

# Providing Safe Drinking Water

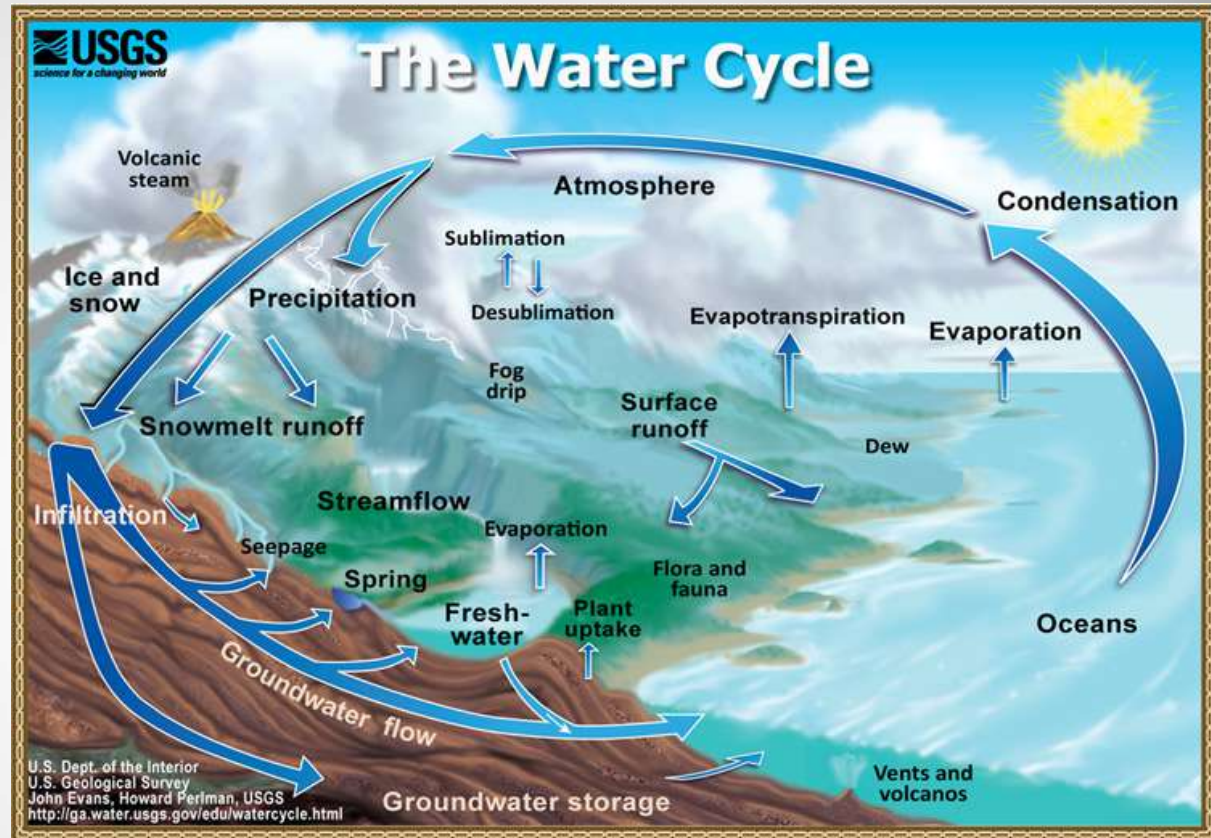
**Coachella Valley Water Counts Academy**

February 25, 2020 Session



# Water = “Universal Solvent”

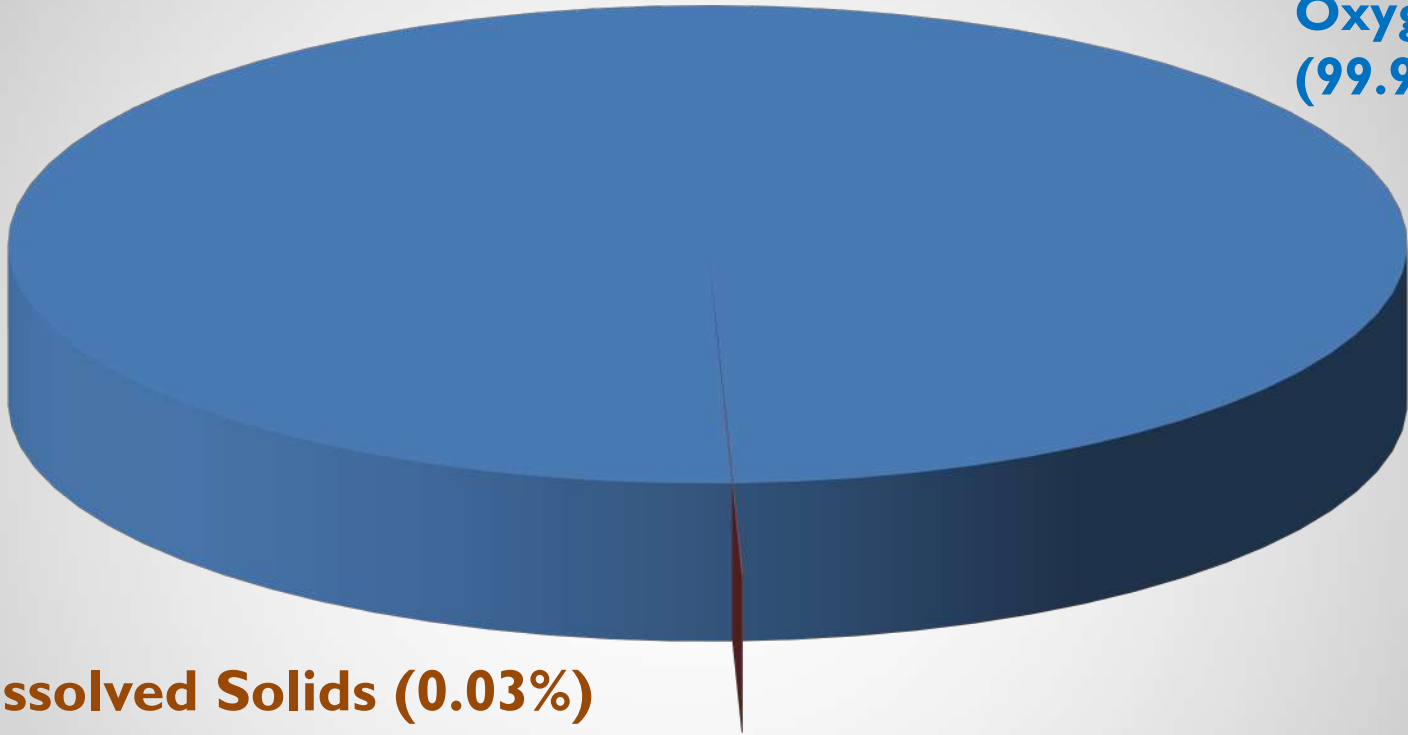
Water Source	Dissolved Solids or Salinity (ppm)
Rain	<5
Melted snow	<30
Freshwater streams	100 – 1,500
Fresh groundwater	100 – 3,000
Brackish groundwater	2,000 – 35,000
Ocean	35,000
Salton Sea	60,000
Great Salt Lake	Up to 270,000
Dead Sea	340,000



**“Contaminants” are any substance or matter in water**

# Tap Water Content

Hydrogen &  
Oxygen  
(99.97%)



## Total Dissolved Solids (0.03%)

**0.0299%** - Bicarbonate, calcium, magnesium, sulfate, sodium, chloride, nitrate, potassium & fluoride

**0.0001%** - Aluminum, arsenic, barium, copper, chromium, disinfection by-products, iron, lead, molybdenum, organic compounds, selenium, strontium, uranium & vanadium

# Program Elements

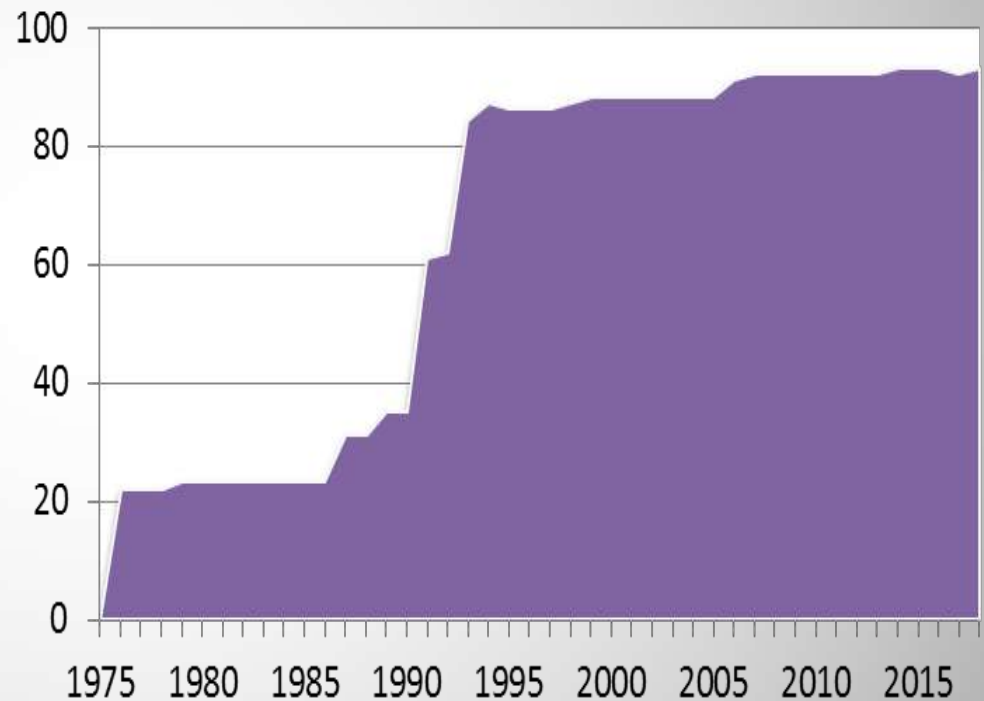
- Research
- Contaminant monitoring
- Source water protection
- State and Federal regulations
- Water treatment
- Sanitary surveys
- Water system construction and OM&R
- Backflow prevention
- Water agency reporting



# Drinking Water Regulations

- Primary maximum contaminant levels
  - Enforceable (health)
- Secondary maximum contaminant levels
  - Non-enforceable (aesthetics)
- EPA establishes national standards
- States can establish more stringent standards

Regulated Drinking Water Contaminants



# State Standards

State	No EPA or Other State MCL	No EPA MCL	More Stringent than EPA MCL	Total
California	6	8	25	39
New York	3	8	13	24
New Jersey	1	4	14	19
Delaware	0	2	4	6
Colorado	0	3	0	3
Massachusetts	0	1	2	3
Hawaii	0	1	2	3

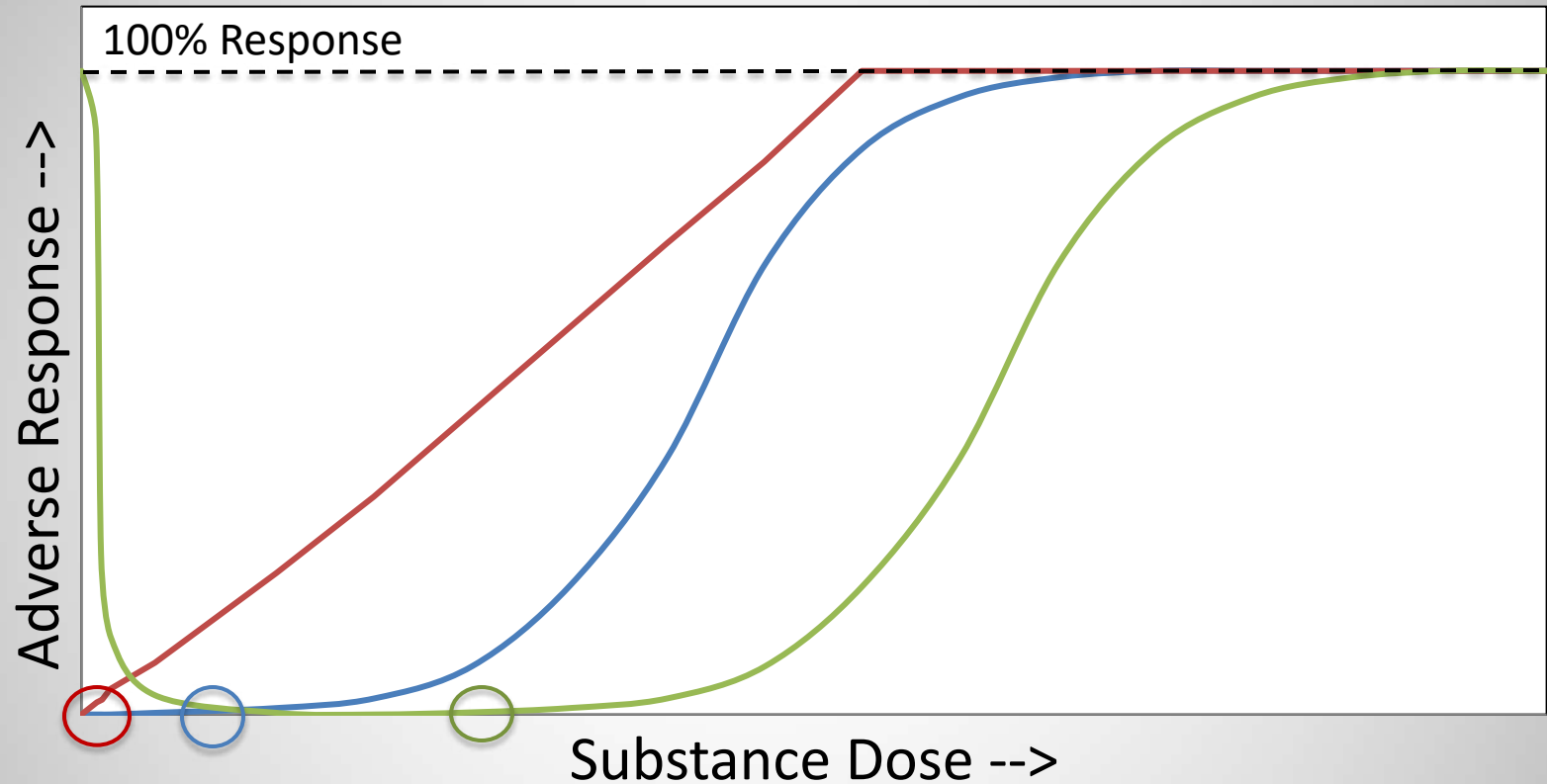
## Examples

Constituent	EPA MCL	Other State MCLs	California MCL
Molinate	None	None	20 ug/L
MTBE	None	NY & DE (10 ug/L), NJ (70 ug/L)	13 ug/L
1,2,3 – TCP	None	NY (5 ng/L), HI (600 ng/L)	5 ng/L

# When EPA Regulates Contaminants

- Toxicity
  - May have adverse health effects
- Occurrence
  - Exists or likely exists enough at levels of concern
- Benefit
  - Meaningful opportunity for risk reduction
  - Technically & economically feasible

# Predicting Dose Response



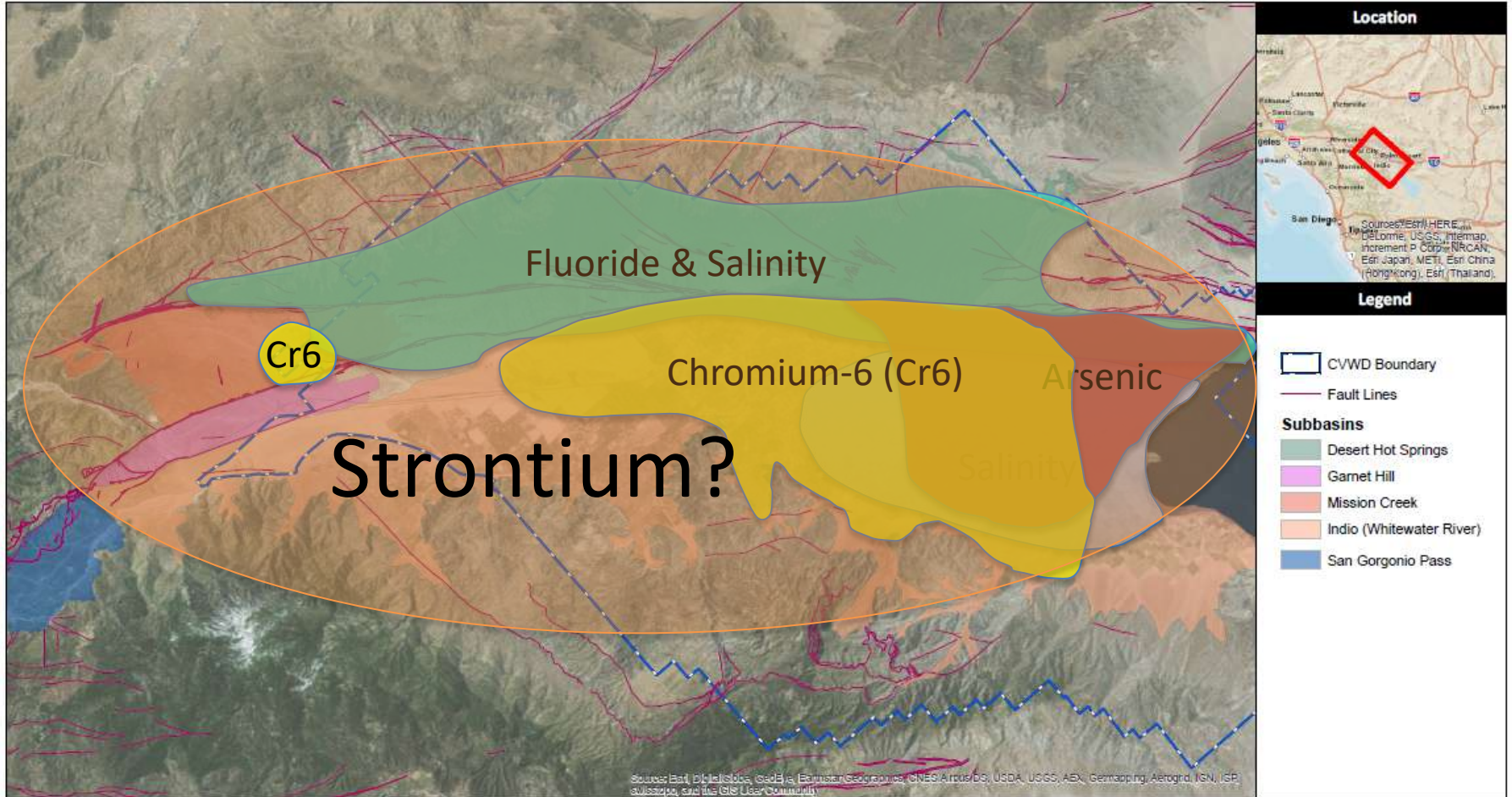
— Threshold (non-essential) — Linear — Threshold (essential)



# EPA Regulatory Determination

- Contaminant occurrence
- Health risk reduction and cost analysis
  - Treatment technology costs
  - Qualitative and quantitative health benefits
- Set lowest feasible limit to maximize benefits
  - Best available technology
  - Must be economically feasible
- Provide 3-5 year compliance period

# Coachella Valley Groundwater Basin



**Coachella Valley Water District**

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[www.cvwd.org](http://www.cvwd.org)  
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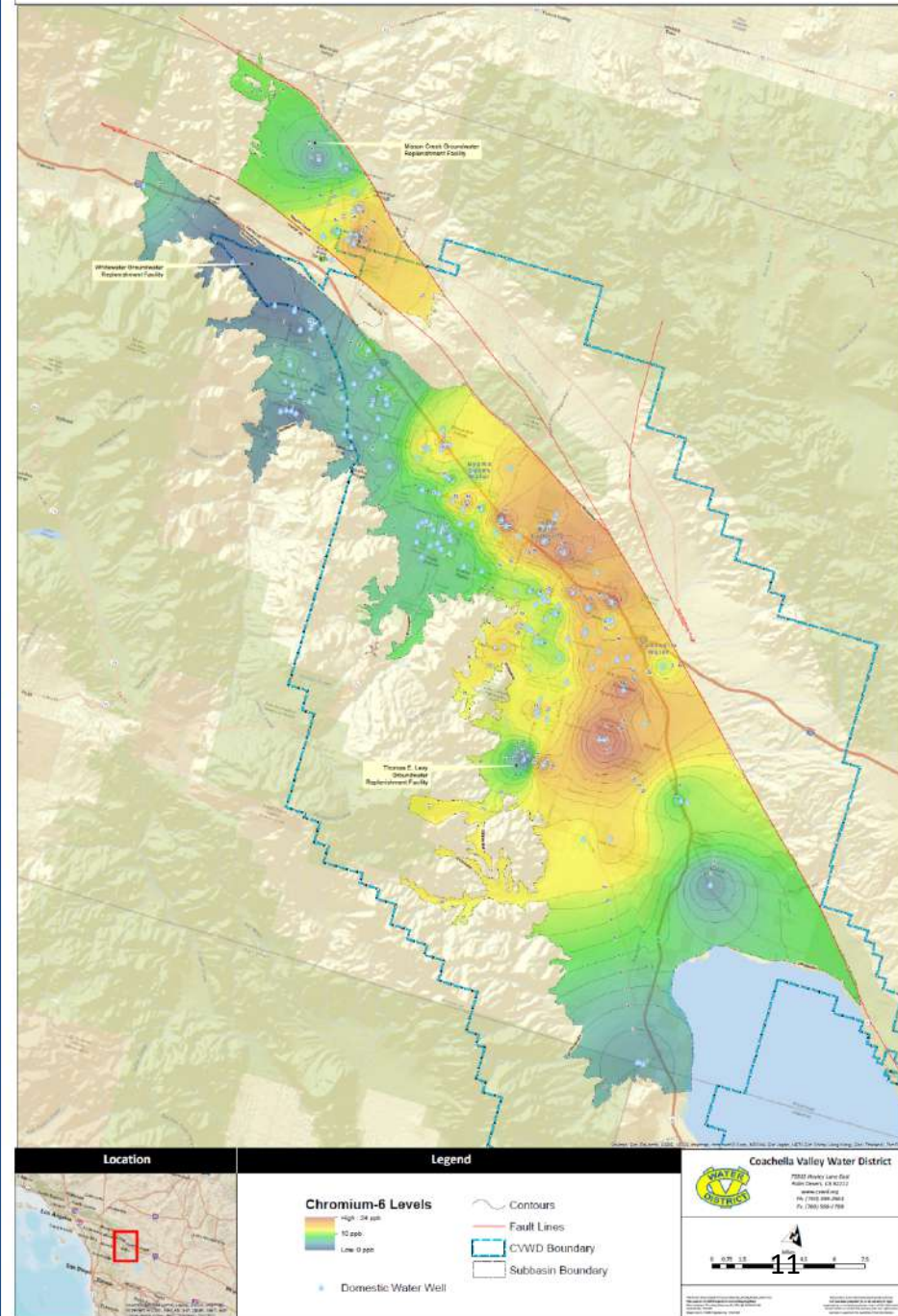


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# Chromium Background

- Abundant in earth's crust
- Chromium-3 (Cr<sup>+3</sup>) or chromium-6 (Cr<sup>+6</sup>) in water
  - Mostly Cr<sup>6</sup> in groundwater
  - Need Cr<sup>3</sup> to regulate blood sugar (nutrient in vitamins)
- Cr<sup>6</sup> Sources in Water
  - Erosion of natural sediments
  - Isolated industrial sources
- Cr<sup>6</sup> Health Concerns
  - Occupational carcinogen when inhaled
  - Possible carcinogen when ingested (rodent studies)

Coachella Valley Groundwater Chromium-6 Occurrence



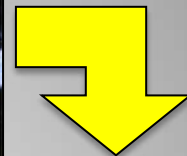
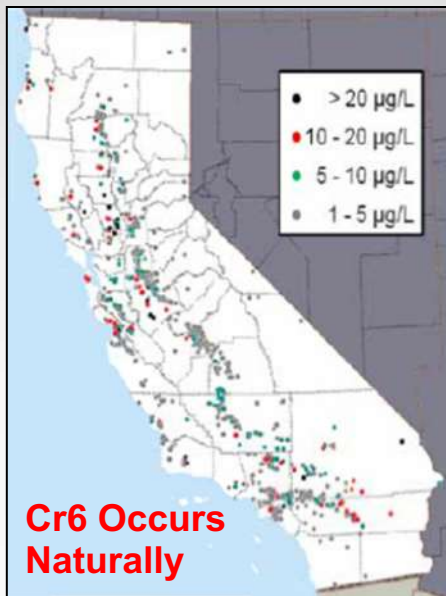


RIP 1968

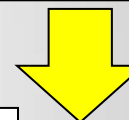
# “Only in California”

SB 351 (2001)

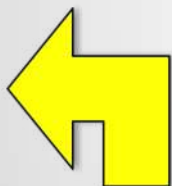
1999  
Cr PHG  
2.5  
ppb



2010  
Cr6  
PHG  
0.020  
ppb



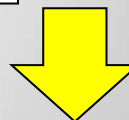
MCL  
Withdrawn



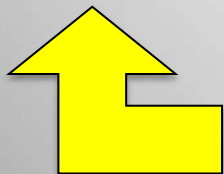
SB 385 (2015)



v.

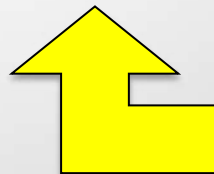


June 1, 2017 Court Orders State to withdraw Cr6 MCL, perform economic feasibility analysis & set new MCL



CMTA & Solano Co. Taxpayers

v.



April 15, 2014 Court Orders State to adopt Cr6 MCL at 0.010 mg/L (10 ppb)

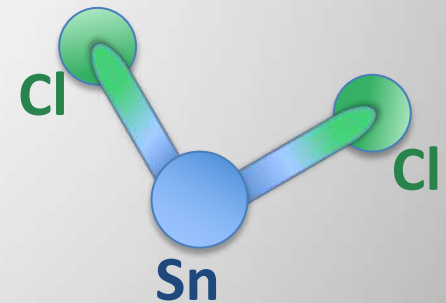
# Water System Activity

- Vast majority of impacted systems on pause
- Handful continue operating plants (e.g., Ion Exchange)
- Some performing treatment studies
  - CVWD full-scale demonstration



# Stannous Alternative

- Approved drinking water additive
  - Solution used to protect pipes
- Salt made of tin & chloride ( $\text{SnCl}_2$ )
- Antioxidant in consumer products
- Reduces  $\text{Cr}_6$  to  $\text{Cr}_3$ 
  - Faster and better than other reductants (e.g., iron, vitamin C)



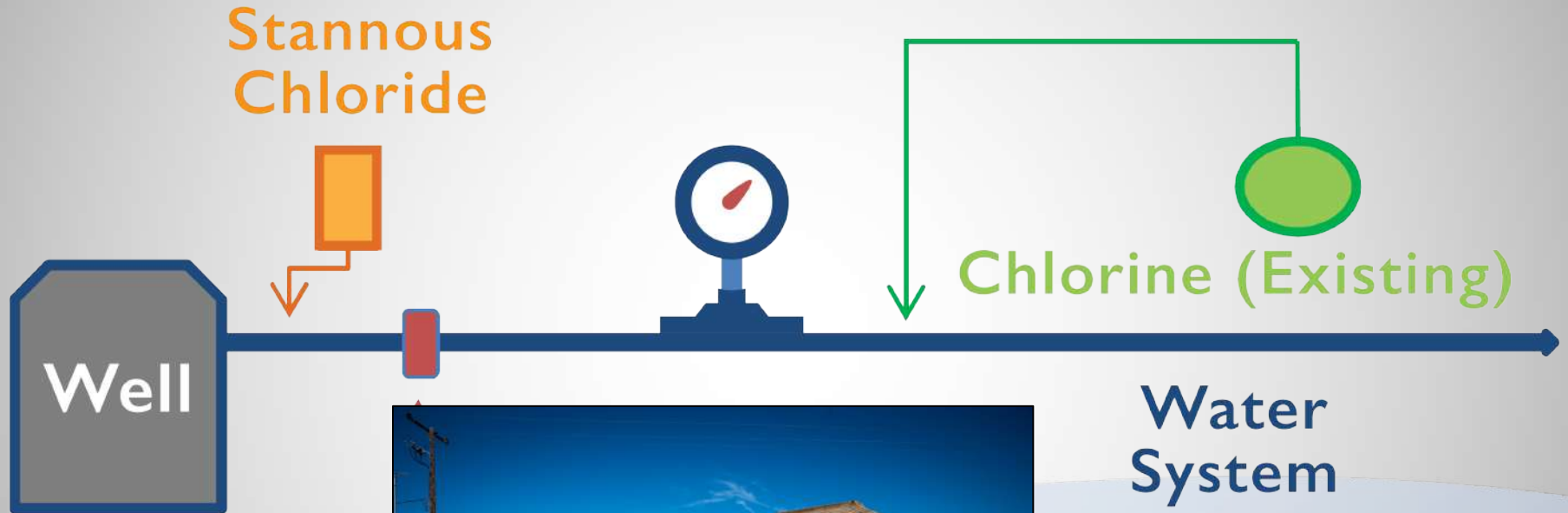


# Sky Valley System Demonstration

- Sufficient Cr6 levels (16-20 ppb)
- Extended water System (15 miles)
- Only 3 active supply wells

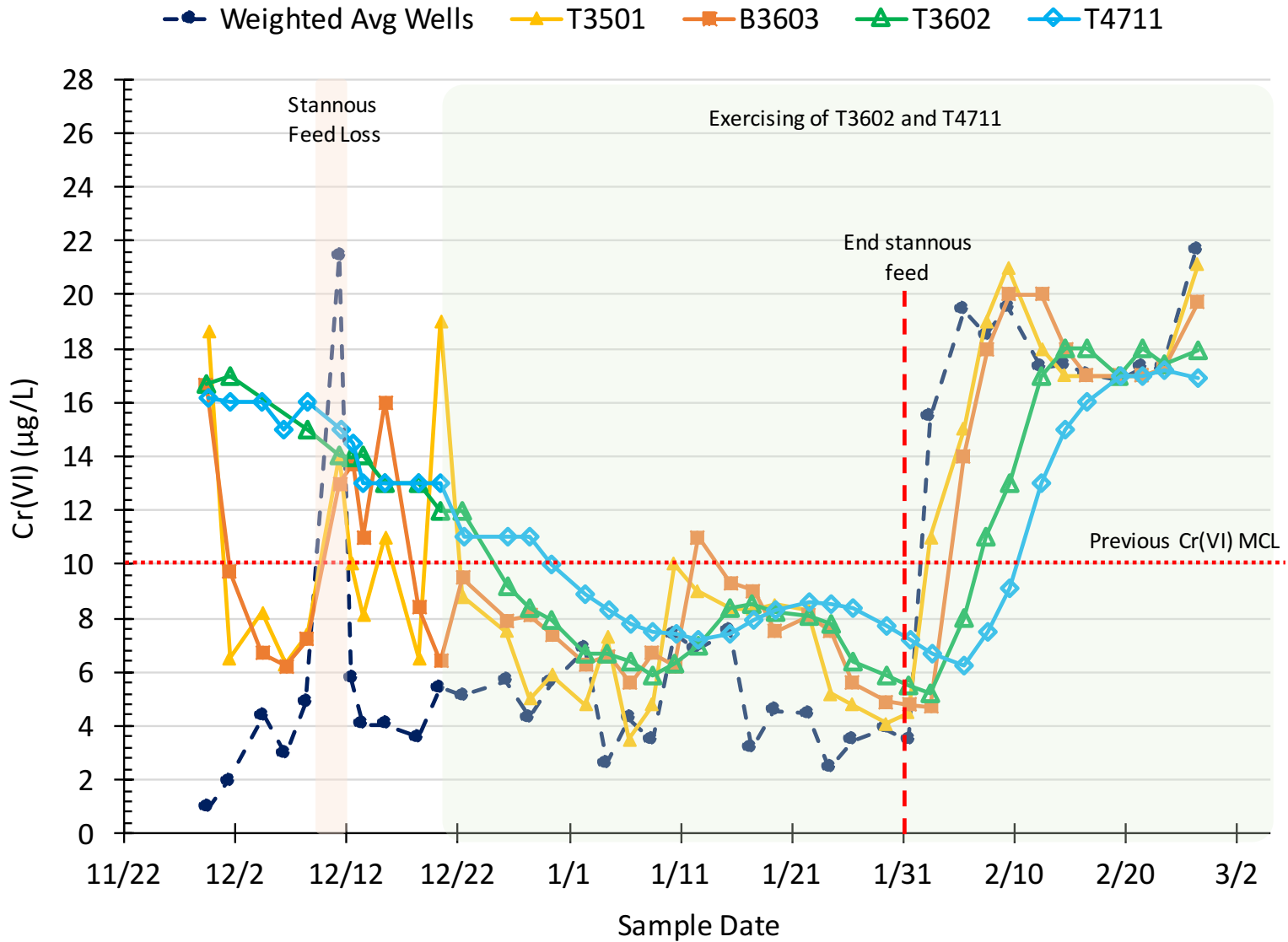


# Stannous Demonstration Project





# Demonstration Test Results



# Benefits

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Cost effective

No waste products

No visual impacts

Helps protect pipes

Does not change taste, smell  
or look of water

# Questions?

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