

CENTER FOR INTEGRATED WATER RESEARCH

University of California, Santa Cruz

Leading issues in California Central Coast Water Sustainability

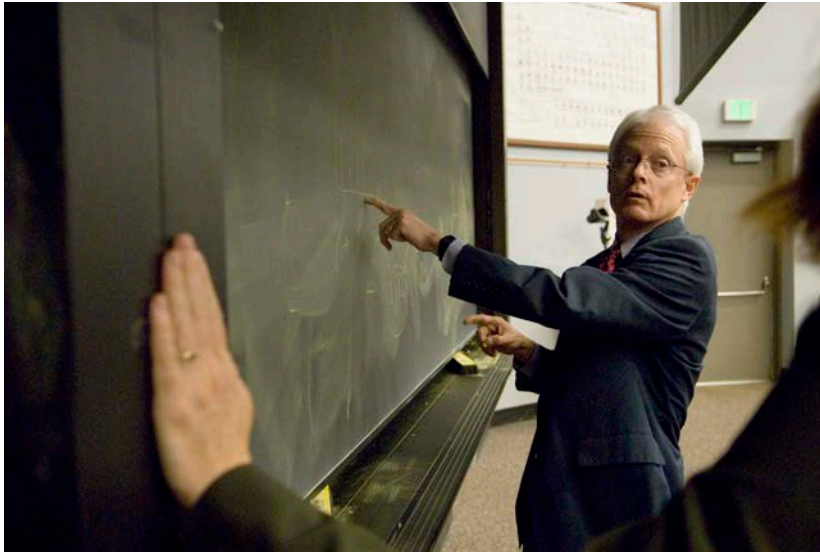


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Center for Integrated Water Research

Located At U.C. Santa Cruz

Dedicated to Fresh-Water Policy,
Management, and Communications



The “Central Coast”

California’s Central Coast is a Laboratory and
a Link for Water Sustainability Studies



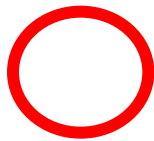
Introduction to the Region



QuickTime™ and a
decompressor
are needed to see this picture.



Introduction to the Region



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Introduction to the Region

A beautiful region and tourist destination

Nation's most productive farmland

Next to San Francisco and Silicon Valley



What is Water Reliability?

- The frequency with which customers receive their expected water supply and quality at the expected price.



What is Water Sustainability?



What is Water Sustainability?

- Sustainability: a term used all the time but hard to define...
 - AWWA, 2009: a multi-generational commitment to “economic growth, environmental protection, and social development”



What is Water Sustainability?

Haddad's criteria (and see Raftelis, 2011):

- program can be managed, operated, and paid for successfully throughout its duration
- When program is operational and completed, the region will be better off than now
 - Region: *people and environment*
 - Better off: *no trade-offs*



What is Water Sustainability?

Haddad's criteria (and see Raftelis, 2011):

- public policy process that led to the program is consistent with how decisions are supposed to be made



Framework for Water Sustainability and Reliability

Goals



Tools



Implementation



Framework for Water Sustainability and Reliability

Goals:

Water Reliability
Water Sustainability

...plus specific goals for region



Framework for Water Sustainability and Reliability

Tools:

Surface water resources
Ocean and inland desalination
Groundwater management
Water reuse
Conservation technology
Pricing
Stormwater capture
Public Communication
Etc.



Framework for Water Sustainability and Reliability

Implementation:

Deploy capital

Human capital

Physical capital

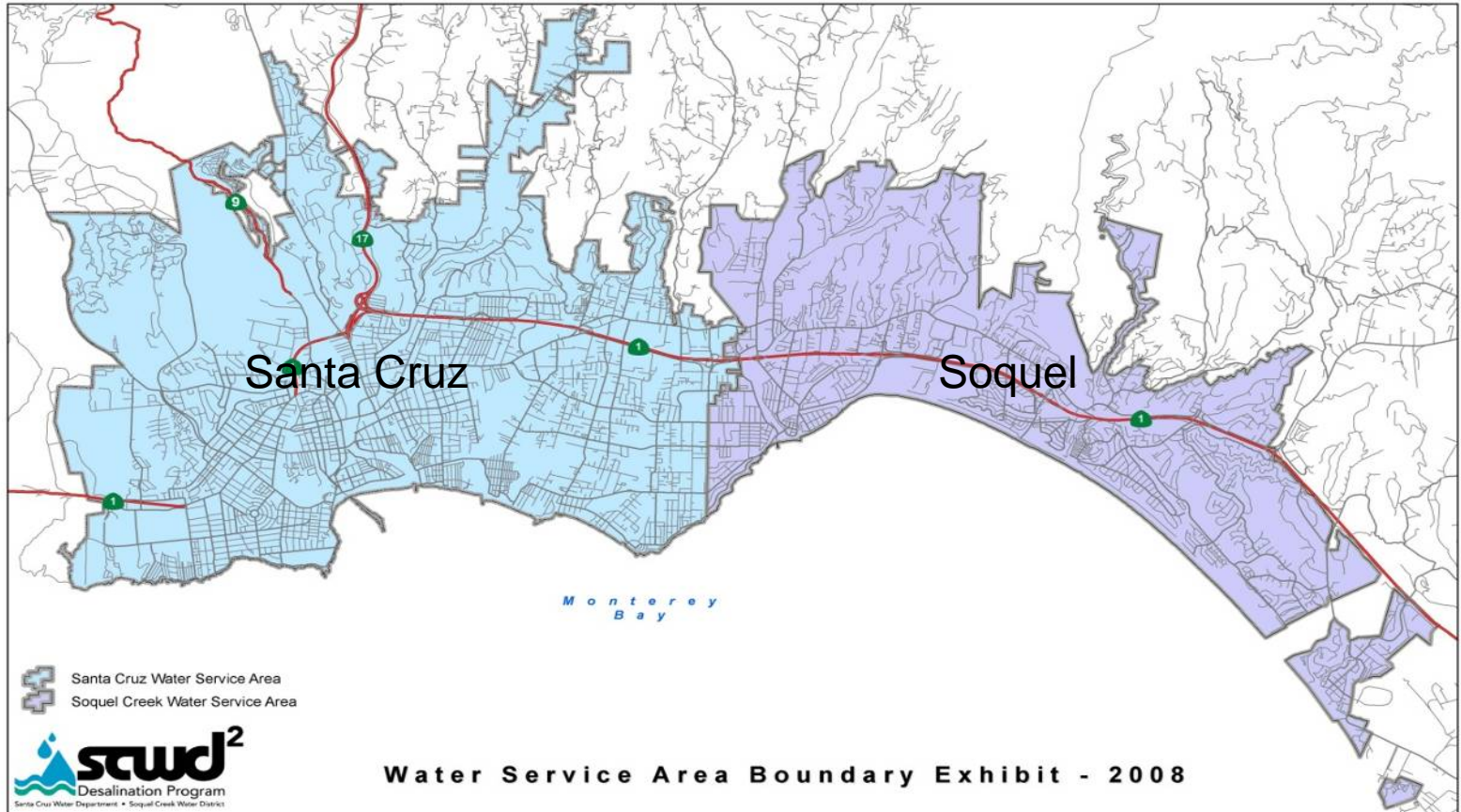
Natural capital

Financial capital

Administrative and governance systems



Case Study: Santa Cruz Drought Risks



Problem and Strategy

- Santa Cruz: Drought Shortage Risk: 35% cut back in major drought: an economic and public health hazard.
- Soquel Creek: overpumping of groundwater

Goals: Improve drought water reliability and restore aquifers consistent with regional sustainability



Problem and Strategy

Tools:

Better surface supply management

Conservation

Desalination



Problem and Strategy

Implementation:

Human capital: train workforce on desal technology

Physical capital: prepare region for desal

cross-ties with neighbors

surface water/groundwater blending

system pressure upgrades

desal technology itself

Natural Capital: extensive studies to protect ocean resources; mitigate energy impacts

Financial Capital: building financial reserves to pay for project



Problem and Strategy

Implementation:

Administrative and Governance Systems:

Administrative System: **strong**

Public Approval System: **slow**



Lessons Learned



Lessons Learned

- To Achieve Reliability and Sustainability:
Connect Goals, Tools, and Implementation
 - Implementation is a function of human, physical, natural, and financial capital, and
 - Strong administrative and governance systems are needed to realize the project
- We can prepare a region for water reliability and sustainability by strengthening all forms of capital related to the regional plan



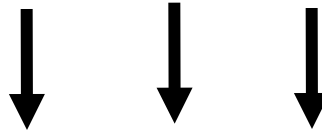
Opportunities for Collaboration

- Research on Water Reliability and Sustainability as they apply to specific water needs of one's region; e.g., NASA-related research
- Development and offering of on-line courses tailored to regional needs
- Student exchanges
- Professional exchanges to learn advanced water system management and operations



Opportunities for Collaboration

Dozens of nations that send their best students to
King Saud University



Prince Khaled Chair for Water Research



UCSC Center for Integrated Water Research



University of California research and teaching resources



Thank You; Questions?



Center for Integrated Water Research

