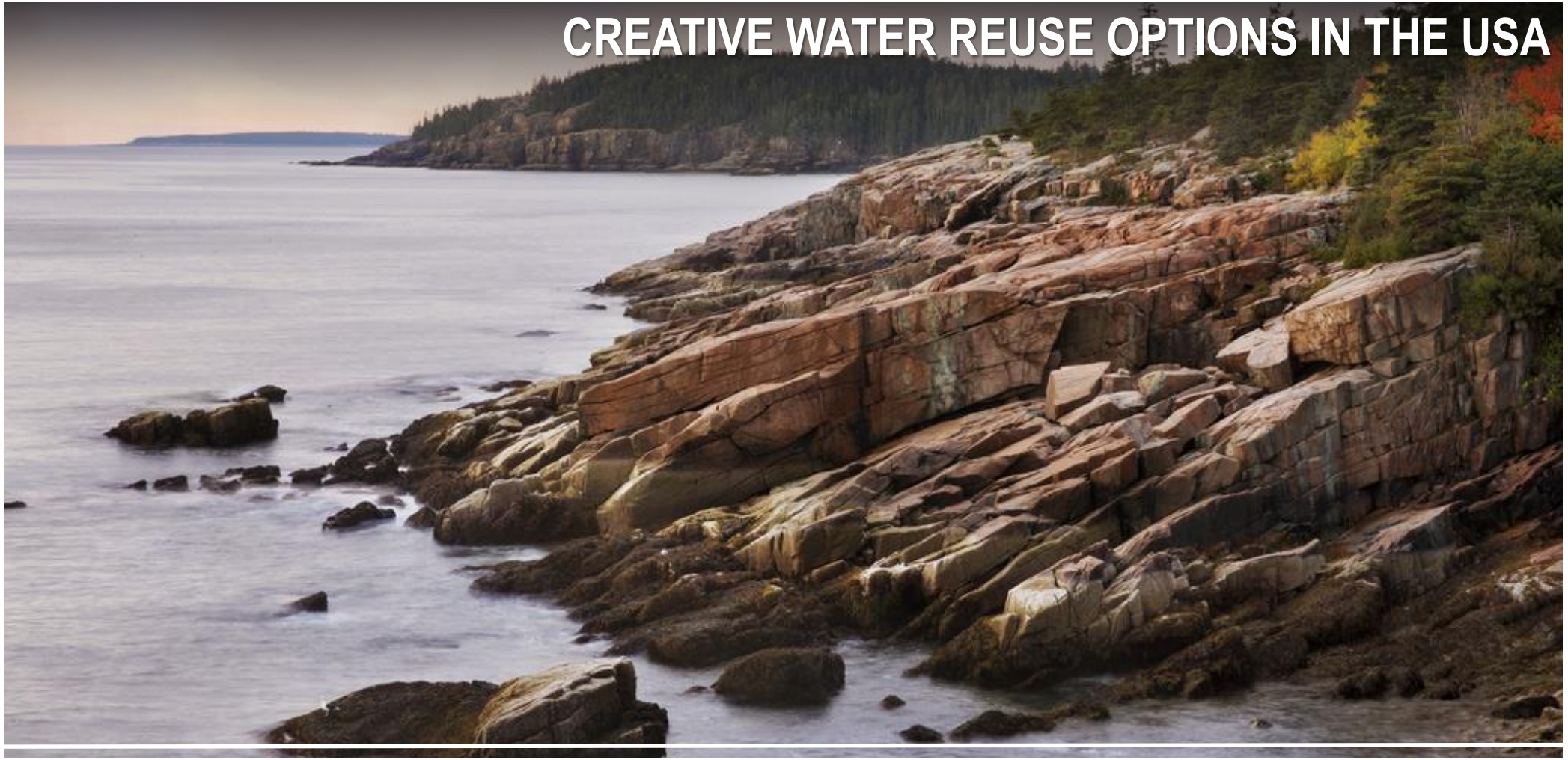
WOODARD &CURRAN

From Coast to Coast

WATEREUSE

Inland Empire
Chapter Meeting
January 23, 2018

Janet Fordunski, PE



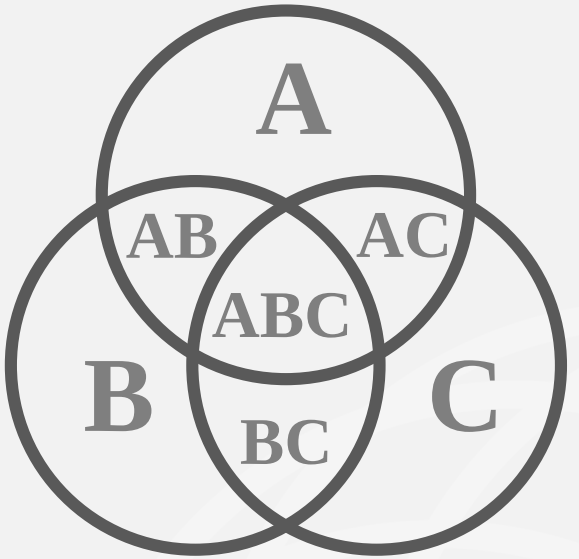
Agenda

- Project Drivers for Reuse
- Examples of Reuse from Different States
  - University of Connecticut, Storrs, CT
  - Water Conserv II, Orlando, FL
  - Victorville, CA

When Does Water Reuse Make Sense?

A. Water scarcity

- Limited water sources
- Frequent droughts & weather variability
- Sustainability goals limiting usage



But also…

B. Economics

- Increased potable water cost
- Investment in development
- Grant opportunities/funding

And…

C. Regulations

- Permitting limits on discharge
- State reuse pathway

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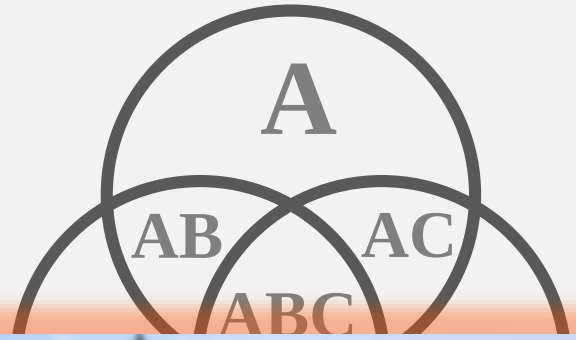

But also…

B. Economics

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- Investment in development
- Grant opportunities

D. Political Will

University of Connecticut

- 2005 drought: Uconn's wellfield desiccated a section of Fenton River
  - State mandates UConn reduce water withdrawal rates by 1/3
- Occurred during a period of rapid campus growth and major investment by the state in their university system

University of Connecticut

- No state regulations for water reuse
  - No pathway
- But there was **political will**
  - The campus and the state worked together to allow reuse to move forward without regulations
- No irrigation allowed
  - State limited water reuse limited to indoor use in campus cooling towers

University of Connecticut

- Recycled Water Demand
  - 0.25 to 0.45 MGD
  - Up to 40% of peak season potable demand
- RW to Central Utilities Plant
  - 1.0 MGD MF/UV Treatment
- Potential to expand recycled water system to irrigation as regulations develop

Water Conserv II

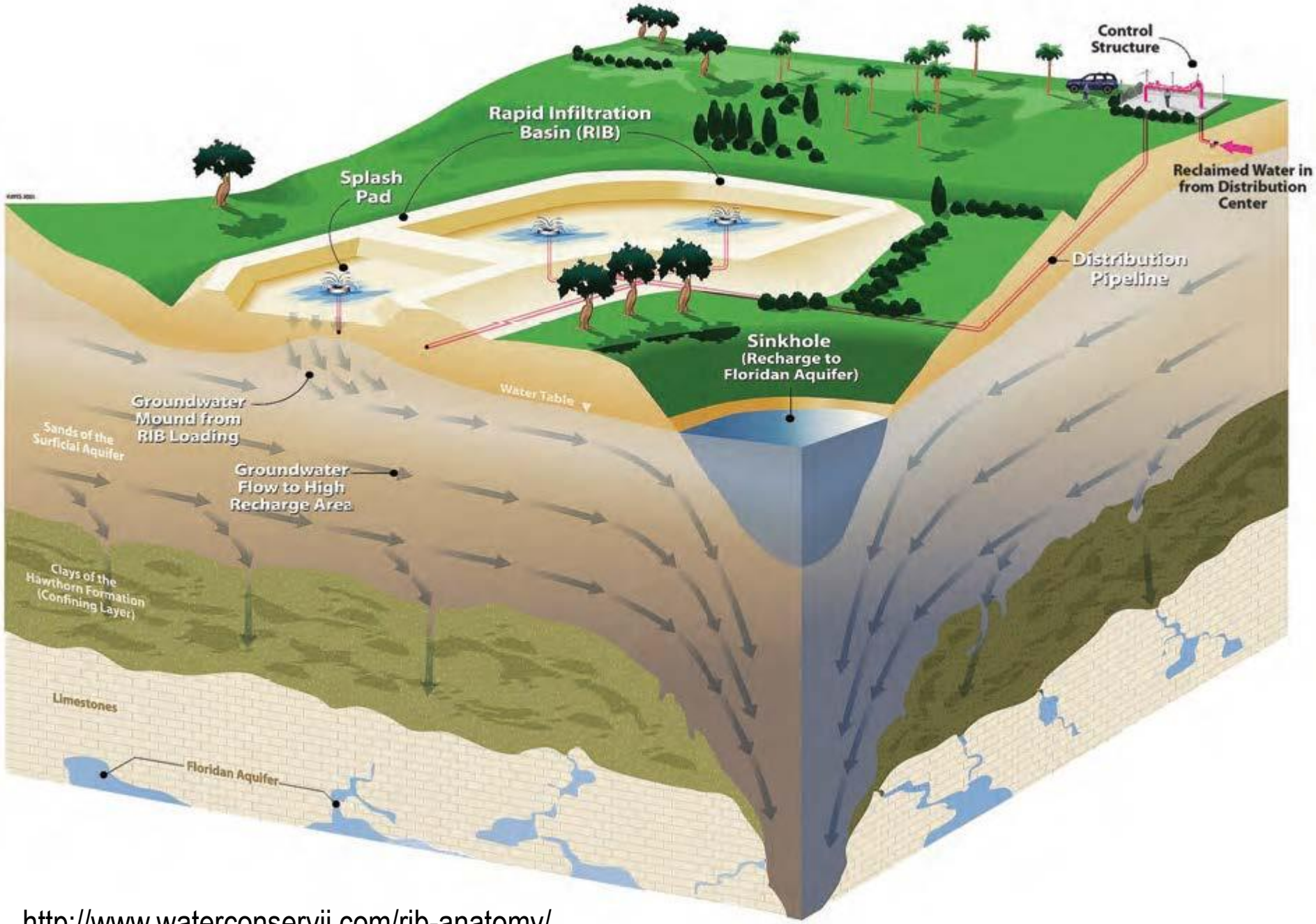
- Growing population around north of Orlando
- State requirement to eliminate treated effluent discharge to Shingle Creek by 1988
- ~3,000 acres of citrus with irrigation needs

Water Conserv II

- No regulations for using recycled water on food crops for human consumption
- Agreement forged in 1983 – precipitated new State regulations
- Operations began in 1986
- First reuse project in FL to irrigate crops for human consumption

Water Conserv II

- This project is BIG!
  - 50 mgd with peak of 75 mgd
  - 90 miles of pipelines
  - 59 agricultural customers, plus golf courses, industrial users, and residential irrigation
- Excess water recharged to aquifer via rapid infiltration basins (RIBs)



http://www.waterconservii.com/rib-anatomy/

Victorville, CA

- Average rainfall 3.2 inches per year
- City's Economic Development Mission
  - $500M investment in infrastructure
  - Multi-modal transportation hub with ground, rail, air
  - Southern California Logistics Airport 2nd longest commercial runway in US
  - 100 miles from Ports of LA/Long Beach
- Dr. Pepper Snapple Group bottling plant wastewater need to discharge high-strength industrial wastewater

Victorville, CA

- Collection system for high-strength industrial wastewater separate from domestic wastewater
- Industrial WW pre-treatment to reduce BOD: anaerobic sludge blanket
- Domestic wastewater from:
  - Businesses
  - Residences
  - Prison
- Fast-track schedule – 23 months

Victorville, CA

- Design flow 2.45 mgd
  - 40% Industrial
  - 60% Municipal
- Existing flow 1.7 mgd
- Unused RW to percolation basins
- Potential customer: High Desert Power Plant 830 MW

Victorville, CA

- High Desert Power Plant – Conceptual Study
- Cooling Towers
  - Up to 4,000 AFY
- TDS < 450 mg/L
  - RO
  - Brine concentration
  - No brine line – brine evaporation ponds

Project Drivers Summary

	UConn		Conserv II		Victorville	
Water Scarcity	Reduced supply Increased demand		Reliable ag supply need Water source for growth		Limited, variable supplies Reduced quality	
	☑	☐	☑	☐	☑	☐
Economic Conditions	State (university) funding		Strong ag economics Local growth		Water/WW management for economic growth	
	☑	☐	☑	☐	☑	☐
Regulations	No reuse regulations		Discharge prohibition	No reuse regulations	CA reuse regulations	
	☐	☒	☑ ☐	☐ ☒	☑	☐
Political Will	☑	☐	☑	☐	☑	☐

Questions / Discussion