

Proposition 50, Project 3

Civic Center Landscape Renovation,
Conservation, and Pollutant Load
Reduction



Project History

- The original project was identified as Project #3: Over-Irrigation/Bacteria Load Reduction and the implementing agency was the City of Encinitas.
- The scope of work included reducing irrigation runoff through improved water use efficiency at eight pilot sites located within the Carlsbad Watershed in San Diego County. The objectives of the project were to provide measurable water conservation and water quality benefits and to demonstrate the link between over-irrigation reductions and associated reductions in pollutant loads.
- The Escondido Creek Watershed Alliance was to implement the three year pilot program to assess the effectiveness of the use of irrigation runoff reduction as a BMP for reducing bacteria and nutrient loads in receiving waters and demonstrate the multiple benefits of water conservation.



Project History Cont.

- On 1/11/2012, the first amendment to Project #3 was approved. Subsequently, Project #3 was renamed to “Campus Landscape Renovation, Conservation and Pollutant Load Reduction”.
- The amendment included drastic scope changes, but kept the overall objective of the original project. The revised scope of work was to protect and enhance water quality by reducing irrigation runoff through improved water use efficiency at Mira Costa College. This site was selected since it represents a large public facility with extensive landscaping, water demand, and educational opportunities.
- On 6/20/2012, the second amendment to Project #3 was approved and included a revised schedule due to the timing of approval of the first project amendment.



Project History Cont.

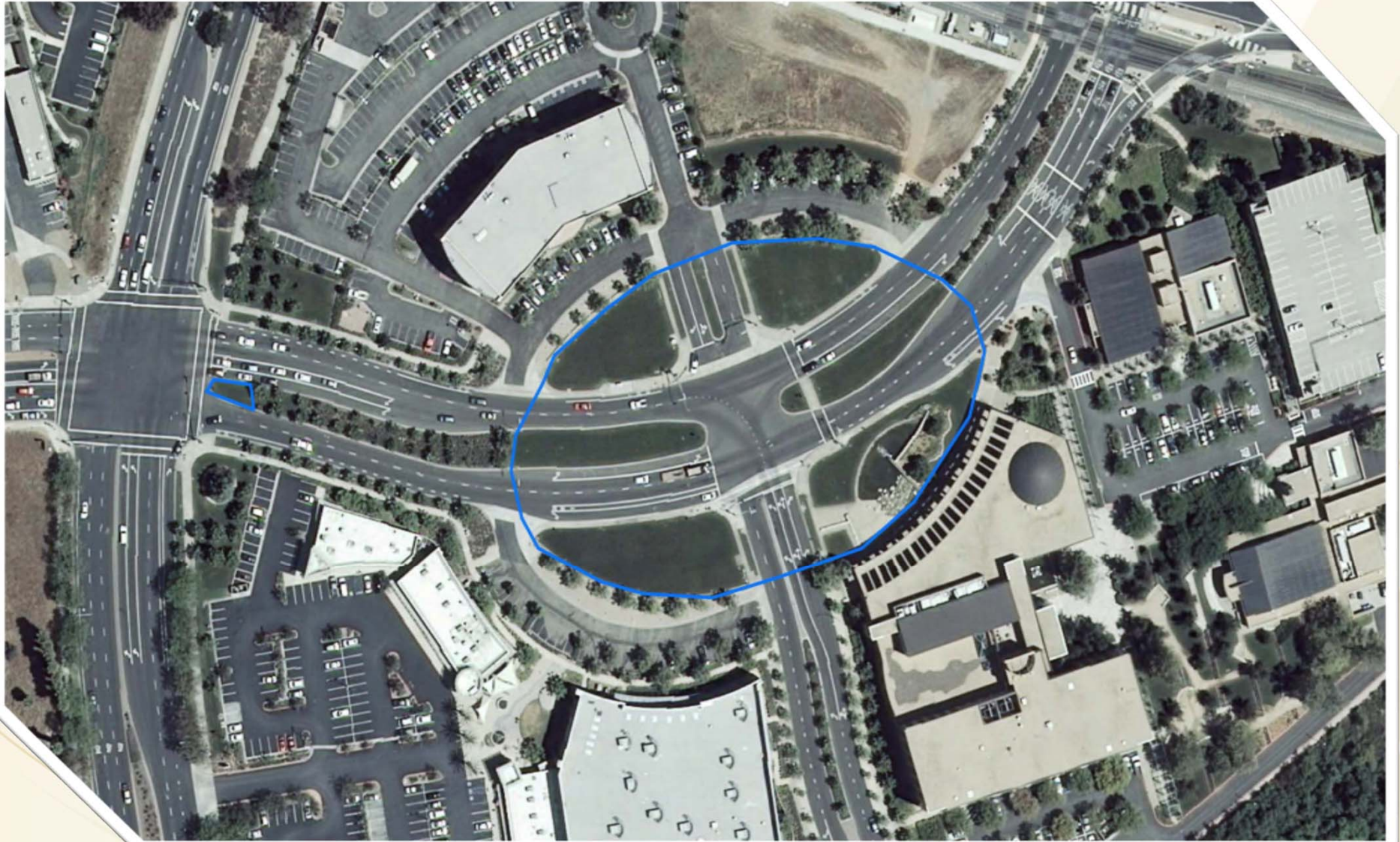
- In 8/4/14, the third amendment to Project #3 was approved. This amendment included major changes to the scope of work and the project sponsor changed to the City of San Marcos.
- Subsequently, the Project was renamed to the Civic Center Landscape Renovation, Conservation and Pollutant Load Reduction Project.
- The broad basis for the amendment was the result of a variety of factors including inability of the original project to move forward due to loss of funding, change in project sponsor, change in project location, and change in project budget allocations to individual tasks.
- Under this amendment, modifications to the original project tasks and budget were completed under the premise of the original project goals and objectives and to preserve the original budget and match.



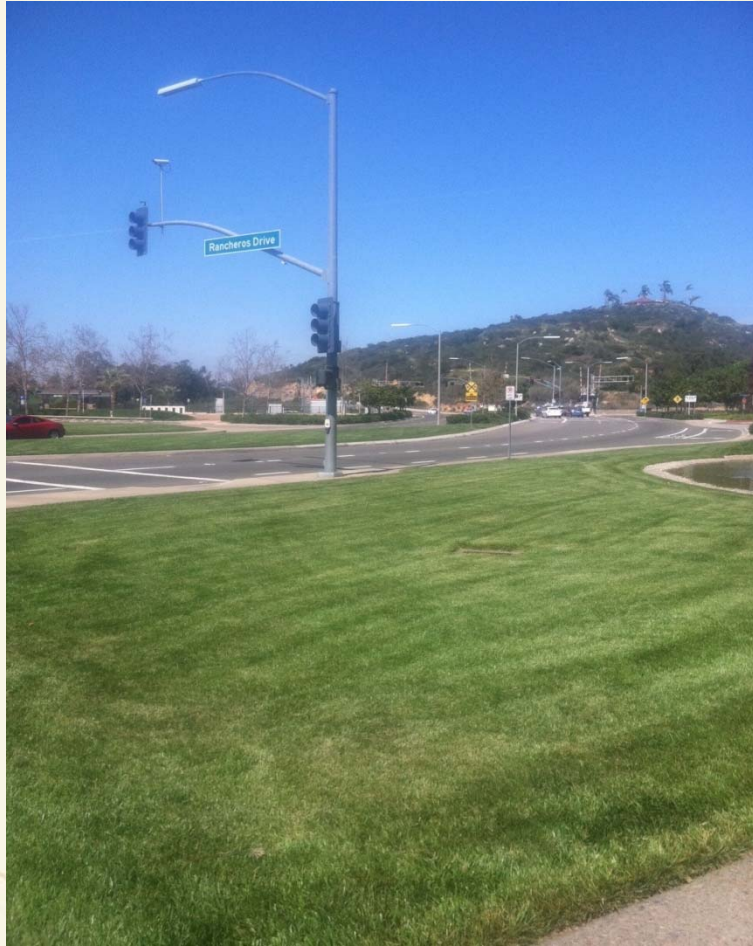
Project Details

- The Project area consists of the landscape areas along San Marcos Boulevard fronting the City of San Marcos Civic Center.
- The San Marcos Civic Center is located within the San Marcos Hydrographic Area of the Carlsbad Watershed Management Area. This site is a primary public facility located at a core transportation hub.
- The Civic Center landscaping fronting San Marcos Boulevard and the median landscaping were formerly landscaped with turf grass. Excessive irrigation runoff has been a problem for many years.
- The objectives of the project was to provide measurable water use efficiency and water quality benefits and to demonstrate the link between irrigation runoff reduction and associated reductions in pollutant concentrations and loading.
- This was accomplished through landscape renovation, advances in irrigation technology, flow monitoring and water quality monitoring.





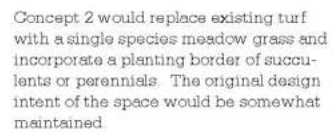
Pre-Project Photos



Project Work Plan Elements

- Planning/Environmental Documentation
- Design Work – Landscape Conversion Concept Packages & Construction Plan Development
- Construction/Implementation
- Water Quality/Flow Monitoring and Data Analysis
- Public Outreach and Education





Total Planting Area: 48,279 SF

Reduction in Meadow Grass Area: 21%
(10,216 SF of succulent or perennial planting)

Legend

- | | |
|------------------------------------|--|
| ① existing decomposed granite band | ④ succulent, perennial or tall/ornamental grass planting |
| ② existing row of trees | ⑤ expanded Callistemon 'Little John' median planting |
| ③ single species meadow grass | |

CONCEPT 2



1



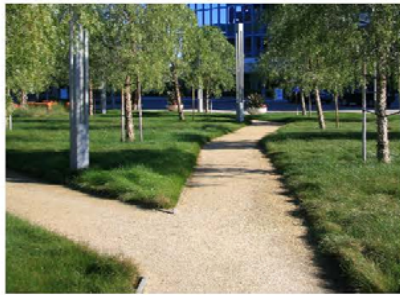
Muhlenbergia emersleyi 'El Toro', Bull Muhly
3' H x 3' W
Note: fall blooming

2



Agave vilmoriniana, Octopus Agave
3-4' H x 3-4' W

3



Native Mow Free Blend
1' H x 1' W

4



Gaillardia 'Mesa Yellow',
Yellow Blanket Flower
16-18" H x 20-22" W

4 Alternative



Senecio mandraliscae,
Blue Chalk Sticks
12-18" H x 2-3' W

SELECTED PLANTING DESIGN

COLOR BANDS WITH 4TH ELEMENT

DESIGN

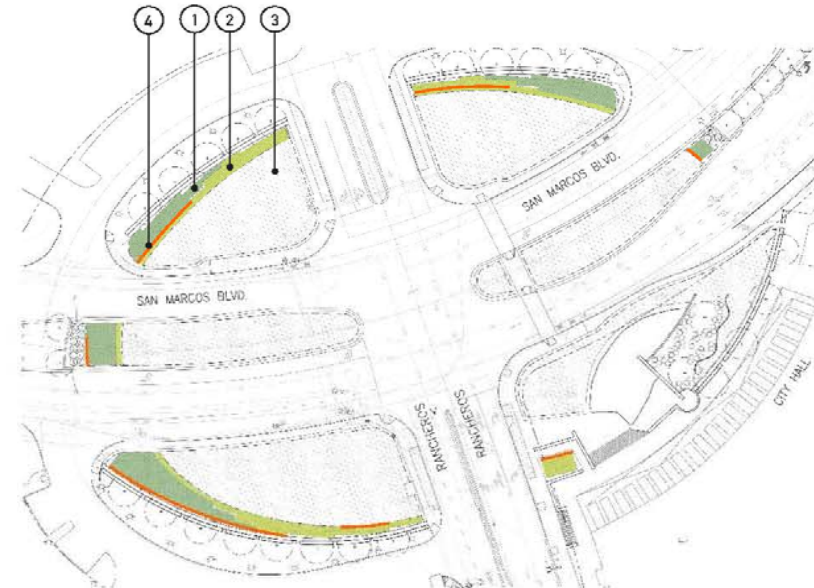
Border plants will read as individual plants in a radial pattern with a drift of color pulling through and maintaining the radial pattern.

PLANTS

Plant 2, medium sized grass (formally Festuca mairei), will be replaced with an agave, and a fourth plant with will introduced for color.

SUMMARY

There will be a greater contrast (color and texture) between the Native Mow Free Blend meadow grass and border planting which will be further emphasized with drifts of color pulled through the border planting.



SAN MARCOS BLVD LANDSCAPE CONVERSION | 05.07.2015











Water Quality/Flow Monitoring

- Pre-project flow monitoring and sampling were completed on April 1, 2015, and post-project flow monitoring and sampling were completed on March 17, 2016.



WQ/Flow Monitoring Cont.

- During the pre-project monitoring events on April 1, 2015, runoff was observed entering the storm drain at Point B but not at Point A. Runoff was not observed at either monitoring location during the post-project monitoring event on March 17, 2016.



	Pre-Project				Post-Project			
	Point A		Point B		Point A		Point B	
	Event 1	Event 2	Event 1	Event 2	Event 1	Event 2	Event 1	Event 2
Flow Rate ¹ (gpm)	0	0	0.1696	0.416	0	0	0	0
Discharge Volume ² (gal)	0	0	1.272	3.12	0	0	0	0
Duration of Flow (min)	0	0	15	15	0	0	0	0

- One grab sample was collected at Point B. Samples were analyzed for the following constituents:

Total Metals (copper, lead, & zinc)

Enterococcus Bacteria

Total Nitrogen (total Kjeldahl nitrogen)

Total & Fecal Coliform Bacteria

Total Phosphorus

Total Suspended Solids



WQ/Flow Monitoring Results

Analyte	Concentration	Concentration Unit	Daily Load ¹	Daily Load Unit	Annual Load ²	Annual Load Unit
Total Nitrogen	10.1	mg/l	83.96	mg	0.03064	kg/yr
Total Copper	0.042	mg/l	0.35	mg	0.00013	kg/yr
Total Lead	ND	mg/l	--	--	--	--
Total Zinc	0.347	mg/l	2.88	mg	0.00105	kg/yr
Total Suspended Solids	401	mg/l	333.42	mg	1.21670	kg/yr
Total Kjeldahl Nitrogen	10.1	mg/l	83.96	mg	0.03064	kg/yr
Nitrate/Nitrite as N	0.02	mg/l	0.17	mg	0.00006	kg/yr
Total Phosphorus	0.93	mg/l	7.73	mg	0.00282	kg/yr
Total Coliform Bacteria	1,600	MPN/100 ml	133,004.27	MPN	48.55	million MPN/yr
Fecal Coliform Bacteria	280	MPN/100 ml	23,275.75	MPN	8.50	million MPN/yr
<i>Enterococcus</i> Bacteria	300	MPN/100 ml	24,938.30	MPN	9.10	million MPN/yr

During the pre-project monitoring events, runoff was only observed at Point B. During the post-project monitoring events, no runoff was observed entering the City's storm drain system from over-irrigation. Only minor overspray from one sprinkler head to the sidewalk was observed around the landscaped area upstream of Point A during the post-project monitoring, but no runoff was observed.



WQ/Flow Monitoring Results

- Reduction in irrigation runoff was due in part to the project design, which included a two-foot border of decomposed granite around the grass landscaping, which helped to contain any potential runoff.
- Reductions also occurred due to installation of new high efficient MP Rotator sprinklers, adjustments to existing MP Rotator sprinklers, installation of drip irrigation systems, and reducing the irrigation duration and frequency.
- Because all irrigation runoff from the site was eliminated as a result of the project, the project achieved a 100% reduction in pollutant concentrations and loads.



Water Usage Data & Analysis

- The City began implementing water conservation efforts prior to project construction in response to California's drought conditions.
- Pre-project water usage was monitored by City staff from July 2013 through June 2015. Water usage monitoring ceased during project construction, but the City resumed collecting water use data in May 2016. Water usage monitoring did not begin until May 2016 since the newly planted vegetation requires a two-month establishment period where it must be watered more frequently.
- Water use was further decreased during the post-project period through shortening irrigation duration and frequency, a result of the replacement of turf grass with alternative vegetation that requires less water use. Irrigation duration and frequency decreased from three times per week at 15 minutes per cycle to two times per week at ten minutes per cycle.



Water Usage Data & Analysis Results

- Although the City has made progress towards achieving the goal of improving water use efficiency, a percent reduction in water use cannot be reported since the post-project water use data is not available at this time.
- Post-project water use data will be collected and reported through Post Performance Reports.
- It is expected that the data will show a measurable decrease in water usage at the project site, exceeding the minimum target of 20% water use reduction.



Public Outreach/Education

News Room

What's growing on: water-wise landscape makeover takes shape at San Marcos Civic Center

Post Date: 01/27/2016 2:00 PM



In March, crews completed a water-wise landscape makeover on the city's Civic Center front lawn and surrounding areas along San Marcos Boulevard to

set the water-saving example.

While newly planted varieties may look like grass from the past, the new "Native Move Free Sod" to be planted requires 50 percent less water than a traditional lawn and only needs mowing eight times per year.

"Knowing that California still faces unprecedented drought conditions, this project is helping the city be good stewards of all our water resources," said Public Works Director Mike Edwards.

Landscape designs approved by the San Marcos City Council call for a large area of native mow free grass surrounded by an oval-shaped border of meadow grasses, a variety of succulents and yellow blanket flowers instead of intensive, high maintenance ornamental turf. Decomposed granite will border the meadow areas.

Irrigated with well water, higher efficiency irrigation technology with drip emitters and high-efficiency spray nozzles will also be put in place.

By transforming the landscaped area, the city not only expects to reduce water use by more than 50 percent but will also trim down on landscape maintenance costs for fertilizers, weed control and labor.

The \$400,000 project, paid for in part by funding from the Water Security, Clean Drinking Water, Coastal and Beach Protection Act, will reduce water use and minimize run-off into the streets while creating a sustainable space for City Hall visitors.

For more information, contact Communications Officer Sarah Macdonald, (760) 744-1050, ext. 3174.

Bull Muhly Grass



Yellow Basket Flowers



Octopus Agave



Blue Chalk Sticks



Public Outreach/Education Cont.

MUHLENBERGIA EMERSLEYI "EL TORO"

Bull Muhly

Proud to be water - wise

NATIVE MOW FREE BLEND

Benefits

*Using 50% less water than traditional sod
(including summer watering),
this native, water - wise blend can be
maintained as turf grass or left un-mowed
to create a meadow landscape.*

