The RIVER PROJECT

Nature-Based Watershed Planning for a Viable Future

July 21, 2018

March 24, 2020

Melanie Winter, Founder & Director
The River Project

ABOUT THE RIVER PROJECT

The River Project is a nonprofit established in 2000. We work to advance watershed-based planning and to restore vital ecosystems of the Los Angeles River Watershed for a regenerative, equitable, just and climate-resilient future through:

- Scientific Research
- Policy Advancement
- Inclusive Planning
- Regenerative Design
- Installations
- Community Engagement
- Hands-on Educational Programs

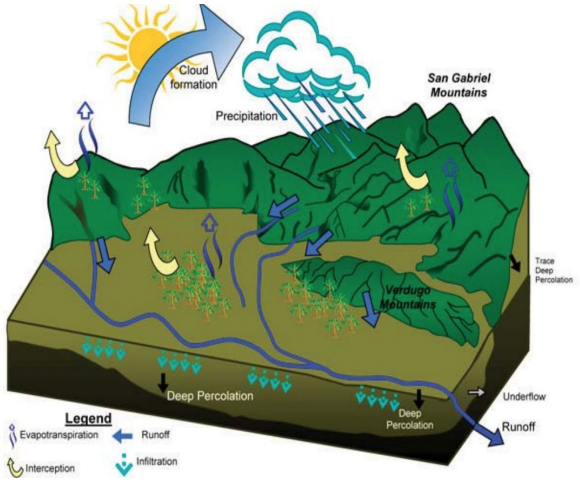
WHAT IS WATERSHED-BASED PLANNING?

- Engaging from the comprehensive perspective of a wider interconnected watershed—rather than the narrow scope approach that results in costly/inefficient single-purpose solutions

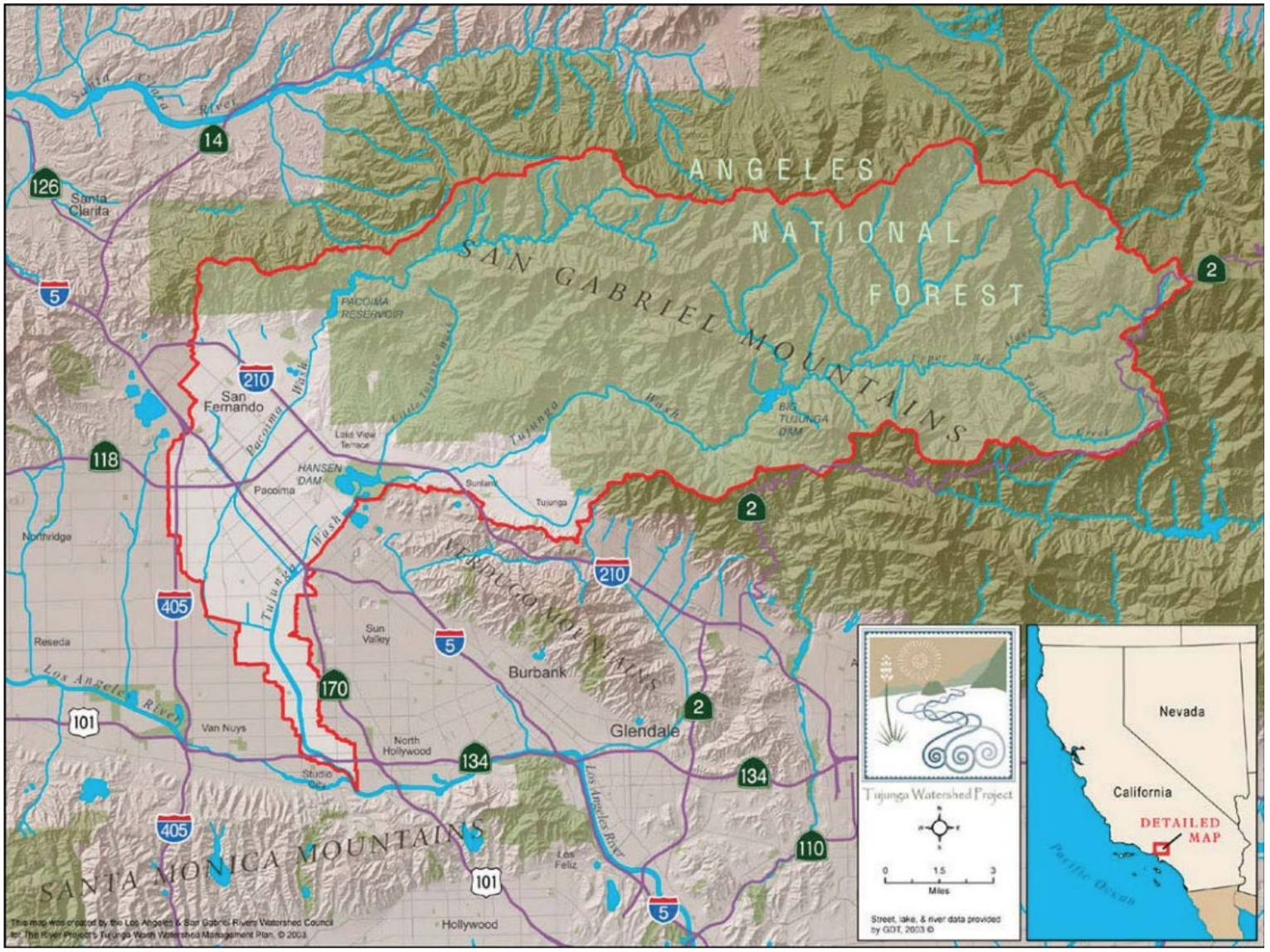
- Considering the full range of challenges and integrating *multiple benefits and natural regeneration* as fundamental to solutions

- Working *with* nature to manage flood risk without sacrificing water supply, degrading water quality, or destroying the natural processes of nature's vital services

- Managing rainwater where it falls



TUJUNGA-PACOIMA WATERSHED PLAN



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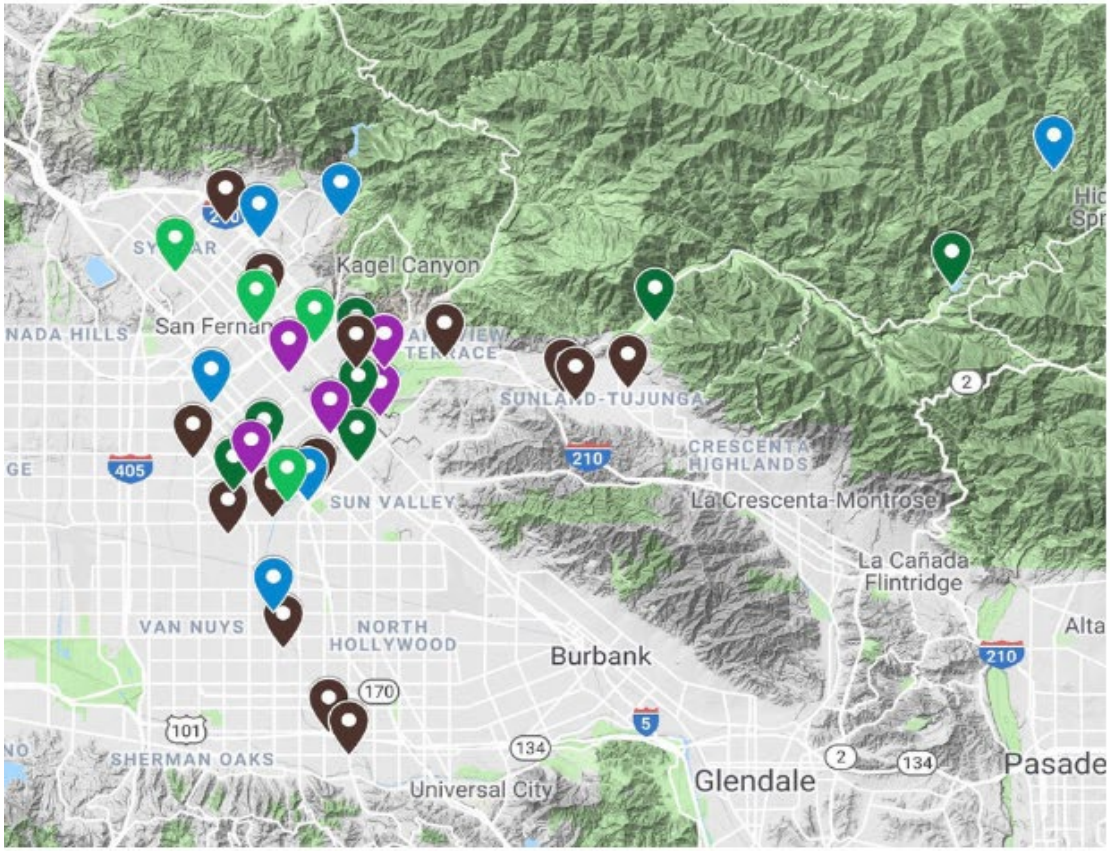


Completed (7)
- Primary Street Improvement
- Big Tujunga Dam Enhancement Project
- Hansen Golf Course Water Recycling Project
- Hansen Spreading Grounds Ehancement
- Tujunga Wells Ammoniation Sation
-Arleta Neighborhood Retrofit
- Angeles Gateway Preserve

Partially Completed (4)
- Railroad Right of Way
- Tujunga Wash Project
- Pacoima Median & Bike Trail
- Pacoima Wash Recreation Trail

In Progress (7)
- Power Line Easement Project
- Valley Generation Station Storm Water Capture
- North Hollywood Well Field
- Pacoima Spreading Ground Enhancement
- Tujunga Wells Ammoniation Station
- Pacoima Reservoir Sediment Removal

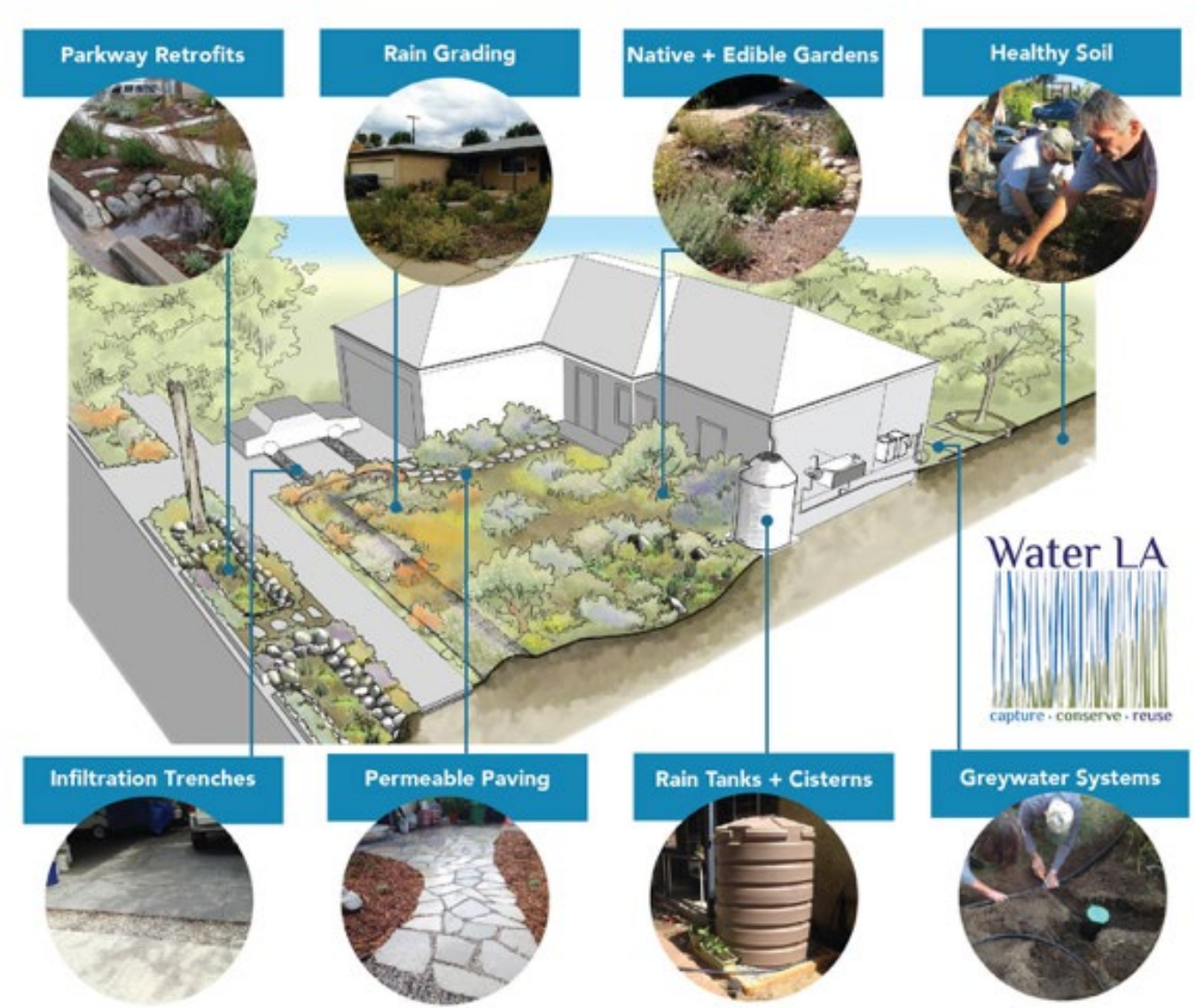
Funded (5)
- Tujunga-Sun Valley Tujunga Wash Diversion Project
- Hansen Dam Water Conservation & Supply
- Boulevard Pit Stormwater Storage
- Pacoima Nieghborhood Retrofit
- Arleta Greenbelt

No Action to Date (14)
- CBS-Viacom Radio Community Park
- Tujunga and Pacoima Wash Bridge Retrofit & Channel Expansion
- Moorpark Park Retrofit
- Wilson Canyon Wash & Sylmar High School Retrofit
- Panorama City Creek Restoration
- Van Nuys Boulevard Pocket Parks
- Grace Community Church of the Valley Parking Retrofit
- Tujunga Wash Outdoor Classroom
- Sunland Park Retrofit
- Wyngate Street Pocket Park
- Verdugo Hills High School Retrofit
- Mission Hills Greenbelt
- Tujunga "Tataviam" Village Parks
- Hansem Dam Wildlife Lake Improvement

WOODMAN AVENUE MEDIAN

- ¾ mile long
- Collects runoff from 120 acres
- 80 acre-feet water capture/year average

WATER LA HOME RETROFITS



Engaging Residents as Partners in the Work

Homes Retrofitted by Water LA:

- Reduced water use by an average 25%
- 22 Homes capture and treat estimated average 3.8AF/year
- 18,175 square feet native plants
- Averaged $5,200 per household in labor and materials
- Average home retrofit cost an estimated $1,013/AF over a 30-year expected project life
- Average parkway basin alone cost $470/AF

AVERAGE PARTICIPANT WATER CONSUMPTION (per capita)

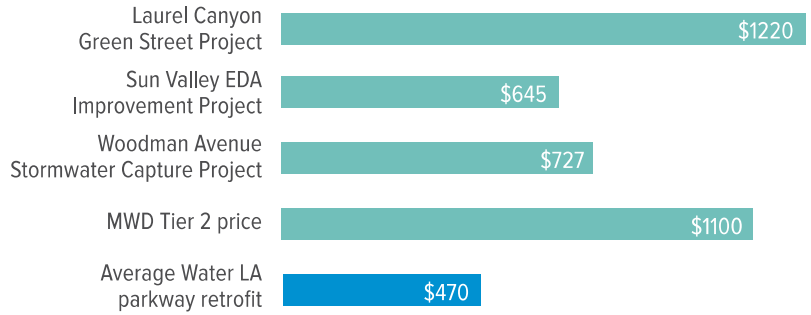
PRIOR TO PROJECT (2009-2013):
73 GALLONS per day

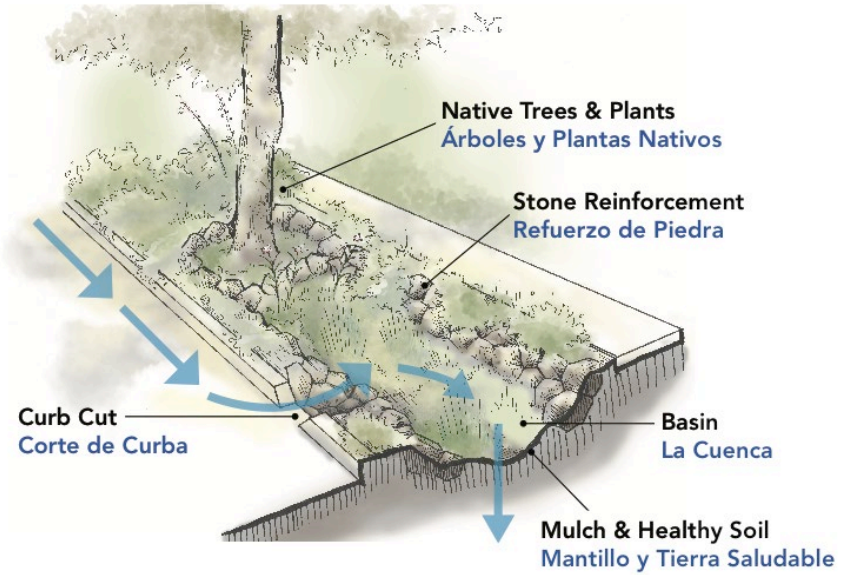
AFTER COMPLETED RETROFITS (2015)
54.7 GALLONS per day

KEY POLLUTANTS REMOVED BY WATER LA PILOT
Estimated based on 85th percentile storm

TRASH	NITRATE	COPPER	LEAD	ZINC	FECAL COLIFORM
36.00 cf/year	0.32 Kg/year	30.08 Kg/year	20.48 Kg/year	232.96 Kg/year	660,992,000.00 MPN/year

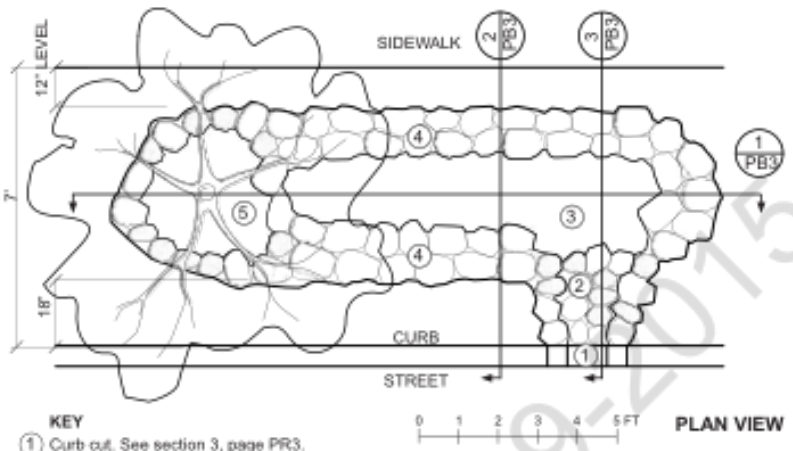
LADWP STORMWATER PROJECT COSTS (per acre-foot of water)





PARKWAY BASINS

PB 2 OF 4



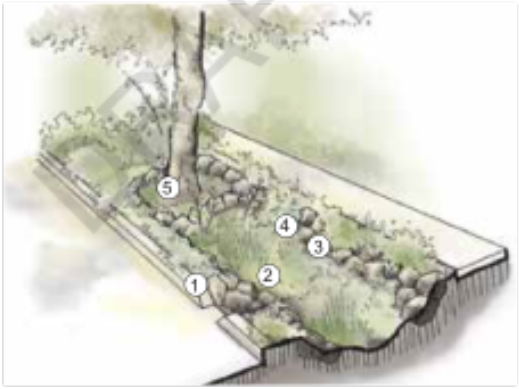
PLAN VIEW

KEY

1. Curb cut. See section 3, page PR3.
2. Erosion control to slow inflowing water and capture fine sediment. See section 3, page PR3
3. Basin for stormwater capture. Depth of basin shall be no greater than 2', and slope no more than 3%.
4. Side slopes. See section 2 page PR3 for details.
5. Optional basin shelf for tree or other planting.

NOTES

1. Call DigAlert at 811 at least 72 hours prior to work to locate utilities.
2. Side slopes shall be dry set (unmortared) with min. 9" stone.
3. Maintain all appropriate slopes, setbacks and clearance distances.



PARKWAY BASIN WITH CURB CUT PLAN AND DIAGRAM

Water LA
capture · conserve · reuse

TABLE 1

LID Feature Average Percolation Rate Summary

Testing Series		Average Percolation Rate (in./hr.)		
		3-Month	9-Month	18-Month
LID Feature Location	81st Street	4.3	5.0	2.5
	Whitset Avenue	9.1	10.7	11.0
	Flallon Avenue	1.2	1.9	1.1
	Le Borne Avenue	13.2	14.4	8.9

Private properties have always been the third rail in Los Angeles stormwater work. Through working with residents directly, providing green stormwater solutions, and training residents to maintain these solutions, The River Project has cracked it with this Water LA Program.

MARK GOLD

Associate Vice Chancellor for Environment and Sustainability, UCLA

Measuring Benefits of Distributed, Nature-Based Stormwater Projects

- More monitoring data is needed
- Differentiating between project scales and typologies would provide more clarity on costs and benefits
- Evaluating project co-benefits beyond stormwater volume in additional detail could provide more
- Accurate cost figures to support fiscally sound decision making.

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With funding from WATER FOUNDATION

June 2018

TYPOLOGY AND SCALE

	Nature-Based Solutions	Gray/Green Infrastructure	Gray Infrastructure
Distributed	Rain grading (swales, berms, rain gardens), curb cuts with parkway basins, infiltration trenches, soil amendment, vegetation and tree planting Examples: Water LA PanoramaCity Retrofits (3.8 AFY for all 22 retrofits)	Cisterns, rain tanks, permeable pavement, infiltration trenches, bioswales, green roofs, planter bump-outs, tree wells, most LID Examples: Horace Mann Elementary School, Jeff Seymour Family Center	Drywells, small low-flow diversions (LFD)/drainage, some LID Examples: PCH LFD in Pacific Palisades
Neighborhood	Wetlands, park grading, stream daylighting/restoration Examples: Rio de Los Angeles State Park, Dominguez Gap Wetlands	Green streets, parks with large underground chambers, small engineered treatment wetlands Examples: Watts Green Streets, Bolivar Park (624 AFY), Basset High School Project (266 AFY), Monteith Park Project (80 AFY)	Street gutters, storm drains, injection wells, large storage tanks, large low flow diversions/drainage Examples: Agro Drain Sub-Basin Facility at LA World Airport
Centralized	Floodplain reclamation, large wetland conservation, mountain and upper watershed conservation Examples: Upper LA River Big Tujunga Restoration (1,000 AFY), Malibu Lagoon	Spreading grounds, large engineered treatment wetlands Examples: Tujunga Spreading Grounds (16,000 AFY Rory M. Shaw Wetlands Park (590 AFY)	Dams, Water and waste treatment plants, pipelines, reservoirs Examples: San Dimas Dam, Hyperion Water Reclamation Plant, Santa Monica Urban Runoff Recycling Facility

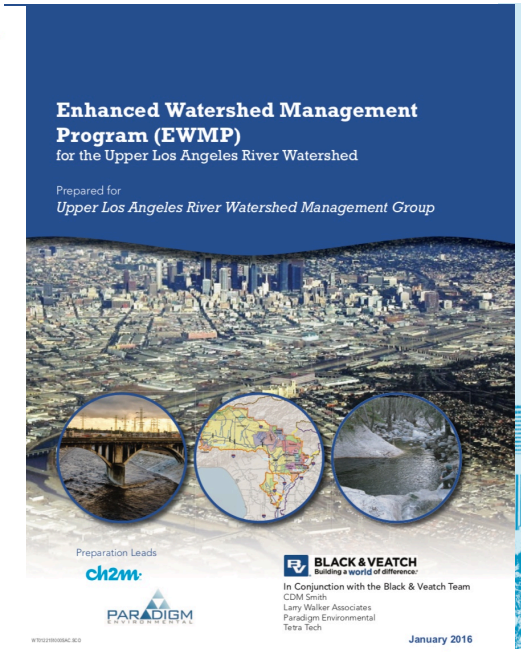
For the last century, we've provided water to Angelenos with large-scale reservoirs and pipelines. With our changing climate and more people moving in every day, our pipes may soon run dry. But by managing our water use on small scales, in every household, in every yard, and on every street, we can provide a great deal more water for everyone.

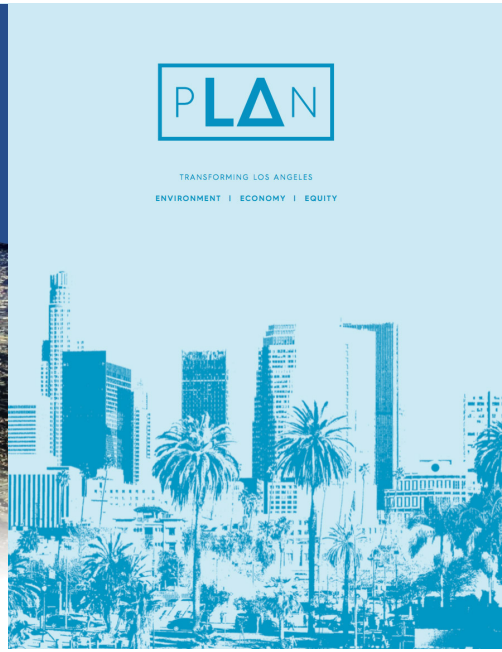
”

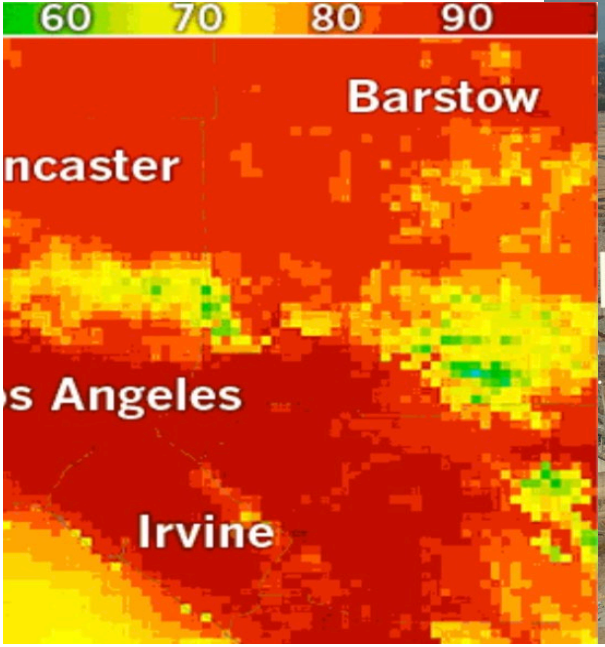
BILL NYE

Science Educator, Professional Engineer

PLANNING EFFORTS

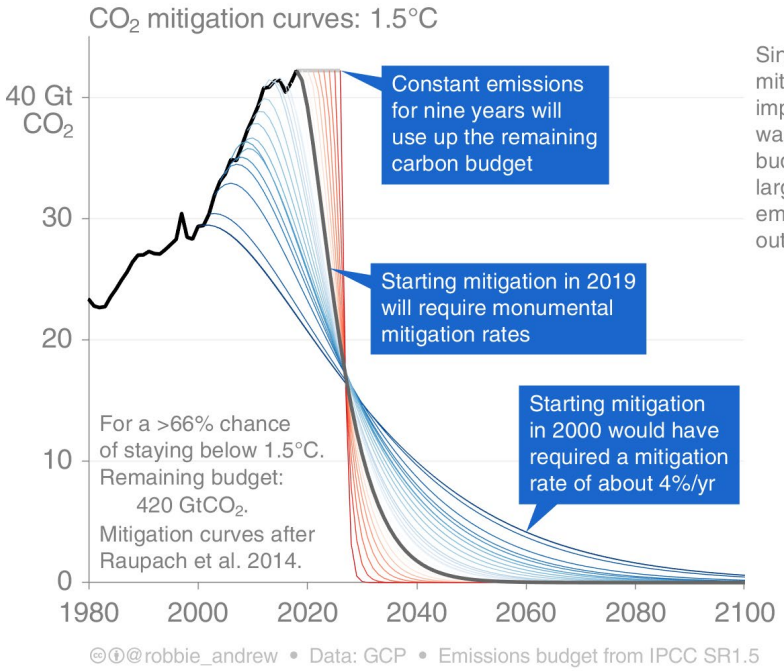







IMPACTS OF CLIMATE CHANGE

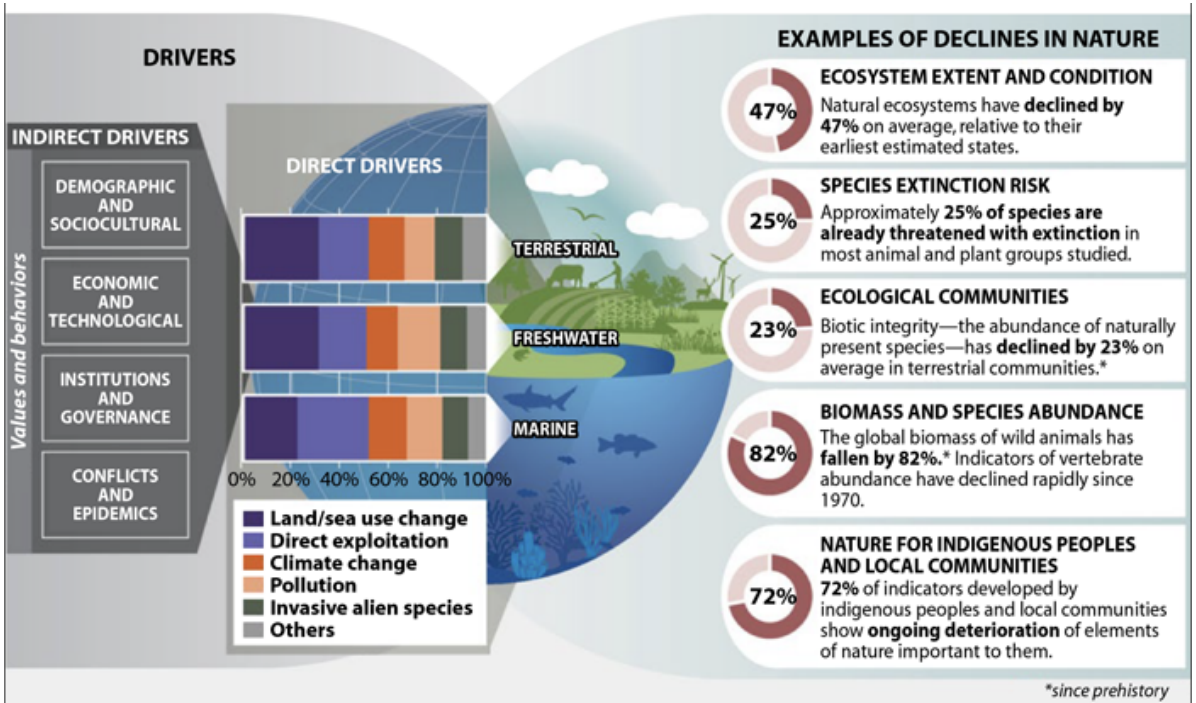


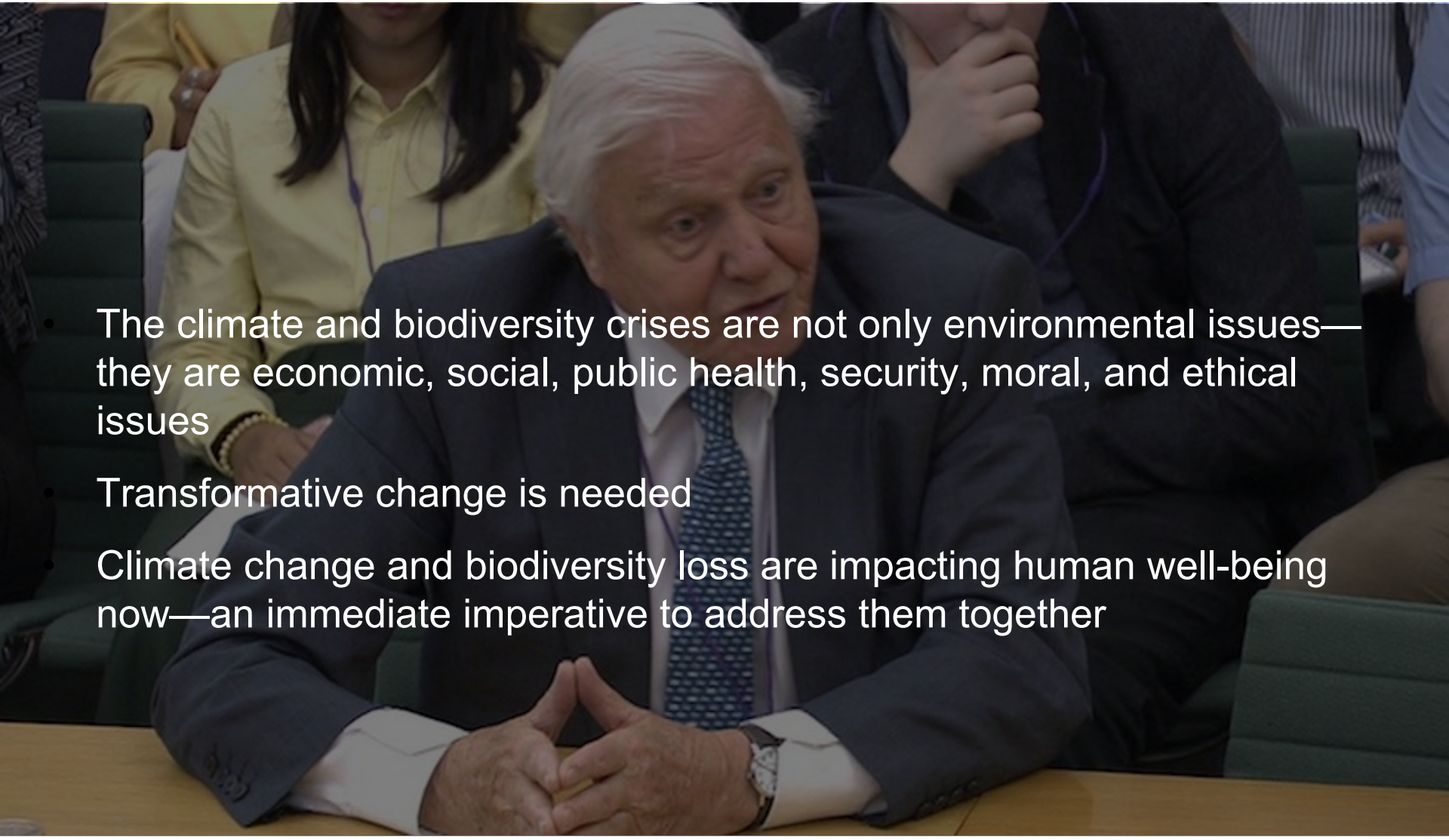


Since such steep mitigation is impossible, the only way to achieve this budget is with very large "negative" emissions: pulling CO_2 out of the atmosphere.

Intergovernmental Panel on Climate Change (IPCC)

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)





- The climate and biodiversity crises are not only environmental issues—they are economic, social, public health, security, moral, and ethical issues
- Transformative change is needed
- Climate change and biodiversity loss are impacting human well-being now—an immediate imperative to address them together

Southwest Drought Rivals Those of Centuries Ago, Thanks to Climate Change

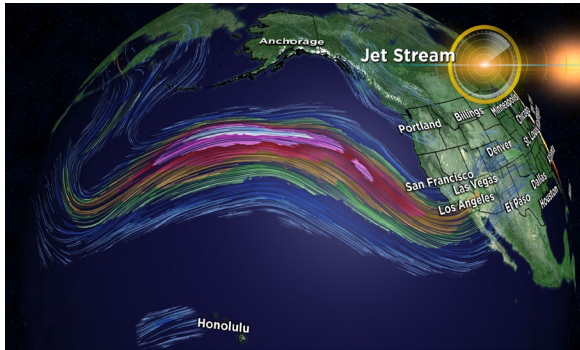
The drought that has gripped the American Southwest since 2000 is as bad as or worse than droughts in the region over the past 1,200 years, a new study finds.

Wildlife Collapse From Climate Change Is Predicted to Hit Suddenly and Sooner

Scientists found a “cliff edge” instead of the slippery slope they expected.

Here's what a 'very likely' sequel to California's 1862 megastorm would look like

The ARkStorm project reminds residents that preparedness is key.



OK.
SO….

HOW DOES THIS ALL RELATE TO *NATURE-BASED APPROACHES TO WATERSHED MANAGEMENT*?

CONCRETE

- Third largest human source of carbon emissions globally
- Estimated at 8% of total emissions in 2016 (Andrew 2017)
- Behind only fossil fuels and land-use changes

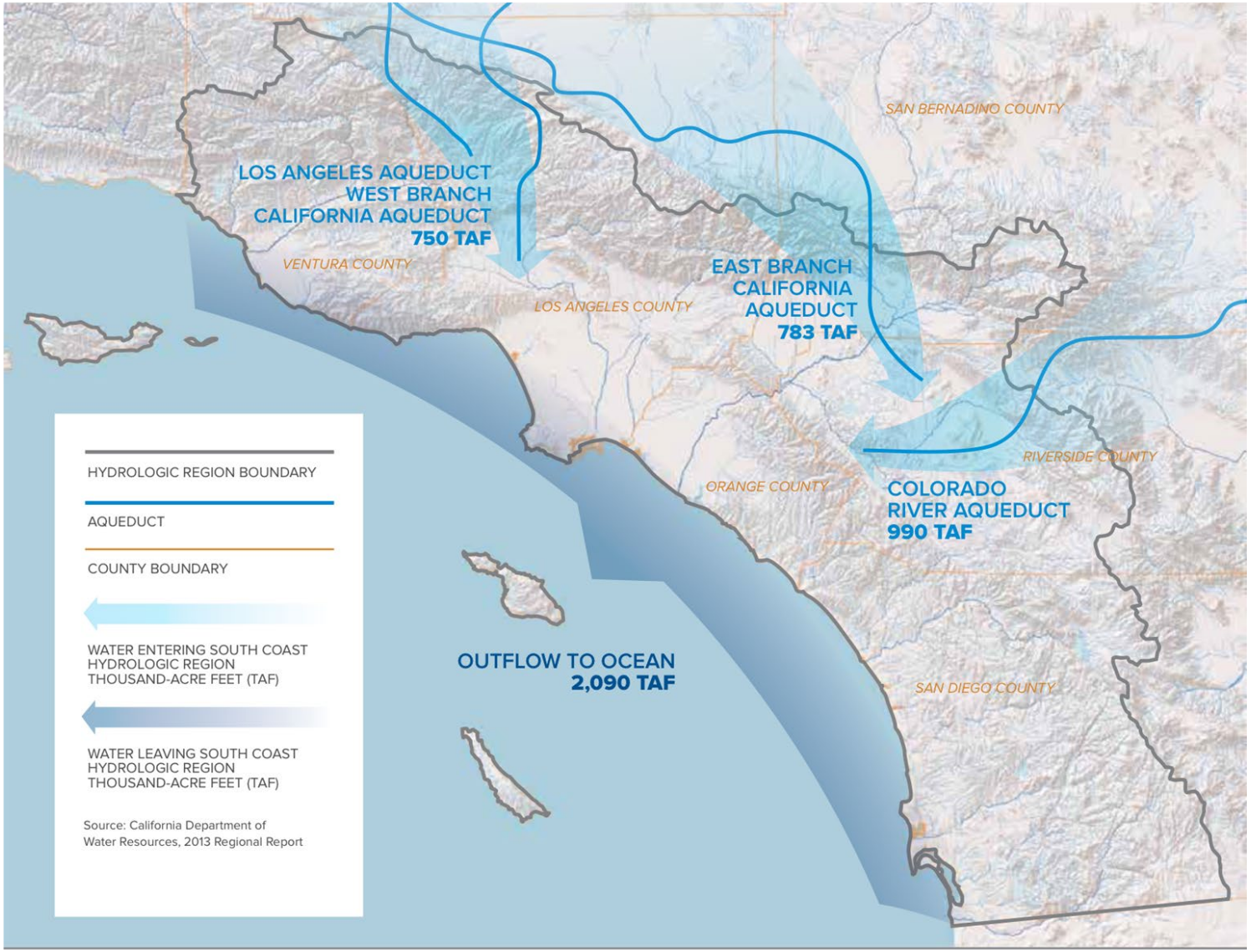
NATURE-BASED SOLUTIONS

- Nature-based solutions can address global carbon targets in the range of 30% (Griscom et. al. 2017)
- Healthy soil can increase water infiltration and hold 20x weight in water (California Department of Food and Agriculture 2018)
- Globally soil holds more than 3x the carbon in the atmosphere (Rattan 2007, Batjes 1996)
- A diverse structure of soil, plants, and trees is highly effective at absorbing carbon—and at street level can absorb more than 40% of nitrous oxide and 60% of particulate matter (Pugh et. al. 2012)

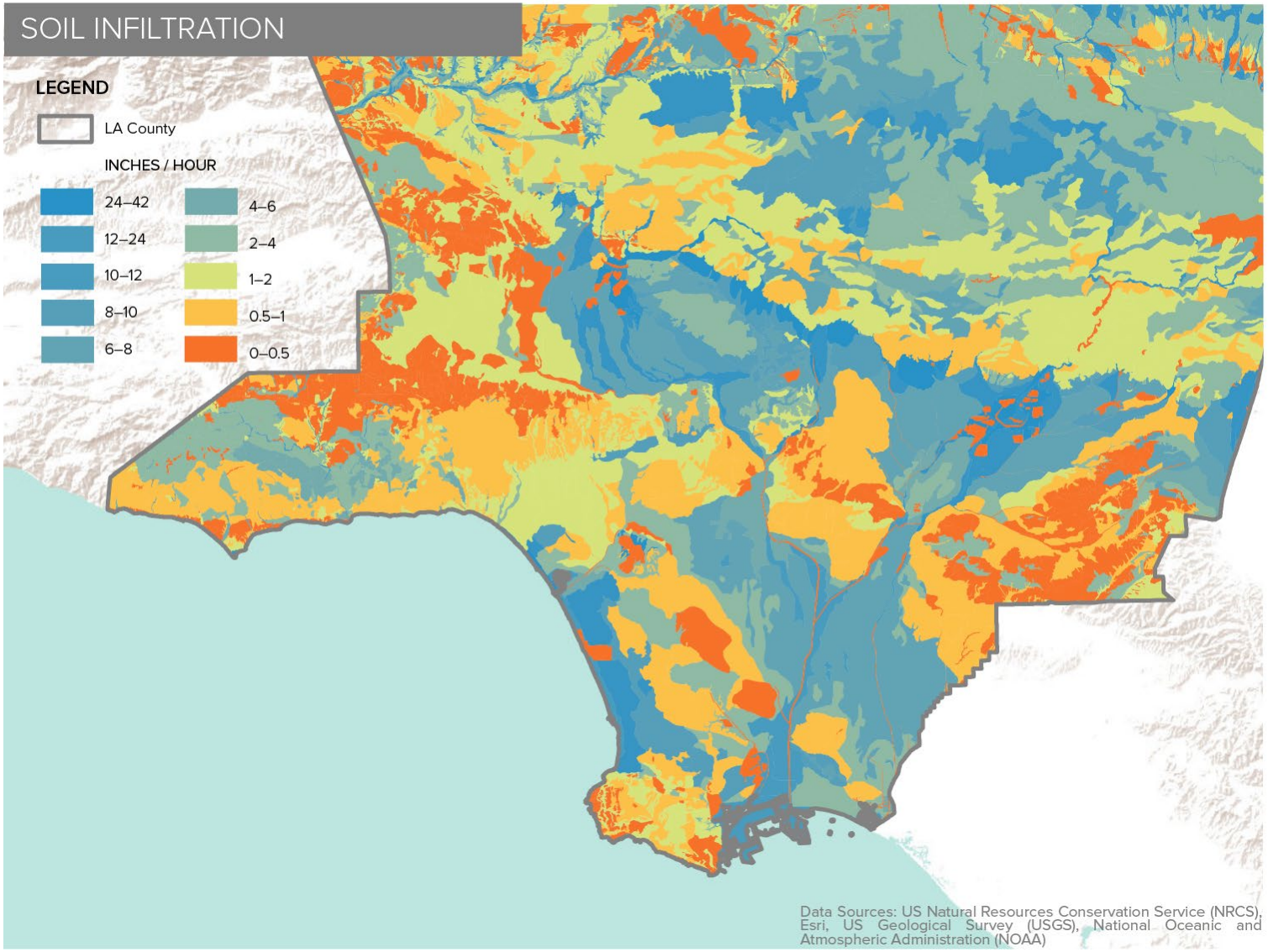
Wetlands, Including Rivers, Creeks, & Streams

Wetlands are most effective terrestrial habitats for carbon sequestration—primarily freshwater wetlands—holding up to 30% of soil carbon in 8% of the land area (Nahlik and Fennessy 2016).

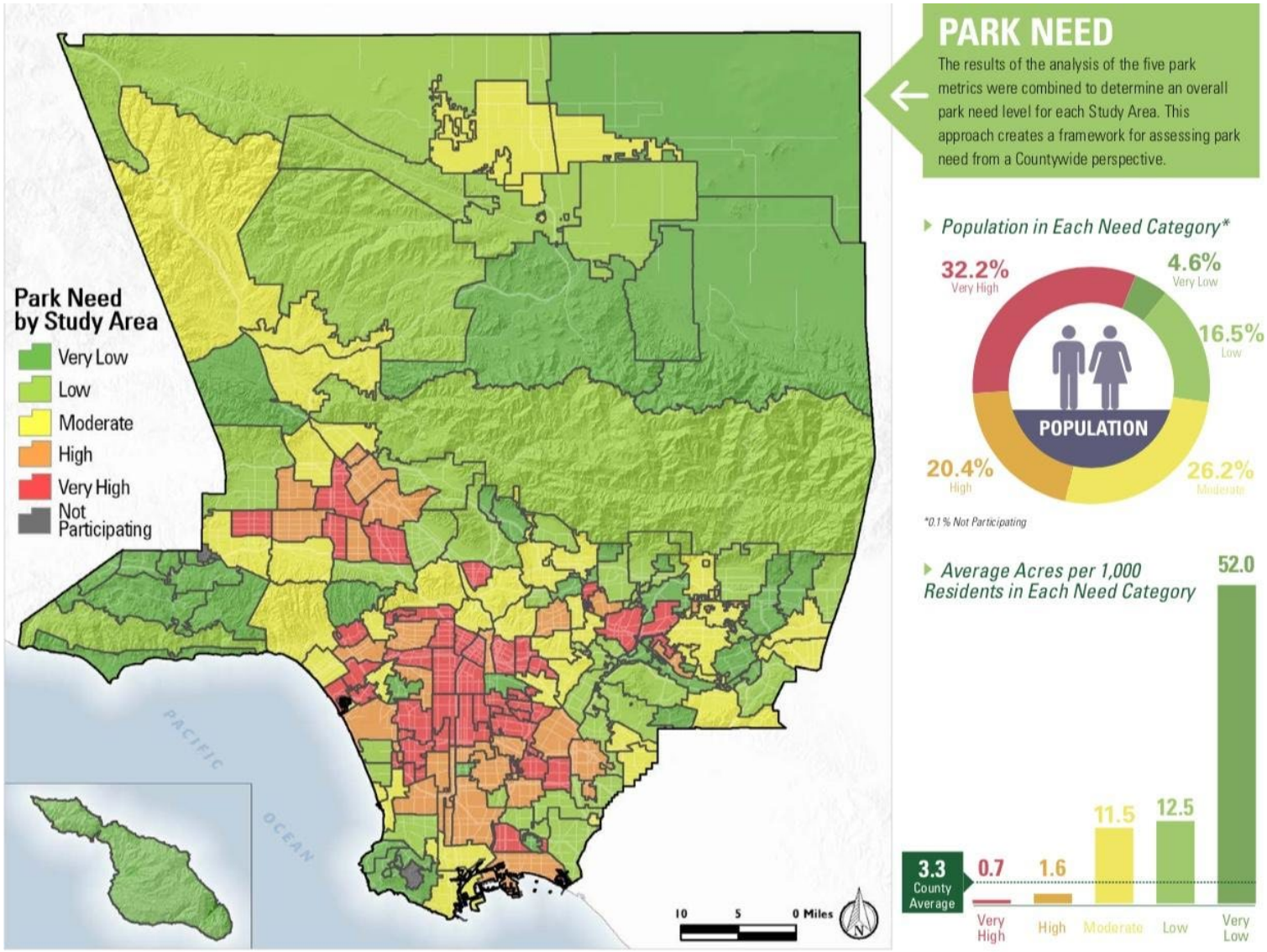
THREATS & OPPORTUNITIES: WATER



THREATS & OPPORTUNITIES: SOILS



THREATS & OPPORTUNITIES: PARK NEEDS



KEY ELEMENTS of TRANSFORMATIVE CHANGE

- Address climate change and biodiversity together
- Invest in projects that sharply reduce emissions
- Do not invest in projects that increase emissions, or fail to reduce them
- Replicate and scale successful policies and projects
- Coordinate and integrate cross sectoral actions
- Ensure inclusive governance structures

BEING PROACTIVE IS KEY

- For every $1 spent on pre-disaster hazard mitigation, we can save $6 in future disaster recovery costs
- Lead with the latest evidence-based science and do not discount externalities when developing cost-benefit analyses
- Nature-based solutions are cost-effective, realizing climate resilience and more
- Redesigning our urban grids from a systems perspective: to restore ecosystem function and mitigate climate disasters is Job One.

THINGS TO CONSIDER

Incorporate diverse expertise into planning (earth and social sciences)

Support for healthy soils and urban groundwater recharge

Provide real incentives for action at the parcel scale

Upstream actions either increase or decreases downstream safety

All investments must move us to carbon neutrality: 30% of our investments towards Nature

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