

*Presentation to the*

# **Civil Works Review Board**

## **Los Angeles River Ecosystem Restoration Feasibility Study Los Angeles, California**

**Colonel Kim Colloton**  
Commander and District  
Engineer  
Los Angeles District

**Mr. David Van Dorpe**  
Deputy District Engineer  
Los Angeles District

**16 July 2015**

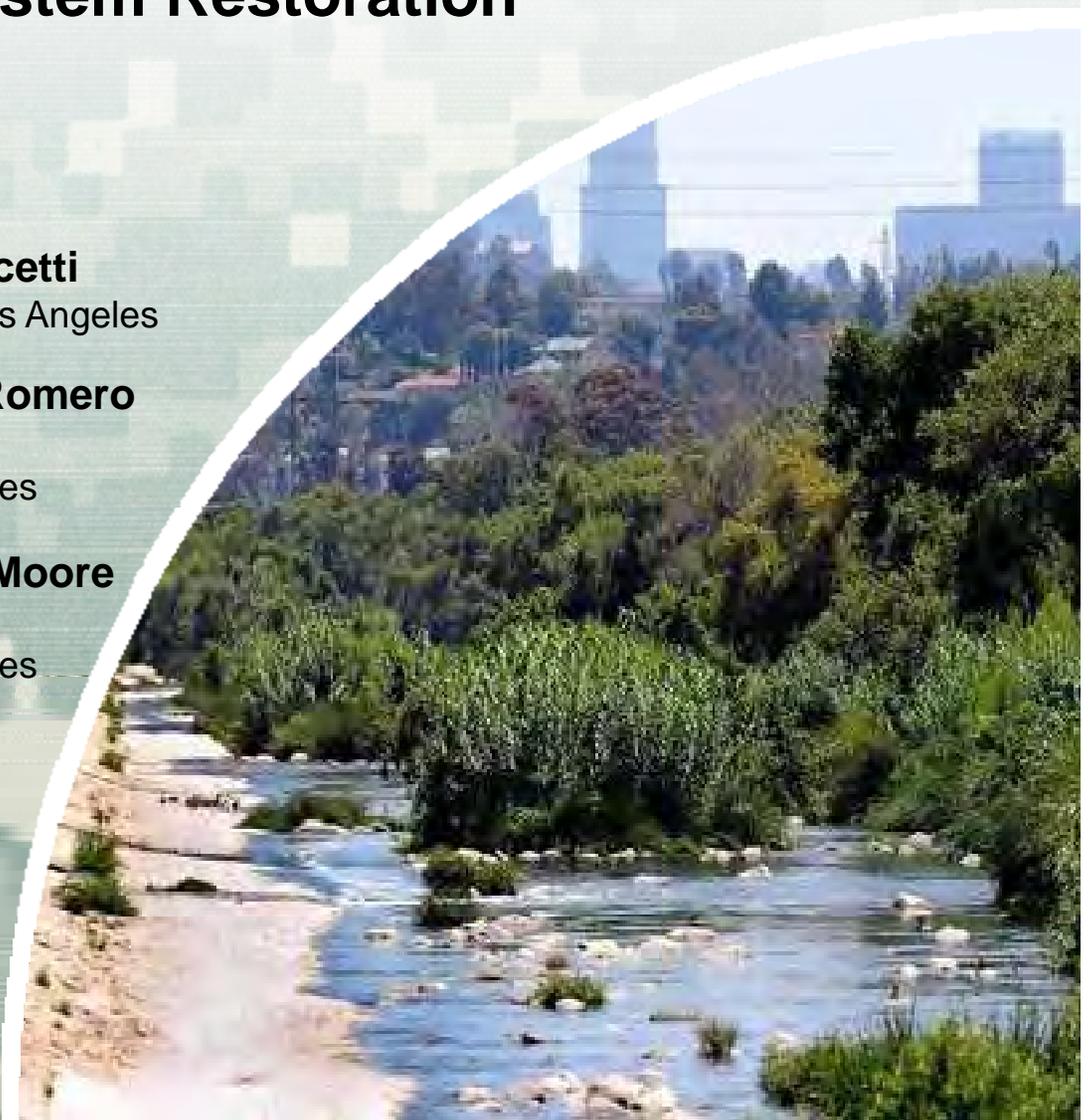
**Hon. Eric Garcetti**  
Mayor, City of Los Angeles

**Ms. Barbara Romero**  
Deputy Mayor  
City of Los Angeles

**Mr. Gary Lee Moore**  
City Engineer  
City of Los Angeles



US Army Corps of Engineers  
**BUILDING STRONG®**



# Project Delivery Team Members



**US Army Corps  
of Engineers®**



**South Pacific  
Division**



**Los Angeles  
District**

## Non-Federal Sponsor

**City of Los Angeles**

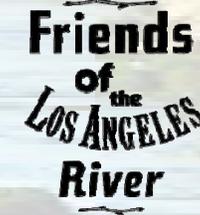


## Financial Contributors

**Los Angeles  
County**



**Friends of the  
Los Angeles River**



**Battelle**  
Independent External  
Peer Review (IEPR)

**ATR**  
Agency Technical  
Review

**PCX**  
Planning Center of  
Expertise

**MCX**  
Mandatory Center of  
Expertise

**Tetra  
Tech**

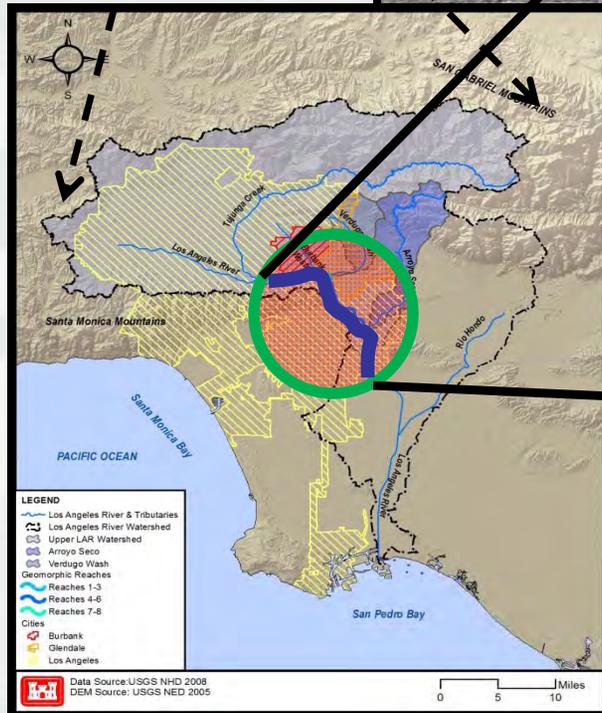
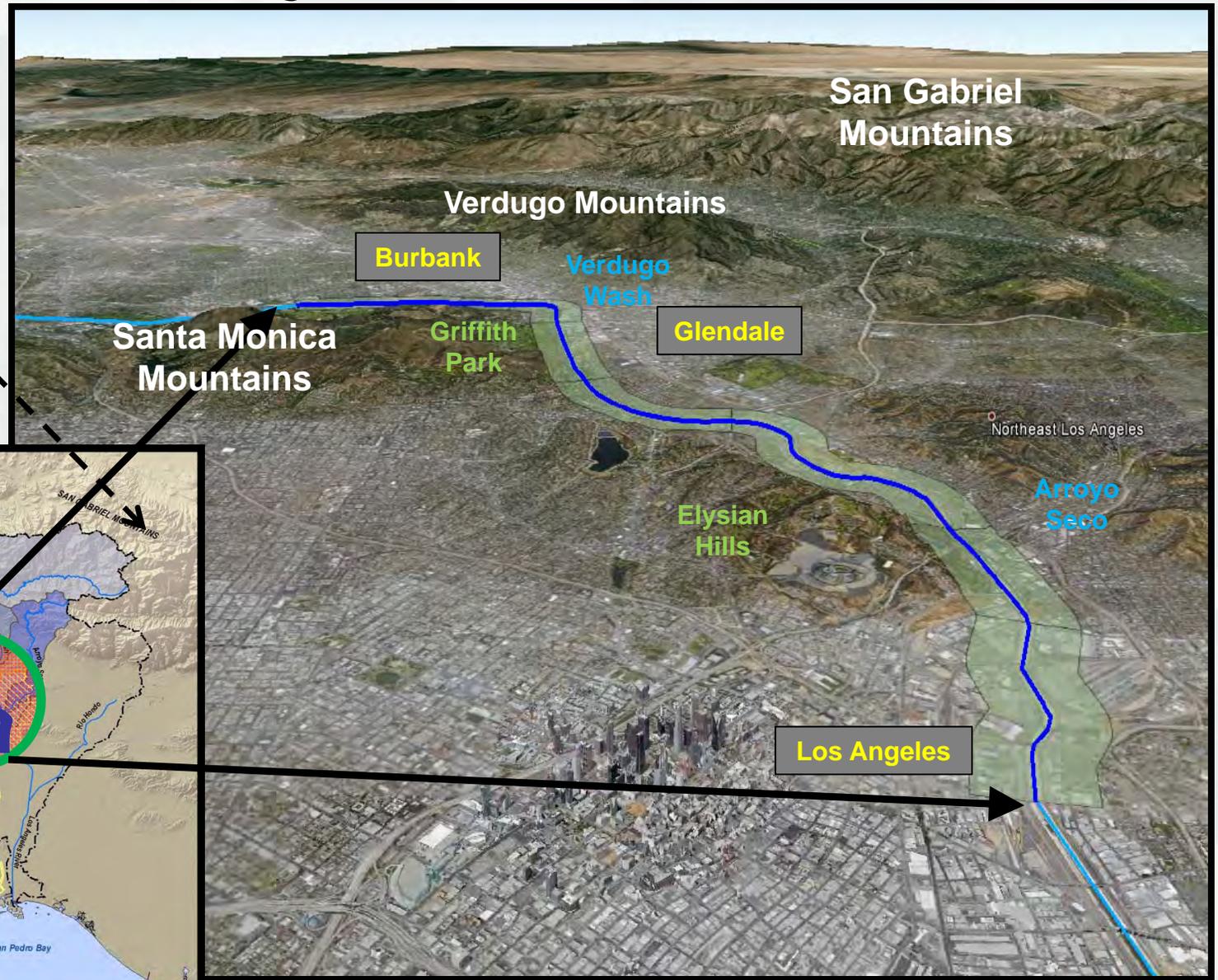
## Key Partners



Corporation for  
**NATIONAL &  
COMMUNITY  
SERVICE**



# Project Location



# Purpose & Authorities

## **PURPOSE: *Opportunities for Ecosystem Restoration & Recreation***

✓ **Resolution of the Senate Committee on Public Works (25 June 1969)**

*“...to review the report of the Chief of Engineers on the Los Angeles and San Gabriel Rivers and Ballona Creek, California... with a view to determining whether any modifications contained therein are advisable at the present time, in the interest of providing optimum development of all water and related land resources in the Los Angeles County Drainage Area.”*

✓ **Section 4018 of WRDA 2007**

*“...feasibility study for environmental ecosystem restoration, flood control, recreation, and other aspects of Los Angeles River revitalization that is consistent with the goals of the Los Angeles River Revitalization Master Plan published by the city of Los Angeles”*



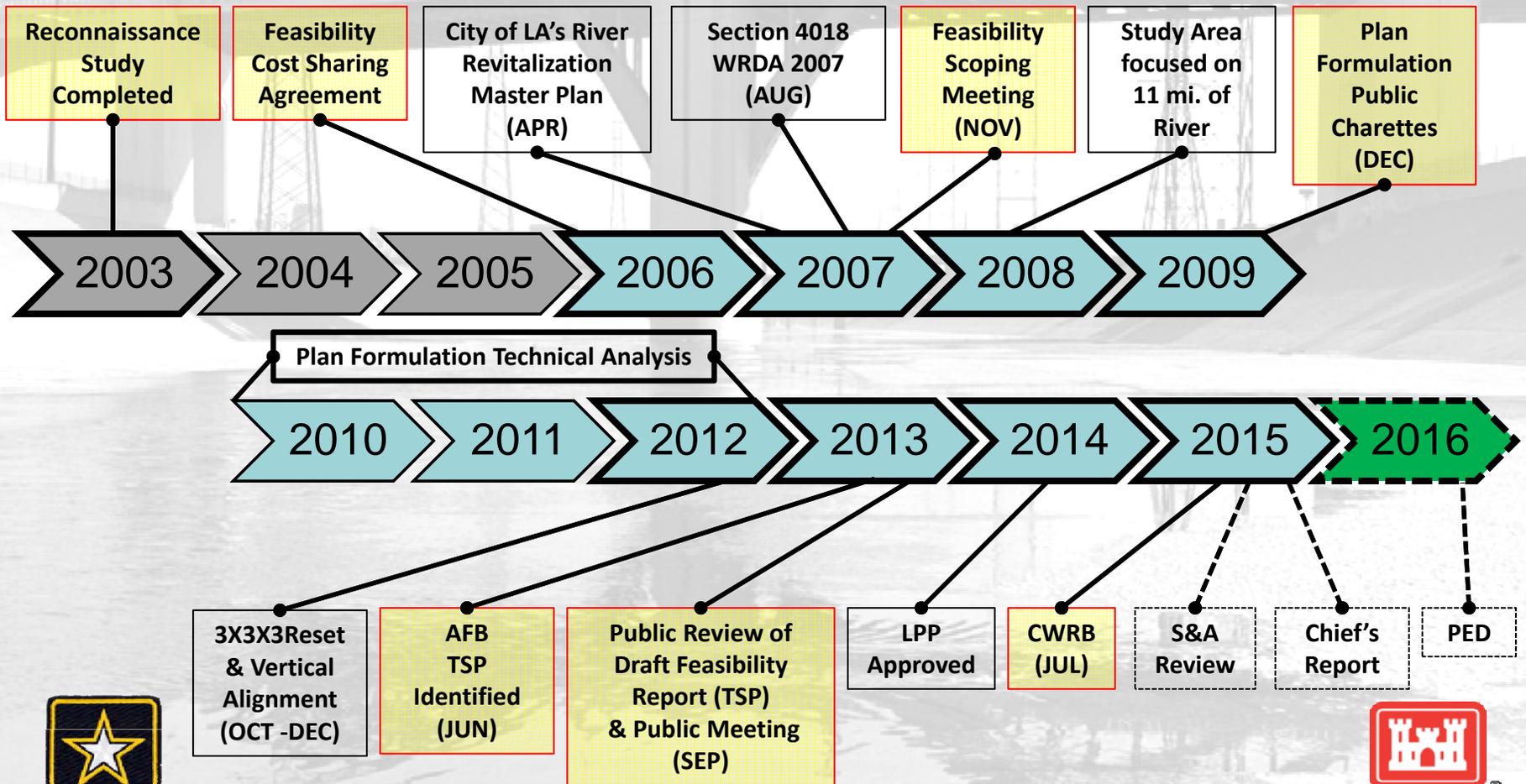
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# Timeline



**STUDY COSTS: \$11.01M**



Mayor Eric Garcetti  
City of Los Angeles

Non-Federal Sponsor



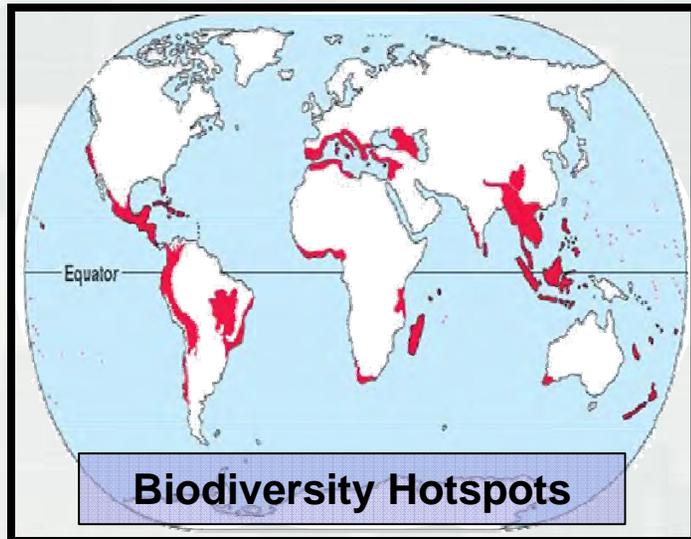
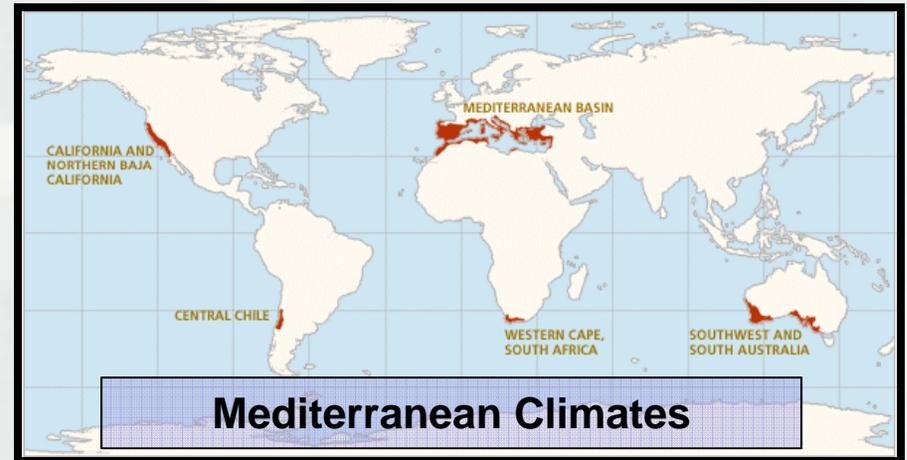
# Resource Significance

## Habitat Scarcity

- Rare Mediterranean ecosystem occupies 2% of the globe and supports 20% of all known plant species

## Biodiversity

- Top 25 global hotspot with rapid biodiversity loss
- 80% of all wildlife in Arid Southwest use the riparian ecosystem



## Status & Trends

- Over 90% of Southern California's riparian habitat lost
- Over 95% of California's wetlands lost

## Lost Species

- 40% reptiles & amphibians
- Large mammals and top carnivores
- All native fish extirpated from study area
  - Rare birds

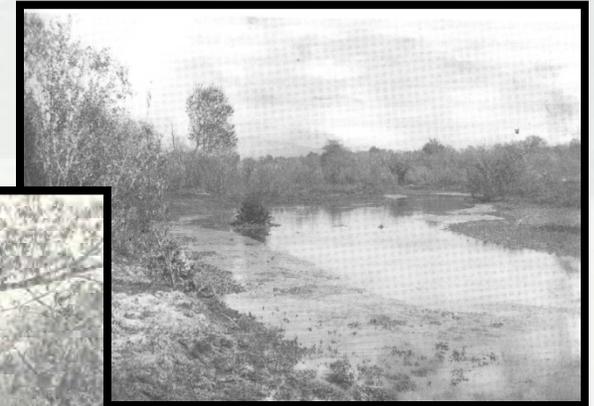


Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Historic Conditions

- Vast floodplain - braided channels migrated and changed form over time
- Diverse assemblages of habitats
  - Cottonwood and willow floodplain forest
  - Marshlands
  - Salt marsh and lagoons at the coast
  - Oak, sage, cacti, and prairies in upland

Near Griffith Park  
late 1800s



Near Downtown LA  
circa 1900



Channelization  
1940



LA River Flood  
Damage early 1900s

- Supported diverse wildlife and movement corridors
- Catastrophic flooding in the early 1900s was catalyst for channelization
- By 1960s 51-miles of River was channelized and mostly paved

Resource Significance	Historic Conditions	<b>Problems &amp; Opportunities</b>	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Problems

Absence of aquatic habitat for fish and other wildlife species

Degradation of ecological processes

Replacement of diverse substrate with concrete

Breaks in connections between the river and its historic floodplain

Highly-altered hydrologic regime

Highly-altered habitat cycle

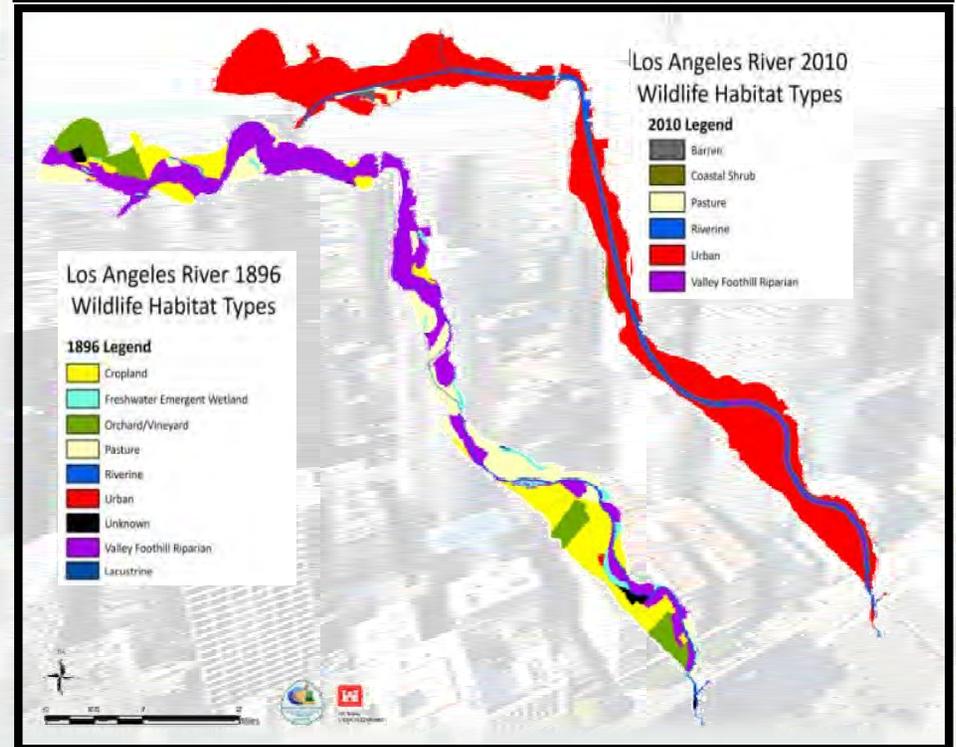
Disruption of natural sedimentation processes

Inability of surface flows to infiltrate and recharge groundwater

Degradation of aquatic habitat

Proliferation of non-native/exotic species and trash/debris

Unpleasant human experience & poor understanding of river's natural history & value



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Opportunities

Restore lost aquatic, riparian & freshwater marsh habitat

Improve diversity and abundance of habitat

Improve and restore ecological processes

Restore substrate

Improve habitat connectivity to floodplains & ecological zones

Restore a more natural hydrologic regime

Decrease peak discharges and/or increase floodplain area

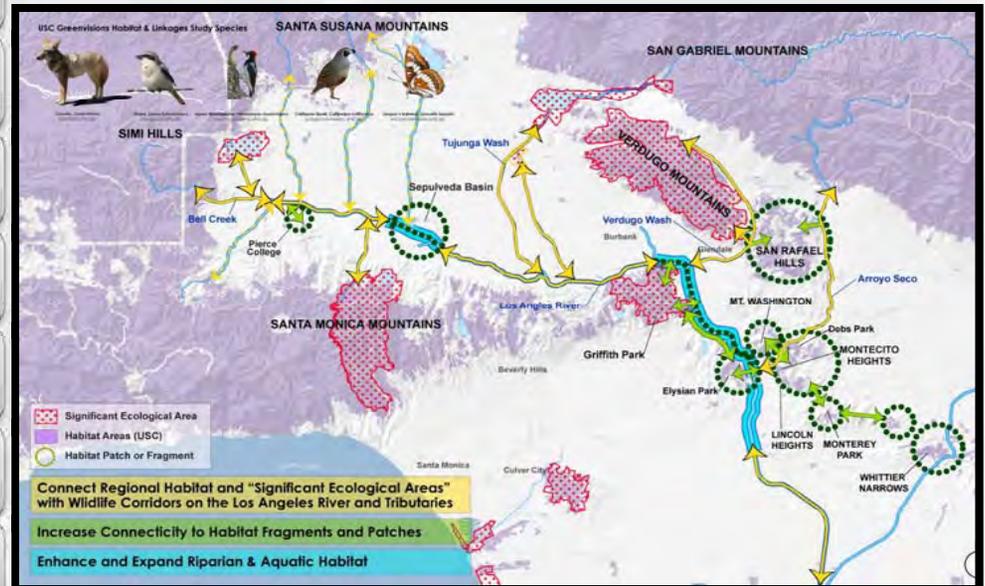
Improve natural sedimentation processes

Improve infiltration and recharge

Improve water quality

Remove and manage invasives/exotics and trash to reestablish native vegetation

Increase recreation & educate the public



## ***Corps tributary connectivity opportunities:***

- Arroyo Seco – to San Gabriel Mountains
- Headworks – to Santa Monica Mountains
- Verdugo Wash – to Verdugo Mountains
- Burbank Western Channel – to San Gabriel Mtns

Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Future Without Project Assumptions

**Continued habitat degradation**

**Simplified and magnified flows**

**Disruption of natural sedimentation processes**

**Lack of river-to-floodplain interactions**

**Decline in wildlife diversity**

**No potential to support populations of threatened and endangered species**

**Habitat connectivity would continue to be limited**

**Continued species decline**

**Current flood risk management levels stay the same**



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Objectives

**Restore Valley Foothill Riparian & Freshwater Marsh Habitat**



**Increase Habitat Connectivity**



**Increase Passive Recreation Compatible With Restored Environment**



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Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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## Constraints & Considerations

- Flood risk management
- Hazardous, Toxic and Radioactive Waste (HTRW) contamination
- Major infrastructure & development
- Land availability and cost
- Levee safety policies
- Water availability
- Recreation design



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Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	<b>Plan Formulation</b>	Recommended Plan
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<b>Measures</b>	<b>Alternative Plans</b>	Cost & Benefits	Plan Comparison	Final Array
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**Planning Charettes Held**



**Measures Developed & Preliminary Plans Formed**



**Alternatives Analysis**



**Benefits Quantified (CHAP) & Cost Estimates Developed**



**Benefits/Costs by Reach**



**CEICA**

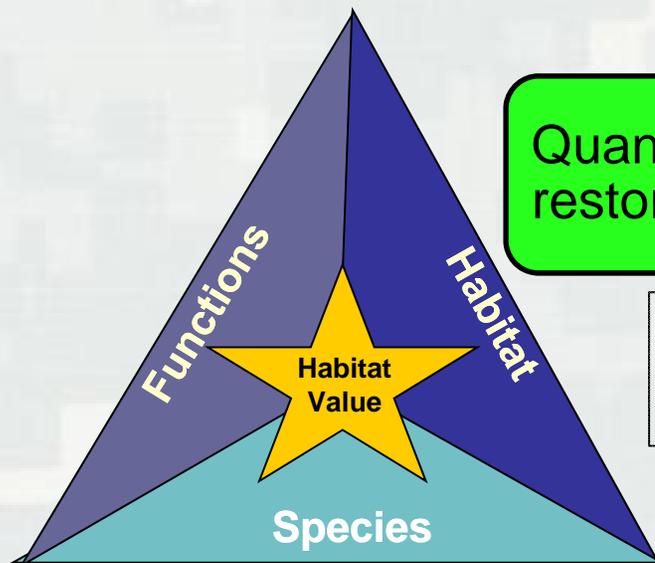


**Preliminary Final Array**



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
Measures		Alternative Plans	Cost & Benefits	Plan Comparison	Final Array	

# Habitat Evaluation: Combined Habitat Assessment Protocols (CHAP)



Quantifies habitat quality and restoration benefits considering:

- Over **175** species and their associated functions and habitats

- Evaluates non-monetary benefits using habitat units
- Habitat connectivity was evaluated qualitatively and quantitatively



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	<b>Plan Formulation</b>	Recommended Plan
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Measures	Alternative Plans	<b>Cost &amp; Benefits</b>	Plan Comparison	Final Array
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# Cost Effectiveness & Incremental Cost Analysis (CEICA)

## Inputs

Cost & Benefits by Plan & Reach

## Outputs

**171** Cost Effective Plans

**21** Best Buy Plans

**4** Plans in Preliminary Final Array



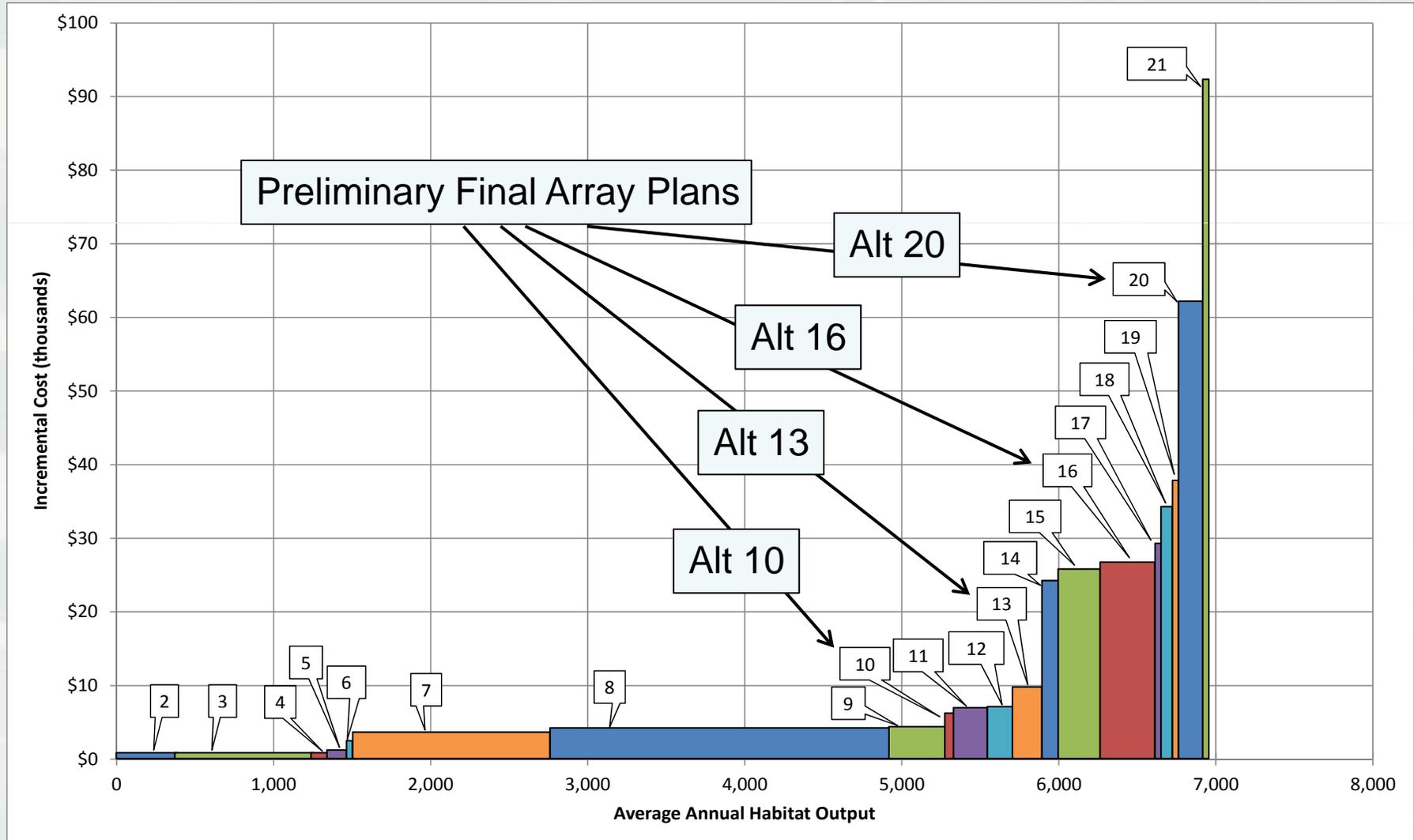
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Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	<b>Plan Formulation</b>	Recommended Plan
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Measures	Alternative Plans	Cost & Benefits	<b>Plan Comparison</b>	Final Array
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# CEICA – Best Buy Plans



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	<b>Plan Formulation</b>	Recommended Plan
Measures		Alternative Plans	Cost & Benefits	Plan Comparison	<b>Final Array</b>	

# Alternative 13v – Variation on Alternative 13

- Alternative 13 identified as the National Ecosystem Restoration (NER) plan and the Tentatively Selected Plan (TSP) in the Draft Report
- Cost estimates were updated and refined after public review
- Reach 7 in Alt 20 was more cost effective than Reach 7 in Alt 13
- The variation of Alt 13, called Alt13v, includes the more efficient Reach 7
- The final array includes the more efficient Alt 13v



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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Measures	Alternative Plans	Cost & Benefits	Plan Comparison	Final Array
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## FINAL ARRAY OF ALTERNATIVES - COMPARISON

Criterion	Alt 10	Alt 13	Alt 13v NER	Alt 16	Alt 20 Locally Preferred Plan
<b>NER Costs (October 2014 Price Levels)</b>					
Total First Cost	\$591 million	\$708 million	\$667 million	\$1.05 billion	\$1.31 billion
Incremental Cost	\$591 million	\$116 million	(\$41 million)	\$384 million	\$258 million
<b>NER Benefits – AAHUs</b>					
Net Average Annual Habitat Output	5,321	5,902	5,989	6,509	6,782
% Increase versus No Action	93%	104%	105%	114%	119%
Incremental Output	5,321	581	87	607	273
<b>NER Benefits – Connectivity</b>					
Added Regional Connections	Santa Monica Mtns	Santa Monica & San Gabriel Mtns	Elysian Hills, Santa Monica & San Gabriel Mtns	Santa Monica & San Gabriel Mtns	Verdugo & Elysian Hills, Santa Monica & San Gabriel Mtns
<b>NER Benefits – Acres Restored</b>					
Acres	528	588	598	659	719

Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Locally Preferred Plan as the Recommended Plan

LPP Waiver Request Approved by ASA(CW) on 27 May 2014

Non-Federal Sponsor Requested Alternative 20 as the Recommended Plan

- Key Reasons for LPP Approval Include:**
- Great Habitat Value
  - Significant Benefits
  - Substantial Federal Interest
  - Strong Agency, Stakeholder and Public Support



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Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Recommended Plan Summary

Oct 2015 Price Levels (\$1,000s)	
<b>Construction Item</b>	
Lands and Damages	\$526,285
Relocations	\$228,562
Ecosystem Restoration	\$462,483
Recreation Facilities	\$14,921
Preconstruction Engineering and Design (PED)	\$85,135
Construction Management (S&A)	\$39,222
<b>Total First Cost</b>	<b>\$1,356,608</b>
<b>Ecosystem Restoration</b>	
Average Annual Cost	\$60,507
Average Annual Habitat Units	6,782
AAC/AAHU	\$8.92
Restored Acres	719
<b>Recreation</b>	
Average Annual Costs	\$978
Average Annual Benefits	\$3,510
Net Benefits	\$2,532
Benefit/Cost Ratio	3.59

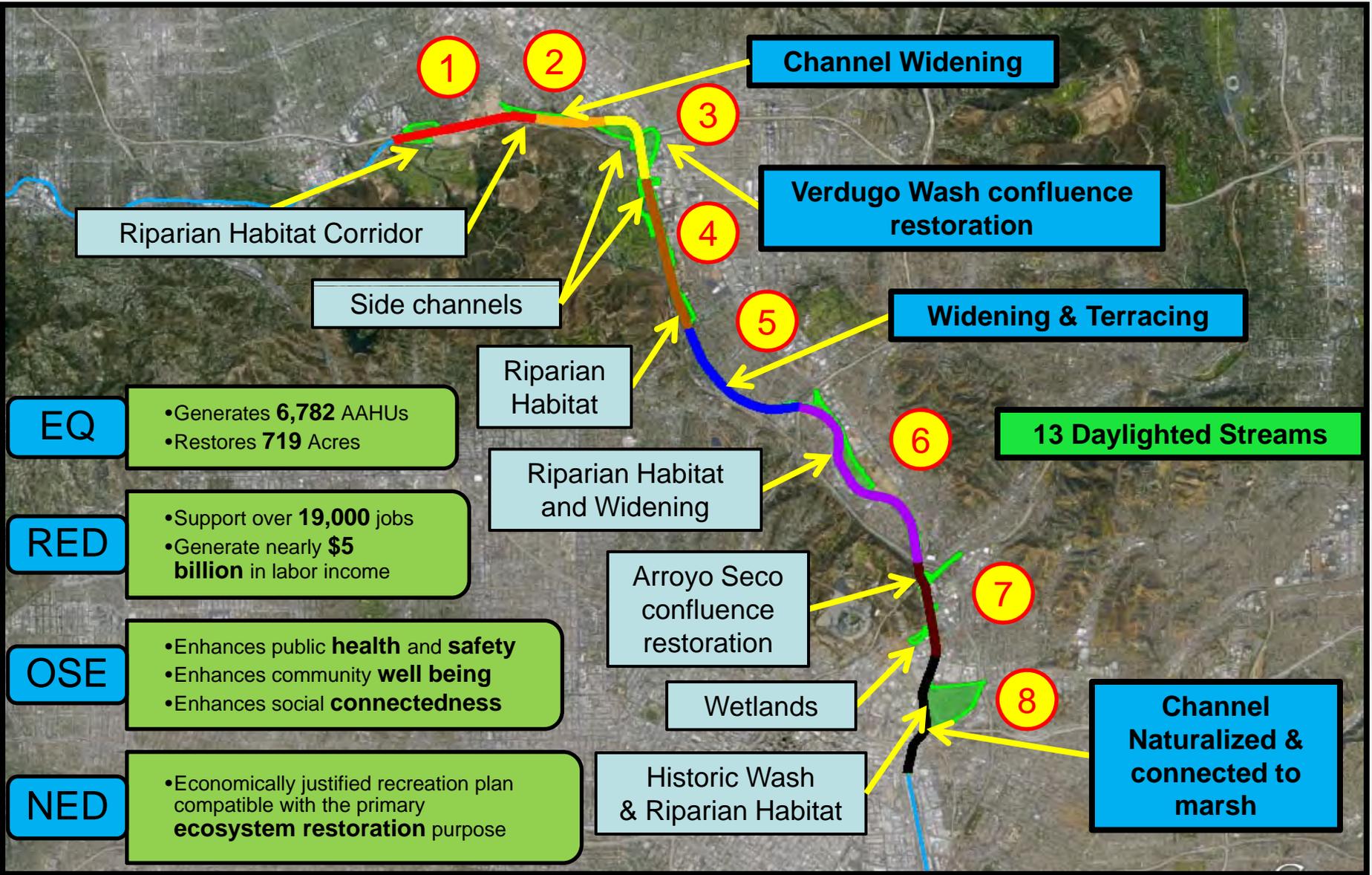


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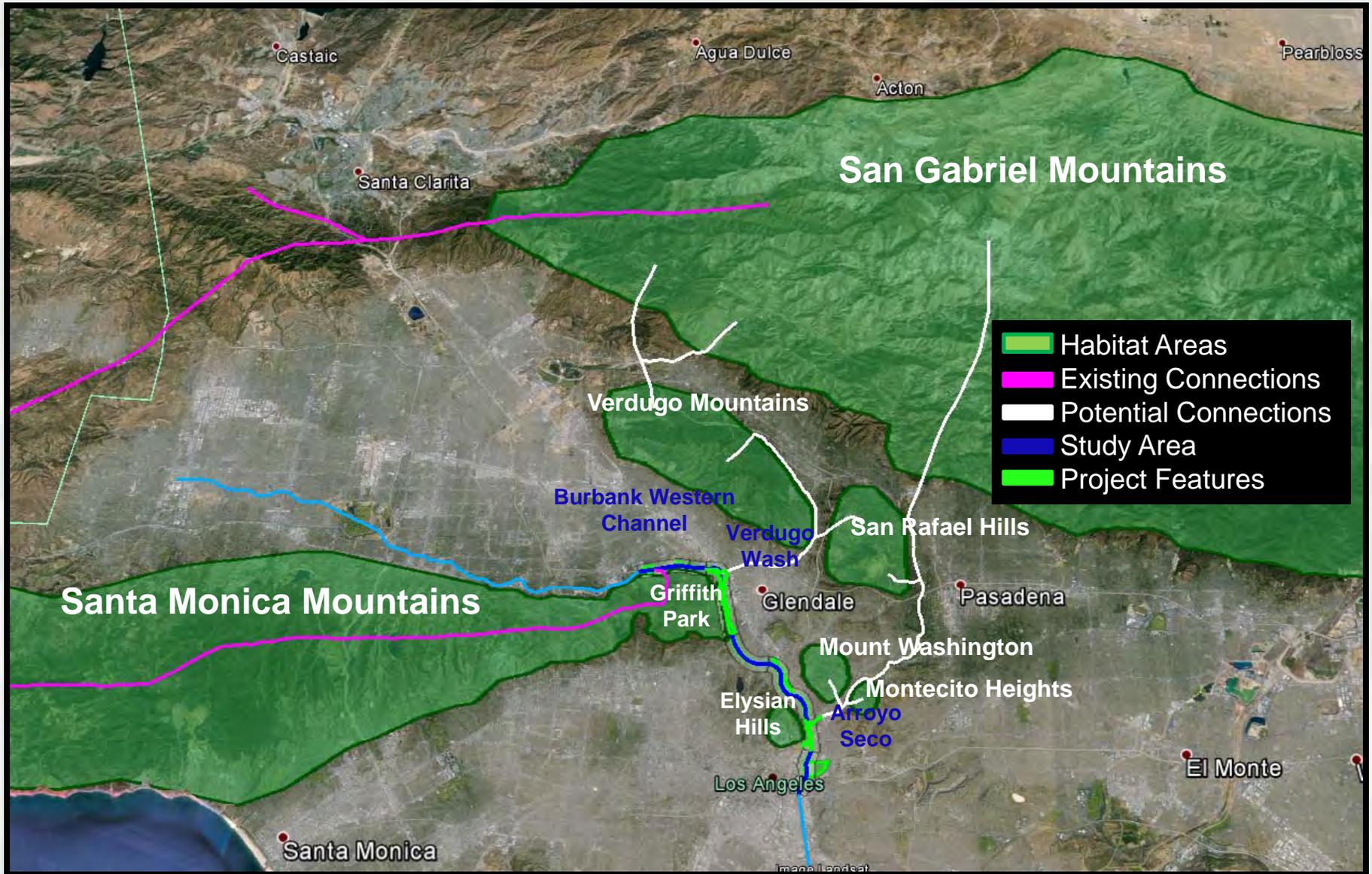
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# Recommended Plan



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Regional Connectivity



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Recommended Plan

Reach 1 – Riparian Corridor



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	<b>Recommended Plan</b>
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# Recommended Plan



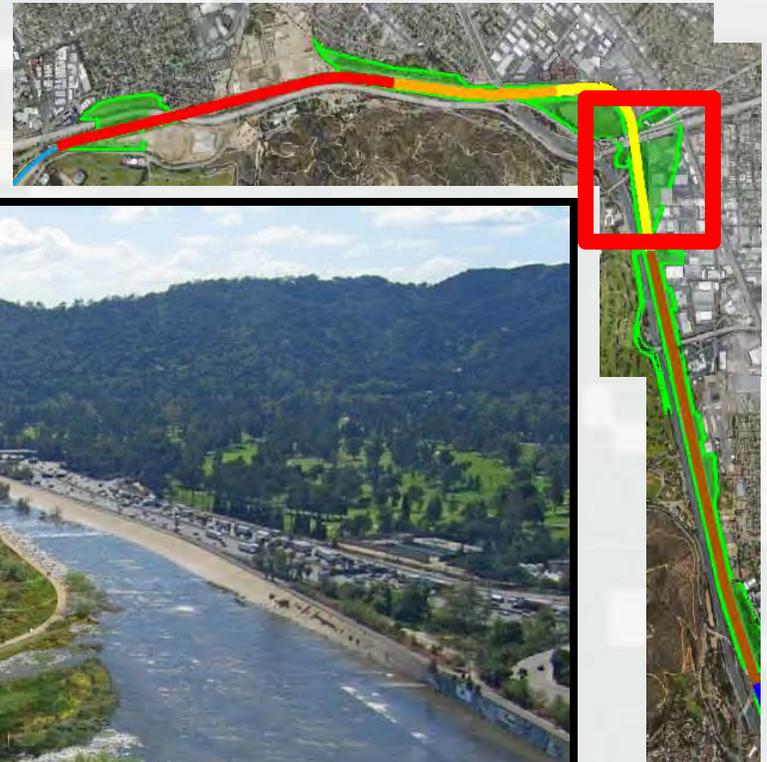
Reach 2 – Channel Bed Widening & Riparian Corridor



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Recommended Plan

Reach 3 – Verdugo Wash Tributary Confluence



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Recommended Plan

## Reach 4 – Side Channel & Daylighted Streams



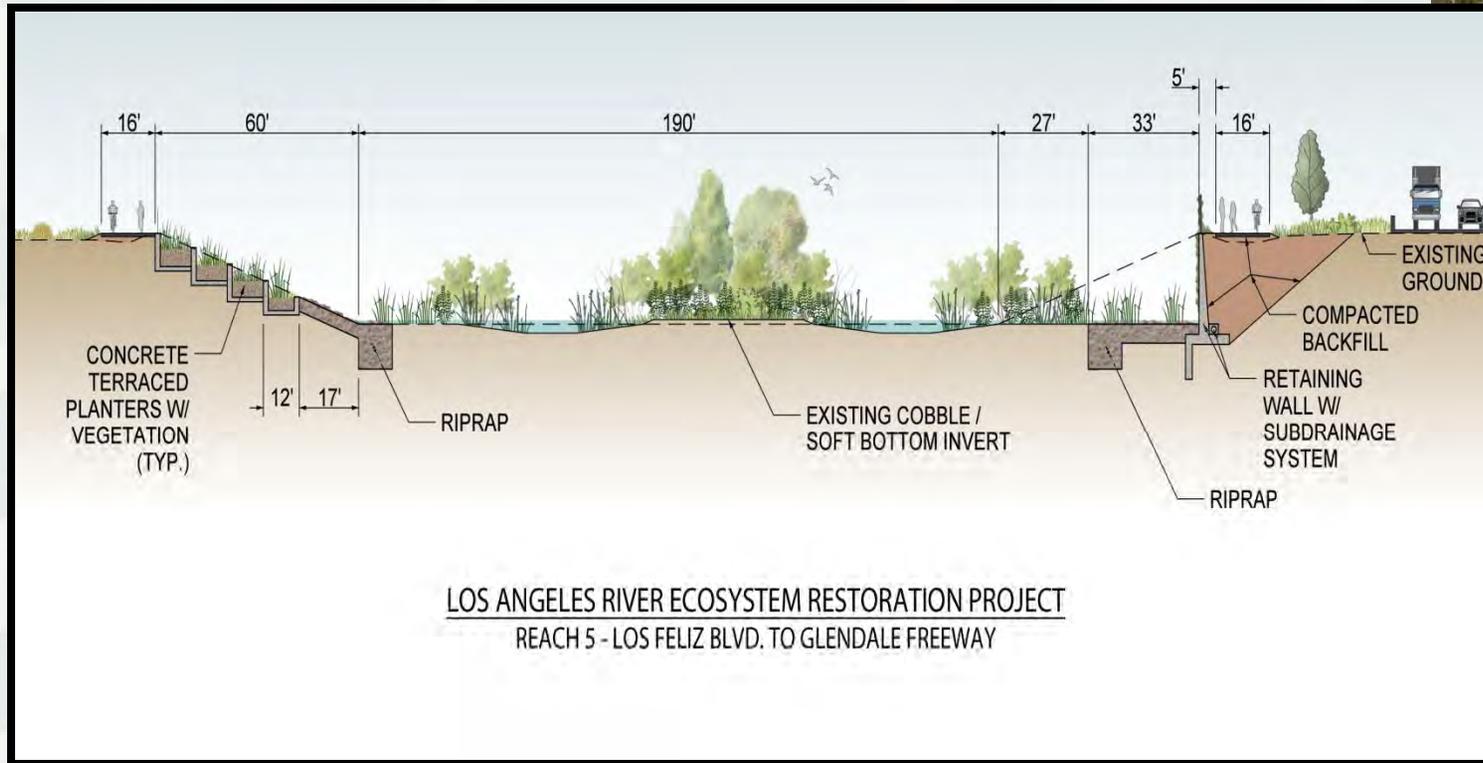
## Reach 4 – Diversion



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Recommended Plan

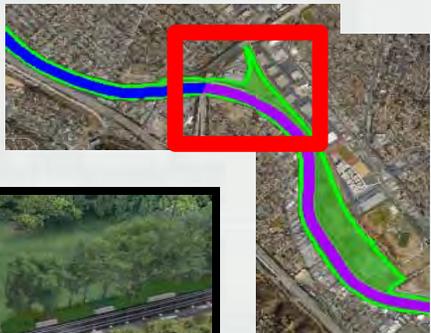
## Reach 5 – Widening & Terracing



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Recommended Plan

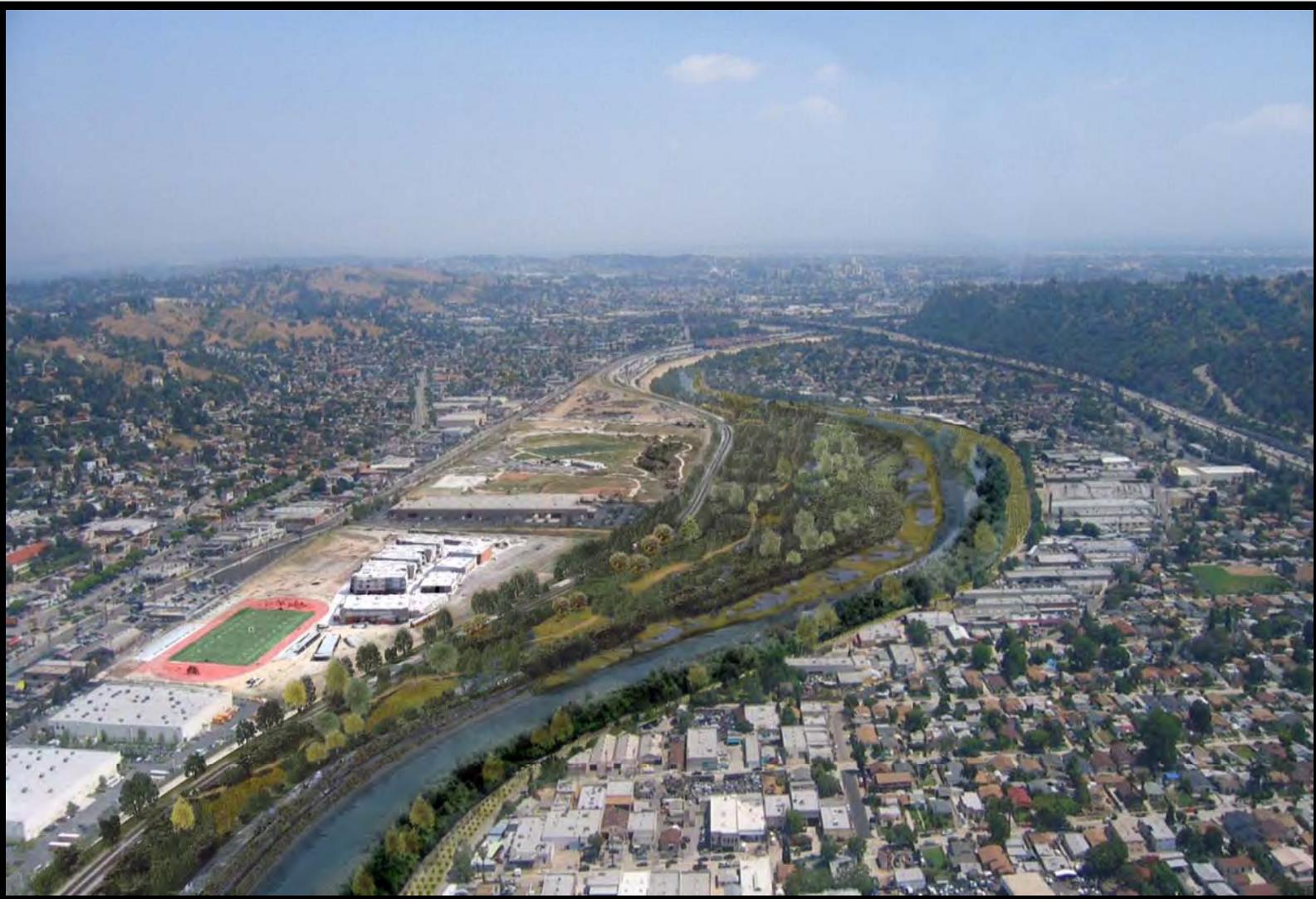
Reach 6 – Back-Water Wetland & Riparian Corridor



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Recommended Plan

Reach 6 – Floodplain Restoration & River Widening



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Recommended Plan

Reach 7 – Arroyo Seco Tributary Confluence Restoration



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	<b>Recommended Plan</b>
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# Recommended Plan

Reach 7 – Marsh Restoration & Terracing



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Recommended Plan

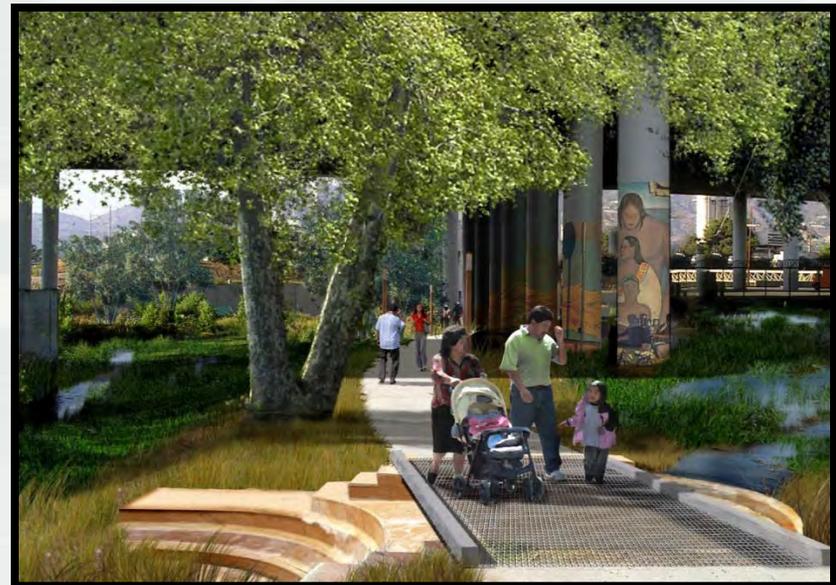
Reach 8 – Floodplain Restoration, Riverbed Widening, Naturalization and Bank Terracing



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Recreation Plan

<b>Total Cost</b>	• <b>\$18 Million</b>
<b>Average Annual Cost</b>	• <b>\$978,000</b>
<b>Average Annual Benefits</b>	• <b>\$3.5 Million</b>
<b>Annual Net Benefits</b>	• <b>\$2.5 Million</b>
<b>Benefit/Cost Ratio</b>	• <b>3.59</b>



# Proposed Cost Sharing

## Ecosystem Restoration Cost

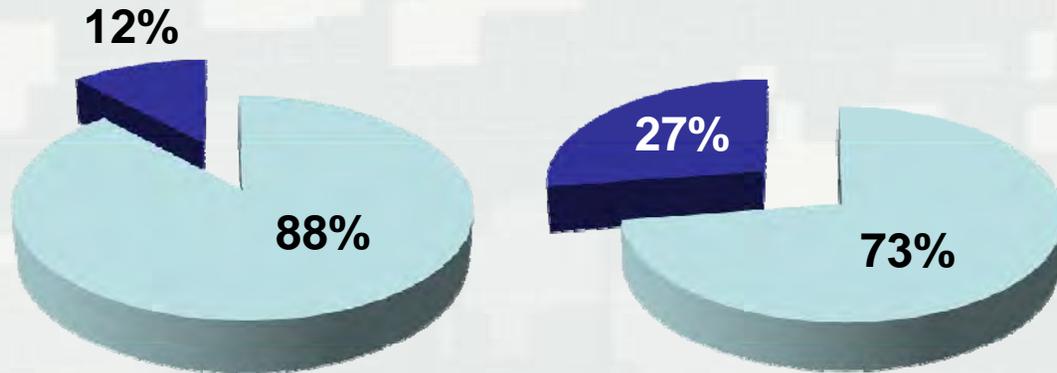
Total Cost - \$1.34 B (OCT 2015)

	Option 1	Option 2
Federal Share	\$157.8 M	\$366.7 M
Non-Federal	\$1.18 B	\$971.8 M

### Option 1

### Option 2

■ Non Fed ■ Fed



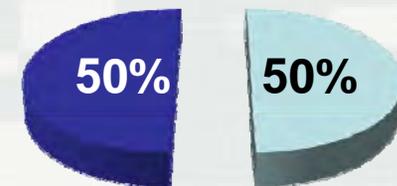
## Recreation Cost

Total Cost - \$18 M (OCT 2015)

Federal Share	\$9 M
Non-Federal	\$9 M

### Recreation

■ Non Fed ■ Fed



Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Risk Management

## RISKS REDUCED/ADDRESSED DURING STUDY

FRM Impacts
Levee Policy Issues
Water Availability
Vegetation Resiliency
Regulatory Agency Conflicts (PA, 401)

## RISKS REMAINING DURING IMPLEMENTATION

Real Estate Acquisition
Market Conditions and Bidding Competition
Conceptual Level of Design
Technical investigations remain that could affect design
HTRW Sites
Utility Relocations
Groundwater Contamination
Future Availability of Funds



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Resource Significance	Historic Conditions	Problems & Opportunities	Future Without Project	Objectives Constraints	Plan Formulation	Recommended Plan
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# Restoration Success

## POST-CONSTRUCTION ACTIONS



### Monitoring

- Evaluate progress of habitat restoration



### Adaptive Management

- Replanting, plant protection, erosion control, import substrates (cobbles for fish), re-grading (scour)

**TOTAL ESTIMATED COST FOR MONITORING (\$3.8M) AND ADAPTIVE MANAGEMENT (\$5M) \$12.25 million (w/ contingency)**

## LONG-TERM ACTIONS



### Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R)

- Sponsor will conduct OMRR&R for ecosystem restoration features
- USACE will continue to conduct OMRR&R for Flood Risk Management (FRM) features



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# Environmental Compliance

## Applicable laws and regulations include:

- Endangered Species Act of 1973
- Executive Order 11988, Floodplain Management
- Executive Order 12989, Federal Actions to Address Environmental Justice in Minority Populations & Low-Income Populations
- Fish & Wildlife Coordination Act of 1958
- National Environmental Policy Act of 1969
- National Historic Preservation Act of 1966
- Clean Water Act of 1972 Section 401 Water Quality Certification (LA RWQCB) – after completion of CEQA



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# Reviews

1. ECO PCX approval of CHAP Model : **June 2013**
2. Draft Report ATR/HQ Policy Review/IEPR/VE Analysis: **August 2013**
3. Draft Report DQC/Legal Certification: **September 2013**
4. Public Review: **September – October 2013**
5. LPP ASA (CW) Approval: **May 2014**
6. Final Cost Certification: **March 2015**
7. Final DQC/ATR/HQ Policy Review/IEPR/Legal Cert: **May 2015**
8. DE Transmittal for CWRB: **May 2015**
9. State & Agency Review: **Expected August 2015**

\* Final Chief's Report: **Winter 2015**



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# Environmental Operating Principles

- ✓ 1) Foster sustainability as a way of life
- ✓ 2) Consideration of environmental consequences
- ✓ 3) Supporting mutually sustainable economic and environmental solutions
- ✓ 4) Corporate responsibility accountability
- ✓ 5) Leverage scientific, economic and social knowledge
- ✓ 6) Consideration of environment using risk management and a systems approach
- ✓ 7) Open and transparent processes



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# Regional Integration Considerations

- 1) Impacts on surrounding communities, infrastructure, and environmental resources are considered
- 2) Surrounding watershed activities incorporated

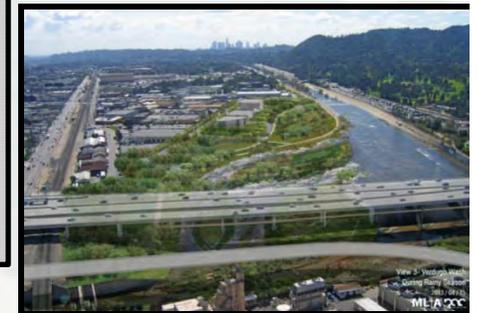


# Before



# Summary

# After



## Significant Increase in Nationally - Critical Riparian Habitat

- Restoration of rare southwestern riparian and aquatic habitats
- Potential to support **two (2) federally threatened & endangered species**
- Significant benefits to local and migratory species

## Increases in Connectivity

- Restoration of natural hydrologic connectivity
- Restoration of floodplain connections
- Restoration of habitat nodes and movement corridors
- Opportunities for regional habitat connections
- Increased connection to the Pacific Flyway

## Increase Recreation

- Increase public education and awareness
- Increase linkage with regional recreational trails
- Improve overall recreation experience compatible with restored environment

# Recommendation

Release the draft Chief's Report for State and Agency review, accompanied by and consistent with the District Commander's final Integrated Feasibility Report and NEPA Environmental Impact Statement document.



On behalf of the team, we thank you for your time and consideration.



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# Los Angeles River Ecosystem Restoration Project Los Angeles, California

**Civil Works Review Board Briefing**

**BG R. Mark Toy**

Commander

South Pacific Division

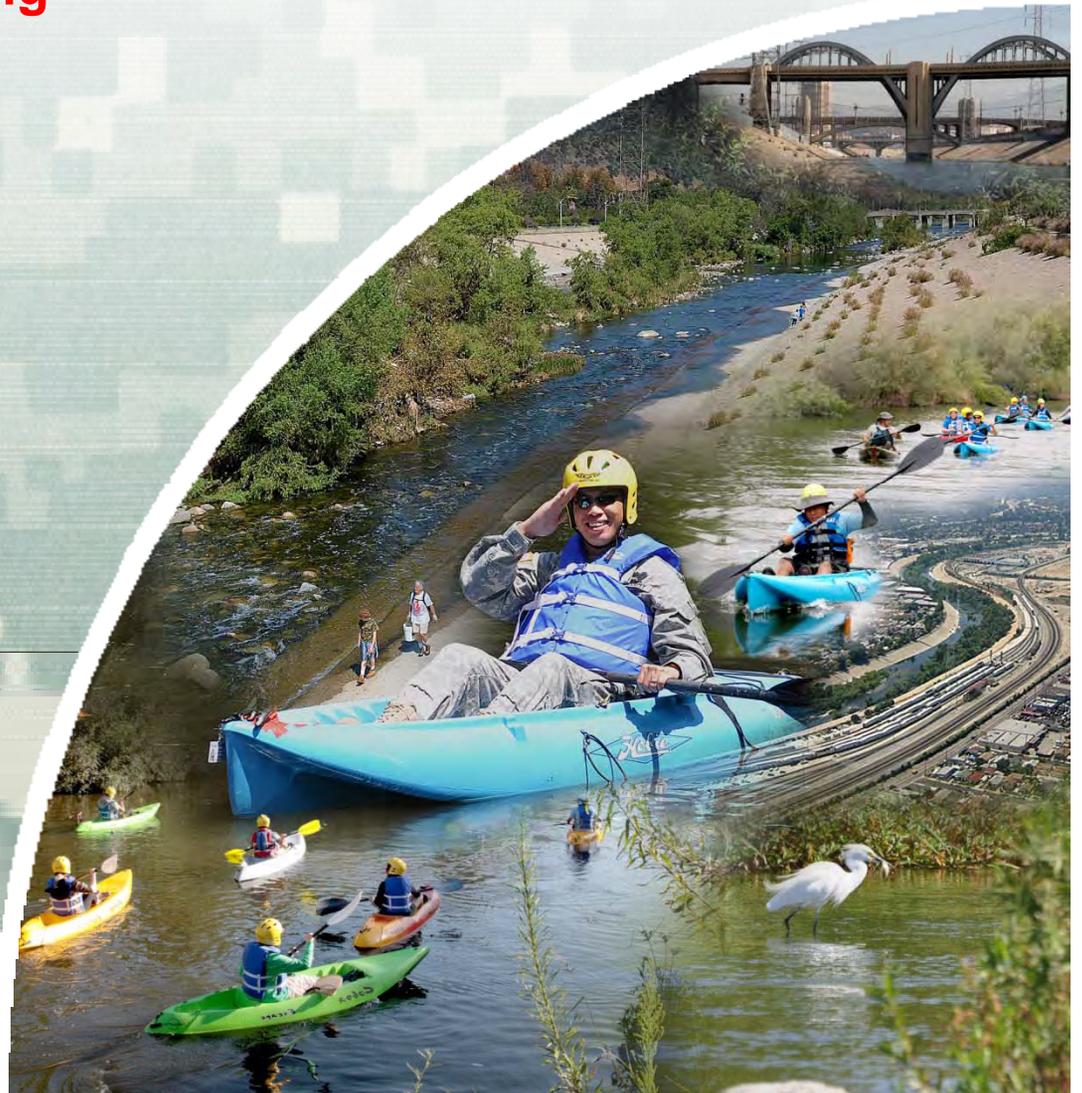
16 July 2015



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# Briefing Objectives

- Rationale for SPD Support
- Quality Assurance, Policy and Legal Compliance Review
- Policy Issue Highlights
- Expected Response to Draft Report of Chief of Engineers
- Division Recommendation



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# Rationale for SPD Support

- Recommended Plan is a significant positive step for restoring 11 miles of aquatic and riparian ecosystem from San Fernando Valley to Downtown LA
- Division Engineer's Transmittal Letter signed May 16, 2015
- Report complies with applicable laws and policies
- Recommended plan is technically sound, restores significant ecological resources, meets tests of cost effectiveness (benefits are economically justified), and is environmentally acceptable
- Recommended plan is supported by the Sponsor, Congressional delegation, State and Federal resource agencies, and the Public



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# SPD Quality Assurance, Policy & Legal Compliance Review

- **Agency Technical Review (ATR)**
  - ▶ Team members from Eco PCX, SWT, SWF, MVM, MVP, MVR, NWS, NWW, SAS, SPK, ERDC & IWR
  - ▶ Completed April 20, 2015
  - ▶ All comments resolved
- **Cost Certification**
  - ▶ ATR and total project cost baseline certified by Walla Walla District Cost Engineering Mandatory Center of Expertise
  - ▶ Completed March 9, 2015



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# SPD Quality Assurance, Policy & Legal Compliance Review

- **Independent External Peer Review (IEPR)**

- ▶ Report completed November 8, 2013 (Addendum completed September 2, 2014)
- ▶ 18 comments (5 high significance, 11 medium, 2 low)
- ▶ PDT did not concur on 5 comments – this has been reduced to 4
- ▶ 53 of 63 panel recommendations adopted
- ▶ All comments successfully resolved

- **Policy Review**

- ▶ Policy Guidance Memo Reviewed
- ▶ All policy compliance issues resolved

- **Legal Review**



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▶ SPL District & SPD Division Counsel completed , respectively, on May 12, 2015 and May 15, 2015



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# Independent External Peer Review – non-Concur Comments

- Comment #1 (high significance): Flood risk management has not been effectively integrated with the objectives of the ecological restoration project, yet is a primary purpose and function of the Los Angeles River channel.
- Comment #10 (medium significance): Groundwater conditions specific to the project have not been fully described and data are lacking, especially on groundwater/ surface water exchanges.



# Independent External Peer Review – non-Concur Comments

- Comment #13 (medium significance): Cost estimates for the eight specific reaches comprising the ARBOR Reach have not been identified for each of the four alternatives and the TSP in particular.
- Comment #14 (medium significance): Future without project conditions related to operation and maintenance, population growth, climate change, and hydrology are not adequately addressed.



# Independent External Peer Review – non-Concur Comments

- Comment #17 (low significance): The reasonableness of key drivers in estimating recreation benefits has not been substantiated with local data.



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# Policy Issues

- Inability to fully quantify connectivity and other ecosystem outputs in the comparison of alternatives & identification of NER Plan
- Real Estate costs exceed 25% of total project costs
- Appropriate just compensation for Los Angeles Trailer and Container (LATC) intermodal facility (fair market value versus cost to provide substitute facility)



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# Expected Response to Draft Report of the Chief of Engineers

- Expectations are for favorable responses to draft Chief's Report
- Recommendation supported by non-Federal Sponsors
- Collaboration with the Vertical Team, Eco PCX, resource agencies and stakeholders integrated throughout study process



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# Division Recommendation

- Release Final Report for State and Agency Review
- Approve Final Report
- Complete Chief's Report



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# Agency Technical Review

## Los Angeles River Ecosystem Restoration, Integrated Feasibility Report, Feasibility Study And Environmental Impact Statement/Environmental Impact Report, Los Angeles County, California, March 2015

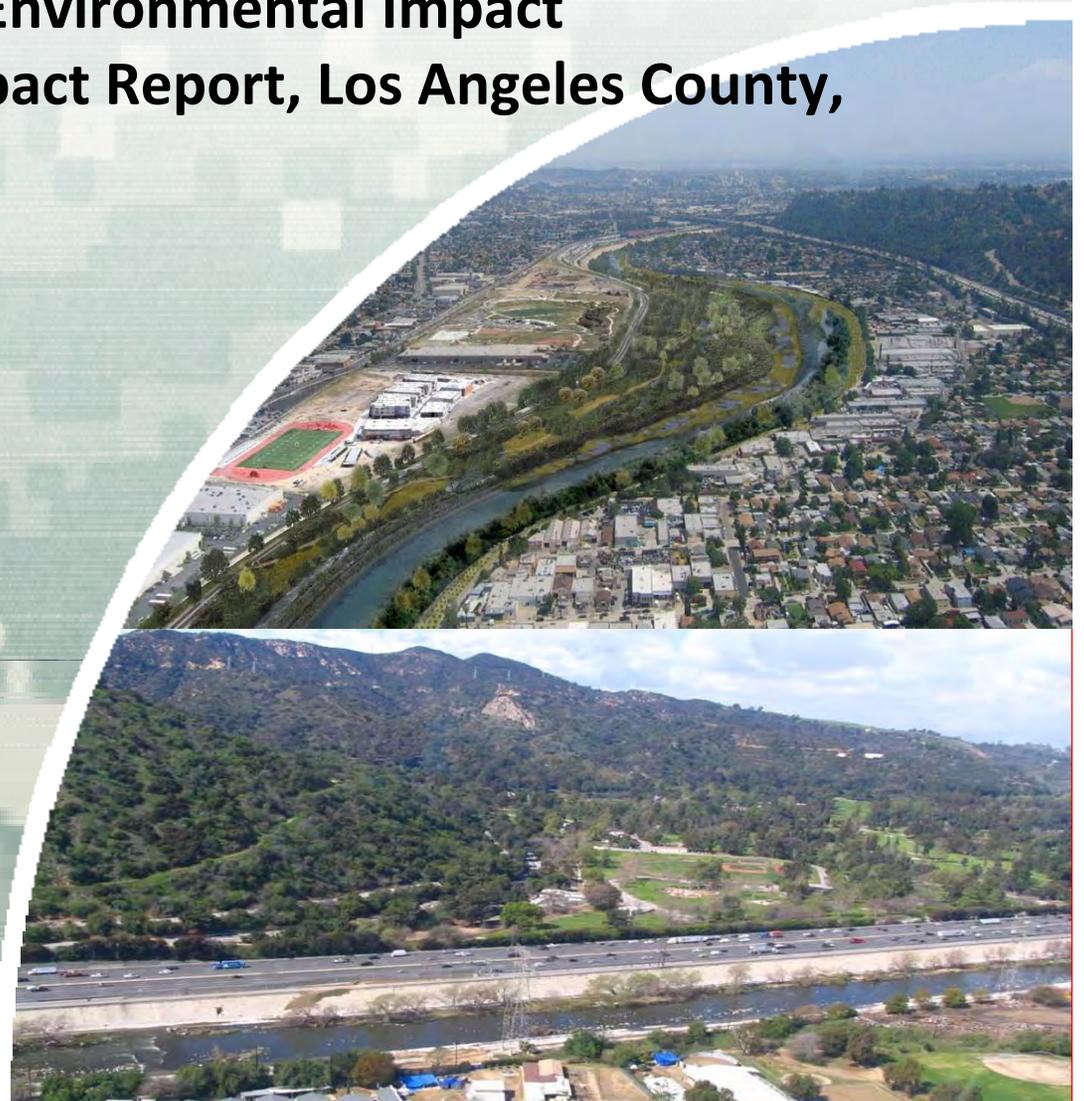
Marc Masnor, P.E.  
CESWF-PEC-PF (Tulsa, OK)  
ATRT Lead for the ECO PCX

16July2015



US Army Corps of Engineers  
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Version: 09.04.14



# Agency Technical Review <sup>g3</sup>

- ✓ ATR Report Dates
  - ✓ Sep 2013 Feasibility Scoping Report (107)
  - ✓ Feb 2014 Env Connectivity Analysis CHAP (informal)
  - ✓ Aug 2014 Response to Public Comments App (14)
  - ✓ Sep 2014-Apr 2015 11 Final Technical Appendices (49)
  - ✓ Apr 2015 Comprehensive Feasibility Report ATR (14)
- ✓ ATR Completion Statement Date: April 2015
- ✓ Comment Status:
  - ✓ All comments closed.
  - ✓ No unresolved issues.



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# Agency Technical Review Team

ATR Team Member	Title or Discipline	Organization
Marc Masnor P.E.	ATR Lead	SWF (RPEC Tulsa)
Douglas E. Lilly	Plan Formulation & Policy	SWF (RPEC Tulsa)
Brian Harper	Economics	IWR
David Williams Charles Little Scott Stonestreet	H&H Engineer (MMC) H&H Engineer Hydraulic & Sedimentation Engineer	SWT ERDC SPK
Christopher W. Behling	Geotechnical Engineer	MVP
Michael Scuderi Julie L. Millhollin Hannah Hadley	Biologist Environmental Engineer Environmental (Air Quality)	NWS MVR NWS
James G Neubauer Matthew M. Bray	Cost Engineer, MCX Cost Engineer	NWW MVP
Zach Gerich	Structural Engineer	SWF
Belinda S. Estabrook	Real Estate	SAS
Shane Callahan	Civil Design Engineer	MVM



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# Agency Technical Review Summary

- ✓ Comprehensive Review (Final)
  - ✓ 14 comments for the comprehensive review, incl “No Comment” comments.
- ✓ Prior Review of 11 Final Appendices (49)
  - ✓ Substantive comments for 3 Appendices.
    - ✓ Cost Engineering (26) All comments resolved.
    - ✓ H&H (4) All comments resolved.
    - ✓ Real Estate (10) All comments resolved.
  - ✓ Eight other apps reviewed and verified with no additional comments.



# Agency Technical Review Summary

- ✓ Efforts were noted for PED completion in H&H and Cost Engineering. District Concurs. No significant impact to plan selection, cost, or schedule. (PCX supported SMART planning)
- ✓ No additional ATR is advised for the decision document.
- ✓ Cost Engineering MCX Certification Date: March 2015.

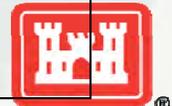


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# Items of Significance

- ✓ Significant Issues Remaining.
  - ✓ None

Postscript: The ECO PCX and the ATRT appreciate the coordination effort by the SPL team. The 17 product reviews conducted from Spring 2013 through Spring 2015 were facilitated by the PDT providing early scheduling, track change documents, comment tracking documents, and kickoff and status conference calls and webinars throughout the series of reviews.

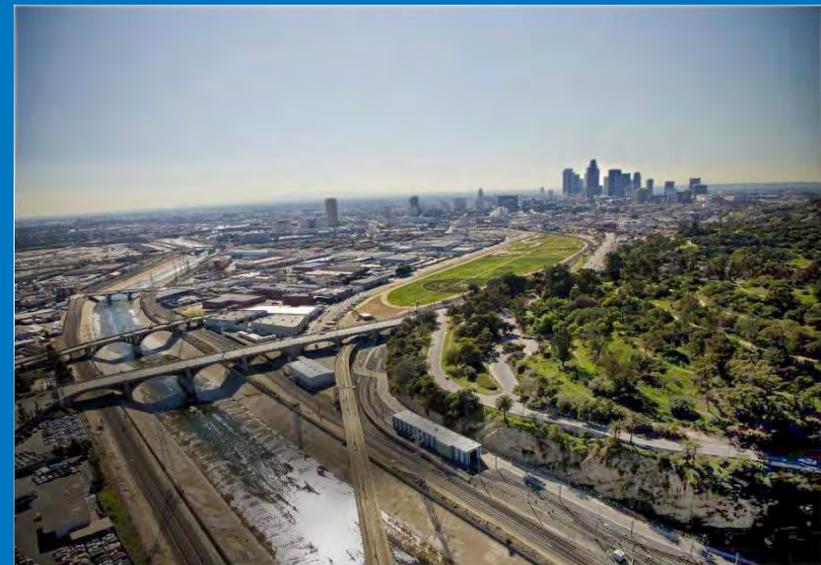


# Independent External Peer Review (IEPR) Los Angeles River Ecosystem Restoration Feasibility Study Los Angeles, California

Presented to the USACE CWRB  
on July 16, 2015

Karen Johnson-Young, PMP  
*Program Manager*

Rachel Sell  
*Project Manager*



# IEPR – Panel and Schedule

Los Angeles River Panel Members	Panel Discipline
Charles Vita, Ph.D., P.E., G.E. (Lead Panel Member)	Geotechnical Engineering
Kevin Coulton, P.E., CFM	Hydrologic and Hydraulic (H&H) Modeling
Bradford Wilcox, Ph.D.	Arid Region Riverine System Ecology
Christopher Behr	Socioeconomics

**Los Angeles River IEPR was conducted from September 2013 – September 2014**

- Panel reviewed the September 2013 version of the documents and reviewed the December 2013 public comments

# IEPR Bottom Line Up Front

The Panel agreed with the actions presented by the PDT to address the Final Panel Comments.

# IEPR – Results

Final IEPR Report submitted on  
November 8, 2013

## Results:

- 17 Final Panel Comments
  - 4 high significance
  - 11 medium
  - 2 low

Addendum to Final IEPR Report submitted  
on January 23, 2014

## Results:

- 1 additional Final Panel Comment\*
  - 1 high significance

*\*for a total of 18 Final Panel Comments*

Comments/Response Results documented on:

January 8, 2014

## Results:

- PDT Evaluator Responses
  - 12 concurs, 5 non-concurs
- Panel BackCheck Responses
  - 17 concurs, 0 non-concurs

September 2, 2014

## Results:

- PDT Evaluator Responses
  - 1 concur, 0 non-concur
- Panel BackCheck Responses
  - 1 concur, 0 non-concur

# IEPR – Notable Findings

1. Flood risk management had not been effectively integrated with the objectives of the ecological restoration project, yet was a primary purpose and function of the Los Angeles River. (High Significance)
2. The hydrologic analyses and hydraulic modeling were focused on design storms and flood event conditions to assess conveyance capacity, but did not consider the more frequent seasonal flows and low flows to understand how the restored river system could be sustained over time. (High Significance)
3. The interaction between the restored landscapes and the wider ecosystem had not been fully considered. (Medium Significance)
4. The reasonableness of key drivers in estimating recreational benefits had not been substantiated with local data. (Low Significance)
5. Stakeholder concerns noted in the public and agency comments suggested that the environmental benefits of the different restoration alternatives had not been fully captured and evaluated, particularly with regard to wildlife and hydrological connectivity. (High Significance)

# Los Angeles River Ecosystem Restoration Los Angeles, CA

## HQUSACE POLICY REVIEW CONCERNS

### Civil Works Review Board

Deborah Scerno  
Office of Water Project Review  
Planning and Policy Division  
Washington, DC – 16 July 2015



US Army Corps of Engineers  
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## HQUSACE Team Reviews:

- FSM was held in November 2007
- AFB was held in June 2013
- Draft report review September 2013
- Final Feasibility Report / EIS June 2015



# Policy Issues from AFB & Draft Report Reviews

- **Plan formulation story - succinctly telling the plan formulation history**
- Significance of the habitat/area
- Identification of NER plan
- Ability of the city to obtain and provide the land required for the plan
- Assumptions underlying identification and valuation of LERRD
- **Replacement site for the LATC**
- **The possibility of HTRW on project lands**
- **Portions of the project that are considered levees**
- **Project feature sustainability - including the use of treated wastewater**
- Section 106 responsibilities being pushed to PED
- Monitoring and Adaptive Management Plan
- Climate change considerations
- Cost estimates - were all possible costs included (e.g. all utilities, BMPs, etc.)
- Language on cost sharing "options"



## Significant Areas of Policy Concern:

- Plan Formulation Story
- Replacement site for the Los Angeles Trailer and Container Intermodal Facility (LATC)
- Possibility of HTRW on project lands
- Portions of the project are considered levees
- Project feature sustainability - including the use of treated wastewater



# Plan Formulation Story

- **CONCERN:** The materials provided for the Alternative Formulation Briefing were confusing as to how measures were developed, turned into alternatives and the cost effective plans identified.
- **REASON:** The report used a lot of “planning” terms like, measures and sub-measures in its discussion of the final alternatives, which could add to the confusion since “measures” and “sub-measure” are more typically combined or used to develop alternatives.
- **RESOLUTION:** The plan formulation history was re-written to be consistent in its use of terms.
- **RESOLUTION IMPACT:** Concern resolved.



# Replacement Site for the LATC

- **CONCERN:** Replacement site for the LATC was not identified during the course of the feasibility study.
- **REASON:** Absent identification of a replacement site, the feasibility of the recommended plan, the sufficiency of the substitute facility cost estimate, and the assessment of the recommended plan's environmental and socioeconomic impacts were called into question.
- **RESOLUTION:** SPL identified multiple representative replacement sites to demonstrate the feasibility of relocating the LATC, estimate the costs of a replacement site, and inform the assumptions underlying the analysis of the recommended plan's environmental and socioeconomic impacts. Although initially objecting to the recommended plan, Union Pacific later clarified that it is open to negotiating relocation of the LATC in the future.
- **RESOLUTION IMPACT:** Concern resolved.



# HTRW

- **CONCERN:** Adequate information was not provided to describe why HTRW could not be avoided for some of the alternatives and why some alternatives that avoided HTRW were eliminated from consideration. The report needed to clearly identify non-federal responsibilities.
- **REASON:** Per ER 1105-2-100, policy is to avoid expenditure of Civil Works funds for HTRW remediation by avoiding contaminated areas where practicable. For water resource studies, emphasis should be placed on early problem identification. Per ER 1165-2-132, the feasibility report will fully document the HTRW impact or potential.
- **RESOLUTION:** The changes were made to the report. For example, the report indicates that the Sponsor understands their responsibilities to provide lands cleaned to the appropriate level and are responsible for any contaminated groundwater encountered.
- **RESOLUTION IMPACT:** Concern is resolved.



# Levees

- **CONCERN:** The report stated that modifications will adhere to the levee safety rules, but it is not clear if there is actually a restoration action that can be done that adheres to the levee safety rules. Clearly indicate which if any measures in the final array of alternatives do not adhere to the levee safety rules.
- **REASON:** Complying with USACE policy concerning levees affects the determination of the completeness of the alternative.
- **RESOLUTION:** Better descriptions were added to the report concerning levee modifications and vegetation and the analyses that would be done during pre-construction engineering and design (PED).
- **RESOLUTION IMPACT:** The concern is resolved.



# Project Feature Sustainability

- **CONCERN:** There is concern about the sustainability of ecosystem restoration alternatives from large flood flows, underground seepage of contaminated groundwater, and urban runoff. In addition, the effect of waste water treatment plant effluent on the aquatic ecosystem was a concern because the levels of nutrients in waste water effluent are often deleterious to the aquatic ecosystem.
- **REASON:** As stated in ER 1165-2-501, “The intent of restoration is to partially or fully reestablish the attributes of a naturalistic, functioning, and self-regulating system.”
- **RESOLUTION:** The final report discusses how the system will stay functioning and be self-regulating given the above stresses.
- **RESOLUTION IMPACT:** Concern resolved.



# **HQUSACE POLICY COMPLIANCE REVIEW TEAM RECOMMENDATION**

**Approval to release the draft Chief's Report  
accompanied by the final Feasibility Report and EIS,  
for S&A Review.**



# Lessons Learned / After Action Report

**What was supposed to happen?**

**Why did it happen that way?**

**What did happen?**

**How will we improve next time?**

Cost & Schedule Growth

FCSA: \$7.9M & 5 yrs

Current: \$11.2M & 9 yrs

Adaptation to Changes in Civil Works Program

Restoration in an Urban Environment

Restoration in an Semi-arid Environment  
(Mediterranean)

Tremendous Public Involvement

Adopt SMART Planning principles

- 3 year funding plan
- Greater emphasis on change management and risk management
- Early alignment on policy issues

- Early vertical integration
- Manage risk/change via MEGA Project Governance

- Cost per acre is a major factor; future urban studies need to address real estate costs.
- Further consideration of full range of Value to the Nation benefits

- Availability of Local Native Plants: Will need to cultivate a supply of native seeds and plants.
- Education and expertise is limited for semi-arid ecosystem restoration

- Stakeholder oversight group during design and construction; Public Outreach & Volunteer Programs



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