





UC San Diego



Water Conservation and Watershed Protection Project Summary

April 6, 2022
Kimberly O'Connell
UC San Diego



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UC San Diego Water Conservation and Watershed Protection Project

Project Partners:

- San Diego Coastkeeper
- WildCoast
- Urban Corps
- Tijuana River National Estuarine Research Reserve (TRNERR)
- Border Field State Park

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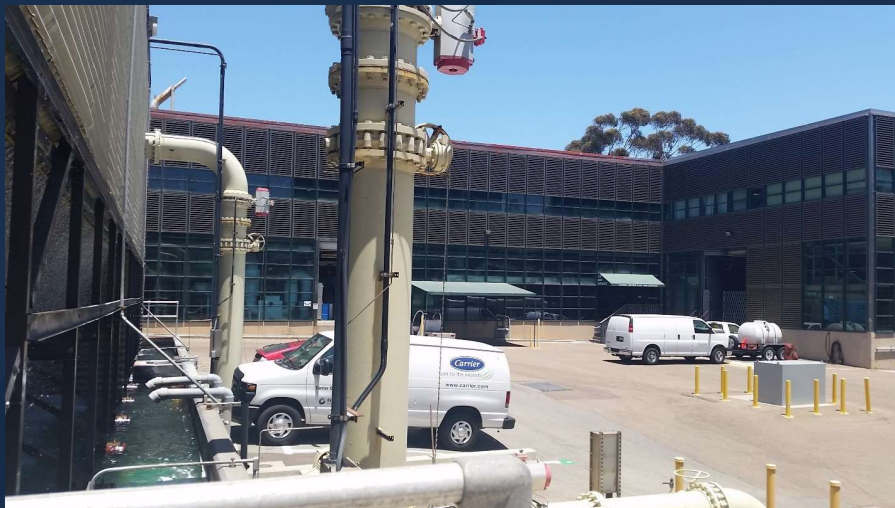
Project Components

1. Central Utilities Plant Reclaimed Water Cooling Tower Retrofits
2. Air Handling Unit Condensate Collection and Reuse
3. Water Conservation Community Outreach
4. Turf Removal and Stormwater Treatment
5. Modular Wetland Treatment System and Monitoring
6. Tijuana River Valley (TRV) Non-Point Source Pollution Reduction and Habitat Restoration



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1. Central Utilities Plant Cooling Tower Retrofits for Recycled Water



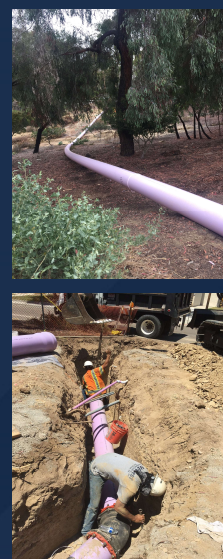
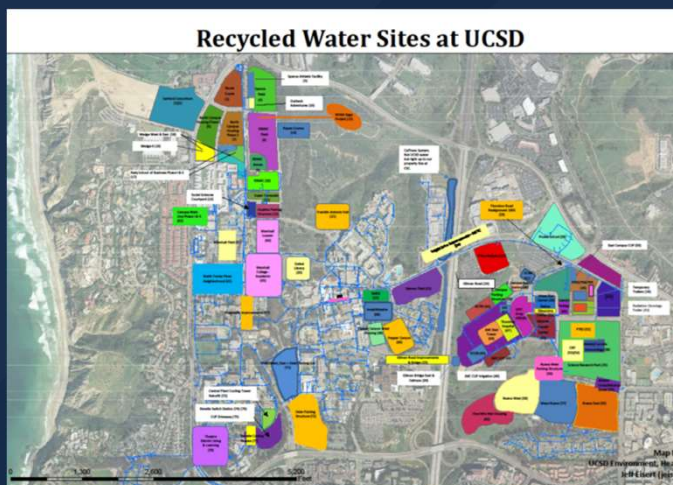
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Cooling Tower Retrofits: Phase I



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Phase II: Main Pipeline Expansion and Recycled Water Loop



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Cooling Tower Retrofits: Challenges

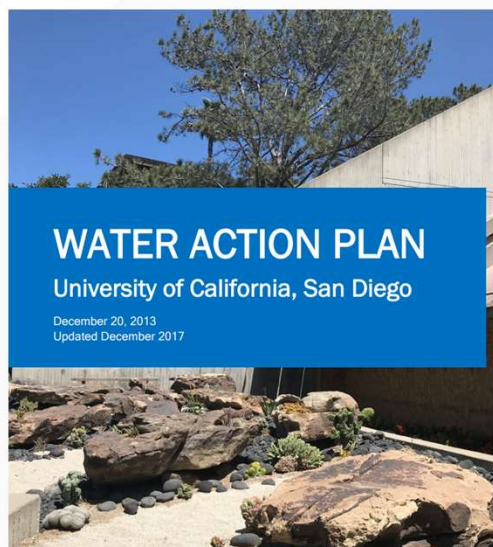


Must monitor the equipment and water chemistry to prevent the recycled water from causing corrosion and equipment damage

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Cooling Tower Retrofits: Project Benefits

The cooling towers now operate using 65% recycled water and 35% potable water, **saving 60 million gallons of potable water each year** (221 acre feet per year equivalent)



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2. Air Handling Unit Condensate Collection and Reuse



Plumbing retrofits for 4 adjacent research buildings to collect:

- Air handling unit condensate
- Reverse osmosis treatment system reject water
- Water softener reject water



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Project Benefits

Quarter	Gallons Collected for Reuse
May – June 2019	438,328 gallons
July – September 2019	1,010,822 gallons
October – December 2019	393,456 gallons
January – March 2020	515,372 gallons
April – June 2020	523,600 gallons
July – September 2020	141,372 gallons
October – December 2020	540,804 gallons
January – March 2021	587,928 gallons
April – June 2021	554,298 gallons
July – September 2021	1,039,683 gallons
October – December 2021	521,904 gallons

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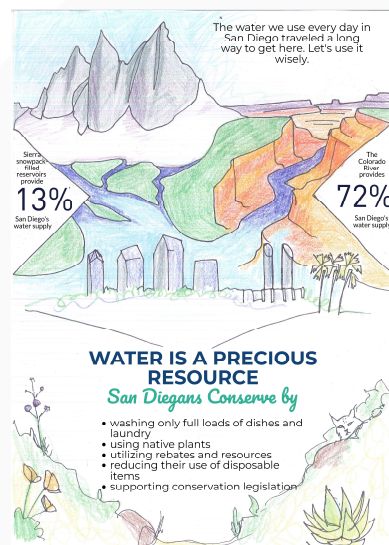
3. Water Conservation Community Outreach



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Coastkeeper Community Outreach

- Wrote and published educational media articles and blog posts on residential, commercial, and statewide water conservation; climate change; and the water-energy nexus
- Conducted water conservation workshops and tours targeting residential and commercial conservation
- Trained volunteers on how to detect and report water waste and best practices to conserve water
- Designed and distributed door hangers and posters



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Coastkeeper “Ride the Tide” Bike Tours

- Bike tours in Golden Hill, South Park, North Park, Kensington, and Talmadge to showcase residential water conservation
- Stopped at homes to explore backyard rainwater capture and greywater reuse projects
- Discussed water use efficiency, localized water supply, and conservation strategies
- Water Conservation professionals from San Diego Sustainable Living Institute and Catching H2O discussed specific projects and regional conservation



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4. Turf Removal and Stormwater Treatment



Before



After

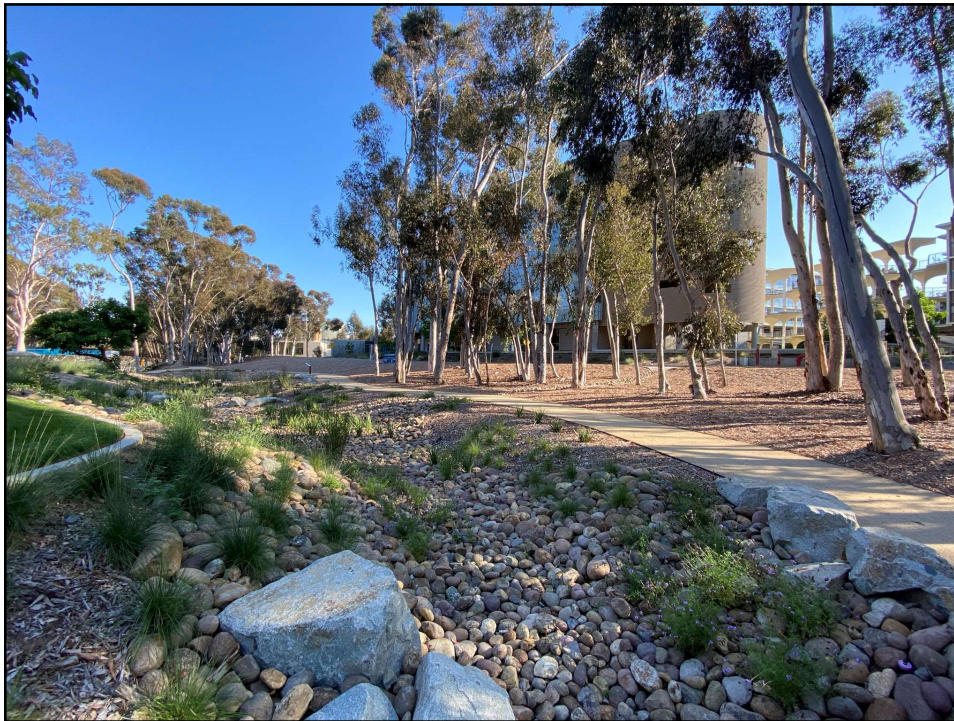
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GROVE SITE BEFORE AND AFTER PROJECT



An asphalt road used for parking and a turf area were replaced with a storm water treatment detention basin and drought tolerant landscaping

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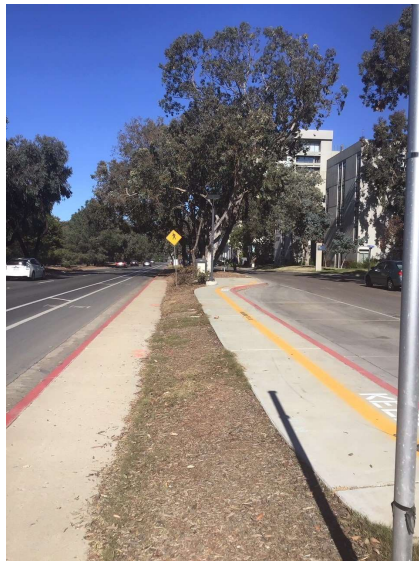


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SCHOLARS LANE SITE BEFORE AND AFTER PROJECT



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Project Challenges



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Turf Removal / Storm Water Treatment Project Benefits



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5. Modular Wetland Treatment System and Monitoring



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Installation 2016



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First Chamber: Pre-Filter Cartridges

- Removes sediment, trash, and hydrocarbons
- Prevents pollutants that can cause clogging from migrating to the biofiltration chamber



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Second Chamber: Biofiltration

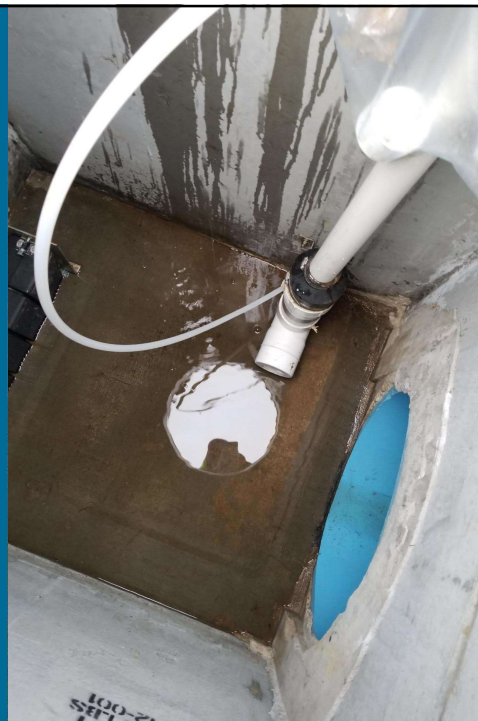
- Wetland media removes heavy metals, sediment, hydrocarbons, and other pollutants



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Third Chamber: Post-Treatment Monitoring

- Stormwater that has passed through the treatment system is sampled before it discharges into the San Diego Bay



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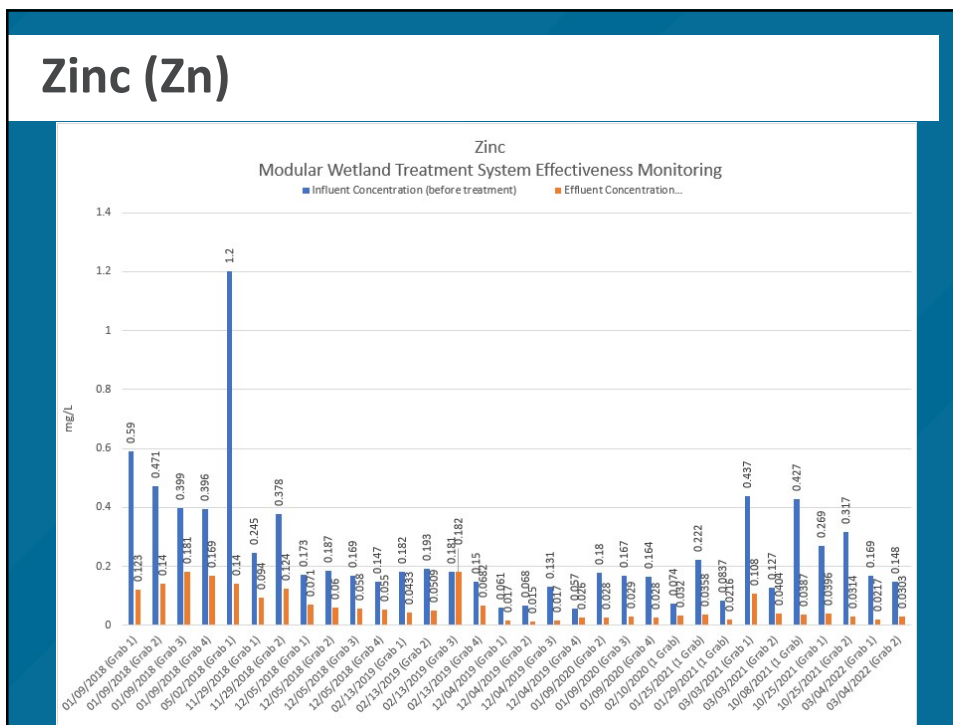
Pre-Treatment Monitoring



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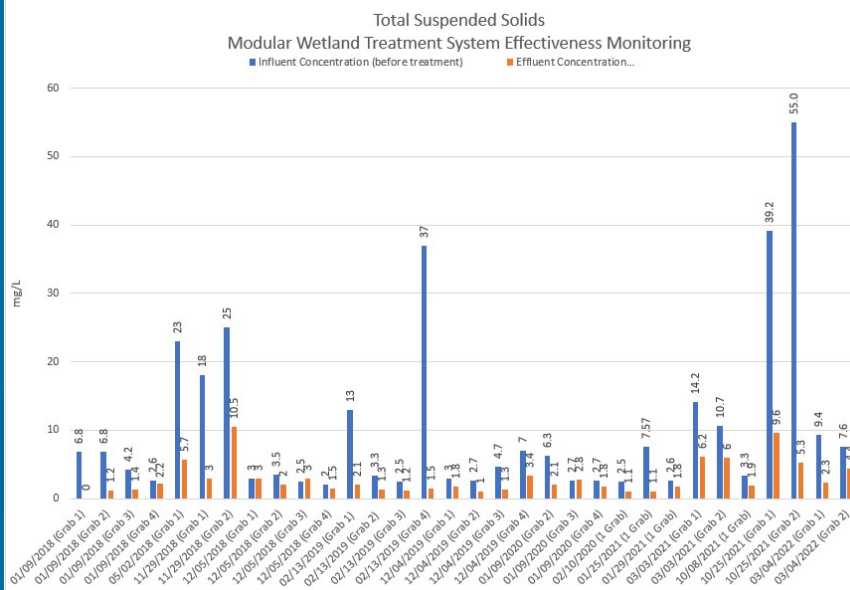


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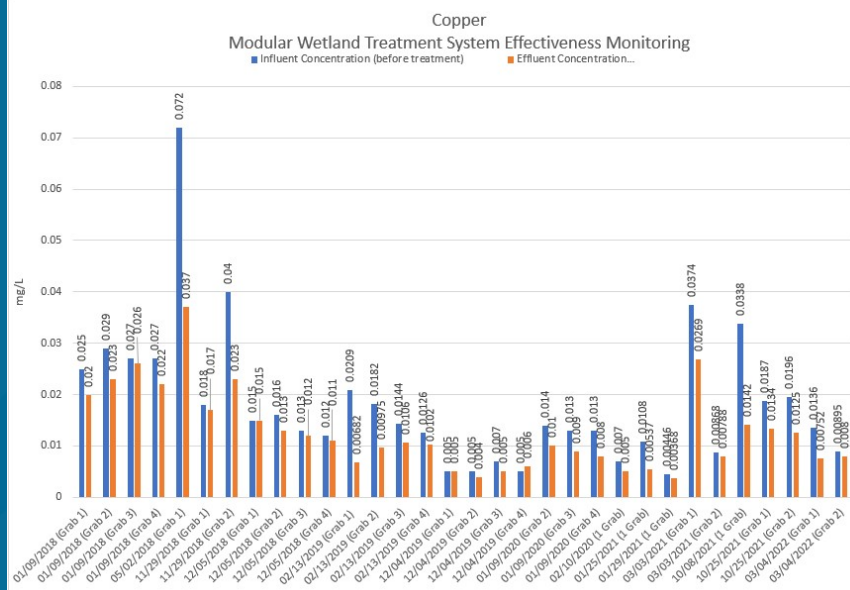
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Total Suspended Solids



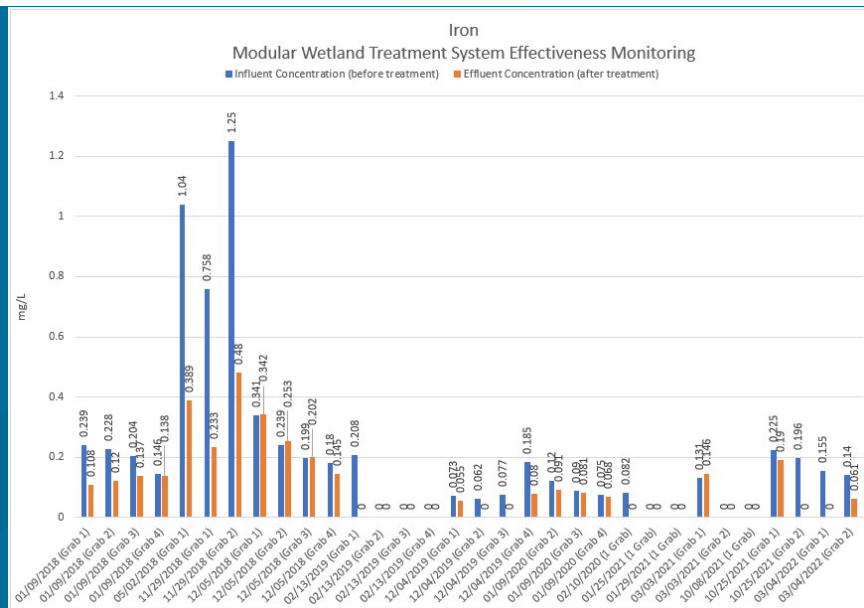
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Copper (Cu)



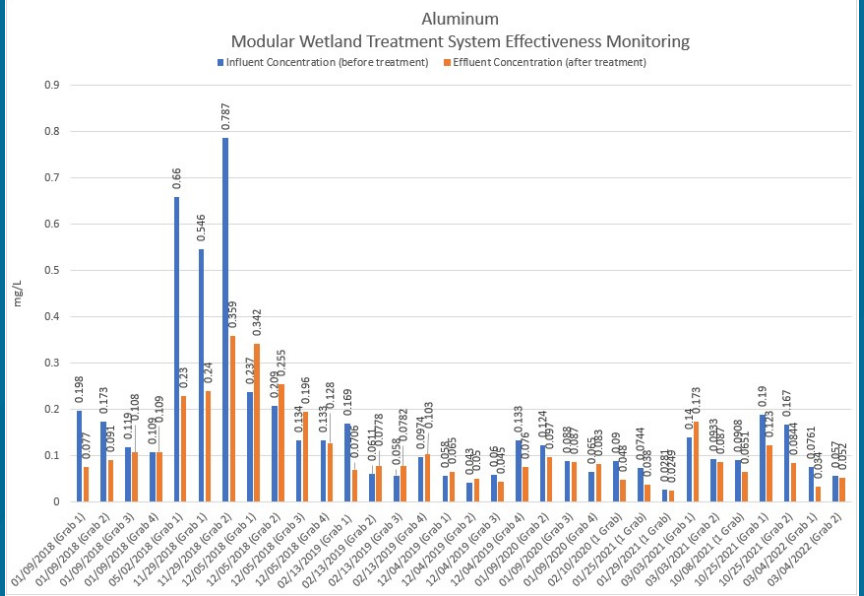
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Iron (Fe)



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Aluminum (Al)



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Tijuana River Valley Habitat Restoration



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Tijuana River Valley Habitat Restoration



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Education and Outreach at Coastal Cleanup



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TRV Non-Point Source Pollution Reduction



THE TIJUANA RIVER ACTION NETWORK INVITES YOU TO THE 8TH ANNUAL

Tijuana River Action Month

A MONTH-LONG SERIES OF EDUCATION AND STEWARDSHIP EVENTS TO BENEFIT THE TIJUANA RIVER WATERSHED

TRAM EVENT DATES

September 9 am-12 pm October

- | | |
|---|---|
| <p>16- Coastal Cleanup Day (US)
at Border Field State Park</p> <p>Salvemos la Playa (MX)
Various Locations</p> <p>23- National Public Lands Day (US)
TRNERR Visitor Center</p> <p>Cleanup (MX)
Los Laureles Canyon</p> <p>29- Environmental Workshops and Beach Cleanup (MX)
Playas de Tijuana</p> <p>30- Cleanup (US)
Dairy Mart Rd. Bridge</p> <p>Cleanup (MX)
Los Laureles Canyon</p> | <p>7- Cleanup (US)
Dairy Mart Rd. Bridge</p> <p>Cleanup (MX)
Playas de Tijuana</p> <p>14 - Goat Canyon Cleanup (US)
Border Field State Park</p> <p>Restoration Activities (MX)
Los Sauces South</p> |
|---|---|

For more info visit:
tjriveraction.net



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Imperial Beach Cleanup



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Border Field State Park Cleanup



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Tijuana Sloughs Cleanup



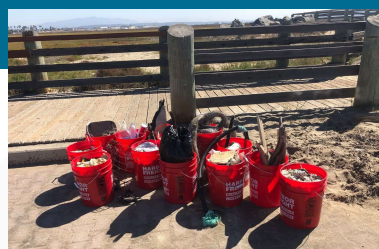
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Tijuana Sloughs Cleanup



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Tijuana Sloughs Cleanup



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Urban Corps Tire Removal in the Tijuana River Valley



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Project Challenges/ Lessons Learned



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Project Benefits:

- Four acres of habitat enhanced by 20 cleanup events in the Tijuana River Valley
- One acre of habitat restored
 - 620 native plants
 - Weed removal
- 977 community volunteers engaged in stewardship activities
- 13,709 pounds of trash collected
- 572 tires removed



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UC San Diego Water Conservation and Watershed Protection Project Total Costs

Budget Category	Funding Match	Grant	Additional Cost	Total
A. Project Administration	\$0	\$0	\$7,228.00	\$7,228.00
C. Planning/Design/Engineering and Environmental	\$193,743	\$0	\$136,130.13	\$329,873.13
D. Construction/Implementation	\$1,188,971	\$1,435,000	\$1,037,070.42	\$3,661,041.42
Grand Total	\$1,382,714	\$1,435,000	\$1,180,428.55	\$3,998,142.55

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Combined Benefits of the 6 Project Components

- ❖ More than 61 million gallons of potable water saved per year
- ❖ Community education and outreach on residential and commercial water conservation
- ❖ Removal of storm water pollutants in the Los Peñasquitos Watershed, Pueblo Watershed, and the Tijuana Watershed
- ❖ Community engagement in stewardship activities in the Tijuana Watershed
- ❖ Habitat restoration and enhancement in the Tijuana River Valley



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UC San Diego Water Conservation and Watershed Protection Project

In Loving Memory of Sam Lopez
An invaluable project partner from Urban Corps

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