MacArthur Lake Stormwater Capture Project

# Final Environmental Impact Report


*Prepared for*

**City of Los Angeles**

*Prepared by*

CDM Smith

State Clearinghouse No. 2022040153 | **August 2025**

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# Chapter F1
# Introduction

## F1.1 Introduction

In accordance with Section 15088 of the California Environmental Quality Act (CEQA) Guidelines, the CEQA Lead Agency must evaluate comments received on the Draft EIR and prepare written responses; in accordance with Section 15090 of the CEQA Guidelines; the Lead Agency must consider the information contained in the Final EIR before approving a project. Pursuant to CEQA Guidelines Section 15132, a Final EIR consists of the Draft EIR or a revision of the draft; comments and recommendations received on the Draft EIR either verbatim or in summary; a list of persons, organizations, and public agencies commenting on the Draft EIR; the responses of the Lead Agency to significant environmental points raised in the review and consultation process; and any other information added by the Lead Agency.

This Final EIR constitutes the second part of the EIR for the proposed MacArthur Lake Stormwater Capture Project (proposed project) and is intended to be a companion to the Draft EIR. The Draft EIR and associated appendices constitute the first part of the EIR and is incorporated by reference and bound separately. The Final EIR is the second component, containing Responses to Comments and Revisions, Clarifications, and Corrections to the Draft EIR. This document constitutes the second component of the EIR.

## F1.2 Organization of the Final EIR

This Final EIR is organized into three main chapters as follows:

- Chapter F1 – Introduction: This chapter provides an introduction to the Final EIR, presents the contents of this Final EIR, summarizes the NOP scoping period and Draft EIR public review process, provides an overview of the Final EIR, and provides a summary of the proposed project and a summary of the environmental impacts.
- Chapter F2 – Responses to Comments: This chapter presents responses to the comments received on the Draft EIR. A list of the parties that commented on the Draft EIR is also included. This chapter includes copies of the public comment letters received on the Draft EIR. Numbered responses are provided for each of the written comments.
- Chapter F3 – Revisions, Clarifications, and Corrections to the Draft EIR: This chapter includes revisions, clarifications, and corrections that have been made to the Draft EIR as part of the Final EIR process.

## F1.3 Public Engagement

### F1.3.1 CEQA Initial Study and Scoping

A Notice of Preparation (NOP)/Initial Study for the project was circulated for a 30-day public review period from April 7, 2022 to May 9, 2022. The NOP was filed with the offices of the City of Los Angeles

City Clerk and the Los Angeles County Clerk. The NOP was posted in both English and Spanish to the State Clearinghouse and to the LASAN website. The NOP was sent to public agencies, Native American tribes, and public and private stakeholders. In addition, a bilingual public notice, in English and Spanish, was mailed to property owners and occupants within the project site vicinity. The NOP was also made available for public viewing at the following locations:

- MacArthur Park Community Center at 2230 W. 6th Street, Los Angeles, California 90057
- Felipe De Neve Branch Library at 2820 W. 6th Street, Los Angeles, California 90057
- Public Works Building at 1149 S. Broadway, 9th Floor, Los Angeles, California 90015

A total of 5 comment letters were submitted to LASAN during the NOP scoping period, including letters from the California Department of Transportation (Caltrans), the California Department of Fish and Wildlife (CDFW), the Los Angeles Metropolitan Transportation Authority (Metro), the Native American Heritage Commission (NAHC), and the Southern California Air Quality Management District (SCAQMD).

Two virtual public scoping meetings were held on April 26, 2022, to discuss the NOP, one in English and one in Spanish. Information regarding the public scoping meetings was included in the notices referenced above. In addition, a notice of the two public scoping meetings was published in the Los Angeles Times and La Opinión newspapers and was posted in various locations within MacArthur Park, at the MacArthur Park Community Center, and at other nearby locations such as the Metro Westlake/MacArthur Park Station. Both the English and Spanish versions of the public scoping meeting presentations were posted to LASAN's website. A total of seven members of the public attended the two public scoping meetings, and a total of five questions were raised during the meetings. Subjects of the substantive questions included how traffic and nearby schools would be affected by construction of the project, whether birds would be removed from the park, whether there would be impacts to historic resources in the park, and whether the City of Los Angeles Department of City Planning, Office of Historic Resources would be consulted during preparation of the EIR in light of the fact that MacArthur Park is a designated City Historic-Cultural Monument.

### F1.3.2 Non-CEQA Community Engagement

During the project development process, LASAN engaged Mujeres de la Tierra to conduct additional outreach and community engagement for the project separate from the CEQA process. LASAN hosted two virtual CEQA 101 Workshops on April 19, 2022, one in English and one in Spanish. The purpose of these workshops was to provide general information to attendees about the purpose of CEQA, the steps in the CEQA process, and opportunities for attendees to engage during the process. The project was not the subject of the CEQA 101 Workshops, and LASAN specifically communicated that the meetings were not being held pursuant to CEQA.

An Earth Day community event (Celebrando a la Madre Tierra) was held in MacArthur Park on April 23, 2022. LASAN and the project consultant team had tables at the event, one of which held information, in both English and Spanish, about the CEQA process. The purpose of the table at the event was to provide general information about the CEQA process and to inform community members of the opportunity to comment on the NOP. Additionally, on April 13, 2024, prior to the release of the Draft EIR, LASAN hosted a second community event in MacArthur Park. As with the Earth Day community

event, the consultant team had tables at the event and provided posters outlining the CEQA process and a timeline showing where the project was within the CEQA process.

Mujeres de la Tierra conducted additional community engagement throughout the project development process, including listening campaigns, surveys, park assessments, and presentations. Fact sheets in English and Spanish were made accessible to community members at school presentations and park events and via email correspondence. Mujeres de la Tierra staff connected with schools and businesses in the immediate project area. They gave presentations to local schools and community groups, conducted surveys, and staged two telenovelas at the park.

## F1.4 Draft EIR

On May 23, 2024, LASAN published a Draft EIR for the MacArthur Lake Stormwater Capture Project. In accordance with CEQA, the Draft EIR was circulated for public review for a minimum of 45 days, with the review period closing on July 8, 2024. Per State CEQA Guidelines Section 15087, public notice of the availability of the Draft EIR was published in the Los Angeles Times and La Opinión, a Spanish-language newspaper, and provided to the Los Angeles County Clerk. In addition, public notice was mailed to public agencies, Native American tribes, property owners and occupants within the project site vicinity, and to all individuals requesting notice of the proposed project. The Draft EIR was submitted to the State Clearinghouse, posted on LASAN's website (http://www.lacitysan.org/ceqa), and made available at the following locations:

- MacArthur Park Community Center at 2230 W. 6th Street, Los Angeles, California 90057
- Felipe De Neve Branch Library at 2820 W. 6th Street, Los Angeles, California 90057
- Public Works Building at 1149 S. Broadway, 9th Floor, Los Angeles, California 90015

A dual-language English and Spanish virtual (online) public meeting was held during the Draft EIR comment period on June 18, 2024, providing an additional avenue for public involvement during the Draft EIR review and comment period. Mass emails (i.e., eBlasts) were sent out prior to, and after, the public meeting to community members and to organizations/businesses. During the meeting, four comments and questions were submitted during the question and answer portion of the meeting by members of the community, two of which raised substantive issues. One question asked whether additional presentations would be held and one asked if there would be any impact to the playground near the corner of 7th Street and Park View Street. Meeting organizers responded to both questions during the meeting. The other two comments were general acknowledgements and did not raise substantive issues that required a response. During the meeting, two questions were submitted by the LASAN community engagement liaison, Mujeres de la Tierra, who was under contract to LASAN at the time of the meeting. These questions were posted to solicit additional information from the presenters. The English and Spanish versions of the Draft EIR meeting presentation were posted to LASAN's website.

## F1.5 Final EIR

This Final EIR was prepared following the Draft EIR comment period. In accordance with State CEQA Guidelines Section 15088, LASAN prepared responses to comments on environmental issues that were received on the Draft EIR. As required by the State CEQA Guidelines, the focus of the responses to comments is on "the disposition of significant environmental issues raised." Detailed responses are not

provided to comments on the merits of the MacArthur Lake Stormwater Capture Project or on other topics that do not relate to significant environmental issues. As discussed below, all comments received on the Draft EIR will be forwarded, as part of this Final EIR, to the decision-makers for their consideration prior to taking any action on the proposed MacArthur Lake Stormwater Capture Project.

This document presents the comments received during the public review period for the Draft EIR and provides written responses to those comments. A total of three comment letters were received during the public review period. A list of the agencies, organizations, and individuals that submitted comments on the Draft EIR is provided in Chapter F2 of this document. Copies of all comment letters received are also included in Chapter F2. In addition, Chapter F2 presents, on a letter-by-letter basis, each comment and their corresponding response. Chapter F3 of this document provides corrections and clarifications to information presented in the Draft EIR.

Together, the Draft EIR, the list of commenters, the comments and responses to comments, and the revisions, clarifications, and corrections to the Draft EIR constitute the Final EIR. Pursuant to CEQA, the Final EIR is being prepared not less than 10 days prior to certification of the Final EIR. The Final EIR will be presented to the decision-makers for their use in considering the proposed MacArthur Lake Stormwater Capture Project. Decision-makers will decide whether to certify the Final EIR pursuant to Public Resources Code Section 21082.1(c) prior to making any decision whether to approve the MacArthur Lake Stormwater Capture Project.

# F1.6 Project Summary

## F1.6.1 Project Location and Setting

The proposed project is a stormwater quality improvement project proposed by LASAN and funded by the Los Angeles County Safe Clean Water Program (SCWP). As indicated in Section 2.2 of the Draft EIR, the proposed project would be located at MacArthur Park and on adjacent streets south of the park. MacArthur Park is a public park located at 2230 W. 6th Street in the Westlake neighborhood of central Los Angeles, approximately 1 mile northwest of downtown. The primary feature of the park is MacArthur Lake, which is located in the southern portion of the park and is a key component of the water quality improvements associated with the proposed project. The lake encompasses approximately 8 acres and has a concrete and asphalt liner. Other features in MacArthur Park include an amphitheater, bandshell, soccer field, playground, and a recreational center, all of which are located in the northern half of the park, as well as mature trees, open turf area, walkways, and public art throughout the park. A playground was recently constructed and opened in early 2024 in the southwest corner of the park adjacent to the proposed project's water feature.

Park users typically include families, adults of all ages, vendors, and unhoused populations. The park is often used as a community gathering place, a venue to exercise and play sports/games, and a spot to take lunch breaks. Other common activities in and near the park include families with children using the playground equipment, vendors selling food and beverages, religious groups holding gatherings, and recreationists engaging in bird watching. The California Department of Fish and Wildlife (CDFW) stocks MacArthur Lake with fish. In addition to fishing being a recreational use of MacArthur Lake, the City of Los Angeles Department of Recreation and Parks recently expressed an interest in possibly reestablishing non-motorized boating as an additional recreational use at the lake, as has occurred in

the past. There are no definitive plans at this time for such a future potential recreational use at the lake. It is not a part of the currently proposed project, which focuses on stormwater quality improvements and would utilize the lake to store treated wet weather stormwater flows and dry weather flows.[1]

## F1.6.2 Project Description

A detailed description of the proposed project is provided in Chapter 2 in the Draft EIR; this section is a summary description. The proposed project would divert a portion of wet weather stormwater flows as well as dry weather flows from the existing underground storm drain system, treat the water, and discharge it into MacArthur Lake for storage or return it to the storm drain system. Some of the water stored in the lake would subsequently be discharged to the sanitary sewer.

The proposed project includes the following elements:

- Stormwater flow diversion structure
- Pretreatment unit
- New pump station
- Stormwater treatment unit
- Water feature
- New conveyance pipelines

The project would divert stormwater and dry weather flows from a 200-acre drainage area through a stormwater diversion structure that would be installed at an existing underground stormwater maintenance hole located in Lake Street south of the park. The pretreatment unit and a pump station would also be located in Lake Street. The pump station would pump stormwater and dry weather flows from the pretreatment unit to an underground stormwater treatment unit located along the southern edge of the park, where it would receive additional treatment and/or be diverted into MacArthur Lake or returned to the storm drain system through a new pipeline in Grand View Street. Underground pipelines would be located in the park and in Lake Street, Grand View Street, and 7th Street. Some of the pipelines would convey stormwater and dry weather flows from the existing storm drain system to the project components, including to the lake, or back to the storm drain downstream of the diversion structure. One of the pipelines would convey water from the lake to the sanitary sewer system. A new, lined water feature would be installed near the southwest corner of the park. A second pump station located in an existing pump house would recirculate water from the lake and through the water feature.

The main purpose of the MacArthur Lake Stormwater Capture Project is to improve water quality in the Ballona Creek watershed in an effort to comply with regulatory standards and to provide tangible

[1] In the event such a recreational use of MacArthur Lake (i.e., non-motorized boating) is pursued in the future, it would be a separate project with its own consideration under CEQA based on project-specific information developed at that time. Given that the timing, nature, and funding related to reestablishment of boating have not been determined, boating was not considered to be a probable future project as defined in State CEQA Guidelines Section 15130(b)(1)(A); therefore, boating was not included in the cumulative impact analysis in this EIR.

community benefits, such as partially offsetting potable water use and providing enhancements to the park. The specific objectives of the proposed project are to:

- Incrementally improve the water quality in the Ballona Creek Watershed in a manner consistent with the Ballona Creek Watershed Management Program's (WMP) customized compliance pathway for Los Angeles County's Municipal Separate Storm Sewer System (MS4) Permit.
- Incrementally improve the water quality in the Ballona Creek Watershed via regional best management practices (BMPs) as defined in the Ballona Creek WMP and as measured against the Total Maximum Daily Load (TMDL) for metals and trash.
- Reduce the use of potable water used to refill MacArthur Lake to compensate for evaporation losses.
- Provide community investment benefits and nature-based solutions as required by the SCWP, including park space enhancement, public health, and educational opportunities.
- Minimize disruption of existing social and commercial activity at MacArthur Park, on sidewalks, at transit stops, and at local businesses and gathering places during both construction and operations to the extent feasible.

The proposed Project would reduce the amount of stormwater and associated pollutant loads that enter Ballona Creek, the Ballona Creek wetlands, and, ultimately, Santa Monica Bay. Specifically, the proposed project would remove approximately 93 percent of the zinc from the stormwater that would be diverted and returned to the storm drain system, approximately 96 percent of the sediment, and almost 100 percent of the trash.

Currently, an automated system using a floating water level sensor is used to replenish the lake with potable water when lake levels drop as a result of evaporation. The diversion of stormwater from the storm drain system into the lake would reduce the amount of potable water that is used to maintain the lake level (i.e., lake refill). Additionally, the proposed project would enhance the park by creating a water feature and providing educational opportunities, such as interpretive/educational signage about stormwater management.

## F1.7 Summary of Environmental Impacts

The proposed project, as described in this Final EIR, would result in significant and unavoidable impacts related to construction equipment noise and human annoyance from vibration. The project's contribution to cumulative impacts related to these topics would be cumulatively considerable. Impacts to the following resources would be less than significant with mitigation: biological resources related to migratory birds, cultural resources – archeological and paleontological, and vibration related to structural damage. The proposed project includes seven mitigation measures to reduce environmental impacts to the greatest extent feasible. In addition, four project commitments were incorporated during the environmental review process to monitor lake water quality and be responsive to Native American tribal concerns.

Regarding all other environmental resources, the EIR determined that there would be no impacts or impacts would be less than significant for the following: aesthetics, agricultural and forestry resources, air quality, cultural resources – historical, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use planning, mineral resources, population and housing, public services, recreation, transportation, utilities and service systems, and wildfire.

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# Chapter F2

# Responses to Comments

In accordance with State CEQA Guidelines Section 15132, this chapter includes comments and recommendations received on the Draft EIR either verbatim or in summary; a list of persons, organizations, and public agencies commenting on the Draft EIR; and the responses of the Lead Agency to significant environmental points raised in the review and consultation process. The format for the responses to the Draft EIR comments presents, on a letter-by-letter basis, each comment letter, which is then followed immediately by responses to the comments contained in that letter. Per Section 15088(c) of the State CEQA Guidelines, the focus of the responses to comments is on "the disposition of significant environmental issues raised." Moreover, per the Guidelines, the level of detail contained in the responses corresponds to the level of detail provided in the comment.

## F2.1 List of Commenters

The following agencies, organizations, and individuals provided written comments on the Draft EIR:

Letter No. 1 State of California Department of Transportation (Caltrans), District 7 (July 8, 2024)

Letter No. 2 Los Angeles County Metropolitan Transportation Authority (Metro) (July 8, 2024)

Letter No. 3 City of Los Angeles Department of Recreation and Parks (RAP) (July 16, 2024)

## F2.2 Responses to Comments

The following provides individual responses to written comments received on the Draft EIR, with a copy of each comment letter bracketed to identify individual comments raised in the letter, to which the attendant written responses are then presented.

**DEPARTMENT OF TRANSPORTATION**
DISTRICT 7
100 S. MAIN STREET, MS 16
LOS ANGELES, CA 90012
PHONE (213) 266-3562
FAX (213) 897-1337
TTY 711
www.dot.ca.gov

Letter No. 1

*Making Conservation a California Way of Life*

July 8, 2024

Carmen Andrade
Los Angeles Sanitation & Environment –
Safe Water Implementation Division
1149 S. Broadway, 10th Floor
Los Angeles, CA 90015

RE: MacArthur Lake Stormwater Capture Project
GTS # 07-LA-2022-04538
SCH # 2022040153
Vic. LA 10 PM 14.763
LA 101 PM 3.084

Dear Carmen Andrade:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above-referenced project. The proposed project led by LASAN in partnership with the City of Los Angeles Department of Recreation and Parks (RAP), would implement a regional multi-benefit stormwater project in MacArthur Park as part of the region's efforts under Los Angeles County's Safe Clean Water Program (SCWP) to meet water quality total maximum daily load (TMDL) limits for the Ballona Creek watershed and the current National Pollutant Discharge Elimination System (NPDES) permit. The proposed project would divert and treat portions of wet weather stormwater flows as well as dry weather flows from the existing underground storm drain system and discharge it into MacArthur Lake for storage or return it to the storm drain system. In-lake storage would decrease the use of potable water to maintain the lake water level. Some of the water that is stored in the lake would subsequently be discharged to the sanitary sewer system. The project would reduce the amount of stormwater and dry weather flows, and their associated pollutant loads, that enter Ballona Creek and, ultimately, Santa Monica Bay. Additionally, the proposed project would enhance the park by creating treatment wetlands and providing educational opportunities, such as signage and information boards about stormwater management and park wetlands. The City of Long Beach is the Lead Agency under the California Environmental Quality Act (CEQA). 1

The closest state facilities are SR 10 and US 101. After reviewing the project's documents, Caltrans has the following comments:

Caltrans will require an Encroachment Permit for work performed within the State Right-of-way. Caltrans recommends that large-size truck travel be limited to off-peak commute hours. Caltrans requires a permit for any heavy construction equipment and or materials that require the use of oversized transport vehicles on State highways. 2

Caltrans recommends that the Project limit construction traffic to off-peak periods to minimize the potential impact on State facilities. If construction traffic is expected to cause issues on any State facilities, please submit a construction traffic control plan detailing these issues for Caltrans' review. 3

If you have any questions, please feel free to contact Jaden Oloresisimo, the project coordinator, at Jaden.Oloresisimo@dot.ca.gov and refer to GTS # 07-LA-2022-04538. 4

Sincerely,

Anthony Higgins

Anthony Higgins
Acting LDR/CEQA Branch Chief

cc: State Clearinghouse

## Letter No. 1 State of California Department of Transportation, District 7

Anthony Higgins, Acting LDR/CEQA Branch Chief
Department of Transportation, District 7, Community Planning & LD IGR Review
100 S. Main Street, MS 16
Los Angeles, California 90012

July 8, 2024

Responses

*Response 1-1*

The California Department of Transportation's (Caltrans') re-statement of the proposed project description, which is presented in detail in Chapter 2 of the Draft EIR, is accurate. Please note that the City of Los Angeles is the Lead Agency for the project, not the City of Long Beach, as stated in the comment.

*Response 1-2*

No work is proposed within the state right-of-way (ROW). As discussed in Section 1.1.2 of the Draft EIR, the proposed project would occur in the southern section of the park, with underground improvements in 7th Street south of the park, in an approximate one-block portion of Grand View Street south of 7th Street, and in an approximate one-block portion of Lake Street south of 7th Street. While, at this time, it is not anticipated that oversized equipment will be required to travel on state highways, should that change, the City or its contractor will comply with the permitting requirements noted in the comment.

*Response 1-3*

As discussed in the Initial Study (Section 4, Issue XVII), and reiterated in Section 2.6.1 of the Draft EIR, the majority of construction would occur in MacArthur Park and in Grand View Street and Lake Street. Limited construction would occur in 7th Street. As further described in Section 2.6.1, the majority of construction would occur between the hours of 7:00 a.m. and 5:00 p.m., Monday through Friday. Work within roadways may be further restricted to avoid peak commute times. Impacts to specific state facilities from construction traffic are not anticipated. Should that change, the City or its contractor will comply with Caltrans procedures pertaining to submittal of a construction traffic control plan noted in the comment.

*Response 1-4*

The Caltrans project contact is noted.

Los Angeles County
Metropolitan Transportation Authority

One Gateway Plaza
Los Angeles, CA 90012-2952

213.922.2000 Tel
metro.net

Metro

Letter No. 2

July 8, 2024

Carmen Andrade
LA Sanitation & Environment
Safe Clean Water Implementation Division
1149 S. Broadway, 10th Floor MS: 1149/756
Los Angeles, CA 90015

Sent by Email: san.safecleanwater@lacity.org

RE: MacArthur Lake Stormwater Capture Project
Notice of Availability Environmental Impact Report (EIR)

Dear Sir/Madam:

Thank you for coordinating with the Los Angeles County Metropolitan Transportation Authority (Metro) regarding the proposed MacArthur Lake Stormwater Capture Project (Project) located at 2230 West 6th Street in the City of Los Angeles (City).

Per Metro's area of statutory responsibility pursuant to sections 15082(b) and 15086(a) of the Guidelines for Implementation of the California Environmental Quality Act (CEQA: Cal. Code of Regulations, Title 14, Ch. 3), the purpose of this letter is to provide the City with specific detail on the scope and content of environmental information that should be included in the Environmental Impact Report (EIR) for the Project. In particular, this letter outlines topics regarding the Project's potential impacts on the Metro B Line (Red) and D Line (Purple) and Metro bus facilities and services which should be analyzed in the EIR, and provides recommendations for mitigation measures as appropriate. Effects of a project on transit systems and infrastructure are within the scope of transportation impacts to be evaluated under CEQA.[1] 1

In addition to the specific comments outlined below, Metro would like to request a consultation meeting with the City's project team to learn more about this project. Metro is also providing the City with the Metro Adjacent Development Handbook (attached), which provides an overview of common concerns for development adjacent to Metro right-of-way (ROW) and transit facilities, available at https://www.metro.net/devreview. 2

## Project Description

The Project would divert and treat stormwater flows from the existing underground storm drain system and discharge it into MacArthur Lake for storage or return it to the storm drain system.

[1] See CEQA Guidelines section 15064.3(a); Governor's Office of Planning and Research Technical Advisory on Evaluating Transportation Impacts In CEQA, December 2018, p. 19.

## Recommendations for EIR Scope and Content

*Bus Service Adjacency*

1. Service: Metro Bus Line 603 operates on 7th Street and Bus Line 2 operates on Alvarado Street adjacent to the Project. Two Metro Bus stops are directly adjacent to the Project site at 7th Street and Park View Street and 7th Street and Alvarado Street. Other transit operators such as LADOT may provide service in the vicinity of the Project and should be consulted.

2. Impact Analysis: The EIR should analyze potential effects on Metro Bus service and identify mitigation measures or project design features as appropriate. Potential impacts may include impacts to transportation services, stops, and temporary or permanent bus service rerouting. Specific types of impacts and recommended mitigation measures to address them include, without limitation, the following:

    a. Bus Stop Condition: The EIR should identify all bus stops on all streets adjacent to the Project site. During construction, the City may either maintain the stop in its current condition and location, or temporarily relocate the stops consistent with the needs of Metro Bus operations. Temporary or permanent modifications to any bus stop as part of the Project, including any surrounding sidewalk area, must be Americans with Disabilities Act (ADA)-compliant and allow passengers with disabilities a clear path of travel between the bus stop and the Project. Once the Project is completed, the City must ensure any existing Metro bus stop affected by the Project is returned to its pre-Project location and condition, unless otherwise directed by Metro.

    b. Driveways: Driveways accessing parking and loading at the Project site should be located away from transit stops, and be designed and configured to avoid potential conflicts with on-street transit services and pedestrian traffic to the greatest degree possible. Vehicular driveways should not be located in or directly adjacent to areas that are likely to be used as waiting areas for transit.

    c. Bus Operations Coordination: The City shall coordinate with Metro Bus Operations Control Special Events Coordinator at 213-922-4632 and Metro's Stops and Zones Department at 213-922-5190 not later than 30 days before the start of Project construction. Other municipal bus services may also be impacted and shall be included in construction outreach efforts.

*Subway Adjacency*

1. Operations: The Metro B and D Lines (Red/Purple) currently operate peak service as often as every five minutes in both directions. Trains may operate 24 hours a day, seven days a week in the tunnels below the Project.

2. Impact Analysis: Due to the Project's proximity to Westlake/MacArthur Park Station and the tunnel for the B and D Lines, the EIR must analyze potential effects on subway operations and identify mitigation measures or project design features as appropriate.

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Critical impacts that should be studied include (without limitation): impacts of Project construction and operation on the structural and systems integrity of subway tunnels; damage to subway infrastructure, including tracks; and disruption to subway service.

The following provisions should be used to develop a mitigation measure that addresses these potential impacts:

a. Technical Review: The City shall submit architectural plans, engineering drawings and calculations, and construction work plans and methods, including any crane placement and radius, to evaluate any impacts to the Metro B and D Lines (Red/Purple) infrastructure in relationship to the Project. Before commencement of any grading or construction for the Project, the City shall obtain Metro's approval of final grading and construction plans.

b. Construction Safety: The construction and operation of the Project shall not disrupt the operation and maintenance activities of the Metro B and D Lines (Red/Purple) or the structural and systems integrity of Metro's tunnels. Not later than two months before Project construction, the City shall contact Metro to schedule a pre-construction meeting with all Project construction personnel and Metro Real Estate, Construction Management, and Construction Safety staff. During Project construction, the City shall:

    i. Work in close coordination with Metro to ensure that station access, visibility, and structural integrity are not compromised by construction activities or permanent build conditions;

    ii. Notify Metro of any changes to construction activities that may impact the use of the ROW;

    iii. Permit Metro staff to monitor construction activity to ascertain any impact to the tunnel for the B and D Lines or Westlake/MacArthur Park Station.

3. Advisories to the City: The City is encouraged to contact the Metro Development Review Team early in the design process to address potential impacts. The City should also be advised of the following:

    a. Occupational Safety and Health Administration (OSHA) Requirements: Demolition, construction and/or excavation work in proximity to Metro right-of-way (ROW) with potential to damage subway tracks and related infrastructure may be subject to additional OSHA safety requirements.

    b. Technical Review: Metro charges for staff time spent on engineering review and construction monitoring.

    c. Right of Way (ROW) Entry Permit: For temporary or ongoing access to Metro ROW for demolition, construction, and/or maintenance activities, the City shall complete Metro's Track Allocation process with Metro Rail Operations and obtain a Right of Entry Permit from Metro Real Estate. Approval for single

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tracking or a power shutdown, while possible, is highly discouraged; if sought, the City shall apply for and obtain such approval not later than two months before the start of Project construction. The City shall apply for and obtain approval for any special operations, including the use of a pile driver or any other equipment that could come in close proximity or encroach on the tunnels or related structures, not later than two months before the start of Project construction.

d. Cost of Impacts: The City will be responsible for costs incurred by Metro resulting from Project construction/operation issues that cause delay or harm to Metro service delivery or infrastructure, including single-tracking or bus bridging around closures. The City will also bear all costs for any noise mitigation required for the Project.

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If you have any questions regarding this letter, please contact our office by phone at 213.547.4326 by email at DevReview@metro.net, or by mail at the following address:

Metro Development Review
One Gateway Plaza
MS 99-22-2
Los Angeles, CA 90012-2952

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Sincerely,

Cassie Truong
Senior Transportation Planner
Transit Oriented Communities

cc: Shine Ling, AICP, Director, Development Review Team

Attachments and links:

- Adjacent Development Handbook: https://www.metro.net/devreview

## Letter No. 2 Los Angeles County Metropolitan Transportation Authority

Cassie Truong, Senior Transportation Planner, Transit Oriented Communities
Los Angeles County Metropolitan Transportation Authority, Metro Development Review
One Gateway Plaza, MS 99-22-2
Los Angeles, California 90012-2952

July 8, 2024

Responses

*Response 2-1*

The Los Angeles County Metropolitan Transportation Authority's (Metro's) statutory responsibility pursuant to CEQA is recognized. The comment letter states that the purpose of the letter is to provide the City with specific detail on the scope and content of environmental information that should be included in the EIR. The Draft EIR has been completed and was circulated for agency and public review on May 23, 2024. Responses to the individual comments included in the comment letter are provided below.

The comment letter includes one attachment, the *Metro Adjacent Development Handbook* (February 2021). A link to the handbook is provided in the letter. As the handbook does not contain comments on the environmental issues raised in the Draft EIR, no responses to the handbook are provided herein and a copy of the handbook is not included in this Final EIR.

*Response 2-2*

Metro's request for a consultation meeting is noted. This request was also included in Metro's comment letter on the Notice of Preparation (NOP). In response to that letter, LASAN held a meeting with Metro on June 14, 2022. The City will continue to coordinate with Metro staff while preparing for project construction, as needed. Metro's re-statement of the proposed project description is accurate.

*Response 2-3*

The comment contains recommendations for EIR scope and content and is nearly identical to the May 9, 2022 comment letter received from Metro during scoping of this proposed project following publication of the NOP and Initial Study. With the exception of one new issue raised in this comment letter, Section 1.6 of the Draft EIR addresses all of Metro's statements included in this comment. The new issue raised in this comment letter is Metro's statement that driveways should be located away from transit stops. The proposed project does not include construction of new driveways. The comment does not include any specific comments on the contents of the Draft EIR.

As described in Section 1.6 of the Draft EIR and in the Initial Study (Section 4, Issue XVII), the proposed project would not result in any significant impacts to transportation. Specifically, the proposed project would not result in any long-term changes to bus stops, bicycle lanes or racks, sidewalks, or other non-automotive transportation infrastructure. In the event a bus stop(s) is affected, it is expected that any such closure would be short term in nature (i.e., 3 to 4 weeks). As more detailed construction plans are developed, LASAN will coordinate with Metro regarding potential effects to bus facilities and ways to minimize those effects, if warranted. Also as summarized in Section 1.6 of the Draft EIR, the proposed project would not result in any changes to subway infrastructure, operations, or service. The proposed project components would not encroach on Metro's easement in MacArthur Park, and no construction

would occur in proximity to the Westlake/MacArthur Park Station. The project component that is located nearest to Metro's easement for the tunnels that lie under MacArthur Park is the proposed water feature. The limits of the water feature would not encroach into the easement and each weir would only be approximately 18 inches deep, limiting the depth of construction activities. Moreover, as noted in the Initial Study and in the Draft EIR, the proposed water feature would be lined to prevent infiltration that could affect subsurface resources, including the subway tunnels. As more detailed construction plans and engineering drawings are developed, LASAN will provide those to Metro for their consideration.

The proposed project would not result in any significant impacts to transportation facilities that would warrant mitigation, including the mitigation measures recommended in this comment.

*Response 2-4*

Metro's project contact is noted.

City of Los Angeles
California

Letter No. 3

KAREN BASS
MAYOR



July 16, 2024

Carmen Andrade
LA Sanitation & Environment
Safe Clean Water Implementation Division
1149 S. Broadway, 10th Floor
Los Angeles, CA 90015

**RE: MACARTHUR LAKE STORMWATER CAPTURE PROJECT DRAFT EIR COMMENTS - CITY OF LOS ANGELES DEPARTMENT OF RECREATION AND PARKS COMMENTS TO THE DRAFT EIR**

The Department of Recreation and Parks (RAP) staff has completed its review of the MacArthur Lake Stormwater Capture Project (Project) Draft EIR (Draft EIR) and found that some areas of the study need to be revised and that some environmental issues of the proposed Project were not addressed adequately. RAP's comments on the Draft EIR are below. 1

Project Description

- The Project Description mentions that “removed trees would be replanted or replaced in accordance with City of Los Angeles RAP or Bureau of Street Services (StreetsLA) policies and requirements”. As the proposed Project is affecting one of RAP’s properties, removed trees should be replaced according to RAP’s policies and requirements, not on StreetsLA’s. 2
- The Project Description mentions that unhoused individuals present in the Project area “would be relocated to another area of the park or to offsite areas” during construction. It would be more appropriate that unhoused individuals’ relocation be managed in agreement with LAHSA and with other City services. 3
- The Project Description highlights that a portion of the staging area could be placed on park property. RAP staff has noted multiple times in the early phases of the Project that no staging area should affect the limited recreational space in the park and therefore any lay down area should be located elsewhere. RAP requests that the option of using park space as lay down area be deleted from the project description. 4

- On page 2-28, the Project Description addresses the post construction monitoring of the project and should be consistent with page 4.5.4-8 of the EIR that acknowledged how the "Regional Program Transfer Agreement for the MacArthur Park Lake project, LASAN would prepare a detailed post-construction monitoring plan based on regulatory requirements, system performance, and water quality design targets. The plan would identify methods and materials that would be used to ensure that post-construction monitoring targets are achieved." 5
- On Page 2-29, the Project Description lists the approvals required for the implementation of the proposed Project on page 2-29. Table 2.2 should be consistent with the written narrative and include project approval among the approvals to be sought with RAP. 6

Air Quality

- Impacts on sensitive receptors are not discussed. Even if a non-significant impact is expected, since the Project area is surrounded by schools and hospitals, a more thorough discussion of this topic is expected. 7

Hydrology/Water Quality

- The hydrology/water quality section acknowledges that the impacts of the propose Project on water quality of MacArthur Park Lake is unknown and water quality monitoring post construction is necessary. The EIR explains that by replenishing the lake with partially treated stormwater rather than potable water, the proposed Project would increase external loads of nutrients to MacArthur Park Lake and would increase the potential for lake water quality impairment. This topic has been raised numerous times in the initial project review and multiple times the project team has confirmed that water recirculation in the water feature included in the proposed Project will have only a marginal positive on water quality. The Draft EIR, however, concludes that the potential impact of the proposed Project on water quality is less than significant. This conclusion is speculative at best, because it is not supported by any kind of analysis, data collection, credible simulation or existing example in other comparable situation. The EIR should acknowledge that there is a potential impact, which is not quantifiable before the approval of the project, but will be addressed in the Regional Program Transfer Agreement for the MacArthur Park Lake project. Even though MacArthur Lake's water quality is not subject to TMDLs, the site has a recreational value that could be affected by the proposed Project and it is appropriate for the EIR to acknowledge this possibility. 8

- The uncertainty about the effects of the proposed Project on water quality of the lake should be recognized in Section 1.6 Areas of Known Controversy and Issues to be Resolved and in the discussion of the environmental impacts on Chapter 4. 9

Thank you for giving RAP the opportunity to comment on the Draft EIR. For any further questions regarding this, please contact Elena Maggioni, of my staff, at (213) 482-6980. 10

Sincerely,

JIMMY KIM
General Manager

DARRYL FORD
Superintendent
Planning, Maintenance and Construction Branch

JK/DF/EM:ar

cc: Darryl Ford, Superintendent, Dept. of RAP

## Letter No. 3 City of Los Angeles Department of Parks and Recreation

Darryl Ford, Superintendent, Planning, Maintenance and Construction Branch
Los Angeles Department of Parks and Recreation
221 N. Figueroa Street, Suite 350
Los Angeles, CA 90012

July 8, 2024

Responses

*Response 3-1*

The comment letter states that the purpose of the letter is to request revisions to the Draft EIR regarding some issues of the Project that RAP feels were not adequately addressed. The Draft EIR was circulated for agency and public review on May 23, 2024. Responses to the individual comments included in the comment letter are provided below.

*Response 3-2*

The comment is related to language in Section 2.6.1 and Section 4.2 of the Draft EIR (specifically in Section 4.2.5.1.1). Based on the project design, two trees located on the site of the water feature would require removal, and one tree would require relocation. The comment that trees that would be removed on RAP's property should be replaced according to RAP's policies and requirements is noted. It is possible that, in addition to trees within the park, trees outside the park on streets adjacent to the proposed improvements may require removal. If any street trees were to require removal, those trees would be removed in accordance with the City of Los Angeles Bureau of Street Services (StreetsLA) policies and requirements. To provide clarification, pages 2-23 and 4.2.4-14 of the Draft EIR have been revised to reflect that tree removals within the park would be replaced in accordance with RAP's policies, and tree removals outside the park along City streets, if needed, would be replaced in accordance with StreetsLA policies. Please see Chapter F3, *Revisions, Clarifications, and Corrections to the Draft EIR*.

*Response 3-3*

RAP's comments about the relocation of unhoused individuals are noted. The comment is related to text in numerous sections of the Draft EIR, including on pages 2-23, 4.6.4-12, and 5-17. The proposed Project may result in the displacement of homeless populations that were previously residing in the Project Area before the construction of the Project. Relocation of unhoused individuals would be conducted and supported in accordance with the City of Los Angeles' Comprehensive Homeless Strategy. This strategy includes recommendations and actions needed to effectively respond to homelessness regionally and ensure coordination between the City of Los Angeles departments and County of Los Angeles. For example, this strategy aims to provide unhoused people services through any City agency (i.e., No Wrong Door Approach) and streamline the process for finding permanent housing for unhoused people through a Coordinated Entry System.[2] City staff would coordinate any relocations with City Council District 1 and appropriate agencies. To provide clarification, pages 2-23,

[2] City of Los Angeles. Comprehensive Homeless Strategy. Available: https://clkrep.lacity.org/onlinedocs/2015/15-1138-S1_misc_1-7-16.pdf.

4.6.4-12, and 5-17 of the Draft EIR have been revised. Please see Chapter F3, *Revisions, Clarifications, and Corrections to the Draft EIR*.

*Response 3-4*

The comment is related to language in Section 2.6.1 of the Draft EIR. RAP concerns regarding the use of park space for construction staging are noted. Subsequent to submittal of this letter, BOE, LASAN and RAP met on April 24, 2025 and agreed that it would be most efficient to conduct staging within the park. Construction would proceed in a phased manner, limiting the extent of fencing and minimizing disruption to park users to the extent feasible. Staging within the park would be conducted in three phases. During active construction of any one phase, the remaining two phased areas would be open to the public to the extent feasible to maintain public safety. In addition, access to the recreational playground and park entrances would be maintained throughout construction. The staging areas would be clearly delineated and fenced to maintain public safety throughout the construction period and would include tree protection zones in accordance with RAP guidelines. No additional areas of the park would be used for construction-related activities outside of those directly associated with the approved park improvements. Any park-adjacent staging areas would be limited to activities supporting park improvement work only. The contractor would be responsible for securing their own laydown space, whether within the adjacent staging areas or offsite, for the storage of equipment, materials, and spoils associated with the street improvement scope.

To provide clarification, page 2-23 and Figure 2-11 of the Draft EIR have been revised. Please see Chapter F3, *Revisions, Clarifications, and Corrections to the Draft EIR*.

*Response 3-5*

The comment is related to language in Section 2.7 of the Draft EIR. As noted by the comment, the Draft EIR provided additional details about post-construction monitoring on page 4.5.4-8 in Section 4.5. To provide consistency with page 4.5.4-8 of the Draft EIR, and to provide additional detail regarding post construction monitoring, page 2-28 of the Draft EIR has been revised. Please see Chapter F3, *Revisions, Clarifications, and Corrections to the Draft EIR*.

*Response 3-6*

The comment is related to the permits and approvals listed in Table 2-2 on page 2-29 of the Draft EIR. This table, which has been renumbered as Table 2-3 as part of these revisions, clarifications, and corrections, has been revised to respond to this comment; the revised table identifies project approval by RAP and provides other clarifications. Please see Chapter F3, *Revisions, Clarifications, and Corrections to the Draft EIR*.

*Response 3-7*

The comment is related to the air quality analysis provided in Section 4.1 of the Draft EIR and states that impacts on sensitive receptors are not discussed. As noted in Section 4.1.4 of the Draft EIR, the thresholds of significance used in the analysis are based on air quality thresholds developed by the South Coast Air Quality Management District (SCAQMD). These thresholds, in turn, are based on the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS), which were developed to be protective of human health. The thresholds include mass emission thresholds and localized significance thresholds (LSTs). LSTs address nearfield direct impacts

to local air quality. As noted on page 4.1.4-13 of the EIR, the LST analysis accounts for nearby sensitive receptors. The Draft EIR acknowledges that the project area is densely populated and heavily urbanized on page 4.1.4-13. For this reason, the most conservative (i.e., closest) distance was used (i.e., 25 meters) in the LST analysis. Therefore, the analysis demonstrates that local effects from project emissions at receptors in the closest vicinity of the project would be below SCAQMD's thresholds, which, as noted above, are protective of human health.

*Response 3-8*

The comment is related to the analysis of hydrology and water quality provided in Section 4.5 of the Draft EIR. In response to this comment, a water quality study has been conducted for the Final EIR that provides a quantitative assessment of impacts to lake water quality resulting from the proposed project. The results of the study are documented in a Water Quality Technical Memorandum, provided as Appendix F-A of this Final EIR. As discussed in the Water Quality Technical Memorandum, under existing conditions, MacArthur Lake is a largely stagnant pool characterized by low inflow loads, even lower outflow loads, and evaporative losses replaced by potable water. The only nutrient mass removal occurs via settling and burial. Implementation of the proposed project would alter the hydrodynamics of the lake, modifying it from a relatively stagnant pool to a well flushed, flow-through system. This is expected to be beneficial to lake water quality, due to increased flushing of nutrient loads and lower residence times for phytoplankton algae. However, inflow nutrient loads would also increase due to the diversion of stormwater into the lake. On balance, the water quality modeling predicted modest increases in lake phosphorous levels and modest decreases in lake nitrogen levels. These changes in nutrient concentrations are not expected to cause a substantial degradation of lake water quality, as measured by algae levels (chlorophyll-a).

The water quality study provides substantial evidence that, with implementation of the project's proposed treatment components performing as designed, the project would not substantially degrade water quality in the lake. Moreover, as discussed in Section 4.5 of the Draft EIR, MacArthur Park Lake is not included in the Ballona Creek Management Plan and is not considered a protected water body; therefore, MacArthur Park Lake's water quality is not subject to total maximum daily loads (TMDL) thresholds or other water quality standards or waste discharge requirements. In conclusion, the addition of treated stormwater is not expected to substantially degrade surface water quality in MacArthur Lake, and water quality impacts would be less than significant.

Although impacts would be less than significant, the Water Quality Technical Memorandum recommends lake water quality monitoring be implemented following construction. To address the concerns raised in this comment related to post-project lake water quality, as a best management practice, LASAN would develop a Post-Construction Lake Monitoring Plan to monitor lake water quality. The Plan will require monitoring of lake nutrient constituents for a 3-year period. Data from post-construction lake water quality monitoring would be collected and reported to RAP.

Revisions have been made to Section 4.5 of the EIR to reflect the conclusions of the water quality study and the Post-Construction Lake Monitoring Plan identified above. Please see Chapter F3, *Revisions, Clarifications, and Corrections to the Draft EIR*.

*Response 3-9*

The comment is related to the discussion of unresolved issues in Section 1.6 of the Draft EIR and to the presentation of water quality impacts in Section 4.5. Section 1.6 of the Draft EIR has been updated as requested in the comment. In addition, as noted in Response to Comment 3-8, Section 4.5 of the EIR has been updated to reflect additional information regarding water quality impacts. Please see Chapter F3, *Revisions, Clarifications, and Corrections to the Draft EIR*.

*Response 3-10*

The City of Los Angeles RAP's project contact is noted.

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# Chapter F3

# Revisions, Clarifications, and Corrections to the Draft EIR

## F3.1 Introduction

The following revisions are hereby made to the Draft EIR. Changes in the text are signified by strikeouts where text is removed and shown with italics and underline where text is added. These changes do not add significant new information to the EIR that would require Draft EIR recirculation under State CEQA Guidelines Section 15088.5. For example, they do not disclose or suggest new or substantially more severe significant environmental impacts of the proposed Project, or a new feasible mitigation measure or alternative considerably different than those analyzed in the Draft EIR that would clearly lessen the proposed project's significant effects.

Corrections and clarifications to the Draft EIR include a new appendix featuring a Water Quality Technical Memorandum (included in this Final EIR as Appendix F-A); additional detail in the Project Description featuring descriptions of the operations and maintenance of the proposed project and descriptions of the aquatic species that will be integrated into the proposed water feature; general clarifications; and updates to the Draft EIR in response to comments. Details from the water quality technical memorandum have been integrated into the Draft EIR, as reflected in Section F3.2.

## F3.2 Revisions, Clarifications, and Corrections to the Draft EIR

### F3.2.1 Chapter 1, Introduction and Executive Summary

1. The following text has been added following the first paragraph in Section 1.6, *Areas of Known Controversy and Issues to be Resolved*, on page 1-18 of the Draft EIR:

> *During preparation of the EIR, RAP expressed concerns about the potential for adverse effects on water quality in MacArthur Lake. To address these concerns, additional analysis of water quality was conducted following completion of the Draft EIR, including lake water quality modeling. The results of the analysis are provided in Section 4.5, Hydrology and Water Quality, and in Appendix F-A.*

In addition, revisions, clarifications, and corrections have been made to Section 4.5, *Hydrology/Water Quality*, of the Draft EIR – see below.

2. The second sentence of the second paragraph in Section 1.6, *Areas of Known Controversy and Issues to be Resolved*, on page 1-18 of the Draft EIR is hereby revised as follows:

> The primary project-specific concerns *raised in the NOP comment letters* that pertain to the proposed project are summarized below.

## F3.2.2 Chapter 2, Project Description

1. The first sentence of the first paragraph in Section 2.5.4, *Water Feature*, on page 2-17 of the Draft EIR is hereby revised as follows:

> The proposed improvements include an approximately *0.085*~~0.15~~ acre tiered water feature, new pedestrian paths, seating areas, a boardwalk, new shade trees, and interpretive signage.

2. The third paragraph in Section 2.5.4, *Water Feature*, on page 2-17 of the Draft EIR is hereby revised as follows:

> The water feature would be located in a sloped area of the park that is currently occupied by turf grass and walkways. *The water feature would be lined with aquatic species. A conceptual plant palette is provided in* ***Table 2-0****.*

***Table 2-0 Conceptual Water Feature Plant Palette***

| *Common Name* | *Scientific Name* |
|---|---|
| ***Trees*** | |
| *Shoestring Acacia* | *Acacia stenophylla* |
| *Pink Trumpet Tree* | *Handroanthus Heptaphyllus* |
| *Island Oak* | *Quercus tomentella* |
| ***Shrubs*** | |
| *Variegated Caribbean Century Plant* | *Agave angustifolia 'Marginata'* |
| *Compact Oregon Grape* | *Berberis aquifolium 'Compacta'* |
| *Toothless Desert Spoon* | *Dasylirion longissimum* |
| *Purple Sage* | *Salvia leucophylla* |
| ***Ground Covers*** | |
| *Yerba Mansa* | *Anemopsis californica* |
| *Dwarf Cape Rush* | *Chondropetalum tectorum 'Dwarf'* |
| *Common Spikerush* | *Eleocharis macrostachya* |
| *Scarlet Monkeyflower* | *Erythranthe cardinalis* |
| *Coastal Gem Grevillea* | *Grevillea lanigera 'coastal gem'* |
| *California Gray Rush* | *Juncus patens* |
| *Cardinal Flower* | *Lobelia cardinalis* |
| *Breeze™ Mat Rush* | *Lomandra longifolia 'LM300'* |
| *Source: Studio-MLA, July 16, 2024.* | |

3. The second sentence of the third paragraph in Section 2.5.4, *Water Feature*, on page 2-17 of the Draft EIR is hereby revised as follows:

> *With implementation of the proposed water feature,* ~~O~~one existing palm and one existing broadleaf tree within the proposed water feature area would be removed, and one broadleaf tree would be relocated.

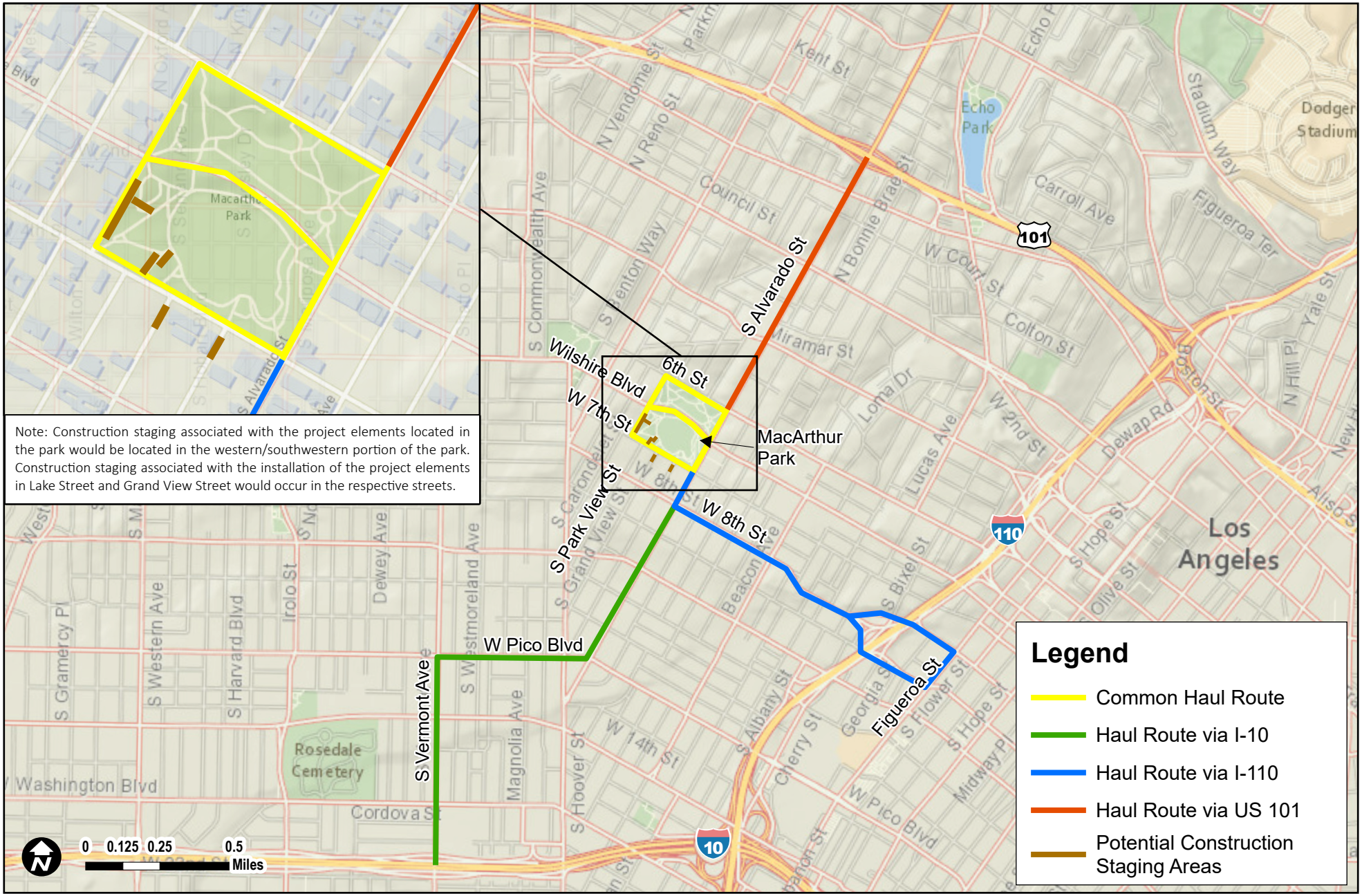
4. The eighth sentence of the fifth paragraph in Section 2.6.1, *Construction Activities*, on page 2-23 of the Draft EIR is hereby revised as follows:

> However, if additional trees *within the park* would require removal, removed trees would be replanted or replaced in accordance with City of Los Angeles RAP ~~or Bureau of Street Services (StreetsLA)~~ policies and requirements.[25,26] *If additional trees outside of the park would require removal or relocation, those removed trees would be replanted or replaced in accordance with the City of Los Angeles Bureau of Street Services (Streets LA) policies and requirements.*[26a]

5. The last paragraph in Section 2.6.1, *Construction Activities*, on page 2-23 of the Draft EIR is hereby revised as follows:

> A portion of the park lies within the proposed construction footprint. This portion, and other areas of the park within the vicinity, would be affected by construction activities. Construction would require a staging area(s) to temporarily store supplies and materials. ~~Some s~~*Staging for construction associated with the proposed park improvements* ~~may~~ *would* be located within the park; parcels adjacent to, or in close proximity to the park may also be used for construction staging. *Specifically, an area along Park View Street adjacent to the park may be used for construction laydown. Use of a portion of Park View Street would be subject to an approved traffic control plan and require coordination and/or approval from the City of Los Angeles Department of Transportation and City Council District 1. Staging would be phased to minimize impacts to the park to the extent feasible. Staging for construction within the roadways would be staged within the roads, specifically in Lake Street and Grand View Street.* ~~Possible~~ *Proposed* staging areas are illustrated in **Figure 2-11**. *As a best management practice, ~~C~~construction* and staging areas would be fenced and closed to the public while construction activities are taking place. Construction activities *within the park* could displace unhoused individuals if any are located in the portion of the park that would be affected by construction. Unhoused residents would be relocated ~~to another area of the park or to offsite areas~~ *and supported in accordance with the City's Comprehensive Homeless Strategy, which provides recommendations and actions needed to effectively respond to homelessness, streamline services for unhoused people, and ensure coordination between the City of Los Angeles departments and the County of Los Angeles.*[26b] *Any relocations would be coordinated with City Council District 1 and appropriate agencies*. The proposed project would not require construction within a Los Angeles County Metropolitan Transportation Authority (Metro) easement that traverses the park, although some temporary construction easements may be required. As shown in Figure 2-11, there would be three primary haul routes used to bring materials, equipment, and construction workers to and from the project site: (1) southwest along Alvarado Street from U.S. Route 101 (Hollywood Freeway), (2) northwest along 8th Street from State Route 110, and (3) north along Vermont Avenue from U.S. Highway 10 (Santa Monica Freeway) to east on Pico Boulevard then northeast on Alvarado Street.

6. Figure 2-11 of the Draft EIR is hereby revised to reflect the revised staging areas. Please see the following revised figure.




Sources: Cordoba Corporation, 2022; CDM Smith, 2022; Carollo Engineers, 2025
Prepared by: CDM Smith, 2025

Figure 2-11



**HAUL ROUTES AND CONSTRUCTION STAGING AREAS**

7. The following changes are hereby made to Section 2.7, *Project Operations*, on page 2-28 of the Draft EIR.

   The section of the heading is hereby revised as follows:

# 2.7 *Post Construction Monitoring and* Project Operations

The first paragraph in Section 2.7, *Project Operations*, on page 2-28 of the Draft EIR is hereby revised and replaced with the following:

## *2.7.1 Post Construction Monitoring*

As part of the project and as required under the SCWP *Regional Program Transfer Agreement*, LASAN would develop an Operation and Maintenance (O&M) *and Post-construction Stormwater Monitoring Plan. The O&M Plan* ~~plan for the project, which~~ would outline the activities that are expected to be necessary to ensure the project components remain in good working order. *The Post-construction Stormwater Monitoring Plan would evaluate the effectiveness of the proposed project's stormwater treatment facilities. Responsibilities for the various O&M activities would be identified in a Memorandum of Understanding to be developed between LASAN and RAP.* ~~In addition, LASAN would develop a Post-construction Monitoring Plan that would identify the steps needed to evaluate the effectiveness of the stormwater treatment facilities as well as the reporting requirements~~*Post-construction stormwater quality monitoring data would be collected and reported for a 3-year period.*

*In addition, LASAN is committed to long term monitoring of the lake for a period of 3 years. As a project commitment, LASAN would develop a Post-Construction Lake Monitoring Plan to monitor lake water quality. Data from post-construction lake water quality monitoring would be collected and reported to RAP. At the end of the 3-year monitoring period, LASAN and RAP would review the data collected and would determine if further monitoring is necessary. The Operation and Maintenance Plan, Post-construction Stormwater Monitoring Plan, and Post-construction Lake Monitoring Plan would be completed prior to the end of construction.*

In addition, the following subheading is hereby added following the text above and prior to the text that currently starts with paragraph 2:

## *2.7.2 Project Operations*

8. The fourth paragraph in Section 2.7, *Project Operations*, on pages 2-28 and 2-29 of the Draft EIR is hereby revised as follows:

   Oversight of the project's operation would primarily be performed via remote access through a telemetry system; however, some on-site O&M would be required for the *pretreatment unit, pump station,* stormwater treatment unit*,* ~~and~~ water feature*, and other project components*. Regular maintenance would include inspections after storm events as well as *semi-*annual

inspections and system cleanings~~to remove any fine particles or trash filtered as part of the pretreatment processes~~. ~~Two-person maintenance crews would conduct the inspections for the proposed project; estimated maintenance requirements are as follows:~~

- ~~Inspection for pumping equipment – twice per year~~
- ~~Cleaning for pumping equipment – twice per year~~
- ~~Inspection/cleaning of other underground structures – approximately 20 times for the pretreatment unit (i.e., after every storm greater than or equal to 0.1 inch of rainfall) and 5 times per year for the stormwater treatment unit~~
- ~~Inspection and cleaning of the water feature – four times per year~~

***Table 2-2*** *provides a summary of the proposed operation and maintenance activities that would be a component of project operations, including frequency and party responsible for implementation.*

***Table 2-2 Operation and Maintenance of Stormwater Structural Project Components and Parkside Project Components***

| ***Activity*** | ***Frequency*** | ***Responsibility*** |
|---|---|---|
| ***Stormwater Structural Components*** | | |
| *Diversion Structure* | *TBD* | *LASAN* |
| *Pretreatment Unit* | *Semi-annually and following major storms* | *LASAN* |
| *Pump Station* | *Semi-annually and following major storms* | *LASAN* |
| *Stormwater Treatment Unit* | *Semi-annually and following major storms* | *LASAN* |
| ***Parkside Project Components*** | | |
| *Water Feature including inspection and maintenance of wetted areas, aquatic vegetation, inlet and weirs, accumulation of trash and debris, sediment removal, recirculation pipe (pump house to water feature)* | *Various* | *LASAN* |
| *Walkways, pathways, boardwalks, and plaza overlook* | *Daily, as needed* | *RAP* |
| *Trash and recycling receptacles* | *Daily, as needed* | *RAP* |
| *Newly planted and relocated trees* | *Annually* | *RAP* |
| *Irrigation* | *Daily, as needed* | *RAP* |
| *Source: Carollo 2024.* | | |

9. Table 2-2 in Section 2.8, *Intended Uses of this EIR*, on page 2-29 of the Draft EIR has been renumbered and revised as follows:

| Table 2-~~2~~3 *Anticipated/Potential* Agencies, Permits, and Approvals | |
|---|---|
| **Agency** | **Permit/Approval** |
| *California Department of Fish and Wildlife* | *California Fish and Game Code Section 1602 Lake and Streambed Alteration Agreement (Operational Phase)[1]* |
| California Division of Occupational Safety and Health | Construction Permit<br>Trenching Excavation Permit |
| California State Water Resources Control Board / Los Angeles Regional Water Quality Control Board | NPDES Construction General Permit 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ), and/or Construction General Permit 2022-0057-DWQ, including Stormwater Pollution Prevention Plan (SWPPP) |
| *Los Angeles City Council* | *Project Approval, EIR Certification* |
| *City of Los Angeles, Board of Public Works* | *Recommendation of Project Approval and EIR Certification to City Council* |
| City of Los Angeles, Recreation and Parks | *EIR Consideration and Approval of Final Project Plans*<br>Encroachment Permit/Right-of-Entry Permit<br>Tree Removal*/Replacement* approval*s* |
| City of Los Angeles, Bureau of Engineering | Construction "B" Permit (LAMC 62.106.b)<br>Sewer (S) Permit<br>Storm Drain (SD) Permit<br>Excavation (U) Permit |
| City of Los Angeles, Bureau of Sanitation and Environment | Industrial Waste Discharge (dewatered groundwater, sanitary sewer discharges)<br>Stormwater Connection Permit |
| City of Los Angeles, Multiple | Temporary Traffic Control Plans<br>Maintenance Hold (MH) Opening Permit<br>State Tree Removal Permit<br>Grading Permits<br>Building and Safety permits |
| Various Agencies/Utilities | Utility Relocation Agreements<br>Utility Crossing Notifications |
| Source: Cordoba Corporation, 2022; CDM Smith, 2024*, 2025*.<br>*Note:*<br>*[1] A Lake and Streambed Alteration Agreement may be required if the water feature, once established, is considered habitat by CDFW, and if water feature maintenance would require sediment removal, trash collection and disposal, invasive species abatement, or other activities that may be subject to Section 1602.* | |

To accompany this change, the last sentence of the third paragraph in Section 2.8, *Intended Uses of This EIR*, on page 2-29 of the Draft EIR is hereby revised as follows:

> The state and local approvals and permits anticipated to be required for the proposed project include, but are not limited to, those identified in **Table 2-~~2~~*3***.

# F3.2.3 Chapter 4, Environmental Impact Analysis

## F3.2.3.1 Section 4.2, Biological Resources

1. The eighth sentence of the second paragraph in Section 4.2.5.1.1, *Construction*, on page 4.2.4-14 of the Draft EIR is hereby revised as follows:

If any trees *within the park* required removal, the tree(s) would be replanted or replaced in accordance with City of Los Angeles RAP ~~or Bureau of Street Services (StreetsLA)~~ policies and requirements. *If additional trees outside of the park would require removal or relocation, those removed trees would be replanted or replaced in accordance with the City of Los Angeles Bureau of Street Services (Streets LA) policies and requirements.*

### F3.2.3.2 Section 4.5, Hydrology/Water Quality

1. Starting with the third sentence in Section 4.5.2, *Methodology*, subsection 4.5.2.1, *Project Site*, on page 4.5.4-1 of the Draft EIR, the text is hereby revised as follows:

   A mass balance was conducted to determine the amount of water that would be discharged to the lake and the amount that would be discharged back to the storm drain system following treatment. ~~The pollutant reductions that would be expected to be achieved by the proposed project were also estimated.[203]~~ The results of this analysis ~~is~~ *are* provided in **Appendix E.** *In addition, a water quality model was constructed for MacArthur Park Lake to investigate the potential for adverse impacts on lake water quality from the addition of captured urban stormwater. The model focused on lake nutrients (i.e., nitrogen and phosphorus) and the potential resulting enhanced phytoplankton algae growth. The model was constructed using CDM Smith's Simplified Lake Analysis Model software with a hydrologic simulation period of 20 years. Both existing conditions and anticipated future conditions with implementation of the proposed project were modeled. For each of these scenarios, simulations were conducted over a 20-year period of historical hydrology (1999 through 2019). More information about these scenarios, input data, and modeling results are discussed in Appendix F-A.*

2. The following sentence is hereby added to the end of the second paragraph in Section 4.5.3.2, *Environmental Setting*, on page 4.5.4-7 of the Draft EIR:

   MacArthur Park Lake is not specifically named in the WMP or the LA Basin Plan; no beneficial uses for the lake have been established. *However, the lake has existing recreational value.*

3. Beginning with the third sentence, the fifth paragraph in Section 4.5.5.1.1, *Impacts*, subsection *Project Site,* on page 4.5.4-8 of the Draft EIR is hereby revised as follows:

   ~~This would increase the potential for lake water quality impairment; *hH*~~owever, water inflows would first go through the pretreatment unit and stormwater treatment unit, which would remove nutrients and other pollutants from the system prior to discharge to the lake, as discussed in Chapter 2, *Project Description*. The continually-operating, recirculating water feature would also remove nutrients and other pollutants. In addition, periodic drawdown of the lake would facilitate removal of nutrients and algae by flushing. Even with these proposed project elements, it is anticipated that nutrient levels in MacArthur Lake may increase with project implementation~~; however, given the current eutrophic conditions in the lake, it is not expected that increased nutrient levels would substantially degrade existing surface water quality~~. ***Table 4.5-2*** *shows the nutrient conditions in the lake under existing conditions and with implementation of the proposed project as designed. As shown in the table, and discussed in Appendix F-A, with implementation and proper operation of the proposed treatment components as designed, modeling results show that total phosphorous is expected to increase slightly compared to existing conditions, while total nitrogen is expected to decrease. These*

*changes are not anticipated to cause a substantial degradation of lake water quality as measured by algae concentrations (represented by chlorophyll-a), which are projected to remain similar to current conditions.*

***Table 4.5-2 Modeled Average Annual Nutrient and Algae Levels for Existing Conditions/No Project and With Project Implementation***

| Constituent | Existing Conditions/No Project | With Proposed Project[3] |
|---|---|---|
| Total Phosphorus (mg/L) | 0.3 (0.2-0.4)[1] | 0.4 (0.2-0.6)[1] |
| Total Phosphorus Sediment Flux (mg/m$^2$/d) | 8 (4-12)[2] | 14 (7-24)[2] |
| Total Nitrogen (mg/L) | 5 (3-7)[1] | 3 (2-4)[1] |
| Total Nitrogen Sediment Flux (mg/m$^2$/d) | 130 (80-190)[2] | 110 (60-160)[2] |
| Chlorophyll-a (µg/L) | 120 (115-125)[2] | 130 (129-134)[2] |

Source: CDM Smith, 2024.

Notes:
[1] Values in parenthesis show range of daily model results.
[2] Values in parenthesis show range of monthly model results.
[3] Values represent stable conditions after simulated initial equilibration period.

Key: mg/L = milligrams per liter; µg/L = micrograms per liter

4. The first sentence of the sixth paragraph in Section 4.5.5.1.1, *Impacts*, subsection *Project Site*, on page 4.5.4-8 of the Draft EIR is hereby revised as follows:

   As required by the Regional Program Transfer Agreement for the MacArthur Park Lake project, LASAN would prepare a detailed post-construction *stormwater* monitoring plan based on regulatory requirements, system performance, and water quality design targets.

5. The paragraph below is hereby added following the sixth paragraph in Section 4.5.5.1.1, *Impacts*, subsection *Project Site*, on page 4.5.4-8 of the Draft EIR. The text of Section 2.7 of the EIR referenced below relates to revisions, clarifications, and corrections to the Draft EIR made in this Final EIR (see Chapter 2, *Project Description*, Revision 7 above).

   *In addition, as described in Section 2.7 of the EIR, as a project commitment, LASAN would develop a Post-Construction Lake Monitoring Plan to monitor lake water quality. The plan would require monitoring of lake nutrient constituents for a 3-year period. Data from post-construction lake water quality monitoring would be collected and reported to RAP. At the end of the 3-year monitoring period, LASAN and RAP would review the data collected and would determine if future monitoring is necessary.*

6. The following text is hereby added to the end of the text in Section 4.5.5.1.2, *Mitigation Measures*, on page 4.5.4-9 of the Draft EIR:

   *Nevertheless, as a project commitment, LASAN would develop a Post-Construction Lake Monitoring Plan to monitor lake water quality.*

## F3.2.3.3 Section 4.6, Noise and Vibration

1. The fourth sentence of the second paragraph in Section 4.6.3.2, *Environmental Setting*, subsection 4.6.3.2.1, *Noise*, on page 4.6.4-12 of the Draft EIR is hereby revised as follows:

Unhousedresidents would be relocated ~~to another area of the park or to off-site housing~~ *and supported in accordance with the City of Los Angeles' Comprehensive Homeless Strategy and in coordination with City Council District 1 and appropriate agencies.*

2. The following sub-bullet is hereby added as the third sub-bullet in the second set of sub-bullets in Mitigation Measure MM-NV-1, *Construction Noise Control and Mitigation Plan*, in Section 4.6.5.2.2, *Mitigation Measures*, on page 4.6.4-24 of the Draft EIR:

   – *Appointment of a public liaison during project construction, who shall be responsible for addressing public concerns about construction activities, including excessive noise. As needed, the liaison shall determine the cause of the noise concern and implement measures to address the concern. The liaison will work directly with the construction contractor to ensure implementation of the Construction Noise Control and Mitigation Plan.*

3. The fourth sub-bullet in the second set of sub-bullets in Mitigation Measure MM-NV-1, *Construction Noise Control and Mitigation Plan*, in Section 4.6.5.2.2, *Mitigation Measures*, on page 4.6.4-24 of the Draft EIR is hereby revised as follows:

   – Designation of a disturbance coordinator for responding to noise complaints, with their name and telephone complaint number to be clearly posted at the construction site; the telephone must be answered at all times during construction. *The disturbance coordinator shall coordinate noise complaints and responses with the public liaison.*

## F3.2.4 Chapter 5, Alternatives

1. The first sentence of the third paragraph in Section 5.4.3.2.6, *Noise and Vibration*, subsection *Construction Equipment Noise Impacts*, on page 5-14 of the Draft EIR is hereby revised as follows:

   ~~As demonstrated in Table 5-2 above, c~~Construction of Alternative 2 would avoid the otherwise significant and unavoidable noise impacts to receptors N1 through N5, N7, N8, and N11 that would occur under the proposed project (receptor locations are shown in Figure 4.6-1 in Section 4.6, *Noise and Vibration*).

2. The fourth sentence of the fourth paragraph in Section 5.4.3.2.6, *Noise and Vibration*, subsection *Construction Equipment Noise Impacts*, on page 5-17 of the Draft EIR is hereby revised as follows:

   Unhoused populations residing in the southeast portion of MacArthur Park (receptor N11) would be relocated *and supported in accordance with the City of Los Angeles' Comprehensive Homeless Strategy, and would be coordinated with City Council District 1 and appropriate agencies* under Alternative 2.

## F3.2.5 Chapter 9, Organizations and Persons Consulted/References

1. The following reference is hereby added to Section 9.2, *References*, of the Draft EIR:

   *City of Los Angeles. Comprehensive Homeless Strategy. 2016. Available: https://clkrep.lacity.org/onlinedocs/2015/15-1138-S1_misc_1-7-16.pdf.*

## F3.2.6 Other

1. Footnote 4 on page 1-17, footnote 22 on page 2-17, footnote 25 on page 2-23, footnote 90 on page 4.2.4-14, footnote 277 on page 5-7, and the sixth reference on page 9-6 of the Draft EIR are hereby revised as follows:

   City of Los Angeles Department of ~~Public Works,~~ Recreation and Parks. Urban Forest Program. October 2004. Available: https://www.laparks.org/sites/default/files/forest/pdf/UrbanForestProgram.pdf.

2. In the fifth paragraph in Section 2.6.1, *Construction Activities,* on page 2-23 of the Draft EIR, footnote 26 is hereby renumbered *26a.*

3. In the sixth paragraph in Section 2.6.1, *Construction Activities,* on page 2-23 of the Draft EIR, the following new footnote is hereby added (see correction 5 in Section F3.2.2, *Chapter 2, Project Description,* for the accompanying text):

   [26b] *City of Los Angeles. Comprehensive Homeless Strategy. Available: https://clkrep.lacity.org/onlinedocs/2015/15-1138-s1_misc_03-21-2016.pdf.*

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# Appendix F-A

# Water Quality Technical Memorandum

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# Memorandum

*To:* *City of Los Angeles Bureau of Engineering*

*From:* *CDM Smith*

*Date:* *June 18, 2025*

*Subject:* *MacArthur Lake Water Quality Study*

## Background

The MacArthur Lake Stormwater Capture Project (proposed project) goals include incrementally improving water quality in downstream Ballona Creek to contribute to the region's efforts to meet National Pollution Discharge Elimination System (NPDES) Permit requirements for Municipal Separate Storm Sewer System (MS4) discharges to the creek in a manner consistent with the Ballona Creek Watershed Management Program as measured against the Total Maximum Daily Load (TMDL) for metals and trash; reducing potable water demand; and providing community investment benefits and nature-based solutions as required by the Los Angeles Safe Clean Water Program, including park space enhancement, public health, and educational features. MS4 drains in the watershed upstream of MacArthur Lake do not discharge into the lake currently. Instead, lake inflows consist of direct rainfall and supplemental water additions with potable water. The proposed project would capture wet weather and dry weather flows (hereafter referred to collectively as "urban stormwater") from the drains that currently bypass the lake, treat the captured water, and either discharge the treated water to the lake or return it to the storm drain system.

The proposed project would capture and treat approximately 244 acre feet per year (AFY) of urban stormwater in the Ballona Creek watershed. Included in this projected volume is approximately 108 AFY of dry weather flows, as identified by Carollo Engineers (2024). Storage in MacArthur Lake would be created by maintaining 8 inches of lake capacity through periodic pumping of lake water, with discharge to the sanitary sewer. Captured stormwater would be treated to decrease contaminant and sediment loads, prior to discharge to the lake and/or discharge back into the storm sewer system. Treatment would include a continuous deflective separation (CDS) unit and two StormFilter® Treatment units, as described in Appendix E of the MacArthur Lake Stormwater Capture Project Draft Environmental Impact Report. Additionally, lake water mixing and dissolved oxygen levels would be enhanced through installation of a lake fountain and recirculation pumping. Note that these features are not expected to have a substantial influence on lake nutrient or algae levels and are, therefore, not included in the modeling described here.

When the lake is at full capacity (despite pumped discharge), captured and treated stormwater would bypass the lake via a valve. This bypass flow is projected to average approximately 95 AFY. Further, not all of the inflow into the lake would be treated by the StormFilter technology. A portion of the total lake inflow (17 AFY) is projected to bypass the StormFilter units and enter the lake. Projected project flows are summarized in **Table 1**.

**Table 1. Project Flow Balance (AFY)**

| |
|---|
| Total System Captured Flow = 244 |
| Total System Captured Dry Weather Flow = 108<br>Total System Captured Wet Weather Flow = 136 |
| CDS Treated Flow = 244 |
| StormFilter Treated Flow = 188<br>StormFilter Overflow (untreated) = 56 |
| StormFilter Treated Lake Inflow = 132[1]<br>StormFilter Untreated Lake Inflow = 17[1]<br>Lake Bypass Flow = 95[1] |

Source: Carollo 2024; CDM Smith 2025.
Note:
[1] Calculated lake inflow and bypass flows differ slightly from those reported in a water balance memorandum (Carollo 2024). The reasons for this difference are described below (Modeling Approach).

The California Environmental Quality Act (CEQA) requires the lead agency to evaluate and disclose potential impacts associated with the proposed project, including potential impacts to water quality. Specifically, for this project, the CEQA document must evaluate whether the proposed project would substantially degrade surface water quality, including in MacArthur Lake. An evaluation of the project is needed to identify potential impacts to water quality in MacArthur Lake pursuant to CEQA.

Lake water quality sampling data was collected by Los Angeles Sanitation and Environment (LASAN) over five events in 2020 and 2021. These data show that eutrophic conditions are persistent in the lake (**Table 2**). The project includes multiple elements that are designed to reduce water quality impacts to MacArthur Lake, in addition to supporting the primary goal of reducing pollutant loads to Ballona Creek and the goal of reducing potable water demand. By design, the project would increase external loads of nutrients to MacArthur Lake by replacing potable water inputs with urban stormwater. Concentrations of nutrients in urban stormwater are greater than in potable water when comparing land use-based event mean concentrations for mixed urban watersheds to reported drinking water quality from the Los Angeles Department of Water and Power (LADWP). This would increase the potential for lake water quality impairment. However, increased flows through the lake would facilitate losses of nutrients and algae by flushing, which would decrease the level of lake water quality impairment. In addition, pretreatment units for urban stormwater inflows are expected to remove nutrients and other pollutants from the system. The net impacts on lake water quality from these processes is complex and suggests the need for a numerical model to quantify these impacts. A lake water quality model was therefore developed to evaluate the changes in lake water quality with project implementation and to provide a scientific basis to support CEQA determinations for the project.

**Table 2. Summary of MacArthur Lake Water Quality (2020-21 Samples)**

| Constituent | Sample Event Date | | | | |
|---|---|---|---|---|---|
| | 4/21/2020 | 8/04/2020 | 11/09/2020 | 04/26/2021 | 08/10/2021 |
| Total Kjeldahl Nitrogen (mg/L) | 2.70 | 2.97 | 3.97 | 5.13 | 6.93 |
| Total Nitrogen (mg/L) | 2.70 | 2.97 | 3.97 | 5.13 | 6.97 |
| Total Phosphorus (mg/L) | 0.20 | 0.08 | 0.21 | 0.31 | 0.39 |
| Orthophosphate (mg/L) | 0.11 | 0.02 | 0.21 | 0.09 | 0.13 |
| Chlorophyll-a (µg/L) | 109 | 110 | 187 | 113 | 297 |

Source: Data provided by Alfredo Magallanes. Division Manager, Watershed Protection Division/Project Manager, MacArthur Lake Stormwater Capture Project. City of Los Angeles Department of Public Works, LA Sanitation and Environment. Electronic Mail Message to Robin Ijams, CDM Smith. Subject: MacArthur Sampling Data. October 14, 2021.
Key: mg/L = milligrams per liter; µg/L = micrograms per liter

## Modeling Approach

A water quality model of MacArthur Lake was constructed to investigate the potential for adverse impacts on lake water quality from the addition of urban stormwater and to quantify the benefit of planned stormwater controls. The model focuses on lake nutrients (nitrogen and phosphorus) and the resulting enhanced phytoplankton (floating) algae growth. The model was constructed using CDM Smith's Simplified Lake Analysis Model (SLAM) software, for a daily simulation over a 20-year variable hydrologic period. SLAM includes a dynamic sediment nutrient calculator that captures the important link between water column nutrients loads and the accumulation and re-release of sediment nutrients. This "recycling" of nutrients often represents a major component of the nutrient budget in lakes of this size. The fact that observed nutrient concentrations in the lake are significantly higher than in the potable water inflow suggests that internal nutrient recycling rates are high in MacArthur Lake.

Model parameterization was guided by a limited measured data set including five samples from the lake in 2020-2021. The aim of the parameterization exercise was to achieve an acceptable agreement between the range of modeled and measured nutrient and phytoplankton (as chlorophyll-a, or chl-a) concentrations. In some cases, where measured data were insufficient to provide direct guidance on parameterization, model parameter values were set based on previous software applications for similar lakes in the City of Los Angeles (e.g., Machado Lake).

Lake bathymetry was defined in the model using depth-to-storage relationships (**Figure 1**) developed based on grading shown in June 1990 record drawings for the lining project completed in 1993.[1]

[1] Metro Rail Transit Consultants. LA CBD to North Hollywood – Wilshire/Alvarado to Wilshire/Vermont, Lake Grading & Paving. June 22, 1990.

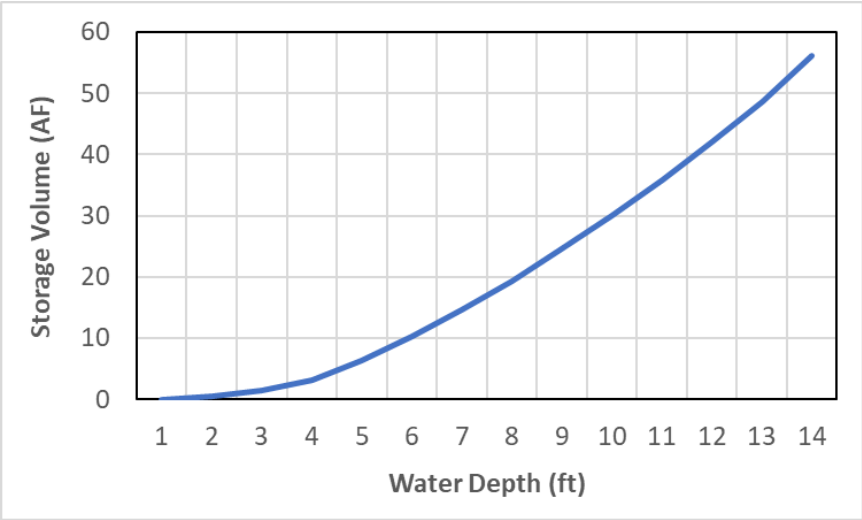


**Figure 1. Depth-Storage Relationship for MacArthur Lake**

Three scenarios were developed to support the CEQA determination of water quality impacts from the proposed stormwater capture project at MacArthur Lake: 1) no project (represented by existing conditions), 2) stormwater capture without proposed stormwater treatment (provided for informational purposes only), and 3) stormwater capture with implementation of proposed project stormwater treatment. For the proposed project scenarios (2 and 3), daily lake inflows were set based on stormwater hydrology and capture calculations performed by Carollo Engineers (2024) and additional information provided by Carollo to include an 8-inch drawdown. These calculations include all aspects of the proposed stormwater capture, diversion, and treatment systems, for a 20-year period of variable historical hydrology (10/1/1999 through 9/30/2019). Output from that analysis, in the form of daily lake inflows, were used as input to the lake water quality model. Note that final daily lake inflows used for the water quality modeling differ slightly (~ 10%) from the numbers reported in the Carollo memorandum (Carollo 2024). These differences are attributable to a refined calculation of lake bypass flows for the water quality modeling and the update to an 8-inch drawdown level, as compared to the previous water balance calculations. This refinement was important for the water quality calculations, but does not affect the overall water balance calculations or sizing of the stormwater treatment systems included in the design. Water quality model simulations were conducted over the same 20-year period of historical hydrology (10/1/1999 through 9/30/2019) used for the water balance calculations. The model scenarios, and a brief description of input data, are summarized below.

- **Existing Conditions/No Project.** Current external inflows to the lake include direct rainfall over the 20-year period and potable water needed to offset evaporative losses. Nutrient concentrations in rainfall were set to model default values, based on global literature (0.025 mg/L total phosphorus, 0.4 mg/L total nitrogen). For potable water, nutrient concentrations were based on LADWP drinking water monitoring (0.05 mg/L total phosphorous, 0.6 mg/L total nitrogen).[2] Additionally, small dry deposition loads (0.0007 pounds per acre per

[2] City of Los Angeles Department of Water and Power. Drinking Water Quality Report. 2020. Available: www.ladwp.com/waterqualityreport.

day [lbs/ac/d] total phosphorus, 0.017 lbs/ac/d total nitrogen) were included, again using model default values based on global literature.

- **Stormwater Capture Only.** This scenario does not represent the project as proposed and was not used in the CEQA analysis. Rather, this scenario was developed to better understand the effects of the project controls. External inflows include direct rainfall, simulated runoff at the point of diversion from the Los Angeles County Watershed Management Modeling System (WMMS) up to the 12.7 cubic-feet-per-second (cfs) diversion capacity, and steady dry weather inflows of 0.15 cfs. No treatment controls are assumed for this scenario. Assumptions regarding nutrient concentrations in rainfall and dry deposition loads were the same as above. For watershed storm event runoff, nutrient (total nitrogen and total phosphorus) concentrations were estimated using a spreadsheet-based pollutant buildup-washoff model[3] developed by CDM Smith. Dry weather nutrient concentrations were assumed equal to the mean value of recent measured dry weather inflows to nearby Machado Lake (Cox et al. 2022).
- **Stormwater Capture with Project Treatment (i.e., the proposed project).** External inflows include direct rainfall, simulated runoff at the point of diversion from the Los Angeles County WMMS up to the 12.7 cubic-feet-per-second (cfs) diversion capacity, and steady dry weather inflows of 0.15 cfs. Assumptions regarding nutrient concentrations in rainfall, pre-treatment diverted stormwater and dry weather flows, and the dry deposition loads were the same as above. Additionally, nutrient load reductions were assumed for inflows treated by the StormFilter system. Load reductions were assumed based on vendor estimates (50% of total phosphorus and 15% of total nitrogen). Conservatively, no nutrient load reductions were assumed for CDS treatment in this analysis.

Significant uncertainties exist in this analysis of a project that has not yet been constructed. To address, and acknowledge, these uncertainties, a probabilistic version of the lake model was constructed using the SLAM software. In this version, a subset of the input variables were specified as normal distributions of values, rather than as single values. The distributions (**Table 3**) are intended to represent reasonable ranges, and likelihoods, of input parameters based on available measured data and professional judgement. Each probabilistic model simulation involves 1,000 random samples of each probabilistic input distribution and 1,000 separate 20-year simulations. Combined model output are provided in the form of distributions of model projections to demonstrate ranges of prediction of uncertainty and to provide for assessment of water quality impairment risk.

[3] WMMS was not used for nutrient loading to MacArthur Lake because simulated concentrations fell outside of reasonable ranges, especially for total phosphorus, which is typically the limiting pollutant associated with freshwater lake water quality. Instead, CDM Smith developed a simplified, dynamic pollutant buildup-washoff analysis, which was employed to generate external nutrient loads to MacArthur Lake to support the application of SLAM in this water quality study.

**Table 3. Summary of Probabilistic Lake Model Input Parameters**

| Parameter | Normal Distribution Mean (and standard deviation) | Source |
|---|---|---|
| StormFlow total phosphorus treatment reduction (%) | 50 (10) | Vendor peer review study; professional judgement |
| StormFlow total nitrogen treatment reduction (%) | 15 (1) | Professional judgement |
| Wet weather inflow total phosphorus concentration (pre-treatment) (mg $L^{-1}$) | 0.79 (0.25) | Observed Machado Lake data |
| Wet weather inflow total nitrogen concentration (pre-treatment) (mg $L^{-1}$) | 3.1 (1.1) | Observed Machado Lake data |
| Dry weather inflow total phosphorus concentration (pre-treatment) (mg $L^{-1}$) | 0.61 (0.2) | Observed Machado Lake data |
| Dry weather inflow total nitrogen concentration (pre-treatment) (mg $L^{-1}$) | 2.6 (0.84) | Observed Machado Lake data |
| Lake winter particulate phosphorus settling velocity (ft $d^{-1}$) | 4 (0.4) | Model calibration; professional judgement |
| Lake winter particulate nitrogen settling velocity (ft $d^{-1}$) | 4 (0.4) | Model calibration; professional judgement |

Source: CDM Smith 2024.

## Results

Sufficient data for a comprehensive model calibration are not available for MacArthur Lake. However, as noted above, simulation results for the current condition were compared to recent measurements over five sampling events in 2020-2021 (see Table 1 above) to guide model parameterization and to provide confidence in the use of the model for predicting and comparing future conditions at a general level. Results (**Table 4**) show that simulated current nutrient and algae levels would fall within observed ranges of data (0.1 to 0.4 mg/L total phosphorus; 2.7 to 7.0 mg/L total nitrogen; 109 to 297 ug/L chl-a). This level of agreement provides sufficient confidence to allow for a relative comparison of water quality between current and with project implementation conditions. Additional data collection, including within the lake bottom sediments, would be useful to facilitate a more rigorous calibration of SLAM for MacArthur Lake and use of the model to predict water quality over an extended period into the future.

**Table 4. Modeled Average Annual Nutrient and Algae for Existing Conditions/No Project, Stormwater Capture, and With Project Implementation Scenarios**

| Result | Existing Conditions/No Project | Stormwater Capture Only[3] | With Proposed Project[3] |
|---|---|---|---|
| Total phosphorus (mg/L) | 0.3 (0.2 - 0.4)[1] | 0.7 (0.4 – 1.1)[1] | 0.4 (0.2 – 0.6)[1] |
| Total phosphorus sediment flux ($mg/m^2/d$) | 8 (4 – 12)[2] | 25 (13 – 45)[2] | 14 (7 – 24)[2] |
| Total nitrogen (mg/L) | 5 (3 - 7)[1] | 3 (2 – 5)[1] | 3 (2 - 4)[1] |
| Total nitrogen sediment flux ($mg/m^2/d$) | 130 (80 – 190)[2] | 125 (70 – 190)[2] | 110 (60 – 160)[2] |
| Chlorophyll-a (µg/L) | 120 (115 – 125)[2] | 146 (144 – 148)[2] | 130 (129-134)[2] |

Source: CDM Smith 2024.
Notes:
[1] Values in parenthesis show range of daily model results.
[2] Values in parenthesis show range of monthly model results.
[3] Values represent stable conditions after simulated initial equilibration period.
Key: mg/L = milligrams per liter; µg/L = micrograms per liter

The model simulated a daily water balance for a 20-year hydrologic period (1999-2019) for the three scenarios. To ensure a water balance, historical additions of potable water were estimated at a daily timestep in order to provide sufficient inflow volume to maintain the lake at its full volume (79 AF) over the course of the year. A summary of the balance of inflows and losses are shown as annual average volumes in **Table 5**. The proposed project would change the operation of MacArthur Lake. Currently, rain falls directly in the lake, but any rain that falls in the area surrounding the lake flows directly into storm drains and does not enter the lake. With implementation of the proposed project, approximately 130 AFY of stormwater that would otherwise be discharged to the storm drain system would be discharged into the lake. The model assumed no potable water input into the lake under the proposed project scenario to conservatively evaluate potential nutrient loads; however, potable water inputs may be required during extended periods of dry weather or high evaporation. Potable water input would result in lower modeled nutrient and chlorophyll-a concentrations; however, as noted, this input was excluded to present a reasonably-foreseeable worst-case scenario for modeled impacts. Direct rainfall and evaporation volumes are calculated based on the simulated lake surface area. The proposed project scenario has a lower average modeled lake depth and surface area, resulting in a lower direct rainfall volume and evaporation. Additionally, an average of 120 AFY of water in the lake would be discharged to the downstream storm sewer system during overflow events or to the sanitary sewer system during routine drawdown pumping.

**Table 5. Modeled Average Annual Water Balance for Existing Conditions/No Project and With Project Scenarios (1999-2019)**

| Type | Existing Conditions/ No Project (AFY) | With Proposed Project (AFY) |
|---|---|---|
| Direct Rainfall | +7.7 | +7.0 |
| Potable Water[1] | +27.6 | 0.0 |
| Watershed Runoff | 0.0 | +140 |
| Evaporation | -32.0 | -27.0 |
| Overflow/Drawdown | -3.3 | -120 |
| **Balance** | **0** | **0** |

Source: CDM Smith 2024.
Note:
[1] Potable water additions are determined as the amount of water needed to balance net losses to maintain a full lake at a daily timestep over the 20-year hydrologic period.

These changes to the hydrology of MacArthur Lake also mean there would be an increase in the load of nutrients delivered to the lake from the upstream watershed from nearly zero[4] to 136 lbs/yr total phosphorus and 984 lbs/yr total nitrogen over the 20-year simulation period (**Table 6** and **Table 7**), as modeled. However, the modeling also projects an increase in mass flushed *from* the lake from 2 and 34 lbs/yr to 130 and 963 lbs/yr, for total phosphorus and total nitrogen respectively. This translates into a decrease in lake nutrient mass retention from 45% and 18% of the total external load to only 4% and 2%, respectively.

**Table 6. Modeled Nutrient Mass Balance: Current System**

| | Total Phosphorus | Total Nitrogen |
|---|---|---|
| Total lake potable inflow (lbs/yr) | 3.8 | 41 |
| Direct precipitation (lbs/yr) | 0.5 | 8 |
| Atmospheric deposition (lbs/yr) | 2 | 50 |
| Total lake outflow (lbs/yr) | 2 | 34 |
| Retained mass (lbs/yr)[1] | 1.7 | 7.3 |
| Retained mass (%) | 45% | 18% |

Source: CDM Smith 2024.
Note:
[1] Calculated as the sum of inflows minus outflows, and includes internal recycling load.

[4] MacArthur Park is an active recreational area and supports encampments of unhoused populations. Nutrient loading from illegal discharges along the shoreline have not been quantified and are assumed to be negligible in this water quality study.

**Table 7. Modeled Nutrient Mass Balance: Proposed Project**

| | Total Phosphorus | Total Nitrogen |
|---|---|---|
| Total lake stormwater inflow (lbs/yr) | 136 | 984 |
| Direct precipitation (lbs/yr) | 0.5 | 8 |
| Atmospheric deposition (lbs/yr) | 2 | 50 |
| Total lake outflow (lbs/yr) | 130 | 963 |
| Retained mass (lbs/yr)[1] | 5.5 | 21 |
| Retained mass (%) | 4% | 2% |

CDM Smith 2025.
Note:
[1] Calculated as the sum of inflows minus outflows, and includes internal recycling load.

The statistics shown in Tables 6 and 7 describe the retained mass as a percentage of the total inflow mass. The retained mass is defined as the inflow mass minus the outflow mass; the retained mass therefore includes the sediment flux described in Table 4. Sediment flux is an additional load of nutrients into the lake water column that is represented using a dynamic sediment diagenesis model in SLAM. The retained mass increases in the proposed project condition because the overall mass inflow increases due to the higher concentrations in the stormwater discharge compared with the potable water inputs in the current system representation.

Without any of the proposed project treatment components, the model predicts an increase in long-term average nutrient and algae concentrations within the lake, as well as further nutrient enrichment of lake bottom sediments (Table 4). However, with the water quality controls described above, modeling results show that total phosphorus is expected to increase slightly, as compared to current conditions, while total nitrogen is expected to decrease. The increase in total phosphorus and decrease in total nitrogen is caused by the differences in the modeled sediment flux rates from the current system to the proposed project condition. Sediment total phosphorus flux is predicted to increase in the proposed project condition and sediment total nitrogen flux is predicted to decrease in the proposed project condition, causing the difference in the modeled water column nutrient concentrations. The increase in retained mass includes the sediment flux, so, even though the retained mass increases for total nitrogen, the sediment flux rate decreases, resulting in the overall lower total nitrogen water column concentration. Note that this result is subject to substantial uncertainty due to the lack of empirical data to use for model calibration. These changes in nutrient concentrations are not expected to cause a substantial degradation of lake water quality, as measured by algae levels (chlorophyll-a).

Probabilistic simulation results (**Figure 2**) provide a reasonable estimate of model uncertainty, focused on key input parameters, for the proposed project. These histograms show median values that are approximately equal to the deterministic projections detailed above, but with low-likelihood ranges that extend well above and below the projected median values. In other words, uncertainty is relatively high for all model projections due to the lack of supporting empirical data.

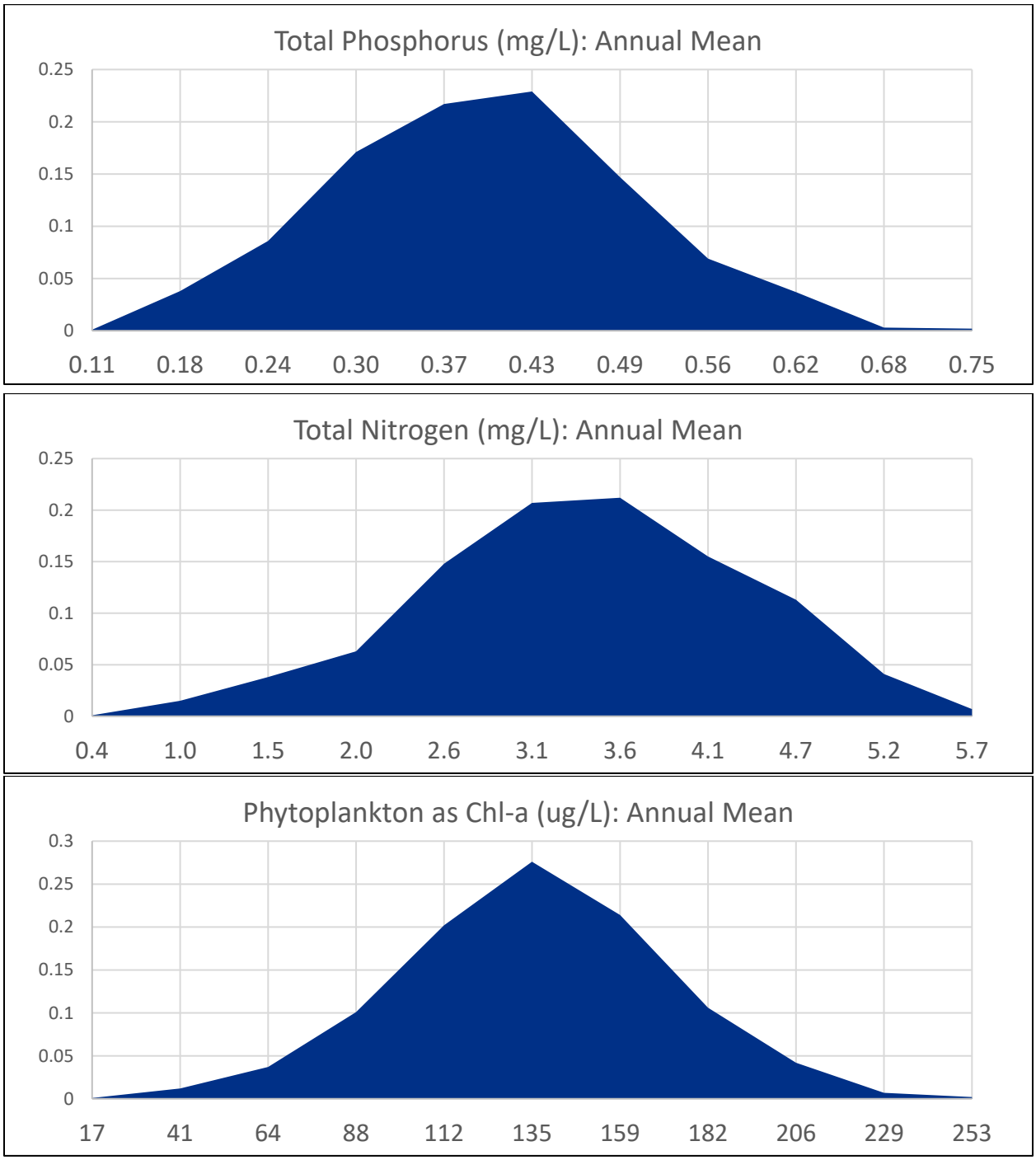


**Figure 2. Probabilistic Lake Water Quality Simulation Results: Proposed Project. Note that modeled annual mean concentrations are plotted on the x-axes, while probability (likelihood) relative weightings are plotted on the y-axes. Plotted output are the result of 1,000 randomly sampled iterations of the probabilistic model.**

## Discussion

MacArthur Lake is currently a largely stagnant pool, characterized by low inflow loads, even lower outflow loads, and evaporative losses replaced by potable water. Current lake nutrient dynamics are dominated by internal “recycling” of nutrient loads, as the majority of the inflow nutrient load is retained by the lake. Evapo-concentration also plays a role. Other than periodic overflows from direct precipitation, the only nutrient mass removal occurs via settling and burial. Otherwise, mass is retained, accumulates in the lake (water column and shallow sediments), and is recycled via sediment nutrient releases. The net result, as demonstrated by the model, are nutrient concentrations that exceed the concentrations of flow inputs (potable water). This is supported by a limited set of in-lake measured data.

The proposed project would alter the hydrodynamics of the lake considerably. The lake would move from a relatively stagnant pool to a well-flushed, flow-through system. It is assumed that much of this flushing would be provided by a steady dry weather inflow, as reported by Carollo Engineers (Carollo 2024). This hydrodynamic change is expected to have a positive impact on lake water quality, due to increased flushing of nutrient loads and lower residence times for phytoplankton algae. However, inflow nutrient loads would also increase considerably, due to the stormwater diversion. This would have a negative impact on lake water quality. The balance of the two is captured by the constructed numerical model. The model predicts that the net impact, assuming stormwater treatment, would be modest increases in total phosphorus and phytoplankton concentrations and a modest decrease in total nitrogen concentration.

If the stormwater treatment system fails, or is taken offline, the model projects significantly higher lake total phosphorus concentrations and a discernable increase in phytoplankton concentrations, as compared to the current system. This highlights the importance of the proposed StormFilter treatment system, including the need for ongoing maintenance of the system. In the event the stormwater treatment system fails or is taken offline, the proposed project is designed with a slide gate system that would close to prevent stormwater from being diverted into the lake.

A cursory review of recent literature (past 10 years) was performed as part of this study. The results of this literature review are summarized in **Table 8** and **Table 9**. Proposed project water quality projections align well with regional and global case studies of similar stormwater urban lakes.

**Table 8. Literature Review Summary: Urban Lake Water Quality**

| Lake Name | Location | Characteristic Total Phosphorus Concentration (mg/L) | Characteristic Total Nitrogen Concentration (mg/L) | Characteristic Chl-a Concentration (ug/L) | Reference |
|---|---|---|---|---|---|
| Machado Lake | Los Angeles, CA | 0.7 | 2 | 85 | Cox et al. 2022 |
| Oswego Lake | Oregon | 0.05 | 0.9 | 20 | Costadone et al. 2021 |
| Lake Dianchi | China | NA | 2 | NA | Liu et al. 2021 |
| Multiple urban ponds | Netherlands | 0.2 - 0.4 | 1.4 - 3.3 | 200 - 300 | Waajen et al. 2014 |
| Dlugie Lake | Poland | 0.24 | 3.2 | 63 | Grochowska et al. 2018 |
| Minneapolis Chain of Lakes | Minnesota | 0.03 - 0.06 | NA | 8 - 30 | Huser et al. 2016 |
| Kranji Reservoir | China | 0.2 | 1.5 | 75 | Xing et al. 2014 |
| Lake Domowe Duze | Poland | 0.27 | 2.8 | 42 | Lopata et al. 2013 |
| Lake Domowe Male | Poland | 0.31 | 3.5 | 69 | Lopata et al. 2013 |
| University Lake | Louisiana | NA | NA | 75 | Norris and Laws 2017 |
| Swarzedzki Lake | Poland | 0.16 | 5.5 | 78 | Rosinska et al. 2017 |
| Lake Jeziorak | Poland | NA | 3 - 6 | NA | Zebek and Krzebietke 2016 |
| Lake Hugh Muntz | Queensland, Australia | 0.015 | 0.6 | NA | Waltham et al. 2014 |
| Oswego Lake | Oregon | 0.08 - 0.3 | 0.6 - 2 | NA | Grund et al. 2022 |
| Kabaka Lake | Uganda | 1 - 2.4 | 10 - 15 | 74 - 400 | Nakagiri et al. 2023 |
| Wattle Grove Lake | Australia | NA | 1.2 - 6.1 | NA | Natarajan et al 2018 |
| Woodcroft Lake | Australia | NA | 1.1 - 3.4 | NA | Natarajan et al 2018 |
| Sha Lake | Wuhan, China | NA | NA | 80 - 100 | Ruan et al 2021 |

**Table 9. Literature Review Summary: Urban Stormwater Water Quality**

| Location | Characteristic Total Phosphorus Concentration (mg/L) | Characteristic Total Nitrogen Concentration (mg/L) | Reference |
|---|---|---|---|
| Machado Lake | 0.8 | 3 | Cox et al. 2022 |
| Multiple sites | NA | 2 - 8 | Osman et al 2014 |
| Multiple urban sites | NA | 1 - 10 | Koch et al. 2014 |
| Madison, Wisconsin | 0.2 - 2 | 2 - 3 | Selbig 2016 |
| Multiple sites | 0.35 | 2.1 | Pamuru et al. 2021 |
| Cambridge, MA | 0.1 - 3 | NA | Kahn et al. 2021 |
| South Korea | 0.5 | 7 | Jeon et al. 2021 |
| Multiple global urban sites | 0.4 | 3 | Simpson et al. 2022 |

## Conclusions

A lake water quality model was developed to predict the impacts of a proposed stormwater capture project on long-term lake water quality. Model simulations were performed both with and without a series of proposed stormwater treatment components, which would address increased nutrient loads to the lake resulting from the urban stormwater capture. Modeling results highlight the importance of the proposed treatment components in maintaining current levels of lake water quality if the proposed project is implemented. With the input of stormwater into the lake but without the treatment components, lake water quality is predicted to worsen compared to current conditions, with substantially higher phosphorus and moderately higher algae levels projected. With the proposed treatment components of the project performing as designed, long term lake water quality is not predicted to substantially worsen. With the treatments, modest increases in lake phosphorus levels, and modest decreases in lake nitrogen levels, are projected. The result of these projected changes are lake phytoplankton (chl-a) levels that are very similar to current conditions and do not represent a discernable change.

This water quality modeling study provides insight into the combined water quality impacts of each element of the proposed project. The model could be further developed and applied in the future to evaluate potential refinements to the project, such as changing treatment flow rates, operational assumptions, adding other in-lake or stormwater treatments, and lake dredging. Such analyses could be useful in support of future decision-making. Future lake water quality monitoring, particularly after project implementation, is also recommended.

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