

California Disadvantaged Communities in Need

Presented To Peter Grevatt, Director, EPA Office of
Groundwater & Drinking Water

February 26, 2015

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Disadvantaged Community Center (CSU DACC)

Small systems face many challenges

- The state of California has a diversity of geography as well as land use.
- Many DACs who are served by small systems lack capacity to effectively manage their water systems.
- DAC problems are both rural and urban.



Small systems face many challenges

Too often the rate base is insufficient to allow for measures allowing these systems to sustain their water delivery services:

- ✓ Much needed capital improvements
- ✓ Competent Technical, Managerial and Financial capabilities



Children whose only safe water source is bottled water reportedly have a higher incidence of obesity.

Small systems face many challenges

Typically these systems are too often the only water delivery systems that serve these disadvantaged communities:

- Violate State requirement for safe drinking water
- Existing drinking water source is risk to public health



Excessive amounts of time and energy are spent on drinking water

Box Springs Mutual Water Company- Riverside County (urban area)

- Mutual water company with approximately 8,000 residents serves community of Edgemont
- Relies on own groundwater with supplemental imported water
- Severely disadvantaged community lacking TMF capacity



Water tanks for the Box Springs Mutual Water Co

Box Springs Mutual Water Company- Riverside County (urban area)

- Residents are not engaged
- Language & cultural barriers
- Deteriorated 1920's-era with leaks throughout wells and pipelines
- Well is heavily contaminated with nitrates



New wells often produce excessive concentrations of contaminants such as nitrate.

Sultana Community Services District- Tulare County (rural area)

- CSD with approximately 775 residents
- Relies on well water for water supply contaminated with nitrates
- Severely disadvantaged community lacking TMF capacity



DAC residents marching for Safe Water during 2014 National Safe Drinking Water Week

Sultana Community Services District- Tulare County (rural area)

- Language & cultural barriers
- Residents are not mindful of the drought because there are no meters on individual properties



Laura Garcia of nearby Monson, whose well water is laced with excessive nitrates, had to use bottled water until the recent installation of a POU device in her sink.

Low Cost Solutions

- ✓ Companies approach DACs with ineffective treatment technology such as wood chips.
- ✓ Processed coconut hulls used in third world countries for arsenic removal and while the process possesses certain good unique features it is problematic for application in California due to the Arsenic MCL of 10 ug/L.



At Box Springs water was to be pumped through a wood chip “treatment process” for removal of nitrates – this plan was abandoned.

Low Cost Solutions

- ✓ Research funding is needed focused on lower cost technology for DACs.
- ✓ Solutions must be able to achieve local mandated water quality requirements.
- ✓ The life cycle requirements of low cost technology must be well-defined, including O&M costs.



This micro-column can help researchers discover biochar's potential to remove pesticides from drinking water. Photo by Josh Kearns, the researcher evaluating this technology.

Low Cost Solutions

Promising solutions lie in changes to institutional requirements

- ✓ Most, if not all, promising institutional solutions should be accompanied by incentives.
- ✓ Require municipal systems to include nearby DACs within their service area.



Working with stakeholders to develop solutions is hard work, but it can payoff. This picture is of a SOAC meeting in the Tulare Lake Basin.

Low Cost Solutions

Promising solutions lie in changes to institutional requirements (cont'd)

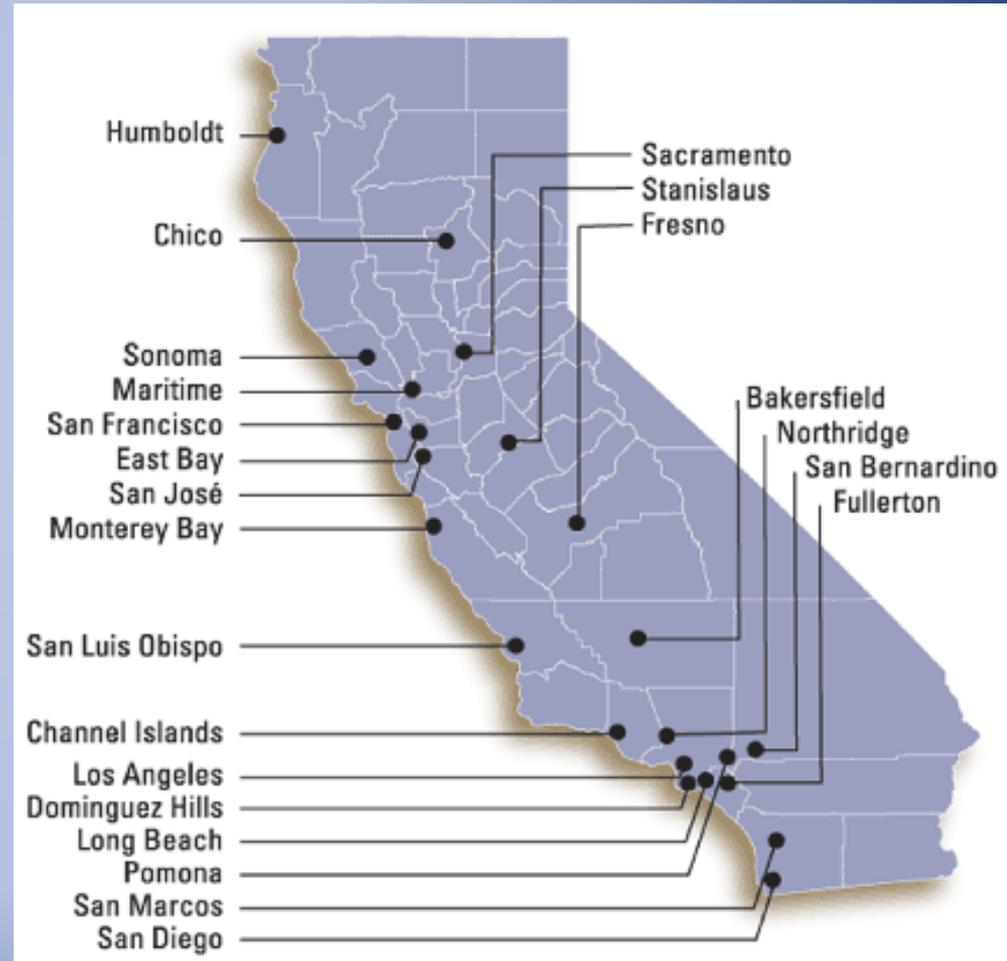
- ✓ Encourage fast track development of water systems capable of providing distributed service to DACs
 - Public owned
 - Private owned
 - NGO owned (Public Benefit Corporation)



This picture is of a Stakeholder Oversight Advisory Committee (SOAC) meeting in the Tulare Lake Basin.

CSU DACC Providing Services To DACs

- ✓ Need for toolbox
- ✓ Build model with multiple pathways to populate toolbox and get job done
- ✓ Need to provide engineering services (Pro Bono Services)
 - Provider
 - Liability issue



On-site Strategies

- ✓ Become fluent with the culture of the DAC and the issues it faces
- ✓ Build trust and strengthen communication
- ✓ Promise what can be accomplished and nothing more
- ✓ Groundwater recharge can mitigate poor groundwater quality in some scenarios

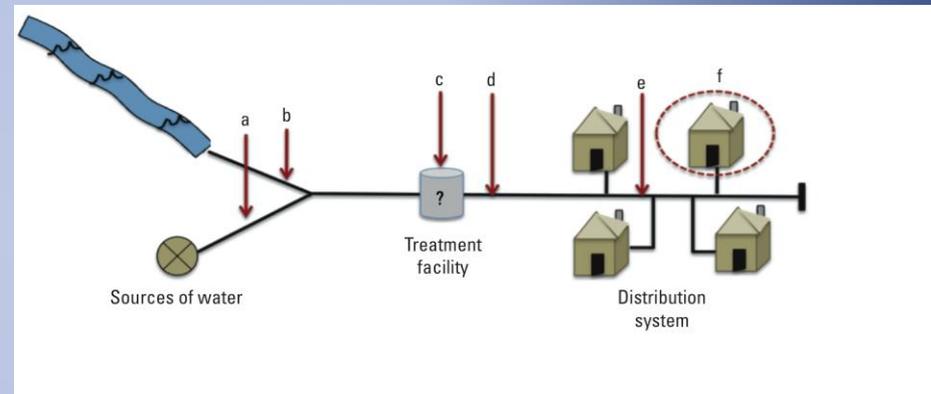


Meeting with stakeholders is important and a continuing process for successful projects

On-site Strategies

Need to build scale:

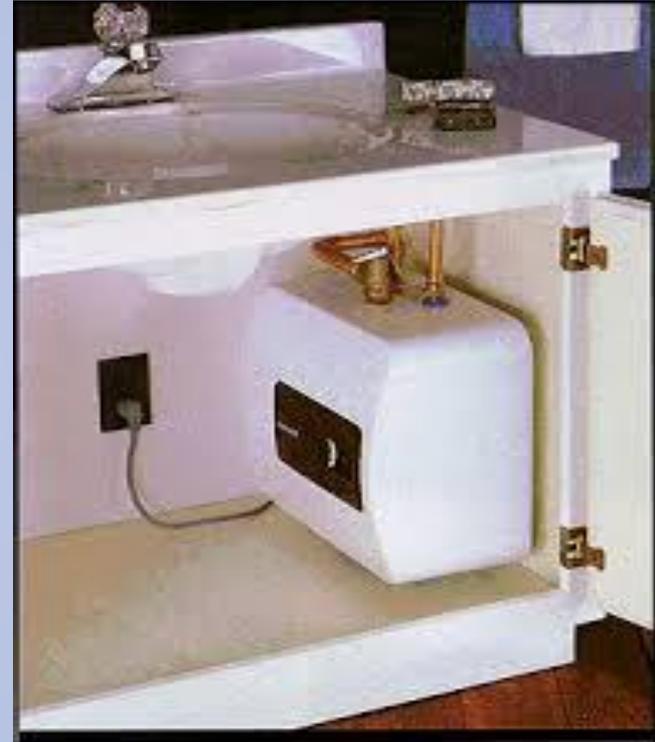
- ✓ Connecting to larger system providing potable water
- ✓ Embrace distributed treatment to achieve sustainable number of connections



System-wide approaches to solutions

On-site Strategies

- ✓ POU/POE devices
 - Not desirable long-term solution
 - Always require centralized O&M when used
- ✓ Groundwater recharge to mitigate poor groundwater quality where applicable



A typical under-the-sink POU water treatment device

On-site Strategies

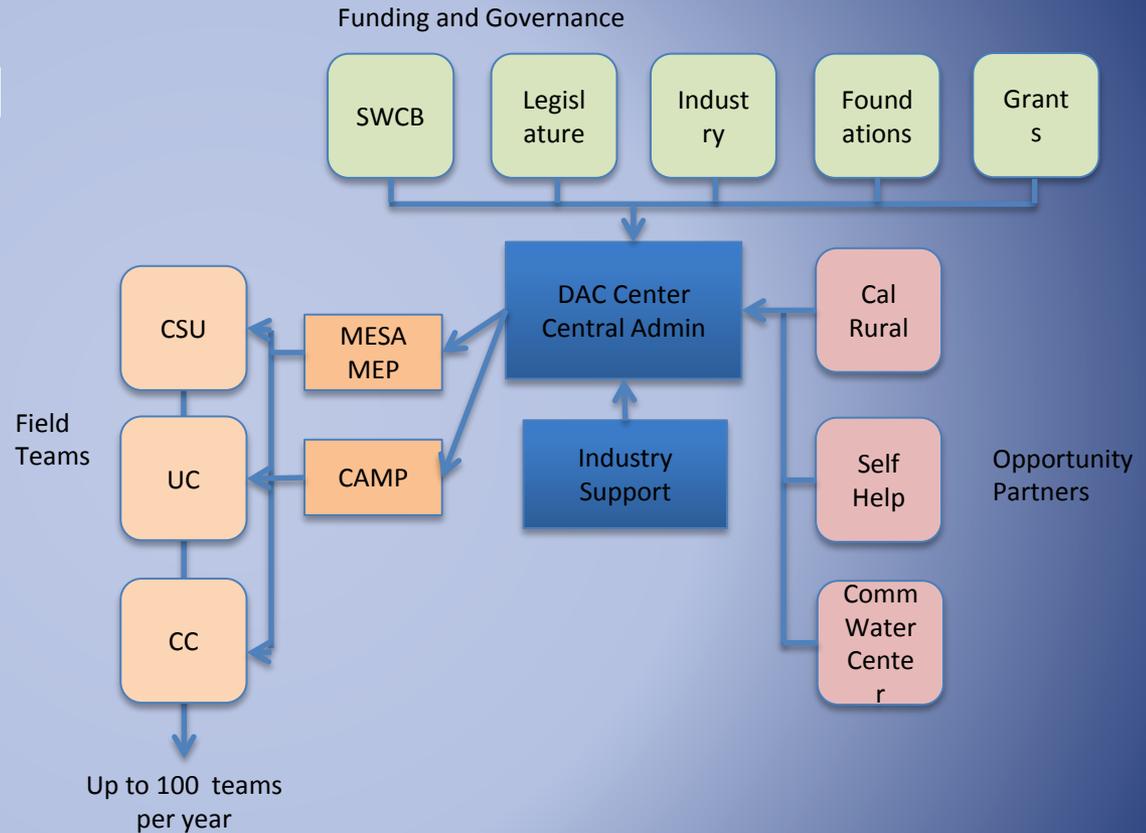
- ✓ Utilization of appropriate treatment technology for long-term solution
 - Fixed bed biological nitrate removal
 - RO with pretreatment & smart controls for ZLD
 - Advanced IX with greatly reduced brine stream & mineral recovery



Corollo Engineering Pilot Bioreactor for Nitrate Removal, Delano, California

The CSU DAC Center (DACC)

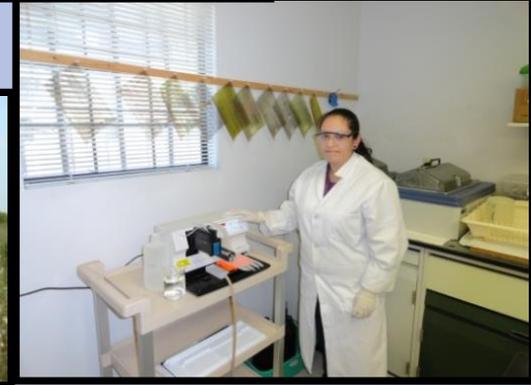
- ✓ Concept approved by CSU, WRPI Presidents Board
- ✓ Initial funding identified
- ✓ Plan is being implemented



The CSU DAC Center (DACC)

Purpose:

- ✓ Provide technical assistance to DACs
- ✓ Provide unique learning opportunities for students



The on-site experience for students is important for their professional development and it can provide an important service to residents

The CSU DAC Center (DACC)

Basic Operations:

- ✓ Serves statewide – UC, CSU & CC participation
- ✓ Housed at Fresno State
- ✓ Permanent staff provides oversight
- ✓ Goal of 50-80 teams annually
- ✓ Existing administrative infrastructure



A campus scene at CSU Fresno, an HSI designated university

The CSU DAC Center (DACC)

Pillar 1: Partnerships

- ✓ Institutional - MESA/MEP, CAMP & LEAD
- ✓ Industry - EWB, AWWA, ASCE, Others
- ✓ NGOs – CRWA, RCAC



The CSU DAC Center (DACC)

Pillar 1: Partnerships (Cont'd)

✓ Service Partners

- California Rural Water Association (CRWA)
- Rural Community Assistance Corp (RCAC)
- California Rural Legal Assistance, Inc. (CRLA)
- Community Water Center (CWC)
- Self Help Enterprises (SHE)
- Others



The Community Water Center acts as a catalyst for community-driven water solutions through organizing, education, and advocacy in California's San Joaquin Valley.

The CSU DAC Center (DACC)

Pillar 2: Student Centric

- ✓ Experiential learning
- ✓ Service provided to communities, home to many students
- ✓ Real world water supply & quality problems at DACs provide excellent experience for students



Engineering student Daniel Bahr (on left) participating in discussion with residents of Sultana about water system problems

The CSU DAC Center (DACC)

Pillar 3: Team Embedding

- ✓ Embedded for time necessary to complete project
- ✓ Permanent DACC staff oversight
- ✓ Opportunities for building community trust
- ✓ Increase success of technology transfer and capacity building

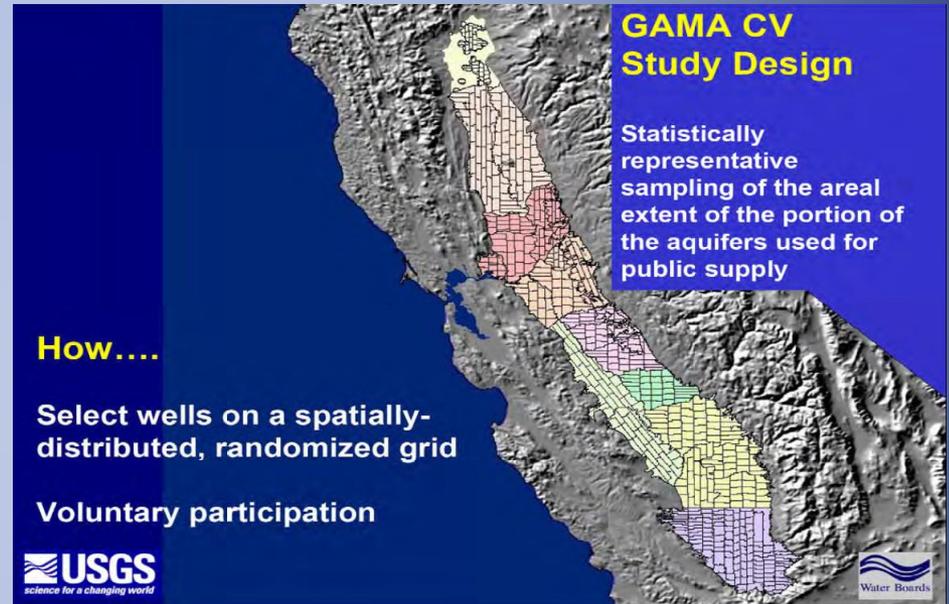


Student team with locals and advisor working on water supply project

The CSU DAC Center (DACC)

Pillar 4: Observations & Measurements

- ✓ Refine body of knowledge regarding California DACs
- ✓ Developing & applying indices for determining effectiveness of programs



GIS and other modeling applications are important tools for analyzing and understanding technical & demographic issues

Actions Requested of USEPA

Actions

- Support letter for full implementation of DACC
- Enactment of budget language for support of State Technical Assistance Centers
- Enactment of Good Samaritan legislation that includes professional services to DACs



The Right of Safe Drinking Water was critical legislation enacted by the California legislature

THANK YOU

QUESTIONS?



Maria



Karl



Boykin