

# Providing Safe Drinking Water

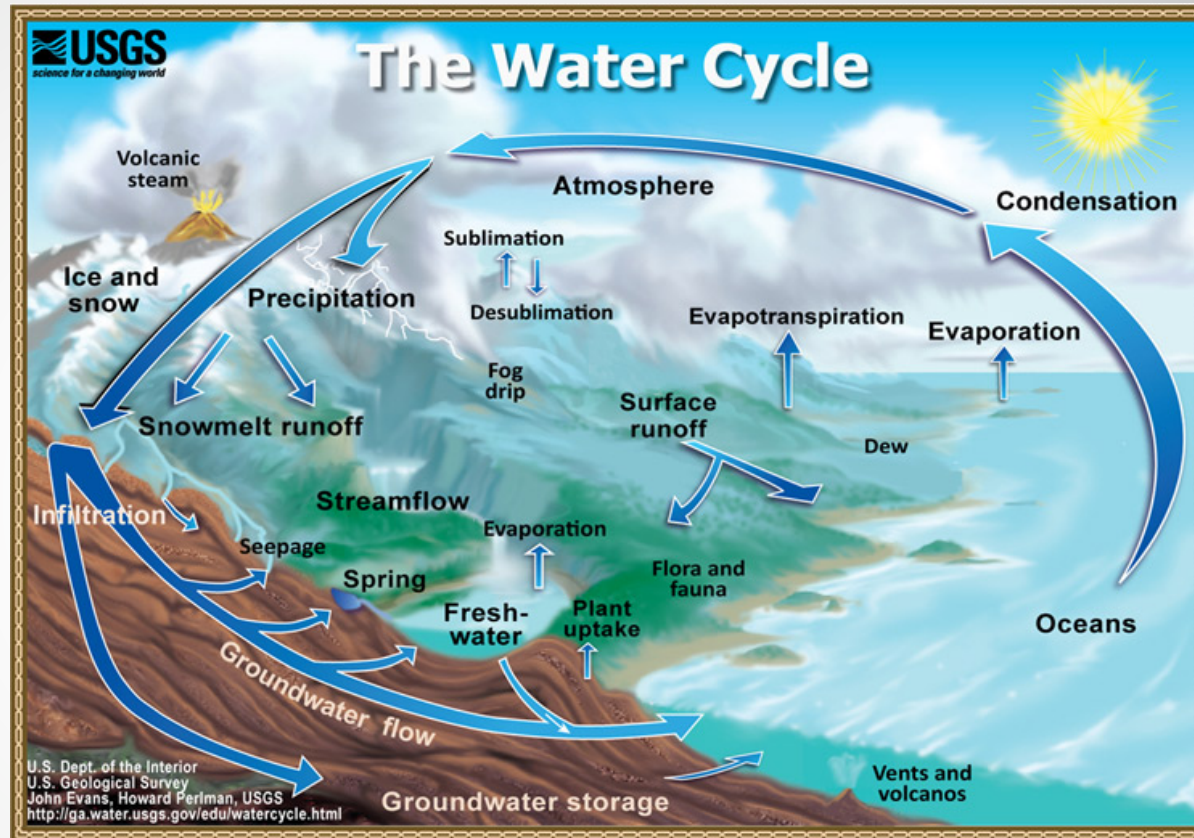
**Coachella Valley Water Counts Academy**

February 4, 2021 Session



# Water = “Universal Solvent”

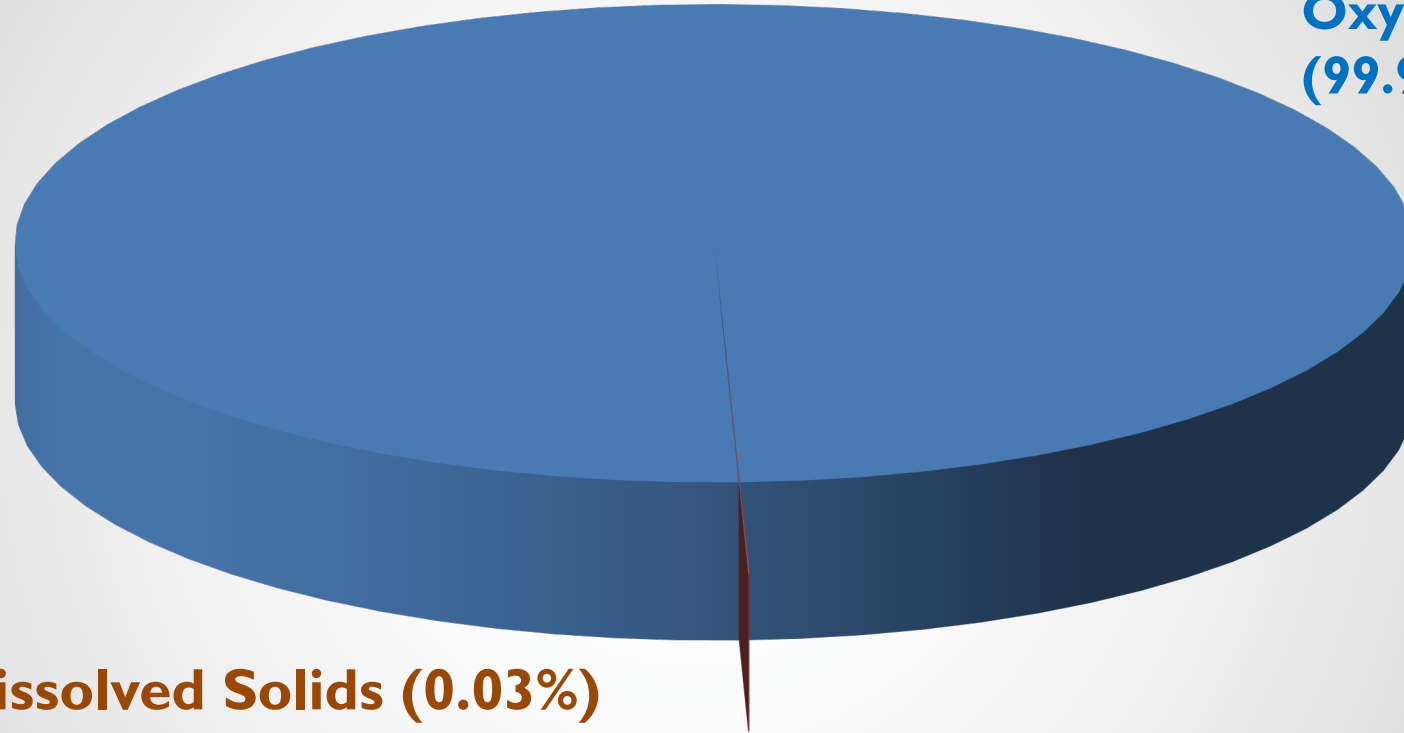
Water Source	Dissolved Solids or Salinity (ppm)
Rain	<5
Melted snow	<30
Freshwater streams	100 – 1,500
Fresh groundwater	100 – 3,000
Brackish groundwater	2,000 – 35,000
Ocean	35,000
Salton Sea	60,000
Great Salt Lake	Up to 270,000
Dead Sea	340,000



**“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

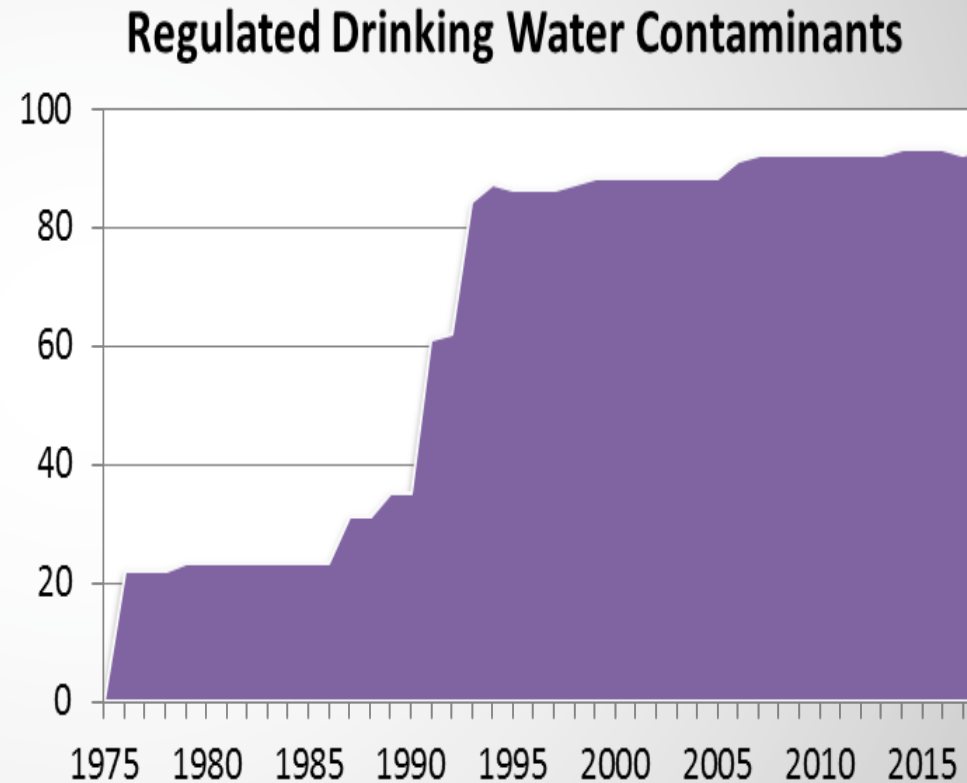
# Program Elements

- 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



# 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

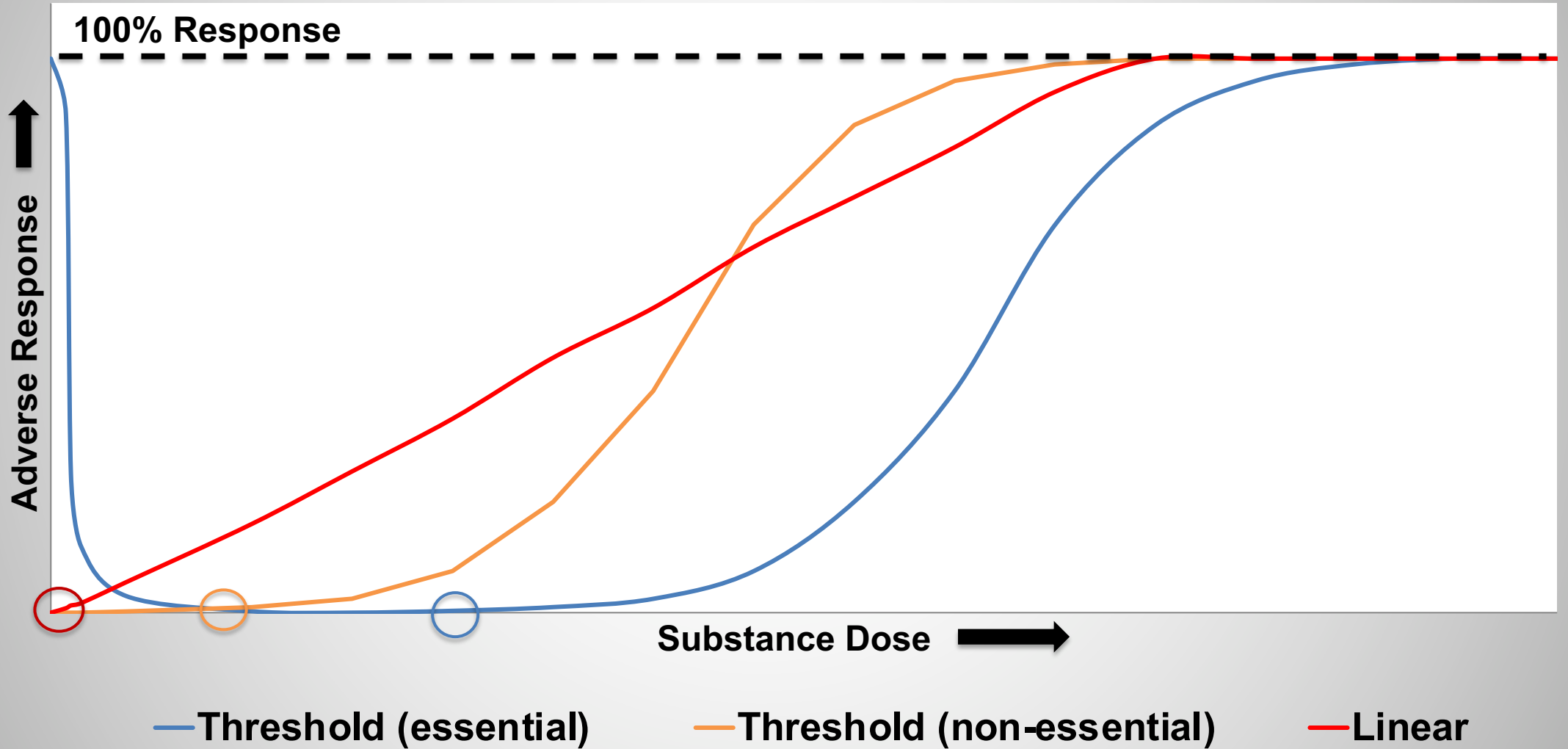
## Examples

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 affects
- Occurrence
  - Exists or likely exists enough at levels of concern
- Benefit
  - Meaningful opportunity for risk reduction
  - Technically & economically feasible

# Predicting Dose Response

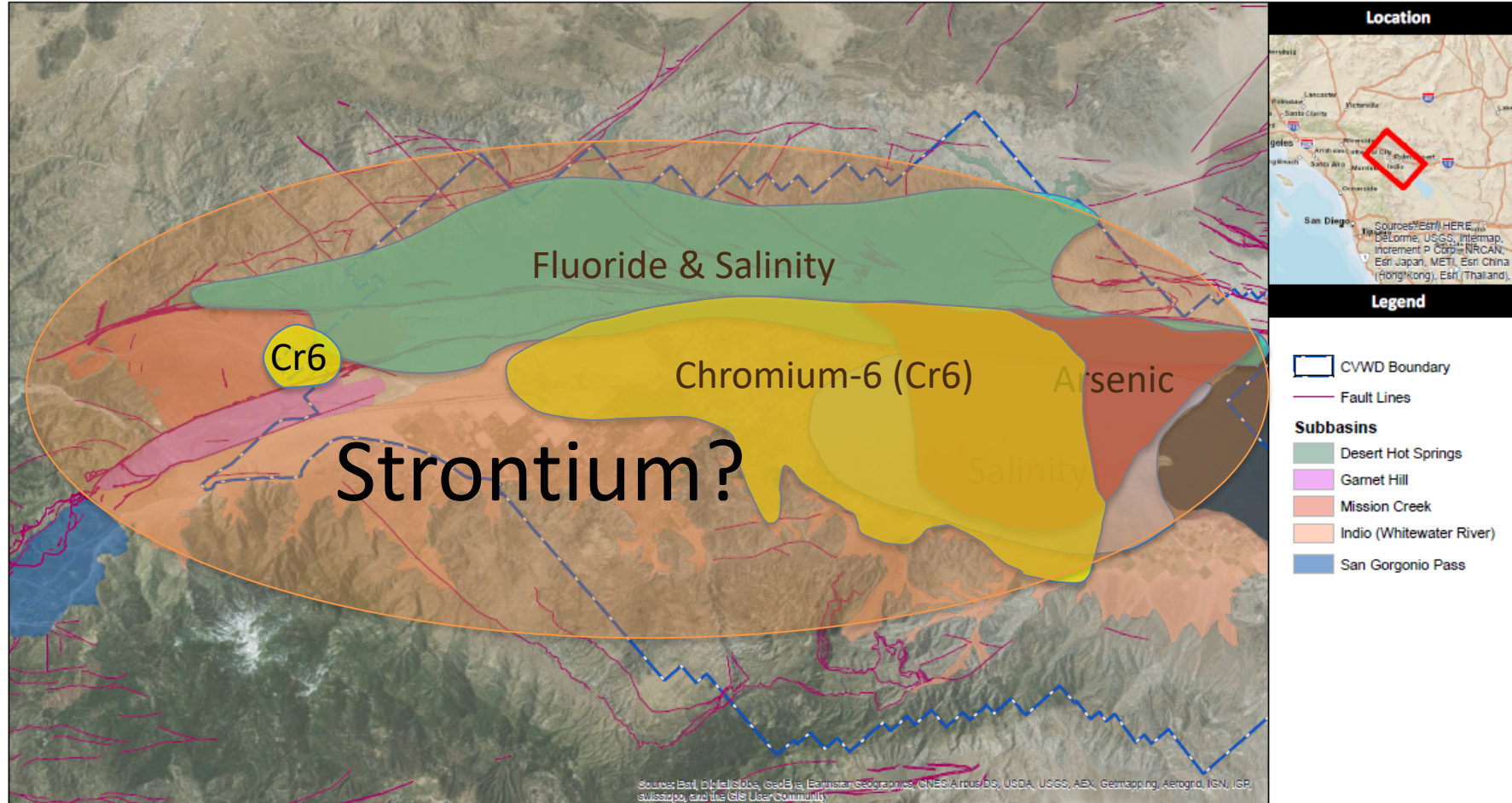




# EPA Regulatory Determination

- 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**

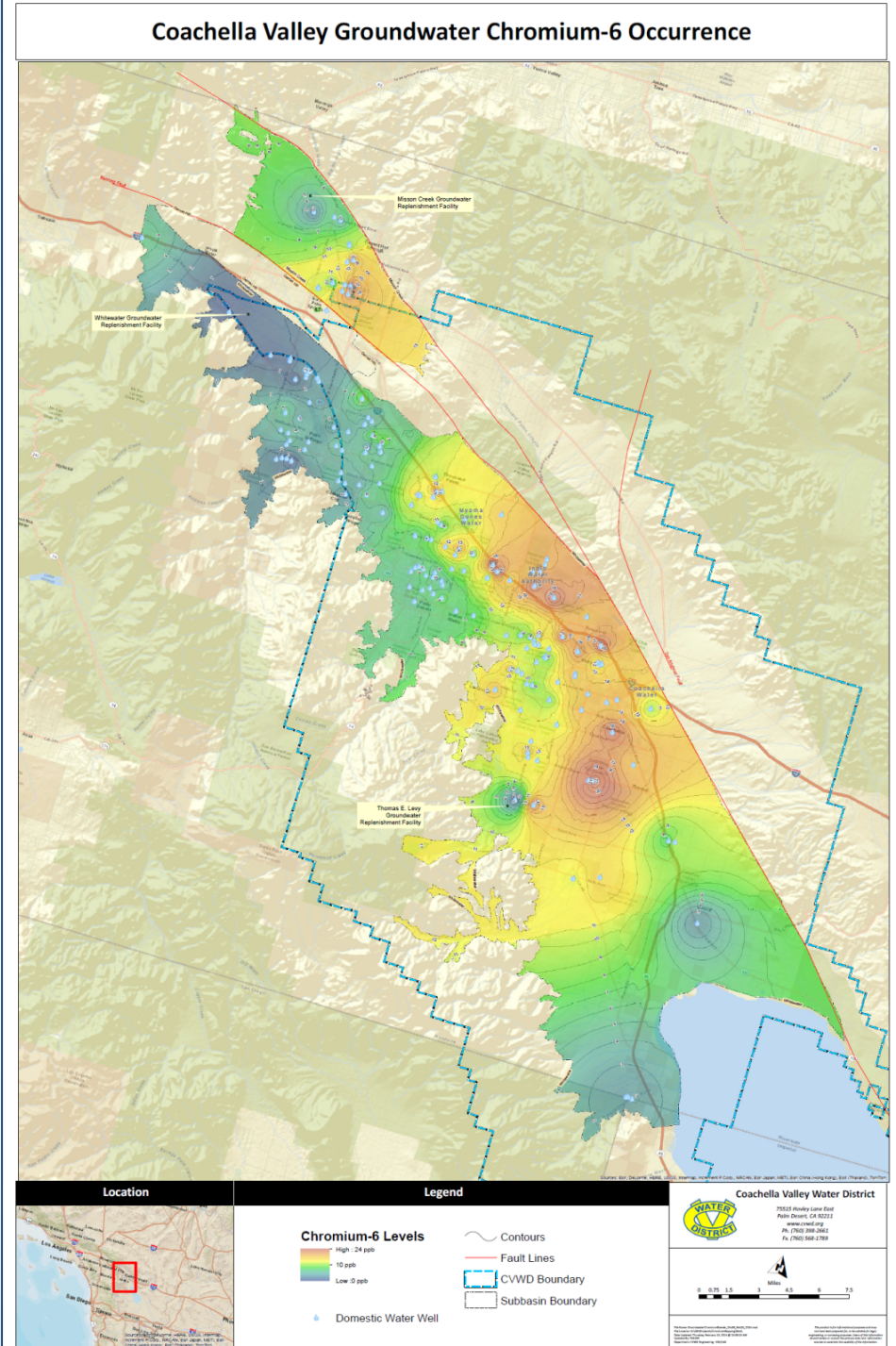
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# Chromium Background

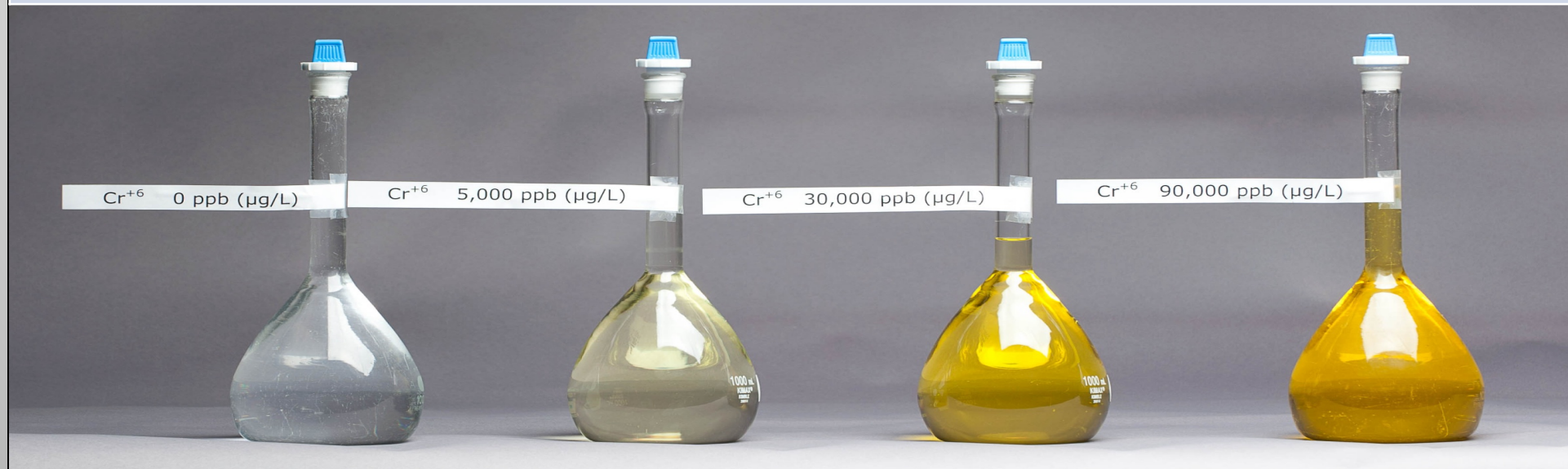
- Abundant in earth's crust
- Chromium-3 (Cr+3) or chromium-6 (Cr+6) in water
  - Mostly Cr6 in groundwater
  - Need Cr3 to regulate blood sugar (nutrient in vitamins)
- Cr6 Sources in Water
  - Erosion of natural sediments
  - Isolated industrial sources
- Cr6 Health Concerns
  - Occupational carcinogen when inhaled
  - Possible carcinogen when ingested (rodent studies)



# National Toxicology Program Study Results (2008)

Organ	Tumor Type	Cr6 Drinking Water Exposure				
		Control	5,000 ppb	10,000 ppb	30,000 ppb	90,000 ppb
Male Mice Small Intestine	Adenoma (Benign Tumor)	1/49	1/49	1/49	5/50	17/48
	Carcinoma (Malignant Tumor)	0/49	2/49	1/49	3/50	5/48
	Adenoma or Carcinoma	1/49	3/49	2/49	7/50	20/48

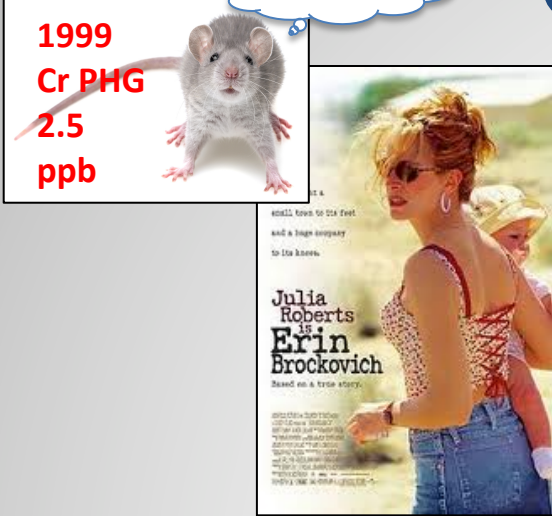
\* Yellow-highlighted values are statistically significant



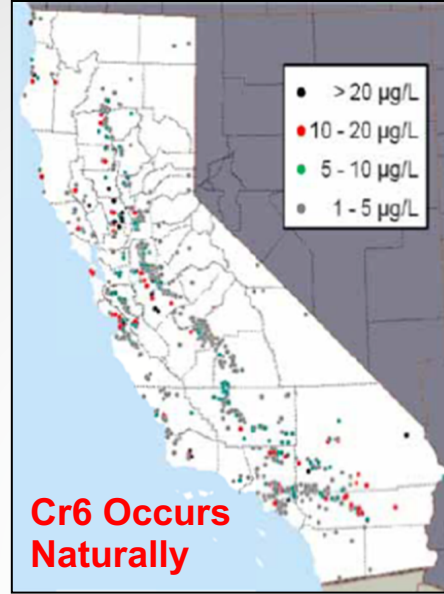
# "Only in California"

RIP 1968

1999  
Cr PHG  
2.5  
ppb



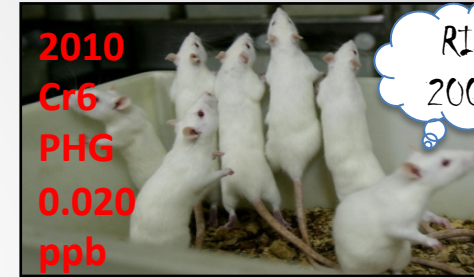
Julia Roberts  
Erin Brockovich



SB 351 (2001)



2010  
Cr6  
PHG  
0.020  
ppb



RIP 2008

12/8/20 New  
MCL Cost  
Workshop

9/11/17  
MCL  
With-  
drawn

SB 385 (2015)



v.



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

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

CMTA & Solano Co. Taxpayers

v.



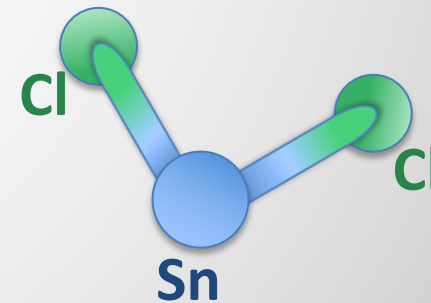
# Water System Activity

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



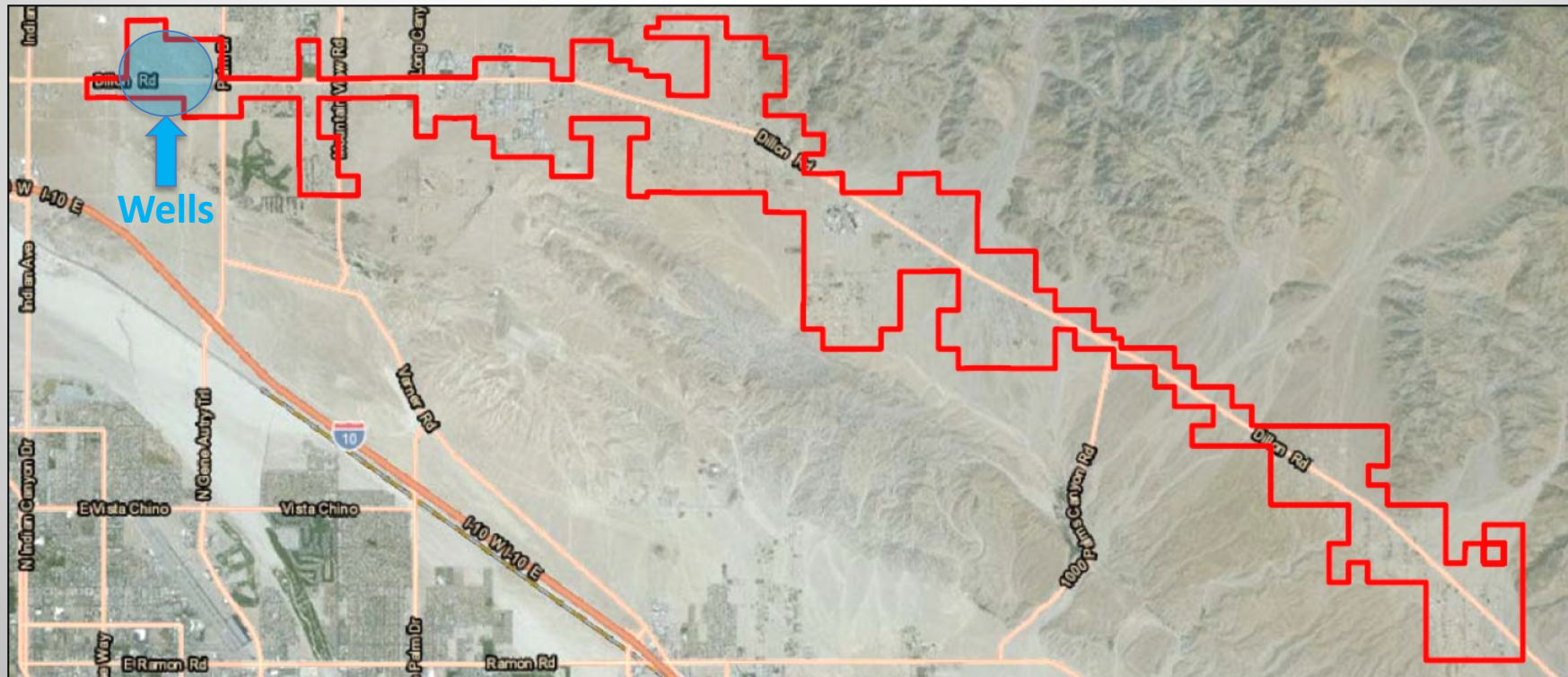
# Stannous Alternative

- 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)



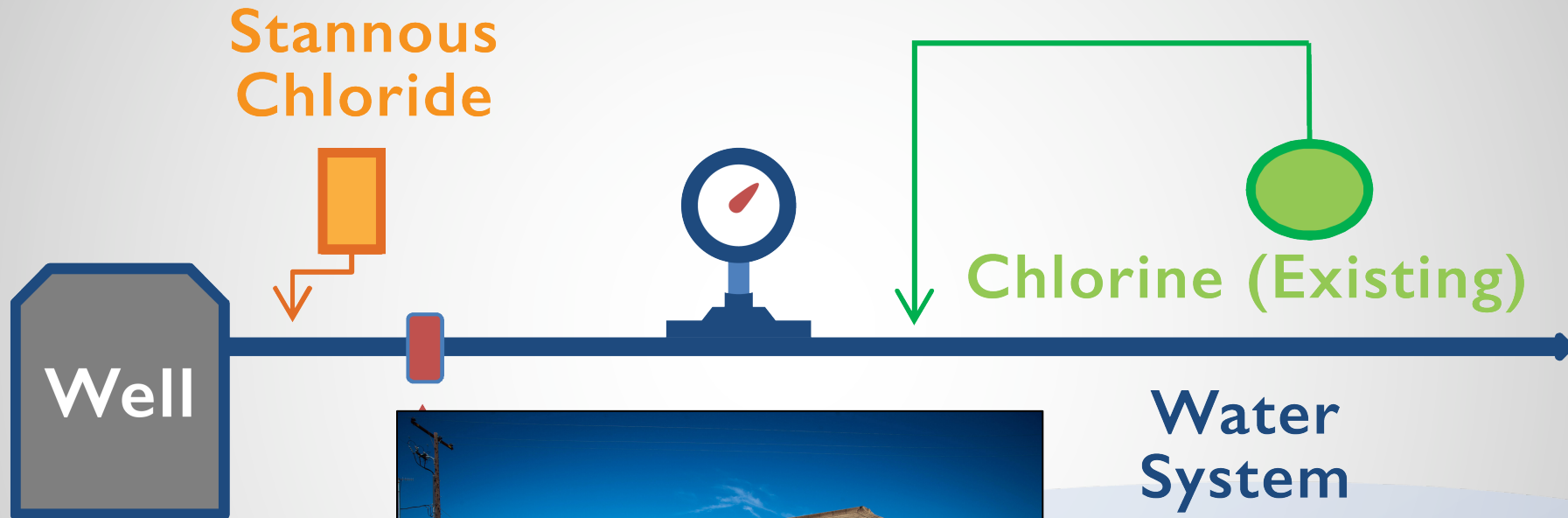
# Sky Valley System Demonstration

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

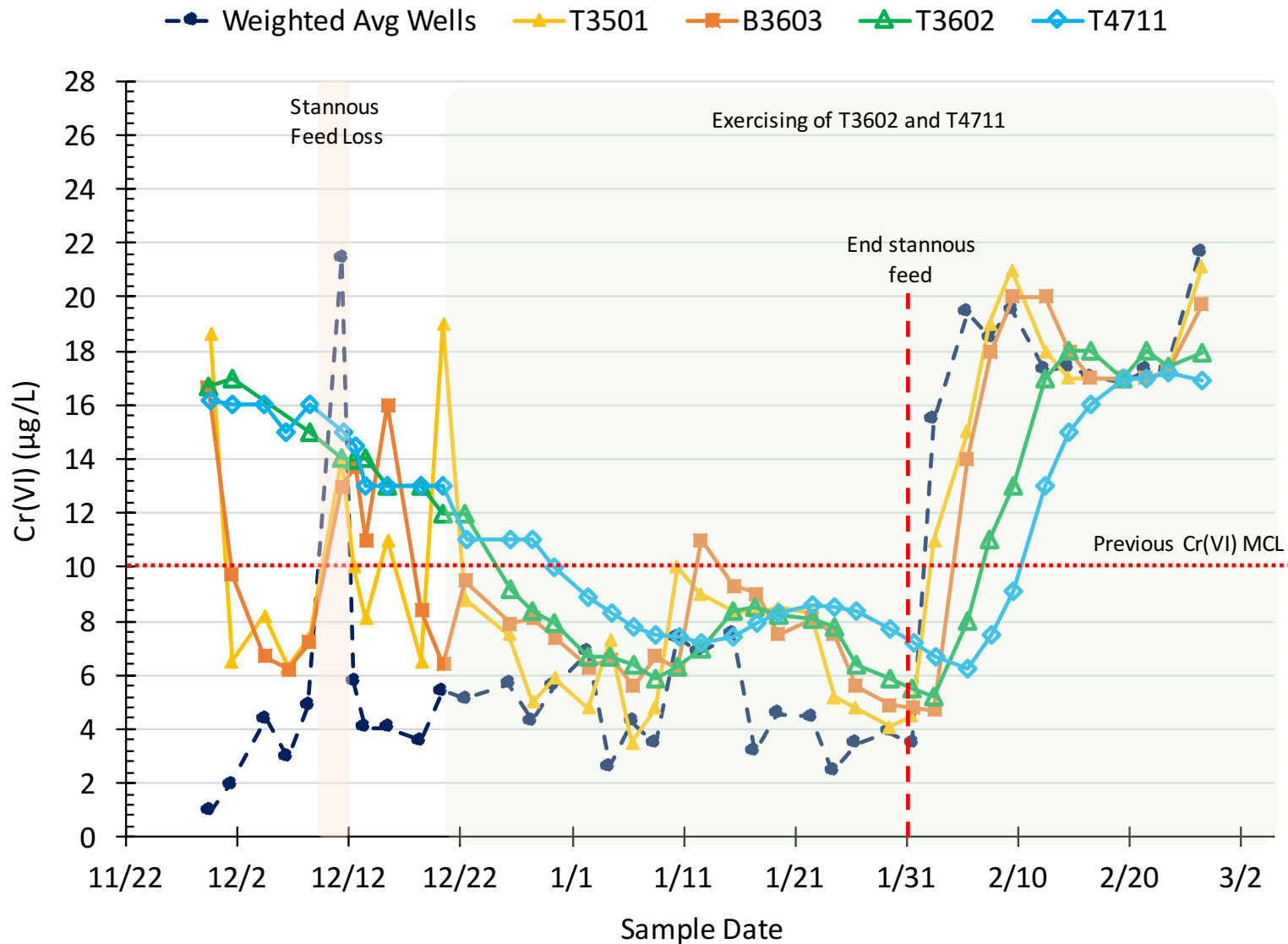




# Stannous Demonstration Project

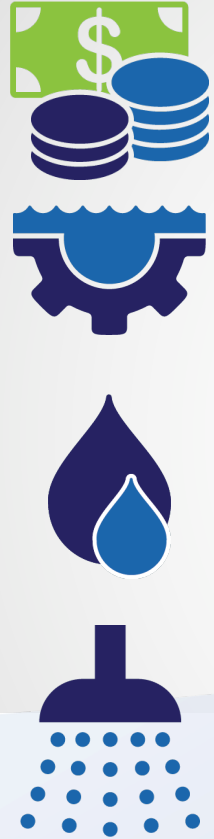


# Demonstration Test Results



# 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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