

**The RIVER
PROJECT**



Nature-Based Solutions for a Viable Future

NOVEMBER 2, 2023

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



1993



PLATFORM

Co-Chairs:

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Coalition Members:

American Institute of Architects
Los Angeles Chapter
American Oceans Campaign
Arroyo Seco Council
Campaign to Save California
Wetlands
Citizens for a Better
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Coalition for Clean Air
Friends of the Ballona Lagoon
Friend of the Los Angeles
River
Heal the Bay
LAROSA
League for Coastal Protection
Long Beach Area Citizens
Involved
Los Angeles Eco-Cities
Council
Mono Lake Committee
North East Trees
Natural Resources Defense
Council
Sierra Club
Small Wilderness Area
Preservation

UNPAVE L A: A COALITION TO RESTORE THE WATERSHED was formed to promote a comprehensive and multi-purpose approach to the problem of flood control, storm water pollution, ground water re-charge and the lack of urban park land and riparian wildlife habitat in Los Angeles County. All of these issues are intertwined, and should be addressed by (1) using natural processes to hold, store and cleanse storm waters so as to reduce their volume, velocity and toxicity, and (2) expanding open space and park land for people and wildlife to provide more recreational opportunities, improve air and water quality, and increase property values.

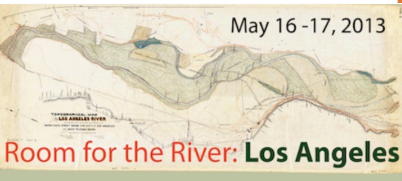
Methods to achieve these objectives include:

- a) Treating the Los Angeles River and its tributaries as a living ecosystem;
- b) Widening and enhancing the Los Angeles River and its tributaries wherever possible, restoring riparian habitat, and creating bike and hiking trails along the river corridor;
- c) Removing as much concrete and other impermeable paving materials as possible from the urban landscape;
- d) Capturing as much storm water flow as possible for ground water recharge, for future irrigation purposes, and for fish and wildlife;
- e) Opposing the Los Angeles County Drainage Area (LACDA) project, endorsed by the U. S. Army Corps of Engineers and the Los Angeles County Department of Public Works, which would erect 2 to 10 foot parapet walls along the lower 21 miles of the Rio Hondo and Los Angeles Rivers, in favor of the above;
- f) Creating a permanent agency to oversee and coordinate all major issues and agencies affecting the Los Angeles River and its tributaries, including but not limited to redevelopment, water quality, flood control, planning, parks and recreation, and groundwater re-charge.

GIVE OUR KIDS A PLACE TO PLAY

A STATE PARK AT TAYLOR YARD

COALITION FOR A STATE PARK AT TAYLOR YARD



Room for the River: Los Angeles

- Exploring the role of The River in an era of climate uncertainties. Learning from the Dutch experience.
- Public Health & Safety
 - Functional Floodplains
 - Local, Clean Water Supply
 - Healthy Soil, Local Food
 - Urban Acupuncture
 - Lower Carbon Footprint
 - Sustainable Development
 - Economic Vitality
 - Transit Alternatives
 - Park Access for All
 - Fishable, Swimmable Rivers
 - Walkable, Bikeable Communities
 - Sense of Place
 - Resiliency



Taylor Yard and Los Angeles River Preliminary Groundwater and Surface Water Study

A Report to
The California Coastal Conservancy
and
The Los Angeles and San Gabriel Rivers Watershed Council

By
The RIVER PROJECT

March 2002

Los Angeles River Community Design ~ Studio City

A Report to
The California Coastal Conservancy
and
The Los Angeles & San Gabriel Rivers Watershed Council

By
The RIVER PROJECT

March 2002

Hydrodynamic Study for Restoration Feasibility of the Tujunga Wash

A Report to
The California Coastal Conservancy
and
The Los Angeles & San Gabriel Rivers Watershed Council

By
The RIVER PROJECT
WaterCycle Inc.
Philip Williams & Associates, Ltd.

March 2002

WOODMAN AVENUE

A MULTI-BENEFICIAL STORMWATER CAPTURE AND MEDIAN RETROFIT PROJECT

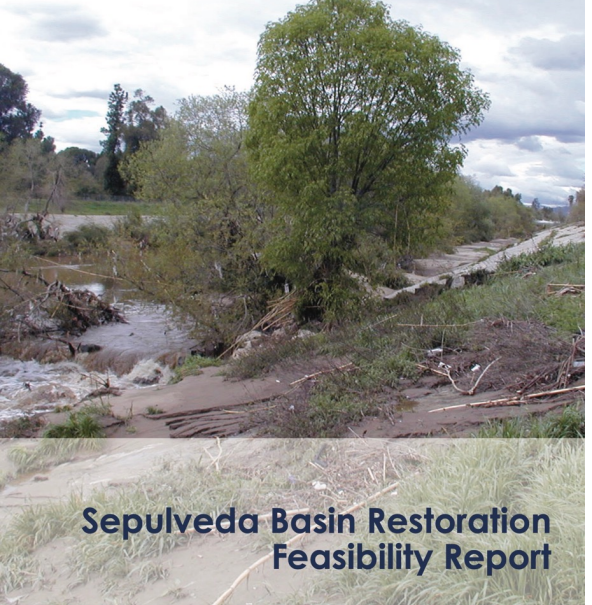
Project Description
This multi-beneficial project will enhance the 3,500-foot-long asphalt medians bordering the west side of Woodman Avenue from Lankers Street to Salford Avenue. The enhancements include the installation of 89 new shade trees, approximately 27,000 square feet of native and drought tolerant landscaping, a five-foot-wide permeable walking path, access ramps, and improvements to existing bus stops along the medians. In addition to improving the experience for pedestrians and providing for passive recreation, these installations will reduce the urban forest, help recharge the groundwater basin, improve water quality, and alleviate local flooding. New design features, such as pre-treatment devices and a naturalized vegetated swale, also allow for the capture and infiltration of parked surface runoff, which currently reaches the Los Angeles River and the ocean untrapped. This project will also include an educational stakeholder component that aims to promote environmental stewardship.

Project Costs
The \$3.4 million project is funded by a State Proposition 50 Called Watershed Protection grant administered by the State Water Resources Control Board, as well as with funding from the Los Angeles Department of Water and Power, and the Bureau of Sanitation. Construction will be implemented by the Bureau of Street Services. These city agencies and The River Project collaborated on the project with support from the Office of Community Tony Cardenas, the Pasadena City Neighborhood Council, local organizations and area residents.



Tujunga-Pacoima Watershed Plan

PADDLE the LA RIVER



Sepulveda Basin Restoration Feasibility Report

April 2022

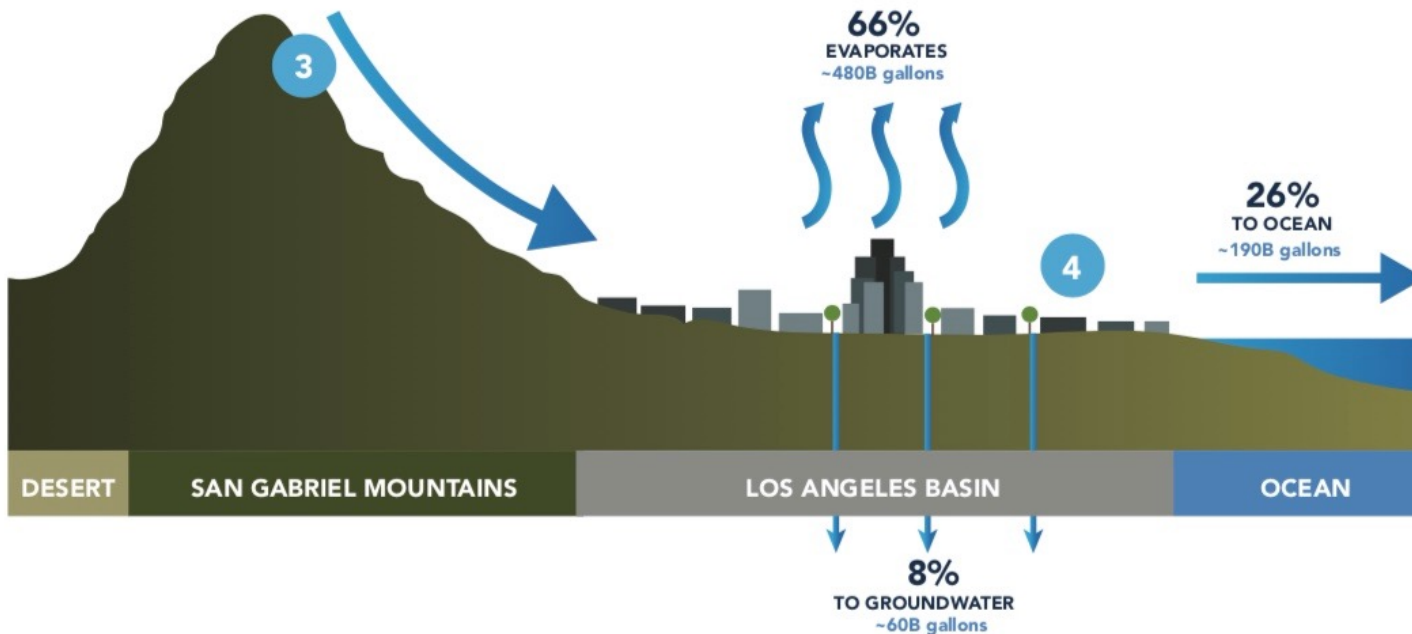
Measuring Benefits of Distributed, Nature-Based Stormwater Projects

June 2018

SOME OF OUR WORK

WATER LA | 2018 REPORT

LOS ANGELES RAINFALL+RUNOFF



1

Rainfall averages from over 50" in the mountains to 12" or less in the basin, supplemented by fog on the coast.

2

A cycle of rain, fire, and flood sends huge amounts of water and sediment out of the mountains and into the LA Basin.

3

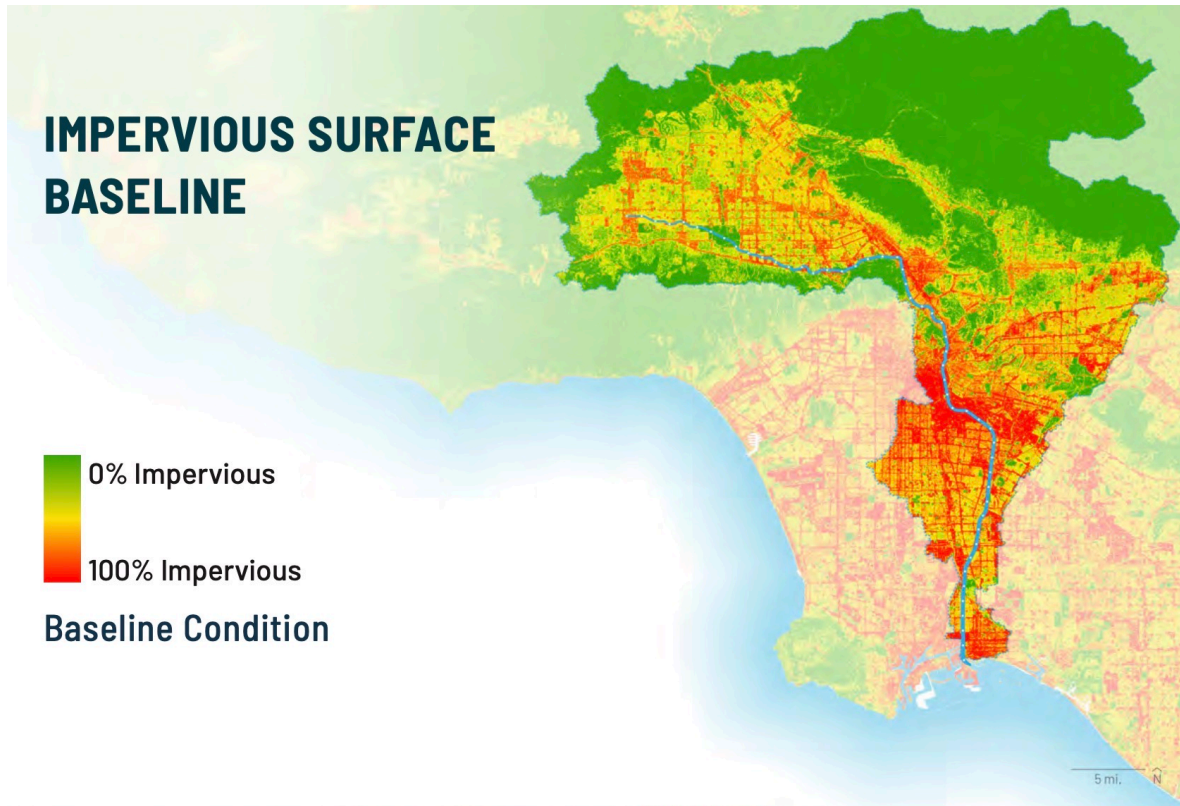
Because the mountains are so steep (50-90° in some places), rainwater falling in the mountains runs quickly toward the city.

4

Impermeable surfaces prevent rain and irrigation water from soaking into the ground where we can use it.

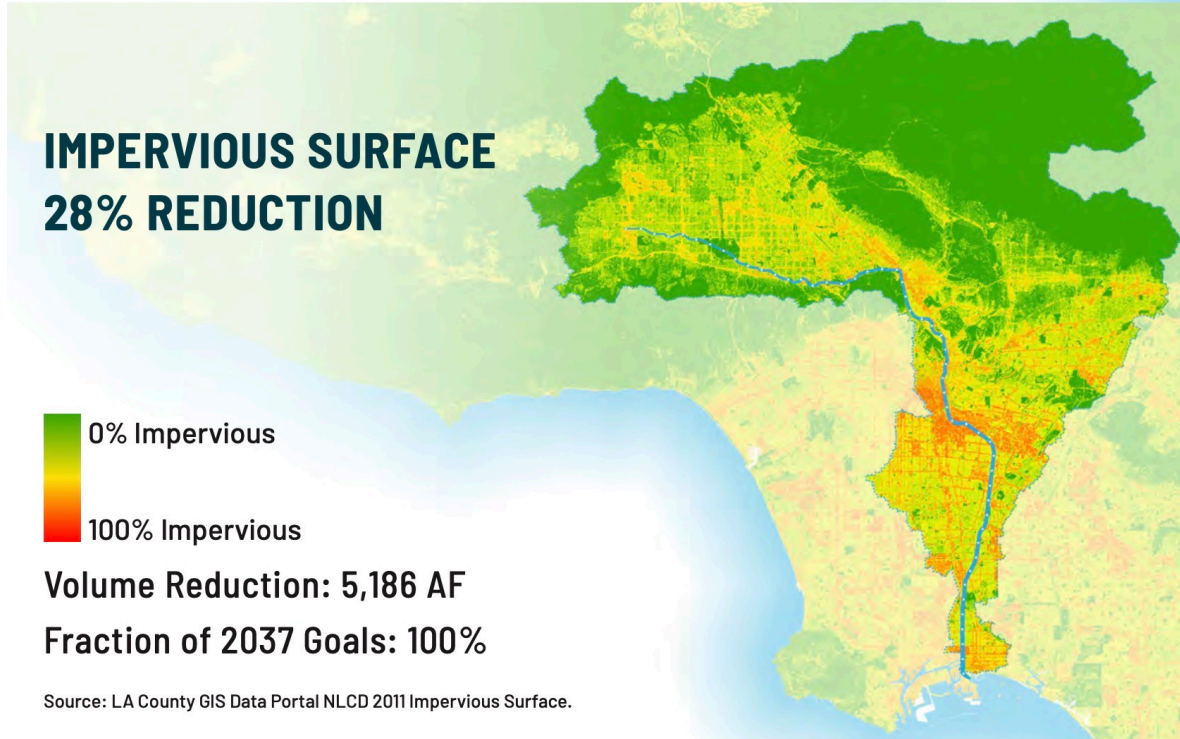
IMPERVIOUS SURFACE BASELINE

0% Impervious
100% Impervious
Baseline Condition



IMPERVIOUS SURFACE 28% REDUCTION

0% Impervious
100% Impervious
Volume Reduction: 5,186 AF
Fraction of 2037 Goals: 100%

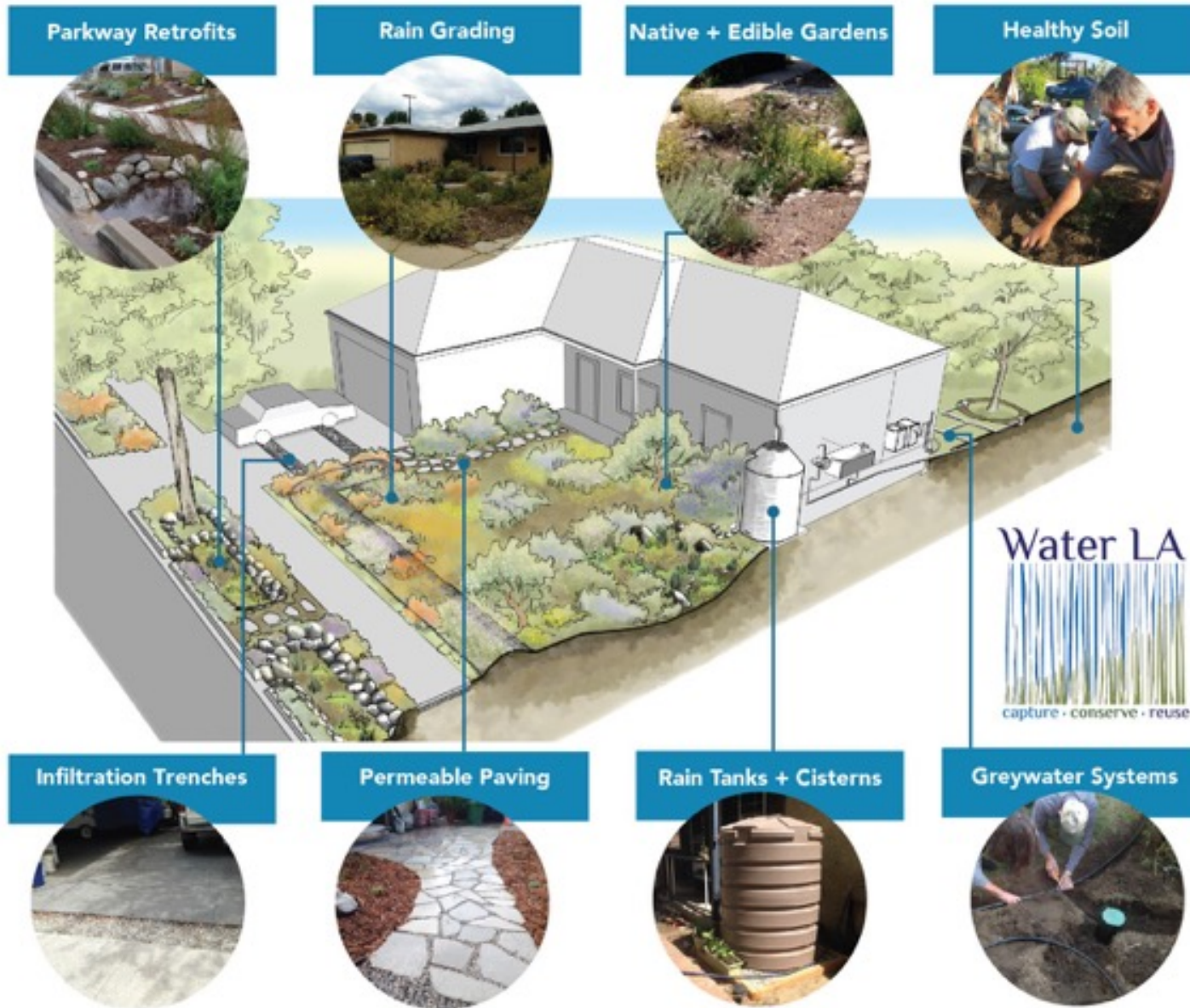


Source: LA County GIS Data Portal NLCD 2011 Impervious Surface.

GREY TO GREEN: TYPOLOGY AND SCALE

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

WATER LA HOME RETROFITS



Homes Retrofitted by Water LA pilot:

- 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

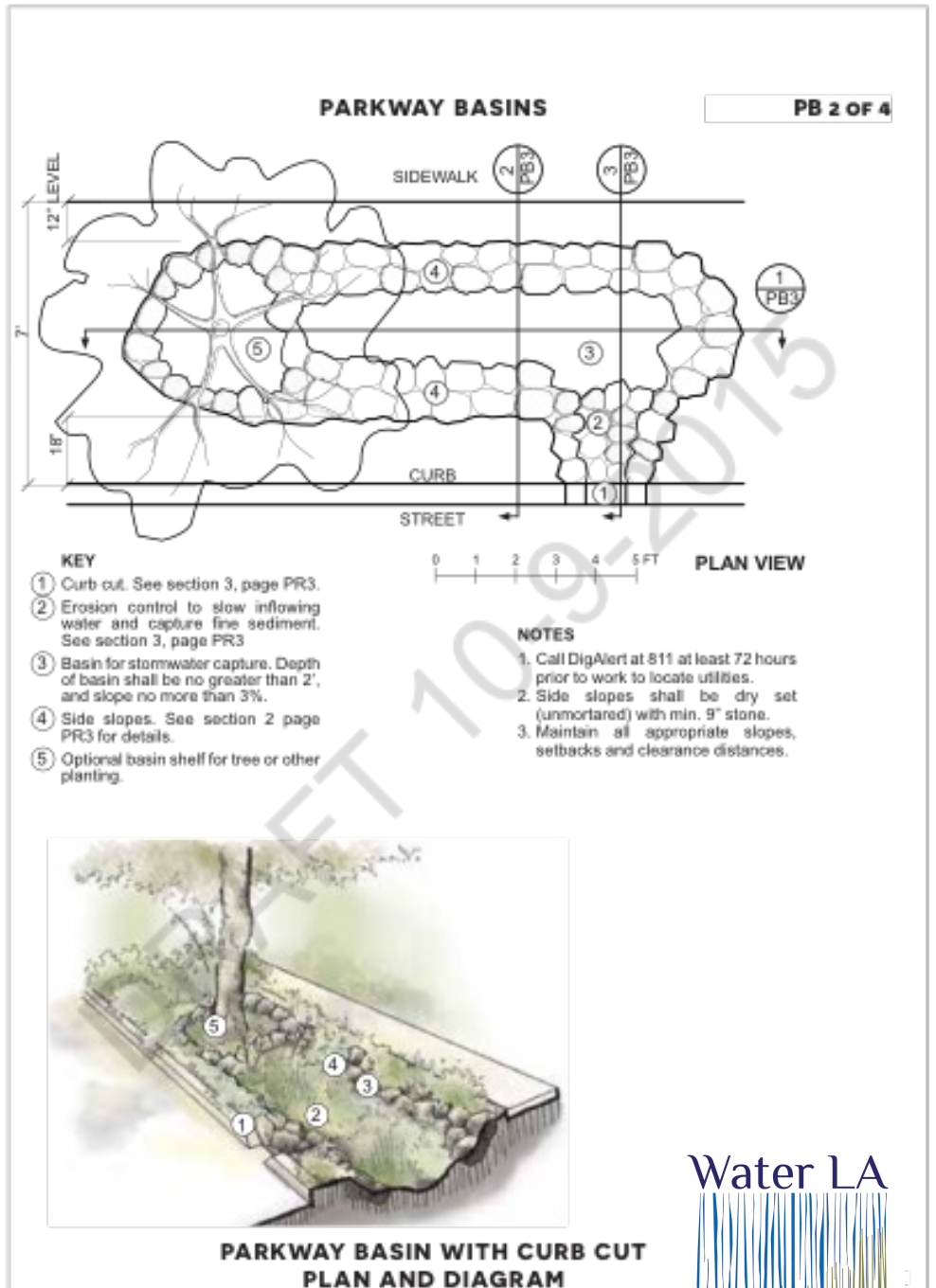
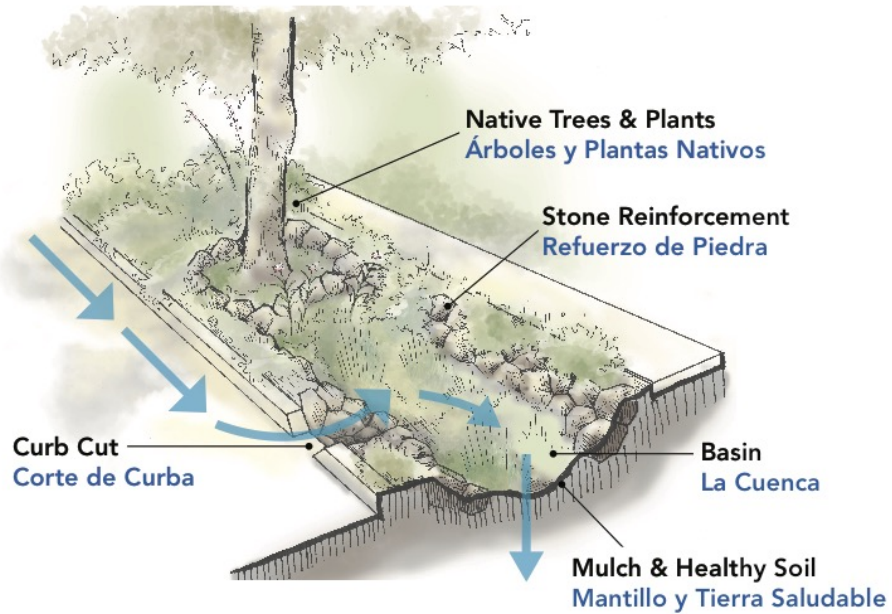
KEY POLLUTANTS REMOVED BY WATER LA PILOT

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)

Laurel Canyon Green Street Project	\$1220
Sun Valley EDA Improvement Project	\$645
Woodman Avenue Stormwater Capture Project	\$727
MWD Tier 2 price	\$1100
Average Water LA parkway retrofit	\$470



**PARKWAY BASIN WITH CURB CUT
PLAN AND DIAGRAM**



TABLE 1

LID Feature Average Percolation Rate Summary

Testing Series		Average Percolation Rate (in./hr.)		
		3-Month	9-Month	18-Month
LID Feature Location	81 st 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

The Water LA Program not only tackles a key challenge in meeting stormwater management needs but by enlisting residents as partners, presents a model for the type of large-scale and long-term engagement necessary to achieve broader sustainability goals.

”

GARY GERO

*Chief Sustainability Officer
County of Los Angeles*



WOODMAN AVENUE MEDIAN



- $\frac{3}{4}$ mile long
- Collects runoff from 120 acres
- 80 acre-feet water capture/year average

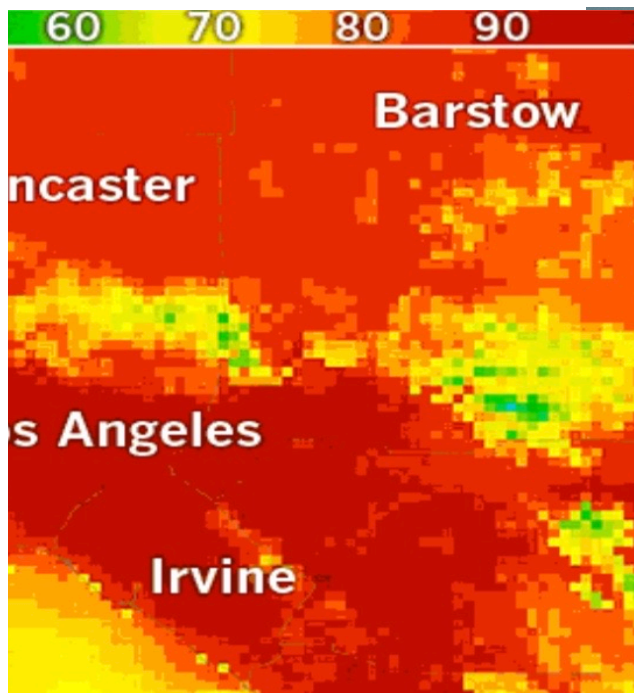
For the last century, we've provided water to Angelenos with large-scale reservoirs and pipelines. With our changing climate and more people moving in every day, our pipes may soon run dry. But by managing our water use on small scales, in every household, in every yard, and on every street, we can provide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

”

BILL NYE

Science Educator, Professional Engineer





IMPACTS OF CLIMATE CHANGE



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.

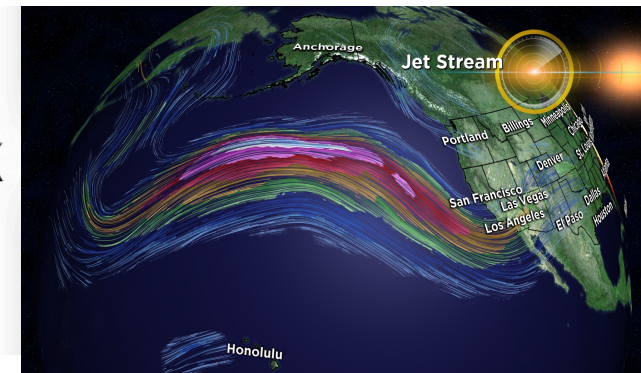


Wildlife Collapse From Climate Change Is Predicted to Hit Suddenly and Sooner

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.





DWR Symposium Highlights the Need to Prepare for Flooding Even During a Drought

Published: Oct 17, 2022



Panel discussion participants from left to right: Alicia Kirchner - Chief of the Sacramento District Planning Division, U.S. Army Corps of Engineers; Jane Dolan - President, Central Valley Flood Protection Board President; Chris Elias - Executive Director, San Joaquin Area Flood Control Agency; John Cain - Senior Director of Conservation, River Partners; Gary Lippner - DWR Deputy Director, Flood Management and Dam Safety; Kris Tjernell - DWR Deputy Director, Integrated Watershed Management.

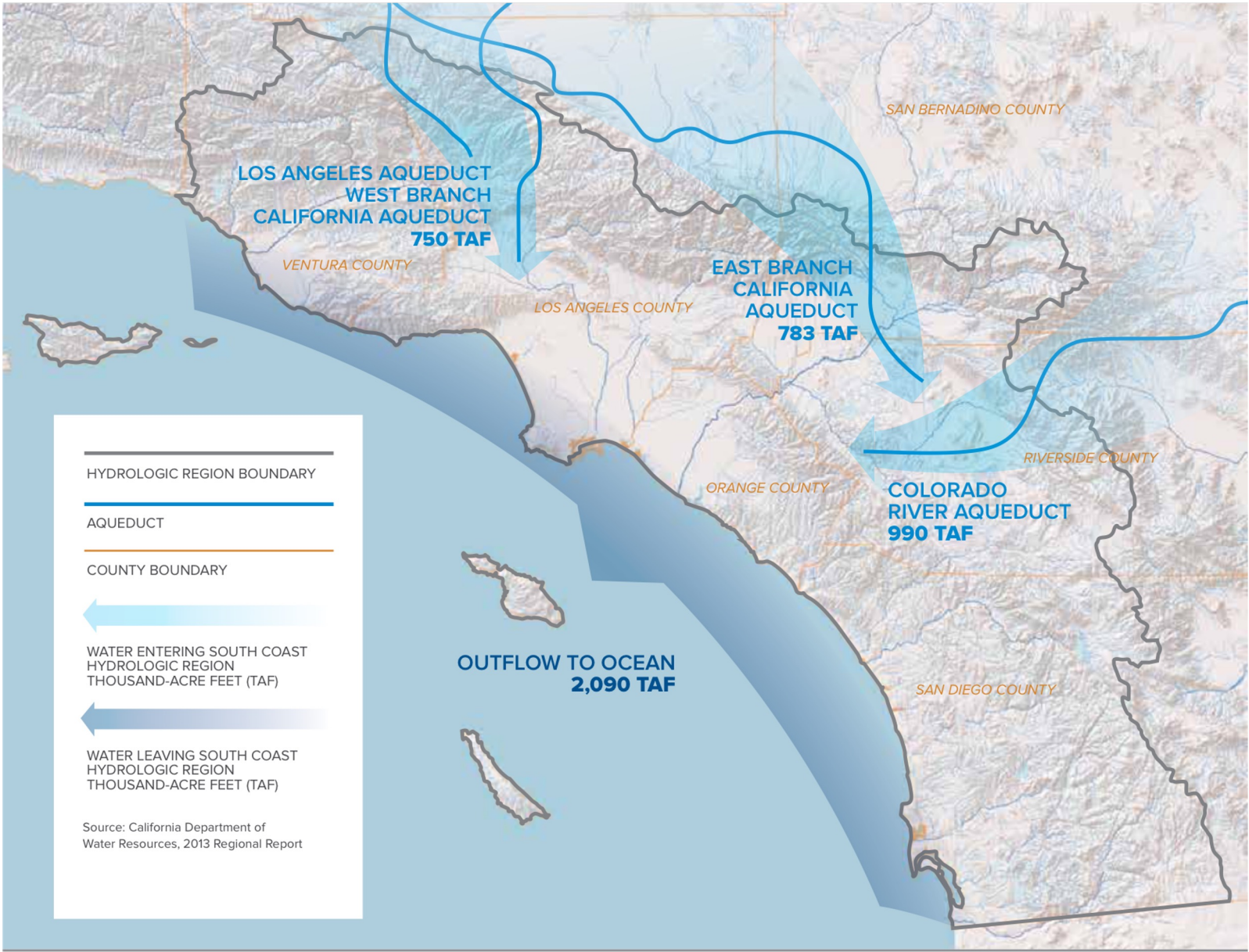
SACRAMENTO, Calif. – With California in extreme drought and facing ongoing extreme climate events, the Department of Water Resources (DWR) gathered scientists, water policy experts, and members of communities impacted by drought and floods for a conversation about building climate resiliency, including in the state’s water and flood management systems.

More than 500 people from around the world attended the symposium, which was conducted virtually and in person. As highlighted in Governor Newsom’s “[Water Supply Strategy for a Hotter, Drier Future](#),” California is experiencing large swings between drought and flood, and due to climate change those swings could become more severe, which will require new strategies and partnerships represented by today’s panelists and speaker.

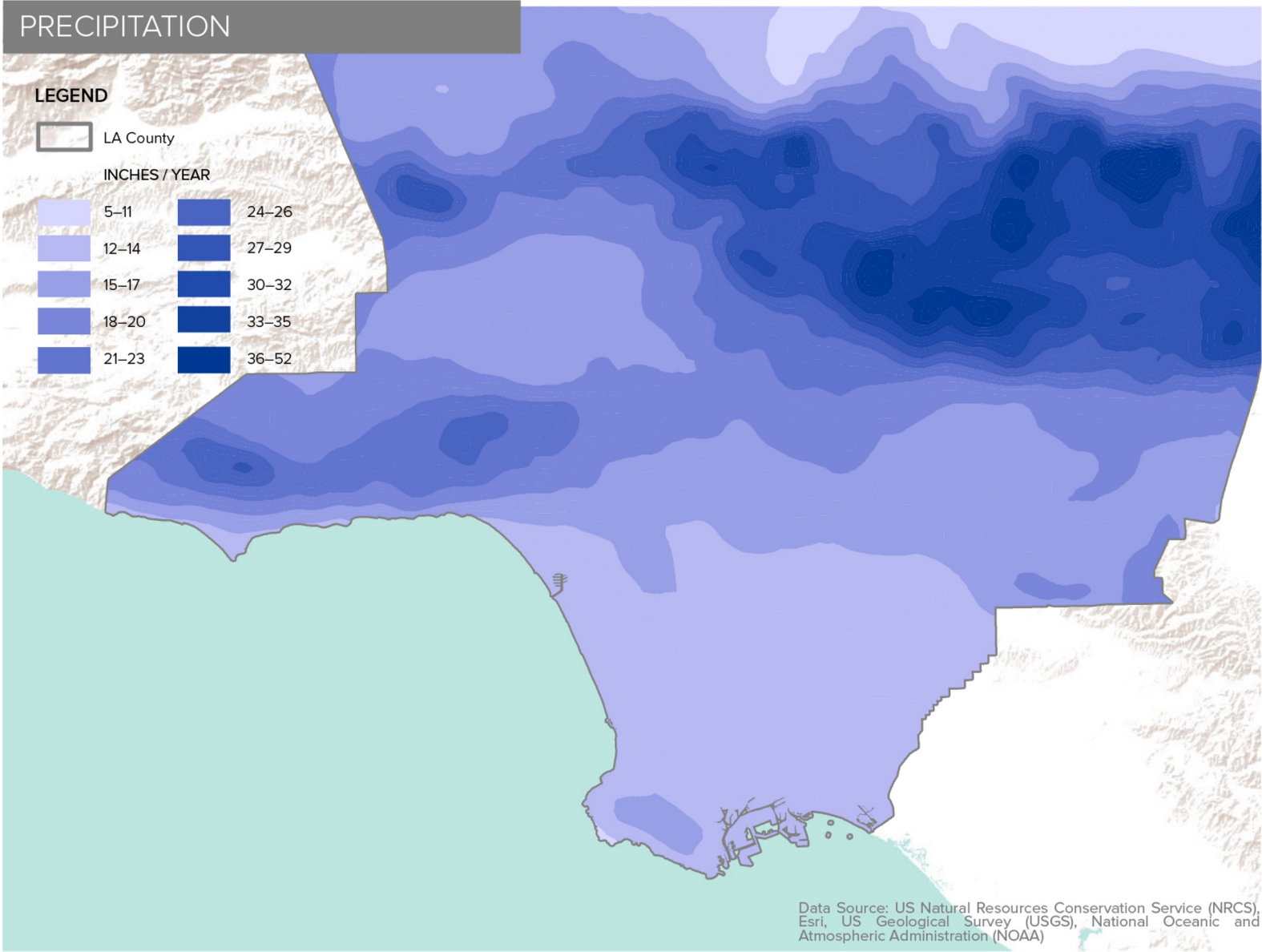
“Being prepared has always been a core goal of DWR, and our need to meet that goal has never been more important,” said DWR Director Karla Nemeth. “We must take action to reduce both the risk and the consequences of flooding by

using nature-based solutions, sophisticated weather forecasting and reservoir operations, and other innovative strategies.”

THREATS & OPPORTUNITIES: WATER



THREATS & OPPORTUNITIES: PRECIPITATION



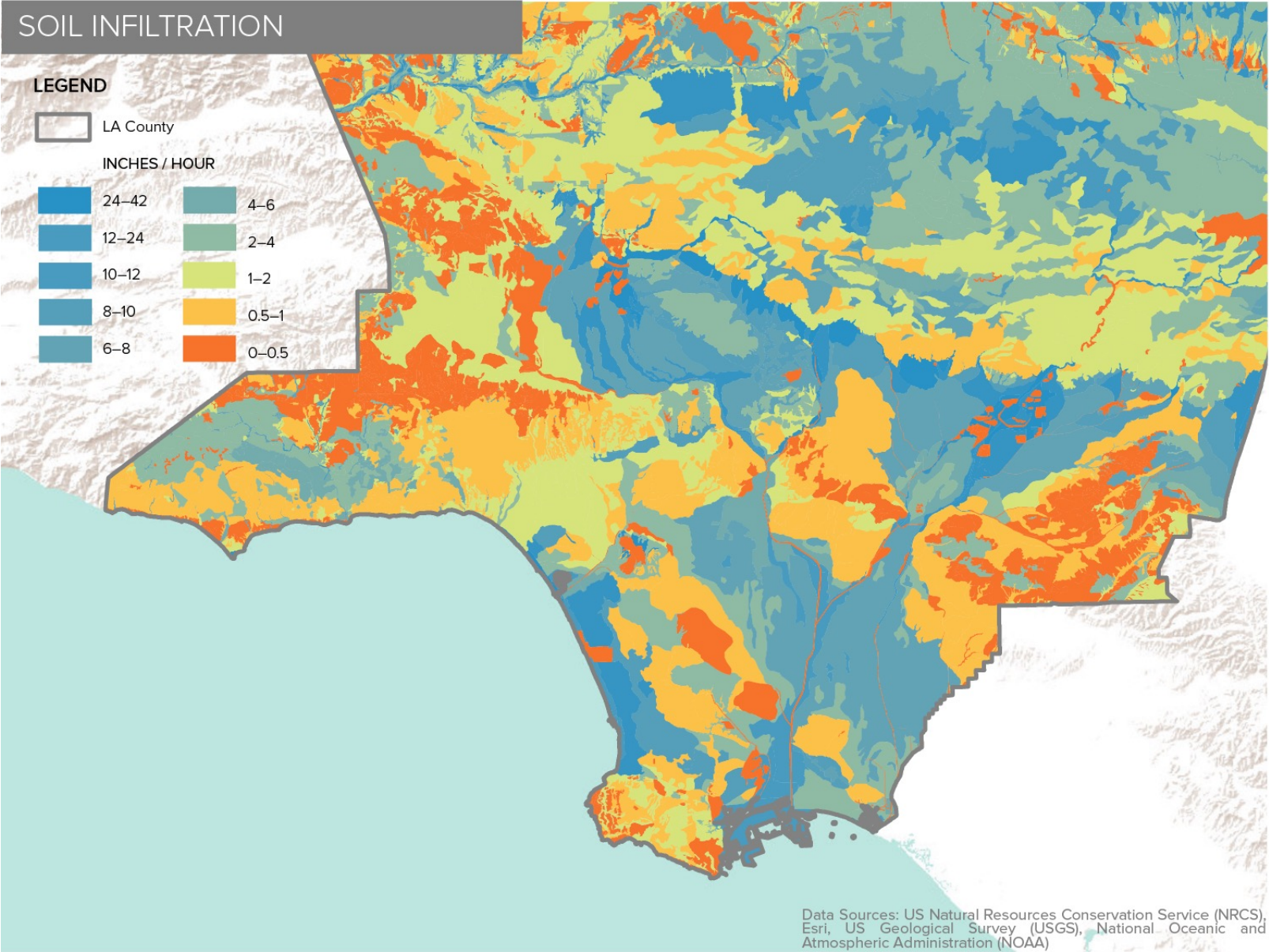
THREATS & OPPORTUNITIES: FLOOD RISK

Flood height (in inches)

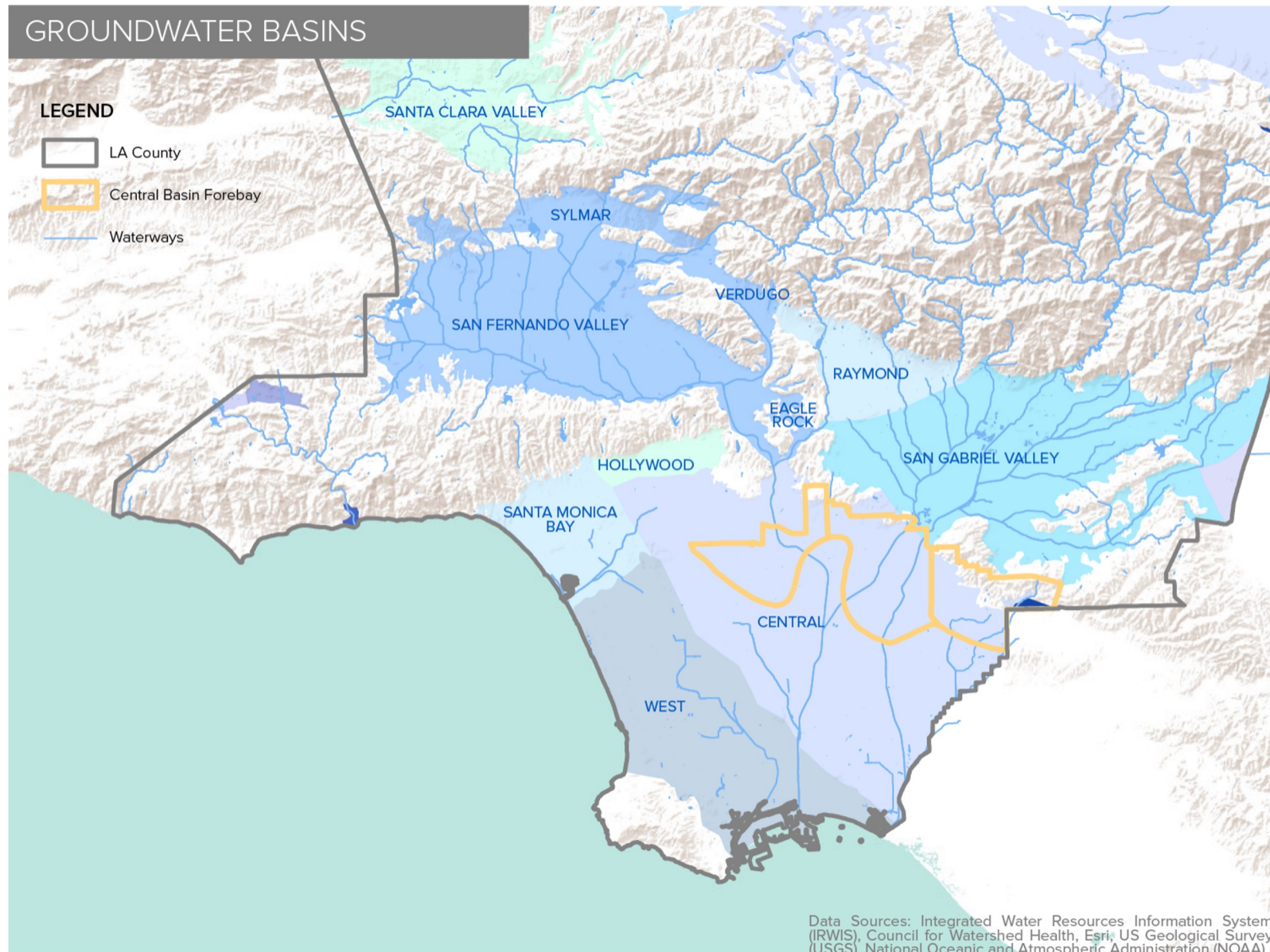
- Below ankle (1-4)
- Knee (4-18)
- Waist (18-39)
- Head (39-67)
- Above head (>67)



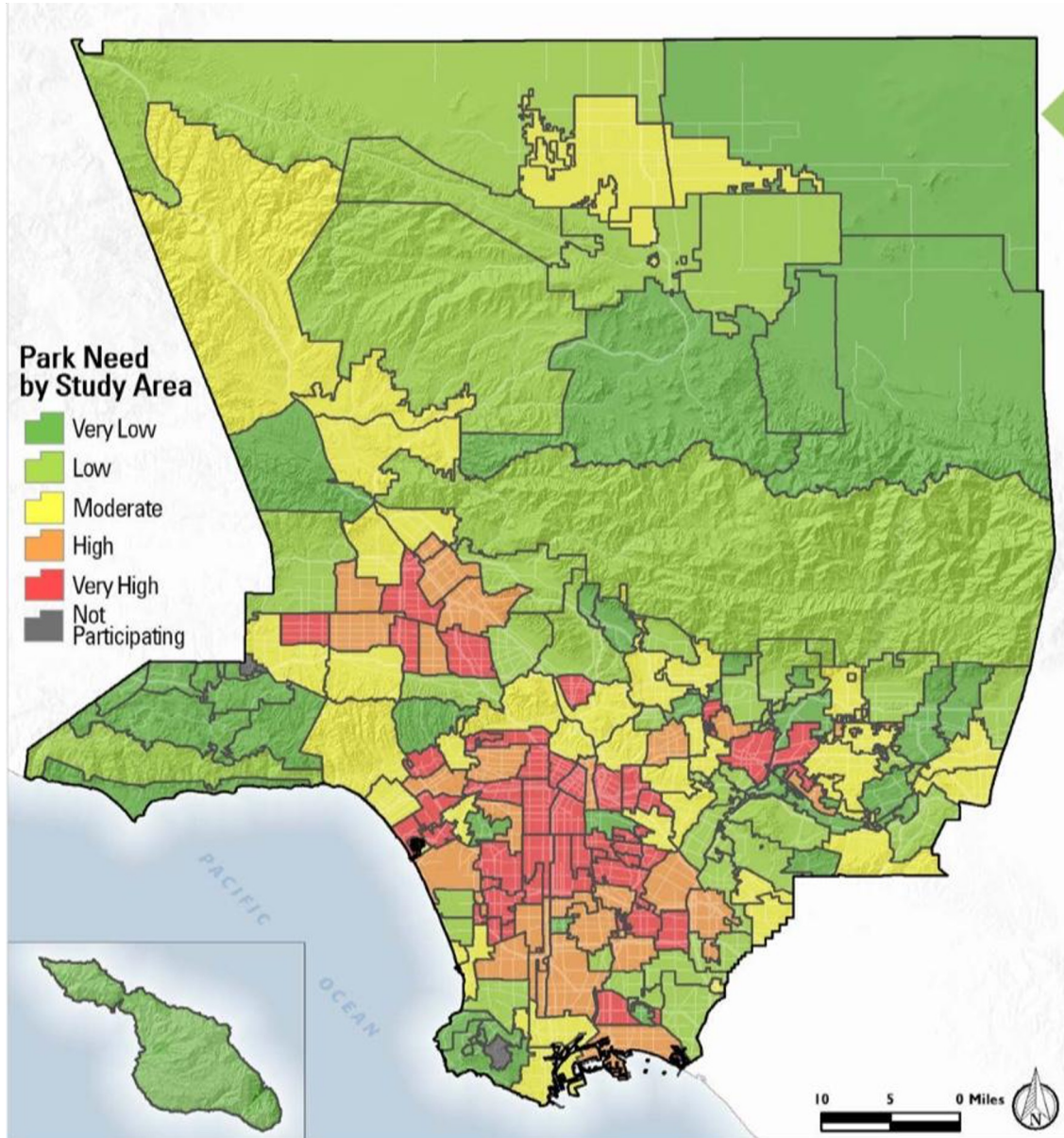
THREATS & OPPORTUNITIES:



THREATS & OPPORTUNITIES: GROUNDWATER



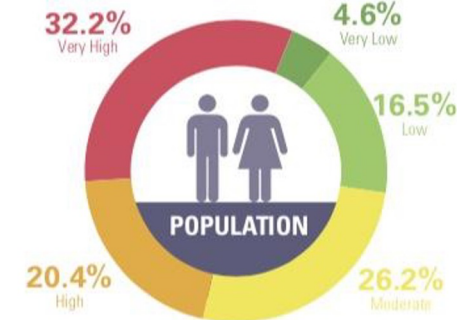
THREATS & OPPORTUNITIES: PARK NEEDS



PARK NEED

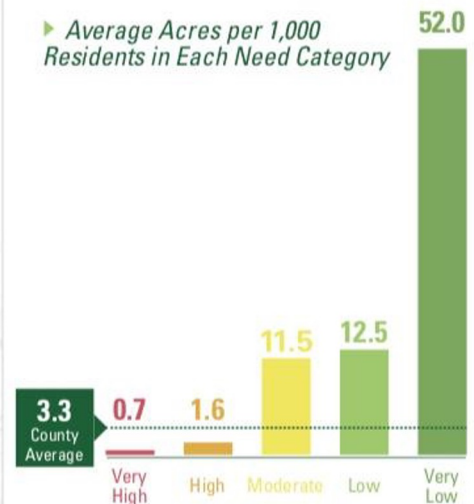
The results of the analysis of the five park metrics were combined to determine an overall park need level for each Study Area. This approach creates a framework for assessing park need from a Countywide perspective.

Population in Each Need Category*

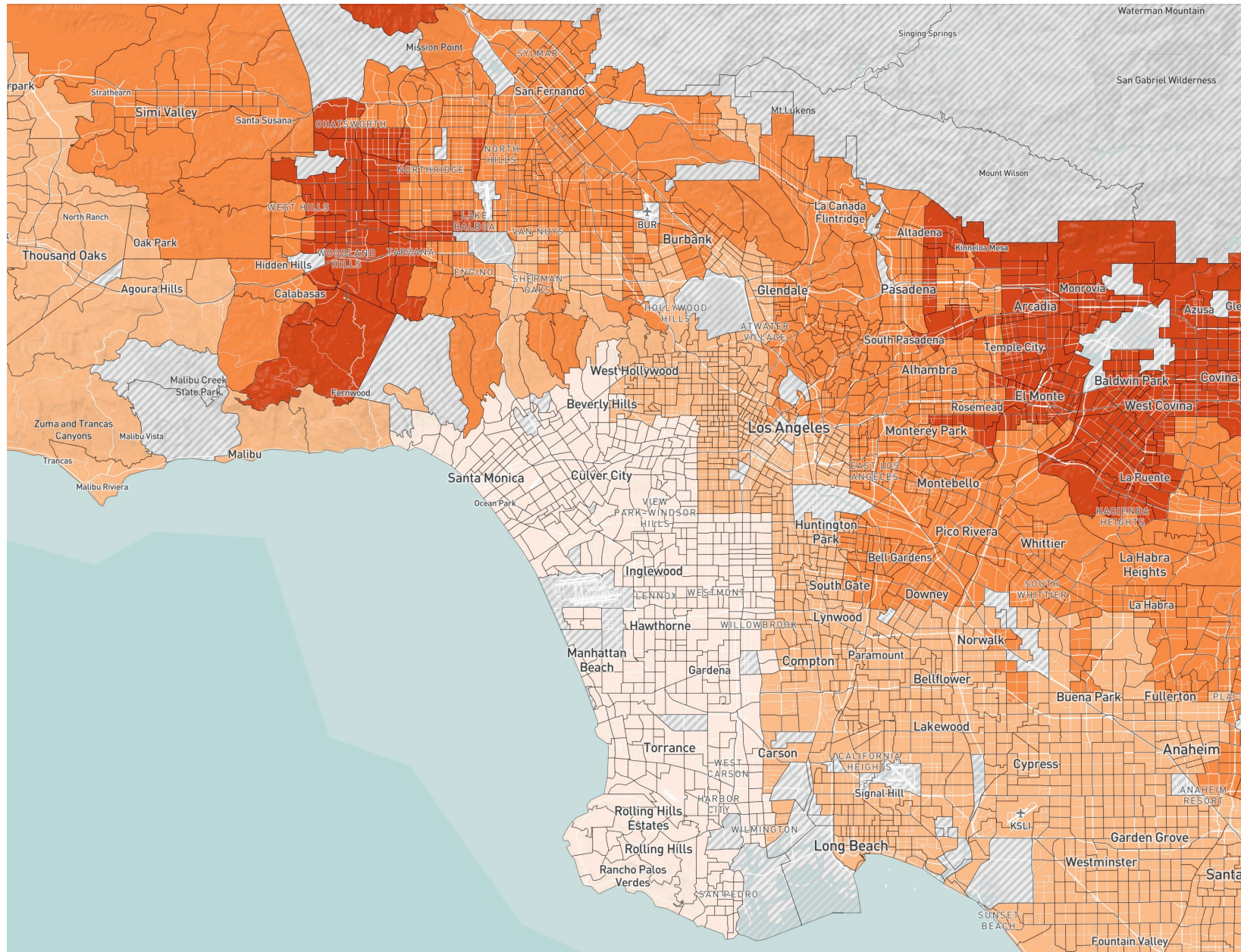


*0.1% Not Participating

Average Acres per 1,000 Residents in Each Need Category



THREATS & OPPORTUNITIES: HEAT ISLAND



THREATS & OPPORTUNITIES: LAND USE



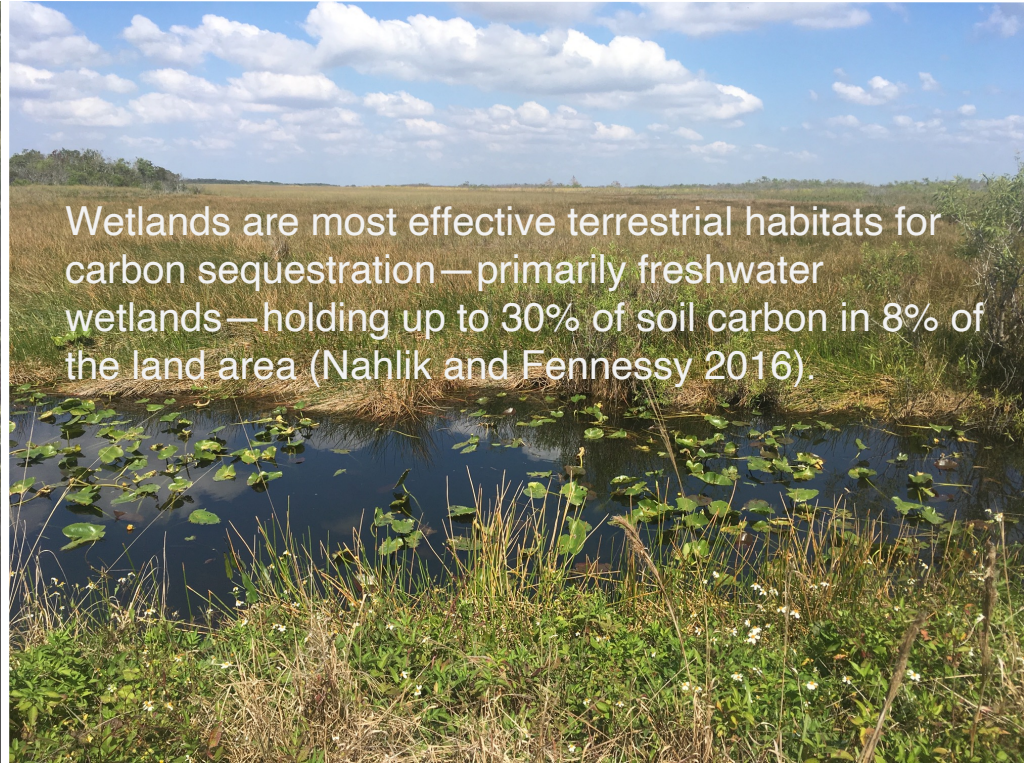
- 
- The climate and biodiversity crises are not only environmental issues—they are economic, social, public health, security, moral, and ethical issues
 - Transformative change is needed
 - Climate change and biodiversity loss are impacting human well-being now—an immediate imperative to address them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

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



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.

OVERVIEW

NNBF

International Guidelines on Natural and Nature-Based Features for Flood Risk Management



LA RIVER MASTER PLAN PROPOSALS

Alternative Section: 95,000 cfs capacity

12' - 18' high parapet walls
Estimate based on Manning's equation



Raise Channel Walls

Alternative Section: 54,700 cfs capacity



40' Bypass Tunnel

Source: Geosyntec, OLIN



MANNING'S

146

Alternative Section: 78,000 cfs capacity

$n = 0.03$



Remove Vegetation

Alternative Section: 120,000 cfs capacity

$n = 0.016$



Pave Soft-bottom

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



Los Angeles Times

County approves L.A. River Master Plan over 11th-hour objections from environmental groups



A view toward what would be the Los Angeles River Platform Park, part of architect Frank Gehry's plan to transform the Los Angeles River with elevated platforms featuring parks and cultural spaces. (Brian van der Brug / Los Angeles Times)

East Yard Communities for Environmental Justice, Sacred Places Institute for Indigenous Peoples, Los Angeles Waterkeeper, Los Angeles Neighborhood Land Trust, Heal the Bay, Trust for Public Land, Friends of the Los Angeles River, and the Nature Conservancy asked that their names be removed from the Master Plan

Center for Biologic Diversity filed a lawsuit against the Plan

Lawsuit Highlights

Master Plan has a deficient vision statement, lacks clear prioritization for future projects, could lead to negative results for the future of the LA River, and is not the product of the diverse community feedback and priorities to achieve climate resiliency, adopt a watershed planning approach, ensure community stabilization, expand green space in river- adjacent communities, and adopt alternative governance approaches.

Failed to analyze or mitigate impacts related to the impacts of climate change on the LA River's hydrology.

Rejects concrete removal and river channel naturalization as a viable option, concluding without environmental impact analysis that "a holistic 51-mile restoration strategy is not realistic, even on a generational timeline" labeling the Floodplain Reclamation as the least feasible option.

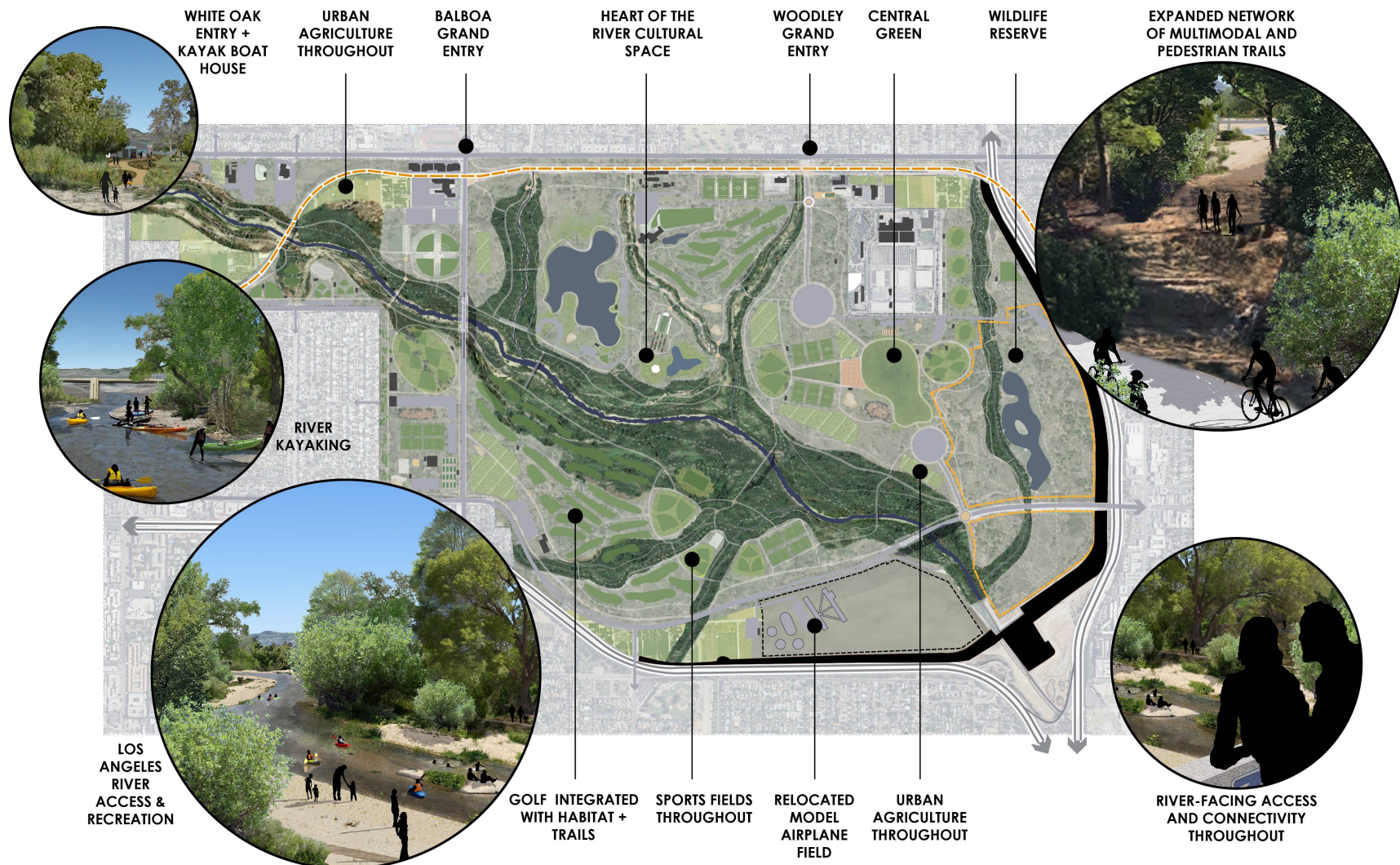
Inconsistent with Los Angeles County General Plan Policy section 2.3, which requires the County to "consider climate change adaptation strategies in flood and inundation hazard."

Inconsistent with many of the goals and policies in the Los Angeles Countywide Sustainability Plan, including implementing strategies to preserve and protect terrestrial streams, wetlands, and aquatic habitats.

Refused to include more detailed environmental justice analysis, stating summarily that "environmental justice is not a CEQA requirement."

SEPULVEDA BASIN RESTORATION

- ~8 miles of restored streams
- 5X increase groundwater recharge
- 20% increase in flood protection
- ^ access, recreation, biodiversity



“At this point, there are no non-radical futures.”

~ Professor Kevin Anderson

Either we do nothing, as we have been doing, and our futures are radical and catastrophic, or we do what is necessary, and that future will be radical and immensely disruptive to business as usual and our current economy, governance, and lifestyles.



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



WATER LA | 2018 REPORT

DOWNLOAD THE REPORTS
via
OUR WEBSITES

EXECUTIVE SUMMARY

A TRANSFORMATIVE APPROACH TO URBAN RIVERS & PARKS

River restoration at the Sepulveda Basin creates the opportunity to re-envision stream corridors, parkland, and water resource management to address natural processes, biodiversity, water supply, climate resiliency, and community needs. Reconnected floodplains naturally infiltrate and detain stormwater, passively recharging groundwater basins. This feasibility study centers the river in its design process, resulting in almost eight miles of living streams within this densely populated metropolis, demonstrating that urban river restoration is possible here.

SEPULVEDA BASIN RESTORATION FEASIBILITY REPORT

The RIVER PROJECT Balance Hydrologics WILDLING DESIGN STUDIO SALT GHD

ES-1

The complex block features a light blue border. At the top, the title "EXECUTIVE SUMMARY" is in bold black. Below it, a subtitle "A TRANSFORMATIVE APPROACH TO URBAN RIVERS & PARKS" is in smaller black text. A paragraph of text describes the river restoration project. Below the text is a photograph of a river with people walking, cycling, and playing. At the bottom, the title "SEPULVEDA BASIN RESTORATION FEASIBILITY REPORT" is in bold black. Below the title are logos for "The RIVER PROJECT", "Balance Hydrologics", "WILDLING DESIGN STUDIO", "SALT", and "GHD". At the very bottom, "ES-1" is written in small black text.

TheRiverProject.org
WaterLA.org