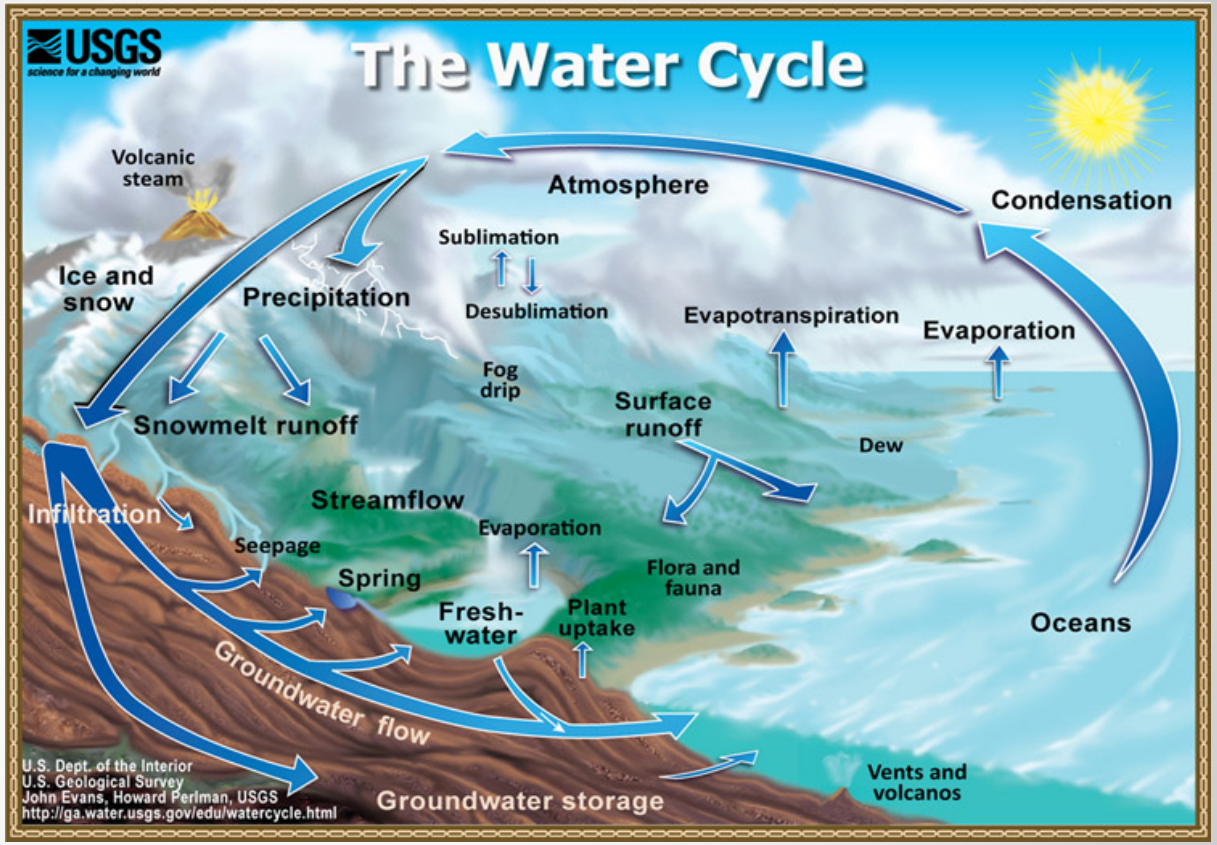
Providing Safe Drinking Water

Coachella Valley Water Counts Academy

February 3, 2022 Session

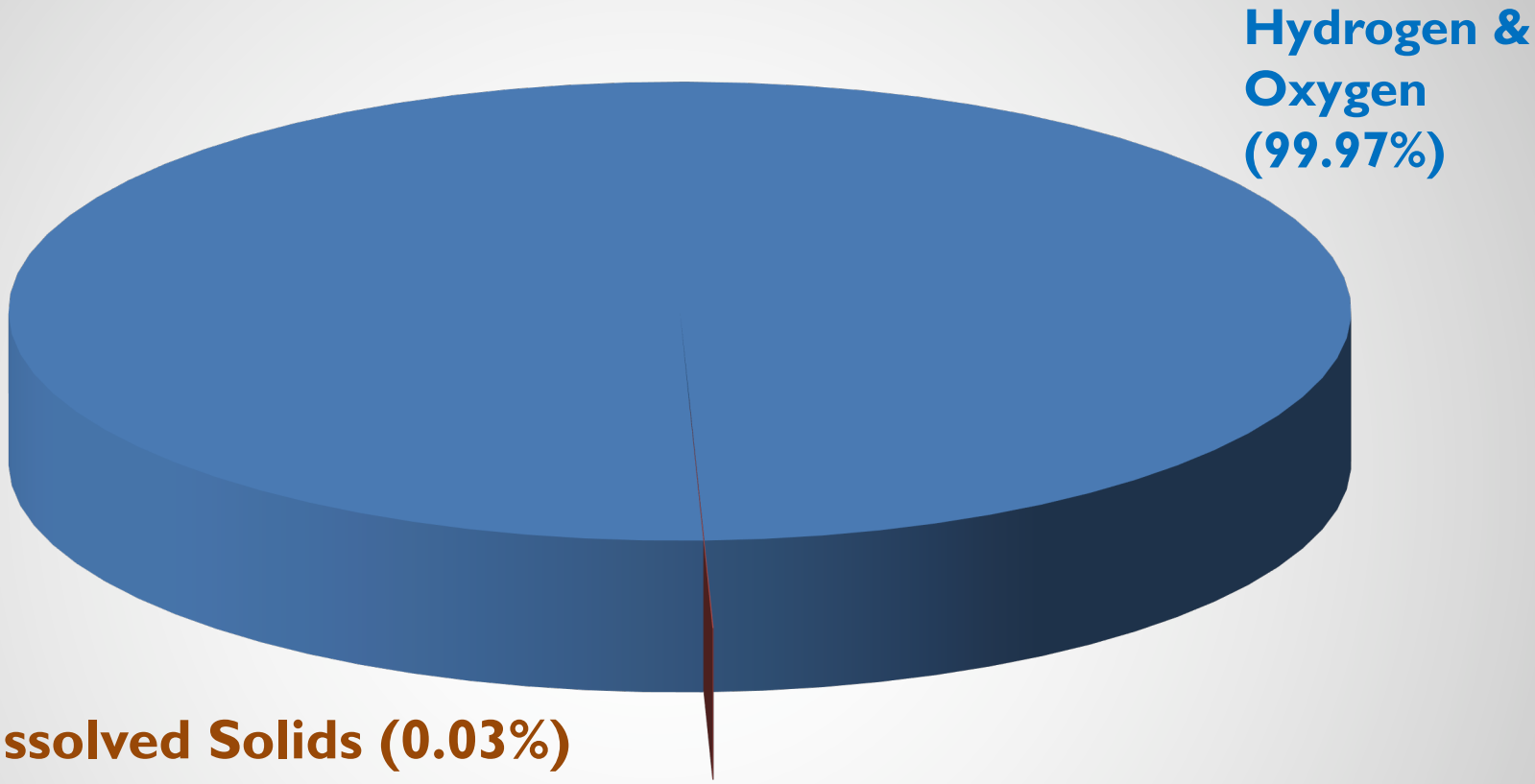
Water = "Universal Solvent"

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



Total Dissolved Solids (0.03%)

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

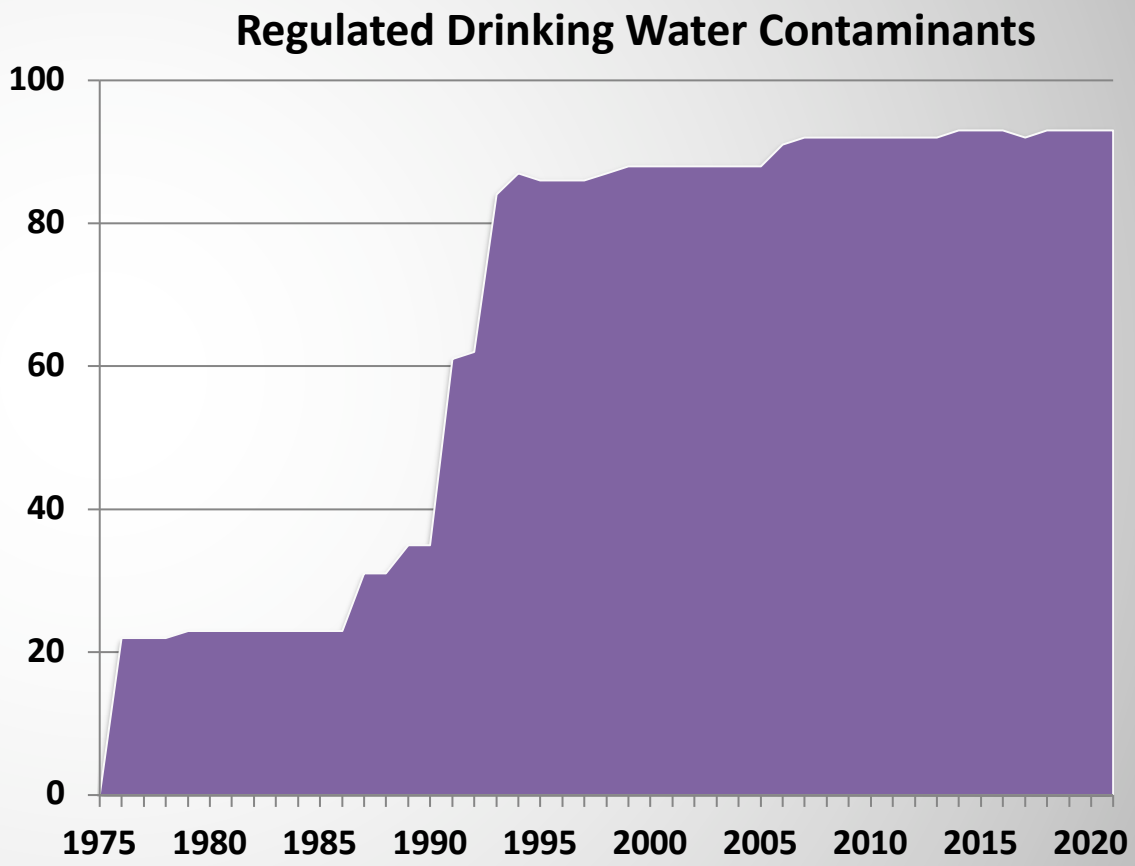
0.0001%: - Aluminum, arsenic, barium, copper, chromium, disinfection by-products, iron, lead, molybdenum, organic compounds, selenium, strontium, uranium & vanadium

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

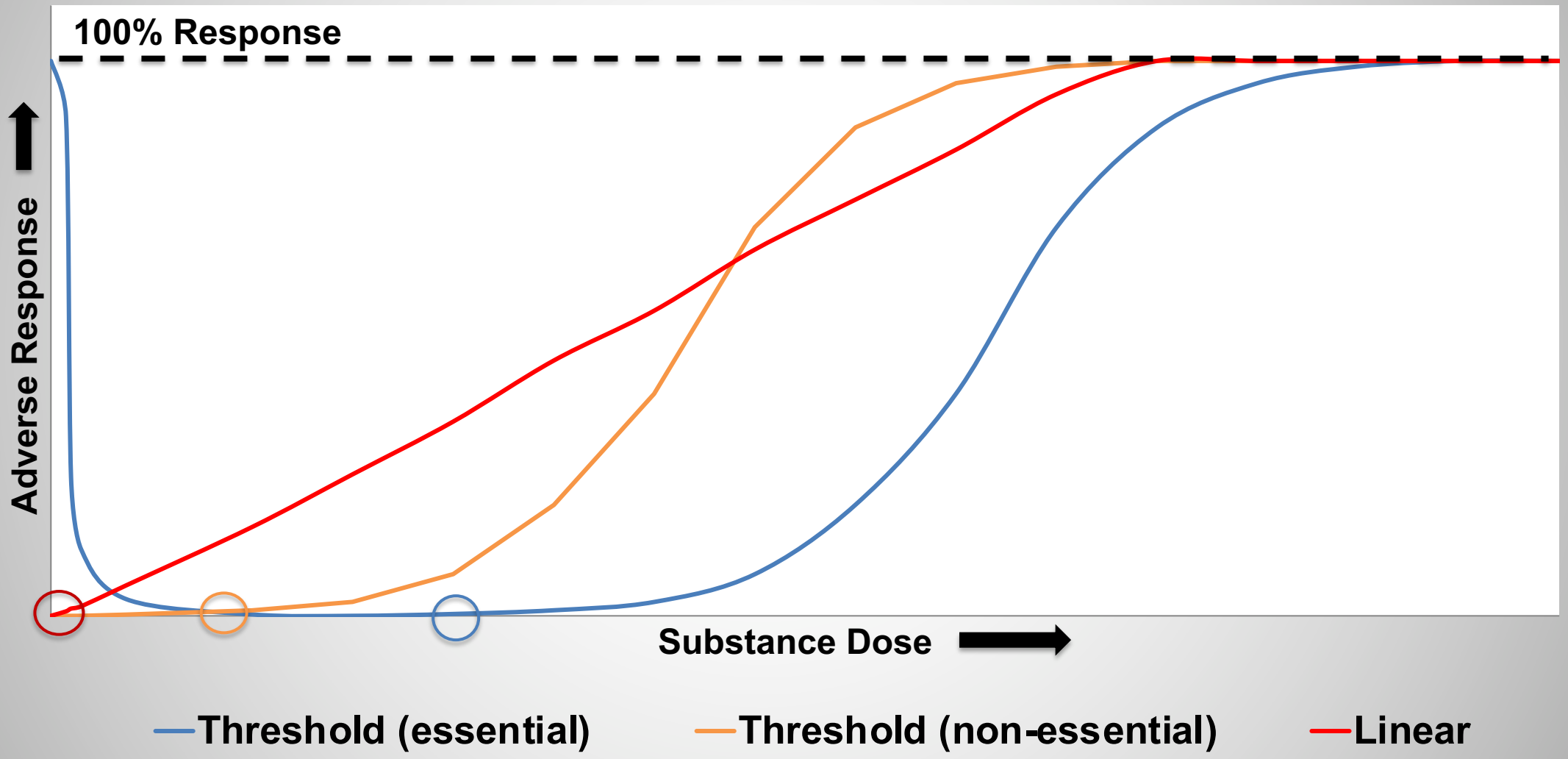
Examples

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

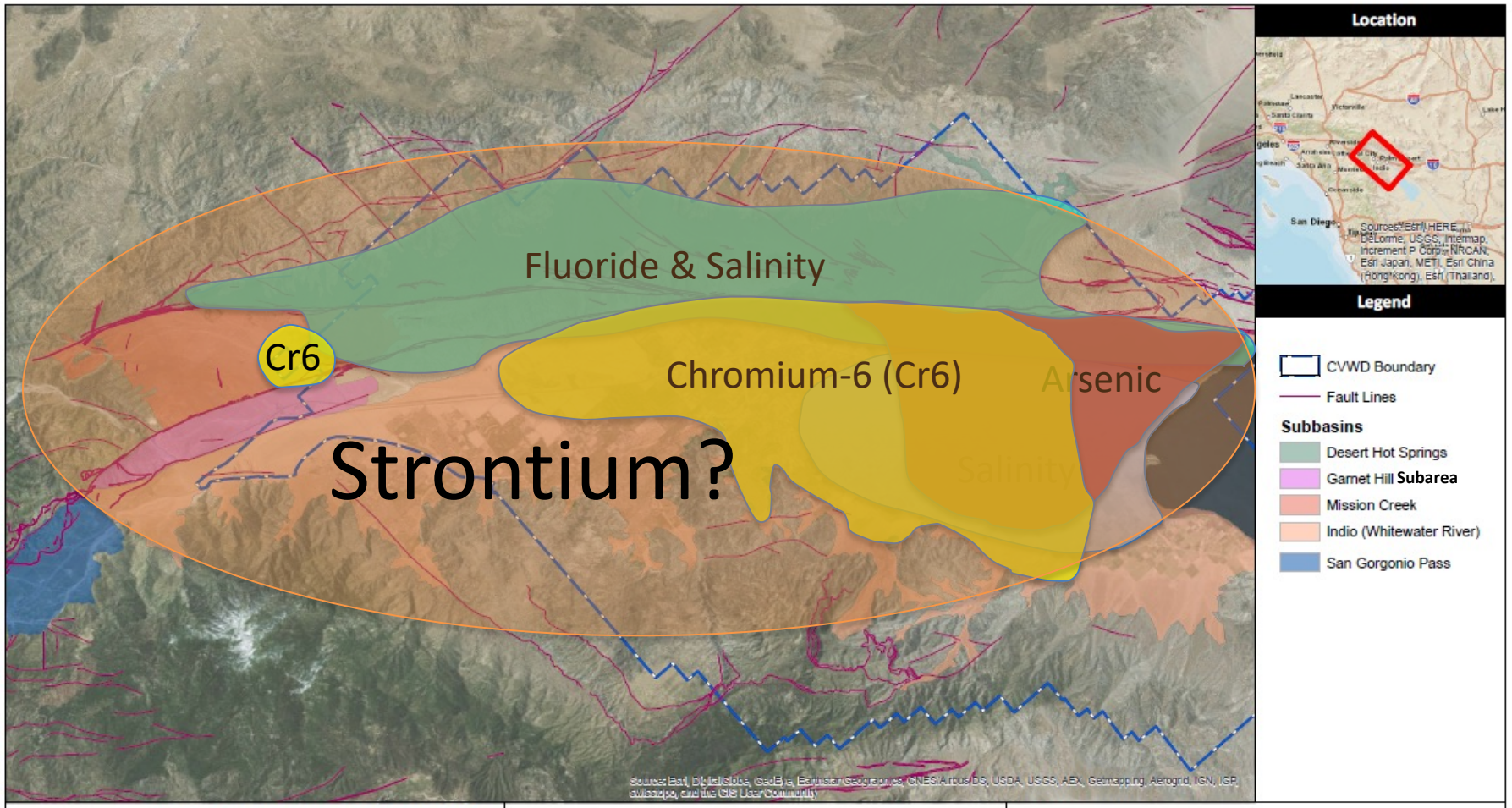
Predicting Dose Response



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



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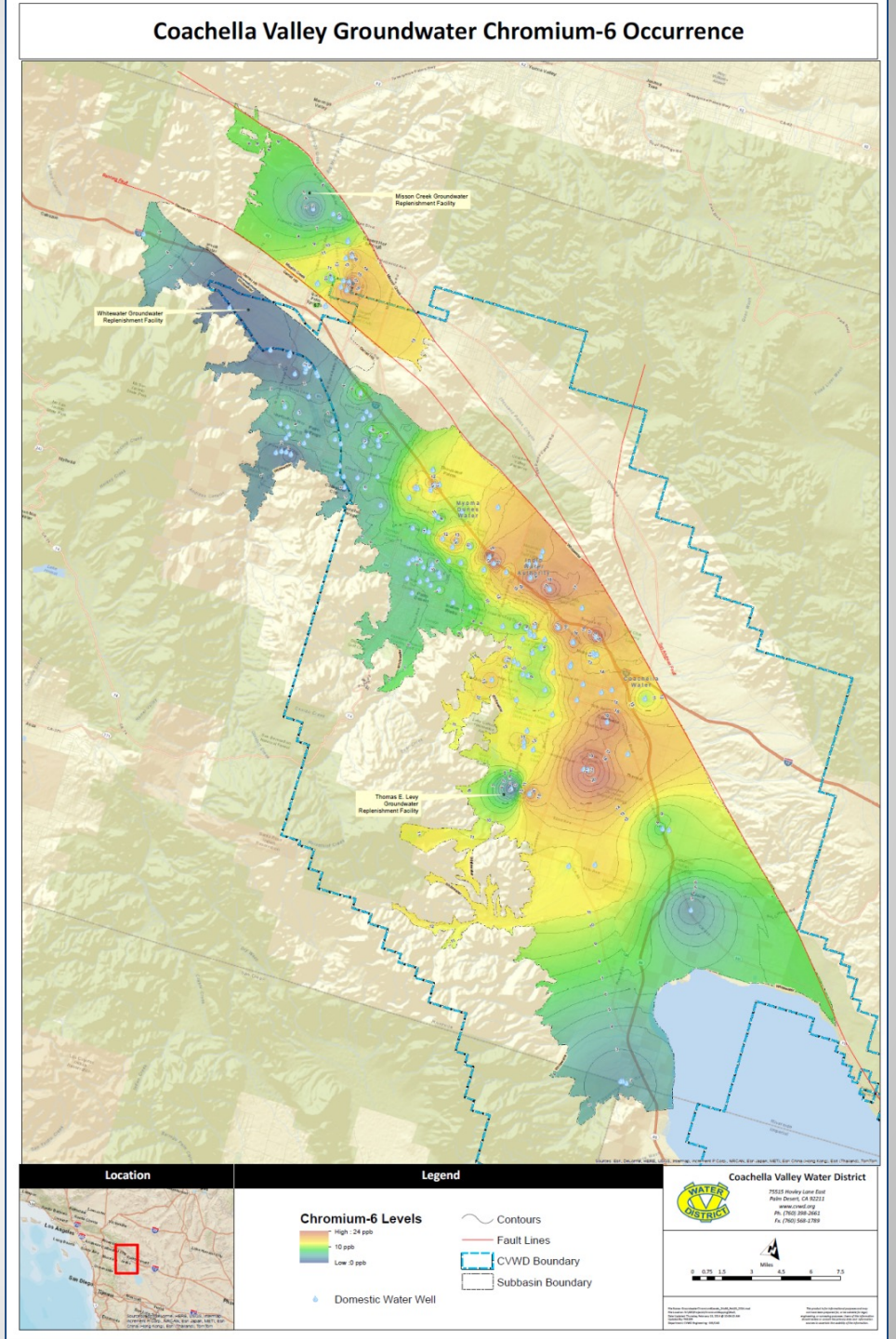
Chromium Background

- 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)

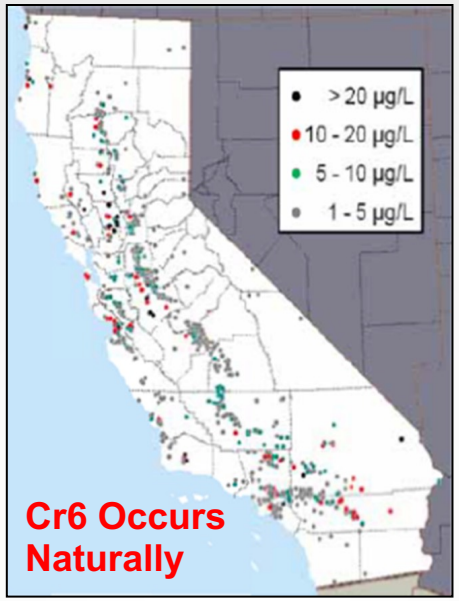


National Toxicology Program Study Results (2008)

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"



SB 351 (2001)

NRDC
THE EARTH'S BEST DEFENSE

V.

CALIFORNIA REPUBLIC

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

SB 385 (2015)

CMTA & Solano Co. Taxpayers

V.

CALIFORNIA REPUBLIC

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

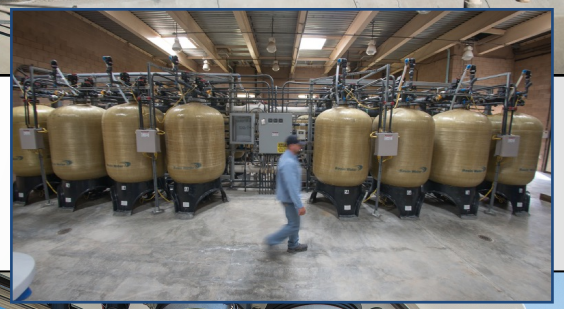
9/11/17 MCL With-drawn

12/8/20 New MCL Cost Workshop

11/29/21 Environ-mental Review Public Meeting

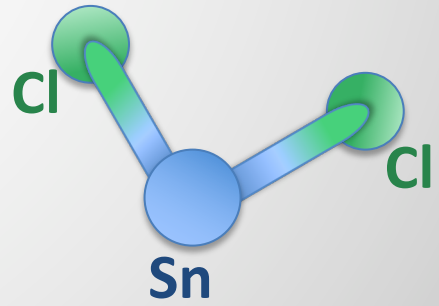
Water System Activity

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



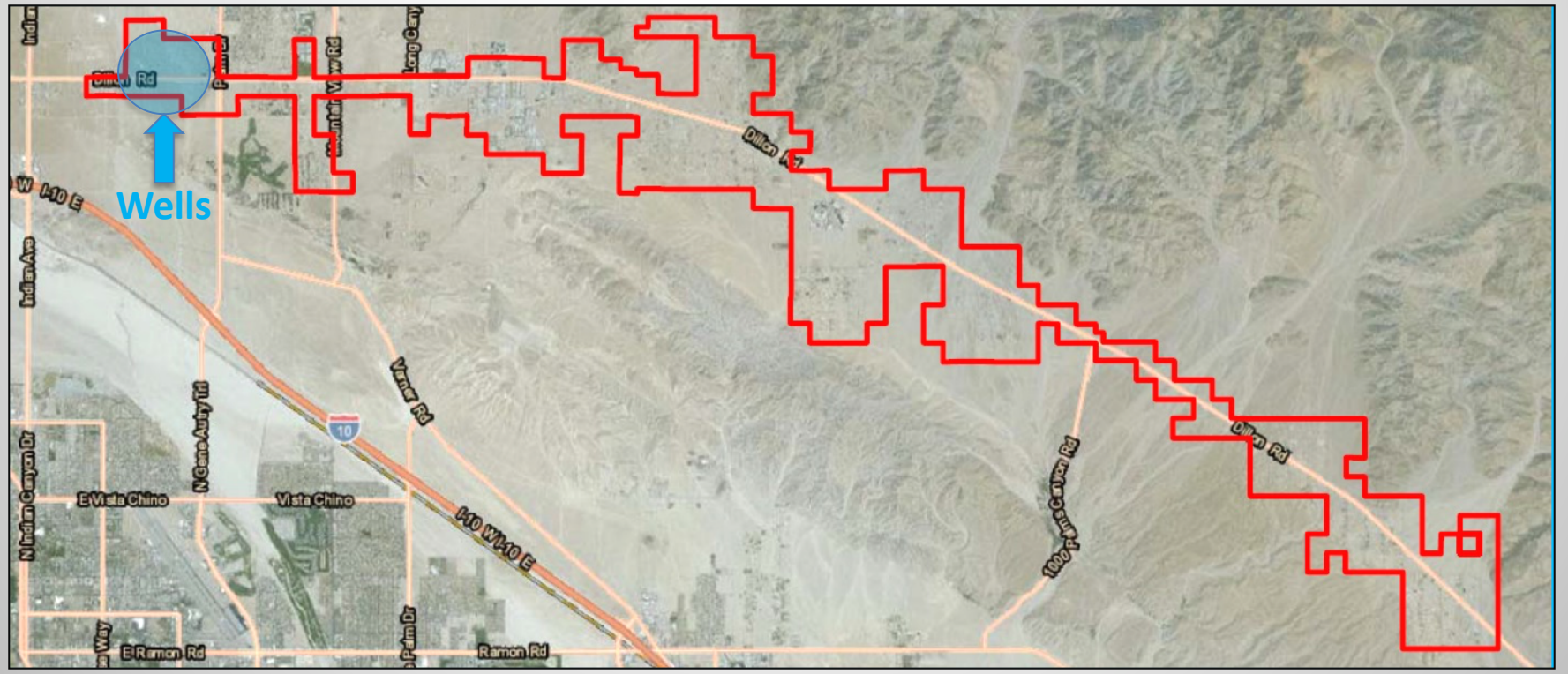
Stannous Alternative

- Approved drinking water additive
  - Solution used to protect pipes
- Salt made of tin & chloride ($SnCl_2$)
- Antioxidant in consumer products
- Reduces Cr6 to Cr3
  - Faster and better than other reductants (e.g., iron, vitamin C)

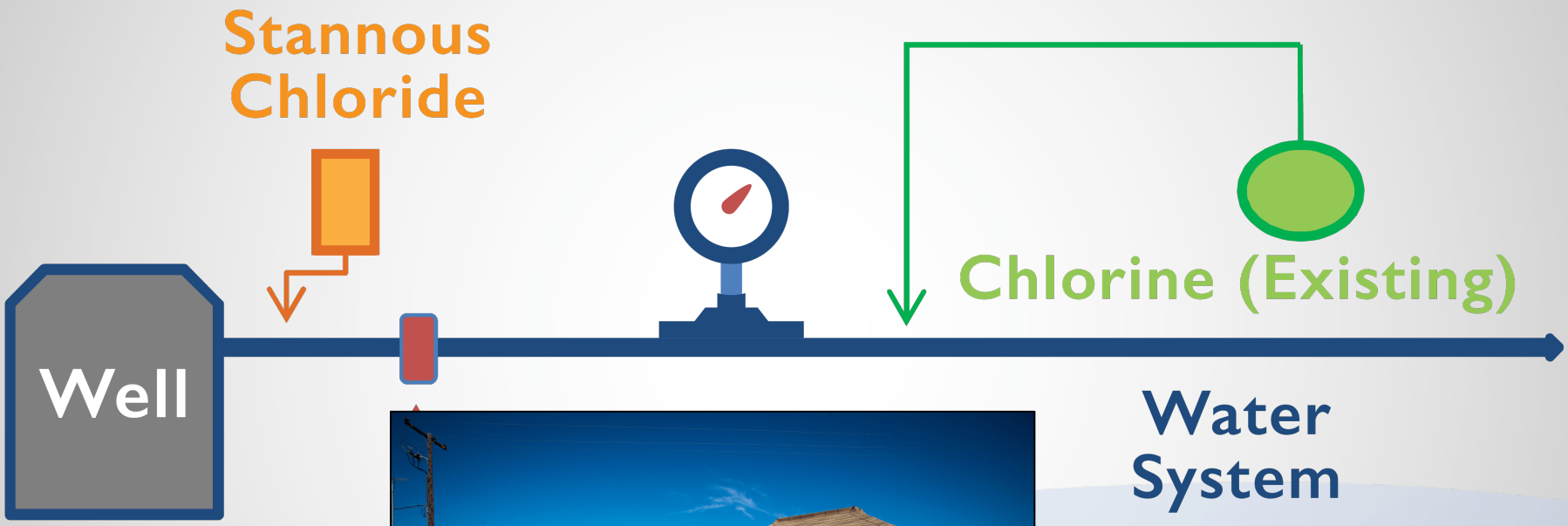


Sky Valley System Demonstration

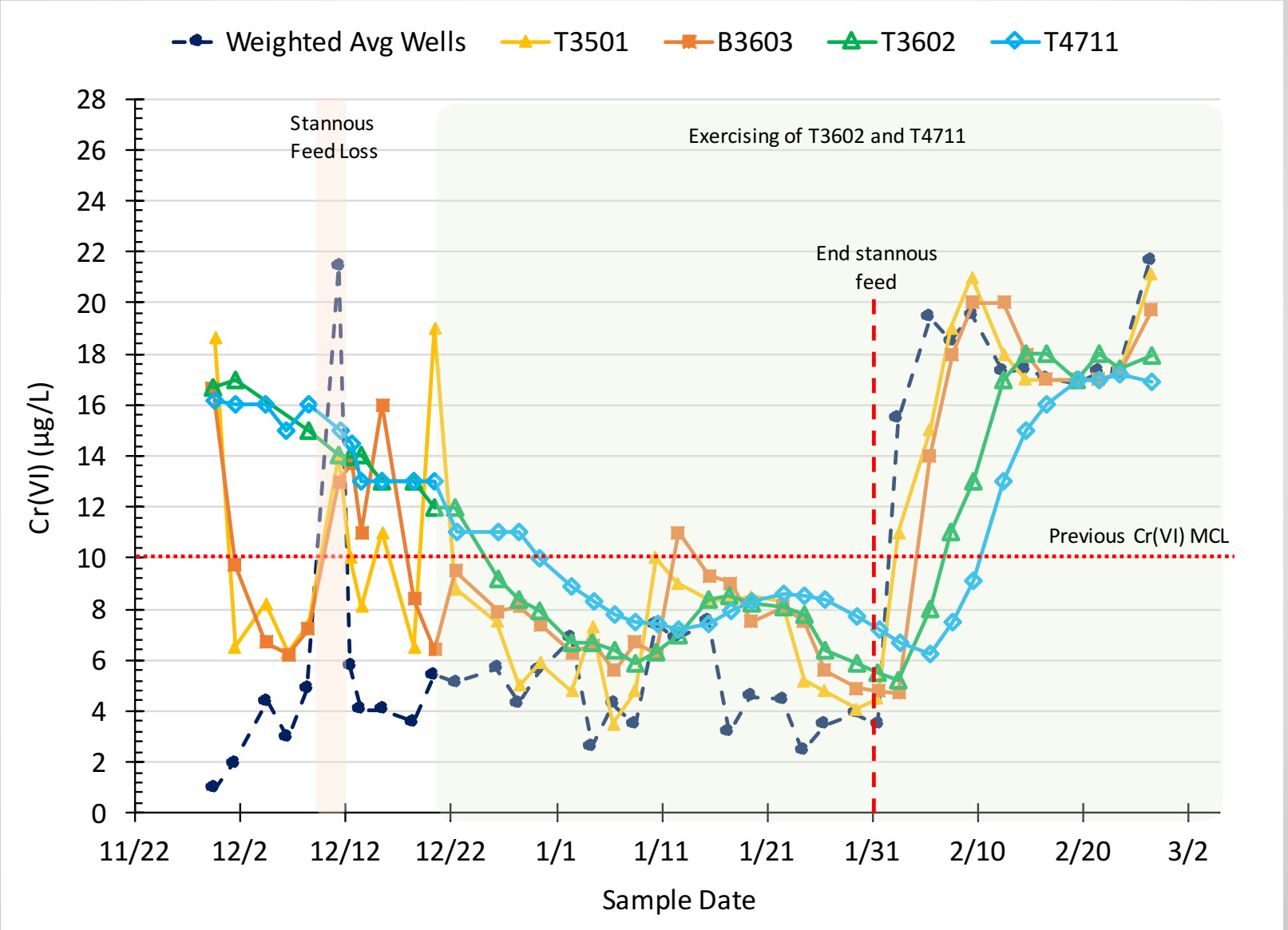
- Sufficient Cr6 levels (16-20 ppb)
- Extended water System (15 miles)
- Only 3 active supply wells



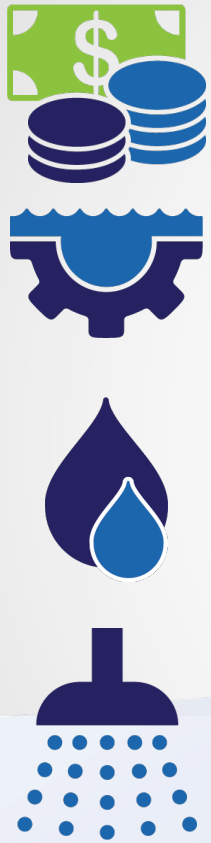
Stannous Demonstration Project



Demonstration Test Results



Benefits



- 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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