PUBLIC
VENTURA COUNTY
WORKS

Planning and Implementation of Stormwater Projects in Ventura County

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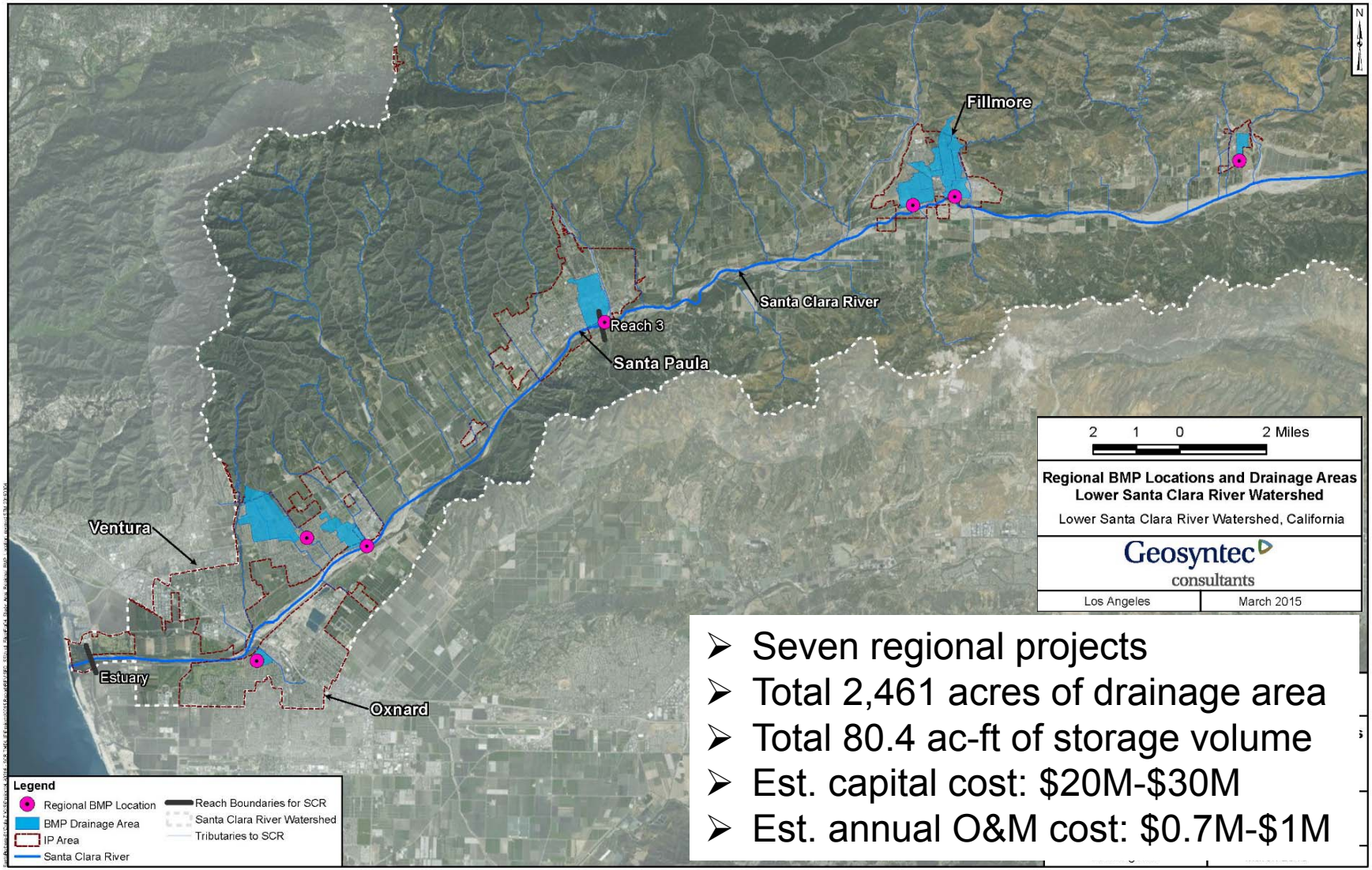
Stormwater Projects

- Regulatory Drivers:
  - NPDES MS4 Permit (Ventura Countywide, 2010)
    - New Development, Redevelopment
    - Retrofit to eliminate wash water runoff from Public facilities
    - BMPs to address exceedances
  - Total Maximum Daily Loads (TMDLs)
- Timeline & funding challenges
- Foundation for a path forward:
  - Watershedwide collaboration
  - Multibenefit projects
  - SB 231 to improve water management, capture of rainwater

Ventura County TMDLs

Watershed	Constituent Listing	2017 Status
Ventura Coastal Beaches	Bacteria	Effective (12/2008)
Ventura River	Trash	Effective (03/2008)
	Algae	Effective (06/2013)
Santa Clara River	Bacteria	Effective (03/2012)
Oxnard Drain #3	Pesticides, PCBs, and Sediment Toxicity	Approved by U.S. EPA (10/2011)
Calleguas Creek	Nutrients	Effective (07/2003); Revised (10/2009)
	Chlorpyrifos and Diazinon	Effective (03/2006)
	OC Pesticides and PCBs	Effective (03/2006)
	Metals (Cr, Ni, Ag, Zn, Cd, Se)	Effective (03/2007)
	Boron, Chloride, Sulfate, TSS, Salts	Effective (12/2008)
	Trash (Revolon/ Beardsley Wash)	Effective (03/2008)
Malibu Creek and Santa Monica Bay	SMB Marine Debris	Effective (03/2012)
	Bacteria	Effective (01/2006); Reopener effective (072014)
	Nutrients (Phase I)/ Ammonia/pH/ Algae/ Eutrophication	Approved by U.S. EPA (03/2003)
	Sedimentation & Benthic-Macroinvertebrates	Approved by U.S. EPA (03/2013)
	Trash	Effective (07/2009)
	Lake Sherwood Mercury	Approved by U.S. EPA (03/2012)

TMDL Implementation Plans
2015 Lower SCR Bacteria TMDL Example

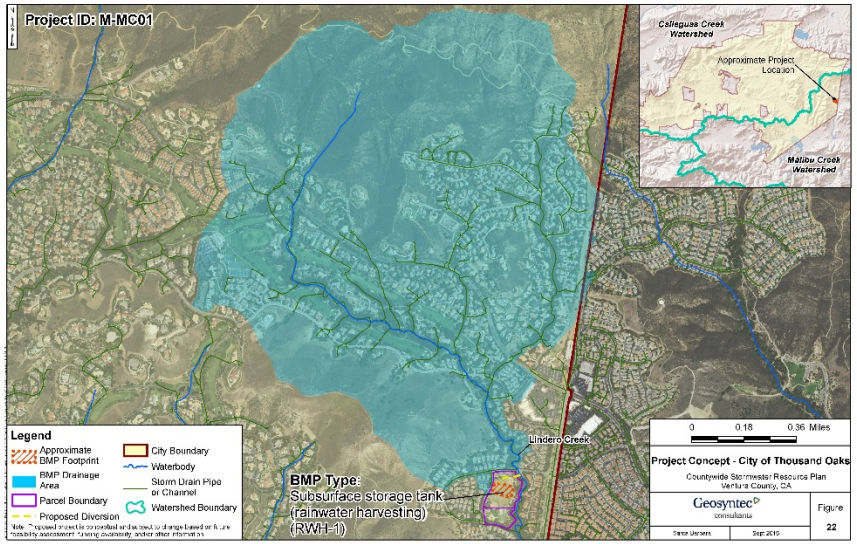


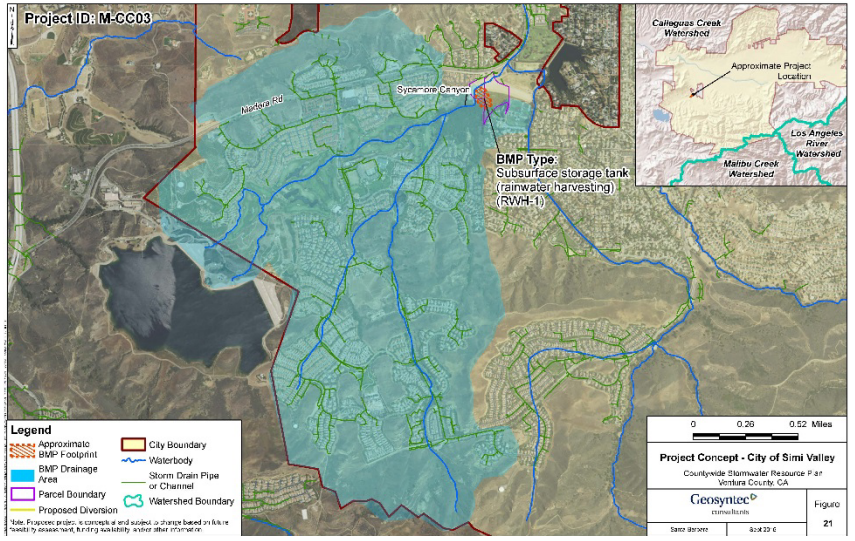
- Seven regional projects
- Total 2,461 acres of drainage area
- Total 80.4 ac-ft of storage volume
- Est. capital cost: $20M-$30M
- Est. annual O&M cost: $0.7M-$1M

Ventura Countywide Stormwater Quality Management Program

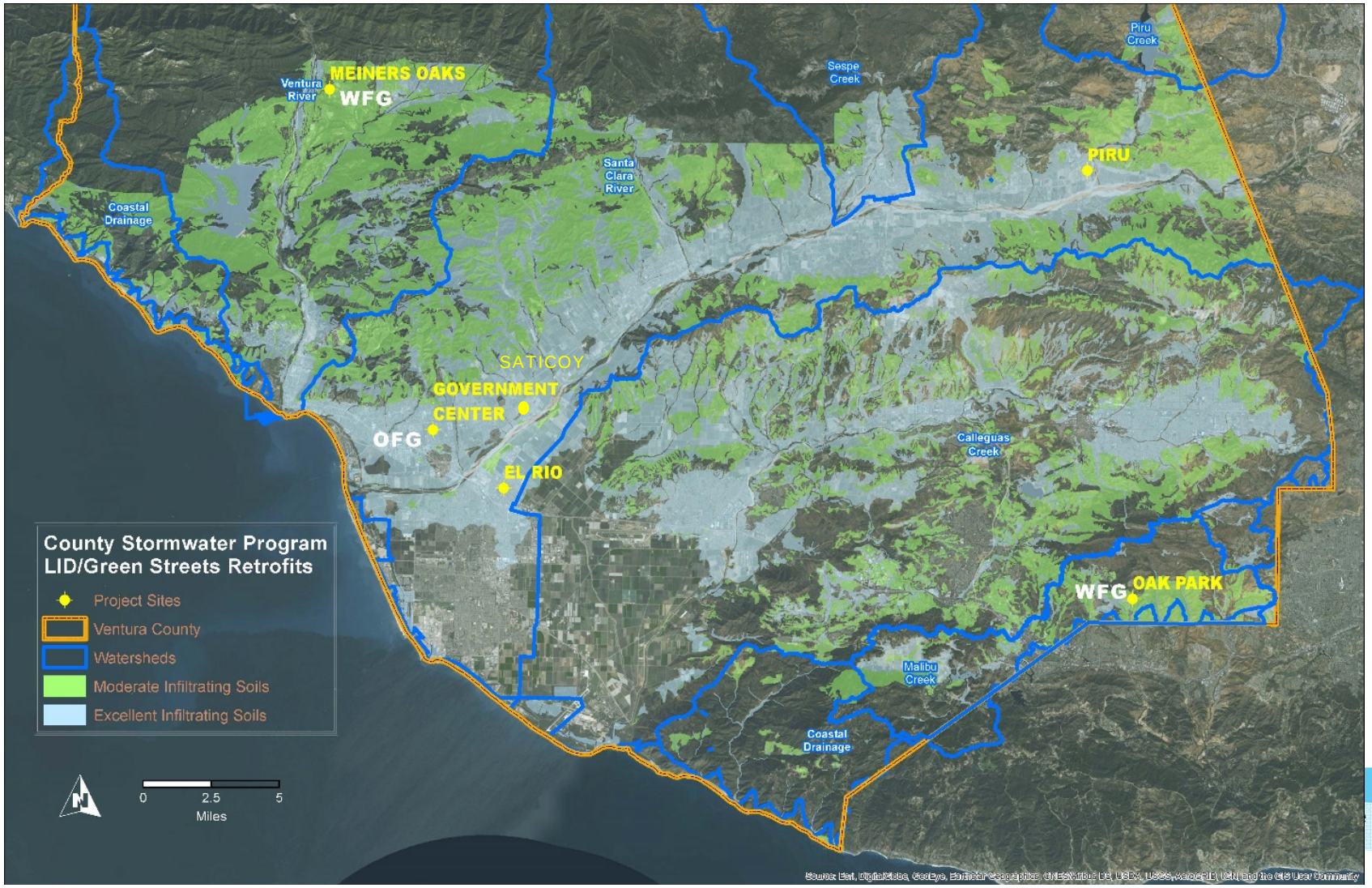
2016 Ventura County Municipal Stormwater Resources Plan

- Eleven regional projects
- Total 6,120 acres of drainage area
- Total 166 ac-ft of storage volume
- Est. capital cost: $57M-$91M
- Est. annual O&M cost: $1.9M-$2.7M

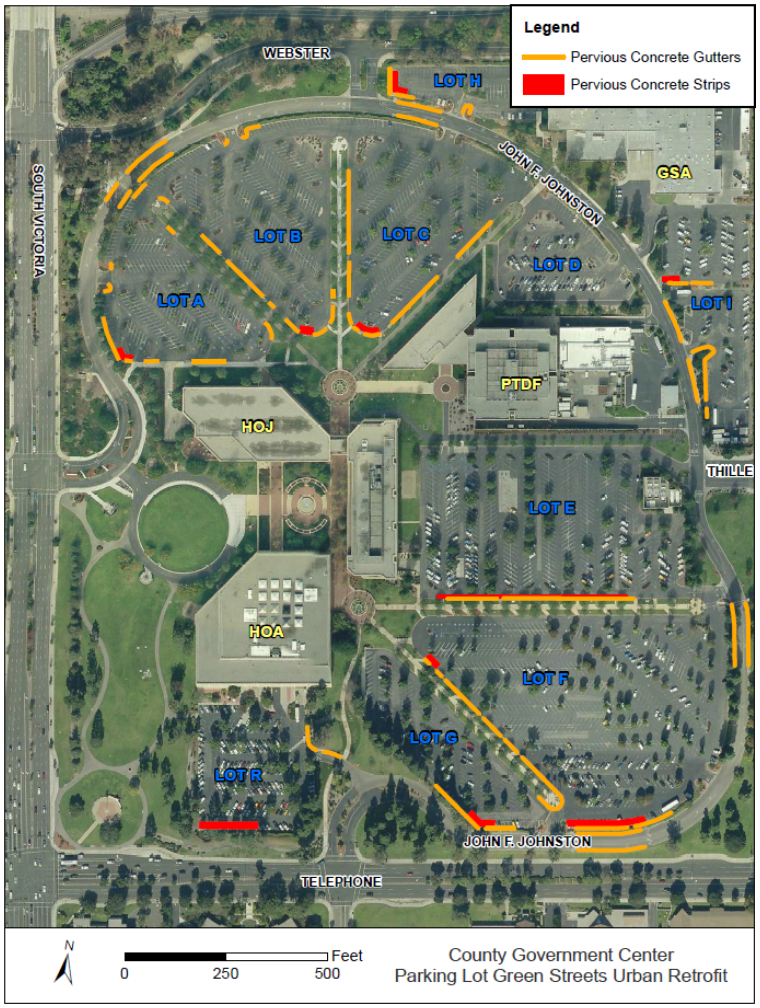




Ventura County Unincorporated Stormwater Projects



County Government Center
Green Streets Urban Retrofit



Project website
http://uninc.vcstormwater.org

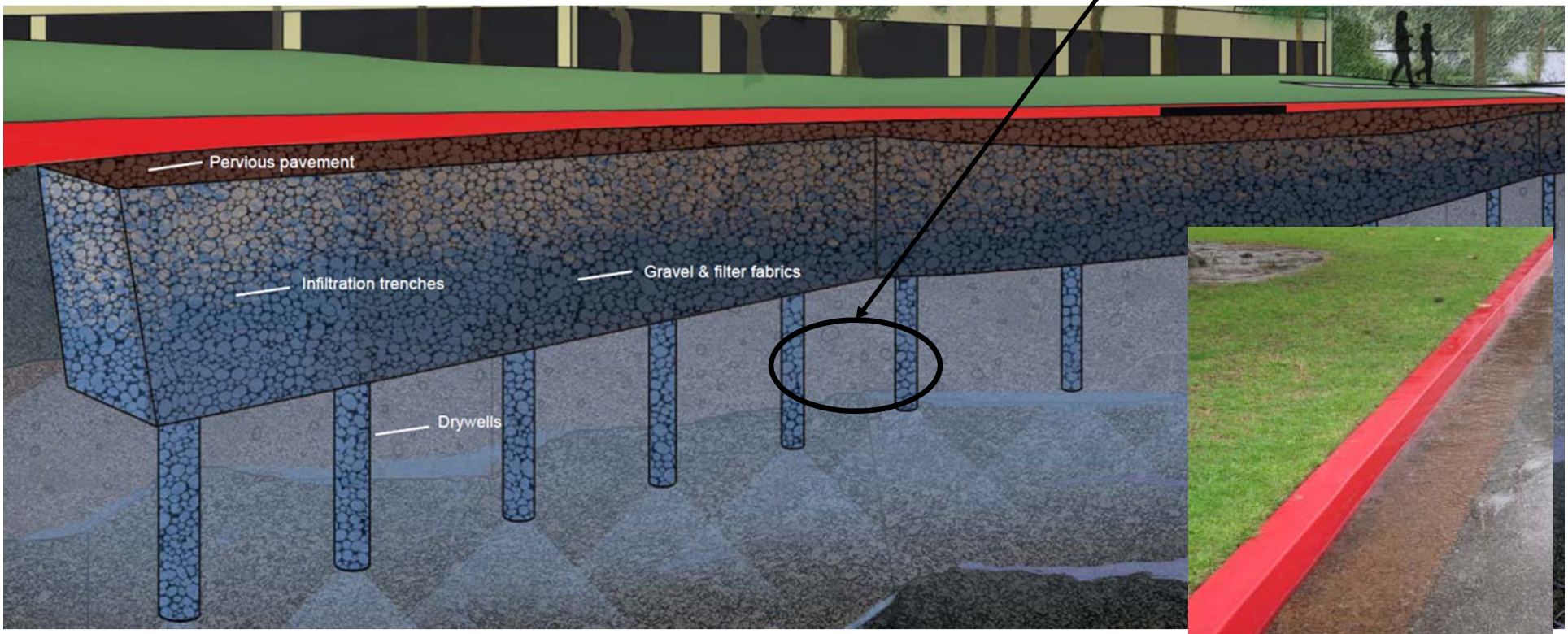
CASQA California Stormwater Quality Association

ASCE AMERICAN SOCIETY OF CIVIL ENGINEERS

APWA AMERICAN PUBLIC WORKS ASSOCIATION

Pervious Gutters

Dry wells needed to combat high clay content and very poor infiltration rates for top 13 feet

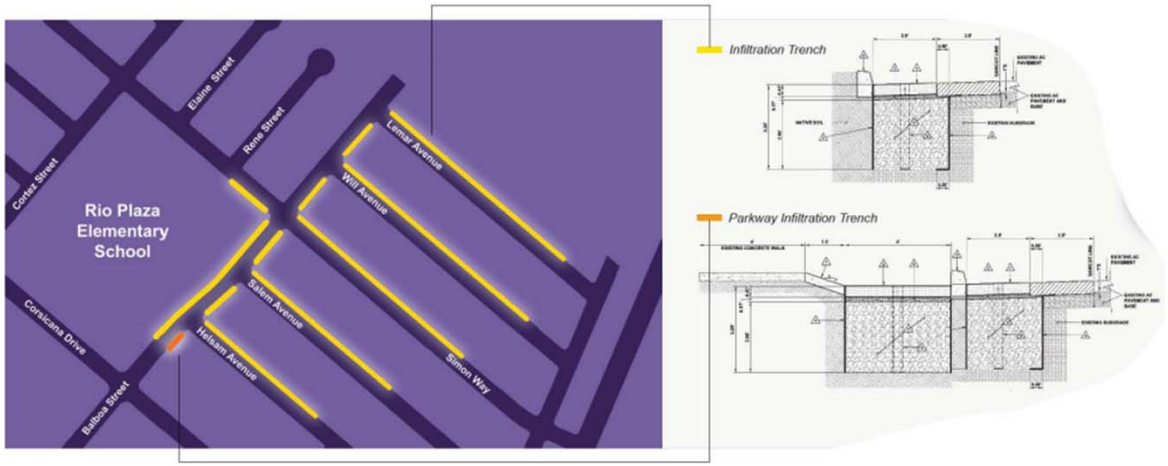


Clean Drain
Drenaje Limpio
Cleaning stormwater before it makes its way to the Ventura River
Limpiar los drenajes de aguas pluviales antes de que cojan su camino al Rio Ventura
http://uninc.vcstormwater.org

El Rio Retrofit for Groundwater Recharge

El Rio Retrofit for Groundwater Recharge

BMP Type: Infiltration Trench
Completed: March 2016
Drainage Area: 46 acres
Groundwater recharge: ~49 ac-ft/yr
Funding Source:
Proposition 84 IRWM Drought Relief



Pervious Concrete Maintenance

B.I.R.D. System – vac track washing attachment

Piru Stormwater Capture for Groundwater Recharge

BMP Type: Spreading grounds

Construction: Summer 2018

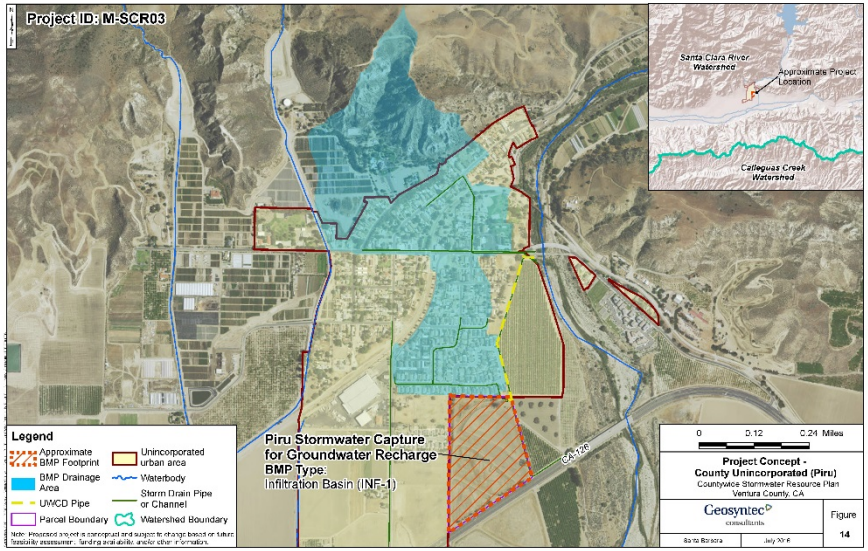
Drainage Area: 123 acres

Stormwater Capture: ~39 ac-ft/yr

Pollutant Reduction: 9.2×10^{12} MPN/yr

Project Collaborator: United Water Conservation District

Funding Source: Proposition 1 SWGP



Saticoy Stormwater Infiltration

BMP Type: Subsurface infiltration basin

Drainage area: 41 acres

Construction: 2022 (estimate)

Collaborator: Caltrans

Funding: Caltrans (planning, design, & construction); County (long-term O&M)

Happy Valley Bioswale
Meiners Oaks, CA


Drone picture before construction


Drone picture after construction

Ojai Valley Land Conservancy

Summary

- Summary for five County's projects:
  - Total capital cost: $3,843,013
  - Estimated annual O&M: $206,275
  - Total drainage area: 286 acres
  - Total impervious area to be treated: 162 acres
  - Estimated stormwater capture volume: 165 ac-ft/yr
  - Estimated groundwater recharge volume: 128 ac-ft/yr
- Much more work to do

Any Questions?

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