

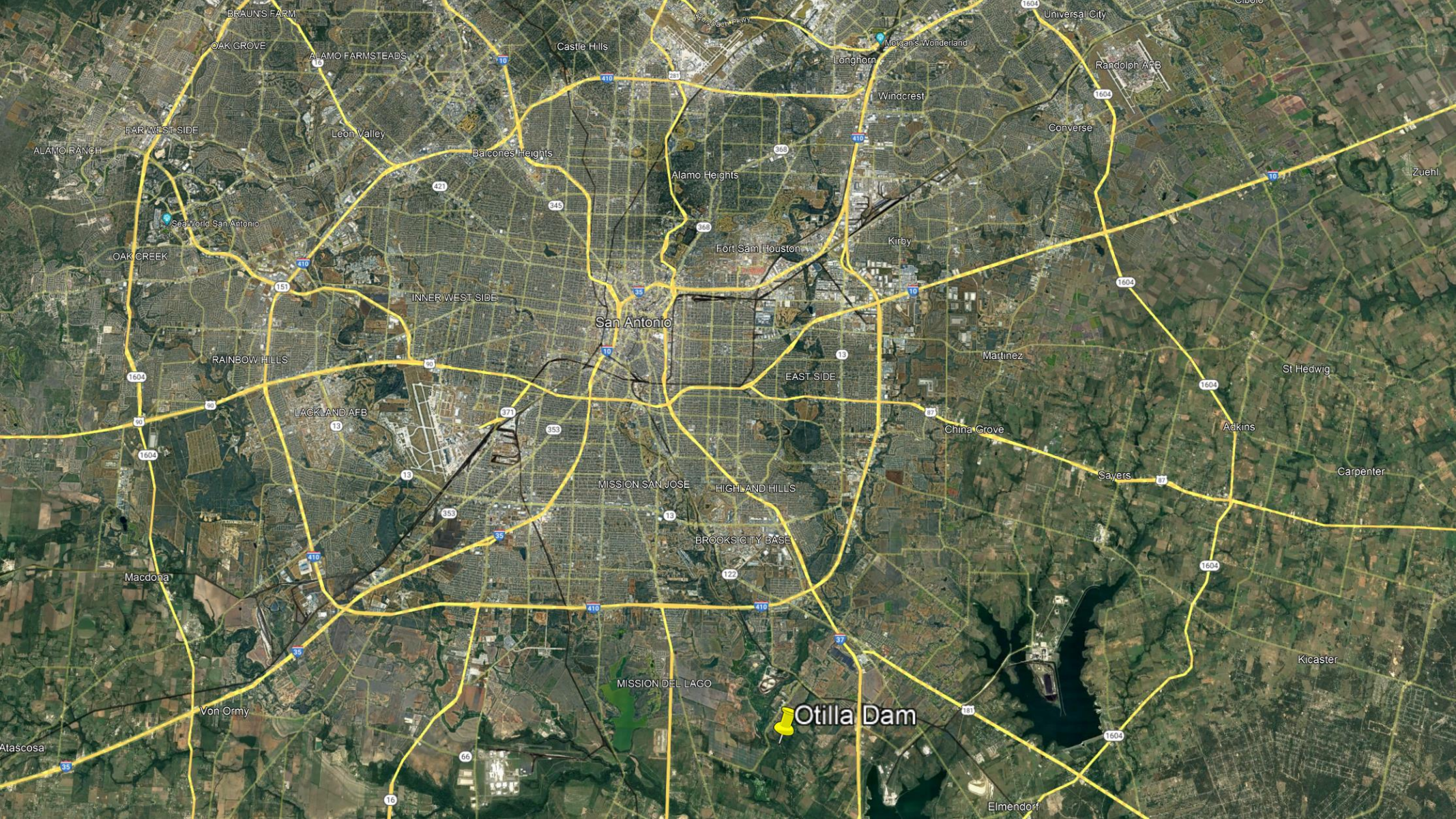
Rewilding Efforts through the San Antonio River Authority





Otilla Dam











Fish Movement



Mussel Populations



Otilla Dam Removal/Modification

- USFWS National Fish Passage Program grant proposal
- SAWS Dam Assessment
- Network for Engineering With Nature Restoration proposal







Freshwater Mussel Reintroduction into the Upper San Antonio River

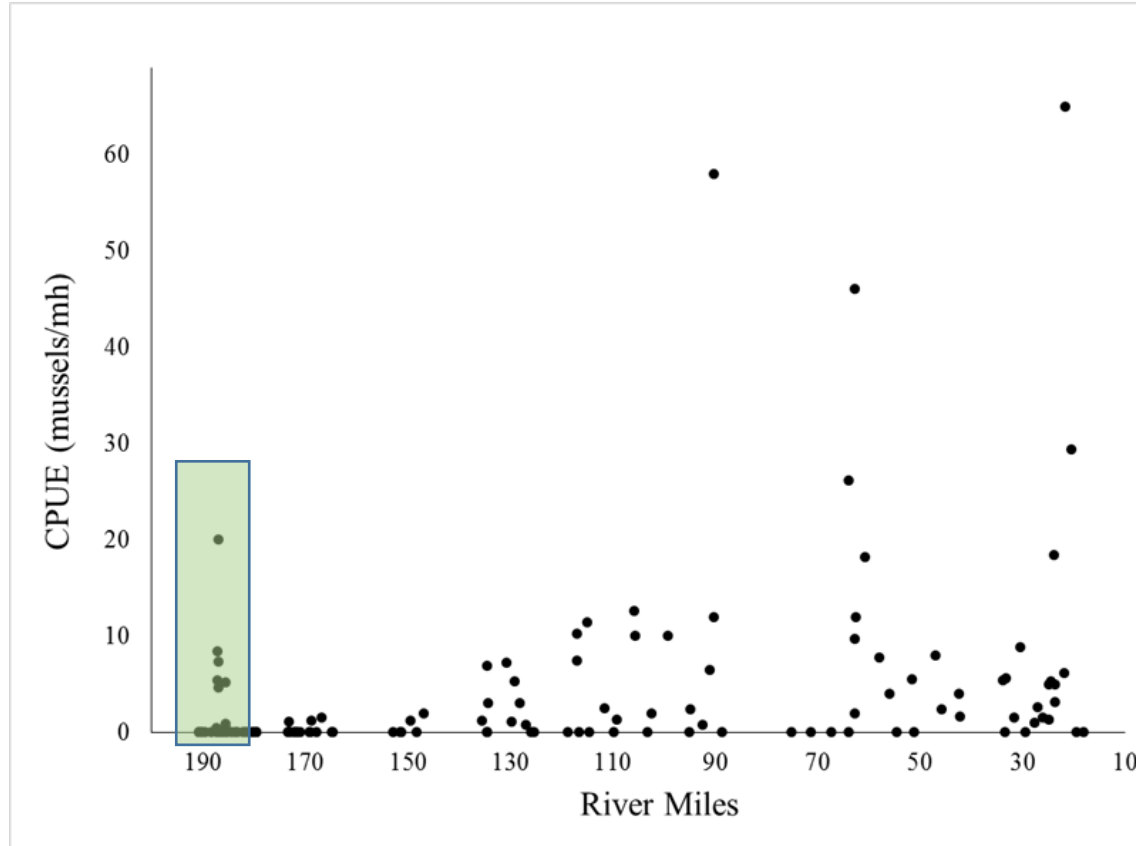
**Chris Vaughn
San Antonio River Authority
cvaughn@sariverauthority.org**

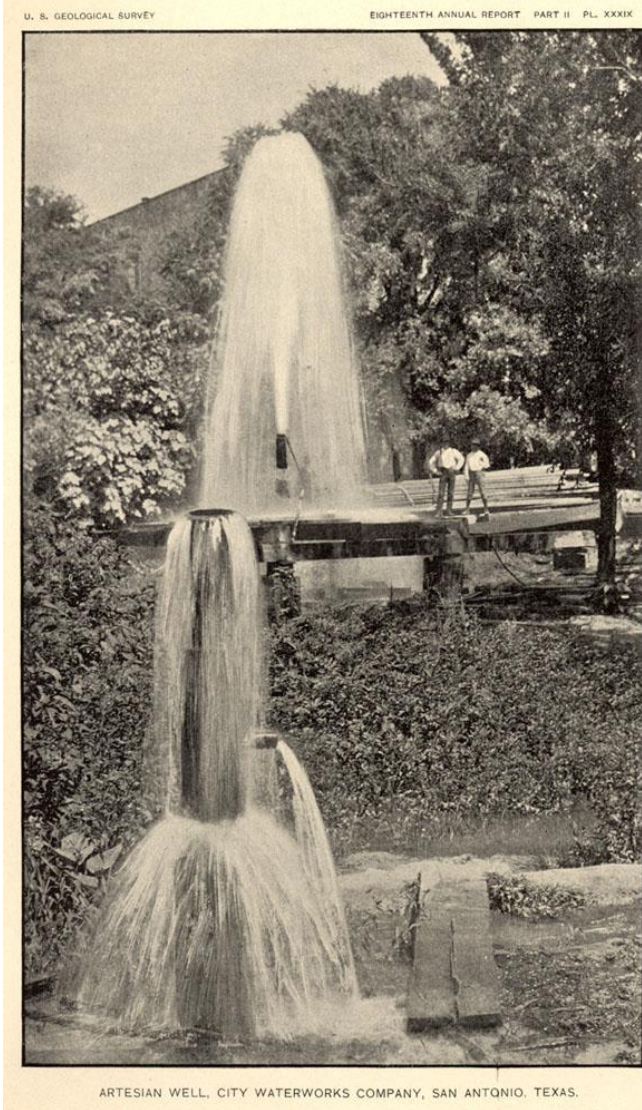




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Holistic Mussel Project





What even is a mussel?

- What do they do?
- Why do we care?
 - Ecosystem services
 - They were here first

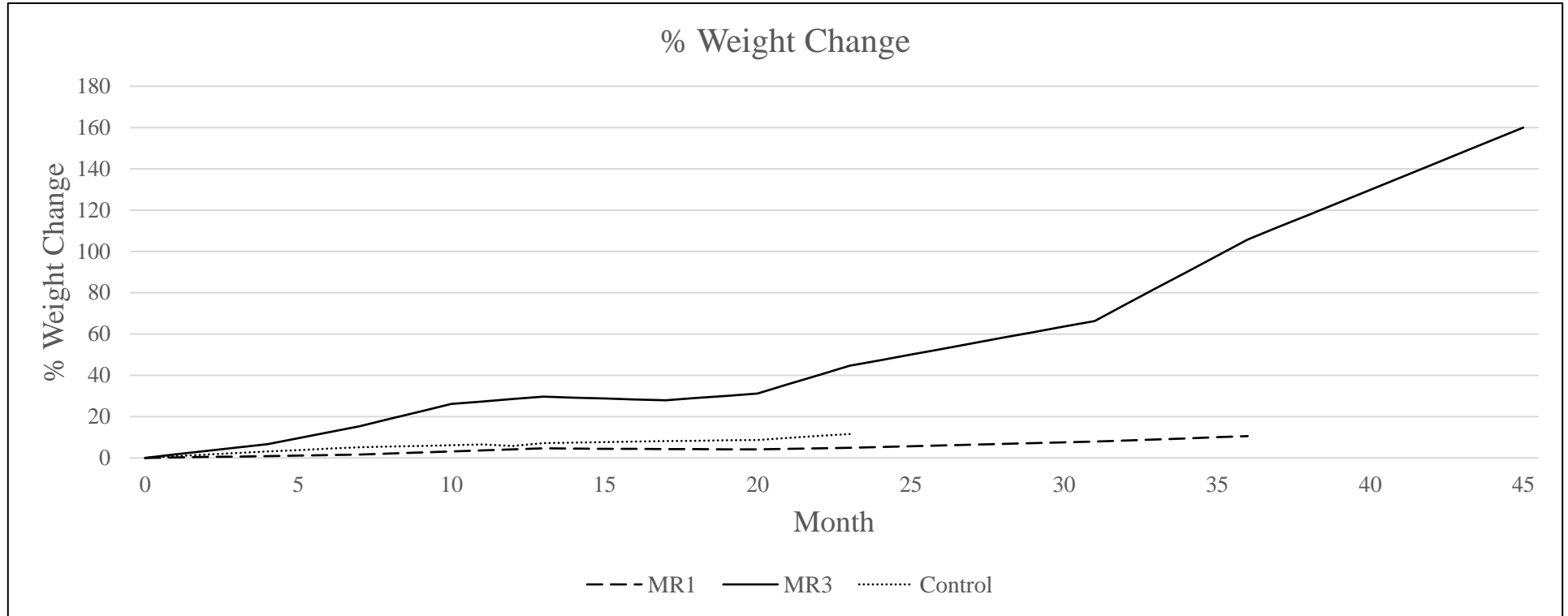






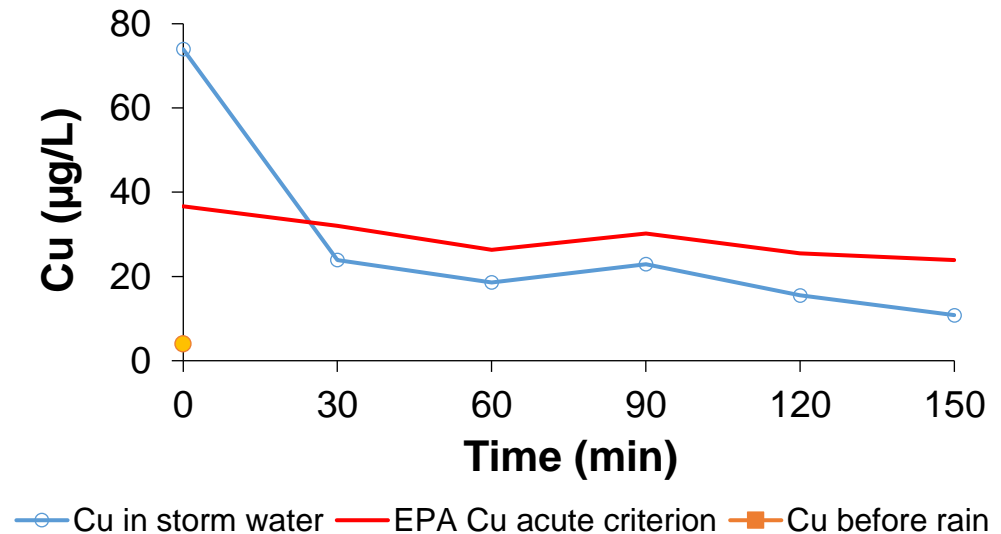
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Weight ($\Delta\%$) Overtime



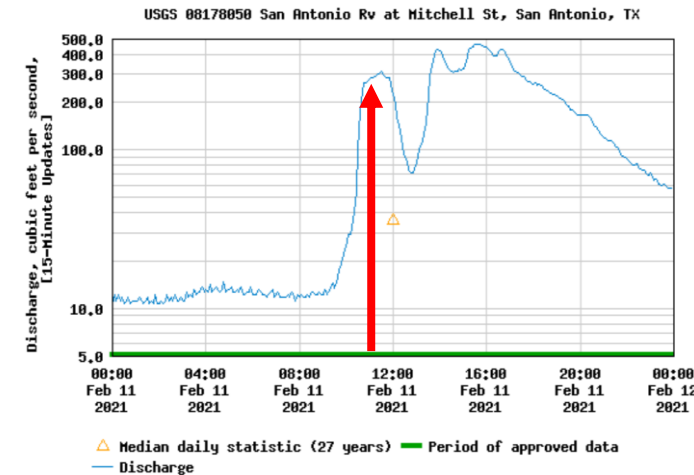
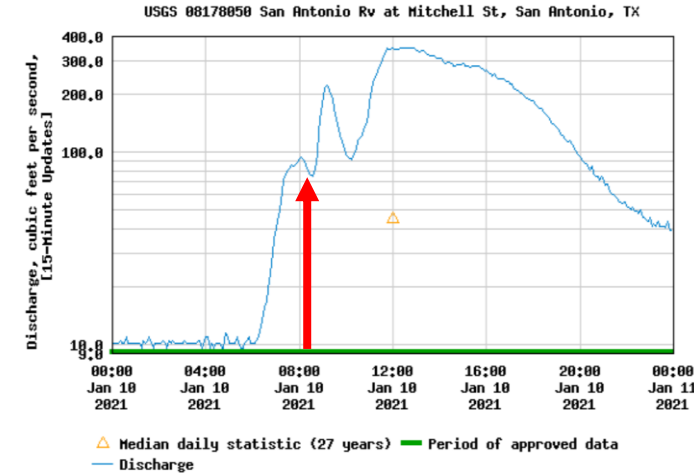
Mussel Toxicology Research

- Concerns for introduction in an urban environment
- Stormwater analysis in Mission Reach
- Highest NH_3N value 0.48 mg/L
- Highest Cu value 74.0 $\mu\text{g/L}$



Mussel Toxicology Research

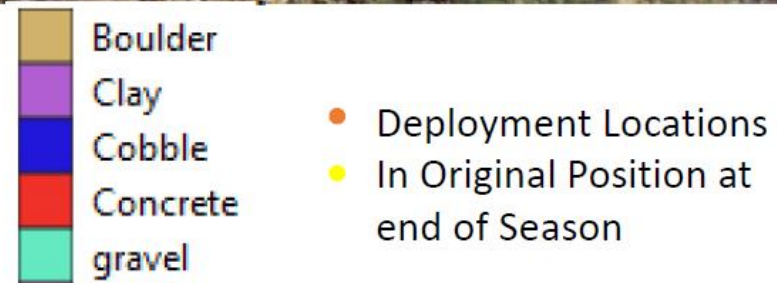
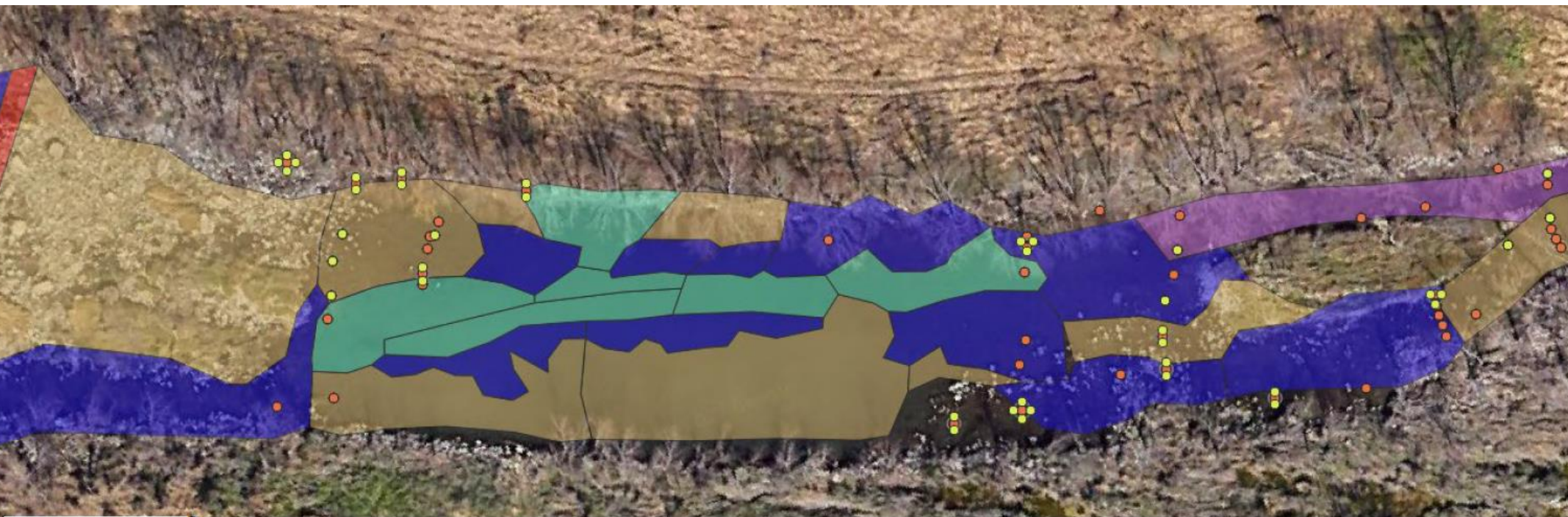
- Concerns for introduction in an urban environment
- Stormwater analysis in Mission Reach





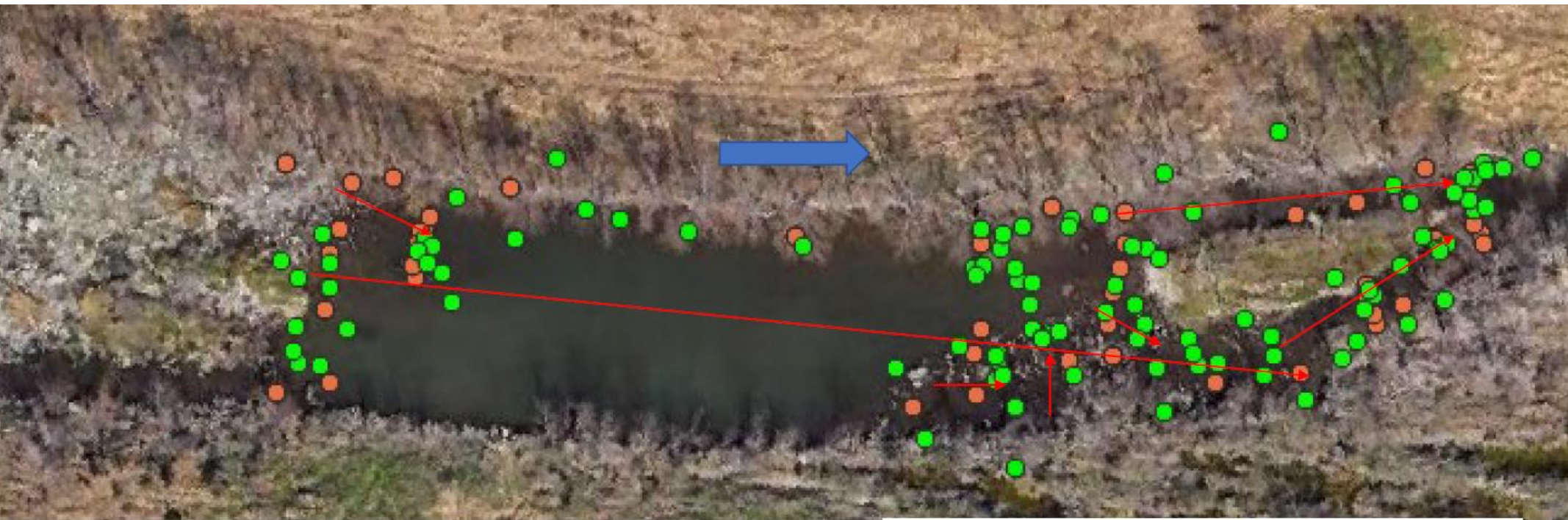


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Site 1	End of Season Orig Pos	Total at Season Start	Percent of End of Season Total Orig Pos	Percent of Total Season Start OP	Percent at End of Season of Start Orig Pos
Boulder	20	51	51.3%	26%	39.2%
Gravel	2	14	5.1%	7%	14.3%
Clay	2	10	5.1%	5%	20.0%
Cobble	15	52	38.5%	26%	28.8%
	39	127			

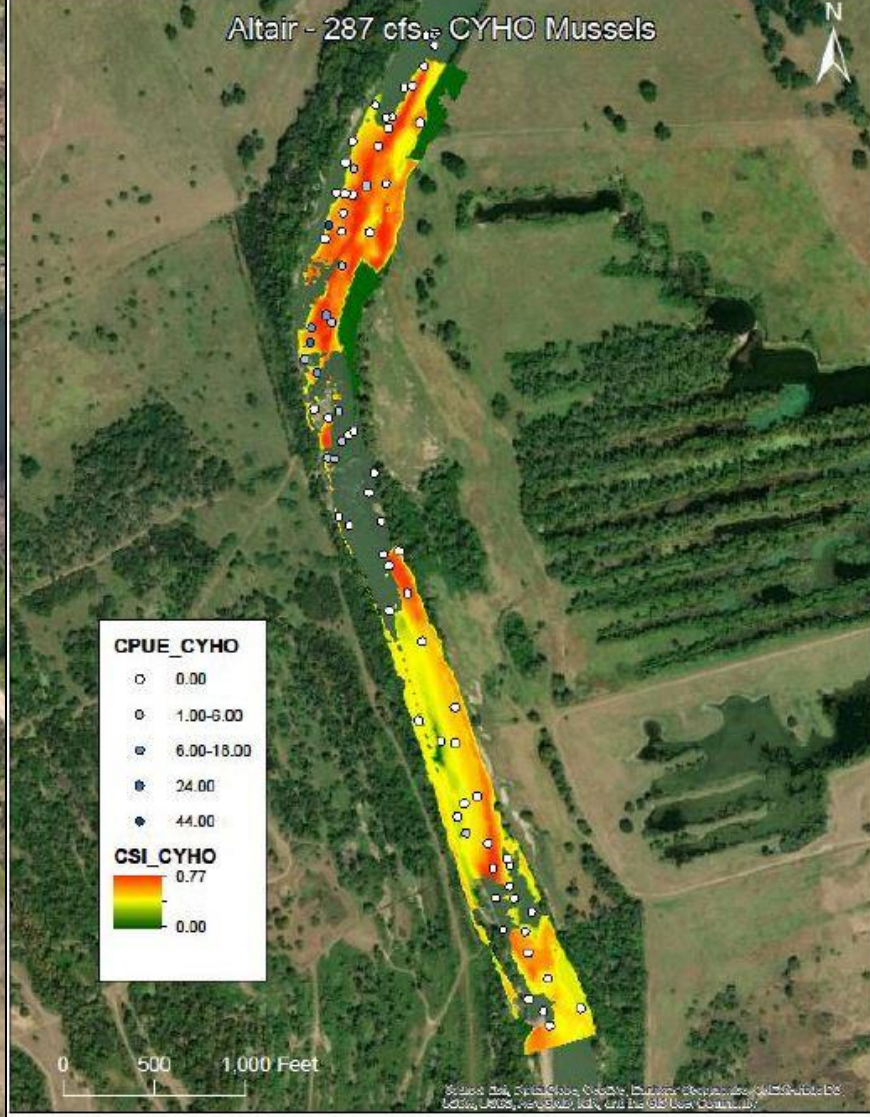


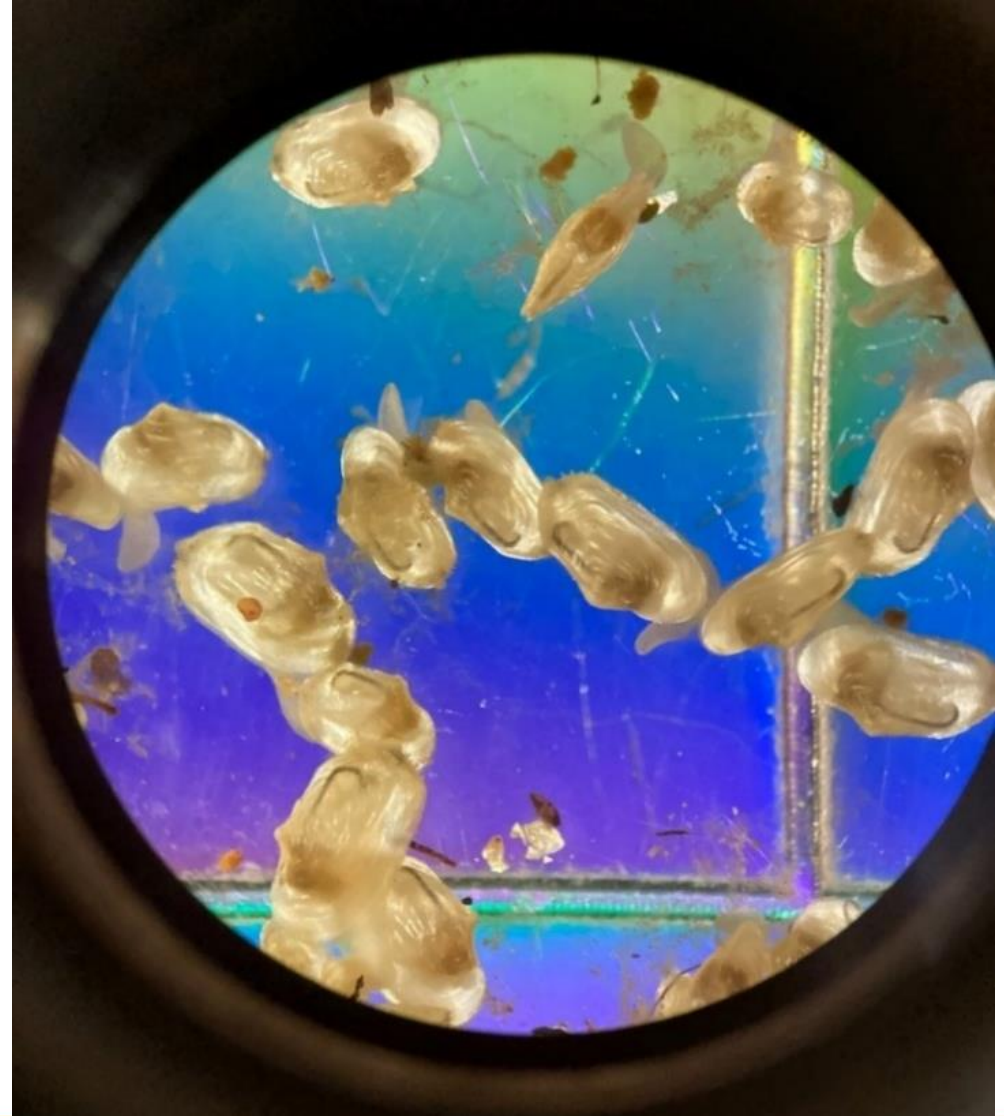


- Deployment Locations
- Rescan points after movement
- Major movement trends

Storm Size		1500 cfs	3000 cfs	3700 cfs	100 cfs
	Count for Full Season	4/27/2022	5/7/2022	7/6/2022	8/18/2022
Distance Traveled					
< 2.5m	39	18	13	1	7
2.5m > x > 5m	30	7	9	6	8
5m > x > 10m	30	2	8	11	9
<10m	17	1	1	9	6
Average Dist Traveled	7.43	2.6	3.74	17.35	6.8





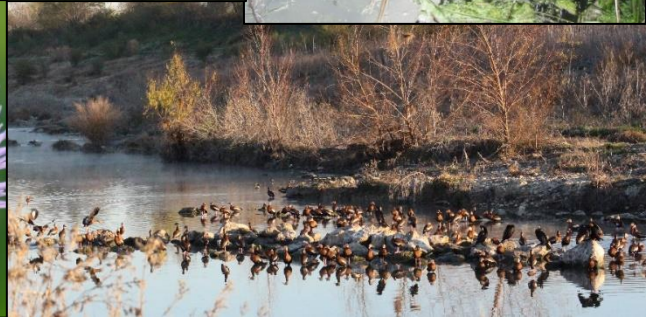


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Mission Reach Today and Tomorrow





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Culebra Creek Tributary F

➤ Erosion, destabilized banks, loss of riparian habitat



Erosion migrating upstream



Restoration Activities



Bank Restoration



Log Rollers for Energy Disipation



Restored Streambanks



East Salitrillo Creek in 2011



Restoration Activities



- Bank restoration with geolifts
- Instream structures to sculpt flows



Pre and Post Restoration Comparison

2010



2018

