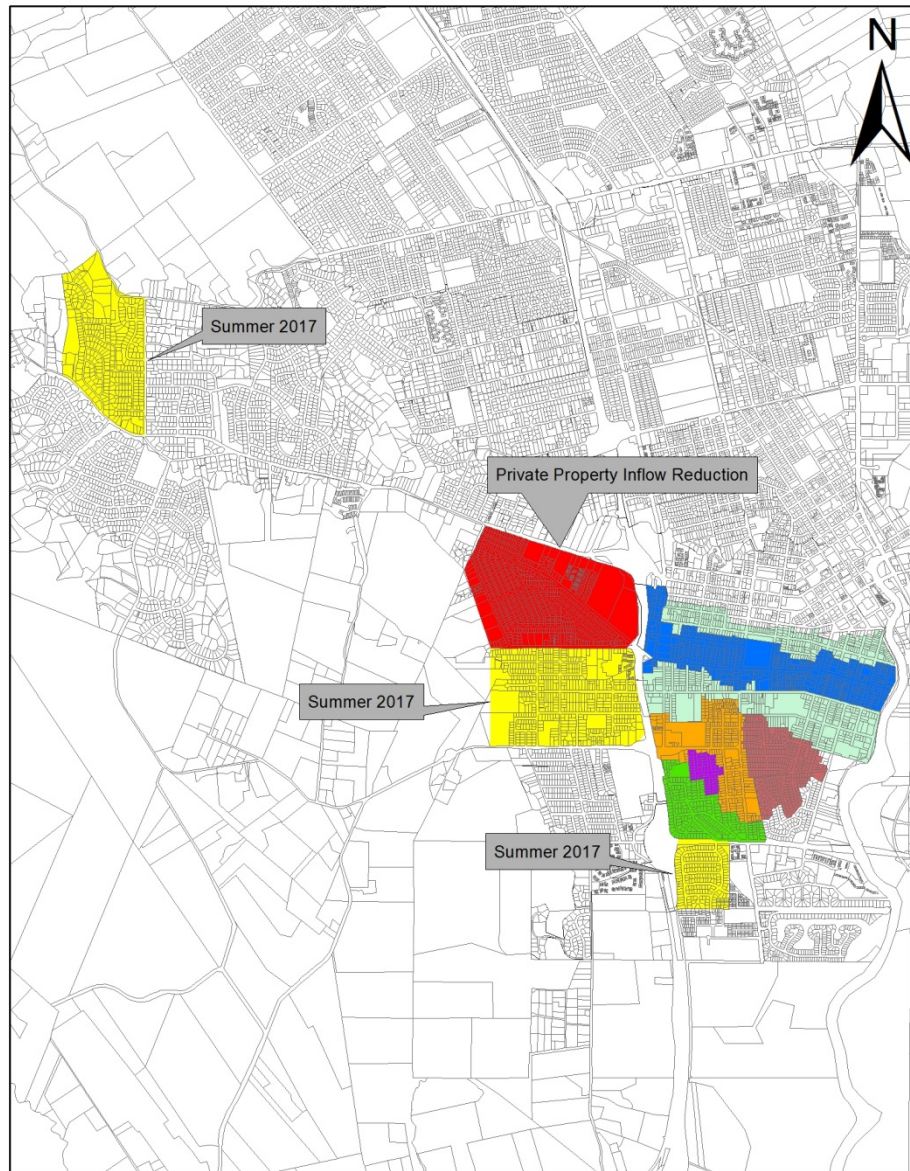
Analysis

- 7 Years of projects – data points
- Industry expected results 30-70%
 - Partial to complete system rehab
- NSD results 11-80% (Avg 40%)
 - Based on partial system rehabilitation



Scheduled Projects

- Most work within WNPS basin
- Basin L #5 (summer 2016)
 - Mains and Lower Laterals
- Upper Laterals – Pilot 2 (fall 2017)
 - Basin L area
- Homewood/Westwood (spring 2017)
- Summer 2017 Project – big project
- Flow monitoring (winter 2016/17)





Reconnaissance

- Field work during rain events
 - Inspection of manholes (infiltration)
- Field work after rain events
 - CCTV of mains (inflow)



Next Steps

1. Continue I/I projects
2. Focus on infiltration and inflow
3. Focus on WNPS basin
4. Implement more pilot projects
5. Continue flow monitoring
6. Continue evaluation of results
7. Collection System Master Plan in FY 18/19
 - 3 more years of project data