

RBMP/MSAR Task Force Update

September 2022 Update

Steven Wolosoff
Paul Caswell

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**CDM
Smith®**

Outline

- Results from Pig2Bac marker sampling
- Enterococcus conditions at Lake Elsinore
- 2023 Triennial Review



Pig2Bac Sampling Efforts

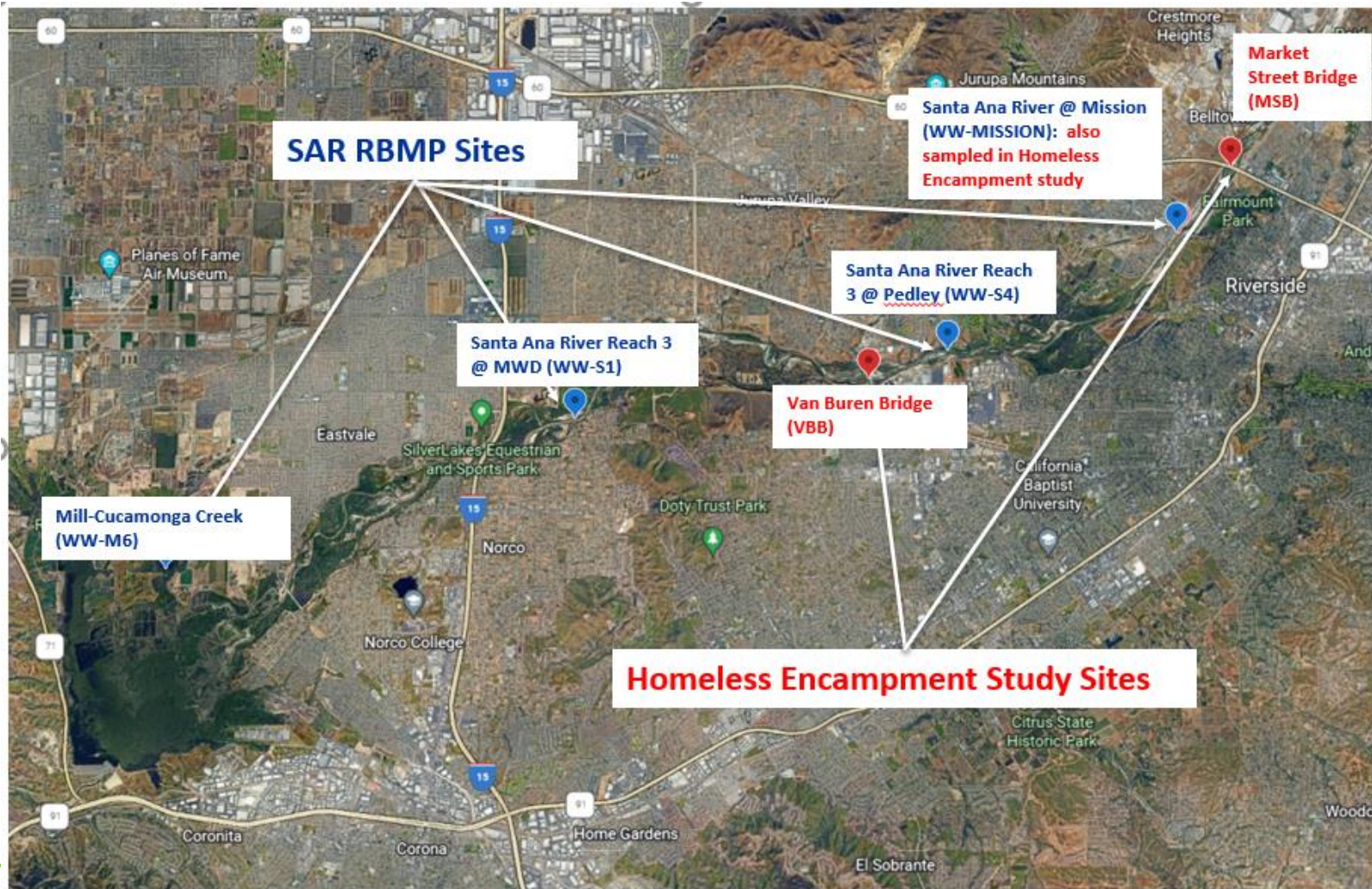
Homeless Encampment Phase A Results

- Human marker non-detect or below detection level in all samples upstream/downstream of encampments
- Pig and dog marker added to sampling events 3 and 4 of the Homeless Encampment Study

Date	Bacteria or Marker		Market Street Bridge		Mission Blvd Bridge		Van Buren Bridge	
			MSB-1	MSB-2	MBB-1	MBB-2	VBB-1	VBB-2
11/18/2021	E.coli		130	230	84	440	150	430
	Pig	Result	ND	ND	ND	Detect	Detect	Detect
		Quantity				945	1924	26915
1/6/2022	E.coli		31	60	59	59	99	93
	Pig	Result	ND	ND	BDL	Detect	Detect	Detect
		Quantity			66	102	102	1919

Pig2Bac Sampling Locations

- Special study conducted in 2022 dry season



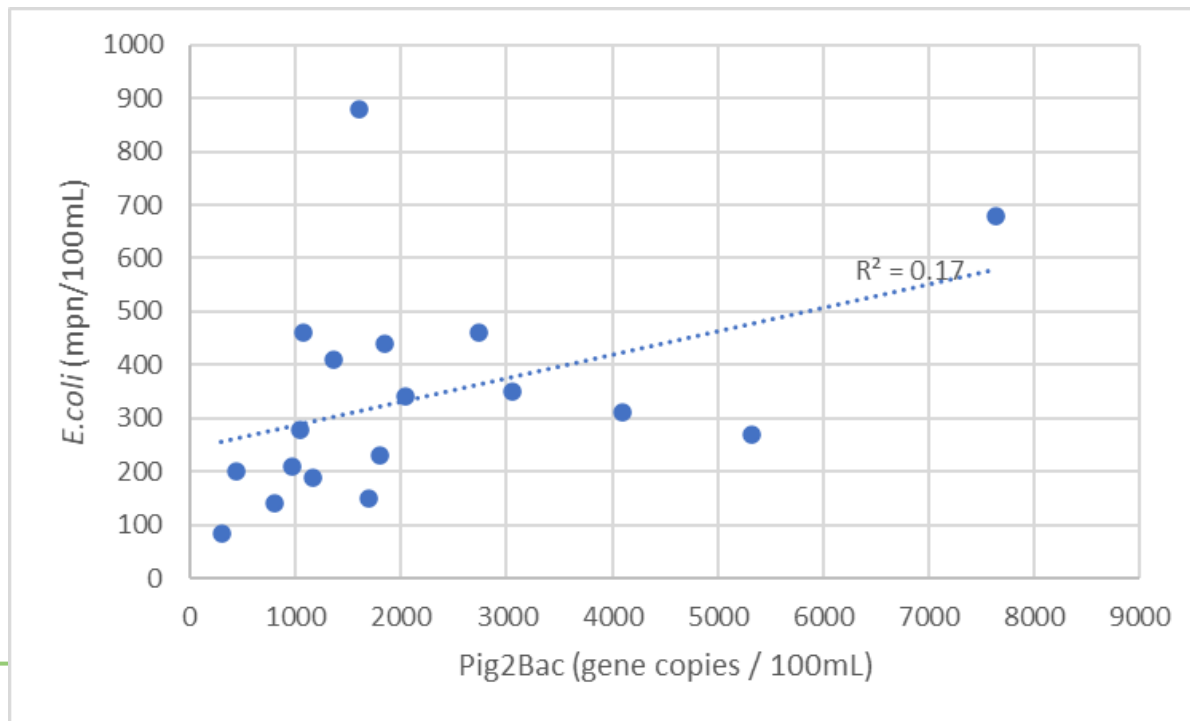
Pig2Bac Results from 2022 Dry Season

- Pig marker consistently seen in Reach 3 at WW-S1 and WW-S4
- Samples from the MISSION station saw no detection of Pig2Bac marker despite elevated bacteria concentrations

	WW-M6		WW-S4		WW-S1		MISSION	
Sample Date	E.coli (MPN/100mL)	Pig2Bac (copies/100mL)	E.coli (MPN/100mL)	Pig2Bac (copies/100mL)	E.coli (MPN/100mL)	Pig2Bac (copies/100mL)	E.coli (MPN/100mL)	Pig2Bac (copies/100mL)
5/12/2022	110	ND	140	795	460	1072	63	ND
5/26/2022	230	ND	200	438	680	7629	800	ND
6/9/2022	74	ND	880	1599	350	3057	1100	ND
6/27/2022	86	ND	190	1161	310	4099	190	ND
6/30/2022	98	ND	210	962	440	1843	1400	ND
7/14/2022	63	ND	340	2042	280	1044	780	ND
7/28/2022	41	ND	150	1692	410	1364	840	ND
8/11/2022	140	ND	230	1802	460	2728	1300	ND
8/25/2022	180	ND	85	295	270	5322	1100	ND

Role of Pig2Bac in *E. coli* within Reach 3

- Detections only in Reach 3 at MWD Crossing and Pedley Sites
- Correlation would suggest that feces from pigs comprise most of the fecal load in the river
- Large load of non-pig, non-dog, non-human, non-MS4 fecal bacteria at MISSION confounds the correlation downstream

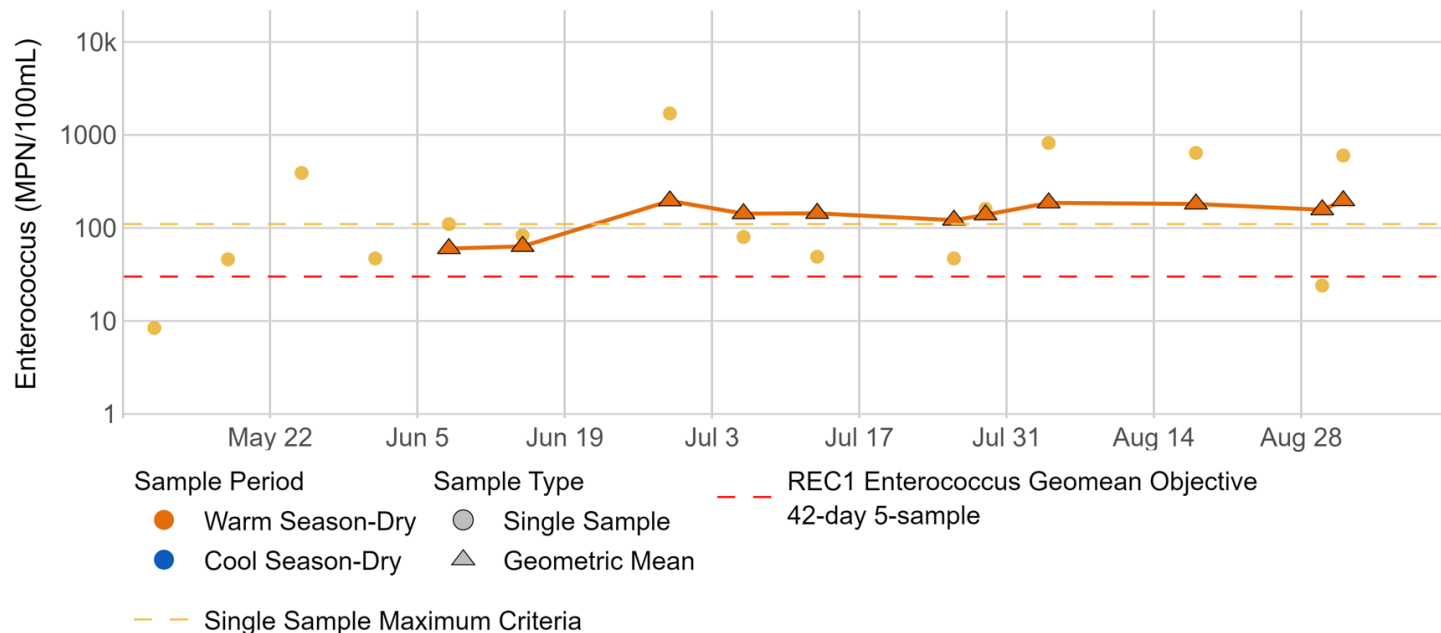




Lake Elsinore Bacteria Levels

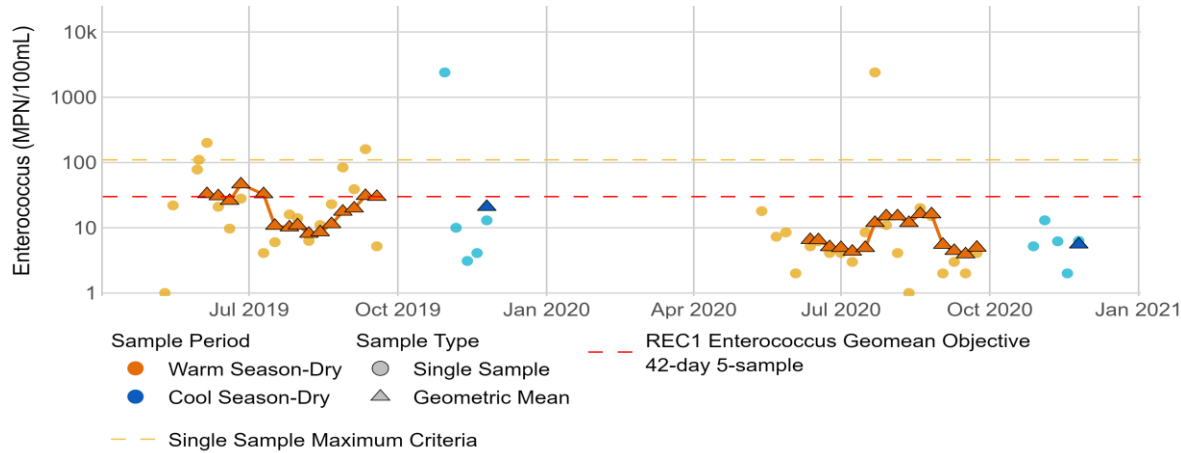
2022 Dry Season Data

- Continued trend of elevated bacteria levels at Elm Grove beach from 2021-2022 sampling season
- Enterococcus samples consistently above both geomean and single water quality criteria



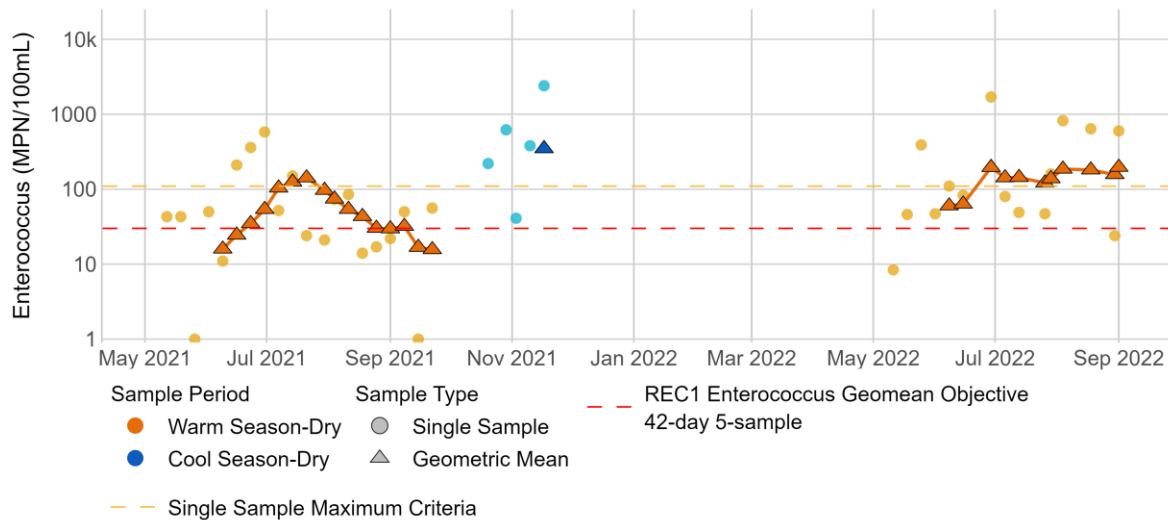
Lake Elsinore Historical Enterococcus Results

P1-2 - Lake Elsinore (Enterococcus) for 2019 - 2020



Boat Launch Site
(2019, 2020)

P1-2-ELM - Lake Elsinore (Enterococcus) for 2021 - 2022



Elm Grove Beach
(2021, 2022)

Naturalized Enterococcus in Lake Elsinore?

- Enterococcus can form colonies within algal mats with prolonged survival and growth
- Reduced UV irradiation
- CDM Smith recommends RBMP refinement to collect samples at the Boat Launch and Elm Grove Beach stations
- Keeping same level of effort by reducing the frequency from 20 down to 10 consecutive weeks during the 2023-2024 sampling season



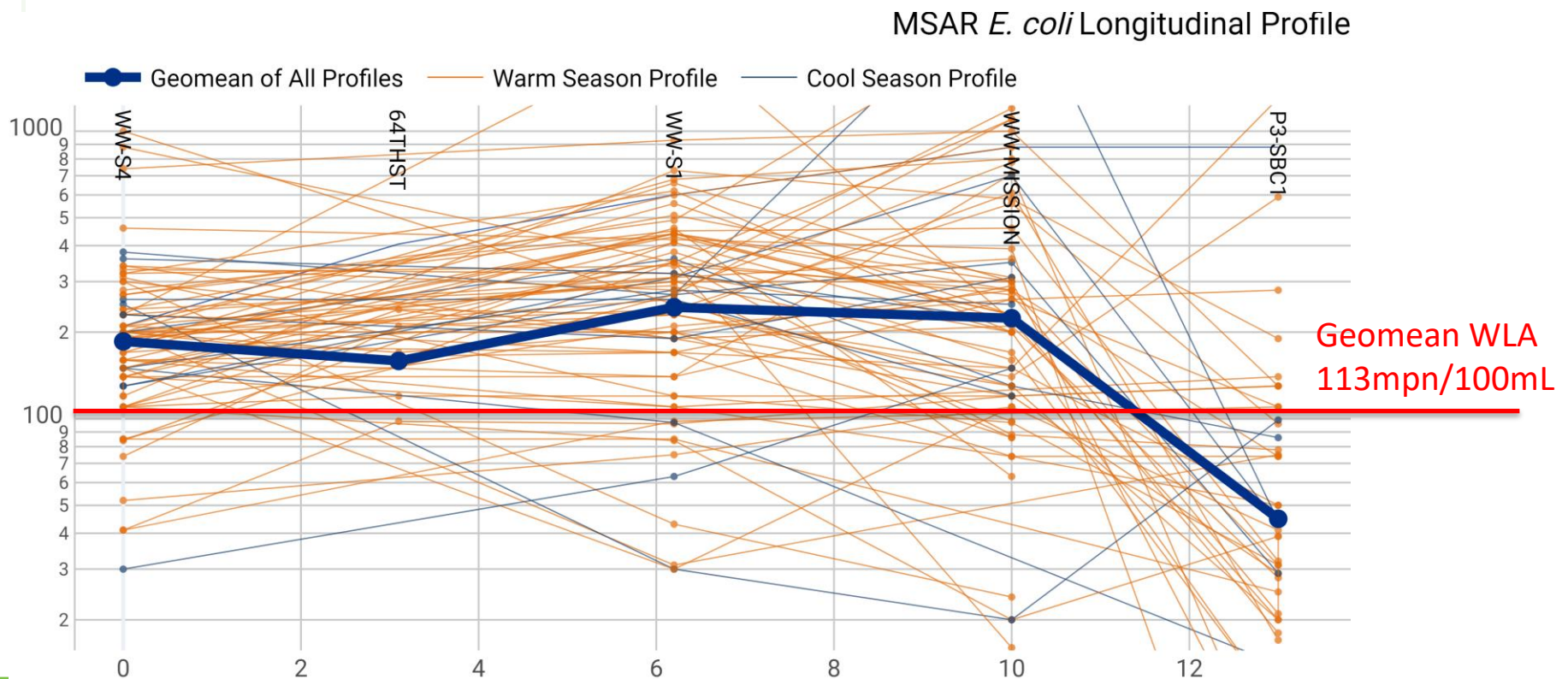
Photo taken during collection of 1700 MPN/100mL enterococcus sample on 06/29/22



2023 Triennial Review

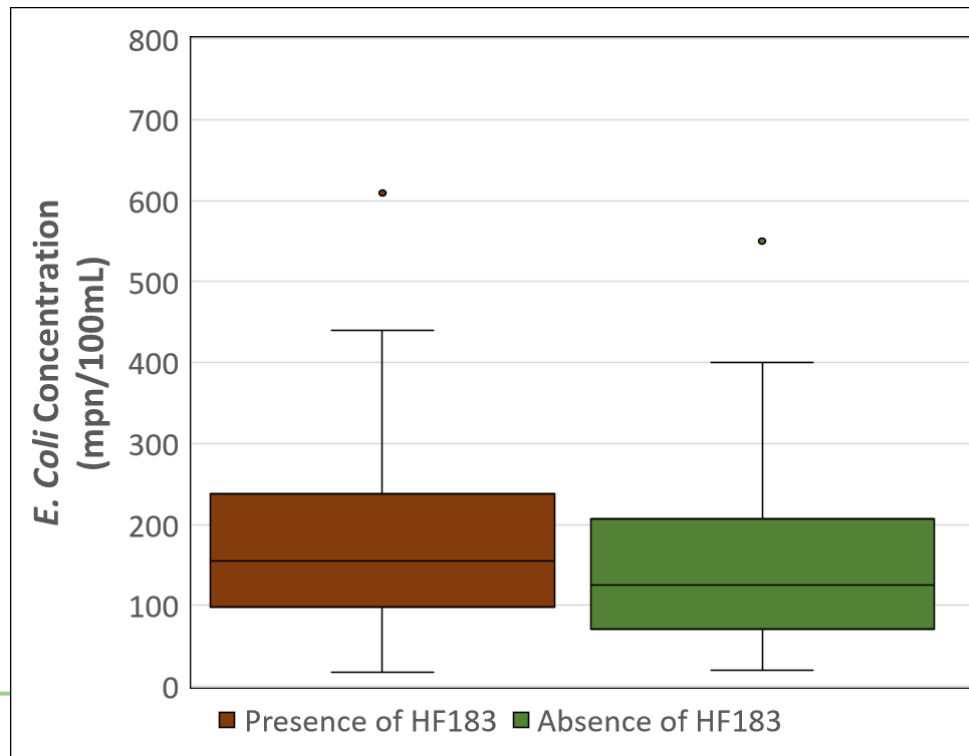
MSAR Longitudinal Profile

- Rise in dry weather *E. coli* within Non-MS4 influenced reach to levels exceeding REC1 standards
- Starker in 2022 than in other years



MSAR Longitudinal Profile

- Subset of routine *E.coli* monitoring within Reach 3 mainstem included analysis for HF183 marker (2019, 2021)
- No significant difference in *E. coli* with and without the presence of HF183 marker



Report Topics

- Source contribution analysis
- Homeless encampment study
- Tier 2 investigations in 2020-2022
- Longitudinal surveys on Cucamonga and Chino Creeks
- Regional BMP effectiveness