

Consolidated Management of Nitrate Treatment: Implementation, Demonstration, and Affordability Assessment

Project Background & Objectives
Kick-off Meeting - 1st Workshop
April 13th 2018

Background

- Nitrate is a critical water quality concern
- The San Joaquin Valley (SJV) is a highly-productive agricultural region challenged by both nitrate and salinity
- Most CA water systems in violation of the nitrate MCL are in the San Joaquin Valley
- Nearly all of these systems are small water systems
- Many are economically disadvantaged
- Co-occurring contamination

2010 – 2013, Nitrate MCL Violations

SJV systems

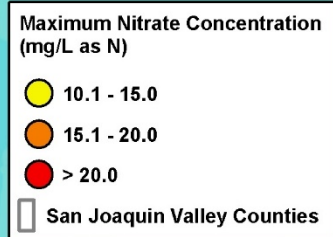
= 25% of total CA systems

= 75% of non-compliant CA systems

Small water systems

= 98% of non-compliant SJV systems

= 100% of multiple year violators



0 25 50 100 150 200
Miles

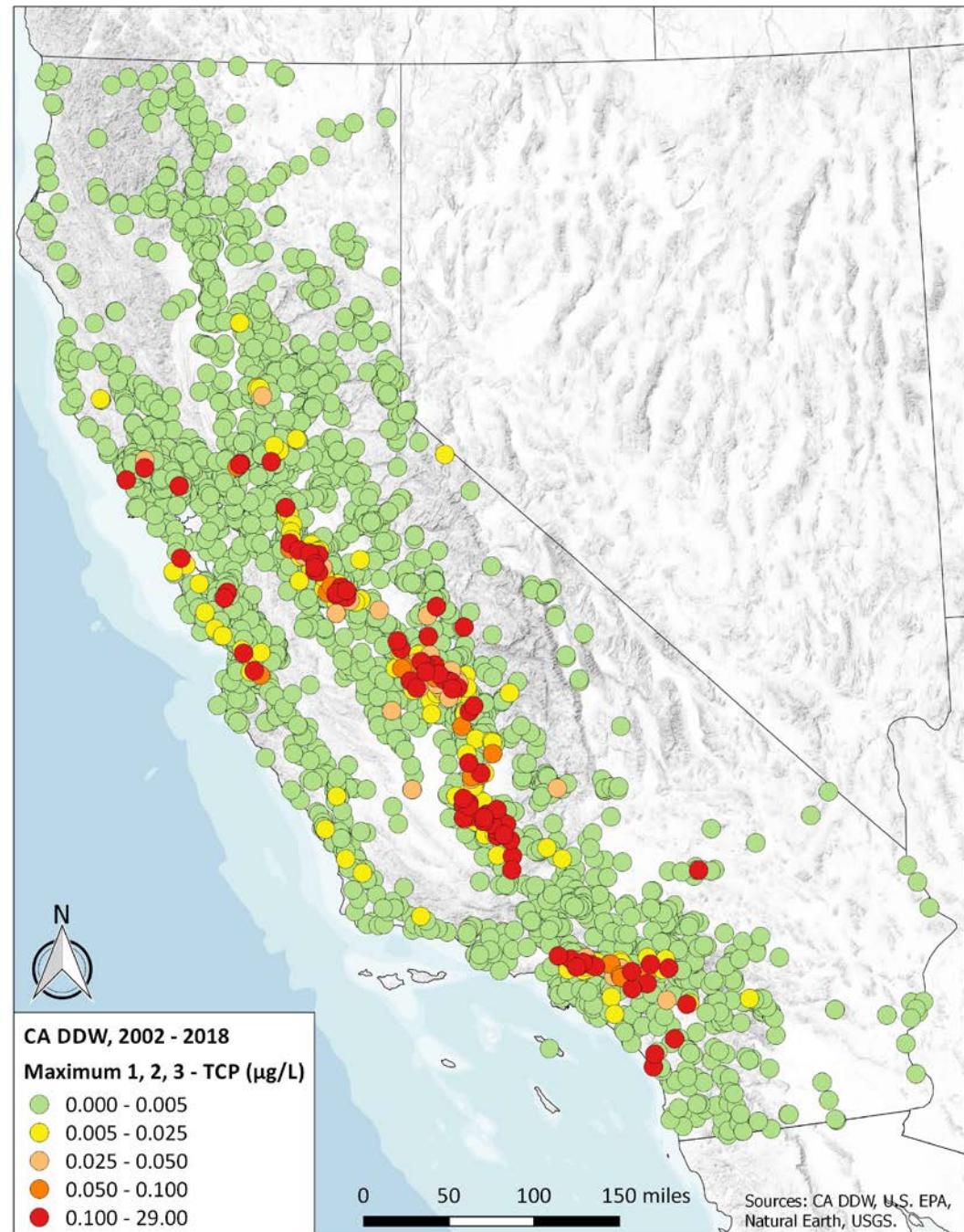


Sources: US EPA, CDPH, DeLorme, Esri, NOAA, NPS, USGS.

1,2,3-TCP: Occurrence

California DDW Data
2002-Feb 2018
Maximum by PWSID

	Count > 0.005 µg/L	
Data Period	2002-2018	Jan-Feb 2018
PWSIDs	281	135
Sources	1,076	263



Background

- Grants available for capital equipment
- Most common nitrate treatment process is strong base anion exchange (SBA-IX)
- Regeneration produces waste brine solution
- Cost of brine disposal represents a significant lifetime financial burden
- No grants available for operations & maintenance (O&M)

Two Parts of the Project

Consolidated Management

- Treatment installation
- Shared O&M

Economic Aspect

- What is affordable?
- What are the policy options for making water affordable?
- Workshops and Bob Raucher's work

Analysis of cost reduction
under the consolidated
management model

Consolidated Management Definition

~~Consolidation with nearby system~~

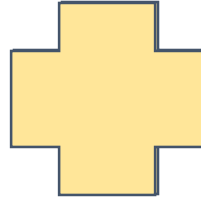
- ~~• Physical consolidation~~
- ~~• Pipeline connecting two systems~~

Consolidated management - reduce operating cost by sharing

- NOT a physical consolidation
- An operator
- Salt delivery
- Waste brine pick-up

Background

Chronic
non-compliance



Lack of affordable
solutions

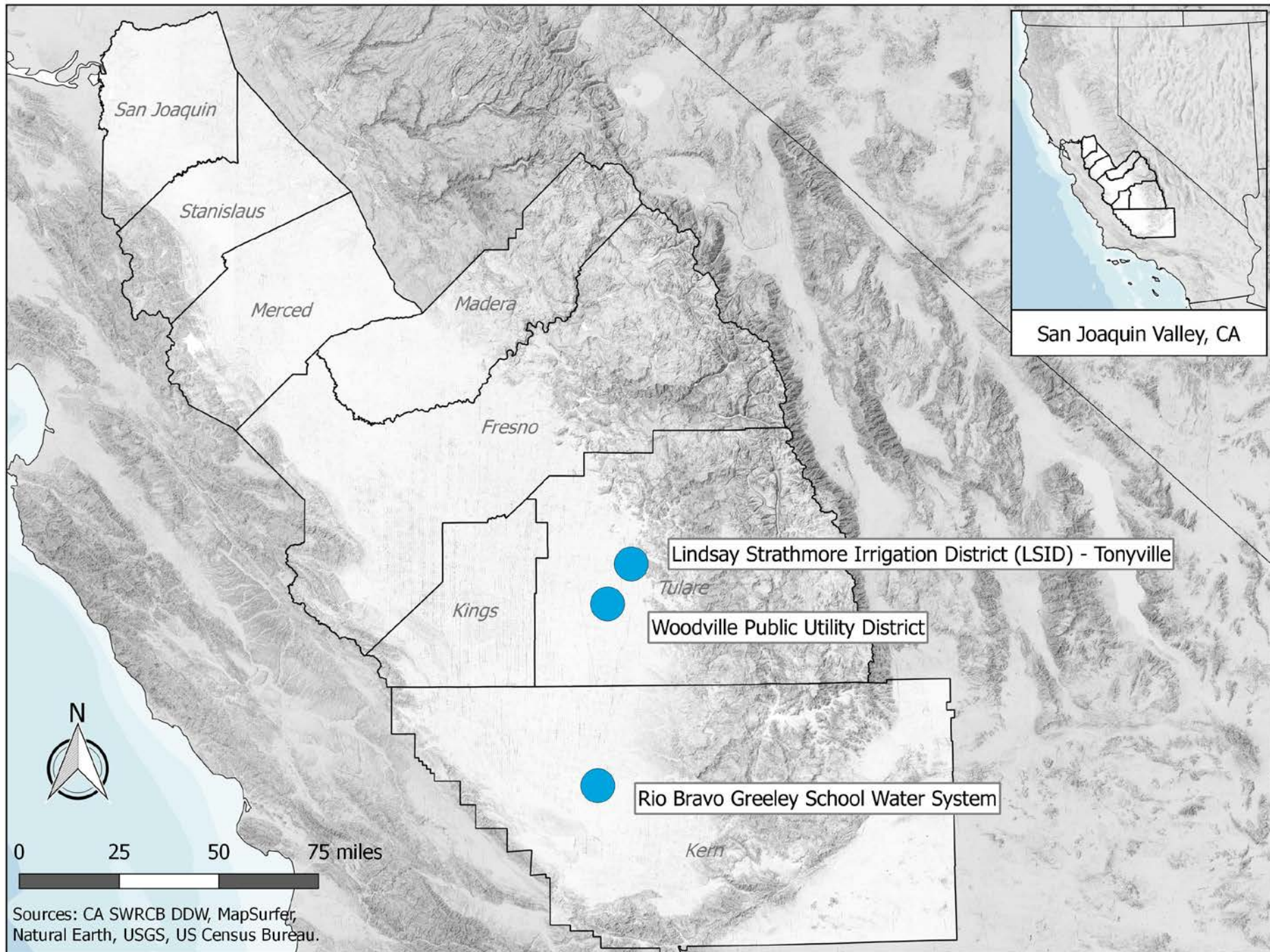
Need alternative approach for small water systems
and economically disadvantaged communities



Consolidated management of optimized SBA-IX
with Assessment of Affordability

Project Location

Candidate System Name				
PWSID	System Address		Population	Connections
Lindsay Strathmore Irrigation District (LSID) - Tonyville				
CA5410007	21665 Cypress Avenue, Lindsay, CA		500	50
Rio Bravo Greeley School Water System				
CA1502229	6601 Enos Lane, Bakersfield, CA		887	16
Woodville Public Utility District				
CA5410025	16716 Ave 168, Woodville, CA		1,673	483





Co-Occurring Contaminants

- 1,2,3-TCP
- Perchlorate
- Hexavalent chromium

Consolidated Management - Objectives

- To minimize small water system O&M costs by sharing:
 - An operator
 - Brine disposal
 - Salt delivery
- Reduce waste brine disposal costs through efficiencies in:
 - collection
 - administration
 - purchasing agreements with disposal providers

Consolidated Management - Objectives

- Equipment maintenance and servicing cost reduction using identical SBA-IX plants located in a geographic cluster.
- Demonstration scale SBA-IX systems will be installed and operated over a three-year period
- Optimized SBA-IX treatment will minimize brine waste production

Affordability Assessment - Objectives

- Estimating and comparing Triple Bottom Line lifecycle treatment costs with and without consolidated management
- Developing and applying a range of informative affordability metrics
- Evaluating a range of potential funding mechanisms for economically disadvantaged communities
- Formulating specific recommendations on addressing affordability on a statewide basis

Questions and Comments

