Assessment and Treatment of Contaminants of Emerging Concern

Scientific Studies Program

Fiscal Year 2026-2027

North Santa Monica Bay, Upper Los Angeles River, and Lower Los Angeles River

Stillwater Sciences

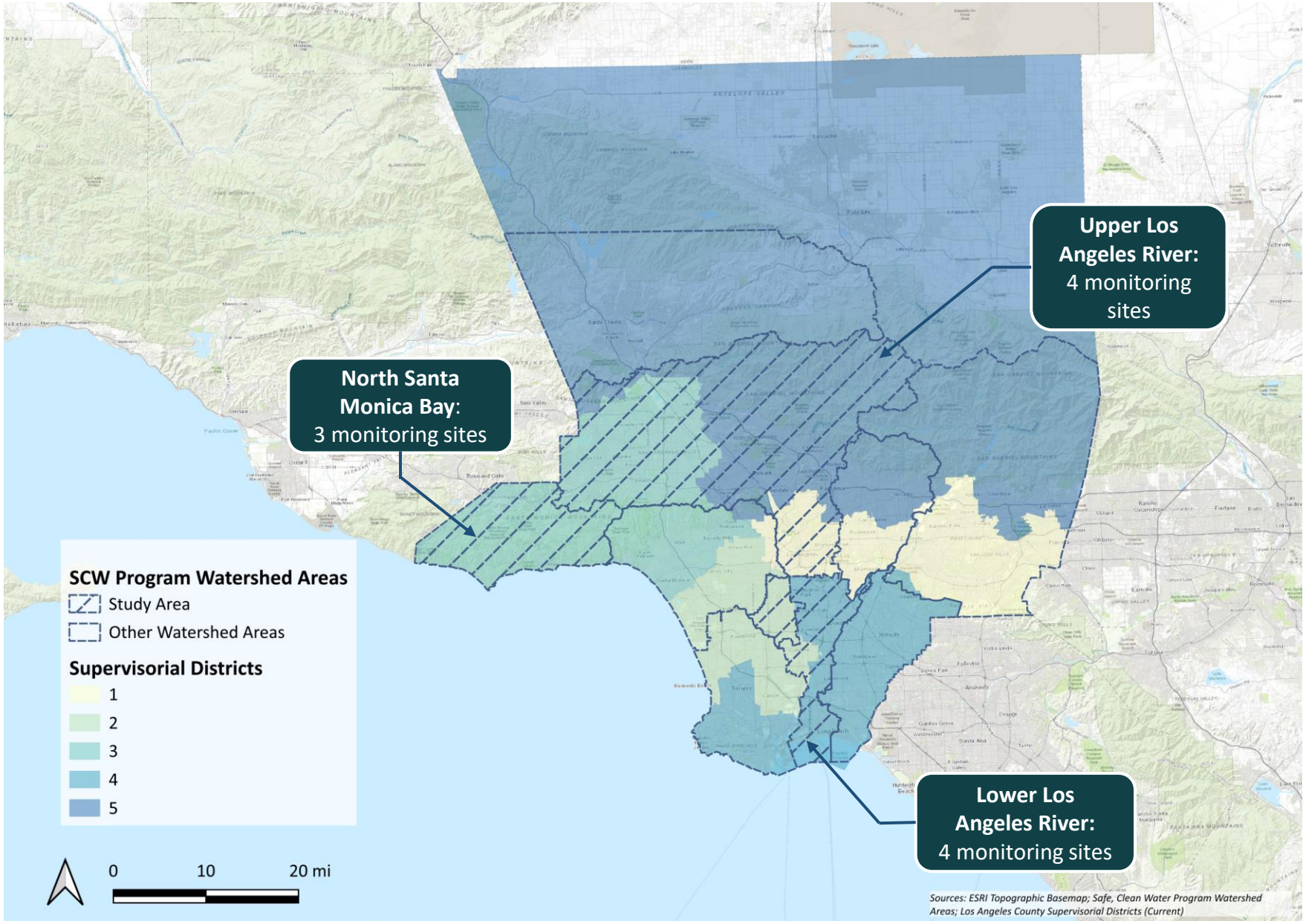
Nate Butler, Rowan Roderick-Jones

Study Overview

An assessment of contaminants of emerging concern (CECs) and recommendations for addressing risks and improving their treatment by stormwater and dry-weather projects.

- Data on CEC concentrations in stormwater and dry-weather runoff can help the SCW Program adapt to the latest science and effectively manage CEC water quality risks, to humans and other biota.
- Three-year monitoring campaign in three watershed areas measuring PFAS/PFOS, bifenthrin/fipronil, and 6PPD-q CECs

Study Location

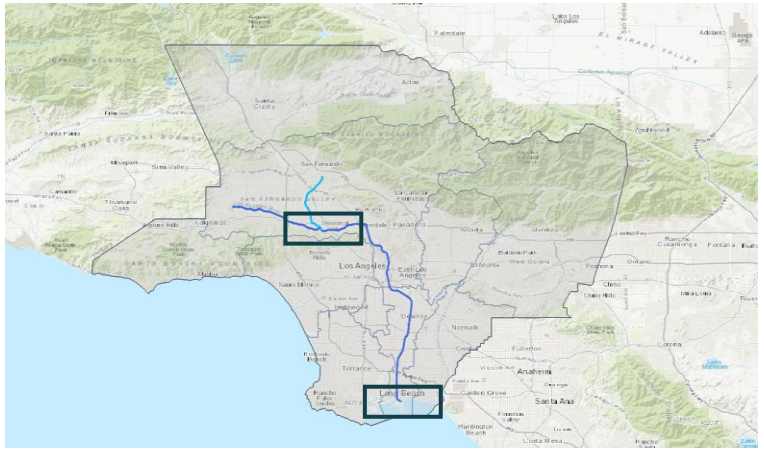


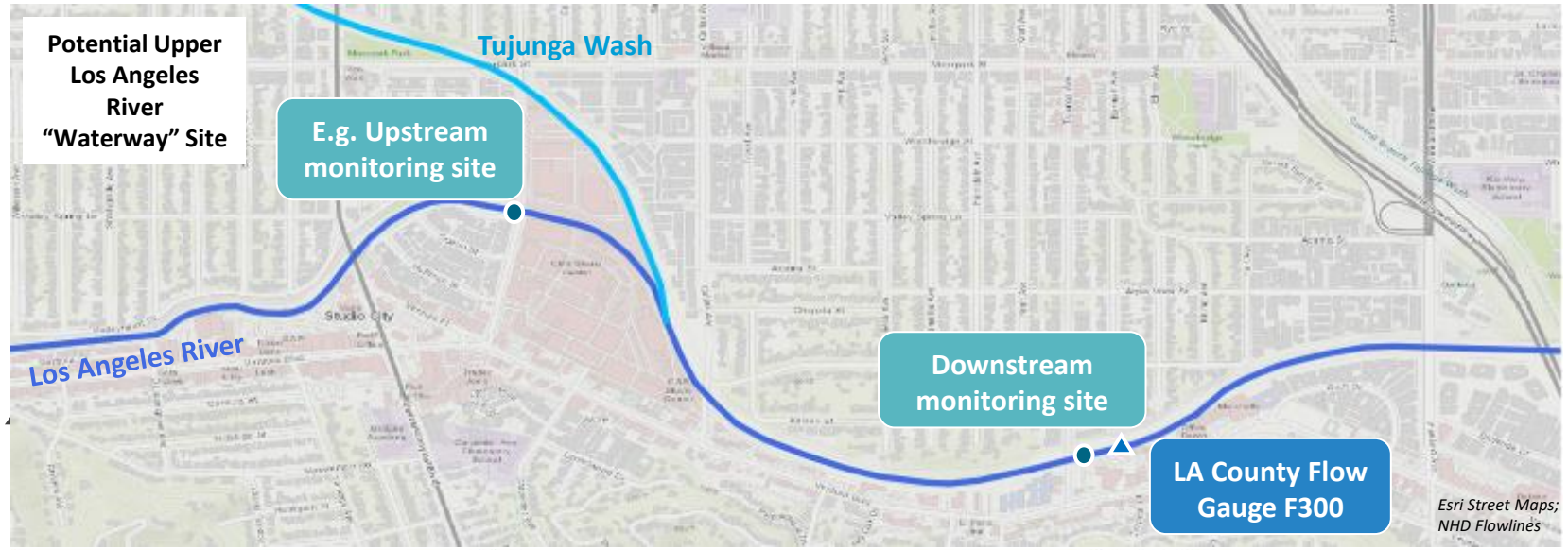
Study Location: Monitoring Site Examples

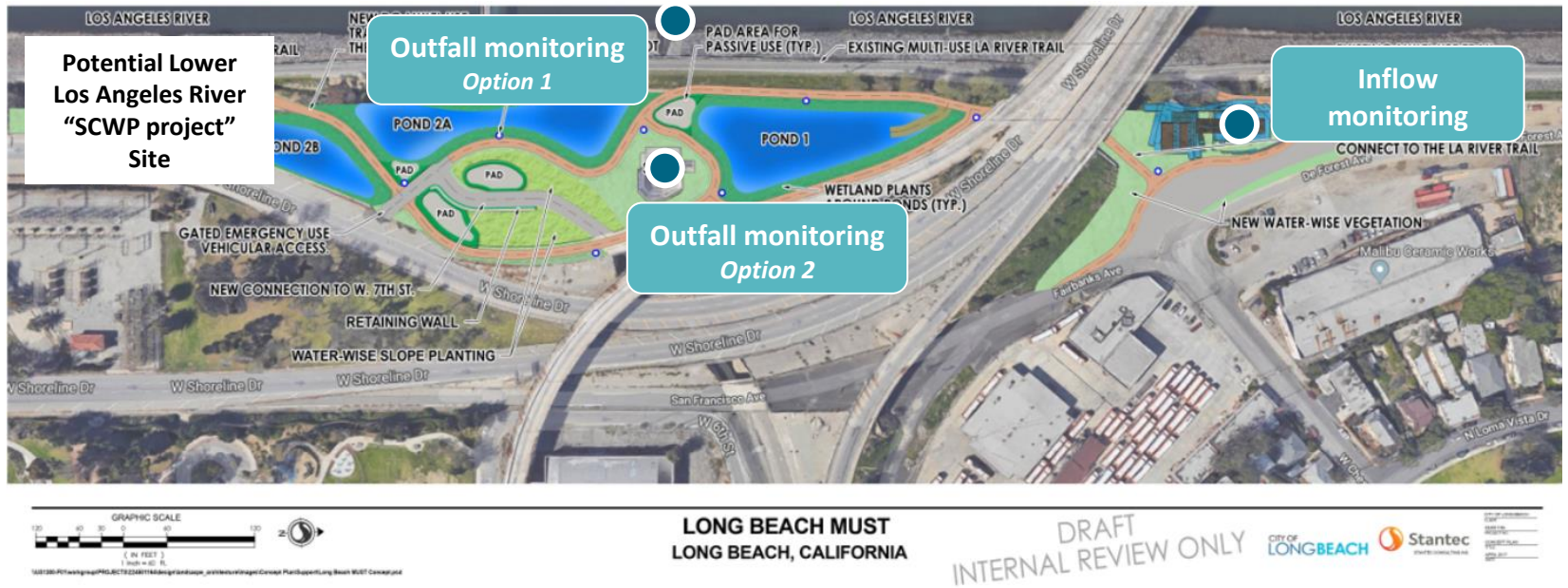
CEC monitoring will occur at "waterway" sites (top right) and SCW Program project sites (bottom right).

CEC monitoring sites will be selected in the first phase of the project.

At least one of each type (waterway or SCW Program project) per watershed area will be selected.







Source: Adapted from Long Beach - Municipal Urban Stormwater Treatment (LB MUST) – Phase 1 Safe, Clean Water Program, Feasibility Study Report Application (2019)

Study Team

Lead entity: Stillwater Sciences

Stillwater Sciences specializes in science-based approaches to environmental issues. Stillwater partners with local governmental agencies, non-profits, and private industry to assist with watershed management issues.

Key Staff:

- Nate Butler, PhD – Environmental Engineer
- Rowan Roderick-Jones, PE, CSci ENVSP – Senior Civil Engineer
- Sam Ward, PE – Environmental Engineer

Study Details

Problem Statement:

- CECs pose a risk to human health, ecosystems, and biodiversity; initial monitoring efforts have identified them as a risk in Los Angeles County, but with very limited data on CECs in stormwater and dry-weather runoff.

Objectives & Outcomes:

- Quantify contaminants of emerging concern (CECs): PFAS (including PFOS), bifenthrin, fipronil, and 6PPD-q.
- Identify priority areas for SCW Program projects to incorporate strategies that address CECs to protect human health and regional biodiversity.
- Evaluate SCW Program project effectiveness in treating CECs listed above and their potential for treating other CECs.
- Collect a CEC dataset to support future modeling under changing watershed conditions and to create a regional knowledge asset.

Study Details: Methods

Task 1 – Literature Review
CEC best management practices (BMPs) & removal efficiencies

Task 2 – Study Plan Development
Identify monitoring sites, specify study methodology

Task 3 – Data Collection and Laboratory Analysis
Monthly CEC data collection for three years at three to four sites per watershed area

Task 4 – Water Quality Data Analysis
Evaluate CEC trends, compare with environmental screening levels, calculate treatment efficiencies

Task 5 – Reporting, Synthesis, and Recommendations
Synthesis of implications for water quality management, recommendations for CEC treatment in stormwater and dry-weather flows

Outcome: Identify and recommend CEC best management practices that could be adaptively incorporated into current and future SCW Program projects.

Sampling Highlights

3 Classes of CECs

- 6PPD-quinone
- PFOS and PFAS
- fipronil and bifenthrin

3 Watersheds

- 11 sites total across all watersheds

Monthly sampling for three water years

- Covers stormwater and dry-weather flows

1,008 CEC samples collected over the study period

Lab analysis estimated at roughly $1,000/sample

Study Details: Similar Studies

Similar Study Title	Description of Relevancy	Application of Similar Study Findings in Proposed Study
Microplastics in LA County Stormwater ***(UC Riverside, SCW Scientific Study)***	Microplastics sampling may include tire particles that contribute to 6PPD-q concentrations.	• Inform monitoring site selection • Supplement study data for CEC analysis
Impact of wastewater reuse on contaminants of emerging concern in an effluent-dominated river ***(U. of Portland, Colorado School of Mines, SCCWRP)***	Analysis and modeling of some CEC concentrations in the Los Angeles River watershed.	• Inform monitoring site selection
Constituents of Emerging Concern (CECs) Statewide Pilot Study Monitoring Plan ***(CA State Water Board)***	Statewide approach to monitoring CECs.	• Leverage CEC monitoring approaches and findings to develop study plans and inform analysis.
Safe Clean Water Program project monitoring studies ***(SCW Infrastructure Projects)***	Consider previously funded SCWP water quality monitoring requirements to avoid duplicative efforts.	• Inform monitoring site selection • Correlate other data gathered at SCWP sites with CEC study findings.

Cost & Schedule

Phase	Description	Cost	Start – Completion Dates
Pre-Study and Work Planning	Literature review, study plan development	$210,000	3/1/2027 – 9/30/2027
Study Implementation	Data collection and laboratory analysis, water quality data analysis	$1,084,000	10/1/2027 – 9/30/2030
Post-Study	Reporting, synthesis, recommendations	$375,000	10/1/2030-6/30/2031
TOTAL		**$1,669,000**	

Funding Request

WASC	Year 1	Year 2	Year 3	Year 4	Year 5	Total
LLAR	$56,000	$110,000	$128,000	$128,000	$157,000	$579,000
NSMB	$56,000	$93,000	$105,333	$105,333	$151,334	$511,000
ULAR	$56,000	$110,000	$128,000	$128,000	$157,000	$579,000
TOTAL	**$168,000**	**$313,000**	**$361,333**	**$361,333**	**$465,334**	**$1,669,000**

Summary of Benefits

Synthesis of the current research on CECs in stormwater in urban watersheds and specifically L.A. County.

Collection of local data to understand where CECs pose risks

Understanding how BMPs perform so that they can be applied most effectively

Development of strategies to inform future SCW investments and reduce risks

Questions?

Rowan Roderick-Jones, PE

Nate Butler, PhD