Regional Pathogen Reduction Study

Scientific Studies Program
Fiscal Year 2023-2024
Central Santa Monica Bay, Lower San Gabriel River,
Rio Hondo, Upper Los Angeles River

Gateway Water Management Authority
Presented by: Bruce Hamamoto
The Study will collect samples from waterbodies within urbanized areas of participating WAs and analyze them for bacterial indicators, viruses, and human markers.

• Describe nexus to Stormwater and Urban Runoff capture and pollution reduction.
  • Study will facilitate improved targeting of pathogen sources and water to capture and/or treat
  • Study may reduce level of stormwater capture for bacteria compliance purposes through the identification of non-MS4 sources of risk thereby improving the protection of human health
  • Study will likely lead to partnering with various parties, such as wastewater agencies and homeless services agencies, to address human sources of pathogens.
Study Location

Measure W Regional Watershed Areas and WMP/EWMP Groups

Legend
- Measure W Regional Watershed Areas
- WMP/EWMP Groups Addressing Bacteria TMDLs
  - Ballona Creek
  - Beach Cities
  - East San Gabriel River
  - Los Angeles River Upper Reach 2
  - Lower Los Angeles River
  - Lower San Gabriel River
  - Malibu Creek
  - Marina Del Rey
- WMP/EWMP Groups with Bacteria as a Water Quality Priority
  - Alamitos Bay/Los Cerritos Channel
  - Dominguez Channel
  - Los Cerritos Channel

North Santa Monica Bay
Palo Verde Peninsula
Río Hondo/GGR Water Quality
Santa Clara River
Santa Monica Bay J2J3
Santa Monica Bay JG7
Upper Los Angeles River
Upper San Gabriel River

$5 B
• Gateway Water Management Authority will manage the project and select the Study Team, which is expected to consist of a team of local and national experts and academia.

• The study team will be selected based on qualifications to address the Work Plan developed by stakeholders, including study sponsors, interested stakeholders, an independent Technical Advisory Committee, and regulators.

• Members of the Study Team are expected to include engineers, scientists, and statisticians with experience in similar studies, such as the San Diego Surfer Health Study.
**Problem Statement:**

- Waterborne pathogens represent the most significant potential threat to the health of people recreating in and around the ocean and inland waters of Los Angeles County.

- Current standards are based on FIB (fecal indicator bacteria), which are used as proxies for pathogens.
  - FIB are ubiquitous; a vast network of structural control measures would need to be implemented to provide adequate control – projected cost over $5 billion.
  - USEPA and academics agree that human sources of pathogens pose the greatest risk.
  - Unless high-risk sources are targeted, water capture projects may receive large FIB loads, but miss the highest risk human sources.

(Continued)
Methodology:

- Study work plan will be developed through a stakeholder-led process with the input of technical experts, including academics.
  - Stakeholder engagement is at the forefront of the study to ensure that diverse viewpoints are incorporated.

- Study will collect samples from beaches and waterbodies. Samples will be analyzed for traditional bacterial indicators, viruses, and human markers during wet and dry weather.
  - Identify areas with highest risk to support a focus on those areas
  - Identify the sources causing the highest risk to focus on those sources

- Study will assess control measure effectiveness and efficiency
  - Identify the best BMPs to address the sources
  - Support planning, applying municipal funds, requests for SCWP funding, and actions by other parties

(Continued)
Regional collaboration efforts:
  • Initiated small group discussions and built a scope for a Safe, Clean Water Regional Program project
  • Presented Approach to E/WMP Groups
  • Discussed with proponents of watershed-specific studies
  • Discussed with Regional Board staff

Revised study three times to address concerns
  • Clearly focused on human pathogens
  • Clarified that study is a component of overall strategy to protect human health
  • Clarified that implementation continues during the study
  • Reduced first year cost of study
# Cost & Schedule

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
<th>Cost</th>
<th>Completion Date</th>
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<tbody>
<tr>
<td>Task 1</td>
<td>Stakeholder Process</td>
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<td>7/22 – 6/27</td>
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<td>Task 2</td>
<td>Health Risk Assessment</td>
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<td>Task 3</td>
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## Funding Request

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<tr>
<th>WASC</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 4</th>
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<td>$282,654.91</td>
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<td>LLAR</td>
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<td>USGR</td>
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<td>$349,813.71</td>
<td>$299,840.33</td>
<td>$326,052.14</td>
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<td>$2,638,112.47</td>
<td>$2,261,239.26</td>
<td>$2,458,915.06</td>
<td>$859,460.00</td>
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Highlighted Watershed Areas have already approved this study for funding.
• By developing a better understanding of pathogens present in the region’s watersheds, the relative risk to human health they pose, and the effectiveness of various control measures, new or adapted BMPs can be established that improve water quality and reduce human health risks at our beaches and inland waterbodies.

• Short-term: results could be used to protect people from health risks that aren’t currently known.

• Long-term: results will enable the targeted placement of BMPs in locations where they can maximize the prevention or treatment of key sources of human pathogens.
Questions?
Kinneloa Yard Stormwater Capture Project

Funding Program - Infrastructure Program
Fiscal Year 2023-2024
Rio Hondo Watershed

Project Lead: City of Pasadena
Presenter: Merrill Taylor (Craftwater Engineering)
Previously Awarded TRP? - No
Project Overview

Site restoration and regional and onsite stormwater capture and infiltration diversion facility located beneath open space at Kinneloa Yard

- **Primary Objective:** Improve WQ within Eaton Wash & transform the contaminated zone into an accessible park
- **Secondary Objectives:** Create onsite LID & public education
- **Project Status:** SCW funding request for Design
- **Total Funding Requested:** $2,292,762
LA County Watershed: 8,659 Acres (84.4%)

City of Pasadena Watershed: 8,659 Acres (15.6%)
Capture area jurisdiction:
- City of Pasadena
- LA County

Watershed Capture Area:
- 10,254 acres

<table>
<thead>
<tr>
<th>Land-use</th>
<th>Area (acres)</th>
<th>% of Impervious</th>
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</thead>
<tbody>
<tr>
<td>Single Family Residential</td>
<td>232.9</td>
<td>46.4%</td>
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<tr>
<td>Commercial</td>
<td>55.2</td>
<td>11%</td>
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<tr>
<td>Institutional</td>
<td>17.6</td>
<td>3.5%</td>
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<tr>
<td>Industrial</td>
<td>84.3</td>
<td>16.8%</td>
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<tr>
<td>Secondary Roads &amp; Alleys</td>
<td>111.9</td>
<td>22.3%</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>502</strong></td>
<td><strong>100%</strong></td>
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Project Background

• Why was the Project Location selected?
  • Pasadena Storm Water Master Plan, close to Eaton Wash

• How was the Project developed?
  • Site remediation desire, nature-based solution

• Which regional water management plan includes the proposed project?
  • IRWMP

• Description of benefits to municipality/municipalities
  • Site remediation, new park facility, treat 85\(^{th}\) percentile storm

• Description of benefits to Disadvantaged Communities
  • Not applicable
Project Benefits

- **Water Quality** improvement in the Eaton Wash Channel by treating stormwater and urban runoff
- **Nature-Based** creation of wetlands and naturalized stream surrounded by native vegetations
- **Flood Management** storing 6 acre-feet of stormwater during storm events
- **Park Recreational Enhancements** replacing undeveloped yard with a wetland park
- **Access to Waterways** walk and sit near Eaton Wash and naturalize stream
- **Reduced Heat Island** native vegetation and 20 new shade trees throughout the park
• Who are the implementation partners already identified?
  • City of Pasadena, Ability First Pasadena

• What communities or groups have expressed support for the project?
  • Boys and Girls Club of Pasadena

• Have you received a letter of concurrence from the municipality (if needed)
  • Yes. Led by the City of Pasadena

• Have you received a letter of concurrence from the Flood Control District (if needed)
  • Yes

• Have you yet engaged the appropriate vector control district about the project concept?
  • Yes
Project Details - Site Plan

Subsurface Storage

Urban Wetland

Naturalized Stream
**Project Details – Schematic Diagram**

<table>
<thead>
<tr>
<th>Diversion Rate</th>
<th>Storage Capacity</th>
<th>24-Hour Capacity</th>
<th>Primary Pollutant Reduction (Zinc)</th>
<th>Secondary Pollutant Reduction (Copper)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 cfs</td>
<td>6.0 ac-ft (2 MG)</td>
<td>17.42 ac-ft</td>
<td>92.7% (135.7 lbs)</td>
<td>89.1% (33.6 lbs)</td>
</tr>
</tbody>
</table>

**Eaton Wash** (Upstream) - Eaton Wash (Downstream)
Existing Conditions

- Infiltration Rate: 0 in/hr
- Approximate Depth to Groundwater: > 50 ft BGS
- Current Use: None
- Owner: City of Pasadena

*Feasibility, Stormwater Capture review done
*Alternative footprint sizes and diversion rates examined
## Cost & Schedule

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<th>Completion Date</th>
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</thead>
<tbody>
<tr>
<td>Planning</td>
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<tr>
<td>Design</td>
<td>Public Outreach during Design</td>
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<td>Design</td>
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<td>Design</td>
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<tr>
<td>Construction</td>
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<td>Construction</td>
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<td>Construction</td>
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<td>Construction</td>
<td>Construction Bid/Award, Admin., Design Support</td>
<td>$1,367,292</td>
<td>12/2026</td>
</tr>
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</table>

### Annualized Costs

- **Maintenance Cost:** $250,000
- **Operation Cost:** $50,000
- **Monitoring Cost:** $25,000
- **Project Life Span:** 50

### Life-Cycle Costs

- **Life-Cycle Cost for Project:** $25,400,994
- **Annualized Cost for Project:** $1,058,644
# Funding Request

<table>
<thead>
<tr>
<th>Year</th>
<th>SCW Funding Requested</th>
<th>Phase</th>
<th>Efforts during Phase and Year</th>
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<tbody>
<tr>
<td>1</td>
<td>$2,292,762</td>
<td>Design</td>
<td>Environmental Planning (CEQA) and Permitting, Community Outreach, Agency Project Management, and Professional Design Services (30/60/90/100)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$2,292,762</td>
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</tr>
</tbody>
</table>

- **Cost Share = $0**
- **Future funding requests**
  - $15,210,214 for Construction – Year 2 and beyond
Score as confirmed by the Scoring Committee

The Scoring Committee confirmed this score on 9 Nov 2022.

- Water Quality: 70 pts
- Water Supply: 50 pts
- Community Investment Benefits: 10 pts
- Nature Based Solutions: 10 pts
- Leveraged Funds and Community Support: 0 pts
Water Quality & Water Supply Benefits

- **Primary Mechanisms**
  - Runoff/pollutant capture
  - Filtration
  - Stormwater use and release after treatment

- **Wet weather project**

- Tributary Area: **10,254 acres**

- 24 Hours Capacity: **17.42 ac-ft**

- Pollutant Load Reduction
  - Primary Pollutant (Zinc) – **92.7% (135.7 lbs-annual avg)**
  - Secondary Pollutant (Copper) – **89.1% (33.6 lbs-annual avg)**

- Average Annual Capture for Water supply: **0 ac-ft**

- Water Supply Use:
  - N/A

- Water Supply Cost Effectiveness: **N/A**

The Scoring Committee confirmed this score on 9 Nov 2022.
Community Investment Benefits and Nature Based Solutions

• Community Investment Benefits
  • Improve flood management
  • Creation of parks and wetlands
  • Improve public access to waterways
  • Enhanced recreational opportunities
  • Reduced heat island effect and increased shade
  • Increase the number of trees and vegetation

• Nature Based Solutions
  • Project creates an urban wetland and a naturalized stream to mimic natural processes
  • Post construction plans include additional native trees, shrubs, decomposed granite, native compacted soil, and grasses

The Scoring Committee confirmed this score on 9 Nov 2022.
Leveraging Funds and Community Support

• Leveraging Funds
  • N/A

• Community Support
  • City of Pasadena to continue to lead an active community outreach effort
  • Strong, local, community-Based Support
    • Boys & Girls Club of Pasadena

The Scoring Committee confirmed this score on 9 Nov 2022
Questions?

Merrill Taylor, PE